ACTIVE TRANSPORTATION PLAN

Summary Report

January 2020

FORWARD PINELLAS

Advantage PINELLAS

ENGAGE. ADAPT. CONNECT.

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01 Introduction

Planning For Active Transportation

Pinellas County provides a strong quality of life for its residents with a low cost of living, vibrant communities, and many public parks, beaches, open space, and recreational opportunities. Forward Pinellas, Pinellas County, and the 24 municipalities are committed to protecting and improving access to these resources and opportunities. Active transportation improves conditions necessary for a healthy and economically vibrant community. A safe network of bicycle and pedestrian infrastructure is a cornerstone for ensuring these travel modes are viable alternatives to the automobile.

ADVANTAGE PINELLAS

Forward Pinellas is a strategic stakeholder in pursuing the county's active transportation goals. As the Pinellas County **Metropolitan Planning Organization (MPO)**, Forward Pinellas is responsible for developing a *Long Range Transportation Plan* (LRTP) every five years that includes a vision, goals and objectives for advancing bicycle and pedestrian mobility. The most recent edition of the plan, "Advantage Pinellas," extends the LRTP horizon year to 2045. It was adopted by the Forward Pinellas Board on November 13, 2019. Mulitmodal transportation is a key element of the Advantage Pinellas Plan particularly in the areas of safety and accessibility.

ACTIVE TRANSPORTATION PLAN

As part of the Advantage Pinellas effort, Forward Pinellas developed a new countywide Bicycle and Pedestrian Master Plan branded as *Advantage Pinellas: Active Transportation Plan*. This plan offers actionable, multimodal strategies to achieve improved bicycle and pedestrian mobility in Pinellas County. The planning effort was undertaken to identify current conditions, gaps, and opportunities for increasing active transportation options throughout the county. The new plan was developed in partnership with local agencies to create a safer and more accessible bicycle and pedestrian network.

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02 Vision, Goals & Objectives

Introduction

To assist with the development of a community supported vision, goals, and performance measures, development of the *Active Transportation Plan* relied on a variety of public engagement tools. This included online mapping, interactive polling, and three in-person work sessions to gain a better understanding of the community's priorities regarding the current and future active transportation network. This section outlines the results of the public outreach efforts and identifies a draft framework for incorporation into the new *Active Transportation Plan* and LRTP.

Vision

Local government and other project stakeholders gathered at the Forward Pinellas Bicycle Pedestrian Advisory Committee (BPAC) and Technical Coordinating Committee (TCC) meetings on February 19th, 27th, March 18th, and May 7th to discuss bicycle and pedestrian concerns and opportunities within their respective communities. Participants submitted feedback and ideas at the meetings and online through a GIS mapping tool and Mentimeter digital polling platform. Approximately 41 respondents participated. As part of the polling exercise, the participants were asked to identify three words

Figure 1. Mentimeter Vision Exercise Word Cloud Results

demonstrating their vision for the bicycle and pedestrian network in Pinellas County.

The words identified by the participants are shown in **Figure 1**. The words appearing in the larger font size were the ones identified most frequently by the respondents. Their responses helped to articulate a vision for bicycle and pedestrian travel in Pinellas County.

VISION STATEMENT

Pinellas County will have a safe, connected and comfortable active transportation network, which is community fostered and in harmony with all travel modes, and that advances an efficient, productive, and healthy mobility system for all users.

Goals & Objectives

In addition to the word cloud, respondents were asked through an online Mentimeter survey to identify the top three objectives they believed the *Active Transportation Plan* should accomplish to meet community needs. The feedback derived from the responses included focusing on safety, comfort, and accessibility while balancing the needs of motorists, bicyclists and pedestrians. Through the review of these comments and consideration of public input collected through LRTP outreach activities, a set of active transportation goals were developed for Pinellas County.

GOALS

Pinellas County desires a Regional Active Transportation Network that:

1. Improves safety and reduces bicycle and pedestrian conflicts;
2. Connects with destinations and integrates with other modes such as public transit;
3. Is accessible and comfortable to all users, of all abilities in all communities; and
4. Enhances the quality of life, economic condition, and health of the region.

These goals are consistent with the themes or "pillars" of the Advantage Pinellas Plan that refer to the current and desired advantages of Pinellas County. These pillars are shown below:

03 Performance Measures & Evaluation Criteria

The *Advantage Pinellas: Active Transportation Plan* is intended to further a countywide vision and build on the bicycle and pedestrian planning efforts of the county's local governments. The goals, objectives and performance measures shown in **Table 1** are designed to achieve this vision.

Table 1. Goals, Objectives & Performance Measures

ADVANTAGE PINELLAS PILLARS	OBJECTIVE	PERFORMANCE MEASURE
Safety: *A regional transportation network that improves safety & reduces bicycle & pedestrian conflicts.*		
	**Three E's.** Work with communities to improve the safety of people bicycling and walking through engineering, education, and enforcement strategies.	- *Number of collisions, injuries, fatalities within high collision, high pedestrian areas (FARS, FDOT)* - *Number of municipalities adopting context sensitive design standards and policies (baseline is number of current policies)* - *Number of safety improvements implemented (baseline of zero as of adoption)* - *Number of intersection enhancements in priority/ high collision locations (baseline of zero as of adoption)* - *Number of bicycle or pedestrian enforcement activities / efforts complete* - *Number of bicycle and/ or pedestrian education activities completed (targeted to either bicyclists/pedestrians and/ or drivers)*
	Context Sensitive Design. Encourage and assist communities with implementing FDOT's Context-Sensitive design standards and policies that emphasize safety and comfort for the most vulnerable road users.	
	Programs/Pilots. Encourage communities to pilot solutions such as protected intersections and protected bicycle lanes in strategic areas to immediately study impacts and possible long term solutions.	
	**Priority Areas.** Help communities identify high crash corridors and perform pedestrian focused road safety audits, and assist with constructing proven safety countermeasures; help communities identify pedestrian priority zones and encourage use of strategies such as shortened signal times like pedestrian intervals and other pedestrian phases within these zones and at specific times such as peak hour.	
	Transit Area Crashes. Work with transit providers to identify alternative measures and locations of bus stops at areas with a history of crashes to better facilitate safe crossings or access destinations or other informal pedestrian paths.	
	**Safety Improvements.** Encourage communities to conduct safety improvements like prohibiting turning right on red in bicycle and pedestrian priority areas or lighting improvements in areas where more than 25 percent of crashes occur outside of daylight hours.	

ADVANTAGE PINELLAS PILLARS	OBJECTIVE	PERFORMANCE MEASURE
Integrated & Connected: *A regional transportation system that connects with regional destinations & integrateswith other modes such as public transit.*		
	Destinations. Work with communities to increase the amount of recreational, educational, business, and social/health destinations reached from the bicycle and pedestrian network from neighborhoods.	- *Boardings by transit users with bicycle (number of existing PSTA monthly bicycle boardings on transit data)* - *% of proposed Pinellas County network completed (baseline of zero as of adoption)* - *% of transit stops served by walk/bike facilities (% determined by GIS model)* - *% of transit stations with secure bicycle parking (number of existing percentage of transit stations with secure parking)* - *% of homes and jobs within 1/4 mile of a bike/ped facility (% determined by GIS model)* - *% of identified regional destinations and activity centers connected directly with bicycle and pedestrian facilities* - *Number of municipalities with adopted bike parking ordinances.* - *Number of exclusive bicycle and/or pedestrian midblock crosswalks that have some form of supplemental traffic control (e.g., RRFBs, pedestrian hybrid beacon, traffic signal)*
	Long Distance/Short Distance. Create a hierarchical network of bicycle and pedestrian facilities for long-distance travel, short-distance travel, local access, and recreation. Also encourage communities to utilize connected, low-speed, low-volume streets and low-stress facilities as part of the bikeway network.	
	Transit. Work with providers to provide equitable integration of bicycle and pedestrian facilities into transit stations and stops such as long-term bicycle parking, bike racks, etc.	
	Gaps. Prioritize gaps in the existing network that increase access and decrease travel distances for people riding bicycles and walking, specifically for East/West and North/South connections across the County.	
	Bike Parking. Normalize and integrate bicycle parking into development projects and temporary parking during events. Encourage the installation of new bicycle parking near businesses, transit stops, apartments, or other destinations. Encourage bicycle parking as a routine hardscape component of street and development projects.	
	Travel Time. Encourage communities to reduce travel times for bicyclists and pedestrians by providing more direct routes, operational improvements such as signal sensor adjustments and/or reducing wait times for pedestrians.	
	Destination Crosswalks. Work with communities to promote quality crosswalks and/or signalized intersections with crosswalks in locations that connect to key destinations.	
	Places of Employment Support. Encourage the provision of enhanced facilities or services such as bicycle lockers, bicycle repair, and showers in activity centers and workplaces.	

ADVANTAGE PINELLAS PILLARS	OBJECTIVE	PERFORMANCE MEASURE
Accessible & Comfortable: *A regional transportation system that is accessible and comfortable to all users, all abilities, in all communities*		
	**ADA Needs.** Encourage each city to fund and complete an ADA transition plan to address ADA accessibility issues for pedestrian facilities in the right-of-way.	- *% of population within ¼ mile of high comfort walk and bike facilities (% determined by GIS model)* - *Density of bicycling and or walking facilities (baseline facility density [centerline miles of existing facilities / centerline miles of existing roadways (for on-street) or / square mile for off-street])* - *Miles of bicycling and walking facilities (baseline miles of all facility types)* - *% of traditionally underserved communities (composite equity score of 5 or higher by census block) within ¼ mile of bicycle and pedestrian facilities (% determined by GIS model)* - *Number of municipalities with ADA Transition Plans*
	Maintenance. Prioritize ongoing maintenance and repair of the bikeway and pedestrian network.	
	Construction. Promote predictable maintenance of operations of the bikeway and pedestrian network during private and public construction projects and events.	
	Wayfinding. Work with communities to help current and potential bicycle riders understand how to navigate the bikeway system with directional signage and up-to-date mapping options and having materials available in multiple languages.	
	**Neighborhood Streets.** Encourage communities to prioritize making neighborhood streets safer and more comfortable for walking with more sidewalks, traffic calming applications, complete streets design, and dedicated walkways and bikeways.	
	Amenities. Encourage communities to incorporate other elements that improve pedestrian comfort such as creating buffers between the sidewalk and vehicle traffic on higher speed roads or providing benches or other seating along pedestrian routes. Pedestrian scale lighting and other visibility enhancements should also be considered for furniture zones. Also increase the viability of bikeways in hot weather by prioritizing shade and providing water fountains or other amenities along trails where feasible.	
	Underserved Populations. Work with communities to prioritize expanding bikeways to and within neighborhoods underserved by the current bikeway network as well as completing sidewalk networks and access to trails.	
	**Universal Design.** Consider the needs of participants of different ages and abilities by designing for a variety of cycle types including adult tricycles, recumbent bicycles, hand-cycles, and child-carriers.	
	Active Transportation Comfort. Encourage communities to prioritize widening of or separation of bicycle facilities from vehicle road lanes; providing alternate routes with lower vehicular traffic volumes, and Levels of Traffic Stress. For pedestrians, improvements should include reducing cross-slope, widening sidewalks, or repairing broken or uneven sidewalks.	

ADVANTAGE PINELLAS PILLARS	OBJECTIVE	PERFORMANCE MEASURE
Quality of Life: *A regional transportation system that enhances the quality of life, economic condition, and health of the region.*		
	**Improving Health Conditions.** Work with communities to target active transportation improvements towards neighborhoods with populations exhibiting concentrated areas of poverty, health problems and low physical activity.	- *Number of bicycle friendly businesses (number of existing businesses who have qualified as a BFB [under LAB's standards])* - *Active transportation facility within 1/2 mile of healthcare facilities, healthy food, parks and community services (number of existing facilities within 1/2 mile of these destinations)* - *Bike share trips per year per bike (determine baseline after first full year of the bike share program)* - *Countywide bicycle and walking mode shares (ACS Commute to Work data; Regional Travel Survey data)* - *Number of jobs within 1/2 mile of ped/bike facilities (% determined by GIS model)* - *Students walking/bicycling to school (ACS Commute to Work data; Regional Travel Survey data; Safe Routes to School hand tallies and parent surveys)* - *Minutes of physical activity from walking or bicycling (existing self-reported physical activity rates per Pinellas County Community Health Assessment)* - *Countywide childhood obesity percentage* - *Number of encouragement activities completed (bike to work, bicycle festivals, etc.)* - *Countywide Walkscore and Bikescore values*
	Air Quality for Areas with Children. Encourage communities to prioritize bicycle and pedestrian connections and networks to educational facilities, parks and other locations frequented by children.	
	**Health/Air Quality.** Improve air quality and community health by increasing the number of people walking and biking.	
	Bike Share. Encourage more bicycle use through bike share programs in key communities.	
	Business Support. Encourage support for active transportation through the promotion of businesses to join Bicycle Friendly certification/designation programs.	
	Job Access. Encourage development of bicycle and pedestrian facilities closer to areas of industry and activity centers.	
	**Childhood Obesity.** Encourage safe routes to school and walking school buses within communities exhibiting high levels of childhood obesity.	
	Mode Share Shift. Encourage communities to promote more pedestrian/bicycle/trail use through public events and educational campaigns.	
	Recreation Access. Encourage recreational bicycling and walking through more pedestrian/bicycle/trail connections to parks and other recreational facilities.	
	**Active Transportation Comfort.** Encourage communities to prioritize widening of or providing separation of bicycle facilities from vehicle road lanes or providing alternate routes with lower vehicular traffic volumes, and lower levels of Traffic Stress. For pedestrians, improvements should include reducing cross-slope, widening sidewalks, or repairing broken or uneven sidewalks.	

Evaluation Criteria

Consistent with the Forward Pinellas Transportation Alternatives Program evaluation criteria, a set of evaluation criteria was developed to help prioritize the improvement projects identified in the *Active Transportation Plan*. The evaluation criteria shown in **Table 2** are linked to the goals identified on page four. Each of the evaluation criteria is weighted to provide a normalized scoring of 0 to 100. For the purposes of the safety criteria, high bicycle or pedestrian crash intensity segments or intersections are those identified in **Tech Memo III (Bicycle & Pedestrian Safety Analysis)** as being one of the top 10 crash intersections or segments in the county.

Table 2. **Evaluation Criteria**

GOAL	EVALUATION CRITERIA	SCORING
SAFETY	Project addresses an identified High Bicycle or Pedestrian Crash Intensity Segment or Intersection	- Includes High Bike or Ped Crash Segment or Intersection - 100 - Crosses High Bike or Ped Crash Segment - 75 - High Bike or Ped Crash Segment or Intersection within 0.5 mile - 50 - No High Bike or Ped Crash Segments or Intersections – 0
INTEGRATED & CONNECTS	Project provides direct access to a multimodal corridor, and/or is located within or directly connects to an Activity Center (as designated on the Countywide Plan Map)	- Multimodal Corridor & Activity Center - 100 - Multimodal Corridor Only - 50 - Activity Center Only - 50 - Neither - 0
	Average of project bicycle & pedestrian demand scores	- Average weighted demand score over project length, 0-100
	Project connects 2 or more existing facilities (fills a gap)	- Yes – 100 - No - 0
	Project provides direct access to transit	- Multiple core routes or routes with headways <= 30 min - 100 - One core route or route with headway <= 30 min - 60 - No core routes, but one or more routes with headways of 45-60 min - 30 - No access to transit - 0
ACCESSIBLE & COMFORTABLE	After project completed, the level of traffic stress (LTS) for bicyclists along the project corridor: (1) All ages & abilities - 100 (2) Interested but concerned - 60 (3) Somewhat confident - 30 (4) Highly confident - 0	- Average weighted LTS over project length, 0-100
	After project is completed, sidewalk coverage (including trails) for full length of project is complete for:	- Both sides of the street - 100 - One side of the street only - 50
	Project is included within, or provides direct access to an area with a High Composite Equity score (5 or higher) and low bicycle or pedestrian services	- High Equity Score & Low Service – 100 - High Equity Score Only – 50 - Low Service Area Only – 50 - Neither - 0
QUALITY OF LIFE	Project provides a direct connection to or extension of an existing recreational facility or destination	- Yes – 100 - No – 0

04 Existing Conditions Summary

Importance of Active Transportation

Active transportation includes non-motorized forms of transportation that involve physical activity such as walking or bicycling. Incorporation of active transportation into the overall transportation system is important to the quality of life of a community. Active transportation provides tangible community benefits by increasing daily physical activity levels, reducing pollution, increasing exposure to local businesses, and improving social well-being and sense of community.

Correlation between the existence of active transportation infrastructure and quality of life can be viewed directly through health, economic, and environmental impacts. Health impacts are visible within existing Pinellas County chronic disease and safety data. Economic impacts relate to business exposure and real estate trends and environmental impacts result from pollution and energy consumption. Each of these factors is discussed further in this section.

HEALTH IMPACTS

The built environment is a key factor considered in a community's Social Determinants of Health (SDOH), identified by the Centers for Disease Control (CDC). These SDOH are used by the CDC to quantify health conditions in the places where people live, learn, work, and play. These factors directly and indirectly impact health risks and outcomes. Transportation infrastructure is an indicator of SDOH. If the bicycle and pedestrian network is deficient due, for example, to a lack of connectivity or unsafe conditions, it has a negative effect on the health of a community.[1]

1 https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/environmental

SAFETY

Another health concern is dangerous traffic and roadway conditions, especially for vulnerable users such as pedestrians and bicyclists, who are at a greater risk of death and injury resulting from crashes involving motor vehicles. Based on its Pedestrian Danger Index, Smart Growth America ranked Tampa-St. Petersburg-Clearwater as ninth most dangerous metro area for walking in the United States as reported in the 2019 edition of *Dangerous by Design*. Eight other Florida metro areas are also ranked in the top ten of the report's most dangerous metropolitan areas. Improvements are being made and additional action is needed to continue to improve safety for pedestrians in Pinellas County and the Tampa Bay region.[2]

ECONOMIC IMPACTS

Built environments promoting active transportation can also help to improve local economies. Several studies have concluded that bicycle and pedestrian features make places more economically viable. For example, in a 2009 study (*Walking the Walk: How Walkability Raises Housing Values in U.S. Cities*), researchers found that improved walkability increases home values. The report looked at 94,000 real estate transactions in 15 major US markets. The study analyzed a wide range of factors affecting home sales, including a location's Walk Score. The study found that a one-point Walk Score increased home values by $700 to $3,000.[3] Additionally, having bicycle and pedestrian facilities nearby is appealing to home buyers. In 2017, the National Association of Realtors surveyed prospective home buyers and found that one in five respondents preferred to live in an attached home within a walkable community.[4]

2 https://smartgrowthamerica.org/dangerous-by-design/
3 http://blog.walkscore.com/wp-content/uploads/2009/08/WalkingTheWalk_CEOsforCities.pdf
4 https://www.nar.realtor/reports/nar-2017-community-preference-survey

HEALTH: CHRONIC DISEASE

Based on 2016 data, Pinellas County has significant rates of obesity and and heart disease. In 2016 heart disease was the **number one cause of death** in the county. Active transportation encourages exercise through increased opportunities for walking and biking.

SAFETY: PEDESTRIAN & BICYCLE

A significant number of bicycle and pedestrian fatalities have been caused by motor vehicle crashes in Pinellas County. In 2016 the county had a rate of 3.17 pedestrian deaths per 100,000 population, **higher than Florida's rate** of 2.78 per 100,000.

ENVIRONMENT: AIR POLLUTION

Exposure to traffic emissions impacts the population throughout the county particularly those who live near busy roadways. In 2016, 13.3% of residents lived within 500 feet of a busy highway, **higher than the average rate** for Florida, which was 12.1% in the same year.

ECONOMIC: BUSINESS EXPOSURE

There are many economic benefits to active transportation infrastructure. Studies show that customers who reach retail businesses by bicycle stop more often and spend as much or more per month as people using personal vehicles. There is greater capacity for arrival by bike where **ten cyclists can fit into just one parking space**.

ENVIRONMENTAL IMPACTS

Environmental impacts from vehicles are visible on both a local and global level. In 2018 research from climate scientists with the United Nation's Intergovernmental Panel on Climate Change (IPCC) indicated that carbon emissions need to be cut in half by 2030 to limit global temperature rise to 1.5 degrees celsius, the goal established at the 2015 Paris Climate Accord. Reducing personal vehicle use and encouraging active transportation reduces emissions of transportation-related greenhouse gas pollutants. The IPCC considers this one of the most cost effective strategies to address global climate challenges.[5]

Local Approaches

Based on public survey input collected by Forward Pinellas, improving active transportation infrastructure is a goal shared by the majority of Pinellas County citizens. The existing active transportation network in Pinellas County includes over 2,047 miles of bicycle lanes, shared-use paths/trails, and sidewalks. The planning work behind the construction of these facilities was reflected in the transportation plans of the local governments and Forward Pinellas. Local plans reviewed for the *Forward Pinellas Active Transportation Plan* are listed in **Table 3**. Detailed review of these plans/programs is provided in **Tech Memo I (Existing Conditions)**.

5 https://www.ipcc.ch/reports/

Bicycle & Pedestrian Network

FACILITY TYPES

The facilities have been classified according to the following types:

- **Bike Lanes:** These are on-road facilities identified with striping, signing and pavement markings for the preferential or exclusive use of bicyclists. FDOT Design Manual (FDM) uses 5 feet as the standard minimum width for bike lanes and 7-foot buffered bike lanes as the preferred or enhanced option.
- **Shared Use Lanes/Sharrows:** The shared use of travel lanes for bicycles and motorists is designated on roads with speed limits of 35 miles per hour or less. Shared lane markings or "sharrows" are often implemented on roadways where pavement or right-of-way widths are not sufficient for designated bike lanes. The sharrow markings, which include directional chevron markings, inform bicyclists and drivers that shared use is allowed and that bicyclists should be expected on the roadway.

Table 3. Bicycle/Pedestrian Plans and Programs Reviewed

NAME	AGENCY
Countywide Plan	Forward Pinellas
200 Long Range Transportation Plan	Forward Pinellas
Bicycle Pedestrian Master Plan Facilities Element	Forward Pinellas
Complete Streets Grant Program	Forward Pinellas
Bike Share Feasibility Study	Forward Pinellas
Tri-County Trail Connection Study	Forward Pinellas
Comprehensive Plan	Pinellas County
Complete Streets Corridor Evaluation	Pinellas County
Linking Lealman Mobility Plan	Pinellas County
Comprehensive Plan	City of Clearwater
Shifting Gears: Bicycle and Pedestrian Master Plan	City of Clearwater
Downtown Redevelopment Plan	City of Clearwater
Complete Streets Projects	City of Clearwater
Comprehensive Plan	City of St. Petersburg
Citytrails Bicycle Pedestrian Master Plan	City of St. Petersburg
Complete Streets Implementation Plan	City of St. Petersburg
Comprehensive Plan	City of Largo
Moving Largo Multimodal Plan	City of Largo
Downtown Largo Multimodal Plan	City of Largo
Pedestrian Safety Action Plan	Florida Department of Transportation (FDOT)
Alternate US 19 North Corridor Studies	FDOT and Forward Pinellas
US 19 Pedestrian and Bicycle Safe Access to Transit Corridor Study	FDOT, Forward Pinellas, and Pinellas Suncoast Transportation Authority
Multimodal Quality of Service Analysis	City of Tarpon Springs
Downtown Palm Harbor Master Plan	Palm Harbor
Corey Avenue District Vision Plan	City of St. Pete Beach
Town Center Plan	City of Madeira Beach
Downtown Master Plan	City of Safety Harbor
Dunedin Causeway Bridges PD&E	City of Dunedin
North Marina Area Master Plan	City of Clearwater

- **Trails:** Shared Use Paths or Trails are paved off-street facilities for non-motorized travel modes including bicycling and walking. They are typically bidirectional pathways separated from paved road lanes 8- to 15-feet wide. In Pinellas County there are two types of trails including community trails and regional trails. The trail system in Pinellas County is made up of regional trails and community trails. Regional trails, such as the Pinellas Trail Loop, serve as the spine of the network. Community trails provide connections between the regional trails and points of interest and neighborhoods.

EXISTING FACILITIES

As shown in **Figure 2**, Pinellas County has existing bicycle facilities along many roadways, as well as an extensive off-street trail network.

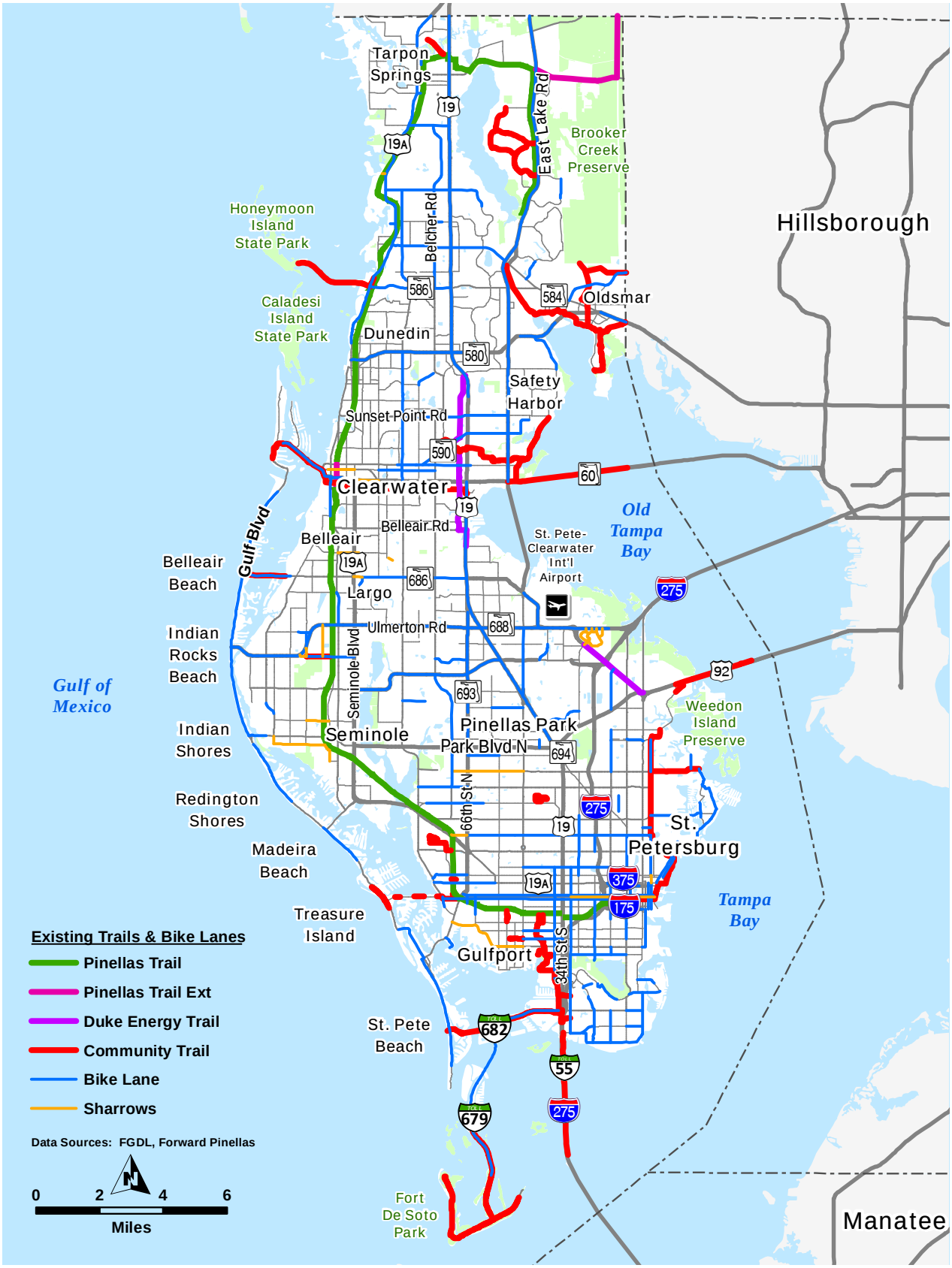
On-Street Bicycle Facilities

- **Bike Lanes.** The majority of bicycle facilities in Pinellas County are designated bike lanes (248 miles). Bike lanes are distributed throughout the county, with concentrations occurring in the south of the county in St. Petersburg, Gulfport, and also in the north between Tarpon Springs and Dunedin. Along the west coast of the county, the beach communities (i.e., Belleair Beach, Indian Rocks Beach, Indian Shores, Redington Shores, Madeira Beach, Treasure Island, and St. Pete Beach) are linked with a bicycle lane along Gulf Boulevard.
- **Sharrows.** Sharrows are the least applied bicycle facility type in the county. According to the existing facility data, the county has 10 roadway segments with designated sharrows. This includes roadway segments in Tarpon Springs, Gulfport, Pinellas Park, Seminole, Indian Shores, Clearwater, and two each segments in Largo and Indian Rocks Beach.

Existing Trails

- The 43-mile **Fred Marquis Pinellas Trail (Pinellas Trail)** is the county's most popular and longest existing trail, running primarily along the western side of the county between Tarpon Springs in northeast Pinellas County to downtown St. Petersburg. It was one of the first trails to be inducted into the Rail-Trail Hall of Fame in 2007. The Rails to Trails Conservancy award recognizes exemplary trails for their "scenic value, high use, trail and trailside amenities, historical significance, excellence in management and maintenance of facility, community connections and geographic distribution." The 15-foot-wide trail opened in 1990 along an abandoned railroad corridor. The trail comprises the western most section of the Florida Coast-to-Coast Connector Trail. When completed, this a 250-mile trail will extend from St. Petersburg to Titusville on the east coast.
- The **Pinellas Trail - Duke Energy Florida Trail (Duke Energy Trail)** is a 22-mile north-south trail that extends from John Chesnut Park on East Lake Road to Roosevelt Boulevard/28th Street. There are three existing segments shown on Figure 2. The remaining sections of the trail have not been constructed yet.

Figure 2. Pinellas County Existing Bicycle Facilities



- The **Pinellas Trail Loop** is a 75-mile regional trail network that includes the entire Pinellas Trail, as well as the Duke Energy Trail and other trail segments. Some portions of this facility are yet to be constructed. Completion of the gaps in the Trail Loop is an LRTP priority. The North Gap project will close the existing gap in the northern portion of the county. This is under development through a grant from FDOT Sun Trail Network funds and additional funding from the Penny for Pinellas.
- Several **Community Trails** connect to the Pinellas Trail, including the Ream Wilson Clearwater Trail, the Druid Road Trail, the Clearwater Beach Connector Trail, the Honeymoon Island Trail, and the Skyway Trail. These trails provide access to the Trail Loop and to key destinations.

EXISTING PEDESTRIAN FACILITIES

Considering that everyone is a pedestrian at some point in their daily commutes, providing a continuous network of sidewalks is critical to meeting a community's basic transportation needs. As of 2018, 88% of the county's major roads had sidewalks alongside them. Areas where there is less coverage or gaps in the network include portions of central Pinellas County and the beach communities. Gulf Boulevard provides a north-south connection for the beach communities, but access to neighborhoods is limited.

Equity Analysis

People who rely on walking, bicycling, and transit to access jobs and meet everyday needs often live in areas that are the least supportive of active transportation modes. Such areas are often characterized by sidewalk networks that have gaps or are in poor condition, infrequent transit service and/or absence of safe bicycle facilities. The health, safety, mobility, and economy of a community is compromised when its residents are not provided with viable mobility choices. Developing bicycle and pedestrian networks that serve all areas of the county, including areas that have a high density of historically under-served populations and relatively few bicycle and pedestrian facilities, is a primary goal of this *Active Transportation Plan*.

To better understand the needs of communities most affected by the lack of access to active transportation options, an equity analysis was conducted based on their demographic attributes. The analysis also considered the spatial relationship of underserved areas to existing bicycle and pedestrian facility networks. This section provides an overview this analysis that resulted in a geographic equity score that helped to identify areas with low bicycle and pedestrian service where people would be more likely to walk or ride a bicycle, to meet their daily transportation needs.

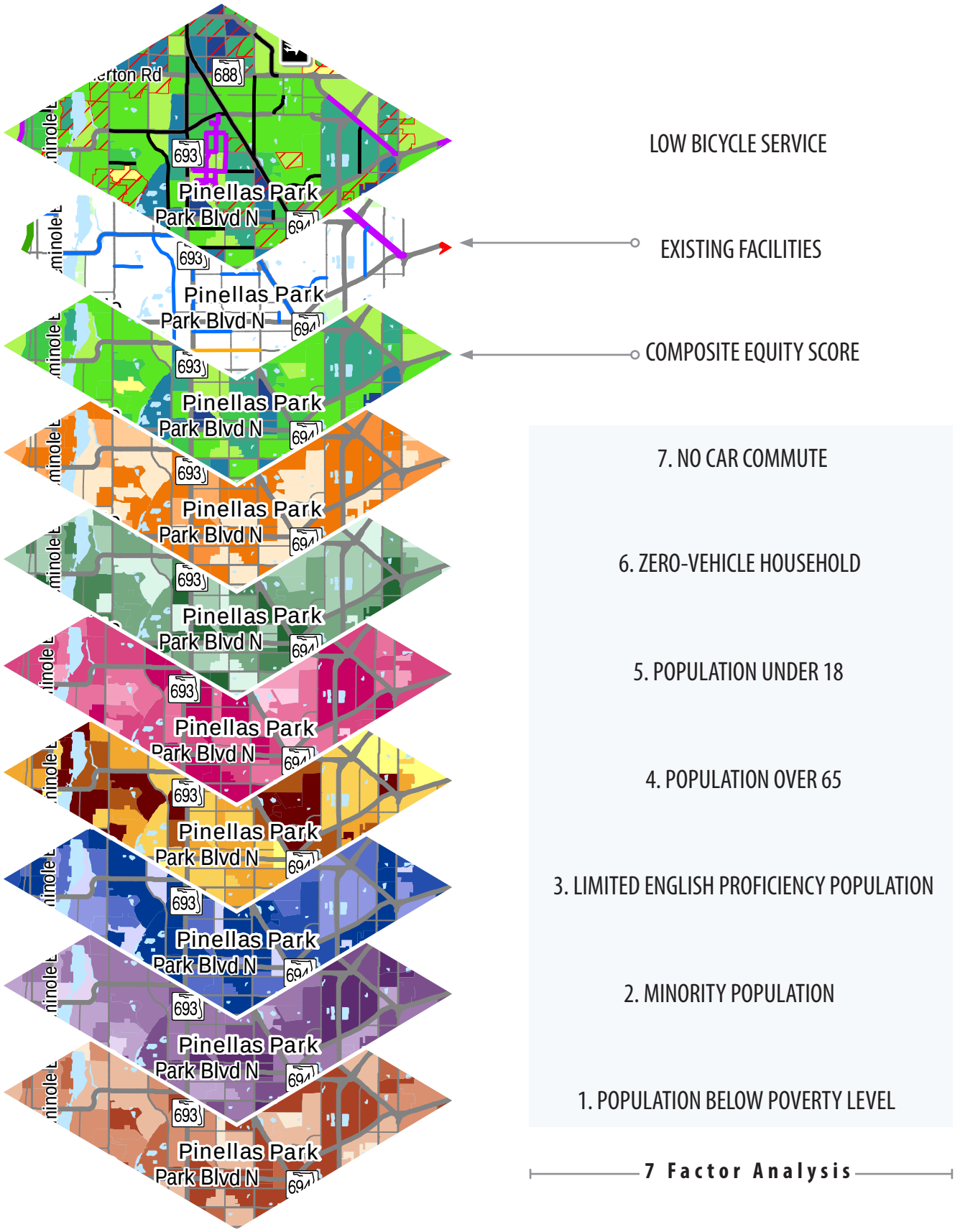
EQUITY ANALYSIS METHODOLOGY

The equity analysis conducted for the plan included an evaluation of seven 2016 American Community Survey (ACS) socio-economic factors identified for the county. These included:

1. **Population Below Poverty Level:** Percentage of population below poverty level;
2. **Minority Population:** Percentage of minority population;
3. **Limited English Proficiency:** Percentage of population with limited English proficiency;
4. **Population Over 65:** Percentage of population age 65 or above;
5. **Population Under 18:** Percentage of population 18 or below;
6. **Zero-Vehicle Household:** Percentage of zero-vehicle households; and
7. **No Car Commute:** Percentage of means of transportation to work other than personal motor vehicle.

The analysis used a threshold for each of the seven factors, so that those census block groups that had a greater value than the countywide mean value for any given indicator was given a score of one (1). The scores for the individual categories were then summed across the seven socio-economic indicators to generate a composite equity score. For example, if a census block group had an above average number of people below poverty level and an above average number of people

Figure 3. Pinellas County Equity Analysis Framework



65 years of age or older, the census block group was given a score of two (2). The Equity Score range has a maximum possible high score of seven (7), indicating above average values for each of the seven socio-economic indicators, and a minimum possible low equity score of zero (0), which would indicate no above average values.

The composite equity map was then overlaid with the existing network of bicycle facilities (bike lanes, trails, and signed/marked bike routes), and overlaid separately with the existing network of pedestrian facilities (sidewalks and trails), to determine areas of low service. For both the bicycle and pedestrian analysis, the facility service level was calculated by dividing the total mileage of bicycle or pedestrian facilities in a census block group by the number of square miles in the census block group (e.g., bicycle facility miles/square miles). Block groups with a population density less than 1 person per acre were excluded from the analysis. Block groups in the lowest quartile (lowest 25%) were considered to be "low service areas."

The results of the equity analysis combined with the assessment of low service areas highlight areas within Pinellas County where improvements to the bicycle or pedestrian network would benefit under-served populations[6]. **Figure 3** shows a schematic diagram of the equity analysis framework that used seven socioeconomic factors to derive a composite equity score, and then overlaid the existing bicycle/pedestrian facilities to help determine where areas of high composite equity scores overlapped with areas of low bicycle or pedestrian service.

Equity Score & Low Bicycle/ Pedestrian Service

Figure 4 shows the results of combining the Equity Score data and the existing facilities data revealing the areas of Low Bicycle Service. Several Low Bicycle Service Areas exist throughout Pinellas County according to this analysis. Each municipality has some level of low coverage for this indicator. As shown on **Figure 4**, local jurisdictions with the largest areas of low service include St. Petersburg, Gulfport, Pinellas Park, Seminole, Largo, Indian Rocks Beach, Treasure Island, Safety Harbor, Oldsmar, Dunedin, and Tarpon Springs.

Efforts should be focused on areas where Low Bicycle Service and concentrated high composite Equity Scores overlap. They identify concentrations of the most vulnerable user populations and where improvements should be prioritized to enhance and provide equitable mobility access. These areas are highlighted on the map by red hatched markings. They include areas of St. Petersburg, Largo, Clearwater, Gulfport, and Dunedin.

Figure 5 shows the results of combining the Equity Score data and the existing facilities data revealing the areas of Low Pedestrian Service. Several Low Pedestrian Service Areas exist in south St. Petersburg, Gulfport, Pinellas Park, Seminole, Largo, Indian Rocks Beach, Redington Shores, Madeira Beach, Treasure Island, St. Pete Beach, and Tarpon Springs. Areas where high concentrated equity score populations and low pedestrian service overlap are in Largo, Pinellas Park, and Clearwater.

This exercise helped to inform the process of identifying the improvement projects discussed in the next chapter.

6 http://weblink.cityofpt.us/weblink/0/edoc/169101/Seattle-Bike-Master-Plan-Update-FINAL.pdf

Figure 4. Pinellas County Low Bicycle Service

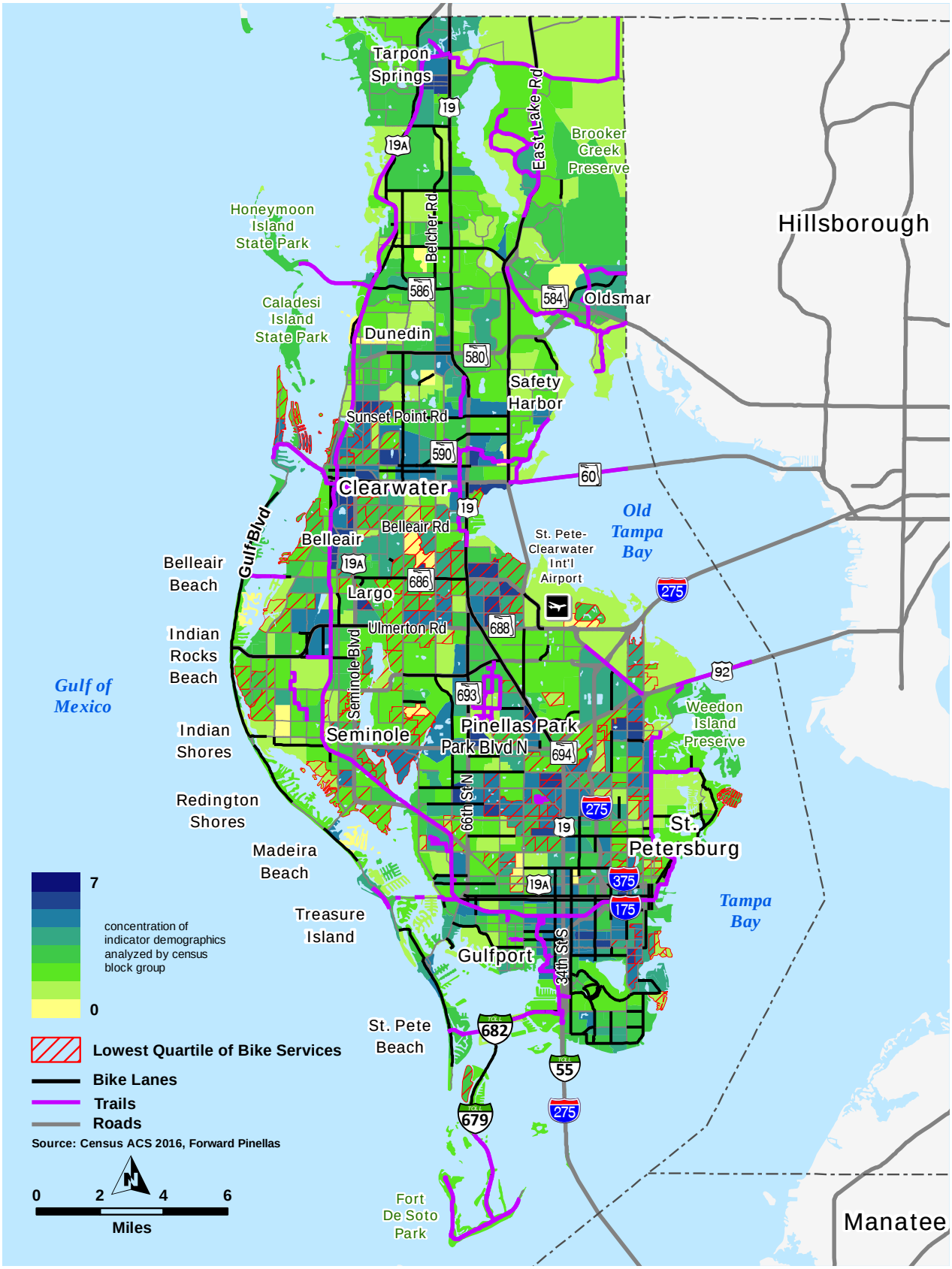
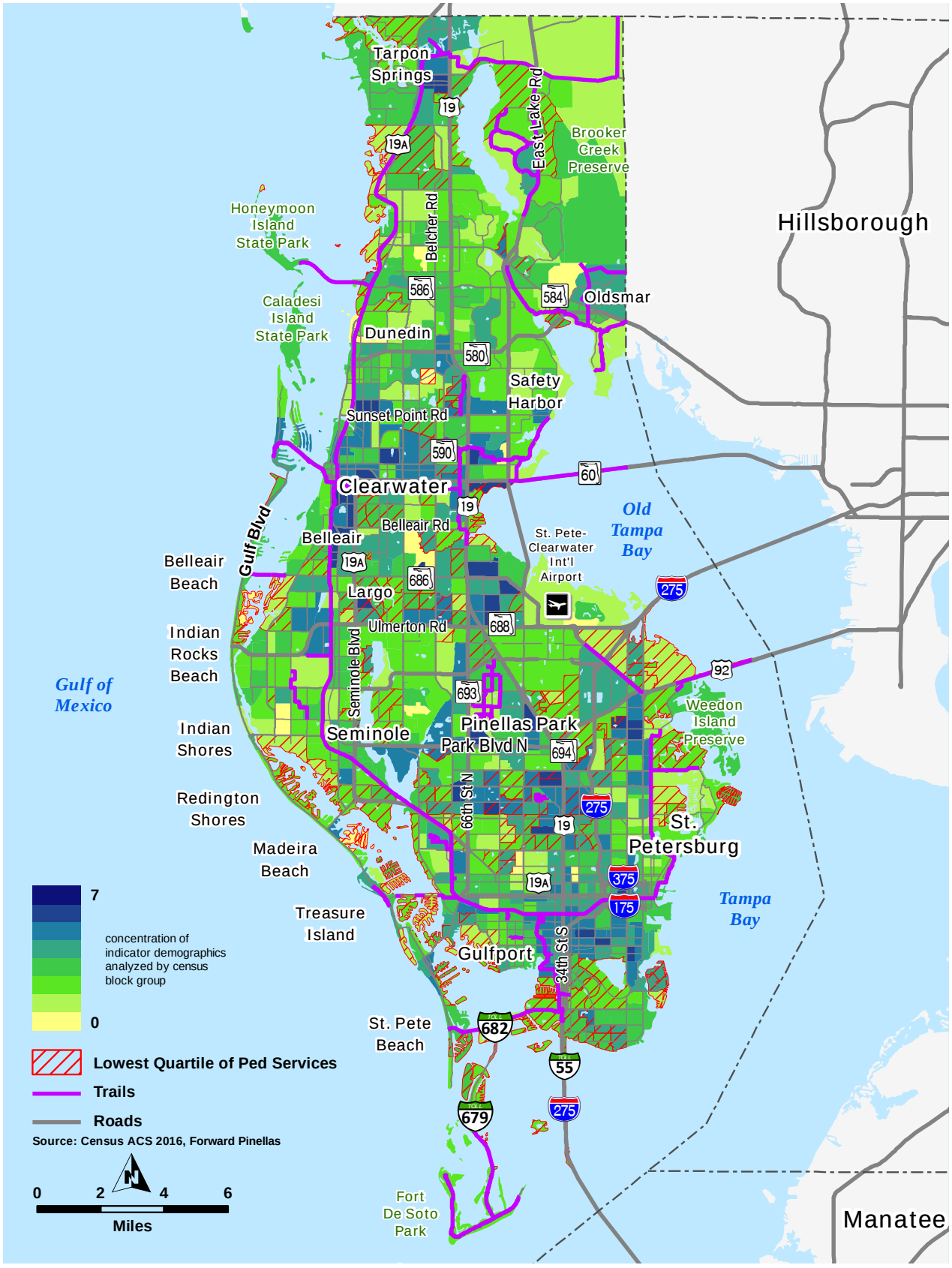


Figure 5. Pinellas County Low Pedestrian Service



05 Proposed Improvement Projects

Development of the *Active Transportation Plan* included a review of the bicycle and pedestrian improvement projects proposed in the Forward Pinellas *Bicycle and Pedestrian Master Plan* (adopted in December 2013 and last updated in May 2017). Based on local government feedback on the status of the projects, the list of Master Plan projects was updated and condensed. The revised list of projects, which represents the countywide long-range vision plan, will continue to be maintained as part of the *Active Transportation Plan* and is illustrated in **Figures 6-9**.

To guide the process of prioritizing projects in the Active Transportation Plan, a network of priority corridors was identified. The top ten corridors were then selected as priority projects that will be advanced through the Advantage Pinellas Plan and Transportation Improvement Program. This section describes the process involved with selecting the top ten priority corridors. Also included is the selection criteria for trail overpass projects in the county.

The methodology for identifying the priority projects involved a balance of data analysis, geographic equity, regional network connectivity, facility diversity and stakeholder feedback.

Data & Planning Analysis

The data analysis approach involved a synthesizing of several GIS datasets to identify focus areas and potential corridors. This included review and analysis of:

- Equity Score
- Low Service Areas for Pedestrian and Bicycle Facilities
- Level of Traffic Stress
- Population
- Demand
- Network Gaps (Existing and Proposed Facilities)
- Safety

Each of the resulting data layers were combined in an online ArcGIS portal. Additionally, the analysis was compared with comments received through the Forward Pinellas crowd sourcing GIS tool. This exercise produced a first step in understanding where the most active transportation activity is, what the conditions are, and where potential improvements can be addressed with the ATP.

The planning analysis looked at network connectivity to identify the location of gaps in terms of connecting activity centers, communities, and destinations. For example, several stakeholders expressed a need to better connect certain communities such as Dunedin and Clearwater. Although completion of the Pinellas Trail Loop has been a top priority in the trail plans of Forward Pinellas and Pinellas County over the years, project stakeholders also expressed a need for more cross county facilities extending north-to-south and east-to-west. Based on this initial analysis step, a list of 47 potential priority corridors was developed. These corridors are listed in **Table 4** and shown in **Figure 10**.

Stakeholder Feedback

Stakeholder feedback was received from the Forward Pinellas Bicycle Pedestrian Advisory Committee (BPAC) and Technical Coordinating Committee (TCC), and face-to-face meetings with local officials. In addition, various plans were reviewed to ascertain local government priorities in terms of bicycle and pedestrian needs.

The BPAC and TCC feedback helped to guide the planning process and help guide the decision-making and selection of the priority projects. TCC members were asked to inventory and update the list of bicycle and pedestrian projects (existing and proposed) from the *Forward Pinellas Bicycle Pedestrian Master Plan*. The revised projects are included in the countywide vision plan illustrated in **Figures 6-9**. Additionally, it was important to identify which of the proposed projects were considered a high priority but were not being funded locally.

Geographic Equity

Based on the data analysis alone, most of the higher ranked priority projects would be concentrated in the southern portion of the county. Understanding that an underlying objective of the plan is to build a bicycle and pedestrian network that serves countywide as well as regional interests it was necessary to consider geographical equity in the prioritization process. To do this, the project team divided the county into three geographic focus areas. The limits for each were as follows:

- North: from SR 60 north to the Pinellas/Pasco County Line;
- Central: from Park Boulevard north to SR 60; and
- South: from the southern end of Pinellas County north to Park Boulevard.

The list of projects shown in **Table 4** was then reorganized into smaller lists for each geographic area to narrow the focus for selecting three to four priority project corridors within each area.

Top Ten Priority Corridor Selection

The selection of the top priority corridors in each geographic area relied heavily on the weighted bicycle and pedestrian demand scores for each corridor. The demand scores were based on a combination of factors including population and employment density; proximity to key destinations such as schools, parks, and community and activity centers; and the computed composite equity scores.

More information about the gap and demand analysis is included in **Tech Memo V (Gap & Demand Analysis)**. Other factors considered in the selection of the top priority corridors included existing infrastructure, connectivity with other facilities and destinations, and local priorities. Also, the project team reviewed the available right-of-way and safety and comfort conditions for users.

A key objective of this plan is to advance a concise list of priority projects that can be programmed in the Transportation Improvement Program in the next few years. Therefore, the initial list of 47 priority corridor was reduced to ten as shown in **Table 5**.

Figure 6. Forward Pinellas Active Transportation Vision Map

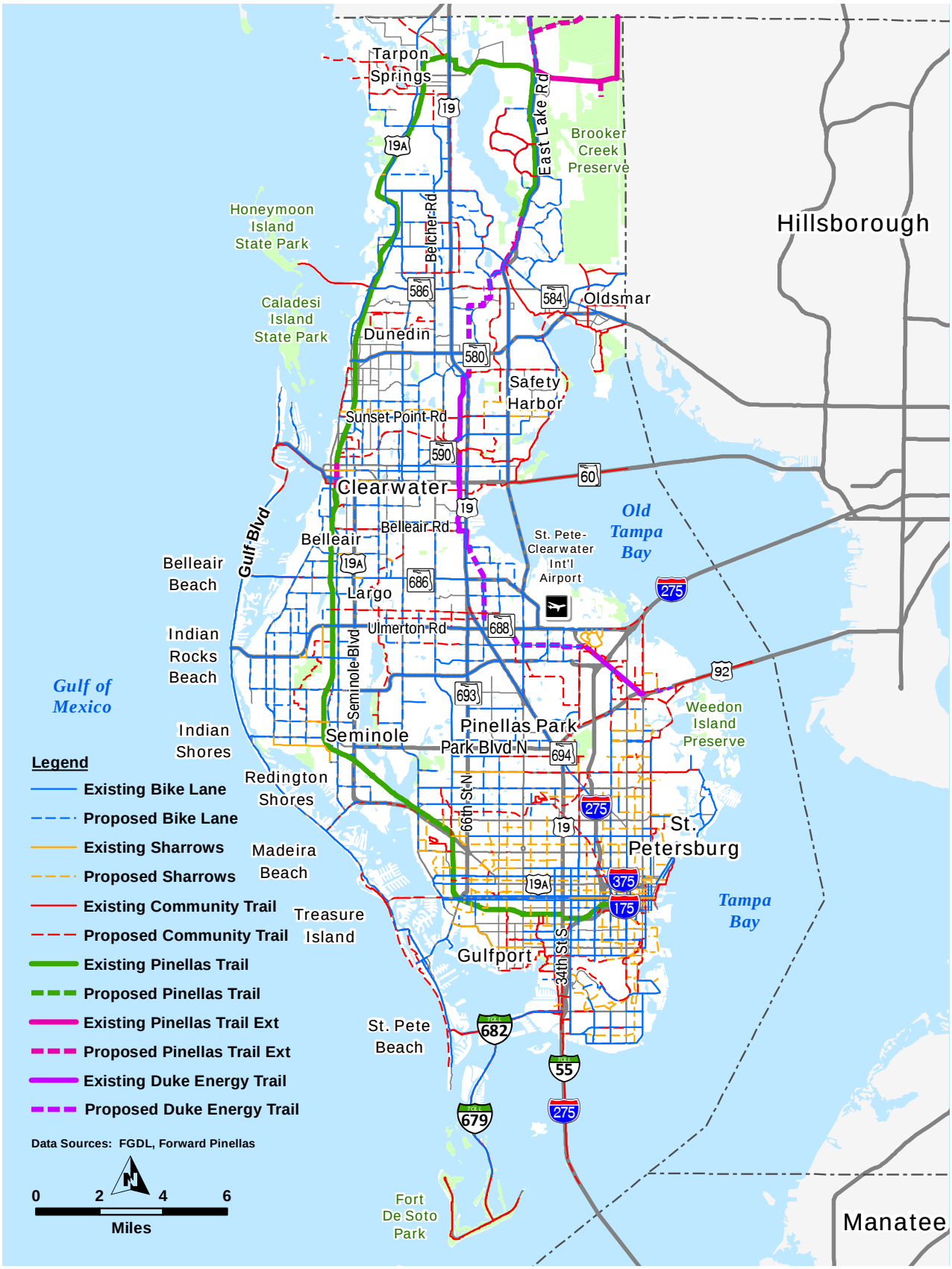
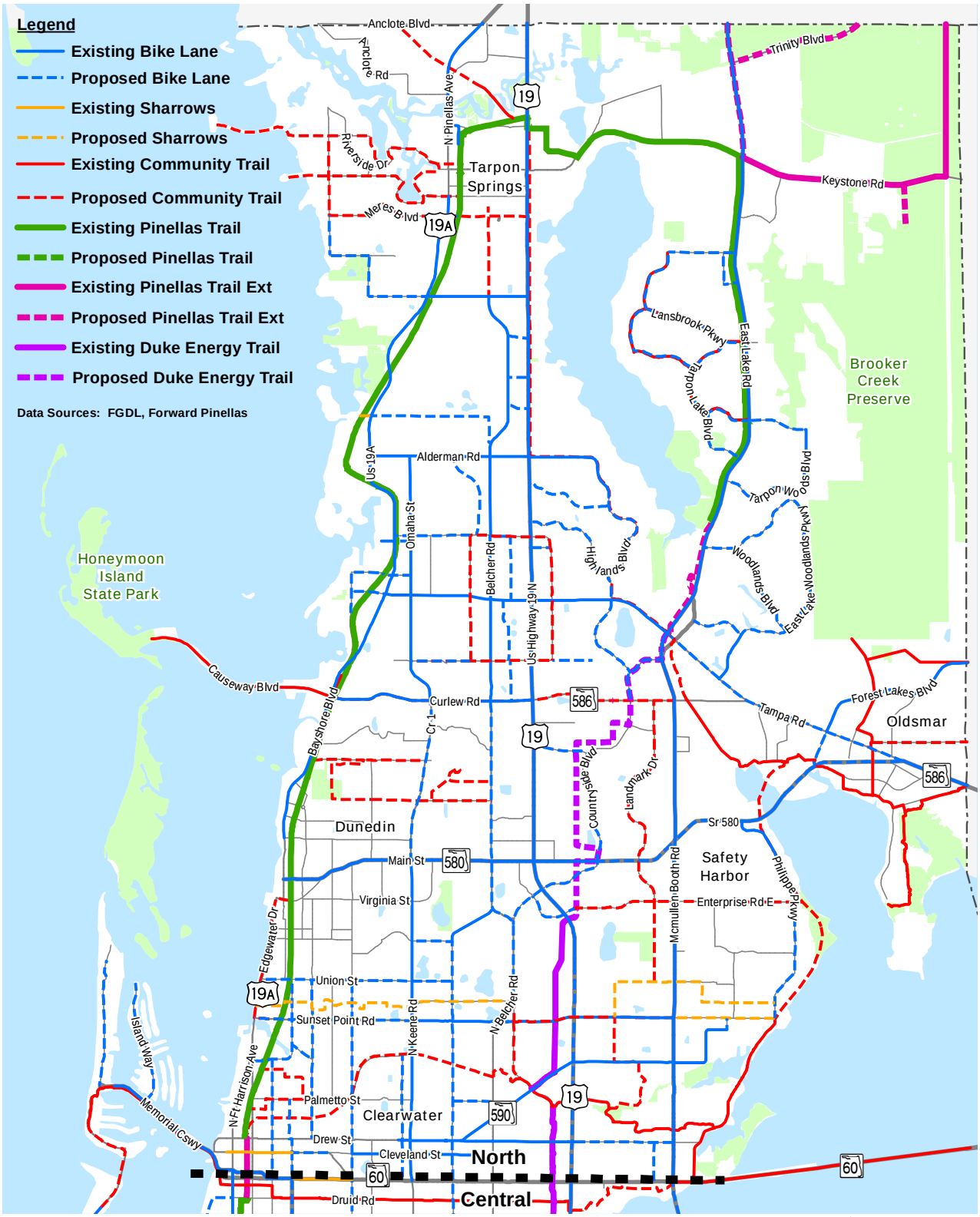
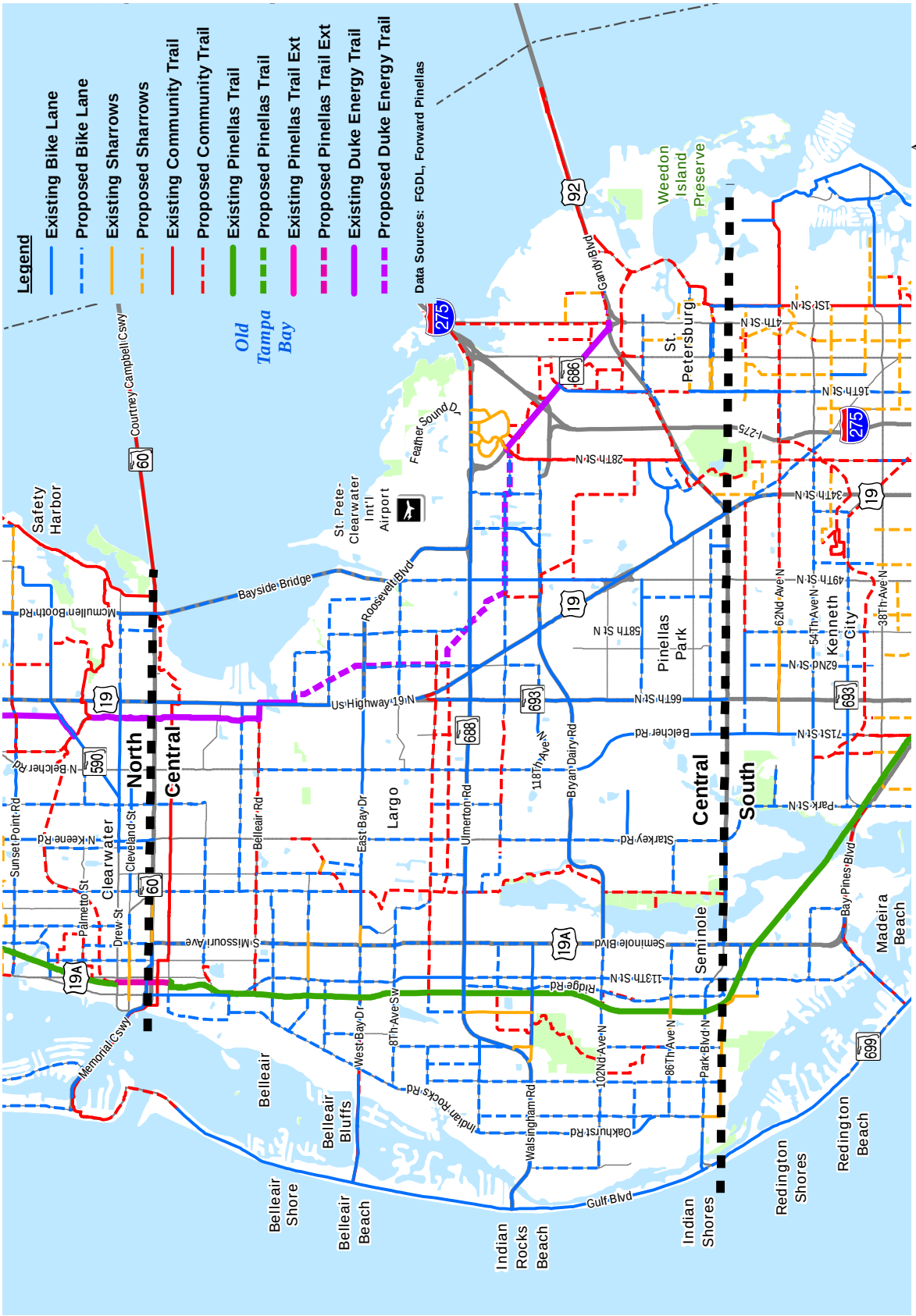


Figure 7. North Area Vision Map



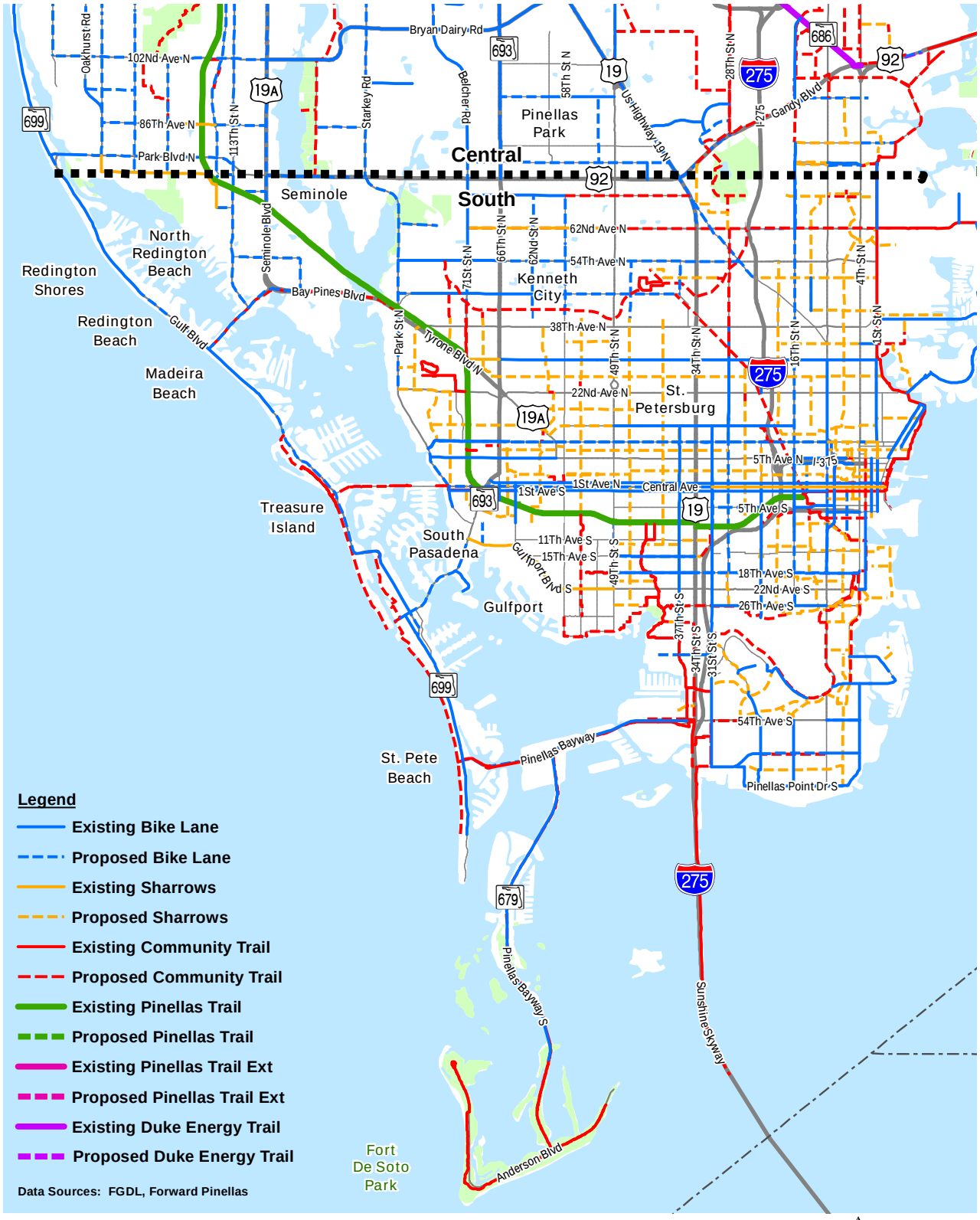
Bike Facilities - North

Figure 8. Central Area Vision Map



Bike Facilities - Central

Figure 9. South Area Vision Area



Bike Facilities - South

Figure 10. Initial Priority Corridor Map

Table 4. Initial Priority Corridor List

NO.	CORRIDOR	LIMIT FROM	LIMIT TO
1	113th Street	Tom Stuart Causeway	Ulmerton Road
2	13th Avenue N/63rd Street N/17th Avenue N	Pinellas Trail	28th St S
3	142nd Avenue N	Pinellas Trail	Duke Energy Trail
4	18th Avenue S/Tangerine Greenway	55th Street S	4th Street S
5	19th Street S	26th Ave S	Central Avenue
6	26th Ave S/Gulfport Multi-use Trail	Skyway Marina Trail	4th Street S
7	28th Street N/S/Sawgrass Lake Trail	Pinellas Trail	Roosevelt Blvd
8	4th Street N	Gandy Blvd/Duke Energy Trail	Howard Frankland Bridge Trail
9	55th Street S/Gulfport Spur	Joe's Creek Trail	Shore Blvd S
10	70th Avenue N/Park Boulevard N	Sawgrass Lake Park	Gulf Blvd
11	71st Street N/Belcher Road	54th Avenue N	Belleair Rd
12	Bay Pines Trail/150th Avenue	Gulf Boulevard	Pinellas Trail
13	Bayshore Drive	Oldsmar Trail	Veterans Memorial Lane
14	Bayway Trail North	Gulf Boulevard	Skyway Trail
15	Belleair Causeway/East Bay Drive/ Roosevelt Blvd	Gulf Boulevard	Ulmerton Road
16	Belleair Road	Pinellas Trail	Duke Energy Trail
17	Central Avenue/107th Avenue	Gulf Boulevard	Bayshore Drive NE/Pinellas Trail Loop (North Bay Trail)
18	Clearwater Beach Trail/Druid Rd Trail/CCC Trail	Gulf Boulevard	Hillsborough County Line
19	Curlew Road/Honeymoon Island Trail	Honeymoon Island Beach	Oldsmar Trail (east side of canal)
20	Elfers Spur and Trail	Pinellas Trail	Pasco County Line
21	Florida Coast to Coast Trail	Pinellas Trail	Pasco County Line
22	Friendship Trail/Gandy Boulevard	Pinellas Trail	Gandy Bridge (to Tampa)
23	Gulf Boulevard	Clearwater Beach	Pass-a-Grille Beach
24	Hercules Ave/Greenbrier Drive/Belcher Rd	Belleair Road	Pinellas Trail
25	I-275 Trail Connections	Ulmerton Rd & 4th Street S	Howard Frankland Bridge Trail
26	Joe's Creek Greenway Trail	54th Ave N	Sawgrass Lake Park
27	Lake St George Drive/Highlands Blvd/ Alderman Rd	Pinellas Trail	Duke Energy Trail
28	McMullen Booth Road/East Lake Road	SR 60	Pasco County Line
29	Oldsmar Trail	S Bayview Blvd	Duke Energy Trail
30	Oleander Way	Pasadena Avenue S	Pinellas Trail
31	Pasadena Ave S/Gulfport Blvd S/22nd Ave S	Gulf Boulevard	Skyway Trail
32	Pinellas Trail Loop (Duke Energy Trail)	Gandy Blvd	Tampa Road
33	Pinellas Trail Loop (East Lake Road)	Tampa Road	Keystone Road
34	Pinellas Trail Loop (North Bay Trail)	1st Ave SE	Gandy Blvd
35	Pinellas Trail Loop (Pinellas Trail)	Bayshore Drive SE	East Lake Rd
36	Rosery Road/Poinsetta Rd	Indian Rocks Rd	Eagle Lake Park
37	Skyway Trail	54th Ave S	Pinellas Trail
38	SR 580/Main Street/Tampa Road	Alt US 19	Hillsborough County Line
39	St. Petersburg N/S Downtown Corridor	Pinellas Point S	Pinellas Trail Loop (North Bay Trail)
40	Sunset Point Road/Main Street	Alt US 19	Bayshore Drive
41	Trinity Trail	Pinellas Trail	Pasco County Line
42	Ulmerton Road	Duke Energy Trail	Howard Frankland Bridge Trail
43	Walsingham Road	Gulf Boulevard	Pinellas Trail
44	Bayway Trail South	Mullet Key	Pinellas Bayway South
45	Pinellas Point Dr S / Roy Hanna Dr S	31st St S	St. Petersburg N/S Downtown Corridor
46	Nebraska Ave / Hermosa Dr	Pinellas Trail Loop (Pinellas Trail)	Omaha St
47	9th Ave North	Park Street N	1st Street N

Table 5. Top Ten Priority Corridors for Active Transportation Projects

CORRIDOR	AREA
Oldsmar Trail	North
Nebraska Ave. Loop	North
Main St/Sunset Loop	North
142nd Ave.	Central
28th St North	Central
San Martin Blvd. Path	Central
Joe's Creek Greenway	South
9th Ave. North	South
18th Ave. South / Salt Creek Blvd. Trail	South
70th Ave. North	South

Three of the top ten priority corridors are located within the north and central areas of the county and four are in the south area.

