MARTIN MPO
Metropolitan Planning Organization

DATA COMPILATION, REVIEW & SUMMARY

2050 Long Range Transportation Plan (LRTP)

MARTIN MOVES 2050

Technical Memorandum #2
AUGUST 2024

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1. INTRODUCTION

The purpose of Technical Memorandum #2 (TM 2) is to provide a comprehensive review of relevant transportation plans and studies; existing socio-economic, demographic, land use and environmental data sets; travel patterns; and emerging mobility - one of the federal and state Planning Emphasis Areas (PEAs). The data and information compiled in TM 2 will support and inform the development of 2050 Long Range Transportation Plan (LRTP) – *Martin Moves 2050*.

This technical memorandum is organized as described below:

Chapter 1: Introduction – explains the purpose of TM 2 and report organization.

Chapter 2: Data Collection and Development – discusses data sources, data collection processes and methodologies.

Chapter 3: Data Review and Summary Findings – provides a summary of analysis findings, existing conditions and trends based on Martin MPO's adopted planning documents as well as relevant state, regional and local transportation studies and comprehensive plans.

Chapter 4: Emerging Mobility – summarizes the current state of the industry, potential impacts of automated, connected, electric and shared-use vehicles (ACES) on land use development patterns, travel behavior and fiscal impacts relative to funding transportation improvements. Further, it describes Martin County's intelligent transportation systems (ITS) network and discusses the Florida Department of Transportation's (FDOT) guidance on incorporating emerging technologies in the Metropolitan Planning Organization's (MPO) LRTP process as well as introduces initial assumptions for the scenario planning exercise.

Chapter 5: Next Steps – includes a summary discussion on how the data and information compiled in TM 2 will be used to support development of the 2050 LRTP.

2. DATA COLLECTION AND DEVELOPMENT

The following datasets, maps, existing studies and planning documents adopted by Martin MPO were reviewed as part of the data compilation and review for the 2050 LRTP.

- Existing transportation plans and studies
- Environmental justice and Title VI, U.S. Census
- Existing and future land use
- GIS datasets for highway and transit systems, sidewalks, bicycle facilities, environmental resources
- Maps for roadway functional classification and federal-aid eligible facilities
- Local comprehensive plans
- Performance measures
- Health-related transportation statistics
- Emerging technologies literature review

2.1. Data Collection

Most of the datasets were collected from online sources including Martin MPO, Martin County, Florida Department of Transportation (FDOT), and Florida Geographic Data Library (FGDL).

Appendix **A** includes maps referenced within this document.

2.2. Data Development

Data development included processing and mapping census data to understand existing travel patterns in Martin County and identify environmental justice and Title VI populations. Environmental resources data was mapped using ArcGIS to identify environmental constraints. Performance measures data obtained from adopted planning documents was reviewed and reported to inform project evaluation criteria and prioritization in the later stages of the LRTP development process. The health-related transportation data was primarily obtained from South Florida Commuter Services (SFCS), Walk Score and Martin County.

Literature research related to emerging technologies included review of available industry data on automated, connected, electric and shared use vehicles (ACES), FDOT's guidance for incorporating ACES in the LRTP process, as well as FDOT's Transportation Systems Management and Operations (TSM&O) Master Plan and Martin County's Advanced Traffic Management System (ATMS) Status Report.

3. DATA REVIEW AND SUMMARY OF FINDINGS

3.1. Relevant Plans and Studies

The following is a summary of relevant transportation planning studies and Martin MPO's adopted documents that will inform and support the development of the 2050 LRTP. The review of these documents provides background, planning context and ensures continuity of local and regional transportation improvement projects identified by the Martin MPO and its partner agencies.

3.1.1. Transportation Improvement Program, FY25-FY29, Martin MPO, July 2024

The purpose of the Transportation Improvement Program (TIP) is to provide a comprehensive and prioritized listing of transportation projects for FY25-FY29 that is consistent with the adopted LRTP. The TIP is based on funding data contained within the FDOT Tentative Work Program. The TIP contains all transportation-related projects to be funded by Title 23 and Title 49 funds and regionally significant transportation projects planned for the upcoming five years based on the 2045 LRTP. The TIP is updated annually with funding priority given to the highest ranked projects from the LRTP Cost Feasible Plan.

3.1.2.Adopted FDOT Five-Year Work Program, FY25-FY29

The document outlines the allocation of funds for various projects, including safety improvements, multi-use pathways, highway capacity improvements, the aviation sector, and more across the years 2025 to 2029. Each project is categorized into one of six sections which are:

- Freight Logistics And Passenger Operations Program: Aviation
- Freight Logistics And Passenger Operations Program: Transit
- Highways
- Maintenance
- Transportation Planning
- Turnpike

The total funds for each project are broken down by phase, funding code, and year the funds are allocated to. The data aids in tracking financial progress, ensuring budget adherence, effective resource management, project planning, budget management, and monitoring project progress. Stakeholders benefit from this information to assess and prioritize funding.

3.1.3.Marty Transit Development Plan, Major Update FY25-FY34, May 2024

The Martin County Transit (Marty) Transit Development Plan (TDP) is an FDOT required, 10-year horizon plan intended to support the development of an effective multi-modal transportation system for the State of Florida. It serves as the basis for defining public transit needs and is a prerequisite to receiving state funds. Martin County's 2025-2034 TDP serves as a blueprint for the operational and capital resources required to meet future transit needs, and is a strategic vision plan developed with the general public and elected leaders. The TDP describes how transit service can help shape the overall transportation system. This is the first TDP to document the impacts of COVID-19, which had a major impact on transit across the world. The vision for the public transportation system is to "Improve the overall quality of life for Martin County residents, workers and visitors by providing a safe, efficient, convenient public transportation system that is

well understood by the public." The TDP defined 7 objectives to establish this vision. The objectives are:

- Safety
- Efficiency
- Effectiveness
- Servicing Underserved Communities
- Regional Connectivity
- Public Outreach
- Resilience
- Technology Advanced

The City of Stuart was recently selected to receive a station for Brightline, which is a private rail service that will enhance connectivity in Martin County. The TDP includes an intermodal hub, planned routes, and other connecting services to best incorporate access to the future Brightline station to help achieve the TDP's objective of regional connectivity.

3.1.4. Transportation Network Resiliency Study, Martin MPO, December 2022

The Transportation Network Resiliency Study provides a mechanism/methodology on how to consider resiliency/climate change in the transportation planning process. In the 2045 LRTP, resiliency is only considered through two broad criteria: whether the project is in an area vulnerable to flooding, and whether the segment is classified as an evacuation route. This study seeks to enhance the methodology the Martin MPO uses to determine the level to which prospective projects consider resiliency. The five goals of the document are:

- Identify critical assets of the MPO's transportation network
- Provide a methodology to measure asset vulnerability to existing and future flooding and excessive heat
- Utilize the methodology to develop a maps identifying which assets are vulnerable to which hazard, under specific planning horizons
- Present examples of adaptation strategies applied to three vulnerable transportation asset case studies
- Develop a recommended project prioritization process to rank and prioritize mitigation projects to address vulnerable transportation infrastructure assets

The vulnerability assessment method suggested by the document is to use a multifaceted assessment that considers tidal flooding, storm surge flooding, sea level rise flooding, rainfall-induced flooding, compound flooding, and excessive heat.

3.1.5. Public Participation Plan, Martin MPO, February 2022

The Public Participation Plan (PPP) outlines the process and expectations for public engagement during the MPO's transportation planning and decision-making activities. The PPP outlines the audience, intent, tools, and expectations for proactive public outreach and engagement on transportation issues. There are six objectives including:

- Hold regular public meetings with MPO advisory committees to obtain feedback on all documents, projects, and funding determinations prior to consideration by the MPO Board
- Provide equitable access to information regarding transportation decision making

- Engage the public early, often, and with clarity so that opportunities exist for public feedback in the transportation decision-making process
- Use a variety of methods to involve and engage the public
- Gather public feedback on the Program of Projects for Martin County Public Transit
- Strive to continuously improve the public participation process

Each year, the MPO assesses the effectiveness of its techniques and strategies for each objective to ensure that funds, time, and effort are being efficiently invested in the public participation process.

3.1.6. Martin County Innovation Hub Recommendations Report, Martin County, 2023

The Martin County Innovation Hub Recommendations Report is a strategic document aimed at transforming the southern part of the City of Stuart, the Golden Gate Community Redevelopment Area, and the Port Salerno Community Redevelopment Area into a thriving hub for innovation, entrepreneurship, and technology. The report uses a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis to outline key goals and recommendations across several areas, including infrastructure, marketing and branding, regulations, aesthetics, and opportunity sites.

Data-driven goals include enhancing stormwater management, improving transportation and multimodal connectivity, encouraging the use of electric vehicles and public transportation, and expanding broadband infrastructure. The document also highlights specific projects, such as the development of pedestrian paths, complete streets, and greenways to enhance mobility and connectivity within the hub. Additionally, the report identifies potential opportunity sites for development and recommends strategies for branding and networking to attract investment and talent to the region. The SWOT analysis resulted in the development of five guiding principles:

- Preserve and strengthen intergovernmental cooperation and partnerships.
- Invest in educational and training programs and partnerships.
- Enhance infrastructure, aesthetics, and the public realm.
- Capitalize on site control as the tool to attract targeted innovative investment and technologies.
- Expose the innovation and entrepreneurship that is already taking place.

These principles are designed to guide the vision of the Innovation Hub, ensuring a cohesive and strategic approach to development.

3.1.7. Community Characteristics Report, Martin MPO, December 2023

Data sources for Martin County Community Characteristics Report include the U.S. Census Bureau and the Florida Department of Highway Safety & Motor Vehicles, covering demographic, economic, commuting, and crash statistics from 2016 to 2020. The report provides key statistics for each planning area, including but not limited to categories such as population size, median household income, average commute time, the number of fatal and serious injury crashes, percentage of households living below the poverty level and the modes of transportation most commonly used by residents. The report focuses on identifying key features and trends in each planning area, providing insights into population growth, income levels, vehicle ownership, and crash hotspots. The goal of the report is to inform and guide transportation policies and projects

that address the needs of Martin County's diverse communities, promoting safety, accessibility, and effective public engagement in the planning process.

3.1.8.US-1 at SW Palm City Road Feasibility Study, Martin MPO, December 2023

The primary purpose of the US 1 at SW Palm City Road Feasibility Study is to assess existing conditions and develop conceptual alternatives to enhance safety and mobility for all transportation modes at this key intersection. The study's goals include managing vehicular speeds and volumes along SW Palm City Road, eliminating the uncontrolled right-turn movement, and improving pedestrian and bicycle infrastructure. The study outlines several conceptual alternatives, each evaluated for traffic operations, physical impacts, cost implications, and alignment with the study's goals. Through public workshops, committee meetings, and consultations with the City of Stuart Commission, Alternative 5, combined with a Traffic Calming Alternative, was selected as the preferred solution. This alternative includes the construction of a new right-turn lane through the Ewing Triangle, the elimination of the free-flow right-turn, and the addition of traffic calming measures along SW Palm City Road. The final concept aims to improve overall safety and mobility while addressing community concerns about speeding and traffic volumes. The report concludes with a detailed concept plan and an opinion of probable costs, laying the groundwork for future implementation and ensuring the project meets the long-term transportation needs of the area.

3.1.9.Hobe Sound North Corridor Shared-Use Nonmotorized (SUN) Trail Feasibility Study, Martin MPO, September 2023

The Hobe Sound North Corridor Shared-Use Nonmotorized (SUN) Trail Feasibility Study evaluates potential routes for extending a shared-use pathway (SUP) connecting Seabranch Preserve State Park to Jonathan Dickinson State Park in Martin County, Florida. The purpose of the study as a part of the Martin MPO's planning efforts is to create a safe and accessible trail for nonmotorized users. Three alignments—SE Gomez Avenue, CR-A1A/Dixie Highway, and SR-5/Federal Highway—were considered. After public and stakeholder engagement, SR-5/Federal Highway was chosen as the preferred alternative due to right-of-way constraints on CR-A1A/Dixie Highway and safety concerns on SE Gomez Avenue.

The study resulted in a conceptual plan for a 10 to 14 foot-wide pathway along SR-5/Federal Highway, aligning with the Florida SUN Trail Network and East Coast Greenway. The report provides a detailed analysis of the selected route, cost estimates, and future considerations, setting the stage for the next phases of design and implementation. The project has been funded for construction, which is programmed for 2026. This project will enhance connectivity, promote multimodal transportation, and contribute to a continuous and safe trail network in the region.

3.1.10. Martin County Transit (Marty) Efficiency Study, Martin MPO, August 2023

The purpose of the Martin County Transit Efficiency Study was to enhance the Marty public transit system's efficiency and service quality. The study's primary objectives were to evaluate existing transit operations, explore potential service improvements, and identify strategies for expanding service coverage and improving ridership as a precursor to the Marty TDP Major Update. The study included a comprehensive analysis of current conditions, public outreach, and the testing

of various transit network scenarios, including options for increasing frequency, adding bus stops, and extending service to new areas.

The outcome of the study led to a series of recommendations aimed at optimizing the Marty transit system. Key recommendations include increasing the frequency of service on high-demand routes, adding new bus stops to improve accessibility, and exploring the implementation of new routes in underserved areas such as North Stuart/Rio/Jensen Beach and Palm City. These recommendations are intended to inform the next major update of the Marty TDP with the purpose of enhancing public transportation services to better meet the needs of Martin County residents.

3.1.11. Vision Zero Plan, Martin MPO, June 2022

The Vision Zero Plan refers to the goal of reaching zero traffic related fatalities and serious injuries from road crashes in the county. The guiding principles of the action plan include:

- Traffic deaths and severe injuries are preventable and unacceptable.
- Protecting human lives takes priority over all other objectives of the road system.
- People will make mistakes on the road and the transportation system will be designed so mistakes are not fatal.
- Reducing vehicle speed is fundamental to safer streets.
- Solutions must be collaborative, equitable, and data-driven.
- Local input is crucial during the planning, prioritization, and implementation of road projects.
- Safety on Martin County streets is everyone's responsibility.
- Our community is accountable for implementing the Vision Zero Action Plan, measuring performance, and responding accordingly.

The Vision Zero initiative emphasizes designing roads that accommodate human errors without resulting in fatalities. The plan is organized into three focus areas: Safe Streets, which involves making physical changes to roadways to enhance safety; Culture, which focuses on changing travel behaviors through education and encouragement; and Evaluation and Accountability, which emphasizes using data to track progress and holding the community accountable for achieving Vision Zero goals. The plan also highlights specific actions such as speed management, enforcement of traffic laws, and the implementation of safety countermeasures at high-injury locations.

3.1.12. Florida Strategic Highway Safety Plan, FDOT, March 2021

The Florida Strategic Highway Safety Plan (SHSP) is a comprehensive framework designed to eliminate traffic-related fatalities and serious injuries on Florida's roadways. The SHSP outlines a statewide strategy to enhance road safety through targeted interventions and collaborative efforts. The plan aligns with the Vision Zero initiative, which aims for zero traffic deaths and severe injuries. The key objectives are:

- Reduce Traffic Fatalities and Serious Injuries: Focus on addressing the most prevalent causes of severe crashes, such as lane departures, intersection collisions, and impaired driving.
- Enhance Road User Safety: Implement targeted strategies for high-risk groups, including pedestrians, bicyclists, motorcyclists, aging road users, and teen drivers.

- Promote Safe Road Behaviors: Increase public awareness and compliance with traffic laws through education, enforcement, and community engagement.
- Improve Infrastructure Safety: Deploy engineering solutions to reduce crash risks at critical locations, including intersections and high-crash corridors.
- Leverage Innovation and Data: Utilize emerging technologies and data-driven approaches to identify high-risk areas and implement effective safety countermeasures.

The outcome of the SHSP is a coordinated, multi-agency effort aimed at making Florida's roads safer for all users over the next five years.

3.1.13. Strategic Intermodal System (SIS) Policy Plan, March 2022

The Strategic Intermodal System (SIS) Policy Plan is a comprehensive framework developed by FDOT to guide the planning and management of Florida's SIS over the next five years. The SIS is a network of high-priority transportation facilities critical to the state's economy, focusing on statewide and interregional significance. The purpose of the SIS Policy Plan is to ensure that Florida's transportation infrastructure remains resilient, safe, and efficient while adapting to changing conditions such as population growth, economic shifts, and emerging technologies. The SIS Policy Plan lays out a strategic approach to prioritize investments and improve transportation systems. Through collaboration with various stakeholders, the plan aims to create a more flexible, resilient, and integrated transportation network that meets the needs of both current and future generations. The objectives include interregional and intermodal connectivity and economic competitiveness, which help develop the policies covering safety, resilience, technology and innovation, urban mobility and connectivity, and rural mobility and connectivity.

3.1.14. Martin County Freight and Goods Movement Study, October 2020

Although the Martin MPO has included freight planning in previous LRTPs, the Martin County Freight and Goods Movement Study is the first stand-alone freight and goods movement plan for the Martin MPO. The document explores existing and future transportation and land use conditions to leverage the transportation network to support economic development and the integration of freight into the multi-modal network. The study includes four goals that are listed below:

- Safety and Security - Leverage multisource data and technology to improve freight system safety and security.
- Efficient and Reliable Mobility - Drive innovation to reduce congestion, bottlenecks and improve travel-time reliability.
- Economic Competitiveness - Continue to forge partnerships between the public and private sectors to improve trade and logistics and capitalize on emerging freight trends to promote economic development.
- Quality Places – Increase freight-related regional and local transportation planning and
- land use coordination.

Stakeholders were involved in the process throughout the study. A proposed network was developed in conjunction with the existing freight and goods network and recommendations for reliability within the network were investigated.

3.1.15. Transportation System Management & Operations (TSM&O) Master Plan, FDOT, March 2019

The Transportation System Management and Operations (TSM&O) Master Plan was developed by FDOT and considered input from MPOs and local partners to identify operation and management strategies to optimize performance outcomes. The TSM&O Plan highlights ways to increase capacity lost to congestion, incidents, construction, weather, and traffic control delay. The Plan focuses on improving vehicular mobility and identifies potential project locations and project types at a corridor level. Objectives are to improve safety, enhance travel reliability, and reduce delay. TSM&O projects are identified along Federal Highway, SW Martin Downs Boulevard, Kanner Highway and SR-714/SE Monterey Road in Martin County.

3.1.16. City of Stuart Tran Business Plan, Martin MPO, Spring 2019

In 2006, the City of Stuart Community Redevelopment Agency (CRA) purchased one fuel-powered Tram to relieve parking issues and, what has now become the Downtown Stuart Tram, was initiated using Tax Increment Funds (TIF). In 2010, the CRA adopted the Downtown Master Parking Plan and in 2012 the CRA purchased its second vehicle, an all-electric Tram. A third electric Tram was purchased by the CRA in 2013. In July 2016, the CRA received a Transit Development Grant from the FDOT District Four. The grant provided funding for the purchase of two more vehicles and operating costs through June of 2019. In 2017, the Tram was placed under the direction of the City Public Works Department.

As funding for the Tram is limited due to the FDOT grant expiring, the Martin MPO coordinated with the CRA and the City to develop a multi-year business plan to sustain and potentially expand Tram services over a five-year period. The goal of the Business Plan is to continue to plan, operate and maintain the Downtown Stuart Tram consistent with a vision of enhanced mobility and economic development for the Downtown Stuart Area. The goal is proposed to be accomplished by setting forth the following objectives to be achieved beginning Fiscal Year (FY) 2019 through FY 2025 with annual updates:

- Improve Tram reliability, efficiency and effectiveness.
- Assure fiscal stability through five (5) year budgeting.
- Create a distinct and recognizable brand for the Tram.
- Seek out and apply for grants and private sector participation.
- Increase transit ridership levels by capturing traditional and new transportation markets.
- Continue intergovernmental coordination with regional transportation authorities and the private sector to foster strong partnerships.

3.1.17. Martin County Transit Operations Center Facility Feasibility Study, Martin MPO, April 2018

The Martin County Transit Operations Center Facility Feasibility Study was sponsored by the Martin MPO in cooperation with the Martin County Public Transit (MCPT). As part of the Martin County Transit Business Plan in 2017, the FDOT and MCPT recommended the initiation of a plan for a wholly-owned maintenance and operations/dispatch facility to maximize efficiency and increase effectiveness of the MCPT's operation. The feasibility study developed a conceptual operations plan for a full-service transit operations facility/customer service center and identified

potential sites for development of that facility for MCPT. Further, the plan developed two illustrative, high-level concept drawings for the proposed center, which included building envelopes, parking and circulation, and potential connections to surrounding land uses and the surrounding transportation system. A GIS analysis was performed to select sites suitable for the facility when considering surrounding land use, existing utilities, traffic impacts, connectivity to transit, and eligibility for federal funding. The analysis identified 28 sites viable for potential development, and the top ten sites were further examined for environmental impacts.

3.1.18. Bicycle, Pedestrian and Trails Master Plan, Martin MPO, December 2017

The Martin MPO Bicycle, Pedestrian & Trails Master Plan identified recommendations for the County becoming a pedestrian and bicycle friendly, walkable and livable community. The Master Plan builds from the 2040 Non-Motorized Needs Plans identified in the 2040 LRTP, as well as other prior plans and studies. The Master Plan provided recommendation to enhance the County's recreational trail network through connectivity between existing trails in and around local, County and State parks. The Plan also provided guidance to expand the non-motorized transportation network to connect residents to hotspots within the area. Some recommendations included shared use paths, buffered bike lanes, bike boxes at signalized intersections, pedestrian bridges and bridge improvements. The Master Plan also included coordination with the Florida Department of Environmental Protection (FDEP) Office of Greenways and Trails (OGT).

3.1.19. FEC Railroad Grade Separation Feasibility Study, Martin MPO, August 2017

The Martin MPO initiated the Florida East Coast (FEC) Railroad Grade Separation Feasibility Study to identify, evaluate and plan for potential roadway and non-motorized pedestrian/bicycle grade separations along the FEC Rail Line through Martin County. The study identified 11 different roadway locations for grade separation along the FEC and five (5) locations for potential non-motorized separations that have the potential need and justification for consideration in future planning and programming efforts by the MPO Board. Four (4) locations were selected for concept development for the purposes of analyzing and better understanding the impacts and benefits of implementing grade separations in Martin County.

