Marco Island Loop Trail Feasibility Study and Conceptual Design

Collier County, Florida

Existing Conditions Report

August 2022 (Updated March 2023)

Prepared for:

Table of Contents

List of Figures

List of Tables

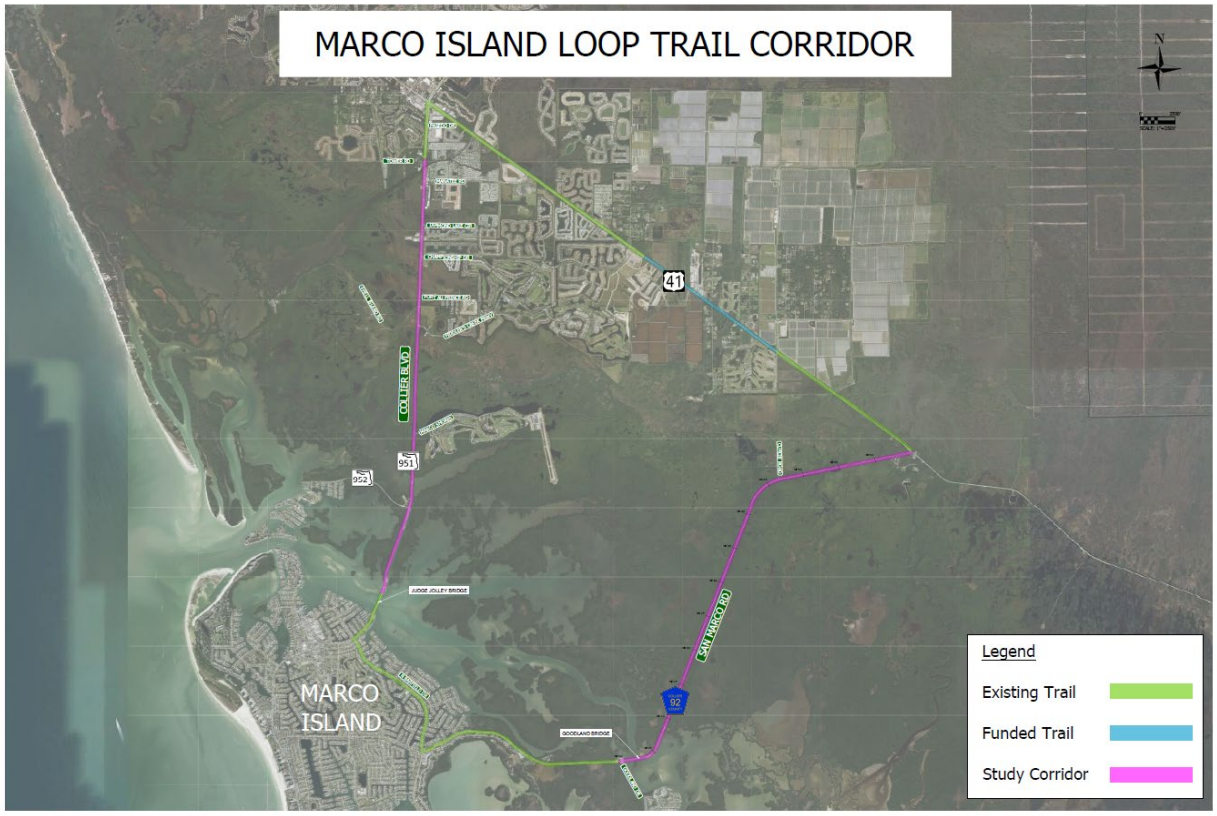
List of Appendices

PROJECT CONTEXT

The purpose of this project is to support the Florida Department of Transportation (FDOT) District One, in partnership with the City of Marco Island, Collier County, and Collier Metropolitan Planning Organization (MPO), to evaluate the feasibility of a 12' multi-use trail (shared use path) along State Road (S.R.) 951 (Collier Boulevard) and County Road (C.R.) 92 (San Marco Road) and determine a preferred design concept for implementation that will complete the Marco Island Loop. The MPO's 2019 Bike-Ped Master Plan identifies the corridor as part of its Shared-Use Nonmotorized (SUN) Trail and Spine Trail Network. It is also identified as a Land Trail Opportunity Trail/Corridor on the Florida Greenways & Trails System and will connect the Marco Island Bike Path Master Plan and the Naples Pathways Coalition Paradise Coast Trail Vision. This study will determine the need for a subsequent Project Development and Environment (PD&E) Study based on the potential project effects, right-of-way requirements, and in consideration of the potential use of federal funds for future project phases.

The project includes two study corridors and will generally evaluate the feasibility of a 12' multi-use trail to be implemented on either side of the roadway. The first corridor is along S.R. 951 from the Judge Jolley Bridge to United States (U.S.) 41. The second corridor is along C.R. 92 from Goodland Road to U.S. 41. Together, these segments will close the pedestrian and bicycle loop connecting Marco Island with U.S. 41. The project location is shown in **Figure 1**.

Figure 1: Location Map



Purpose and Need

The purpose of the project is to enhance the regional bicycle and pedestrian network connecting Marco Island to the Shared-Use Nonmotorized (SUN) Trail facility along U.S. 41. Additionally, the project will improve bicycle and pedestrian safety in the study corridors.

The need for the project is based on the following criteria:

Safety:

Improve safety conditions

Safety plays an important role in deciding to utilize a facility. Along S.R. 951, the majority of the study corridor has no sidewalks, so non-motor vehicular travel must utilize the shoulder or share the travel lanes where the posted speed ranges from 35 MPH to 55 MPH. Along C.R. 92, the roadway has no sidewalks or paved shoulders along a roadway posted at 55 MPH.

System linkage:

Improve bicycle and pedestrian connectivity

The proposed project aligns with the goals of the City of Marco Island and Collier County to “provide a safe comprehensive bicycle and pedestrian network that promotes and encourages community use and enjoyment” (Collier MPO Bicycle/Pedestrian Master Plan’s Vision). The project would create a connected multimodal transportation system that links the existing network in the City of Marco Island to the statewide SUN Trail network along U.S. 41.

Social and economic demand:

Enhance mobility choices and provide social benefits through outdoor recreation

The Florida Department of Environmental Protection (DEP) Division of Recreation and Parks oversees the Florida Greenways and Trails System (FGTS). Studies demonstrate that outdoor recreation delivers personal and social benefits on which healthy, happy communities thrive (FGTS Plan 2019-2023). These study corridors have been identified as a Land Trail Opportunity Trail/Corridor as part of the plan. Trail benefits identified in the plan include economic development, opportunities to support active lifestyles and improve overall health, and increased transportation choices.

FDOT District One will continue to coordinate with the City of Marco and Collier MPO to ensure that the project promotes consistency with local government comprehensive and transportation plans.

TRANSPORTATION

Major Roadways and Traffic Data

The two corridors within the study are S.R. 951 (Collier Boulevard) and C.R. 92 (San Marco Road). S.R. 951 is classified as an urban minor arterial. It is a four-lane divided highway with a raised, curbed median and outside flush shoulders. The posted speed limit ranges from 35 miles per hour (MPH) to 55 MPH. Data obtained from Florida Traffic Online estimated the Annual Average Daily Traffic (AADT) volume of 37,500; design hour factor (K factor) of 9; directional-distribution factor (D factor) of 55.1; and a 24-hour truck factor (T factor) of 7.7.

C.R. 92 is classified as a rural minor arterial. It is an undivided, two-lane roadway with no paved outside shoulders. The posted speed limit is 55 MPH. The estimated AADT is 3,800, K factor of 9, D factor of 56.7, and T factor of 4.7.

Intersections and Traffic Control

Signalized intersections along both corridors:

- S.R. 951 and Manatee Road (3-way intersection)
- S.R. 951 and Capri Boulevard / Boating Park (4-way intersection)
- S.R. 951 and Mainsail Drive (3-way intersection)
- S.R. 951 and Fiddlers Creek Parkway (3-way intersection)
- S.R. 951 and Naples Fire Rescue (Emergency signal)
- S.R. 951 and Manatee Road (3-way intersection)
- S.R. 951 and the Walmart Entrance (3-way intersection)
- S.R. 951 and U.S. 41 (Tamiami Trail) (4-way intersection)
- C.R. 92 and U.S. 41 (Tamiami Trail) (Flashing)

Stop controlled

- S.R. 951 and Shell Island Road
- S.R. 951 and Port Au Prince Road
- S.R. 951 and Championship Drive
- S.R. 951 and Silver Lakes Boulevard
- S.R. 951 and Shell Island Road

- S.R. 951 and Naples Outlet Collection Entrance
- S.R. 951 and Riverwood Road
- S.R. 951 and Tower Road
- S.R. 951 and Henderson Creek Drive
- S.R. 951 and Shell Island Road
- S.R. 951 and Eagle Creek Drive
- S.R. 951 and Shopping Center Entrance
- C.R. 92 and Curcie Road

Bicycle and Pedestrian Facilities

Marco Island has a planned network of bicycle and pedestrian facilities. As you exit the island on S.R. 951, the Jolley Bridge has wide shoulders and an 8-foot pathway on the northside of the bridge. As you continue north, the outside paved shoulders are sufficient in width to allow bicyclists use of the shoulders. Most right turn lanes provide keyhole bike lanes. Pedestrian facilities are only located in the northern end of the project area, from Tower Road to U.S. 41. On the east side of the roadway is a five-foot sidewalk and on the west side of the roadway is a ten-foot wide sidepath.

There are no bicycle or pedestrian facilities along C.R. 92 from the Goodland Bridge to U.S. 41. During the field visit (06/30/22), a runner, skater, and biker were observed utilizing the outside shoulder of the Goodland Bridge with no connecting facilities on the east side of the bridge.

Transit

While no transit improvements are to be included in this study, Collier Area Transit (CAT) has multiple transit stops along S.R. 951 as shown in **Figures 2, 3 and 4**. Two routes cover the entirety of S.R. 951: Route 21 Marco Island Circulator and Route 121 Immokalee to Marco Island Express. Four routes have stops at the Walmart Supercenter: Route 17 Rattlesnake to FSW, Route 21 Marco Island Circulator, Route 24 U.S. 41 East to Charlee Estates, and Route 121 Immokalee to Marco Island Express. Sidewalk and/or trails can provide the necessary link between transit stops or hubs and final destinations such as residences, offices, and retail areas offering that “last mile” connectivity.

Figure 2: Collier Area Transit System Map

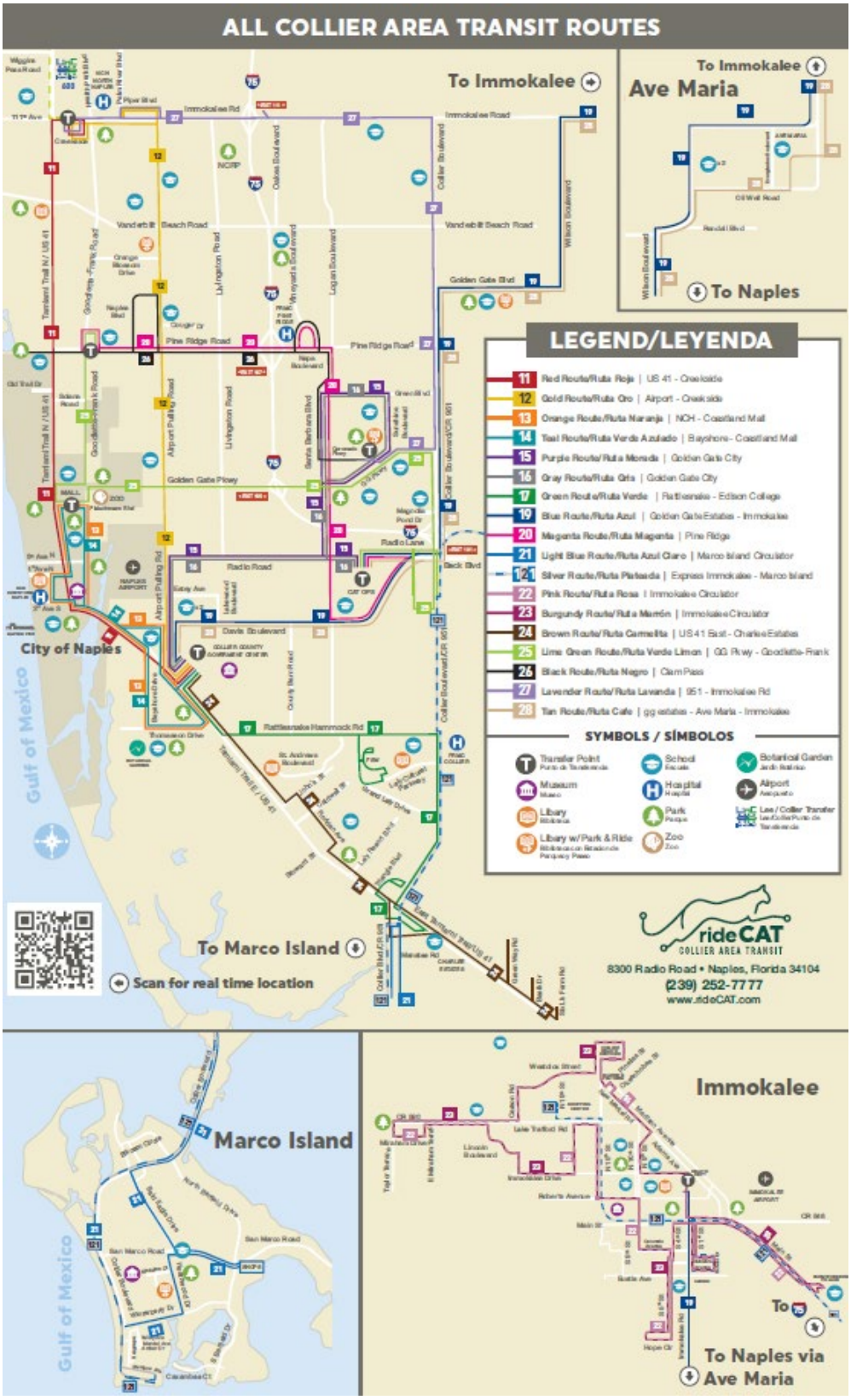


Figure 3: Collier Area Transit - Route 21 Stops

Figure 4: Collier Area Transit - Route 121 Stops

Existing Structures

There are six existing structures along the Marco Island Loop Pedestrian Trail study corridor. These structures are shown in **Table 1** and **Figure 5**.

Table 1: Existing Bridges

BRIDGE NAME	BRIDGE NUMBER	YEAR BUILT
NORTHBOUND (NB) AND SOUTHBOUND (SB) S.R. 951 OVER HENDERSON CREEK	032088/030289	1993/1992
S.R. 951 OVER MCILVANE CREEK	032087	1999
S.R. 951 OVER MCILVANE BAY	032086	1999
GOODLAND BRIDGE	030184	1975
C.R. 92 OVER DRAINAGE CANAL	034128	1992

Figure 5: Existing Bridge Locations

NB and SB S.R. 951 over Henderson Creek (Bridges 032088 & 032089)

These structures carry S.R. 951 over Henderson Creek and consists of twin bridges with three simple spans. Each span is approximately 43.33 ft in length and provide a total bridge length of 130 ft and 40 ft clear roadway widths. The vertical clearance above the high-water level of Henderson Creek is approximately 6.75 ft. The superstructure consists of prestressed-concrete American Association of State Highway and Transportation Officials (AASHTO) beams with a cast-in-place concrete deck. The substructure is founded on 18" prestressed-concrete piles.

Figure 6: S.R. 951 over Henderson Creek

S.R. 951 over McIlvane Creek (Bridge No. 030287)

This structure carries S.R. 951 over McIlvane Creek and consists of one simple span. The bridge has a total length of 40 ft and clear roadway width of 90 ft. The vertical clearance above the high-water level of McIlvane Bay is approximately 6.9 ft. The superstructure consists of prestressed-concrete AASHTO beams with a cast-in-place concrete deck. The substructure is founded on 24" prestressed-concrete piles. Bulkhead walls are located under the existing structure.

Figure 7: S.R. 951 over McIlvane Creek

S.R. 951 over McIlvane Bay (Bridge No. 030286)

This structure carries S.R. 951 over McIlvane Bay and consists of four simple spans. Each span is 50 ft in length and provides a total bridge length of 200 ft and 90 ft clear roadway width. The vertical clearance above the high-water level of McIlvane Bay is approximately 9.8 ft. The superstructure consists of prestressed-concrete AASHTO beams with a cast-in-place concrete deck. The substructure is founded on 24" prestressed-concrete piles. Bulkhead walls are located under the existing structure.

Figure 8: S.R. 951 over McIlvane Bay

Goodland Bridge (Bridge No. 030184)

This structure carries C.R. 92 over Goodland Bay and consists of 22 spans with varying lengths (varies from 70.0 ft to 116.17 ft). The total bridge length is approximately 1842 ft and 44 ft clear roadway width. The vertical clearance above the high-water level of Goodland Bay is approximately 55 ft at the centerline of the channel. The superstructure consists of prestressed-concrete AASHTO beams with a cast-in-place concrete deck. The substructure is founded on 18” and 24” prestressed-concrete piles.

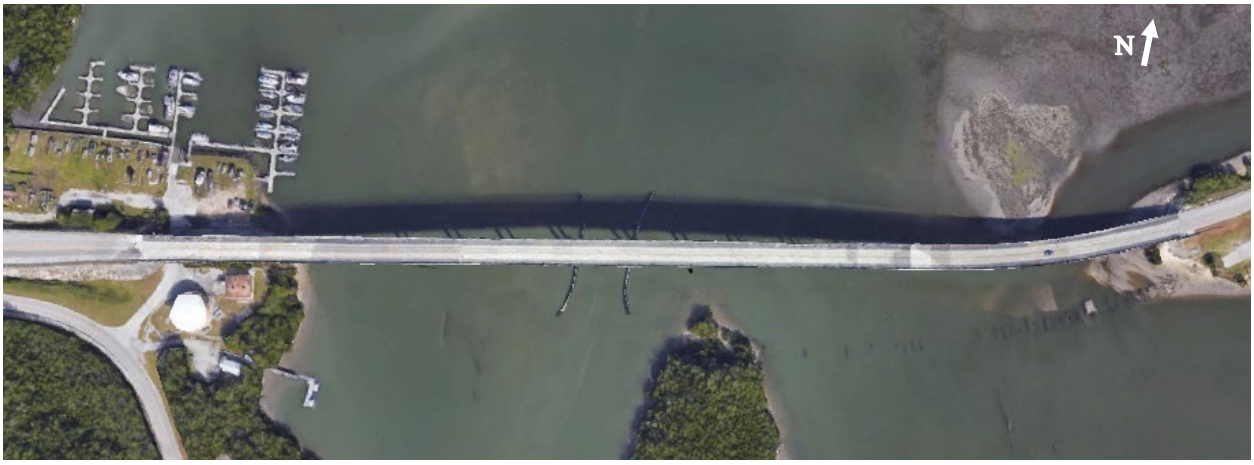


Figure 9: Goodland Bridge

C.R. 92 over Drainage Canal (Bridge No. 034128)

This structure carries C.R. 92 over Drainage Canal and consists of two simple spans. Each span is approximately 30 ft in length and provides a total bridge length of 60 ft and 40 ft clear roadway width. The vertical clearance above the high-water level of the drainage canal is approximately 3.45 ft. The superstructure consists of a cast-in-place concrete flat slab founded on 24” prestressed-concrete piles.

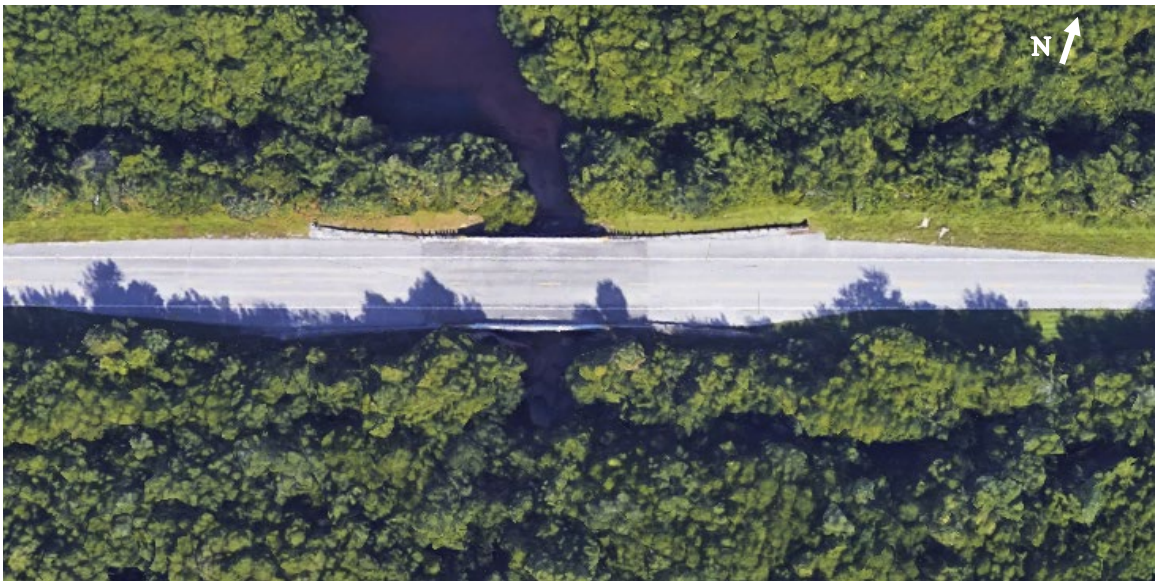


Figure 10: C.R. 92 over Drainage Canal

Bridge Conditions

Bridge inspection reports conducted in 2021 were obtained to evaluate the current bridge conditions. The following bridges were evaluated using a sufficiency rating which is indicative of bridge sufficiency to remain in service. The bridge rating results are presented in **Table 2**. All bridges except the Goodland Bridge have an Inventory Rating above 1.0 (36 tons).

Table 2: Bridge Rating Summary

BRIDGE NAME	BRIDGE NUMBER	SUFFICIENCY RATING	INVENTORY RATING (TONS)	INSPECTION DATE
NB S.R. 951 OVER HENDERSON CREEK	032088	98.0	40.6	04/06/2021
SB S.R. 951 OVER HENDERSON CREEK	032089	98.0	40.8	04/06/2021
S.R. 951 OVER McILVANE CREEK	032087	85.0	46.0	04/06/2021
S.R. 951 OVER McILVANE BAY	032086	85.0	51.5	04/06/2021
GOODLAND BRIDGE	031084	96.0	34.2	02/02/2021
C.R. 92 OVER DRAINAGE CANAL	034128	93.7	44.4	01/29/2021

CRASH STATISTICS AND SAFETY

Crash Summary for State Road 951

A five-year (2017-2022) Signal4 review of the crash data along S.R. 951 revealed 320 crashes, including seven serious injuries. The majority of the crashes were rear-end collisions (over 50%), followed by sideswipe, other, off road, and left turn crashes as identified in **Figure 11**.

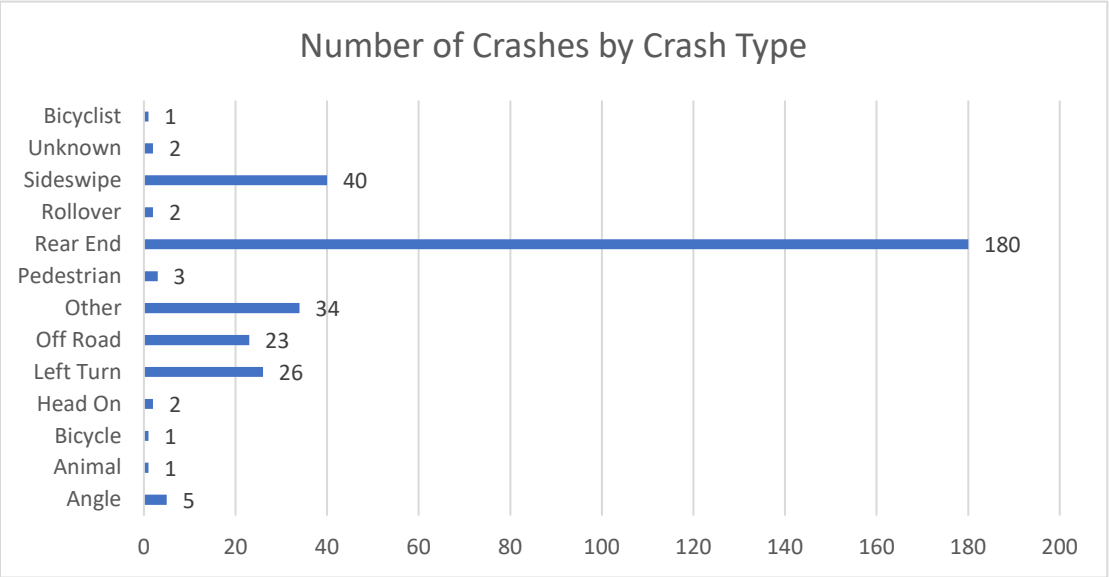


Figure 11: Number of Crashes by Crash Type for S.R. 951

Figure 12 shows a heat map of where crashes occurred along S.R. 951. The frequency of crashes seems evenly distributed along the corridor.

Figure 12: Heat Map of Crashes along S.R. 951

Of the 320 crashes, three involved bicyclist and four involved pedestrians, with no fatalities. Locations of these crashes are depicted in **Figure 13**.

Figure 13: Location of bicycle and pedestrian crashes

Crash Summary for County Road 92

A five-year (2017-2022) Signal4 review of the crash data along C.R. 92 revealed 11 crashes, including one fatality and one serious injury. No crashes were reported that involved pedestrians or bicyclists. **Figure 14** categorizes the crashes by crash type.

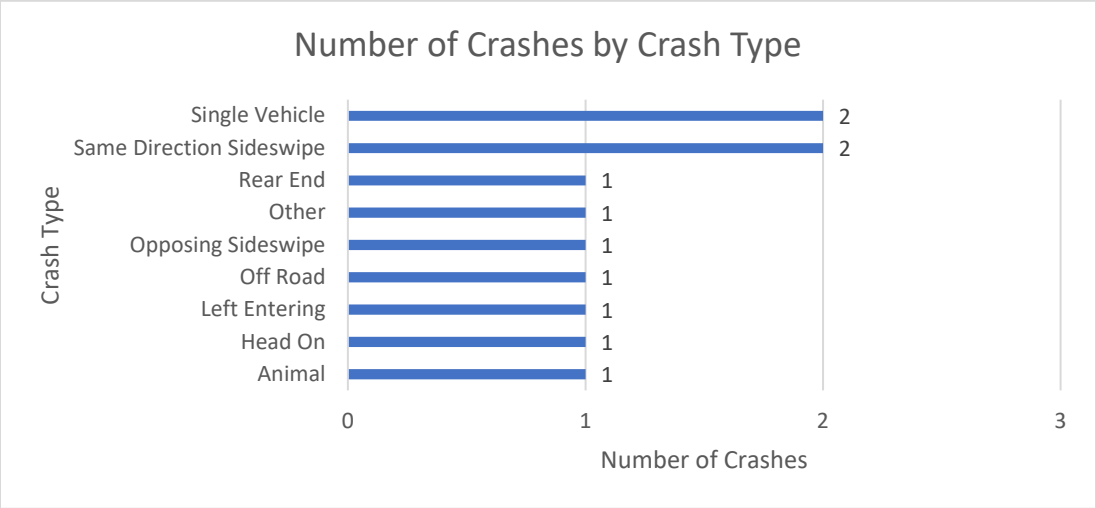


Figure 14: Number of Crashes by Crash Type for C.R. 92

LAND USE

Current zoning and future land use designations within the study corridors are primarily conservation lands and residential for S.R. 951 and conservation lands for C.R. 92 as shown in **Figures 15 and 16**. **Tables 3 and 4** summarize the study areas in terms of both the current general zoning and future land use by corridor.

Table 3: General Zoning Summary

General Zoning		
Category	**S.R. 951**	**C.R. 92**
Residential	9.87%	3.07%
Agricultural	22.44%	8.83%
Commercial	2.98%	6.93%
Open Space	0.00%	50.11%
Planned Unit Development	53.05%	28.44%
Civic and Institutional	0.14%	0.00%
Undesignated (Water/Roadway)	11.52%	2.63%

Table 4: Future Land Use Summary

Future Land Use		
Category	**S.R. 951**	**C.R. 92**
Conservation Designation	45.58%	93.87%
Incorporated Area	8.43%	4.28%
Mixed Use Activity Center Subdistrict	4.02%	0.00%
Urban Coastal Fringe Subdistrict	38.40%	0.00%
Henderson Creek Mixed Use Subdistrict	1.40%	0.00%
Undesignated (Water/Roadway)	2.17%	1.86%

Figure 15: General Zoning Map

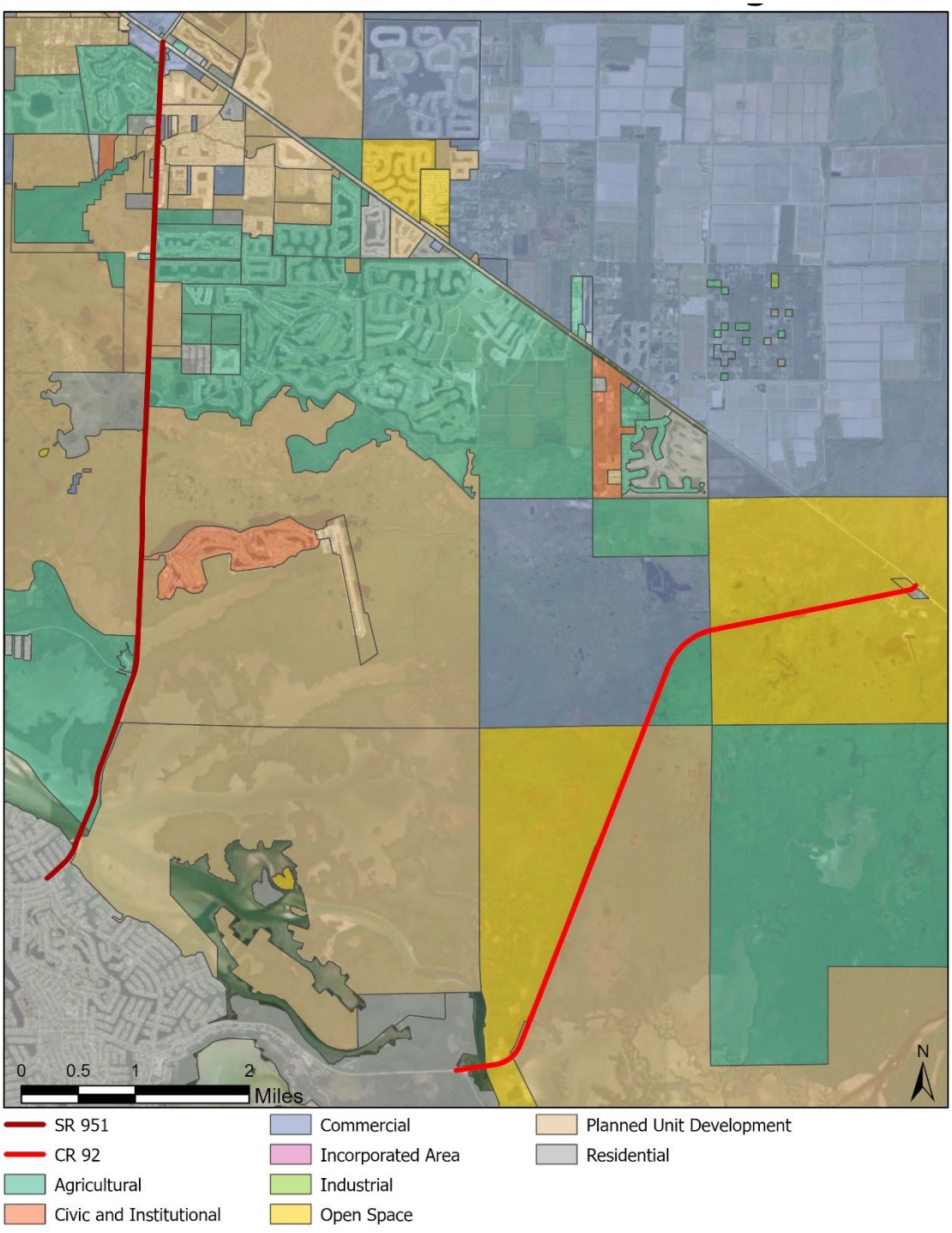
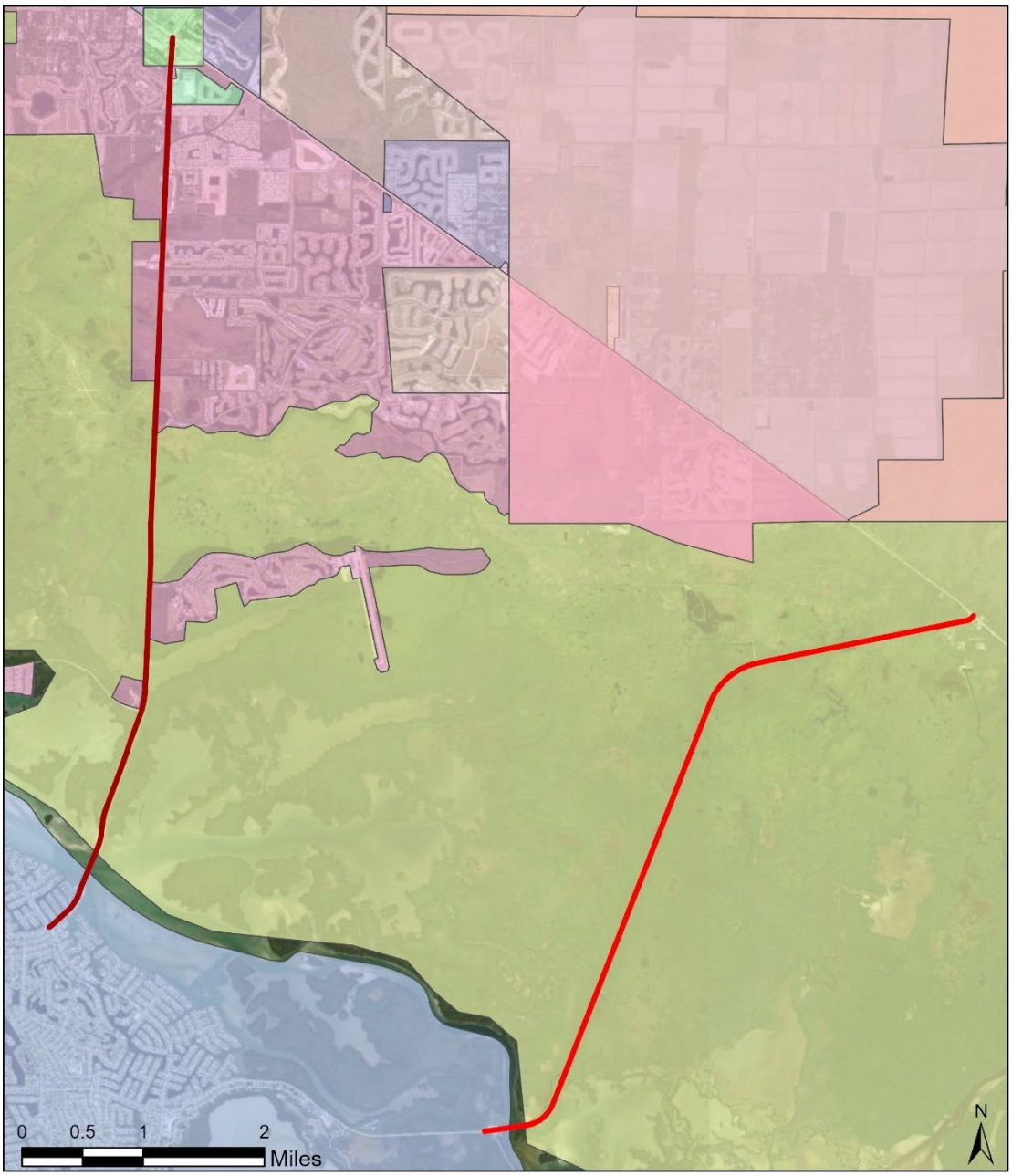


Figure 16: Future Land Use Map



Roadway Context Classification

The context classification system broadly identifies the various built environments existing in Florida. Roadways will extend through a variety of context classifications ranging from C1-Natural to C3R-Suburban Residential to C6-Urban Core. S.R. 951 is classified as a C3R-Suburban Residential and C3C-Surburban Commercial. C.R. 92 would be considered as C1-Natural.

- C1-Natural: Lands preserved in a natural or wilderness condition, including lands unsuitable for settlement due to natural conditions.
- C3R-Suburban Residential: Mostly residential uses within large blocks and a disconnected or sparse roadway network.
- C3C-Suburban Commercial: Mostly non-residential uses with large building footprints and large parking lots within large blocks and a disconnected or sparse roadway network.

Property Ownership

The lands adjacent to S.R. 951 south of Fiddler's Creek Parkway is state-owned land (Trustees of the Internal Improvement Trust Fund (TIITF)) under the Rookery Bay National Estuarine Reserve. Up through Henderson Creek, Collier County owns some lands to the west as well. North of Henderson Creek, property ownership is mixed between residential and commercial uses. The lands adjacent to C.R. 92 is either state-owned land (TIITF) under the Rookery Bay National Estuarine Reserve or federal lands under the National Park Services.

Right of Way

Data from Collier County Property Appraiser's site indicates that the right of way width for S.R. 951 is approximately 200 feet and 140 feet for C.R. 92.

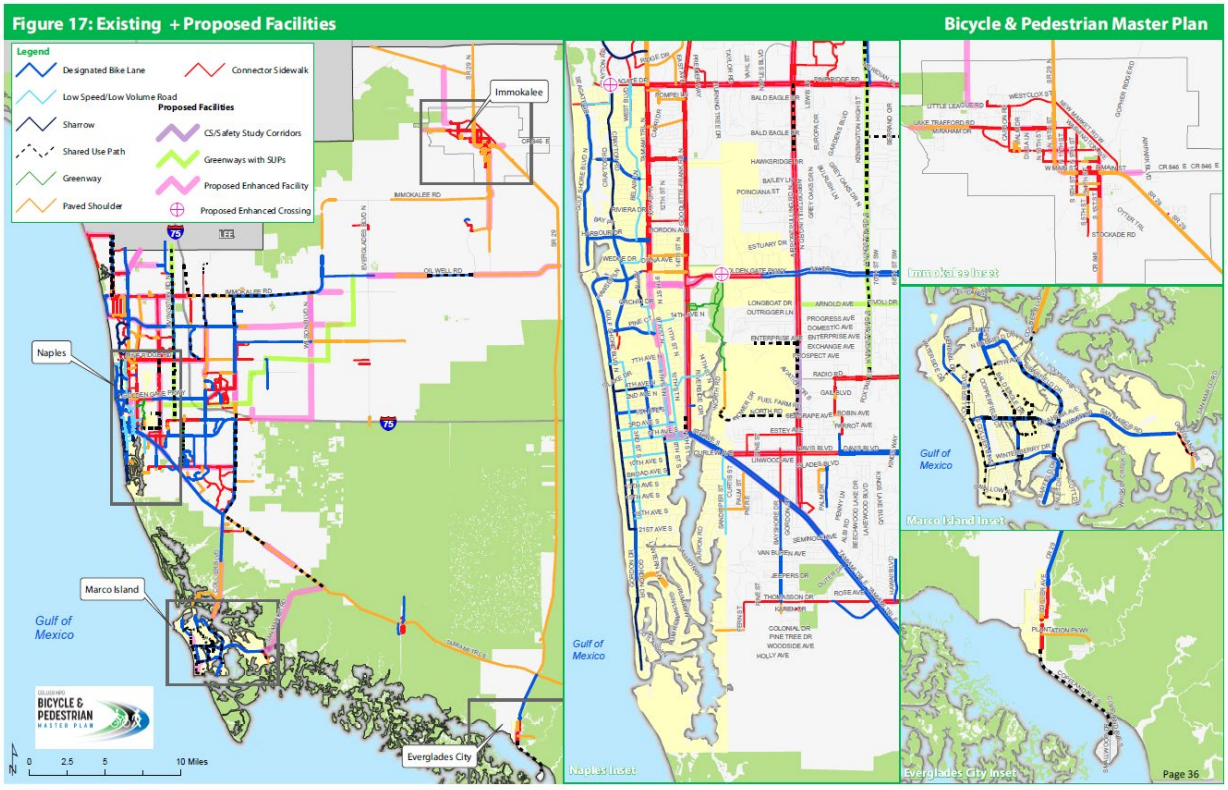
Community Plans

The study area will be influenced by a variety of planning documents that have goals and objectives that generally align with the intent of this study.

Collier MPO Bicycle & Pedestrian Master Plan

In 1994, the Collier MPO developed its first Comprehensive Pathways Plan, the precursor to what is now known as the Bicycle & Pedestrian Master Plan. The Plan was updated in 2006 and again updated in 2012 and 2019. The purpose of the 2019 Collier MPO Bicycle & Pedestrian Master Plan is "to build on prior efforts to develop a fist-class bicycle and pedestrian network throughout Collier County. This Plan is not intended to duplicate or conflict with existing local plans and ongoing bicycle and pedestrian projects, but rather, to unify planning efforts and influence facility improvement priorities at the county level." (See **Appendix A**) The Plan visually summarizes the MPO's project priorities for major roadways in **Figure 17**.

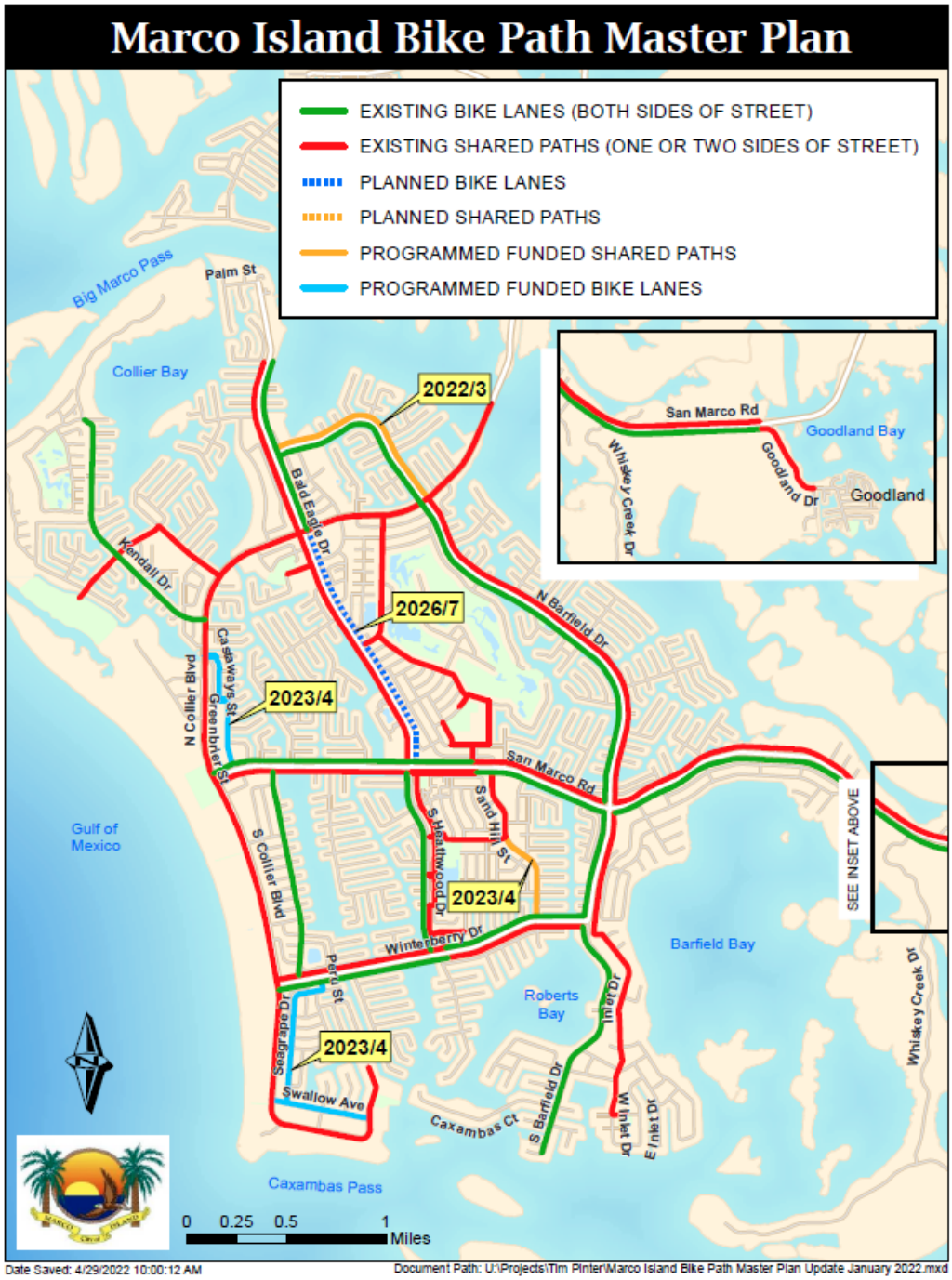
Figure 17: Collier Metropolitan Planning Organization Project Priorities for Major Roadways



Marco Island Bike Path Master Plan

"The City of Marco Island has an approved bicycle and shared-use path master plan (map), which the City updates annually. The plan's goal is to develop "bike lanes and way projects to allow both expert and novice riders to get around most parts of the city by bicycle."" The current Bike Path Master Plan is provided in **Figure 18**.