An initial project feasibility review was completed for each of the top ten priority corridors to identify the project limits, potential facility type(s), and issues and opportunities. In addition, a planning-level project cost was estimated for each project based on the project length, facility type(s) and general cost per mile assumptions for various facility types. A project concept summary is provided for each of the ten priority corridors in **Tech Memo VI (Project Concept Summaries).** In total, the ten projects represent more than 47 miles of new facilities, at a total estimated cost of approximately $58.1 million. These ten projects will be placed on the Forward Pinellas Multimodal Project Priority List at regular intervals, beginning in 2020, in order to initiate the project development process. Each of these ten projects will require additional and more detailed planning to finalize alignments and facility types.

Facility Types

Throughout the county, efforts are being taken to fill sidewalk gaps, complete the Pinellas Trail, and implement Complete Streets projects. **Figure 11** illustrates some of the facility types that were

Figure 11. Project Types Considered for ATP

On-Street Shared Lanes

Bike Lanes

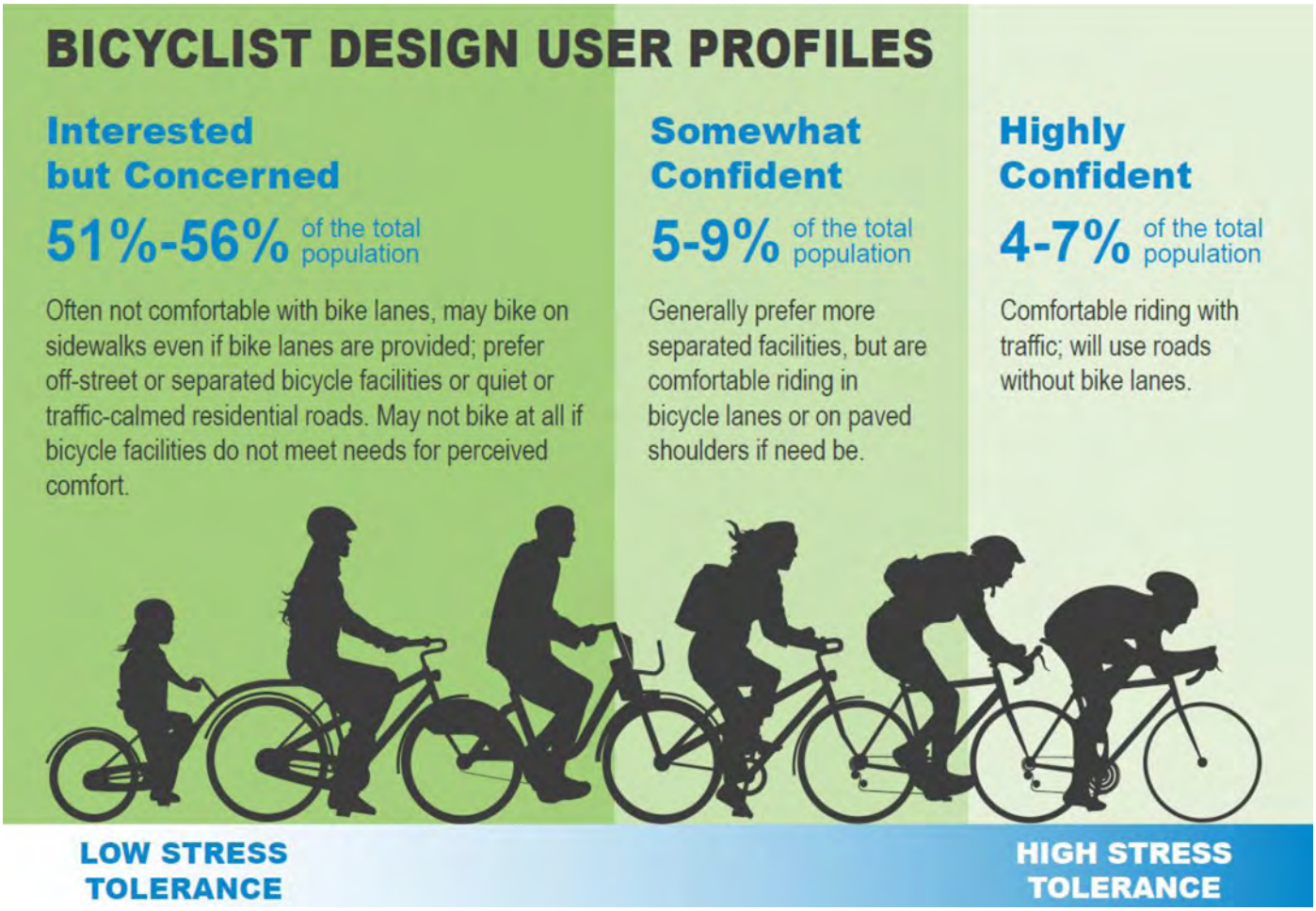
Separated Bikeway
(Cycle Track / Protected Bikeway)

Buffered Bike Lanes

Sidewalks

Trails

Figure 12. FHWA Bicycle Design User Profiles



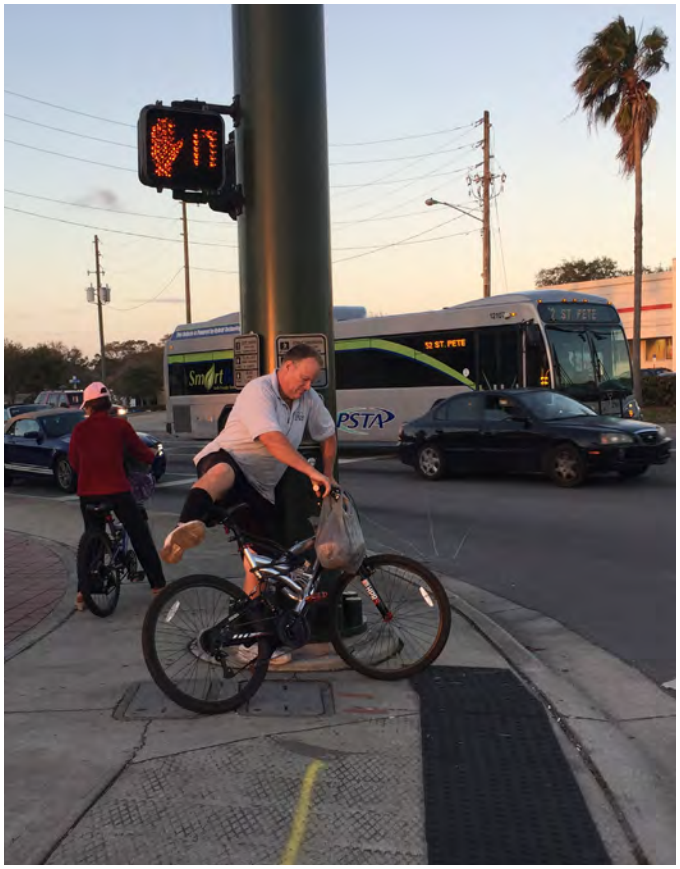
considered for implementation. More information on each of these types can be found in **Tech Memo IV (Bicycle Facility Types & Related Standards).**

The most appropriate bicycle facility types on the priority corridors need to reflect a recent change in bicycle planning and design related to the target design user. In many communities, bicycle facilities have traditionally defaulted to serving "Highly Confident" and "Somewhat Confident" bicycle users, which make up a relatively small portion of the existing and potential bicyclist population. As shown in **Figure 12,** the largest category of bicyclists falls into the "Interested but Concerned" group, typically 50-60% of the population. These users will often not use traditional bicycle facilities like on-street bike lanes on high speed or high volume roadways due to the close proximity of motor vehicle traffic and a perceived safety threat. These users require more separation from traffic or very low volume, low speed neighborhood streets to feel comfortable riding a bike. Consequently, to attract a wider range of bicycle users, it is important to establish low stress bicycle networks that will serve users of all ages and abilities. Low stress networks incorporate separation from motor vehicle traffic by focusing on trails and separated bikeways, along with providing more bicycle boulevards (also know as neighborhood bikeways or neighborhood greenways, which are low volume, low speed streets optimized for walking and bicycling through signage, pavement markings, traffic calming, traffic reduction, and intersection crossing treatments). Lower stress facilities and a greater amount of separation from vehicle traffic were key considerations for the facilities proposed in the proposed projects along the ten priority corridors.

06 Project Prioritization

The process of prioritizing the top ten corridor projects utilized the evaluation criteria described in Section 3, local agency feedback and demand, along with geographic equity.

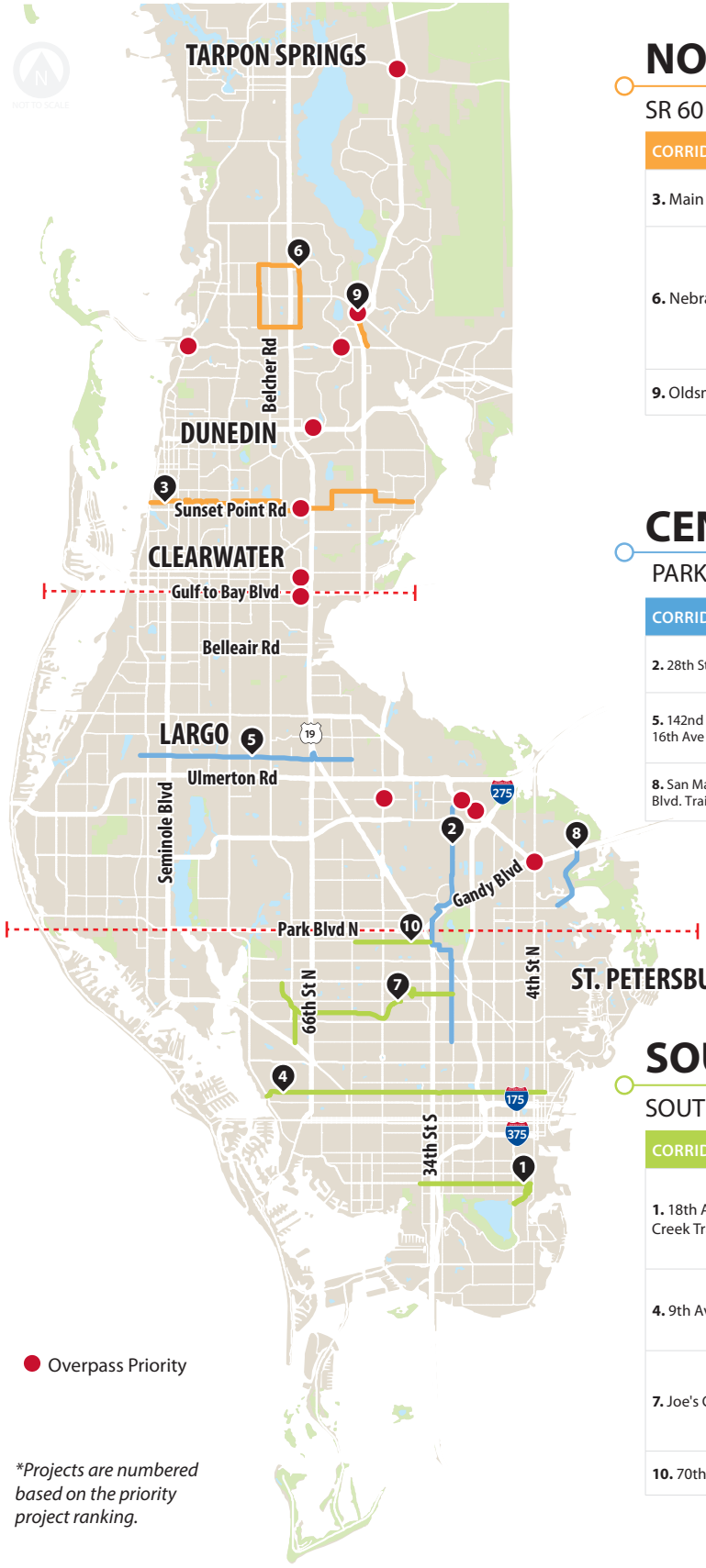
The projects were initially ranked in descending order of total weighted score, but these rankings were not equitable across all areas of the county, as the south area had the top two projects and four of the top six, while the north area did not have a project higher than seven. As a result, the projects were re-sorted to provide a more equitable distribution of priorities across the entire county. The revised priorities have the highest scoring project from each geographic area ranked one through three, then the second highest scoring project from each geographic area ranked four through six, and so on. **Table 6** shows the scoring for each project, but also reflects the final sorting for geographic equity. As an example, the Sunset Point Road / Main Street project was only the seventh highest scoring project, but as the highest scoring project in the north area, it was moved up to priority number three after the re-sorting to incorporate geographic equity. **Figure 13** provides the final project prioritization map.



TRAIL OVERPASSES AND PRIORITIZATION

In addition to the top ten priority corridors, a focus of the *Active Transportation Plan* is to create safe crossings along the Pinellas Trail Loop where it intersects with major multi-lane roadways in the form of new trail overpasses. A portion of the LRTP Cost Feasible Plan budget has been dedicated to the construction of these overpasses at priority locations. A total of 12 potential overpass locations were evaluated at existing and proposed trail crossing locations. Considerations for prioritizing potential overpasses include speed limits, traffic control, number of lanes / crossing width, and crash history. To maintain consistency with the prioritization method of the top ten priority corridors, the same evaluation criteria were used to identify priority trail crossings. As noted previously, these tie back to the *Active Transportation Plan* goals as well as to the criteria Forward Pinellas uses to evaluate applications for Transportation Alternatives project funding. The prioritization scoring for the potential overpass locations are listed in **Table 7**. The top four potential overpass locations listed are along the Duke Energy Trail at SR 60, Roosevelt Boulevard/Carillon, 4th Street/Gandy Boulevard, and Drew Street.

Figure 13. Final Active Transportation Plan Priority Projects



NORTH PROJECT AREA

SR 60 NORTH TO PINELLAS/PASCO COUNTY LINE

CORRIDOR	LIMITS	PROPOSED FACILITY
3. Main St/Sunset Loop	Sunset Point Road, Alt. US 19, to Phillipe Parkway	Bike Boulevard, Trail, Pedestrian Crossings
6. Nebraska Ave Loop	Nebraska Avenue, 19th Street to W. Lake Road; 19th Street, CR 39 to Nebraska Avenue; CR 39 / CR 95, 19th Street to W. Lake Road; W. Lake Road, CR 95 to Nebraska Avenue	Trail, Pedestrian Crossing
9. Oldsmar Trail	Curlew Road to Tampa Road	Trail, Pedestrian Crossing

CENTRAL PROJECT AREA

PARK BOULEVARD NORTH TO SR 60

CORRIDOR	LIMITS	PROPOSED FACILITY
2. 28th Street North	Roosevelt Blvd to 30th Avenue North	Trail, Bike Boulevard, Pedestrian Crossings
5. 142nd Ave / 16th Ave SW	142nd Avenue North / 16th Avenue Southwest, Pinellas Trail to 58th Street North	Trail, Pedestrian Crossing
8. San Martin Blvd. Trail	San Martin Boulevard, Macoma Drive NE (at Patica Rd NE) to Gandy Boulevard	Trail, Pedestrian Crossings

SOUTH PROJECT AREA

SOUTH PINELLAS COUNTY LINE TO PARK BOULEVARD

CORRIDOR	LIMITS	PROPOSED FACILITY
1. 18th Ave South/ Salt Creek Trail Extension	18th Avenue South from 37th Street South to 4th Street South; Salt Creek Trail from 18th Avenue South to 26th Avenue South	Separated Bike Lanes, Trail, Bike Boulevard, Pedestrian Crossings
4. 9th Ave North	Park Street North to 1st Street North	Separated Bike Lanes, Shared Lane Markings, Bike Boulevard, Pedestrian Crossings
7. Joe's Creek Greenway	54th Avenue North at Joe's Creek to 28th Street North; 71st Street North from Joe's Creek Greenway to Pinellas Trail	Trail, Bike Boulevard, Pedestrian Crossings
10. 70th Ave North	70th Avenue North, 58th Street North to US 19	Trail

Table 6. Priority Corridor Project Scoring (Total Weighted Score & Geographic Equity)

RANK	AREA	PROJECT	SAFETY	INTEGRATED & CONNECTS					ACCESSIBLE & COMFORTABLE				QUALITY OF LIFE	TOTAL WEIGHTED SCORE 100%
			High Crash Location Score	Multimodal Corridor / Activity Center Score	Avg Bike/ Ped Demand Score	Connects Existing Facilities Score	Direct Access to Transit Score	SUB-TOTAL	Avg Weighted Bicycle LTS Score	Sidewalk Coverage Score	High Equity / Low Service Area Score	SUB-TOTAL	Recreational Facility Score	
			20%	**10%**	**10%**	**10%**	**10%**	**40%**	**10%**	**10%**	**15%**	**35%**	**5%**	
1	S	18th Ave S/ Salt Creek Trail Ext	100	100	61.9	100	100	90.5	96.9	50	100	84.8	100	90.9
2	C	28th St N	100	100	41.4	100	60	75.3	100	0	100	71.4	100	80.1
3	N	Sunset Point Rd / Main St	0	50	42.0	100	60	63.0	67.8	0	100	62.2	100	52.0
4	S	9th Ave N	75	100	55.2	100	100	88.8	83.3	50	100	80.9	100	83.8
5	C	142nd Ave N/ 16th Ave SW	75	0	47.6	100	100	61.9	100	50	100	85.7	100	74.8
6	N	Nebraska Ave Loop	0	0	38.4	100	60	49.6	100	100	0	57.1	100	44.8
7	S	Joe's Creek Greenway	50	0	51.5	100	100	62.9	92.7	0	100	69.3	100	64.4
8	C	San Martin Blvd	0	50	27.2	100	60	59.3	100	50	50	64.3	100	51.2
9	N	Oldsmar Trail	0	0	46.0	0	30	19.0	100	50	0	42.9	100	27.6
10	S	70th Ave N	50	50	55.9	0	100	51.5	100	100	50	78.6	0	58.1

Table 7. Trail Overpass Scoring & Prioritization

TRAIL	INTERSECTION OR CROSSING	SPEED LIMIT	TRAFFIC CONTROL	AREA JURISDICTION	APPROX WIDTH	SAFETY	INTEGRATED & CONNECTS				ACCESSIBLE & COMFORTABLE			QUALITY OF LIFE	TOTAL WEIGHTED SCORE 100%	RANK BY SCORE
						High Crash Location Score	Multimodal Corridor / Activity Center Score	Avg Bike/Ped Demand Score	Connects Existing Facilities Score	Direct Access to Transit Score	Avg Weighted Bicycle LTS Score	Sidewalk Coverage Score	High Equity / Low Service Area Score	Recreational Facility Score		
						20%	**10%**	**10%**	**10%**	**10%**	**10%**	**10%**	**15%**	**5%**		
Duke Energy	SR 60	40	traffic signal	Clearwater	100 ft	75	50	61.0	100	60	100	100	50	100	74.6	1
Duke Energy	Roosevelt Blvd / Carillon	55	traffic signal	Largo/ Unincorp	300 - 350 ft	50	50	39.0	100	60	100	50	100	100	69.9	2
Duke Energy	4th St/Gandy Blvd	40-45 / 50	overpass/ interchange	St. Petersburg	~350 ft	0	50	51.0	100	60	100	100	100	100	66.1	3
Duke Energy	Drew Street	45	traffic signal	Clearwater	100 ft	0	50	76.0	100	30	100	100	100	100	65.6	4
Duke Energy	Sunset Point Road	40	mid block	Clw/Unincorp	105 ft	0	50	54.5	100	30	100	100	100	100	63.5	5
Duke Energy	I-275	65	overpass/ interchange	St. Petersburg	?	50	50	36.5	100	60	100	50	50	100	62.2	6
PT Loop	SR 580	45	mid block	Clearwater	~125 ft	0	50	54.5	100	60	100	100	0	100	51.5	7
PT Loop	Tampa Road	45	traffic signal	Unincorp	~150 ft	0	0	31.5	100	30	100	50	100	100	51.2	8
Pinellas Trail	Keystone/East Lake	45 / 55	traffic signal	Unincorp	140 ft / 175 ft	50	0	22.0	100	0	100	50	50	100	49.7	9
Duke Energy	49th Street / 126 Ave	45	traffic signal	Pinellas Park	~120 ft	50	0	28.5	100	60	100	50	0	100	48.9	10
Pinellas Trail	Curlew Road/Alt US 19	35 / 40-45	traffic signal	Dunedin	100 ft / 130 ft	0	0	42.5	100	30	100	50	50	100	44.8	11
PT Loop	Curlew Road / Countryside Blvd	45 / 30	traffic signal	Clw/Unincorp	130 ft	0	0	47.0	100	30	100	100	0	100	42.7	12

Project Funding

A total of $86 million has been allocated in the LRTP Cost Feasible Plan to fund priority projects from the Active Transportation Plan. As shown in Figure 10, $62 million of this funding is allocated to the Active Transportation Plan priority corridor projects and the remaining $24 million is allocated for four trail overpass projects at high conflict crossings. The funding strategy places priority bicycle/pedestrian corridor projects in four defined time periods from 2025 through 2045, and includes funding for one overpass in each of the four time periods. **Figures 14 and 15** Illustrate the funding strategy and **Tables 8 and 9** provides a summary of the specific priority corridor and overpass projects included in each of the four time periods.

Local governments or FDOT will manage the projects through each phase of the project development and delivery process.

Figure 14. 2045 Draft Cost Feasible Bicycle / Pedestrian Project Cost Allocations

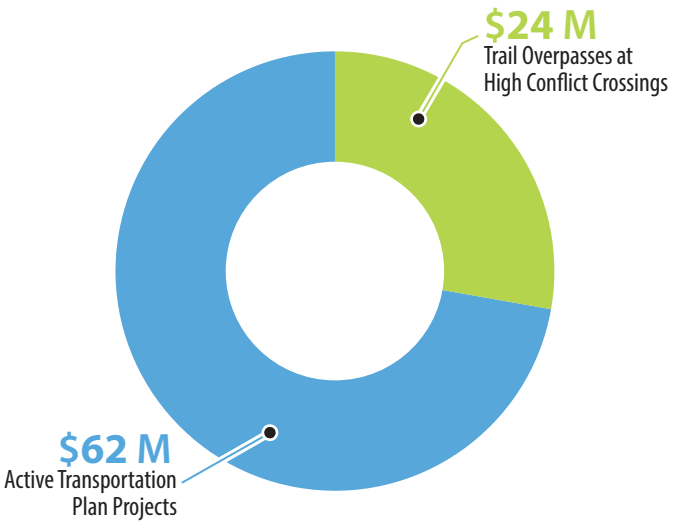


Figure 15. Project Funding Strategy

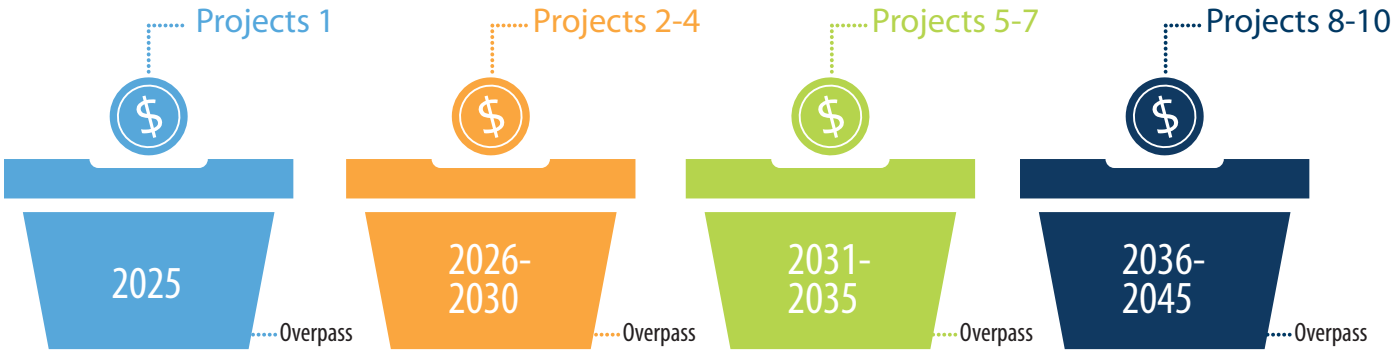


Table 8. Project Scoring By Total Weighted Score & Geographic Equity

RANK	AREA	PROJECT	TOTAL WEIGHTED SCORE	FUNDING TIMEFRAME
1	South	18th Ave. S. / Salt Creek Trail Ext	90.9	2025
2	Central	28th St. N.	80.1	2026-2030
3	North	Sunset Point Rd. / Main St.	52.0	2026-2030
4	South	9th Ave. N.	83.8	2026-2030
5	Central	142nd Ave. N. / 16th Ave. SW	74.8	2031-2035
6	North	Nebraska Ave. Loop	44.8	2031-2035
7	South	Joe's Creek Greenway Trail	64.4	2031-2035
8	South	San Martin Blvd. Trail	51.2	2036-2045
9	North	Oldsmar Trail	27.6	2036-2045
10	Central	70th Ave. N.	58.1	2036-2045

Table 9. Overpass Scoring & Funding Timeframe

RANK	AREA	PROJECT	TOTAL WEIGHTED SCORE	FUNDING TIMEFRAME
1	Central	Duke Energy Trail at SR 60	74.6	2025
2	Central	Duke Energy Trail at Roosevelt Blvd. / Carillon	69.9	2026-2030
3	Central	Duke Energy Trail at 4th St. / Gandy Blvd	66.1	2031-2035
4	North	Duke Energy Trail at Drew St.	65.6	2036-2045

ACTIVE TRANSPORTATION PLAN

Technical Memorandum I:
Existing Conditions

January 2020

FORWARD PINELLAS

Advantage PINELLAS

ENGAGE. ADAPT. CONNECT.

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CONTENTS

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01 Introduction

Planning For Active Transportation

Pinellas County has a strong quality of life for residents with a low cost of living, vibrant communities, and plenty of parks, beaches, open space, and recreational opportunities. Forward Pinellas, and the county along with the 24 municipalities, are committed to addressing these challenges through a variety of efforts, including enhancing walking and biking infrastructure. It has long been proven that active transportation influences improved conditions for health, economy, and the environment, and a safe network of bicycle and pedestrian infrastructure is a cornerstone for these objectives.

ADVANTAGE PINELLAS

Forward Pinellas is a strategic stakeholder in pursuing improved active transportation in the county. As the Pinellas County **Metropolitan Planning Organization (MPO)**, Forward Pinellas is responsible for developing a *Long Range Transportation Plan* (LRTP) every five years that includes goals and objectives for advancing bicycle and pedestrian mobility and for achieving a vision of a safe, efficient and sustainable transportation system. In an effort to better understand and strengthen the components of a multimodal Pinellas County, Forward Pinellas and the Pinellas Suncoast Transit Authority (PSTA) are jointly developing the 2045 LRTP titled "Advantage Pinellas" scheduled for adoption in November, 2019. This is a strategic plan intended to improve mobility and economic opportunity countywide and to link land use and economic development strategies with major transportation investments.

ACTIVE TRANSPORTATION PLAN

As part of the Advantage Pinellas effort, Forward Pinellas is developing a new countywide *Bicycle and Pedestrian Master Plan* branded as Advantage Pinellas: Active Transportation Plan. This plan will offer actionable, multimodal strategies to achieve improved bicycle and pedestrian mobility in Pinellas County. It also identifies current conditions, gaps, and opportunities for increasing active transportation options throughout the county. The new plan will be developed in partnership with local agencies to create a countywide framework for a safer built environment for the county and a healthier community that can support sustainable growth.

This technical memorandum offers a thorough review of existing bicycle and pedestrian conditions. It also documents the importance of active transportation in Pinellas County and includes county specific data associated with bicycle and pedestrian travel. Also included is a review of important agency planning activities, studies, and safety initiatives that inform the development of this plan. A series of maps are provided to identify the existing facilities and demographic indicators throughout the county. The document concludes with an equity analysis, overlaying key demographic patterns with existing facilities to identify areas with deficient bicycle and pedestrian accommodations.

Importance of Active Transportation

Active transportation includes non-motorized forms of transportation that involve physical activity such as walking or bicycling. Incorporation of active transportation into the overall transportation system is important to the quality of life of a community. Active transportation provides tangible community benefits by increasing daily physical activity levels, reducing pollution, increasing exposure to local businesses, and improving social well-being and sense of community.

Correlation between the existence of active transportation infrastructure and quality of life can be viewed directly through health, economic, and environmental impacts. Health impacts are visible within existing Pinellas County chronic disease and safety data. Economic impacts relate to business exposure and real estate trends and environmental impacts result from pollution and energy consumption. Each of these factors is described further in this section.

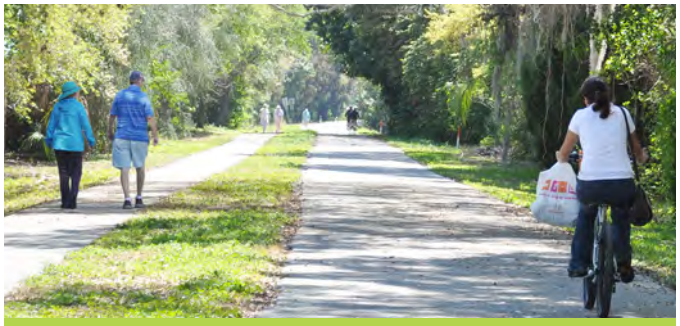
HEALTH IMPACTS

The built environment is a key factor considered in a community's Social Determinants of Health (SDOH), identified by the Centers for Disease Control (CDC). These SDOH are used by the CDC to quantify health conditions in the places where people live, learn, work, and play. These factors directly and indirectly impact health risks and outcomes. The quality of active transportation infrastructure is an indicator for SDOH and can have a significant impact on public health and equity.[1]

Chronic Disease, Obesity & Mental Health

The US in general has witnessed a decline in physical activity and active transportation when compared with previous generations. The lack of physical activity in the US is a major contributor to the steady rise in rates of obesity, diabetes, heart disease, stroke, and other chronic health conditions.[2] These health conditions are present in Pinellas County and have been documented in recent health assessment efforts.

1 https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/environmental
2 https://www.cdc.gov/transportation/



THE **QUALITY** OF A COMMUNITY'S ACTIVE TRANSPORTATION INFRASTRUCTURE IS A **DIRECT INDICATOR** OF ITS SOCIAL DETERMINANTS OF **HEALTH.**

In collaboration with various local public and private stakeholders, the Florida Department of Health in Pinellas County recently completed the 2018 *Pinellas County Community Health Assessment*. This report identifies key needs and issues resulting from a systematic, comprehensive data collection and analysis effort.[3] Findings from the assessment provide some insight into the conditions of the county's built environment and highlight impacts related to a lack of active transportation participation.

The 2018 health assessment references national data from the 2016 American Community Survey, including data regarding commuting travel mode. In 2016, 87.5% of county residents commuted to work via car, truck or van, 1.6% walked, and 1.1% used a bicycle. An additional 3.2% of workers in Pinellas County worked from home. The county's travel to work statistics are similar to the State of Florida, but showed a slightly higher rate of travel to work by active transportation modes. Within the State of Florida, 1.5% walk and 0.7% bicycle to work.[4]

Additionally, the county's health assessment includes findings from the 2016 Florida Behavioral Risk Factor Surveillance System. Behavioral and weight data are included in the report. For example, in 2016

3 http://pinellas.floridahealth.gov/programs-and-services/community-health-planning-and-statistics/data-and-reports/_documents/2018-pinellas-co-community-health-assess.pdf
4 https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_14_5YR_S0801&prodType=table

approximately 28.1% of adults were obese, more than the average for Florida (27.4%) and only 34.7% of adults were at a healthy weight. In terms of behavior, for the same year 26% of adults were identified as sedentary compared with 29.8% of adults for Florida. Also, 54.4% of adults indicated they are inactive or insufficiently active compared with Florida's rate of 56.7%. This suggests adults in Pinellas County have inactive behaviors at rates lower than that of the State, but still significant enough to call for targeted solutions.

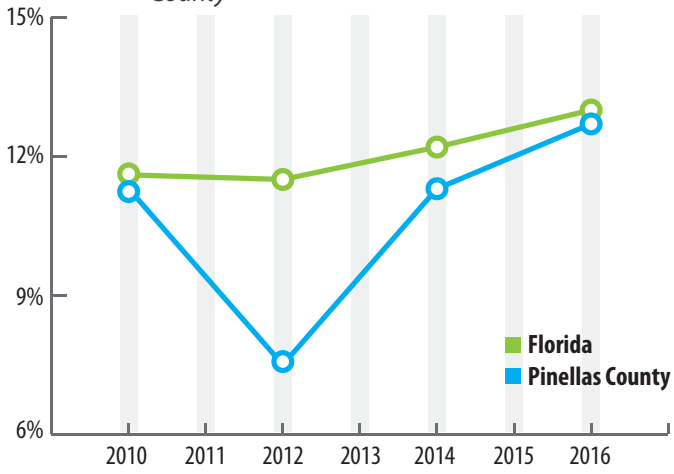
Childhood obesity is also a concern in Pinellas County. In the US, childhood obesity has tripled since the 1970s and has steadily risen over the past ten years in Pinellas County.[5] According to the Florida Department of Health in 2016, 13% of high school students were obese compared to 12% in 2015, and 6.9% in 2012. It should be noted these statistics for 2016 are lower than the surrounding counties of Hillsborough (14.8%) and Pasco (13.7%). Similar patterns exist for middle school students. In 2016 middle school students had a 12.3% rate for obesity, which is less than Florida's (12.6%), but higher than the surrounding counties of Hillsborough (10.8%) and Pasco (9.4%).[6] **Figure 1** shows these statistics and the trend from 2010 to 2016, compared with Florida.

These conditions indicate that Pinellas County residents, specifically children, would benefit from increased active transportation options. However, there are also other population statistics to consider for active transportation benefits. Some key statistics are described below:

- **Heart Disease:** In 2016, heart disease was the number one cause of death in Pinellas County with over 2,500 deaths attributed to heart disease. For the same year, 6% of adults in Pinellas County claim to have been told they had a coronary heart disease compared to 4.7% of Florida residents.
- **Senior Population:** In 2016, seniors (those over 60 years of age) made up 30.4% of the population in Pinellas County and comprised the largest percentage of any age group in the county. In comparison to Florida, which had a population over 60 of 25.3%, this means there was an above average concentration of seniors in Pinellas County.
- **Mental Health:** In 2016, Pinellas County had a higher rate of suicide (19.6 per 100,000) than the State of Florida (14.1 per 100,000). Additionally, the incidence of hospitalizations for mental disorders in the county has increased over the past 10 years. In 2016, the county's hospitalization rate for mental health was 1,354.4 per 100,000, much higher than the Florida rate of 976.8 per 100,000.[7]

Active transportation addresses each of these factors by improving opportunities for exercise and mental health, all of which have been shown to improve the overall health of a community.

Figure 1. **Percent of students who are obese,** All Middle & High School Students - *Pinellas County*



HEART DISEASE

In 2016, Heart Disease was the number one cause of death in Pinellas County.

6% of adults in Pinellas County have a coronary heart disease

4.7% of adults in the State of Florida have a coronary heart disease

5 https://www.cdc.gov/nchs/data/hestat/obesity_child_11_12/obesity_child_11_12.htm
6 http://www.flhealthcharts.com/charts/OtherIndicators/NonVitalIndRateOnlyDataViewer.aspx?cid=0503

7 http://pinellas.floridahealth.gov/programs-and-services/community-health-planning-and-statistics/data-and-reports/_documents/2018-pinellas-co-community-health-assess.pdf

Safety

Another health concern is dangerous traffic and roadway conditions, especially for vulnerable users such as pedestrians and bicyclists. Pedestrians and bicyclists are at a greater risk of death from crashes than those traveling by motor vehicles. Using the Pedestrian Danger Index, Smart Growth America has ranked the Tampa-St. Petersburg-Clearwater metro area as ninth most dangerous metro area for walking in the United States in the *2019 Dangerous by Design* report. Eight other Florida metro areas are ranked in the top ten of this list, suggesting a state-wide pattern. It should be noted that the Tampa-St. Petersburg-Clearwater metro area has improved in the last few years, dropping from the seventh most dangerous place for walking in 2016. While this shows improvements are being made, additional action is needed to continue to improve safety for pedestrians in Pinellas County and the Tampa Bay region.[8]

The 2018 *Pinellas County Community Health Assessment* provides additional data on safety-related issues for bicyclists and pedestrians. For example, a significant number of bicycle and pedestrian fatalities have been caused by motor vehicle accidents. In 2016, Pinellas County had 35 pedestrian deaths as result of motor vehicle crashes. With a rate of 3.17 per 100,000, this is higher than Florida's rate (2.78 per 100,000). In the same year, there were two bicycle deaths in Pinellas County caused by motor vehicle crashes.[9]

Concerns about safety may prevent residents in Pinellas County from considering bicycling and walking as viable alternatives to driving. This ultimately impacts vulnerable populations such as low income, seniors, people with disabilities, and children by limiting mobility access. Improvements to the built environment and focusing on pedestrian and bicycle infrastructure can improve these conditions. According to a FHWA study, adding sidewalks directly influences safety benefits, resulting in a 65-89% reduction in crashes involving pedestrians walking along roadways without sidewalks. Also, there is a 71% decrease in crashes involving pedestrians walking along roadways with the implementation of paved shoulders.[10]

HIGHER PEDESTRIAN FATALITY RATE

Pedestrian fatality rates are higher in Pinellas County when compared to the rates of Florida

3.17 Pinellas County

2.78 State of Florida

ECONOMIC IMPACTS

Built environments promoting active transportation can also impact surrounding economic conditions of the community. Several studies have concluded bicycle and pedestrian features make places more economically vibrant. For example, in a 2009 study (*Walking the Walk: How Walkability Raises Housing Values in U.S. Cities*), researchers found that improved walkability increases home values. The report looked at 94,000 real estate transactions in 15 major US markets. The effort analyzed a wide range of factors affecting sale values, including a location's Walk Score. The study found that a one-point Walk Score increase is connected with an increase of $700 to $3,000 in home values.[11] Additionally, home buyer preferences are beginning to favor these features as well. In 2017, the National Association of Realtors surveyed prospective home buyers and found that one in five respondents prefer to live in an attached home supported by a walkable community.[12]

Bike facilities also offer economic value benefits. Research from Portland State University found that proximity to a network of high-quality bike facilities, with protected or buffered bike lanes and bike boulevards for example, is connected to an increase in property values.[13] Another study by the Urban Land Institute shows economic development benefits are influenced by the construction of bicycling infrastructure. For example in Indianapolis, the

8 https://smartgrowthamerica.org/dangerous-by-design/
9 http://pinellas.floridahealth.gov/programs-and-services/community-health-planning-and-statistics/data-and-reports/_documents/2018-pinellas-co-community-health-assess.pdf
10 https://safety.fhwa.dot.gov/provencountermeasures/walkways

11 http://blog.walkscore.com/wp-content/uploads/2009/08/WalkingTheWalk_CEOsforCities.pdf
12 https://www.nar.realtor/reports/nar-2017-community-preference-survey
13https://www.pdx.edu/sustainability/sites/www.pdx.edu.sustainability/files/Portland%20Green%20Loop%20Final%20Report%20FINAL%2003-17-2017.pdf

Indianapolis Cultural Trail cost $62.5 million to build and yielded a $1.01 billion increase in property values for areas in proximity to the trail.[14]

Bicycle facilities also increase retail stores exposure and sales. For example, the New York City Department of Transportation found that the installation of protected bicycles lanes on Manhattan's 8th and 9th Avenues correlated with a 49% increase in retail sales for businesses in these corridors. According to the report *Protected Bike Lanes Mean Business* from the Alliance for Biking & Walking, customers who reach businesses by bicycle stop by more often and spend as much or more per month as people who arrive in personal vehicles. Plus, there is greater customer capacity for arrival by bike with ten cyclists fitting in the parking space of just one customer who arrives by car.[15]

Another important economic benefit from active transportation is reduced congestion costs. When using bikes or walking there is reduced automobile trip generation and therefore reduced traffic congestion. These impacts are greatest in commercial districts, near schools and recreational centers where many short trips begin and end. Additionally, these features require less pavement per user, saving money at the beginning of projects and reducing maintenance costs overall.

ENVIRONMENTAL IMPACTS

Environmental impacts from auto-centered transportation modes are visible on both a local and global level. In fact, 2018 research from climate scientists with the United Nation's Intergovernmental Panel on Climate Change (IPCC) indicates that immediate solutions are needed to reduce carbon impacts and maintain a healthy balance for the earth's atmosphere. Reducing personal vehicle use and encouraging active transportation options can reduce emissions of transportation-related greenhouse pollutants. The IPCC considers this one of the most cost effective strategies to address global climate challenges.[16]

Active transportation can reduce the environmental impacts through decreases in carbon pollution (e.g., air and waste), energy consumption, and noise pollution. Traffic-related pollutants (e.g., particulate matter and ozone) are among the largest contributors to harmful air quality. Transportation pollution is responsible for approximately one-third of all US greenhouse gas emissions contributing to climate change. Exposure to traffic emissions has also been linked to many negative health effects including asthma, diminished lung function, adverse birth outcomes, childhood cancer and cardiovascular disease.

POOR AIR QUALITY

13.3%

of Residents in Pinellas County live within 500 feet of a busy highway, increasing exposure to air pollution from automobiles.

Exposure to traffic emissions impacts the population throughout Pinellas County due to proximity to busy roadways. The Florida Health Department defines a busy roadway as one that has more than 25,000 cars per day. In 2016, approximately 13.3% of residents lived within 500 feet of a busy highway, increasing their exposure to negative environmental impacts. This is higher than the average rate for Florida which was 12.1%, and the surrounding counties of Hillsborough (12.9%) and Pasco (7.8%). Also, there were approximately 165 schools and day care facilities within 500 feet of a busy roadway.[17]

Creating pedestrian and bicycling routes with options leading away from major roads can help reduce exposure to pollution while walking or bicycling. Additionally, opportunities like bike share reduces traffic congestion by up to 4% within neighborhoods.

14 http://uli.org/wp-content/uploads/ULI-Documents/Active-Transportation-and-Real-Estate-The-Next-Frontier.pdf
15 https://b.3cdn.net/bikes/123e6305136c85cf56_0tm6vjeuo.pdf
16 https://www.ipcc.ch/reports/

17 https://www.floridatracking.com/healthtracking/Topic.htm?i=18

02 Existing Plans, Studies & Approaches

Improving active transportation infrastructure is a goal shared among many of the agencies within Pinellas County. Collectively, these agencies help support an existing active transportation network of over 2,047 miles of bicycle lanes, shared-use paths/trails, and sidewalks. Various plans, studies, and initiatives have been pursued by these agencies which are reviewed in this section of the memo. This includes highlighting efforts for Forward Pinellas, Pinellas County and the cities of Clearwater, St. Petersburg, and Largo. While most of the municipalities within the county incorporate supportive bicycle/pedestrian policies within comprehensive planning documents, the cities discussed in this chapter have gone beyond policy making and into the implementation of projects that are expanding opportunities for bicycle and pedestrian activity in the county.

Forward Pinellas

As the Metropolitan Planning Organization (MPO) for Pinellas County, Forward Pinellas is the lead agency in the county for coordinating active transportation planning efforts. From a policy level, Forward Pinellas explicitly identifies bicycle and pedestrian improvements as a goal within the Countywide Plan and also as an objective in the *2040 Long Range Transportation Plan* (LRTP). This is supported with the *Bicycle & Pedestrian Master Plan Facilities Element* (2013, updated in 2017) that guides focused strategies for improvements. Additionally, Forward Pinellas incorporates bicycle and pedestrian criteria as part of its Complete Streets Grant Program and has studied expanding bicycle access in Pinellas County through a countywide bike share program.

COUNTYWIDE PLAN

The *Countywide Plan* guides the formulation and execution of integrating land use and transportation planning. The document includes goals and strategies for guiding coordinated land use planning in the county. Bicycle and pedestrian improvements are addressed in one of the Transportation Goals.

> ***Transportation Goal 3.0 - Transit-Oriented Pedestrian/Bicycle Planning:*** *Enhance the existing transportation network to provide functional and effective pedestrian, bicycle, and transit connections in transit-oriented areas.*

This goal is supported by specific strategies to integrate transit-oriented developments and bicycle/pedestrian planning. Several other transportation and land use goals in the *Countywide Plan* support bicycle and pedestrian improvements in Pinellas County.

2040 LONG RANGE TRANSPORTATION PLAN

The *2040 Long Range Transportation Plan* (LRTP) includes goals, objectives, and policies related to bicycle and pedestrian mobility that guides bicycle and pedestrian improvements. Objectives and policies related to bicycle and pedestrian transportation in the 2040 LRTP are shown below.

Objective 2.3: Increase bicycle and pedestrian travel by providing sidewalks, bike lanes, and multi-use trails throughout the county.

- **Policy 2.3.1:** The MPO shall facilitate the expansion of sidewalks, bicycle lanes, and multi-use trail facilities in Pinellas County through the implementation of the Bicycle Pedestrian Master Plan Facilities Element.

- **Policy 2.3.2:** The MPO shall continue to identify and address "gaps" between existing sidewalk links along arterial and collector facilities and between existing sidewalks and major destination points.
- **Policy 2.3.3:** The MPO shall encourage local governments to adopt regulatory polices that require sidewalk installation on new development and redevelopment sites.
- **Policy 2.3.4:** The MPO shall continue to review roadway design plans, including resurfacing plans to ensure the needs of all modes, including pedestrian and bicycle, are addressed.
- **Policy 2.3.5:** The Bicycle Pedestrian Master Plan Facilities Element shall be used as the policy document to define the location and type of trails throughout Pinellas County as well as regional connections to adjacent counties.

Other related transportation planning documents, including PTSA's *Community Bus Plan* and the *Advantage Pinellas: Active Transportation Plan* are described below.

BICYCLE PEDESTRIAN MASTER PLAN FACILITIES ELEMENT (2013)

In 2013, Forward Pinellas developed the *Bicycle Pedestrian Master Plan* (BPMP) in an effort to establish a countywide network of bicycle and pedestrian facilities. At the time, there was over 678 miles of sidewalks, 134 miles of bike lanes, and 87 miles of trails. The focus of the 2013 BPMP was to further expand these facilities.

The BPMP Facilities Element is the implementation arm of the LRTP for bicycle and pedestrian projects. It includes a comprehensive inventory of existing and proposed trails, bike lanes and sidewalks for the county and its municipalities. The plan organizes Pinellas County into 14 planning sector areas to focus on improvements, on a city-by-city level. The network is partially based on the MPO Trailways Plan network which includes three categories of trails: community trails, Pinellas Trail, and the Pinellas Trail Loop. The Pinellas Trail is considered the backbone of the network and the community trails serve the primary function of providing bicycle and pedestrian connections to the Trail Loop and key destinations.

BICYCLE & PEDESTRIAN FACILITIES

Since the 2013 Bicycle Pedestrian Master Plan, miles of facilities have increased by:

85% BIKE LANES **7%** SIDEWALKS **56%** TRAILS

Existing bicycle and pedestrian facilities are identified in maps provided in the plan which also identifiy gaps. Sidewalk maps included in the element identify sidewalk coverage as a percentage of the applicable road segment length. Any segment showing less than 50 percent coverage is considered to be be a gap. **Figure 2** shows the sidewalk coverage on the major roads of Pinellas County. **Figure 3** identifies the overall existing and proposed bicycle and trail facilities.

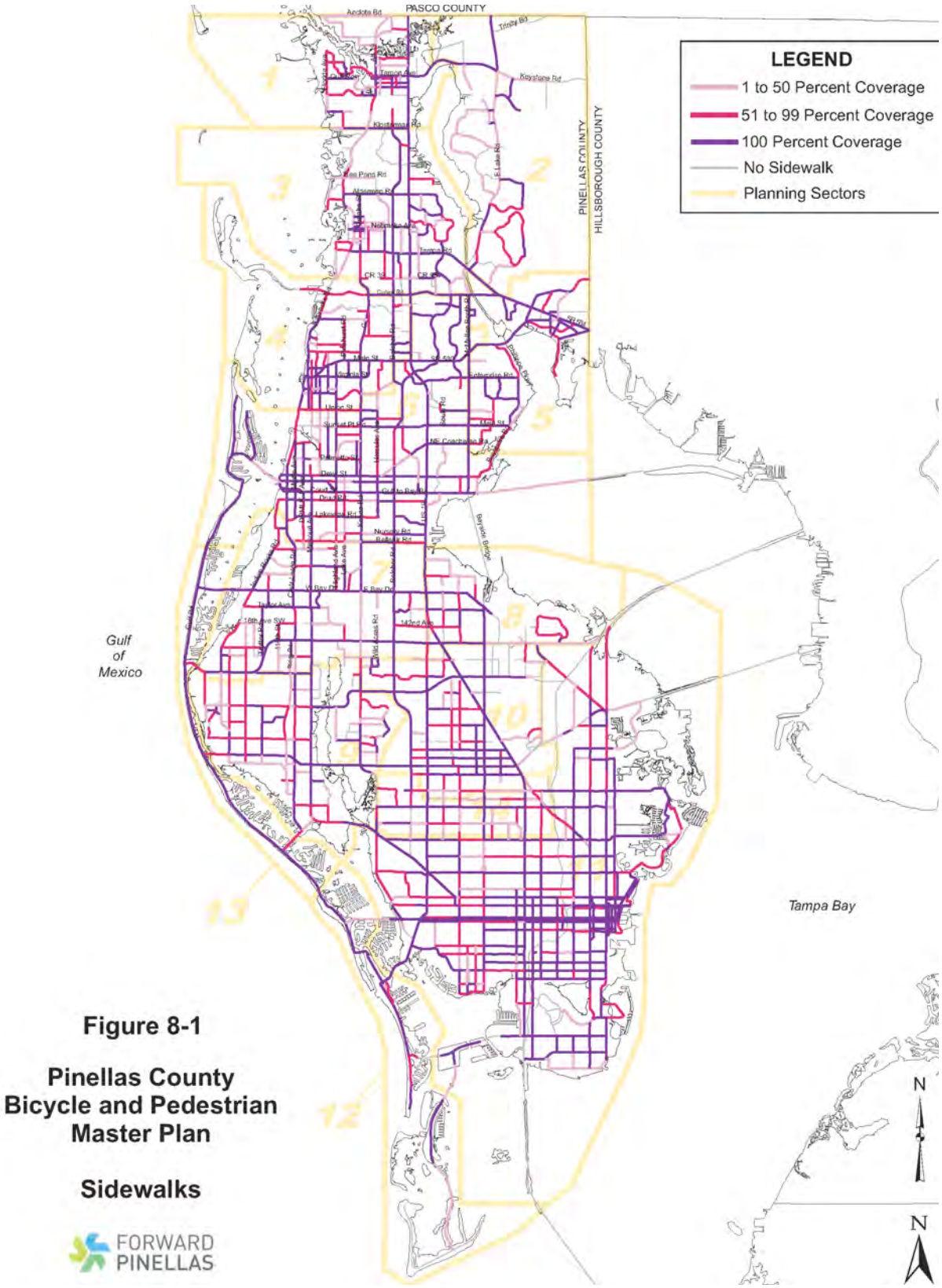
The county pursues implementation of these projects alongside local governments and the Florida Department of Transportation (FDOT), and assists with the identification of funding opportunities. Working with FDOT and local governments, trail mileage has increased by 56% (to 136 miles) since the 2013 plan was produced. In the same time period miles of bike lanes have increased by 85% (to 248 miles), and sidewalks on major roads have increased by 7%.

COMPLETE STREETS GRANT PROGRAM

In 2016 Forward Pinellas established a Complete Streets Grant Program to further its policies of accommodating the mobility and safety needs of all roadway users. Complete Streets is an approach where public right-of-way is planned, designed, constructed, reconstructed, operated, and maintained for people of all ages and abilities. A major component of this philosophy is providing safe and accessible bicycle and pedestrian facilities.

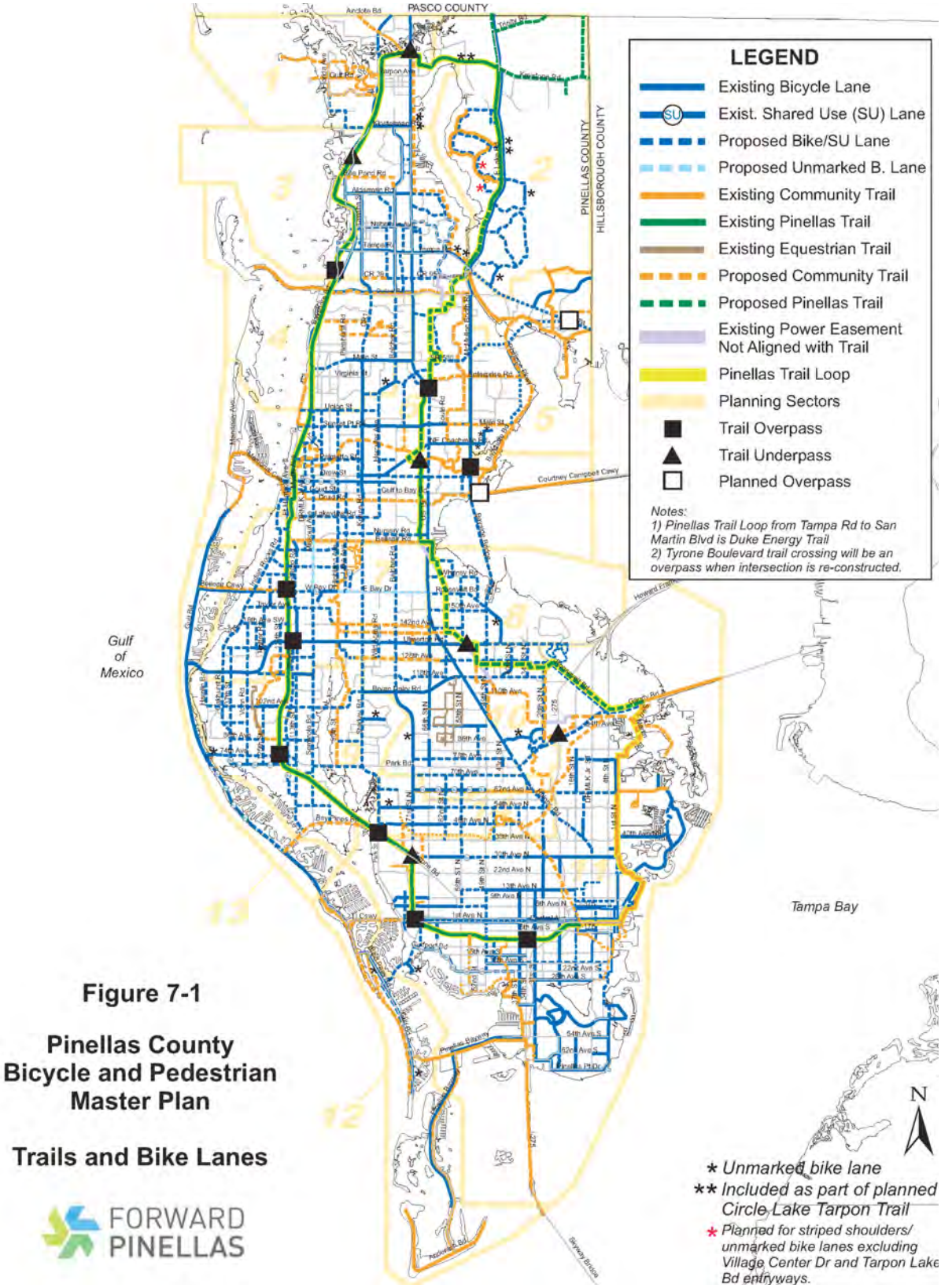
While Complete Streets planning typically involves establishing a local policy and implementation plan, Forward Pinellas has developed a unique approach,

Figure 2. Pinellas County Bicycle Pedestrian Master Plan Element Sidewalk Coverage Map (2014)



Source: 2014 Bicycle Pedestrian Master Plan

Figure 3. Pinellas County Bicycle Pedestrian Master Plan Element Trails and Bike Lanes Map (2014)



Source: 2014 Bicycle Pedestrian Master Plan

FDOT and local government complete streets policies and working with them to implement projects. The Complete Streets Grant Program provides incentives to the local governments to implement related projects and apply for funding through Forward Pinellas. The program seeks to advance at least one concept planning project and one roadway construction project each year. To date, there have been three rounds of funding to develop complete streets concept plans and construction projects. Forward Pinellas has supported 10 Complete Streets projects, including projects in seven jurisdictions.

Forward Pinellas Complete Streets Projects

- **City of St. Petersburg:**
  - Skyway Marina District - 34th Street South Sidewalk Improvements
  - 22nd Street South Complete Streets Construction
  - 18th Avenue South Complete Streets Concept Planning Study
- **City of Clearwater:**
  - Drew Street from North Fort Harrison Avenue to US Highway 19 Concept Plan
  - Fort Harrison Avenue Belleair Road to Pleasant Street Concept Study
- **City of Largo:**
  - Rosery Road Phase II Construction
- **City of Oldsmar:**
  - St. Petersburg Drive Construction Project
- **City of Dunedin:**
  - Skinner Boulevard (State Road 580) Alternate US 19 to Bass Boulevard Concept Study
- **Pinellas County:**
  - 54th Avenue North Corridor Concept Plan
- **Forward Pinellas:**
  - West Bay Drive Concept Plan

Bicycle and pedestrian facilities are included in the project acceptance criteria. A committee of technical staff from local government agencies review the applications and make final recommendations to the Forward Pinellas Board to fund one or more of the applications received. Up to $100,000 is available for the development of concept plans and up to $1 million is available for construction projects.

BIKE SHARE FEASIBILITY STUDY

In 2016, Forward Pinellas conducted a *Bike Share Feasibility Study* to assess implementing a countywide program. Implementation of bike share supports the MPO's goal of providing a balanced and integrated multimodal transportation system to meet growing mobility needs. The effort reviewed peer areas and how they are implementing and benefiting from bike share, business models, existing conditions, funding sources, and community feedback.

The study analyzed various benefits of bike share programs, including being a cost-effective multimodal option in comparison with other projects like transit and roadways. Bike share is typically funded through user-generated revenue. Additionally, the study indentified other indirect benefits including encouraging active transportation, boosting economic development, and improving first- and last-mile transit connections.

The eight indicators used to measure the suitability of an area for supporting bike share services are related to characteristics associated with successful bike share programs. **Table 1** shows the details for the eight indicators used in this analysis.

Each of the indicators included a heat map demand analysis. Areas with high potential demand for bike

Table 1. Demand Analysis Indicators

INDICATOR	SCALE	METRIC
Employment Density	TAZ	Jobs per acre
Population Density	Census Block	Population per acre
Attractions	Kernel	Point density
Colleges	Kernel	Point density
Bicycle Modeshare	Census Block	Point density
Transit Stops Density	Kernel	Point density
Existing Bicycle Infrastructure	Kernel	Proximity distance
Equity (Minority/ Poverty)	Census Block	% minority population greater than 50% / Poverty level for Pinellas County

Source: Pinellas County MPO Bike Share Feasibility Study

share were identified through a heat mapping exercise that allocated "weighted points" to where people live, work, shop, play, and take transit. This helped to identify potential sites with the highest demand for bike share. As shown in **Figure 4**, the composite heat map shows downtown St. Petersburg and downtown Clearwater as having the highest demand potential.

The study recommendations include actions needed to implement and administer a bike share program. Specifically, the administration of the program could be handled by a non-profit organization that would own the bike share infrastructure and work in partnership with a private operating contractor. This strategy would help to maximize potential revenue sources, expertise, minimize risk, and maintain transparency and control for the public agency. A countywide administration program is recommended, similar to one implemented in Broward County. This would help to coordinate efforts across jurisdictional boundaries, for example along Gulf Boulevard.