3.1.20. Bicycle and Pedestrian Safety Action Plan, Martin County, Martin MPO, May 2016

The Martin County Bicycle and Pedestrian Safety Action Plan (BPSAP) was adopted by the Martin MPO Board on May 9, 2016. Martin County's BPSAP was established to meet FDOT's requirement that each MPO prepare a pedestrian safety action plan, identify bicycle and pedestrian safety problems and crash hot spots, develop strategies to enhance bicycle and pedestrian safety, and to assist local and state agencies in further enhancing their bicycle and safety programs and activities. Through a 12-month planning period with extensive community outreach and engagement efforts and quantitative and qualitative analysis, the BPSAP identified 68 crash hot spots within Martin County. Nearly 32 of these hot spots were matched up with the programmed projects in the FDOT's Five Year Work Program (FY 2017 – FY 2021) and the local plans that could potentially address bicycle and pedestrian issues in the County. The plan also identified location specific engineering countermeasures of six "representative" locations based on a corridor approach. The BPSAP also recommended enforcement and education and encouragement countermeasures as part of the project's "4Es – Engineering, Enforcement,

Encouragement, and Emergency Medical Services (EMS)" approach to improve bicycle and pedestrian safety.

3.1.21. Martin Grade Scenic Corridor, Corridor Management Plan, Martin Grade Scenic Highway Corridor Advocacy Group (CAG), December 2014

The Martin Grade Scenic Corridor is an approximately 12-mile long two-lane, minor arterial roadway in western Martin County. The Corridor Management Plan (CMP) was developed under the Corridor Advisory Group (CAG) and with community input through Martin County agencies and the Martin MPO. The CMP's vision is that the "Martin Grade Scenic Corridor's rare Old-Florida ambiance, scenic beauty, and natural environment are preserved, maintained and enhanced for the enjoyment of countless generations." The CMP proposes to protect this resource through education, awareness and integration into the local tourism economy and addresses fundraising and sustained community support. The Plan seeks to preserve the tree canopy and other scenic resources along the corridor and envisions a greenway along the Grade, which helps integrate the Scenic Corridor into the larger tourism economy in the area, and provide access to outdoor, low-impact recreational opportunities in publicly conserved lands. An objective of the CMP is to ensure that protection for the Martin Grade is included in the Martin County Growth Management Plan and Land Development Regulations.

3.1.22. Martin and St. Lucie Regional Waterways Plan, Martin MPO December 2014

The Waterways Plan was developed at the initiative of the Martin MPO and St. Lucie Transportation Planning Organization (TPO), with funding from and participation by the Florida Inland Navigation District (FIND). The purpose of the plan is to identify and prioritize waterway access and facility needs of the regional waterways system to promote and maximize its economic vitality and public benefit. The plan was developed through a public process facilitated by the Treasure Coast Regional Planning Council (TCRPC) and was created with the guidance of a plan steering committee and with public input. Plan development included a series of public forums, workshops, and a planning charrette, which were conducted from December 2013 through May 2014. This plan supports the continuation of many of the counties' extensive, ongoing programs related specifically to the protection of natural systems, recreation and environmental enhancement, public access, and economic development. The plan also highlights a series of key activities that go beyond the ongoing restoration and enhancement activities and recommends that they be prioritized in the next five to ten years.

3.2. Existing Transit Network

Martin County is located in South Florida and is bordered on the north by St. Lucie County, on the south by Palm Beach County, on the west by Okeechobee County, and on the east by the Atlantic Ocean. Very little of the county is incorporated as there are only five municipalities. Among these incorporated municipalities is the largest city, City of Stuart, which has over 18,000 residents and is located in the northeastern quadrant of the county. The other municipalities include Town of Sewall's Point, Town of Ocean Breeze, Village of Indiantown, and Town of Jupiter Island. The most populated place within the county is unincorporated Palm City, with a population of over 25,000 according to 2022 American Community Survey (ACS) estimates. **Figure 3.2-1** presents a physical representation of the county and the existing transit network.

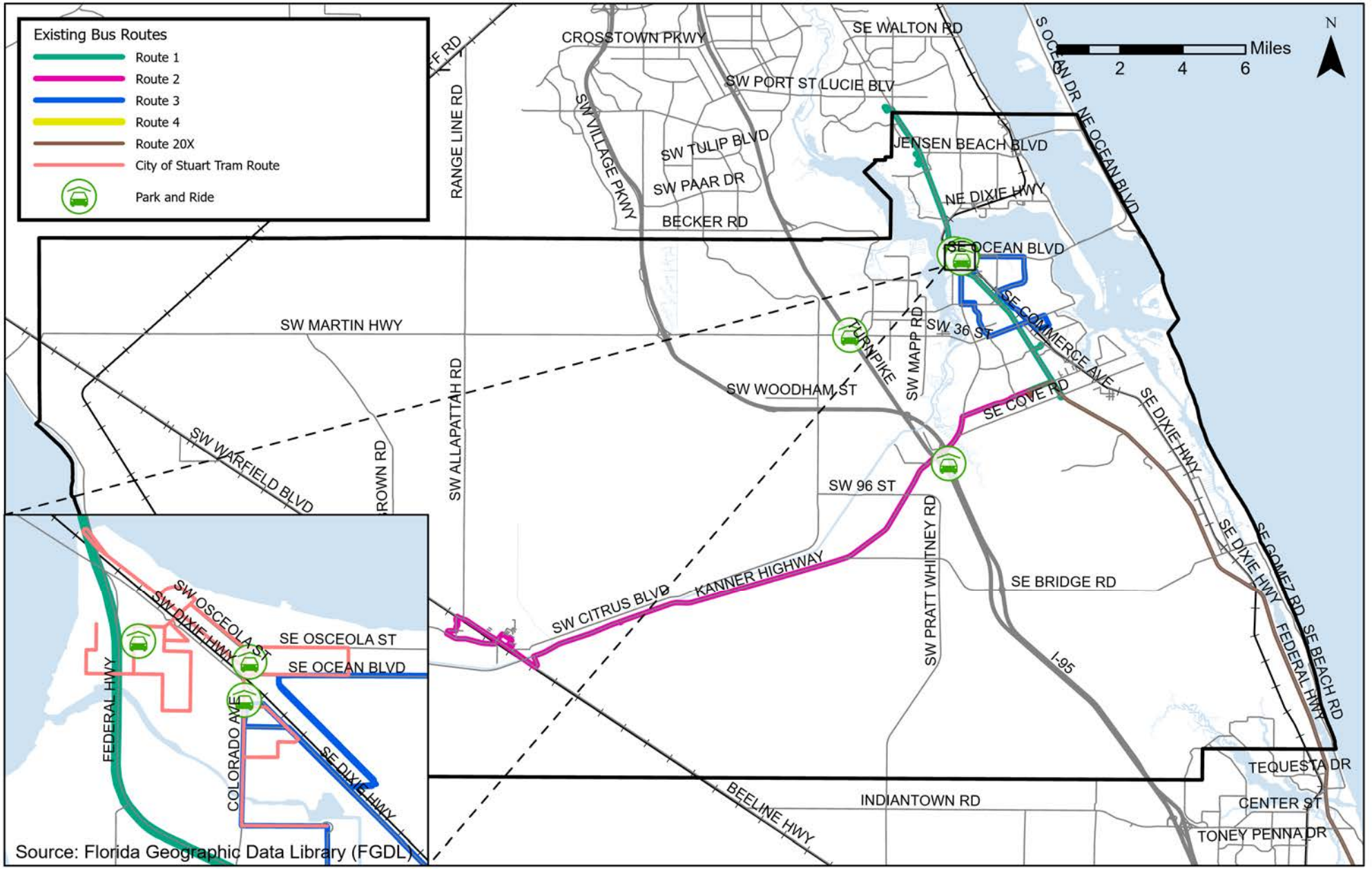

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Figure 3.2-1

3.2.1. Highways

Regionally significant transportation corridors in Martin County including designated Strategic Intermodal System (SIS) facilities are I-95, Florida's Turnpike, State Road 710 and US 98. Other roadway facilities that carry local traffic include major and minor arterials such as, State Road 76/Kanner Highway, US 1/Federal Highway, County Road A1A/Dixie Highway, State Road 714 /Martin Highway, Martin Downs Boulevard, County Road 76A/Citrus Boulevard/SW Newfield Parkway, County Road 711/Pratt Whitney Road, County Road 708/Bridge Road, County Road 722/Salerno Road, Cove Road and Willoughby Boulevard.

3.2.2. Transit

Martin County Public Transit (MCPT) system, Marty, operates five routes. These routes include the following four fixed-routes and one express route for commuters:

- Route 1, an intercounty route serving US 1 from the Port St. Lucie Walmart to Cove Road and providing connections to the Treasure Coast Connector in St. Lucie County. Service operates on weekdays (Monday- Friday) from 6:00 am to 8:00 pm at 35-minutes headway.
- Route 2, a deviated fixed route with a line haul segment between Stuart and Indiantown and becomes a fixed route loop in Indiantown. Service operates on weekdays (Monday-Friday) from 6:00 am to 7:35 pm. Headways within Indiantown is 35-minutes and 160-minutes from Indiantown to Robert Morgade Library.
- Route 3, primarily serving Stuart. Service operates on weekdays (Monday- Friday) from 6:00 am to 8:00 pm at 40-minutes headway.
- Route 4, serving South Stuart and Hobe Sound. Service operates on weekdays (Monday-Friday) from 7:00 am to 5:55 pm at 60-minutes headway.
- Route 20x, an express route providing service from Stuart to Palm Beach County and providing connections to Palm Tran at Palm Beach Gardens Mall and the Veteran's Administration Medical Center (VAMC) in Palm Beach County. Service operates on weekdays (Monday- Friday) from 6:30 am to 7:25 pm. Headway varies from 35- to 95-minutes.

ADA service is offered within a ¾-mile buffer of Marty's fixed-routes for individuals with disabilities. Other transit agencies with connecting opportunities to Marty routes include Palm Beach County's Palm Tran routes and St. Lucie's ART routes as well as City of Stuart's downtown Tram route, which operates as a wave down service and stops at key locations within the downtown area.

3.2.3. Freight

In Martin County, I-95 is included in the Primary Highway Network System (PHNS), which is a critical component of the freight transportation network. In addition, the County's designated SIS facilities that include Florida's Turnpike, State Road 710 and US 98 as well as Atlantic Intracoastal Waterway (AIW) are part of the regionally significant freight network. While Martin County has not designated any local roadways as truck routes, all the major and minor arterials are included in the regionally significant freight network. Witham Field, located approximately one mile southeast of Stuart, does not have commercial or air cargo services but plays a significant role in the general aviation needs of the region. Key freight railroads that traverse Martin County include Florida East Coast Railway (FEC) and CSX Transportation (CSX).

3.2.4. Waterways

Martin County has an extensive network of waterways. The Intracoastal Waterway (ICW), also known as the AIW, spans roughly 44 miles through Martin and St. Lucie counties and provides connections to both the St. Lucie Inlets and Fort Pierce. The St. Lucie River, including its north and south forks, provides connections to the ICW, water access inland, and a connection to Lake Okeechobee via the St. Lucie Canal (C-44). Additionally, Martin County has a series of smaller creeks, canals, and tributaries, which provide additional waterway connections for residents, business owners, visitors, and marine life. Waterways in Martin County are primarily used for recreational purposes by the marine industry and limited cargo service comprised of barge traffic to specific industrial hubs (power plants).

3.3. Existing Travel Patterns

This section describes the travel characteristics of Martin County. The focus is on work trips made by workers that live in Martin County as work trips make up more than 15% of the total daily traffic and are the single most important contributing factor to traffic congestion during peak hours. The analysis is based on the most current available five-year American Community Survey (ACS)/Census Transportation Planning Product (CTPP) data, which is the 2012-2016 dataset[1]. CTPP is a data program sponsored by AASHTO with funding contributions from all state DOTs and some MPOs. The CTPP uses ACS samples for data tabulation and the dataset includes the following three parts:

- Part 1: Residence-based tabulations summarizing worker and household characteristics
- Part 2: Workplace-based tabulations summarizing worker characteristics
- Part 3: Worker flows between home and work, including travel mode

The ACS/CTPP dataset provides the most current and most comprehensive information on socio-economic and commute characteristics at various geographic levels.

3.3.1. Places of Work for Martin County Working Residents

Figure 3.3.1-1 illustrates the counties and places where residents of Martin County worked. Between 2012 and 2016, there were a total of 60,940 workers residing in Martin County. Close to two-thirds (65.1%) of the resident workers (39,690) in Martin County were employed within the County. Palm Beach County was the most popular workplace outside Martin County, employing 13,675, or 22.4% of the County's workforce. This was followed by the neighboring St. Lucie County where 5,040, or 8.3% of the Martin County resident workers traveled to work. There were 1,341 workers (2.2%) who traveled to work in other counties in Florida, while a small percentage of people (2.0%, or 1,194) worked out of the State.

[1] The CTPP data has been recently renamed to AASHTO Census Transportation Solutions (ACTS). According to AASHTO, a more recent ACTS dataset from 2017 to 2021 will be released in late 2024. For this report, the terms CTPP and ACTS will be used interchangeably, and the report will be updated when the new dataset is released.

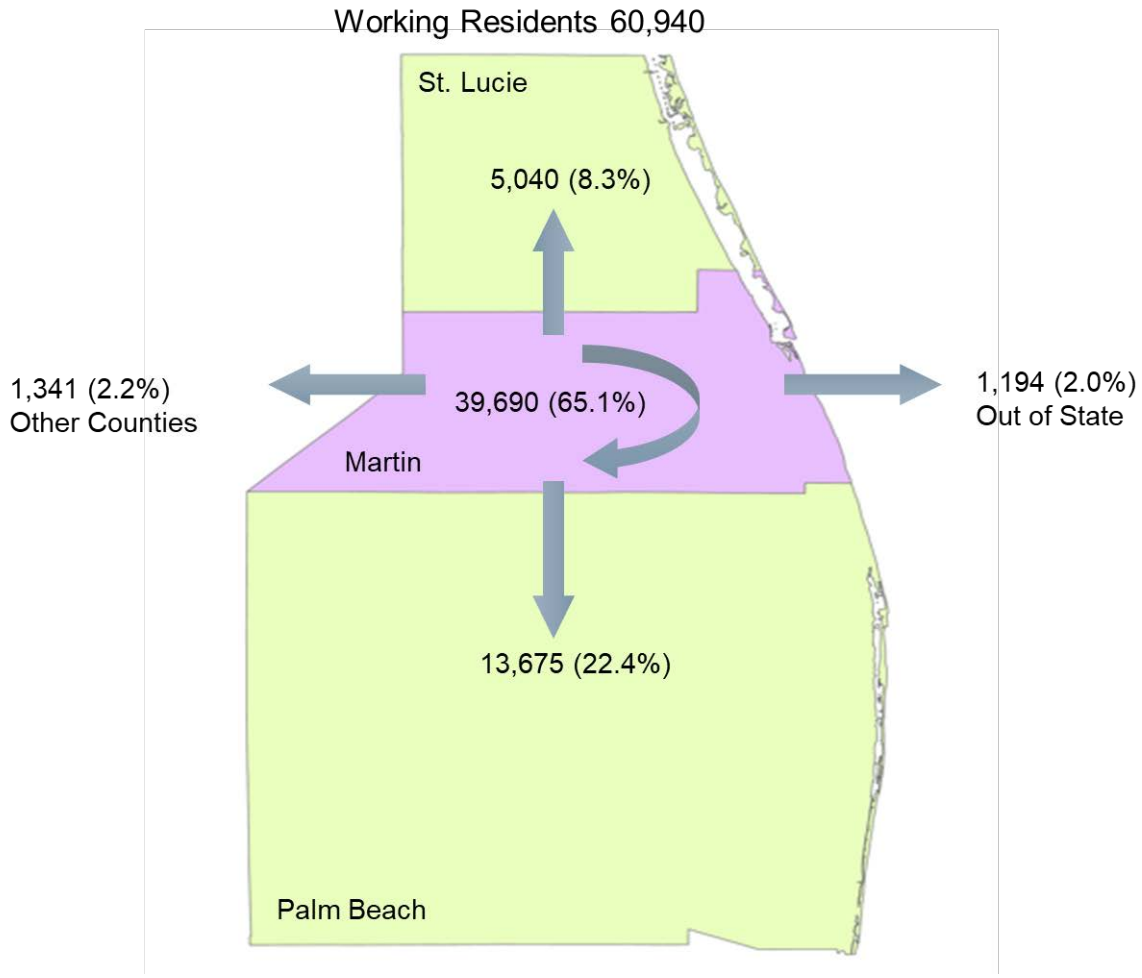


Figure 3.3.1-1. Workplace Counties for Martin County Working Residents

3.3.2. County of Residence for Martin County Workers

Figure 3.3.2-1 shows where workers in Martin County resided. Between 2012 and 2016, a total of 62,510 workers were employed in Martin County. Compared to the 60,940 workers available in Martin County, Martin County provided more employment opportunities than the County's workforce and had an employment surplus of 1,570 jobs. Approximately 28.7%, or 17,920 workers in Martin County lived in St. Lucie County. A smaller percentage, 5.5%, or 3,435 workers in Martin County traveled to Martin County from Palm Beach County. Two percent (2%) or 1,252 people were residents of Florida counties. Over two hundred people traveled to Martin County to work from out-of-state.

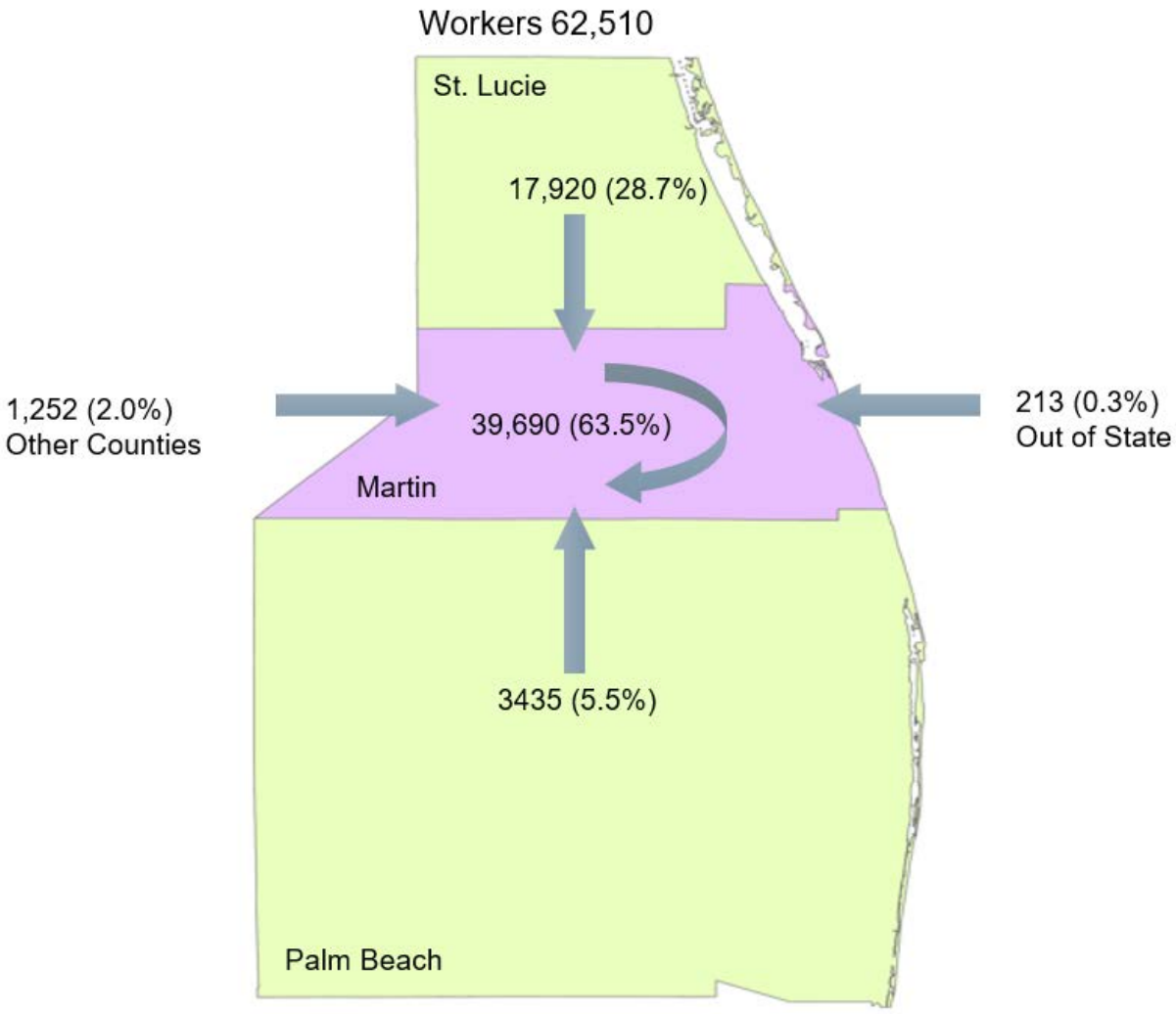


Figure 3.3.2-1. Residence Counties for Martin County Workers

3.3.3. Martin County Employment by Industry Sector

Figure 3.3.3-1 shows 2021 employment rates in different industry sectors in Martin County in descending order. This data was obtained from the most recent U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES), Version 8. The LEHD program is used to enhance the nation's statistical infrastructure by exploring the interactions between workers and firms. By linking employer and household data, the LEHD program has built a comprehensive database of longitudinally linked jobs data. According to LODES, Version 8, "Health Care, and Social Assistance" was the largest industry sector, employing nearly 16,000 people. More than 8,000 people worked in "Retail Trade" sector, and over 7,000 people worked in "Accommodation and Food Services". Close to 6,500 people were employed in "Construction" sector, and a similar number of people worked in "Administration & Support, Waste Management and Remediation". The "Professional, Scientific, and Technical

Services" industry employed more than 4,500 people during the same time period, making it the sixth largest industry in the County.