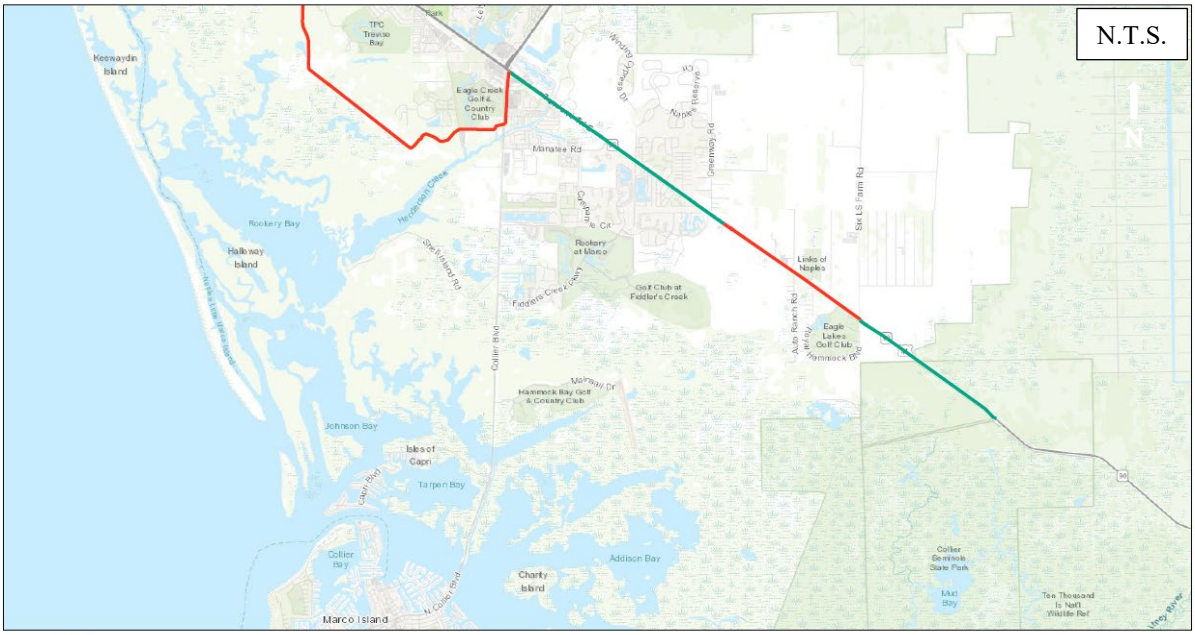
Figure 18: Marco Island Bike Path Master Plan (2022)



SUN Trail

"SUN Trail network is the statewide system of high-priority (strategic) paved trail corridors for bicyclists and pedestrians. Today, the SUN Trail network includes a combination of existing, planned, and conceptual multiple-use trails; it is a refined version of the Florida Greenways and Trails System (FGTS) Plan's Land Trails Priority Network." (FDOT Planning Office: www.fdot.gov/planning/systems/SUNTrail.shtm) **Figure 19** identifies the SUN Trail network alignments within the study area.

Figure 19: Identified SUN Trail Network Alignments



SOCIOCULTURAL

Demographics

A demographic analysis of the Census block groups surrounding the project's limits was conducted to understand the community characteristics of those communities most likely to use a proposed trail. The study area community includes 26 Census block groups with populations located within a half mile of the project limits (See **Table 5**):

Table 5: Study Area Census Block Groups:

STATE CODE	COUNTY CODE	CENSUS TRACT ID	CENSUS BLOCK GROUP
12	021	010802	1
12	021	010803	2
12	021	010803	3
12	021	010902	1
12	021	010902	2
12	021	010903	1
12	021	010903	2
12	021	010903	3
12	021	010904	1
12	021	010904	2
12	021	010905	1
12	021	010905	2
12	021	010905	3
12	021	010905	4
12	021	011001	1
12	021	011001	2
12	021	011002	1
12	021	011102	1
12	021	011102	3
12	021	011103	1
12	021	011103	2
12	021	011105	1
12	021	011105	2
12	021	011105	3
12	021	011106	1
12	021	011106	2

As shown in **Table 6**, approximately 45,290 people live in the study area community. This population has a median age of 64.3, which is older than Collier County's median age of 51.8 (**Figure 20**). The area is predominantly white alone (92%) followed by Black alone (7%) (**Figure 21**) Approximately 16% of the population in the study area community is Hispanic.

The median income in the study area community is $69,770 a year, which is less than Collier County's $76,025 median household income (**Figure 22**). The Census block groups with the lowest incomes in the study area community are in the Belle Meade area at the intersection of Collier Boulevard and Tamiami Trail. Approximately 38% of the study area community is employed (17,399 employed residents) (**Figure 23**). The study area community includes 393 zero vehicle households, or just under 2% of the total study area community households, which is lower than Collier County's 3% zero-vehicle households. The largest number is located east of U.S. 41 as shown in **Figure 24**, but the largest concentration of zero-vehicle households includes 31 households, or just over 7% of all households in the Census block group. This concentration of zero-vehicle households is located east of Collier Boulevard just south of Manatee Road.

Table 6: Summary Study Area Community Characteristics

RACIAL & ETHNIC CHARACTERISTICS				**GENERAL STATISTICS**		
Study Area Community			Collier County	Study Area Community		Collier County
Asian & Pacific Islander	204	<1%	1%	Median Income	$69,770	$76,025
Black	2,961	7%	7%	Median Age	64.3	51.8
Hispanic*	7,085*	16%	28%	Zero-Vehicle Households	393 (2%)	255,507 (3%)
Native American	0	0%	0%	*Data based on the 2019 U.S. Census American Community Survey (ACS) Five-Year Estimates*		
Other Identity	656	<1%	2%			
White	41,469	92%	89%	**Hispanic population data represents ethnicity, not race, as Hispanic people can be of any race.*		
Total	45,290	-	-			

Figure 20: Median Age

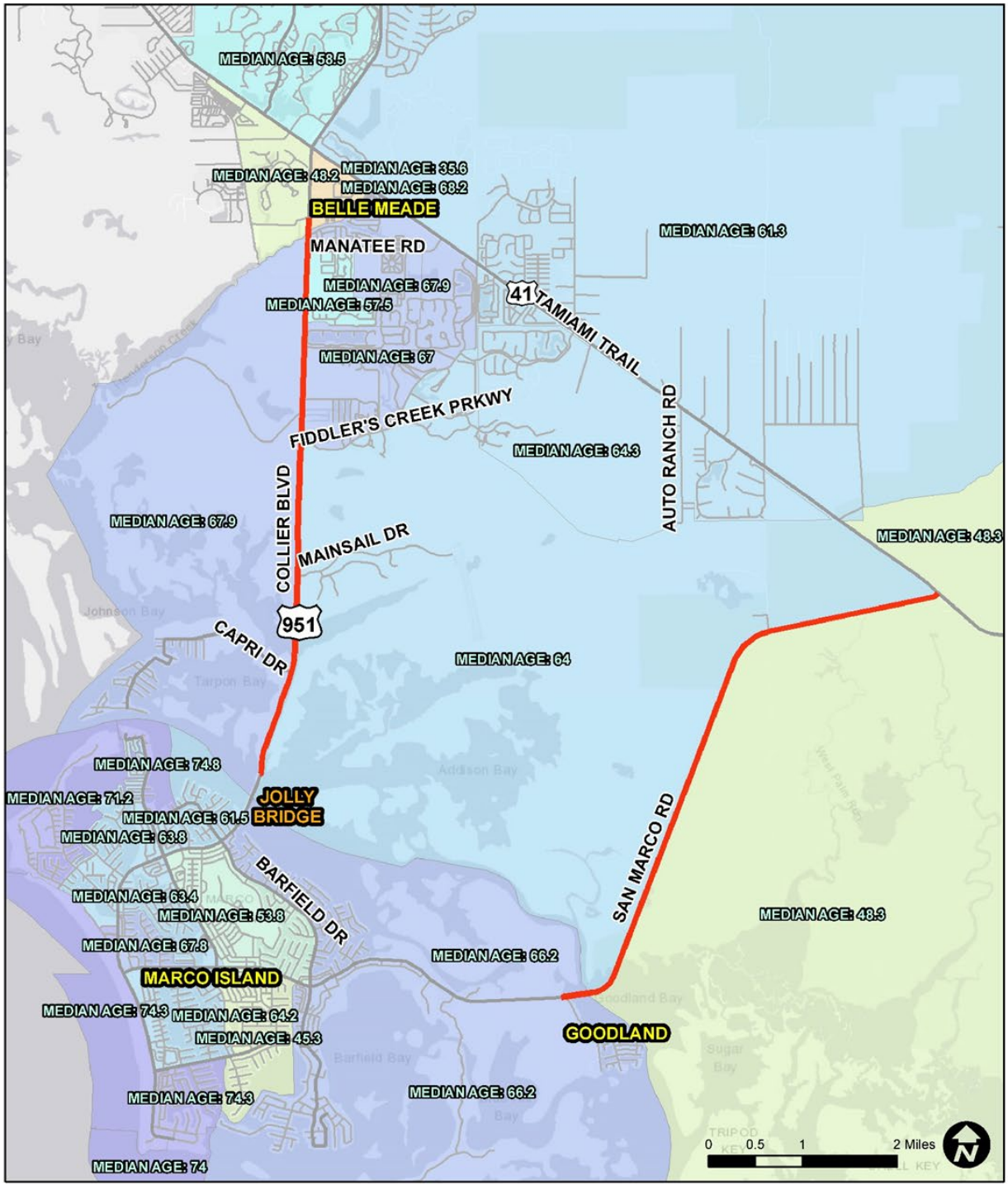


Figure 21: Racial Composition

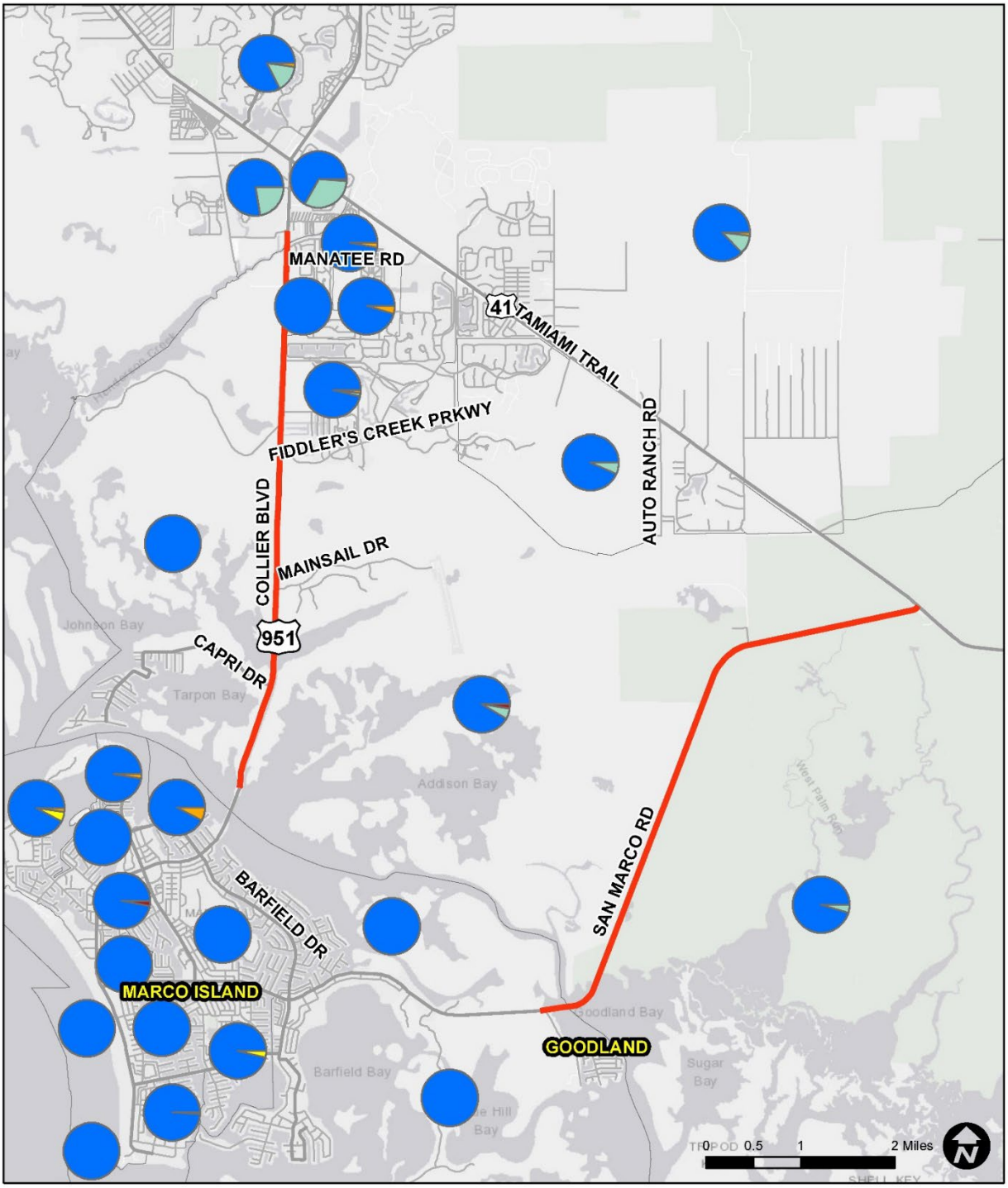


Figure 22: Median Income

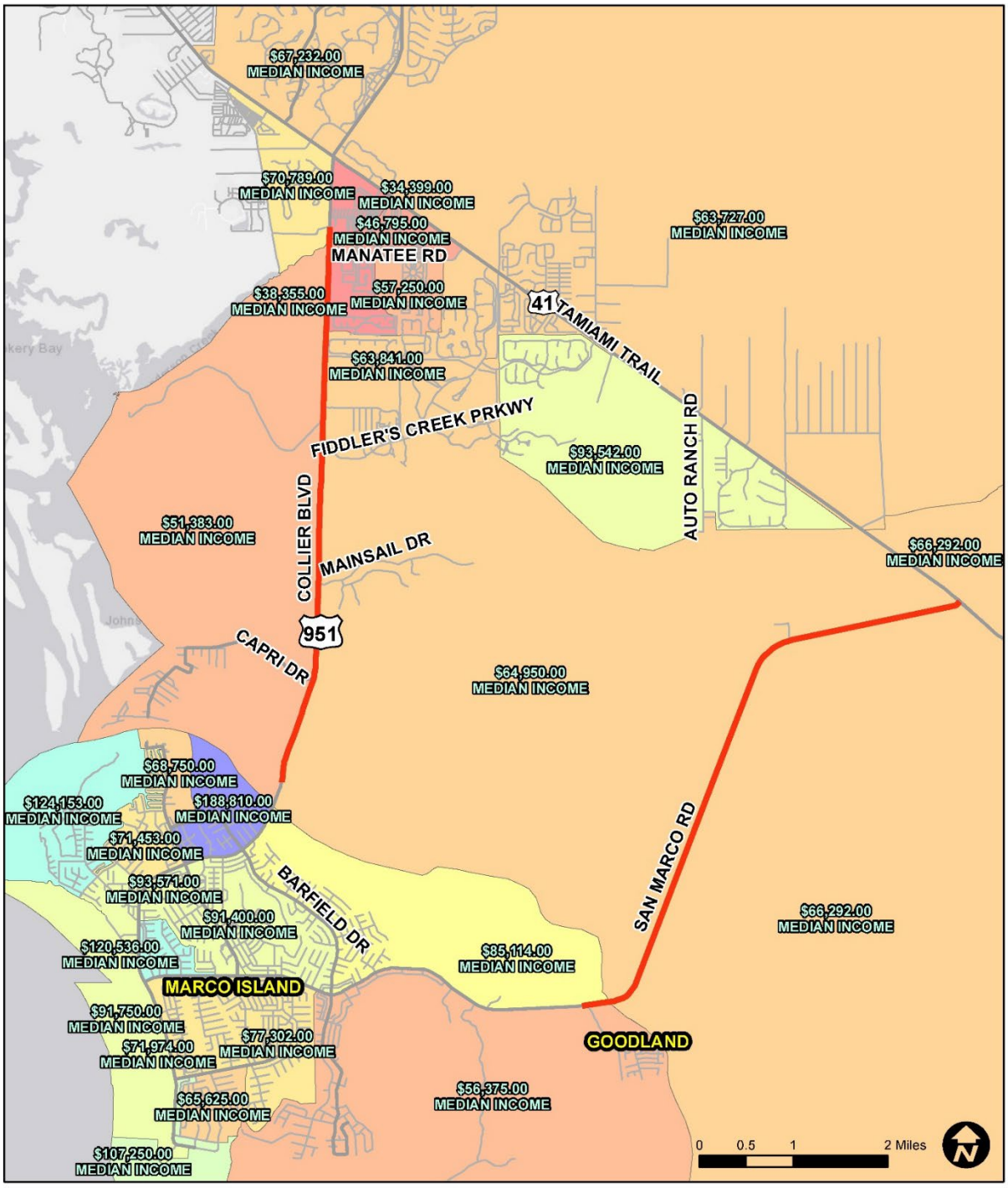


Figure 23: Employment Density

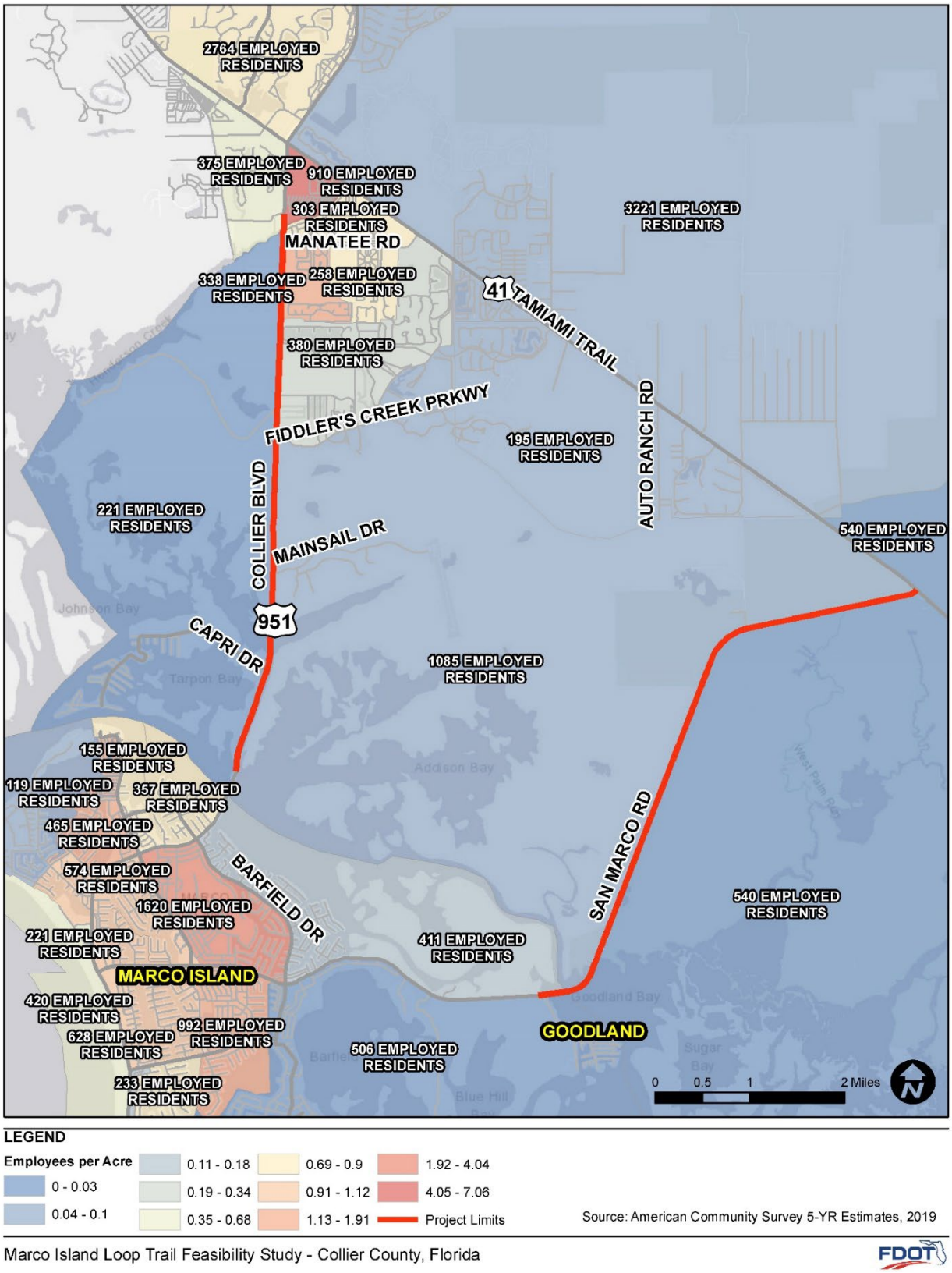
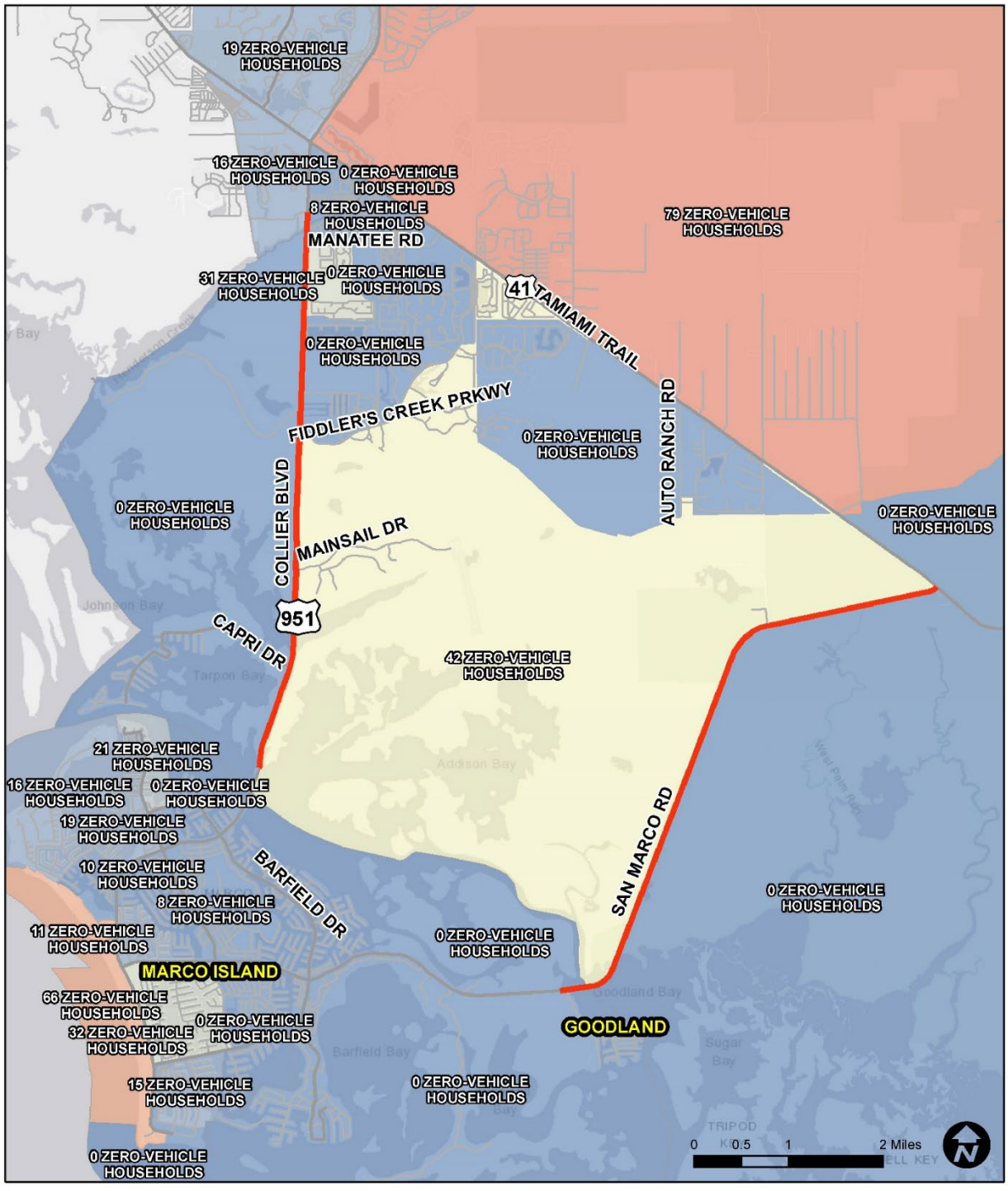


Figure 24: Zero Vehicle Households



Environmental Justice Considerations

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations, signed by the President on February 11, 1994, directs federal agencies to take appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law.

A preliminary analysis of the study area community's demographics compared the minority and low-income populations to the demographics of Collier County. Collier County has a 37% minority population, and a 30% low-income population. As shown on **Figure 25** two Census block groups located at the intersection of Collier Boulevard and Tamiami Trail have minority populations (57% and 82%) much higher than the rest of Collier County's 37%. When comparing low-income populations, four Census block groups have low-income population concentrations much higher than the rest of Collier County's 30%. As shown in **Figure 26**, these Census blocks have low-income populations of 38%, 41%, 49%, and 57%, and are located at the intersection of Collier Boulevard and Tamiami Trial and at the intersection of Collier Boulevard and Manatee Road. Based on this demographic analysis, minority and low-income populations exist within the study area community, so disproportionately high and adverse effects to these populations should be minimized to the greatest extent practicable and permitted by law.

Figure 25: Minority Population

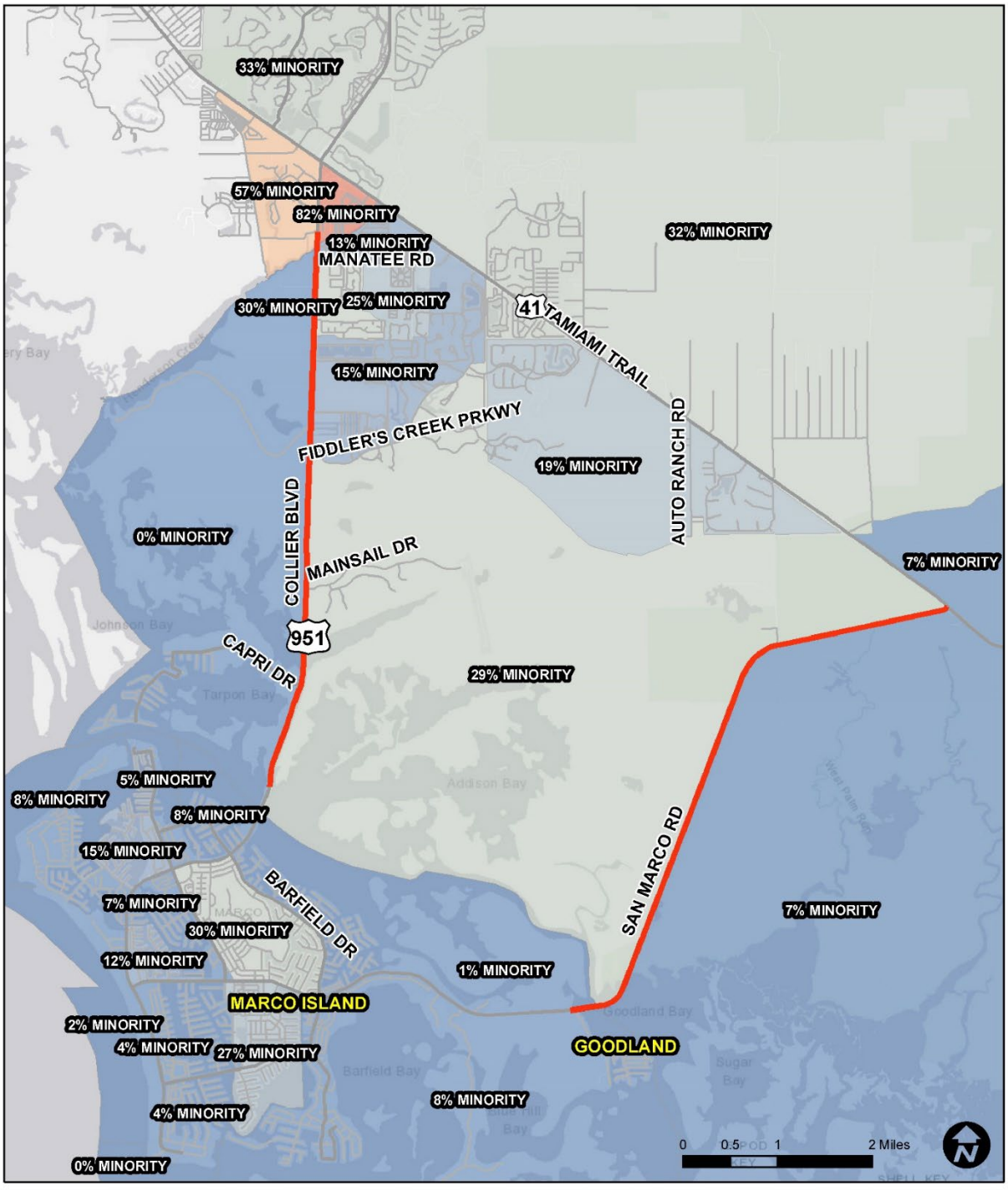
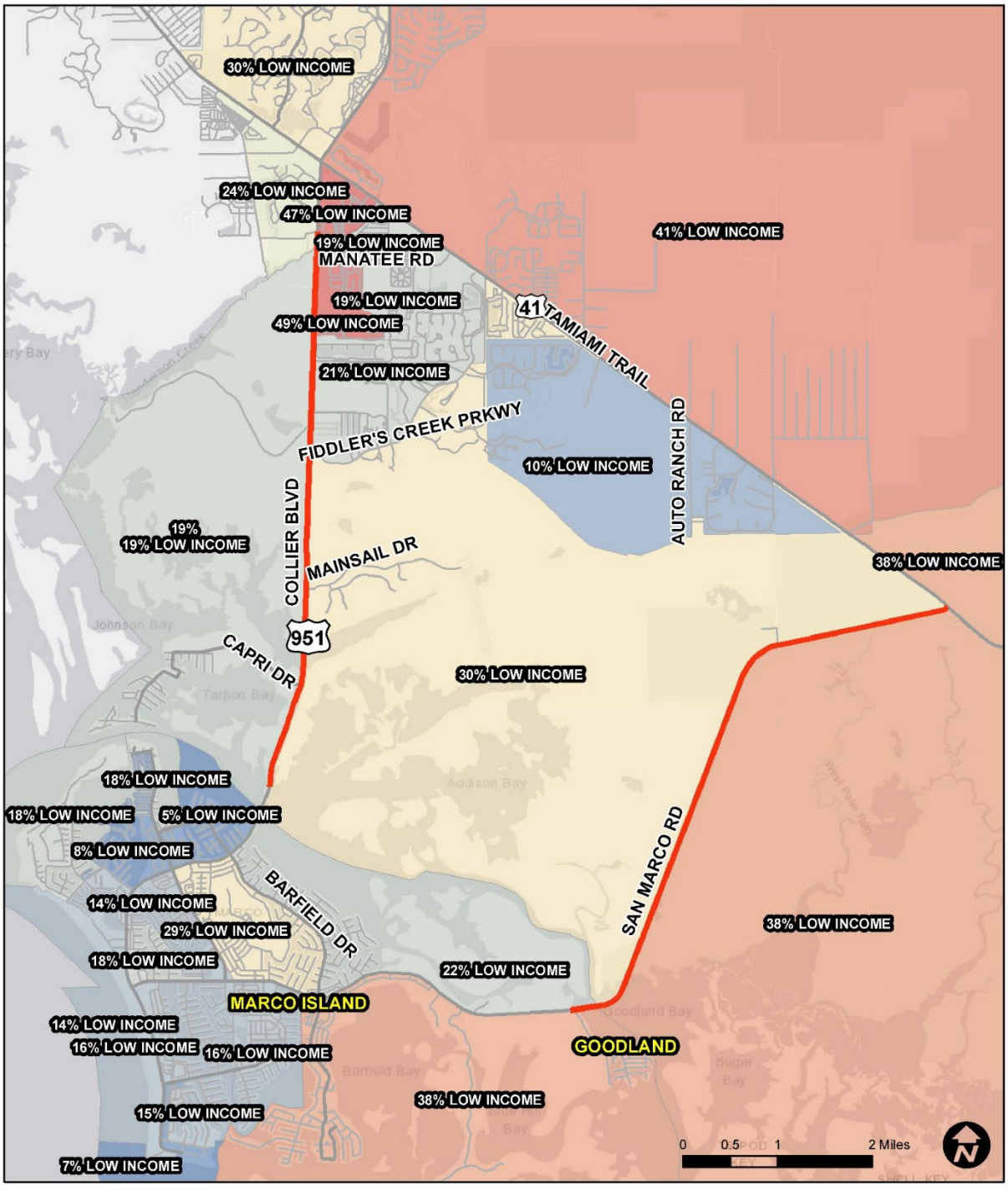


Figure 26: Low-Income Population



ENVIRONMENT

Most land within the Study Area is sensitive environmental areas associated with several public lands with special designations. This section discusses the soils, species, wetlands, and surface waters within the Study Area. The following resources were consulted to obtain the best available data including the:

- Florida Department of Transportation (DOT) Efficient Transportation Decision Making (ETDM) Environmental Screening Tool (EST),
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPac),
- National Oceanic and Atmospheric Administration (NOAA) National Endangered Species Act (ESA) Critical Habitat Mapper,
- NOAA Essential Fish Habitat Mapper,
- Florida Land Use, Cover and Forms Classification System (FLUCCS) Handbook (January 1999),
- Florida Natural Areas Inventory (FNAI) Biodiversity Matrix Mapper,
- Florida Fish and Wildlife Conservation Commission's (FFWCC) publication, Florida's Endangered and Threatened Species List (Updated June 2021), and
- Individual species profiles on the FFWCC Imperiled Species Website.

To assess the area in the FDOT EST, two Areas of Interest (AOI) were established by drawing a polyline from the centerline of S.R. 951 from the Judge Jolley Bridge to U.S. 41 and a second polyline along C.R. 92 from Goodland Road to U.S. 41. A 500-foot buffer from the centerline of each roadway was used to conduct the analysis.

Wetlands and Surface Waters

The National Wetlands Inventory classifies wetland boundaries and is maintained by the United States Fish and Wildlife Service (USFWS). Wetlands and surface waters constitute 90% of the Study Area. The majority are Estuarine wetlands (mangrove island and tidal flats) associated with Rookery Bay National Estuarine Research Reserve, Collier-Seminole State Park, Ten Thousand Islands National Wildlife Refuge, and Shell Island Preserve. The remaining wetlands account for Palustrine (freshwater, nontidal wetlands) and Riverine wetlands. Roadside ditches are also present in the urbanized

areas, some of which appear to directly connect to adjacent waterbodies. A more detailed review following the USFWS Classification Systems of Wetlands and Deepwater Habitats of the United States (Cowardin, et. Al 1979), the Florida Land Use, Cover and Form Classification System (FLUCCS), Chapter 62-340 Florida Administrative Code, the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coast Plain Region (TR-10-20) will be needed to determine jurisdictional wetland boundaries. The wetlands identified in this report have not been formally approved by the SFWMD or the U. S. Army Corps of Engineers (USACOE).

Four open waterbodies are spanned by bridges within the Study Area. S.R.951 (N. Collier Parkway), spans East Marco Bay at the Judge S.S. Jolley Bridge. Near Marco Shores, the roadway spans an unnamed tributary of McIlvane Bay. Near U.S. 41, S.R. 951 spans Henderson Creek, which is tidally influenced and is a tributary to Rookery Bay. East of and parallel to S.R. 951 is Flotilla Passage. This passage connects East Marco Bay to the south and McIlvane Bay to the north. C.R. 92 is flanked by linear waterbodies that connect near Mud Bay at the northern end and Goodland Bay to the south. These canals are part of a Depression-era drainage and transportation system. A detailed categorization of the wetland and surface water land-use types found in the Study Area is presented in **Table 7**.

Table 7: Wetland Types with Florida Land Use, Cover and Forms Classification System (FLUCCS)

FLUCCS Code	Description	Percent of Study Area
S.R. 951 (Collier Boulevard)		
617	Mixed Wetland Hardwoods	2.0 %
641	Freshwater Marshes	0.09%
642	Saltwater Marshes	11.0 %
612	Mangrove Swamps	18.0%
625	Hydric Pine Flatwoods	3.0%
630	Wetland Forested Mixed	0.6%
619	Exotic Wetland Hardwoods	0.4%
617	Mixed Wetland Hardwoods	6.0%
C.R. 92 (San Marco Road)		
612	Mangrove Swamp	46.0%
651	Tidal Flats	1.0%
630	Wetland Forest Mixed	2.4%

Water Quality

A desktop review of the Florida Department of Environmental Protection's (FDEP) State's Verified List of Impaired Waters and the Clean Water Act (CWA) section 303 (d) List (June 2022) showed that there are seven impaired waterbodies within the Study Area. Best Management Practices (BMP) should be incorporated into the design and construction methods to reduce nutrient levels within the impaired waterbodies.

All waters of the state fall into one of five surface water classifications (62-305.400 F.A.C.) with specific criteria applicable to each class of water. In addition to water classification, water may be designated as an Outstanding Florida Water (OFW) per 62-302.700 F.A.C. An OFW is a water designated worthy of special protection because of its natural attributes. The Study Area includes three OFWs: Rookery Bay Aquatic Preserve, Rookery Bay National Estuarine Research Reserve, and Collier-Seminole State Park. The Rookery Bay National Estuarine Research Reserve and Rookery Bay Aquatic Preserve include open waters and mangrove swamp east and west of S.R. 951 and the same habitat types west and south of C.R. 92. Collier-Seminole State Park includes Mud Bay and associated mangrove swamps at the northeast portion of C.R. 92, near U.S. 41 (Tamiami Trail). The Cape Romano-Ten Thousand Islands Aquatic Preserve overlaps with the Collier-Seminole State Park but is not expected to be directly impacted. The design phase should include avoidance and minimization of impacts to the OFW’s.

Floodplains

The Federal Emergency Management Agency (FEMA) developed a Flood Insurance Rate Map (FIRM) for the Study Areas. The relevant FIRM panel numbers for the S.R. 951 portion of the Study Area are dated May 16, 2012, and include panels 12021C0612H, 12021C0615H, 12021C0827H, and 12021C0829H. The relevant FIRM panel numbers for the C.R. 92 portion of the Study Area are dated May 16, 2012, and include panels 12021C0855H, 12021C0835H, and 12021C0842H. Due to the coastal location, nearly the entire Study Area is within the 100-year floodplain. Only small pockets of higher elevation are present. Flood zone designations for the Study Area are Zone AE and VE; areas identified as Zone “AE” are areas within the 100-year floodplain and Zone “VE” are coastal areas. Should the project require fill within the regulatory floodway, a

FEMA No-Rise Certification will be required to demonstrate no increase in the 100-year flood elevation because of the proposed fill. For these reasons, floodplain compensation will be required by the SFWMD.

Permitting Considerations

This Study Area is within the jurisdiction of the South Florida Water Management District (SFWMD). According to the South Florida Water Management District ePermitting Web App, several permits have been issued within the Study Area. Formal Wetland Determination applications have been requested for the waters at the Goodland Bridge (Permit # 11-03089-P) and S.S. Jolley Bridge (Permit #11-03073-P). Along S.R. 951, several permits are in the system for Formal Wetland Determination (Permit #11-100411-P) and Surface Water management (Permit #11-00528-S). No applications or permits are in the system along C.R. 92. If a trail project impacts a previously permitted stormwater management system, a separate modification of the associated permit would be required.

In general, trail projects are exempt from permitting pursuant to Rule 62.330.051 (10) of the Florida Administrative Code, as long as:

- They are not located in, on, or over wetlands or other surface waters,
- Have a width of eight feet or less for pedestrian paths and 14 feet or less for multi-use recreational paths, and
- Are not intended for use by motorized vehicles powered by internal combustion engines or electric-powered roadway vehicles, except when needed for maintenance or emergency purposes.

If a trail project would not qualify for an exemption due to wetland or other surface water impacts, an Individual Permit would be required. The Study Area includes wetlands and surface waters, 100-year floodplain, public lands, Critical Habitat, Essential Fish Habitat (EFH), and OFW's. Due to the prevalence of these resources, avoidance is likely not possible. As a result, permitting through the SFWMD for an Environmental Resource Permit is anticipated. The trail impervious area would still be exempt from the treatment and attenuation requirements; however, floodplain, conveyance, and wetland impacts would need to be addressed.

With OFW's present, special consideration will be needed during the design phase to compensate for any additional water draining into them, and any fill that could result

due to the design will need to consider floodplain compensation through the SFWMD permit application. Due to rule changes to 404 permitting, a preapplication meeting will be needed with the USACOE to determine if that agency has permitting authority or if it belongs to the Florida Department of Environmental Protection. Preapplication meetings will need to be coordinated with the agencies to assure appropriate information is provided in a timely manner.

There are two mitigation banks that provide credits within this area: Little Pine Island Mitigation Bank and Corkscrew Regional Mitigation Bank. Little Pine Island Mitigation Bank is the only one of the two that provides Forested Freshwater, Forested Saltwater, Herbaceous Freshwater/Brackish, and Herbaceous Saltwater, and is within close proximity to the Study Area. Since the Study Areas contains over 75% estuarine wetlands, the Little Pine Island Mitigation Bank would be the ideal selection.

Public lands near the Study Area could provide an additional opportunity for mitigation of unavoidable impacts. The first opportunity would be to develop a partnership with Collier County Parks and Recreation's to enhance Shell Island Preserve. This preserve has no public access and is considered a resource for protection. A second option would be to provide restoration efforts for Rookery Bay National Estuarine Research Reserve. Working with the local public land managers and owners would be ideal as the mitigation would stay within the same basin.

Section 4(f)

Section 4(f) refers to the U.S. Department of Transportation Act of 1966 which provided for consideration of park and recreational lands, wildlife and waterfowl refuges, and historic sites during transportation project development. Public lands are a major land use in the Study Area. Parks, preserves and reserves make up approximately 85% of lands within the S.R. 951 corridor and 69% of the C.R. 92 corridor. **Tables 8 and 9** list the public lands and management information associated with these 4(f) resources.

Table 8: Public Lands adjacent to S.R. 951

Resource Name	Management Entity
Rookery Bay National Estuarine Research Reserve	Managed by FDEP and NOAA and includes two aquatic preserves: Rookery Bay Aquatic Preserve and Cape Romano-Ten Thousand Islands Aquatic Preserve.

Shell Island Preserve	Managed by Collier County and there is no public access at this preserve. This preserve is considered a resource protection/restoration preserve. This property should be investigated for a potential to conduct mitigation work that may be needed due to impacts for the construction of the trail.
Collier Boulevard Boating Park (S.R. 951 Boat Ramp)	This boat ramp is managed by Collier County Parks and Recreation and is a popular public water access boat ramp.
Isle of Capris Paddlecraft Park	This park is the only public access facility in Collier County designed exclusively for launching paddle crafts, non-motorized vessels such as canoes, kayaks, and paddleboards. It is managed by Collier County Parks & Recreation. This site could be an opportunity for educational kiosks for the trail users.