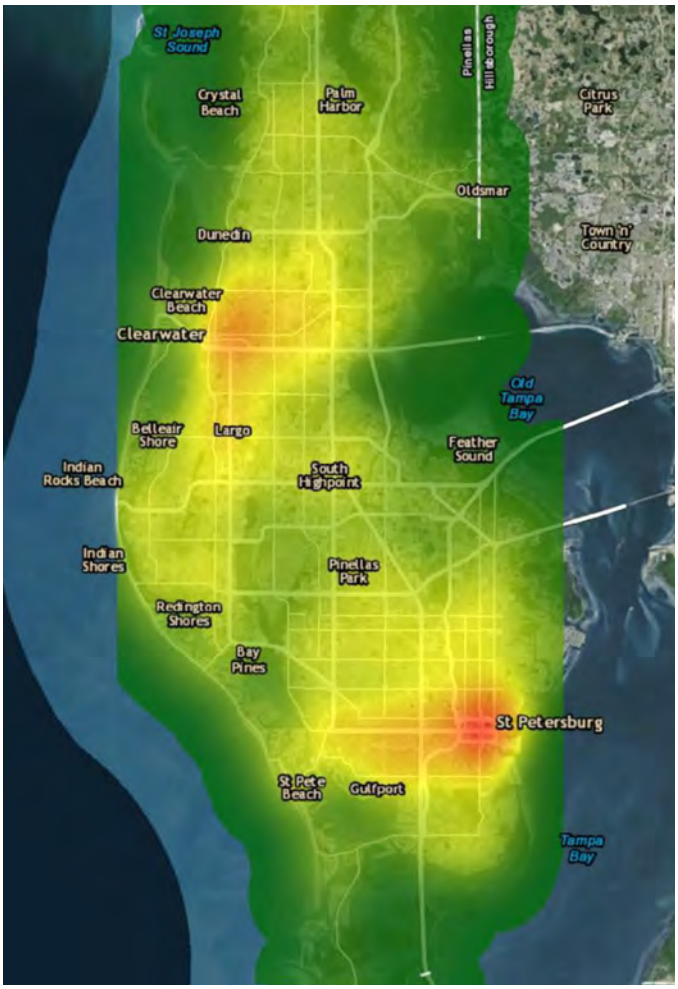
TRI-COUNTY TRAIL CONNECTION STUDY

In 2014, the Pasco and Pinellas County MPOs prepared a trail planning study for the development of a multi-use trail that would provide a link between the Starkey Boulevard/Wilderness Park Trail in Pasco County and the Pinellas Trail System. This project was the initial effort that led to the SUN Trail Program and Florida Coast-to-Coast Trail. These efforts are described further in this section.

Pasco County is currently constructing 2.4 miles of this trail and 5 miles of the trail have been completed in Pinellas County, resulting in a total of 9 miles. The trail crosses four arterial roadways including S.R. 54, Trinity Boulevard, Keystone Road, and East Lake Road. This trail route also intersects collector roads R.T. Jones Parkway and Woodfield Road, and neighborhood streets and driveways on Keystone Road.

The Pinellas Trail is the main spine of the county's trail system. User Count Data Summaries for 2017 showed the Pinellas Trail serving over 1.4 million users. The inter-county trail resulting from the Tri-County Trail Connection Study is anticipated to increase this activity by providing a regional connection to the Pinellas Trail.

Figure 4. Bike Share High Demand Areas



Source: Forward Pinellas Bike Share Feasibility Study

Pinellas County Government and the MPO

Pinellas County has long been an advocate for providing a bicycle and pedestrian supportive environment. One of the most significant bicycle planning efforts of the MPO and Pinellas County resulted in the development of the Pinellas Trail, which opened in 1989. It was one of the nation's first "Rails-to-Trails" projects. Over the last 30 years, additional connections to other trails have been developed. Today, the 43-mile long Pinellas Trail serves as the backbone of the county's extensive bicycle and pedestrian network.

The adoption of amendments to the Pinellas County Comprehensive Plan in 1995 led to more on-street

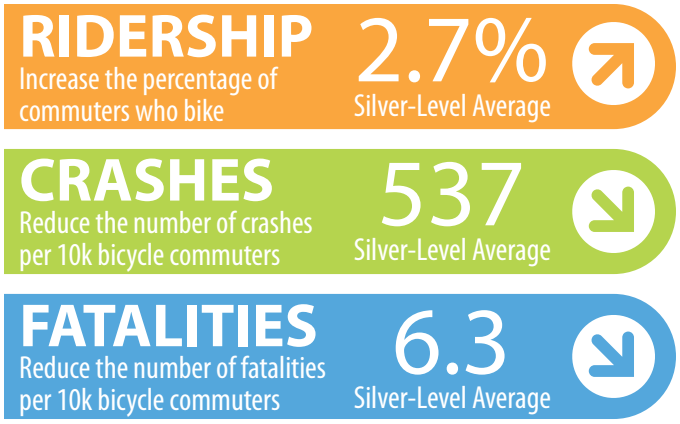
accommodations, calling for the inclusion of striped, four-foot bicycle lanes on road construction and resurfacing projects. Since then bicycle infrastructure and pedestrian facilities have been developed throughout the county, resulting in an extensive active transportation network. These efforts have resulted in the awarding of a bronze-level Bicycle Friendly Community (BFC) designation in 2018 with the League of American Bicyclists. Key performance metrics for Pinellas County in 2018 include1.2% of commuters biking, 1,577 crashes per 10,000 bike commuters, and 13.4 fatalities per 10,000 bike commuters. The League has outlined several strategies that will help Pinellas County become more bicycle friendly and achieve outcomes that will help achieve silver-level BFC designation, including the metrics listed in **Figure 5** that are indicative of the average Silver-designated community.

The MPO was staffed by the Pinellas County Planning Department from the time it was created in 1977 until 2014, when it merged with the Pinellas Planning Council and became a single independent agency. Therefore, bicycle and pedestrian planning programs and projects that occurred prior to the MPO/PPC merger served joint purposes associated with implementation of the LRTP and the Pinellas County Comprehensive Plan.

COMPLETE STREET CORRIDOR EVALUATION

Pinellas County completed a *Complete Streets Corridor Evaluation* in January 2019. This study provides a prioritization of corridors in the unincorporated areas of the county for Complete Streets implementation. A prioritization framework was developed using local input, existing plans, GIS crash and trail data, and corridor characteristics including connectivity, volume to capacity (V/C) ratio, annual average daily traffic (AADT), transit service, posted speed limits, and cross-section types. Prioritization was also influenced by connectivity to existing and proposed trails as well as the existing bicycle and pedestrian network. For planning purposes, the priority corridors have been broken into segments. These segments have been organized into Tiers 1-4 as shown in **Figure 6**. There are 37 segments within Tier 1, 38 segments for Tier 2, 14 segments Tier 3, and 31 segments for Tier 4.

Figure 5. BFC Silver-Level Metrics



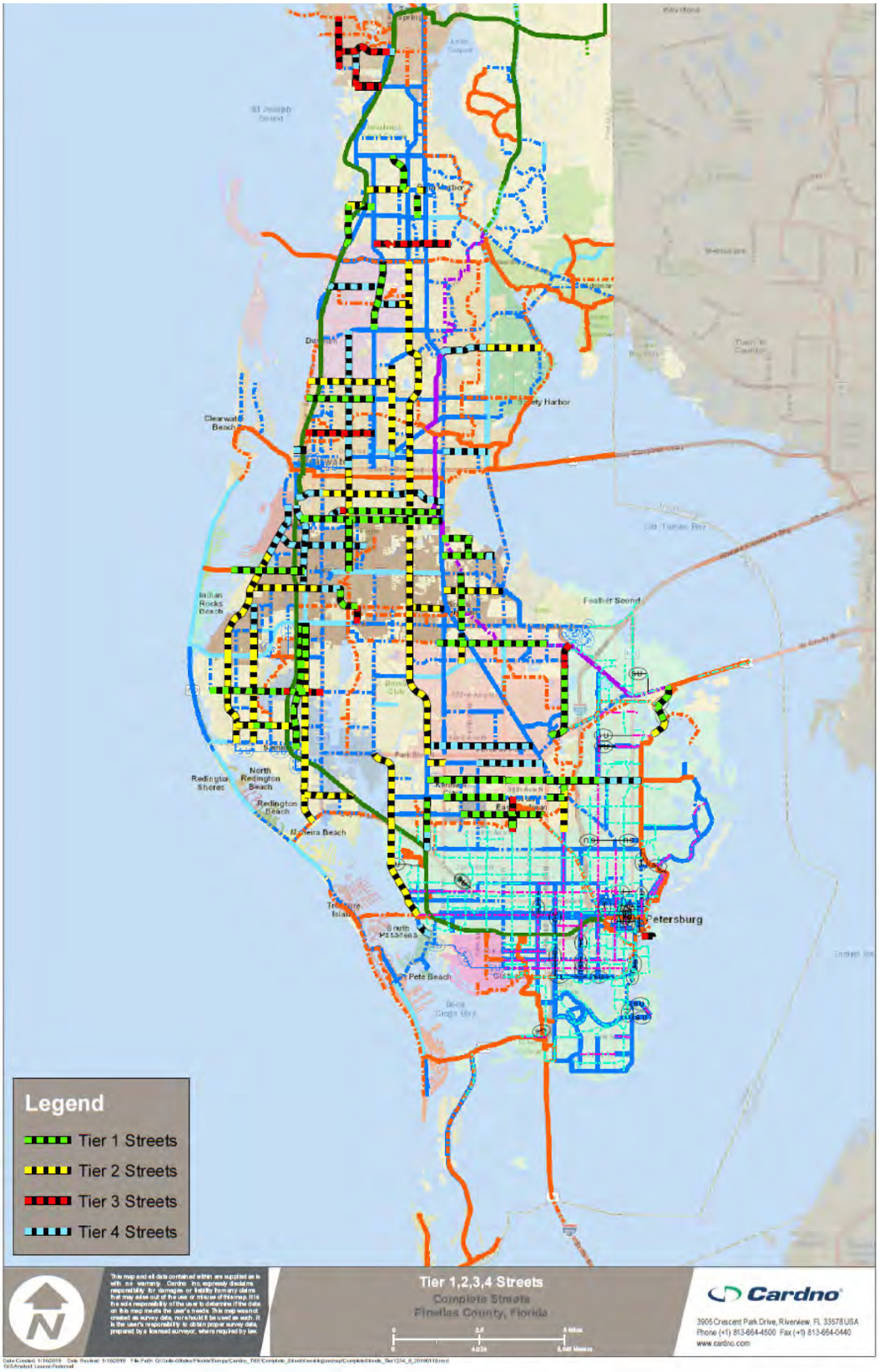
The Tier 1 Priority List includes a combination of projects from the Forward Pinellas Bicycle Pedestrian Master Plan, Forward Pinellas GIS proposed bicycle lanes, sidewalks and trails map, and cross-checked for similar corridor segments in the county repaving plan; overlapping segments were prioritized. Project lists in Tiers 2-4 were also prioritized using a scoring system of points for corridor characteristics. Corridors with existing paved shoulders or marked bike lanes were not included in the evaluation for priority projects. The priority with this effort is to address corridors lacking any bicycle and pedestrian access. Also, downtown areas are excluded due to constrained right-of-way conditions.

LINKING LEALMAN MOBILITY PLAN

The *Linking Lealman Mobility Plan* (2018) provides a framework for improving mobility for all modes and users in the Lealman Community Redevelopment Area (CRA). The plan identifies challenges and opportunities for the Lealman CRA, which is located within the unincorporated area of mid Pinellas County. Potential Complete Streets improvements were identified on 54th Avenue between 49th and 38th Streets North.

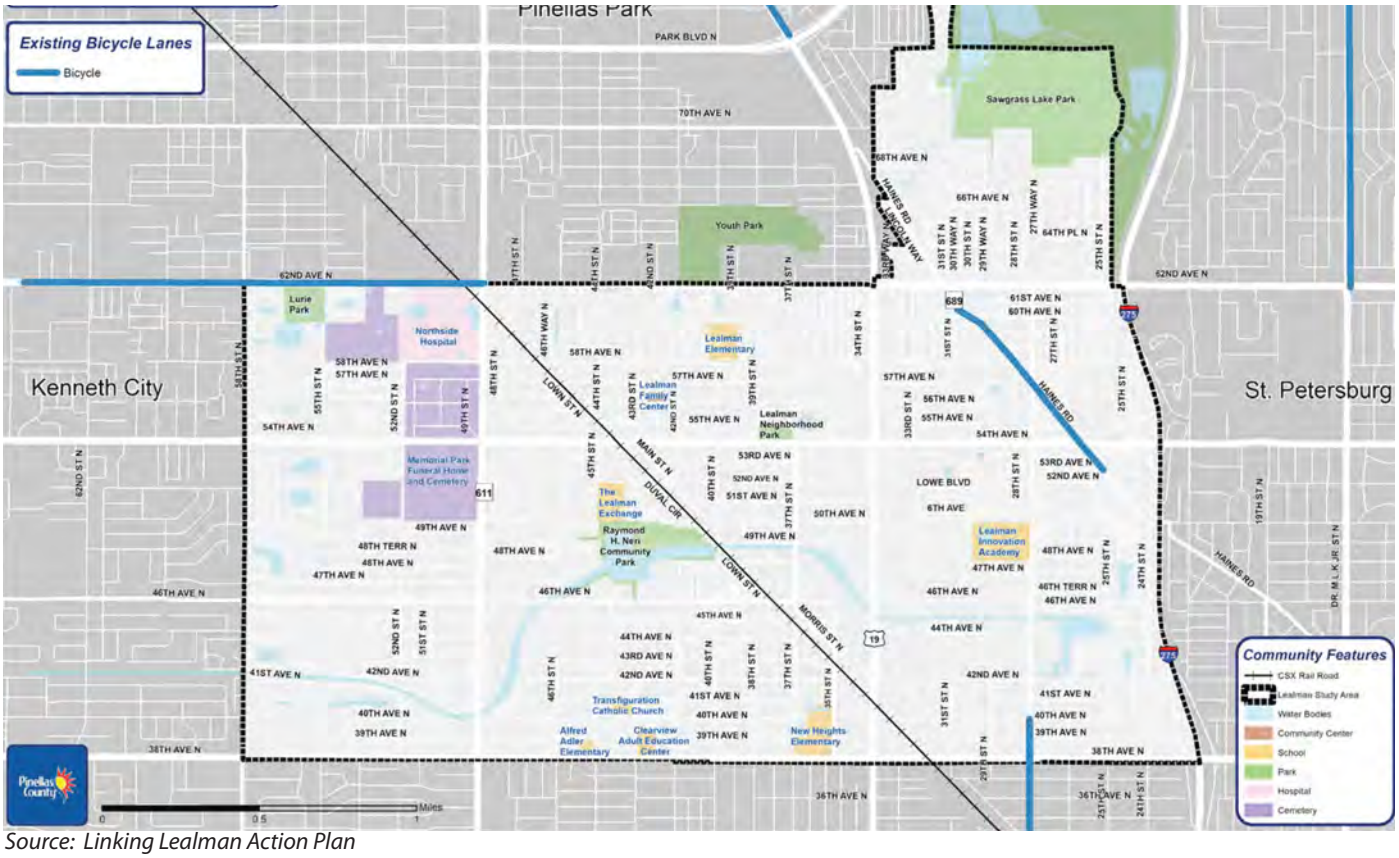
The Linking Lealman Plan includes an action plan that will identify the implementation strategies needed for the area. **Figure 7** is from the draft version of this plan and shows the exisiting bicycle facilities in the area. It is evident that extensive improvements are needed to create a contiguous network for bicycles and the Linking Lealman Action Plan is anticipated to address this need.

Figure 6. Pinellas County Tier 1, 2, 3, 4, Priority Project Streets



Source: Pinellas County Complete Streets Corridor Evaluation, 2019

Figure 7. Linking Lealman Existing Bicycle Facilities



Source: Linking Lealman Action Plan

There are scheduled Capital Improvement Program (CIP) projects in the area and this effort anticipates taking advantage of these by incorporating improvements identified in the Linking Lealman Action Plan with the CIP projects.

City of Clearwater

The City of Clearwater is pursuing a Bicycle Friendly Community (BFC) designation from the League of American Bicyclists. This certification is based on how well a city is providing safe accommodations for bicycling and encouraging people to bike for commuting and recreational purposes. Current conditions for the City including limited bicycle facilities, low bicycle ridership, and low bicycle network mileage demonstrate some of the challenges the City will need to address with the updated plan. In order to achieve a BFC-Bronze designation, the City of Clearwater will need to improve key outcomes such as ridership, safety, and a facility network. The average bronze community has bicycle facilities on 26% of its total road network. Currently, the City of Clearwater has 9%, and needs 86 miles of bike facilities to meet this average.

To guide the bicycle and pedestrian improvement efforts, the City of Clearwater's main approaches involve identification of facility needs in the Comprehensive Plan and the implementation of a Bicycle and Pedestrian Master Plan, discussed further in this section. Also, the City is pursuing a Complete Streets Plan to complement these strategies.

COMPREHENSIVE PLAN

The City's commitment to supporting these modes is evident in the Transportation Element of the *Comprehensive Plan* (2000) with the first goal stating:

> *The City shall provide for a safe, convenient and energy efficient multimodal transportation system that serves to increase mobility, efficiently utilize roadway capacity, reduce the incidence of single-occupant vehicle travel, reduce the contribution to air pollution from motor vehicles, and improve*

the quality of life to the citizens of the City of Clearwater.

Throughout the rest of the plan bicycle and pedestrian improvements are highlighted, but mainly with a recreational focus as opposed to transportation.

SHIFTING GEARS: BICYCLE AND PEDESTRIAN MASTER PLAN

The City's *Bicycle and Pedestrian Master Plan* was completed in 2006. This effort incorporated work and expanded on the City's *Bikeways and Trails Plan*, recommending actionable strategies for facility improvements. The plan also helped city officials prioritize bicycle and pedestrian improvements in future planning efforts such as implementation of the *North Marina Area Master Plan*.

The vision of this plan states:

The City of Clearwater seeks to increase overall mobility and wellness by providing an integrated non-motorized network of bicycle and pedestrian facilities throughout the City for the purposes of recreation, conservation, education, transportation, and economic development.

Supporting this vision, the City developed four goals with objectives for implementation. The goals include:

- **Engineering -** Enhance our existing transportation network and accommodate non-motorized users through infrastructure modifications to roadways, trails, sidewalks, and crosswalks for bicycling and walking.
- **Education -** Create and implement educational and safety programs that support bicycling and walking.
- **Enforcement -** Ensure the physical safety of our users.
- **Encouragement** - Encourage and promote more walking and bicycling in the City of Clearwater.

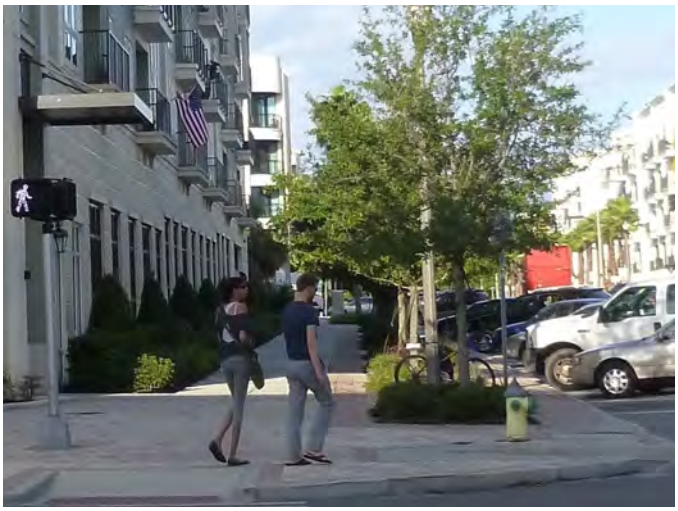
This plan includes analysis of bicycle and walking demand for the municipality using commercial, social/recreation, and school demand using Transportation Analysis Zone data. The results of this analysis indicate the greatest demand for bicycling within the center of the City and for walking within the downtown core and along Gulf-to-Bay Boulevard (S.R. 60) near Belcher Road.

The City of Clearwater recognizes the importance of expanding bicycle and pedestrian infrastructure. The Planning and Development Department regularly uses the data contained in the Shifting Gears Plan and is in process of updating the plan. The update will include an assessment of the effectiveness of the plan implementation to date, updated bicycle and pedestrian facilities inventory and projects status list.

DOWNTOWN REDEVELOPMENT PLAN

The Clearwater Downtown Redevelopment Plan was adopted in 2018 and provides the long-term vision for implementation of improvements to this area and as a Special Area Plan serves as the land use plan for downtown. The plan identifies the importance of bicycle and pedestrian facilities and also recognizes the gaps which exist in the area. The plan includes supportive policies for these improvements within the Accessibility and Urban Design goals. Additionally, specific bicycle and pedestrian improvement projects are identified within the Future Transportation and Parking section. These projects include:

- Waterfront & Beach Connections
- Bikeway Connections
- Sidewalk Network Improvements
- Streetscape Projects
- Bike Parking
- Urban Design Features



- Integration with Transit
- Bicycle Sharing Program
- Jurisdictional Coordination
- Pedestrian Safety
- Green Colored Pavement

COMPLETE STREETS

The City was awarded a Complete Streets grant from Forward Pinellas in 2017 for the Drew Street Complete Streets Concept Design. **Figure 8** illustrates one of the concepts developed to provide improved bicycle and pedestrian facilities along Drew Street from North Fort Harrison Avenue to US Highway 19. The plan identifies typical sections for downtown, neighborhood, and commercial areas. The Drew Street preferred concepts were approved by the Clearwater City Council. Engineering designs are the next step of implementation for the project. The City of Clearwater submitted another application for the Forward Pinellas Complete Streets Grant Program and was approved for a project to improve Fort Harrison Avenue from Belleair Road to the Alternate US 19 merge at North Myrtle Avenue.

The City also initiated a citywide Complete Streets planning effort, which is slated for completion in 2019. The citywide plan is intended to identify and implement improvements designed to encourage all types of mobility. It will also support the prioritization of transportation improvements in conjunction with redevelopment efforts. The objectives of the citywide plan include the following:

- Build stakeholder consensus (internally and externally) on the elements of Complete Streets;
- Develop a framework to prioritize projects and the delivery process;
- Adopt an implementation action plan and guiding principles of citywide action; and
- Adopt a Complete Streets Policy for the City of Clearwater.

A Citywide Complete Streets Advisory Committee was also created to help guide efforts of implementation. The City has also undertaken a robust public involvement program to get feedback on the plan and ensure concepts are supported by the community.

Figure 8. Drew Street Complete Streets Concept

Source: City of Clearwater

City of St. Petersburg

The City of St. Petersburg has also undertaken extensive efforts to improve the environment for biking and walking in the city. The City's Transportation Mission Statement underscores their commitment in this area.

> *St. Petersburg will have a livable balance of connected transportation options for all of its Citizens. Pedestrian and bicycle facilities shall be designed , encouraged, and celebrated as indicators of a healthy city....*

The City of St. Petersburg has continuously sought to be a model city for bicycle and pedestrian infrastructure. The City was certified as BFC-Bronze level in 2006 by the League of American Bicyclists. The City achieved Silver-Level certification in 2017, increasing the total bicycle network mileage from 26% to 30%.

The City has also committed to improving the safety and access of its active transportation network. These efforts are guided by its Comprehensive Plan, CityTrails Bicycle Pedestrian Master Plan, and Complete Streets Implementation Plan.

COMPREHENSIVE PLAN

The Comprehensive Plan (last amended 2016) provides a vision for the incorporation of active transportation infrastructure within the City. The City's Transportation Mission Statement is supported through a

Comprehensive Plan transportation objective for bicycle and pedestrian improvements.

Objective T16: *The City shall encourage and increase bicycle and pedestrian travel throughout the City of St. Petersburg for commuting to work and school as well as for recreation.*

The Comprehensive Plan identifies a lack of on-street bike lanes and continuity between those bike lanes that currently exist. To address this challenge, there are 15 associated policies in the Plan aimed at implementing this objective and addressing bike lane design and safety, and the need for community engagement.

CITYTRAILS BICYCLE PEDESTRIAN MASTER PLAN

Established in 2003 and updated in 2009, the *CityTrails Bicycle Pedestrian Master Plan* (CityTrails Plan) identifies the vision for the City of St. Petersburg to improve non-motorized mobility. The CityTrails Plan identifies proposed bicycle lanes, bicycle routes, recreational trails, sidewalks, crosswalks, and other active transportation infrastructure. The vision of the plan is that:

> *St. Petersburg will be a City with a balanced transportation system designed to move people safely and effectively. Pedestrian and bicycle facilities shall be designed, encouraged and celebrated as indicators of a healthy City.*

The CityTrails Plan provides a 5-year action plan outlining goals and specific, measurable objectives. The goals include:

- **Goal 1**: Transform the existing transportation network in the City to accommodate bicycling and walking as a transportation mode and for recreation. Provide safe and easier access to schools, parks, recreational trails, and community centers by foot and bike.
- **Goal 2:** Change the character of roadways (e.g. arterials and major collectors) to allow safe and convenient crossing by pedestrians and cyclists.
- **Goal 3:** Provide beautiful streets that are aesthetically pleasing, safe, multimodal, and livable.
- **Goal 4:** Provide transportation options for all citizens that will increase the levels of bicycling and walking and reduce the percentage of automobile trips.
- **Goal 5:** Enhance the safety of pedestrians and bicyclists in St. Petersburg.

The objectives for each goal are categorized into the five areas of Bicycle Facilities, Sidewalk Program, Crosswalk Safety, Education, and Enforcement. Between 2003 and 2009, 97 action items related to these objectives were completed, demonstrating the City's commitment to the plan. By 2009, the City had added 95 miles of bicycle facilities, resulting in 67% coverage of the major road network, and contributing to the reduction of bicyclist crashes by 12%.

Since meeting the objectives established in the 2003 CityTrails Plan, the City of St. Petersburg has continued to add bicycle facilities, enhanced crosswalks, and sidewalks. The CityTrails Plan also provided a foundation for the St. Petersburg Complete Streets Implementation Plan, which was adopted by City Council in May, 2019.

COMPLETE STREETS IMPLEMENTATION PLAN

In November 2015, the City of St. Petersburg adopted a Complete Streets administrative policy to outline the approach and steps to pursue a network of Complete Streets. The key elements of this approach include adding facilities for pedestrians, bicyclists, and transit riders as core elements in the planning and design of all roadway and bridge projects. Another element is the emphasis on corridor land use context in achieving the desired roadway character and performance levels.

This policy directive led to the development of the Complete Streets Implementation Plan, which documents existing conditions and barriers, establishes a network of bicycle routes, and identifies needed facilities to make walking and bicycling safe and comfortable. It also prioritizes improvements and connections necessary to build bicycle and pedestrian grids and it establishes a Complete Streets checklist to be used in the planning, design, and construction phases of all roadway development and redevelopment projects.

The implementation plan follows eight goals including:

- **Goal 1:** Safe and Comfortable Access.
- **Goal 2:** Mobility Options that Support an Integrated Transportation Network across Modes.
- **Goal 3:** Transportation Efficiency that Promotes Reliable Travel Times for all Modes.
- **Goal 4:** Social Equity.
- **Goal 5:** Economic Development.
- **Goal 6:** High Quality of Life and Community Places.
- **Goal 7:** Improved Public Health.
- **Goal 8:** Community Sustainability, Resiliency and Environmental Quality.

The implementation plan is intended to achieve its goals through the implementation of its resurfacing program and other capital improvements funded through grant awards, local revenue and developer improvements through the city's site plan review process. It also includes a phased implementation plan over the next five years, and calls for extensive public involvement.

The City has also received funding support from the Forward Pinellas Complete Streets Grant Program for the following projects:

- 34th Street South from 22nd Avenue South to 54th Avenue South;
- 22nd Street from15th Avenue South to 1st Avenue South; and
- 18th Avenue South from 35th Street to 14th Street.

City of Largo

The City of Largo supports an improved bicycle and pedestrian environment through the pursuit of "Community Streets," which are identified in the *Largo Strategic Plan* as a citywide network designed to connect cyclists, pedestrians, motorists, and transit riders from neighborhoods to local destinations. As evident in this definition, the approach for the City is multimodal, emphasizing bicycle and pedestrian improvements, while balancing the needs of other modes.

The policy approach for improving bicycle and pedestrian infrastructure is identified in the City's *Comprehensive Plan,* the *Moving Largo Multimodal Plan*, and the *Downtown Largo Multimodal Plan.*

MOVING LARGO MULTIMODAL PLAN

The City of Largo first pursued development of a bicycle and pedestrian network in the *2004 Strategic Plan*. This plan was designed to establish a network of community streets and expanded parks, trails, and greenways. The plan set forth principles that guided multimodal improvements with a strong emphasis on community streets, parks, and trails to provide safe alternatives to traveling on major roadways. The City expanded this approach in 2010 with the adoption of the *Moving Largo Multimodal Plan* and in 2013 with the creation of the Downtown Multimodal Plan.

While the City does not have a master plan exclusive to bicycle and pedestrian facilities, the *Moving Largo Multimodal Plan* does comprehensively address them through the establishment of a multimodal network or what the plan refers to as the "Community Street

Network". The City's goals for the multimodal network include:

- Improving community streets to provide safe and efficient routes from neighborhoods to local destinations; and
- Accommodating growth by promoting the use of transit and addressing deficient bicycle and pedestrian facilities along community streets, in order to improve mobility within constrained rights-of-way that cannot be expanded to allow additional automobiles.

The document outlines three phases for identifying and implementing priority multimodal projects. Many of these projects include bicycle, pedestrian, and trail improvements phased over a 25-year planning horizon in 5-year incremental planning phases.

Projects were prioritized based on the criteria shown in **Table 2** for eight specific focus areas, with the cumulative points representing a project's total. The corridors with the most points were considered higher priority corridors and candidates for near-term improvements. This methodology and the bicycle and pedestrian prioritization criteria demonstrate local priorities for the City of Largo. This effort can be considered within this Active Transportation Plan as a model for the development of a prioritization methodology.

DOWNTOWN LARGO MULTIMODAL PLAN

The *Downtown Largo Multimodal Plan* seeks to improve quality of life by encouraging a paradigm shift where residents safely travel by foot, bicycle, or transit throughout the area instead of personal automobile. The plan showcases a number of multimodal goals and the goal most pertinent to bicycle and pedestrian improvements is:

- Build upon the Community Streets system with new connections that promote bicycle and pedestrian travel

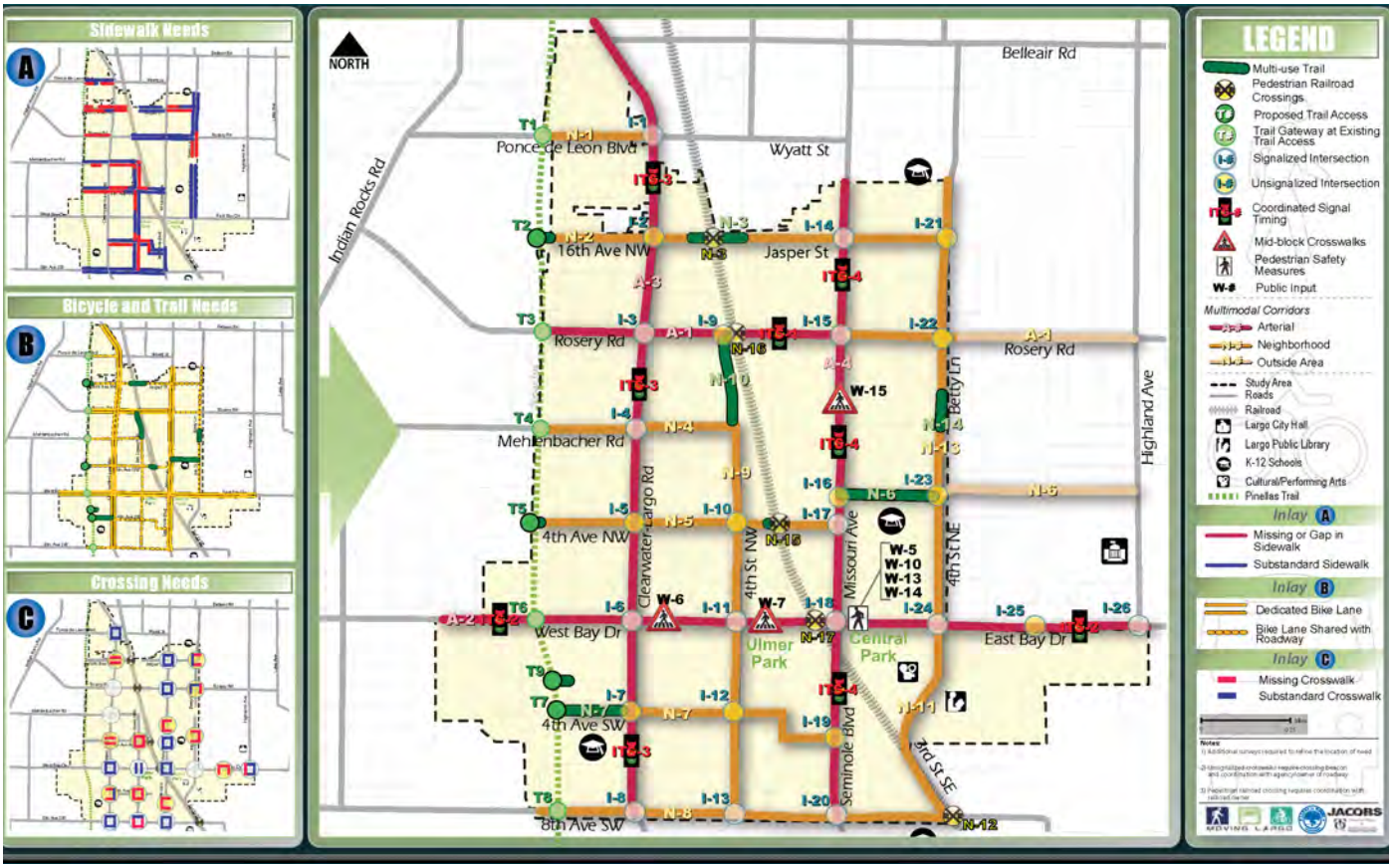
The plan, shown in **Figure 9,** follows an approach similar to the Multimodal Plan in terms of phased implementation. The bicycle and pedestrian projects included in the plan focus on new sidewalks, crosswalks, bicycle lanes and shared roadway facilities.

Table 2. Largo Prioritization Point System

LEVEL OF SERVICE (LOS)	
Pedestrian LOS	
Below Recommended Target (Ped) > 1	*3*
Below Recommended Target (Ped) <1 and < 0.5	*2*
Below Recommended Target (Ped) < 0.5	*1*
Bicycle LOS	
Below Recommended Target (Bike) >1	*3*
Below Recommended Target (Bike) <1 and < 0.5	*2*
Below Recommended Target (Bike) < 0.5	*1*
PEDESTRIAN NEEDS	
Substandard sidewalks - sidewalk coverage along at least one side of the road 50% or less	*3*
Sidewalk improvements needed - only 50% - 85% sidewalk coverage on at least 1 side	*2*
Minor sidewalk improvements needed/between 85%-90% sidewalk coverage	*1*
Crosswalk enhancements needed	*1*
Mid-block crossings recommended	*1*
Enhanced buffering between vehicle travel lane from sidewalk recommended (existing buffer 3 feet or less)	*1*
Landscape enhancements recommended	*1*
BICYCLE NEEDS	
Detailed corridor study needed	*3*
Recommended Road Diet for bike lanes	*3*
The construction of paved shoulders, restriping, or shared lane markings (sharrows)	*3*
Corridor has recommended improvement but is currently meeting target LOS	*2*
SAFETY	
Located within identified high hazard area	*3*
Corridor has an average of 4 or more crashes within last 5-years	*2*
Corridor has some areas of concern due to bike/ped related crashes within last 5-years	*1*
COMMUNITY RESOURCE CONNECTIVITY*	
Recommended Multi-use Trail - provides parallel facility to major corridor or fills network gap	*3*
Within Urban Trails Corridor	*2*
Connection to School(s)	*2*
Connection to recreational centers or parks	*2*
Connection to community or governmental facilities	*2*
Connection to activity center	*2*
TRANSIT CONNECTIVITY	
Corridors served by more than 2 transit routes	*3*
Corridors served by 1-2 transit routes	*2*
Corridors served by at least 1 transit route	*1*
Corridor is within 1/4 mile buffer of a transit route	*1*
PUBLIC SUPPORT*	
Corridor and/or improvements were identified as high priority from public input	*3*
Corridor and/or improvements were identified as high priority by Technical Committee	*3*
SUPPORTS LOCAL PLANS	
Identified for funded improvements in another plan	*3*
Identified for unfunded improvements in another plan	*2*

Source: City of Largo Mutimodal Plan

Figure 9. Downtown Largo Multimodal Plan Bicycle and Pedestrian Vision



Source: City of Largo Downtown Largo Multimodal Plan

The plan builds upon investments already made in the Largo community such as Central Park and Clearwater-Largo Road sidewalk and crosswalk improvements and seeks to connect them to assets like the Pinellas Trail. Specific needs addressed for active transportation include:

- All corridors should have sidewalks on both sides of the street;
- All corridors should include a bicycle facility - shared with vehicles in neighborhoods and dedicated on arterial corridors;
- Access to the Pinellas Trail where it intersects with the network with a system of shared-use paths that span existing gaps in the street network; and
- All intersections provide enhanced crossing measures designed for pedestrian and bicycle safety, considering signalization and refuges conditions and opportunities where possible.

This plan outlines a phased implementation approach for three phases from 2011 to 2035 and includes 11 projects.

Other Municipal Efforts

In addition to the planning efforts previously described for Clearwater, Largo, and St. Petersburg, several other municipalities have also undertaken multimodal planning or implementation programs. These bicycle and pedestrian improvement activities typically include statements or goals included in comprehensive or strategic plans, district master plans, and bicycle and pedestrian improvements identified in various studies. A brief synopsis of the major efforts are included in this section.

FDOT - PEDESTRIAN SAFETY ACTION PLAN

In 2009, FDOT developed a Pedestrian Safety Action Plan (PSAP) for Pinellas County in response to the

Federal Highway Administration's selection of Florida as a Pedestrian Safety Focus State. Local law enforcement and jurisdictions also contributed to compiling the PSAP. The purpose of the plan was to establish a framework to realize improved pedestrian safety performance through the following processes:

- Define the characteristics of the pedestrian crash problem in Pinellas County;
- Identify short term actions to improve pedestrian safety;
- Identify longer term policy initiatives to sustain pedestrian safety improvements;
- Identify opportunities for inter-agency and intra-agency coordination; and
- Provide an opportunity for elected leaders to support agency staff in implementing short and long term strategies.

The PSAP presented a comprehensive review of pedestrian crash conditions. Specific challenges and themes were identified within the county including:

- A significant amount of crashes identified in the PSAP involved pedestrians attempting to cross major roads, at mid-block and signalized intersections. The plan recommended installation of mid-block crosswalks, raised medians, traffic control islands, operational improvements, and street lighting.
- Most crashes involved adult males being struck by automobiles. The plan recommended an educational outreach effort and suggested improvements in primary and secondary school traffic safety education efforts. Transit specific efforts were recommended as most crashes appeared to be in areas of transit routes and high transit propensity.

To address these challenges the Safety Action Plan provided a set of implementation goals, objectives and action tasks. The goals for the plan included:

- **Goal 1:** Improve transportation system infrastructure (through the implementation of strategic countermeasures and construction of new transportation facilities) to optimize the safety of all users.
- **Goal 2:** Change the "culture" of drivers and pedestrians to increase compliance with existing laws and encourage mutual respect and courtesy.
- **Goal 3:** Reduce real and perceived conflicts between the need to efficiently move automobiles and pedestrian safety and mobility through private investment in compact, mixed-use developments.
- **Goal 4:** Coordinate 4E activities with the full support of elected and appointed leaders.

The 4E activities identified in Goal 4 referred to engineering, enforcement, education, and emergency medical services. The plan indicates that approach is most practical when addressing challenges along higher speed, higher volume roadways where traditional countermeasures may not be applicable.

FDOT & FORWARD PINELLAS - ALTERNATE US 19 CORRIDOR STUDY

FDOT has been conducting a corridor study on Alternate US 19 from the Pasco County Line to Park Street in Seminole in coordination with Forward Pinellas and the affected local governments to identify improvement needs and projects with a focus on accessibility and safety associated with vulnerable road users. The study is anticipated for completion in 2019. FDOT has programmed design funding for certain projects recommended in this study.

FORWARD PINELLAS, FDOT, PSTA - US 19 SAFE ACCESS TO TRANSIT CORRIDOR STUDY

The purpose of the *US 19 Safe Access to Transit Corridor Study* (2016) was to identify opportunities and strategies for improving the safety of bicyclists and pedestrians traveling to and from bus stops along the US 19 corridor in Central/Northern Pinellas County. The study highlighted hot spots along the corridor in terms of of pedestrian/bicycle crashes, high levels of transit ridership, and bicycle and pedestrian activity. The study also identified socioeconomic conditions along the corridor and areas with a high propensity for transit use. This information helped to develop recommendations for improving safety and access to bus stops including crossing alternatives such overpasses, underpasses and a transit circulator. The

project concluded with four Road Safety Assessments for key areas along the corridor, in addition to continued collaboration and development of a transit and mobility vision for US 19.

CITY OF TARPON SPRINGS - MULTIMODAL QUALITY OF SERVICE ANALYSIS

The *Multimodal Quality of Service Analysis* (2007) was conducted by the City of Tarpon Springs during the development of the Multimodal Transportation District (MMTD) that covers the downtown redevelopment area. In this effort, the City used a quality of service analysis to assess the conditions for bicycle, pedestrian, and transit facilities in order to better inform the comprehensive plan amendment process for establishing the MMTD.

The results of the analysis demonstrated that within the MMTD the overall existing multimodal quality of service is considered fair. To improve the level of service it was recommended to complete the sidewalk network between major destinations, add bicycle lanes for the east/west bicycle network, and add a local circulator connecting the downtown to other major destinations.

This effort also set the foundation for guiding development to use design techniques supportive of livable, walkable communities in exchange for increased densities and intensities.

PALM HARBOR - DOWNTOWN PALM HARBOR MASTER PLAN

The *Palm Harbor Master Plan* (2001) was developed for the Palm Harbor community located in unincorporated area of Pinellas County. This plan encompasses a 64-acre area, including downtown Palm Harbor. The plan identifies a series of improvements for downtown, including pedestrian enhancements such as widening of the pedestrian corridor along Florida Avenue, pedestrian crossing signalization, pedestrian lighting, and some bike racks.

CITY OF ST. PETE BEACH - COREY AVENUE DISTRICT VISION PLAN

The *Corey Avenue District Plan* was adopted by the City of St. Pete Beach in 2015. The plan seeks to guide physical improvements and development on Corey Avenue in downtown through:

- Streetscape and gateway enhancements;
- Circulation improvements for bikes, pedestrians, automobiles, and transit;
- Redevelopment opportunities; and
- Recommendations for the City development code.

The primary bicycle and pedestrian improvements identified in the plan include: improving pedestrian spaces and aesthetics throughout the entire district and adding bike lanes on Blind Pass Road, Gulf Boulevard, and 75th Avenue.

CITY OF MADEIRA BEACH - TOWN CENTER PLAN

The *Madeira Beach Town Center* project is organized around two new civic spaces and a redesigned Madeira Way, a two-block pedestrian-oriented street. The main pedestrian and bicycle improvements identified in this plan include a pedestrian / bike trail extended from Madeira Way to Causeway Park and an elevated crosswalk for crossing Gulf Boulevard.

CITY OF SAFETY HARBOR - DOWNTOWN MASTER PLAN

The *Downtown Master Plan* was adopted by the City of Safety Harbor in 2012 to guide development within the Community Redevelopment Area (CRA) area of the city. The plan focuses on pedestrian enhancements to Main Street in downtown Safety Harbor. Pedestrian circulation is referenced throughout the plan, but the key improvements include widening the Bayshore Linear Trail system to 10-feet with pedestrian amenities.

CITY OF DUNEDIN - DUNEDIN CAUSEWAY BRIDGES PD&E

The Dunedin Causeway is a 2.5-mile-long corridor connecting Alternate US 19 to the entrance of Honeymoon Island State Park. The area is currently undergoing a PD&E Study, started in 2014, to improve the conditions of the causeway, trail, and roadway. Improvements to the bridge will include pedestrian enhancements including sidewalks and trail facilities.

CITY OF CLEARWATER - NORTH MARINA AREA MASTER PLAN

The *North Marina Area Master Plan* (2016) seeks to improve the area, provide public access to the waterfront and develop opportunities to increase its value for the City of Clearwater. The plan identifies the need to incorporate vibrant bicycle-friendly, and pedestrian-oriented enhancements for multi-use paths, connections to the Pinellas Trail, and wider sidewalks on Fort Harrison Avenue.

03 Existing Network Data

Existing Bicycle Facilities

As seen in **Figure 10**, Pinellas County has existing bicycle facilities along many roadways, as well as an expanding off-road trail network. The facilities have been classified according to the following types:

- **Bike Lanes:** These facilities can be designated areas of the roadway identified with striping, signing and pavement markings for the preferential or exclusive use of bicyclists. FDOT Design Manual (FDM) uses 5' as the standard minimum width for bike lanes and 7' buffered bike lanes as the preferred or enhanced.
- **Shared Use Lanes/Sharrows:** The shared use of travel lanes for bicycles and motorists is designated on several roads with speed limits of 35 miles per hour or less. Shared lane markings or "sharrows" can be implemented on roadways where pavement or right-of-way widths are not sufficient for designated bike lanes. The sharrow markings, or directional arrows, help to identify to both bicyclists and drivers that shared use is allowed and that bicyclists should be expected on the roadway.
- **Trails:** Shared Use Paths or Trails are off-road facilities that are used by multiple types of non-motorized users and groups. They are typically bidirectional pathways separated from road right-of-way, 8- to 15-feet in width, with limited roadway crossings, and various access points.

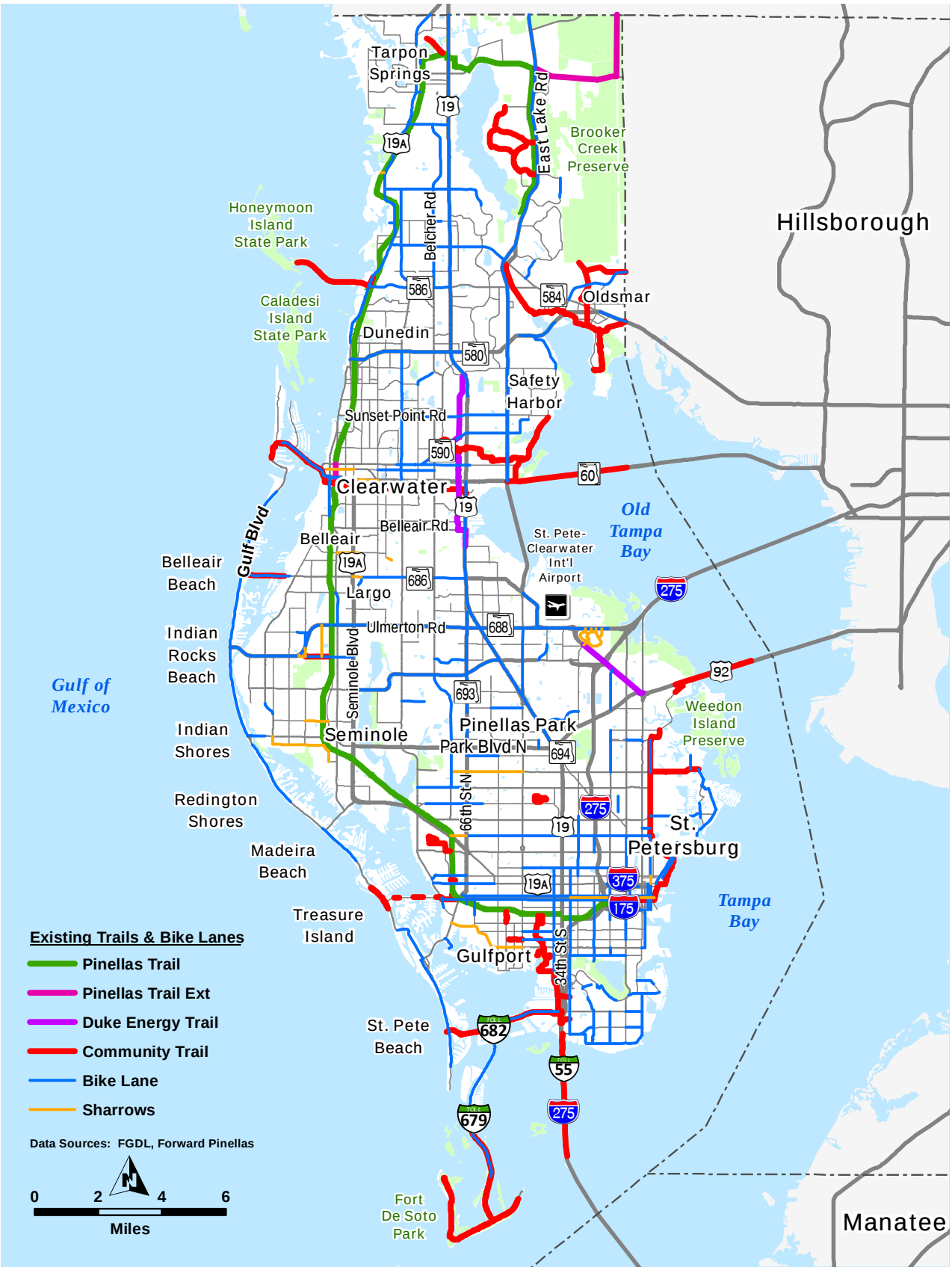
BIKE LANES

The majority of bicycle facilities in Pinellas County are designated bike lanes (187 miles). Bike lanes are distributed throughout the county, with the highest concentration of them in St. Petersburg. Along the west coast of the county, the beach communities (i.e., Belleair Beach, Indian Rocks Beach, Indian Shores, Redington Shores, Madeira Beach, Treasure Island, and St. Pete Beach) are linked with a bicycle lane and shared use markings (I.e., "sharrows") along Gulf Boulevard. Significant gaps exist in the countywide network of bicycle lanes

SHARROWS

According to the existing facility data, the county has ten roadway segments with designated sharrows. This includes roadway segments in Tarpon Springs, Gulfport, Pinellas Park, Seminole, Indian Shores, Clearwater, and two segments each in Largo and Indian Rocks Beach.

Figure 10. Pinellas County Existing Bicycle Facilities

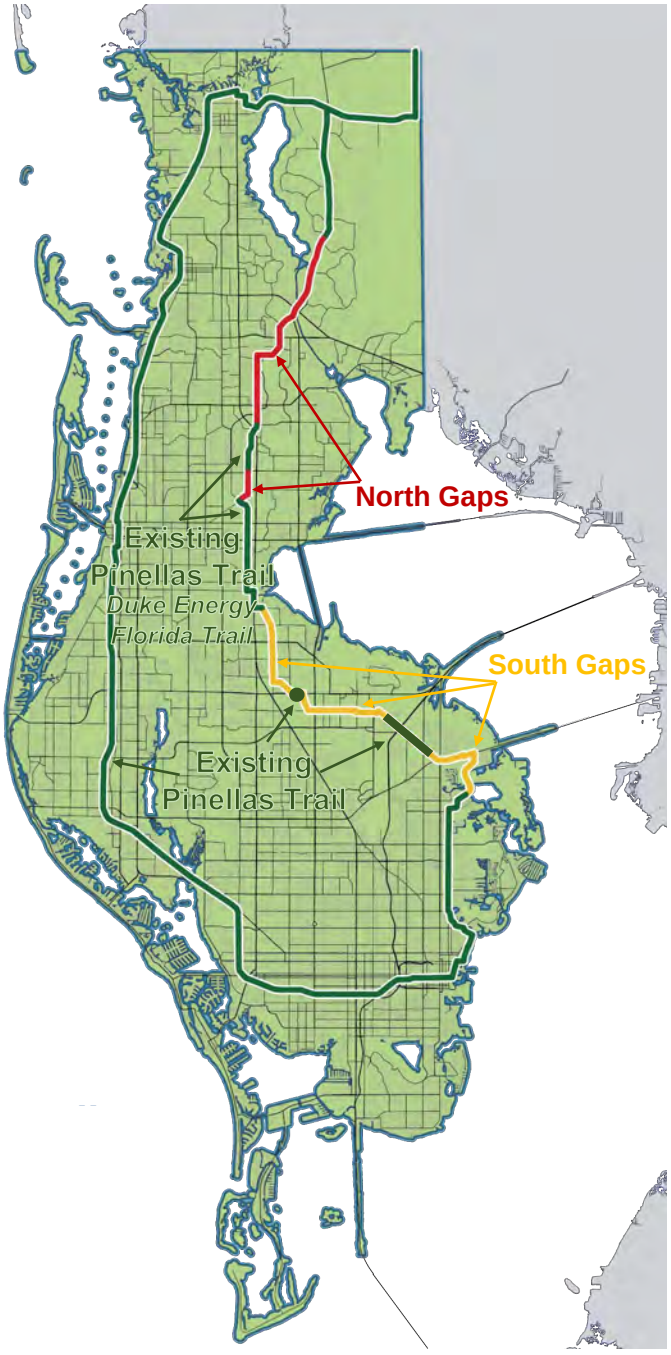


TRAILS

The trail network in Pinellas County is comprised of community trails as well as regional trails such as the Fred Marquis Pinellas Trail.

- The **Fred Marquis Pinellas Trail (Pinellas Trail)** is the longest and most complete regional trail, running along the western side of the county between Tarpon Springs in northeast Pinellas County to St. Petersburg. The popular Pinellas Trail opened in 1990 along an abandoned railroad corridor. The 15-foot-wide trail runs 43 miles, primarily along the western edge of the county. The trail is part of the larger Florida Coast-to-Coast Connector Trail, a 250-mile multi-use trail that crosses the state.
- The **Pinellas Trail - Duke Energy Florida Trail (Duke Energy Trail)** is a 22-mile north-south trail under development that will connect through the center of the county. There are two existing segments of this trail along Roosevelt Boulevard and within the utility corridor near US Highway 19 in Clearwater.
- The **Pinellas Trail Loop** is a planned 75-mile facility that includes the entire Pinellas Trail, as well as the Duke Energy Trail. As shown in **Figure 11**, most of it is yet to be fully constructed. Completion of the gaps in the network are a priority for the county. The North Gap project is under development through a grant from FDOT and additional funding from the Penny for Pinellas.
- Several other **Community Trails** connect to the Pinellas Trail, including the Ream Wilson Clearwater Trail, the Druid Road Trail, the Clearwater Beach Connector Trail, the Honeymoon Island Trail, and the Skyway Trail. These trails provide access to the regional trails, access within a community, or connections to key destinations.

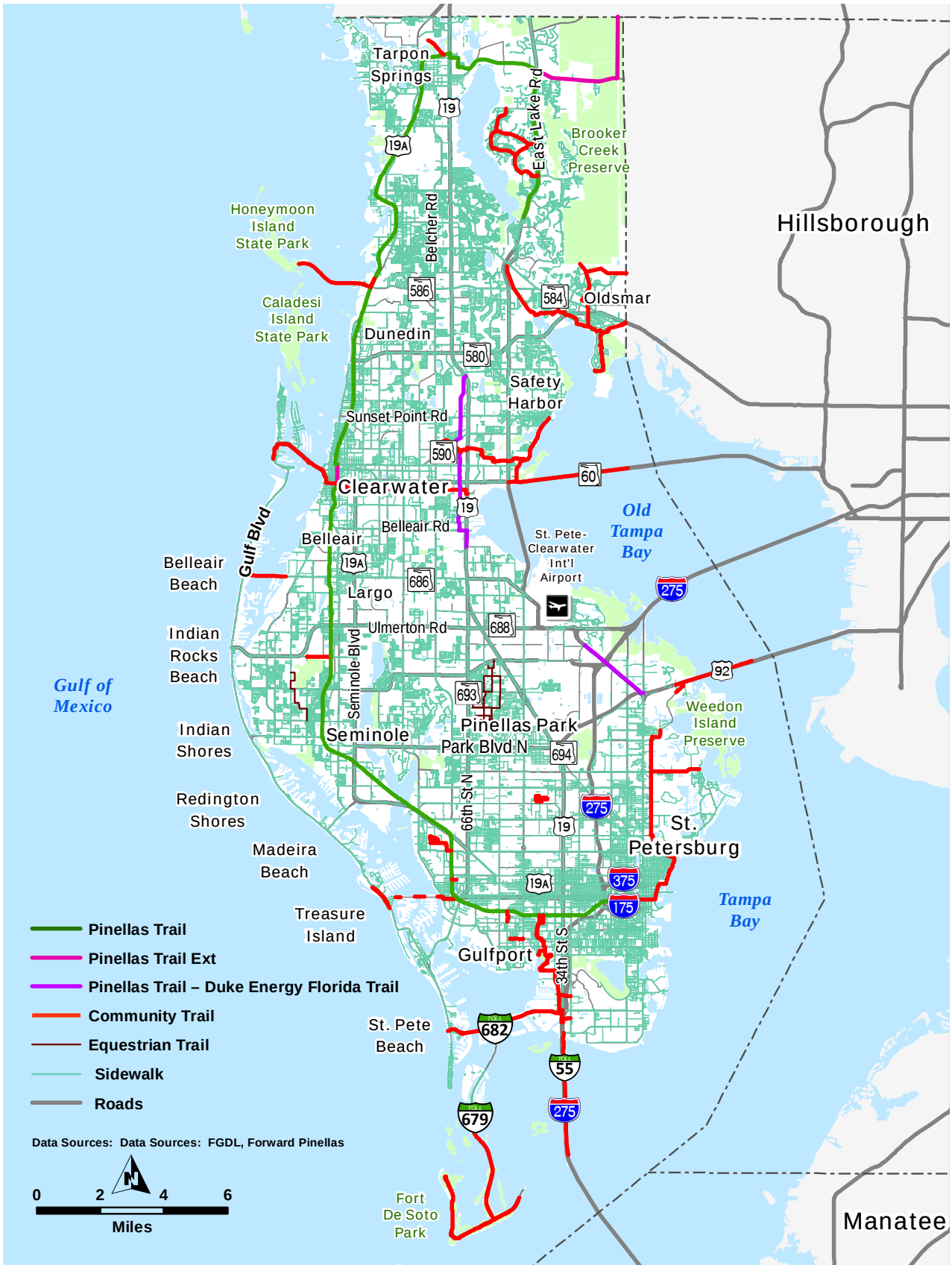
Figure 11. Pinellas Trail Loop Gaps



Existing Pedestrian Facilities

Walking is an important mode of travel in Pinellas County, and sidewalk connectivity is a key method of providing pedestrian access to key destination points. As shown in **Figure 12,** the majority of the county has significant sidewalk coverage (1,725 miles) along local and major roadways. The facilities are primarily located in the county's more traditional downtown areas. Areas where there is less coverage or gaps in the network include portions of Pinellas Park, Largo, and the beach communities. Gulf Boulevard provides a north-south connection for the beach communities, but access to neighborhoods is limited. Existing data shows less pedestrian connectivity at the neighborhood level along the bays and intra-coastal waterways.

Figure 12. Pinellas County Existing Pedestrian Facilities



Strava Metro Data

Walkers, runners, and cyclists self-report exercise activity through a mobile app, Strava Metro. This information is collected and accessed by FDOT to identify areas that experience high levels of bicycle and pedestrian activity. Individual data is aggregated by Strava to show popular routes, peak commute times, intersection crossing times, and origin/destination zones. This data can be used to identify areas of high demand for prioritizing decisions.

The Strava Metro Data can be used to illustrate trends and preferences for specific active transportation facilities. **Figures 13 and 14** show the pattern of self-reported bicycle and pedestrian activity throughout the county. The data indicates that most demand is occurring along the perimeter of the county, with the heaviest traffic in St. Petersburg, Clearwater, Dunedin, Tarpon Springs, Belleair, and the beach communities of Belleair Beach, Indian Rocks Beach, Indian Shores, Redington Shores, Madeira Beach, Treasure Island, and St. Pete Beach. Also, there is activity along the east coast of the county in Safety Harbor, and Oldsmar. Areas with less occurrences of reported bicycle and pedestrian activity in the county occur in Largo and Pinellas Park. Walking activity corresponds to the same routes as bicycle activity.