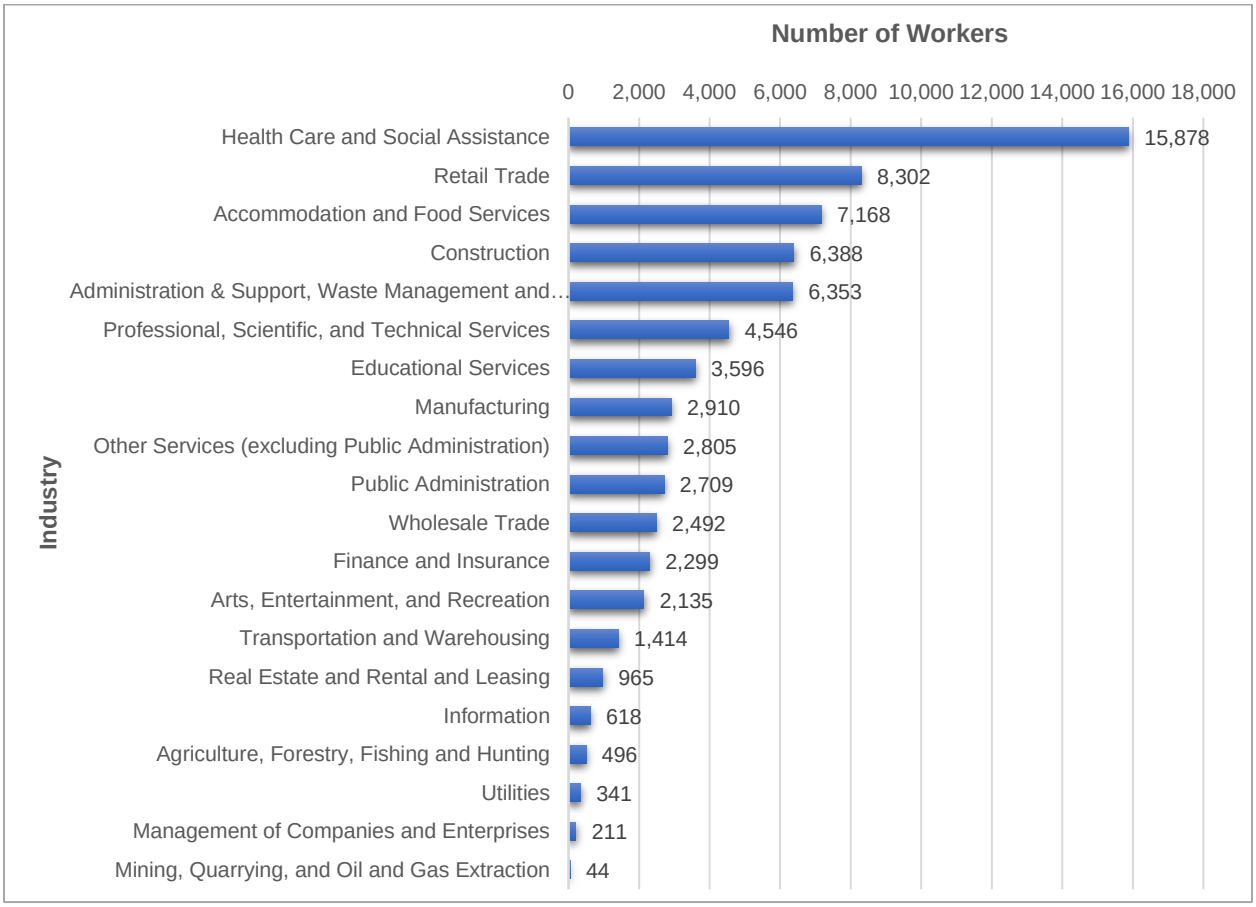


Figure 3.3.3-1. Martin County Employment by Industry Sector

3.3.4. Means of Transportation (MOT) to Work

Figure 3.3.4-1 depicts the Means of Transportation (MOT) to work distribution for workers that lived in Martin County in 2022. The data was obtained from ACS One-Year Supplemental Estimates. "Drove Alone" was still the predominant mode of travel to work with 71.0%. Approximately 7.0% of workers commuted to work by carpool. Public Transportation made up about 0.3% of the mode shares, which was the lowest one among different means of transportation to work. About 5.1% of workers used "Taxicab, motorcycle, bicycle, walked, or other method" to work. Like other places in the country that were impacted by the travel restrictions during the Pandemic, Martin County also saw a significant increase in the Work-from-Home share. More than 16% of the employees worked from home in 2022.

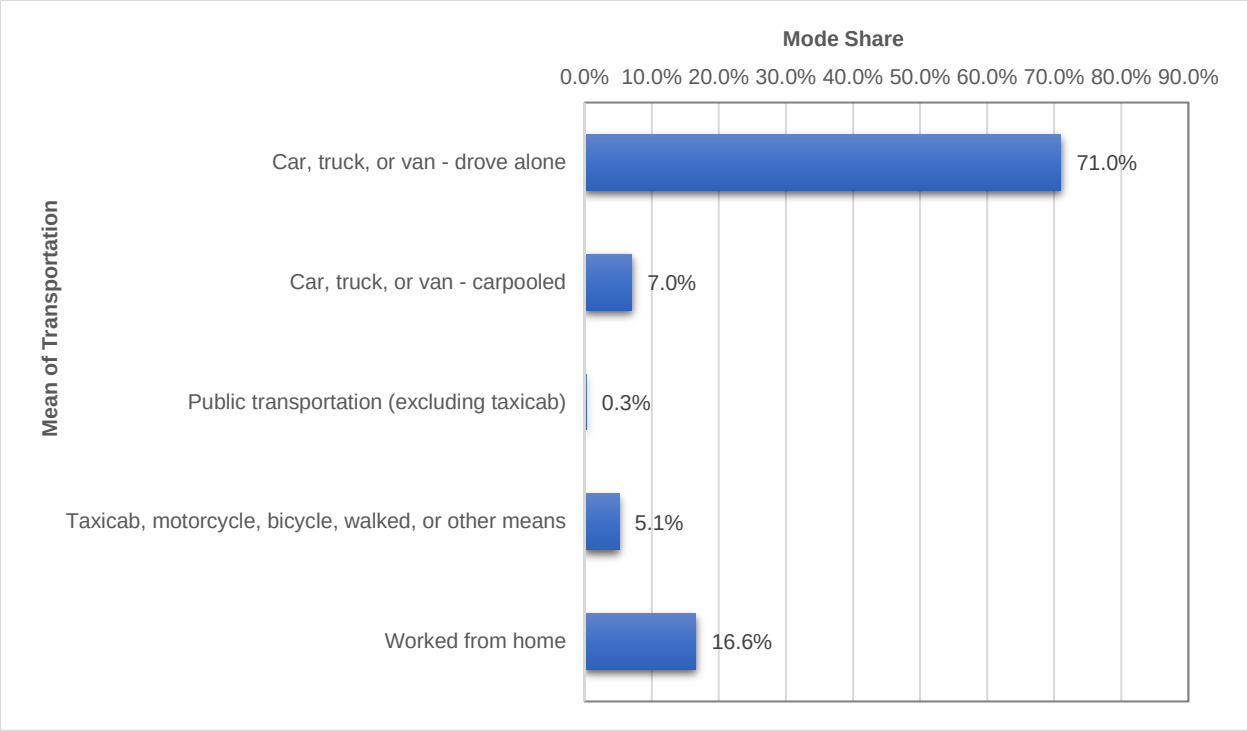


Figure 3.3.4-1. Martin County Workers Means of Transportation to Work

3.3.5. Travel Time to Work

Figure 3.3.5-1 shows the travel time distribution for workers residing in Martin County in 2022. The data is also based on ACS One-Year Supplemental Estimates. Close to 8.6% of the workers took less than 10 minutes to get to work. Most people took between 10 and 29 minutes to go to work, which accounted for 46.3% of the workers. About 32.7% of people spent 30 to 59 minutes, and 12.4% of people spent more than 60 minutes on the road to go to work. The average travel time for all employees that did not work from home was 31.5 minutes.

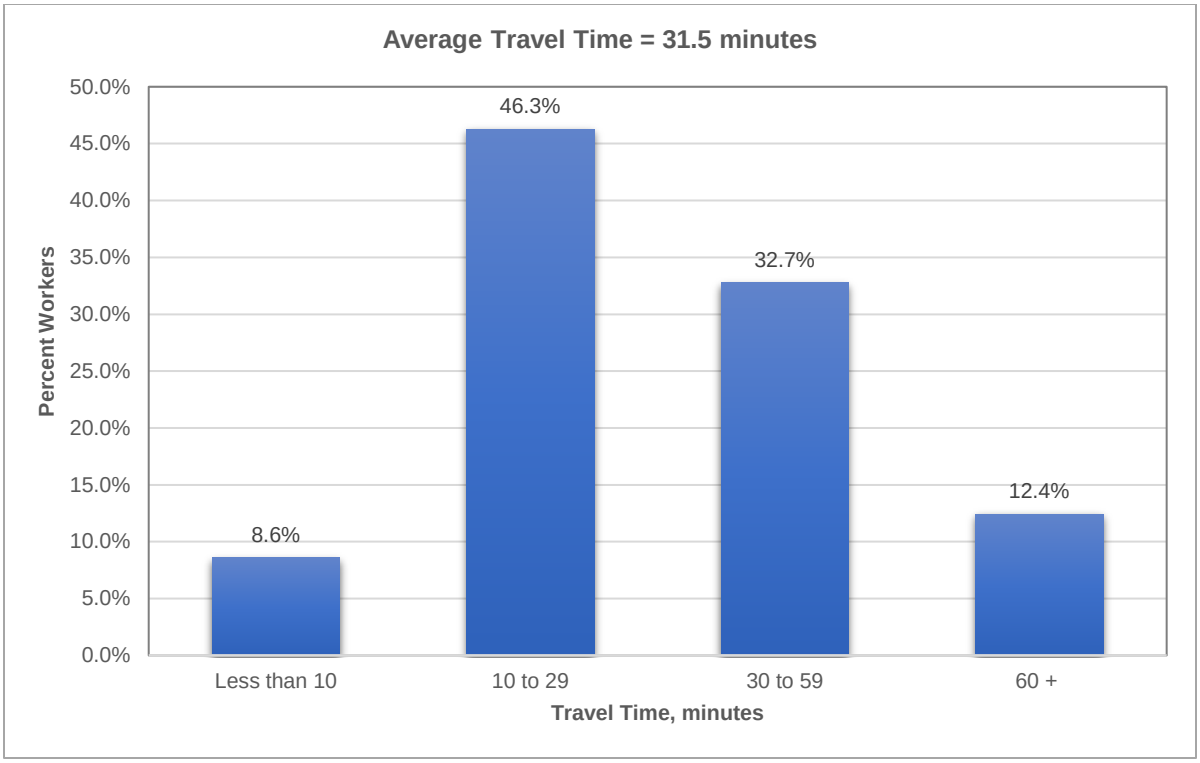


Figure 3.3.5-1. Martin County Workers Travel Time to Work

3.4.Existing and Future Land Use

Martin County is centered around the Atlantic Ocean, St. Lucie Inlet, estuaries of the St. Lucie River, Indian River, Loxahatchee River, and Lake Okeechobee. Martin County's total land area is approximately 344,316 acres or 538 square miles. The urbanized area predominantly lies between the Florida Turnpike and Atlantic Ocean in the eastern portion of the county, and Stuart is the most urbanized portion of the county. A western urban core occurs in the Indiantown area along the State Road 710 corridor. The western portion of the county is largely agricultural, with older, rural residential developments. The top land uses within the county according to the Martin County Comprehensive Plan include agriculture land, state lands, single-family homes, and vacant acreage. **Figure 3.4-1 2010 Existing Land Use** was developed by Martin County for the County's Comprehensive Growth Management Plan. It shows existing land uses categorized from the Department of Revenue Codes (DOR) and assigned by the Martin County Property Appraiser.

Martin County

File: G:\projects\lits\rlawton\CPAs\CGMP_Figures
Created By: Emily Kohler (GMD)
Plot Date: July 9, 2013

Comprehensive Growth Management Plan
2010 Existing Land Uses

0 1.5 3 6 9 12 Miles

N

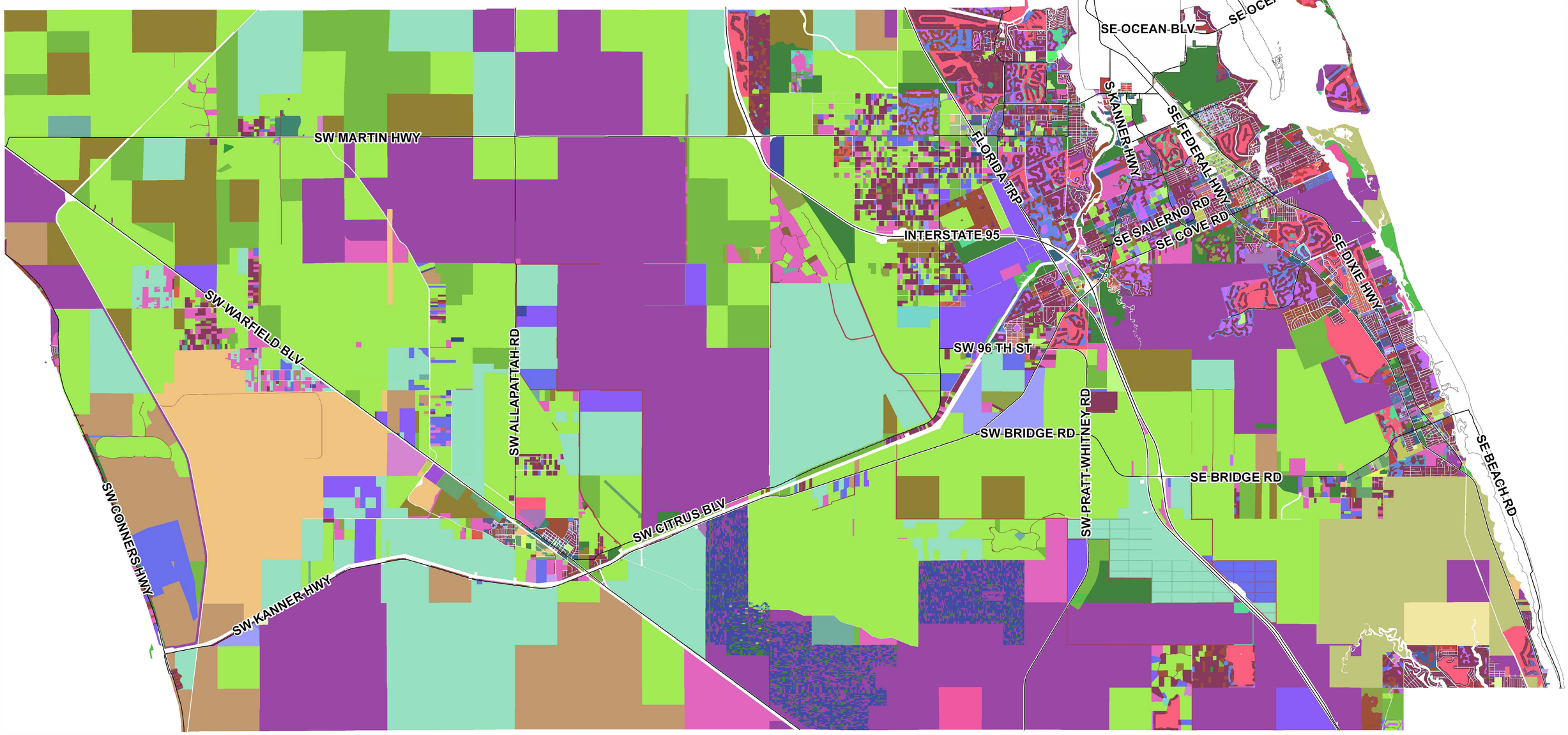
Location Map

Legend

- Major Roads
- Municipal Boundaries

Existing Land Uses

- 0000 Vacant Residential
- 0100 Single Family
- 0110 Single FamilyTransitional
- 0200 Mobile Home
- 0300 Multi family >=10 units
- 0400 Res Mobile Home Condo
- 0400 Residential Condo
- 0402 Condo recreation area
- 0500 Cooperative
- 0600 RetirmentHmNotElig196.192
- 0700 Misc Residential Imp
- 0800 Duplex
- 0803 Triplx Income Producing
- 0804 Quadriplex income prod
- 0812 Multi fam apts < 10
- 0880 Duplex Unit value only
- 1000 Vacant Commercial
- 1001 Commerc. Transition Prop
- 1100 STORES 1 STORY
- 1200 Mixed use/store/office
- 1204 Mixed Use condo
- 1300 Department Store
- 1400 Supermarkets
- 1500 Regional Shopping Cntr
- 1600 Community shopping center
- 1700 Office bldg non-prof1story
- 1800 Off bldg non-prof mlt sty
- 1900 Prof serv/Medical offices
- 2000 Marina/air/bus terminals
- 2100 Restaurant/cafeterias
- 2200 Drive-in Restaurants
- 2300 Financial institution
- 2500 Repair service shops
- 2600 Service Station
- 2700 Auto Sales/Repair
- 2800 MHome Parks,Parking Lots
- 2900 Wholesale Outlets
- 3000 Florist Greenhouses
- 3300 Nightclub Bars Lounges
- 3400 BowlingAlley/SkatingRink
- 3500 TouristAttrn/PermExhib
- 3800 Golf Course/Driving Range
- 3900 Hotels/Motels
- 4000 Vacant Industrial
- 4100 Light Equipment Mfg
- 4200 Heavy Equipment Mfg
- 4300 Lumber Yards, Sawmills
- 4400 PackingPlt/fruit/veg/meat
- 4500 Cannery Fruit/Veg/Brewers
- 4700 Minrl Process CementPhosp
- 4800 Warehse distribution term
- 4804 Warehouse Condo
- 4900 Open Storage Junk Yard
- 5200 Cropland Soil Cpcty CLII
- 5300 Cropland Soil Cpcty CLIII
- 5700 Timber Site Index 4
- 6300 GrazLD Soil Cpcty CL III
- 6400 GrazLD Soil Cpcty CL IV
- 6500 GrazLD Soil Cpcty CL V
- 6600 ORCHARD GROVES CITRUS ETC
- 6700 Poultry Bees TropFish etc
- 6900 Ornamentals Misc agric.
- 7000 Vacant Institutional
- 7100 Churches
- 7200 Private Schools/Colleges
- 7300 Privately owned Hospitals
- 7400 Homes for the aged
- 7500 Orphan/non-profit/charity
- 7600 Mort./cemeteries/cremat
- 7700 Clubs Lodges Union Halls
- 7800 Sanit/Convalescent Home
- 7900 Cultural Org. Facilities
- 8200 Forest Pk Recreation Area
- 8300 Public County Schools
- 8500 Hospitals
- 8600 Cnty other than prev cvrd
- 8700 St other than prev cvrd
- 8800 Fed other than Prev cvrd
- 8900 Muni other than prev cvrd
- 9100 UtilityGasElectricTelep
- 9105 Hm own no val utility res
- 9145 HmOwn NoVal UTILITY CONDO
- 9400 Right of way streetsRoads
- 9405 HmOwn NoVal ROW, RES
- 9445 Hm Own No Val ROW CONDO
- 9445 HmOwn NoVal ROW, RES
- 9485 ComAssnNoVal ROW Comm
- 9500 RiversLakesSubmergedLands
- 9505 HmOwnNoVal RVRSLAKES RES
- 9545 HmOwnNoVal RVRS LKS CONDO
- 9600 SewageDisposalSolidWaste
- 9700 outdoor rec park lands
- 9705 HmAssnNoValRecArea,Res
- 9745 HmOwnNoValRecAreaCondo
- 9800 Central Assess Railroads
- 9900 Vacant Acreage
- 9901 ImprovedACNoClassed ag
- 9902 Vac Acreage no classed Ag
- H - SUBDIVISION HEADER
- I - Information Card
- No category assigned



A full county future land use map (FLUM) was developed by Martin County (**Figure 3.4-2**) as a representative figure for future land use designations. **Figure 3.4-2** is not the official FLUM of Martin County due to the large map scale required to show designations; the official FLUM consists of an online mapping application and a 58 page map series found on the County's website. The majority of land uses includes agricultural land along with public conservation areas and a major power generation facility. There are over 182,000 acres designated for agricultural use. 9,901 acres are designated for the public power plant operated by Florida Power and Light. Urban development will continue in the coastal area between the Turnpike and the Atlantic Ocean, concentrating in Stuart. Residential uses within the coastal area are encouraged to be integrated with mixed use redevelopment projects to conserve environmental resources, provide recreational opportunities, support tourism and redevelopment, and enhance the local economy. Agricultural lands are a vital part of the County's export industry and are to be protected as urbanization continues to threaten these lands through encroachment along the Coastal Ridge. Future land use designations listed 2,344 acres of land for commercial purposes, 1,948 acres for industrial use, and 3,301 acres as general institutional use.

Martin County

Plot Date: Oct 17, 2024

Future Land Use *

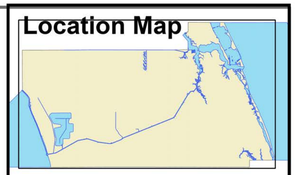
0 1 2 4 6 8 Miles

N

Disclaimer

"This Geographic Information System Map Product, received from Martin County ("COUNTY") in fulfillment of a public records request is provided "as is" without warranty of any kind, and the COUNTY expressly disclaims all express and implied warranties, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. The COUNTY does not warrant, guarantee, or make any representations regarding the use, or the results of the use, of the information provided to you by the COUNTY in terms of correctness, accuracy, reliability, timeliness or otherwise. The entire risk as to the results and performance of any information obtained from the COUNTY is entirely assumed by the recipient. This is not a survey."