Table 9: Public Lands adjacent to C.R. 92

Resource Name	Management Entity
Rookery Bay National Estuarine Research Reserve	Managed by FDEP and NOAA. This includes two aquatic preserves: Rookery Bay Aquatic Preserve and Cape Romano-Ten Thousand Islands Aquatic Preserve.
Collier-Seminole State Park	The C.R. 92 intersects this park as the road curves toward and merges to U.S. 41. The Park is on both sides of the C.R. 92. It is managed by FDEP and could be a potential for a mitigation partnership due to impacts of construction of the trail.
Ten Thousand Islands National Wildlife Refuge	U.S. Fish and Wildlife Service lands and waters are managed for recreational activities.

Soils

A review of the United States Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) Web Soil Survey descriptions identified 18 soil types within the Study Area, along with waters of the Gulf of Mexico and other waters attributed to bays and alcoves. Per the Florida Association of Environmental Soil Scientists 2007 Hydric Soils Handbook and the USDA NRCS soil survey, ten of the 18 soils types are hydric and could support anaerobic wetland conditions. Approximately 67% of the S.R. 951 corridor and approximately 75% of the C.R. 92 corridor consists of hydric soils. The soil characteristics are consistent with the location and habitat types found in the study area. Although a particular soil may be mapped as hydric, soil

disturbances such as fill can disrupt historic conditions. Both roadways appear to have been constructed by utilizing fill that was placed over historic mangrove swamp. The nature of the fill is not known. **Tables 10 and 11** summarize the soils and percentage of soil types for each corridor in the Study Area.

Table 10: Soil Types Found in S.R. 951 Corridor

Soil Number	Soil Name	Hydric	Percent
16	Oldsmar fine sand, 0 to 2 percent slopes	No	4%
32	Urban land, 0 to 2 percent slopes	N/A	1%
35	St. Augustine, organic substratum-Urban land complex, 0 to 2 percent slopes	No	6%
40	Durbin and Wulfert mucks, tidal complex, 0 to 1 percent slopes	Yes	42%
53	Estero and Peckish mucks, tidal, 0 to 1 percent slopes	Yes	9%
99	Water	N/A	0.4%
100	Waters of the Gulf of Mexico	N/A	11%
107	Durbin-Wulfert mucks, tidal-Urban land complex, 0 to 1 percent slopes	Yes	2 %
108	Estero and Peckish mucks, tidal-Urban land complex, 0 to 1 percent slopes	Yes	2%
110	Brynwood fine sand-Urban land complex, 0 to 2 percent slopes	No	0.7%
113	Holopaw fine sand-Urban land complex, 0 to 2 percent slopes	Yes	5%
115	Holopaw-Basinger-Urban land complex, 0 to 2 percent slopes	Yes	1%
125	Oldsmar fine sand-Urban land complex, 0 to 2 percent slopes	No	10%
128	Pineda fine sand, limestone substratum-Urban land complex, 0 to 2 percent slopes	Yes	5%
132	Riviera, limestone substratum-Copeland fine sand-Urban land association, 0 to 2 percent slopes	Yes	1%

Table 11: Soil Types Found in C.R. 92 Corridor

Soil Number	Soil Name	Hydric	Percent
2	Holopaw fine sand, limestone substratum, 0 to 2 percent slopes	Yes	0.01%
7	Immokalee fine sand, 0 to 2 percent slopes	No	1%
20	Ft. Drum-Malabar, high association, 0 to 2 percent slopes	No	10%
30	St. Augustine, organic substratum-Urban land complex, 0 to 2 percent slopes	No	5%
40	Durbin and Wulfert mucks, tidal complex, 0 to 1 percent slopes	Yes	76%

100	Waters of the Gulf of Mexico	N/A	7%

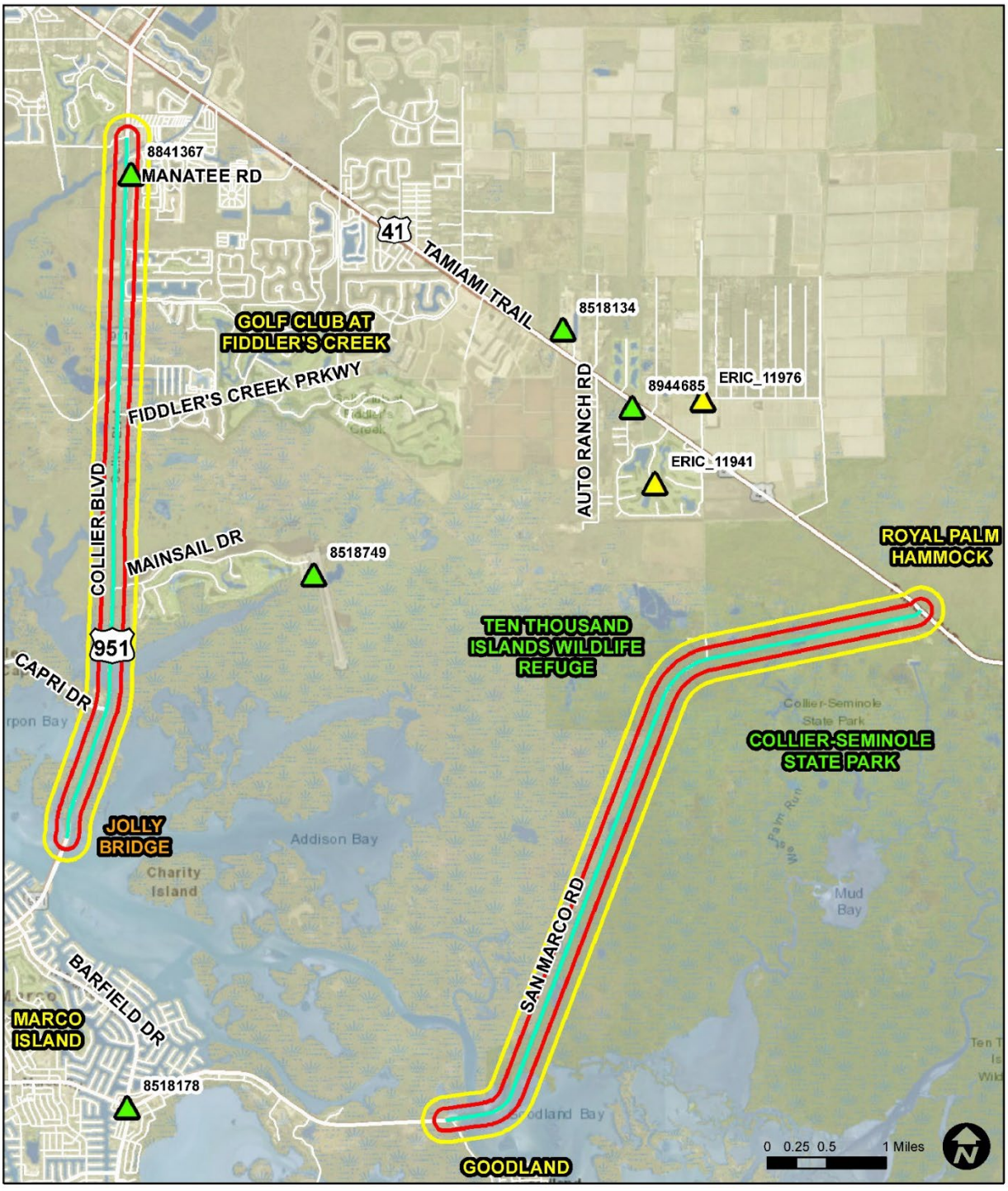
Potential Contamination Sites

Sites with potential contamination locations are shown in **Figure 27**. Twelve (12) potential contamination sites listed in **Table 12** were identified in the study area using the FDEP's Contamination Site Locator database. Only one (1) of the identified sites, is within the project limits. Racetrac #2358 is a gas station on the corner of Collier Boulevard and Manatee Road at 6170 Collier Boulevard. The site is currently shown as a pending petroleum cleanup site. Further review of this potential contamination site may be appropriate during future project phases.

Table 12: Potential Contamination Sites

FACILITY ID	FACILITY	ADDRESS	TYPE
8518134	Cemex-East Trail Ready Mix	15555 E Tamiami Trail, Naples, FL 34114	Petroleum
8518178	Kwik Stop	110 Barfield Drive S, Marco Island, FL 33937	Petroleum
8518273	Dash In Dash Out	1095 N Collier Boulevard, Marco Island, FL 34145	Petroleum
8518316	Uooligan Gas Station Inc.	861 Bald Eagle Drive, Marco Island, FL 34145	Petroleum
8518749	Collier County-Marco Island Exec. Airport	2003 Mainsail Drive, Naples, FL 34114	Petroleum
8731681	Rose Marina	951 Bald Eagle Drive, Marco, FL 34145	Petroleum
8841367	Racetrac #2358	6170 Collier Boulevard, Naples, FL 34114	Petroleum
8944685	Sunshine #184	17100 E Tamiami Trail, Naples, FL 34114	Petroleum
8945066	Pelican Pier Marina	1085 Bald Eagle Drive, Marco Island, FL 34145	Petroleum
ERIC_11941	Eagle Lakes Golf Club	18100 Royal Tree Parkway, Naples, FL 34114	Other Cleanup
ERIC_11976	Veins Diesel @ Sunny Grove	Six L's Farm Road & Sunny Grove Road, Naples, FL	Other Cleanup
ERIC_4287	Marco Island Cleaners	695 Bald Eagle Drive, Marco Island, FL 34145	Other Cleanup

Figure 27: Potential Contamination



Protected Species

A desktop environmental analysis and general field review were conducted for the Study Area to determine the presence of federal and/or state-protected species and their suitable habitat following 50 Code of Federal Regulations (CFR) Part 402 of the Endangered Species Act of 1973, as amended, Chapters 5B-40: Preservation of Native Flora of Florida and 68A-27 Florida Administrative Code Rules Relating to Endangered or Threatened Species and Part 2, Chapter 16 – Protected Species and Habitat of the FDOT PD&E Manual. Literature reviews and agency database searches were conducted to document state and federally protected species presence, their habitat, and critical habitat occurring or potentially occurring within the Study Area.

Seventeen federally protected species, eleven state protected species and five protected, non-listed species were determined to be present or have a likelihood for utilization of habitats within or adjacent to the Study Area. **Table 13** lists protected species with the potential to occur and their likelihood to occur within the Study Area. Ranking of potentially occurring protected species was developed and each species was assigned a low, moderate, or high likelihood for occurrence within the Study Area.

Low – Species with a low likelihood of occurrence are defined as those that are known to occur in Collier County, but the preferred habitat is limited within the Study Area, or the species is rare, or no longer existent.

Moderate – Species with a moderate likelihood for occurrence are those species known to occur in Collier County, and for which suitable habitat is located within the Study Area, but no observations or positive indications exist to verify the species presence.

High – Species with a high likelihood for occurrence are suspected within the Study Area based on known ranges and existence of sufficient preferred habitat; are known to occur beyond the Study Area or have been previously observed or documented in the project vicinity.

A field review was conducted on June 30, 2022. No listed protected species were observed at that time. The species observed were: White Ibis (*Eudocimus albus*), Great egret (*Ardea alba*), European starling (*Sturnus vulgaris*), Curly-tailed lizard (*Leiocephalus eremitus*), Cuban anole (*Anolis sagrei*), Snowy egret (*Egretta thula*), and Eastern phoebe

(*Sayornis phoebe*). Species identified during this field review demonstrates utilization by wildlife within the Study Areas, with activity also observed in developed sections.

Table 13: Protected Species with Potential to Occur within the Study Area

Common Name	Scientific Name	Status[1]	Habitat Preference	Likelihood	Reasoning
Mammals					
West Indian Manatee	*Trichechus manatus*	FT	Coastal waters, rivers, and springs	High	Consultation Area, Critical Habitat, and suitable habitat
Florida Panther	*Puma concolor coryi*	FE	All habitat types but rely on forested areas with dense understory vegetation	High	Panther Focus Area and documented in Study Area
Florida Black Bear	*Ursus americanus floridanus*	NL	Mixed hardwood pine, cabbage palm hammock, upland oak scrub, and forested wetlands.	High	Within range and documented nearby
Florida Bonneted Bat	*Eumops floridanus*	FE	Semi-tropical forests with tropical hardwood, pineland and mangrove habitats and man-made areas like golf courses and neighborhoods	Moderate	Consultation Area and suitable habitat
Big Cypress Fox Squirrel	*Sciurus niger avicennia*	ST	Stands of cypress, slash pine savanna, mangrove swamps, tropical hardwood forests, live oak woods, coastal broadleaf evergreen hammocks, and suburban habitats	Moderate	Within range and suitable habitat
Birds					
American Oystercatcher	*Haematopus palliates*	ST	Beaches, sand bars, spoil islands, shell rakes, salt marsh, and oyster reefs	Moderate	Within range and suitable habitat
Florida Burrowing Owl	*Athene cunicularia*	ST	Open habitat with little understory: prairies, golf courses, airports, pastures, agricultural fields, and vacant lots	Moderate	Within range and suitable habitat
Black Skimmer	*Rynchops niger*	ST	Coastal esturaries, beaches, and sandbars	Moderate	Within range and suitable habitat
Everglade Snail Kite	*Rosrhamus sociabilis plumbeus*	FE	Shallow freshwater marshes and shallow grassy shorelines of lakes	Low	Within range, near Consultation Area, but Little suitable habitat

Roseate Spoonbill	*Platalea ajaja*	ST	Coastal areas, mangrove, and spoil islands	Moderate	Documented nearby, suitable habitat, but range limited
Tricolored heron	*Egretta tricolor*	ST	Fresh and saltwater marshes, estuaries, mangrove swamps, lagoons, and river deltas	High	Within range, documented nearby and suitable habitat
Reddish Egret	*Egretta rufescens*	ST	Coastal areas, estuaries near mangroves and lagoons and spoil islands	High	Within range, documented nearby and suitable habitat
Little Blue Heron	*Egretta cearulea*	ST	Fresh, salt, and brackish water environments	High	Within range, documented nearby and suitable habitat
Least Tern	*Sternula antillarum*	ST	Estuaries and bays	Moderate	Within range and suitable habitat
Piping Plover	*Charadrius melodus*	FT	Sandy beaches, sand flats, and mud flats along coastal areas	High	Consultation Area and suitable habitat
Audubon's Crested Caracara	*Plyborus plancus audobonii*	FT	Open grasslands with a low density of herbaceous ground cover and sparse cabbage palms	Moderate	Consultation Area, documented in area, but little suitable habitat
Florida Scrub Jay	*Aphelocoma coerulescens*	FT	Restricted to Florida scrub dominated by scrub oaks rarely exceeding 7 feet and saw palmetto	Moderate	Consultation Area, documented nearby, but little suitable habitat
Wood Stork	*Mycteria ameridana*	FT	Marshes, floodplain lakes, swamps	High	Within range, documented nearby, and suitable Habitat
Red Knot	*Califris canutus rufa*	FT	Shorelines including sandy beaches, estuaries, and inlets	High	Within Range, suitable habitat, and documented nearby
Red-cockaded Woodpecker	*Picoides borealis*	FT	Inhabit 90–100-year-old slash, long leaf, and loblolly pines	Moderate	Consultation Area, documented nearby, but little suitable habitat
Bald Eagle*	*Haliaeetus leucocephalus*	NL	Commonly coastal areas, bays, rivers, lakes, and other food sources. Forages near water. Nests in tall trees	Moderate	Documented nests within ½ mile
Eastern Black Rail	*Laterallus jamaicensis*	FT	Densely vegetated marshes, grassy marshes, and tidal areas	Moderate	Within range and suitable habitat, but no documented populations nearby
Osprey**	*Pandion haliaetus*	NL	Coasts, lakes, rivers, and swamps	High	Within range and suitable habitat

Reptiles					
American Crocodile	*Crocodylus acutus*	FT	Brackish and saltwater areas, ponds, coves, and creeks in mangrove swamps	High	Consultation Area and suitable habitat available
American Alligator	*Alligator missisippiensis*	SAT	Freshwater lakes and slow-moving rivers and their associated wetlands. Brackish water habitats. Rarely in saltwater	High	Within range and suitable habitat
Eastern Indigo Snake	*Drymarchon couperi*	FT	Range of habitats from scrub and sandhill to mesic flatwoods	Moderate	Consultation Area, documented in area, but little suitable habitat
Loggerhead Sea Turtle	*Caretta*	FT	Subtropical and temperate oceans	Low	Critical Habitat outside Study Area, no documented nesting
Hawksbill Sea Turtle	*Eretmochelys imbricate*	FE	Subtropical and temperate oceans, reefs in the Florida Keys and Atlantic Coast	Low	Nearest nesting beaches are in Tampa Bay and Florida Keys
Gopher Tortoise	*Gopherus poluphemus*	ST	Well-drained Sandy Soils of longleaf pine sandhills, xeric oak hammocks, scrub, pine flatwoods, dry prairies, and coastal dunes	Low	Within range, documented on Shell Island, but little suitable habitat
Green Sea Turtle	*Chelonia mydas*	FT	Open water, shallow flats and seagrass meadows and rock ledges, oyster bars and coral reefs	Low	Critical Habitat outside Study Area, no documented nesting
Fish					
Gulf Sturgeon	*Acipenser oxyrinchus desotoi*	FT	Brackish/salt water during fall and freshwater rivers in spring/ summer	High	Critical Habitat
Smalltooth Sawfish	*Prostis pectinata*	FE	Estuaries, river mouths and bays, especially red mangrove shorelines	High	Critical Habitat
Insects					
Bartram's hairstreak Butterfly	*Stymon acis bartrami*	FE	Prefers pine rockland	Low	Range limited, little suitable habitat

Florida Leafwing Butterfly	*Anaea troglodyte floridalis*	FE	Prefers pine rockland	Low	Range limited, little suitable habitat
Miami Blue Butterfly	*Cyckargys thomasi bethunebakeri*	FE	Tropical hardwood hammocks, tropical pine Rocklands and beachside scrub.	Low	Exceedingly rare, current known populations only in Florida Keys

FE-Federally Endangered, FT- Federally Threatened, SE – State Endangered, ST – State Threatened, NL – Not Listed, & SAT – State Threatened Due to Similarity of Appearance
*Bald eagles are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, along with the state bald eagle rule 68A-16.002, F.A.C.
**Osprey are protected under the U.S. Migratory Bird Treaty Act and State Rule Chapter 68A-4 and 68A-16, F.A.C.

Consultation Areas

The Study Area is within the USFWS Consultation Areas for the West Indian Manatee (*Trichechus manatus*), Florida Bonneted Bat (*Eumops floridanus*), Piping Plover (*Charadrius melodus*), Red-cockaded Woodpecker (*Picoides borealis*), Florida Scrub Jay (*Aphelocoma coerulescens*), and the American Crocodile (*Crocodylus acutus*). Suitable habitat exists for the West Indian Manatee, Florida Bonneted Bat, Piping Plover, and American Crocodile.

The Florida Panther (*Puma concolor coryi*) Consultation Area is north of U.S. 41 (Tamiami Trail). Three FDOT Florida Panther Vehicle Collision (PVC) Hot Spots are located on North Collier Boulevard due to vehicle collisions with this species that were documented in 2008, 2014, and 2015.

Critical Habitat

The Study Area was evaluated for the potential occurrence of Critical Habitat as defined by 17 CFR 35.1532. The USFWS and National Marine Fisheries Service (NMFS) are federal agencies that oversee the protection of Critical Habitat from adverse impacts to the biological or physical elements essential to the conservation of a listed species. Henderson Creek on the northern portion of S.R. 951 and Ten Thousand Island National Wildlife Refuge along the C.R. 92 corridor are classified as Critical Habitat for the West Indian Manatee by the USFWS. The Ten Thousand Islands/Everglades Unit is designated as Critical Habitat for the Smalltooth Sawfish by the NMFS. If impacts to Critical Habitat are anticipated, an effect determination will be needed as well as coordination with and concurrence from these agencies.

Essential Fish Habitat

NOAA Fisheries, also known as NMFS, is the federal agency charged with protecting EFH. The NMFS has designated EFH for Reef Fish, Sandbar Shark, Blacknose Shark, Coastal Migratory Pelagics, Red Drum Fishery, and Shrimp Fishery within the Study Area. If impacts to EFH are anticipated, an impact determination will be needed as well as coordination and concurrence from the NMFS.

Non-Listed Species with Potential to Occur

The Study Area is within the FFWCC South Bear Management Unit. Although the Florida Black Bear (*Ursus americanus floridanus*) is no longer a listed species, the Bear Conservation Rule still protects them. In 2021, 572 bear-related calls were received by the agency and several road kills have been reported in the Study Area.

Bald Eagles are protected under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act and the state bald eagle rule (68A-16-002, F.A.C.). There are several documented eagle nests in the area. The closest to the project areas are located at Tamiami Trail and C.R. 92 and another at S.R. 951 (Collier Blvd.) and Tower Road. Both are within a half mile of the Study Area.

Osprey are protected under the U.S. Migratory Bird Treaty Act and State Rule Chapter 68A-4 and 68A-16, F.A.C. This species frequents coastal habitats and often nests on infrastructure associated with roadways (lights and signposts).

It is illegal to kill bats in Florida in accordance with F.A.C. rule 68A-4.001 General Prohibitions. Bats are particularly vulnerable when they roost in man-made structures, like bridges. Protections for bats in structures are included in rule 68A-9.010 Taking Nuisance Wildlife. All bridges should be inspected for the presence of bats.

Protected Plants

The protected plants with the potential to be found within the Study Area include Banded Wild-Pine Air plant (*Tillandsia flexuosa*), Ghost Orchid (*Dendrophylax lindenii*), Fuzzy-Wuzzy Air Plant (*Tillandsia pruinosa*), and Golden Leather Fern (*Acrostichum aureum*).

Most of the anticipated impact to the Study Area is within maintained right of way, but some impacts outside this area may be unavoidable. The Banded Wild-Pine Air Plant prefers filtered sunlight with exposed habitat and prefers to grow on pinelands or scrub

and can occur in mangrove swamps. The Ghost Orchid prefers to grow on two host tree species, Pop Ash (*Fraxinus caroliniana)* and Pond Apple (*Annona glabra)*. Pop Ash does not tolerate salty environments. Pond Apple could be present; any trees should be inspected for Ghost Orchid. The Fuzzy-Wuzzy Air Plant prefers to grow in freshwater wetlands on dead trees. The Golden Leather Fern does prefer mangrove swamps; however, the fringe habitat is dense with mature trees and open tidal shoreline is limited. The likelihood for this species to be present is unlikely along the Study Areas. In conclusion, for some of the species the habitat is appropriate; however, due to development and maintained right of ways the occurrence of these plant species is unlikely. **Table 14** lists the plant species with the potential to occur within the Study Area and their likelihood of occurrence.

Table 14: Plant Species Listed within the Study Areas

Common Name	Scientific Name	Status	Likelihood of Occurrence	Reasoning
Banded Wild-Pine	*Tillandsia flexuosa*	ST	Moderate	Prefers scrub or pinelands but can occur in mangroves
Ghost Orchid	*Dendrophylax lindenii*	SE	Moderate	Documented in the area near C.R. 92 and Tamiami Trail East
Fuzzy-Wuzzy Air Plant	*Tillandsia pruinosa*	SE	Low	Prefers freshwater habitats
Golden Leather Fern	*Acrostichum aureum*	ST	High	Prefers mangrove swamps
Florida Prairie-Clover	*Dalea carthagenensis floridana*	FE	Low	No salt tolerance, outside normal range, but vouchered specimen documented in Collier
Garber's Spurge	*Chamaesyce garberi*	FT	Moderate	Documented on barrier islands and in Collier Seminole State Park

Note: FE-Federally Endangered, FT- Federally Threatened, SE – State Endangered, ST – State Threatened

Cultural Resources

A desktop review of the Florida Geographic Library's State Historic Preservation Office (SHPO) database indicated nineteen (19) potentially historic structures are within a half mile of the project limits as listed in **Table 15** and shown in **Figure 28**. Of these twenty structures, seven (7) were identified as "ineligible" for listing in the National Register of Historic Places (NHRP) and twelve (12) have not been evaluated by SHPO.

One resource (CR00138) was identified as 'potentially eligible" for listing in the National Register of Historic Places.

Sites not evaluated by SHPO include seven (7) resources located inside Collier-Seminole State Park located in the southwest corner of the C.R. 92/U.S. 41 intersection. Resources inside the park include the Blockhouse (CR01089), the Barron Collier Memorial (CR01090), a shop (CR01517), the Myers Property (CR01518), a camp restroom (CR01519), a bathhouse (CR01520), and a recreation hall (CR01521). The other five resources not evaluated by SHPO are in the Goodland area. The resource listed as "potentially eligible" is the Bay City Walking Dredge, also located within Collier-Seminole State Park. The Bay City Walking Dredge is a National Historic Engineering Landmark. It was constructed in 1924 and used to build the Tamiami Trail Highway (U.S. 41) through the Everglades and Big Cypress Swamp. The Bay City Walking Dredge is the only "potentially eligible" resource identified.

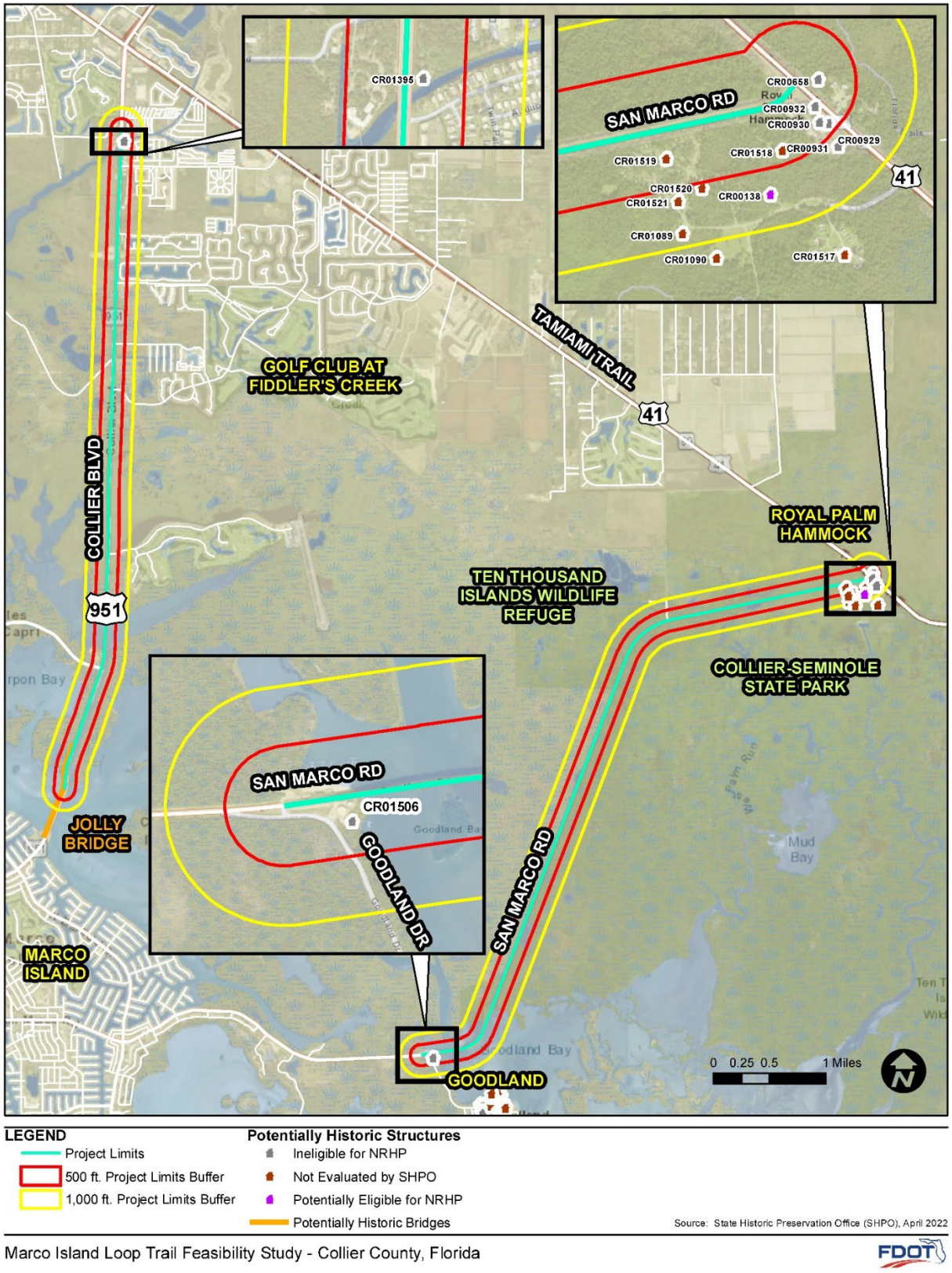
The only potential resource located within the project limits is the S.R. 951/Big Marco Pass Bridge (CR01301), also known as Jolly Bridge, which has not been evaluated by SHPO. None of the other resources identified in this section are within or directly adjacent to the project limits. All other identified potential resources are located well outside the existing right-of-way.

Table 15: Cultural Resources

SITE ID	SITENAME	ADDRESS	SHPO EVALUATION
CR01395	6360 COLLIER BLVD	6360 COLLIER BLVD	INELIGIBLE FOR NRHP
CR01506	10,000 ISLANDS FIELD RESEARCH STATION	2561 SAN MARCO RD	INELIGIBLE FOR NRHP
CR00658	ROYAL PALM HAMMOCK STATION	20018 TAMIAMI TRAL	INELIGIBLE FOR NRHP
CR00929	ROYAL PALM HAMMOCK CABIN	19830 TAMIAMI TRAL	INELIGIBLE FOR NRHP
CR00930	ROYAL PALM HAMMOCK MOTEL	19820 TAMIAMI TRAL	INELIGIBLE FOR NRHP
CR00932	ROYAL PALM HAMMOCK RESTAURANT	19800 TAMIAMI TRAIL	INELIGIBLE FOR NRHP
CR00931	ROYAL PALM HAMMOCK PUMPHOUSE	U.S. 41 AND C.R. 92	INELIGIBLE FOR NRHP
CR01089	THE BLOCKHOUSE	20200 TAMIAMI TRAL E	NOT EVALUATED BY SHPO
CR01090	BARRON COLLIER MEMORIAL	20200 TAMIAMI TRAL E	NOT EVALUATED BY SHPO
CR01517	SHOP	20200 TAMIAMI TRAL E	NOT EVALUATED BY SHPO
CR01518	MYERS PROPERTY	20200 TAMIAMI TRAL E	NOT EVALUATED BY SHPO
CR01519	CAMP RESTROOM	20200 TAMIAMI TRAL E	NOT EVALUATED BY SHPO
CR01520	BATHHOUSE	20200 TAMIAMI TRAL E	NOT EVALUATED BY SHPO
CR01521	RECREATION HALL	20200 TAMIAMI TRAL E	NOT EVALUATED BY SHPO
CR00140	MARCO LODGE	HARBOR PLACE	NOT EVALUATED BY SHPO
CR00623	SCOTT, ED HOUSE	333 BAYSHORE WAY	NOT EVALUATED BY SHPO

CR00624	217 BAYSHORE	217 BAYSHORE	NOT EVALUATED BY SHPO
CR00689	MARCO ISLAND MARINA	125 BAYSHORE WAY	NOT EVALUATED BY SHPO
CR01301	S.R. 951/BIG MARCO PASS BRIDGE	S.R. 951 (COLLIER BOULEVARD)	NOT EVALUATED BY SHPO
CR00138	WALKING DREDGE	20200 TAMIAMI TRAL E	POTENTIALLY ELIGIBLE FOR NRHP

Figure 28: Cultural Resources



CORRIDOR FIELD REVIEW

Project stakeholders were invited to participate in a corridor field review on Thursday, June 30, 2022. The eight participants observed travel conditions, land use characteristics, environmental features, and physical constraints in the study corridor. A summary of the field review is provided in **Appendix B**.

COLLIER MPO

BICYCLE & PEDESTRIAN MASTER PLAN

Collier MPO
Bicycle/Pedestrian Master Plan

March 8, 2019

COLLIER Metropolitan Planning Organization

VISION

To provide a safe and comprehensive bicycle and pedestrian network that promotes and encourages community use and enjoyment.

Photo Credit: Naples Pathways Coalition

ACKNOWLEDGEMENTS

The Bicycle and Pedestrian Master Plan (BPMP) has been financed in part through grants from the Federal Highway Administration, the Federal Transit Administration and the U.S. Department of Transportation, under the Metropolitan Planning Program, Sections 134 and 135 of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

The BPMP was made possible by the leadership of the Collier Metropolitan Planning Organization (MPO), the MPO staff, MPO advisory committees, BPMP Stakeholder Committee and the members of the public who commented on various drafts of the Plan.

COLLIER METROPOLITAN PLANNING ORGANIZATION

Councilman Reg Buxton, City of Naples, MPO Chair

Councilwoman Elaine Middelstaedt, Esq., Everglades City Vice-Chair

Commissioner Donna Fiala
Collier County

Commission Penny Taylor
Collier County

Commissioner William L. McDaniel, Jr.
Collier County

Councilman Terry Hutchison
City of Naples

Commissioner Burt L. Saunders
Collier County

Councilwoman Charlette Roman
City of Marco Island

Commissioner Andy Solis, Esq.
Collier County

MPO Project Staff
Anne McLaughlin, Executive Director
Eric Ortman, Project Manager
Karen Intriago, GIS

Tindale Oliver

Wally Blain, AICP, Senior Project Manager

Jennifer V. Bartlett, AICP, LEED AP, Project Manager

Sara Goolsby, GIS

Bicycle and Pedestrian Advisory Committee

Joe Bonness, Chair

Anthony Matonti, Vice Chair

Jane Cheffy

Dayna Fendrick

Dr. Mort Friedman

Andrea Halman

Victor Ordija

Alan Musico

Reginald Wilson

Citizens Advisory Committee

Gary Shirk, Chair

Karen Homiak, Vice Chair

Robert Anderson

Pam Brown

Suzanne Cross

Neal Gelfand

Rick Hart

Susan Jones

Tammie Pernas

Robert Phelan

Josh Rincon

William Stephens

Russell Tuff

Technical Advisory Committee

Voting Members

Lorraine Lantz, Chair, Collier County Transportation Planning
Tim Brock, Vice Chair, City of Everglades City
Michelle Arnold, Collier County Public Transportation & Neighborhood Enhancement
Dan Hall, Collier County Traffic Operations
Andy Holland, City of Naples Planning
Justin Lobb, Collier County Airport Authority
Tim Pinter, City of Marco Island Public Works
Don Scott, Lee County MPO
Daniel James Smith, AICP, City of Marco Island Planning
Alison Beckett, City of Naples Streets and Drainage
Ute Vandersluis, City of Naples Airport Authority

Non-Voting Members

David Ogilvie, Collier County Public Schools
April Olson, Conservancy of Southwest Florida
David Agacinski, FDOT

Stakeholders Committee

Joe Adams, BPAC, former member
Michelle Avola-Reese, Naples Pathways Coalition
Beth Brainard, Naples Pathways Coalition
Jessica AyersCrane, Blue Zones
Debra Forester, Collier County Community Redevelopment Agency
Patty Huff, Citizen
Anita Jenkins, Collier County Transportation Planning
Robert Jones, CAC, former member
Matthew Liveringhouse, Collier Public Transportation & Neighborhood Enhancement
Wendy Olson, BPAC, former member
Wayne Sherman, CAC, former member
Patricia Spencer, Golden Gate Civic Association
Fred Thomas, CAC former member
Cherryl Thomas, Citizen
Barry Williams, Collier County Parks and Recreation

It is the policy of the Collier Metropolitan Planning Organization to support and encourage public involvement and to adhere to the principles of Environmental Justice in the planning process relating to transportation systems and facilities. The MPO's public participation policy is designed to ensure opportunities for the public to express its views on transportation and mobility issues and to become active participants in the decision-making process.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Introduction

Prior to this Plan, bicycle and pedestrian facility plans were referred to as "Comprehensive Pathway Plans." MPO staff suggested changing the title to Bicycle and Pedestrian Master Plan to bring the document's title more in-line with State and Federal transportation funding categories. "Pathway" is an undefined term in the transportation planning lexicon. The term "pathways" suggests a winding path through the woods, or a garden path of flagstones. The term conveys neither the complex, technical requirements nor the critical role bicycle and pedestrian facilities provide related to multimodal transportation.

The Collier MPO developed its first Comprehensive Pathways Plan in 1994 to establish a basis for an organized and strategic approach to developing a bicycle and pedestrian system in Collier County. The MPO conducted a major update to the Plan in 2006, introducing Best Practices and using a Level of Service (LOS) methodology to identify needs. Due to the complex statistical nature of the LOS methodology, staff and the Bicycle and Pedestrian Advisory Committee (BPAC) (formerly called the Pathways Advisory Committee) found it difficult to manipulate the model and make adjustments. The Comprehensive Pathways Plan adopted in 2012 replaced the LOS methodology with Geographic Information Systems (GIS) analysis using a series of overlays. This Plan continues that practice, expanding the GIS database and overlays to include public input in evaluating and prioritizing network connections.

Purpose

The purpose of this Plan is to build on prior efforts to develop a fist-class bicycle and pedestrian network throughout Collier County. This Plan is not intended to duplicate or conflict with existing local plans and ongoing bicycle and pedestrian projects, but rather, to unify planning efforts and influence facility improvement priorities at the county level.

Vision

The Plan's Vision, Goals, Objectives and Strategies were developed with input from the MPO's advisory committees, the BPMP Stakeholders group, MPO staff and the consultant and vetted by the MPO Board. The Vision combines an emphasis on safety with creating a network for the community to use and enjoy:

To provide a safe and comprehensive bicycle and pedestrian network that promotes and encourages community use and enjoyment.

Goals and Strategies

The Goals and Strategies were developed by reviewing local, state and national Best Practices and goals in similar plans including the 2012 Comprehensive Pathways Plan. (See Chapter 4). Though similar to the previous plan, Safety, Equity and Community Health have received greater emphasis in 2019.

Goal	Strategy
Safety	Increase safety for people who walk and bicycle in Collier County.
Connectivity	Create a network of efficient, convenient bicycle and pedestrian facilities in Collier County.
Equity/Livability	Increase transportation choice and community livability through development of an integrated multimodal system.
Health	Increase total miles of bicycle and pedestrian facilities and encourage local governments to incorporate Complete Streets principles in road planning, design, and operations
Economy	Promote tourism and economic opportunities by developing a safe, connected network of biking and walking facilities.
Environment	Protect the environment by promoting walking and bicycling for transportation to reduce congestion, reduce the need for costly expansion of road and highway systems, and reduce our nation's dependence on foreign energy sources

Planning Process

The Plan took approximately 1 ½ years to complete. The process began with a Kick-off meeting held on October 30, 2017 and was adopted by the MPO Board on March 8, 2019. Several of the MPO's longstanding advisory committees were directly involved throughout the process – the Citizens Advisory Committee, Technical Advisory Committee and Bicycle and Pedestrian Advisory Committee. In addition, the MPO reached out to a group of Stakeholders that expanded the representation to include other agency staff, nonprofit groups and members of the public who had expressed an interest in working on the Plan.

MPO staff and the consultant engaged in a robust and multifaceted public outreach campaign that attracted 300+ online comments on an interactive map posted on the MPO's website and another 300+ comments via completed online surveys. The project team hosted 2 stakeholder meetings, 12 community events, 2 public open houses and presented updates and sought input at numerous advisory committee meetings. MPO staff and the consultant gave presentations to the MPO Board as progress on major milestones were met. (See Chapter 3 on Community Engagement.)

As with all major planning efforts, this Plan evolved over time slowly at first, then rapidly gaining momentum through an iterative process involving gathering and analyzing existing conditions, inviting public comment, developing a vision and goals towards identifying a preferred future network. That network was evaluated against criteria developed specifically for this Plan – such as safety, equity, connectivity, and opportunities available for funding. The planning process constantly looped back through public comment and data analysis to derive additional guidance in the form of investment policies, planning policies and design guidelines. The planning process was flexible enough to periodically expand for the incorporation of recommendations arising from other local initiatives that were underway – such as the City of Naples *Downtown Circulation and Connectivity Plan* adopted in April 2018 and the Board of County Commissioner's adoption of a Complete Streets Resolution and Policy in January 2019. The process adjusted to accommodate the Naples Pathway Coalition's nascent Spine Trail Vision map revealed in January 2019 and a late arriving request from the City of Naples and Collier County's Parks and Recreation to incorporate a proposed pedestrian bridge connecting the Gordon River Greenway with Freedom Park across the Golden Gate Parkway. MPO staff's desire to expand the SunTrail network necessitated additional public comment and coordination among staff, the Naples Pathways Coalition, the Conservancy of SW Florida and the MPO's advisory committees in January and February 2019. (See Chapter 5 Needs Analysis).

the Conservancy of SW Florida and the MPO's advisory committees in January and February 2019. (See Chapter 5 Needs Analysis).

Major Components of the Plan

The major components of the Plan are readily identifiable in the Table of Contents. What follows is a high-level summary:

- **Existing Conditions:** Every new plan establishes a benchmark when it comes to inventorying existing facilities, and this Plan is no exception. The GIS database provides an excellent starting place for measuring performance and identifying needs when the next update occurs.
- **Public Input:** This Plan broke new ground for the Collier MPO by actual mapping of public comments regarding network needs in GIS and including public input as an evaluation measure for identifying high priority projects.
- **Vision, Goals, Objectives & Strategies:** These elements grew out of advisory committee participation and public comments. The project team referred constantly back to this section as a guide throughout the development of the Plan.
- **Needs Analysis:** This proved to be the most iterative component of the Plan, as Needs were constantly evaluated against the goals of Equity, Safety, Network Connectivity and funneled through additional review incorporating public comments, roadway capacity projects identified in the 2040 Long Range Transportation Plan (LRTP), the Plan's design guidelines and evolving policy statements.

  The Needs Analysis (Chapter 5) resulted in the selection of several groups of priority projects. Projects within each group were not prioritized to provide implementing agencies greater flexibility in selecting projects. The projects may require further review and study before proceeding. The prioritized groups include:

  - Complete Streets/Safety Corridor Studies for high crash locations on arterial and collector roadways
  - Bicycle and pedestrian facility gaps on arterial and collector roadways
  - Shared Use Path facility gaps
  - Sidewalks on local roads

- **Design Guidelines:** The advisory committees urged the project team to develop design guidelines customized for the MPO's jurisdiction. The Plan coalesced quickly around the concept of designing for All Ages and Abilities as promoted by the National Association of City Traffic Officials (NACTO) and Complete Streets and Context Classification guidance provided by the Florida Department of Transportation (FDOT). While it may sound simple to address, this was challenging due to great differences in scale between the road networks serving the incorporated cities of Naples, Marco Island and Everglades City and the road network serving unincorporated Collier County. Additional

complicating factors were the difference in posted and/or target speeds, vast differences in the amount of traffic the roadways carry daily, and the differing amounts of commercial vehicle usage. The Design Guidelines Matrix in Chapter 6 is a first-generation attempt at customization to fit Collier County that will undoubtedly require adjustment over time. But it provides an essential starting point.

- **Policies:** The Plan establishes policies pertaining to including bicycle and pedestrian facilities along all collector and arterial roads; formalizes the applicability of the Design Guidelines; adopts FDOT's Complete Streets policy, identifies high priority Complete Streets Corridors and establishes MPO priorities for funding improvements. The policies also commit MPO staff to reporting to the MPO Board on performance measures and targets on an annual basis.

- **Appendices:** The appendices contain a compendium of advisory committee and public comments and the tools used in developing the Plan, such as the on-line survey and interactive Wiki map.

    - Appendix 1: Environmental Justice Methodology
    - Appendix 2: Naples Pedestrian and Bicycle Master Plan
    - Appendix 3: Marco Island Bike Path Master Plan
    - Appendix 4: Public Outreach Tools
    - Appendix 5: Public Outreach Comments
    - Appendix 6: Wiki Interactive Map Comments
    - Appendix 7: Survey Form, Results and Comments
    - Appendix 8: Advisory Committee and Collier County Transportation Planning Comments
    - Appendix 9: Stakeholder Comments
    - Appendix 10: Bicycle Gaps; Collectors and Arterials
    - Appendix 11: Tier 1 Segments from Walkable Community Studies
    - Appendix 12: Local Road Segments near Schools, Transit Stops, and EJ Communities
    - Appendix 13: MPO Resolution 2010-05

CHAPTER 1 – EXISTING CONDITIONS

This chapter provides an overview of existing conditions in Collier County, particularly as they relate to the bicycle and pedestrian network and the people who use the network. Figure 1 shows the MPO's 2018 updated inventory of bicycle and pedestrian facilities in Collier County.