Key Features of Strava Metro Data

STREETS
Hourly activity counts across the entire roadway network

ORIGIN / DESTINATION
Activity starting and ending points

INTERSECTIONS
Activity counts and wait times at every intersection

Level of Traffic Stress

Bicycle and pedestrian Level of Service (LOS) are measures that have been used in many communities to determine the suitability of bicycle and pedestrian facilities in a shared roadway environment. However, this method has limitations in terms of the types of facilities it covers (does not directly account for sharrows, separated bikeways, or shared-use paths) and is also typically not applied to local streets where traffic count data isn't usually available. It also requires a substantial amount of data related to traffic and street cross sections that is also not usually available. An alternative approach is Level of Traffic Stress (LTS), which provides a comprehensive evaluation of a street network's stressfulness corresponding to different user profiles, providing a way to map the bicycle network according to which populations they serve rather than just according to facility type. LTS accounts for different bicycle user types and their specific needs and preferences, including those categorized as "interested but concerned" that can make up as much as 60% of the general population and require separated facilities or low speed, low volume neighborhood streets in order to feel comfortable riding a bicycle. These user types are referenced in the 2019 FHWA

Figure 13. Pinellas County Strava Metro Data (Bike)

Figure 14. Pinellas County Strava Metro Data (Pedestrian)

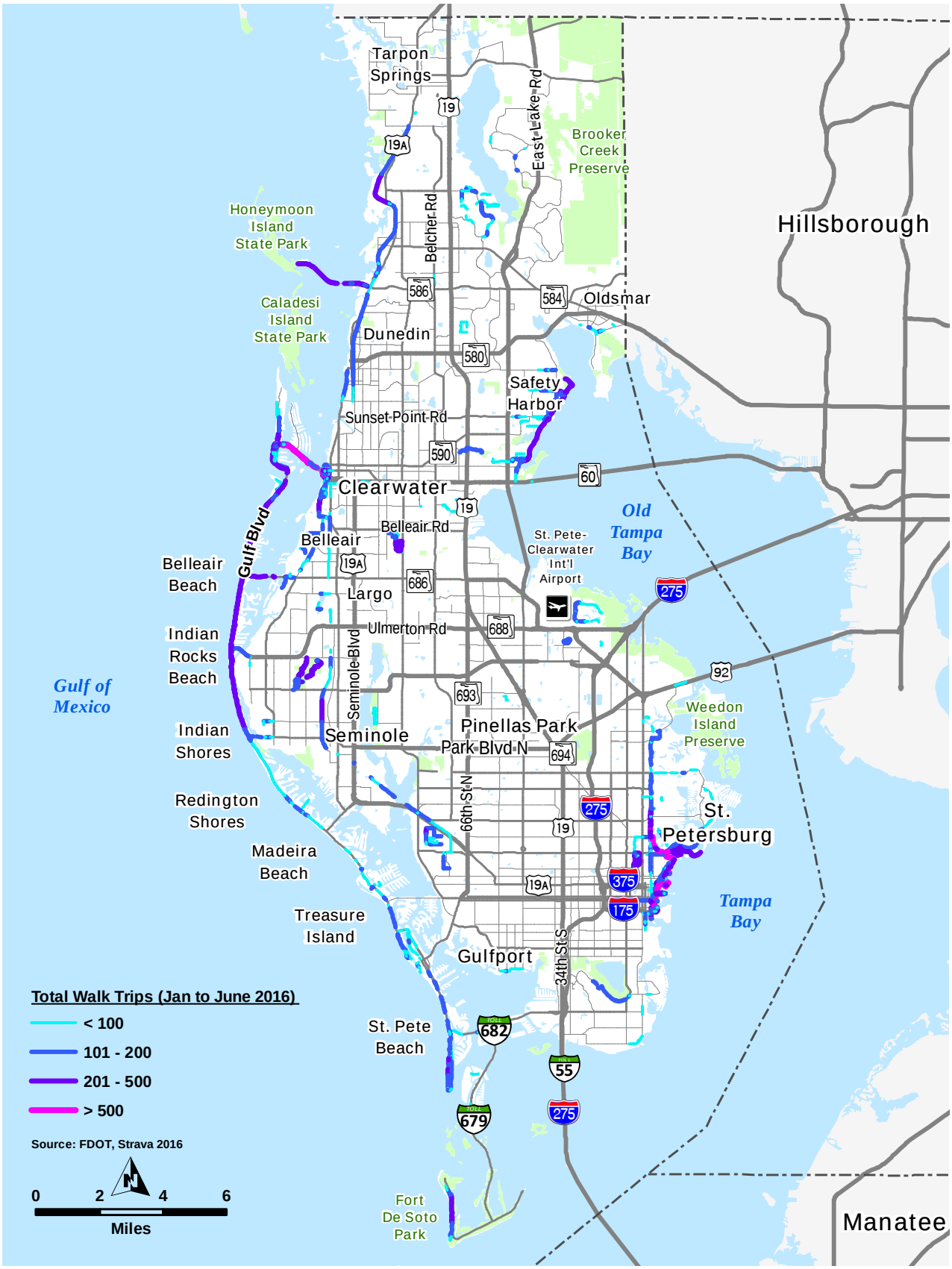
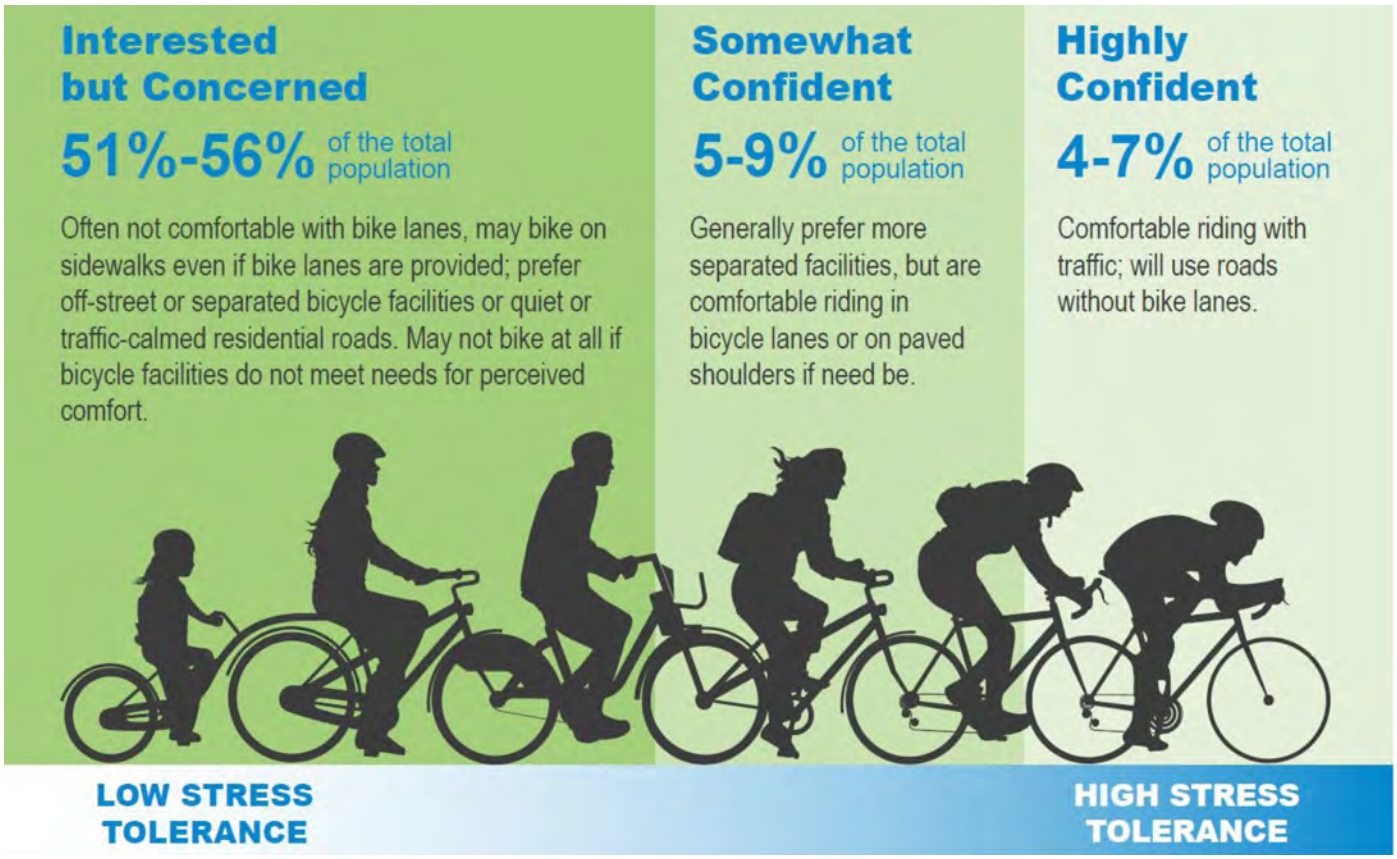


Figure 15. FHWA Bicycle Design User Profiles



Source: 2019 FHWA Bikeway Selection Guide

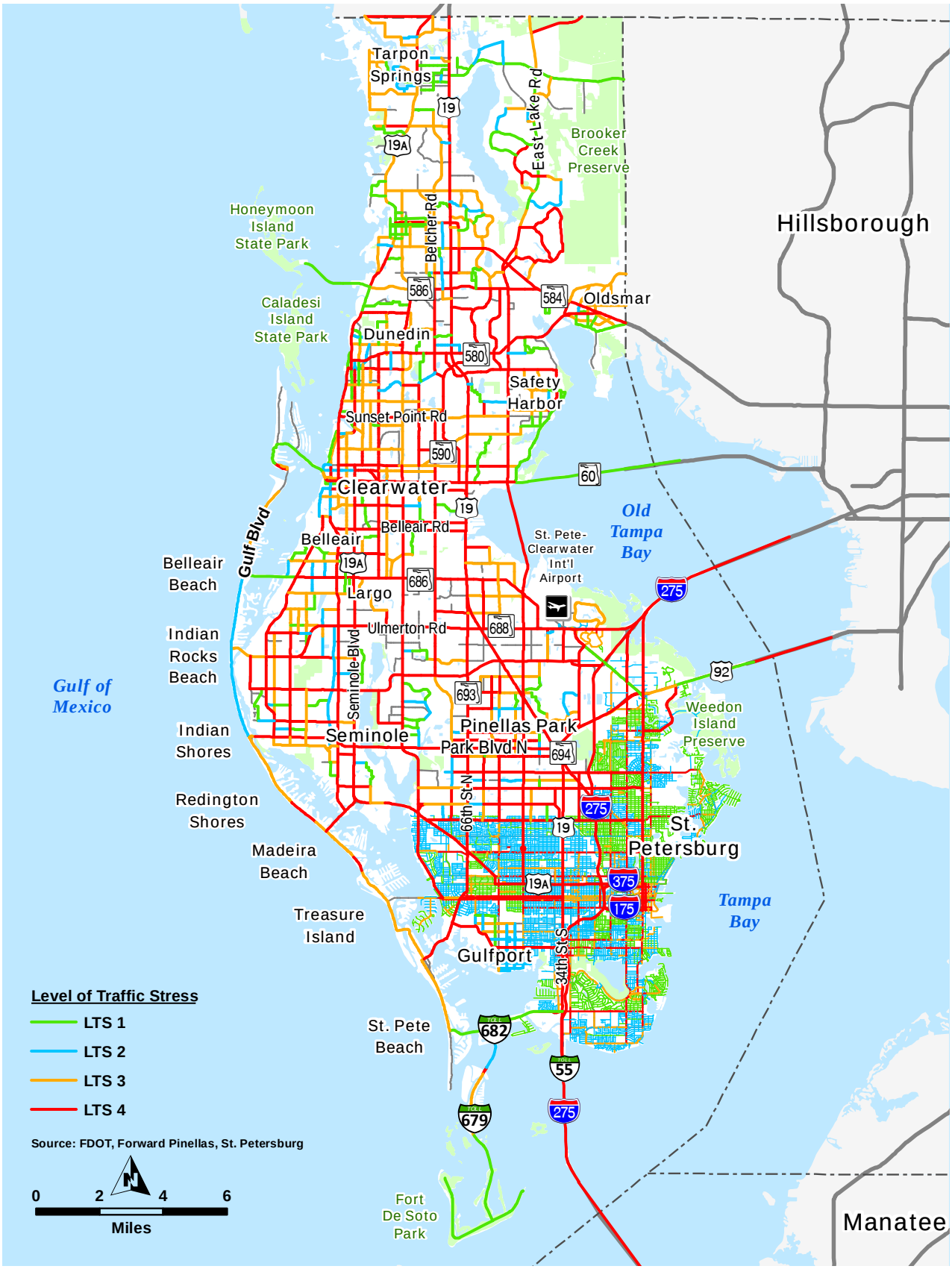
Table 3. Traffic Level of Stress Level Descriptions

LTS LEVEL	1	2	3	4
Bicyclist Type Accommodation	*All Ages & Abilities*	*Interested but Concerned*	*Somewhat Confident*	*Highly Confident*
Traffic	*Low Speed, Low Volume*	*Low/Moderate Speed, Low Volume*	*Moderate/High Speed & Volume*	*High Speed, High Volume*
Traffic Separation	*Strong Separation, Little Interaction*	*Separation w/ Higher Speeds*	*Close Proximity, Med/ High Interaction*	*Close Proximity, Heavy Interaction*
Crossings	*Simple*	*Easy for Adults*	*Longer Distances*	*Longer Distances, Intimidating*

Bikeway Selection Guide, as shown in **Figure 15**. For LTS, **Table 3** provides a summary of the LTS levels, and their corresponding suitability for different types of bicyclists.

Forward Pinellas evaluated and assigned LTS designations to arterial and collector roadways within Pinellas County. **Figure 16** shows the results of this effort. **Figure 16** also shows LTS on all streets, including local streets, within the City of St. Petersburg boundaries. The city's evaluation of LTS was completed as part of its Complete Streets Implementation Plan, and they provided the LTS results.

Figure 16. Pinellas County Level of Traffic Stress



04 Equity Analysis

The lack of accessible transportation infrastructure and transit service in a community has a direct impact on the health and economic well being of its residents. This impact is particularly adverse in low income communities where their is a higher dependence on transit use, bicycling and walking. To better understand these impacts, an equity analysis was completed for Pinellas County using a number of demographic attributes. This section provides an overview of the demographic factors that were evaluated to develop a geographic equity score to help identify areas with low bicycle and pedestrian service.

Equity Analysis Methodology

Developing bicycle and pedestrian networks that serve all areas of the county, including areas that have a high density of historically under-served population and relatively few bicycle and pedestrian facilities, is a primary goal of this Active Transportation Plan. To measure the distribution and correlation of under-served populations and facilities, an equity analysis was completed using a methodology based on an equity analysis completed for the 2014 Seattle Bicycle Master Plan.[1]

As shown in **Figure 17,** the equity analysis included an evaluation of seven socio-economic indicators. To help define under-served populations, the following Census block group level population and household data from the 2016 American Community Survey (ACS) was used:

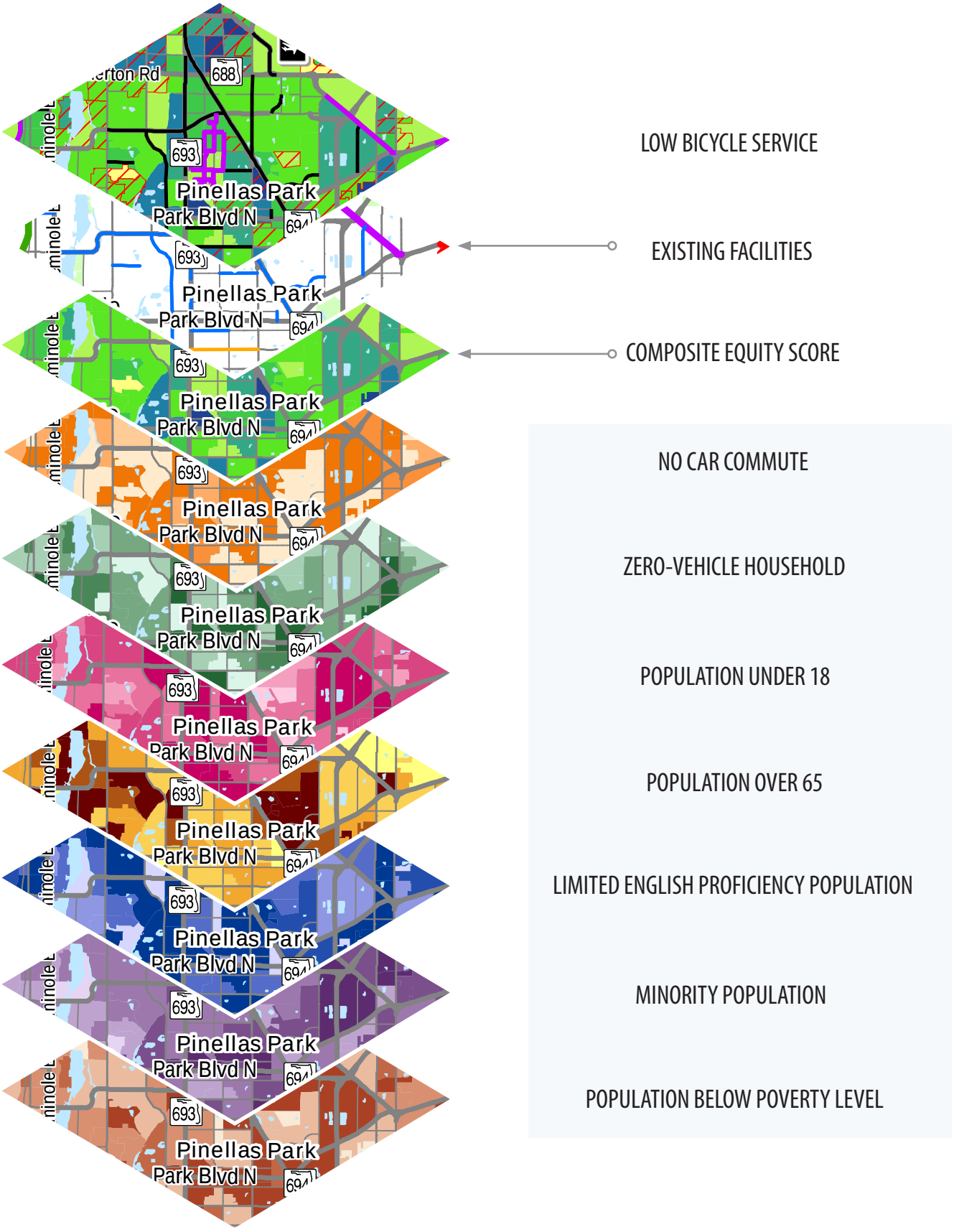
- **Population Below Poverty Level:** Percentage of population below poverty level;
- **Minority Population:** Percentage of minority population;
- **Limited English Proficiency:** Percentage of population with limited English proficiency;
- **Population Over 65:** Percentage of population age 65 or above;
- **Population Under 18:** Percentage of population 18 or below;
- **Zero-Vehicle Household:** Percentage of zero-vehicle households; and
- **No Car Commute:** Percentage of means of transportation to work other than personal motor vehicle.

The analysis used a threshold for each of the above indicators, so that those census block groups that had a greater value than the mean value for any given indicator was given a score of one (1). The scores for the individual categories were then summed across the seven socio-economic indicators to generate a composite equity score. For example, if a census block group had an above average number of people below poverty level and an above average number of people 65 years of age or older, the census block group was given a score of two (2). The Equity Score range has a maximum possible high score of seven (7), indicating above average values for each of the seven socio-economic indicators, and a minimum possible low equity score of zero (0), which would indicate no above average values.

The composite equity map was then overlaid with the existing network of bicycle facilities (bike lanes, trails, and signed/marked bike routes), and overlaid separately with the existing network of pedestrian facilities (sidewalks and trails), to determine areas of low service. For both the bicycle and pedestrian analysis, the facility service level was calculated by dividing the total mileage of bicycle or pedestrian facilities in a census block group by the number of

1 http://weblink.cityofpt.us/weblink/0/edoc/169101/Seattle-Bike-Master-Plan-Update-FINAL.pdf

Figure 17. Pinellas County Equity Analysis Framework



square miles in the census block group (e.g., bicycle facility miles/square miles). Block groups with a population density less than 1 person per acre were excluded from the analysis. Block groups in the lowest quartile (lowest 25 percent) were considered to be "low service areas." These areas are shown with yellow outlines and hatches to indicate census block groups with low bicycle or pedestrian service.

The results of the equity analysis combined with the assessment of low service areas highlight areas within Pinellas County where improvements to the bicycle or pedestrian network would benefit under-served populations.

Socio-Economic Indicators

Based on data from the 2016 American Community Survey (ACS) 5-Year Estimates, Pinellas County had a population of 939,548 in 2016. The county grew by 2.3% between 2010 and 2016, growing from 918,263 to 939,548 residents. The County is 280 square miles and considered one of the densest counties in Florida.

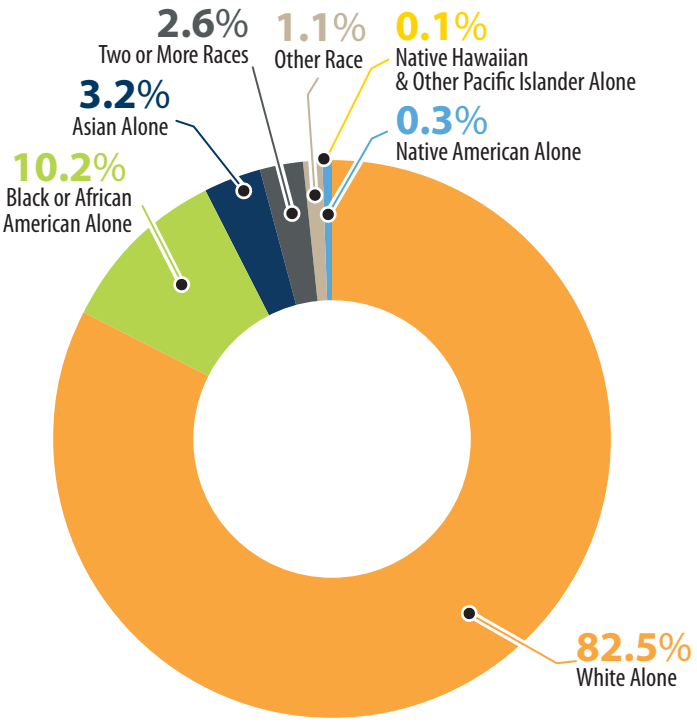
Population and household data at the block-group level from the 2016 ACS was used to create a series of maps (**Figures 20 to 26**). These maps and the following narrative provide an overview of the seven socio-economic indicators used in the equity analysis.

POVERTY

The 2016 ACS 5-Year Estimates were used to estimate poverty levels for Pinellas County. The 2016 ACS 5-Year Estimates calculated poverty level for 924,925 persons in Pinellas County. Of this number, 130,727 persons, or 14.1% are considered to live below the poverty level. This is below the Florida average which is 16.1%.

As seen in **Figure 20**, the areas of the county with the greatest concentration of persons below the poverty level (20% or more of a block groups population) are located in St. Petersburg, Pinellas Park, Largo, and Clearwater.

Figure 18. Pinellas County Racial/Ethnic Distribution



Source: 2016 American Community Survey

MINORITY POPULATIONS

Diverse communities exist throughout the County, as seen in **Figure 21.** The areas with the greatest percentages of minority populations include: Oldsmar, Clearwater, Largo, Safety Harbor, Belleair, Indian Rocks Beach, Pinellas Park, Gulfport, and south St. Petersburg. The racial distribution of the County's population is shown in **Figure 18.**

Additionally, it should be noted that the Hispanic population in Pinellas County is approximately 83,145 persons, or about 9% of the population.

LIMITED ENGLISH PROFICIENCY HOUSEHOLDS

The County's Limited English Proficiency (LEP) population includes households whose primary language is Spanish, Indo-European, Asian and Pacific Island Languages, or Other Languages. Forward Pinellas's Title VI Plan (March 2019) identifies 46,416 individuals as LEP or 5.1% of the population.

Figure 22 shows the concentrations of the LEP populations in the County based on the 2016 ACS 5-Year Estimates. As seen in this map, the greatest

concentrations exist in Oldsmar, Tarpon Springs, Clearwater, Largo, Pinellas Park, and St. Petersburg.

POPULATION OVER 65 YEARS OF AGE

Pinellas County has a higher percentage of population over 65 years of age than the State of Florida. Approximately 23% of the county's population, or 215,889 individuals, are 65 years of age or older. In comparison, 19% of Florida's population is 65 or older.

As shown in **Figure 23,** the areas with the greatest concentration of older populations are in northern Pinellas County, Tarpon Springs, Dunedin, and Oldsmar. Additional pockets of senior residents include Belleair, Largo, Seminole, and Pinellas Park.

POPULATION UNDER 18 YEARS OF AGE

Compared to the state, the percent of the population 18 years of age or under within Pinellas County is much lower. The County has 159,955 residents, or 17% of the total population, that are 18 years old or younger. Within the entire state, 20% of the population is 18 years or less in age.

Figure 24 shows the block groups with the highest percentages of younger populations. The greatest concentrations of persons under 18 years are in Clearwater, Gulfport, and St. Petersburg.

ZERO-VEHICLE HOUSEHOLDS

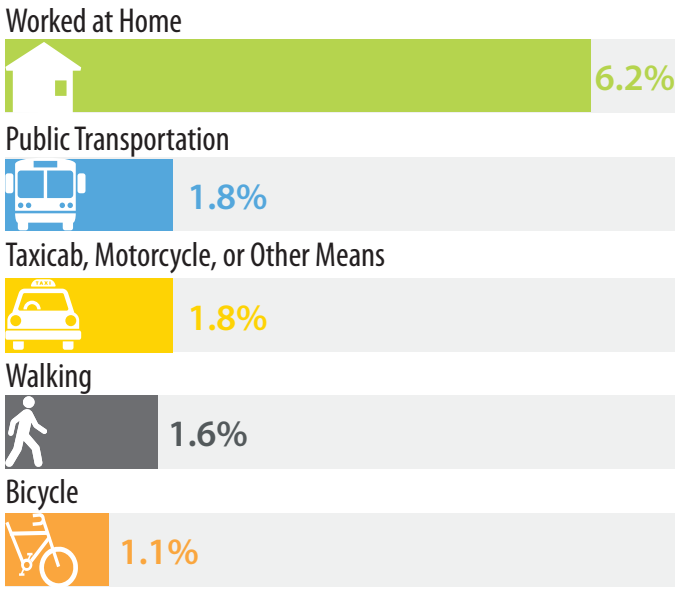
According to 2016 ACS data, 8.6% of occupied housing units or households in Pinellas County do not have access to a personal vehicle access. In Florida, 6.9% of households have zero vehicles.

Figure 25 shows the block groups with the highest percent of households that lack access to a personal vehicle. The areas with the greatest concentration of this population include Tarpon Springs, Clearwater, Belleair, Pinellas Park, Indian Rocks Beach, and St Petersburg.

COMMUTERS USING OTHER MEANS OF TRAVEL TO WORK

The majority of workers (87.5%) who live in Pinellas County commute to work using personal vehicles. As shown in **Figure 19,** the remaining 12.5% of Pinellas County workers commute to work using a mix of other transportation modes. The means of travel for Pinellas County workers is generally consistent with statistics for Florida. However, a lower percentage of Pinellas County workers travel to work using public transportation. Approximately 1.8% of Pinellas County workers use public transportation, compared to Florida where 2.1% of workers use public transportation.

Figure 19. Other Transportation Modes



Source: 2016 American Community Survey

Figure 25 showcases the percentages of users of these modes throughout the County. The areas with the most significant concentrations of users of other modes include Clearwater, Largo, Belleair, and St. Petersburg.

Figure 20. Pinellas County Percentage of Population Below Poverty Level

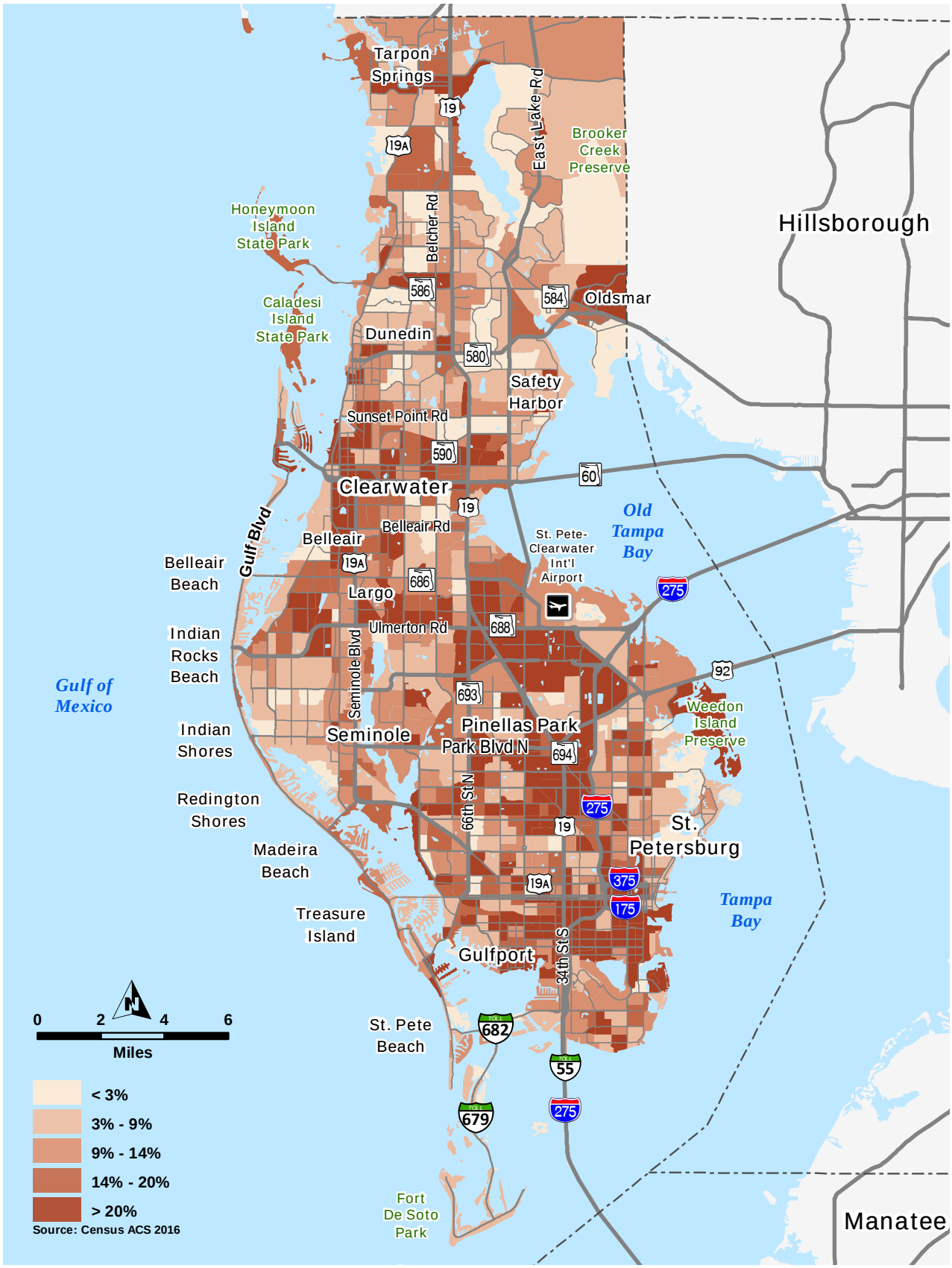


Figure 21. Pinellas County Percentage of Minority Population

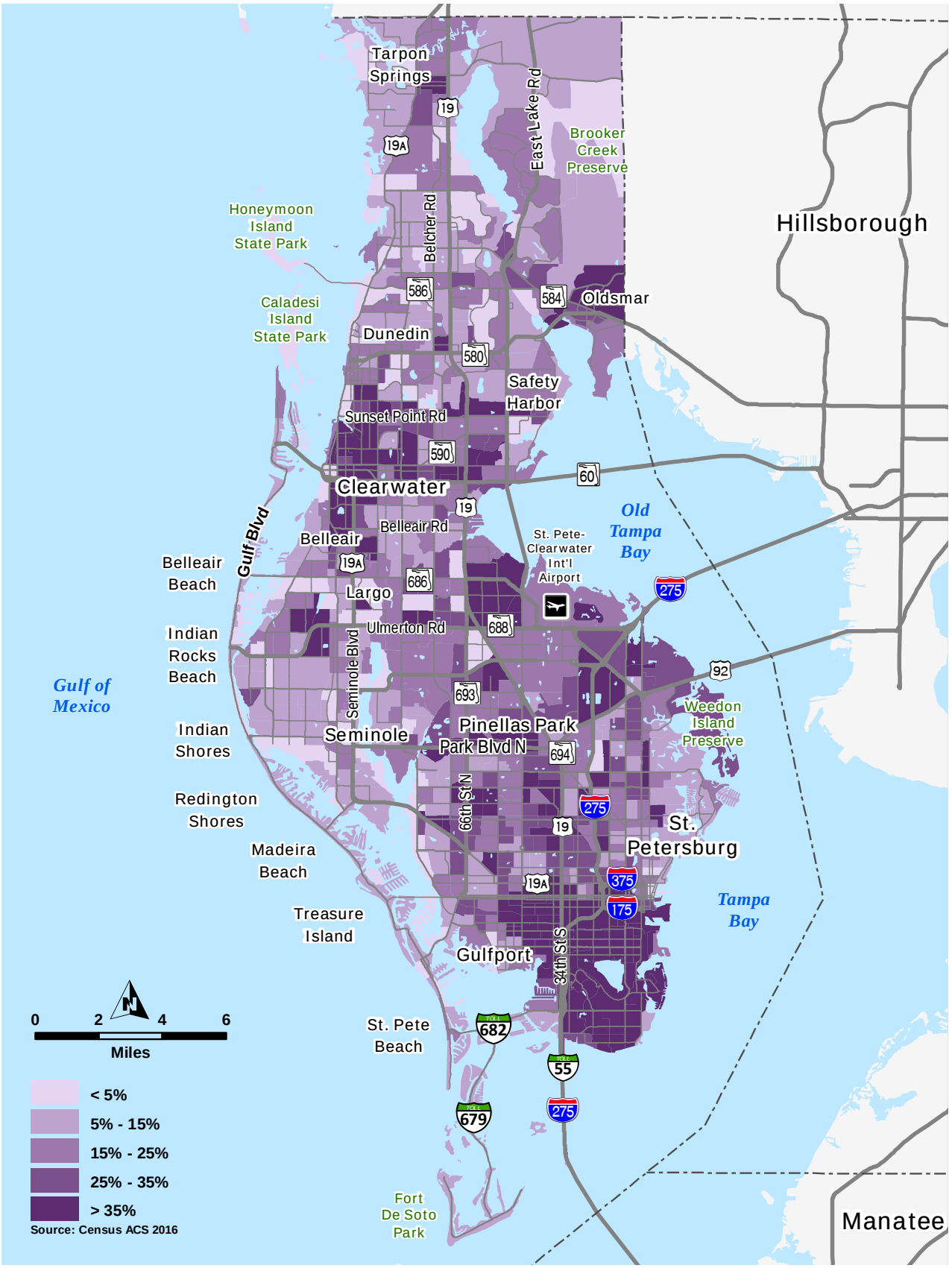


Figure 22. Pinellas County Percentage of Limited English Proficiency

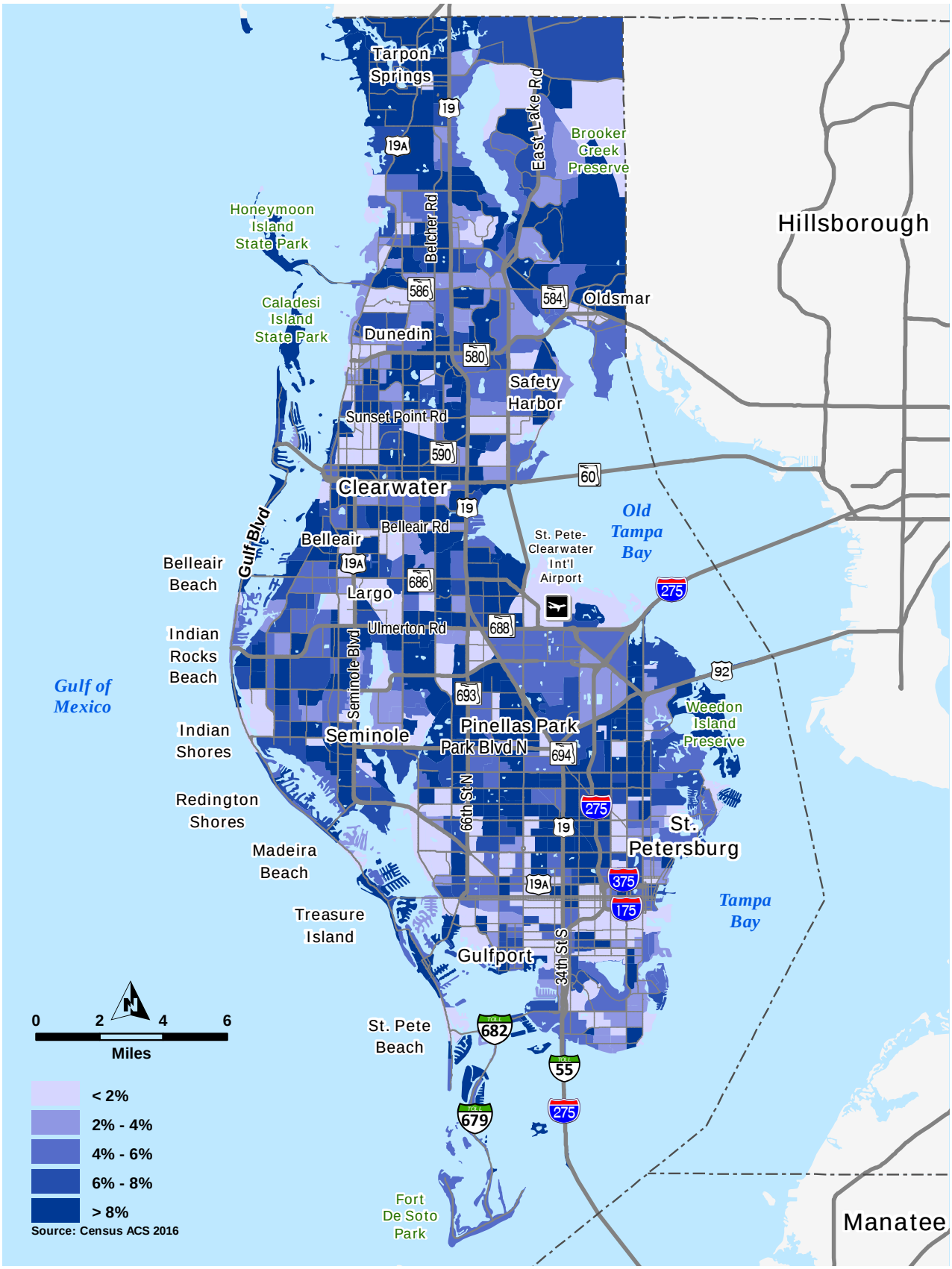


Figure 23. Pinellas County Percentage of Population Age 65 or Above

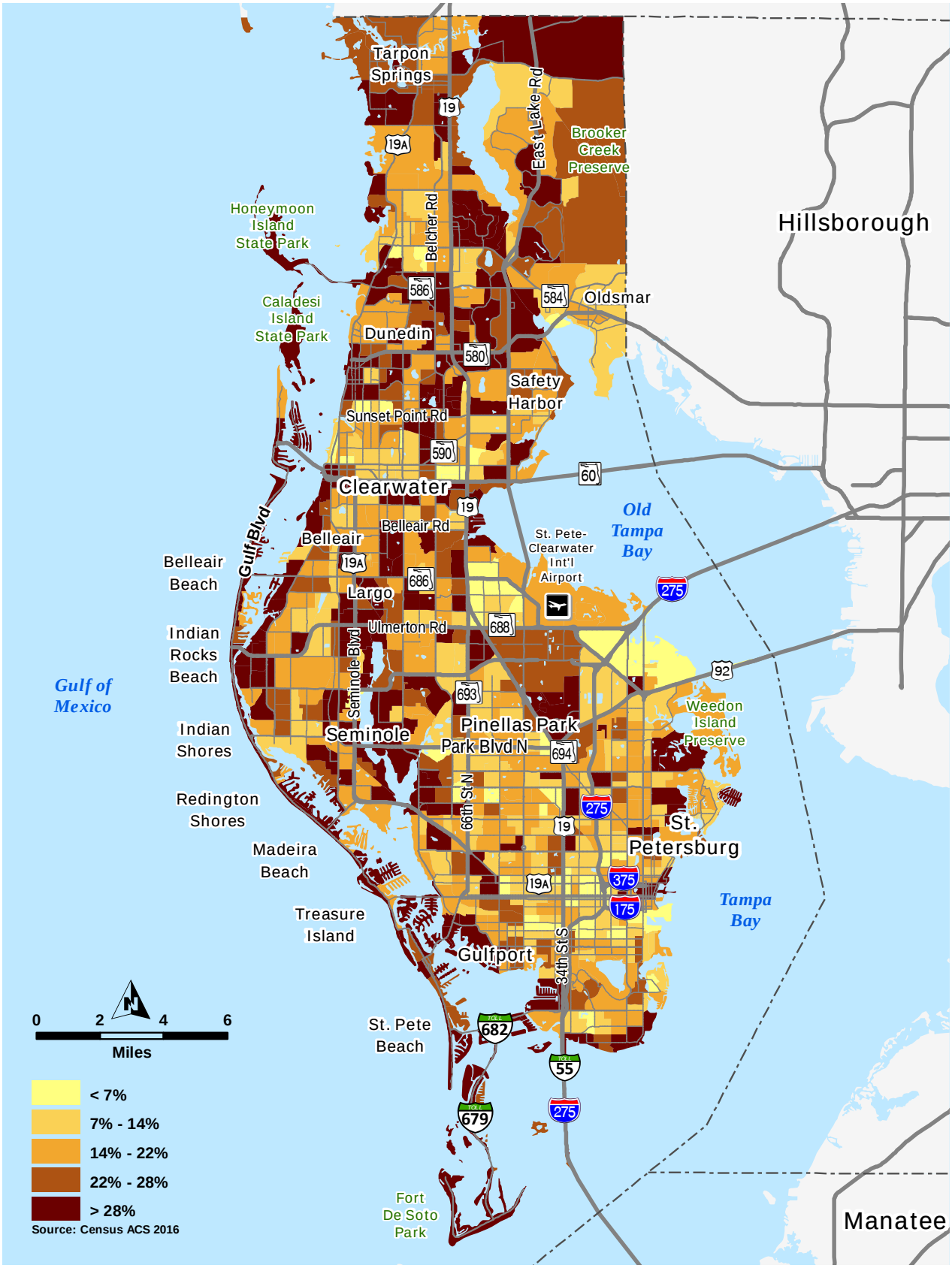


Figure 24. Pinellas County Percentage of Population Below Age 18

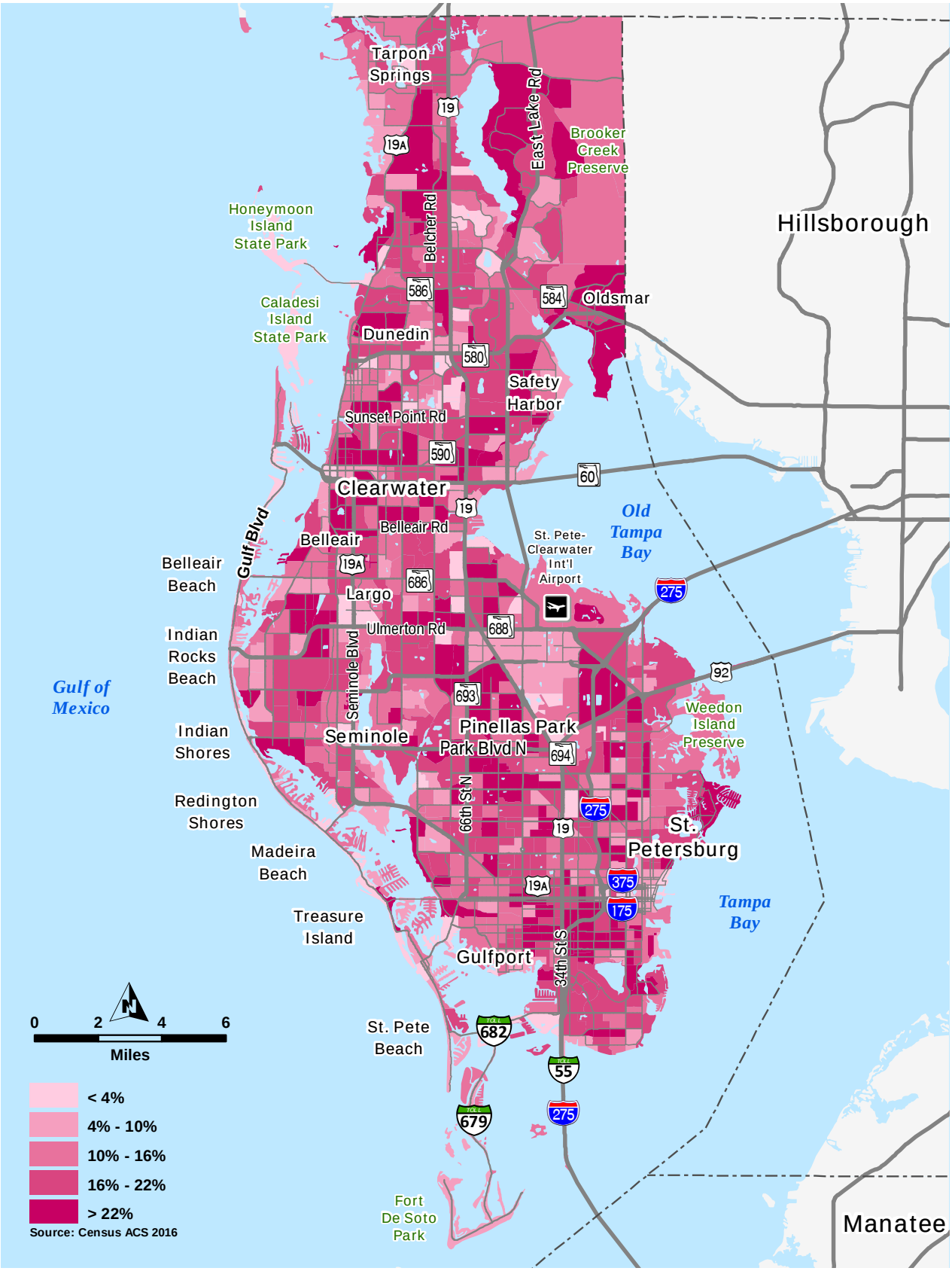


Figure 25. Pinellas County Percentage of Zero-Vehicle Households

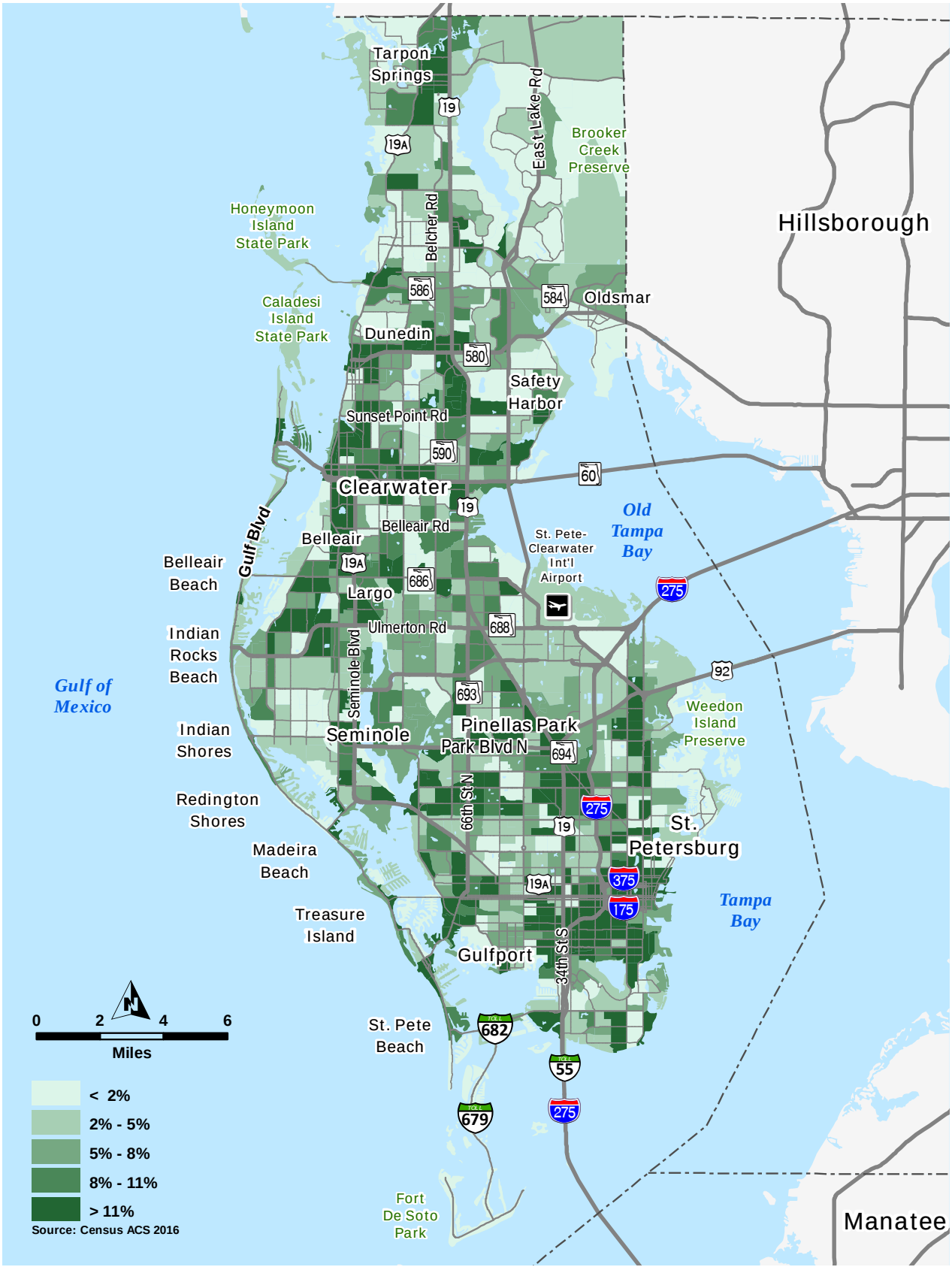
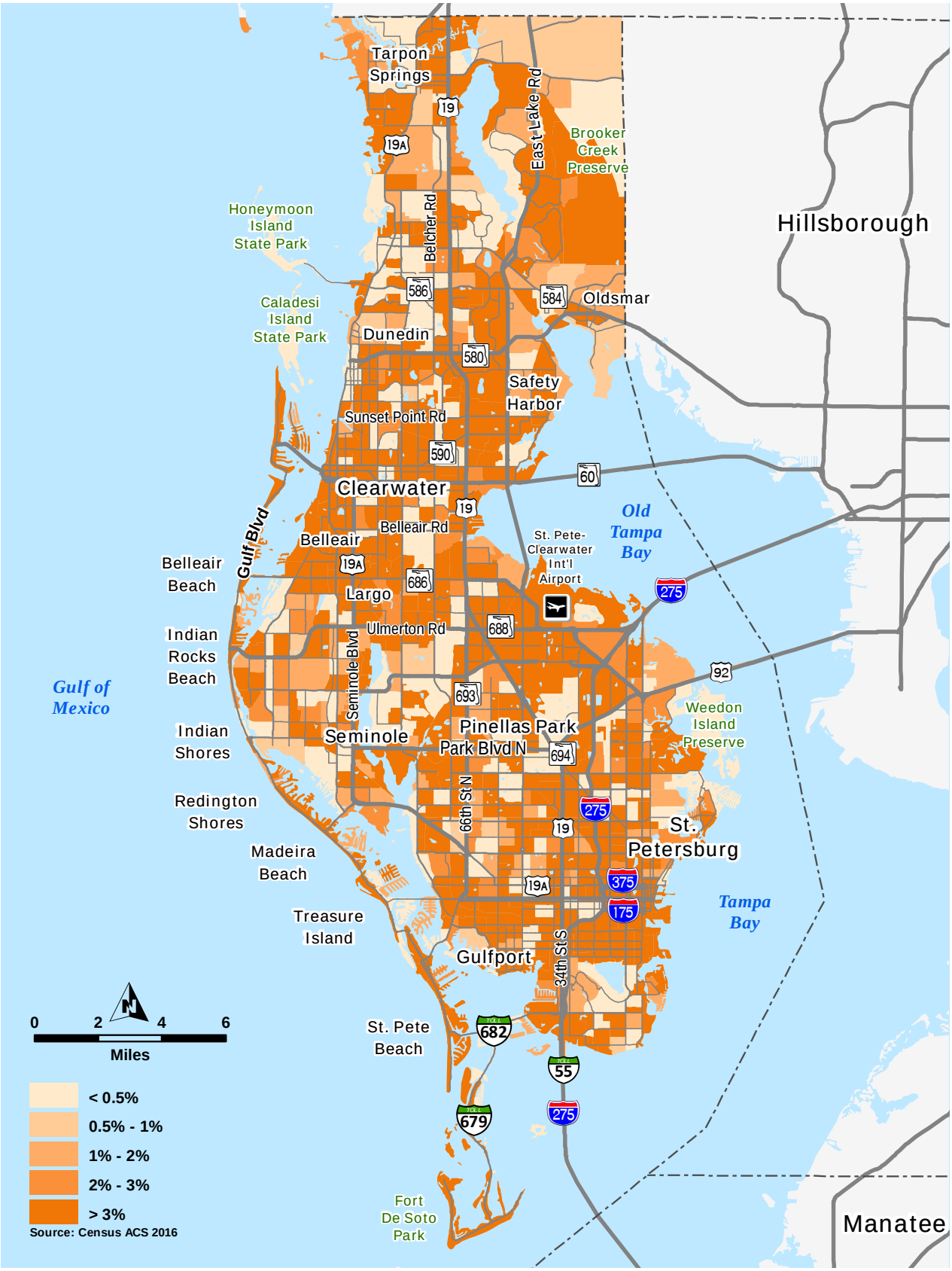


Figure 26. Pinellas County Percentage of Population Commute Non-Personal Motor Vehicle



Equity Score & Low Bicycle/ Pedestrian Service

The results of combining the demographic patterns discussed in the beginning of this section are demonstrated in **Figure 26.** This map shows the areas with the highest concentration of these demographic characteristics are St. Petersburg, Gulfport, Pinellas Park, Largo, Belleair, Clearwater, and Tarpon Springs. The areas with the lowest concentration include Dunedin, Oldsmar, Indian Rocks Beach, and small sections of St. Petersburg and Gulfport.

Figure 27 shows the results of combining the Equity Score data and the existing facilities data revealing the areas of Low Bicycle Service. Several Low Bicycle Service Areas exist throughout Pinellas County according to this analysis. Each municipality has some level of low coverage for this indicator. Locations with the most areas of low service include St. Petersburg, Gulfport, Pinellas Park, Seminole, Largo, Indian Rocks Beach, Treasure Island, Safety Harbor, Oldsmar, Dunedin, and Tarpon Springs.

Efforts should be focused on areas where Low Bicycle Service and concentrated negative Equity Scores overlap. These are the most vulnerable user populations and improvements should be prioritized to enhance and provide equitable mobility access. These areas are highlighted in the map by red hatched markings. These areas include St. Petersburg, Largo, Clearwater, Gulfport, and Dunedin.

Figure 28 shows the results of combining the Equity Score data and the existing facilities data revealing the areas of Low Pedestrian Service. Several Low Pedestrian Service Areas also exist throughout Pinellas County including south St. Petersburg, Gulfport, Pinellas Park, Seminole, Largo, Indian Rocks Beach, Redington Shores, Madeira Beach, Treasure Island, St. Pete Beach, and Tarpon Springs. Areas where high concentrated equity score populations and low service overlap include Largo, Pinellas Park, and some areas in Clearwater.

This exercise is helpful for the development of the next steps of this effort. The results show areas where this Active Transportation Plan can concentrate planning efforts in order to prioritize improvements benefiting communities with the greatest need in terms of bicycle and pedestrian safety and access.

Figure 27. Pinellas County Equity Score

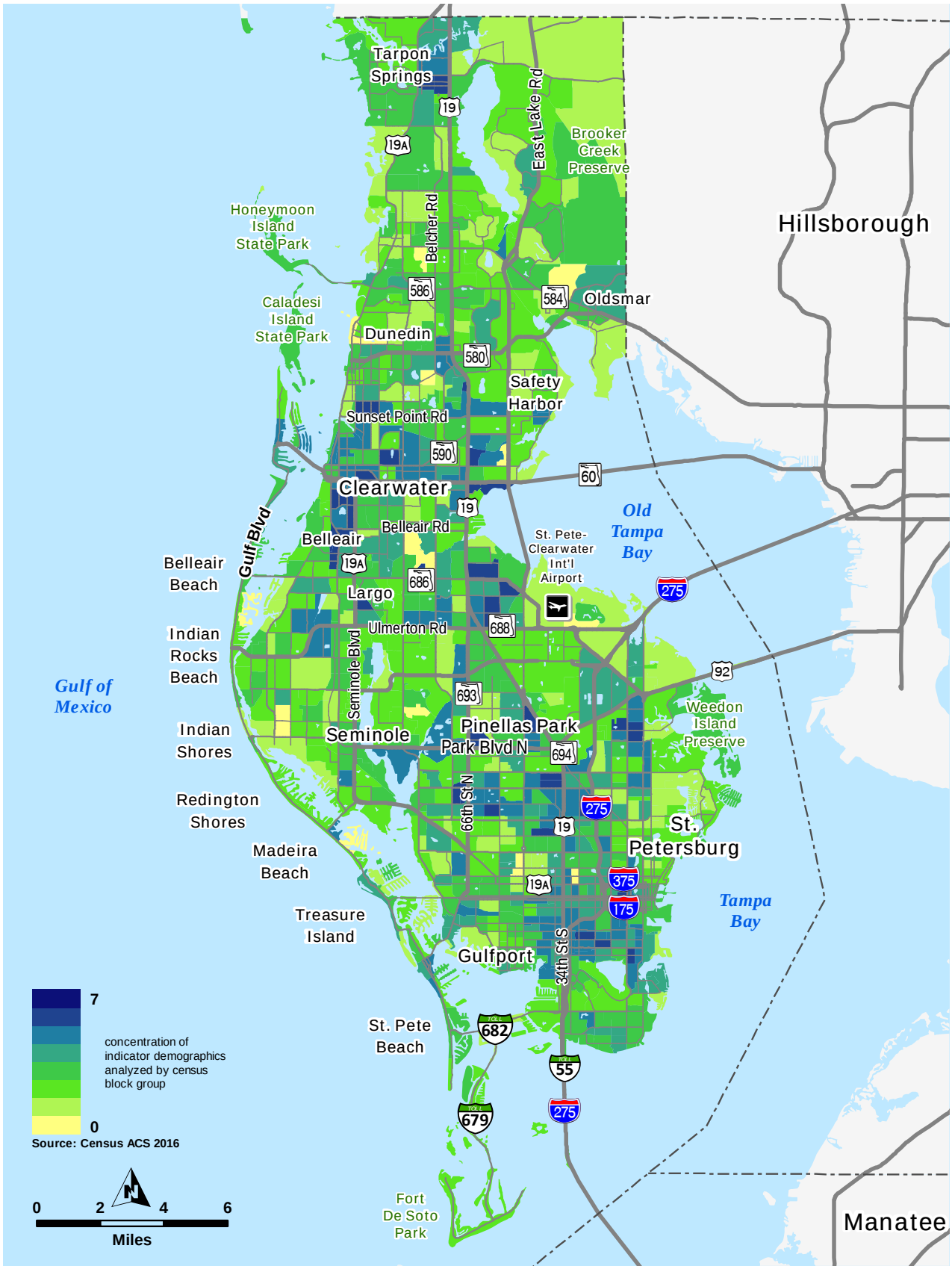


Figure 28. Pinellas County Low Bicycle Service

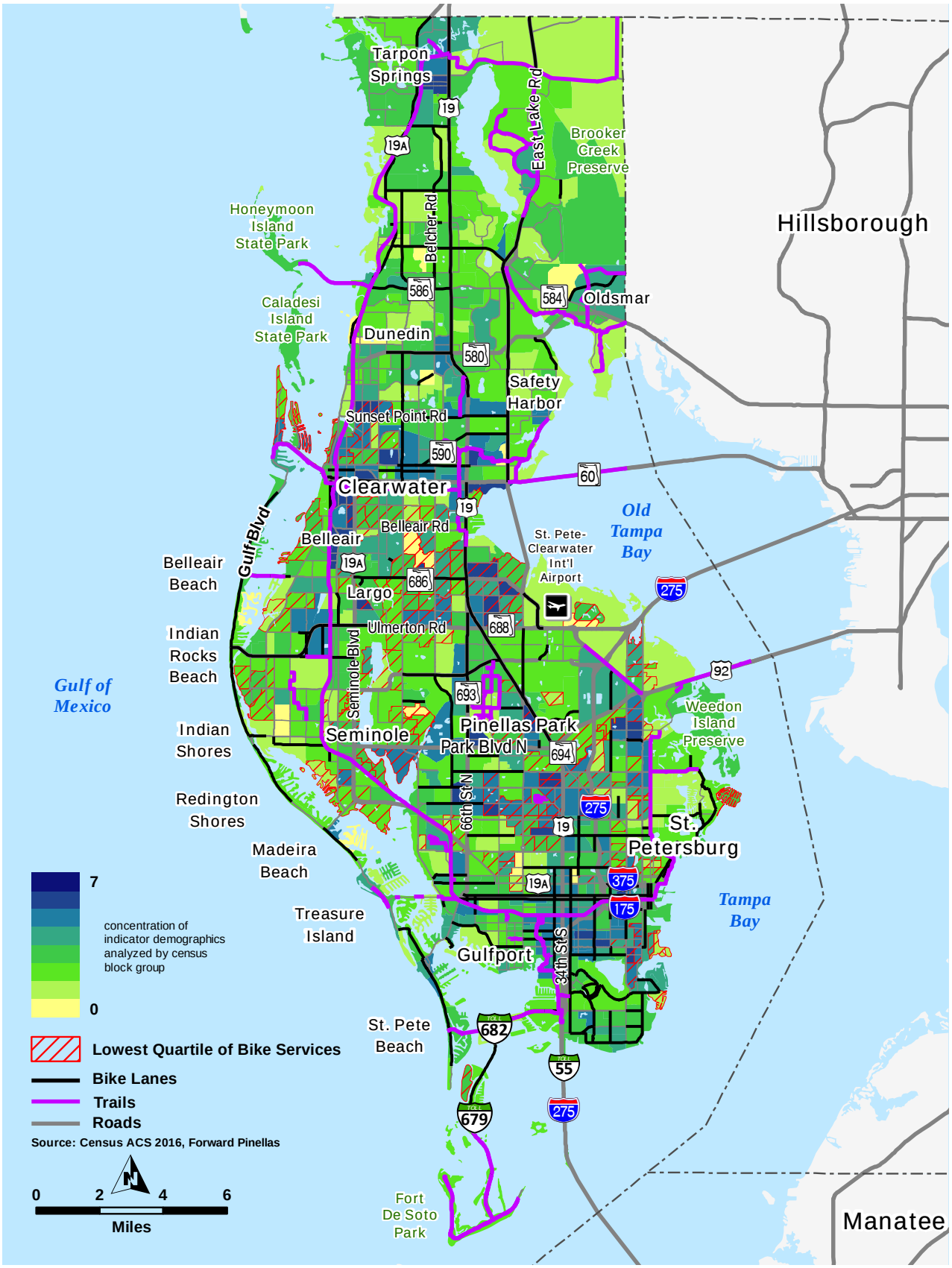
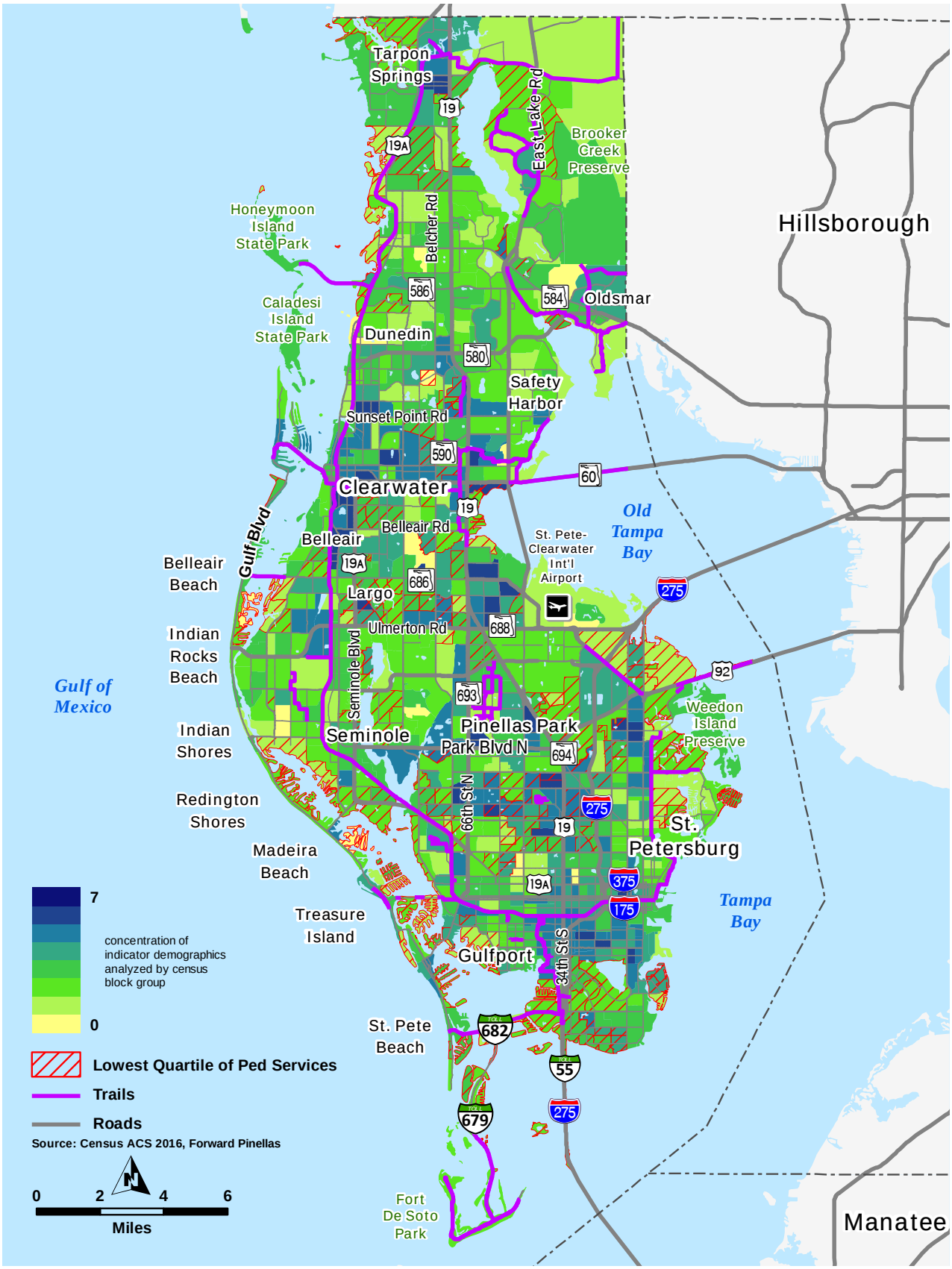


Figure 29. Pinellas County Low Pedestrian Service



05 Sources

- Healthy People Social Determinants of Health, U.S. Department of Health and Human Services: https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/environmental
- CDC Transportation Recommendations: https://www.cdc.gov/transportation/
- 2018 Pinellas County Community Health Assessment: http://pinellas.floridahealth.gov/programs-and-services/community-health-planning-and-statistics/data-and-reports/_documents/2018-pinellas-co-community-health-assess.pdf
- U.S. Census Factfinder
- CDC 500 Cities Project Local Data for Better Health: https://www.cdc.gov/500Cities/
- CDC National Center for Health Statistics: https://www.cdc.gov/nchs/data/hestat/obesity_child_11_12/obesity_child_11_12.htm
- Florida Health Charts: http://www.flhealthcharts.com/charts/OtherIndicators/NonVitalIndRateOnlyDataViewer.aspx?cid=0503
- Smart Growth America Dangerous by Design: https://smartgrowthamerica.org/dangerous-by-design/
- NHTSA Florida State Report: https://cdan.nhtsa.gov/#
- St. Petersburg Complete Streets Open House Presentation: http://www.stpete.org/transportation/docs/Complete%20Streets%20Public%20Open%20House%20Materials%20--%2012-19-18.pdf
- FHWA Proven Safety Countermeasures: https://safety.fhwa.dot.gov/provencountermeasures/walkways/

ACTIVE TRANSPORTATION PLAN

Technical Memorandum II:
Bicycle & Pedestrian Policy Best Practices

January 2020

FORWARD PINELLAS

Advantage PINELLAS

ENGAGE. ADAPT. CONNECT.

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CONTENTS

01 Introduction

Effective bicycle and pedestrian policies and codes impact long-term planning strategies and immediate decision-making priorities. It evolves infrastructure development to incorporate more users throughout planning, design, construction, and maintenance. Also, investments and capital improvements are equally connected to the decisions made around bicycle and pedestrian improvements. For these reasons, a review of best practices is important to the development of this Active Transportation Plan. Further, for communities to truly become bicycle and pedestrian-friendly, local government comprehensive plans and land development regulations must incorporate language that is supportive of implementing not only bicycle and pedestrian infrastructure, but also language supporting education, enforcement, encouragement, and evaluation measures for bicycling and walking.

The best practices presented in this document are compiled from a variety of authoritarian sources and state/local agencies, including examples from the Federal Highway Administration (FHWA), Florida Department of Transportation (FDOT), the American Association of State Highway and Transportation Officials (AASHTO), the National Association of City Transportation Officials (NACTO), and the Institute of Transportation Engineers (ITE). What follows is a brief overview of national standards followed by a review of local/state polices by topic area. It is recommended that the partner local governments of Forward Pinellas review the policies in their current plans and consider revisions or amendments to give a greater priority and higher requirements to support the bicycle and pedestrian modes, based on the guidance provided here.

National Standards & Best Practices

Table 1 provides a summary of current references for the planning and design of facilities that support walking and biking. Local judgment is recommended to ensure that the application makes sense for the context of each treatment and community.