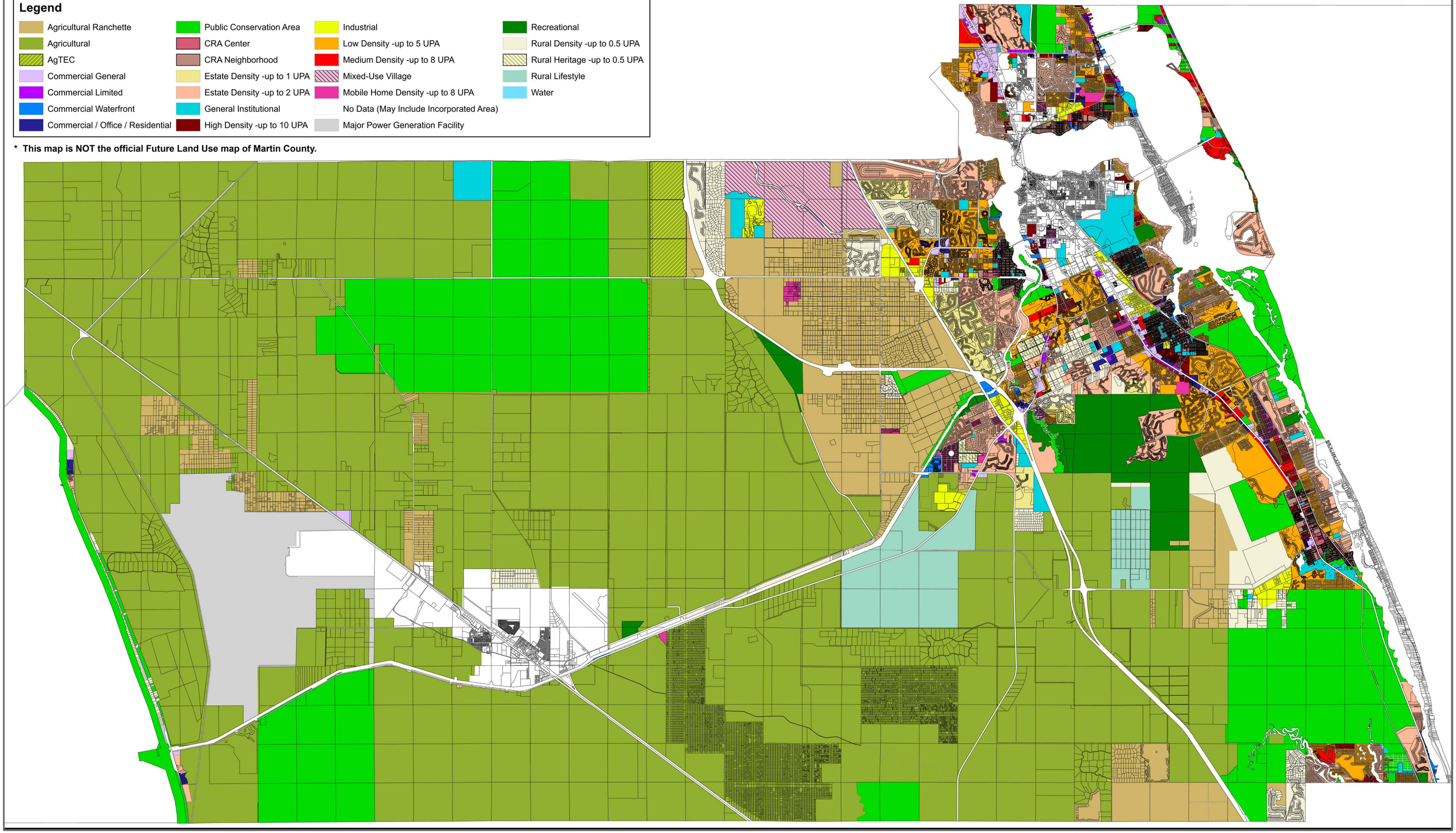
Location Map



Legend

- Agricultural Ranchette
- Agricultural
- AgTEC
- Commercial General
- Commercial Limited
- Commercial Waterfront
- Commercial / Office / Residential
- Public Conservation Area
- CRA Center
- CRA Neighborhood
- Estate Density -up to 1 UPA
- Estate Density -up to 2 UPA
- General Institutional
- High Density -up to 10 UPA
- Industrial
- Low Density -up to 5 UPA
- Medium Density -up to 8 UPA
- Mixed-Use Village
- Mobile Home Density -up to 8 UPA
- No Data (May Include Incorporated Area)
- Major Power Generation Facility
- Recreational
- Rural Density -up to 0.5 UPA
- Rural Heritage -up to 0.5 UPA
- Rural Lifestyle
- Water

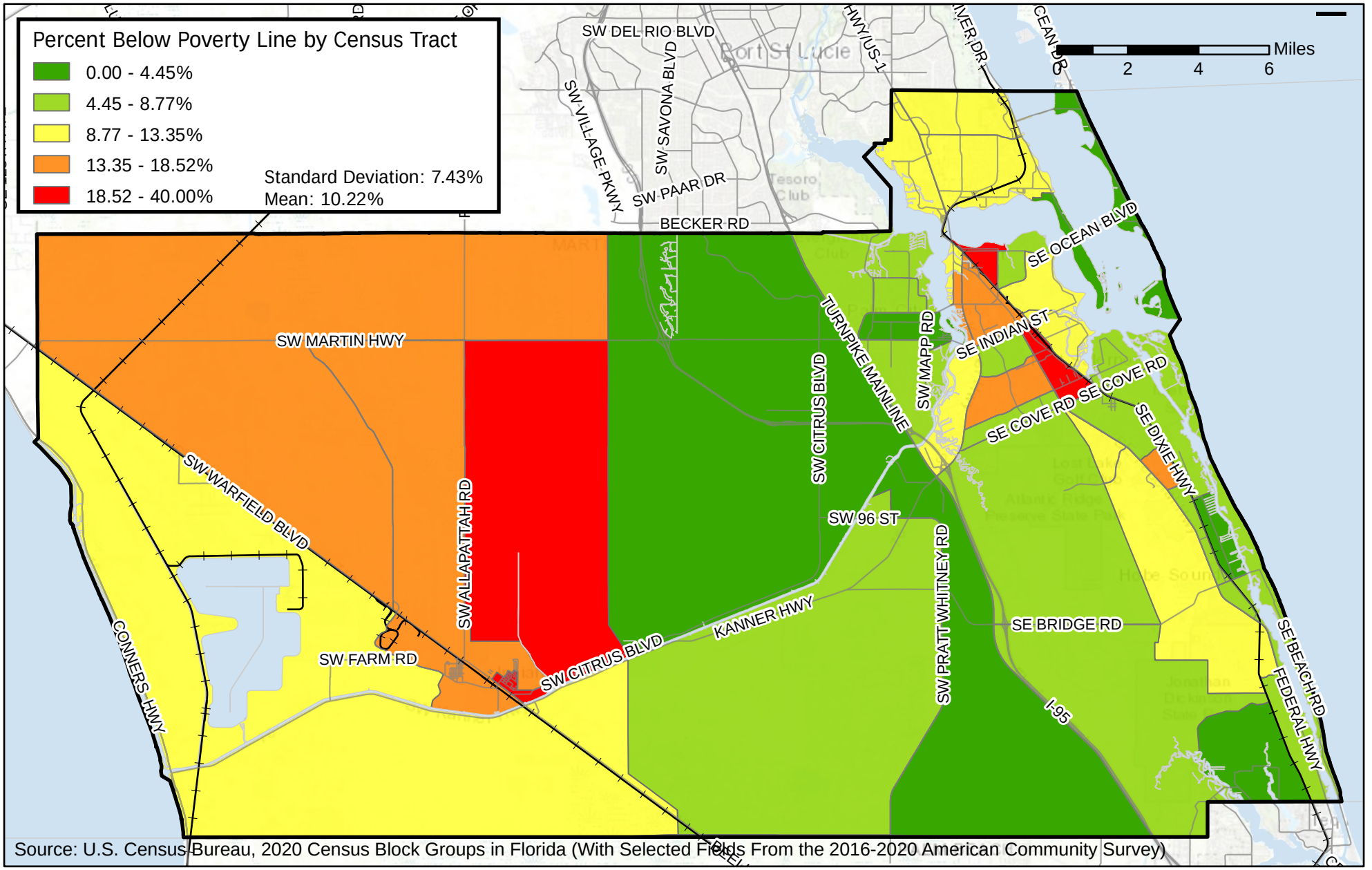
* **This map is NOT the official Future Land Use map of Martin County.**



3.5. Environmental Justice and Equity

3.5.1. Low Income Households

Low income households were analyzed using data from the 2020 Census Block Groups and the 2016-2020 American Community Survey 5-year Estimates. The percent of households below the national poverty level was examined by census tract within Martin County. Data was classified by natural breaks, with five classes accounting for non-uniform distributions. According to the data, the county average was 10.22% with a standard deviation of 7.43%. Highest percentages of low-income households were located in the westernmost portion of the county and along with the southern portion of the City of Stuart along SE Dixie Highway. (**Figure 3.5.1-1**).



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Low Income Households

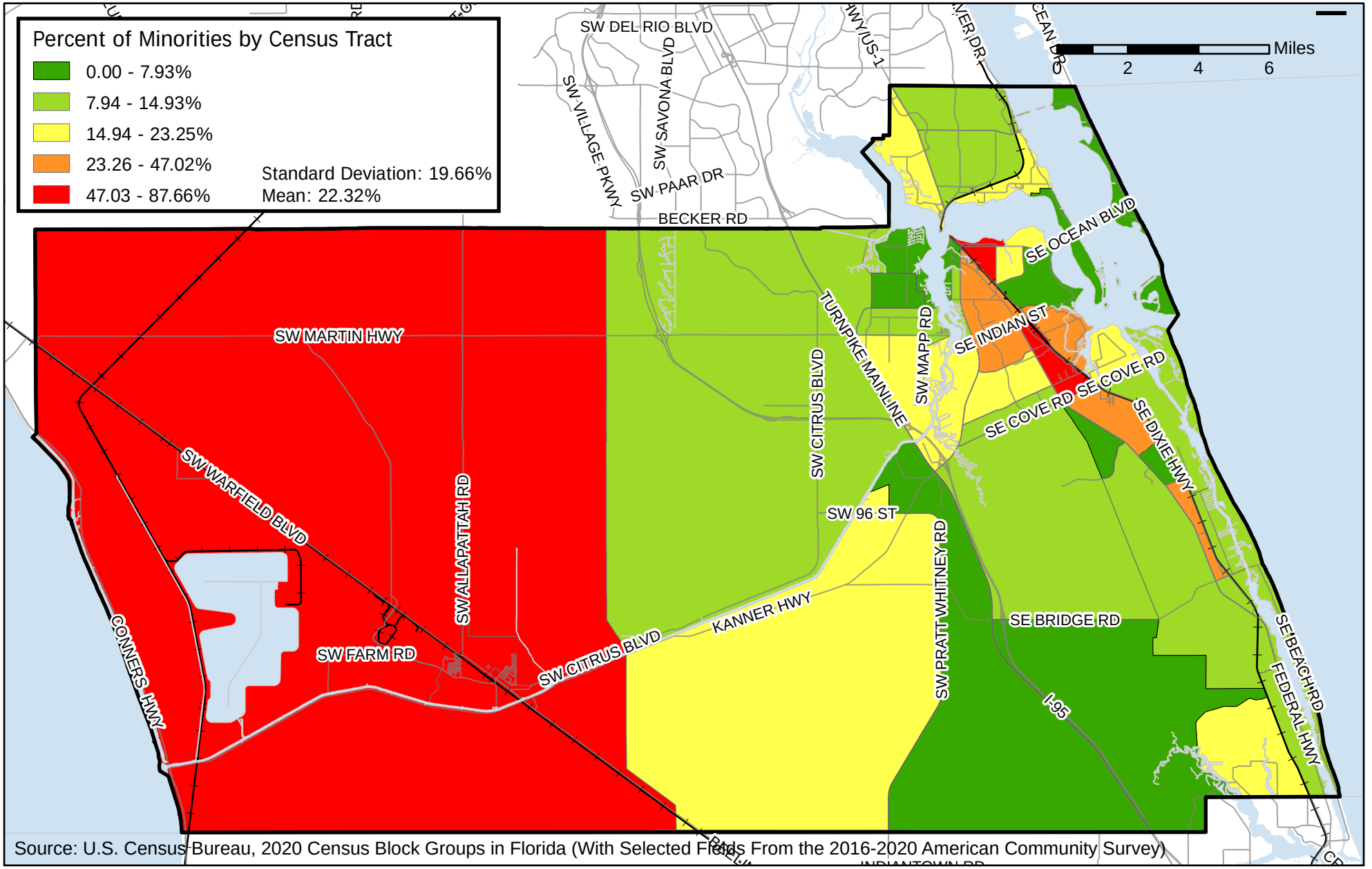
Martin County

MARTIN MOVES 2050

Figure 3.5.1-1

3.5.2. Minorities

Minority populations were analyzed using data from the 2020 Census Block Groups and the 2016-2020 American Community Survey 5-year Estimates. The percent of the population that is a minority was examined by census tract within Martin County. Data was classified by natural breaks, with five classes accounting for non-uniform distributions. According to the data, the County average was 22.32% with a standard deviation of 19.66%. Highest percentages of minorities are located within the westernmost portion of the County, west of SW Village Parkway, where land use is predominantly agricultural (**Figure 3.5.2-1**).



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Minority Population

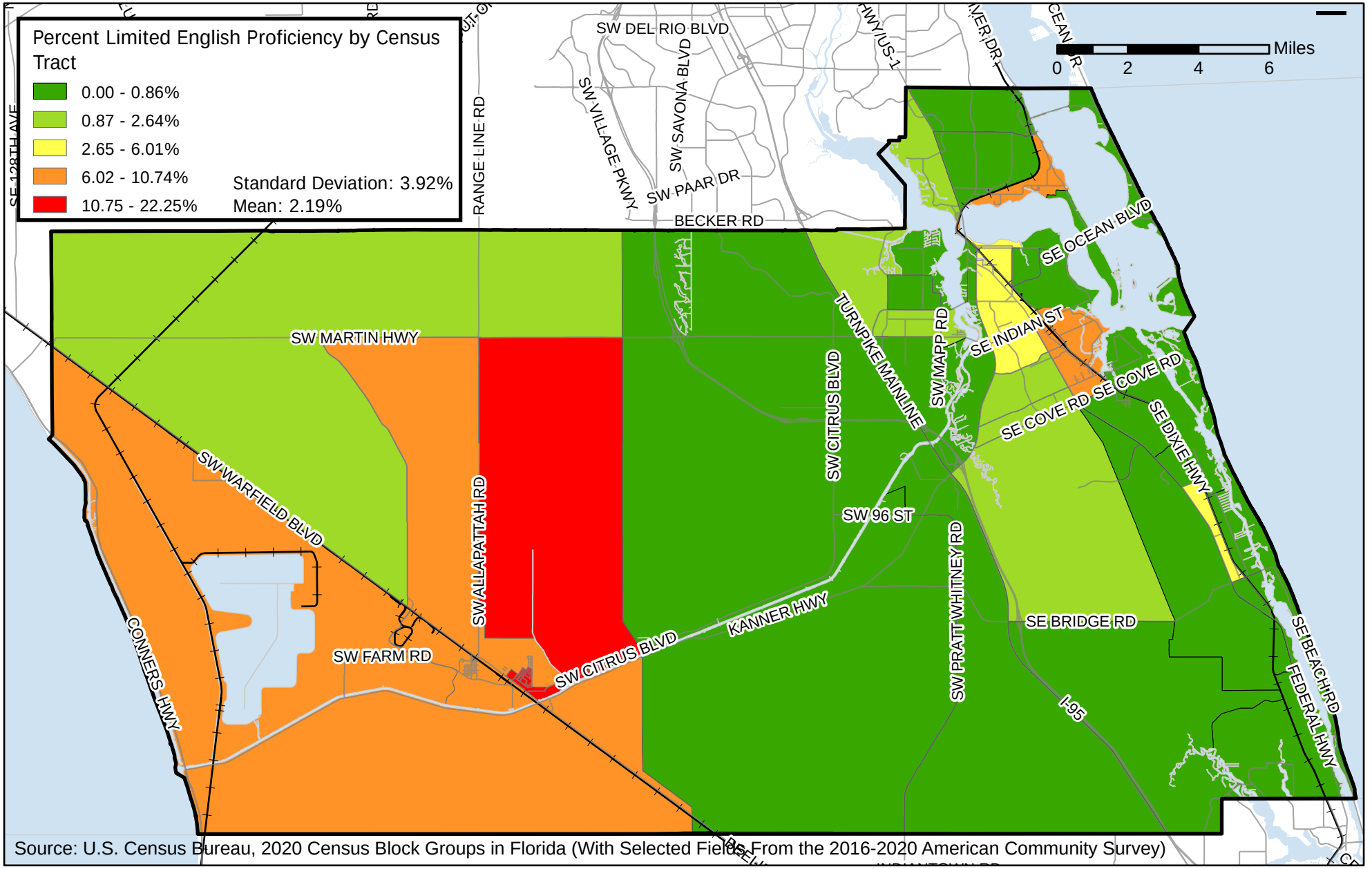
Martin County

MARTIN MOVES 2050

Figure 3.5.2-1

3.5.3. Limited English Proficiency (LEP)

Limited English proficiency (LEP) was analyzed using data from the 2020 Census Block Groups and the 2016-2020 American Community Survey 5-year Estimates. The percent of the population with LEP for census tracts within Martin County were classified by natural breaks, with five classes accounting for non-uniform distributions. According to the data, the County average was 2.19% with a standard deviation of 3.92%. Highest percentages of LEP are within the westernmost portion of the county, including the census tract that contains Indiantown (**Figure 3.5.3-1**).



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Limited English Proficiency Population

Martin County

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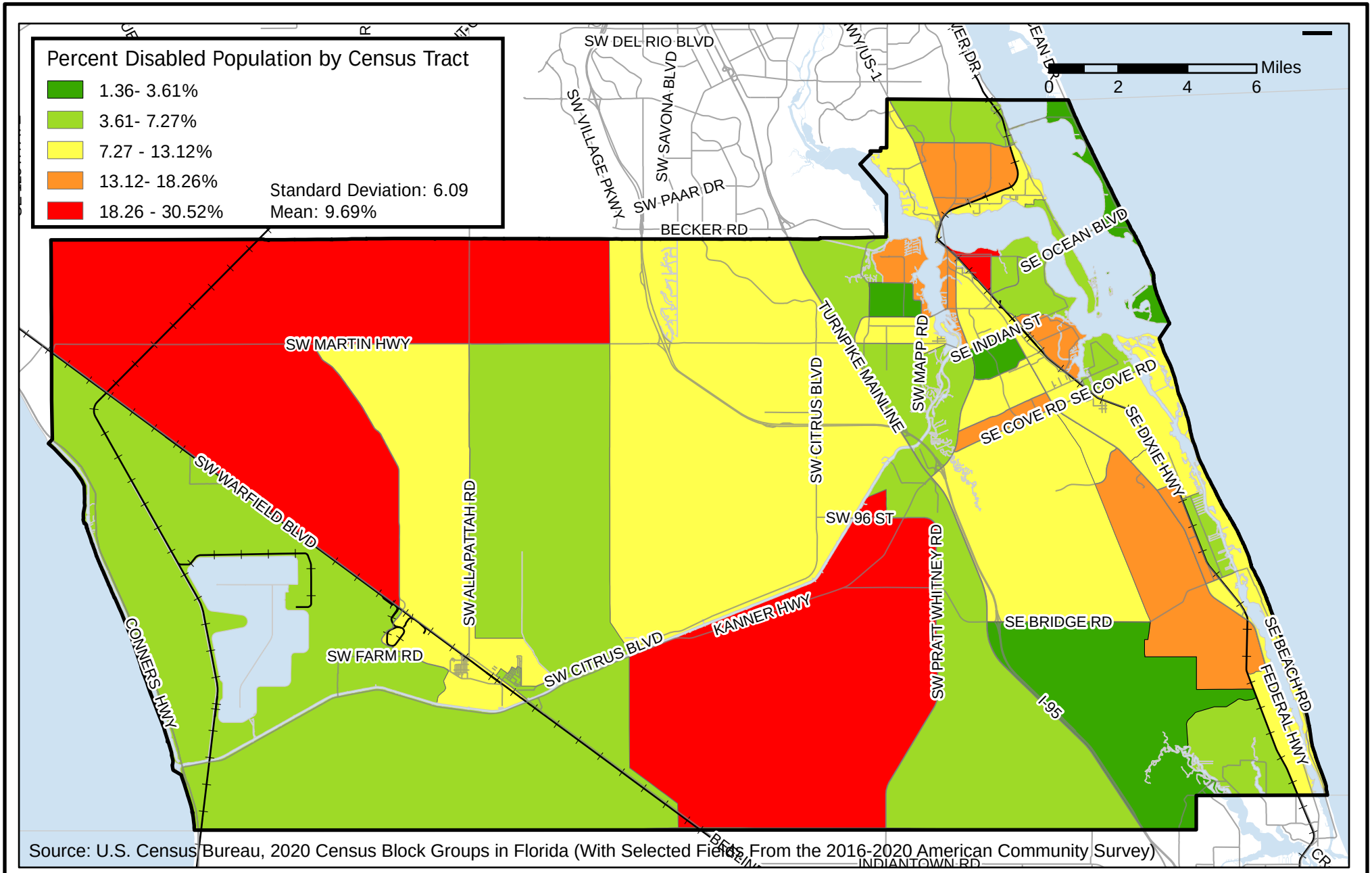
Figure 3.5.3-1

3.5.4. Disabled Population

Disabled population was analyzed using data from the 2020 Census Block Groups and the 2016-2020 American Community Survey 5-Year Estimates. The percent of population with a disability was examined by census tract within Martin County. Data was classified by natural breaks, with five classes accounting for non-uniform distributions. According to the data, the County average was 9.69% with a standard deviation of 6.09%. Highest percentages of disabled populations are located northwest and southeast of Indiantown, as well as along the major highway SE Dixie Highway (**Figure 3.5.4-1**).