Demographics

Collier is the largest county in Florida by land area and had a 2016 American Community Survey (ACS) population estimate of 348,236. The county includes three cities—Everglades City, Marco Island, Naples—as well as multiple Census Designated Places (CDP) within unincorporated Collier County. Demographics for the three cities and three of the largest CDPs—Immokalee, Golden Gate City, Naples Manor—were compared with each other, the county, and the state.

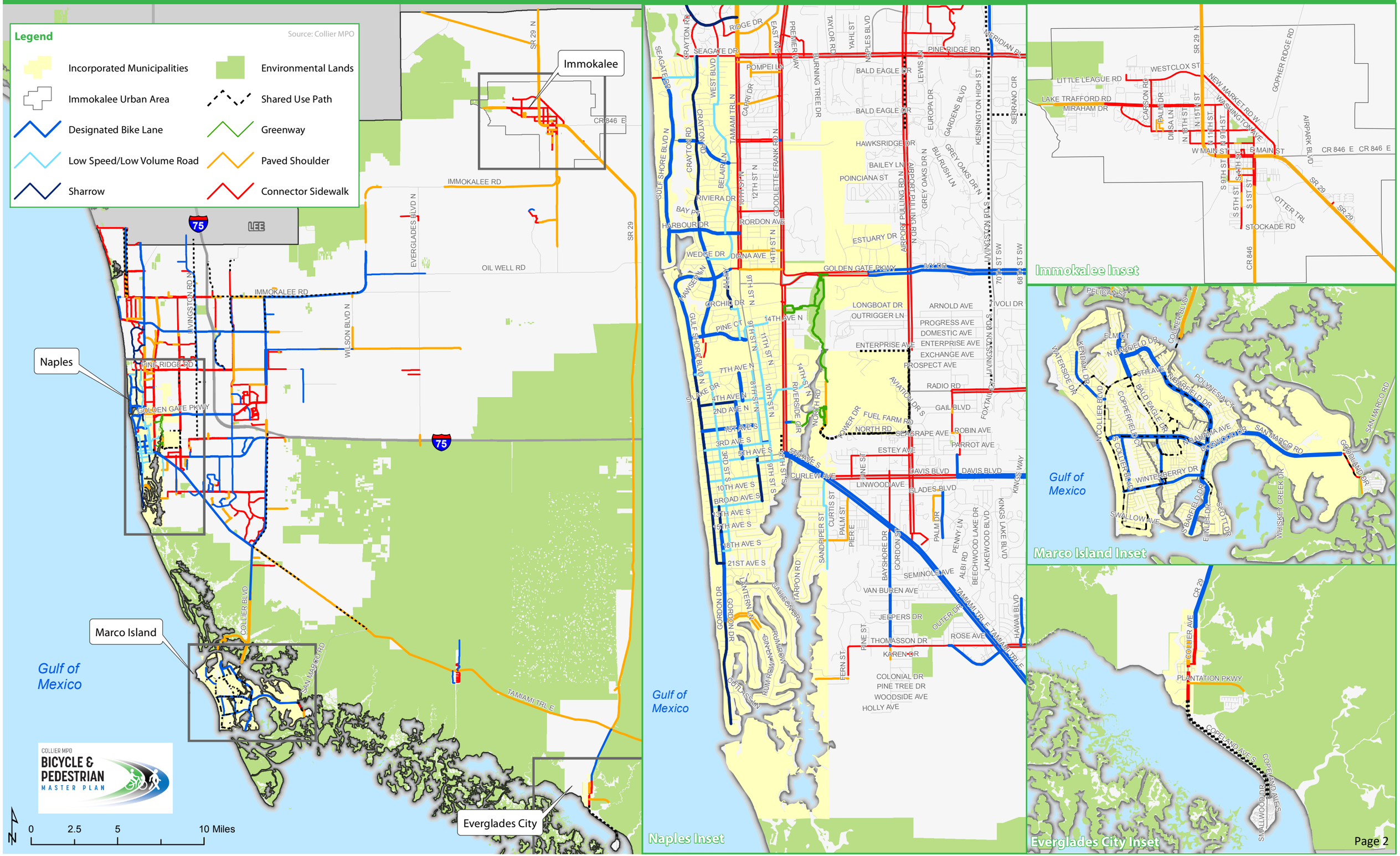
The county's population is socio-economically diverse. The average household income is higher than that of Florida, and the percent of people living below the poverty level is lower than Florida. However, there are areas within Collier County, including Golden Gate City, Immokalee, and Naples Manor, where incomes are significantly lower, levels of poverty are significantly higher, and more people are without access to a vehicle than county or Florida averages, as shown in Table 1. The people who live and work in these areas tend to be greater users of the bicycle, pedestrian, and transit networks. Collier also has many seasonal residents and visitors who, as part of their daily lives, bike and walk for recreation, run errands, and as transportation to and from local destinations.

Table 1. Vehicle Availability, Income, Means of Transportation to Work[1]

Area	Percent of Population with No Vehicle Available	Percent of Population Who Walk, Bike, or Use Public Transportation to Get to Work	Percent of Individuals with Incomes in Last 12 Months Below Poverty Level	Mean Household Income
Florida	3%	2%	16%	$69,936
Collier County	5%	6%	13%	$98,115
Everglades City	4%	5%	11%	$57,739
Marco Island	6%	6%	8%	$119,571
Naples	2%	7%	9%	$173,790
Golden Gate City	13%	5%	23%	$52,759
Immokalee	24%	32%	44%	$38,071
Naples Manor	16%	8%	25%	$56,339

[1] US Census, American Community Survey, 2016 5-year estimates, Tables S0802, B08101, B17001, DP03.

Figure 1: Existing Facilities Inventory



The 2016 ACS indicates that 30% of Collier County's residents are age 65 and older compared to 19% for the state. As these residents become less comfortable with driving, they may increasingly use the transit system or, with the appropriate infrastructure and proximity, could walk or bicycle to run errands or get to appointments. Research has shown that people are willing to walk about ½ mile to a transit stop, and access to convenient biking infrastructure can increase that travel distance to about 3 miles. This access can have far-reaching impacts on personal and community quality of life and livability, provide better access to jobs, and benefit the overall financial health of the community.

As noted in the Collier MPO's 2040 Long Range Transportation Plan (LRTP), Collier County is one of the fastest-growing counties in the US, with its population increasing seven-fold between 1970 and 2010. Population projections forecast the addition of another 150,000 people by 2040, bringing the population to almost 500,000. This forecasted growth in population will increase travel demand and likely result in additional traffic congestion. Whereas widening roads to accommodate additional vehicle traffic is one approach, continuing to build these roads to accommodate different modes of travel such as bicycles and proactively planning bicycle and pedestrian infrastructure are other important strategies.

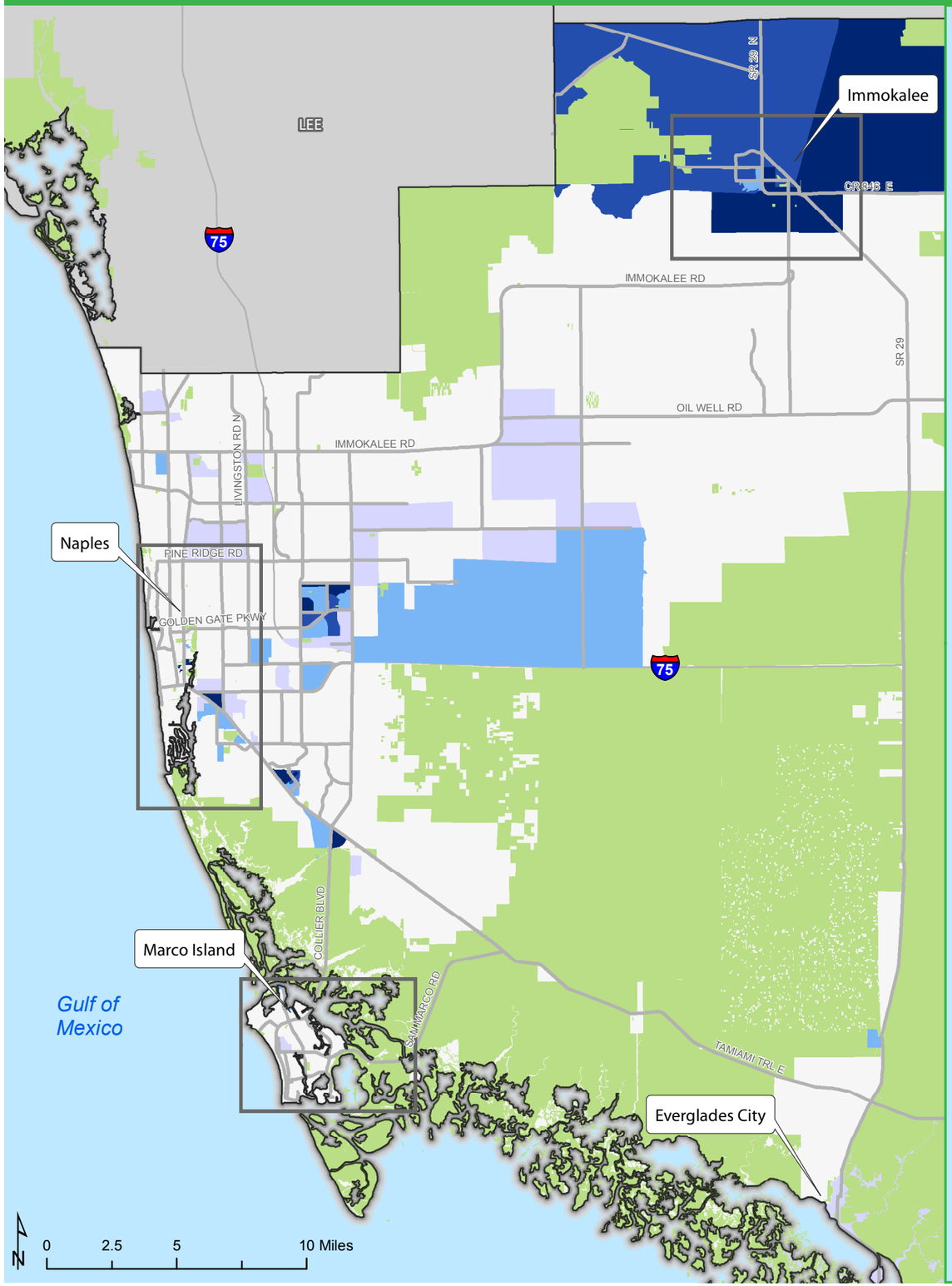
To address the issue of equity in terms of providing equal access to bicycle and pedestrian facilities county-wide, the MPO's previous identification of Environmental Justice (EJ) communities was updated. The EJ criteria used for this Plan were minority status, poverty, no access to a vehicle, and limited ability to speak English. EJ areas were defined as areas where the criteria were 10% greater than the county average. Figure 2 shows the results of the EJ analysis, and a full description of the EJ methodology is provided in Appendix 1.

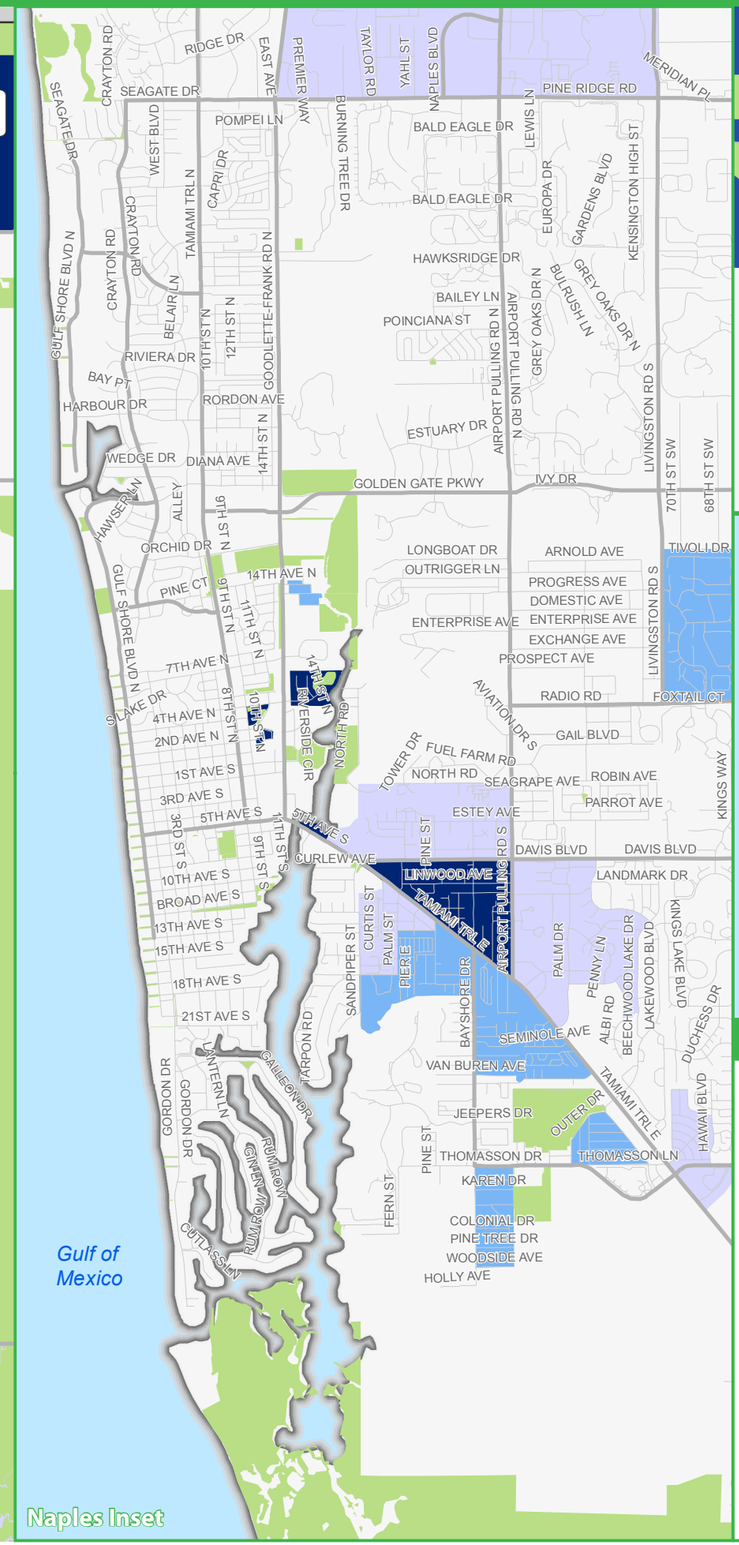
Bicycle and Pedestrian Infrastructure

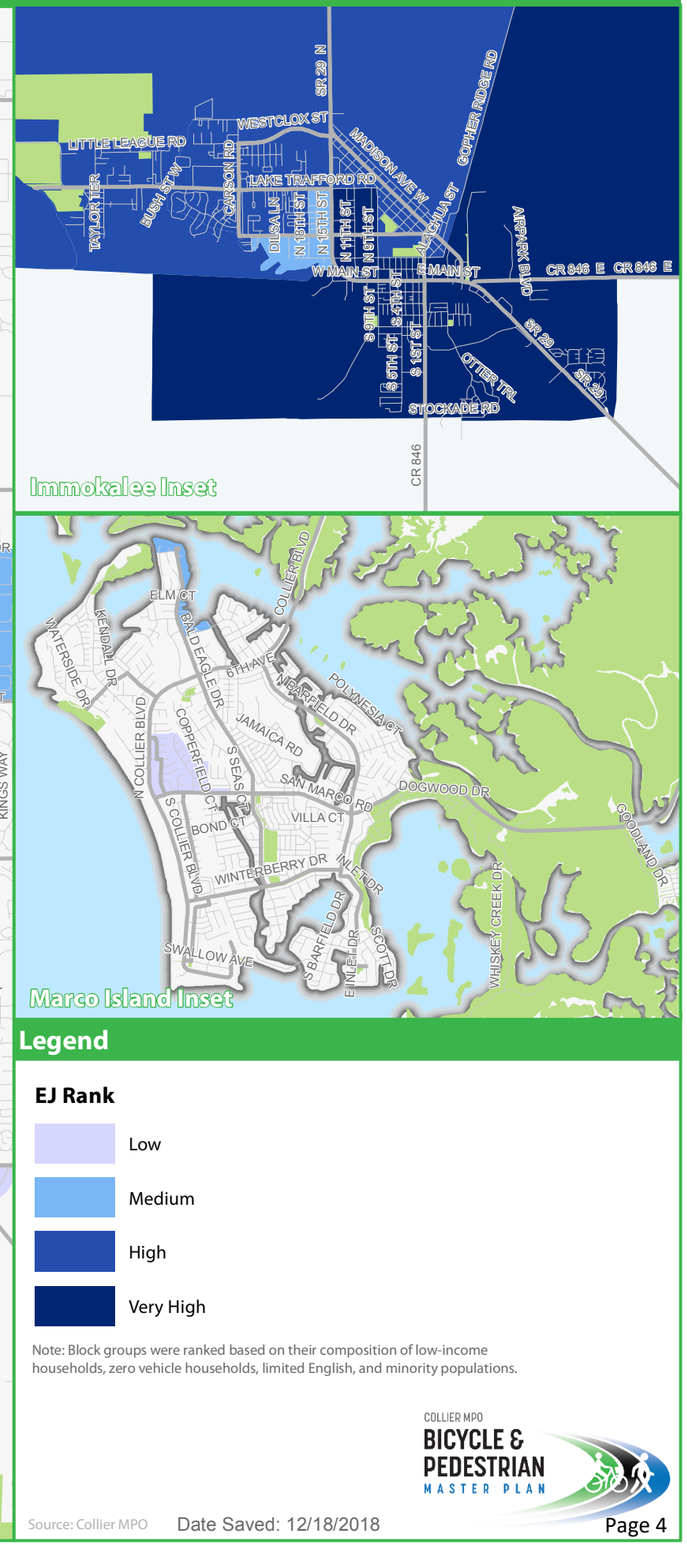
Except for I-75 and limited access facilities, bicyclists and pedestrians are allowed, under State statute, to use all types of roads, sidewalks, and shared-use paths in Collier County. Therefore, their needs must be addressed at all levels, from the Americans with Disabilities Act (ADA) and intersection improvements to creating corridors that safely accommodate walking and bicycling. There are roughly 1,400 centerline miles of locally-maintained roads throughout Collier County. Focusing just on collector and arterial roadways, the current facility inventory and gap analysis (see Chapter 5) show approximately 72 miles with no bicycle facility and 153 miles having insufficient cycling facilities, either a paved shoulder or connector sidewalk. Currently, five miles of bike lanes are funded but not yet constructed; this provides a glimpse of the amount of work left to be done.

Many factors beyond the number of bicyclists influence the extent to which these facilities are used, including traffic volumes, posted speed limits, width of facilities, and individual rider level of comfort and perception of safety. Current best practices indicate that separating bicycles from vehicles is the safest and preferred method when adding bicycle infrastructure to roadways that carry large volumes of traffic at higher speeds. Increasing the quantity, quality, connectivity, and safety of the bicycle infrastructure is a critical strategy for improving the overall appeal of the bicycle network.

Figure 2: Environmental Justice (EJ) Communities







Legend

EJ Rank

- Low
- Medium
- High
- Very High

Note: Block groups were ranked based on their composition of low-income households, zero vehicle households, limited English, and minority populations.

COLLIER MPO BICYCLE & PEDESTRIAN MASTER PLAN

Source: Collier MPO

Date Saved: 12/18/2018

The current facility inventory and gap analysis indicates there are approximately 72 miles of collector and arterial roadways having no sidewalk or shared-use path. Filling in the gaps and increasing connectivity in the existing sidewalk and pathway network and constructing and interconnecting new sidewalks and pathways where there is demand are critical steps to improving the connectivity and overall appeal of the sidewalk/pathway network.

Other Bicycle and Pedestrian Plans

The cities of Marco Island and Naples have developed their own bicycle and pedestrian master plans that include similar goals of improving bicycle and pedestrian safety and connectivity. The Collier MPO Bicycle and Pedestrian Master Plan will work in conjunction with these other plans by incorporating their priorities and needs into the MPOs' list of needed improvements to be prioritized and evaluated for funding.

In 2013, Naples adopted a Pedestrian and Bicycle Master Plan[2] that identified five-year goals and objectives and outlined programs and projects that would enhance biking and walking in Naples. The infrastructure recommendations include adding bike lanes and shared-lane markings with pavement resurfacing and completing sidewalk gaps. The 2013 Naples Pedestrian and Bicycle Master Plan is provided in Appendix 2. Refer to Chapter 5, Needs Analysis, and Chapter 7, Policies and Implementation, regarding incorporating the most current adopted City of Naples Bicycle and Pedestrian Master Plan.

The City of Marco Island has an approved bicycle and shared-use path master plan (map), which the City updates annually. The plan's goal is to develop "bike lanes and way projects to allow both expert and novice riders to get around most parts of the city by bicycle." Many of the plan's remaining projects have been funded and will be completed in the next five years. The 2018 Marco Island Bike Path Master Plan and supporting City Council resolution are provided in Appendix 3. Refer to Chapter 5, Needs Analysis, and Chapter 7, Policies and Implementation, regarding incorporating the most current adopted Marco island Bike Path Master Plan by reference.

The City of Everglades City is a small community on the edge of the Florida Everglades. The City recently received designation as a Florida Trail Town from the Department of Environmental Protection, Division of Recreation and Parks, Office of Greenways and Trails. Its City Council has identified four priority sidewalk projects that can be considered for future funding. The City is developing its own Bicycle and Pedestrian Master Plan which, when adopted, will be included in this Plan by reference.

Multiple Community Redevelopment Associations (CRA) in Collier County, in collaboration with the County, identify infrastructure needs and develop funding strategies. Collier County recently was awarded a $13 million federal TIGER Grant that will construct 20 miles of sidewalk, upgrade 32 intersections, add or upgrade bus shelters and lighting, and make drainage improvements in Immokalee. Many roads identified for improvements in the grant application also have been identified in other plans such as the Collier MPO 2012 Comprehensive Pathways Plan and the 2011 Immokalee Walkable Community Study. Needs in areas outside the grant area will be included on the list of local needs developed for this plan. See Chapter 7 Policies and

[2] https://www.naplesgov.com/community/page/cycling-naples.

Implementation regarding incorporating the most current adopted CRA bicycle and pedestrian plans by reference.

Walkability Studies

Three walkable community studies have been prepared for the MPO—Bayshore (2010), Naples Manor (2010), and Immokalee (2011). A fourth study for Golden Gate City was completed in 2019. Each study identified and prioritized walking infrastructure needs within the community and included a list of prioritized recommendations to improve walkability. As part of this Plan, the first-tier recommendations from each walkability study were reviewed and added to the list of needs for bicycle and sidewalk infrastructure on local roads. Refer to Chapter 5, Needs Analysis, and Chapter 7, Policies and Implementation, for prioritized projects on local roads.

CHAPTER 2 – SAFETY CRASH DATA ANALYSIS

Crash Data

To better understand conditions and risks and to identify potential improvement strategies for people walking and biking in Collier County, six years of bicycle and pedestrian crash data (2011–2016) were mapped and analyzed using data from the Collier County Crash Data Management System (CDMS).[3] The primary purposes of the review were to note any changes in trends and to identify where the most severe crashes and crash clusters occur. The MPO conducted a similar analysis in 2014. The two analyses generally agree with each other and identify similar high-crash areas, suggesting that the challenges remain consistent and opportunities for safety-focused projects throughout Collier County continue to be a primary need. Smart Growth America's *Dangerous by Design 2019* highlights this challenge, noting that Florida has the highest pedestrian danger index in the US.[4]

Between 2011 and 2016, there were 808 reported bicycle and pedestrian crashes that resulted in 33 fatalities, 119 serious injuries, and 460 total injuries. Approximately 80% of all reported crashes occurred on a collector or arterial roadway; these roads have higher posted speed limits and greater volumes of traffic than local, residential roads. As shown in Figure 3, bicyclists accounted for 60% (485) of the reported crashes, and 40% (323) involved pedestrians.

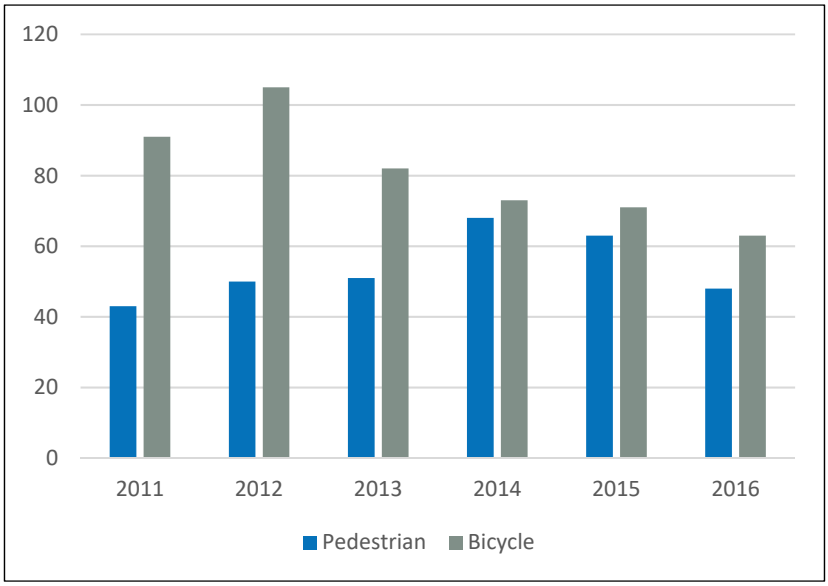


Figure 3. Total Bicycle and Pedestrian Crashes, 2011–2016

The number of bicycle crashes has declined in each of the last four years. Pedestrian crashes increased from 2011 to 2014 before declining in 2015 and 2016. Analysis of the reasons for these decreases is beyond the scope of this Plan; however, an average annual number of 81 bicycle crashes and 54 pedestrian crashes still represents a sizeable absolute number of crashes and indicates that further opportunities and challenges to improving safety remain.

Traffic Speed and Crash Severity

The arterial roadways in Collier County form the backbone of the transportation network, functioning to move large volumes of traffic efficiently and effectively and allow the rapid movement of people and goods,

[3] Collier County Crash Data Management System, 2011–2016.
[4] Smart Growth America, *Dangerous by Design 2019*, p. 26.

providing the necessary infrastructure for a successful economy. Most of these roads have posted speed limits between 35 and 50 miles per hour (mph) and have four to six through lanes with multiple turning lanes, which results in very large intersections. These roadways also provide important bicycle and pedestrian throughfares due to the lack of publicly-accessible collector roads, yet they present obstacles of varying degrees of difficulty to pedestrians and bicyclists who are using or crossing these roads. In total, 80% of reported bicycle and pedestrian crashes occurred on arterials and collectors. Figure 5 shows the major arterials and collectors with bicycle facility gaps in Collier County.

Many studies have determined that vehicle speed is a critical factor in the survivability of a pedestrian or bicyclist involved in a crash with a motor vehicle. Figure 4 depicts the likelihood of a pedestrian being fatally or severely injured, rising dramatically as the speed of the vehicle increases.

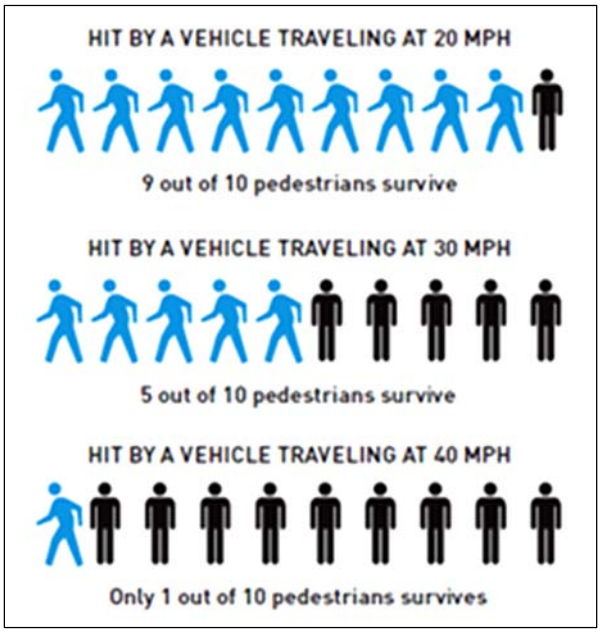


Figure 4. Vehicle Speed Impacts on Pedestrian Survival Rates when Involved in a Crash

Source: Seattle.gov. Vision Zero

Because the difference in speed between vehicles and bicyclists/pedestrians is a primary factor in the severity of injuries, much of the current focus in bicycle and pedestrian safety is on funding education and enforcement campaigns to train drivers to obey the speed limit, slowing down traffic, or separating modes. A recent study by the Insurance Institute for Highway Safety concluded that "lowering the speed limit in urban areas is an effective countermeasure to reduce speeds and improve safety for all road users."[5]

[5] Insurance Institute for Highway Safety, "Lowering the Speed Limit from 30 to 25 mph in Boston: Effects on Vehicle Speeds," Wen Hu, August 2018.

Figure 5: Major Arterials and Collectors in Collier County

Legend

- Incorporated Municipalities
- Immokalee Urban Area
- Environmental Lands

Bicycle Facility Gaps

- No Existing Bicycle Facilities
- Existing Paved Shoulder
- Existing Connector Sidewalk

Note: Gaps include segments where no facilities exist and where substandard facilities exist consistent with policies of the Bicycle and Pedestrian Master Plan. Source: Collier MPO

Immokalee
Naples
Marco Island
Everglades City
LEE
Gulf of Mexico
IMMOKALEE RD
OIL WELL RD
SR 29
SR 29 N
CR 846 E
EVERGLADES BLVD N
LIVINGSTON RD N
WILSON BLVD N
PINE RIDGE RD
GOLDEN GATE PKWY
COLLIER BLVD
SAN MARCO RD
TAMIAMI TRL E
75
0 2.5 5 10 Miles
N

COLLIER MPO
BICYCLE & PEDESTRIAN
MASTER PLAN

Naples Inset

Immokalee Inset

Marco Island Inset

Everglades City Inset

The 2015 Pedestrian/Bicycle Safety Audit (from Commercial Drive to Guilford Road on US-41 and Airport Road from US-41 to Estey Avenue) completed by the Florida Department of Transportation (FDOT) stated that reducing the speed on US-41 from 45 mph to 35 mph and "modifying the "look" of the corridor to emphasize multi-use characteristics along with controlling speeds by design with tighter turning radii and narrower lanes will aid in slowing motorists down. This will assist in driver reaction times, not only for pedestrians and bicyclists, but also for reducing vehicle-vehicle collisions. Reducing speeds will reduce the probability of a pedestrian fatality".[6] As shown in Figure 4, a reduction of speed from 40 mph to 30 mph lowers the probability of a pedestrian fatality from 90% to 50%.'

High-Crash Corridors

FDOT periodically releases a report on the Top 50 Bicycle and Pedestrian High-Crash locations in each District. The most recent District 1 list, partially shown in Table 2 and Figure 6, includes five locations in Collier County—three on US-41, one on Airport Road, and one on SR-29 in Immokalee.

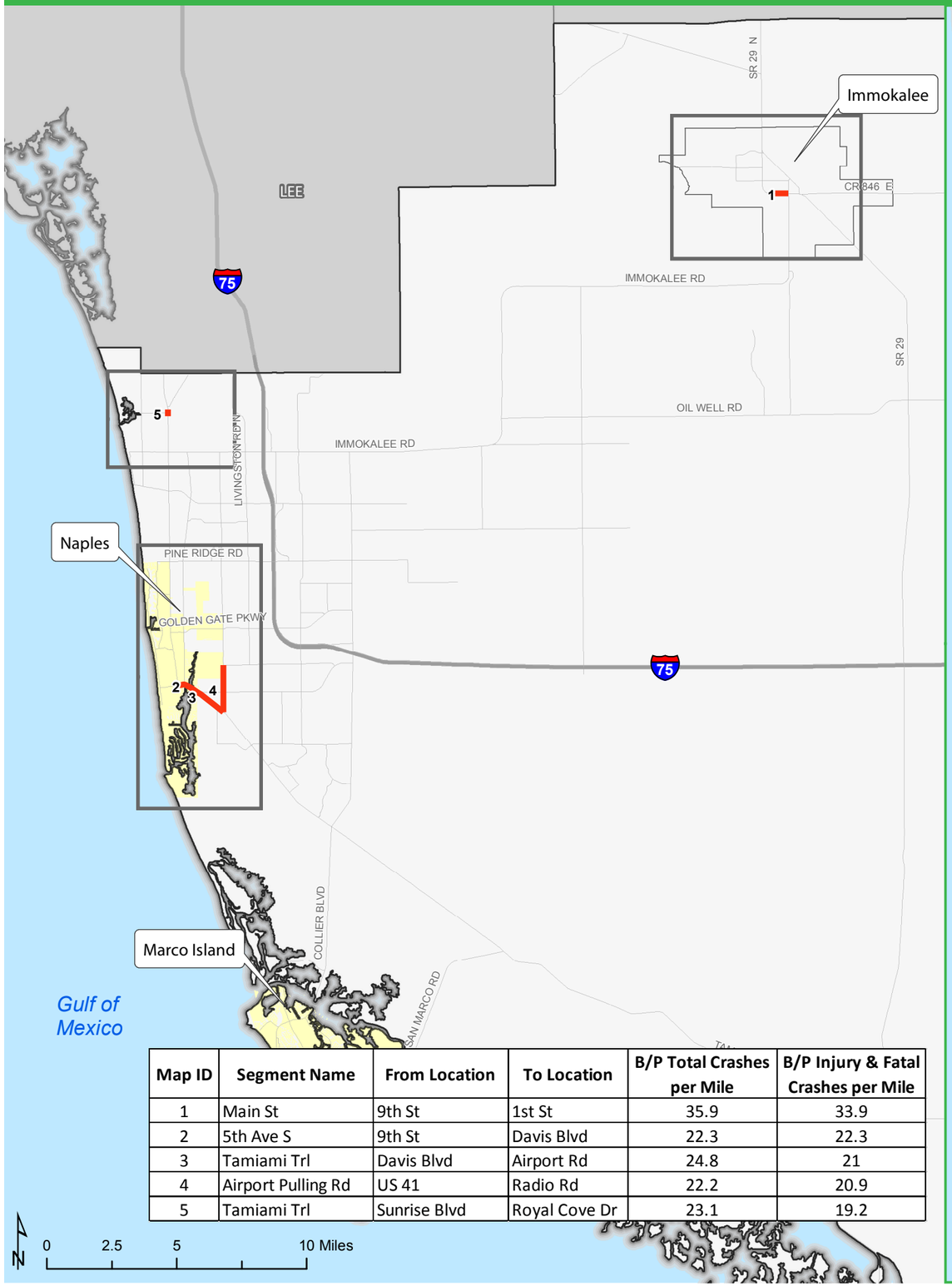
FDOT conducted a Pedestrian/Bicycle Safety Audit (PBSA) on US-41 from Commercial Drive to Guilford Road and on Airport Road from US-41 to Estey Avenue and is implementing a limited range of the recommended improvements in a repaving project on US-41 (FPN 4380591) and at the intersection of Airport Road and Calusa Avenue, but much of the PBSA has not been addressed to date. FDOT also conducted a BPRSA on SR-29 in Immokalee and has constructed several safety improvements.

Table 2. FDOT 2013–2015 Bicycle and Pedestrian High Crash List – Collier MPO

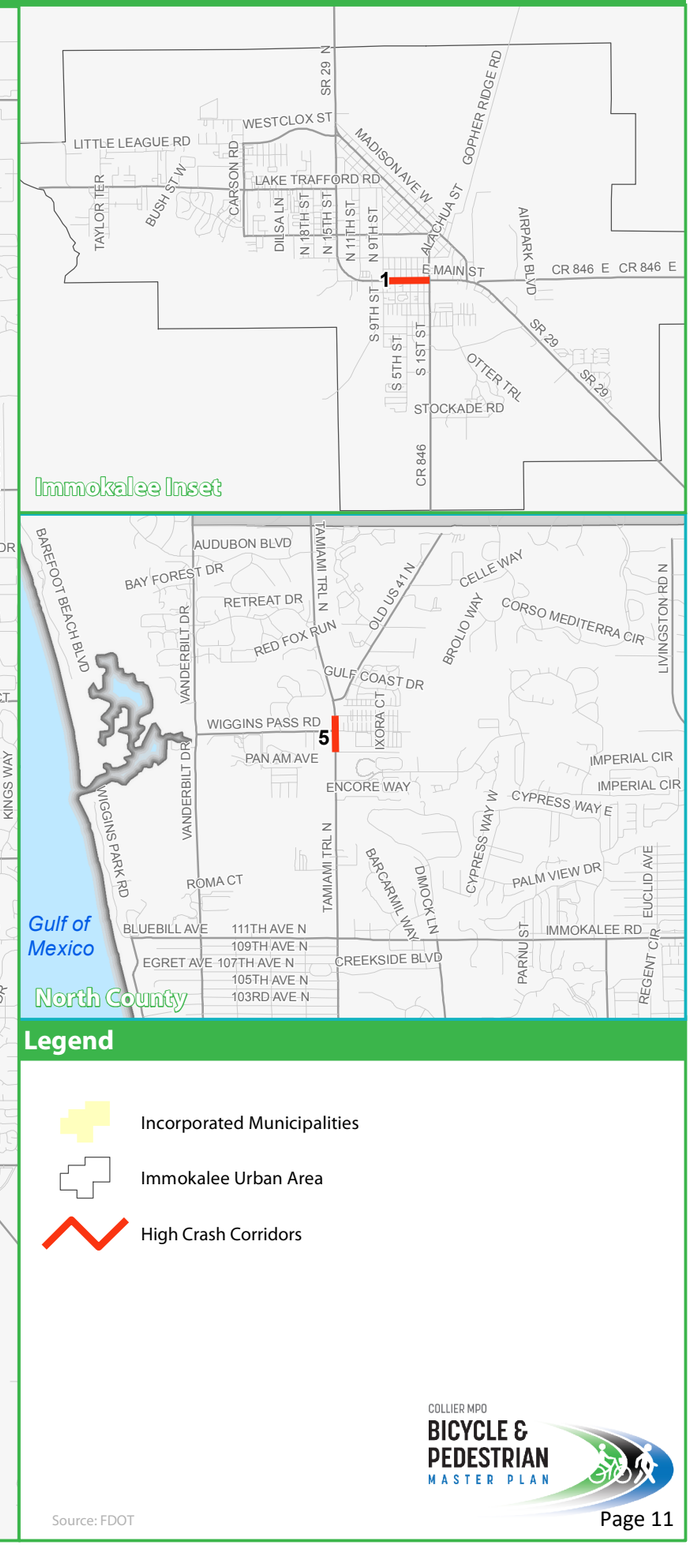
						Bicycle/Pedestrian Crashes					
District Rank	County Rank	Miles	Name of Segment	From Location	To Location	All Injury	Incapacitating Injury	Fatal	Total Per Mile	Incapacitating Injury & Fatal Per Mile	Injury & Fatal Per Mile
4	1	0.5	SR 29 -Main St	9th St	1st St	16	1	1	35.9	4	33.9
8	2	0.5	US 41 - 5th Ave S	9th St	Davis Blvd	11	0	1	22.3	1.9	22.3
11	3	1.3	US 41 - Tamiami Trail	Davis Blvd	Airport Rd	26	2	1	24.8	2.3	21
12	4	1.8	Airport Rd	US41	Radio Rd	29	1	2	22.2	1.7	20.9
16	5	0.3	US 41 - Tamiami Trail	Sunrise Blvd	Royal Cove Dr	4	0	1	23.1	3.8	19.2

[6] FDOT Pedestrian Bicycle Safety Audit: US41 from Commercial Drive to Guilford Road; Airport Pulling Road from US41 to Estey Avenue, FPN 430582-1, June 2015, p. 22.

Figure 6: FDOT High Crash Corridors



Map ID	Segment Name	From Location	To Location	B/P Total Crashes per Mile	B/P Injury & Fatal Crashes per Mile
1	Main St	9th St	1st St	35.9	33.9
2	5th Ave S	9th St	Davis Blvd	22.3	22.3
3	Tamiami Trl	Davis Blvd	Airport Rd	24.8	21
4	Airport Pulling Rd	US 41	Radio Rd	22.2	20.9
5	Tamiami Trl	Sunrise Blvd	Royal Cove Dr	23.1	19.2



Legend

- Incorporated Municipalities
- Immokalee Urban Area
- High Crash Corridors

Source: FDOT

COLLIER MPO BICYCLE & PEDESTRIAN MASTER PLAN

Contributing Factors

Data collected for crashes includes contributing crash factors. Although there is a reliance upon legal judgment and experience regarding contributing factors, assigning cause and effect, and completing forms, understanding contributing crash factors is important in developing strategies to lower the number and lessen the severity of crashes.

Contributing behavioral factors from the CDMS data are shown in Figure 7. At 37% (296), aggressive driving is the most frequent behavioral factor of crashes, and failure to yield is listed as a contributing factor in one-third of crashes (31%, 251) crashes; the data did not state whether the driver or pedestrian/bicyclist had failed to yield. Impaired/intoxicated driving (10%, 78) and distracted driving (10%, 79) were each listed as a behavioral contributing factor. According to the National Highway Traffic Safety Administration (NHTSA), education and enforcement have the greatest impact on changing behavior.

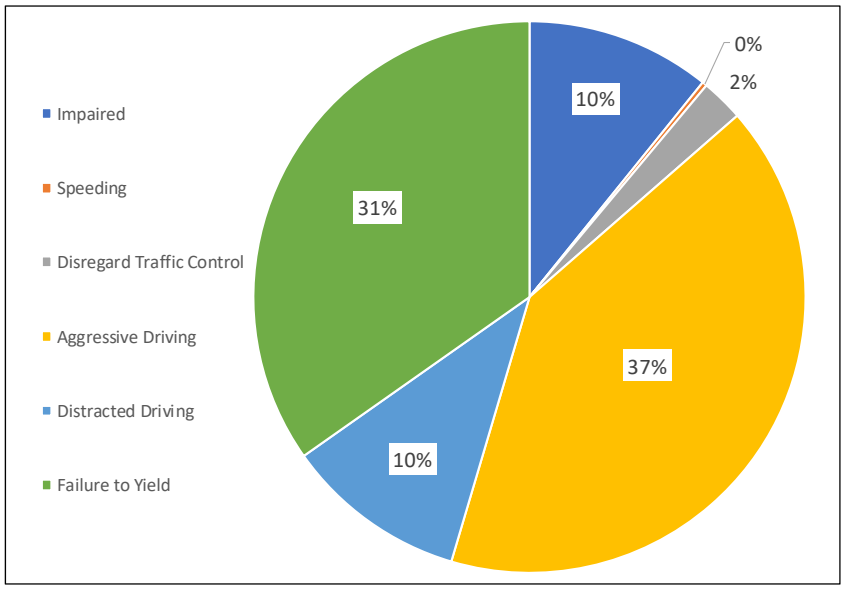


Figure 7. Behavioral Contributing Factors in Reported Crashes

Analysis of the data also looked at two demographic factors—teen drivers and drivers age 65 and over. The data indicate that both age groups are not involved in more crashes than the percent of the county's population that they constitute; teens were involved in 5% of crashes and constitute 5% of the county's population, and drivers age 65 and over were involved in 32% of crashes and constitute 30% of the County's population.

Speeding was indicated as a contributing factor in only two crashes. Speeding is included as a contributing factor only when a law enforcement officer, using radar, detects the driver's speed or determines that the driver was driving too fast for the road conditions.

The Florida Bicycle Association published a booklet containing relevant statistics on safety, the *Florida Pedestrian/Bicycle Law Enforcement Guide, 2017 Edition,*[7] that identifies the following conditions as common contributing factors in pedestrian-motor vehicle crashes. The guide assigns actions by both pedestrian and driver that contributed to a crash, as shown in Table 3.