Table 1. National Standards & Best Practices

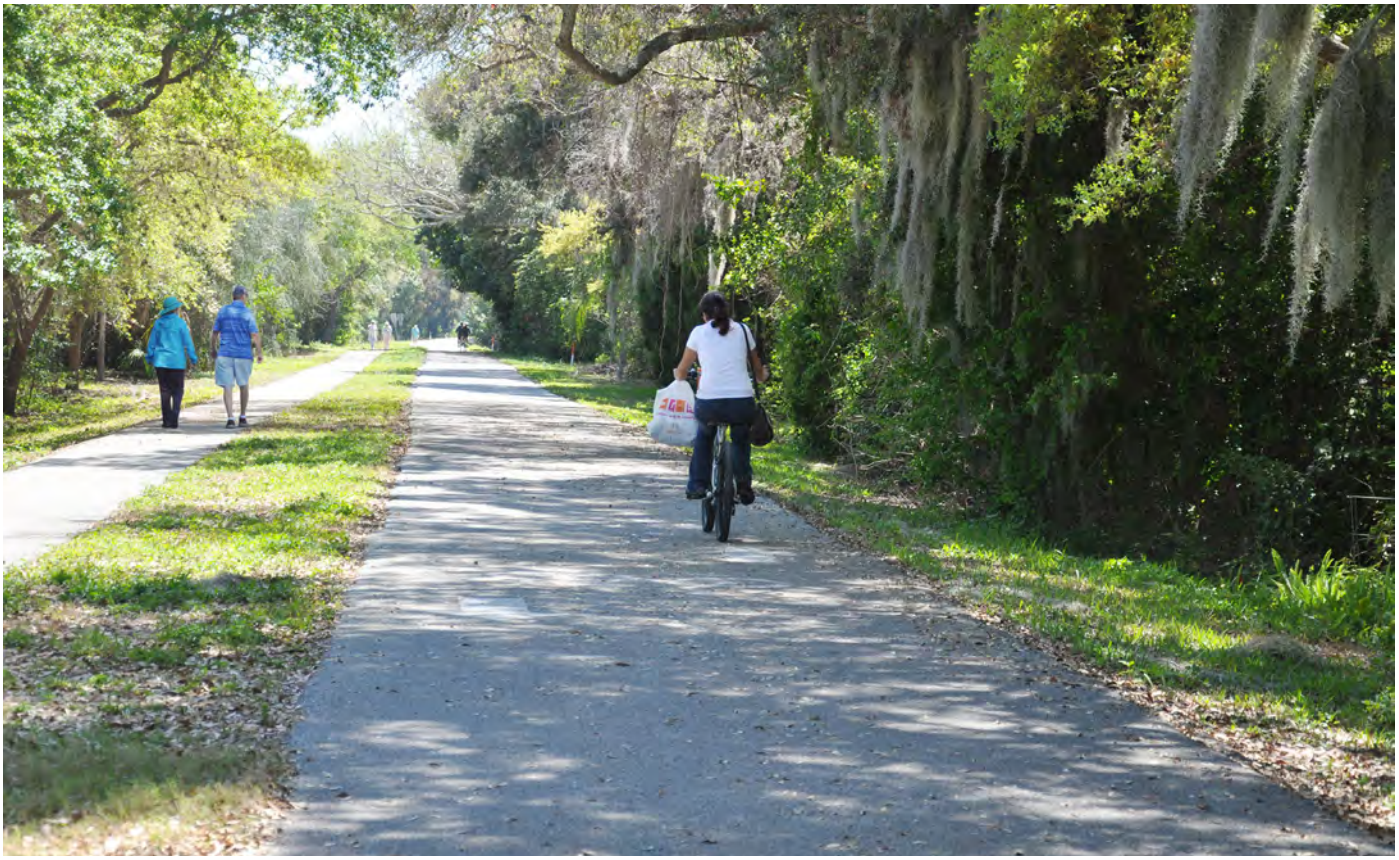
DOCUMENT	SOURCE	PURPOSE
MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)	*FHWA*	The FHWA's MUTCD sets the standards used by transportation professionals nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic. The MUTCD provides criteria on lane striping requirements, signal warrants, and recommended signage and pavement markings. It should be noted that the current version of the MUTCD was released in 2009 and many of the contemporary and more innovative bicycle and pedestrian infrastructure types and treatments are not addressed in the guide. FHWA has been issuing interim approvals for some new treatments, and there is a reference website that includes the approval status of various bicycle treatments.
www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/mutcd/index.cfm		
BIKEWAY SELECTION GUIDE	*FHWA*	Resource to help transportation practitioners consider and make informed trade-off decisions relating to the selection of bikeway types. The guide focuses on safety, but it also emphasizes the importance of comfort to appeal to a broad spectrum of bicyclists, and meet the needs of people of all ages and abilities. It is not intended to supplant existing design guides but rather serve as a decision support tool.
www.safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf		
SEPARATED BIKE LANE PLANNING & DESIGN GUIDE	*FHWA*	This Separated Bike Lane Planning and Design Guide outlines planning considerations for separated bike lanes (also sometimes called "cycle tracks" or "protected bike lanes") and provides a menu of design options covering typical one and two-way scenarios. It highlights different options for providing separation, while also documenting midblock design considerations for driveways, transit stops, accessible parking, and loading zones. It provides detailed intersection design information covering topics such as turning movement operations, signalization, signage, and on-road markings. Case studies highlight best practices and lessons learned throughout the document. The Guide consolidates lessons learned from practitioners designing and implementing separated bike lanes throughout the U.S. It attempts to capture the current state of practice, while still recognizing that our understanding of this facility type is still evolving and that there is a need for design flexibility. To encourage continued development and refinement of techniques, the guide identifies specific data elements to collect before and after implementation to enable future analysis across facilities in different communities. It identifies potential future research, highlights the importance of ongoing peer exchange and capacity building, and emphasizes the need to create holistic ways to evaluate the performance of a separated bike lane.
www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/separatedbikelane_pdg.pdf		

DOCUMENT	SOURCE	PURPOSE
ACHIEVING MULTIMODAL NETWORKS, APPLYING DESIGN FLEXIBILITY & REDUCING CONFLICTS	*FHWA*	This publication is a resource for practitioners seeking to build multimodal transportation networks. The publication highlights ways that planners and designers can apply the design flexibility found in current national design guidance to address common roadway design challenges and barriers. It focuses on reducing multimodal conflicts and achieving connected networks so that walking and bicycling are safe, comfortable, and attractive options for people of all ages and abilities. This resource includes 24 design topics, organized into two themes. The 12 design topics in Part 1 focus on design flexibility. The 12 topics in Part 2 focus on measures to reduce conflicts between modes. Each design topic is four pages in length and includes relevant case studies and references to appropriate design guidelines. This document covers a wide range of solutions to achieve multimodal transportation networks. It includes solutions for streets and intersections, and has information about shared use paths and other trails that can serve both transportation and recreation purposes. It includes information about crossing main streets, bridges and underpasses, and about interactions with freight and transit. This resource addresses common concerns and perceived barriers among planning and design professionals and provides specific information about flexible design treatments and approaches.
www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/fhwahep16055.pdf		
GUIDE FOR IMPROVING PEDESTRIAN SAFETY AT UNCONTROLLED CROSSING LOCATIONS	*FHWA*	This guide assists State or local transportation or traffic safety departments that are considering developing a policy or guide to support the installation of countermeasures at uncontrolled pedestrian crossing locations. This document provides guidance to agencies, including best practices for each step involved in selecting countermeasures. By focusing on uncontrolled crossing locations, agencies can address a significant national safety problem and improve quality of life for pedestrians of all ages and abilities. Agencies may use this guide to develop a customized policy or to supplement existing local decision-making guidelines.
www.safety.fhwa.dot.gov/ped_bike/step/docs/STEP_Guide_for_Improving_Ped_Safety_at_Unsig_Loc_3-2018_07_17-508compliant.pdf		
GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES	*ASSHTO*	This guide provides information on dimensions, use, and layout of specific bicycle facilities. This resource provides basic information, such as dimensions for bicycle lanes and trails, striping requirements and preferred signage and pavement markings. The current Fourth Edition, published in 2012, is currently undergoing a complete update and is expected to be released in 2019 or 2020. While the default design user for the 2012 edition of the guide was the experienced and confident cyclist, the updated version will focus on the "interested but concerned" cyclist as its design user.

DOCUMENT	SOURCE	PURPOSE
GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES (CONT)	*AASHTO*	As such, there will be much more focus on separated and low stress bicycle facilities. The updated AASHTO guide will contain similar recommendations for bikeway selection as the recently released FHWA Bikeway Selection Guide.
www.store.transportation.org/item/collectiondetail/116		
GUIDE FOR THE PLANNING, DESIGN AND OPERATION OF PEDESTRIAN FACILITIES	*AASHTO*	The AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, 1st Edition, provides guidance on the planning, design, and operation of pedestrian facilities along streets and highways. Specifically, the guide focuses on identifying effective measures for accommodating pedestrians on public rights-of-way. Appropriate methods for accommodating pedestrians, which vary among roadway and facility types, are described in this guide. The primary audiences for this manual are planners, roadway designers, and transportation engineers, whether at the state or local level, the majority of whom make decisions on a daily basis that affect pedestrians.
https://store.transportation.org/Item/CollectionDetail?ID=131		
A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 6TH EDITION (GREENBOOK)	*AASHTO*	The AASHTO Policy on Geometric Design of Highways and Streets 6th edition ("Greenbook") contains current design research and practices for highway and street geometric design. The document provides guidance to highway engineers and designers who strive to make unique design solutions that meet the needs of highway users while maintaining the integrity of the environment. It is also intended as a comprehensive reference manual to assist in administrative, planning, and educational efforts pertaining to design formulation. Design guidelines are included for freeways, arterials, collectors, and local roads, in both urban and rural locations, paralleling the functional classification used in highway planning.
https://store.transportation.org/Item/CollectionDetail?ID=180		

DOCUMENT	SOURCE	PURPOSE
PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG)	*United States Acess Board*	Guidelines for accessibility within public rights of way. Criteria are intended to 'fill the gap' where the ADA Standards do not cover elements found primarily along roadways. Criteria are not enforceable by law, but constitute the 'state of the practice' for accessible rights of way and should be followed where the ADA Standards don't address an issue.
www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines		
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN	*ADA*	Provides standards for the implementation of accessible facilities. This includes requirements for sidewalk curb ramps, slope requirements, and pedestrian railings along stairs.
www.ada.gov/regs2010/2010ADAStandards/2010ADAStandards.pdf		
URBAN BIKEWAY DESIGN GUIDE (2012)	*NACTO*	Provides state-of-the-practice solutions that can help create complete streets that are safe and enjoyable for bicyclists.
www.nacto.org/publication/urban-bikeway-design-guide/		
URBAN STREET DESIGN GUIDE (2013)	*NACTO*	The Urban Street Design Guide charts the principles and practices of the nation's foremost engineers, planners, and designers working in cities today. A blueprint for designing 21st century streets, the Guide unveils the toolbox and the tactics cities use to make streets safer, more livable, and more economically vibrant. The Guide outlines both a clear vision for complete streets and a basic road map for how to bring them to fruition.
www.nacto.org/publication/urban-street-design-guide/		
DON'T GIVE UP AT THE INTERSECTION, DESIGNING ALL AGES AND ABILITIES BICYCLE CROSSINGS	*NACTO*	Expands the NACTO Urban Bikeway Design Guide adding detailed guidance on intersection design treatments that reduce vehicle-bike and vehicle-pedestrian conflicts. It covers protected bike intersections, dedicated bike intersections, and minor street crossings, as well as signalization strategies to reduce conflicts and increase comfort and safety.
www.nacto.org/wp-content/uploads/2019/05/NACTO_Dont-Give-Up-at-the-Intersection.pdf		
ESSENTIALS OF BIKE PARKING	*APBP*	Developed for operations planning to purchase or install bike parking fixtures on a limited scale. It provides a brief overview of APBP's comprehensive Bicycle Parking Guidelines handbook. This guide covers the following topics: • Site planning for short- and long-term parking • Installation • Bicycle rack selection--including performance criteria, rack styles, and materials and coatings • Placement and spacing
www.apbp.org/page/Publications		

DOCUMENT	SOURCE	PURPOSE
BICYCLE PARKING GUIDELINES	*APBP*	This overviews additional best practices on bicycle parking including performance criteria, polices, and other design features.
www.apbp.org/page/Publications		
DESIGN MANUAL (FDM)	*FDOT*	The FDOT Design Manual (FDM), sets forth geometric and other design criteria, as well as procedures, for FDOT projects. The information contained in the FDM applies to the preparation of contract plans for roadways and structures.
www.fdot.gov/roadway/FDM/		
TRAFFIC ENGINEERING MANUAL (TEM)	*FDOT*	The purpose of this manual is to provide traffic engineering standards and guidelines to be used on the State Highway System. The manual covers the process whereby standards and guidelines are adopted, as well as chapters devoted to highway signs, traffic signals, markings, and specialized operational topics, such as midblock pedestrian crossings.
www.fdot.gov/traffic/TrafficServices/Studies/TEM/TEM.shtm		
ACCESS TRANSIT DESIGN HANDBOOK FOR FLORIDA BUS PASSENGER FACILITIES	*FDOT*	Includes technical guidelines in transit facilities design to facilitate transit operations on and off the roadway system. It contains various build standards important to the discussion of accessibility to transit both for those with and without impairment.
www.fdot.gov/transit/Pages/NewTransitFacilitiesDesign.shtm		
FLORIDA TOD HANDBOOK	*FDOT*	The handbook focuses on the land use patterns located within a quarter- to a half-mile of transit stations and corridors served by a premium transit system. TOD maintains a strong emphasis on mobility, walkability, connectivity, urban form, and a mix of uses arranged in a pattern of higher density and intensity than typically found beyond the half-mile "transit shed."
www.fltod.com/Florida%20TOD%20Guidebook-sm.pdf		
MULTIMODAL TRANSPORTATION BEST PRACTICES MANUAL AND MODEL ELEMENT	*FDOT*	This report provides guidance in developing a multimodal transportation element of a local government comprehensive plan. Two model elements were developed to address differences in statutory requirements for communities of different sizes and planning context. The first model element includes guidance for large local governments and those within the boundary of a metropolitan planning organization (MPO). The second includes guidance for smaller or more rural communities outside of MPO boundaries. Each model element encourages a range of best practices in multimodal transportation planning as identified through a review of the literature, agency plans, and related documents.
www.nctr.usf.edu/wp-content/uploads/2015/08/77954.pdf		



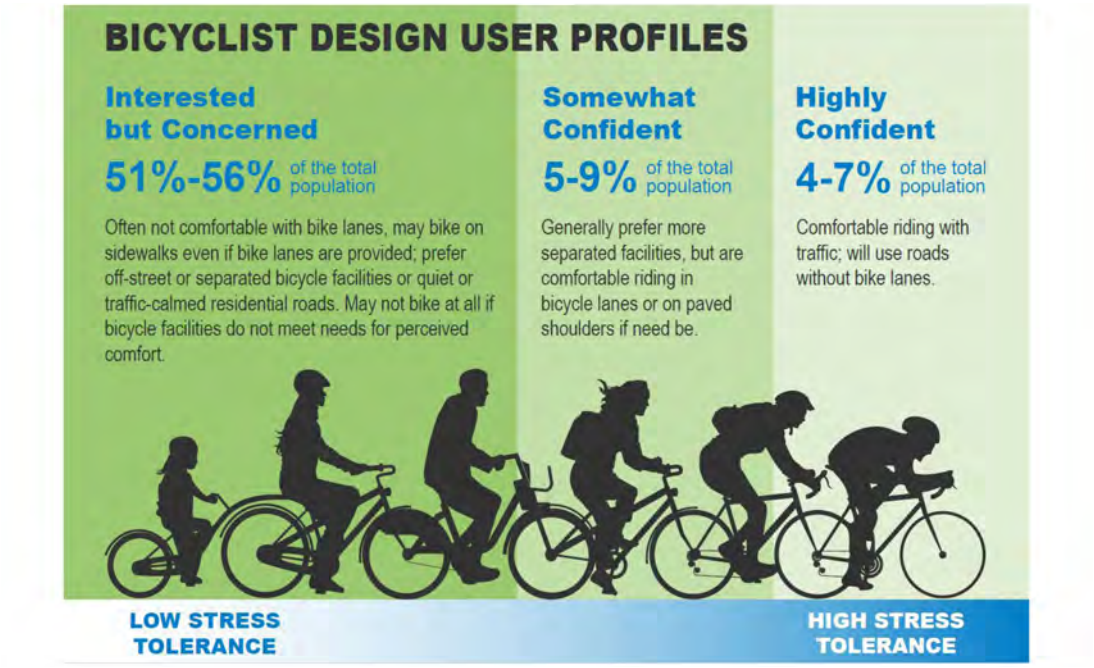
DOCUMENT	SOURCE	PURPOSE
IMPLEMENTING CONTEXT SENSITIVE DESIGN ON MULTIMODAL THOROUGHFARES	*ITE*	This combined ITE & Congress for New Urbanism (CNU) report was developed in response to widespread interest for improving both mobility choices and community character through a commitment to creating and enhancing walkable communities. The report's objective is to identify how context sensitive solutions (CSS) principles can be applied in the process involved with planning and developing roadway improvement projects on urban thoroughfares for walkable communities, describe the relationship, compatibility and trade-offs that may be appropriate when balancing the needs of all users, adjoining land uses, environment and community interests when making decisions in the project development process, describe the principles of CSS and the benefits and importance of these principles in transportation projects, present guidance on how to identify and select appropriate thoroughfare types and corresponding design parameters to best meet the walkability needs in a particular context, and provide criteria for specific thoroughfare elements, along with guidance on balancing stakeholder, community and environmental needs and constraints in planning and designing walkable urban thoroughfare projects.
www.cnu.org/our-projects/cnu-ite-manual		

02 Bicycle & Pedestrian Supportive Strategies, Policies, & Codes

Bicycle and pedestrian use and safety is impacted through policy decisions. These decisions can increase the numbers of people walking and riding bicycles, provide active transportation options, support individual health and mobility, and also improve regional environmental health. **Table 2** summarizes a variety of bicycle and pedestrian-specific policy planning strategies and best practices.

Of particular importance is the recent change in bicycle planning and design related to the target design user. In many communities, bicycle facilities have traditionally defaulted to serving "Highly Confident" and "Somewhat Confident" bicycle users, which make up a relatively small portion of the existing and potential bicyclist population. The largest category of bicyclists falls into the "Interested but Concerned" group. These users will often not use traditional bicycle facilities like on-street bike lanes on high speed or high volume roadways due to the close proximity of motor vehicle traffic and a perceived safety threat. These users require more separation from traffic or very low volume, low speed neighborhood streets in order to feel comfortable riding a bike. As such, communities that desire to attract a wider range of bicycle users will need to establish low stress bicycle networks that will serve users of all ages and abilities. Local policies should establish the "Interested but Concerned" bicycle user group as the target design user in establishing local bicycle networks and then seek to build low stress bicycle networks that incorporate separation from motor vehicle traffic and more neighborhood bikeways.

Figure 1. Bicycle Design User Profiles



Source: FHWA Bikeway Selection Guide

Table 2. Bicycle and Pedestrian-Specific Policy Planning Strategies and Best Practices

TOPIC	POLICY
BICYCLE NETWORK PLANNING & IMPLEMENTATION	• Prioritize "Interested but Concerned" bicyclists as the target bicycle user group to develop and expand a low-stress bicycle network to accommodate users of all ages and abilities. • Adopt the bicycle facility selection guidance included in FHWA's Bikeway Selection Guide including volumes and speeds as contexts for appropriate levels of bikeway separation. Prioritize low-stress facilities, including trails, separated bikeways, shared-use wide sidewalks, and neighborhood bikeways. • Street improvements in the Transportation Improvement Program (TIP) or a local municipality Capital Improvement Plan (CIP) shall be consistent with the bicycle and pedestrian facility type(s) identified in the Forward Pinellas Active Transportation Plan, including the provision of separated bikeways. Example local ordinance: City of Cambridge MA Cycling Safety Ordinance (Chapter 12.22). • Evaluate corridors with excess capacity for potential lane reconfiguration to provide appropriate bicycle facilities. • Plan and design sidewalk and pathways, including separated bikeways, adjacent to roadways to minimize conflicts between turning motor vehicles and sidewalk/path users. Strategies include minimizing bicycle and pedestrian crossing distances and exposure to conflicts, reducing motor vehicle speed at conflict points, communicating right-of-way priority, and providing adequate sight distance. • Local municipalities should consider reducing posted speed limits on all streets that are designated as bicycle boulevards or bicycle routes to no more than 25 mph. • Consider omitting centerline striping (no double yellow centerline marking) on corridors serving as bicycle boulevards. An unstriped condition encourages flexibility in the behavior of drivers and cyclists, as drivers tend to be less inclined to give a safe passing clearance to people riding bikes if doing so involves crossing a striped centerline. • Use traffic calming tools and other available tools and methods to create and maintain sufficiently low automotive volumes and speeds on bicycle boulevards to ensure a comfortable cycling environment on the street. Speed cushions are particularly advantageous as they provide cutouts for bike traffic to pass through and can be configured so spaces match axel widths of emergency vehicles. • When reconstructing roadways within the recommended bicycle and/or pedestrian network, review existing driveway configurations (width, placement, frequency) as a standard part of the design process to identify and eliminate unnecessary conflict points with bicycle and pedestrian infrastructure. • Create conditions that make bicycling more attractive than driving for trips of 3 miles or less. Form a countywide network of connected bikeways on facilities that provide low-stress environments for bicyclists, including trails, separated bikeways, and streets with low traffic speeds and low traffic volumes.

TOPIC	POLICY
BICYCLE PARKING & END-OF-TRIP FACILITIES	• Local municipalities should develop a bicycle parking ordinance that increases bicycle parking facilities at destinations such as transit stations, parks, schools, and activity centers. • Address both short term bicycle parking (outside racks at short term destinations) and long term bicycle parking (secure rooms, cages, or lockers for extended bicycle storage such as at schools, employment centers, or apartments). • Include quantities of bicycle parking based upon ratios related to square footage of land use, number of vehicular parking spaces, or specific units (such as bedroom, residential units, or employees). • Include incentives for developers to replace some of the vehicular parking spaces with bicycle parking facilities. • Create a specific program addressing bicycle parking within licensed parking lots and commercial buildings. In New York City, the Bikes in Building Law, provides a framework for tenants of commercial office buildings with freight elevators to request bicycle access to workspaces. Three indoor bike parking lots are provided free for all city employees. • Require special events permits to include provisions for bicycle parking. • Provide design standards, such as size of parking space, width of aisles, vertical and horizontal clearances, parking location, and style of racks. It is recommended that the preferred rack type be the "inverted U", and that any other type of rack considered for use support the bicycle frame at two points above the wheel hubs. • The installation surface should be a sturdy concrete pad which can accommodate in-ground mounting or freestanding bike racks such as inverted U-racks mounted to rails. • Establish a free or subsidized bike rack program to allow racks to be placed in public rights-of-way or within an easement at businesses that request bike parking. • Revise land use/development codes to require bicycle parking minimums possibly as a ratio to vehicle parking to ensure that bike parking facilities are included in new development or redevelopment projects as well as streetscape elements in public rights of way for roadway corridor projects. • Encourage the provision of showers and changing facilities for commuting cyclists, including the development of such facilities in commercial buildings and at central locations. • Encourage large employers to provide bicycle parking facilities and changing rooms. • Good locations for bicycle parking are high demand bus stop and station areas. These locations can be identified through consultations with local bicycle groups and transit rider surveys and will include all bus rapid transit stops.
BIKE SHARE	• Work with regional stakeholders to expand bike share throughout the county, including dockless bikes. • Acquire a fleet of shared bikes for use by municipal employees during the workday; facilitate possibly through tax/street user fee incentives and or collective purchasing. Encourage other large employers to do the same.

TOPIC	POLICY
SIDEWALKS & WALKWAYS	• In sparsely populated areas, the shoulders of rural roads usually accommodate pedestrians. There are, however, roadways outside urban areas where the urban character creates a need for sidewalks. Where sidewalks are not provided, shoulders should be wide enough to accommodate both pedestrians and bicyclists. • Sidewalks must be provided on both sides of all arterial and collector streets, unless there are physical limitations and land use characteristics that render a sidewalk unsuitable on one side. • Sidewalks should be provided on both sides of the street on minor collectors and local streets. There is a point below which sidewalks on both sides of a local street may not be critical: e.g., on short dead-end streets with few potential residences and with no access to other facilities.
CROSSINGS & MEDIANS	• At signalized intersections with high volumes of pedestrians and turning vehicles, Leading Pedestrian Intervals (LPI) should be used to give pedestrians a head start to cross the road. • All multi-lane facilities should be designed with a raised or restrictive median except four-lane sections with design speeds of 40 mph or less. Facilities having design speeds of 40 mph or less are to include sections of raised or restrictive median where possible for enhancing vehicular and pedestrian safety, improving traffic efficiency, and attainment of the standards of the Access Management Classification of that highway system. • Raised medians benefit pedestrians on two-way, multi-lane streets, as they allow pedestrians to cross only one direction of traffic at a time: it takes much longer to cross four lanes of traffic than two. Where raised medians are used for access management, they should be constructed so they provide a pedestrian refuge. Where it is not possible to provide a continuous raised median, island refuges can be created between intersections and other accesses. These should be located across from high pedestrian generators such as schools, park entrances, libraries, parking lots, etc. In most instances, the width of the raised median is the width of the center turn-lane, minus the necessary shy distance on each side. Ideally, raised medians should be constructed with a smooth, traversable surface, such as brick pavers. If a median is landscaped, the plants should be low enough so they do not obstruct visibility, and spaced far enough apart to allow passage by pedestrians. • Local municipal codes should ensure pedestrians have the right-of-way on sidewalks, especially in special districts like business districts. In addition, municipal codes should not require that bicycles be operated on sidewalks or be restricted from operating on the sidewalk (exceptions for special locations such as downtown commercial districts are permissible).
LIGHTING	• Lighting should be provided at all marked pedestrian or trail crossings, major transit stops, along street corridors with a history of midblock bicycle and/or pedestrian crashes at a minimum, as well as at other locations where personal security may be an issue. • Lighting should be pedestrian-scale, with fixtures located about 15 feet above the sidewalk or trail and with 0.5 to 2.0 foot candles. • Where lighting is not provided, reflective edge lines should be marked on the pavement.

TOPIC	POLICY
LANDSCAPING	• Urban street designs should provide for streetscape amenities like street furniture, street lighting, trees, and landscaping, which buffer pedestrians from street traffic and parking areas. • To effectively provide drainage and shade support, street trees should be placed no more than 50 feet apart. Trees should be placed in basins with a large opening or capped with pervious material to allow for maximum water absorption.
TRANSIT	• Consider expanding bike accommodations on transit, namely augmenting capacity (potentially with vertical racks inside buses) to facilitate bike boardings and cycling as a means of accessing transit. • Work with PSTA and other local partners to install public bicycle repair tool kiosks at transit stations or stops with high bike boardings or at other visible locations on key cycling routes, such as along the Pinellas Trail; post contact information for cycling clubs and shops on kiosks. • Work with PSTA to install bicycle lockers at intermodal stations throughout the county. • Consider bicycle accommodations in the planning, design, and development of all rapid transit corridors, station areas, and transit hubs. • Work to improve bicycle access on PSTA and partner Van Pool vans. • Bicycles extend access to transit to a larger area. Look for opportunities to enhance the connections between bicycles and buses and provide for bicycle parking as needed at both ends of the trip. • Bicycle lanes should be placed to the left of bus travel lanes where possible, as buses stop and start and bicyclists need to maintain momentum. An alternative is to keep bicycle lanes on the curb side, and ramp up to sidewalk level to have the bike lane go around the back side of transit stops/stations. • Utilizing "bulb-outs" (sidewalk extensions) can be a useful tool at transit stops. Bulb outs increase sidewalk areas and improve efficiency by enabling transit vehicles to stop in travel lanes rather than pulling into bus bays, which can reduce passenger boarding time and eliminate the need to weave in and out of traffic, thereby improving travel time and reducing potential conflicts with automobiles. • Detectable warnings are necessary at intersecting roads connecting to any bus stop under ADA regulations.
MAINTENANCE	• Establish a permanent budget item for bicycle infrastructure maintenance and spot improvements including debris removal, possibly coupled with existing streets and/or stormwater system maintenance programs. • Implement bicycle improvements as a part of all resurfacing and maintenance activities.

TOPIC	POLICY
SIGNAGE & WAYFINDING	• Develop bicycle maps and wayfinding signage that provide designated routes for pedestrians and bicyclists to navigate between significant destinations. Example: The WalkArlington program provides maps for 23 "Walkabouts" through different neighborhoods and to different destinations (visit www.walkarlington.com/pages/walkabouts). • Prioritize implementation of improvements that necessitate paint and wayfinding signage with minimal capital investment including bicycle boulevards, buffered bike lanes, and other low cost rapid implementation opportunities. • Implement and install wayfinding signage on off-road portions of bike mobility network as a means of garnering interest and support for the construction of safer multi-use paths. • Install regulatory signs bearing the message Bikes May Use Full Lane instead of signs bearing the more ambiguous message Share the Road.
ADOPTION OF ATP	• Put forth a resolution and required amendments for consideration by local governments in Pinellas County to formally adopt the MPO's Active Transportation Plan for integration into local plans.
COMPLETE STREETS POLICY	• Local municipalities should develop and adopt a complete streets policy. The policy could be developed by a variety of methods such as by ordinance or resolution, by policy in a Comprehensive Plan or Strategic Plan document, and with implementation requirements by land development code amendments or by department directive. Smart Growth America and the Complete Streets Coalition have developed a detailed Local Policy Development workbook that may be a useful reference in developing a complete streets policy (visit www.smartgrowthamerica.org/documents/cs-local-policy-workbook.pdf).

TOPIC	POLICY
PROJECT & DEVELOPMENT CODES & REVIEW	• Develop and implement a Bicycle and Pedestrian Checklist to be used in the plan review process for both public and private projects. The checklist may be divided into three sections for each stage of the development process: planning, scoping, and design. • Revise land use/development codes to define a mechanism by which developers' contributions in lieu of land dedication may be used to build out the bicycle infrastructure network. • Revise land use/development codes to define vehicle parking maximums rather than minimums. • Discourage new and expanded high-traffic, auto-oriented uses in neighborhood commercial nodes. Direct auto-oriented uses to locations on commercial corridors that are not at the intersection of two designated corridors, where more traditional urban form would be appropriate. • Every community, especially suburban communities with open land that will be developed, should consider enacting subdivision regulations that plan ahead for bicyclists and pedestrians. • New developments should include walkways that create a grid pattern for pedestrians at locations where cul-de-sacs and other nontraditional street designs fail to provide direct routes along a roadway sidewalk. • Ensure that development review processes acknowledge bicycle parking and other bicycle facility needs. • Re-evaluate standard contracting language for roadway construction projects to ensure that required provisions for pedestrians and cyclists in active roadway construction zones is adequate.
EDUCATION	• Work with state and local agency partners and advocacy groups to educate bicyclists, pedestrians, and drivers about bicycle and pedestrian safety and existing laws and regulations. Work with partners to push out messaging regarding safe cycling, safe passing, use of helmets for minors, front and back lights for night riding, and yielding to pedestrians at crosswalks. • Provide pedestrian and bicycle awareness campaigns for motorists, cyclists, and pedestrians through public service announcements, blogs, the City's newsletter, and the bicycle page on the City's website. Example: The City of Edmonton, Ontario provides a web-based series of videos using Lego characters to educate the public on various bicycle laws and safety concerns (visit www.edmonton.ca/transportation/cycling_ walking/cycling-video-gallery.aspx). • Capitalize on cost-effective opportunities for communicating bicycle and pedestrian safety messages including wraps on municipal vehicles, safety information/placards on buses and at transit stops/shelters, PSAs, and elementary school education workshops. • Work with local bike shops to provide safety information to customers and host smart cycling trainings. • Offer frequent courses in on-road riding skills with instructors certified by the League of American Bicyclists or Cycling Savvy. Consider covering the costs for interested residents to take this low-cost course.

TOPIC	POLICY
ENFORCEMENT	• Enforce existing Safe Passing Law. • Implement a traffic ticket diversion program which provides an opportunity for cyclists who have received traffic violations to attend bicycle/pedestrian education classes in lieu of payment of the traffic ticket. • Implement targeted traffic law enforcement campaigns in locations with high rates of pedestrian or bicycle use, or locations identified as high crash locations. Example: The Best Foot Forward program, run by Bike/Walk Central Florida (visit www. iyield4peds. org), targets crosswalk enforcement with highly visible enforcement campaigns at intersections across the City of Orlando. • Emphasize and encourage police officer training related to bicycle and pedestrian transportation. Work with state and local agency partners and advocacy groups to develop new or use existing training materials targeted towards law enforcement personnel. • Enforce codes relating to encroachment including vehicles or vegetation in public rights of way.
ENCOURAGEMENT	• Work with local employers to develop incentive programs that encourage bicycle and pedestrian commuting by employees. • Work with businesses to implement/encourage a bicycle friendly accreditation program and encourage businesses to submit applications to become Bicycle Friendly Businesses. • Implement a municipal tax credit program possibly using a street user fee credit or waiver for businesses that make investments in community bicycle infrastructure. • Encourage local businesses and organizations to register for the National Bike Challenge as a means of promoting cycling through friendly competition. • Provide information and incentives to all city or county employees about bicycling for transportation/recreation and encourage other businesses and corporations to do so as well. • Host "open streets" events (with an ultimate goal of once per month) that temporarily close a route of surface streets to automobile traffic so that bicyclists and pedestrians can use the streets without vehicular conflicts. • Host "Bike and Walk to Work" and "Bike and Walk to School" days. These events are typically sponsored by municipalities or schools but coordinated by bicycle advocacy groups. • Refine the process whereby neighborhoods and or businesses can establish local improvement districts to request and fund pedestrian and bicycle improvements as part of an effort to improve their local street environment. • Establish a Bicycling Buddy program encouraging current cyclists to partner with new riders. • Promote walking among youth to other activities in addition to school, possibly through a Bike Walk Ambassador Program.

TOPIC	POLICY
ENCOURAGEMENT (CONT)	• Implement an incentive program for bike commuters using certificate of credit to local bike shops, ability to earn points for rewards, safety gear, or the provision of bikes available for employee use. • Implement a Safe Route to Schools program for all elementary and middle schools that includes bicycle and pedestrian education. Safe Routes to Schools projects are eligible for federal funding through the Transportations Alternatives Program under the federal transportation legislation. This effort would require a partnership with the Pinellas County school system. Work with school districts to develop programs that address safe routes to school including in-class safe riding education for students and practical on-bike exercises. Work with schools to design/designate a school crossing guard program at strategic locations.
EVALUATION & PLANNING	• Continue to conduct research on bicycle and pedestrian use within the county through surveys and physical counting. Example: Boston Bikes tracks key bicycle usage through an annual bicycle count and annual bicycle survey (visit www.cityofboston.gov/bikes/statistics.asp • Track bicycle and pedestrian crashes annually and provide a summary of crash statistics, including fatalities, injuries, hot spot locations, and prominent crash types. Provide accounting of successful measures in reducing crashes at locations previously identified as bicycle and/or pedestrian hot spots.
EQUITY	• Prioritize bicycle and pedestrian investments and maintenance in identified areas of low bicycle and/or pedestrian service, and in particular those areas that overlap with areas with high composite equity scores, e.g., areas having multiple socioeconomic indicators of bicycling and/or walking demand above countywide average values. • Encourage and partner with non-profit groups to provide bikes to low income and minority residents.

ACTIVE TRANSPORTATION PLAN

Technical Memorandum III:
Bicycle & Pedestrian Safety Analysis

January 2020

FORWARD PINELLAS

Advantage PINELLAS

ENGAGE. ADAPT. CONNECT.

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CONTENTS

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01 Introduction

A critical component to the Forward Pinellas Active Transportation Plan is to address existing safety concerns, as shown in the Plan's Vision Statement, as follows:

> *"Pinellas County will have a **safe, connected,** and comfortable active transportation network, which is **community fostered** and **in harmony with all travel modes,** and that advances an **efficient, productive,** and **healthy** mobility system for all users."*

A pedestrian and bicycle safety analysis completed as part of the Plan identified the most common pedestrian and bicycle crash types and locations of highest concentration within Pinellas County. Specific countermeasures were identified to help mitigate these particular crash types and improve the safety of the County's transportation network. Pedestrian and bicycle crash data was obtained from Pinellas County's Crash Data Management System (CDMS) for years 2013 to 2017. There were a total of 2,421 pedestrian crashes and 3,252 bicycle crashes countywide during this five-year period, including 187 fatal pedestrian crashes and 29 fatal bicycle crashes. The number and severity of pedestrian and bicycle crashes by year is shown in **Figure 1** and **Figure 2,** respectively.

Figure 1. Pedestrian Crashes by Year (2013 - 2017)

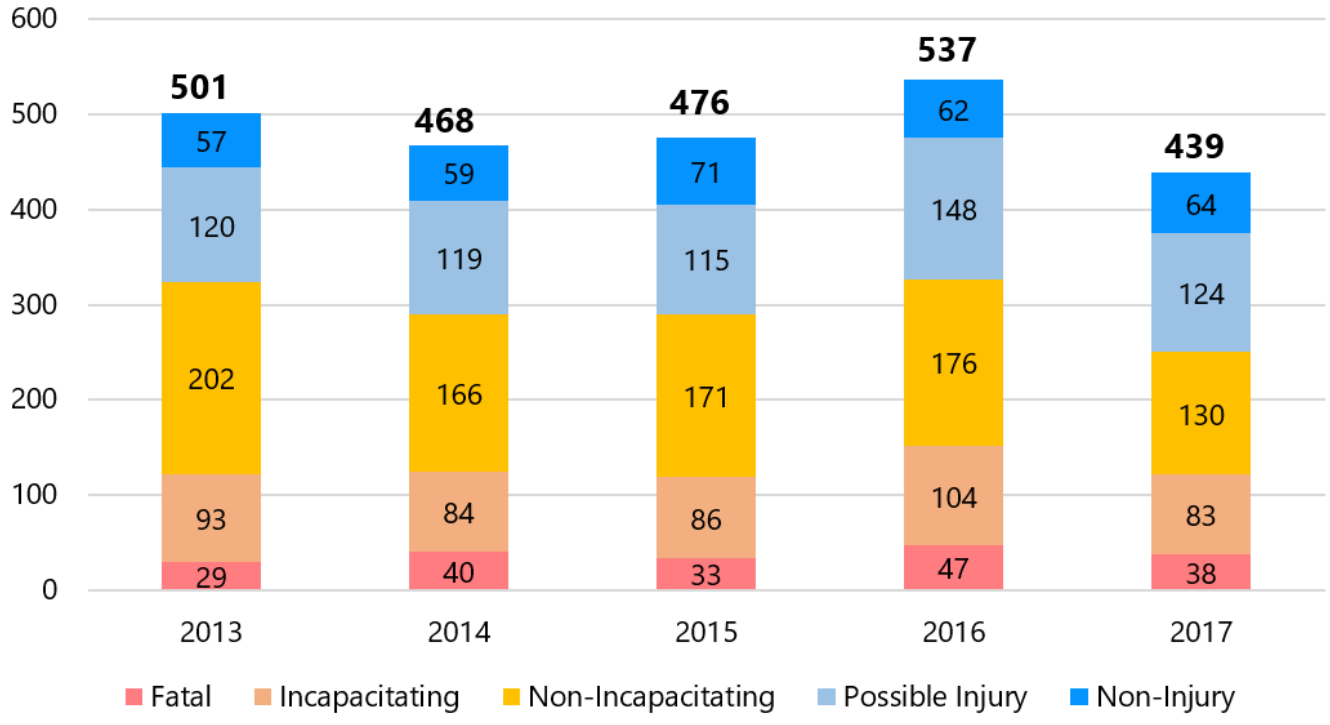
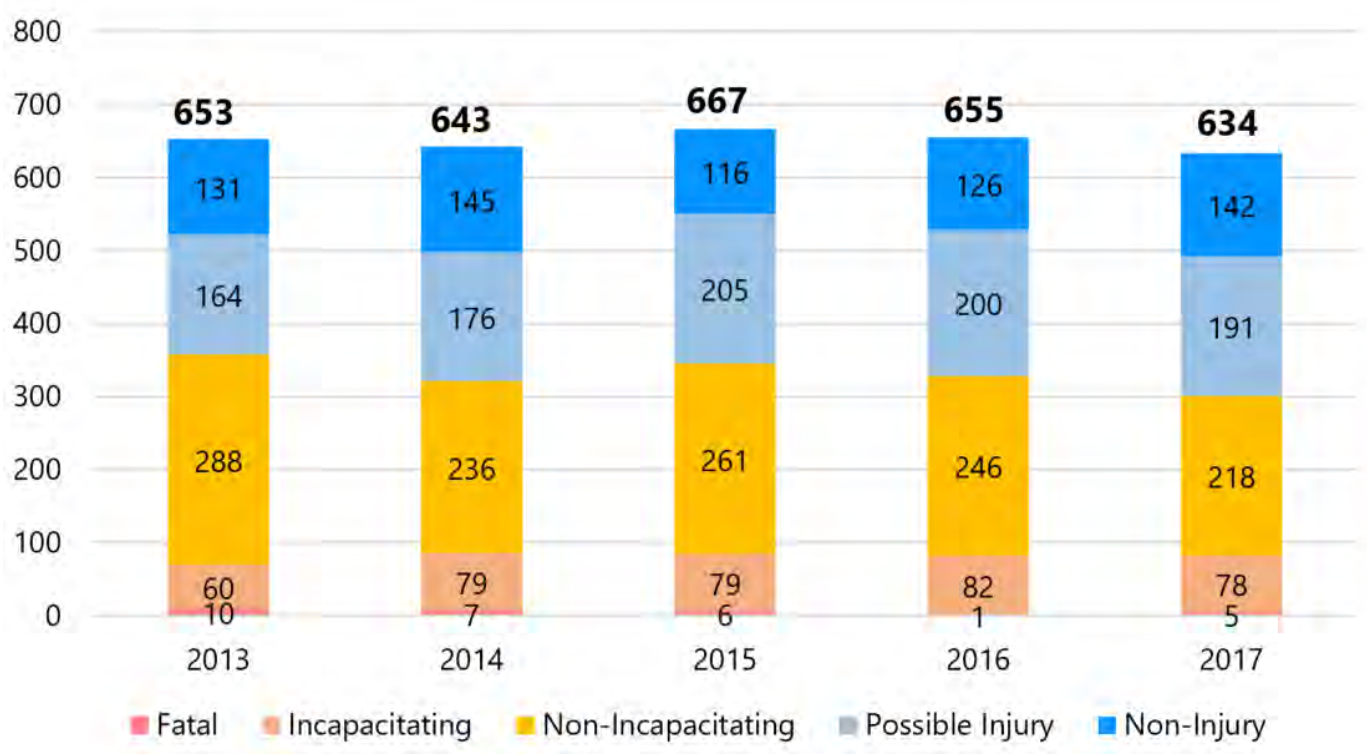


Figure 2. Bicycle Crashes by Year (2013 - 2017)



As shown in **Figure 1**, outside of an increased number of pedestrian crashes in 2016, the total number of pedestrian crashes followed a relative steady to slightly decreasing trend. Similarly, **Figure 2** shows a consistent level of total bicycle crashes, but gradual decreasing trend between 2015 and 2017.

Bicycle fatalities have also generally been decreasing gradually over the five-year analysis period. Despite these recent gradual downward trends, the total number of pedestrian and bicycle crashes, as well as fatalities and serious injuries, are relatively consistent during this five-year period compared to a previous 2007-2010 analysis, as shown in **Figure 3** through **Figure 6**. That analysis was part of the previous Bicycle and Pedestrian Master Plan (Pinellas County Bicycle and Pedestrian Master Plan Update, Crash Data Report Technical Memorandum, November 2012).

The report documented an average of 327 pedestrian crashes per year including 103 fatal or serious injury crashes, compared to an average of 484 pedestrian crashes per year including 127 fatal or serious injury crashes during the 2013-2017 period. Similarly, the previous 2007-2010 analysis documented an average of 456 total bicycle crashes per year including 65 fatal and serious injury crashes, compared to an average of 650 total bicycle crashes per year including 81 fatal and serious injury crashes during the 2013-2017 period. The overall increases in these numbers show that more efforts are needed to make the County street network safer for its most vulnerable users.

Figure 3. Total Number of Pedestrian Involved Crashes by Year (2007 - 2010)

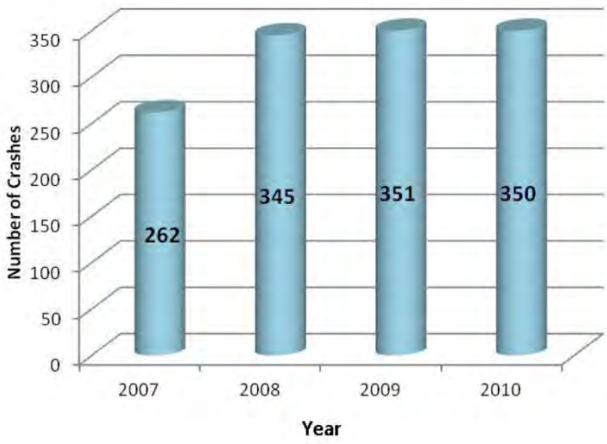


Figure 4. Total Fatal and Incapacitating Crashes Involving a Pedestrian (2007 - 2010)

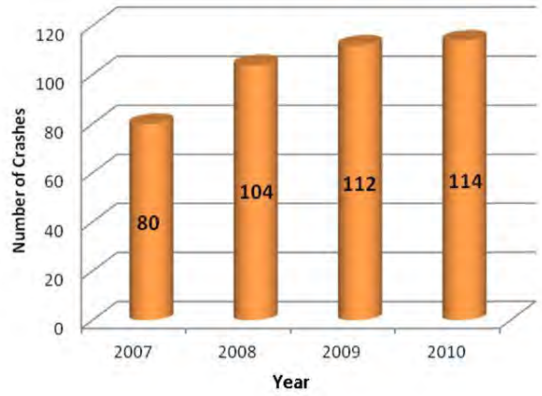


Figure 5. Total Number of Crashes Involving a Bicycle (2007 - 2010)

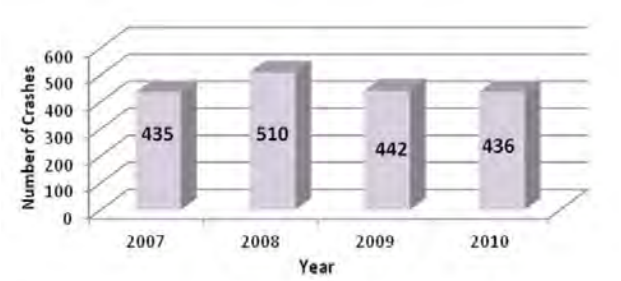
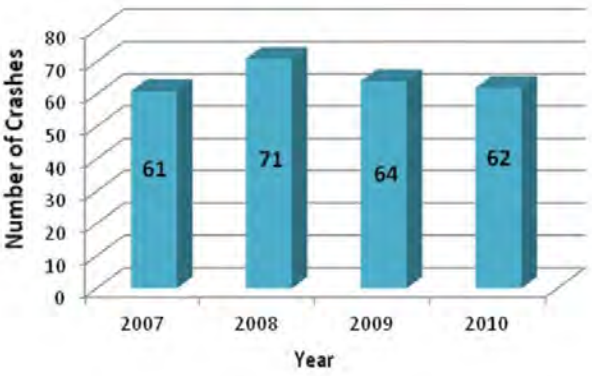


Figure 6. Total Fatal and Incapacitating Crashes Involving a Bicycle (2007 - 2010)



02 Pedestrian and Bicycle Crash Types and Countermeasures

The Federal Highway Administration (FHWA) has developed the Pedestrian & Bicycle Crash Analysis Tool (PBCAT) to help communities identify effective countermeasures to prevent pedestrian and bicyclist crashes. This tool relies on pedestrian and bicycle crash typing to improve walking and bicycling safety by analyzing the details associated with crashes between motor vehicles and pedestrians or bicyclists. The specific crash type is based on information such as the location, traffic control, and initial approach and position of the pedestrian or bicyclist with respect to the roadway prior to the crash. This is typically determined based on the crash report narrative and diagram. PBCAT recognizes 56 pedestrian crash types categorized into 16 groups, and 79 bicycle crash types categorized into 21 groups. Each specific crash type is associated with potential countermeasures that can help to mitigate that specific type of crash. Countermeasures and representative case studies are available via the PEDSAFE and BIKESAFE applications and websites developed by FHWA. The benefit of crash typing is that recommended safety improvements can be based on a thorough understanding of where, how and why crashes happened and the specific treatments that can be implemented to address them.

The County's CDMS does not include pedestrian and bicycle crash typology data. Therefore, additional crash data was obtained from Signal Four Analytics hosted by the GeoPlan Center at the University of Florida and matched to records in the CDMS database. The crash typology data from Signal Four was appended to CDMS crash records based on a common HSMV record number. Approximately 68 percent of the CDMS records were represented in the Signal Four data. Unfortunately, crash type data was only available in Signal Four for years 2013-2015. As such, the crash type data represents a sample of the total records in the 2013-2017 crash analysis database – 839 pedestrian crashes had crash typology data (34.7%) and 1,223 bicycle crashes had crash typology data (37.6%). With more than one-third of all crashes represented by crash typology data, this is a reasonable sample to ascertain the most common types of pedestrian and bicycle crashes.

The five most common pedestrian and bicycle crash types from the available samples are summarized in **Table 1** and **Table 2**, respectively. Each specific crash type also lists several potential countermeasures that could help mitigate that crash type.

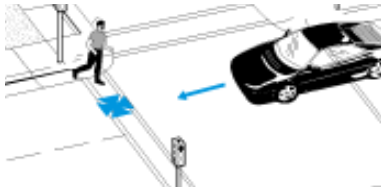
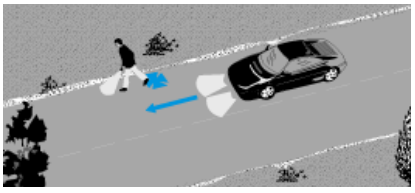
The top five most common pedestrian crash types account for more than 60 percent of all pedestrian crashes in Pinellas County. The top two crash types, representing nearly 35 percent of all pedestrian crashes, were crashes with the pedestrian crossing the road, the vehicle not turning, and either the pedestrian or the motorist failing to yield.

The top six most common bicycle crash types (two crash types tied for fifth most crashes) account for almost half of all bicycle crashes in Pinellas County. Further, five out of the top six most common bicycle crash types were the fault of the motorist, including four different variations of motorist failure to yield / drive-out crash types. As shown in **Figure 7**, in 86 percent of the crashes for these four types of motorist failed to yield / drive-out crash types, the bicyclist location was on a sidewalk, crosswalk, or driveway crossing. Further, **Figure 8** shows that in 78 percent of the total crashes of those types, the bicyclist was riding facing traffic. This confirms that the majority of

the most common crash types are largely the result of drivers pulling out in front of bicyclists riding on the sidewalk, crosswalk, or driveway in the opposite direction of traffic. Often drivers, particularly those turning right from a driveway or cross street, do not look to their right before pulling out of the driveway or cross street and may miss seeing a bicyclist coming from their right.

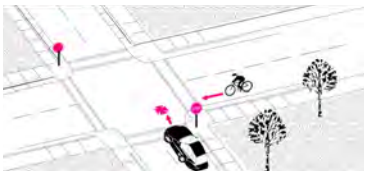
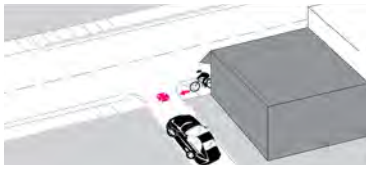
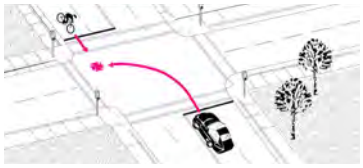
Table 3 summarizes the potential countermeasures associated with the top five most common pedestrian crash types in Pinellas County and their benefits. Similarly, **Table 3** summarizes the potential countermeasures associated with the top six most common bicycle crash types in Pinellas County and their benefits.

Table 1. Five Most Common Pedestrian Crash Types in Pinellas County

	CRASH TYPE	NO. & % OF CRASHES		ILLUSTRATION	COUNTERMEASURES
1	Pedestrian Failed to Yield	152	18.1%		• Crossing Enhancements • Crossing Islands • Traffic or Pedestrian Signal
2	Motorist Failed to Yield	137	16.3%		• Raised Pedestrian Crossing • Lighting Improvements • Speed Humps
3	Dash	106	12.6%		• Crossing Enhancements • Crossing Islands • Lighting Improvements • Traffic or Pedestrian Signal
4	Motorist Left Turn – Parallel Paths	76	9.1%		• Crosswalk Enhancement • Raised Crossing • Lighting Improvements
5	Walking Along Roadway With Traffic–From Behind	42	5.0%		• Sidewalk • Shoulder • Lighting Improvements • Sign Improvements
	TOTAL	513	61.1%		

Source: Signal Four Analytics

Table 2. Five Most Common Pedestrian Crash Types in Pinellas County

	CRASH TYPE	NO. & % OF CRASHES		ILLUSTRATION	COUNTERMEASURES
1	Motorist Drive-out – Sign-Controlled Intersection	189	15.5%		• Curb Radii Revisions • Sight Distance Improvements • Path / Intersection Improvements • Visual Narrowing • Sign Improvements
2	Motorist Drive-out – Commercial Driveway / Alley	131	10.7%		• Driveway Improvements • Sight Distance Improvements • Path / Intersection Improvements • Sign Improvements
3	Bicyclist Ride Through – Signalized Intersection	68	5.6%		• Lighting Improvements • Intersection Markings • Roundabout • Bicycle Signal Heads • Bike-Activated Signal
4	Motorist Drive-out – Right Turn on Red	65	5.3%		• Turning Restrictions • Curb Radii Revisions • Sight Distance Improvements • Roundabout
5	Motorist Drive-out – Other Midblock	61	5.0%		• Driveway Improvements • Sight Distance Improvements • Path / Intersection Improvements • Sign Improvements
	Motorist Left Turn – Opposite Direction	61	5.0%		• Cycle Track • Intersection Markings • Median/ Crossing Island • Turning Restrictions • Roundabout
	TOTAL	575	47.1%		

Source: Signal Four Analytics

Figure 7. Bicycle Location in Motorist Failed to Yield / Drive-Out Crashes (4 of top 6 crash types)

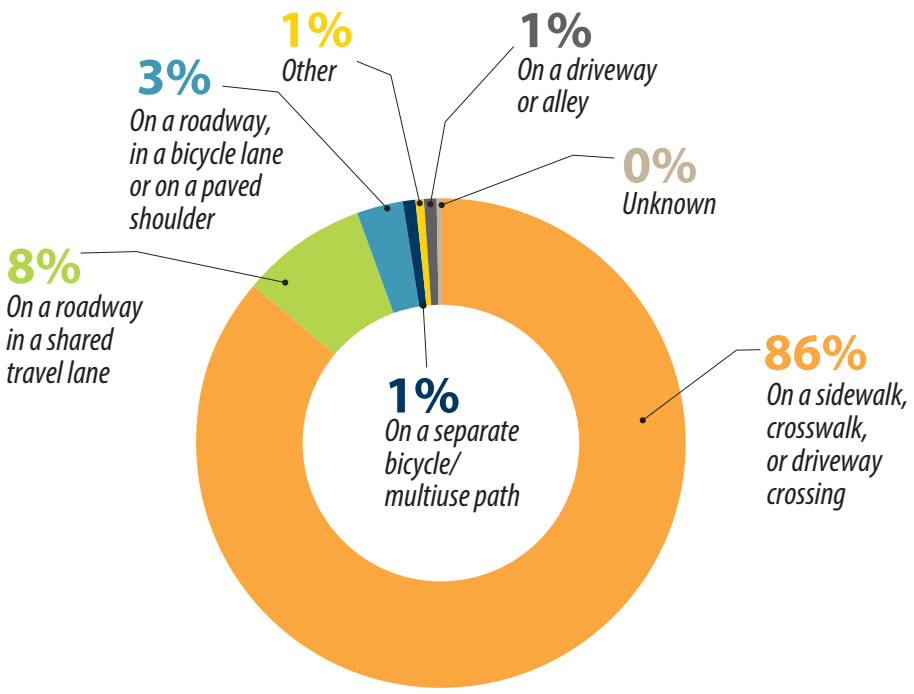


Figure 8. Bicycle Direction in Motorist Failed to Yield / Drive-Out Crashes (4 of top 6 crash types)

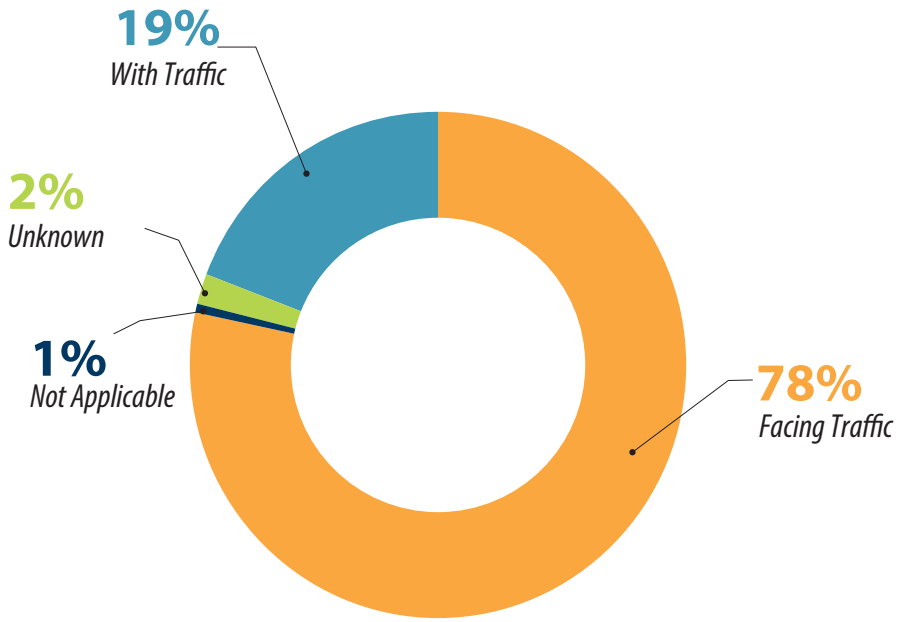


Table 3. Countermeasures and Examples Associated with the Five Most Common Pedestrian Crash Types

DESCRIPTION	PURPOSE	EXAMPLES/ RECOMMENDATIONS	APPLICABLE CRASH TYPE	IMAGES
CROSSING ENHANCEMENTS				
Crossing enhancements improve pedestrian safety and help with the control of roadway facilities.	Provides warning to drivers when pedestrians use crosswalk; assists pedestrians in crossing a street / highway at a marked crosswalk; improve safety and comfort for pedestrians; reduces exposure for pedestrians while also reducing vehicle speed; improves sight distance; encourages pedestrians to cross at designated locations; reduces complexity of an intersection	1. Rectangular Rapid Flashing Beacon (RRFB) 2. Pedestrian Hybrid Beacon (PHB) 3. Lane Reduction (Road Diet) 4. Curb Extensions 5. Curb Radius Reduction 6. Improved Right-Turn Slip-Lane Design 7. Advanced Stop Lines at Traffic Signals 8. Parking Restrictions (at Crossing Locations) 9. On-Street Parking Enhancements	• Pedestrian Failed to Yield • Dash	 *Rectangular Rapid Flashing Beacon (RRFB) Source: Carol Kachadoorian (2012)*
CROSSING ISLANDS				
Medians with a refuge area that helps protect pedestrians who are in the presence of multilane roadways with vehicles going at high rates of speed.	Crossing islands enhance the safety of pedestrians who are crossing multilane roads; reduces vehicle speeds approaching the island by making roadways and intersections more compact; increases awareness and motor vehicle attentiveness to pedestrian crossing locations; allows pedestrians to focus on one road or direction of traffic at a time	1. Midblock crossing with high-visibility markings 2. Desirable to include crossing islands where: 3. Speed Limits > 35 MPH 4. Average Annual Daily Traffic (AADT) is 9,000 or higher 5. Uncontrolled pedestrian crossings on 3-lane or 2-lane roads with high vehicle speeds or volumes	• Pedestrian Failed to Yield • Dash	 *Crossing Islands Source: Designing for Pedestrian Safety*

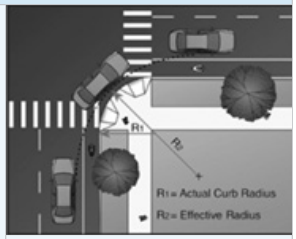
DESCRIPTION	PURPOSE	EXAMPLES/ RECOMMENDATIONS	APPLICABLE CRASH TYPE	IMAGES
TRAFFIC OR PEDESTRIAN SIGNAL				
Signals should provide adequate time for pedestrians to cross the street, reducing the delay experienced with no traffic control. The Manual on Uniform Traffic Control Devices (MUTCD) governs the installation of traffic signals based on the number of pedestrians and vehicles crossing a particular intersection. It is important to consider installation of automatic pedestrian phases where traffic is regular and frequent.	Create gaps in the traffic flow providing sufficient time for pedestrians to cross; provides guidance to pedestrians crossing the street	**1.** Clearance intervals based on maximum walking speed of 3.5 feet/second **2.** WALK and DON'T WALK messages **3.** Push button **4.** Leading Pedestrian Interval (LPI) **5.** Exclusive pedestrian phase **6.** Protected pedestrian phase with push-button actuation	• Pedestrian Failed to Yield • Dash	 *A Pedestrian Signal with a Countdown Timer Module* *Source: Designing for Pedestrian Safety*
RAISED PEDESTRIAN CROSSING				
Crossing technique to distinguish the crosswalk from the roadway or intersection. Raised crosswalks or intersections should be demarcated with paint and / or special paving materials. Because the crosswalk is raised to the sidewalk level, curb ramps are eliminated. Reported that this particular countermeasure can reduce pedestrian crashes by 45% and increase the compliance of vehicles yielding to crossing pedestrians.	Increases pedestrian safety because high speed arterial and collector roadways pose a challenge to cross; improves motorists awareness to yield; reduces vehicle speeds; reduces need for curb ramps	**1.** Paint and / or special paving materials **2.** Curb ramps eliminated due to pedestrians crossing at same level as sidewalk **3.** At least 10 feet wide **4.** Typically installed on 2-lane or 3-lane roads with speed limits less than 30 MPH and AADT below 9,000 **5.** Can be used on minor cross streets and at major driveways to emphasize the pedestrian movements and slow vehicle speeds	• Motorist Failed to Yield	 *Raised Pedestrian Crossing in Alexandria, Virginia* *Source: Federal Highway Administration*

DESCRIPTION	PURPOSE	EXAMPLES/ RECOMMENDATIONS	APPLICABLE CRASH TYPE	IMAGES
LIGHTING AND ILLUMINATION				
It is vital to provide adequate lighting with appropriate quality for pedestrians to enhance an environment of comfort and safety. Because a single luminaire directly over a crosswalk does not adequately illuminate the pedestrian for an approaching motorist, it is necessary to provide lighting in advance of the crossing in each direction. Virginia Tech Transportation Institute found in a study they conducted that 20 lux was necessary for motorists to detect a pedestrian on a crosswalk; this luminaire should be 10 feet from the crosswalk and the approaching vehicle. It is also important to consider lighting that reduces glare to motorists.	By focusing on the pedestrian instead of the roadway, visibility is increased for motorists who may not see pedestrians; adequate lighting enhances the safety of all roadway users	1. Corridor-level street lighting 2. Enhanced lighting at marked crosswalks (intersections or midblock locations) 3. Specialty pedestrian-level lighting 4. Building lights	• Motorist Failed to Yield • Dash • Walking Along Roadway With Traffic-From Behind	 *Roadway Lighting Source: Pedbikeimages.org – Annie Lux*
SPEED HUMPS				
Traffic control measure to regulate speed. Speed humps have speed reduction impacts on motor vehicles through vertical deflection, thereby enhancing the pedestrian environment at pedestrian crossings.	Through speed reduction motor vehicles will drive slower, increasing the safety of pedestrians walking along and adjacent to the roadway	1. Speed cushions, designed with two 1-ft slots – better accommodates bicycles and emergency vehicles 2. Use of color can improve aesthetics 3. 12-foot hump (15 to 20 MPH) 4. 14-foot hump (20 to 25 MPH) 5. 22-foot table (25 to 30 MPH) 6. Consider longer humps for larger vehicles	• Motorist Failed to Yield	 *A Speed Hump Source: Gina Coffman (2012)*

DESCRIPTION	PURPOSE	EXAMPLES/ RECOMMENDATIONS	APPLICABLE CRASH TYPE	IMAGES
SIDEWALKS, WALKWAYS, AND PAVED SHOULDERS				
Also considered "pedestrian lanes," sidewalks, walkways, and paved shoulders provide travel space for people to travel within the public right-of-way that separates motor vehicles from pedestrians. Sidewalks and these separated walkways reduce pedestrian collisions with motor vehicles, as inclusion of these walkways prevent pedestrians from walking along the roadway. Sidewalks are typically less expensive and made of concrete, versus walkways constructed of asphalt, crushed stone, or other maintained and accessible material. The Federal Highway Administration (FHWA) and the Institute of Transportation Engineers (ITE) recommend 5-foot minimum width for sidewalks and at least 6-foot width for paved shoulders. In addition, a buffer zone of 4 to 6 feet is desirable to separate pedestrians from the street. However, these buffer zones will vary according to street type. Visual mobility restrictions that would otherwise be present without the inclusion of a sidewalk, walkway, or paved shoulder is reduced.	Improves safety as pedestrians typically walk along the roadway where sidewalks or walkways are unavailable	1. Buffer zone of 4 to 6 feet 2. Minimum width of 5 feet (sidewalk / walkway) 3. Preferred width of 6 feet (paved shoulders)	• Walking Along Roadway With Traffic-From Behind	 *Paved Sidewalk/ Shoulder* *Source: Pedestrian Safety Guide and Countermeasure Selection System*
SIGN IMPROVEMENTS				
Regulatory signs provide information that can be useful to motor vehicles approaching crossing locations, and warn pedestrians of unexpected driver maneuvers. Advance pedestrian warning signs alert drivers, promoting speed reduction and as a result, road safety is improved. It is important to not overuse signs, as too many signs can create visual clutter.	Provide information to motorists and can improve road safety; informs people in advance of what to expect, allowing for sufficient time to reduce speed appropriately	1. STOP 2. YIELD 3. NO TURN ON RED 4. Pedestrian Warning Sign (AHEAD)	• Walking Along Roadway With Traffic-From Behind	 *Advance Pedestrian Warning Sign Prior to Crosswalk* *Source: Toole Design Group*

Table 4. Countermeasures and Examples Associated with the Six Most Common Bicycle Crash Types