Source: U.S. Census Bureau, 2020 Census Block Groups in Florida (With Selected Fields From the 2016-2020 American Community Survey)

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Disabled Population

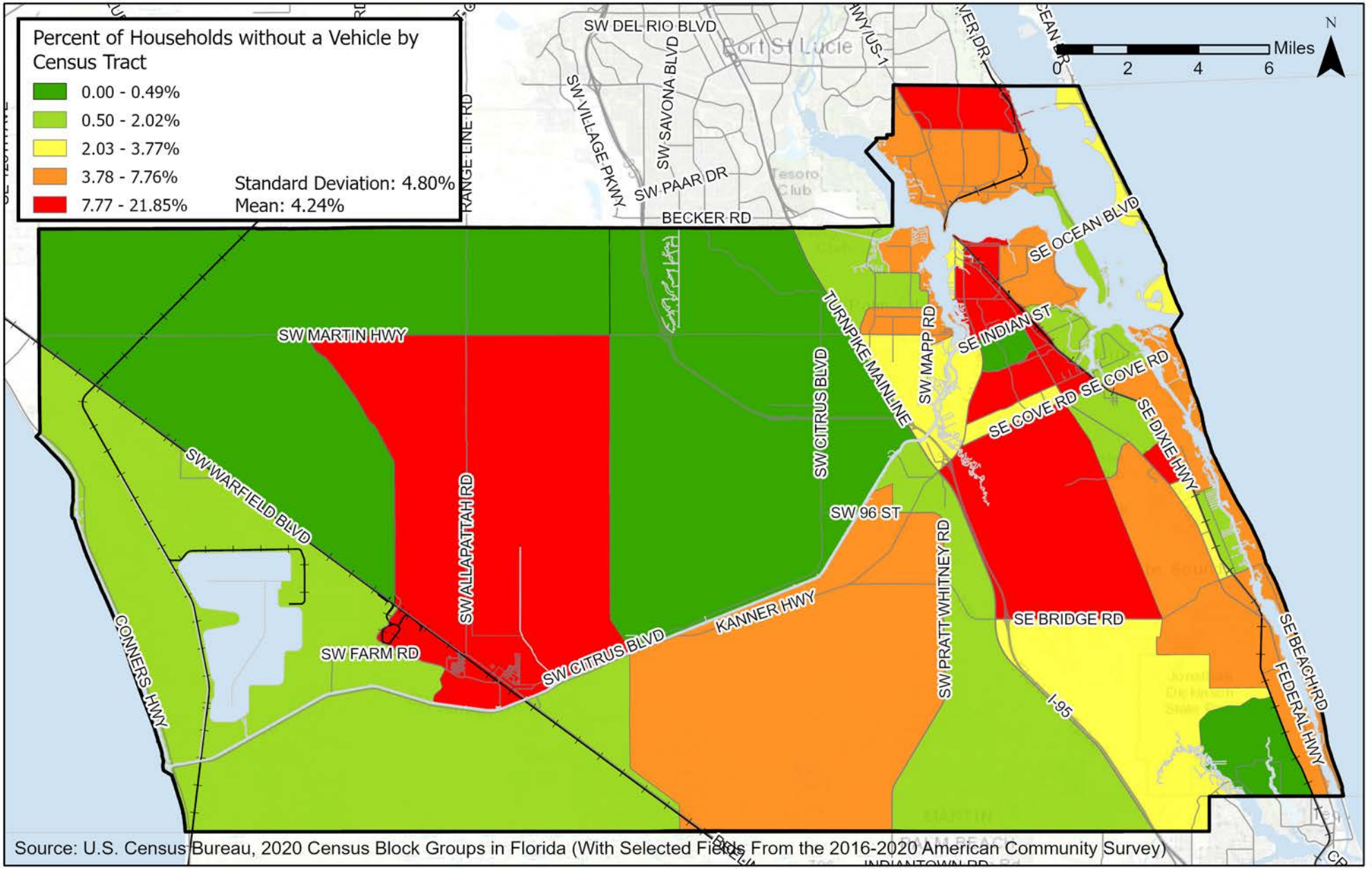
Martin County

MARTIN MOVES 2050

Figure 3.5.4-1

3.5.5. Zero-auto Households

Zero-auto households was analyzed using data from the 2020 Census Block Groups and the 2016-2020 American Community Survey 5-Year Estimates. The percent of households without a vehicle was examined by census tract within Martin County. Data was classified by quantile, with five classes containing an equal number of features. According to the data, the County average was 4.24% with a standard deviation of 4.80%. Highest percentages of households without a vehicle are within the census tracts of Indiantown and in the eastern portion of the County (**Figure 3.5.5-1**).



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Zero Auto Households

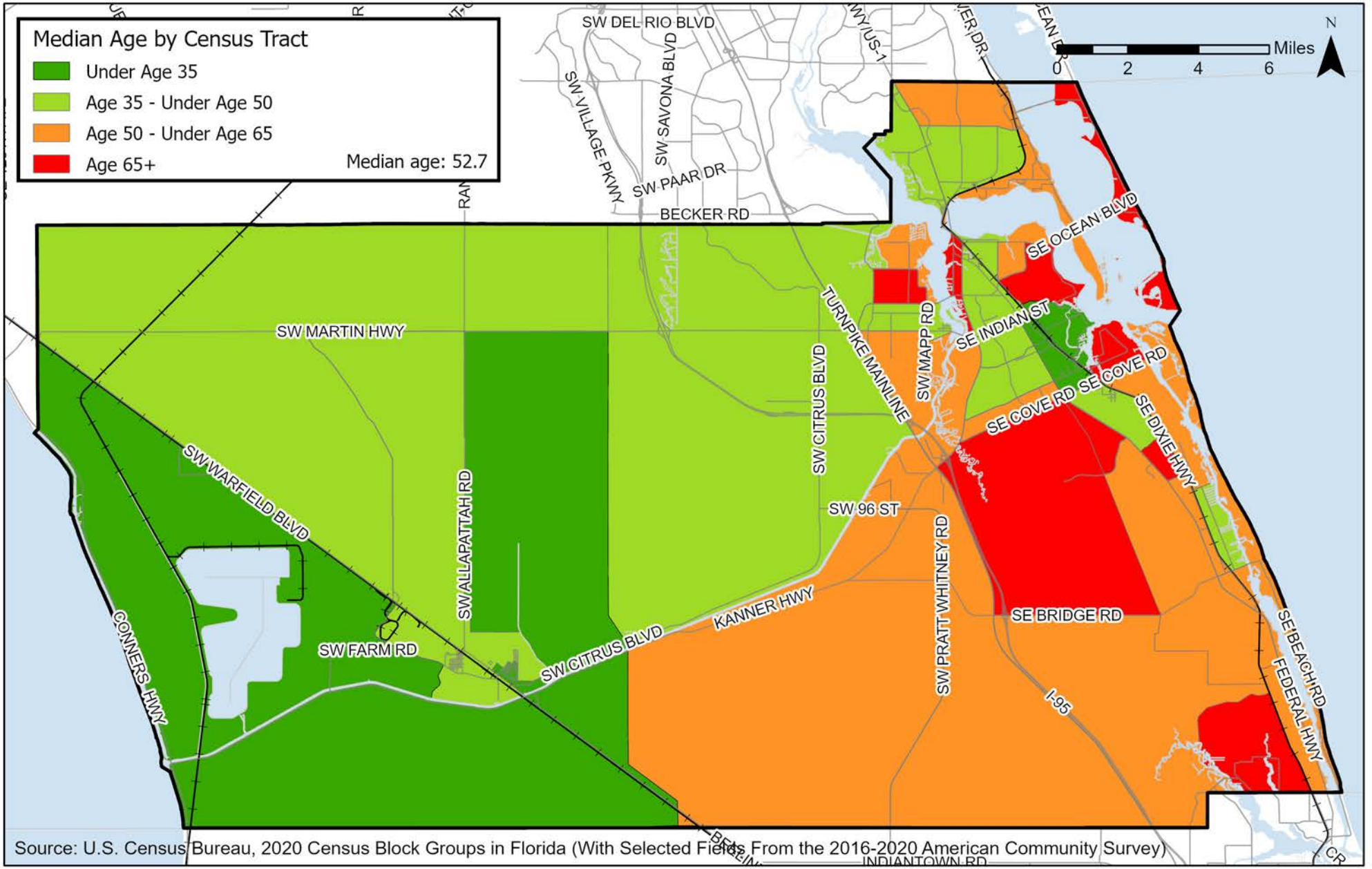
Martin County

MARTIN MOVES 2050

Figure 3.5.5-1

3.5.6. Elderly Population

The elderly population was analyzed using data from the 2020 Census Block Groups and the 2016-2020 American Community Survey 5-Year Estimates. Median age was examined by census tract within Martin County. Data was classified manually within four groups: age below 35, 35-50, 50-65, and 65 and up. According to the data, the median age for the county was 52.7. Populations over the age of 65 are concentrated within the census tract along the barrier island north of St. Lucie Inlet, as well as several country clubs including Monarch Country Club, The Yacht and Country Club, and Heritage Ridge Golf Club (**Figure 3.5.6-1**).



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Median Age

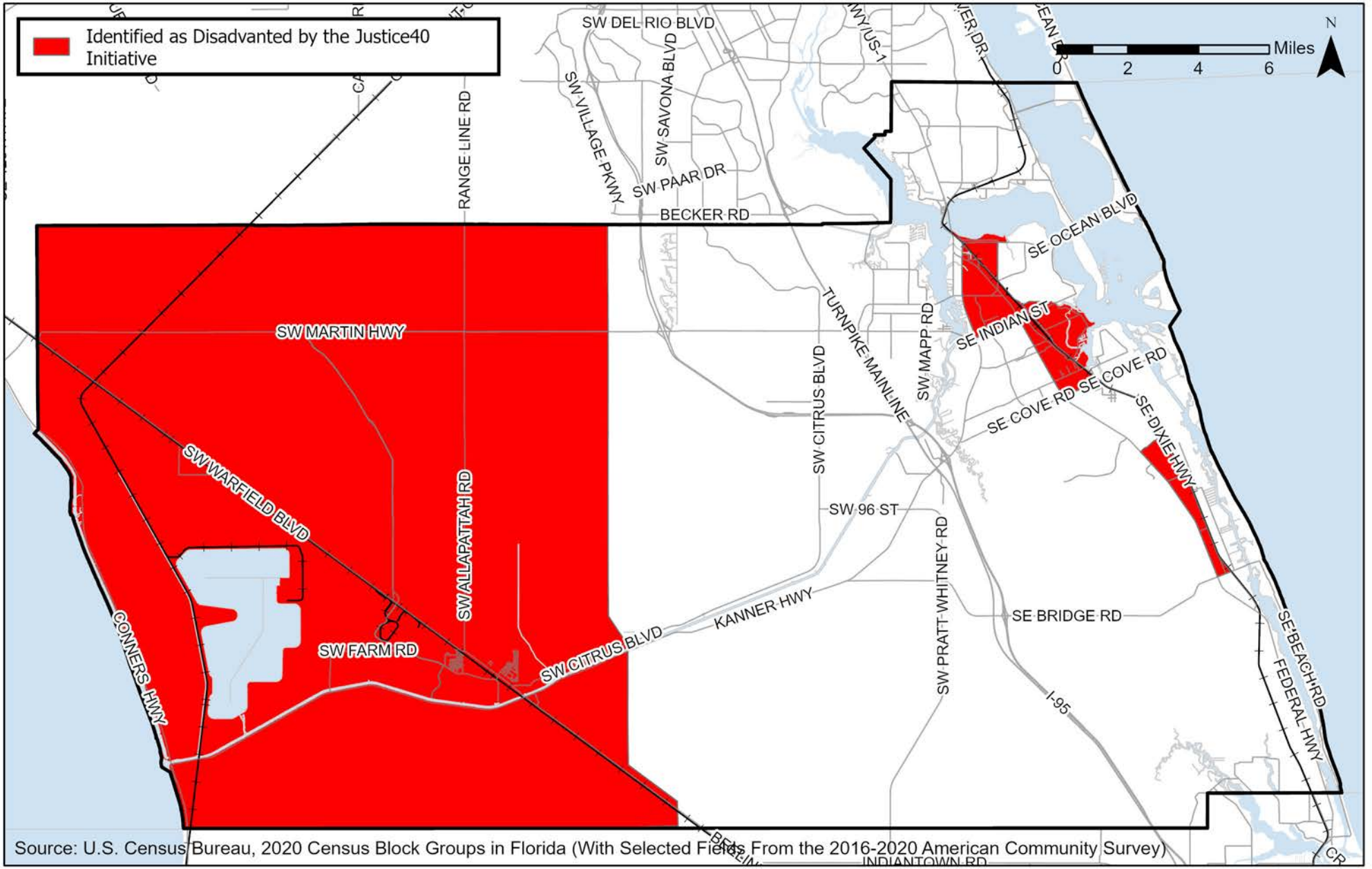
Martin County

MARTIN MOVES 2050

Figure 3.5.6-1

3.5.7. Equity

Equity was analyzed using datasets that are created and managed by the White House Council on Environmental Quality (CEQ) and the Office of Management and Budget (OMB). Equity is analyzed by the Justice40 Initiative which aims to ensure that 40% of the benefits of federal investments in climate and clean energy go to disadvantaged communities. The datasets are developed using a range of indicators to identify communities that are overburdened by pollution, climate risks, and socio-economic challenges. According to the data, the western portion of the County along with a few Census Blocks near the City of Stuart and west of SW Dixie Highway have disadvantaged communities that do not meet the equity standards put forth by the Justice40 Initiative (**Figure 3.5.7-1**).



Source: U.S. Census Bureau, 2020 Census Block Groups in Florida (With Selected Fields From the 2016-2020 American Community Survey)

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Disadvantaged Population

Martin County

MARTIN MOVES 2050

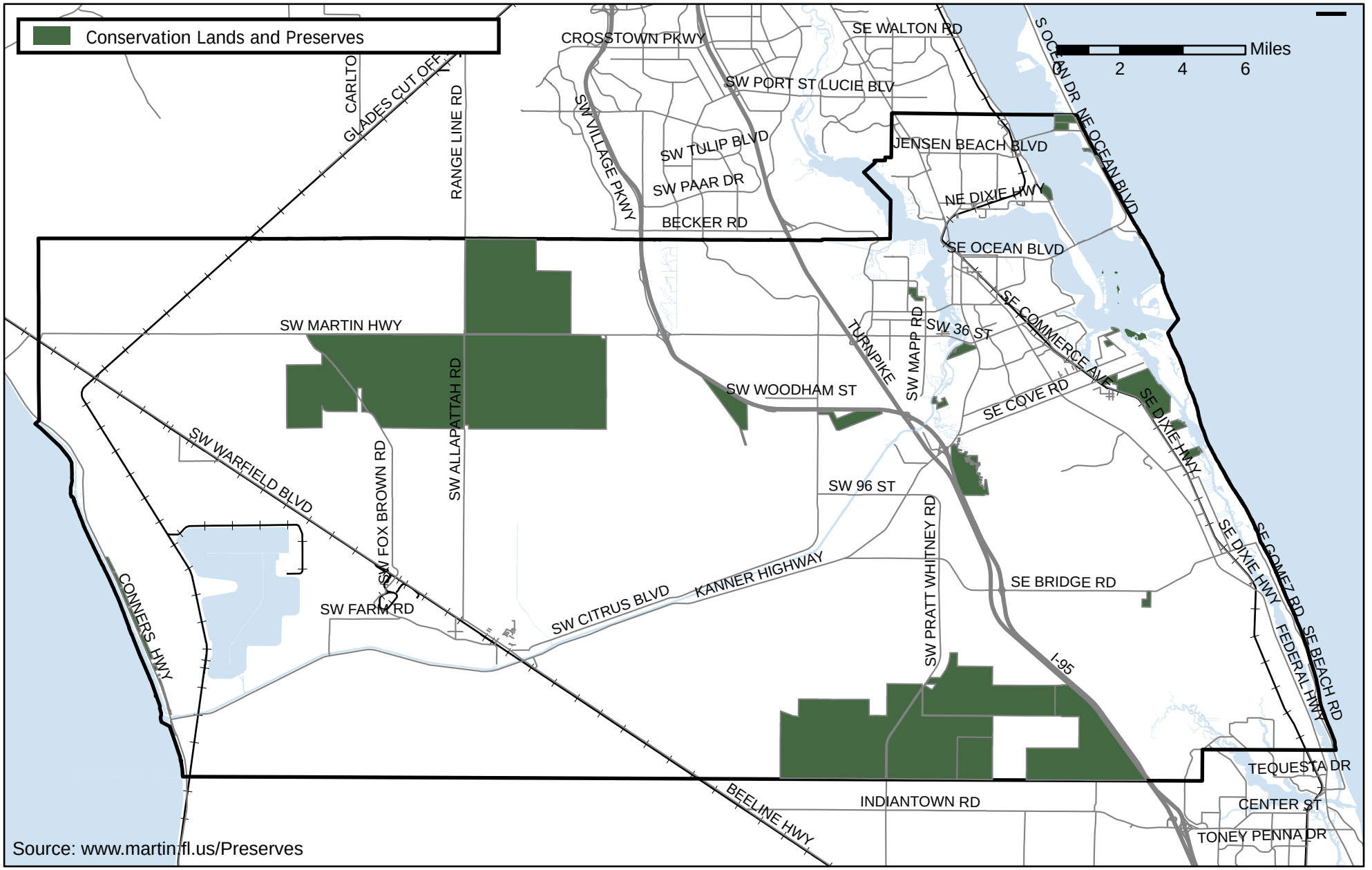
Figure 3.5.7-1

3.6. Environmental Constraints

Within the Martin County Comprehensive Growth Management Plan, the Coastal Management Element provides guidelines for the preservation of the County's coastal and estuarine areas. A shoreline protection zone is established to be 75 feet laterally upland from the mean high-water line and includes mangrove species. Shoreline protection zones are protected from construction and building maintenance activities.

The Loxahatchee River is federally designated as a Wild and Scenic River and is protected. Other water bodies that are protected include aquatic preserves, outstanding Florida waters, class 1 waters, marine sanctuaries, estuarine sanctuaries, and manatee sanctuaries or areas of critical manatee habitat. The uplands of the Coastal Ridge and adjacent coastline along the Indian River from the south County line to the St. Lucie Inlet have been designated an aquatic preserve and manatee sanctuary by the Florida Department of Environmental Protection.

Chapter 9 of the Comprehensive Growth Management Plan includes the Conservation and Open Space Element to address the goals regarding the preservation and provision of the County's public open spaces. The County's Ecosystem Restoration and Management Division preserves, restores, maintains, and enhances environmental resources. The County manages approximately 35,000 acres of environmentally sensitive lands, which protect unique, rare or endangered habitat, assure survival of listed wildlife species, protect scenic water corridors, and provide public access and open space. County conservation lands and preserves, in addition to environmentally sensitive spoil islands near the St. Lucie Inlet, are illustrated in **Figure 3.6-1**. These conservation lands are County owned lands that are managed by the Ecosystem Restoration and Management Division and/or the Martin County Parks and Recreation Department. As an overall environmental constraint due to strict regulations for future land uses and to preserve wetland and upland habitats, all development must preserve wetlands and native uplands on-site, with relationship to off-site regional natural resources. Activities that adversely affect wetlands are extremely restricted or prohibited. According to Chapter 4 of the Comprehensive Growth Management Plan of the 347,258 acres of land in Martin County in 2017, 65,682 acres, or 18.9%, are wetlands.



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Conservation Lands and Preserves

Martin County

MARTIN MOVES 2050

Figure 3.6-1

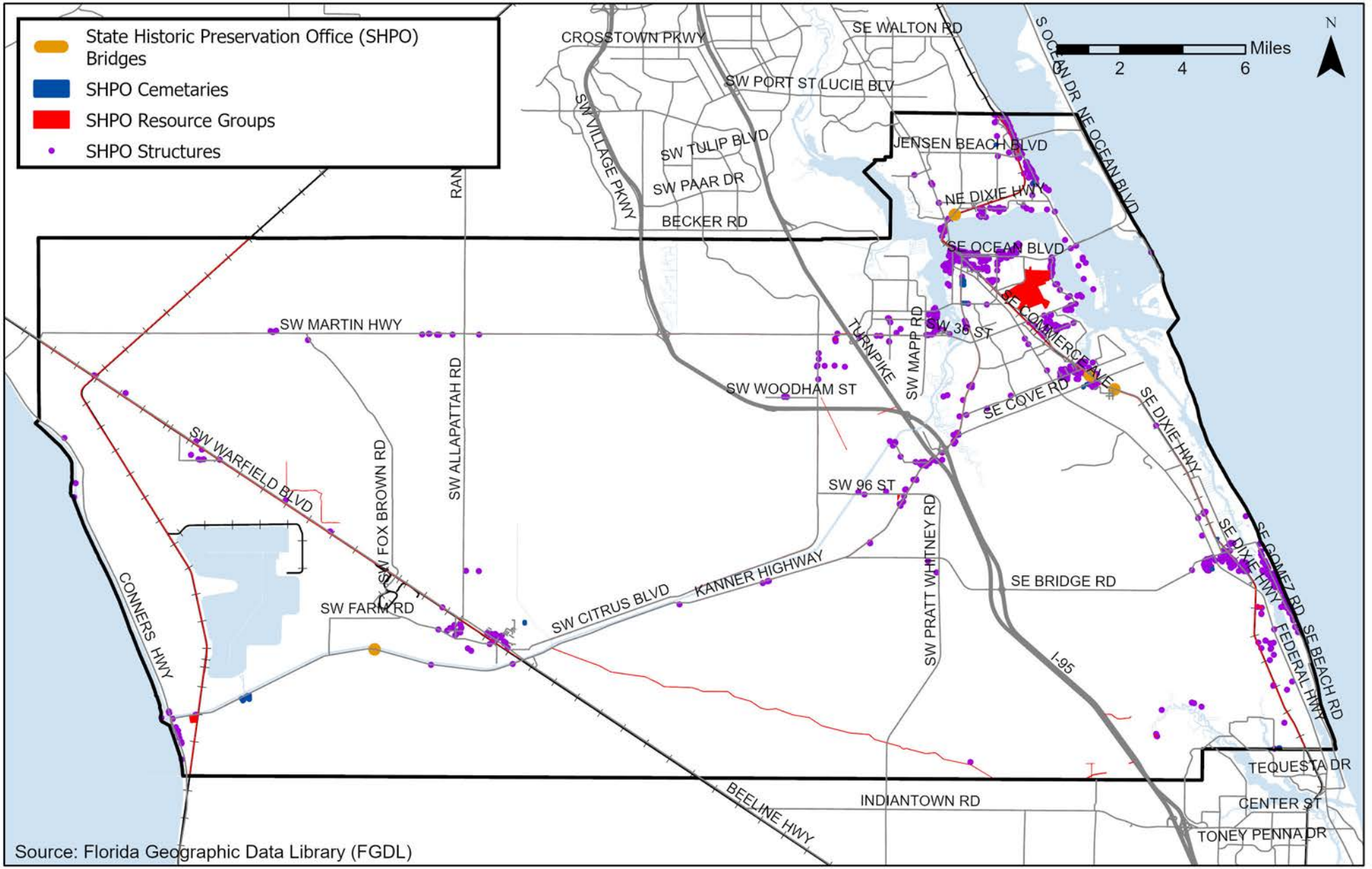
According to the National Register of Historic Places, there are 14 historic places within Martin County. These historic sites are as follows:

- Burn Brae Plantation – Krueger house
- Cypress Lodge
- Gate House
- Georges Valentine Shipwreck Site
- Golden Gate Building
- House of Refuge at Gilbert's Bar
- Lyric Theatre
- Court House Cultural Center (Old Martin County Court House)
- Mount Elizabeth Archaeological Site
- Olympia School
- Seminole Inn
- Stuart Welcome Arch
- Trapper Nelson Zoo Historic District
- Mansion at Tuckahoe

The Florida Division of Historical Resources' Florida Historical Marker Program recognizes significant historic resources, persons and events with markers that tell the stories of significant places in Florida's cultural history. These markers identify the following within Martin County:

- Mount Elizabeth Mound
- Golden Gate Building
- Camp Murphy Site
- Jonathan Dickinson Shipwreck
- Jupiter Indiantown Road
- Stuart Welcome Arch
- Trapper Nelson Interpretive Site

Figure 3.6-2 shows the State Historical Preservation Office historical structure locations, historic bridges, and resource groups as recorded at the Florida Master Site File (FMSF). Resource groups include historical districts, archaeological districts and building complexes.