Table 3. Pedestrian and Driver Actions as Contributing Crash Factor

Primary Error by Pedestrian	Percent
Failure to yield when crossing roadway	19%
Dash/dart out	14%
Parking lot	7%
Primary Error by Driver	
Failure to yield when crossing roadway	16%
Backing vehicle (failed to detect pedestrian)	8%

Pedestrian and Bicycle Safety Audits

A Road Safety Audit (RSA) is a formal safety performance examination of a roadway or intersection by an independent and multidisciplinary team. The audit qualitatively estimates and reports on potential road safety issues and identifies opportunities to improve safety for all road users. A Pedestrian and Bicycle Safety Audit (PBSA) is a more narrowly-focused audit for pedestrians and bicyclists. Areas of safety concern may be identified by looking at crash data, but a Safety Audit often is the only way to determine what is causing the crashes and to develop appropriate strategies to increase safety.

The 2015 FDOT PBSA for Airport Road and US-41 included a detailed data analysis of the 72 pedestrian and bicycle crashes on US-41 and Airport Road. Bicycle crashes (85%) are more predominant than pedestrian crashes (15%) in the study area. Half of the crashes (51%) occurred at a driveway, 23% at a signalized intersection, and 17% mid-block. The study also noted that 61% of the individuals involved in the crash were listed as Hispanic; Hispanics and Latinos comprise only 26% of the county's residents, according to 2013 Census data.

Bicycle crashes typically are occurring during daylight hours involving males riding on the sidewalk and being struck while crossing a driveway, often approaching from the driver's right, but there is also a pattern of crashes with bicyclists approaching from the driver's left. Bicycle crashes occurring in a bike lane typically were bicyclists traveling the wrong way. Bicycle crashes at a signal typically were daytime crashes involving a right-turning vehicle. Overall, crash conflicts involving turning vehicles were significantly higher on the south side of US-41 than on the north side; and on Airport Road more often on the east side of the road.

Pedestrian crashes typically involve males crossing mid-block at night and often under the influence of alcohol. Pedestrian crashes occurring at signals often are attributed to pedestrians not using the pushbuttons or failing to wait for pedestrian signals before crossing the intersection.

[7] Florida's Integrated Report Exchange System (FIRES) and USF Center for Urban Transportation Research (CUTR) data collection and analysis.

The PBSA also identified a recurring engineering issue–channelized right-turn lanes and conflicts with pedestrians and cyclists. The Airport Road intersection with Davis Boulevard, for example, is described as having been redesigned and ready for the construction phase to add a southbound right-turn lane. The proposed design includes a channelized right-turn lane that will provide an unsignalized right-turn movement or YIELD control and an unsignalized pedestrian movement across the channelized turn lane. FDOT notes that this could contribute to pedestrian/bicycle crashes at this location, as seen at other locations. The YIELD condition and the wider turning radius of the right-turn lanes encourage higher turning speeds by motorists.

FDOT suggests modifying the proposed design to include a signalized crosswalk across the entire north leg by removing the channelized right-turn lane and providing signalized control for the southbound right-turn movement. At the very least, the design should be modified to include signalized control of the southbound right-turn lane with a right-turn signal overlap phase.

Economic Costs of Crashes

A NHTSA study[8] estimated the economic[9] and comprehensive[10] costs of those severely or fatally injured in a motor vehicle crash involving at least two motor vehicles. Table 4 lists the combined NHTSA and FDOT estimated costs per injury type and multiplies these figures by the number of fatal and severe bicycle and pedestrian injuries shown in the data collected for this Plan to develop an order of magnitude of the total economic and comprehensive costs associated with bicycle and pedestrian crashes.

Table 4. Economic and Comprehensive Cost of Bicycle and Pedestrian Crashes 2011–2016*

Economic Cost			
Type	**NHTSA/FDOT Cost per Crash**	**2011–2016 Bike/Ped Crashes**	**2011–2016 Total Cost of Crashes**
Severe Injury	$1.0 million	119	$ 119 million
Fatal injury	$1.4 million	33	$ 46 million
Comprehensive Cost			
Type	**Each Cost**	**Crashes**	**Total Cost**
Severe Injury	$ 5.6 million	119	$ 666 million
Fatal injury	$ 9.1 million	33	$ 300 million

*Costs expressed in 2010 economics using a 3% discount rate.

[8] NHTSA, "The Economic and Societal Impact of Motor Vehicle Crashes," 2010 (revised 2015).

[9] Economic costs are total of goods and services expended to respond to a crash, treat injuries, repair or replace damaged property, litigate restitution, administer insurance programs, and retrain or replace injured employees; also includes health and environmental congestion impacts and value of workplace and household productivity lost.

[10] Comprehensive costs are total societal harm resulting from a crash; includes value of lost quality-of-life as measured and economic impacts that result from crash.

Enforcement

The Collier County Sheriff's Office Traffic Unit periodically conducts high-visibility enforcement (HVE) details targeting high-crash corridors. For example, in September 2018, enforcement campaigns were held in the following locations:

- Airport Road from Davis Boulevard to US-41
- US-41 from Davis Boulevard to Rattlesnake Hammock Road
- N 15th/Main Street from New Market Road west to Immokalee Road
- SR-29 S at Farm Worker Way

HVE details are funded through a contract with the University of North Florida in partnership with FDOT's focused initiative to improve pedestrian and bicycle safety. The goal of this enforcement effort is to increase awareness of and compliance with traffic laws that protect the safety of pedestrians and bicyclists. Enforcement efforts focus primarily on educating drivers, pedestrians, and bicyclists. However, violations may result in warnings or citations depending on the circumstances.

Education Campaigns

The PBSA suggests that bi-lingual education material needs to be incorporated into education outreach. FHWA and NHTSA have free downloadable material including flyers, brochures, posters and Public Service Announcements (PSAs) that can be used. FDOT also recommends using changeable message signs on both Airport Road and US-41 to display to motorists the need to follow the three-foot rule.

Unreported Bicycle and Pedestrian Crashes

Law enforcement crash reports have been the traditional source of bicycle and pedestrian crash statistics. Although these reports provide significant information, studies have concluded that they represent only a portion of the total number of crashes. Many factors contribute to this under-reporting, including the presence and/or severity of injuries, whether an insurance claim is filed, and whether those involved wish to not report the crash.

Many studies show that reported crashes represent only a portion of the total number of crashes.

A literature review done by FHWA found that 60–75% of hospitalized victims of pedestrian- and bicycle-motor vehicle crashes were identified in official motor vehicle crash files. The report also found that for persons receiving only emergency room treatment and not hospitalization, the reported crash percentages ranged from 50–60%.[11] A study by Elvik and Mysen in 2007 found that 95% of all fatal pedestrian and bicycle crashes are captured in official crash data; however, the percent of reported crashes declined dramatically with decreasing injury severity to as low as 25% of all crashes.[12] A similar study found that bicyclists who were

[11] "Injuries to Pedestrians and Bicyclists: An Analysis Based on Hospital Emergency Department Data," FHWA-RD-99-078 (1999).
[12] Rune Elvik and Ann Borger Mysen, "Incomplete Accident Reporting: Meta-Analysis of Studies Made in 13 Countries," *Transportation Research Record*, 1665, 133-140, 2007.

hospitalized or killed were 1.4 times more likely to be reported in official state crash data than bicyclists who received emergency room treatment but were not admitted.[13]

Street and Sidewalk Lighting

Lighting can be an important safety feature, allowing increased visibilty for motorists, pedestrians, and bicyclists. It is important to consider adequate lighting during the design and construction of bicycle and pedestrian infrastruture. Public comments often equate safety with adequate lighting. A survey was administered during the public outreach for this Plan, and the survey and results are provided in Appendix 7. Two survey questions asked respondents what made them feel unsafe when walking or biking. Of the respondents who answered, 30% of pedestrians and 22% of bicyclists noted a lack of lighting as a reason they felt unsafe.

Safety Performance Targets

FDOT has adopted "Vision Zero," a program that sets the goal of zero traffic fatalities or severe injuries in the state. The Collier MPO adopted FDOT's safety performance targets in February 2018. By doing so, the MPO can rely upon FDOT's annual reporting to FHWA on safety performance in the Statewide Transportation Improvement Program (STIP), which greatly simplifies the reporting requirements associated with the MPO's Transportation Improvement Program (TIP) and Long Range Transportation Plan (LRTP). This Plan also includes other performance measures that are Safety Performance Targets.

Safety is the first national goal identified in the Fixing America's Surface Transportation (FAST) Act and is of critical importance to the MPO. As part of the FAST Act, FHWA required all state departments of transportation (DOTs) and MPOs to adopt five safety performance targets by the end of February 2018 (Table 5). MPOs could adopt their own targets or those of the State DOT. The five safety performance measures and their associated targets are shown in Table 5. The Safety Performance Target for non-motorized fatalities and serious injuries is also referred to in Chapter 7, Policy and Implementation, under Monitoring and Reporting.

Table 5. Safety Performance Measure Targets

Performance Measure	Performance Target
Number of fatalities	0
Rate of fatalities per 100 million vehicle miles traveled (VMT)	0
Number of serious injuries	0
Rate of serious injuries per 100 million VMT	0
Number of non-motorized fatalities and serious injuries	0

[13] J. C. Stutts and W. W. Hunter, "Police Reporting of Pedestrian and Bicyclists Treated in Hospital Emergency Rooms," *Transportation Research Record*, 1635, 88-92, 1998.

CHAPTER 3 – COMMUNITY ENGAGEMENT

An enhanced community engagement process was used for this Plan to reach the most people and get the broadest possible community input. In addition to traditional workshops, committee meetings, and open houses, the process included outreach at farmers' markets and non-MPO public meetings, an interactive map on the Collier MPO website, and a survey in English, Spanish, and Creole. The survey was available online and distributed at outreach events. Appendix 4 provides the public outreach tools used.

The MPO considered the pubic engagement for this Plan to be a success, as more than 600 comments were received (Figure 8). These comments are described below and are provided in the appendices. Several repeated themes were identified during the process, including the following:

- Increase safety for those walking and bicycling.
- Complete sidewalk, bike lane, and path gaps on major roads.
- Address local sidewalk needs.
- Increase connectivity, particularly to and from the region's beaches, between existing greenways, and between Immokalee and the rest of the county.
- Develop multi-use paths where possible.

Figure 8. Collier MPO Bicycle and Pedestrian Engagement by Numbers

Two open-house workshops were held during the Plan's development. The first, at Veterans Community Park, was held early in the process to receive input about plan goals and objectives, bicycle and pedestrian facility needs, and the public's perception of this part of the region's transportation system. Attendees voted on goal statements that were used to develop the needs and evaluation criteria and also marked up maps to show challenging locations and connections they wanted to see made. A total of 20 people signed in for the meeting, and many comments were received; an additional 15 written comments were received after the open house.

A second workshop, held at East Naples Community Park, was at the end of the Plan development process to affirm that the planning process had captured the feedback correctly and that there was community support for the Plan. Maps of the needs on collectors, arterials, and local roads were presented for review and comment. Attendees were asked to comment on any omissions or proposed additions to the proposed maps and lists. A total of 7 individuals signed in, and 2 written comments were received as were many verbal comments from most of those who attended (see Appendix 5). Public outreach also was conducted at the following locations:

- 4 farmer's markets—Vanderbilt Beach Road, Golden Gate City, Naples Community Hospital (NCH), Marco Island.
- 2 Community Redevelopment Association (CRA) meetings—Bayshore CRA and Immokalee CRA
- 1 Everglades City Council meeting
- 2 open houses for Commissioner Taylor—Naples City Hall and Livingston Road
- 3 Immokalee CRA meetings—Farm Workers Coalition, Unmet Needs Coalition, and CRA office (outreach conducted by CRA)

Another product of the outreach for this Plan was that the MPO received multiple emails, phone calls, and letters from citizens with questions and comments about the Plan. Appendix 5 contains the comments collected through outreach or by citizens contacting the MPO office.

Interactive Map

Figure 9 depicts a portion of an interactive web-based tool that was used to gather citizen input. Comments could be made about bicycle or pedestrian needs and challenges, needed connections, safety concerns, and potential destinations. Appendix 6 includes a list of all comments received.

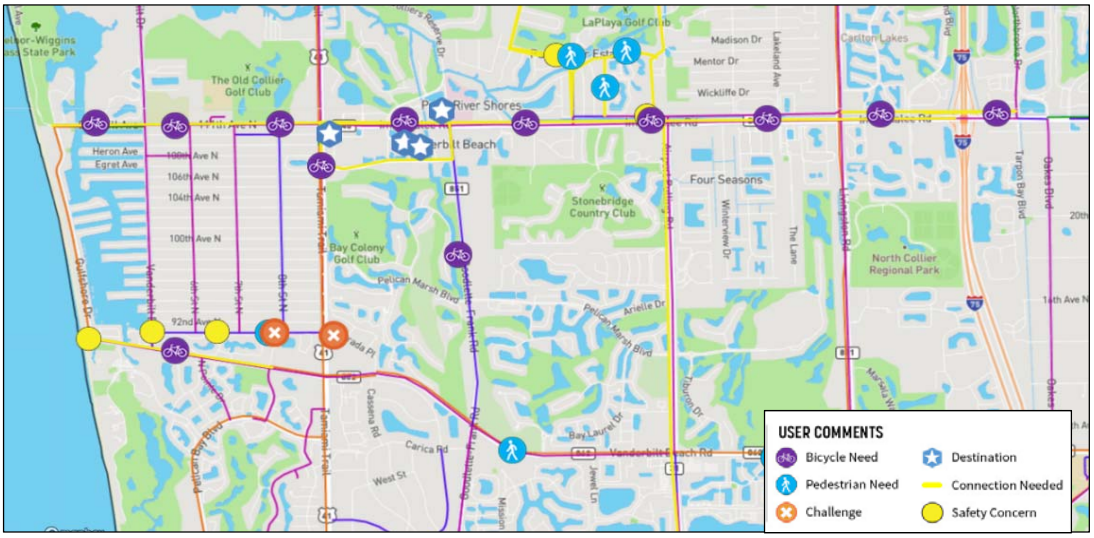


Figure 9. Interactive Wiki Map Used in Public Outreach

Online Survey

An online survey was used to get a sense of the level of comfort people felt when walking or bicycling and to identify areas of concern and desired support. Respondents were asked a variety of questions related to bicycling and walking; several questions allowed multiple responses. Generally, those who responded to the survey expressed discomfort with the bicycling and

A total of 87% of survey respondents stated that there are places they would not bike because of "uncomfortable/unsafe routes or lack of routes."

walking environment in Collier County. The survey received 327 responses. The complete survey, and responses and other feedback can be found in Appendix 7.

Respondents were asked what makes them feel unsafe when biking or walking (multiple answers permitted). The top three reasons for not feeling safe biking were lack of facilities (81%), driver behavior (78%), and speed of traffic (72%). The top three reasons why pedestrians felt unsafe were lack of facilities (64%), driver behavior (60%), and speed of traffic (55%). Figure 10 shows the responses to these questions.

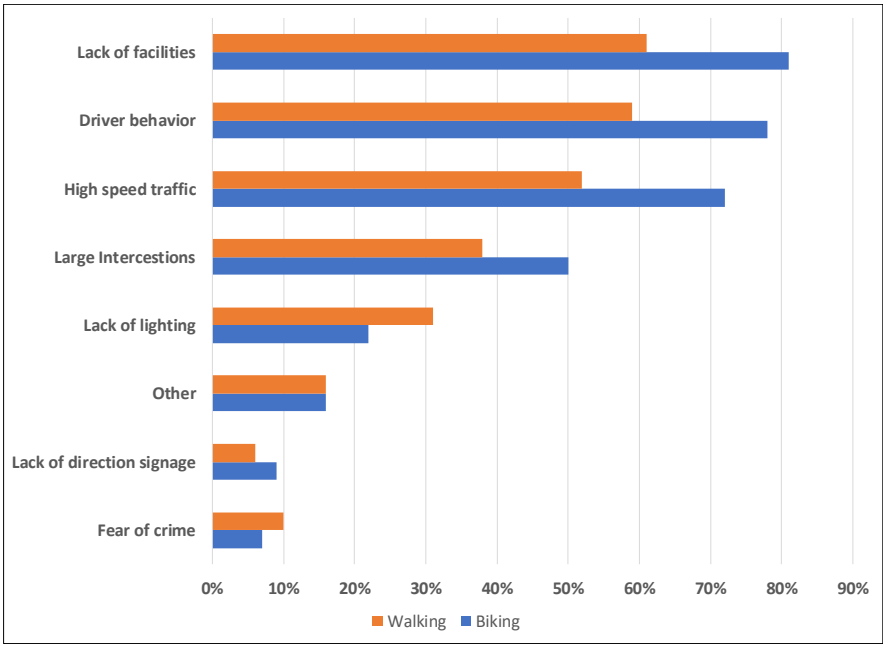
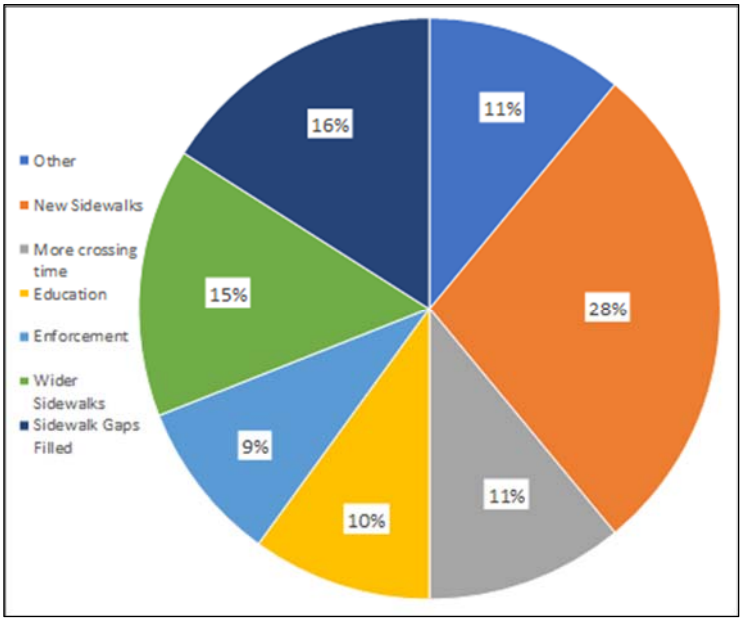


Figure 10. What makes pedestrians and bicyclists feel unsafe?



Respondents were also asked about walking support (Figure 11) and could select as many options as desired. New sidewalks had the most support (28%), followed by filling gaps in existing sidewalks (16%) and wider sidewalks (15%). Items in the "Other" category included lighting, maintenance, and mid-block crossings.

Figure 11. Desired Pedestrian Facility Support

Respondents were asked what types of facilities or bike support they would like to see more of and could select as many options as desired. Paths were noted by 34% of respondents, and bike lanes were noted by 21%. Items in the "Other" category included protected bike lanes, wider bike lanes, green-painted bike lanes, and bike parking (see Figure 12.)

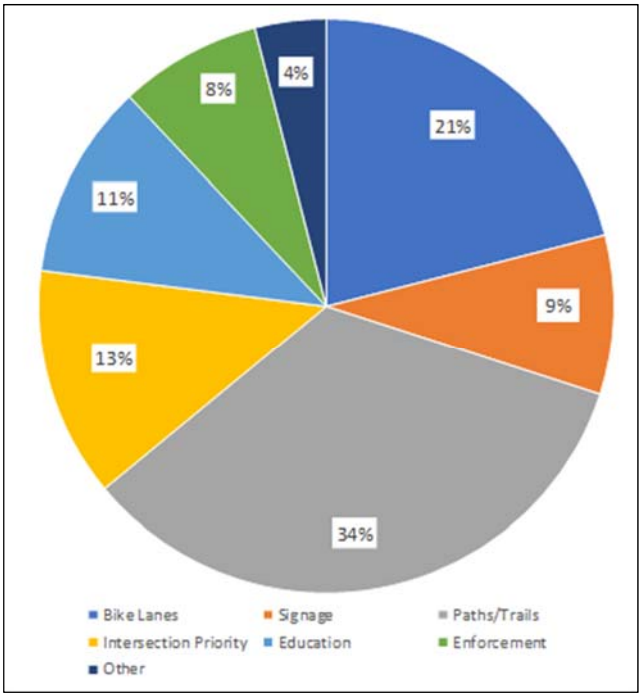


Figure 12. Desired Bicycle Facility Support

MPO Board and Advisory Committee Meetings

The MPO Board and three of its advisory committees—Technical Advisory Committee (TAC), Citizens Advisory Committee (CAC), and Bicycle and Pedestrian Advisory Committee (BPAC)—were updated regularly on the Plan's development and provided meaningful direction and comment. All MPO meetings are open to the public, and additional public comment was gathered at these meetings. Advisory Committee and Collier County Transportation Planning comments are provided in Appendix 8.

Stakeholder Group

A stakeholder group, comprising agency and advocacy groups for users of the bicycle and pedestrian system as well as MPO committee members, was convened twice to solicit feedback on the Plan's focus and direction and goals and objectives. In addition to providing feedback, the group acted as a voice for people who regularly walk and bike but whose voice may not have been heard through the other public engagement efforts. Stakeholder comments are provided in Appendix 9.

CHAPTER 4 – VISION, GOALS AND OBJECTIVES

Defining a vision, goals, and objectives creates the structure for a plan. To develop the vision for this Plan, the team reviewed the 2012 MPO Comprehensive Pathways Plan and other similar plans and considered public, Board, committee, and stakeholder group input. The following vision statement was used to guide the development of the Plan's goals, objectives and strategies.

Vision

To provide a safe and comprehensive bicycle and pedestrian network that promotes and encourages community use and enjoyment.

Safety and a comprehensive or connected network are the two cornerstones of the Plan. Public feedback indicated that safety and making biking and walking more accessible and interconnected should be primary emphasis points. This interest is supported by travel trends and by current research showing that if there are safe and accessible facilities, whether for walking or for biking, people will use them. With this and the future in mind, the vision for this Plan was developed. The vision and the goals and objectives are consistent with the priorities identified in the 2040 Long Range Transportation Plan (LRTP) and will be incorporated into the 2045 LRTP.

Goals

Goals, as shown in Table 6, were developed by reviewing local, state and national Best Practices, goals in similar plans including the 2012 MPO Comprehensive Pathways Plan, and with consideration of public and committee input. Though similar to the previous plan, the importance of safety, equity (Environmental Justice), and community health have been increased in this Plan. The goals became the basis for the development of strategies, policies and project prioritization criteria discussed in Chapter 7.

Table 6. Goals and Strategies

Goal	Strategy
Safety	Increase safety for people who walk and bicycle in Collier County.
Connectivity	Create a network of efficient, convenient bicycle and pedestrian facilities in Collier County.
Equity/Livability	Increase transportation choice and community livability through development of an integrated multimodal system.
Health	Increase total miles of bicycle and pedestrian facilities and encourage local governments to incorporate Complete Streets principles in road planning, design, and operations
Economy	Promote tourism and economic opportunities by developing a safe, connected network of biking and walking facilities.
Environment	Protect the environment by promoting walking and bicycling for transportation to reduce congestion, reduce the need for costly expansion of road and highway systems, and reduce our nation's dependence on foreign energy sources

Objectives and Strategies

Goals can be general and lofty, but objectives and strategies need to specific enough to help make measurable progress towards meeting the goals. The following objectives and strategies were identified to help achieve the goals developed for this Plan and to provide sufficient flexibility in the implementation of the Plan.

1. Safety – Increase safety for people who walk and bicycle in Collier County.

Objectives:

- Reduce the number and severity of bicycle crashes.
- Reduce the number and severity of pedestrian crashes.

Strategies:

- Identify high-crash locations for RSAs. Projects identified in RSAs will be a high priority for funding.
- Collaborate with law enforcement to develop and deploy enforcement/education campaigns.
- Work with FDOT and law enforcement agencies to seek funding for High Visibility Enforcement (HVE) for pedestrian and bicycle safety.
- Adopt a Complete Streets Policy and work with local governments and the County to develop and adopt their own Complete Streets policies.
- Work with FDOT, MPO member entities, and other transportation agencies to reduce the number of crashes, particularly those with severe or fatal injuries.

2. Connectivity – Create a network of efficient, interconnected, and convenient bicycle and pedestrian facilities in Collier County.

Objectives:

- Fill in gaps in the existing bicycle and pedestrian network.
- Provide a variety of bikeways and pedestrian facilities connected to transit stops and along transit routes.
- Provide a variety of bikeways and pedestrian facilities connected to parks, schools, downtowns, and employment centers.

Strategies:

- Actively pursue multiple sources of funding to implement the Plan.
- Use Transportation Management Area (TMA) funds for a wide range of project types.
- Coordinate with MPO member entities and FDOT to complete network gaps that may be completed during roadway widening or reconstruction or infrastructure projects.

TMA funds are distributed from State DOTs to MPOs with populations over 200,000. TMA funds are prioritized by the MPO in conjunction with the State DOT.

- Coordinate with MPO member entities and FDOT to complete gaps during resurfacing projects.
- Prioritize bicycle and pedestrian projects in areas that will impact the greatest number of people.

3. Equity/livability – Increase transportation choice and community livability through the development of an integrated multimodal system.

Objectives:

- Provide safe biking and walking conditions in areas of Collier County that are underserved or transit-dependent.
- Provide a variety of bikeways and pedestrian facilities connected to destinations.
- Provide a variety of bikeways and pedestrian facilities connected to transit.

Strategies:

- Support Collier Area Transit (CAT) by coordinating bicycle and pedestrian facilities and ADA improvements with bus routes and transfer centers.
- Identify and select projects that support the safe, convenient, and accessible use of transit.
- Prioritize bicycle and pedestrian projects in areas that will impact the greatest number of people.
- Identify and select projects that allow safe, convenient access to areas of high employment.
- Identify and select a proportion of projects that address the needs in EJ communities/areas.
- Adopt a Complete Streets policy.

4. Health – Encourage health and fitness by providing a safe, convenient network of facilities for walking and biking.

Being either obese or overweight increases the risk for many chronic diseases (e.g., heart disease, type 2 diabetes, certain cancers, and stroke). Reversing the Collier County obesity epidemic requires a comprehensive approach that uses policy and environmental change to transform communities into places that support and promote healthy lifestyle choices for all Collier County residents. Lack of access to safe places to play and exercise contributes to the increase in obesity rates by inhibiting or preventing healthy active living behaviors. The objectives and strategies listed below are supported by the Florida Department of Health and are based on the Centers for Disease Control and Prevention's "Recommended Community Strategies and Measurements to Prevent Obesity in the United States".[14]

Objectives:

- Increase physical activity or limit sedentary activity among children and youth.
- Create safe communities that support physical activity.

[14] Centers for Disease Control and Prevention. "Recommended Community Strategies and Measurements to Prevent Obesity in the United States," July 24, 2009, https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5807a1.htm. Suggested measurements #17, #18, #23.

Strategies:

- Increase total miles of designated Shared Use Paths and bike lanes relative to the total street miles (excluding limited access highways) maintained by a local jurisdiction.
- Increase total miles of paved sidewalks relative to the total street miles (excluding limited access highways) maintained by a local jurisdiction.
- Local government has a policy for designing and operating streets with safe access for all users that includes at least one element suggested by the National Complete Streets Coalition (http://www.completestreets.org).

In all-user street design policies, such as the Complete Streets program, local governments incorporating at least one of the following elements in a policy will enhance traffic safety and promote healthy lifestyle choices:

- Specifies that "all users" includes pedestrians, bicyclists, transit vehicles and users, and motorists of all ages and abilities.
- Aims to create a comprehensive, integrated, connected network.
- Recognizes the need for flexibility—that all streets are different and user needs will be balanced.
- Is adoptable by all agencies to cover all roads.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations for the entire right-of-way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design standards.
- Directs that Complete Streets solutions fit within the context of the community.
- Establishes performance standards with measurable outcomes.

5. Economy – Promote tourism and economic opportunities by developing a safe, connected network of biking and walking facilities.

Objectives:

- Improve bikeability to destinations.
- Support bicycle and pedestrian access to jobs.
- Improve connections to lively pedestrian environments.

Strategies:

- Coordinate with local agencies to develop a wayfinding and directional signage program.
- Identify and select projects that allow safe, convenient access to areas of high employment.
- Work with local agencies to identify projects that facilitate pedestrian access to areas of employment and recreation.
- Collaborate with local agencies to identify opportunities for amenities (e.g., bike parking, benches, street trees).

6. Environment – Protect the environment by promoting walking and bicycling for transportation to reduce congestion, reduce the need for costly expansion of road and highway systems, and reduce our nation's dependence on foreign energy sources

Objectives:

- Provide an accessible, connected network.
- Connect to destinations such as retail or service, making short distance trips on foot or by bike appealing.
- Plan, design, and construct bicycle and pedestrian facilities in a manner that minimizes any negative environmental impacts and maximizes positive impacts.

Strategies:

- Fill gaps in the network to create better connections and minimize the disruption in travel.
- Work with agencies to improve intersections and create safe crossing opportunities.

CHAPTER 5 – NEEDS ANALYSIS

Identification of Network Needs

The steps taken to identify and prioritize bicycle and pedestrian infrastructure gaps and needs on collector and arterial roads were the following:

1. **Plan Review** – Review of plans and documents that address bicycle and pedestrian issues and opportunities. The plans review noted the following:
   - FDOT released a list of the top five bicycle and pedestrian crash corridors while work on this Plan was underway. FDOT's list coincides, for the most part, with the high-crash corridors that this Plan had already identified. The only notable difference is that FDOT's list does not include US-41 (Tamiami) between 91st Avenue and 111th Avenue as this Plan does.
   - Collier County's TIGER grant goes a long way towards implementing the Immokalee Walkable Community Study, thereby addressing two primary concerns raised by this Plan—safety and equity (EJ). In addition, FDOT is in the process of implementing a bicycle and pedestrian safety project on Immokalee's Main Street.
   - The Golden Gate City Walkable Community Study completed in 2019 addresses another EJ and high-crash location identified by this Plan.
2. **Inventories** – The MPO's 2017 bicycle and pedestrian facilities inventory maps were reviewed and commented on by local agencies, stakeholders, and the community through an extensive public outreach effort, resulting in further edits. While the BPMP was underway, the MPO entered into an agreement with the Naples Pathway Coalition (NPC) to develop a joint bicycle facilities map in partnership with NPC and the City of Naples Community Services Department. In the process, MPO staff approved many revisions to the MPO's 2017 facilities inventory. The joint map was completed and published in November 2018 and those GIS files were then used by the BPMP consultant to update all of the Plan's base maps again. Going forward, NPC agreed to serve as the recipient of comments regarding the joint map's accuracy, and the MPO agreed to update the GIS files on an as-needed basis. Given that improving the accuracy of the facilities inventory remains an ongoing effort, field review is a necessary precursor for all projects that MPO member entities wish to advance through the funding application process.
3. **Public Input** – In addition to the public outreach described in Chapter 3, the MPO posted an interactive map on its website using a Wiki map platform. The interactive map generated nearly 400 total comments, roughly 250 of which were gathered at the Marco Island Farmer's Market and input into

Arterial road: A roadway that serves primarily through traffic and secondarily provides access to abutting properties.

Collector road: A roadway providing access and traffic circulation service to a residential, commercial, or industrial area and secondarily provides for local through traffic.

Local road or street: A route providing service that is of relatively low traffic volume, serving short trip length, or minimal through-traffic movements, and a high degree of access for abutting properties. Local roads may be privately owned or governed by Collier County or the incorporated municipalities in the county.

the Wiki map; these comments expressed support for the top priorities in the City of Marco Island Bike Path Master Plan. The remaining 150 comments were attributable to 25 unique creator IDs, most of which were from people living in the western and southern parts of the county. The project's consultants created a GIS overlay from the Wiki maps data.

4. **Crash and EJ Data** – Analysis of crash and EJ data overlays showing concentrations of bicycle and pedestrian crashes indicates high-use areas related to adjacent land uses. The high-use areas in Collier County tend to occur in relation to tourism and services or in relation to EJ residential areas. The combination of these two factors—bicycle and pedestrian crash clusters and EJ communities—proved to be a useful marker for the needs of low-income, minority, and immigrant populations.
5. **Network Configuration** – MPO staff worked closely with the advisory committees and agency staff and considered public comment in the process of articulating design and planning policies related to roads (see Chapter 7.)
6. **Gap / Needs Analysis** – The project team (consultants and staff), using GIS as the basis, analyzed a series of overlays of the gathered data, public input, and draft policies to identify missing links in the bicycle/pedestrian network and portions of the network with deficiencies in the existing infrastructure. The combination of missing links and segments characterized as deficient infrastructure culminated in maps and related spreadsheets quantifying needs, continuously refined the prioritization criteria, and provided monthly updates with the advisory committees and stakeholders beginning in the fall of 2018.

The foregoing analysis identified a total of 74 miles of roadway lacking any type of bicycle and/or pedestrian facility and 150 miles of roadway lacking sufficient bicycle facilities (see summary in Table 7).

Table 7. Network Gaps/Facility Needs

Type of Gap in Bicycle Network	Mileage of Missing Facilities			
	All Gaps on Collector & Arterial Roadways	*Gaps Meeting Equity Criterion[2]*	*Gaps Meeting Safety Criterion*	*Gaps Meeting Equity and Safety Criteria*
No facility	73.9	22.9	2.4	0.0
Insufficient facility	150.3	44.5	13.1	5.8
Paved shoulder[1]	85.3	26.0	1.7	1.3
Connector sidewalk[1]	65.0	18.5	11.4	4.5
Total miles	224.2	67.4	15.5	5.8

[1]Paved shoulder/ connector sidewalk are sub-categories of Insufficient Facility total.
[2]Equity criterion established as block groups receiving a medium, high, or very high ranking from the Composite Equity Analysis.

Priority Projects Identified

The following project priorities were identified based on the analysis that began with identifying EJ considerations in Chapter 1, followed by Safety in Chapter 2, then this chapter's Plan Review, Gaps and Needs Analysis.

Safety, Equity, and Multimodal Connections - Complete Streets/Safety Corridor Studies on High-Crash Locations on Arterial and Collector Roads

This Plan's support of FDOT's Complete Street's Policy (see Chapter 7) makes it possible to address a multiplicity of factors—equity/EJ, safety, high use, transit connections, and public and agency input. The in-depth multi-disciplinary analysis conducted during a Complete Streets/Safety study will develop recommendations to reduce crashes and improve safety. RSAs and the projects they recommend are eligible for federal Highway Safety Improvement Program (HSIP) funding.

Table 8. Complete Streets – Safety Corridor Studies

Rank	Road Name	From	To	Project Description
1	US-41 Tamiami Tr	Commercial Dr/Palm St	Guilford Rd	Review, adopt and implement FDOT RSA recommendations
	Airport Rd	US-41 Tamiami Tr	Estey Ave	
2	Airport Rd	Estey Ave	Golden Gate Pkwy	Corridor Study
3	US41 Tamiami Tr	Commercial Dr/Palm St	9th Ave	Corridor Study
4	Goodlette Frank	US-41 Tamiami Tr	Golden Gate Pkwy	Corridor Study
5	Davis Blvd	US-41 Tamiami Tr	Airport Rd	Corridor Study
6	Golden Gate Pkwy	Santa Barbara Blvd	Collier Blvd	Corridor Study

Network Gaps on Arterial and Collector Roads Prioritized by Public Input

The network gaps/facility needs shown in Table 7 identified a total of 224 miles of collector and arterial roadways in need of facility improvements. Appendix 10 contains the complete listing, alphabetized by road name with mileage shown by road segment and a description of the infrastructure gap.

The magnitude of the needs identified through technical analysis alone demonstrated the importance of prioritizing public investment; to do so, the project team used GIS to analyze the confluence of public comments and facility gaps. Figure 13 and Table 9 show the results of that analysis. These are the facility gaps identified by technical analysis that the public is most interested in addressing at this time. The segments identified total 66 miles, an amount that is within reach of achievement by concerted effort of all parties.

Figure 13: Bicycle and Pedestrian Facility Gaps Overlapped with Public Comment

Legend

- Incorporated Municipalities
- Immokalee Urban Area
- Environmental Lands

Public Comment Overlap

- On-Road Bicycle Facility
- Pathway
- Safety Concern
- Marco Island Master Plan
- Sidewalk

Bicycle Facility Gaps

- No Existing Bicycle Facilities
- Existing Paved Shoulder
- Existing Connector Sidewalk

Immokalee

Naples

Marco Island

Everglades City

Gulf of Mexico

COLLIER MPO BICYCLE & PEDESTRIAN MASTER PLAN

0 2.5 5 10 Miles

Immokalee Inset

Marco Island Inset

Naples Inset

Everglades City Inset

Table 9. Prioritized Bicycle and Pedestrian Facilities

Road	From	To	Dist	Agency	Facility Type
111TH AVE N	VANDERBILT DR	TAMIAMI TRL N	1.0	Collier Co	Bike Lane/Path
AIRPORT RD N	PINE RIDGE RD	IMMOKALEE RD	4.2	Collier Co	Bike Lane/Path
AIRPORT RD N	S HORSESHOE DR	PINEWOODS CIR	2.5	Collier Co	Bike Lane/Path
AIRPORT RD S	SEAGRAPE AVE	DAVIS BLVD	0.5	Collier Co	Bike Lane/Path
AIRPORT RD S	DAVIS BLVD	TAMIAMI TRL E	0.8	Collier Co	Safety
BLUEBILL AVE	BLUEBILL AVE	VANDERBILT DR	0.4	Collier Co	Bike Lane/Path
BONITA BEACH RD	VANDERBILT DR		1.7	Collier Co	Bike Lane/Path
CASTAWAYS ST	SATURN CT	AMAZON CT	0.2	Marco Is	Marco Master Plan
COLLIER BLVD	17TH AVE SW	CITY GATE BLVD N	2.0	Collier Co	Bike Lane/Path
COLLIER BLVD	N END JOLLEY BRIDGE	FIDDLERS CREEK PKWY	3.6	Collier Co	Bike Lane/Path
COPELAND AVE S	BROADWAY	OYSTER BAR LN	0.7	Everglades	Pathway
DAVIS BLVD	TAMIAMI TRL	AIRPORT RD S	1.0	Collier Co	Bike Lane/Path
EVERGLADES BLVD	OIL WELL RD	58TH AVE NE	3.1	Collier Co	Sidewalk
GOLDEN GATE PKWY	9TH ST N	ESTUARY BLVD	1.6	Naples	Bike Lane/Path
GREENBRIER ST	MANOR TER	SATURN CT	0.2	Marco Is	Marco Master Plan
IMMOKALEE RD	TAMIAMI TRL	NORTHBROOKE DR	4.0	Collier Co	Bike Lane/Path
LOGAN BLVD N	LOGAN BLVD	VANDERBILT BEACH RD	1.1	Collier Co	Bike Lane/Path
LOGAN BLVD S	LOGAN BLVD	GREEN BLVD	2.0	Collier Co	Bike Lane/Path
OIL WELL RD	EVERGLADES BLVD N	OIL WELL GRADE RD	3.9	Collier Co	Bike Lane/Path
OIL WELL RD	AVE MARIA BLVD	SR 29	5.7	Collier Co	Bike Lane/Path
OLD US 41 N	TAMIAMI TRL	PERFORMANCE WAY	1.5	Collier Co	Pathway
PERU ST		SEAGRAPE DR	0.1	Marco Is	Marco Master Plan
PINE RIDGE RD	TAMIAMI TRL	LOGAN BLVD S	5.1	Collier Co	Bike Lane/Path
RANDALL BLVD	RANDALL BLVD	APPROACH BLVD	1.5	Collier Co	Bike Lane/Path
RATTLESNAKE H RD	VALLEY STREAM DR	COLLIER BLVD	3.5	Collier Co	Bike Lane/Path
SAN MARCO RD	GOODLAND DR	TAMIAMI TRL E	6.5	Collier Co	Pathway
SANTA BARB BLVD	GREEN BLVD	17TH AVE SW	0.2	Collier Co	Bike Lane/Path
SATURN CT	CASTAWAYS ST	GREENBRIER ST	0.1	Marco Is	Marco Master Plan
SEAGRAPE DR	PERU ST	SWALLOW AVE	0.7	Marco Is	Marco Master Plan
TAMIAMI TRL E	GREENWAY RD	SIX LS FARM RD	2.5	Collier Co	Pathway
VANDERBILT BEACH RD	GULFSHORE DR	VANDERBILT DR	0.4	Collier Co	Bike Lane/Path
WIGGINS PASS RD	VANDERBILT DR	TAMIAMI TRL N	1.0	Collier Co	Bike Lane/Path
WILSON BLVD N	GOLDEN GATE BLVD	24TH AVE NE	3.0	Collier Co	Pathway
TOTAL MILES			66.3		

SunTrail Alignments and Spine Pathway Corridors

Figure 14 shows the two SunTrail alignments and other interconnected spine pathway corridors within Collier County that form an integrated, high-priority pathway network. The following paragraphs describe the network and the prioritized projects needed to complete it.

SunTrail Alignments – The Gulf Coast Trail is envisioned to be a regional facility linking Collier, Lee, Sarasota and Manatee counties. As such, it is critical to maintain regional connections across county boundaries. This Plan expands the Collier MPO's previously-adopted alignment to include the Paradise Coast Bicycle Route that connects to a coastal alignment of the Gulf Coast Trail approved for Lee County. Collier's Paradise Coast Bicycle

Route follows existing roadways that, for the most part, do not require additional signage or lane markings, with the exception of completing the missing link across Seagate Drive that would connect Crayton Road north and south. Public input and the Naples Pathways Coalition (NPC) strongly support filling this gap. The MPO will submit the new alignment to the Florida Department of Environmental Protection, Office of Greenways and Trails for consideration.

FPL Easement/Livingston/Rich King Greenway Alignment – The current SunTrail alignment occurs within a Florida Power and Light (FPL) easement that parallels Livingston Road and would connect with the existing Rich King Greenway. Constructing a Shared Use Path in this alignment has been a goal of the Bicycle and Pedestrian Advisory Committee (BPAC) for many years. The southeast portion of the current alignment occurs on-street except for the proposed Rookery Bay Greenway. Due to its environmental and hydrologic sensitivity, the Conservancy of Southwest Florida recommended eliminating the proposed trail through Rookery Bay and making other refinements to the current SunTrail–Southwest Coast Connector alignment. These revisions have been incorporated in this Plan (Figure 14).

FDOT is planning to conduct a safety study of US-41 Tamiami Trail east that may result in improvements to the existing shoulders to more safely accommodate cyclists and pedestrians. The roadway forms a gateway into a region of State and national parks, as well as a critical cycling link within Collier County in that it also connects to SR-29 and the greater Everglades City area.

Gordon River Greenway Connections – Improved connections to the Gordon River Greenway are needed to bridge the gap between the two SunTrail alignments. The Gordon River Greenway Master Plan calls for a pedestrian overpass over Golden Gate Parkway connecting Freedom Park with the Greenway to the south. Golden Gate Parkway is a critical connecting east/west roadway.

Golden Gate Canal Greenway (Proposed) – The Golden Gate Canal provides an opportunity to extend the off-street Shared Use Path system north and west, connecting to Golden Gate City, Ave Maria, Immokalee, and the Corkscrew Swamp Sanctuary.