DESCRIPTION	PURPOSE	EXAMPLES/ RECOMMENDATIONS	APPLICABLE CRASH TYPE	IMAGES
DRIVEWAY IMPROVEMENTS				
Every driveway and street connection is a conflict point among bicyclists, pedestrians, and motorists. Managing important aspects of both side streets and driveways (i.e., spacing, access, directional flow) protects users traveling along corridor. Through management of the number, spacing, access, and directional flow of driveway and side street connections, those traveling along the corridor are protected from conflict with those entering or leaving the corridor.	Reduces the number of conflict points among bicyclists and motorists; slows speed of motorists entering /exiting roadway; reduces bicycle fall or turning error	1. Smaller driveway radii of 15 to 20 feet 2. Closing (consolidating) driveways 3. Converting driveways to right-in-right-out 4. Implementation of stop bars, signs, and other measures	• Motorist Drive-out – Commercial Driveway / Alley • Motorist Drive-out – Other Midblock	 *Adding medians and consolidating driveways to manage access. Source: Model Design Manual for Living Streets*
PATH INTERSECTION IMPROVEMENTS				
Careful planning and construction is required to maximize safety at intersections where crossings must occur. Since motorists are not expecting bicyclists from both directions, they may not look for them. Safe and convenient crossings must be present to prevent impacts to bicyclists due to hazards at intersections and driveways.	Maximizes safety of path users; guides path users to safety; minimizes crossing delays for path users, improves sight while reducing the crossing distance; alerts drivers and improves motorist expectations for bicyclists	1. Stop-Controlled Approach 2. Path Transitions 3. Pavement Markings 4. Warning/ Regulatory Signs	• Motorist Drive-out – Commercial Driveway / Alley • Motorist Drive-out – Sign-Controlled Intersection • Motorist Drive-out – Other Midblock	 *The two-way separated facility illustrates minimizing exposure to conflicts by managing access with a right-in, right out configuration and keeping the crossings short. This crossing also uses small corner radii to keep speeds slow at the conflict points, and signage and markings to communicate right-of-way priority. Source: HDR*
SIGN IMPROVEMENTS				
Signs let bicyclists and motorists know what to expect. This information can improve road safety as it increases awareness. These signs are typically placed along roads with significant bicycle traffic, or places with relatively hazardous conditions for riding. Wayfinding signs provide information about direction, destinations, and distance to help bicyclists determine best routes.	Keeps space clear for cyclists; provides useful information to inform motorists to be mindful of bicyclists; reduces hazardous conditions in narrow segments of roadway; helps bicyclists navigate roadway and determine best route	1. Two-Way Crossing Signs 2. STOP / YIELD Signs 3. BIKE MAY USE FULL LANE Signs	• Motorist Drive-out – Commercial Driveway / Alley • Motorist Drive-out – Sign-Controlled Intersection • Motorist Drive-out – Right Turn on Red • Motorist Drive-out – Other Midblock	

DESCRIPTION	PURPOSE	EXAMPLES/ RECOMMENDATIONS	APPLICABLE CRASH TYPE	IMAGES
CURB RADII REVISIONS				
Motor vehicles that turn at high rates of speed can pose problems for bicyclists. Through careful design of the curb radii and using the effective radius rather than the actual radius, efficient designs are constructed.	Reduces problems for bicyclists and pedestrians posed by vehicles turning at high speed rates while accommodating design vehicle turn radius; motorist awareness for right-turning bicyclists	1. Effective Radius of Design Vehicle 2. 90-Degree Intersection Corners 3. Tight Curb Radii	• Motorist Drive-out – Sign-Controlled Intersection • Motorist Drive-out – Right Turn on Red • Motorist Drive-out – Other Midblock	 *Illustration of Curb Radii Source: Institute of Transportation Engineers*
SIGHT DISTANCE IMPROVEMENTS				
It is vital that adequate site distance is provided for users to ensure safe bicycling. Adequate sight distance provides bicyclists with vision of the movements of motor vehicles and vice versa. Keeping streets and intersections clear improves the line of sight for all traffic modes.	Allows bicyclists and motorists to see movements of each other; increases awareness and exposure of bicyclists / pedestrians crossing; prevents parking too close to the pathway	1. Remove a Parking Space 2. Curb Extensions 3. Remove Signs / Landscaping 4. Provide Appropriate Signs / Landscaping 5. Realign Skewed Intersections 6. Keep Intersection Clear	• Motorist Drive-out – Commercial Driveway / Alley • Motorist Drive-out – Sign-Controlled Intersection • Motorist Drive-out – Right Turn on Red • Motorist Drive-out – Other Midblock	 *Landscaping causing site distance challenges Source: www.pedbikeimages.org – Libby Thomas*
VISUAL NARROWING				
"Traffic calming" technique which suggests motorists reduce speed due to the visual perception of a narrow, multi-use roadway. These traffic-calming techniques combined with designs creating a visual perception of a narrow roadway improves attentiveness.	Lowers speed of vehicles, enhances functional separation of roadway, increases motorist attentiveness	1. Special / Contrasting Paving 2. Roadway Markings 3. Street Furniture 4. Striping Bike Lanes 5. Street Lighting 6. Landscaping	• Motorist Drive-out – Sign-Controlled Intersection	 *Public Art for Visual Narrowing Source: www.pedbikeimages.org – Andy Hamilton*

DESCRIPTION	PURPOSE	EXAMPLES/ RECOMMENDATIONS	APPLICABLE CRASH TYPE	IMAGES
BICYCLE SIGNAL HEAD				
Intersection signal used as an additional traffic-control device. Considered an additional traffic-control device, bicycle signal heads provide guidance and right-of-way control in specific circumstances. The three-lens signal head is used at locations where signal phases with pedestrians and bicycles are the same. An interim approval by the Federal Highway Administration (FHWA) has issued an optional use of bicycle signal heads with green, yellow, and red. These should be considered at intersections with high bicycle volumes and intersections with bicycle-specific movements.	Provides guidance and right-of-way control; prevents conflicting vehicle movements which interfere with bicyclists / pedestrians; provides long clearance intervals suitable for bicyclists' speeds; improves safety and operations; increased comfort for inexperienced bicyclists	1. Standard Lenses / Bicycle Symbol Lenses	• Bicyclist Ride Through –Signalized Intersection	 *Bicycle Signal Indication with Bicycle Stenciled Lenses* *Source: Flicker - Oregon DOT*
CYCLE TRACK (SEPARATED BIKE LANE OR PROTECTED BIKE LANE)				
Cycle Tracks typically run alongside a roadway and separate the bicyclists from motor vehicles and automobile traffic. Through separation from a physical barrier from motorists, bicyclist comfort increases, which may potentially attract new riders. These bike lanes may be one-way or two-way and raised at the street level. A cycle track is most effective in destinations with high concentrations of destinations on one side of the street.	Reduces collisions between bicyclists and motorists; reduces collisions with parked cars; prevent "doorings"; increases bicyclists' comfort; potential to attract new riders; reduces concentration on roadway	1. Curb Separation 2. Landscaped Buffer Separation 3. Bollards Separation	• Motorist Left Turn – Opposite Direction	 *Two-way Cycle Track* *Source: Graham Pitts*
INTERSECTION MARKINGS				
Most conflicts between bicyclists and motor vehicles occur at intersections / driveways. Pavement markings at intersections improve awareness and visibility of bicyclists at these points of conflict. Intersection marking treatments such as a bike box should be considered in locations with a significant amount of daily bicycle commuters. Dashed lines indicate proper path for bicyclists, and colored pavement indicate the weaving area for bicyclists and motor vehicles when right turning.	Creates a safe space facility for bicyclists separating them from motorists; increases awareness of safe behavior; improves visibility of bicyclists at intersections	1. Dashed Lines 2. Colored Pavement (Green) 3. Bike Box 4. Advanced Stop Bar	• Motorist Left Turn – Opposite Direction • Bicyclist Ride Through –Signalized Intersection	 *Illustration of a Bicycle Lane Treatment at a Right Turn Only Lane* *Source: Manual on Uniform Traffic Control Devices*

DESCRIPTION	PURPOSE	EXAMPLES/ RECOMMENDATIONS	APPLICABLE CRASH TYPE	IMAGES
MEDIAN / CROSSING ISLAND				
Medians and crossing islands provide refuge for bicyclists who intend to cross busy thoroughfare at unsignalized locations. These islands provide sufficient time for bicyclists to focus on one direction of travel at a time. A median helps to manage traffic and reduce the number of conflict areas. Restricting access to side streets help to reduce the cut-through of traffic. A refuge width of 10 feet is desirable in conjunction with center crossing islands where curb extensions may be built. Medians and crossing islands also provide space for street landscaping.	Manages traffic, reduces conflict points, reduces cut-through traffic, provides refuge for bicyclists / pedestrians crossing roadway, may help to reduce traffic speeds	1. Raised Median w/ Non-Conflicting Landscape 2. Diagonal Median Opening 3. Median Pocket Access 4. Midblock Crossing	• Motorist Left Turn – Opposite Direction	 *Diagonal Median Opening to Break Crossing into Two Stages Source: www.pedbikeimages.org – Dan Burden*
TURNING RESTRICTIONS				
Collisions between a bicycle and turning motor vehicle are one of the most frequent crash types. Motorists may fail to recognize a gap between oncoming motor vehicles and as a result fail to acknowledge an approaching bicyclist. The permissible Right Turn on Red (RTOR) introduced in the 1970s promotes fuel efficiency but also increases the risk of crashes between motor vehicles and bicyclists. By prohibiting RTOR where bicycle volumes and conflicts are high with right-turning vehicles, fewer collisions occur. These restrictions used in conjunction with low-speed and low-volume streets help create to bicycling cross-street preferences.	Reduces collisions between motorists and bicyclists; increases bicycle / pedestrian safety	1. NO TURN ON RED Signs 2. Digital blank-out signs that read NO TURN ON RED, and may also read YIELD TO PEDS during concurrent phasing 3. Restrict Turns w/ Diverters and Partial Diverters	• Motorist Drive-out – Right Turn on Red • Motorist Left Turn – Opposite Direction	 *Turning Restriction Sign Source: Manual on Uniform Traffic Control Devices*
ROUNDABOUT				
Circular, raised island at an intersection of two or more streets as an alternative to a signalized intersection. Roundabouts promote lower speeds, and a properly designed roundabout will have operating speeds that will allow bicyclists to navigate comfortably around the roundabout. These lower speeds enhance safety of all road users.	Reduces speed at intersections; reduces conflict areas; eliminates left turns and angle collisions; improves safety	1. Discontinued Bike Lane Approaching Roundabout 2. Yield Lines 3. Consider Pedestrian / Bike Volumes 4. Bicycle Ramp to Sidewalk for Comfort	• Motorist Drive-out – Right Turn on Red • Motorist Left Turn – Opposite Direction • Bicyclist Ride Through –Signalized Intersection	 *Bicycle sharing the Lane through Single Lane Roundabout Source: www.pedbikeimages.org Carl Sundstrom*

DESCRIPTION	PURPOSE	EXAMPLES/ RECOMMENDATIONS	APPLICABLE CRASH TYPE	IMAGES
LIGHTING IMPROVEMENTS				
Illumination of the roadway improves visibility for nighttime bicyclists. Although majorities of accidents occur in the daylight, good illumination prevents the rise of collisions between motor vehicles and bicyclists during the nighttime. Improved lighting may reduce crashes that occur in less than optimal light conditions. Good lighting is also important to ensure the safety and personal security on roadways, bridges, tunnels, and shared-use paths. Illuminating the roadway surface and its surrounding areas optimizes visibility of bicyclists especially in locations with high number of bicyclists are to be expected.	Improves visibility for bicyclists at night; allows bicyclists to see surface conditions; illuminates intersections; illuminates underpasses and tunnels; enhances safety of roadway; improves ambience of areas during nighttime	1. Street Lighting Poles 2. Tunnel Lighting	• Bicyclist Ride Through –Signalized Intersection	 *Lighting Illuminates the Roadway Surface and Roadway Users Source: www.pedbikeimages.org Dan Burden*
BIKE-ACTIVATED SIGNAL				
Bike-activated signal detection helps to facilitate safe, comfortable, and convenient crossings at intersections. Bike-activated signal detections are either active or passive. Passive detection is preferred as it automatically detects the presence of the user, whereas active detection activates the signal phase through pushbutton. Loop detectors are the most common motor vehicle detection technology to service bicyclists.	Deters red light running; reduces unsafe behavior through reduction of delay; detects presence of users to activate signal; improves safety, comfort, and convenience of bicyclists; minimizes delay	1. Bike Symbol Placement 2. Detection Located at Conspicuous Locations 3. Advanced Bicycle Detection	• Bicyclist Ride Through –Signalized Intersection	 *Pavement Marking at Traffic Signal showing Users where to Stop to Activate Source: www.pedbikeimages.org Marie Stake*

03 Pedestrian and Bicycle Crash Location Analysis

Using the CDMS data set for 2013-2017, the top intersections and roadway segments having the highest number of pedestrian and bicycle crashes over the analysis period were determined.

PEDESTRIAN CRASH ANALYSIS

Figure 9 presents the specific intersections and discreet roadway segments having the highest number of pedestrian crashes during the analysis period.

Table 5 summarizes the top pedestrian crash segments and the total number of crashes.

The two roadway segments with the most pedestrian crashes were 18th Avenue South from 22nd Street South to 16th Street South and US 19 / 34th Street North from 30th Avenue North to 38th Avenue North with a total number of 16 crashes. Data of road lighting conditions, and roadway surface conditions were analyzed to differentiate the factors that may have contributed to each crash, as shown in **Figure 10** through **Figure 13**.

The data presented for the segments of 18th Avenue South and US 19 / 34th Street show that road surface conditions were almost exclusively dry. Lighting conditions varied where "daylight" means during daylight or day time conditions; "dark – lighted" means during dark or night time conditions on a street that has some amount of street lighting; and "dark – not lighted" means during dark or night time conditions on a street with no street lighting. Dark-lighted and dark-not lighted road lighting conditions evenly represented the predominant lighting condition on 18th Avenue South, but on US 19 / 34th Street, lighting was half daylight, half dark-lighted. Due to the small

Table 5. Pinellas County Top 10 Pedestrian Crash Roadway Segments

RANK	ROAD	SEGMENT	CRASHES
1	18th Ave S	22nd St S - 16th St S	16
	US 19/34th St N	30th Ave N - 38th Ave N	16
2	Gulf Blvd	Drawbridge - 133rd Ave N	15
	US 19/34th St N	1st Ave N - 5th Ave N	15
3	Park Blvd	66th St N - 58th St N	14
	SR 688/ Ulmerton Rd	US 19 - 58th St N	14
	SR 688 / Ulmerton Rd	49th St N - Roosevelt Blvd	14
4	1st Ave N	3rd St N - 2nd St N	13
	Gulf-to-Bay Blvd	Keene Rd - S Arcturas Dr	13
5	14th Ave S	22nd St S - 16th St S	11
	1st Ave N	28th St N - 22nd St N	11
	22nd Ave S	Dr MLK Jr St S - 4th St S	11
	Alt US 19/ Missouri Ave	Rosery Rd - Jasper St	11
	Alt US 19/ Seminole Blvd	Ulmerton Rd - 16th Ave SE	11
	Gulf Blvd	164th Ave N - Park Blvd	11
	Park Blvd	49th St N - 43rd St	11
	US 19	78th Ave N - 80th Ave N	11

Figure 9. Pedestrian Crash Intensive Segments and Intersections

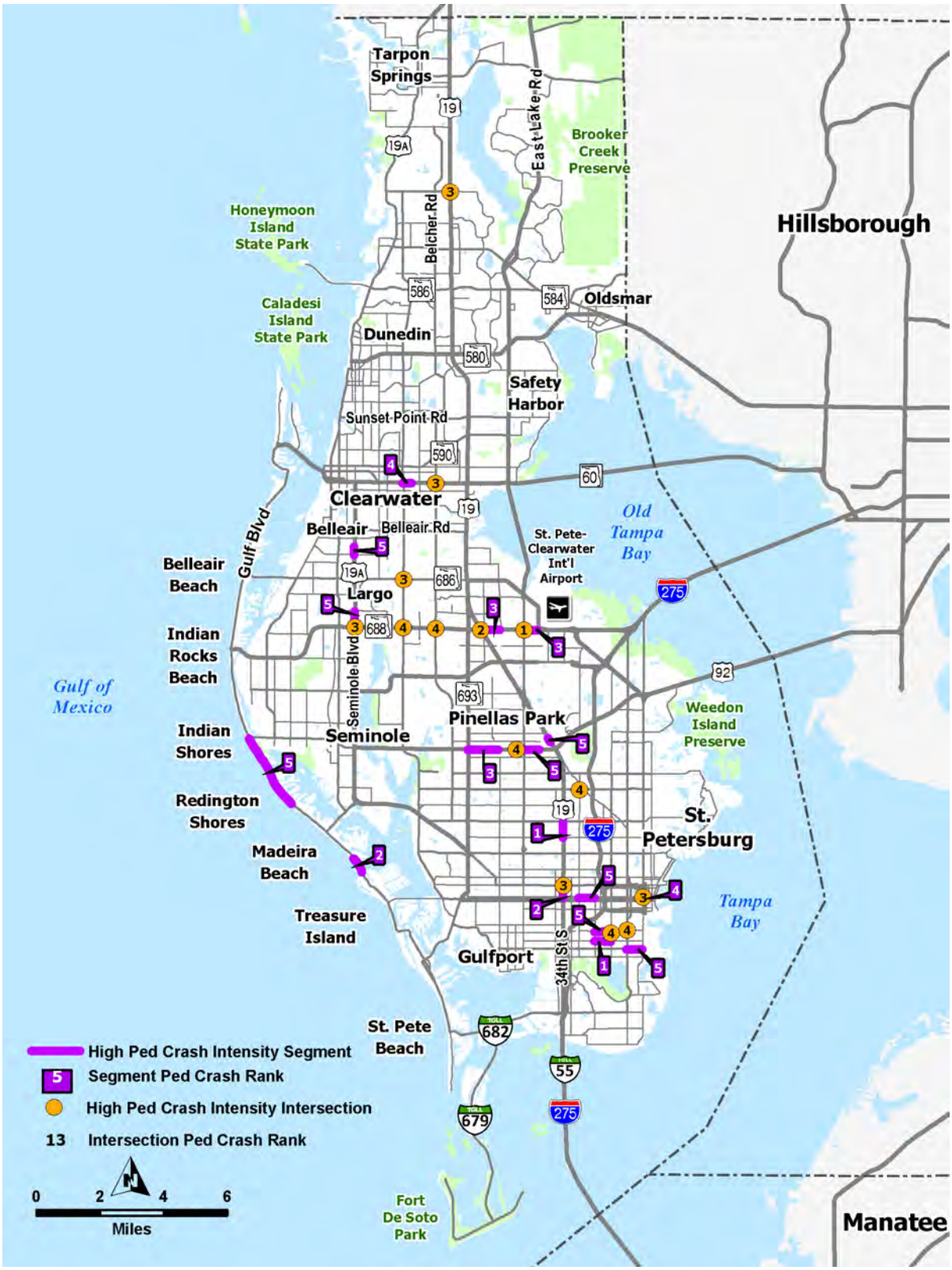


Figure 10. 18th Avenue S. from 22nd Street S. to 16th Street S. Roadway Surface Conditions

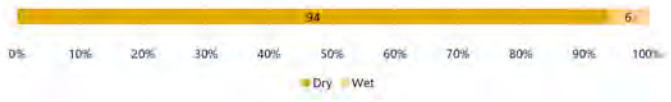


Figure 11. 18th Avenue S. from 22nd Street S. to 16th Street S. Lighting Conditions

Figure 12. US 19 / 34th Street N. from 30th Avenue N. to 38th Avenue N. Roadway Surface Conditions

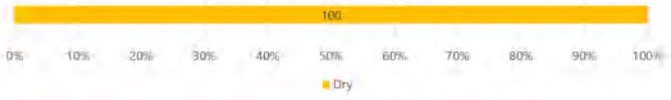
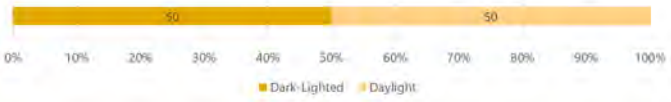


Figure 13. US 19 / 34th Street N. from 30th Avenue N. to 38th Avenue N. Lighting Conditions



sample of pedestrian crash type data available, the specific crash types cannot be determined for these two highest pedestrian crash corridors.

Table 6 summarizes the top pedestrian crash intersections by the total number of crashes. As shown, the intersection with the highest number of pedestrian crashes was State Road (S.R.) 686 at 49th Street North with 13 crashes. Similar to the crash segments, road lighting conditions, and roadway surface conditions were analyzed to differentiate the factors that may have contributed to each crash, as shown in **Figure 14** and **Figure 15**.

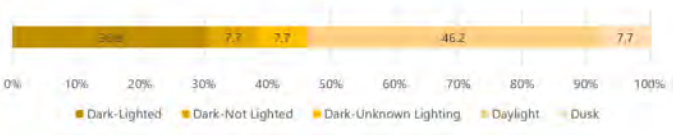
The data presented for the intersection of State Road (S.R.) 686 at 49th Street North show that all crashes happened when road surface conditions were dry. In addition, almost 50 percent of all pedestrian crashes occurred during daylight. Due to the small sample of pedestrian crash type data available, the most common crash types cannot be determined for this highest pedestrian crash intersection.

Table 6. Pinellas County Top 10 Pedestrian Crash Intersections

RANK	INTERSECTIONS	CRASHES
1	SR 686 @ 49th St N	13
2	SR 686 @ US 19	10
3	1st Ave N @ US 92	9
	Alderman Rd @ US 92	9
	Alt US 19 @ Ulmerton Rd	9
	Belcher Ave @ Gulf-to-Bay Blvd	9
	SR 686 @ Starkey Rd	9
	US 19 @ Alt US 19 S	9
4	14th Ave S @ Dr Martin Luther King Jr St S	8
	16th St S @ 15th Ave N	8
	28th St N @ 54th Ave N	8
	52nd St N @ Park Blvd	8
	Belcher Rd @ SR 688	8
	Starkey Rd @ Ulmerton Rd	8

Figure 14. State Road 686 at 49th Street N. Roadway Surface Conditions

Figure 15. State Road 686 at 49th Street N. Road Lighting Conditions



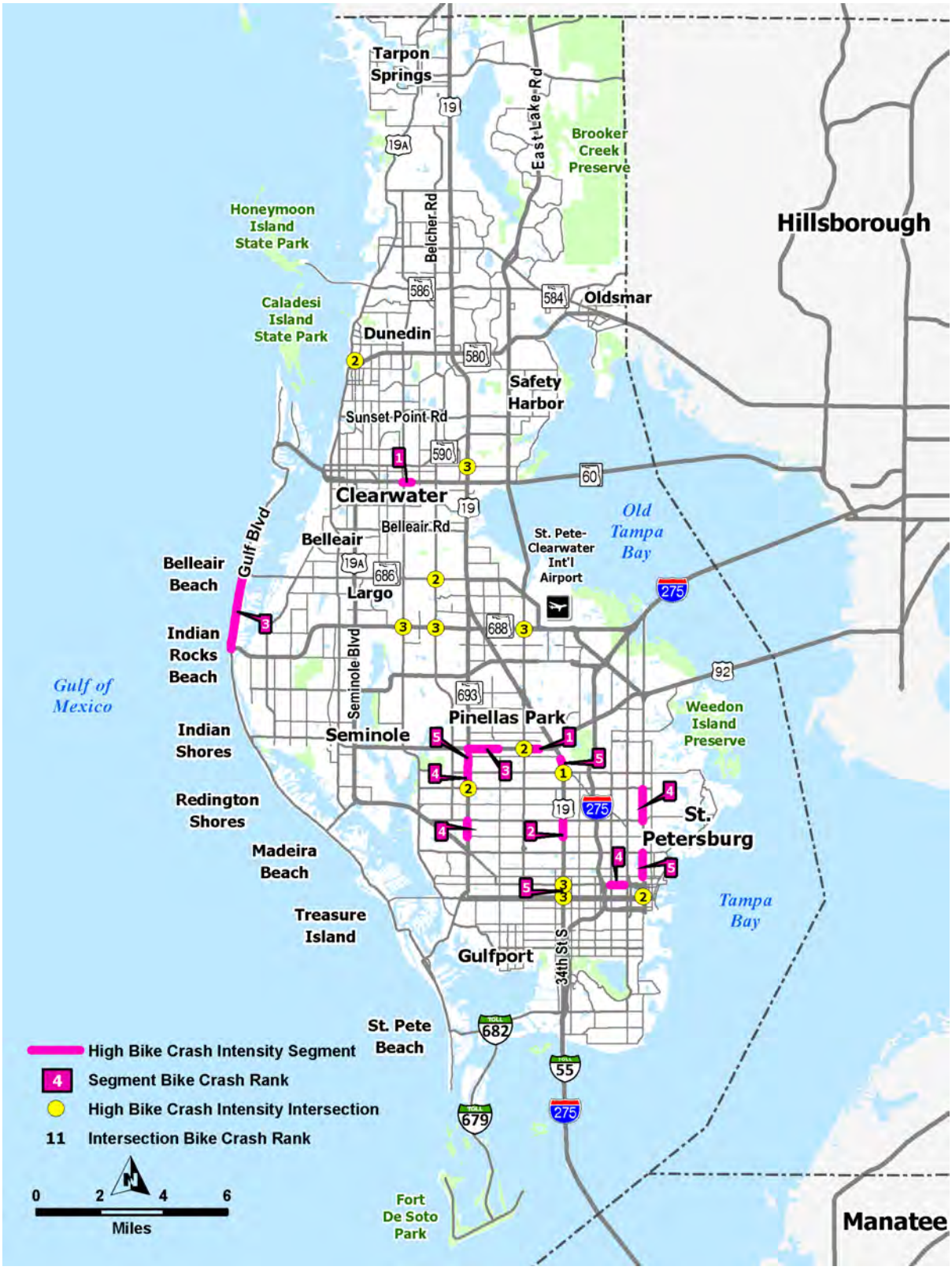
BICYCLE CRASH ANALYSIS

Figure 16 presents the specific intersections and discreet roadway segments having the highest number of bicycle crashes during the analysis period.

Table 7 summarizes the top bicycle crash segments and the total number of crashes.

The two roadway segments with the most bicycle crashes were Gulf-to-Bay Boulevard from Keene Road to South Arcturas Drive and Park Boulevard from

Figure 16. Bike Crash Intensive Segments and Intersections



49th Street North to 43rd Street, each with a total number of 20 crashes. Data of road lighting conditions and roadway surface conditions were analyzed to differentiate the factors that may have contributed to each crash, as shown in **Figure 17** through **Figure 20**.

The data presented for both the segment of Gulf-to-Bay Boulevard and Park Boulevard show that 90 percent of the crashes happened when road surface conditions were dry. In addition, almost all bicycle crashes took place during daylight (80 and 90 percent). Due to the small sample of bicycle crash type data available, the specific crash types cannot be determined for these two highest bicycle crash corridors.

Table 8 summarizes the top bicycle crash intersections by the total number of crashes. As shown, the intersection with the highest number of bicycle crashes was US 19 at 62nd Avenue with 12 crashes.

Table 7. Pinellas County Top 10 Bicycle Crash Roadway Segments

RANK	ROAD	SEGMENT	CRASHES
1	Gulf-to-Bay Blvd	Keene Rd - S Arcturas	20
	Park Blvd	49th St N - 43rd St	20
2	US 19/34th	30th Ave N - 38th Ave N	19
3	Gulf Blvd	Walsingham Rd - Belleair Cswy	17
	Park Blvd	66th St N - 58th St N	17
4	4th St N	38th Ave N -54th Ave N	16
	5th Ave N	16th St N - I-375 On-ramp	16
	66th St N	54th Ave N - 62nd Ave N	16
	66th St N	30th Ave N -38th Ave N	16
5	4th St N	9th Ave N - 22nd Ave N	15
	66th St N	62nd Ave N - 70th Ave N	15
	US 19	62nd Ave N - 66th Ave N	15
	US 19/34th St N	1st Ave N to 5th Ave N	15

Figure 17. Gulf-to-Bay Boulevard from Keene Road to S. Arcturas Drive Roadway Surface Conditions

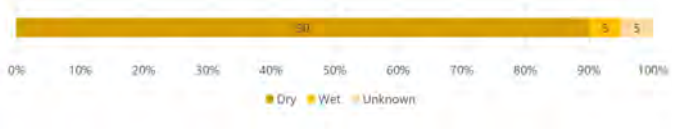


Figure 18. Gulf-to-Bay Boulevard from Keene Road to S. Arcturas Drive Lighting Conditions

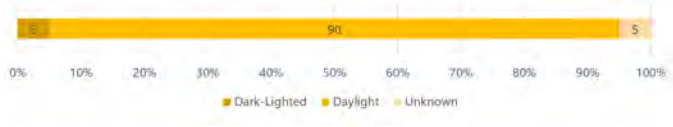


Figure 19. Park Boulevard from 49th Street N. to 43rd Street Roadway Surface Conditions

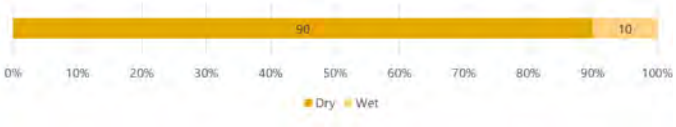


Figure 20. Park Boulevard from 49th Street N. to 43rd Street Lighting Conditions

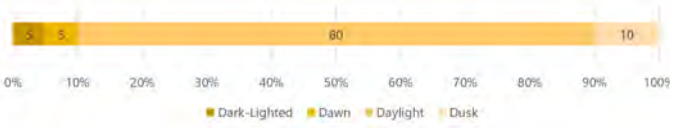


Table 8. Pinellas County Top 10 Bicycle Crash Intersections

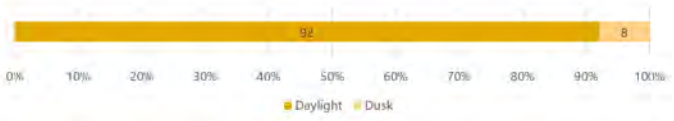
RANK	INTERSECTIONS	CRASHES
1	US 19 @ 62nd Ave	12
2	1st Ave N @ 4th St N	11
	66th St N @ 54th Ave N	11
	Belcher Rd @ E Bay Dr	11
	Douglas Ave @ Skinner Blvd	11
	Park Blvd @ 49th St N	11
3	Belcher Rd @ Ulmerton Rd	10
	Drew St @ US 19	10
	Starkey Rd @ Ulmerton Rd	10
	Ulmerton Rd @ 49th St N	10
	US 19 @ 1st Ave N	10
	US 19 @ Alt US 19 N	10

Road lighting conditions and roadway surface conditions were analyzed to differentiate the factors that may have contributed to each crash, as shown in **Figure 21** and **Figure 22**.

The data presented for the intersection of US 19 at 62nd Avenue show that 10 out of the 12 (83 percent) crashes happened when road surface conditions were dry. In addition, more than 90 percent of all bicycle crashes occurred during daylight. Due to the small sample of bicycle crash type data available, the most common crash types cannot be determined for this highest bicycle crash intersection.

Figure 21. US 19 at 62nd Avenue Roadway Surface Conditions

Figure 22. US 19 at 62nd Avenue Lighting Conditions



04 Conclusions and Next Steps

This pedestrian and bicycle safety analysis and the resulting direction will support the Forward Pinellas' Active Transportation Plan, both in terms of general countywide strategies, as well as specific areas to target for improvements. Identifying the most common pedestrian and bicycle crash types in the county and the corresponding countermeasures can help to inform general engineering strategies to apply on projects countywide to target improvements in pedestrian and bicycle safety.

The most common crash types should also direct resources related to educational messages. One example would be messaging directed towards motorists to target the most prominent bicycle crash type in Pinellas countywide (Motorist Drive-out – Sign Controlled Intersection) with themes such as "always look to the right" (for drivers turning right from driveways or cross streets) and to pedestrians and bicyclists to be aware of roadside conflict points. These example messaging themes address the causes of common crashes that occur with bicyclists riding on the sidewalk in the opposite direction of traffic.

The identified roadway segments and intersections with the highest concentrations of pedestrian and bicycle crashes should be a focus of the Forward Pinellas Vision Zero Action Plan and targeted for multimodal safety audits to identify specific safety improvements.

05 References

BIKESAFE: Bicycle Safety Guide and Countermeasure Selection System, www.pedbikesafe.org/bikesafe/countermeasures.cfm.

PEDSAFE: Pedestrian Safety Guide and Countermeasure Selection System, www.pedbikesafe.org/pedsafe/countermeasures.cfm.

Pinellas County Bicycle and Pedestrian Master Plan Update, Crash Data Report Technical Memorandum, URS, November 2012.

ACTIVE TRANSPORTATION PLAN

Technical Memorandum IV:
Bicycle Facility Types & Related Standards

January 2020

FORWARD PINELLAS

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CONTENTS

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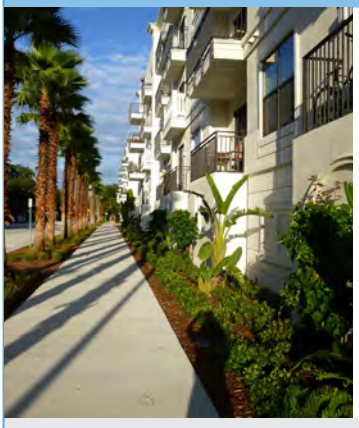
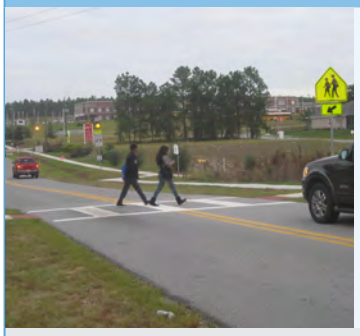
Bicycle/Pedestrian Infrastructure Types

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
BIKE LANE			
	• Portion of the street designated for preferential use by bicyclists. • One-way facilities that typically carry bicycle traffic in the same direction as adjacent motor vehicle traffic on the left or right side of the street. • Used in location with limited right-of-way, lower travel speeds and volume.	• Provide dedicated space for bicyclists to ride separated from vehicular traffic. • Reduces stress caused by acceleration and operating speed differentials between bicyclists and motorists. • Approved for use within Manual On Uniform Traffic Control Devices (MUTCD).	**Medium** ($10,000-$100,000)
Guidance: *Federal Highway Administration (FHWA) Bikeway Selection Guide, National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide, Florida Department of Transportation (FDOT) Design Manual (FDM)*			
BUFFERED BIKE LANE			
	• Created by painting a flush buffer zone between a bike lane and the adjacent travel lane. • Buffers may also be provided between bike lanes and parking lanes to demarcate the door zone and discourage bicyclists from riding closely next to parked vehicles. • Used in locations where separation between active travel lanes and/or parked cars is needed.	• Provides a warning for motorists and bicyclists that the street is multi-purpose. • Buffered bike lanes increase the riding comfort for bicyclists as they increase separation from vehicular traffic and/or parked vehicles. • Approved for use within MUTCD.	**Medium** ($10,000-$100,000)
Guidance: *FHWA Bikeway Selection Guide, NACTO Urban Bikeway Design Guide, FDOT FDM*			
SHARROW/SHARED LANE MARKING			
	• Marking alerts road users to the lateral position bicyclists are likely to occupy within the traveled way to be most visible to drivers and to help avoid conflicts with parked cars. • Used in locations to connect adjacent bicycle facilities and along neighborhood bikeways. • Can provide wayfinding guidance for bicyclists.	• Provide guidance to bicyclists and motorists in situations where separate bicycle facilities are not provided. • Encourages safer passing practices (including changing lanes, if necessary). • Encourages bicyclists to ride outside of the parked vehicle door zone. • Approved for use within MUTCD.	**Low** (<$10,000)
Guidance: *FHWA Bikeway Selection Guide, NACTO Urban Bikeway Design Guide, FDOT FDM*			

Bicycle/Pedestrian Infrastructure Types

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
SEPARATED BIKEWAY (CYCLE TRACK / PROTECTED BIKEWAY)			
	• Physically separated lane for bicycles using a vertical element within a buffer area such as bollards, parked vehicles, raised curbs, or landscaping/planters. • Used in locations where physical protection and separation is required to improve bicyclist comfort. • Also known as a cycle track or protected bikeway.	• Physical barrier provides added level of separation between travel lane and bicyclist, increasing bicyclist comfort and attracting a wider range of users. • Combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. • Approved for use within MUTCD.	**Medium** ($10,000-$100,000) 
Guidance: FHWA Bikeway Selection Guide, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, FHWA Separated Bike Lane Planning & Design Guide, NACTO Urban Bikeway Design Guide			
TRAIL (SHARED-USE TRAIL / MIXED-USE PATH)			
	• Physically separated from motorized traffic by an open space or barrier within the right of way or within an independent right of way. • Designed typically for two-way pedestrian and bicycle traffic. • Often run parallel to roadways, following alignments through natural areas and parks and along corridors with limited crossings like waterfronts, creeks, and current/former railroad lines.	• Provides low-stress environment for bicycling and pedestrian activity away from roadway traffic. • Can serve as arterials of the active transportation system for urban and suburan communities. • Compared with other facility types, can be the most expensive to construct.	**High** (> $100,000) 
Guidance: AASHTO Guide for the Development of Bicycle Facilities; FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts; NACTO Urban Street Design Guide; FDOT FDM			
SIDEWALK			
	• Continous, paved walkway along the side of a road. • Typically provided on all curbed roadways. • Sidewalk width varies by context classification, normally five feet wide. • Sidewalk grade typically mirrors roadway profile.	• Ideal to provide on both sides of roadway to optimize convenience for pedestrians, although some environments may be exempt or challenging due to available right of way. • Focus sidewalk connections in major residential areas and activity generators including schools, recreation centers, libraries, transit areas, and other pedestrian heavy locations.	**High** (>$100,000) 
Guidance: *FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, FDOT FDM, FDOT Traffic Engineering Manual (TEM)*			

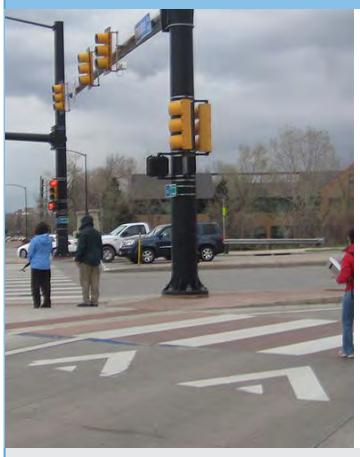
Bicycle/Pedestrian Crossing Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
MARKED CROSSWALKS			
	• FDOT standard is ladder-style markings. • Typically used at signalized, all- way stop-controlled intersections, and midblock crossing locations. • Designated pedestrian crossings should be considered at locations with pedestrian volumes greater than 20 per hour and/or with high vehicle-pedestrian collisions.	• Can provide a false sense of security, especially at uncontrolled crossings; consider installing additional improvements to reduce vehicle speeds, shorten the crossing distance, or increase the likelihood of motorists stopping and yielding. • Cannot utilize colors or patterns that result in driver confusion regarding intended purpose of crosswalk.	**Low** (<$10,000)
Guidance: FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, NACTO Urban Street Design Guide, FDOT FDM, FDOT TEM			
HIGH-VISIBILITY SIGNS & MARKINGS			
	• High-visibility colored signs are posted at crossings to increase driver awareness of the pedestrian crossing and regulatory (state law) requirements. • Typically applied at unsignalized and signalized locations where pedestrian or bicycle movements need to be emphasized.	• Beneficial in areas where drivers might not expect a pedestrian crossing or where a higher level of driver attention is required due to potential pedestrian and bicycle conflicts.	**Low** (< $10,000)
Guidance: *FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, FDOT FDM*			
ADVANCED YIELD LINES			
	• White yield lines are placed in advance of marked, uncontrolled crosswalks or at crossings with Rectangular Rapid Flash Beacons **(see page 7).** • Used to establish the location in which drivers should stop and yield to pedestrians (used in conjunction with R1-5 "Yield Here To Pedestrians" sign). • Useful in areas where pedestrian visibility is low.	• Increases the visibility between pedestrians and motorists. • Reduces the number of vehicles encroaching on the crosswalk when a pedestrian is present. • Helps reduce multiple threat crash typology where two lanes of traffic approach a crosswalk from the same direction and one driver yields to the crossing pedestrian but the other does not due to limited visibility of the pedestrian caused by the first vehicle.	**Low** (<$10,000)
Guidance: *FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, NACTO Urban Street Design Guide*			

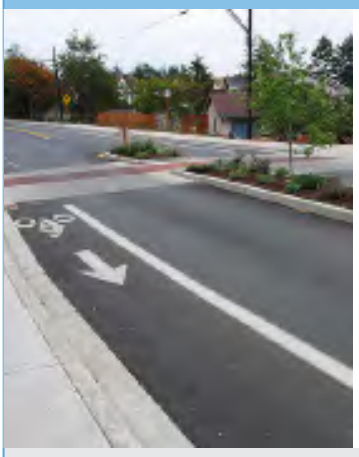
Bicycle/Pedestrian Crossing Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
IN-STREET PEDESTRIAN CROSSING SIGNS			
	• Regulatory pedestrian signage posted on lane edge lines and road centerlines. • Used to remind road users of laws regarding right of way at an unsignalized pedestrian crossing, especially midblock crossings. • Typically installed on raised median island along single-lane streets.	• Highly visible to motorists and has a positive impact on pedestrian safety at crosswalks. • Good driver compliance with yielding to pedestrians though compliance decreases on multi-lane streets.	**Low** (< $10,000)
Guidance: *FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations*			
CURB EXTENSIONS / BULBOUTS			
	• Consists of an extension of the sidewalk space into the street, narrowing the street at a pedestrian crossing. • Considered at intersection and midblock locations where there is high crossing activity, and no travel lane conflicts. • Typical application in locations with on-street parking.	• Shortens the distance pedestrians have to cross, decreasing pedestrian exposure time. • Provides opportunity to increase the sidewalk space. • Improves pedestrian visibility. • Lowers vehicle turning speeds. • Where applicable, allows for traffic control and warning devices to be placed closer to travel lane. • Provides opportunity to store and treat stormwater runoff. • Often involves an on-street parking trade-off.	**Medium** ($10,000-$100,000)
Guidance: *FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, Institute of Transportation Engineers (ITE) Implementing Context Sensitive Design on Multimodal Throughfares, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, NACTO Urban Street Design, NACTO Urban Bikeway Design Guide, FDOT FDM*			
REDUCED CURB RADII			
	• The radius of a curb is reduced requiring motorists to make a tighter turn. • Considered in locations with non-traditional intersection geometry or larger radii and minimal truck traffic.	• Shortens the distance pedestrians have to cross. • Reduce traffic speeds and increase driver awareness (like curb extensions). • Improves ADA ramp alignment and provides more sidewalk space. • Improves traffic control device visibility.	**High** (> $100,000)
Guidance: *ITE Implementing Context Sensitive Design on Multimodal Throughfares, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, NACTO Urban Street Design Guide, FDOT FDM*			

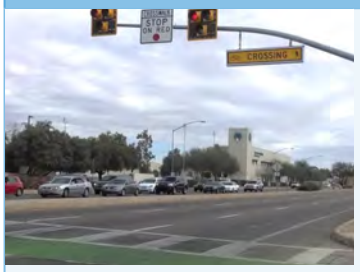
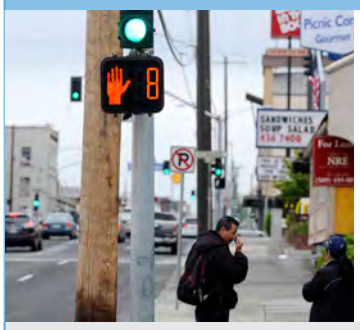
Bicycle/Pedestrian Crossing Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
RAISED CROSSWALK AT CHANNELIZED RIGHT TURN			
	• Marked crosswalks that are raised to slow driver turning speed and increase yielding compliance. • Tighter angles in right turn channelization make crossing pedestrians more visible, slow down right turning vehicles, and make turns easier for drivers (don't have to turn their head as far to check for gaps in traffic). • Used in locations with high bicycle/pedestrian activity combined with higher speed right turning vehicular traffic.	• Provide safety advantage to pedestrians with demonstrated increased yielding by drivers. • Slows driver turning speeds.	**Medium** ($10,000-$100,000)
Guidance: *ITE Implementing Context Sensitive Design on Multimodal Thoroughfares, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts*			
RAISED CROSSWALKS			
 	• Speed tables outfitted with crosswalk markings and signage to facilitate pedestrian crossings. Located at crosswalks to provide pedestrians with a level street crossing. • Applied in locations where modal hierarchy is desired to promote better bicycling and pedestrian yielding compliance by drivers.	• Provide safer crossing for pedestrians. • Channelize pedestrians to an enhanced crossing. • Slow vehicular travel speeds. • Improve pedestrian visibility and accessibility.	**Medium** ($10,000-$100,000)
Guidance: *FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, NACTO Urban Bikeway Design Guide*			
RAISED INTERSECTIONS			
 	• Flat raised areas covering an entire intersection, with ramps on all approaches and often textured materials. The raised intersection makes crosswalks more visible by motorists and provides level street crossing. • Applied in locations where modal hierarchy is desired to promote better bicycling and pedestrian yielding compliance by drivers. • Also considered in locations where neighborhood or commercial gateway is desired.	• Increases awareness of pedestrians. • May be used as a neighborhood gateway feature. • Calm two streets at once. • Slow vehicular travel speeds. • Improve pedestrian visibility and accessibility.	**High** (> $100,000)
Guidance: *NACTO Urban Street Design Guide*			

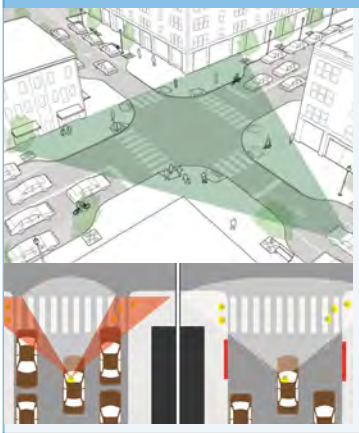
Bicycle/Pedestrian Crossing Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
MEDIAN ISLANDS			
	• Raised islands in the center of a street, separating opposing lanes of traffic with cutouts for pedestrian access along the pedestrian route, providing a refuge area for people crossing a street. • Used in locations on single lane or multi lane streets where there is a defined midblock crossing desire line or at intersections.	• This measure allows pedestrians to cross the street in two stages, focusing on each direction of traffic separately. • The refuge provides pedestrians with a better view of oncoming traffic as well as allowing drivers to see pedestrians more easily. • It can also split up a multi-lane road and act as a supplement to other pedestrian facility treatments.	**Medium** ($10,000-$100,000)
Guidance: *FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, ITE Implementing Context Sensitive Design on Multimodal Thoroughfares, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, NACTO Urban Street Design Guide, NACTO Urban Bikeway Design Guide, FDOT FDM*			
STAGGERED MEDIAN ISLANDS			
 	• Crosswalks in the street are staggered such that a pedestrian crosses half the street and then must walk towards traffic to reach the second half of the crosswalk. • Used in locations on single lane or multi lane streets where there is a defined midblock crossing desire line.	• Increase the concentration of pedestrians at a crossing and the provision of better traffic views for pedestrians (forces them to look towards traffic on the second half of the crossing). • Motorists are better able to see pedestrians as they walk through the staggered refuge.	**Medium** ($10,000-$100,000)
Guidance: *NACTO Urban Bikeway Design Guide*			
FLASHING BEACONS			
	• Flashing amber lights installed on overhead signs or on side of road in advance of or at marked crosswalks. • Can be considered along higher speed streets where increased driver visibility of multimodal crossing is desired. • Can be activated via push button, passive detection, or flashing continuously.	• Blinking lights during pedestrian crossing times increase the number of drivers yielding for pedestrians and reduce pedestrian-vehicle conflicts. • May also improve yielding compliance and pedestrian safety conditions on multi-lane streets. • Most effective when pedestrian actuated, and not flashing continuously.	**Medium** ($10,000-$100,000)
Guidance: *FHWA Manual on Uniform Traffic Control Devices (MUTCD)*			

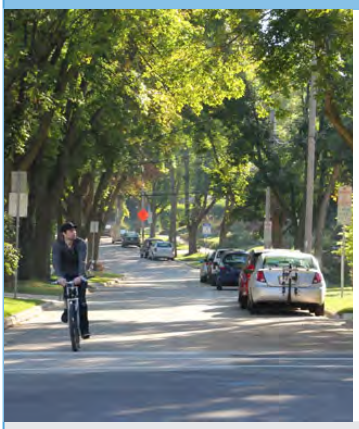
Bicycle/Pedestrian Crossing Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
RECTANGULAR RAPID FLASH BEACONS (RRFB)			
	• Rapid flashing LED strobe lights post-mounted in between a pedestrian or trail crossing warning sign and down arrow sign. • The beacons may be push-button activated or activated with passive pedestrian detection. • Typically applied on two-lane or four-lane streets where there is a defined midblock crossing desire line and meets established evaluation criteria.	• Increased driver yielding compliance. • Solar panels reduce energy costs associated with the device. • Wireless capabilities reduces installation cost.	**Medium** ($10,000-$100,000)
Guidance: *FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, NACTO Urban Bikeway Design Guide, FDOT TEM*			
PEDESTRIAN HYBRID BEACON (PHB) / HIGH INTENSITY ACTIVATED CROSSWALK (HAWK)			
 	• Pedestrian-actuated beacon that is a combination of a beacon flasher and a traffic control signal. • When actuated, the beacon displays a yellow (warning) indication followed by a solid red. • During pedestrian clearance, the driver sees a flashing red "wig-wag" pattern until the clearance interval has ended and the signal goes dark. • Can be considered along higher speed multi-lane streets where increased driver visibility of multimodal crossing is desired and meets established evaluation criteria.	• Reduces pedestrian-vehicle conflicts and increases driver compliance with yielding to pedestrians. • Reduces vehicle delay when compared to standard pedestrian traffic signal.	**High** (> $100,000)
Guidance: *NACTO Urban Bikeway Design Guide, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, NACTO Urban Bikeway Design Guide, FDOT TEM*			
PEDESTRIAN COUNTDOWN SIGNALS			
	• Pedestrian signal head that displays the amount of time remaining during the pedestrian clearance interval. • Standard treatment for signalized intersections that have pedestrian signals.	• Reduces pedestrian-vehicle conflicts and slows traffic speeds. • Provides pedestrians with increased awareness of how much time they have remaining to finish crossing the street.	**Low** (< $10,000)
Guidance: *FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, FDOT FDM*			

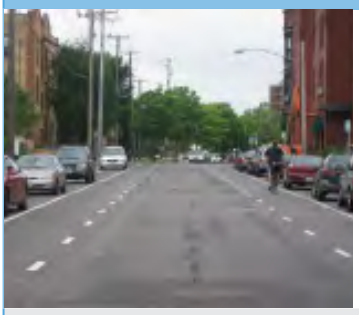
Bicycle/Pedestrian Crossing Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
GRADE-SEPARATED CROSSING			
	• Pedestrian and bicyclist-only overpass or underpass over or under a street or topographical barrier. • Provides complete separation of pedestrians and bicyclists from motor vehicle traffic, normally where no other pedestrian facility is available. • Typically applied in locations with defined pedestrian/bicycle desire line that extends across a major barrier.	• Allow for the uninterrupted flow of pedestrian movement separate from vehicular traffic. • Underpass configuration can reduce energy expenditure for bicyclists by spanning existing topography. • Eliminates conflict between pedestrians, bicyclists, and moving traffic.	**High** (> $100,000)
Guidance: *AASHTO Guide for the Development of Bicycle Facilities; ITE Transportation Planning Handbook: Bicycle and Pedestrian Facilities*			
INTERSECTION DAYLIGHTING			
	• Parking is restricted 20 feet back from any flashing beacon or traffic control signal. • Applied in locations to improve sightlines between drivers and pedestrians and bicyclists.	• Improves visibility of pedestrians or bicyclists to drivers. • Works well in conjunction with bulbouts which help slow vehicles as they approach the intersection.	**Low** (< $10,000)
Guidance: *NACTO Urban Street Design Guide*			

Other Bicycle Features & Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
NEIGHBORHOOD BIKEWAY (BIKE BOULEVARD)			
	• Low traffic volume and low speed streets that are designated to give bicyclists priority. • Use signs, pavement markings, and traffic calming measures to discourage through trips by motor vehicles and provide bicyclists with enhanced crossing of arterial streets. • Typically applied along low-volume, low-speed residential streets to define multimodal priority and wayfinding.	• Provide bicyclists of all abilities with low stress route. • Enhanced safety due to reduced exposure to moving traffic. • Provide enhanced wayfinding. • Approved for use within MUTCD.	**Medium** ($10,000-$100,000)
Guidance: *FHWA Bikeway Selection Guide, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, NACTO Urban Bikeway Design Guide*			
BIKE / BUS LANE			
	• Marking is intended to alert bicyclists and bus drivers that both users are encouraged to occupy the same travel way space. • Special pavement markings warn motorists of their presence. • Include special stop designs to allow passing by bicyclists when buses are stopped. • Applied in locations with low frequency and low speed bus service and limited right of way.	• Encourage safer passing practices (including changing lanes, if necessary). • Allow bicyclists to remove themselves from flow of traffic. • Approved for use within MUTCD.	**Medium** ($10,000-$100,000)
Guidance: *NACTO Urban Bikeway Design Guide*			
CONTRA-FLOW BIKE LANE			
	• Bike lanes that allow bicyclists to legally ride in the opposite direction of traffic. • Requires conversion of a one-way street into a two-way street which maintains a one-way orientation for motor vehicles while providing two-way traffic for bicyclists. • Used to connect two-way bicycle facility across one-way street, typically on lower-volume residential streets.	• Enhances connectivity for bicyclists traveling in both directions. • Decreases sidewalk riding. • Decreases out of direction travel for bicyclists. • Approved for use within MUTCD.	**Low** (< $10,000)
Guidance: *NACTO Urban Bikeway Design Guide*			

Other Bicycle Features & Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
ADVISORY BIKE LANE			
	• Uses dashed lane line to distinguish bike lane and allow for drivers to encroach into the bike lane when bicyclists are not present to avoid an oncoming vehicle in the opposite direction. • Used on streets with less than 4,000 vehicles per day (vpd), no centerline, and limited right-of-way.	• Brings greater awareness to the street as shared space. • Encourages slower vehicular travel speeds and reduces cut through traffic. • Experimental within MUTCD.	**Medium** ($10,000-$100,000)
Guidance: *FHWA Bikeway Selection Guide*			
INTERSECTION MARKINGS			
	• Consists of using green and white colored pavement markings at conflict points such as at the start of right turn lanes adjacent to bike lanes, or additional bike symbols such as turn queue boxes within the intersection. • Increase the visibility of bicyclists to drivers, identify areas of potential conflict, and provide guidance to bicyclists on their intended alignment through the intersection. • Typically applied on high ease-of- use facilities and at high conflict locations.	• Increases visibility of bicyclists. • Raises driver and bicyclists awareness of conflict areas. • Increases driver yielding behavior. • Increases bicyclists comfort level. • Two-Stage Bicycle Turn Boxes require formal request and approval from FHWA to use under current interim approval.	**Medium** ($10,000-$100,000)
Guidance: *NACTO Don't Give up at the Intersection, Desiging All Ages and Abilities Bicycle Crossings, FHWA Separated Bike Lane Planning and Design Guide, NACTO Urban Bikeway Design Guide, FDOT FDM*			
BIKE BOXES			
	• Applied in locations with high volumes of bicyclists where there may be right or left turning conflicts with vehicles. • Also applied in conjunction with red signal indication where there is a desire for bicyclists to transition from one side of the street to the other at signalized intersections.	• Provides dedicated space at the intersection for bicyclists, improving visibility to drivers during a red signal indication. • Brings bicyclists to the front of the queue, prioritizing bicycle traffic. • Does not benefit bicyclists approaching on a green signal indication. • Bicycle Boxes require formal request and approval from FHWA to use under current interim approval.	**Medium** ($10,000-$100,000)
Guidance: *FHWA Separated Bike Lane Planning and Design Guide, NACTO Urban Bikeway Design Guide, FDOT FDM*			

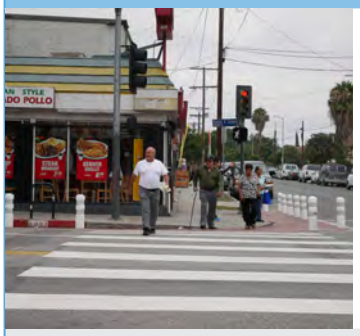
Other Bicycle Features & Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
PROTECTED INTERSECTIONS			
 	• Intersection design that provides separated space for pedestrians and bicyclists leading up to and through an intersection. • Typically applied at the intersection of two protected bike lanes or in locations where additional intersection protection is desired.	• Protected Intersections reduce the potential for people on bicycles to mix with vehicular traffic at the intersection, providing a continuous low-stress facility when combined with protected bike lanes. • Combines multiple treatments in one intersection (reduced curb radii, intersection markings, and protected bike lanes). • Enhances right-turning driver's visibility of approaching cyclist through setback of bike lane crossing. • Works better with larger setbacks between the bikeway and adjacent lane, which provide better visibility and more space for vehicles to wait and yield to people on bikes. • Challenging to implement at intersections with large volumes of turning trucks. • Approved for use within MUTCD.	**High** (> $100,000)
Guidance: *NACTO Don't Give up at the Intersection, Desiging All Ages and Abilities Bicycle Crossings, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts*			
SHARED USE SIDEWALK			
	• Designed for bicycle usage to avoid conflicts between single direction motor vehicle traffic in low volume pedestrian locations. • Sidewalks will include additional signage, pavement markings, and special curb cuts to facilitate bicycle travel. • Physical separation between wheeled and non-wheeled users is recommended to minimize potential conflicts between users. • Used sparingly to facilitate connections in locations with limited right-of-way and high speed travel lanes.	• Physically removes bicyclists from travel lanes • Approved for use within MUTCD.	**High** (> $100,000)
Guidance: *NACTO Urban Bikeway Design Guide*			

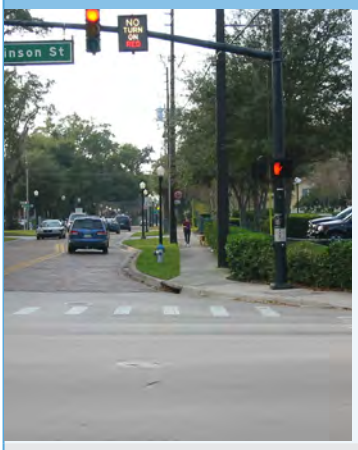
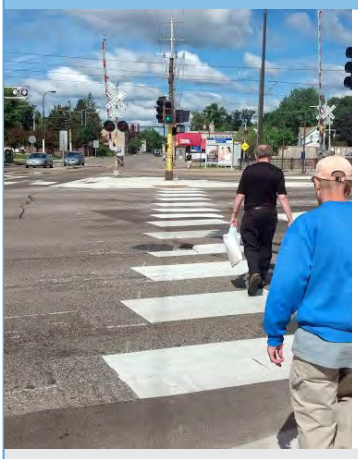
Other Bicycle Features & Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
RAISED CYCLE TRACK			
	• Physically protected and raised lane for bicycles using raised curbs or landscaping/planters. • Used in locations where physical protection and separation is required to improve bicyclist comfort. • Can be installed as one-way, two-way, or contra-flow.	• Raised barrier provides added level of separation between travel lane and bicyclist, increasing bicyclist comfort. • Can be raised to same elevation as adjacent sidewalk or in between sidewalk and adjacent roadway elevation. • Approved for use within MUTCD.	**High** (>$100,000)
Guidance: *NACTO Urban Bikeway Design Guide*			
WAYFINDING SIGNS			
	• Posting a series of pedestrian and bicycle wayfinding signs that orient pedestrians and bicyclists to destinations. • Used along bikeways and pedestrian walking corridors to identify destinations and travel times and distances.	• Encourages more walking and bike trips by providing people with a reference point to a destination.	**Low** (<$10,000)
Guidance: *NACTO Urban Bikeway Design Guide*			
BIKE CORRALS			
	• Installation of a bicycle parking area in an on-street parking space, typically on a main street or business corridor.	• Provides parking for 10-20 bicycles in the same space it takes to park one car. • Gives bicyclists the best spot right in front of businesses. • Increases amenity zone and sidewalk space.	**Medium** ($10,000-$100,000)
Guidance: *Association of Pedestrian and Bicycle Professionals (APBP) Bicycle Parking Guidelines, 2nd Edition*			

Traffic Signal Features & Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
BICYCLE DETECTION			
	• In pavement or above ground detection system that allows bicyclists to be detected at signalized intersections. • Typically installed at signalized locations along bike routes with lower side street approach volumes.	• Decreases delay for bicyclists at signalized intersection. • Encourages bicyclists to wait for signal indication. • Identifies where bicyclist should position themselves to be detected. • Allows for implementation of lengthened clearance interval when bicyclists are present.	**Medium** ($10,000-$100,000)
Guidance: *NACTO Urban Bikeway Design Guide*			
BICYCLE SIGNALS			
	• Dedicated signal head for bicyclists. • Used in locations with separated bicycle facilities.	• Provides ability to provide separate signal phase for bicyclists when desired for enhanced safety or non-traditional signal operations. • Past national studies have shown an increase in compliance with signal indication. • Bicycle Signals require formal request and approval from FHWA to use under current interim approval.	**Low** (< $10,000)
Guidance: *NACTO Don't Give up at the Intersection, Desiging All Ages and Abilities Bicycle Crossings, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, FHWA Separated Bike Lane Planning and Design Guide, NACTO Urban Bikeway Design Guide*			
LEADING PEDESTRIAN / BICYCLE INTERVALS			
	• Traffic signal timing that provides pedestrians/bicyclists with a few seconds head start prior to motor vehicles on the parallel street being given the green light. • Typically applied in locations with high pedestrian/bicyclist conflicts with turning vehicles or vulnerable pedestrian populations.	• Increases pedestrian/ bicyclist visibility for turning vehicles and driver yielding compliance for pedestrians. • Helps reduce conflicts between turning vehicles and pedestrians/ bicyclists.	**Low** (< $10,000)
Guidance: *NACTO Don't Give up at the Intersection, Desiging All Ages and Abilities Bicycle Crossings, ITE Implementing Context Sensitive Design on Multimodal Thoroughfares, FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, FHWA Separated Bike Lane Planning and Design Guide, NACTO Urban Street Design Guide, FDOT TEM*			

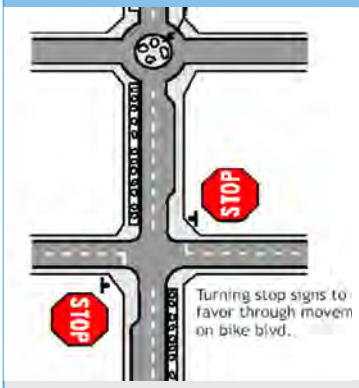
Traffic Signal Features & Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
PROTECTED TURN PHASING			
	• Traffic signal phasing and signal equipment that only allows turning vehicles to enter the intersection during a dedicated signal phase separate from the pedestrian and/or bicycle through phases. • Typically applied in locations with high pedestrian/bicyclist conflicts with turning vehicles or vulnerable pedestrian populations.	• Elminates conflicts between left turning vehicles and pedestrians which is one of the most common type of crash involving pedestrians/ bicyclists and vehicles.	**Low** (< $10,000)
Guidance: *NACTO Don't Give up at the Intersection, Desiging All Ages and Abilities Bicycle Crossings*			
TURN RESTRICTION BLANK-OUT SIGNS			
	• Digital sign typically mounted on signal mast arm that displays message prohibiting turning movements, such as 'No Turn on Red', which can also show supplementary messages such as 'Yield to Peds'. • Turn prohibition linked to pedestrian actuation or set to recall automatically. • Also applied at locations with bike boxes or protected intersections.	• Reduces potential conflicts between turning vehicles and pedestrians or bicyclists that might be crossing during the conflicting traffic signal phase.	**Low** (< $10,000)
Guidance: *NACTO Don't Give up at the Intersection, Desiging All Ages and Abilities Bicycle Crossings*			
RETIMING CLEARANCE INTERVALS			
	• Modifying the pedestrian clearance intervals at signalized intersections to provide adequate time for all pedestrians to cross the intersection at a walking speed slower than 3.5 ft/second. • Typically applied at locations with pedestrians moving at slower speeds. • Also applied in locations with designated bicycle routes to allow bicycles to clear the intersection.	• Increases the comfort level for all pedestrians and reduces the need to rush to cross the street. • Federal signal timing standards require pedestrian clearance intervals to be timed for a walking speed of 3.5 ft/second. • Slower walking speeds can be accommodated in locations where slow moving pedestrians are present such as around schools, senior facilities, etc.	**Low** (< $10,000)
Guidance: *MUTCD*			

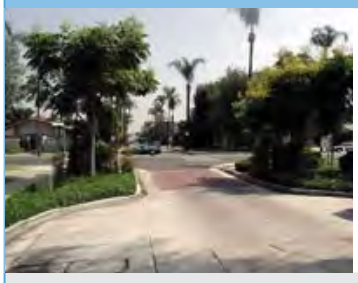
Traffic Signal Features & Treatments

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
SIGNAL COORDINATION (LOWER SPEED LIMIT PROGRESSION)			
	• Developing a traffic signal coordination plan that is based around a slower travel speed usually between 12-18mph for bicyclists and slower for pedestrians. • Applied along signalized corridors with high pedestrian or bicyclist volume. • Often referred to as a "Green Wave".	• Reduces start and stop delay for bicyclists. • Promotes a more uniform travel speed for all road users. • Makes for a more comfortable street to bike. • Reduces crash severity based on slower vehicular travel speeds.	**Low** (Less than $10,000)
Guidance: *FHWA Achieving Multimodal Networks, Applying Design Flexibility & Reducing Conflicts, NACTO Urban Street Design Guide*			

Neighborhood Bikeway Features / Traffic Calming

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
STOP SIGN REORIENTATION			
	• Reorienting two-way or reconfiguring all-way stop controlled approaches to provide neighborhood bikeway approaches with the right-of-way at the intersection. • Utilized along neighborhood bikeway facilities to minimize stop delay for bicyclists.	• Reduces delay and energy expenditure for bicyclists and thereby encourages more bicyclists to use the street. • Need to consider current traffic control configuration to understand impacts of changing stop control and the potential to create unintended traffic operational or safety consequences.	**Low** (< $10,000)
Guidance: *NACTO Urban Bikeway Design Guide*			
SPEED CUSHIONS			
	• Humps or speed tables with wheel cutouts to allow large vehicles to pass at regular speed while slowing down smaller vehicles. • Extend across one direction of travel from centerline with longitudinal gap for wide wheel base vehicles to avoid going over hump.	• Allow emergency vehicles and transit vehicles to pass with vehicle wheels on either side of the raised area. • Calms automobile traffic while allowing critical service vehicles to maintain travel times.	**Low** (< $10,000)
Guidance: *NACTO Urban Street Design Guide, NACTO Urban Bikeway Design Guide*			
DIVERTERS			
 	• Landscaped islands placed diagonally across an intersection, blocking through movements and creating two separate, L-shaped streets. They are often staggered to create circuitous routes through the neighborhood as a whole, discouraging non-local traffic while maintaining access for local residents. • Used along neighborhood bikeways or in locations where reduction in cut-through traffic is desired, while accommodating through bicycle and pedestrian traffic.	• Do not require a full intersection closure, only a redirection of existing streets. • Able to maintain full pedestrian, bicycle, and emergency vehicle access. • May result in a diversion of traffic to adjacent streets.	**High** (> $100,000)
Guidance: *NACTO Urban Bikeway Design Guide*			

Neighborhood Bikeway Features / Traffic Calming

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
HALF CLOSURES			
	• Landscaped islands that block travel in one direction for a short distance on otherwise two-way streets. • Used along neighborhood bikeways or in locations where reduction in vehicular traffic is desired, while accommodating through bicycle and pedestrian traffic.	• Maintain two-way bicycle access. • Effective in reducing traffic volumes. • Provides opportunities for controlled crossing by pedestrians and bicyclists. • May result in a diversion of traffic to adjacent streets.	**High** (> 100,000)
Guidance: *NACTO Urban Bikeway Design Guide*			
FULL CLOSURES			
	• Barriers placed across a street to completely close the street to through-traffic, usually leaving access open only for bicyclists and pedestrians via cut-throughs. • Can be applied at the end of the block or within a median of an intersecting street. • Used along neighborhood bikeways or in locations where reduction in vehicular traffic is desired, while accommodating through bicycle and pedestrian traffic.	• Maintain pedestrian and bicycle access. • Barrier can be landscaped. • Provides opportunities for controlled crossing by pedestrians and bicyclists. • May result in a diversion of traffic to adjacent streets.	**High** (> $100,000)
Guidance: *NACTO Urban Bikeway Design Guide*			
CHOKERS / NECKDOWNS			
	• Curb extensions at midblock locations that narrow a street. • Applied at midblock locations along single lane streets where reduced speeds are desired.	• Easily negotiable by large vehicles. • Can have positive aesthetic value. • Shortens pedestrian crossing distance when combined with pedestrian treatment. • Slows vehicular travel speeds.	**Medium** ($10,000 - $100,000)
Guidance: *NACTO Urban Bikeway Design Guide*			

Neighborhood Bikeway Features / Traffic Calming

SAFETY TREATMENT	DESCRIPTION	KEY FACTORS	COST (per mile or unit)
TRAFFIC CIRCLES / MINI-ROUNDABOUTS			
 	• Installation of a small circulating island in the middle of residential street intersection. Traffic circulates counter-clockwise around the central island. • Applied on local, residential streets (often neighborhood bikeways) where increased traffic control, speeding and cut-through traffic compliance are desired. • Can be installed as mountable in locations where larger vehicles may not be able to circulate around the circle.	• Can reduce crash frequency and severity. • Can have positive aesthetic value. • Placed at an intersection, they can calm two streets at once • Can often be developed to fit within existing right-of-way constraints. • Larger vehicles and emergency responders can turn left in front of island when no conflicting traffic is present. • If designed as mountable, can accommodate ocassional large truck traffic. • Can be installed as an all-way yield condition or as an all-way stop condition depending on location.	**Medium** ($10,000- $100,000)
Guidance: *NACTO Urban Street Design Guide, NACTO Urban Bikeway Design Guide*			
CHICANES			
 	• Curb extensions that alternate from one side of the street to the other, forming S-shaped curves along the street. They interrupt straight stretches of street and force vehicles to shift horizontally. • Chicanes can be created by alternating onstreet parking between each side of the street. • Applied in residential or neighborhood locations where increased traffic control, speeding and cut-through traffic compliance are desired.	• Can be as restrictive as necessary. • Negotiable by large vehicles except under heavy traffic conditions.	**Medium** ($10,000 - $100,000)
Guidance: *NACTO Urban Street Design Guide, NACTO Urban Bikeway Design Guide*			

ACTIVE TRANSPORTATION PLAN

Technical Memorandum V:
Gap Demand Analysis

January 2020

FORWARD PINELLAS

Advantage PINELLAS

ENGAGE. ADAPT. CONNECT.