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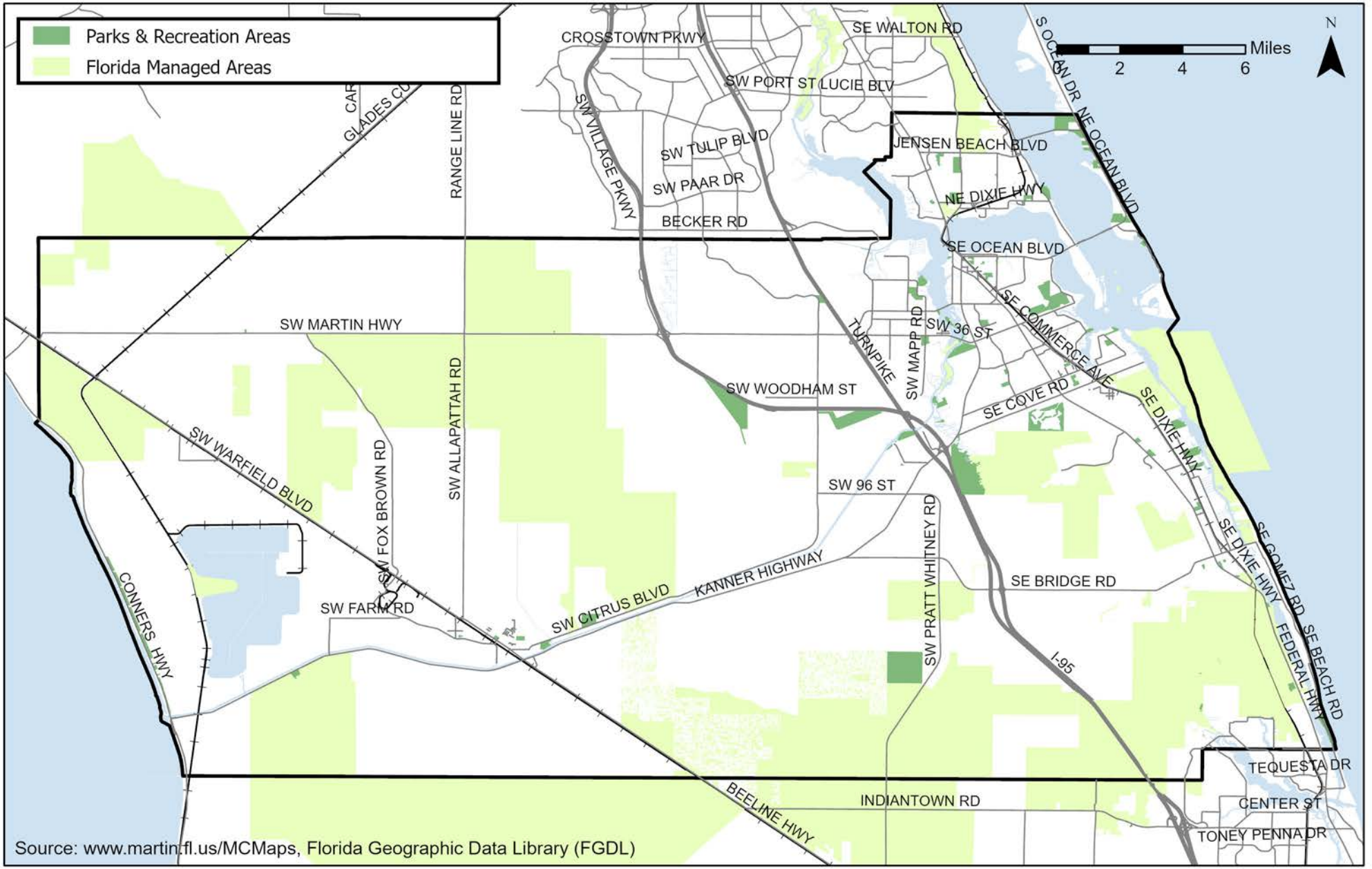
Historic Resources

Martin County

MARTIN MOVES 2050

Figure 3.6-2

Section 4(f) of the U.S. Department of Transportation Act of 1966 restricts FHWA and FDOT from using land from publicly owned parks, recreational area, wildlife and waterfowl refuges, or public and private historical sites. **Figure 3.6-3** also illustrates public parks and recreational areas maintained by Martin County as well as parks, sanctuaries and conservation areas maintained by the State.



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Public Parks, Recreation and Conservation Areas

Martin County

MARTIN MOVES 2050

Figure 3.6-3

3.7. Performance Measures

The Infrastructure Investment and Jobs Act (IIJA), November 2021 reauthorizes several surface transportation programs for Fiscal Years (FY) 2022-2026 and created new formula, competitive and discretionary grant programs. The IIJA continued the provisions of Moving Ahead for Progress in the 21st Century Act (MAP-21) and Fixing America's Surface Transportation (FAST) Act for state Department of Transportation (DOTs) and MPOs to implement Transportation Performance Management (TPM), a strategic approach to making investment and policy decisions to achieve performance goals. Per federal transportation law requirements, the United States Department of Transportation (USDOT) established 17 performance measures through rulemaking process corresponding to the following seven national goal areas:

1. Safety
2. Infrastructure Condition
3. Congestion Reduction
4. System Reliability
5. Freight Movement and Economic Vitality
6. Environment Sustainability
7. Reduced Project Delays

Consistent with Federal Highway Administration (FHWA) Performance Measures (PM) rules and FTA transit rules, the FDOT, Martin MPO and Martin County Public Transit (MCPT) have established various performance measures to assess highway safety (PM1), bridge and pavement condition (PM2), system performance and freight movement (PM3), transit asset management (TAM), and transit safety. Further, the FHWA and FTA Planning Rule and the performance measures rules also specify the process for MPOs to set performance targets, report performance, and integrate performance management into the LRTPs and TIPs. The performance targets serve as benchmarks to measure progress made toward achieving the national goals. The process, methodology and rationale for developing specific performance targets are documented in the Martin MPO's FY 25 - FY29 TIP. Below is a summary description of relevant performance measures and targets.

3.7.1.PM1: Safety (All Public Roads)

FHWA's Safety Performance Management Measures Final Rule (PM1) establishes the safety-related performance measures to assess safety on all public roads and process to establish safety targets. **Table 3.7.1-1** shows FDOT's performance measures for calendar year (CY) 2024 established on August 31, 2023 and agreed to by Martin MPO on December 11, 2023.

Table 3.7.1-1. Safety Performance Measures and Targets

Safety Performance Measures and Targets	Statewide Target (CY 2024)	MPO Target (CY 2024)
Number of fatalities	0	0
Rate of fatalities per 100 million vehicle miles traveled (VMT)	0	0
Number of serious injuries	0	0
Rate of serious injuries per 100 million vehicle miles traveled (VMT)	0	0
Number of non-motorized fatalities and serious injuries	0	0

Source: Martin MPO TIP, FY25-29

3.7.2.PM2: Bridge and Pavement

FHWA's Pavement and Bridge Condition Performance Measures Final Rule (PM2) requires the utilization of nationally defined performance measures for the National Highway System (NHS). The NHS consists of roadways and interstate highway systems that are important to the country's economy, defense, and mobility. FHWA's PM2 requires state DOTs and MPOs to establish two-year and four-year targets for the following six performance measures to assess the condition of the pavements and bridges:

1. Percent of National Highway System (NHS) bridges by deck area in good condition
2. Percent of NHS bridges by deck area in poor condition
3. Percent of Interstate pavements in good condition
4. Percent of Interstate pavements in poor condition
5. Percent of non-Interstate NHS pavements in good condition
6. Percent of non-Interstate NHS pavements in poor condition

Table 3.7.2-1 includes FDOT's statewide bridge and pavement two-year and four-year targets for the second performance period ending in calendar years 2023 and 2025, respectively, established on December 16, 2022. These targets are identical to those set for 2019 and 2021, respectively. Florida's performance through 2021 exceeds the targets.

Table 3.7.2-1. Bridge and Pavement Condition Performance Measures and Targets

Performance Measures and Targets	2022 Statewide Conditions	2023 Statewide Target	2025 Statewide Target
Percent of NHS bridges (by deck area) in good condition	58.2%	>=50.0%	>=50.0%
Percent of NHS bridges (by deck area) in poor condition	0.6%	<=10.0%	<=10.0%
Percent of Interstate pavements in good condition	73.4%	>=60.0%	>=60.0%
Percent of Interstate pavements in poor condition	0.2%	<=5.0%	<=5.0%
Percent of non-Interstate NHS pavements in good condition	48.8%	>=40.0%	>=40.0%
Percent of non-Interstate NHS pavements in poor condition	0.6%	<=5.0%	<=5.0%

Source: Martin MPO TIP, FY25-29

In addition, the FDOT has also developed a Transportation Asset Management Plan (TAMP) for all NHS pavements and bridges within the state that was submitted on December 30, 2022, and recertified by FHWA on February 23, 2023. The Martin MPO agreed to support FDOT's PM2 targets on April 17, 2023.

3.7.3. PM3: System Performance

FHWA's System Performance Measures Final Rule (PM3) requires state DOTs and MPOs to establish targets for the following six performance measures:

National Highway Performance Program (NHPP)

1. Percent of person-miles traveled on the Interstate system that are reliable
2. Percent of person-miles traveled on the non-Interstate NHS that are reliable

National Highway Freight Program (NHFP)

3. Truck Travel Time Reliability index (TTTR)

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

4. Annual hours of peak hour excessive delay per capita (PHED)
5. Percent of non-single occupant vehicle travel (Non-SOV), and
6. Cumulative 2-year and 4-year reduction of on-road mobile source emissions (NOx, VOC, CO, PM10, and PM2.5) for CMAQ funded projects.

Because all areas in Florida meet current national air quality standards, the three CMAQ measures do not apply in Florida.

Table 3.7.3-1 includes FDOT's system performance and freight statewide two-year and four-year targets for the second performance period ending in calendar year 2023 and 2025, respectively, established on December 16, 2022. These targets are identical to those set for 2019 and 2021, respectively. Florida's performance through 2021 exceeds the targets.

Table 3.7.3-1. System Performance and Freight Targets

Performance Measures and Targets	2022 Statewide Conditions	2023 Statewide Target	2025 Statewide Target
Percent of person-miles traveled on the Interstate that are reliable	85.7%	>=75%	>=70%
Percent of person-miles traveled on the non-Interstate NHS that are reliable	92.1%	>=50%	>=50%
Truck Travel Time Reliability (TTTR) index (Interstate)	1.46	1.75	2.00

Source: Martin MPO TIP, FY25-29

On April 17, 2023, the Martin MPO agreed to support FDOT's statewide system performance and freight targets.

3.7.4.Asset Management: Public Transit

Per FTA's Transit Asset Management (TAM) regulations, MCTP – the sole Tier II provider of public transit in the Martin MPO planning area reviewed and approved TAM targets for each of the applicable asset categories on February 1, 2023 (**Table 3.7.4-1**).

Table 3.7.4-1. Martin County Public Transit (MCPT) Asset Management Targets

Asset Category-Performance Measures	Asset Class	2023 Target	2024 Target	2025 Target	2026 Target	2027 Target
Revenue Vehicles						
Age - percent of revenue vehicles within a particular asset class that have met or exceeded their Useful Like Benchmark (ULB)	BU - Bus	0%	0%	0%	0%	0%
	CU - Cutaway Bus	0%	0%	1000%	0%	0%
Equipment						
Age - percent of vehicles within a particular asset class that have met or exceeded their Useful Like Benchmark (ULB)	Non-Revenue/Service Automobile2017	0%	0%	0%	0%	0%
	Trucks and other Rubber Tire Vehicles 2018	0%	0%	0%	0%	0%
Facilities						
Condition - percent of facilities with a condition rating below 3.0 on the FTA Transit Economic Requirements Model (TERM) Scale	Maintenance facility (leased)	N/A	N/A	N/A	N/A	N/A

Source: Martin MPO TIP, FY25-29

The transit provider's TAM targets are based on the condition of existing transit assets and planned investments in equipment, rolling stock, infrastructure, and facilities. The targets reflect the most recent data available on the number, age, and condition of transit assets, and capital investment plans for improving these assets. The table summarizes both existing conditions for the most recent year available, and the current targets.

MPOs are not required to establish TAM targets annually each time the transit provider establishes targets. Instead, MPO's must revisit targets each time the MPO updates the LRTP. MPOs can either agree to program projects that will support the transit provider targets or establish separate regional TAM targets for the MPO planning area. On May 6, 2024, the Martin MPO agreed to support the MCPT's TAM targets.

3.7.5. Safety: Public Transit

FTA's Public Transportation Agency Safety Plan (PTASP) regulations established transit safety performance management requirements for providers of public transportation systems that receive federal financial assistance under 49 U.S.C. Chapter 53. The PTASP must include performance targets for the performance measures established by FTA in the National Public Transportation Safety Plan. The transit safety performance measures include the following:

- Total number of reportable fatalities and rate per total vehicle revenue miles by mode
- Total number of reportable injuries and rate per total vehicle revenue miles by mode

- Total number of reportable safety events and rate per total vehicle revenue miles by mode
- System reliability – mean distance between major mechanical failures by mode

FDOT technical guidance recommends that Florida's transit agencies revise their existing System Safety Program Plan (SSPP) to be compliant with the new FTA PTASP requirements. MCPT established the transit safety targets identified in **Table 3.7.5-1** below on January 23, 2024:

Table 3.7.5-1. Martin County Public Transit (MCPT) Safety Performance Targets

Mode of Transit	Fatalities (Total)	Fatalities (Rate Total VRM)	Injuries (Total)	Injuries (Rate per Total VRM)	Safety Events (Total)	Safety Events (Rate per Total VRM)	System Reliability (VRM/failures)
Fixed Route Bus	0	0	0	0	0	0	54,950
Commuter Bus	0	0	0	0	0	0	28,661
ADA Paratransit	0	0	0	0	0	0	0

Source: Martin MPO TIP, FY25-29

MPOs are not required to establish transit safety targets annually each time the transit provider establishes targets. Instead, MPO's must revisit targets each time the MPO updates the LRTP. MPOs can either agree to program projects that will support the transit provider targets or establish separate regional transit safety targets for the MPO Planning area. On September 21, 2020, the Martin MPO agreed to support MCPT's transit safety targets.

3.8. Health Related Transportation Data

Transportation policy and planning decisions can have significant health impacts by influencing crashes (injuries and fatalities), physical activity, environmental pollution (emissions), basic access, and mental health. Traditional planning often overlooks these health impacts while emphasizes automobile speed, congestion delays, and operating costs. However, there has been a paradigm shift within the past few years in transportation agencies across the country and industry. The new planning paradigm is more comprehensive, balances accessibility and mobility needs, integrates multimodal options and emerging technologies, and incorporates equity and smart growth principles.

While need for research to establish cause and effect relationship as well as quantify direct health benefits resulting from transportation planning and policy making is recognized, positive impacts of active living (walking and biking), enhanced safety and accessibility from traffic calming and improved multimodal facilities are some of major benefits acknowledged by transportation professionals, policy makers and the public. To that end, the Martin MPO and FDOT have embraced various transportation strategies for improving public health, such as, safety, traffic calming and speed control, public transportation improvements, active transport (walking and cycling) improvements through their policies, plans and programs. Some of the examples include Complete Streets, Florida Design Manual (FDM), TSM&O Master Plan, South Florida Commuter Service (SFCS), Alert Today Alive Tomorrow campaign, Vision Zero, Bicycle and Pedestrian Safety Action Plan (BPSAP) amongst others.

3.8.1. Walk Score

The Walk Score (www.walkscore.com) website is a widely recognized resource and is used in transportation planning industry to quantify and characterize entire neighborhoods, cities and/or specific geographic areas as pedestrian and bicycle friendly. **Table 3.8.1-1. Walk Score, Martin County** shows walk score and bike score for various cities in Martin County.

Table 3.8.1-1. Walk Score, Martin County

Geography[2]	Walk Score	Characteristics	Bike Score	Characteristics
Downtown Stuart	72	Very walkable. Most errands can be accomplished on foot.	74	Very bikeable. Biking is convenient for most trips.
Hobe Sound	70	Somewhat walkable. Some errands can be completed on foot.	67	Bikeable. Some bike infrastructure.
Sewall's Point	29	Car-dependent. Most errands require a car.	38	Somewhat bikeable. Minimal bike infrastructure.
Indiantown	10	Car-dependent. Almost all errands require a car.	32	Somewhat bikeable. Minimal bike infrastructure.
Palm City	14	Car-dependent. Almost all errands require a car.	34	Somewhat bikeable. Minimal bike infrastructure.
Jupiter Island	0	Almost all errands require a car.	44	Somewhat bikeable. Minimal bike infrastructure.
Ocean Breeze	62	Somewhat walkable. Some errands can be completed on foot.	55	Bikeable. Some bike infrastructure.
Port Salerno	64	Somewhat walkable. Some errands can be completed on foot.	60	Bikeable. Some bike infrastructure.

Source: www.walkscore,com

3.8.2. South Florida Commuter Services (SFCS)

The SFCS provides online dashboard type tools to quantify and promote health and environmental benefits of walking and biking as well as carpooling and vanpooling. According to SFCS' website, biking can burn anywhere from 300 to 500 calories in 30 minutes of pedaling, while walking 10,000 steps (approximately 5 miles) daily can help reduce and treat chronic illness. Further, biking and walking can also help build muscle, improve mental health and increase life expectancy.

In addition to monetary benefits of carpooling and vanpooling, according to the SFCS website, significant environmental benefits can be realized by reducing single occupant vehicles (SOV) on the road. The carbon dioxide emissions produced by commuting just 10 miles (one way), five days per week for one year would be as follows:

- Small car (35 MPG fuel economy): 1.4 tons
- Midsize car (20 MPG fuel economy): 2.6 tons
- Full-size car/SUV (14 MPG fuel economy): 3.8 tons

[2] Note: Does not represent administrative boundaries or census defined geography.

Fewer automobiles would result is less carbon dioxide emissions. As an example, if only 5% of the New York City's drive alone trips were eliminated they would save about 75,000 tons of carbon dioxide emissions every year. That is roughly equivalent to planting 30 square miles of forest.

3.8.3. Community Health Improvement Plan (CHIP), Martin County, 2022

The Florida Department of Health in Martin County (DOH-Martin) conducts the Community Health Assessment (CHA) and Community Health Improvement Plan (CHIP) process every five years to make meaningful improvements in community health. The following are top health priorities identified in the CHIP:

- Access to Health and Human Services
- Mental Health and Substance Use
- Economic and Social Mobility

The CHIP identifies an executable plan with goals, objectives, action strategies, and performance measures that align with the community's strategic health issues and is guided by the Mobilizing for Action through Planning and Partnerships (MAPP) model. The MAPP process consists of six phases to achieve the desired goals. To form the CHIP, data on health status, demographics, environmental health, health disparities, and healthcare access was collected. It also includes community input to identify key health issues, guide interventions, and monitor progress. The CHIP plays a significant role in shaping the county's long-range transportation plan for 2050 by emphasizing the connection between public health and transportation planning. It promotes safer infrastructure, expanded non-motorized transportation options, reduced emissions, and community engagement.

4. EMERGING MOBILITY

4.1. Background and Planning Context: What is Emerging Mobility

Emerging mobility, also called new mobility or technology enabled mobility, includes numerous types of transportation services and technologies that offer different ways of moving people and goods. As shown in **Table 4.1-1**, this includes Automated, Connected, Electric, and Shared vehicles (ACES), Mobility as a Service (MaaS), micromobility (personal and shared electric bicycles and scooters), and microtransit. Emerging mobility can connect people to places, goods, and information using new services, products, and technologies. Long range planning for the Martin County transportation system requires a proactive, adaptive approach that embraces the benefits emerging mobility brings while also ensuring that negative externalities do not compromise economic development, quality of life, and natural resources.

Table 4.1-1. Emerging Mobility Options

Emerging Mobility	Inclusive Range	Purpose and Scope
Automated, Connected, Electric, and Shared (ACES) Vehicles	Automated cars and trucks, connected vehicles, and electric vehicles	ACES have the potential to increase safety and efficiency, lower the cost shared mobility services, and reduce localized emissions of harmful pollutants and greenhouse gases. Automated trucks connected in a platoon provide more efficient long-haul movement of goods, lowering costs to shippers and receivers.

Mobility as a Service (MaaS)	All modes of transportation	MaaS is a linked, app-enabled system that integrates multiple transportation modes in a seamless fashion.
Micromobility	Bicycles, e-bicycles, and e-scooters	These small, lightweight vehicles are typically shared and either electric or human powered. They can be used for personal travel, particularly for first/last-mile connectivity, as well as for sustainable urban freight delivery.
Microtransit	Vans, shuttles, and small buses	Microtransit uses smaller vehicles to deliver on-demand service through app-based trip requests and fare payments.