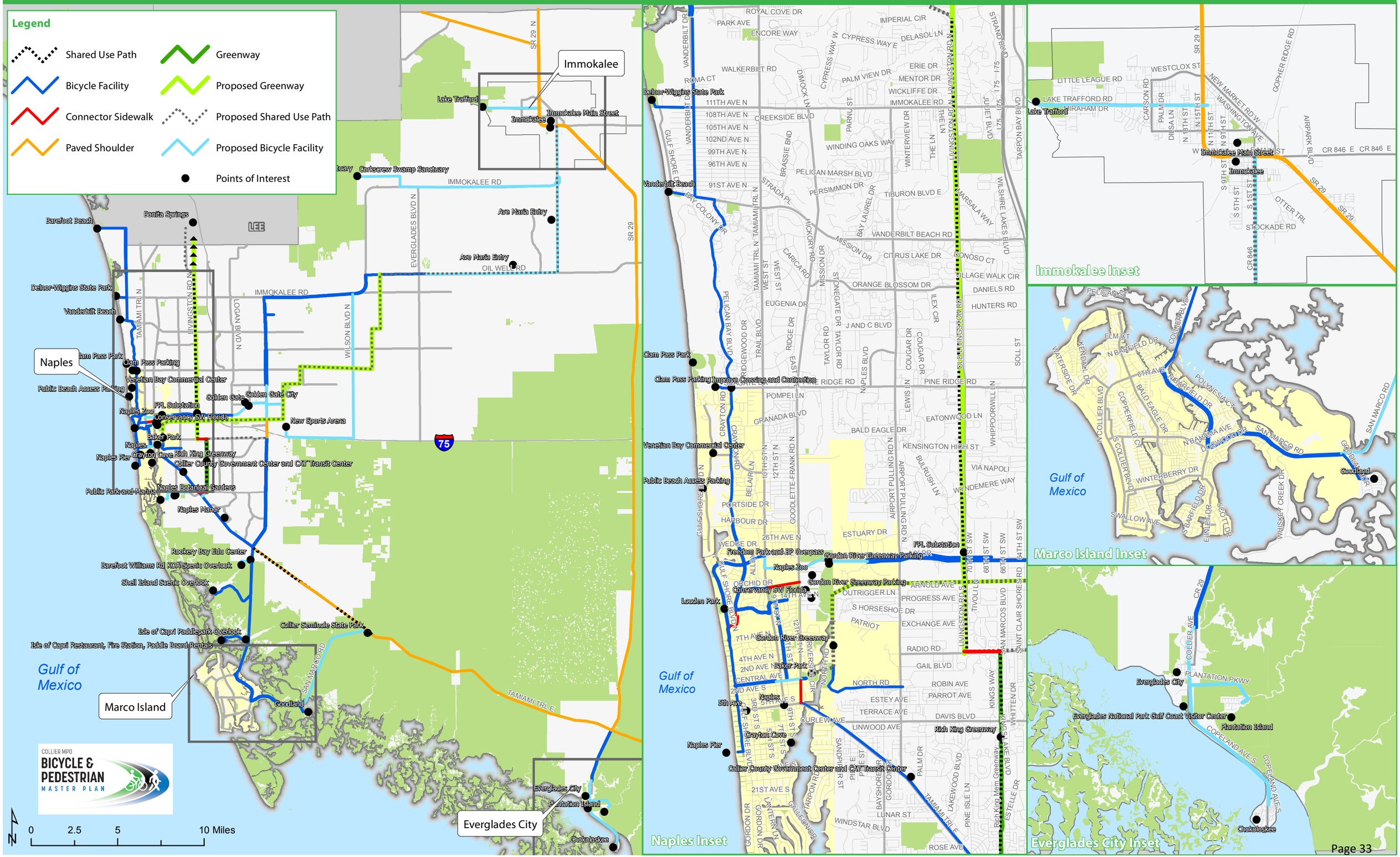
Golden Gate Parkway between Santa Barbara and Collier Boulevards – This section of Golden Gate Parkway coincides with the Spine Trail Network and has been identified in this Plan for additional bicycle, pedestrian, and transit enhancements following Complete Streets design principles. The segment also falls within the newly-designated Golden Gate City Economic Development Zone and has been identified as needing improved bicycle and pedestrian safety features in the Golden Gate City Walkable Community Study (2019).

SR-29 and SR-82 – These roadways form a critical outer loop for recreational cycling. As adjacent lands become urbanized, portions of these roadways will serve as multimodal transportation.

Table 10. Prioritized Spine Pathway Projects

Rank	Road / Trail	From	To	Project Description
1	Seagate Crossing	Crayton Rd	Crayton Rd	Connect & improve crossing
2	Freedom Park Overpass	Golden Gate Pkwy	Gordon River Greenway	Pedestrian overpass estimated at $5million
3	Wilson Road Connection to New Sports Stadium	Immokalee Road	New frontage road N of I/75	Shared Use Paths & bike lanes
4	Lake Trafford Rd	Endpoint of FPN 4433573 & 574	Lake Trafford	TBD through further study
5	Golden Gate Canal Greenway	Airport Rd	Oil Well Rd	Shared Use Path – paved
6	FPL Greenway along Livingston Rd	South of Golden Gate Pkwy	Lee County Line	Shared Use Path – paved
7	Golden Gate Pkwy	Livingston Rd	Gordon River Greenway	Shared Use Path – paved
8	Golden Gate Pkwy	Santa Barbara Blvd	Collier Blvd	Enhanced facilities, Complete Streets study – newly-designated economic development zone

Figure 14: SunTrail Alignments and Spine Pathway Corridors



City of Naples Downtown Circulation & Connectivity Plan

The Naples City Council formally adopted Resolution 2018-14134 on April 4, 2018, which establishes that the City desires to maintain the existing number of vehicular travel lanes on US-41 and asks FDOT to work with City staff to establish other improvements that promote safe multimodal connectivity across US-41, as described in the Naples Downtown Circulation and Connectivity Plan. The Naples Downtown plan is incorporated by reference in this Plan.

A project calling for bicycle and pedestrian improvements to the Gordon River Bridge (5th Ave S) has regional significance and is therefore included as a high-priority project in this Plan (see Figure 15). The proposed design calls for narrowing the existing travel lanes, eliminating the shoulder, and moving the existing barrier to provide a 14-ft Shared Use Path on each side of the bridge at an estimated cost of $2.6 million. The Gordon River Bridge has regional significance because it is the hub of the SunTrail and Spine Corridor Network, as shown in Figure 16.

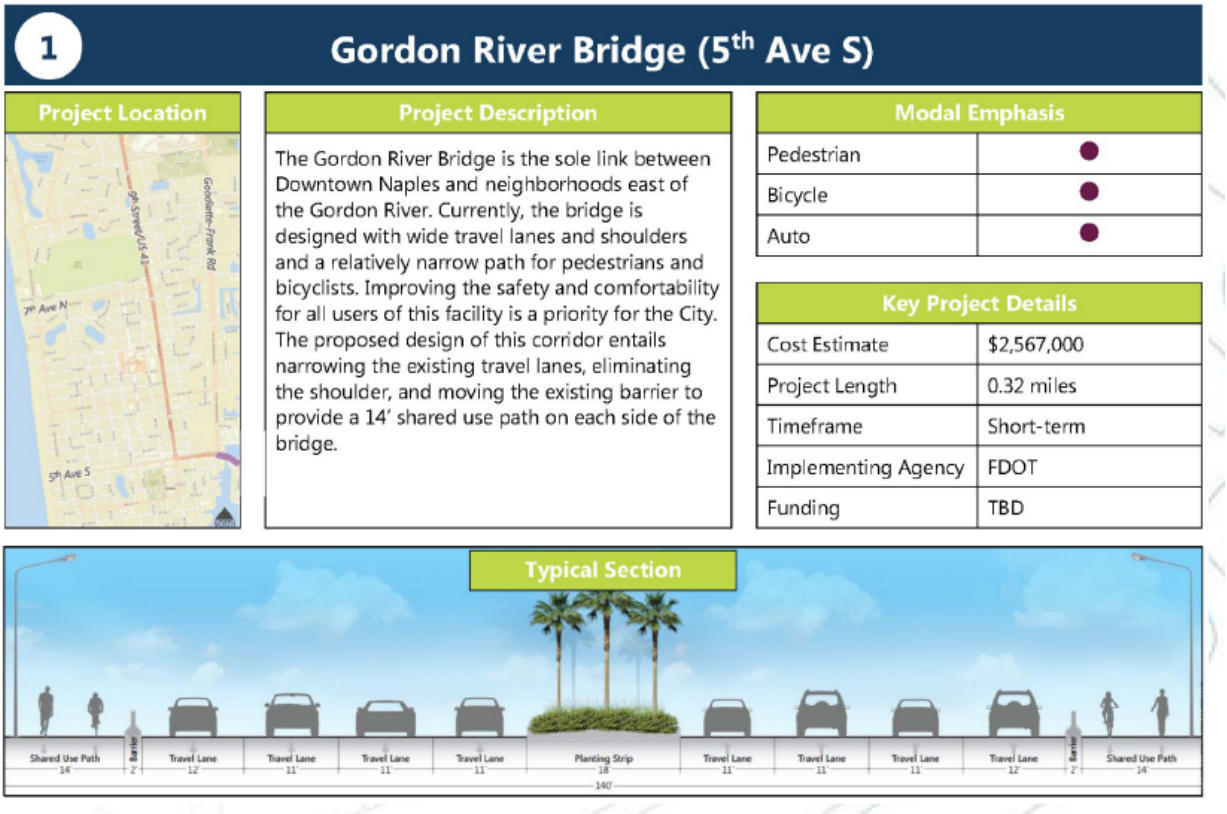


Figure 15. Gordon River Greenway Bridge

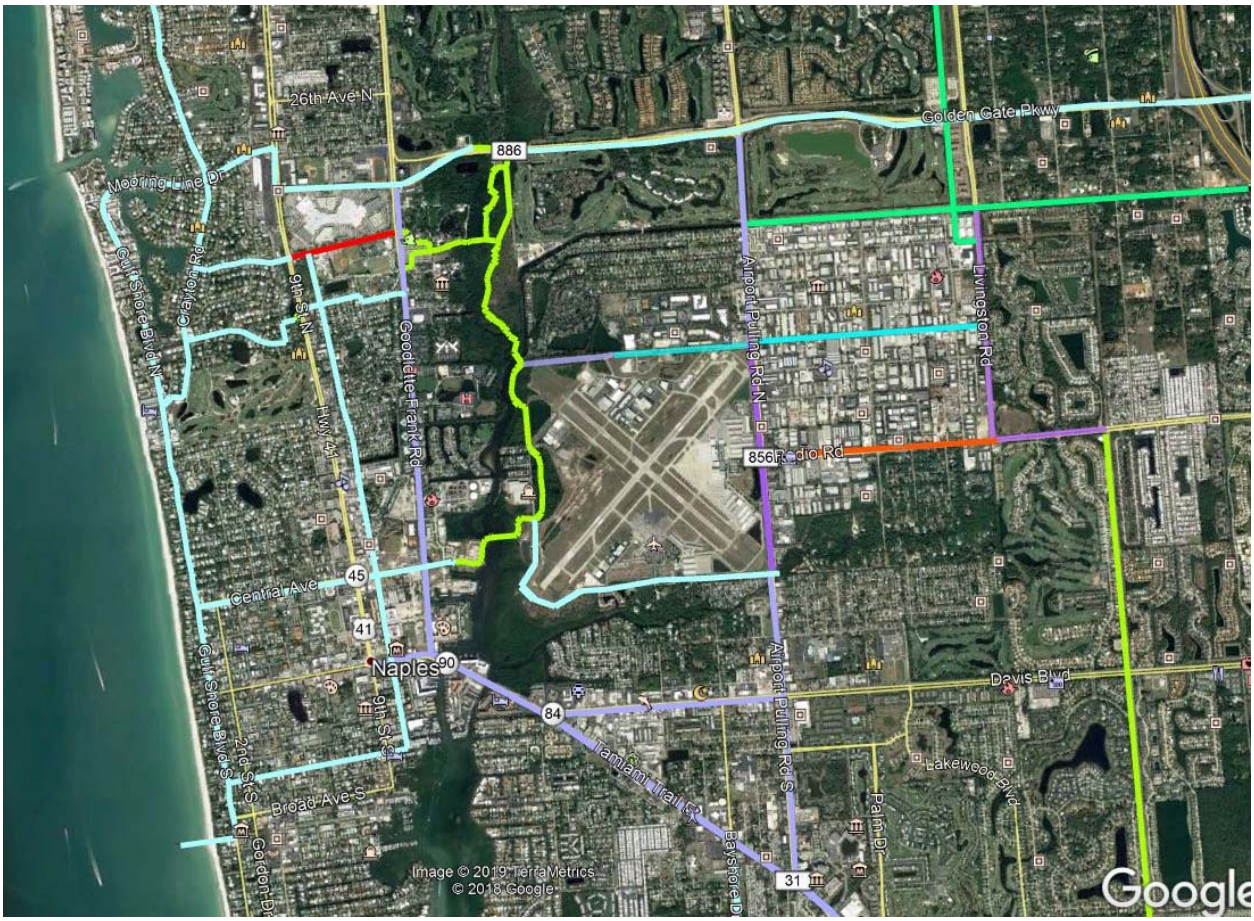


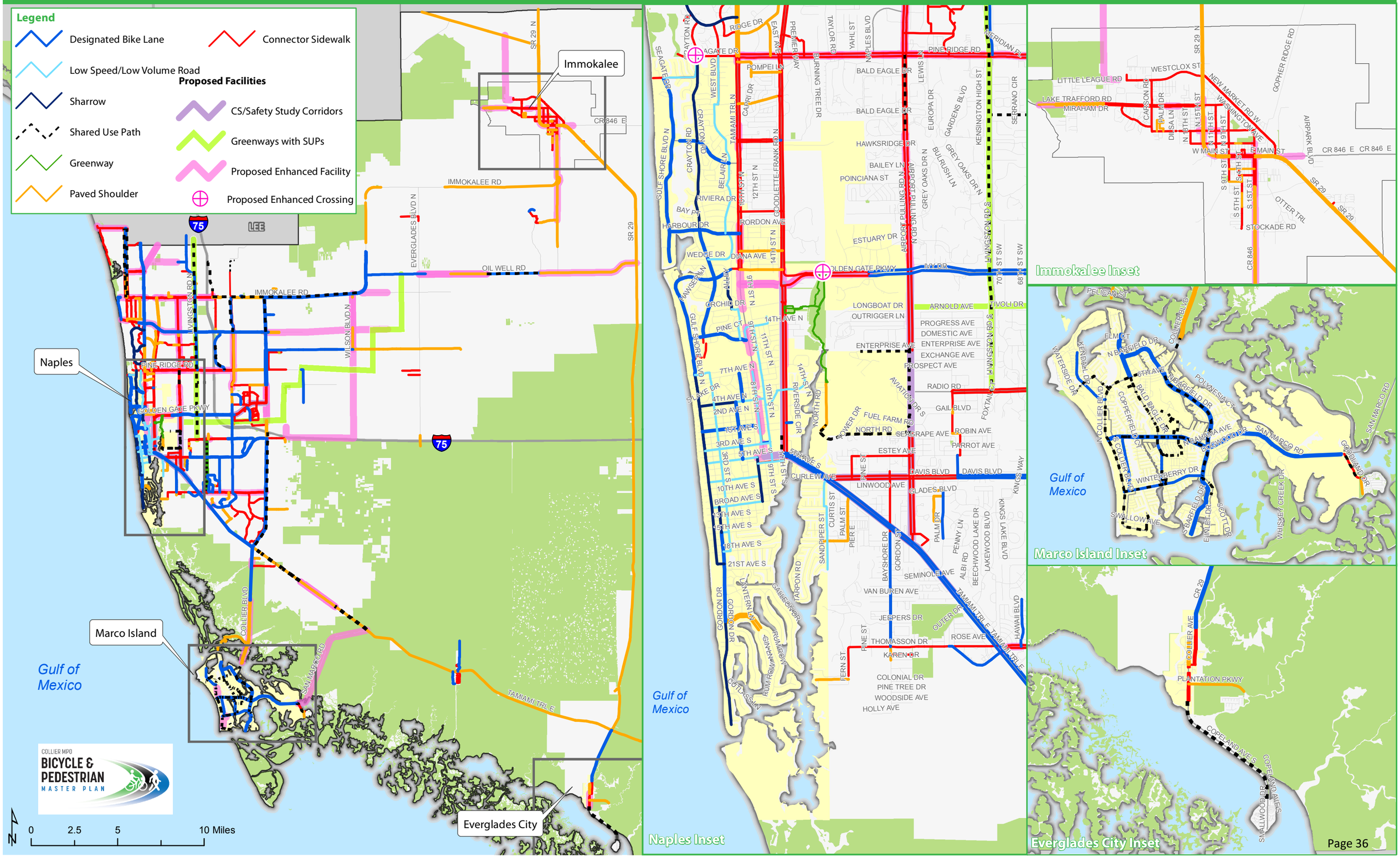
Figure 16. Gordon River Greenway – Regional Significance

Existing + Proposed Facilities

The project team added a layer to the needs analysis described above—capacity enhancement roadway projects identified in the 2040 Long Range Transportation Plan (LRTP). Roadway enhancement projects provide an excellent opportunity to expand the bicycle and pedestrian network in a cost-effective manner.

The Existing + Proposed Facilities Map (Figure 17) is a visual summary of the project priorities for major roadways and the Spine Trail network based on the foregoing analysis.

Figure 17: Existing + Proposed Facilities



Local / Residential Roads

The MPO has completed four Walkable Community studies that focused on pedestrian needs in areas of the county with concentrated populations and, therefore, more walking and biking. The goal of each study was to identify infrastructure needs and prioritize them into separate tiers. Tier 1 identified the greatest needs as segments with no sidewalks, Tier 2 as sidewalks on only one side of the street, and Tier 3 included lighting and additional amenities. These studies generated a long list of projects, and considerable progress has been made building the Tier 1 projects.

This Plan recommends continuing to coordinate with the County to fund the recommended remaining Tier 1 facilities from the first three studies as well as the Tier 1 priorities from the fourth study adopted in 2019. (Tiers 2 and 3 in high-need areas should be considered and may present opportunities to partner with local groups or agencies.) The Tier 1 segments were combined with the top priorities of Everglades City and Marco Island (a walkable community study has not been done in either city.). Each candidate project on the combined list was then scored and ranked using the methodology developed based on the Plan's goals. Table 11 lists these criteria and the point values. The list of projects and their relative priority is provided in the Appendix 11.

Table 11- Prioritization Criteria for Use on Local Road or Local Agency Bicycle and Pedestrian Needs

Criterion	Intention	Points
Safety	Increase safety for people who walk and ride in Collier County.	25
Connectivity	Enhance the network of efficient, convenient bicycle and pedestrian facilities in Collier County.	20
Equity/Livability	Increase transportation choice and community livability through development of an integrated multimodal system.	20
Economic Development	Promote tourism and economic opportunities by developing a safe, connected network of biking and walking facilities.	15
Community Support	Has an agency or local group provided written support?	10
Readiness	Has advanced work, such as engineering or feasibility study, been completed?	5
Major Road – Bike or Pedestrian Access	Provides bike or pedestrian access to major roads.	5

Because many local road projects identified in previous walkability studies have been constructed, the need for more projects was identified. Analysis yielded 360 miles of sidewalk needs throughout Collier County where there are no sidewalks on either side of the street. In collaboration with the County, a screening process was developed to identify the highest-priority segments. The screening identified roads segments that were within one mile of a school or a transit stop and that also were in a medium, high, or very high EJ area. The results of this analysis yielded 160 miles of road segments that are within one mile of a transit stop and that meet the EJ criteria and 146 miles of road segments within one mile of a school and that meet the EJ criteria. These results are graphically displayed in Figures 18, 19, and 20.

Review of these needs identified much overlap between sidewalk gaps around schools and near transit stops. Figure 20 shows the sidewalk gaps that satisfy both criteria. In total, 119 miles of sidewalks could be constructed that would facilitate safer access to schools and to transit stops. Appendix 12 lists the name of each road that passed these screens.

This Plan focused on sidewalks in residential areas. Towards the end of the planning process, MPO staff received a request from members of the public to include completing sidewalk and bicycle connections in office and industrial areas. The concept has tremendous merit; however, this has not been vetted against the criteria developed for this Plan. MPO staff will work with interested parties and local agencies to try to identify funding for specific proposals on a case-by-case basis.

Local Agency Priorities on Local Roads

Adopted local agency plans are incorporated into this Plan by reference. Current priorities are described in the following paragraphs.

Everglades City

Everglades City is developing its own Bicycle and Pedestrian Master Plan. Once adopted by the City Council, the plan, including any adopted updates, will automatically be incorporated in this Plan by reference, assuming the policies towards US-41 East are compatible with MPO Board directives. The Everglades City Council has endorsed the following four sidewalk projects as their highest priority:

- Copeland Avenue – City Hall to Chokoloskee Causeway – sidewalk on east side of road
- Datura Street – E School Drive to Collier Avenue (SR-29)
- Broadway – Riverside Drive to Copeland Avenue
- Collier Avenue (SR-29) – Begonia to bridge

Immokalee Urban Area

In 2018, Collier County was awarded a $13 million TIGER grant to make sidewalk and other improvements in Immokalee. The County identified the sidewalk projects in the grant application based on the adopted Immokalee Walkable Community Study. Implementing the TIGER grant will significantly improve the pedestrian and cycling network in Immokalee along with improved connections to transit.

This Plan identifies SR-29 and SR-82 as critical components of the Spine Trail Network for Collier County. In addition, the Immokalee CRA's request to extend bicycle and pedestrian facilities along Lake Trafford Road all the way to the lake is acknowledged as a Spine Trail priority. The drainage issues along this segment will need to be addressed by a different funding source than that used for bike/ped facilities. The details are under discussion between FDOT, the CRA, Collier County and MO staff at the time this Plan was published.

Marco Island

The current, adopted Bike Path Master Plan map is shown in Figure 21. Marco Island updates its Bike Path Master Plan, which has significant public support, on a regular basis. Future updates of the plan are automatically incorporated into this Plan by reference. The City Council notes the following projects as current, top priorities for the plan:

- Collier Boulevard – alternate bike lanes (Landmark extension)
- Bald Eagle Drive – bike lanes (Collier to San Marco)

Immokalee

Naples

Marco Island

Everglades City

Gulf of Mexico

LEE

IMMOKALEE RD

OIL WELL RD

GOLDEN GATE BLVD W

PINE RIDGE RD

GOLDEN GATE PKWY

SR 29

SR 29 N

CR 846 E

TAMIAMI TRL N

LIVINGSTON RD N

LOGAN BLVD N

COLLIER BLVD

SAMMARCO RD

TAMIAMI TRL E

0 2.5 5 10 Miles

Naples Inset

Immokalee Inset

Marco Island Inset

Legend

- Bus Routes
- Sidewalk on Both Sides of Street
- Sidewalk on One Side of Street
- No Sidewalk on Either Side of Street

EJ Score

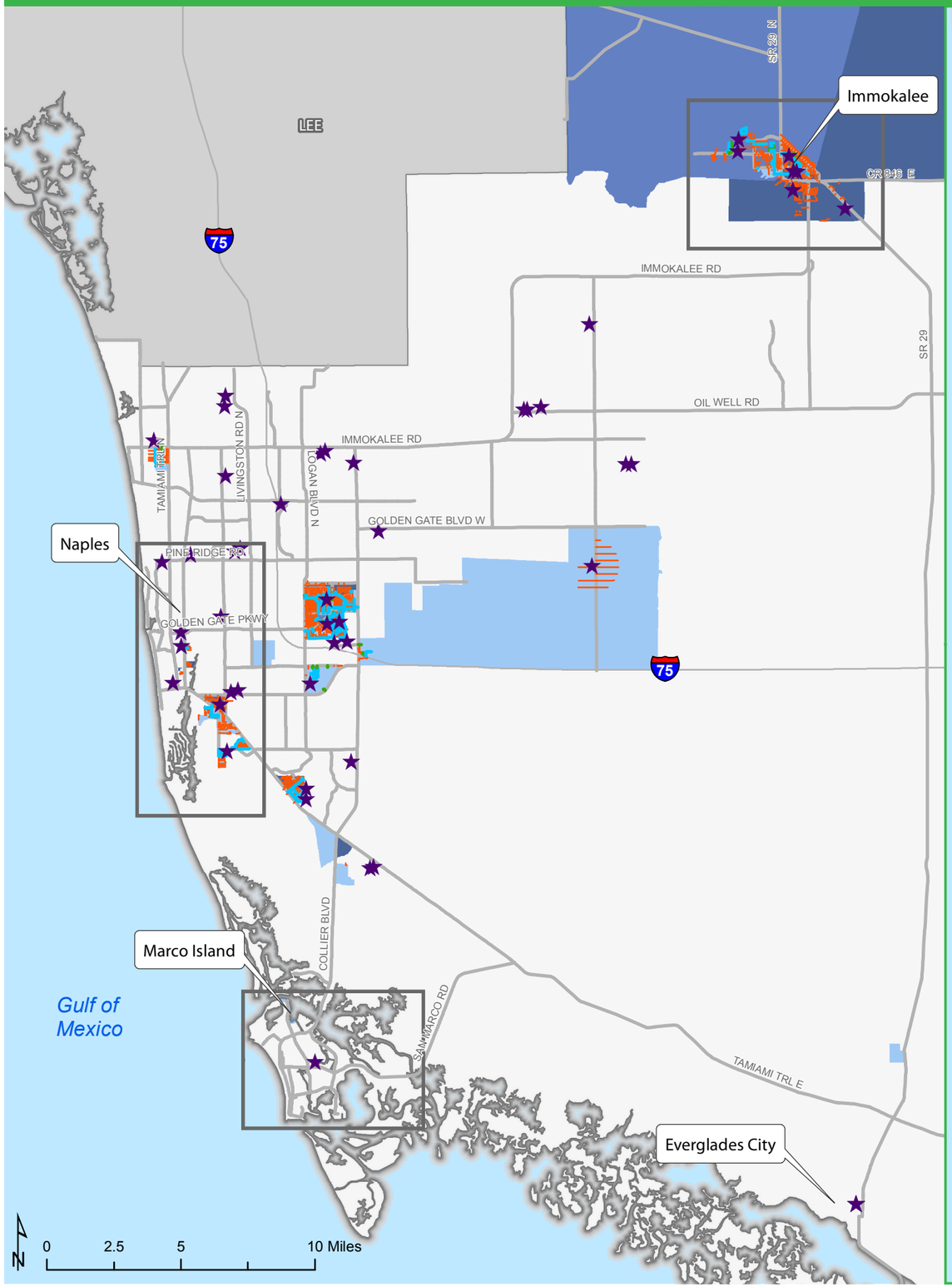
- Medium
- High
- Very High

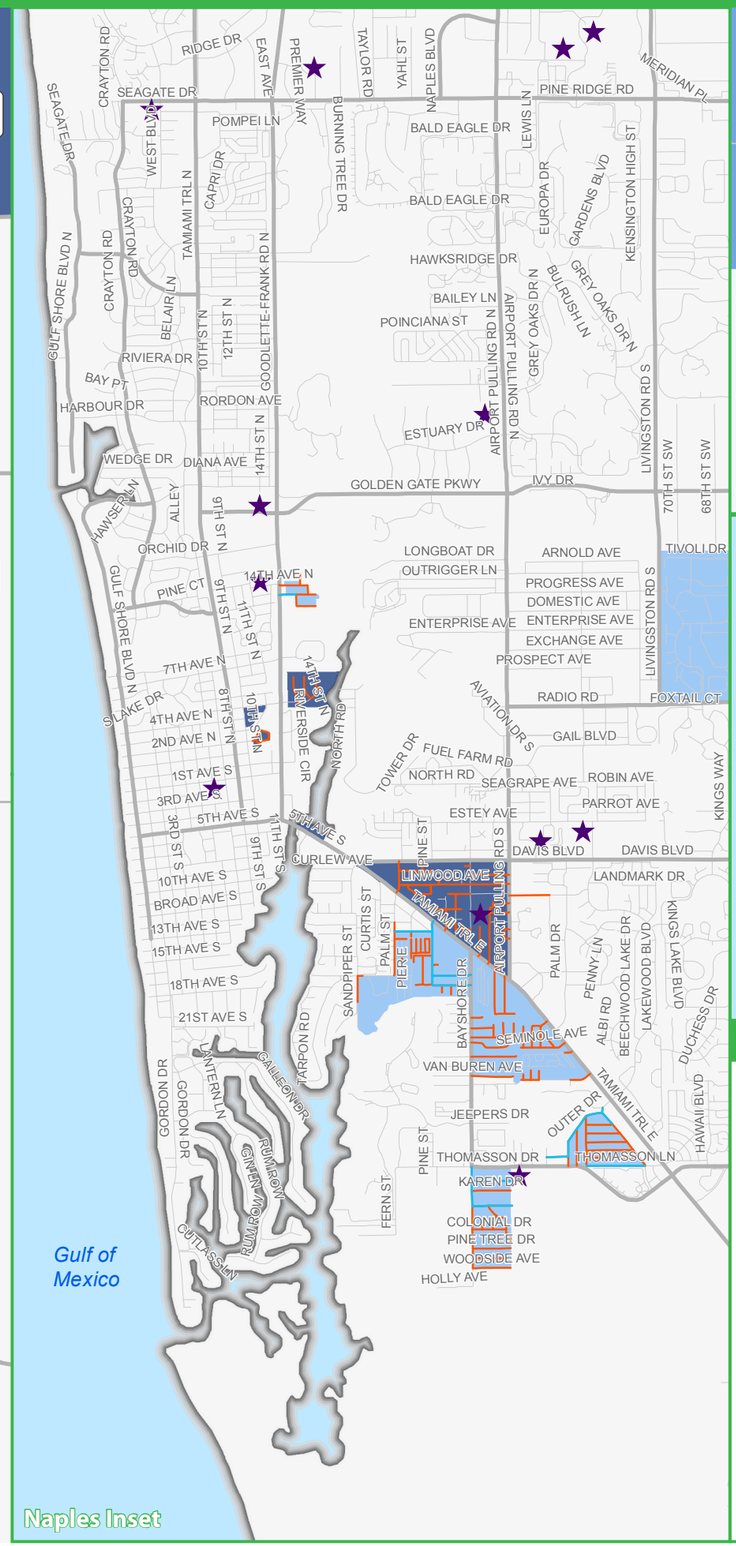
Note: Segments represent local roads 3/4-mile from a bus stop

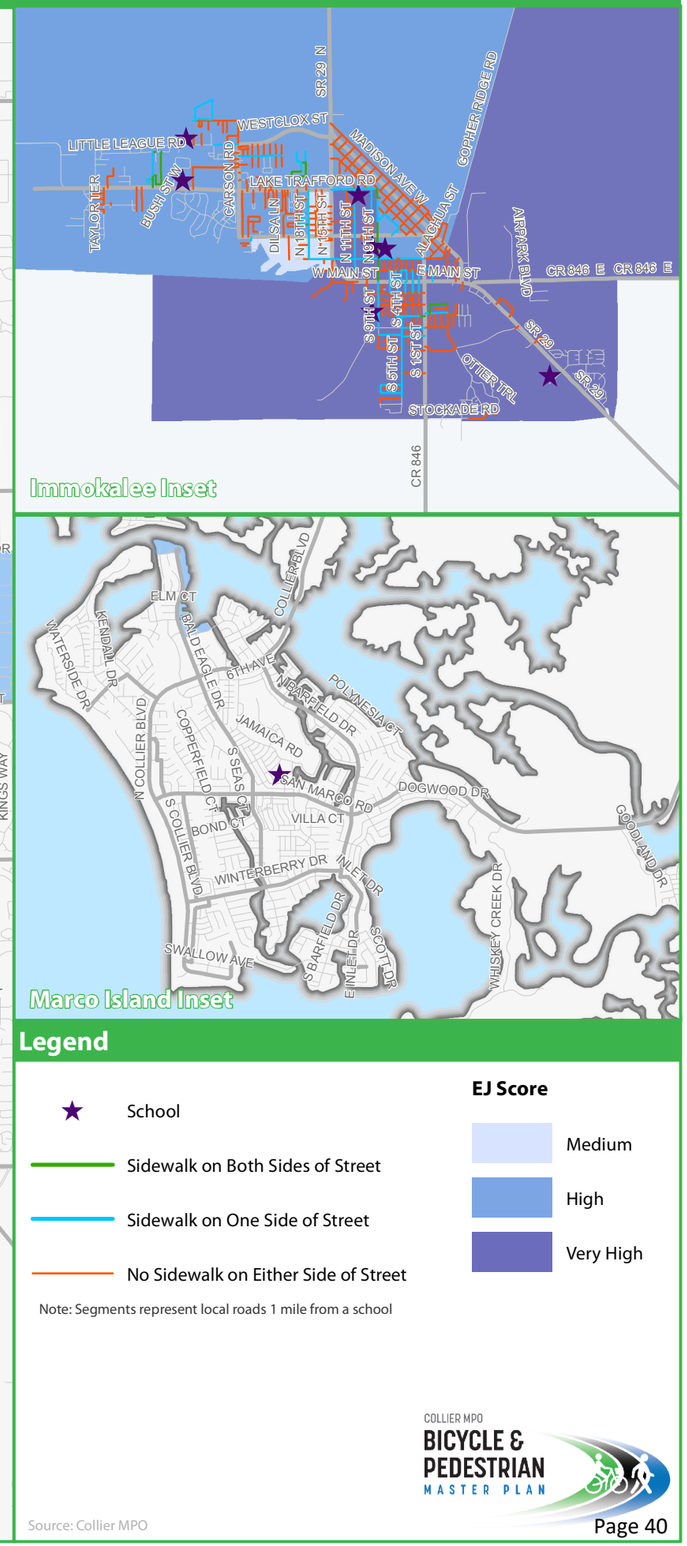
Source: Collier MPO

COLLIER MPO BICYCLE & PEDESTRIAN MASTER PLAN

Figure 19: Sidewalk Segments - School Proximity and EJ







Legend

- School
- Sidewalk on Both Sides of Street
- Sidewalk on One Side of Street
- No Sidewalk on Either Side of Street

EJ Score

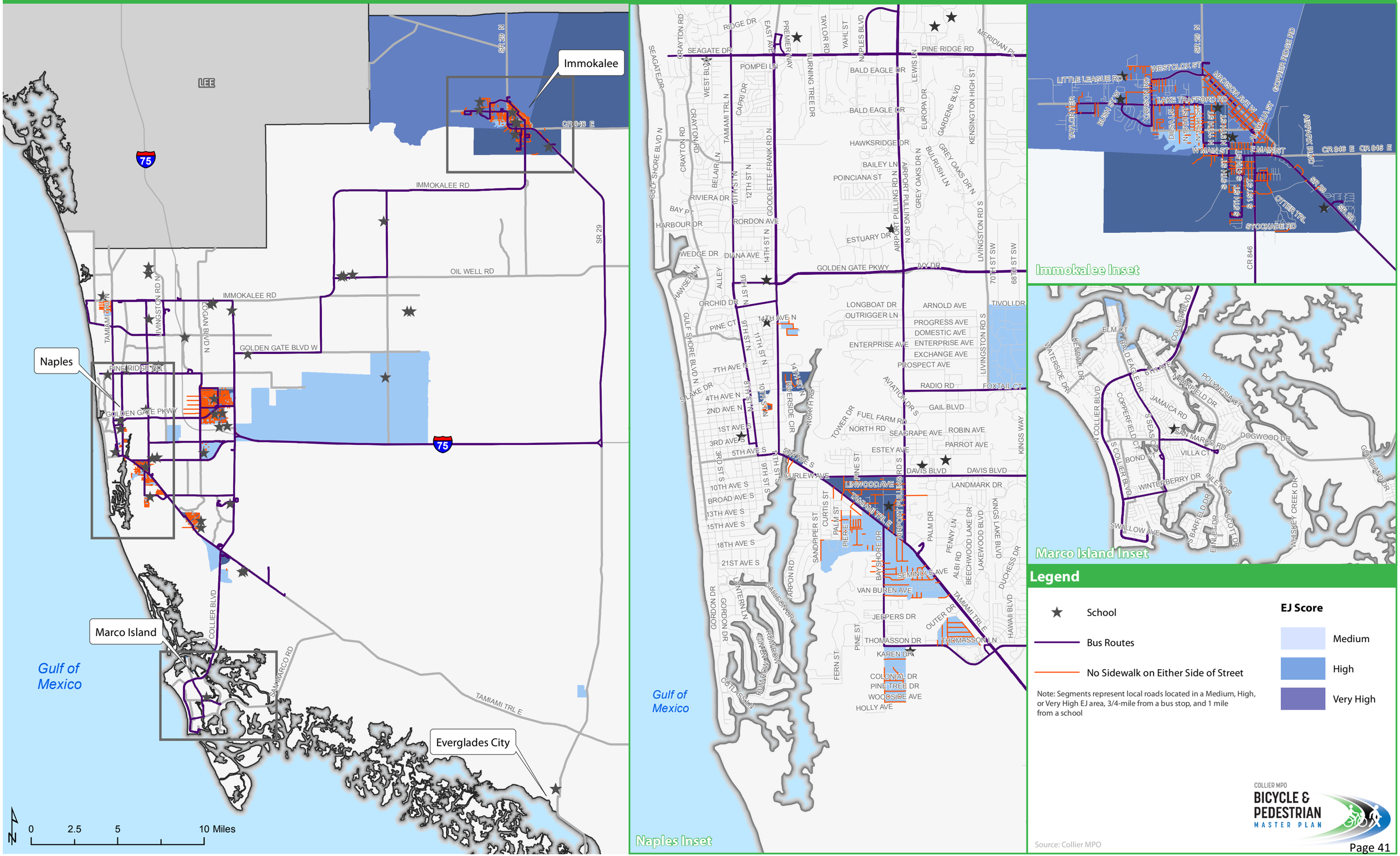
- Medium
- High
- Very High

Note: Segments represent local roads 1 mile from a school

Source: Collier MPO

COLLIER MPO BICYCLE & PEDESTRIAN MASTER PLAN

Figure 20: Sidewalk Segments - Transit and School Proximity and EJ



Marco Island Bike Path Master Plan

Date Saved: 3/13/2019 11:02:28 AM

Document Path: H:\Projects\Tim Pinter\Marco Island Bike Path Master Plan Update March 2019.mxd

Naples

The City of Naples' Five-Year Goals and Objectives for Priority Bicycle Pathways are shown in Table 12. The Naples 2013 Pedestrian and Bicycle Master Plan includes a list (see Figure 22) of priority sidewalk projects. They are not individually ranked; however, the City selects locations to install sidewalks from this list. The first four projects on the list have been constructed or programmed to be built. Future updates to the City of Naples Pedestrian and Bicycle Master Plan and/or bicycle and pedestrian facility priority lists are automatically incorporated into this Plan by reference.

Table 12. Naples Priority Bicycle Pathways – Five-Year Goals & Objectives

Location	From	To	Project Description	Cost
Gulf Shore Blvd	Mooring Line Dr	20th Ave S	Sharrow designation (with resurfacing)	$ 5,000
Crayton Rd	Seagate Dr	Neapolitan Way	Sharrow designation (with resurfacing)	$ 2,500
14th Ave N	US41	Goodlette-Frank	Sharrow designation	$ 5,000
Fleishman Blvd	US41	Goodlette-Frank	8'-12' multiuse pathway on south side	$ 70,000
Central Ave	10th St	Riverside Cl	Designate bike lanes with future CRA streetscape improvements	n/a
Central Ave	6th St	8th St	Designate bike lanes with resurfacing	$ 3,500
3rd Ave S	US41	10th St	Designate bike lanes with resurfacing	$ 3,500
Total Cost				$ 89,500

Figure 22 – Naples Priority Sidewalk Projects

Sidewalk on Residential Streets with support to include in Master Plan Update		
SEGMENT (Side)	**FROM**	**TO**
Old Trail Drive (North)	Park Shore Dr	Belair Lane
FPL Easement Pathway Trail	6th Avenue North	7th Avenue North
6th Avenue North (North)	10th Street North	FPL Easement Pathway
South Golf Drive (North)	Gulf Shore Blvd	US41
1st Avenue South (Both)	10th Street South	Goodlette
13th Avenue South (South)	3rd Street South	Gordon Drive
2nd Avenue South (North)	Gulf Shore Blvd	3rd Street South
4th Avenue South (North)	5th Street South	6th Street South
4th Avenue South (North)	Gulf Shore Blvd	2nd Street South
7th Street North (East)	4th Avenue North	South Golf Drive
4th Street South (West)	Central Avenue	1st Avenue South
5th Street South (East)	1st Avenue South	4th Avenue South
6th Avenue South (North)	GSBS	West Lake Drive
7th Avenue South (North)	GSBS	West Lake Drive
8th Avenue South (North)	GSBS	3rd Street South
9th Avenue South (South)	GSBS	3rd Street South
10th Avenue South (North)	GSBS	3rd Street South
11th Avenue South (North)	GSBS	3rd Street South
13th Avenue South (North)	3rd Street South	Gordon Drive
14th Avenue South (South)	3rd Street South	Gordon Drive
15th Avenue South (North)	3rd Avenue South	GSBS
East Gordon Dr.(Riley Park Path)	18th Avenue South	21st Avenue South
12th Avenue North (South)	Goodlette Frank Rd.	US 41
12th Street North (Easement Req)	3rd Avenue North	12th Street North
3rd Avenue North (Easement Req	12th Street North	Goodlette Frank Rd.
12th Street South (East)	Central Avenue	1st Avenue South
Riverside Circle (South)	Goodlette-Frank Rd	Dog Park & Future Greenway
Mandarin Drive (West)	Banyan Blvd.	Orchid Drive
Pine Street (North)	Mandarin Drive	Banyan Blvd.
11th Avenue South (North)	5th Street South	6th Street South
4th St South (Both)	8th Avenue South	10th Avenue South
5th St South (Both)	9th Avenue South	11th Avenue South
6th St South (Both)	9th Avenue South	10th Avenue South
West Lake Drive (East)	7th Avenue South	8th Avenue South
East Lake Drive (Both)	5th Avenue South	8th Avenue South

Project Costs

Routine resurfacing and infrastructure projects represent some of the best and least expensive opportunities to add bicycle lanes and other facilities. Roads are restriped after being resurfaced, so the additional cost to include bike lanes when restriping is minimal. A paved bike lane may be added, or a paved shoulder may be converted to a bike lane as part of a roadway reconstruction project. Costs for construction will be impacted by the unique circumstances of each site, but generalized costs can be helpful when considering projects. Details such as drainage issues and right-of-way availability have not been confirmed as part of this study and would need to be identified during feasibility. Project costs have been estimated at a planning level. A more detailed engineer's estimate would be required for submission of a project for prioritization consideration.

There are a number of ways to fill sidewalk gaps, depending on the agency—during a resurfacing project or when a parcel is developed. Another option is to group a number of proximate sidewalk gaps into a "bundle" of projects to gain some efficiencies of scale. The rebuilding of infrastructure, whether it be sub-surface utility work or adding lanes, also provides an opportunity to add both bicycle and pedestrian facilities. Safe Routes to School funding is limited to gaps in walking infrastructure within two miles of middle schools, and applications for those projects are independent of roadway reconstruction.

The cost per mile estimates shown in Table 13 are based on the FDOT District 1 Long Range Estimates (last updated in 2018). It's important to note that these costs are for new construction. For stand-alone projects that are retrofits on existing roadways, the costs are likely to double, or even quadruple, depending on available right-of-way, encroachments, drainage issues, the need to move or restore utilities, and other site conditions.

Table 13. Component Costs for Bicycle and Pedestrian Projects[15][16]

Component	Cost
Bicycle Lane or Road Shoulders per Mile (5' width, 2 sides) (2)	$532,000
Sidewalks per mile (5' width, 1 side)	$154,000
Shared Use Trail per mile (12' width)	$286,000

Table 14 shows order of magnitude costs for constructing different combinations of bicycle and pedestrian facilities on the road segments identified as meriting Proposed Enhanced Facilities (see Figure 17, page 37.)

Table 14- Cost of Proposed Enhanced Facilities by Mileage Totals *(Based on Table 13 and various combinations of facilities described in Ch 6 Design Guidelines from most to least expensive.)*

Component	Mileage/number	Cost Per Mile	Cost
Shared use paths and bike lanes on both sides of roadway	122	$1,104,000	$135 million
Bicycle lanes on both sides, shared use path on one side, sidewalk on the other	122	$972,000	$119 million
Bicycle lanes and sidewalks on both sides of roadway	122	$840,000	$103 million
Bicycle lanes on both sides; shared use path on one side	122	$818,000	$100 million
Bike lanes on both sides, sidewalk on one side	122	$686,000	$ 84 million

15 FDOT D1 Long Range Estimates (LRE) last updated 2018 (rounded to nearest $1,000).

16 MPO staff approximation based on cost per vehicle lane miles new construction, rural setting

CHAPTER 6 – BICYCLE AND PEDESTRIAN FACILITY DESIGN GUIDELINES

Bicycle and pedestrian facility design is constantly evolving. Past guidance provided by organizations such as the American Association of State Highway and Transportation Officials (AASHTO) and the National Association of City Transportation Officials (NACTO) focused on providing on-street bicycle facilities for experienced and confident riders rather than off-street SUPs that less-accomplished cyclists preferred. This guidance has resulted in bicycle lanes being included in the design and construction of roadways for more than two decades. In the last 10 years, however, an increasing number of people have begun riding, and research indicates that most people need more than the standard 4-ft bike lane to feel comfortable riding.