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CONTENTS

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01 Introduction

An analysis of relative levels of bicycle and pedestrian demand within the county's 780 traffic analysis zones (TAZs) was conducted utilizing criteria corresponding to the of proximity of bicyclists and walkers to various key destinations, projected population and employment density data, and socioeconomic data. This data identified populations with a higher propensity to make trips by walking or bicycling. It should be noted that the demand analysis did not consider existing "on the ground" bicycle and pedestrian conditions or facilities.

The rationale for each demand category and corresponding scoring is explained as follows:

- **Proximity to Key Destinations.** This demand category reflected a graduated scoring criteria that gave more points for bicyclists and pedestrians in closer proximity to destinations, accounting for the fact that people have different tolerances for how far they are willing to walk or ride a bicycle to their destination. Graduated demand scoring was applied to the areas around bus stops on PSTA's core routes, colleges and universities, public schools, parks, libraries, cultural centers, and activity centers. The highest scores were given for the closest proximity of bicyclists and pedestrians to each destination (within one-quarter mile for pedestrians and one-half mile for bicyclists), decreasing to lower scores for bicyclists and pedestrians who were further away from destinations (capped at one mile for pedestrians and two miles for bicyclists). **Table 1** summarizes the graduated demand scoring for each type of destination.

- **Population and Employment Density.** The basis for the second demand category was the socioeconomic data for year 2040 from the Tampa Bay regional travel demand model for the traffic analysis zones (TAZ) within Pinellas County. The demand analysis reflected the anticipated and forecasted Pinellas County growth up to 2040. There were two specific elements included in the scoring for this category: population + employment density and employment to population ratio, which are described as follows:

  - **Population + Employment Density.** This measure is based on summing the population and employment totals for each TAZ and dividing by the acreage of the TAZ to calculate the density. It should be noted that this exercise did not include the subtraction of any non-developable acreage within an individual TAZ. Areas with higher population and employment densities are generally reflective of development patterns that are more conducive to bicycling or walking. **Table 2** summarizes the points given to each TAZ area based on the computed densities among the TAZs within Pinellas County. The points are based

roughly on dividing the TAZ rankings into quintiles. The TAZs ranked highest in terms of density (in the first quintile) received the highest score.

- **Employment to Population Ratio.** This measure is based on the ratio of total employment divided by total population in each TAZ. Those TAZs with a balance of employment and population within a single zone represent areas more likely to have bicycling and walking trips due to the proximity of complimentary land uses within shorter distances of each other – distances that are more conducive to bicycling and walking. **Table 2** summarizes the points given to each TAZ area based on the computed ratios among the TAZs within Pinellas County. As with density, the points are based roughly on dividing the rankings into quintiles. However for this ratio, the values in the middle (third) quintile are given the highest score, as these are the TAZs with the best balance between total population and total employment. Therefore these areas are more likely to have the most short-distance trips between complimentary land uses. The first and fifth quintile represent the areas that are most unbalanced. These areas have either a very high ratio (reflecting mostly employment with little to no residential) or a very low ratio (mostly residential with little to no employment).

- **Composite Equity Score.** The third demand category is based on a tabulated composite equity score that reflects values above the countywide average for seven socioeconomic indicators that are typical of areas that have higher levels of bicycling and walking activity. The seven socioeconomic indicators include the following:
  - **Poverty**: Percentage of population below poverty level
  - **Minority**: Percentage of minority population
  - **Limited English Proficiency**: Percentage of population with limited English proficiency
  - **Over 65**: Percentage of population age 65 or above
  - **18 or Below**: Percentage of population 18 or younger
  - **Zero-Vehicle**: Percentage of zero-vehicle households
  - **Other Means of Travel to Work**: Percentage of means of transportation to work other than personal motor vehicle

Composite equity scores ranged from 0 (none of the seven indicators are above the countywide average for a given census block) to 7 (all indicators are above the countywide average for a given census block). An increase in the overall demand scoring for this category corresponds with increases in the composite equity score. This reflects the higher bicycle and pedestrian demand typically associated with areas having above average values across multiple socioeconomic indicators.

The map shown in **Figure 1** illustrates the results of the analysis for bicyclists. **Figure 2** shows the results for pedestrians. Areas with darker colors are projected to have higher levels of demand.

It should be noted that this demand evaluation only considers transportation trips being made to destinations, and does not consider recreational trips such as leisure rides or jogs/walks that do not involve traveling to and from a destination.

Table 1. Bicycle and Pedestrian Demand Scoring - Part I

DESTINATION	BICYCLE DEMAND SCORING SCORE BY BIKE DISTANCE (MI)				PEDESTRIAN DEMAND SCORING SCORE BY BIKE DISTANCE (MI)			
	0.50	1.00	1.50	2.00	0.25	0.50	0.75	1.00
College/University	15	10	5	1	15	10	5	1
Cultural Facilities & Attractions[1]	10	5	1	0	10	5	1	0
School (public)	10	5	1	0	10	5	1	0
Activity Centers	10	5	1	0	10	5	1	0
PSTA Core Bus Route Stop	10	5	1	0	10	5	1	0

[1] Includes arboretum/botanical garden, auditorium/concert hall/theater/opera house, community/recreation center, ice arena, library, marina, museum, park, public pool, science center, sports arena/stadium, and visual arts center.

Table 2. Bicycle and Pedestrian Demand Scoring – Part II

DATA	BICYCLE / PEDESTRIAN DEMAND SCORING SCORE BY TAZ QUINTILE				
	Q1	Q2	Q3	Q4	Q5
Population + Employment	10	7	5	3	1
Employment / Population Ratio	1	3	5	3	1

Table 3. Bicycle and Pedestrian Demand Scoring – Part III

DATA	BICYCLE / PEDESTRIAN DEMAND SCORING COMPOSITE EQUITY SCORE							
	0	1	2	3	4	5	6	7
Composite Equity Score*	0	0	1	3	5	10	13	15

** Each point in the composite equity score represents a block group above the countywide average for one of the following: Population below poverty level; Minority population; Zero-vehicle households; Population age 65 or above; Population age 18 or below; Means of transportation to work other than personal motor vehicle; Limited English proficiency*

Figure 1. Bicycle Demand

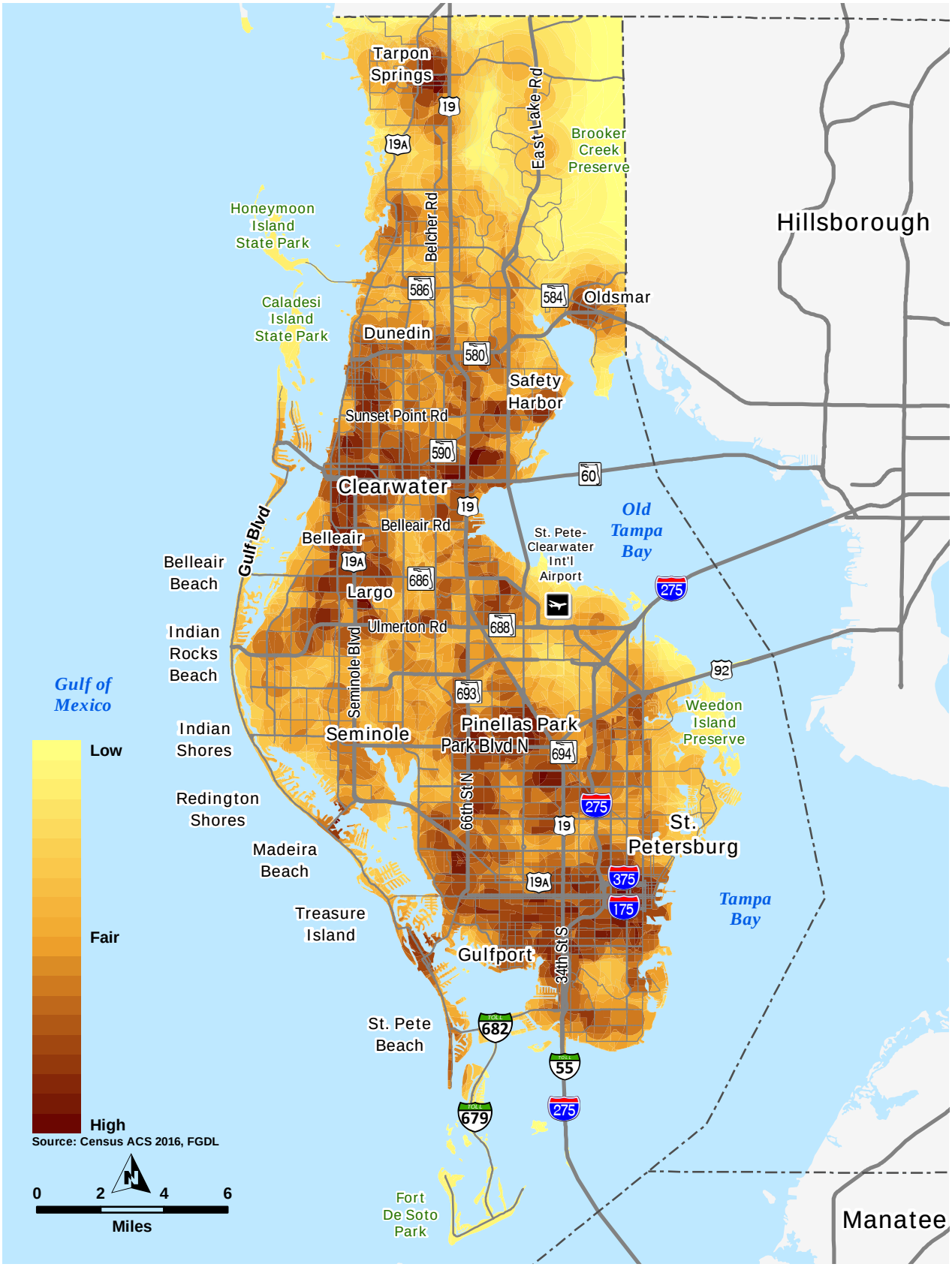
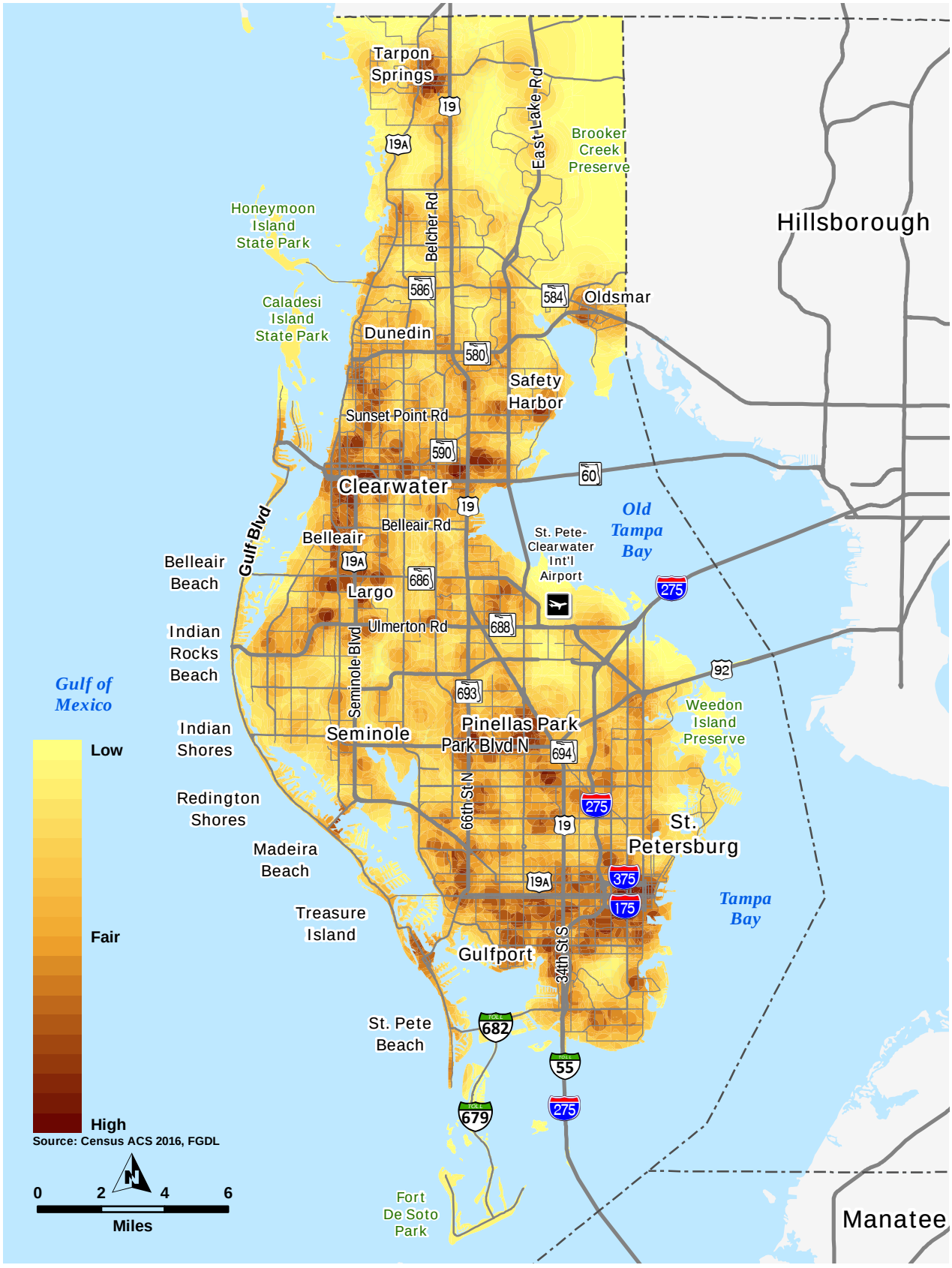


Figure 2. Pedestrian Demand



02 Network Gaps & Recommendations

A qualitative network gap analysis was completed to identify areas within the county where there are missing links. Elements considered in the analysis included the following:

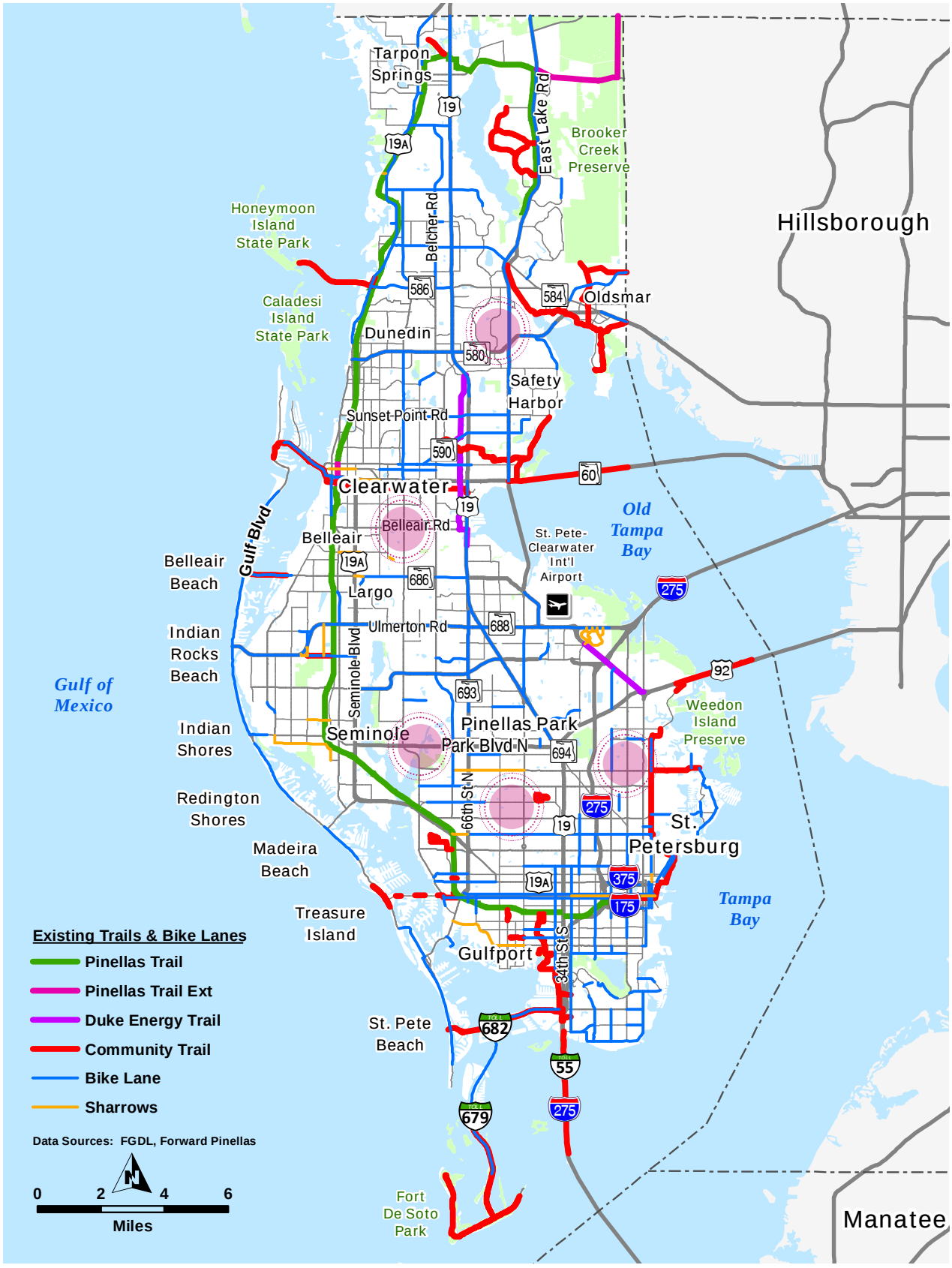
- The location of existing bicycle and pedestrian facilities and networks
- Bicycle and pedestrian demand analyses
- High composite equity score areas
- Low service areas for bicycle and pedestrian networks (i.e., the census block groups with network coverage in the lowest 25 percent based on facility miles divided by square miles)

Figure 3 illustrates existing gaps in the Pinellas County bicycle network. General needs across the region include enhancements to north/south connectivity in the central portion of the county, and east/west connectivity in locations across the county. Based on the preliminary qualitative assessment, the following general recommendations are offered to help guide the Active Transportation Plan priority projects:

- **Pinellas Trail Loop:** Completing the Pinellas Trail Loop is critical to providing bicycle access and connectivity in eastern Pinellas County, specifically within northeast St. Petersburg, Lealman, Clearwater, and Safety Harbor.
- **North/south connection from Pinellas Park to central St. Petersburg:** Currently there are no bicycle facilities connecting Pinellas Park to central St. Petersburg.
- **East/west connection from Seminole to Pinellas Park:** There are also no bicycle facilities between Seminole and Pinellas Park. Extending bike lanes on CR 296 from Starkey Road to the Pinellas Trail is the most viable option to make this connection.
- **Largo to Clearwater:** The Pinellas Trail provides a connection between west Largo and downtown Clearwater. However, there is a need for a Clearwater-Largo bicycle facility connection between the Pinellas Trail and the planned Duke Energy section of the Loop.
- **Safety Harbor to Oldsmar:** No bicycle facilities are connecting these cities. SR 580 could be used to connect the bike lane on Phillipe Parkway to the Oldsmar trail system.

These gaps serve as a basis for identifying specific priority corridors that will provide greater connectivity across the county.

Figure 3. Gaps in Bicycle Network



ACTIVE TRANSPORTATION PLAN

Technical Memorandum VI:
Project Concept Summaries

January 2020

FORWARD PINELLAS

Advantage PINELLAS

ENGAGE. ADAPT. CONNECT.

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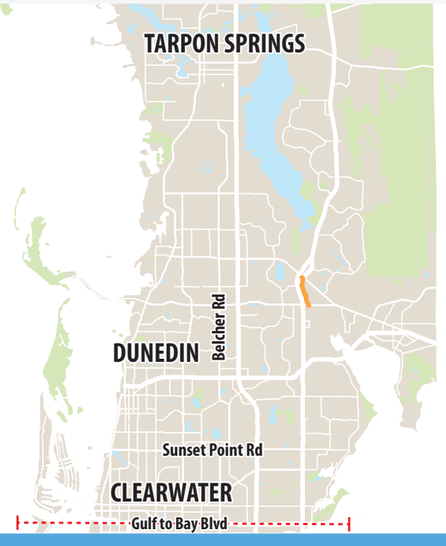
CONTENTS

Project Number 1: Oldsmar Trail | County Area: North

PROJECT LIMITS: OLDSMAR TRAIL, CURLEW ROAD TO TAMPA ROAD

PROJECT LOCATION

LENGTH: 0.90 MILE



POPULATION & EMPLOYMENT

1,924
POPULATION
Within 1/4 mile of project

913
EMPLOYMENT
Within 1/4 mile of project

BICYCLE & PEDESTRIAN FACILITIES

TRAIL

PEDESTRIAN CROSSINGS

PROJECT DESCRIPTION

Existing paved Oldsmar Trail ends just north of Curlew Road. Portion of canal frontage north of that point appears to be an existing unpaved trail. This project would extend the paved trail north from the existing terminus to Tampa Road. Project would consist of a widened sidewalk along the north side of Tampa Road to approximately 300 west of E. Lake Road South at which point it would connect to a proposed section of the Pinellas Trail on the east side of the canal.

Connections to Key Destinations: Extends Oldsmar Trail; Oldsmar Sports Park; Shoppes at Boot Ranch; future section of Pinellas Trail

ISSUES, OPPORTUNITIES, & CONCEPT CONSIDERATIONS

- Existing paved Oldsmar Trail along the canal is approximately 15 feet wide. Proposed extension of this trail should maintain the same width.
- There appears to be an existing unpaved connection in this area from the canal frontage through a wooded section to the Oldsmar Sports Park, so there may be an opportunity to formalize that connection with a paved trail spur. There is also an existing connection from the current north terminus of the paved trail at Curlew Road to the park via the sidewalk along the north side of Curlew Road and an 8-foot wide sidewalk along Windward Place. Wayfinding signage should be provided for the existing sidewalk connection to the park, and via the trail spur if connected.
- As part of the Tampa Road Corridor Plan, the City of Oldsmar intends to work with property owners to place wider meandering sidewalks along the roadway that allow access to properties and protect existing trees.
- Project connection to the Pinellas Trail would provide access to the Circle Lake Tarpon Trail Route.
- On the north side of Tampa Road, east of E. Lake Road, there may be limited opportunity to widen the existing sidewalk as it immediately abuts the parking area for the Shoppes of Boot Ranch. Any widening would likely require right-of-way acquisition and also shifting of an existing retaining wall.
- A structure would be required to ramp the trail down from the Tampa Road sidewalk down to the berm alongside the canal to connect to the proposed section of the Pinellas Trail.

OLDSMAR TRAIL

TYPICAL SECTION

PROJECT & PRIORITY SCORING RESULTS

0
SAFETY SCORE

- Not within 0.5-mile of an identified high bike/pedestrian crash segment or intersection

19
INTEGRATED & CONNECTED SCORE

- Not within or providing direct access to a multimodal corridor or activity center
- Average bike/pedestrian demand score = 46.0
- Connects to one existing facility (extends Oldsmar Trail)
- Provides direct access to 2 bus routes with headways of 45-60 min (Route 62; North County Connector OTC)

42.9
ACCESSIBLE & COMFORT SCORE

- Average weighted bicycle LTS score = 100 (all LTS 1)
- Results in full sidewalk coverage on one side only
- Not in a high composite equity score area nor in a low bicycle or pedestrian service area

100
QUALITY OF LIFE SCORE

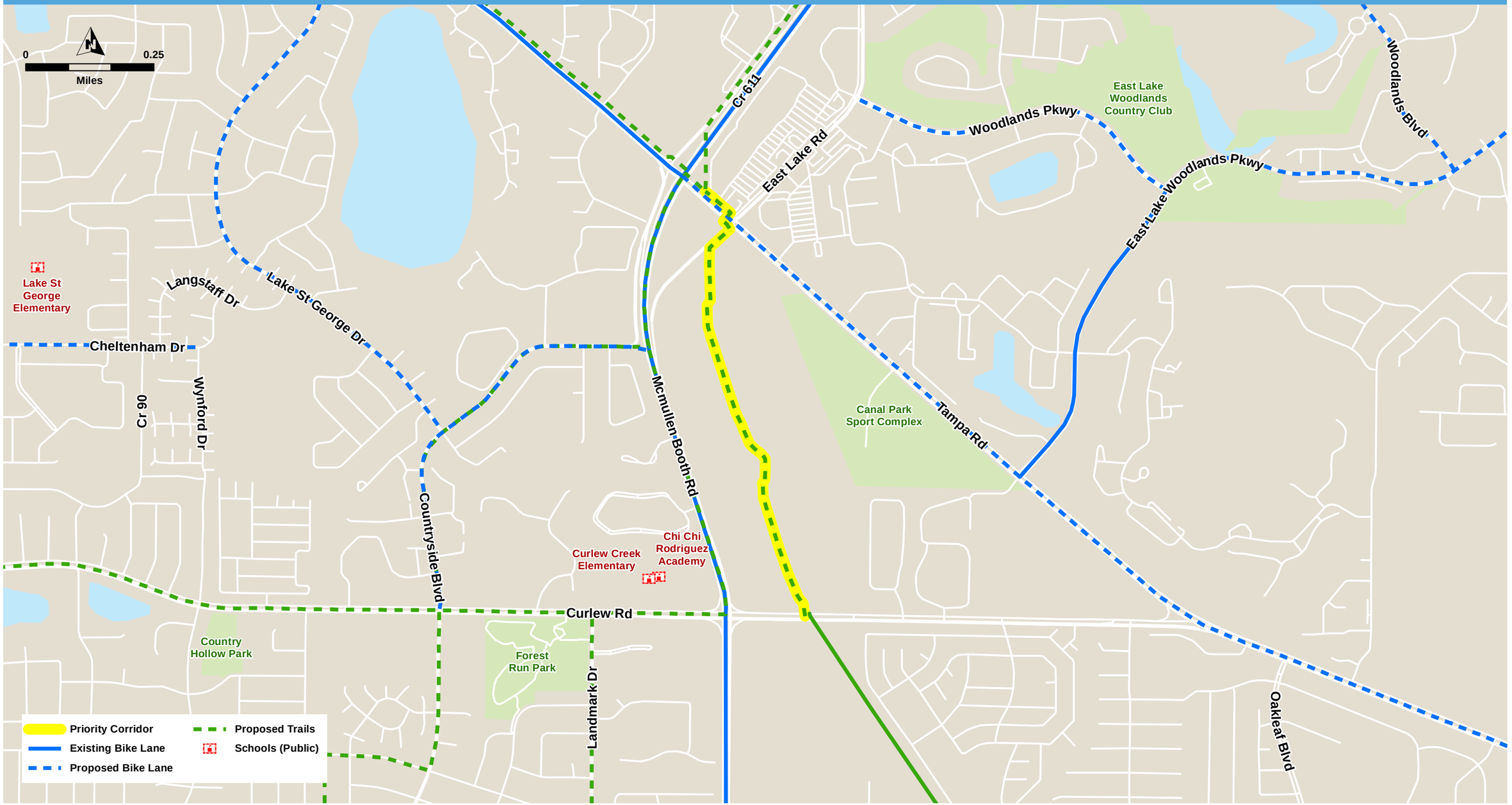
- Extends Oldsmar Trail; connects to Oldsmar Sports Park, Shoppes of Boot Ranch and future segment of Pinellas Trail

27.6 TOTAL WEIGHTED SCORE

9 PRIORITY RANKING
(North Area Priority 3)

$1.59 MILLION PLANNING COST ESTIMATE

CORRIDOR MAP: OLDSMAR TRAIL, CURLEW ROAD TO TAMPA ROAD



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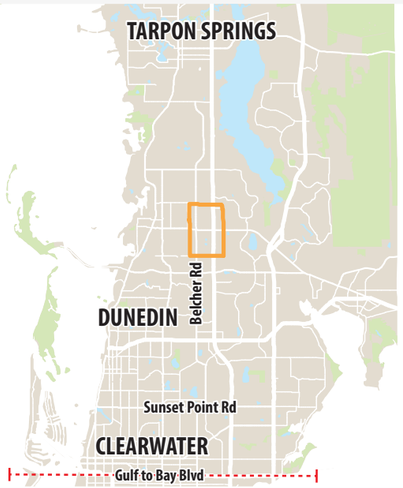
Project Number 2: Nebraska Avenue Loop | County Area: North

PROJECT LIMITS: NEBRASKA AVENUE, 19TH STREET TO W. LAKE ROAD; 19TH STREET, CR 39 TO NEBRASKA AVENUE; CR 39 / CR 95, 19TH STREET TO W. LAKE ROAD; W. LAKE ROAD, CR 95 TO NEBRASKA AVENUE

PROJECT LOCATION

LENGTH: 5.23 MILES



POPULATION & EMPLOYMENT

9,469
POPULATION
Within 1/4 mile of project

4,453
EMPLOYMENT
Within 1/4 mile of project

BICYCLE & PEDESTRIAN FACILITIES

TRAIL

PEDESTRIAN CROSSINGS

PROJECT DESCRIPTION

This project would provide a shared-use path alongside four roadways, connecting neighborhoods in Palm Harbor, including on both sides of US 19.

Connections to Key Destinations: Palm Field; Palm Harbor Library; Palm Harbor Middle School; Lake St. George Elementary School

ISSUES, OPPORTUNITIES, & CONCEPT CONSIDERATIONS

NEBRASKA AVENUE:

- A shared-use path is proposed on the south side of the street, which could be accomplished by widening the existing sidewalk to a minimum of 8 feet, preferably 10 feet. The apparent right-of-way (source: Pinellas County Property Appraiser parcel lines) indicates the ability to widen the sidewalk either to the outside or within the landscape strip, where one is available. In some locations, the path may need to narrow back to the existing sidewalk width in locations with existing mature trees, utility poles, or other obstructions.
- US 19 is proposed to be converted to a limited access facility in the future, similar to sections further to the south. A grade-separation is proposed at Nebraska Avenue, allowing the shared-use path to go underneath US 19 alongside Nebraska Avenue.
- A path on this side would fill an existing gap in the sidewalk from east of US 19 to W. Lake Road. This section may require the construction of curb and gutter on the south/west side of the street, with the path at or near the back of curb.
- The segments of Nebraska Avenue from Alt. US 19 to Belcher Road and from Rivere Road to US 19 are included in the Pinellas County Complete Streets Corridor Evaluation as Tier 2 segments.

WEST LAKE ROAD:

- The path is proposed to transition from the west side of the road to the east side at an existing marked crosswalk at the Queen Anne Drive intersection. Providing the path on the east side of the road south of this point would fill an approximate 1-mile gap in the sidewalk network over two sections.
- (Cont) The west side of W. Lake Road already has complete sidewalks in this section south to CR 95.
- Coordination will be needed with the electric utility; the section south of Jeffrey Drive has electric transmission lines along the east side of the street.
- The apparent right-of-way appears sufficient to construct a path on this rural two-lane section.

COUNTY ROAD 39 / 95

- The path is proposed to be located on the north side of CR 95 east of US 19, which will fill a 0.2-mile gap in the sidewalk network. Complete sidewalks exists on the south side of the road.
- The shared-use path on CR 95 could be extended approximately 750 feet to the east from W. Lake Road (via a widened sidewalk on the north side of the road to provide a complete, wider connection to Lake St. George Elementary School.
- There is a grade-separation proposed for US 19 just north of CR 95 for a pedestrian underpass and vehicular U-turns. This location will provide enhanced connectivity for Lake St. George Elementary School, and will allow the proposed shared-use path on CR 95 to connect across US 19. 10-foot wide sidewalks along frontage roads on each side of US 19 will provide connectivity to the proposed pedestrian underpass.
- There is a sidewalk gap of approximately 0.12 miles on the north side of the road west of Sunflower Drive; sidewalk is recommended to fill this gap.
- The Belcher Road intersection currently is stop controlled on CR 39. Traffic control options need to be evaluated to facilitate path crossings; a full signal would be preferred (if vehicle warrants can be met), but alternatively should include a pedestrian hybrid beacon (PHB) or RRFBs at minimum.
- Opportunity to extend the path further west to connect to Hermosa Drive and towards CR 1 through a natural area where there is currently a gap in the road network. A community trail was previously proposed for this section.
- The segments of Hermosa Drive / CR 39 from Alt. US 19 to CR 1 to US 19 and CR 95 from US 19 to Langstaff Drive are included in the Pinellas County Complete Streets Corridor Evaluation as Tier 3 segments.
- The path is proposed to be located on the south side of CR 39 / CR 95 west of US 19, which would fill an approximate 0.4-mile gap in the sidewalk network.

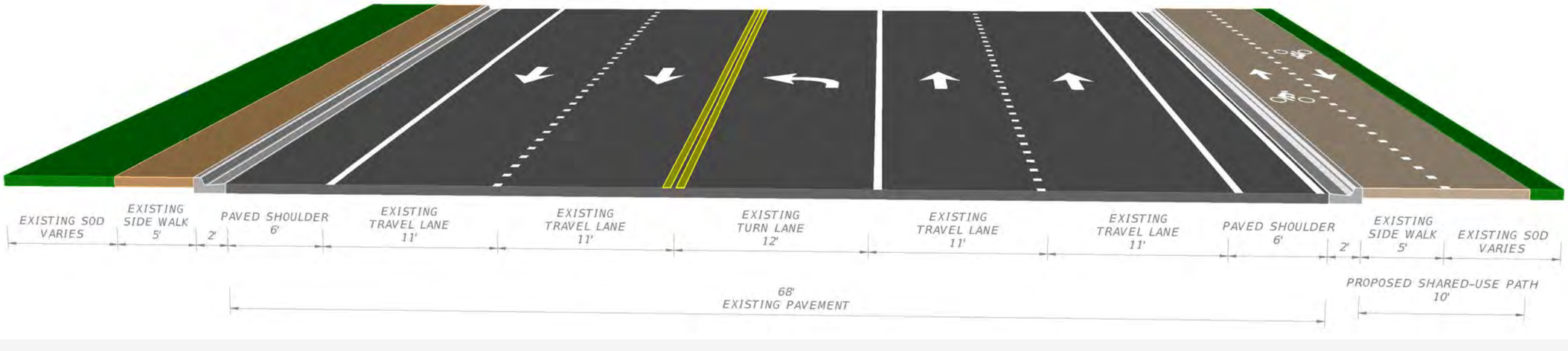
- The apparent right-of-way appears to be sufficient to construct a path on this rural two-lane section; there is one apparent pinch point in the right-of-way just west of Fisher Road where property acquisition or an easement may be required.

19TH STREET

- A path is proposed on the west side of the street, which could be accomplished by widening the existing sidewalk to a minimum of 8 feet, preferably 10 feet. The apparent right-of-way generally indicates the ability to widen the sidewalk within the landscape strip. In some locations, the path may need to narrow back to the existing sidewalk width in locations with existing mature trees, utility poles, or other obstructions.
- Coordination will be needed with Pinellas County Schools and Palm Harbor Middle School regarding widening of the existing sidewalk in front of (and within the property of) the school.
- There is a sidewalk gap of approximately 0.17 miles on the east side of the road north of Swan Lane; sidewalk is recommended to fill this gap.
- North of Tampa Avenue, the posted speed drops from 35 mph to 25 mph. Also, north of Mourning Dove Drive, the street widens to approximately 30 feet. The combination of wider street and lower posted speed provides the opportunity for a potential less expensive option – to stripe 5-foot bike lanes adjacent to 10-foot travel lanes, with shared lane markings in the narrower 25-mph section south of Mourning Dove Drive. However, with this being in such close proximity to Palm Harbor Middle School, a shared lane configuration may not be desirable in lieu of a wider shared-use path.

NEBRASKA AVENUE LOOP

TYPICAL SECTION : LOCATION SHOWN IS NEBRASKA AVENUE EAST OF BELCHER ROAD



PROJECT & PRIORITY SCORING RESULTS

0
SAFETY SCORE

- Not within 0.5-mile of an identified high bike/pedestrian crash segment or intersection

49.6
INTEGRATED & CONNECTED SCORE

- Not within or providing direct access to a multimodal corridor or activity center
- Average bike/pedestrian demand score = 38.4
- Connects to multiple existing facilities (bike lanes/paved shoulders on Nebraska Ave, Tampa Rd, Belcher Rd, US 19)
- Provides direct access to 1 core bus route (Route 19)

57.1
ACCESSIBLE & COMFORT SCORE

- Average weighted bicycle LTS score = 100 (all LTS 1)
- Results in full sidewalk coverage on both sides of the four streets
- Not in a high composite equity score area nor in a low bicycle or pedestrian service area

100
QUALITY OF LIFE SCORE

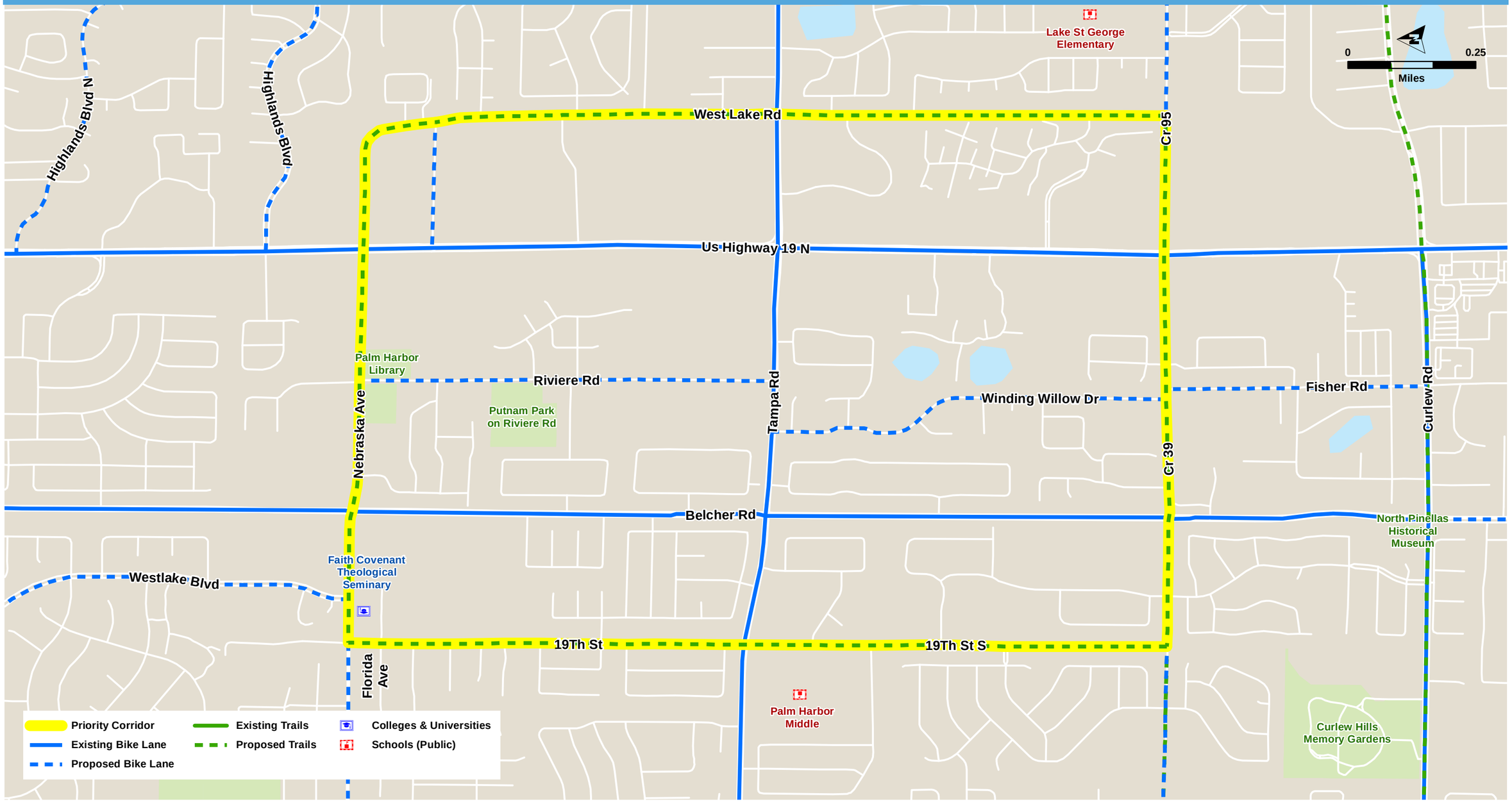
- Connects to Palm Field, Palm Harbor Library, Palm Harbor Middle School, Lake St. George Elementary School

44.8 TOTAL WEIGHTED SCORE

6 PRIORITY RANKING
(North Area Priority 2)

$9.25 MILLION PLANNING COST ESTIMATE

CORRIDOR MAP: NEBRASKA AVENUE LOOP



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Project Number 3: Sunset Point Road / Main Street | County Area: North

PROJECT LIMITS: SUNSET POINT ROAD, ALTERNATE US 19 TO PHILLIPE PARKWAY

PROJECT LOCATION

LENGTH: 8.02 MILES

POPULATION & EMPLOYMENT

16,988
POPULATION
Within 1/4 mile of project

5,912
EMPLOYMENT
Within 1/4 mile of project

BICYCLE & PEDESTRIAN FACILITIES

BIKE BOULEVARD

PEDESTRIAN CROSSING

TRAIL

PROJECT DESCRIPTION

This project provides a connection across the county from Alt. US 19 in Clearwater to Phillipe Parkway in Safety Harbor. The proposed route includes a combination of bike boulevards and shared-use paths. The western-most portion of the route connects Alt. US 19 to Coachman Road via several neighborhood streets, located less than one-quarter mile north of Sunset Point Road. At Coachman Road, a shared-use path is proposed along the west side of the street connecting south to Sunset Point Road. The path would then run along the south side of the street to the signal at World Parkway Boulevard where it would cross to the north side of the street, and continue east to Soule Road. From that point, the route turns off of Sunset Point Road and continues to the north and east as a bike boulevard, using Soule Road, Union Street / Cedar Street, Elm Street, and 4th Street North to reach Phillipe Parkway.

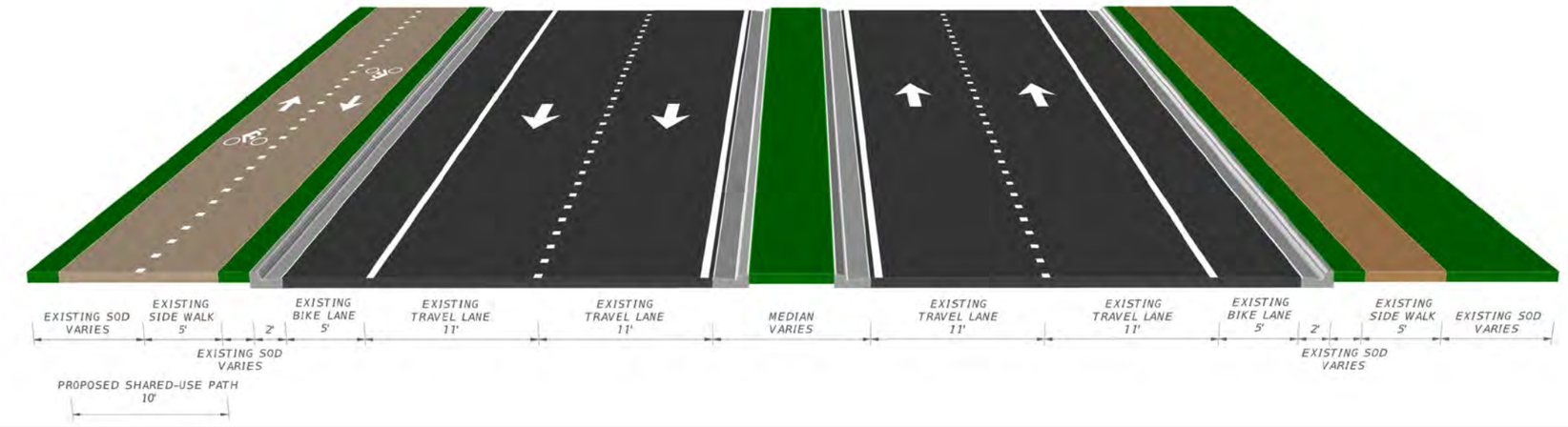
Connections to Key Destinations: Pinellas Trail; State Street Park; Montclair Park; Valencia Park; Frank Tack Park; Duke Energy Trail; Soule Road Park; McMullen Booth Elementary School; Safety Harbor Elementary School; Downtown Safety Harbor; Mullet Creek Park.

ISSUES, OPPORTUNITIES, & CONCEPT CONSIDERATIONS

- Sunset Point Road from Alt. US 19 to Keene Road has traffic volumes (approximately 7,500) and a posted speed (35 mph) that make it undesirable for a shared lane configuration. It also has a very narrow and limited right-of-way between Alt. US 19 and Douglas Avenue. The proposed bike boulevard provides a parallel facility on low volume, low speed neighborhood streets – Sedeeva Street, Iva Street, N Sedeeva Circle, Chenango Avenue, State Street, Freedom Drive, Byram Drive, Kruse Lane, Souvenir Drive, Nugget Drive, Algonquin Drive, and Montclair Road.
- Supplemental traffic control is proposed to help route users cross the street at more significant collectors and arterials, including Douglas Avenue at Iva Street / N Sedeeva Circle; N Betty Lane at State Street; Highland Avenue at Byram Drive; Keene Rd at Algonquin Dr / Montclair Rd.
- A short trail connection via land acquisition or easement may be needed to connect State Street to Freedom Drive if the streets don't fully connect. Need to verify if a signed route can be taken through Clearwater Village (private property, no trespassing sign at entrance off Kings Highway). One potential alternate route would to use Granada Street and Woodlawn Terrace to connect between the Pinellas Trail and Kings Highway, although that would require connections on unbuilt roadway right-of-way. Another alternative could include a shared-use path south along Betty Lane to Sunset Point Road and then north on Kings Highway.
- For bike boulevard sections, add wayfinding signs to direct users along route including turns, and implement bike-friendly traffic calming elements, such as speed tables or cushions, to help achieve appropriate vehicle speeds. Some streets already have traffic calming such as Byram Drive, Souvenir Drive, Algonquin Drive, and portions of Montclair Road. Consider lowering posted speed limits on streets currently posted at greater than 25 mph if traffic calming is implemented.
- Proposed shared-use path on the west side of Coachman Road would connect bike boulevard on Montclair Road to shared-use path Sunset Point Road, but would require the removal of the southbound right turn lane into the Publix and southbound right turn lane at Sunset Point Road, along with extension of curb to get sufficient path width.
- Shared-use path on Sunset Point Road would begin at Coachman Road on the south side of the street, and transition to the north side at the World Parkway signalized intersection, continuing west to Soule Road. There is generally more available right-of-way on the north side, although in some locations, widening the existing sidewalk may be challenging. The path on the north side avoids a dangerous low angle, high speed driveway at the Sunset Point shopping center just west of Lawson Road. The shared-use path would supplement the existing on-street bike lanes on this section of Sunset Point Road. The potential to improve the existing on-street bike lanes to buffered bike lanes is low as the travel lanes are already 11-feet wide.
- The eastern bike boulevard would use Soule Road, Union Street, Cedar Street, Elm Street, and 4th Street North. Additional traffic calming in the form of speed tables or speed cushions would help control speeds to provide a more bike-friendly corridor. There appears to be sufficient right-of-way along Soule Road and Union Street should a shared-use path be preferred on those streets. The only major street crossing on this route at McMullen Booth Road has existing signal control. Consider lowering posted speed limits on streets currently posted at greater than 25 mph if traffic calming is implemented.
- The lane striping could be modified at the Sunset Point Road / McMullen Booth Road to provide east/west bike lane accommodation through the intersection, with the bike lanes transitioning to shared lane markings once east of the intersection in the two-lane section.
- Main Street in Safety Harbor is proposed to be striped with shared lane markings east of McMullen Booth Road. Public involvement is needed to refine the proposed route and treatments. An alternatives analysis may be needed.

SUNSET POINT / MAIN STREET

TYPICAL SECTION: LOCATION SHOWN IS SUNSET POINT ROAD, EAST OF US 19



PROJECT & PRIORITY SCORING RESULTS

0

SAFETY SCORE

- Not within 0.5-mile of an identified high bike/pedestrian crash segment or intersection

63

INTEGRATED & CONNECTED SCORE

- Not within or providing direct access to a multimodal corridor, but connects to an activity center (Safety Harbor)
- Average bike/pedestrian demand score = 53.8
- Connects to multiple existing facilities (Pinellas Trail, Duke Energy Trail, and bike lanes/paved shoulders on Sunset Point Rd & Keene Rd)
- Provides direct access to 1 core bus route (Route 19)

62.2

ACCESSIBLE & COMFORT SCORE

- Average weighted bicycle LTS score = 67.8 (combination of LTS 1 & 2)
- Does not result in full sidewalk coverage on at least one side of all streets along route
- Traverses high composite equity score areas that also represent low bicycle and pedestrian service areas

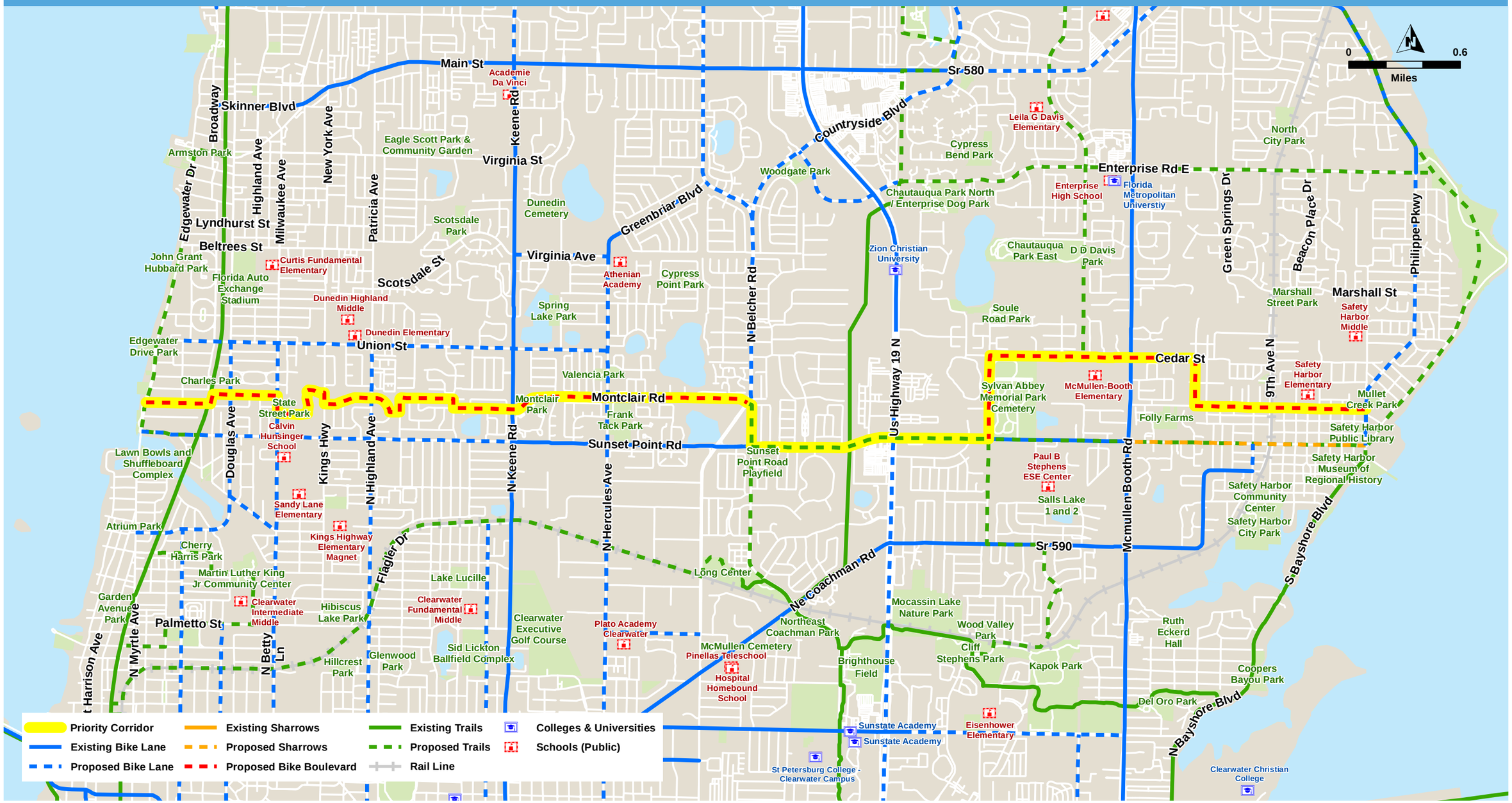
100

QUALITY OF LIFE SCORE

- Connects to Pinellas Trail and Duke Energy Trail, multiple parks (State Street Park, Montclair Park, Valencia Park, Frank Tack Park, Soule Road Park, & Mullet Creek Park), & multiple schools (McMullen Booth Elementary School & Safety Harbor Elementary School)

52.0 TOTAL WEIGHTED SCORE	**3** PRIORITY RANKING (North Area Priority 1)	**$2.99** MILLION PLANNING COST ESTIMATE

CORRIDOR MAP: SUNSET POINT ROAD / MAIN STREET



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Project Number 4: 142nd Avenue North / 16th Avenue Southwest | County Area: Central

PROJECT LIMITS: 142ND AVENUE NORTH / 16TH AVENUE SOUTHWEST, PINELLAS TRAIL TO 58TH STREET NORTH

PROJECT LOCATION

LENGTH: 5.59 MILES

POPULATION & EMPLOYMENT

11,786
POPULATION
Within 1/4 mile of project

7,866
EMPLOYMENT
Within 1/4 mile of project

BICYCLE & PEDESTRIAN FACILITIES

TRAIL

PEDESTRIAN CROSSINGS

PROJECT DESCRIPTION

This project would provide a shared-use path alongside this roadway corridor from between 58th Street to the Pinellas Trail, and would serve as an east/west corridor across the City of Largo. A portion of the project would be accomplished as a component of a new two-lane street connection between Belcher Road and Lake Avenue.

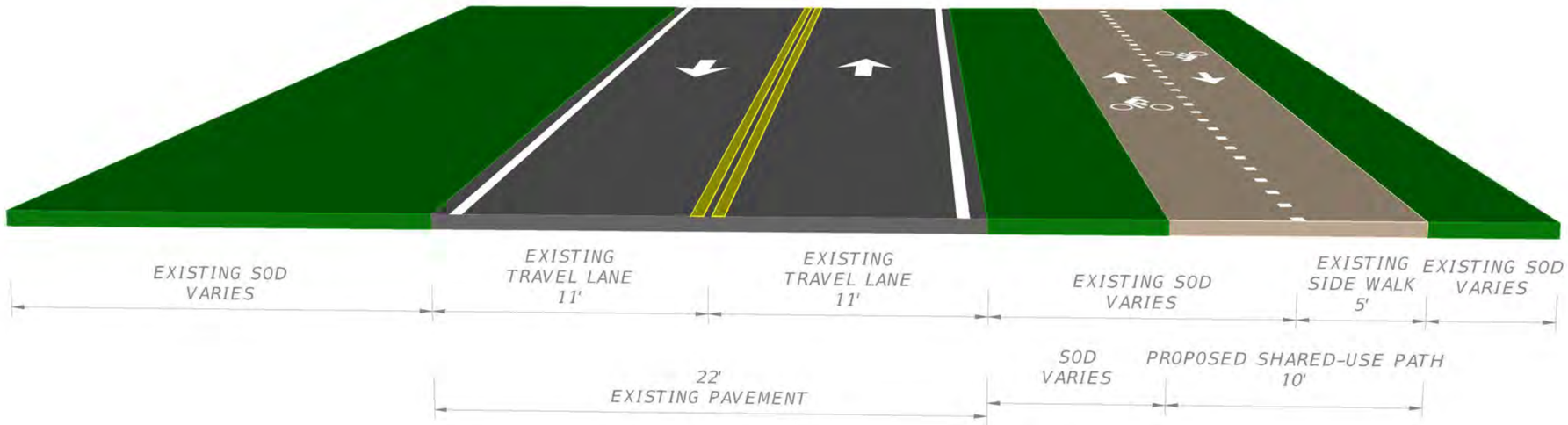
Connections to Key Destinations: Pinellas Trail; Donegan Park; Greater Ridgecrest Branch YMCA; Taylor Park; St. Petersburg College; Florida Beacon Bible College

ISSUES, OPPORTUNITIES, & CONCEPT CONSIDERATIONS

- Project corridor is the top priority in the City of Largo's Multimodal Plan for city maintained projects. It includes construction of a new 2-lane road with complete streets features from Belcher Road to Lake Avenue and sidepath/trail along the entire corridor from 66th Street to the Pinellas Trail.
- Provides an alternative east/west corridor to Ulmerton Road.
- Enhancements would be needed to provide for safe crossings at the intersections with Ridge Road and Seminole Boulevard, both 6-lane roadways. Signal control or pedestrian hybrid beacons would be preferred traffic control.
- Coordination would be required with the Palm Hill mobile home development as the proposed route passes through private property within this development between Ridge Road and Seminole Boulevard, including a crossing of Sabal Pam Drive.
- Route proposes a crossing of the railroad tracks between 16th Street SE and Donegan Road, which would require coordination with CSX and appropriate railroad crossing treatments. If the tracks cannot be crossed, an alternative route would be to run the path along Donegan Road to 8th Avenue SE/SW, continuing west to the Pinellas Trail. This alternative route would also provide a direct connection to Largo Middle School.
- Proposed route includes a diversion onto 66th Street at US 19 to cross under US 19. There is long term potential for grade separated crossing over US 19, but additional assessment would be required.
- The segment of Donegan Road from Lake Avenue to 8th Avenue SE is a Tier 1 segment in the Pinellas County Complete Streets Corridor Evaluation, and 142nd Avenue from Belcher Road to 66th St is a Tier 4 segment.

142ND AVENUE NORTH / 16TH AVENUE SOUTHWEST

TYPICAL SECTION



PROJECT & PRIORITY SCORING RESULTS

75

SAFETY SCORE

- Crosses an identified high pedestrian crash segment (Seminole Blvd, Ulmerton Rd to 16th St SE)

61.9

INTEGRATED & CONNECTED SCORE

- Not within or providing direct access to a multimodal corridor or activity center
- Average bike/pedestrian demand score = 47.6
- Connects to multiple existing facilities (Pinellas Trail, and bike lanes/paved shoulders on Ridge Rd, 66th St N & US 19)
- Provides direct access to 2 core bus route (Routes 18 & 34)

85.7

ACCESSIBLE & COMFORT SCORE

- Average weighted bicycle LTS score = 100 (all LTS 1)
- Results in full sidewalk coverage on one side of the street along route
- Traverses high composite equity score areas that also represent low bicycle and pedestrian service areas

100

QUALITY OF LIFE SCORE

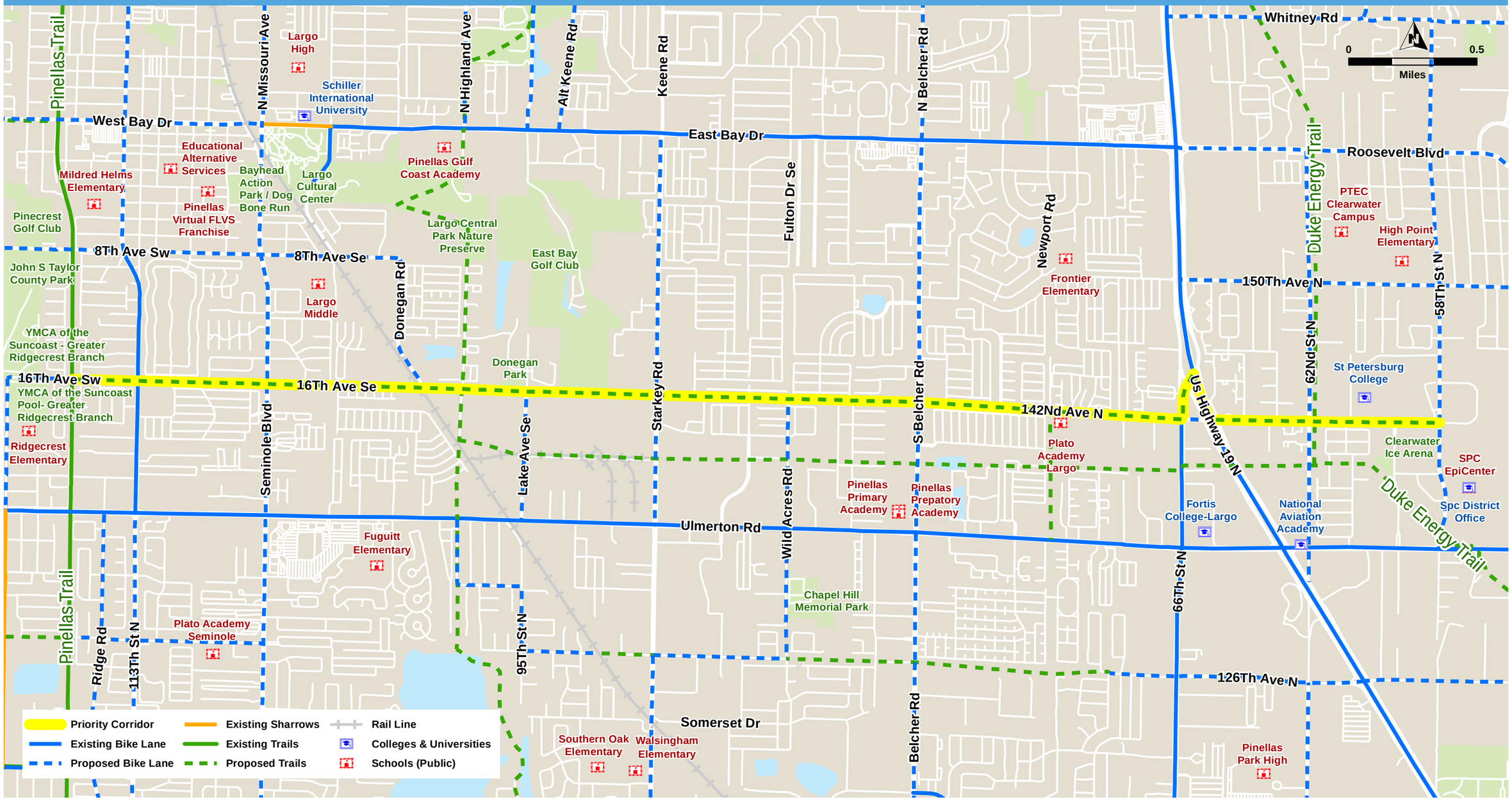
- Connects to Pinellas Trail, Donegan Park & Plato Academy Largo

74.8 TOTAL WEIGHTED SCORE

5 PRIORITY RANKING
(Central Area Priority 2)

$9.88 MILLION
PLANNING COST ESTIMATE
(Trail only, does not include new roadway construction)

CORRIDOR MAP: 142ND AVENUE NORTH / 16TH AVENUE SOUTHWEST



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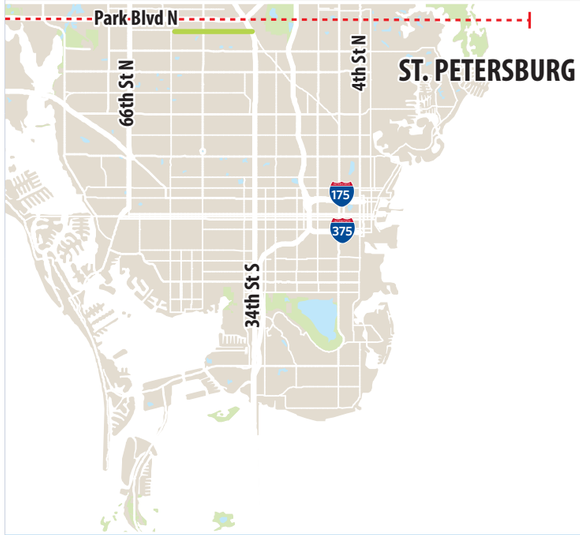
Project Number 5: 70th Ave North | County Area: South

PROJECT LIMITS: 70TH AVENUE NORTH, 58TH STREET NORTH TO US 19

PROJECT LOCATION

LENGTH: 1.90 MILES



POPULATION & EMPLOYMENT

3,918
POPULATION
Within 1/4 mile of project

3,909
EMPLOYMENT
Within 1/4 mile of project

BICYCLE & PEDESTRIAN FACILITIES

TRAIL

PROJECT DESCRIPTION

This project would provide a multi-use trail on the north side of 70th Avenue and provide an alternate east/west route to Park Boulevard across Pinellas Park.