4.1.1. Automated, Connected, Electric, and Shared (ACES) Vehicles

The development of technologies associated with ACES holds the potential to revolutionize transportation systems on a global scale, offering substantial benefits in safety, efficiency, and environmental sustainability.[3] These technologies encompass four main areas (see **Figure 4.1.1-1**):

- **Automated Vehicles (AVs)**: Vehicles equipped with advanced driver-assistance systems (ADAS) and, ultimately, fully autonomous capabilities. The Society of Automotive Engineers provides an AV scale from 0 to 5, ranging from no to full automation, with a human driver required for levels 0 to 3. AVs promise to reduce accidents caused by human error, optimize traffic flow, and increase mobility for those unable to drive. AV rates of adoption and impacts on metropolitan planning will vary by vehicle type (cars, light trucks, buses/shuttles, heavy trucks, etc.).[4] Fully automated trucks, for example, operating in dedicated highway lanes could radically transform the cost structure of long-haul freight.
- **Connected Vehicles (CVs)**: Vehicles that communicate with each other (vehicle-to-vehicle or V2V) and with infrastructure (vehicle-to-infrastructure or V2I). This connectivity enhances safety by preventing collisions, improving traffic management, and enabling real-time data sharing. According to FDOT, the most significant impact of CV technology on MPO programs is likely to be their role in introducing dedicated AV/CV-only lanes.[5] FDOT's CAV program documents projects and initiatives in different stages (planning, design/implementation, operational, legacy/retired) throughout the state.[6]
- **Electric Vehicles (EVs)**: Vehicles powered by electricity instead of fossil fuels. These vehicles reduce greenhouse gas emissions, lower operating costs, and decrease dependence on oil. However, widespread adoption hinges on advancements in battery technology and charging infrastructure. The deployment of EV infrastructure in the state of Florida will occur in several phases as the network builds out and densifies, adapting to and influencing annual EV sales. FDOT's 2021 Electric Vehicle Master Plan details strategies to facilitate the expansion of EVs and EV charging infrastructure across the

[3] Guidance for Assessing Planning Impacts and Opportunities of Automated, Connected, Electric, and Shared-Use Vehicles. Florida Department of Transportation. Office of Policy Planning. September 2018.
[4] Ibid.
[5] Ibid.
[6] FDOT. CAV Deployments. https://www.fdot.gov/traffic/its/cav-deployments

state, specifically along the state highway system.[7] As of late 2023, approximately 7 percent of new vehicle registrations in Florida were EVs, compared to about 9.3 percent nationwide.[8]

- **Shared Vehicles**: Shared mobility services such as ride-hailing and car-sharing that allow users to share rides and access or rent vehicles on demand. In some cases, these options can reduce the need for private vehicle ownership and lower user transportation costs. This subset of ACES includes transportation network companies such as Uber and Lyft. Their proliferation over the last decade has caused increased competition for curb space in dense urban areas. Local jurisdictions (and to some extent MPOs) must consider how to prioritize and manage this limited resource. [9]

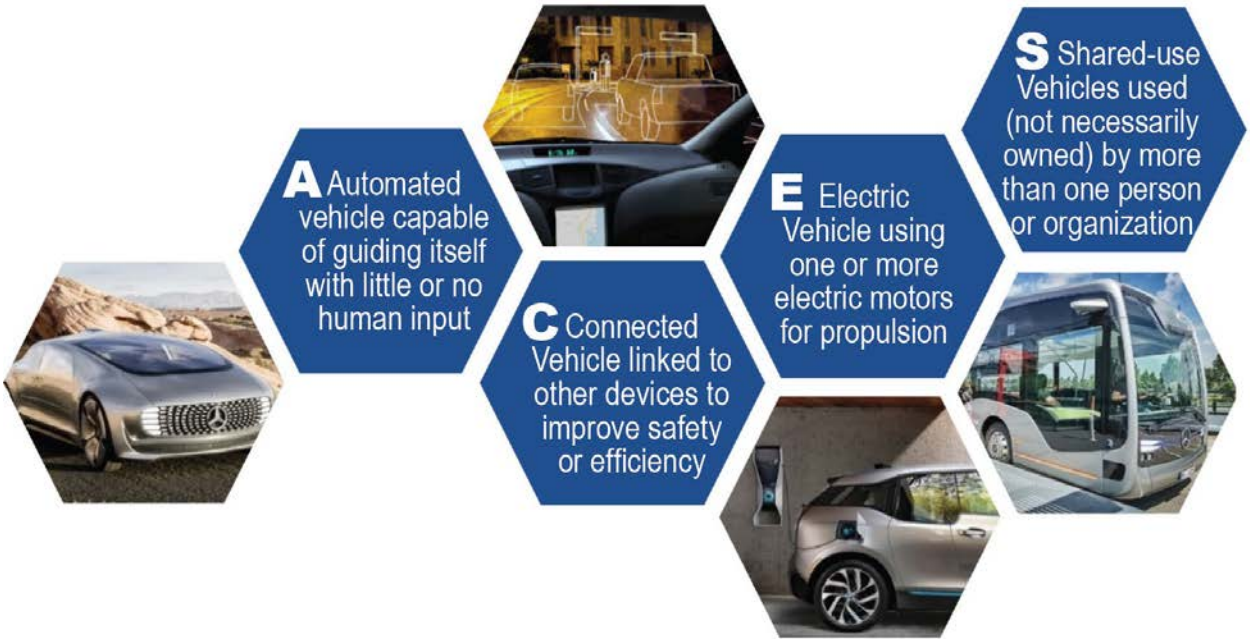

Figure 4.1.1-1. Elements of ACES. Credit: FDOT

ACES have the potential to enhance safety and transportation network efficiency, reduce transportation costs, and provide environmental benefits. AVs and CVs can reduce crashes and associated fatalities and injuries, and they can drive with less space between them, leading to more efficient use of existing physical space on roadways. They are expected to lower costs for shared mobility services by reducing the expense of driver labor. EVs can reduce localized emissions of harmful pollutants and greenhouse gases, contributing to improved public health over the long term. However, ACES may also introduce system costs, social inequities, and new

[7] Electric Vehicle Master Plan. FDOT. July 2021. https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/emergingtechnologies/evprogram/fdotevmp.pdf?sfvrsn=b5888a_2

[8] Mills, Mollie and Fatima Yousofi. How Electric Vehicles Could Affect State Transportation Budgets. July 3, 2024. The Pew Charitable Trusts. https://www.pewtrusts.org/en/research-and-analysis/articles/2024/07/03/how-electric-vehicles-could-affect-state-transportation-budgets

[9] Guidance for Assessing Planning Impacts and Opportunities of Automated, Connected, Electric, and Shared-Use Vehicles. Florida Department of Transportation. Office of Policy Planning. September 2018.

planning demands.[10] AVs, for example, could encourage mode shifts that increase drive-alone trips and their associated greenhouse gas emissions. It is the responsibility of public entities such as MPOs and other local government agencies to recognize and plan for these impacts.

4.1.2. Mobility as a Service (MaaS)

MaaS platforms integrate many modes of transportation and related services and makes them available at the click of a button, with the goal of enabling truly complete trips and delivering people seamlessly to their destinations.[11] Expected to become more prevalent in the coming decades, MaaS allows people to plan, book, and pay for their transportation all in one place, typically on an app-based platform. It also provides individuals travel options beyond a personal vehicle.[12] Cities across the country are experimenting with MaaS; as shown in **Figure 4.1.2-1**, Pittsburgh's Move PGH pilot program offered residents access to a variety of mobility services through an app and at mobility hubs across the city.[13]

[10] Ibid.

[11] American Public Transportation Association. Mobility as a Service. https://www.apta.com/research-technical-resources/mobility-innovation-hub/mobility-as-a-service

[12] San Jose Emerging Mobility Action Plan. Final Report, April 2022. https://www.sanjoseca.gov/home/showpublisheddocument/83364/638124456821870000

[13] Shifting the Mobility Paradigm with Move PGH in Pittsburgh, PA. Shared Use Mobility Center. https://learn.sharedusemobilitycenter.org/casestudy/shifting-the-mobility-paradigm-with-move-pgh-pittsburgh-pa/

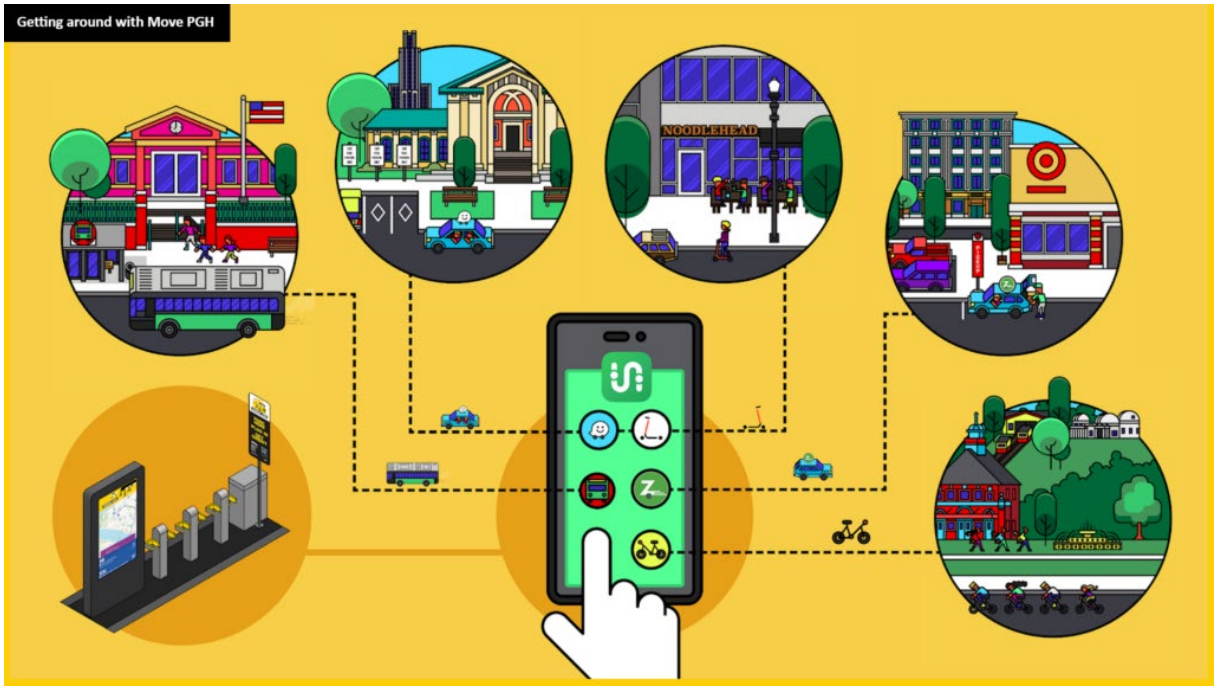

Figure 4.1.2-1. Move PGH MaaS Pilot. Credit: City of Pittsburgh

4.1.3. Micromobility

Micromobility refers to small, low-speed, lightweight vehicles like bicycles and scooters, either electric or human powered (see **Figure 4.1.3-1**).[14] When shared, these vehicles are typically accessed and paid for through mobile apps. Micromobility can serve as a first/last-mile option for commuting, linking people to ride-hailing, carsharing, and transit services. It can be an option for those who would otherwise be unable to take active transportation and for those who live in areas underserved by conventional transit.[15] Micromobility are also options for more sustainable delivery in urban areas, e.g., e-cargo bikes. Planning for safe and equitable micromobility services includes determining parameters such as service areas, maximum speeds, and designated parking zones. In the United States, shared micromobility trips have skyrocketed from less than 1 million in 2010 to 133 million in 2023. [16] This rise in use of micromobility is expected to continue. In Martin County, cars will remain the primary mode of transportation through 2050, especially in rural areas. However, denser areas such as the eastern portion of the county and Indiantown may be viable locations for micromobility.

[14] Micromobility Factsheet. FHWA. https://www.fhwa.dot.gov/livability/fact_sheets/mm_fact_sheet.pdf
[15] Price, Jeff, Danielle Blackshear, Wesley Blount, Jr., and Laura Sandt. Micromobility: A Travel Mode Innovation. https://highways.dot.gov/public-roads/spring-2021/02
[16] Shared Micromobility Snapshot: 2023. NACTO. https://nacto.org/wp-content/uploads/2024/05/Shared-micro-in-2023-snapshot_FINAL_July22-2024.pdf

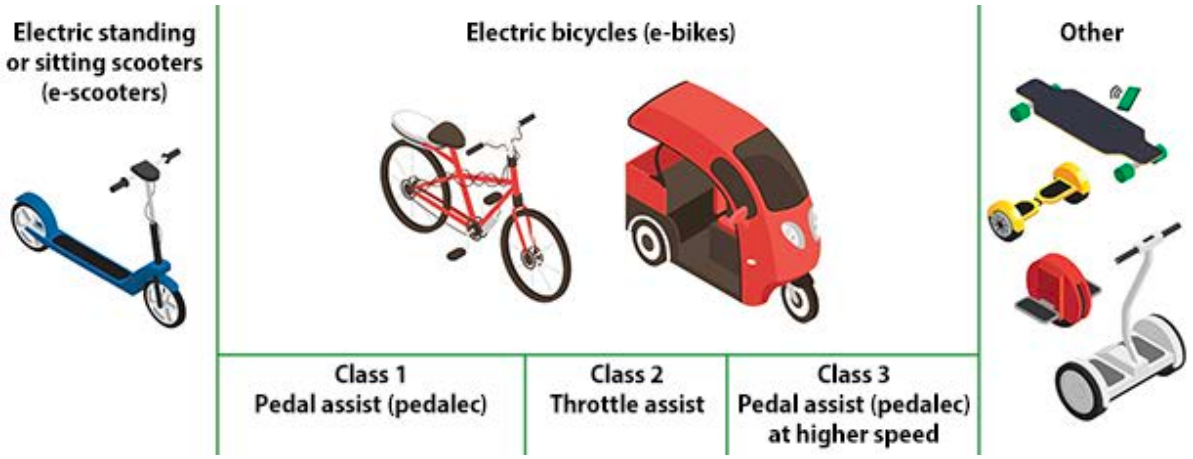

Figure 4.1.3-1. Forms of Micromobility. Credit: Laura Sandt, PBIC

4.1.4. Microtransit

Microtransit is a technology-enabled, on-demand transit service that typically uses smaller vehicles and app-based trip requests and fare payments. Rather than operating by fixed routes and schedules, the service responds to rider requests as needed and can provide transportation during times of day or suburban/rural locations where fixed-route transit would be ineffective.[17]

Microtransit is often more expensive for agencies and jurisdictions to operate compared to fixed-route transit, but its flexibility and cash-free payment can appeal to some riders. Providing the service equitability is also a consideration; some systems offer a call-in option and/or prepaid credits for those without access to smartphones or bank accounts. Microtransit also has the potential to become more widespread if the services are automated and the costs of AVs decline. Currently, driverless microtransit typically operates in simple routing environments like airports and college campuses.

4.2. Emerging Mobility and the LRTP

The 2050 LRTP is designed to address the varying personal mobility needs of urban, suburban, and rural residents, including those without access to private automobiles. Decision-making driven by taxpayers and investors may lead to an inequitable distribution of transportation services. Thus, the 2050 LRTP aims to develop policies, strategies, and actions to ensure all residents and businesses have opportunities to thrive socially and economically.

In 2021, FDOT's Office of Policy Planning identified four emphasis areas to be considered in the metropolitan transportation planning process: safety, equity, resiliency, and emerging mobility. The agency recognized the importance of planning for emerging mobility and acknowledged that these changes may be disruptive and transformational, with impacts to safety, vehicle ownership, travel capacity, vehicle miles traveled, land-use, transportation design, future investment demands, the supply chain, and the economy and workforce. However, transforming major

[17] Microtransit: What is it and Why Use It? National Center for Applied Transit Technology (N-CATT). May 2022. https://n-catt.org/guidebooks/microtransit-what-is-it-and-why-use-it-factsheet/

corridors and hubs and expanding transportation infrastructure in support of the adoption of emerging mobility can also further the goals of the Florida Transportation Plan.

To account for emerging mobility within a long-range plan, FDOT provides the following guidance:[18]

Integration with Planning Processes

- **Scenario Planning**: Utilize scenario planning to explore a range of plausible futures for connected and autonomous vehicles. FHWA has developed six CV and AV scenarios to capture various potential outcomes. These can help MPOs develop their own scenarios.
- **Incorporate into Goals and Objectives**: Ensure that the goals and objectives of the long-range plan reflect the potential impacts and opportunities of emerging mobility options. This can be done by broadening the definition of infrastructure to include enabling technologies.

Collaborative Efforts

- **Partner with Local Jurisdictions:** Smaller communities may rely on the expertise of MPOs. Collaborative efforts can ensure that emerging mobility benefits all communities, enhancing inclusivity and fostering innovation across the region.
- **Public and Stakeholder Engagement:** Engage with the public and stakeholders to gather input and build support for emerging mobility initiatives. This helps ensure that the plans reflect community needs and preferences.

Data and Performance Monitoring

- **Data Collection and Analysis**. Develop and implement strategies for collecting and analyzing data on emerging mobility trends. This can include monitoring the adoption rates and performance of automated, connected, electric, and shared vehicles.

Policy and Regulatory Framework

- **Develop Policies and Guidelines**. Create policies and guidelines that support the deployment and integration of emerging mobility technologies. FDOT's "Guidance for Assessing Planning Impacts and Opportunities of Automated, Connected, Electric, and Shared-Use Vehicles" provides a detailed planning process and matrices to help MPOs incorporate these technologies.

Pilot Projects and Feasibility Studies

- **Conduct Feasibility Studies**: Undertake feasibility studies to assess the utility and integration of emerging mobility options within specific contexts. For example, the North Central Texas Council of Governments conducted a study to assess the feasibility of AVs and shared parking within a planned redevelopment area.

[18] Florida Planning Emphasis Areas: A Resource Guide to Notable Practices. July 2022. https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/policy/metrosupport/resources/fdot-pea-resource-guide-for-mpos.pdf?sfvrsn=b31a71ef_2

- **Implement Pilot Projects**: MPOs can focus on pilot demonstration projects to test and refine emerging mobility solutions before broader implementation.

Innovative Technologies

- **Adopt and Adapt New Technologies**: Stay informed about the latest advancements in transportation technologies and consider their implications for long-range planning. The Tampa Bay Area Regional Transit Authority's Innovative Transit Technologies study is a good example of applying research to both local and statewide contexts.

4.3. Emerging Mobility Impacts

The following section describes some of the potential land use, transportation, financial, and social impacts of emerging mobility. Given the many uncertainties associated with emerging mobility technologies, it can be challenging to say definitively how emerging mobility will affect daily travel and the transportation system overall. However, Martin MPO can consider the potential impacts as it undertakes scenario planning, develops policy and regulatory frameworks, plans and implements pilot projects, and conducts feasibility and other studies.

4.3.1. Land Use Impacts

- **Parking**. Emerging mobility, specifically shared vehicles and AVs, could reduce parking demand and space requirements for parking garages, surface parking lots, and on-street spaces. However, this outcome depends on the extent to which vehicles are shared versus privately owned. AV applications for trucking could also impact hours of service rules and thus the need for parking.
- **Curb space.** With new and competing demands for the curb, local jurisdictions are looking to technology to collect and analyze data for efficient curb space management. In the future, reductions in on-street parking demand due to a shift toward shared vehicles and AVs could free up space at the curb for other uses such as passenger pick-up/drop-off zones, freight delivery areas, bike/micromobility lanes and parking, pedestrian space, and parklets or eateries. At the same time, the rise of ride-hailing and home delivery in the last decade has introduced new demands. These shifts make it imperative for localities to begin assessing and prioritizing uses on a block-by-block basis.
- **Location decisions.** AVs may alter travel behavior by allowing individuals to use time previously spend driving for other tasks and making longer commutes more practical. This in turn could shift residential and commercial development farther from urban centers, increase overall vehicle miles traveled (VMT), and perpetuate a built environment built for vehicle-only travel. Conversely, the availability of shared vehicles could allow for reduced vehicle ownership and incentives to locate in more compact, dense environments.
- **EV charging infrastructure.** Advancements in battery and other technologies are reducing "range anxiety" associated with EV use, as is the proliferation of charging point locations on public and private property. FDOT has documented installation considerations and state statutes regarding EV installations, noting siting the infrastructure requires an understanding of how, where, and why EV operators charge

their vehicles.[19] FDOT also notes the need for EV infrastructure resiliency in the face of natural disasters such as hurricanes. Existing publicly accessible EV charging sites in Martin County can be found through the US Department of Energy's Alternative Fuels Data Center database.[20]

- **Micromobility.** As transportation options expand to include bicycles, e-bicycles, and scooters, physical space for their storage between trips will need to be planned and demarcated. Both docked and dockless systems require physical space for storage between trips. Without dedicated areas, micromobility devices can clutter public spaces and become obstructions and risks for individuals with low vision or other disabilities. Curb space can be allocated for micromobility storage, and signage and geofencing can encourage compliance.
- **Mobility hubs.** Mobility hubs integrate multiple modes and facilitate seamless trips and trip planning. They serve a critical function in the regional transportation system as origin/destination and transfer points.[21] Because mobility hubs include many travel modes, they are prime locations to site emerging mobility services, amenities, and supporting technology, including bikeshare and scooter-share stations, carshare, customer service kiosks, etc. (see **Figure 4.3.1-1**).[22] Mobility hubs vary in size and complexity, but all can be planned for by considering two zones: the station area and the surrounding transit-oriented development zone. The former is the intermodal transfer point (be it a rail/bus station, ferry terminal, or other connection point). The latter is the development area surrounding the station, within walking distance, that is typically an activity center of mixed-use development.