Level of Comfort and Facility Type – Designing for All Ages & Abilities

Due to the strong correlation between comfort and facility type, communities around the US are developing bicycle networks that also support more casual cyclists who may be interested in riding but are intimidated by sharing the road with vehicles. Building facilities that are more protected will expand the number and types of users to include those who are less expert and feel less safe riding in or adjacent to vehicular travel lanes.

The NACTO publication titled *Designing for All Ages & Abilities-Contextual Guidance for High-Comfort Bicycle Facilities* (December 2017) (Figure 23) builds on NACTO's *Urban Bikeway Design Guide* and establishes All Ages & Abilities criteria for selecting and implementing bike facilities. According to NACTO, "Building bicycle infrastructure that meets these criteria is an essential strategy for cities seeking to improve traffic safety, reduce congestion, improve air quality and public health, provide better and more equitable access to jobs and opportunities, and bolster local economies."

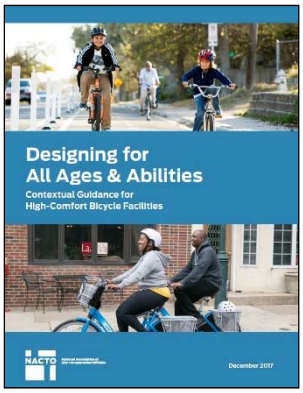


Figure 23. Designing for All Ages and Abilities

The All Ages & Abilities facility selection guidance is focused on urban street types and considers factors such as vehicular speeds and volumes, operational uses, and what NACTO terms "bicycling stress"—the level of comfort or discomfort cyclists of all ages and abilities feel riding alongside vehicular traffic. The guidance indicates when traffic calming tools, such as speed reduction and volume management, may be needed in addition to roadway design changes, such as full lane separation, to reduce traffic fatalities and increase cycling rates and rider comfort.

The box on the next page defines the terms used by NACTO to describe how bicycle facilities meet the needs of riders of all ages and abilities, increase cycling rates and rider comfort.

NACTO has also developed contextual guidance for selecting the most appropriate type of bicycle facility to meet the needs of riders of all ages and abilities (Figure 24).

88% of survey respondents said there are places they want to ride in Collier County but do not because they feel unsafe.

In keeping with the general trends reported around the country, the online survey developed to capture input for this Plan found that although many people ride and walk, feeling unsafe is the primary reason reported by those who do not ride often. In total, 88% of survey respondents said there are

places they want to ride in Collier County but do not because they feel unsafe. Comfort and safety are the primary motivators for people who ride by choice. The analysis of safety crash data (Chapter 2) shows that areas of high use for walking and cycling coincide with a high number of vehicular crashes. Residents who rely on these modes to meet daily transportation needs are particularly at risk.

All Ages & Abilities Bike Facilities are ...

Safe	Comfortable	Equitable
More people will bicycle when they have safe places to ride, and more riders mean safer streets. Among seven NACTO cities that grew the lane mileage of their bikeway networks 50% between 2007–2014, ridership more than doubled while risk of death and serious injury to people biking was halved.[6] Better bicycle facilities are directly correlated with increased safety for people walking and driving as well. Data from New York City showed that adding protected bike lanes to streets reduced injury crashes for all road users by 40% over four years.[7]	Bikeways that provide comfortable, low-stress bicycling conditions can achieve widespread growth in mode share. Among adults in the US, only 6–10% of people generally feel comfortable riding in mixed traffic or painted bike lanes.[8] However, nearly two-thirds of the adult population may be interested in riding more often, given better places to ride, and as many as 81% of those would ride in protected bike lanes.[9] Bikeways that eliminate stress will attract traditionally under-represented bicyclists, including women, children, and seniors.	High-quality bikeways expand opportunities to ride and encourage safe riding. Poor or inadequate infrastructure—which has disproportionately impacted low-income communities and communities of color—forces people bicycling to choose between feeling safe and following the rules of the road, and induces wrong-way and sidewalk riding. Where street design provides safe places to ride and manages motor vehicle driver behavior, unsafe bicycling decisions disappear,[11] making ordinary riding safe and legal and reaching more riders.

Figure 24. NACTO Guidance for Selecting Appropriate Bicycle Facilities

Contextual Guidance for Selecting All Ages & Abilities Bikeways

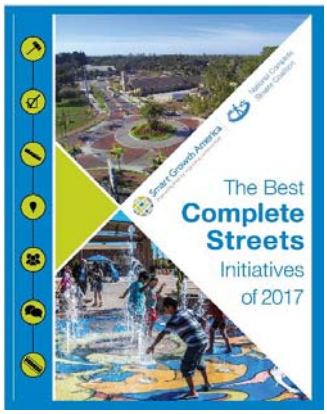
Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor Vehicle Speed*	Target Max. Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	
Any		*Any*	*Any of the following:* high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts‡	**Protected Bicycle Lane**
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	**Shared Street**
≤ 20 mph	≤ 1,000 – 2,000		< 50 motor vehicles per hour in the peak direction at peak hour	**Bicycle Boulevard**
≤ 25 mph	≤ 500 – 1,500			
	≤ 1,500 – 3,000	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	**Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane**
	≤ 3,000 – 6,000			**Buffered or Protected Bicycle Lane**
	Greater than 6,000			**Protected Bicycle Lane**
	Any	Multiple lanes per direction		
Greater than 26 mph†	≤ 6,000	Single lane each direction	Low curbside activity, or low congestion pressure	**Protected Bicycle Lane, or Reduce Speed**
		Multiple lanes per direction		**Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed**
	Greater than 6,000	*Any*	*Any*	**Protected Bicycle Lane, or Bicycle Path**
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		*Any*	High pedestrian volume	**Bike Path with Separate Walkway or Protected Bicycle Lane**
			Low pedestrian volume	**Shared-Use Path or Protected Bicycle Lane**

* While posted or 85th percentile motor vehicle speed are commonly used design speed targets, 95th percentile speed captures high-end speeding, which causes greater stress to bicyclists and more frequent passing events. Setting target speed based on this threshold results in a higher level of bicycling comfort for the full range of riders.

† Setting 25 mph as a motor vehicle speed threshold for providing protected bikeways is consistent with many cities' traffic safety and Vision Zero policies. However, some cities use a 30 mph posted speed as a threshold for protected bikeways, consistent with providing Level of Traffic Stress level 2 (LTS 2) that can effectively reduce stress and accommodate more types of riders.[18]

‡ Operational factors that lead to bikeway conflicts are reasons to provide protected bike lanes regardless of motor vehicle speed and volume.

FDOT Guidance



Two FDOT publications, the *Florida Greenbook* and the *Florida Design Manual,* provide essential design guidelines to follow when seeking State and federal transportation funding for local projects. The MPO values FDOT's design guidance for reasons that go beyond funding considerations—FDOT has nationally-recognized expertise in integrating the concept of Complete Streets into FDOT practices. Smart Growth America identified the *Florida Design Manual* as one of the 12 best Complete Streets Initiatives of 2017. FDOT design guidance takes into consideration the 2010 ADA Standards for Accessible Design and the US Department of Transportation 2006 ADA Standards for Transportation Facilities.

The *Manual of Uniform Minimum Standards for Design, Construction and Maintenance (Florida Greenbook*) provides criteria for public streets, roads, highways, bridges, sidewalks, curbs and curb ramps, crosswalks, bicycle facilities, underpasses and overpasses used by the public for vehicular and pedestrian travel. The current (2016) *Florida Greenbook* became effective on June 19, 2017. The current version of the *Florida Design Manual* (January 2018) includes design criteria for pedestrian and bicycle facilities that are linked to the Context Classification System developed by FDOT.

Florida Design Manual, Context Classification and Complete Streets[17]

FDOT adopted a Complete Streets Policy in 2014 that accommodates all users along the State roadway system. In August 2017, FDOT published guidance on Context Classification, which states,

> FDOT will routinely plan, design, construct, reconstruct and operate a context-sensitive system of Complete Streets. To this end, a context classification system comprising eight context classifications has been adopted. The context classification of a roadway, together with its transportation characteristics, will provide information about who the users are along the roadway, the regional and local travel demand of the roadway, and the challenges and opportunities of each roadway user. The context classification and transportation characteristics of a roadway will determine key design criteria for all non-limited-access State roadways.

Although counties typically follow the *Florida Green Book*, it has not yet been updated to match the *Florida Design Manual*, which sets the design criteria for State roads. The two resources, while separate, are coordinated in their approach to developing a transportation system that serves all users. To better serve the different users of the system, FDOT developed a Context Classification methodology that, according to infrastructure and land use, assigns a context that reflects where the roadway is in the land development continuum, as shown in Figure 25. This continuum ranges from undeveloped conservation land to the most urban downtowns. By analyzing land use, FDOT determined the facilities that are most appropriate for where they are located. It is FDOT policy that roadways in all counties be classified before or when work is anticipated to assist in the determination of what facilities to include.

[17] Additional information can be found at http://flcompletestreets.com or at http://fdot.gov/roadway/fdm/.

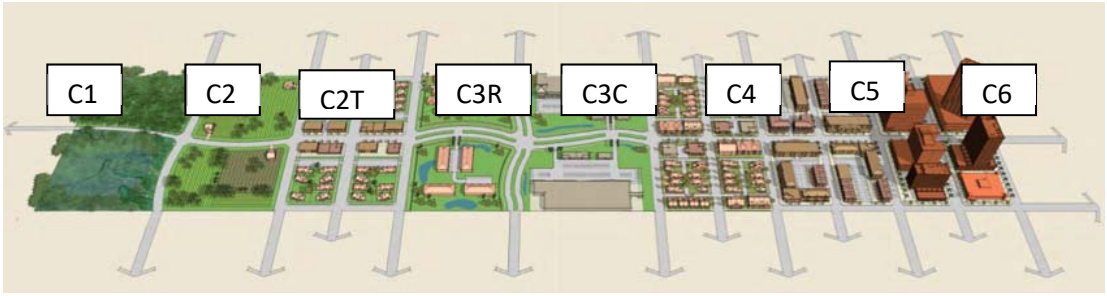


Figure 25. Illustration of FDOT Context Classification System

FDOT Guidance on Pedestrian Facilities

Table 15 identifies sidewalk facilities by FDOT Context Classification.

Table 15. FDOT Context Classification Guidance for Sidewalks

Context	Allowable Range (mph)	SIS Minimum (mph)	Sidewalk
C1 Natural	55-70	65	5' sidewalk if demand warrants
C2 Rural	55-70	65	5' sidewalk if demand warrants
C2T Rural Town	25-45	40 (35 with design elements)	6' sidewalk
C3R Suburban Residential	35-55	50 (45 with curb)	6' sidewalk
C3C Suburban Commercial			6' sidewalk if demand warrants
C4 Urban General	30-45	45	6' sidewalk
C5 Urban Center	25-35	35	10' sidewalk
C6 Urban Core	25-30	30	12' sidewalk

Notes: 1) C2T, C3, C4 sidewalk may be increased to 8' with demand; 2) C5 and C6 should be maximum width possible, not less than 6'; 3) For RRR projects, 4' sidewalk may be retained.

Crosswalks

According to the *Florida Design Manual* (FDM), Special Emphasis Crosswalk markings should be used at signalized intersections, roundabouts, and midblock crosswalks. Midblock crosswalks should be illuminated, marked, and signed in accordance with the *Manual of Uniform Traffic Control Devices* (MUTCD), *Traffic Engineering Manual* (TEM), and FDM. An engineering study supporting the need for the installation is required before a midblock crosswalk can be placed on a State roadway.

Standard crosswalk markings should be used for stop or yield-controlled intersections. When separated right-turn lanes are used, crosswalks should be placed so that an approaching motorist has a clear view of the pedestrian, and the crossing distance is minimized. School Zone crosswalks have additional criteria for signing and pavement markings (see *Manual on Speed Zoning for Highways, Roads, and Streets in Florida*, Chapter 15). The FDM advises that, as roadway volumes, speeds, and number of travel lanes increase, marked crosswalks are best used in conjunction with other treatments, e.g., signals, signs, beacons, curb extensions, raised medians, refuge islands, and enhanced overhead lighting.

Bicycle Facilities

Table 16 identifies bicycle facilities by FDOT Context Classification. It is important to note that the vision or community intent for a corridor is a factor that FDOT considers when it designs a facility, and coordination between agencies is critical to the final result. Bicycle lanes are a portion of a roadway designated for the preferential or exclusive use of bicyclists. Bike lanes are designated by a bicycle symbol pavement marking and signage in accordance with *Standard Plans* and MUTCD.

According to the FDM, bicycle lanes are the preferred bicycle facility type on curbed roadways with a design speed of ≤ 45 mph. For new construction projects, a 7' buffered bicycle lane is the standard. A buffered bicycle lane has a separated, double 6" white edge line separating the bike lane and the adjacent travel lane. For projects where a bike lane is needed, but it is not practical to move the existing curb, the width of the bicycle lane depends on the width of available roadway pavement. The options in the order of priority are:

- 7-ft buffered bicycle lane
- 6-ft buffered bicycle lane
- 5-ft bicycle lane
- 4-ft bicycle lane
- Do not provide a bike lane when available roadway pavement is less than 4 ft

Table 16. FDOT Context Classification Guidance for Bicycle Facilities

Context	Allowable Range (mph)	SIS Minimum (mph)	Bicycle Facility
C1 Natural	55-70	65	Unmarked paved shoulder or Shared Use Path
C2 Rural	55-70	65	Unmarked paved shoulder or Shared Use Path
C2T Rural Town	25-45	40 (35 with design elements)	Marked bicycle lane
C3R Suburban Residential	35-55	50 (45 with curb)	Marked bicycle lane when speed is ≤ 45pmh and Shared Use Path not present or Shared Use Path
C3C Suburban Commercial	35-55	50 (45 with curb)	Marked bicycle lane when speed is ≤ 45pmh and Shared Use Path is not present or Shared Use Path
C4 Urban General	30-45	45	Buffered bike lanes when posted speed is ≤ 45pmh. Facility options, in decreasing order of priority are 7'-buffered bike lane, 6'-buffered bike lane, 5' bicycle lane, 4' bicycle lane
C5 Urban Center	25-35	35	Buffered bike lanes when posted speed is ≤ 45pmh. Facility options, in decreasing order of priority are, 7'-buffered bike lane, 6'-buffered bike lane, 5' bicycle lane, 4' bicycle lane
C6 Urban Core	25-30	30	Buffered bike lanes when posted speed is ≤ 45pmh. Facility options, in decreasing order of priority are, 7'-buffered bike lane, 6'-buffered bike lane, 5' bicycle lane, 4' bicycle lane

Illustrated Guide to Bicycle and Pedestrian Facilities

On-Road Bicycle Facilities

Several different types of on-road bicycle facilities make use of the current roadway network by working between existing curbs; they can enhance the off-road network by connecting parks and trails and creating transportation opportunities and accommodating different categories of users. They also tend to be less expensive to build and may be able to be implemented with a resurfacing project. Increasingly, as noted, research is showing that the more protection bicyclists have from vehicles, the more comfortable they feel, and the more people ride. Following are facility types, from least to most protected or comfortable, and a discussion of where they should be considered for construction.

Paved Shoulders

Paved shoulders (Figure 26) are commonly used on rural roads that provide a separated space for bicyclists but are not marked as a bicycle facility. The minimum shoulder width is 4', but on high-speed roadways or roadways with many bicycle users, wider shoulders are recommended.

Figure 26. Paved Shoulder

Audible Pavement Markings

This is an enhanced paved shoulder, primarily used along rural roads. Many cyclists report feeling unsafe on a standard paved shoulder, especially when adjacent to high-speed traffic or high volumes of trucks. FDOT has developed audible pavement markings to buffer bike lanes on high-speed rural roads. The audible pavement markings act like a rumble strip, providing additional separation between vehicles, and require only a modest increase in shoulder width (Figure 27).

Figure 27. Audible Pavement Marking

Bike Lanes

Bike lanes (Figure 28) are spaces dedicated to bicycle travel on roadways. They are a minimum of 4-ft-wide if no curb and gutter, and 5-ft wide if included. Typical users are those who are comfortable riding with traffic and who represent a small segment of the bicycle-riding community. This facility type should be the minimum considered during roadway resurfacing projects and can be used to make connections between s. Bike lanes are not considered a preferred facility type for developing a community-friendly Shared Use Path system.

Figure 28. Marked Bicycle Lane

Buffered Bike Lanes

Buffered bike lanes (Figure 29) are spaces dedicated to bicycle travel on roadways and are 6- to 7-ft wide with a painted buffer to provide extra space between bicyclists and adjacent vehicles. These facilities provide an additional degree of comfort to bicyclists and should be considered for all new roads being constructed in Collier County, particularly where higher volumes of bicycle traffic are anticipated.

Figure 29. Buffered Bicycle Lane

Separated Bicycle Lanes and Cycle Tracks

Separated bicycle lanes/cycle tracks are on-road facilities that include a traffic separator and dedicated space for bicyclists. They can be one- or two-way depending on the need or the roadway condition. Figure 30 depicts a two-way cycle track. Separated bicycle lanes can often be constructed between existing curbs if the roadway has excess capacity. In urban areas, this type of facility can provide a high level of comfort for bicyclists (similar to a Shared Use Path) and decrease the number of bicycle crashes. Design care must be taken at intersections and driveways. Adding this type of facility has also been shown to increase ridership.[18]

Figure 30. Cycle Track

[18] "Lessons from the Green Lanes: Evaluating Protected Bike Lanes in the US," Transportation Research Board, RIP #32182, June 30, 2014.

Green Bike Lanes

Green paint can be applied to bike lanes in areas of potential conflict where motorists must cross the bike lane to turn or to exit a parking area. Green paint is considered a traffic control device and, after receiving approval (Interim Approval 14) is subject to guidance in the Manual on Uniform Traffic Control Devices (MUTCD). See Figure 31.

Figure 31. Green Bicycle Lane Central Avenue, Naples

Advisory Bike Lane

An advisory bike lane is used on low-speed roadways where there is not enough room for both bike lanes and travel lanes. These markings communicate to both bicyclists and motorists where to ride while also communicating to motorists that they can pass when there is room (Figure 32).

Figure 32. Advisory Bike Lane

Advisory Shoulder

Advisory shoulders (Figure 33) may be used on roads where it is not possible to construct a traditional shoulder. Using paint, space is designated for pedestrians within the travel lane; a dashed line is used to delineate the space may be crossed by motorists if the way is clear. Considered an innovative facility type by FHWA, an approved Request to Experiment is required to implement this facility on federally-funded projects. Additional information can be found in FHWA's *Small Town and Rural Multimodal Networks.*

Figure 33. Advisory Shoulder

Two-Stage Queue Box

A two-stage queue box (Figure 34) allows bicyclists to more easily make a left turn. Rather than having to move into a turn lane to make a left turn, the turn box allows bicyclists to proceed across the intersection and position themselves to cross the intersection with the signal. It received FHWA Interim Approval IA-20 in 2017.

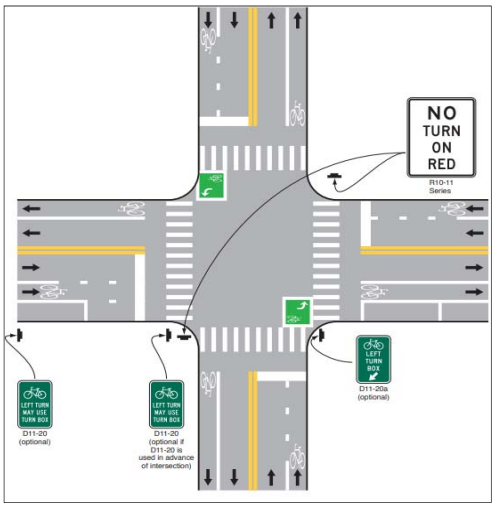


Figure 34. Two-Stage Queue Box

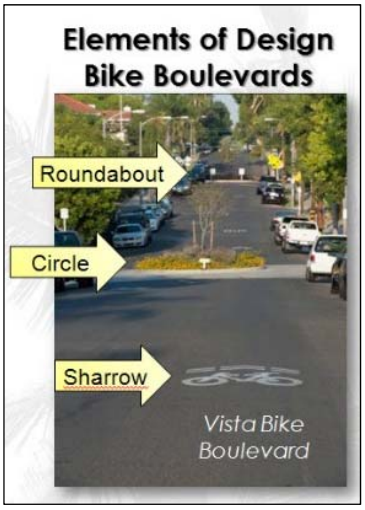


Figure 35. Bicycle Boulevard

Bicycle Boulevard

A bicycle boulevard (Figure 35) is a low-volume, low-speed street designed to give bicycles priority, typically achieved by a combination of signage and infrastructure. Also called neighborhood greenways, bicycle boulevards generally provide convenient access to local destinations and often connect or go through neighborhoods.

Off-Road Bicycle & Shared-Use Facilities on Independent Rights-of-Way

Shared Use Paths on Independent Rights-of-Way

AASHTO defines a Shared Use Path on an independent right-of-way as a facility that provides a separated path for nonmotorized users to supplement the on-road network. It may be used for recreation or transportation purposes and falls under the accessibility requirements of the ADA (Figure 36).

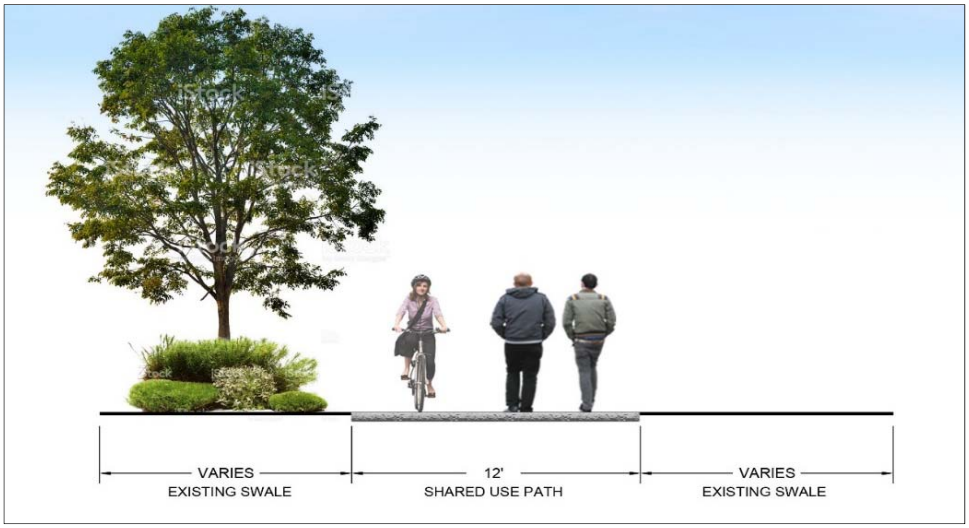


Figure 36. Cross-Section

Sidepaths

AASHTO defines a sidepath (Figure 37) as a Shared Use Path immediately adjacent or parallel to a roadway and lists 10 reasons why using a sidewalk as a Shared Use Path or providing a sidepath is undesirable:

Figure 37. US-41

Sidewalks on US-41 between the 5th Avenue and 9th Street intersection and Airport Road are heavily used by cyclists, often riding against traffic. They are a good example of a situation to be strenuously avoided in new and retrofit designs.

- Conflicts at intersections and driveways; motorists often do not notice bicyclists approaching from the right because they do not expect wheeled traffic from this direction.
- Bicyclists are apt to cross intersections and driveways at unexpected speeds that are significantly faster than pedestrian speeds.
- Drivers often pull forward to get an unobstructed view of traffic, in doing so they block the sidepath crossing.
- Attempts to require bicyclists to yield or stop at each cross-street or driveway are inappropriate and ineffective
- When a sidepath is provided on just one side of the road, it tends to produce wrong-way travel by bicyclists when a sidepath. Wrong-way travel may also result when a sidepath abruptly ends. Wrong-way travel by cyclists is a common factor in bicycle-automobile crashes; a two-way sidepath on one side of the road may need additional road crossings to provide safe access.
- Signs and traffic signals posted for roadway users are backwards for contra-flow riders.
- Because of proximity of roadway traffic, barriers or railings are sometimes needed.
- Sidepath width may be constrained by fixed objects such as utility poles, mailboxes, etc. Eight feet is the minimum width for a sidewalk intended to accommodate bicyclists and pedestrians.
- Due to operational issues, some bicyclists will use the roadway instead of the sidepath; when this occurs, drivers may harass the cyclists, even though Florida does not have a law requiring cyclists to use a path if one is provided.
- When using a sidepath, bicyclists must yield to traffic twice instead of once when making a pedestrian style left turn thereby introducing unnecessary delay.

The sidepath on Airport Road adjacent to Naples Municipal Airport is a good example of a sidepath application that works due to the edge condition – the absence of multiple driveways and curb cuts.

Sidepaths (Figure 38) may be considered where one or more of the following conditions exist:

- If bicyclists cannot be accommodated on nearby parallel streets and a sidepath is the only practical alternative.

- The sidepath is used for a short distance to provide continuity between sections of path in independent rights-of-way, or to connect to local streets.
- The sidepath can be built with few roadway and driveway crossings.
- The sidepath can be terminated at each end onto streets that accommodate cyclists, onto another path, or in a location that is bicycle compatible.

Figure 38. Sidepath on Airport Road

Bicycle and Pedestrian Counters

Understanding bicycle and pedestrian usage is critical to properly plan and design bicycle and pedestrian facilities. Information on usage can help make the case to expand the system or improve facilities. The Collier MPO recently submitted a proposal, which was accepted, to be a participant in FDOT's Statewide Non-motorized Traffic Monitoring Program. FDOT has looked at two candidate sites for installing permanent bicycle and pedestrian counters, and it is possible that both sites will be approved:

- County-owned and maintained bicycle/pedestrian bridge over the Gordon River on the Gordon River Greenway
- City of Naples-owned and maintained bicycle/pedestrian bridge connecting Baker Park to the west side of the Gordon River/Naples Bay

FDOT will share the count data gathered at these sites with participating agencies and use the data to calibrate bicycle and pedestrian trip data assumptions statewide.

Cycling Facility Crossings on Major Roadways

Walkers and bicycle riders are especially vulnerable as they cross a roadway, whether at an intersection or at a Shared Use Path or a sidewalk that is functioning as a sidepath and road crossing. Several engineering design techniques are available to help minimize the risks. Crossing features for both pedestrian and bicycle infrastructure are discussed below.

Two primary challenges for bicyclists are the speed differential between vehicles and bicyclists and sight distance, which is related to speed. Designing intersections that give bicyclists and vehicle operators enough time to react to each other is crucial to minimizing the opportunities for crashes. Several design tools are available to help all users navigate intersections, as described below.

Because each crossing is unique, the specific geometry and location will factor into the design of each intersection. It is important to note that circumstances of use may change over time; this should trigger a review and modification as needed at certain intersections. If, for example, a bicycle lane, Shared Use Path, or sidewalk has a higher volume of users than might have been anticipated, it is recommended that the road crossings be reviewed. It is also important to consider changes to surrounding land use. A crash trend or

higher-than-projected volumes for either vehicles or bicyclists may require the need to redesign the crossing to address the challenges.

Pedestrian Safety Countermeasures

FHWA is promoting a number of pedestrian safety countermeasures through its Every Day Counts (EDC-4) program:[19]

- Road diets can reduce vehicle speeds and the number of lanes pedestrians cross and can create space to add new pedestrian facilities.
- Pedestrian hybrid beacons (PHBs) are a beneficial intermediate option between Rectangular Rapid Flashing Beacons (RRFBs) and a full pedestrian signal. They provide positive stop control in areas without the high pedestrian traffic volumes that typically warrant signal installation.
- Pedestrian refuge islands allow pedestrians a safe place to stop at the midpoint of the roadway midpoint before crossing the remaining distance. This is particularly helpful for older pedestrians or others with limited mobility.
- Raised crosswalks can reduce vehicle speeds.
- Crosswalk visibility enhancements, such as crosswalk lighting and enhanced signing and marking, help drivers detect pedestrians—particularly at night.

Enhanced At-Grade Crossing or Signalized Crossing

Pedestrian Hybrid Beacon

A Pedestrian Hybrid Beacon (Figure 39) is a pedestrian-activated traffic control device that is dark to motorists until activated by a pedestrian, at which time a flashing yellow light followed by a solid red light is provided to motorists to direct them to stop. The solid red advances to a flashing red that allows motorists to proceed with caution once the pedestrian has cleared the crossing).

Figure 39. Pedestrian Hybrid Beacon

[19] https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/step.cfm.

Rectangular Rapid Flashing Beacon (RRFB)

A RRFB (Figure 40) is a traffic control device consisting of two rapidly and alternately flashing rectangular yellow indications with an LED array that functions as a warning beacon. This device has Interim Approval through FHWA for use at unmarked crosswalks.

Figure 40. Rectangular Rapid Flashing Beacon (RRFB)

Mid-Block Crosswalks

Crosswalks provide critical clarification at intersections. In mid-block locations, the design of the crosswalk is particularly critical to identify a safe space for bicyclists and pedestrians to cross and heighten the visibility of users of the crossing. The design of a crosswalk should depend on the facility type, location, adjacent street function, surrounding land use, and level of potential conflict.

The Small Town and Rural Design Guide has identified several factors that can be included to make a crossing safer, including median islands, raised crossings, and crosswalk markings (Figure 41). NACTO's *Bikeway Design Guide* has also identified a number of crosswalk designs that can be implemented depending on context. Features highlighted in the guide include green paint in the intersection and "elephant tracks" or wider white striping along the outside of the intersection. It is recommended that each intersection or crossing be designed for the context, including the features that would provide the most clarity for all users of the crossing.

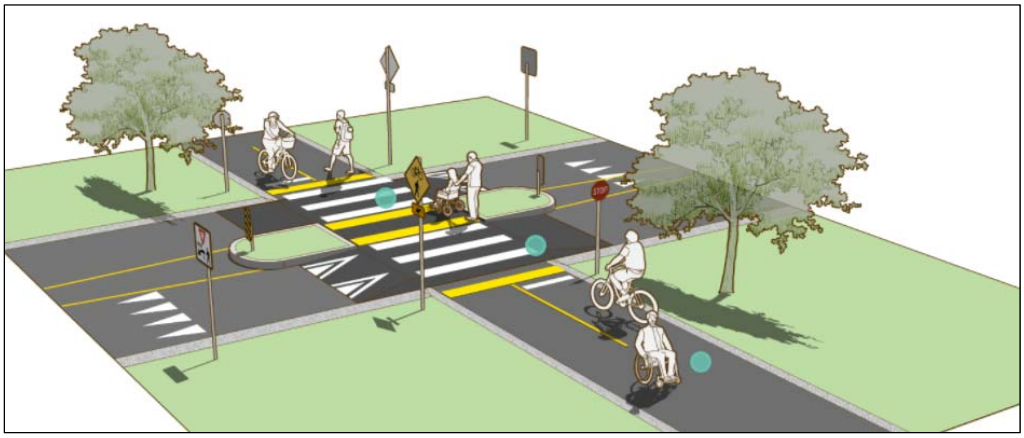


Figure 41. Shared Use Path Crossing

Source: FHWA Small Town and Rural Design Guide

Overpasses and Underpasses

Overpasses and underpasses could be considered in locations where traffic volumes and speeds are too high to manage with an at-grade crossing, such as multi-lane highway crossings. In some instances, based on usage volume, it may be appropriate to consider the construction of an overpass as part of a long-term plan for the bicycle and pedestrian network. Overpasses and underpasses present their own design challenges, however, and require a great deal of study prior to making the determination that they are the preferred roadway crossing solution.

Wayfinding

Wayfinding is an important component of a bicycle network and can be defined as:

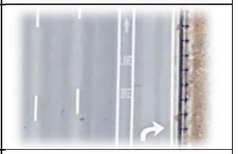
> … a system [that consists] of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes. (*NACTO Urban Bikeway Design Guide*)

The Collier MPO has areas that would benefit from signage that informs bicycle riders in the same way roadway signage informs motorists. Although cell phones have put maps and information at rider fingertips, signage creates confidence in the route being traveled and can quickly and conveniently convey directions and distance. Established local signage plans are helpful when riding in defined areas. Signage can also be used to help 'bridge the gap' between Shared Use Paths and on-street facilities, telling users how to get to a Shared Use Path or a destination.

Summary Chart and Illustrative Cross Sections

The design guide lines summarized in Table 17 are customized to fit the characteristics of the Collier MPO's road network and consider established land uses, development patterns, and form-giving environmental conditions such as canals, drainageways, and protected conservation lands. The MPO Design Guidelines account for the fact that major arterials located in high growth areas in Collier County exhibit current Average Daily Traffic (ADT) that far exceeds the levels envisioned in the source manuals referenced at the beginning of this chapter. Figures 42–46 show illustrative cross-sections based on roadway characteristics with an emphasis on bicycle and pedestrian facilities. The following chapter on Policy and Implementation provides additional guidance.

for All Ages & Abilities

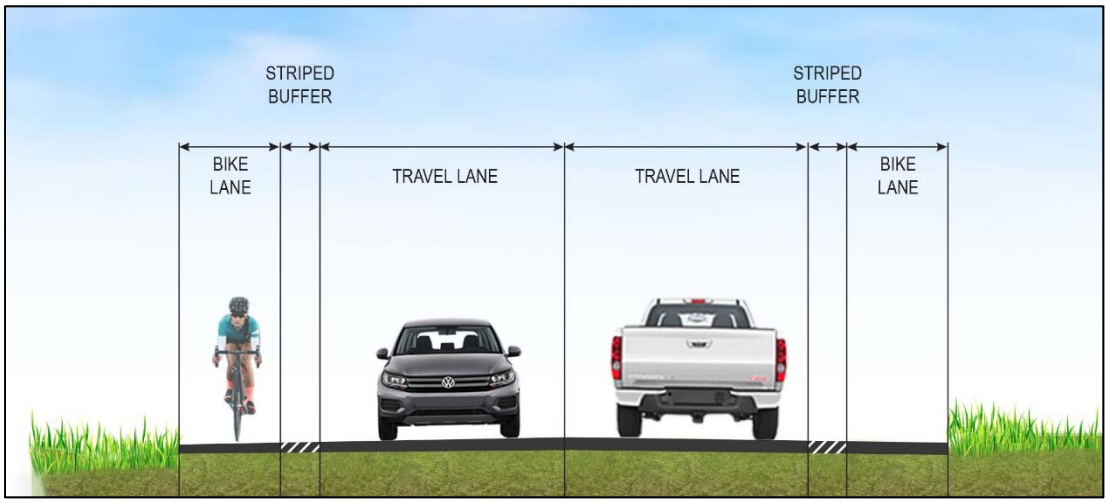
Federal/FDOT Roadway Functional Classification	Roadway Description	Motor Vehicle Posted Speed	Target Maximum Motor Vehicle Volume in (ADT)	Number of Vehicular Lanes	Type of Bikeway	Minimum Bikeway Width	Minimum Sidewalk Width	Photos
unclassified (i.e. residential or "local" roads) - urban and rural settings	Minor, low volume roads	up to 25 mph	up to 1,000	2-lanes (1 in each direction)	Shared lanes, marked (sharrows) or unmarked	N/A	5' in residential areas	
unclassified (i.e. residential or "local" roads) - urban and rural settings	Local, low volume, low speed roads	up to 25 mph	over 1,000 up to 3,000	2-lanes (1 in each direction)	Bicycle Boulevards	N/A	5' in residential areas	
Collectors and Arterials with Severely Constrained ROW	Lower volume, moderate speed, major roads with space constraints	26 to 35 mph	over 3,000 up to 6,000	2-4 lanes (1-2 in each direction)	on roads serving residential land uses, reducing road pavement width may be a traffic calming measure: 10' lanes with 2' shoulder fits context; in mixed-use or commercial areas, a wide, shared-use outside lane marked with "sharrows" fits context	10' lane + 2' shoulder; or 14' outside lane	6'	
Collectors and Arterials with Moderately Constrained ROW	Moderate volume and speed, major roads with space constraints	26 to 35 mph	over 3,000 up to 6,000	2-4 lanes (1-2 in each direction)	Conventional, Marked Bike Lanes in urban setting; Paved Shoulders in rural settings	minimum 4' bike lane width; 5' adjacent to curbs, walls, guardrails, other fixed verticle objects)	6'	
Rural Highways (State Roads - US41 & SR29 are prime examples)	Low to Moderate volume, high speed and high commercial or RV traffic	45 to 60 mph	under 6,000	2-lanes (1 in each direction)	Wide, paved shoulders, Buffered bike lanes or Shared Use Paths; 8'-wide sidewalks may be substituted for Shared Use Paths on State roads; and on locally-owned roads on a case-by-case basis	min. 5'-wide paved shoulders, preferred 7' with 2' buffer or 11' SUP on one side; 7' shoulder width required if marked as a bike lane (FDM)	pedestrians use shoulders or SUP; if marked bike lanes, include signage - cyclists yield to peds	
Collectors and Arterials with higher speeds, higher volumes	Higher volume, higher speed, limited access, urban and rural highways	36 to 45 mph	over 6,000	2-4 lanes (1-2 in each direction)	Buffered Bike Lanes or Shared Use Paths (AASHTO & FDOT Greenbook); 8'-wide sidewalks may be substituted for Shared Use Paths on State roads; and on locally-owned roads on a case-by-case basis.	5' bike lane and 2' painted buffer (may include a rumble strip)	6' with minimum 5' wide planting strip; if adjacent to protected bike lane, can eliminate planting strip	
High volume, High speed Arterials with greater than 20% Commercial or Recreational Vehicular Traffic (only truck count data (not RV) available; RV use based on observation, not %)	High volume, high speed urban and rural highways	45 mph and greater	over 6,000	4-6 lanes (2-3 in each direction)	Protected Bike Lanes or Shared Use Paths (NACTO- All Ages & Abilities 26 mph and greater) - ***in places with low curbside activity;*** 8'-wide sidewalks may be substituted for Shared Use Paths on State roads; and on locally-owned roads on a case-by-case basis.	5' bike lane and sufficient width to provide curbed or other verticle separation	6' with minimum 5' wide planting strip; if adjacent to protected bike sidewalks on flush shoulder roadways should not be constructed directly adjacent to the roadway or shoulder pavement.	
Collectors and Arterials with limited access and sufficient ROW	Adjacent to roadways with no or very few intersections or driveways	45 mph and greater	over 6,000	4-6 lanes (2-3 in each direction)	Sidepath defined by AASHTO as a two-way Shared Use Path adjacent to roadways - ***in places with low curbside activity per NACTO;*** 8'-wide sidewalks may be substituted for Shared Use Paths on State roads; and on locally-owned roads on a case-by-case basis.	11' -AASHTO 12' - FDOT	N/A	
OFF ROAD FACILITIES	**Location**							
N/A - Facilities constructed outside of road ROW	Linear greenways typically within or adjacent to drainage and utility ROW	N/A	N/A	N/A	a two-way Shared Use Path in independent ROW	12'	N/A	

Illustrative Roadway Cross-Sections

The following illustrations of roadway cross-sections show MPO-recommended bicycle and pedestrian facilities on roadways having posted or target speeds of 40 mph and higher.

Figure 42. Two-Lane Rural Roadway

Buffered bike lanes on both sides of road; option to add audible pavement markings and green surface



*Note Applicable to Figures 43– 46: An 8' sidewalk meets minimum standards and may be substituted for on State roads, and on locally-owned roads where ROW is limited.

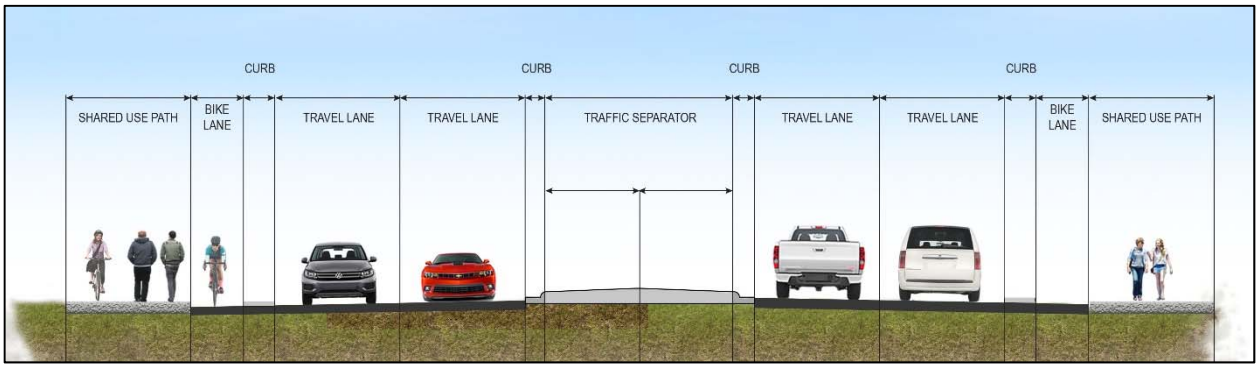


Figure 43. Multi-Lane Urban Roadway

Shared Use Path* and Protected Bike Lane on Both Sides

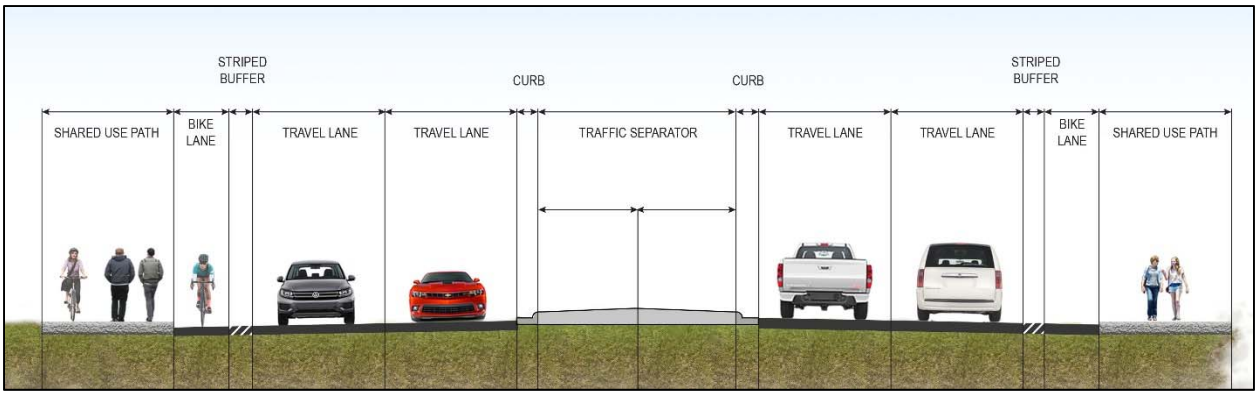


Figure 44. Multi-Lane Urban Roadway
Shared Use Path* and buffered bike lane on both sides

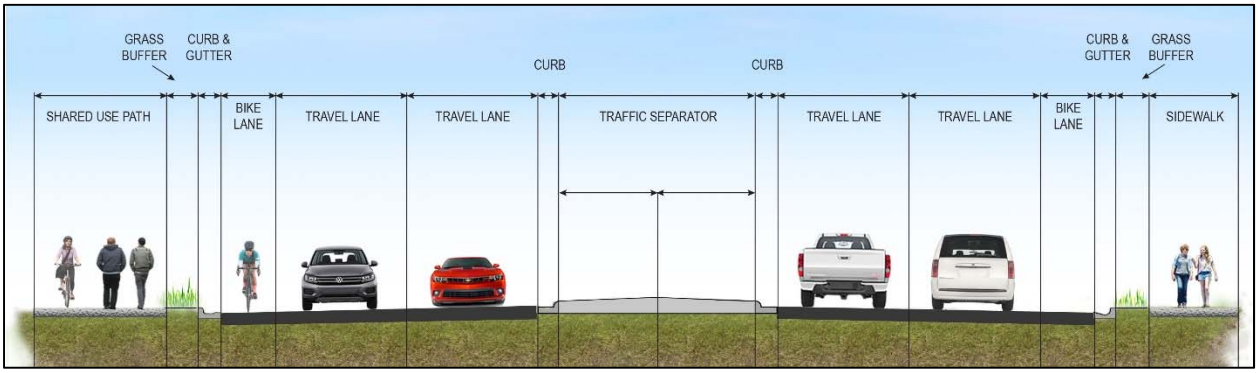


Figure 45. Multi-Lane Urban Roadway
Shared Use Path on one side, 8' sidewalk on other side, standard bike lanes both sides*

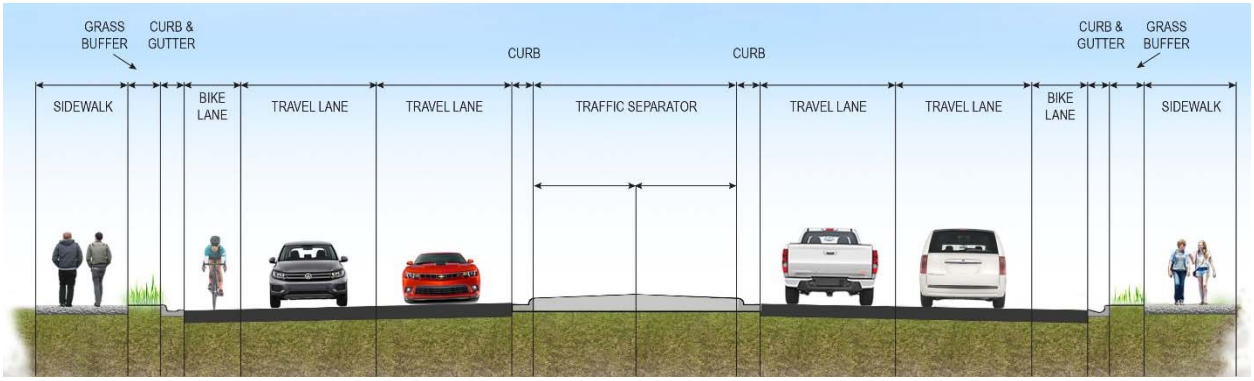


Figure 46. Multi-Lane Urban Roadway – Retrofit
8'-wide sidewalks and standard bike lanes on both sides*

CHAPTER 7 – POLICIES AND IMPLEMENTATION

The MPO's Role in Setting Policies

Locally-adopted plans and policies relating to biking and walking provide a key part of the framework for building a safe, convenient multimodal network for users of all ages and all abilities. According to FHWA's *Noteworthy Local Policies that Support Safe and Complete Pedestrian and Bicycle Networks*,

> Effective policy shapes long-term planning efforts, as well as more immediate decision making. It informs infrastructure planning, design, construction and maintenance and shapes decision making related to investments in infrastructure and capital improvements. Policy informs and shapes an agency's work in engineering, education, enforcement, emergency response, encouragement, and evaluation efforts. This multidisciplinary approach, embodied in both required Federal safety planning and best practices in bicycle and pedestrian planning and design, is important in establishing a safe and complete pedestrian and bicycle network.[20]

Unlike its member entities, the Collier MPO does not build projects and is not an implementing agency. The MPO does, however, play a unique role in providing a forum for regional coordination and a collaborative process for establishing funding priorities.