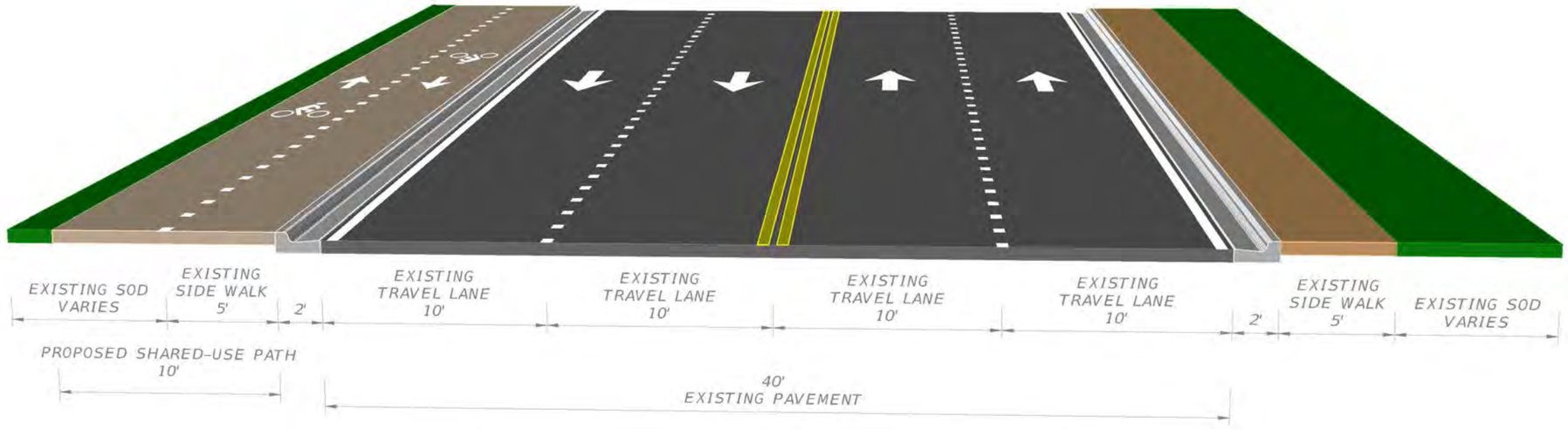
Connections to Key Destinations: Pinellas Park CRA; Shoppes at Park Place; Nina Harris ESE Center; existing neighborhoods; Lealman Community Redevelopment Area

ISSUES, OPPORTUNITIES, & CONCEPT CONSIDERATIONS

- As a four-lane undivided street with an AADT of approximately 10,700, this section of 70th Avenue North is an ideal candidate for a lane elimination to reconfigure as a three-lane segment. While this reconfiguration is not contemplated as part of the proposed multi-use trail project, it is included as a complete street project in the City of Pinellas Park CRA Plan. The proposed $10 million project in the CRA plan included a 10' multi-use trail, widening of sidewalks, installation of a landscape strip and street lights.
- There is an existing midblock crossing with RRFBs behind the Shoppes at Park Place. There is also an existing marked but uncontrolled school crossing at 52nd Street, which may be a candidate for upgrading to RRFBs.
- Available right-of-way along the north side of the street is tight in many locations and the trail width will likely need to be narrowed within these pinch points.
- A pedestrian railroad crossing gate may be needed for the proposed trail on the west side of the CSX railroad crossing located just east of 58th Street.
- Trail could be extended east of US 19 to 34th Street North, which is part of a proposed bike boulevard route connecting the 28th Street North corridor.
- 70th Avenue North from 58th Street North to US 19 is a Tier 4 segment in the Pinellas County Complete Streets Corridor Evaluation.

70TH AVE NORTH

TYPICAL SECTION



PROJECT & PRIORITY SCORING RESULTS

50

SAFETY SCORE

- Within 0.5-mile of two identified high bike and ped crash segments (Park Blvd, from 66th St to 58th St, and from 49th St to 43rd St), high bike crash intersection (Park Blvd at 52nd St) and a high ped crash intersection (Park Blvd at 49th St)

51.5

INTEGRATED & CONNECTED SCORE

- Not within or providing direct access to a multimodal corridor, but connects to an activity center (Pinellas Park)
- Average bike/ped demand score = 55.9
- Connects to one existing facility (existing bike lanes on 70th Ave, west of 58th St)
- Provides direct access to 2 core bus route (Routes 34 and 52/52LX)

78.6

ACCESSIBLE & COMFORT SCORE

- Average weighted bicycle LTS score = 100 (all LTS 1)
- Maintains full sidewalk coverage on both side of the street along route
- Not in a high composite equity score area, but traverses a low bicycle service area

0

QUALITY OF LIFE SCORE

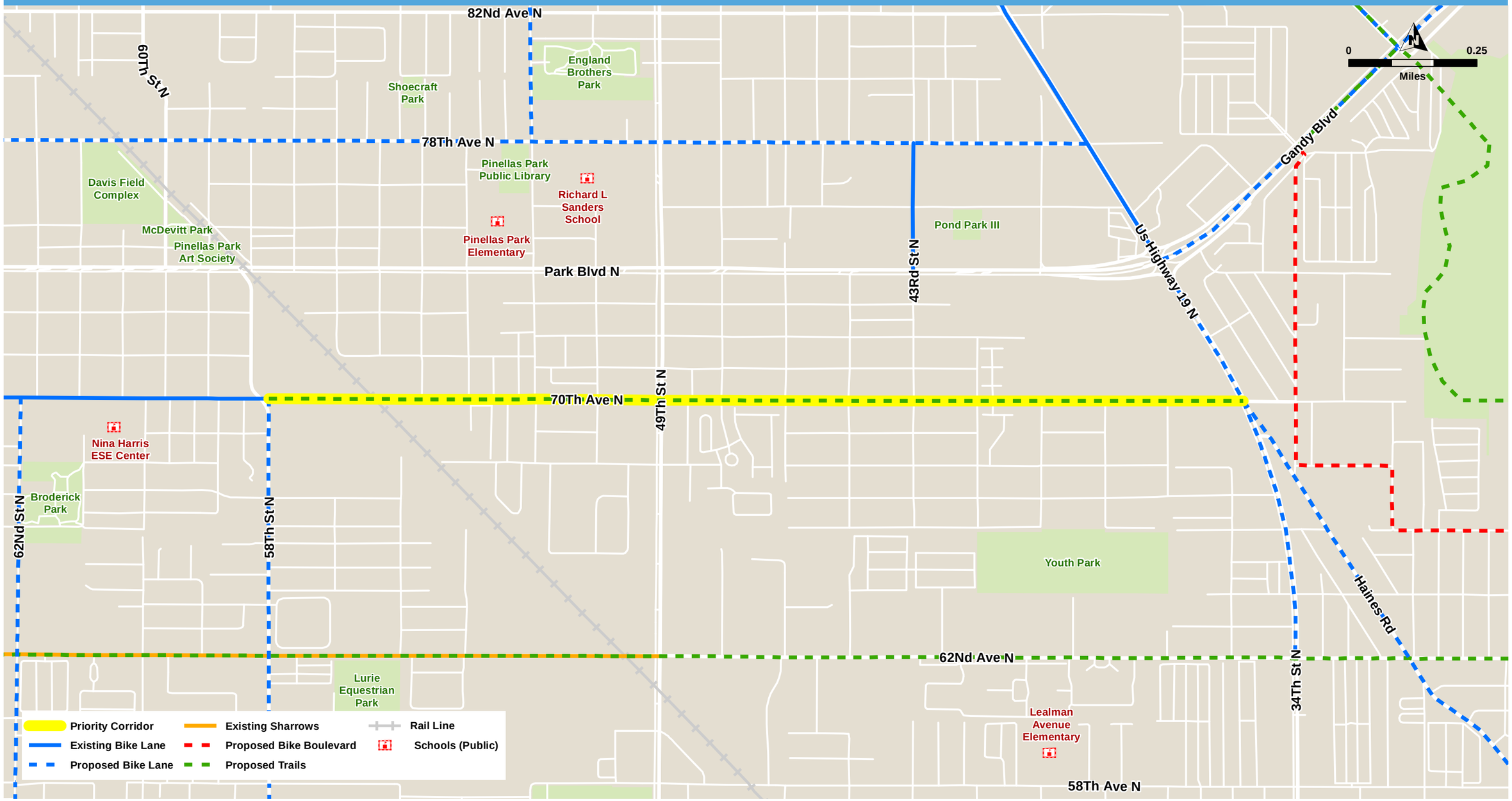
- Does not connect to existing recreational facility or destination.

58.1 TOTAL WEIGHTED SCORE

10 PRIORITY RANKING
(South Area Priority 4)

$3.36 MILLION PLANNING COST ESTIMATE
(Trail only, does not include new roadway construction)

CORRIDOR MAP: 70TH AVE NORTH



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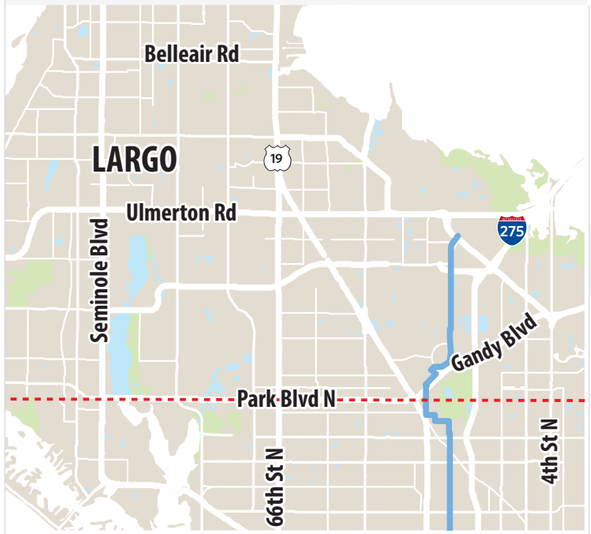
Project Number 6: 28th Street North | County Area: Central

PROJECT LIMITS: ROOSEVELT BLVD TO 30TH AVENUE NORTH

PROJECT LOCATION

LENGTH: 6.45 MILES



POPULATION & EMPLOYMENT

8,381
POPULATION
Within 1/4 mile of project

11,406
EMPLOYMENT
Within 1/4 mile of project

BICYCLE & PEDESTRIAN FACILITIES

BIKE BOULEVARD

PEDESTRIAN CROSSING

TRAIL

PROJECT DESCRIPTION

This project provides a north/south connection through St. Petersburg, Pinellas Park, and Lealman along the 28th Street corridor, primarily in the form of a multi-use trail alongside the roadway, in conjunction with a section of bike boulevard in the neighborhoods west of Sawgrass Lake Park

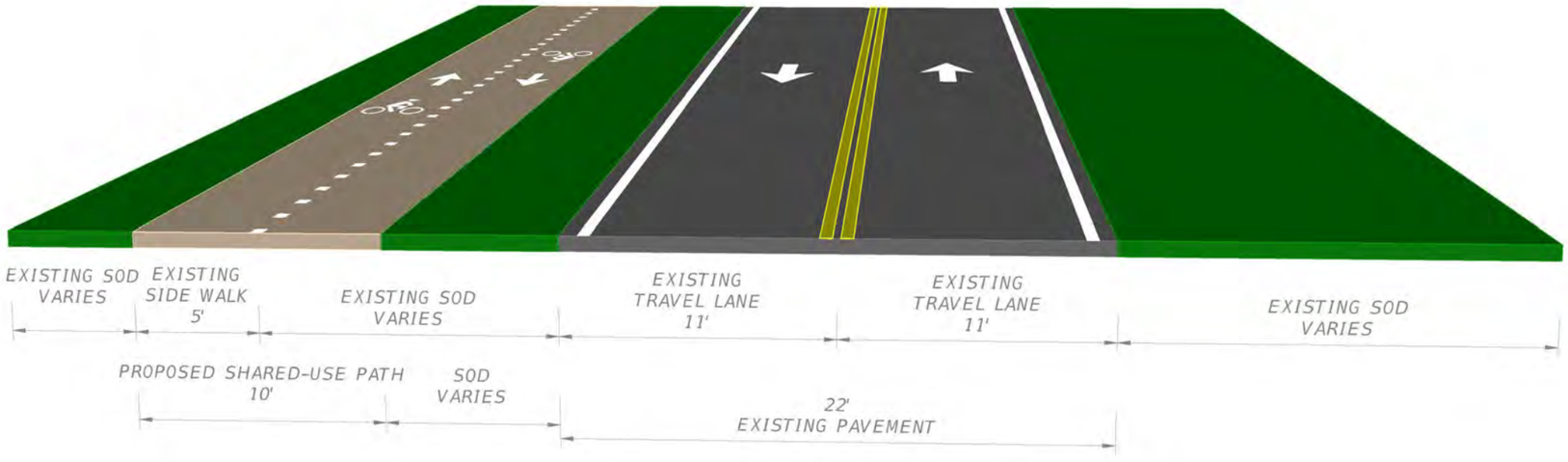
Connections to Key Destinations: Duke Energy Trail; Gateway/Mid-County area; Carillon area; Sawgrass Lake Park: Lealman Innovation Academy

ISSUES, OPPORTUNITIES, & CONCEPT CONSIDERATIONS

- The Gateway Master Plan classifies 28th Street as an Avenue/Main Street, with bicyclists and pedestrians as the priority modes. The master plan shows both proposed bike lanes and a proposed trail along the 28th Street corridor from Roosevelt Boulevard to Gandy Boulevard. The trail would connect to the existing Duke Energy Trail at Roosevelt Boulevard. The south end would connect to the proposed Bypass Community Trail along Gandy Boulevard.
- The segment of 28th Street North from Gandy Access Road to 114th Avenue North is a Tier 1 segment in the Pinellas County Complete Streets Corridor Evaluation and part of the County's FY 2020 paving program. This section of 28th Street currently has a rural typical section with five lanes, 45 mph posted speeds, no sidewalks, and transit stops. This section is a designated truck route. The sections from 114th Avenue North to 118th Avenue North and from 118th Avenue North to Roosevelt Boulevard are Tier 3 corridors.
- The proposed trail route could follow North Gandy Boulevard (where 28th Street becomes North Gandy Boulevard) to Gandy Boulevard or could follow Grand Avenue to Gandy Boulevard. If North Gandy Boulevard is used, supplemental traffic control may be needed at the North Gandy Boulevard / Grand Avenue intersection to allow trail users to cross to the west side of Grand Avenue.
- Once at Grand Avenue, the trail would travel south and cross to the south side of Gandy Boulevard at the existing signalized intersection. The trail would continue east along the south side of Gandy Boulevard until reaching 34th Street at which point it would become a bike boulevard route.
- The proposed bike boulevard route would use 34th Street, 68th Avenue North, 32nd Avenue North, 66th Avenue North, and 28th Avenue North to reach a proposed midblock crossing with appropriate traffic control / enhanced crossing features at 62nd Avenue North. Use wayfinding signs to direct users along the route including turns, and implement bike-friendly traffic calming elements, such as speed tables or cushions, to help achieve appropriate vehicle speeds.
- South of 62nd Avenue North, the street is predominantly a two-lane urban section with a trail proposed to run alongside the roadway. A three-lane section between Haines Road and 54th Avenue North has tighter, more constrained right-of-way and trail widths may be need to be narrowed. This section connects to existing on-street bike lanes at 38th Avenue North.
- The segment of 28th Street North from Haines Road to 62nd Avenue North is a Tier 1 segment in the Pinellas County Complete Streets Corridor Evaluation and part of the County's FY 2021 paving program. The segment from 38th Avenue North to Haines Road is a Tier 2 segment.

28TH STREET NORTH

TYPICAL SECTION: LOCATION SHOWN IS 28TH STREET NORTH , SOUTH OF 62ND AVENUE NORTH



PROJECT & PRIORITY SCORING RESULTS

100
SAFETY SCORE

- Includes an identified high pedestrian crash intersection (28th St N at 54th Ave N)

75.3
INTEGRATED & CONNECTED SCORE

- Provides direct access to a multimodal corridor (at 38th Ave N) and multiple activity centers (Gateway & Pinellas Park)
- Average bike/pedestrian demand score = 41.4
- Connects to multiple existing facilities (Duke Energy Trail, and bike lanes/paved shoulders on Gateway Center Pkwy & 28th St N)
- Provides direct access to 1 core bus route (Route 4)

71.4
ACCESSIBLE & COMFORT SCORE

- Average weighted bicycle LTS score = 100 (all LTS 1)
- Does not result in full sidewalk coverage on at least one side of all streets along route
- Traverses high composite equity score areas that also represent low bicycle and pedestrian service areas

100
QUALITY OF LIFE SCORE

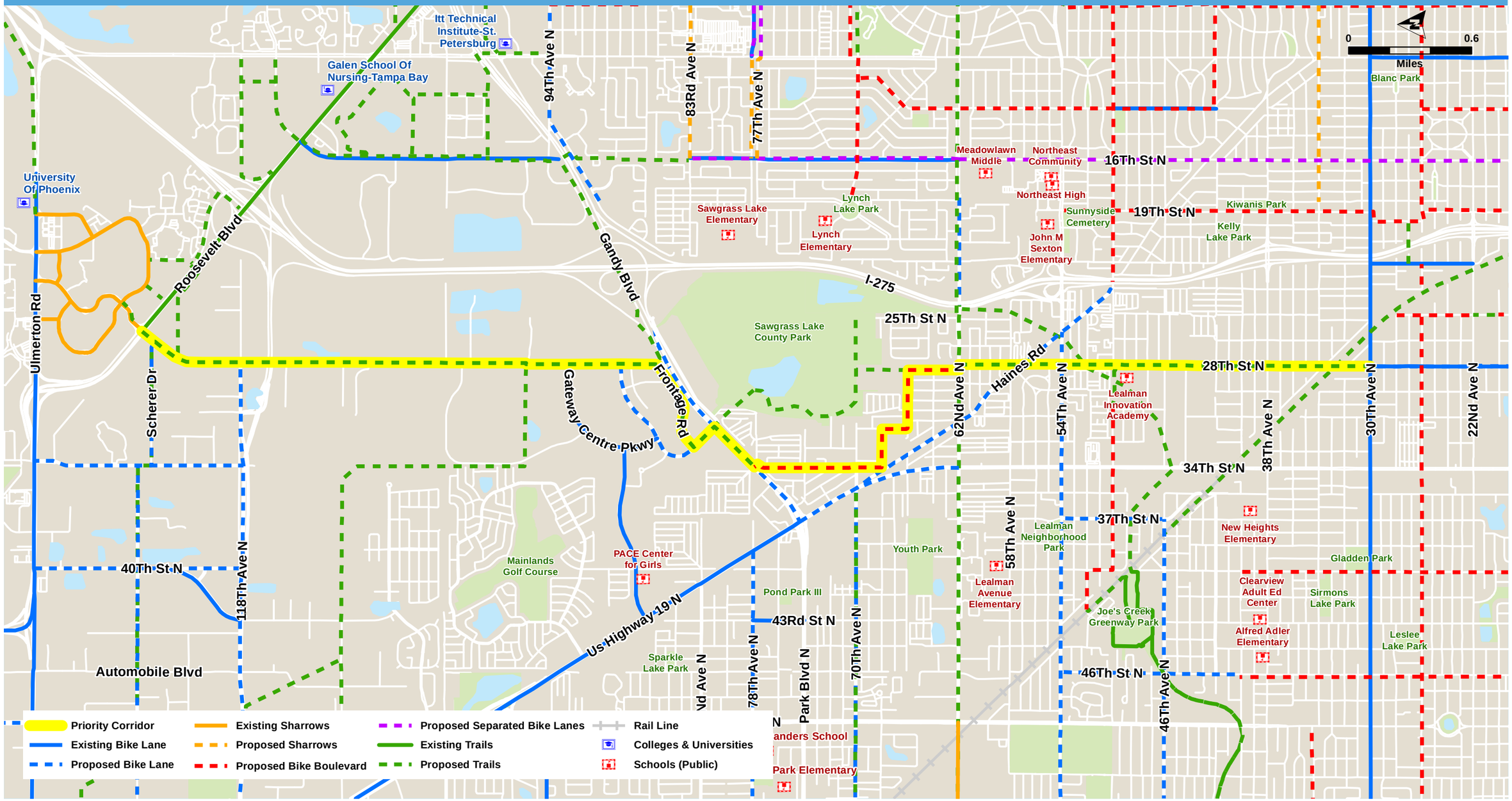
- Connects to Duke Energy Trail & Lealman Innovation Academy

80.1 TOTAL WEIGHTED SCORE

2 PRIORITY RANKING
(Central Area Priority 1)

$8.86 MILLION
PLANNING COST ESTIMATE
(Trail only, does not include new roadway construction)

CORRIDOR MAP: 28TH STREET NORTH



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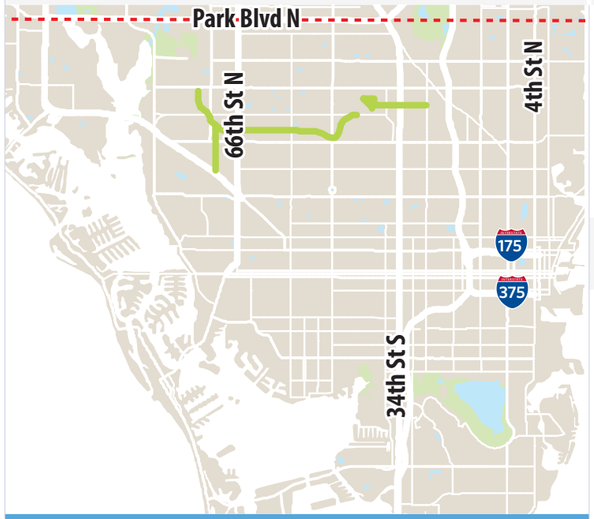
Project Number 7: Joe's Creek Greenway | County Area: South

PROJECT LIMITS: 54TH AVENUE NORTH AT JOE'S CREEK TO 28TH STREET NORTH; 71ST STREET NORTH FROM JOE'S CREEK GREENWAY TO PINELLAS TRAIL

PROJECT LOCATION

LENGTH: 6.21 MILES



POPULATION & EMPLOYMENT

14,820
POPULATION
Within 1/4 mile of project

6,704
EMPLOYMENT
Within 1/4 mile of project

BICYCLE & PEDESTRIAN FACILITIES

BIKE BOULEVARD

PEDESTRIAN CROSSING

TRAIL

PROJECT DESCRIPTION

This project will provide a critical link between Joe's Creek Greenway Park and the Pinellas trail, allowing users to travel safely in the Lealman area of Pinellas County to the Pinellas Trail system . The trail will become a linear park which provides a safe, inexpensive option for regular recreation and exercise for people living in the surrounding communities

Connections to Key Destinations: Joe's Creek Greenway Park; Pinellas Trail; Lealman Innovation Academy

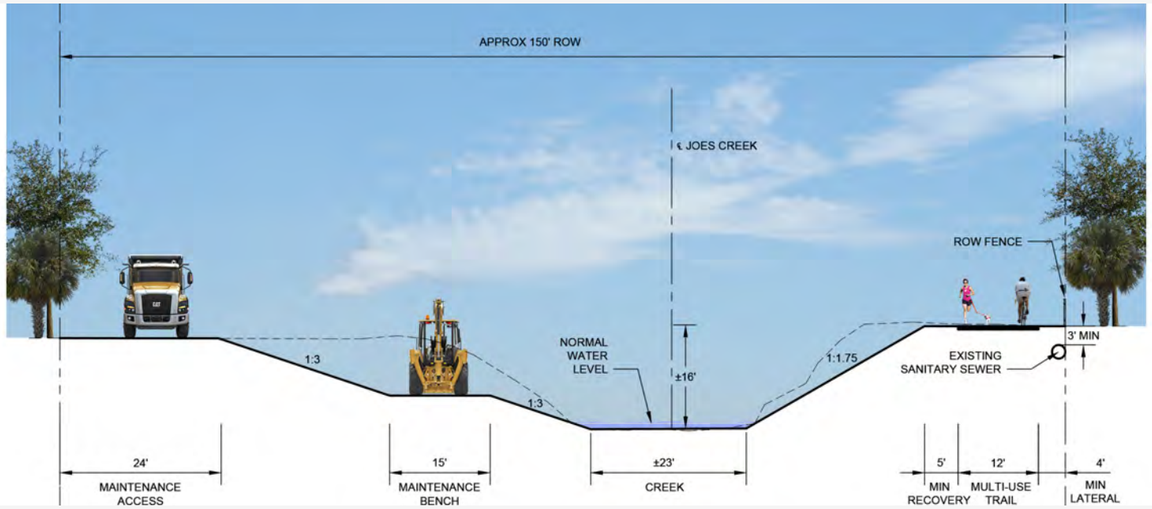
ISSUES, OPPORTUNITIES, & CONCEPT CONSIDERATIONS

- Project evaluated to determine a preferred trail alignment in Joe's Creek Greenway Trail Alignment Study (June 2017, AECOM). Project is proposed as a 12-foot multi-use trail connecting Joe's Creek Greenway Park to the Pinellas Trail via Joe's Creek and the City of St. Petersburg planned future 71st Street North Trail. The study evaluated three connections on the east and west sides of the existing Joe's Creek Greenway Park, with East Connection Option 1 and West Connection Option 1 along with the central spine along Joe's Creek emerging as the preferred route.
- East Connection Option 1 starts at Joe's Creek Greenway Park and runs along the eastern edge of the Duval Park Apartments property to utilize the existing CSX Railroad crossing at 52nd Avenue North, then traverses southeast along Main Street North utilizing Pinellas County right-of-way/ easments. After utilizing a short segment along 40th Street North the trail would then head east along the north side of Joe's Creek before switching to the south side of Joe's Creek east of 37th Street North and would terminate on the west side of 34th Street North across from the intersection of 46th Avenue North. This option would require a structure to cross back to the north of Joe's Creek just to the west of 34th Street North.
- The proposed east connection in this concept differs from the proposed East Connection Option 1 in that it proposes to utilize a bike boulevard on 52nd Avenue North, 40th Street North, and 50th Avenue North. The bike boulevard would be an in-street route on these low volume, low speed streets, supplemented with wayfinding signage and traffic calming such as speed cushions. A crossing would be required where 50th Avenue North crosses US 19 (34th Street North) – a grade separated crossing could be considered, but the crossing could also be facilitated by a traffic signal.
- (Cont) East of 31st Street North where 50th Avenue North currently ends, a trail is proposed along the north edge of the Lealman Innovation Academy property to provide a connection to 28th Street North, which would tie into an existing midblock crossing and the proposed trail along 28th Street North.
- West Connection Option 1 diverges from Joe's Creek at 71st Street North and travels south along 71st Street North, connecting to the future City of St. Petersburg 71st Street Trail at 38th Avenue North, and subsequently the Pinellas Trail.
- The preferred trail alignment from the alignment study included 13 roadway crossings. Five crossings are proposed to include RRFBs (37th Street North, 58th St North, 62nd Street North, 71st Street North, 46th Avenue North); two crossings are proposed as full traffic signals or pedestrian hybrid beacons (49th Street North, 66th Street North); and six crossings are proposed to be accommodated with signs and markings only (46th Street North, Tyler Circle North, 41st Street North, 40th Avenue North, 39th Avenue North, 38th Avenue North).
- Preferred trail alignment utilizes existing disturbed areas or existing unimproved paths within Pinellas County lands along Joe's Creek to minimize impacts to existing vegetation and wildlife habitats. It also limits the amount of conflicts with Pinellas County utilities and a proposed bank stabilization project.
- The segment of 71st Street North from 38th Avenue North to 54th Avenue North is a Tier 1 segment in the Pinellas County Complete Streets Corridor Evaluation and was recently resurfaced as part of the County's FY 2018 paving program. The segment from the Pinellas Trail north to 38th Avenue is listed as a planned multi-use trail connector and included for preliminary engineering in 2022/2023, and is included as a Tier 4 segment.

JOE'S CREEK GREENWAY

TYPICAL SECTION: LOCATION SHOWN IS JOE'S CREEK GREENWAY ON RECOMMENDED ROUTE BETWEEN JOE'S CREEK GREENWAY PARK AND 49TH STREET NORTH

Source: Joe's Creek Greenway Trail Alignment Study, June 2017



PROJECT & PRIORITY SCORING RESULTS

50

SAFETY SCORE

- Within 0.5-mile of an identified high bike crash segment (66th St N, 38th Ave N to 30th Ave N) & high pedestrian crash intersection (28th St N at 54th Ave N)

62.9

INTEGRATED & CONNECTED SCORE

- Not within or providing direct access to a multimodal corridor or activity center
- Average bike/pedestrian demand score = 51.5
- Connects to multiple existing facilities (existing Joe's Creek Trail, and bike lanes/paved shoulders on Gateway Center Pkwy & 28th St N)
- Provides direct access to multiple core bus routes (Routes 18, 34, & 52/52LX)

69.3

ACCESSIBLE & COMFORT SCORE

- Average weighted bicycle LTS score = 91.2 (mostly LTS 1, small section of LTS 2)
- Does not result in full sidewalk coverage on at least one side of all streets along route
- Traverses high composite equity score areas that also represent low bicycle and pedestrian service areas

100

QUALITY OF LIFE SCORE

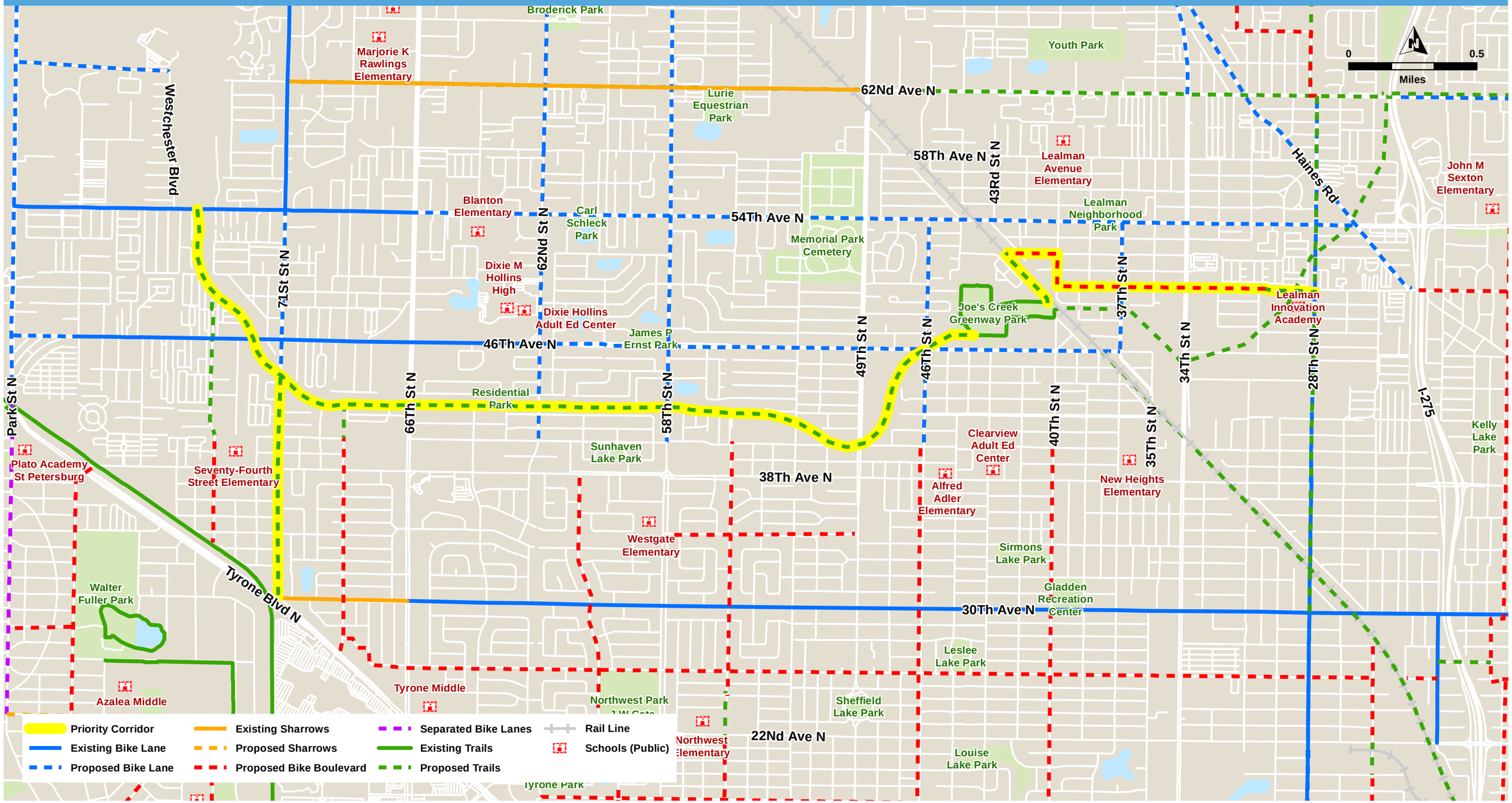
- Extends existing Joe's Creek Trail, and connects to Joe's Creek Greenway Park & Lealman Innovation Academy

64.4 TOTAL WEIGHTED SCORE

7 PRIORITY RANKING
(South Area Priority 3)

$10.02 MILLION PLANNING COST ESTIMATE

CORRIDOR MAP: JOE'S CREEK GREENWAY



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Project Number 8: San Martin Boulevard | County Area: Central

PROJECT LIMITS: SAN MARTIN BOULEVARD, MACOMA DRIVE NE (AT PATICA RD NE) TO GANDY BOULEVARD

PROJECT LOCATION

LENGTH: 1.80 MILES

POPULATION & EMPLOYMENT

1,398
POPULATION
Within 1/4 mile of project

1,186
EMPLOYMENT
Within 1/4 mile of project

BICYCLE & PEDESTRIAN FACILITIES

TRAIL

PEDESTRIAN CROSSINGS

PROJECT DESCRIPTION

This project closes a key section of the Pinellas Trail Loop by extending the North Bay Trail north to the Friendship Trail and Duke Energy Trail at Gandy Boulevard.

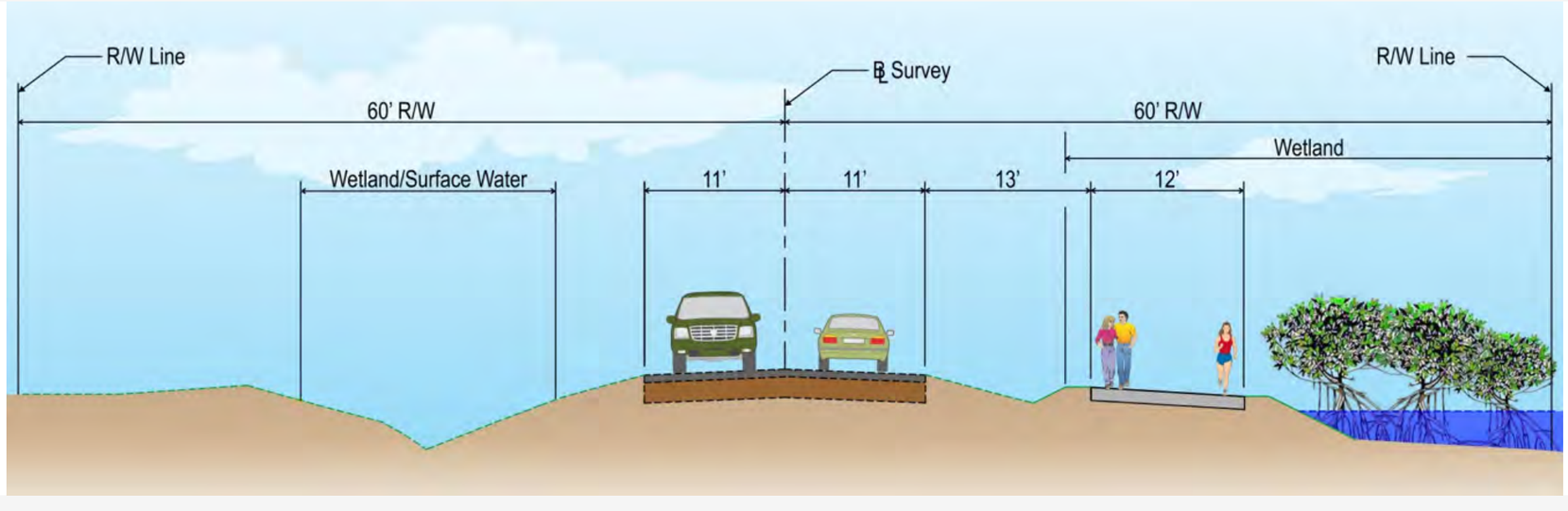
Connections to Key Destinations: Duke Energy Trail; North Bay Trail; Riviera Bay Park

ISSUES, OPPORTUNITIES, & CONCEPT CONSIDERATIONS

- The San Martin Boulevard Bridge has been the subject of an ongoing PD&E Study, which also includes an evaluation of an extension of the North Bay Trail including alignment alternatives and crossing locations.
- The PD&E concept for the bridge includes both on-street buffered bike lanes and the trail, however, the road is not proposed to be widened outside of the bridge limits. Extending the on-street bike lanes beyond the bridge limits may be a potential option for consideration; alternatively, shared lane markings could be considered to enhance the in-street environment.
- The trail alternatives evaluated in the PD&E Study included a west side alternative, east side alternative, and hybrid alternative that includes portions on both sides with a crossing near Osceola Court. The west alignment would have four trail crossing/connection points, while the east alignment has two, and the hybrid has three. The cost estimate for this project assumes use of the east alignment.
- A crossing of Gandy Boulevard is needed to provide a connection to the existing Friendship Trail. The preferred crossing would likely be a new traffic signal at the Gandy Boulevard / San Martin Boulevard intersection, but a pedestrian hybrid beacon located just east of San Martin Boulevard could also be considered.
- The segment of San Martin Boulevard from Weedon Drive NE to Gandy Boulevard is a Tier 1 segment in the Pinellas County Complete Streets Corridor Evaluation and part of the County's FY 2021 paving program. The segment (Patica Road) from Macoma Drive to Weedon Drive NE is a Tier 2 segment.

SAN MARTIN BOULEVARD

TYPICAL SECTION: LOCATION SHOWN IS PROPOSED SECTION FOR THE RIGHT/EAST TRAIL ALIGNMENT NORTH OF THE BRIDGE



PROJECT & PRIORITY SCORING RESULTS

0

SAFETY SCORE

- Not within 0.5-mile of an identified high bike/pedestrian crash segment or intersection

59.3

INTEGRATED & CONNECTED SCORE

- Provides direct access to a multimodal corridor (along Gandy Blvd), but no direct access to an activity center
- Average bike/pedestrian demand score = 27.2
- Connects to multiple existing facilities (Pinellas Trail Loop North Bay Trail, Friendship Trail Gandy Blvd, & Friendship Trail Savona Dr)
- Provides direct access to 1 bus route with headways of 30 min (Route 9)

64.3

ACCESSIBLE & COMFORT SCORE

- Average weighted bicycle LTS score = 100 (all LTS 1)
- Results in full sidewalk coverage on one side only
- Traverses a low pedestrian service area, but no high composite equity score areas

100

QUALITY OF LIFE SCORE

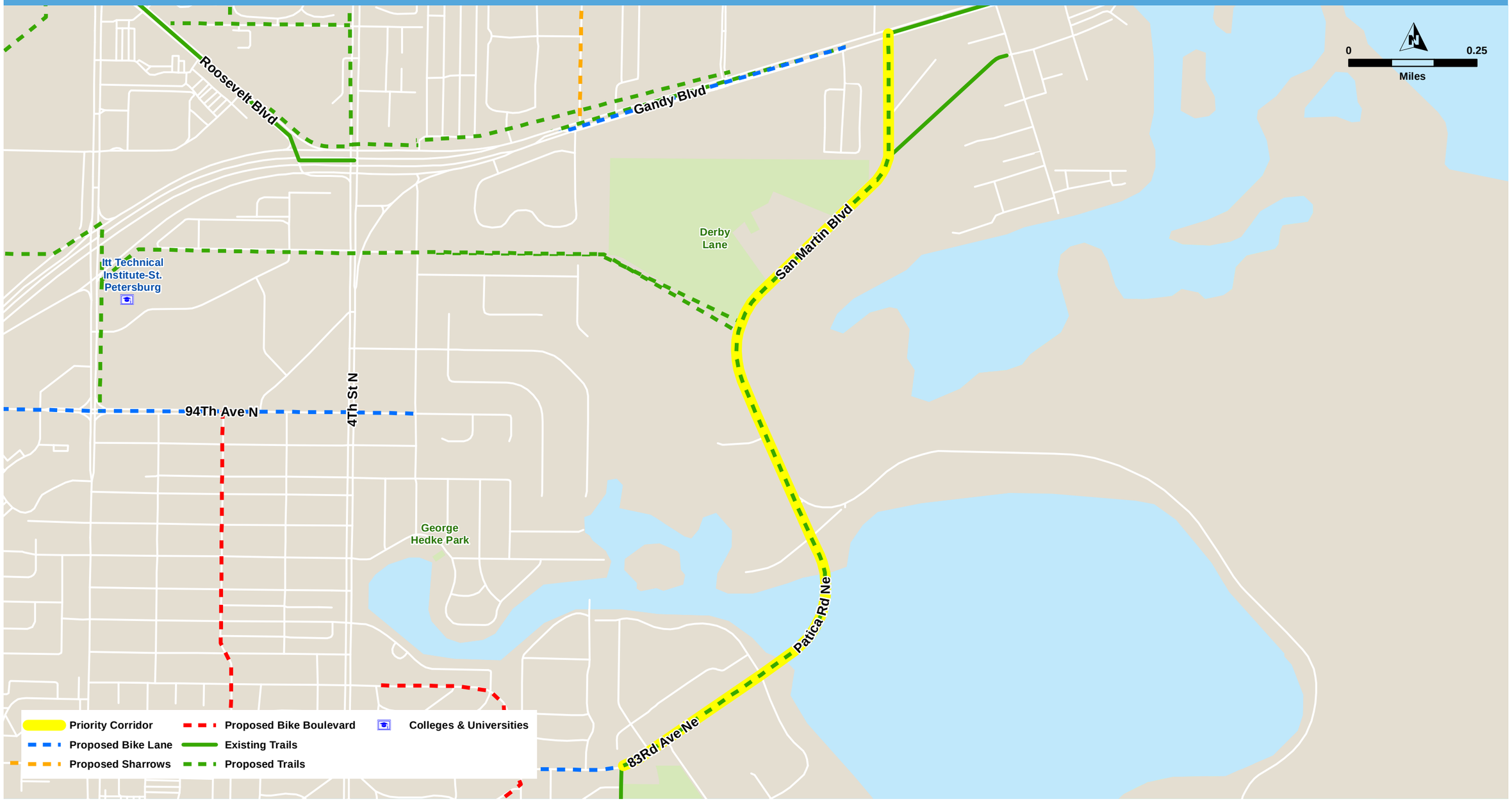
- Connects Pinellas Trail Loop North Bay Trail with Friendship Trail Gandy Blvd, & connects to Riviera Bay Park

51.2 TOTAL WEIGHTED SCORE

8 PRIORITY RANKING
(Central Area Priority 3)

$0.92 MILLION PLANNING COST ESTIMATE

CORRIDOR MAP: SAN MARTIN BOULEVARD



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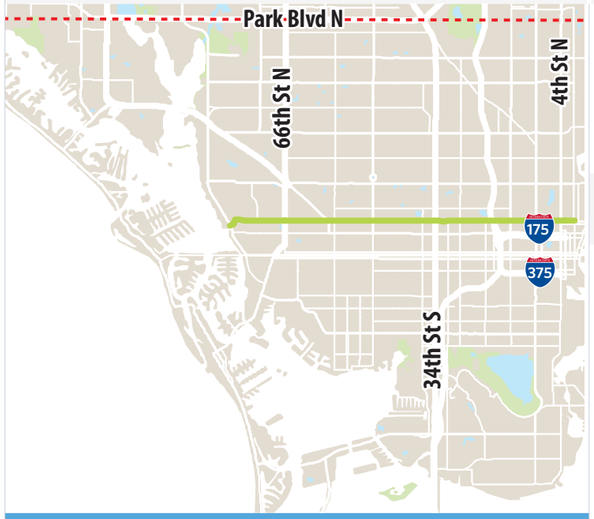
Project Number 9: 9th Avenue North | County Area: South

PROJECT LIMITS: PARK STREET NORTH TO 1ST STREET NORTH

PROJECT LOCATION

LENGTH: 6.95 MILES



POPULATION & EMPLOYMENT

17,292
POPULATION
Within 1/4 mile of project

9,466
EMPLOYMENT
Within 1/4 mile of project

BICYCLE & PEDESTRIAN FACILITIES

SEPARATED BIKE LANES

SHARED LANE MARKINGS

BIKE BOULEVARD

PEDESTRIAN CROSSINGS

PROJECT DESCRIPTION

This project would provide a key east/west bicycle connection across the City of St. Petersburg on the north side of downtown.

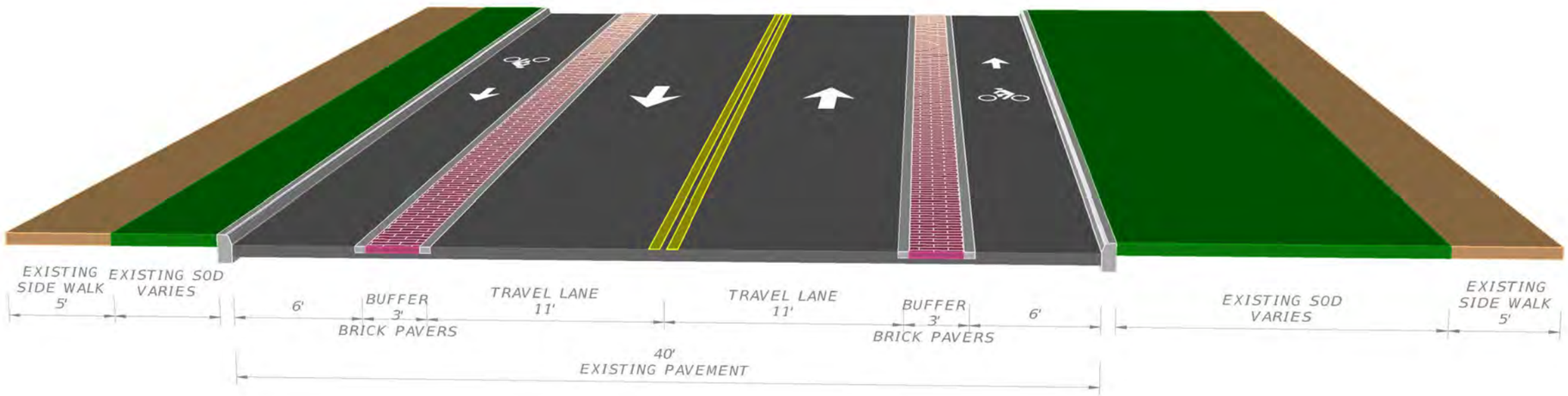
Connections to Key Destinations: Pinellas Trail; St. Petersburg Public Library, North Central Neighborhood Park, St. Petersburg High School, St. Petersburg Catholic High School

ISSUES, OPPORTUNITIES, & CONCEPT CONSIDERATIONS

- Corridor identified in the City of St. Petersburg Complete Streets Implementation Plan for separated bike lanes from Park Street North to Dr. MLK Jr. Street North, shared lane markings from Dr. MLK Jr. Street North to 4th Street North, and separated bike lanes from 4th Street North to 3rd Street North. The separated bike lanes between 66th Street North and Dr. MLK Jr. Street North are proposed to be achieved via a road diet reconfiguration from the existing four-lane undivided section to a three-lane section.
- The section between Park Street North and 66th Street North is a three-lane section with existing bike lanes. Enhancements to gain more separation for the bike lanes could be made by simply reducing the widths of each of the travel lanes to 10 feet.
- Curb to curb width of the existing four-lane section is 44 feet in some areas, but narrows to just 40 feet in others, which would make it very challenging to achieve separated bike lanes if it is desired to do a simpler, less expensive retrofit at street level and go to a three-lane section. One solution (shown in the typical section) would be to reconfigure to a two-lane section with separated bike lanes. This may be feasible because the daily traffic volumes are approximately 3,100 vehicles per day, which may make a center two-way left turn lane unnecessary, particularly since the corridor widens to a five-lane section at major signalized cross streets today – those intersections would be reconfigured with three-lane sections and separated bike lanes. Other configurations that leave the existing curb to curb width unchanged may be possible as well, such as sidewalk level separated bike lanes placed between the curb and sidewalk.
- There is potential for protected intersections at locations where the 9th Avenue North separated bike lanes would intersect other corridors with proposed separated bike lanes, such as at 28th Street North and 16th Street North.
- The City's Complete Streets Implementation Plan shows proposed pedestrian crossings / greenway connections along the 9th Avenue North corridor at the following locations: 74th Street North, 61st Street North, 55th Street North, 40th Street North, 25th Street North, and 22nd Street North.
- The existing two-lane section between Dr. MLK Jr. Street North and 4th Street North has narrow undesignated bike lanes. In lieu of the proposed shared lane markings, these bike lanes could potentially be widened by narrowing the adjacent travel lanes.
- The one-block section from 4th Street North to 3rd Street North is currently a two-lane, one-way street, and could be retrofit with separated bike lanes either by placing them outside the curbs adjacent to the existing sidewalks or by removing one travel lane.
- The section from 3rd Street North to 1st Street North is proposed to be a bike boulevard with appropriate traffic calming as needed. This section would connect to proposed shared lane markings on 1st Street North and an enhanced pedestrian crossing / greenway connection at the 9th Avenue North / 1st Street North intersection.

9TH AVENUE NORTH

TYPICAL SECTION



PROJECT & PRIORITY SCORING RESULTS

75

SAFETY SCORE

- Crosses an identified high bike crash segment (4th St N, 22nd Ave N to 9th Ave N)

88.8

INTEGRATED & CONNECTED SCORE

- Provides direct access to a multimodal corridor (at numerous cross streets along the corridor) and multiple activity centers (Tyrone Square; Pinellas Trail; downtown St. Petersburg)
- Average bike/pedestrian demand score = 55.2
- Connects to multiple existing facilities (Pinellas Trail and bike lanes/paved shoulders on 9th Ave N, 37th St N, 31st St N, 28th St N, & Dr. Martin Luther King Jr St N)
- Provides direct access to multiple core bus routes (Routes 4, 18, 34, & 52/52LX)

84.8

ACCESSIBLE & COMFORT SCORE

- Average weighted bicycle LTS score = 83.3 (mostly LTS 1, small section of LTS 2)
- Results in full sidewalk coverage on one side only
- Traverses high composite equity score areas, as well as low bicycle and pedestrian service areas (but not overlapped with high equity areas)

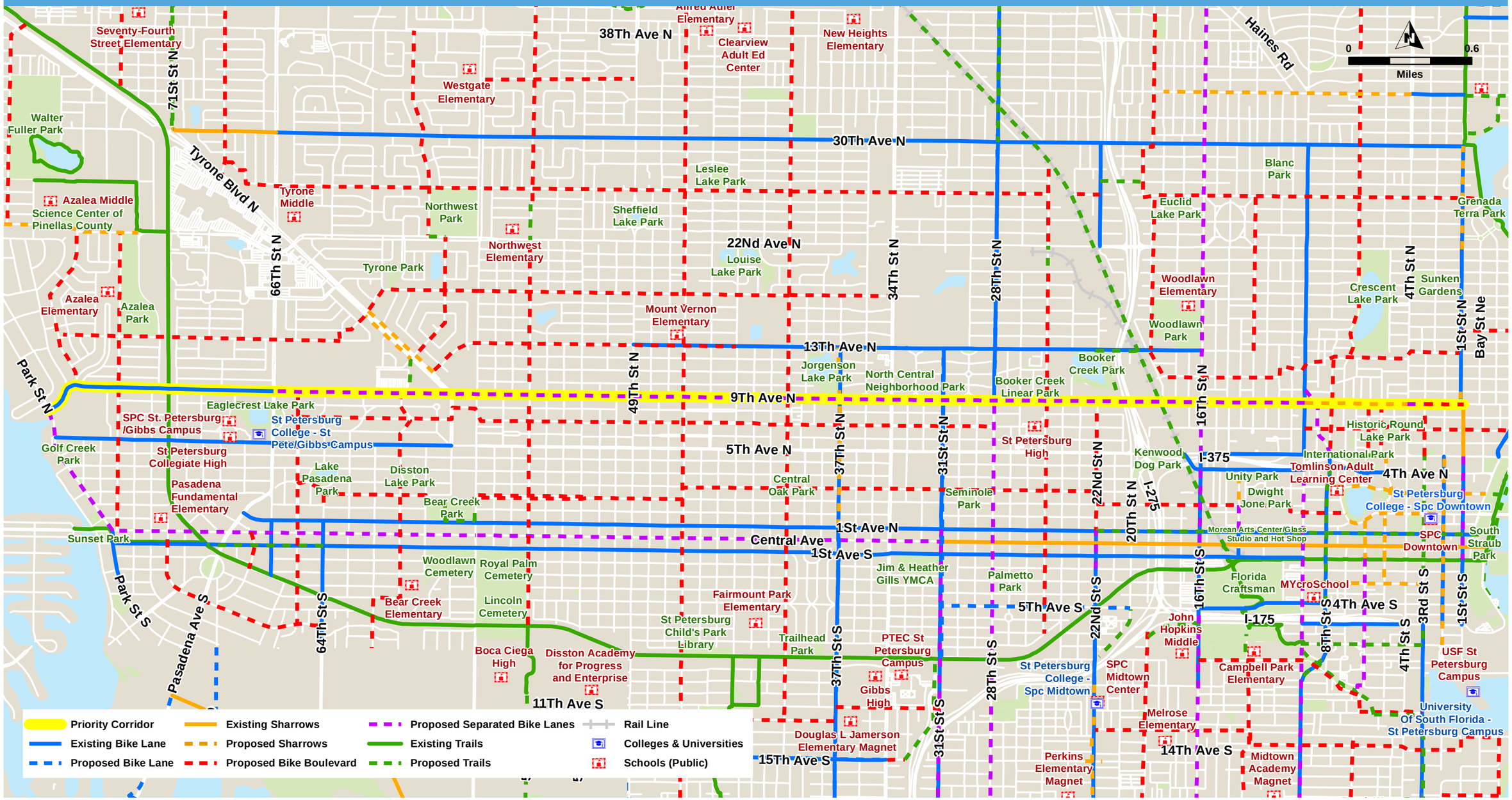
100

QUALITY OF LIFE SCORE

- Connects to Pinellas Trail, St. Petersburg Public Library, & North Central Neighborhood Park

83.8	TOTAL WEIGHTED SCORE	**4** PRIORITY RANKING (South Area Priority 2)	**$6.33** MILLION PLANNING COST ESTIMATE

CORRIDOR MAP: 9TH AVENUE NORTH



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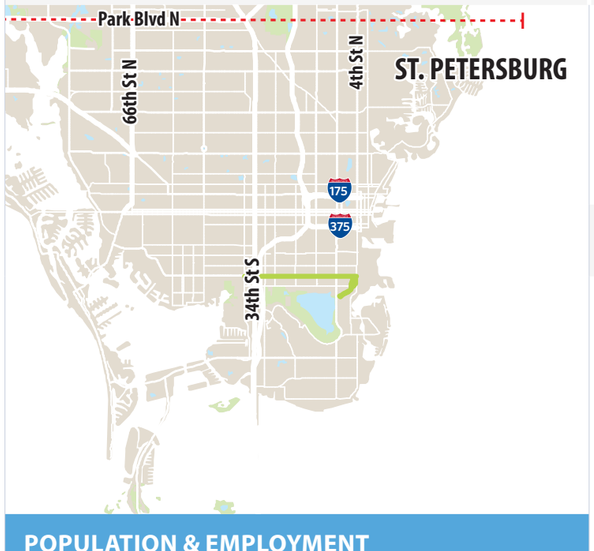
Project Number 10: 18th Avenue South / Salt Creek Trail Extension | County Area: South

PROJECT LIMITS: 37TH STREET SOUTH TO 4TH STREET SOUTH; SALT CREEK TRAIL FROM 18TH AVENUE

PROJECT LOCATION

LENGTH: 4.06 MILES



POPULATION & EMPLOYMENT

10,226
POPULATION
Within 1/4 mile of project

1,713
EMPLOYMENT
Within 1/4 mile of project

BICYCLE & PEDESTRIAN FACILITIES

BIKE BOULEVARD | PEDESTRIAN CROSSING | SEPARATED BIKE LANES

PROJECT DESCRIPTION

This project would provide safety and operational improvements that would improve the environment for non-motorized users by moderating motor vehicle speeds, providing a continuous east/west bicycle route and facilities, and providing safer and more comfortable crossing treatments.

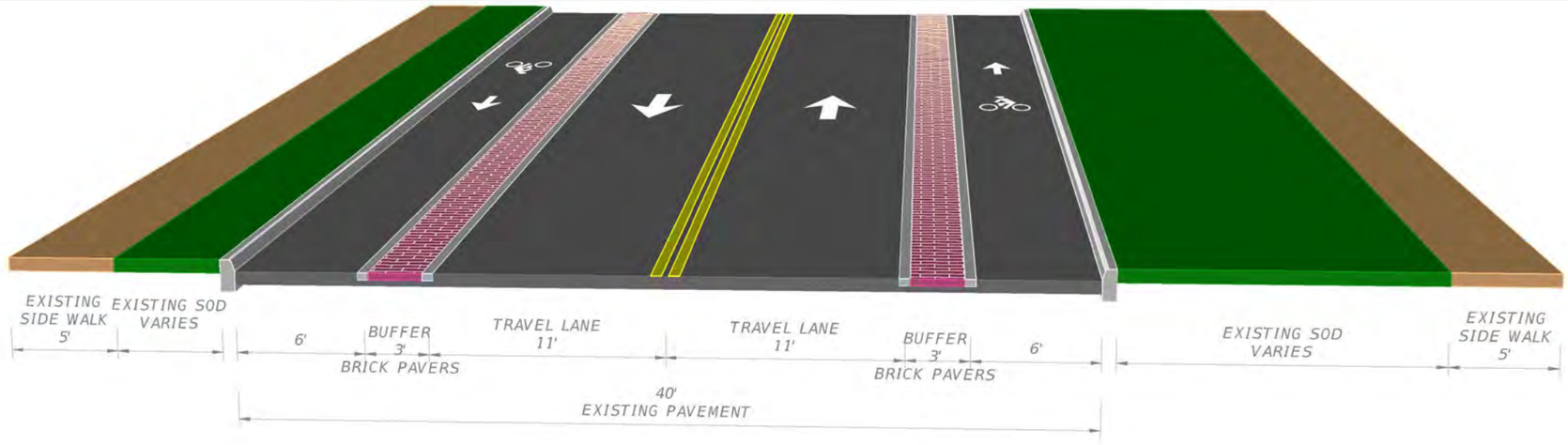
Connections to Key Destinations: Bartlett Park, Frank H. Pierce Recreation Center, St. Petersburg Tennis Center, Enoch D Davis Center, James Weldon Johnson Branch Library, Harbordale Park, Perkins Elementary School, Midtown Academy

ISSUES, OPPORTUNITIES, & CONCEPT CONSIDERATIONS

- The 18th Avenue South corridor is identified in the City of St. Petersburg Complete Streets Implementation Plan for separated bike lanes from 37th Street South to 3rd Street South. The separated bike lanes are proposed to be achieved via a road diet reconfiguration from the existing four-lane undivided section to a three-lane section. Additionally, trail is proposed along both sides of Salt Creek from 18th Avenue South to 26th Avenue South.
- The City has also submitted and had approved an application to the Forward Pinellas Complete Streets Program to complete a Concept Planning Study for the 18th Avenue South corridor from 37th Street South to Dr. MLK Jr. Street South.
- Curb to curb width of the existing four-lane section is approximately 40 feet, which would make it very challenging to achieve separated bike lanes if it is desired to do a simpler, less expensive retrofit at street level and go to a three-lane section. One solution (shown in the typical section) would be to reconfigure to a two-lane section with separated bike lanes. This may be feasible because the daily traffic volumes are approximately 4,300 vehicles per day, which may make a center two-way left turn lane unnecessary, particularly since the corridor widens to a five-lane section at several major signalized cross streets today – those intersections would be reconfigured with three-lane sections and separated bike lanes. Other configurations that leave the existing curb to curb width unchanged may be possible as well, such as sidewalk level separated bike lanes placed between the curb and sidewalk.
- East of 16th Street South, the existing configuration changes to a three-lane section and the curb to curb width narrows to approximately 35 feet. East of Dr. MLK Jr. Street South, the street changes to a two-lane street with on-street parking permitted, while the width is maintained at 35 feet. Coordination would be needed on these sections to determine if and where turn lanes and on-street parking would need to be maintained. The constrained width may necessitate separated bike lanes being shifted to outside the curbs in this section.
- There is potential for protected intersections at locations where the 18th Avenue South separated bike lanes would intersect other corridors with proposed separated bike lanes, such as at 31st Street South, 28th Street South, 16th Street South, and Dr. MLK Jr. Street South.
- The City's Complete Streets Implementation Plan shows a proposed pedestrian crossing / greenway connection at 18th Avenue South and 7th Street South and one at 22nd Avenue South and the Salt Creek Trail.
- While trail is proposed along both side of Salt Creek in the City's Complete Streets Implementation Plan, simpler bicycle facility treatments could be considered in some locations given the very low volume, low speed nature of the adjacent streets. As such, this concept proposes bike boulevards with signage and additional traffic calming as needed on East Harbor Drive South from 22nd Avenue South to 24th Avenue South, and on East and West Harbor Drive South from 7th Street South to 26th Avenue South.

18TH AVENUE SOUTH

TYPICAL SECTION



PROJECT & PRIORITY SCORING RESULTS

100

SAFETY SCORE

- Crosses an identified high bike crash segment (4th St N, 22nd Ave N to 9th Ave N)

90.5

INTEGRATED & CONNECTED SCORE

- Provides direct access to a multimodal corridor (at numerous cross streets along the corridor) and multiple activity centers (Tyrone Square; Pinellas Trail; downtown St. Petersburg)
- Average bike/ped demand score = 55.2
- Connects to multiple existing facilities (Pinellas Trail and bike lanes/paved shoulders on 9th Ave N, 37th St N, 31st St N, 28th St N, & Dr. Martin Luther King Jr St N)
- Provides direct access to multiple core bus routes (Routes 4, 18, 34, & 52/52LX)

80.9

ACCESSIBLE & COMFORT SCORE

- Average weighted bicycle LTS score = 83.3 (mostly LTS 1, small section of LTS 2)
- Results in full sidewalk coverage on one side only
- Traverses high composite equity score areas, as well as low bicycle and pedestrian service areas (but not overlapped with high equity areas)

100

QUALITY OF LIFE SCORE

- Connects to Pinellas Trail, St. Petersburg Public Library, & North Central Neighborhood Park

90.9	TOTAL WEIGHTED SCORE	**1**	PRIORITY RANKING (South Area Priority 1)	**$4.94 MILLION**	PLANNING COST ESTIMATE

CORRIDOR MAP: 118TH AVENUE SOUTH/SALT CREEK TRAIL EXTENSION

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