[19] Electric Vehicle Master Plan. FDOT. July 2021. https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/emergingtechnologies/evprogram/fdotevmp.pdf?sfvrsn=b5888a_

[20] USDOE Alternative Fuels Data Center. Alternative Fueling Station Locator. https://afdc.energy.gov/stations#/find/nearest?fuel=ELEC&ev_levels=all

[21] Mobility Hubs. ITE Technical Brief. April 2022. https://www.ite.org/pub/?id=FB9BA468-9D2A-5B45-F502-21EDD578F800

[22] San Diego Association of Governments (SANDAG). https://www.sandag.org/projects-and-programs/innovative-mobility/mobility-hubs

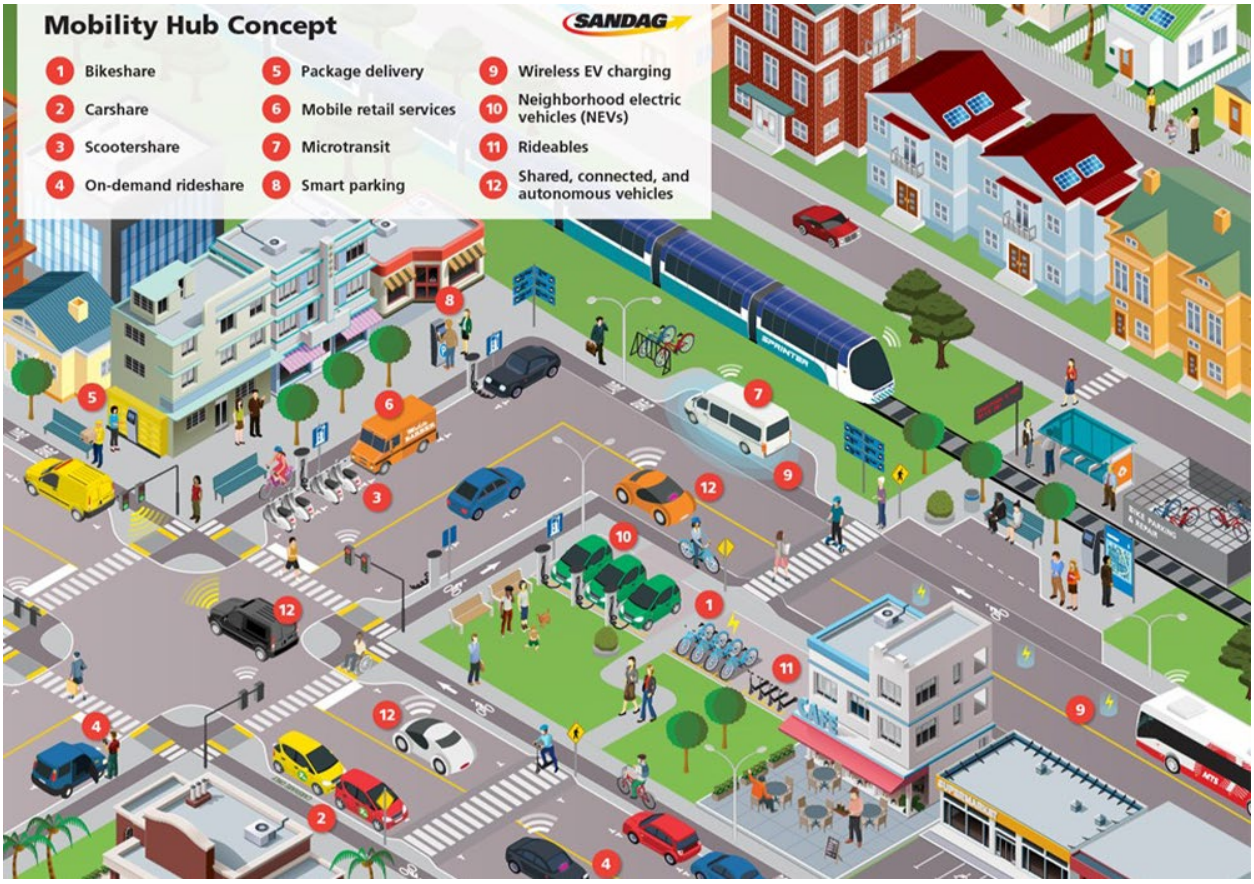

Figure 4.3.1-1. Mobility Hub Concept. Credit: SANDAG

4.4. Transportation Impacts

- **Safety.** The National Highway Safety Traffic Administration estimates that 40,990 people died in motor vehicle traffic crashes in 2023, at a rate of 1.26 fatalities per 100 million VMT.[23] In Florida, this number was 3,436 at a rate of 1.47. Higher levels of vehicle automation may ultimately remove human error from the chain of events that lead to crashes. Advanced driver-assistance systems like rearview video systems, automatic emergency braking, lane departure avoidance, blind spot detection, etc. are already assisting drivers by anticipating imminent dangers and working to avoid them.[24] At the same time, the increased use of micromobility options may pose new safety challenges and increased modal conflicts if adequate space and infrastructure are not provided.
- **Efficiency.** The ability to drive with less space between vehicles can enhance efficiency by reducing vehicle hours traveled (VHT) and improving operating speeds. However, many ACES scenarios are also projected to increase overall VMT, potentially counteracting capacity increases. In an AV future, minimum occupancy requirements,

[23] NHTSA Traffic Safety Facts. Early Estimate of Motor Vehicle Traffic Fatalities in 2023. April 2024. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813561

[24] NHTSA. Automated Vehicles for Safely. https://www.nhtsa.gov/vehicle-safety/automated-vehicles-safety

road pricing, and policies that encourage shared rides could be important to prevent or mitigate potential increases in VMT.[25]

- **Deterioration.** AVs may impact the deterioration rates of roads and bridges, depending on the key factors of VMT growth and vehicle weight. Current EVs have heavier curb weights due to their batteries, which could exacerbate infrastructure wear and tear. However, advancements aimed at reducing battery weight may mitigate these effects.
- **Transit.** The emergence of shared vehicles and ride-hailing services has been flagged as a potential threat to traditional public transit, competing for finite resources and riders. However, many transit agencies and local jurisdictions are recognizing that emerging mobility can also extend transit's reach, supplementing and supporting traditional services. For example, microtransit can be an effective solution in lower-density areas to connect riders to higher frequency routes, micromobility can be a first/last-mile connector to transit hubs, and carshare and ride-hailing can make not owning a car easier and more affordable, thus encouraging the use of multiple modes. Transit agencies will increasingly look to integrate emerging mobility into their operations, building on the MaaS concept and acting as "mobility managers" for a full suite of transportation services.
- **Street design.** Street design that balances the needs of all modes is critical to a safer, more equitable, and more sustainable future. It is one way to help ensure that the adoption of emerging mobility technologies such as ACES leads to enhanced mobility rather than only an overall increase in driving. In an autonomous future, design features such as more narrow and fewer travel lanes, tight corner radii, protected bikeways, dedicated transit lanes, and flexible curbs can help slow speeds and promote active transportation and transit use while also maintaining or increasing people throughput (see **Figure 4.4-1**).[26]

[25] Shaheen, Susan, et. al. Mobility on Demand Planning and Implementation: Current Practices, Innovations, and Emerging Mobility Futures. FHWA-JPO-20-792. March 2020. https://rosap.ntl.bts.gov/view/dot/50553
[26] Blueprint for Autonomous Urbanism, Second Edition. NACTO. 2019. https://nacto.org/publication/bau2/

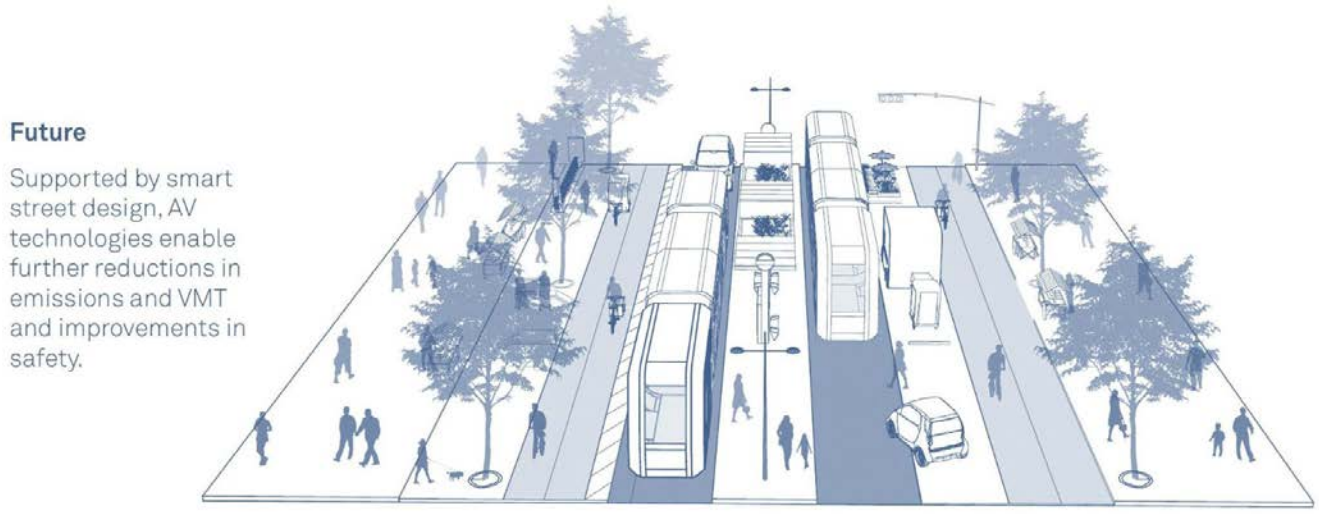

Figure 4.4-1. Future Street. Credit: NACTO

4.5. Financial Impacts

- **Fuel taxes.** The transition to EVs is expected to reduce fuel tax revenue, including the Highway Fuel Sales (HFS) Tax, the State Comprehensive Enhanced Transportation System (SCETS) Tax, and the Local Option Distribution. Net revenue losses by 2040 could range from 5.6 to 20 percent depending on EV market penetration. [27] As fuel taxes are a primary revenue source for transportation infrastructure improvements, operations, and maintenance, the decline in fuel consumption will negatively impact these funds unless adjustments are made in how road usage is charged. In addition, increased use in micromobility options that are not reliant on fuel could also contribute to a reduction in fuel tax revenues if they replace fossil-fuel car trips.
- **Vehicle and operator fees.** The shift to AVs, particularly shared fleets, may reduce revenue from motor vehicle registration and driver license fees. Generational attitude shifts regarding car ownership and driving may also lead to delays or decisions not to obtain a driver's license at all, further impacting revenues.
- **Mileage-based fees.** A potential replacement for fuel taxes, mileage-based fees are based on distance traveled and can also incorporate vehicle weight or other factors. Pilot programs in various regions suggest that mileage-based fees could provide adequate and appropriate revenue for transportation expenses. However, these fees may be seen as regressive, particularly for rural users, and could face challenges related to privacy and public acceptance.
- **EV charging infrastructure.** As states and localities invest in EV charging infrastructure to promote EV adoption, publicly owned EV infrastructure could become an alternative source of revenue to offset declining fuel taxes. The extent of this potential revenue

[27] Electric Vehicle Master Plan. FDOT. July 2021. https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/emergingtechnologies/evprogram/fdotevmp.pdf?sfvrsn=b5888a_

source depends on the level of EV market penetration. Some states (Georgia, Iowa, Montana, Utah) are considering or have already adopted an electricity sales tax, levied on users of EV charging stations.[28]

- **Ride-hailing and curb space changes**. As demand for the curb increases, functions beyond on-street parking could provide new revenue opportunities. For example, many large cities have implemented performance parking pricing, adjusting rates based on time of day and day of week. Others are considering or have implemented fees in commercial vehicle loading zones or passenger pickup/drop-off zones. However, many of these programs aim primarily to reduce congestion (caused by double parking or circling for parking) and increase access rather than generate revenue. In addition, any revenue from pricing the curb will require adequate automated enforcement.

4.6. Social Impacts

Equity. Emerging mobility offers a variety of modes and services to enhance transportation options. However, it may also benefit or adversely impact some individuals and groups over others due to access to technology (smartphones, bank accounts, etc.), physical limitations, affordability, etc. As shown in **Figure 4.6-1**, a STEPS framework (Spatial-Temporal-Economic-Physiological-Social) is one tool to identify barriers to accessing transportation. These barriers also come with policy opportunities for MPOs and other government entities to act as a "facilitator, funder, regulator, and evaluator of services," helping ensure that emerging mobility benefits are experienced by those who have experienced historical disadvantages and are most in need today.[29]

[28] Mills, Mollie and Fatima Yousofi. How Electric Vehicles Could Affect State Transportation Budgets. July 3, 2024. The Pew Charitable Trusts. https://www.pewtrusts.org/en/research-and-analysis/articles/2024/07/03/how-electric-vehicles-could-affect-state-transportation-budgets

[29] Shaheen, Susan, et. al. Travel Behavior: Shared Mobility and Transportation Equity. PL-18-007. August 2017. https://www.fhwa.dot.gov/policy/otps/shared_use_mobility_equity_final.pdf

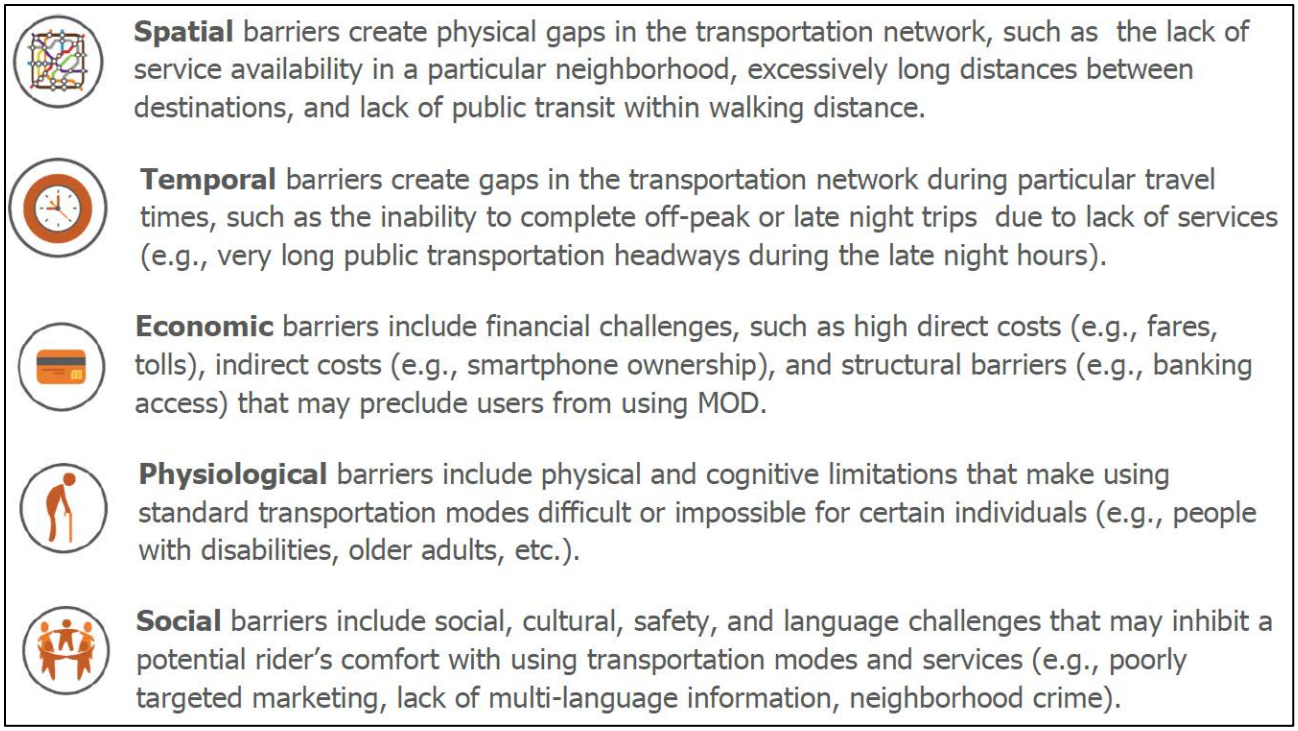

Figure 4.6-1. Spatial, Temporal, Economic, Physiological, and Social (STEPS) to Transportation Equity Framework. Source: Shaheen, Susan, et. al. 2017

4.7. Martin County Transportation Network Readiness

As discussed in **Section 3.2**, Martin County's multimodal transportation system includes a robust network of roads, waterways, transit, and bicycle and pedestrian facilities. The roadway system spans over 1,200 miles and includes an expanding network of public and private EV charging infrastructure. The County is building out its bicycle and pedestrian facilities and has identified and prioritized "opportunity segments" for Complete Streets interventions.[30] Martin County's transit system, Marty, provides fixed route, deviated fixed route, and express route bus service, facilitating connections within Martin County and to/from St. Lucie and Palm Beach. The following section outlines opportunities for and considerations regarding emerging mobility as applied to Martin County's transportation network.

4.7.1. Applications of Emerging Mobility

In addition to following FDOT guidance to account for emerging mobility in long-term planning, Martin MPO can consider where within the County emerging mobility is best applied in order to further its transportation goals. This includes anticipating the requirements of emerging mobility technologies and services, as well as their suitability across land use contexts. [31]

[30] Martin Metropolitan Planning Organization Complete Streets: Access to Transit Study. June 2020. https://martinmpo.com/wp-content/uploads/Complete-Streets-Access-to-Transit-Study.pdf

[31] Ibid. Martin County's three main land use contexts, in combination with roadway corridor types, are an organizing framework for Complete Street design elements in the 2020 study.

Urban Land Use Context: Higher Density Mixed-Use Areas

- **Micromobility:** Evaluate areas such as the eastern portion of the county and Indiantown for micromobility options such as scooter-share and bikeshare. These options provide convenient first/last-mile solutions and can reduce dependency on personal vehicles.
- **Mobility Hubs:** Consider existing and future transit nodes for opportunities to establish mobility hubs that integrate multiple modes and improve connectivity and convenience for urban residents and visitors.
- **Transit Enhancements:** Encourage transit use with the provision of accurate real-time information, bus stop amenities, and improved frequency and service spans. Marty can promote and continue to improve upon its "next bus" and mobile ticketing features.
- **Curb Management:** Evaluate and prioritize curb space for uses beyond private vehicle parking. In high-density areas, this could include space for passenger pickup and drop-off, commercial loading, secure micromobility parking, outdoor dining, etc.

Suburban Land Use Context: Moderate Density Residential and Commercial Areas

- **Microtransit:** Assess the costs and benefits of offering technology enabled, on-demand transit options. Martin County can look to its neighbor, St. Lucie County's Area Regional Transit, as a microtransit example worth considering.[32]
- **Park-and-Ride Facilities:** Develop existing park-and-ride facilities to encourage carpooling and transit use. When combined with other services and amenities, e.g., EV charging, carshare, etc., the facilities can evolve into mobility hubs.

Rural Land Use Context: Low Density Farm and Conservation Areas

- **Shared Mobility Options:** Consider how to facilitate shared mobility options (e.g., carshare, microtransit, ride-hailing, etc.) in more rural areas where other transportation services are unavailable.
- **Improved Connectivity:** Enhance road and communication infrastructure to support CVs and AVs throughout the county.
- **EV Charging Infrastructure:** Plan for a comprehensive EV infrastructure network, including more rural areas, to promote EV adoption and reduce range anxiety.

Countywide

- **Complete Streets.** Follow through on the action items outlined in the 2020 Complete Streets Study, including prioritization of Complete Streets interventions for local, County and FDOT resurfacing and rehabilitation projects as well as new roadway design.
- **Bicycle and Pedestrian Network.** Continue installation of future facilities identified in the 2019 Martin County bicycle and pedestrian facilities map. Consider bike lane designs that are wide enough to accommodate cargo bikes, adaptive bikes, etc.
- **ITS:** Expand ITS capabilities and integrating emerging mobility data into the transportation management system can improve traffic management, safety, and efficiency. This includes deploying more sensors, connected traffic signals, and dynamic messaging signs.

[32] ART On Demand a Microtransit Service. https://www.stlucieco.gov/departments-and-services/area-regional-transit/our-services/microtransit

- **Equitable Access:** Ensure equitable access to emerging mobility options across all areas, with a focus on underserved communities, to promote inclusivity and reduce transportation disparities. Tools such as street design and permitting private companies can mitigate potential harm while maximizing emerging mobility benefits.
- **Public Engagement and Education:** Engage with residents and stakeholders through public meetings and educational campaigns to increase awareness and solicit feedback regarding emerging mobility options.

4.7.2. Traffic Management System and ITS Network Considerations

Emerging technology provides new sources of data that can support FDOT and Martin County's traffic management system and the overall goal of increasing transportation system safety, efficiency, and reliability. Traffic Management Centers (TMCs) serve as the operations centers of the system, housing physical assets as well as operations personnel. FDOT District 4 (Broward, Indian River, Martin, Palm Beach, and St. Lucie counties) operates two TMCs: the Ft. Lauderdale regional TMC and the Palm Beach satellite TMC.

FDOT's District 4 & 6 Regional ITS Architecture includes the advanced traffic management system (ATMS) operated in Martin County.[33] Intelligent transportation systems (ITS) resources that enable traffic management and operations in Martin County include traffic signals, vehicle detectors, closed circuit television cameras, vehicle detectors, signal controllers and cabinets, and dynamic message signs. Between now and 2050, new instrumentation will be deployed to expand current ITS elements and introduce new ones that expand management and operations capabilities.

Effective transportation management and operations require high-quality and wide-ranging roadway information, such as data from vehicle probes, toll tags, connected vehicles, etc. The ability of the County's ATMS to tap into emerging mobility data sources and elements such as ACES could support management and operations functions, optimizing the network by improving safety, reducing delay, and increasing reliability. However, harnessing relevant information requires an assessment of available data sources and a determination of if and how the data could be received, used, and incorporated into the ATMS environment. Cybersecurity, data privacy, and data sharing agreements are other key considerations.

[33] Florida Statewide and Regional ITS Architectures. Martin County ATMS. https://teo.fdot.gov/architecture/architectures/d4and6/html/elements/el91.html

5. NEXT STEPS

Information included in TM 2 will be used throughout the LRTP development process to ensure consistency with relevant local and regional transportation plans/studies prepared by the Martin MPO and its local, state, and federal partner agencies. Understanding existing and future land use development patterns will be critical in developing a strategic multimodal transportation investment plan for Martin County. Further, key findings from this data compilation and review will assist the Martin MPO develop vision, goals and objectives, establish project prioritization criteria, prepare a system performance report, undertake environmental justice and equity analysis for projects included the cost feasible plan, and inform scenario planning exercises.

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