MPO Planning Policies

The following policies provide a guide for planning bicycle and pedestrian facilities identified as high priorities in this Plan and for identifying future project priorities over the coming years.

1) The MPO reconfirms Resolution 2010-05 (Appendix 13) which gives walking and bicycling the same priority as is given to other modes of transportation and ensuring that there are transportation choices for people of all ages and abilities.
2) The MPO supports FDOT's ***Statewide Complete Streets Policy*** (Topic No. 000-625-017-a). The key components are:
    a) It is the policy of the MPO to serve the transportation needs of transportation system users of all ages and abilities, including but not limited to: pedestrians, bicyclists, transit riders, motorists, and freight handlers.
    b) The MPO recognizes Complete Streets are context-sensitive and require transportation system design that considers local land development patterns and built form.
    c) The MPO encourages its member entities to incorporate a Complete Streets approach for all projects submitted for funding consideration and for inclusion in the LRTP.
3) The MPO's **High Priority Complete Streets Corridors** coincide with the Collier Area Transit (CAT) System bus routes, high bicycle/pedestrian crash corridors and address the need to provide equitable

[20] https://nacto.org/2016/07/20/high-quality-bike-facilities-increase-ridership-make-biking-safer/.

access to multimodal transportation facilities for populations identified in this Plan's Environmental Justice Communities (Figure 47).

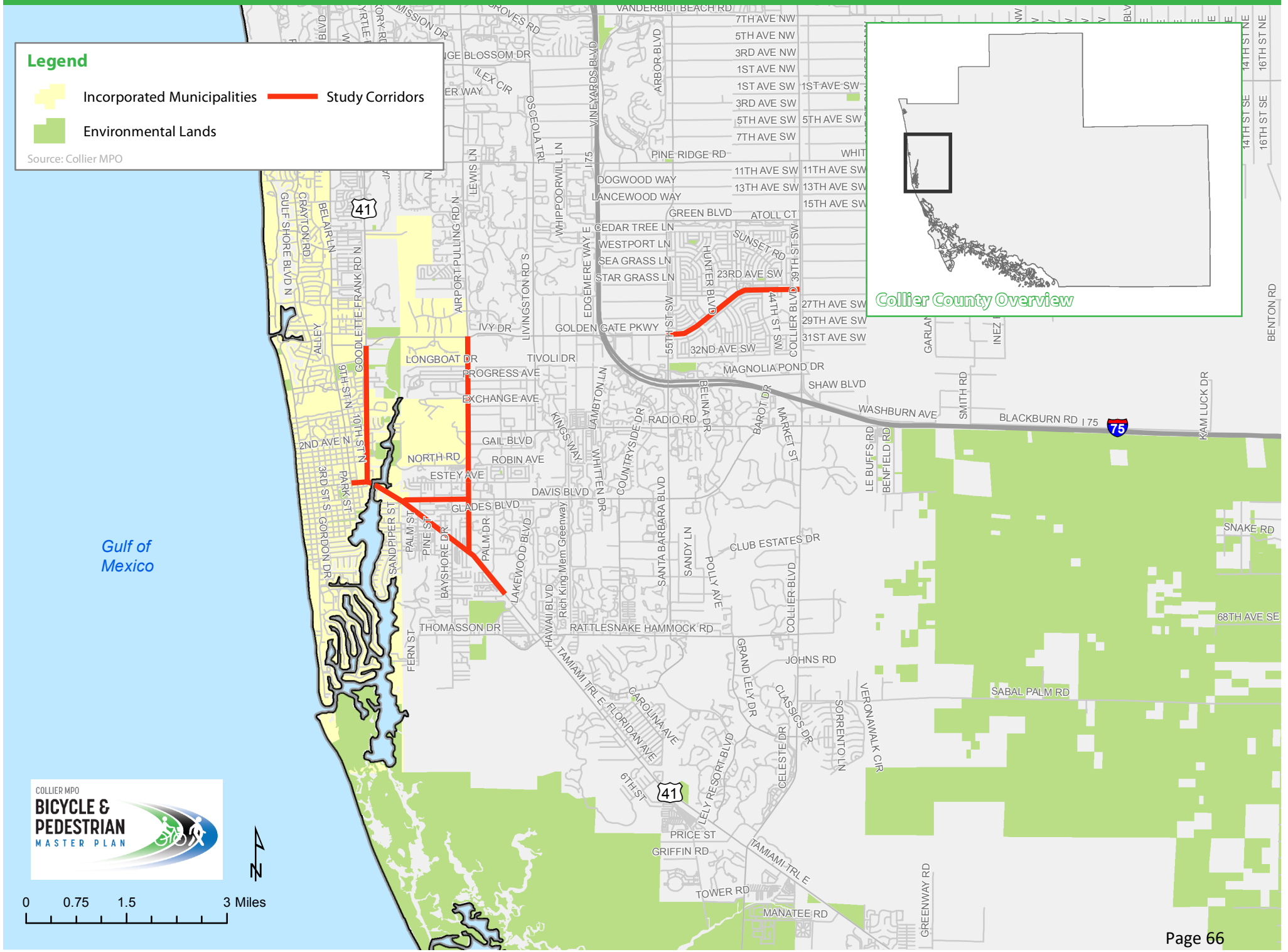
4) Bicycle facilities should be designed for All Ages and Abilities (AAA), a principal developed by NACTO.[21] Lesser accommodation requires additional justification as projects are brought forward for prioritization.
5) The MPO encourages its member entities and FDOT to include bike lane improvements as part of resurfacing, reconstruction and routine maintenance.
6) The MPO encourages its member entities to require new development to connect on-site bicycle and pedestrian infrastructure to adjacent public bicycle and pedestrian infrastructure.
7) State roads that are fronted on both sides by a continuum of tribally-owned lands, State and national parks, preserves, forests, wildlife refuges, and Everglades National Park are identified as primarily serving a recreational function and statewide interests in terms of bicycle and pedestrian usage. Therefore, the MPO asks that FDOT take the lead in coordinating stakeholder involvement (refer to Figure 48).

MPO Design Policies

1) MPO member entities are encouraged to follow the MPO Design Guidelines in Chapter 6, particularly on projects submitted for MPO funding.
2) Figure 48 identifies which facilities the MPO views as filling a recreational function and which fill a transportation function. The distinction is made based upon existing and future urbanized areas in contrast with conservation lands. Existing and proposed bicycle and pedestrian facilities located within urbanized areas clearly serve a transportation function for MPO residents and tourists. Facilities surrounded by large areas of conservation lands serve a recreational function.
3) Where bicycle and pedestrian facilities are identified along roadways and greenways that, based on local land use policies, will eventually transition from undeveloped to developed conditions—the areas identified as Transitional on the map—the MPO recommends a phased approach to planning, design and construction. MPO member entities are encouraged to plan for and obtain sufficient ROW to accommodate anticipated developed conditions, while phasing actual construction of facilities to match the current roadway context.
4) Designing for safety – the MPO recommends that member entities incorporate the following principles when planning transportation improvements in areas this Plan has identified as having high pedestrian and bicycle use (coinciding with high-crash concentrations). These recommendations are based on the Bicycle/Pedestrian RSA referenced in the chapter on Safety:
    a) Limit unsignalized right turns
    b) Target and posted speeds should not exceed 35 mph

[21] NACTO, *Designing for All ages & Abilities – Contextual Guidance for High-Comfort Bicycle Facilities*, December 2017.

Figure 47: Complete Streets and Safety Corridors



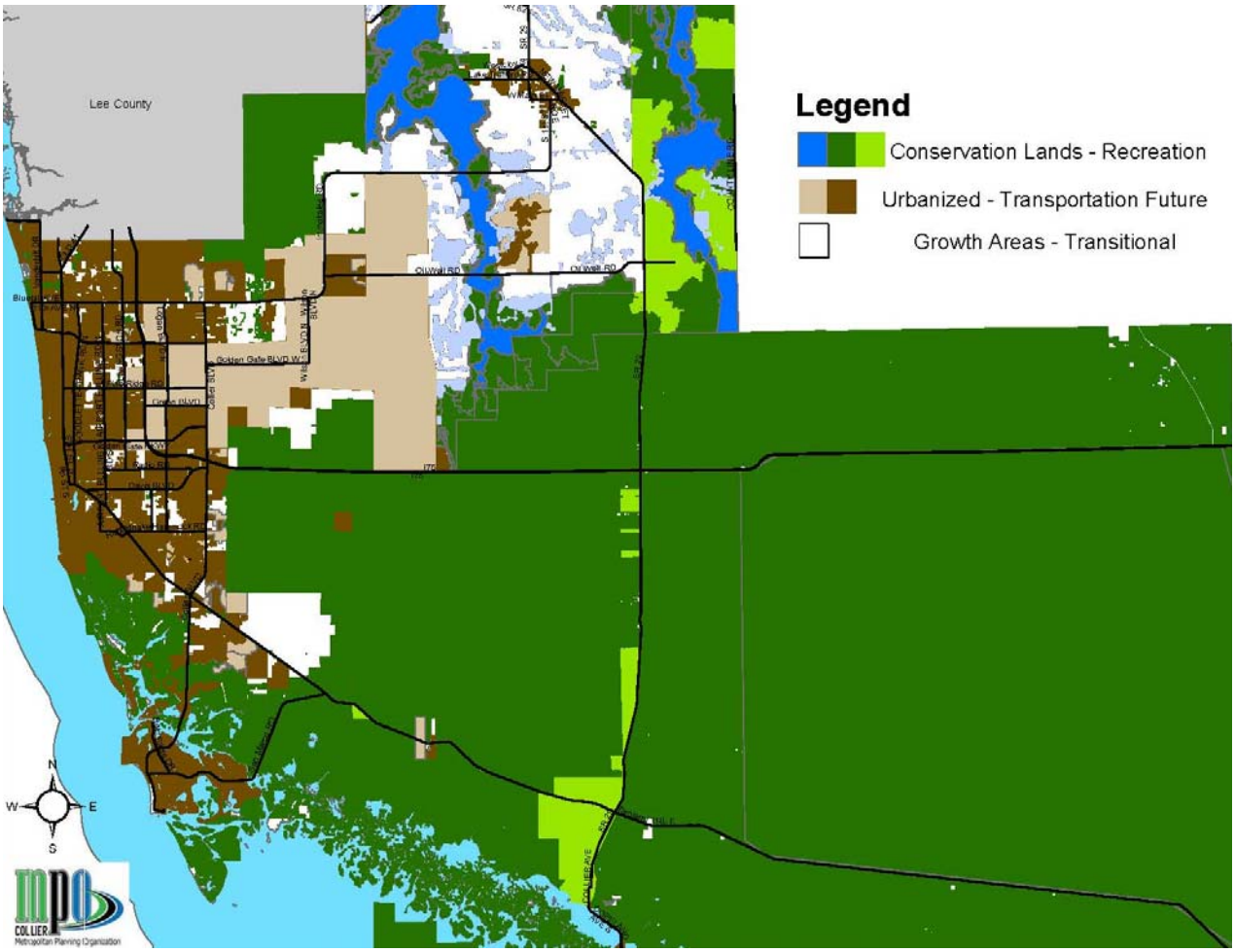


Figure 48. Collier MPO Bicycle and Pedestrian Policy Zones

Funding Priorities

The MPO Board establishes policy by which it allocates Surface Transportation-Urban (SU) funds for 1) congestion management, 2) new bridge construction, and 3) bicycle and pedestrian projects. MPO staff issues a Call for Projects based on the Board's established allocation policy and schedule, which is currently on a five-year rotation among the three categories. MPO member entities submit bicycle and pedestrian infrastructure projects that implement the current, adopted Bicycle and Pedestrian Master Plan, which is, or will be, incorporated by reference into the current, adopted LRTP. Bicycle and pedestrian projects range from locations on local, collector, and arterial roads to greenway connections, RSAs, and special studies.

1) The Network Needs analysis (Chapter 5) identifies the MPO's priorities for funding projects based on safety, equity, and connectivity. In addition, the MPO's priorities include the projects recommended in adopted Community Walkability studies and the current adopted bicycle and/or pedestrian master plans of the cities of Marco Island, Naples, and Everglades City and CRAs in Collier County, all of which are incorporated by reference.

2) MPO staff will coordinate with FDOT and local entities to implementing RSA recommendations that the MPO Board has specifically endorsed.
3) The MPO's priority projects include planning, designing, and constructing Complete Streets retrofits to coincide with a) the FDOT top five high-crash corridors, b) high-use CAT routes, and c) equity. The two highest priority Complete Streets retrofit projects are:
    a) US-41 between 5th Avenue/9th Street intersection and Airport Road
    b) Airport Road from US-41 north to Radio Road

Evaluation Criteria

1) MPO staff will issue a Call for Projects on an as-needed basis, based on the MPO's current adopted TMA SU "Box" allocation/programming policy. The Board has sole discretion to set this policy and may change it at any time pursuant to the MPO Bylaws and Public Participation Plan.
2) Member entities are free to choose which projects to submit as long as they are identified in the Network Needs analysis (Chapter 5) and/or other local plans incorporated by reference in this Plan. Member entities may submit up to one project for each jurisdictional area represented by voting membership on the Board, and MPO staff may submit one project of regional significance, for a total of 10 projects in response to any Call for Projects:
    - 1 project located in each County Commissioner District (total 5)
    - 2 projects located within the City of Naples
    - 1 project located within City of Marco Island
    - 1 project located within City of Everglades City (inclusive of Chokoloskee and Plantation Island)
    - 1 project submitted by MPO staff
3) MPO staff will conduct a preliminary assessment of submitted projects for eligibility according to the following criteria; incomplete project submittals will not be considered for funding:
    - Timeliness – the submitting agency verifies that the project can and should be designed and constructed within the time-period selected for funding.
    - Constructability – the submitting agency verifies that the project is fully scoped, the right-of-way is available, and cost estimates are complete and accurate.
    - Funding Availability – the submitting agency has identified funding that is currently available for programming by the MPO and funding available for programming by the local entity. Funding availability must be sufficient to meet project costs.
4) MPO staff will conduct a preliminary prioritized ranking of eligible projects based on the following scoring criteria. The BPAC, CAC, and TAC will review and comment on the ranking and endorse with adjustments as deemed warranted. Projects will be scored and ranked according to the method listed below. The score is cumulative depending on the number of factors addressed:
    - Safety
        - Implements a recommended action in a Bicycle/Pedestrian Road Safety Audit – 5 points

- Addresses a safety concern involving serious injuries and fatalities as identified in this Plan, absent a Safety Audit to verify the proposed mitigation measure – 3 points
- Addresses a safety concern involving crashes of less severity, absent a Safety Audit to verify the proposed mitigation measure – 2 points
- Addresses a safety concern expressed by members of the public in the absence of crash records – 1 point

- Equity
  - Fills a need associated with an Environmental Justice community or use identified in this Plan – 5 points
  - Fills a need associated with an area that meets some, but not all EJ criteria used in identifying EJ communities for this Plan – 3 points
  - Fills a need associated with an area that does not have adequate access to nonmotorized transportation facilities based upon public input received in the development of this Plan – 1 point
- Connectivity
  - Fills a prioritized infrastructure gap identified in this Plan – 5 points
  - Fills a need for improved connectivity based upon public input received in the development of this Plan – 2 points

5) MPO staff will present the complete record of staff and advisory committee rankings to the MPO Board. The Board has sole and final decision-making authority in determining the final list of priorities in ranked order. MPO staff will submit the Board's adopted project priorities to FDOT on or before June 30th.

MPO Programs and Special Events

MPO staff will incorporate bi-lingual educational material from NHTSA, such as flyers, brochures, posters, and Public Service Announcements (PSAs), and will work with the Community Traffic Safety Team to augment distribution of the materials.

Staff will work with the CTST and FDOT to use changeable message signs on both Airport Road and US-41 to display to motorists the need to follow the three-foot rule and to watch for cyclists at driveway crossings.

MPO staff will help promote outreach and education opportunities offered throughout Collier County on the MPO website and through social media. Example programs include Walk/Bike to School Day, Bike to Work Day/Week, Safe Kids SWFL, bike helmet fittings and giveaways, carseat fittings and giveaways, bike rodeos, programs such as Summer Nights, Winter Nights, and Fridays Nights (safety programs targeting school-age kids and their parents), and Ciclovía (Spanish term that means “cycleway),” an event in which a permanent bike path or certain streets are closed to automobiles for cyclists and pedestrians. Ciclovia Immokalee! has hosted events in May and August 2017 and 2018 in a parking lot (see http://www.cicloviaimmokalee.org/august-4-2018-ciclovia-immokalee-joins-lipman-family-farms-at-their-backpack-giveaway/).

Additional Federal, State and Local Funding Sources & Technical Assistance

The projects identified this Plan are in locations throughout unincorporated Collier County and its member entities—Naples, Marco Island, and Everglades City. Projects range from locations on local, collector, and arterial roads to greenway connections, RSAs, and special studies.

The needs for bicycle and pedestrian improvements far outstrip the funds available. This section discusses funding sources in addition to SU funds that may be used to fully implement this Plan and help make up for the ongoing funding shortfall. The potential to form partnerships with other agencies is another funding option that is not discussed in this Plan. Bicycle and pedestrian improvements can also be incorporated into roadway construction projects or funded independently.

MPO member entities have the jurisdictional authority over land use and zoning to work with developers to address gaps in bicycle and pedestrian infrastructure and make connections as new homes, communities, and shopping areas are constructed. MPO member entities have many opportunities to submit projects in response to Calls for Projects related to other funding opportunities such as State and federal grant programs, SRTS, and NHTSA funding. In addition, MPO member entities have their own plans, policies, and funding sources to address project priorities that are independent of MPO funding sources. Collier County, for example, typically funds transportation improvements that incorporate bicycle and pedestrian facilities using local funds on County-owned roads.

Federal Programs

The MPO collaborates with FDOT on the allocation of a variety of State and federal funds, which are one component of a complex funding stream in which the competition for limited resources statewide is fierce. The primary funding sources available to the MPO are discussed below.

National Highway Performance Program (NHPP)

NHPP funds may be obligated only for a project on an "eligible facility"—a project, part of a program of project, or an eligible activity supporting progress toward the achievement of national performance goals for improving infrastructure condition, safety, congestion reduction, system reliability, or freight movement on the National Highway System (NHS). Projects must be identified in the Statewide Transportation Improvement Program (STIP)/Transportation Improvement Program (TIP) and be consistent with the Long-Range Statewide Transportation Plan and the MPO's LRTP. Bicycle and pedestrian improvements associated with an NHS facility are eligible. Bicycle lanes, paved shoulders, and sidewalk improvements on major arterial roads that are part of the NHS, and bicycle and/or pedestrian bridges and tunnels that cross NHS facilities are eligible for funding.

Surface Transportation Block Grant Program (STBG)

The FAST Act converts the long-standing Surface Transportation Program into the Surface Transportation Block Grant Program (STBG). This program has the most flexible eligibilities among all federal-aid highway programs. Funding for Transportation Alternatives is set aside from a State's STBG apportionment, as is funding for bridges not on federal-aid highways (aka "off-system bridges"). The Lee County and Collier MPOs jointly prioritize Regional Transportation Alternative Program funds on an annual basis.

A percentage of a state's STBG apportionment (after set-asides) is to be obligated to areas in proportion to their relative shares of the state's population. Urbanized areas with population greater than 200,000, such as the Collier MPO represents, are apportioned an annual amount of SU funds to program projects eligible for STBG funding. The MPO Board prioritizes projects for programming for the new 5th year of the new TIP. FDOT covers the 20% match requirement.

STBG projects may not be on local (i.e., residential) roads or rural minor collectors, with the exception of recreational trails, pedestrian and bicycle projects, and Safe Routes to School projects. SRTS projects require a 50% local match.

Highway Safety Improvement Program (HSIP)[22]

FDOT determines the use of HSIP funds on a statewide basis. HSIP funds can be used for pedestrian and bicycle safety improvements, but this is subject to meeting FDOT's strict criteria and statewide prioritization. States may obligate funds under HSIP to carry out any highway safety improvement project on any public road or publicly-owned bicycle or pedestrian pathway or trail or as provided under Flexible Funding for States with a Strategic Highway Safety Plan, and other safety projects. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. The FAST Act added the following items to the list of approved uses:

- Pedestrian hybrid beacons
- Roadway improvements that provide separation between pedestrians and motor vehicles, including medians and pedestrian crossing islands
- Road Safety Audits (RSAs), a category that includes Bicycle and Pedestrian Safety Audits

Recreational Trails Program (RTP)[23]

The RTP is a federally-funded competitive grant program that provides financial assistance to agencies of city, county, state, or federal governments and organizations approved by the State, or State- and federally-recognized Indian tribal governments, for the development of recreational trails, trailheads, and trailside facilities. The Florida Department of Environmental Protection (DEP) Office of Greenways and Trails manages the State's RTP. The DEP periodically issues a Call for Projects. The most recent Call for Projects identified the maximum grant funds an applicant could request for Fiscal Year 2018: Mixed Use and Non-motorized Projects $200,000; Motorized Projects $500,000. Additional information including the application form, fact sheet, and other tools are available on their website at: http://www.dep.state.fl.us/gwt/grants/.

[22] https://safety.fhwa.dot.gov/legislationandpolicy/fast/guidance.cfm.
[23] https://floridadep.gov/ooo/land-and-recreation-grants/content/recreational-trails-program.

FTA Funds

A variety of FTA funding is available that may be used to fund the design, construction, and maintenance of pedestrian and bicycle projects that enhance or are related to public transportation facilities. Improvements made expressly eligible by statute include capital projects such as pedestrian and bicycle access to a public transportation facility and transit enhancements such as pedestrian access, walkways, and bicycle access, including bicycle storage facilities and equipment for transporting bicycles on public transportation vehicles.

NHTSA Funds

NHTSA provides funding to state DOTs to undertake priority area programs and activities to improve traffic safety and reduce crashes, serious injuries, and fatalities. Any use of NHTSA grant funds must support data-driven state safety goals. NHTSA annually apportions these funds according to a formula based on population and road miles. Occasionally, additional funding may be available for projects in other program areas if there is documented evidence of an identified program.

FDOT awards these funds as sub-grants to traffic safety partners. See https://www.fdot.gov/safety/3-grants/grants-home.shtm for detailed information including eligibility, funding cycle, and selection process. Funds may be used for programs for:

- Pedestrian and bicycle safety
- Speed and aggressive driving
- Impaired driving
- Aging road users
- Teed driver safety
- Community traffic safety
- Police traffic services
- Impaired driving
- Motorcycle safety
- Occupant protection and child passenger safety
- Teed driver safety
- Traffic records
- Traffic Record Coordinating Committee (TRCC)

Emphasis areas under the pedestrian and bicycle safety program include:

- Increasing awareness and understanding of safety issues and compliance with traffic laws
- Development and use of a systematic approach to identify locations and behaviors prone to bicycle and pedestrian crashes and implement multidisciplinary countermeasures
- Creating urban and rural built environments that support and encourage safe walking and biking

- Supporting national, state, and local legislative initiatives and policies that promote bicycle and pedestrian safety

Efforts to combat aggressive driving and speeding include:

- Enforcing speeding and aggressive driving laws by focusing on high-risk locations
- Incorporating technology and other innovations at high-risk locations
- Evaluating hot spots and implementing appropriate engineering countermeasures to control speed and reduce aggressive driving

Technical Assistance

The Florida Traffic and Bicycle Safety Education Program (FTBSEP) is a statewide comprehensive training program funded by the FDOT Safety Office and teaches individuals how to be more competent and safer pedestrians and bicyclists. In addition to training individuals, FTBSEP uses a train-the-trainer model to teach training workshop participants (e.g., District, County, City staff; law enforcement, fire rescue, EMS; municipal parks and recreation staff; senior center staff; community professionals, etc.) how to teach pedestrian and bicycle safety education to others (e.g., children, adults, seniors). Training is provided at no cost to District, County, or City staff and other organizations. Collier County is identified as one of the Top 25 Priority Counties of the Pedestrian and Bicycle Focused Initiative and is eligible for assistance in coordinating a training workshop in the area. For more information see the following websites:

http://hhp.ufl.edu/safety

https://alerttodayflorida.com/resources/Top25Countiesmap_dark.pdf

Shared-Use Non-motorized (SUN) Trail Network

Managed by the Florida DEP Office of Greenways and Trails, the SUNTrail program funds non-motorized, paved, shared-use trails that are part of the Florida Greenways and Trails System Priority Trail. The Southwest Coast Connector Trail alignment (Figure 14) is eligible to receive SUNTrail funds if local entities agree in advance to assume maintenance responsibilities.

USDOT BUILD Program (formerly TIGER Grant Program)

The USDOT manages the Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grant program. (See https://www.transportation.gov/BUILDgrants/about). The BUILD Program replaces the Transportation Investment Generating Economy Recovery (TIGER) program. Eligibility requirements allow for multimodal, multi-jurisdictional projects that are more difficult to support through traditional DOT programs.

When the USDOT publishes a Notice of Funding Opportunity (NOFO), MPO member entities may submit project applications to the USDOT. The most recent NOFO was issued on April 27, 2018, with a submittal deadline of July 18, 2018. This is a highly-competitive, national program. Instructions for completing a Project Information Form are posted at http://www.transportation.gov/buildgrants/build-info.

Plan Monitoring and Reporting

This Plan is a living document and reflects the vision of the MPO and stakeholders and analysis done at the time the Plan was developed. Developing a plan is only the first step in the process to creating a robust and successful active transportation network. After plan adoption, collaboration and action are what make a plan successful. Monitoring and reporting on performance measures and targets is necessary to assess the strengths and weaknesses of the plan in light of actual performance.

The measures and targets described below will be incorporated into the MPO Director's Annual Report to the MPO Board, which will also be presented to the Bicycle and Pedestrian Advisory Committee. The MPO Director's Annual Report to the MPO Board also includes a listing of currently programmed projects that address problem areas in the bicycle and pedestrian network identified in safety studies, Walkable Community studies, and Bicycle and Pedestrian Safety Audits. This reporting is mandated by the MPO Congestion Management Process.

Safety Performance

Safety is the first national goal identified in the FAST Act and is of critical importance to the MPO. As part of the FAST Act, FHWA required all State DOTs and MPOs to adopt five safety performance targets by the end of February 2018. MPOs could adopt their own targets or those of the State DOT. The Collier MPO adopted FDOT's safety performance targets which include a goal of zero non-motorized fatalities and serious injuries. To satisfy federal requirements, FDOT has issued a clarification that forecasts an interim performance measure of 3,447 non-motorized fatalities and serious injuries statewide in 2018. In support of the MPO commitment to Vision Zero, one of the primary goals of this Plan is to reduce the number of bicycle and pedestrian serious injuries and fatalities by funding projects that will support this goal. The MPO Director's Annual Report will address performance according to both the zero target and the interim performance measure.

The MPO Director's Annual Report to the MPO Board already reports on the number of non-motorized fatalities and serious injuries on an annual basis and tracks trends over a five-year period. The significance of tracking trends involving safety crash statistics must be understood in the context of several important caveats:

- The MPO Board prioritizes projects for the new fifth year of the following year's TIP. Projects are, therefore, six years out at the earliest; this Plan will be updated every five years.
- Project phases usually, but not always, start with preliminary design, followed by obtaining environmental clearances, right-of-way acquisition, final design, and construction. Including time to complete each of these phases, the actual opening day for a new construction project is about nine years out.
- If the projects selected for funding are widely scattered geographically or do not address safety, the potential to improve on safety performance will be lessened considerably.

Network Expansion Performance

The MPO Director's Annual Report to the MPO Board already tracks the following measures which are also in the MPO's 2017 Congestion Management Process:

- Centerline miles of paved shoulders
- Centerline miles of bike lanes
- Linear miles of Shared Use Paths adjacent to roadways
- Linear miles of Shared Use Paths located within greenways
- Linear miles of connector sidewalks on arterial roadways. Connector sidewalks are defined in the Bicycle and Pedestrian Facilities inventory database as "a sidewalk that provides cyclists the option of a connection that is separated from motorized vehicle traffic, identified only where there are gaps in the cycling network between stretches of bike lanes, paved shoulders and/or s." The MPO established these data by updating the 2007 sidewalk inventory conducted by Collier County against satellite imagery available via the free website platform: Google Earth. The MPO does not attempt to inventory or report on linear miles of all sidewalks located within the MPO jurisdictional area; however, the MPO's member entities are encouraged to begin doing so as part of their asset management programs.

BPMP Priority Project Implementation Performance

The MPO Director's Annual Report to the MPO Board will be expanded to include a status report on BPMP Project Priorities that are making their way through the following project development steps:

- MPO Project Priority Listing for:
    - SU box funding
    - RTAP funding
    - Incorporated in roadway projects for TRIP or CIGP funding
    - Other funding applications submitted
    - Projects programmed and funded in the MPO TIP/FDOT STIP for design and construction
- Projects programmed in a member entity's CIP or identified for local funding in the County's Annual Update & Inventory Report (AUIR) / Capital Improvement Element Schedule (CIE)
- Projects received funding through notice of a grant award

Plan Updates and Amendments

The MPO will update this Plan every five years to match the cycle for updating the MPO's LRTP. The BPMP will be incorporated by reference in the LRTP.

Member entities and MPO staff may propose major revisions to the Plan in the form of amendments for the MPO Board to consider on an as-needed basis to address unforeseen opportunities or resolve issues that are preventing or delaying plan implementation. Major revisions are changes that would alter plan policies or project priorities. The procedures for amending the BPMP will follow the MPO's adopted Public Participation Plan.

MPO staff may make minor revisions to correct typographical errors or mapping errors or to update references and pertinent data. Such minor revisions will be distributed to the Board and advisory committees and the

MPO's email listserv(s) indicating track changes and the resulting clean version of any altered text, spreadsheet, or map following the procedures in the MPO's adopted Public Participation Plan.

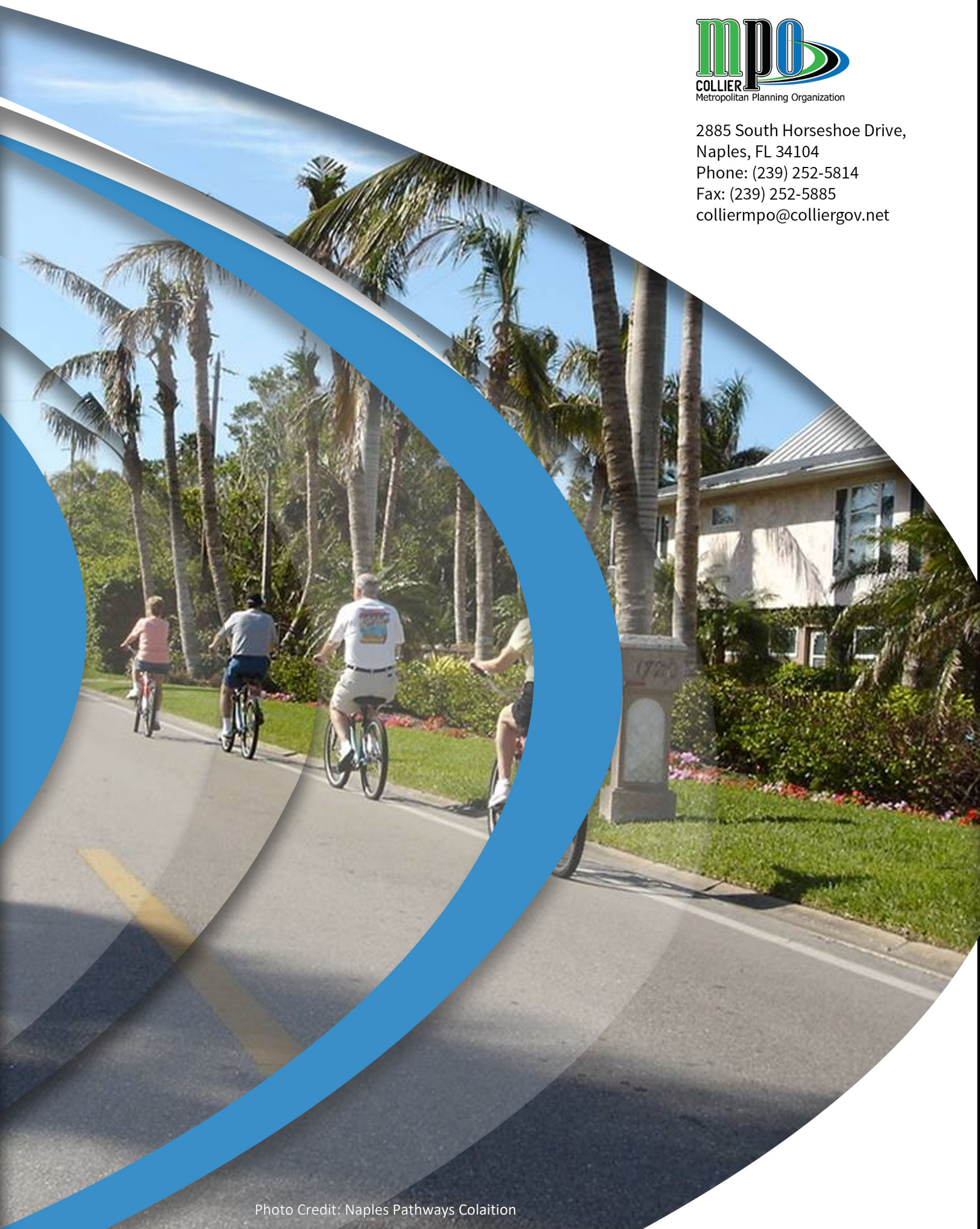


Photo Credit: Naples Pathways Colaition

COLLIER
Metropolitan Planning Organization

2885 South Horseshoe Drive,
Naples, FL 34104
Phone: (239) 252-5814
Fax: (239) 252-5885
colliermpo@colliergov.net

COLLIER
Metropolitan Planning Organization

Collier Metropolitan Planning Organization
2885 Horseshoe Drive S.
Naples, FL 34104
Phone (239) 252-8192

www.colliermpo.org

Marco Loop Trail Feasibility Study and Conceptual Design

Contract CAF58 Task Work Order No.2

Thursday, June 30, 2022

Field Review (9AM – Noon)

Summary

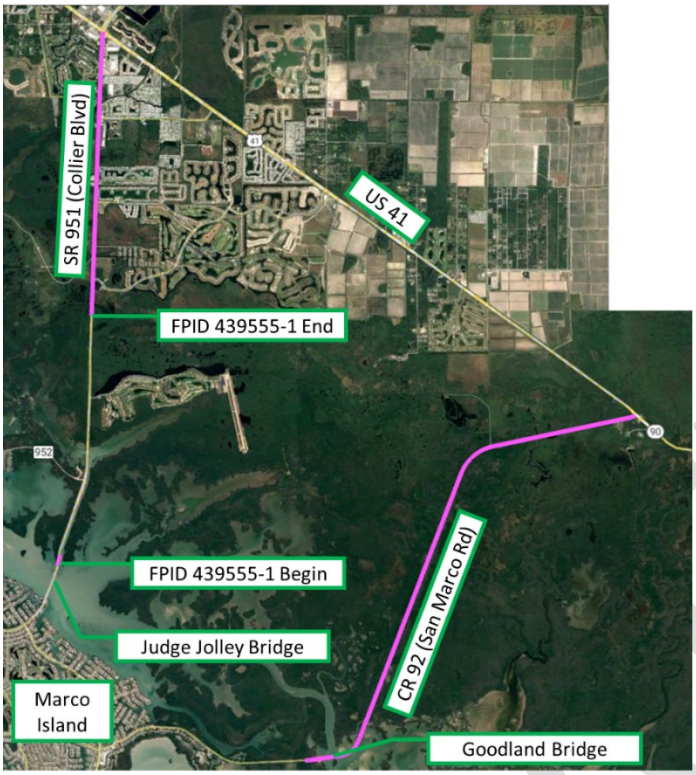
Participants met in the parking lot of:

Walmart Supercenter (9AM)
6650 Collier Blvd
Naples, FL 34114

In attendance:

Name	Agency/Firm	Email
Todd Engala	FDOT	Todd.Engala@dot.state.fl.us
Alan Musico	MPO Bike/Ped Advisory Committee Chairman, Marco Island Bike Path Committee	flprsup@gmail.com
Jodi Walborn	Blue Zones Project	Jodi.Walborn@sharecare.com
Theo Petritsch	Landis Evans	tap@landisevans.com
Vu Vu	Landis Evans	vu@landisevans.com
Brandon Walker	Landis Evans	bwalker@landisevans.com
Matthew Betancourt	RS&H	Matthew.Betancourt@rsandh.com
Cynthia Grizzle	PSG	cynthia@psgplans.com

Corridors reviewed:



CR 92 – San Marco Road

Points of interest:

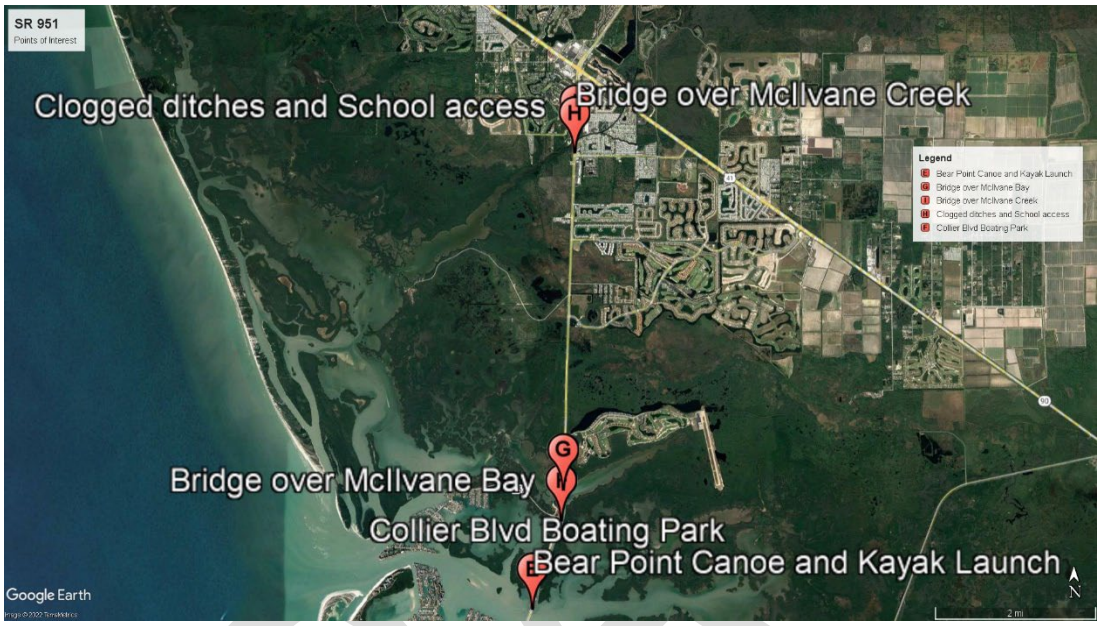
A) Goodland Drive
   i. Recent improvements to Goodland, it seems that 1' was from the travel lane was converted to a buffer to the trail.
   ii. A private boat ramp facility is located north of the west end of the Goodland Bridge.
B) Old Goodland Bridge
   i. Possible location for trail facilities
   ii. Be aware of traffic coming down from bridge in the EB direction
C) Makeshift Boat launch and bank erosion
   i. Possible location for county amenities
   ii. Be aware if the facilities include parking, then additional space is needed for deceleration lanes
   iii. Outdoor advertisement is located adjacent to this area.
   iv. Quite a few areas of bank erosion are located near this site. Coordinate with county their maintenance schedule.
D) Utility Pole Offset
   i. Utility pole is located about 14' from travel lane

Observations:

- No shoulders on the roadway.
- The northwest side of roadway appears to have more space for a multiuse trail.
- There are no destination points along this corridor (example: no boat ramps, no kayak launch sites, no trail heads.)
- Due to no destination points along the corridor, it appears the users along this 5–6-mile corridor would cater to bicyclist, rollerblades and/or specialty events.
- Consider periodic facilities along this corridor due to the lack of destinations.
- It was identified that many drivers speed along this corridor and speed management techniques should be reviewed.

SR 951 – Collier Boulevard

Points of interest:



E) Bear Point Canoe and Kayak Launch
   i. Review connection to facilities on SS Jolley Bridge.
   ii. Alternatives should address the multiple users of area i.e., fishing, water sports, multimodal users.
   iii. Similar situation is SR 60 just east of Clearwater Pier
      a. Alternatives to provide

turnarounds under bridge
    b. Cut into slope embankment
    c. Shift fishers to new boardwalk pier facility and utilize new area for trail

F) Collier Blvd Boating Park
    i. Very limited space with turn lane and guardrail
    ii. Heavy traffic during weekends
    iii. Trail location might be best suited on the west side of road in through this area

G) Bridge over McIlvane Bay
    i. Pinch point along corridor with dense vegetation and steep slopes leading up to bridge
    ii. Utilities on the west side of bridge
    iii. Single bridge with wide shoulders and 22' median on bridge.
    iv. Trail options
        a. Repurpose bridge deck
        b. Cantilever new structure from pier heads

H) Clogged ditches and School access
    i. Roadside ditches have retained quite a bit of water.
    ii. Jodi brought up that students from Manatee Middle and Elementary use Manatee Road and walk north along Collier Boulevard but have no facilities and therefore use the shoulders including those over McIlvane Creek.
    iii. In this area, there are sidewalk facilities along Manatee Road but none along Collier except for a short stretch in front of the RaceTrac. The trail ends about 1500' north of the RaceTrac.

I) Bridge over McIlvane Creek
    i. Dual bridge with wide outside shoulders.
    ii. Water level and freeboard for bridge seems high.
    iii. Power lines on the west side of bridge

Observations:

- Ditches are clogged and full of water with little rain prior to site visit. A local resident also cited there may be a larger issue related to this. Research if any local studies by the WMD have been conducted.
- Request school route information from school board
- Drainage will be a concern along the corridor as water is prevalent in ditches on both sides of the roadway even though there seems to be quite a bit of right of way.