

# 2045 MIAMI-DADE BICYCLE PEDESTRIAN MASTER PLAN

EXECUTIVE SUMMARY

SEPTEMBER 2019

PREPARED BY:

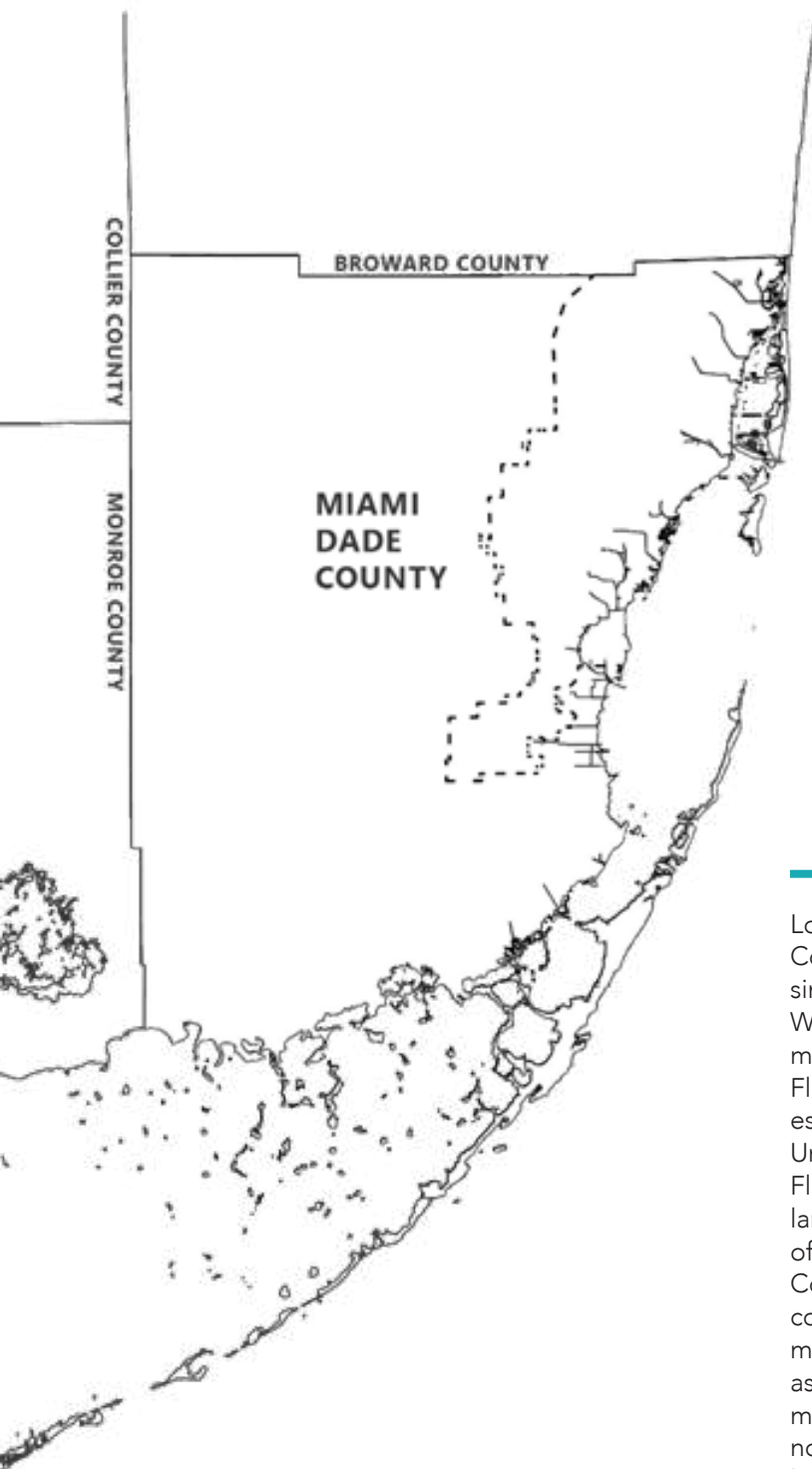
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**TP**  
Miami-Dade Transportation  
Planning Organization

# INTRODUCTION

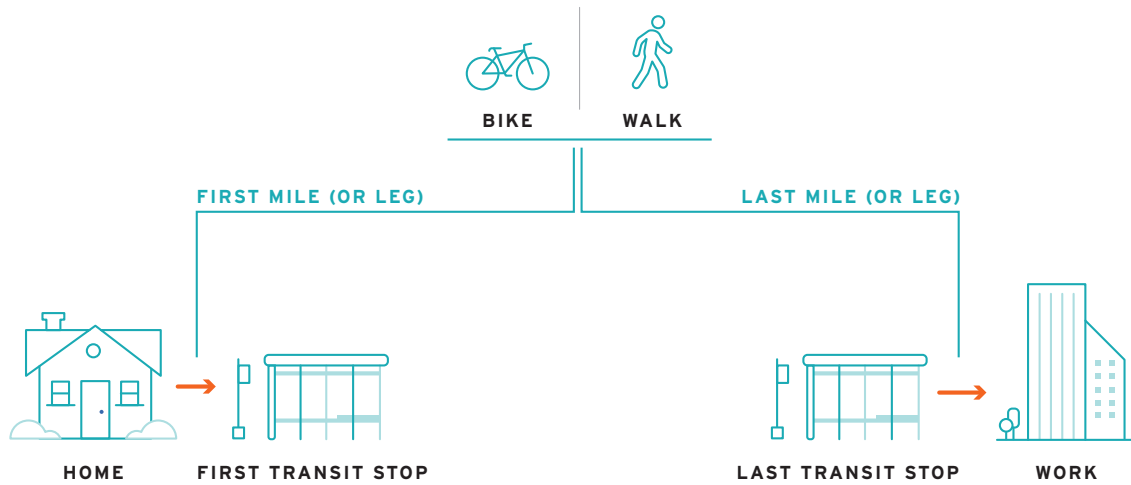




Located in the southeastern area of Florida, Miami-Dade County was established on January 18<sup>th</sup>, 1836 and has since become an industrious and cultured global hub. With a diversified population of 2,702,602 people<sup>1</sup>, it maintains the superlative of most populated county in Florida. According to the US Census Bureau's 2017 5-year estimate, it's the seventh most populated county in the United States and growing. As the third largest county in Florida, it is not the most densely populated due to its land area of 2,431 square miles, including large swaths of the Everglades National Park. Broward (north), Collier (west), and Monroe (south) are its neighboring counties. Within its boundaries reside 34 incorporated municipalities, as seen in Figure 1, with City of Miami as its very first, established in 1896, and Cutler Bay the most recent, founded in 2005.<sup>2</sup> Miami-Dade possesses noteworthy industry centers, significant cultural venues, local and national parks. It hosts events that draw international attention. Its communities are as dynamic as the people who inhabit them. A visitor to the county can experience the urban core of Miami, the buzz of Miami Beach, and the historical significance of Coral Gables. Connecting these locations is a transportation system with major expressways such as I-95, I-75, SR 826/Palmetto Expressway, SR 836/Dolphin Expressway, SR 874/DonShula Expressway, SR 5/US-1/Biscayne Boulevard, and Homestead Extension of Florida's Turnpike (HEFT).

<sup>1</sup> <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>

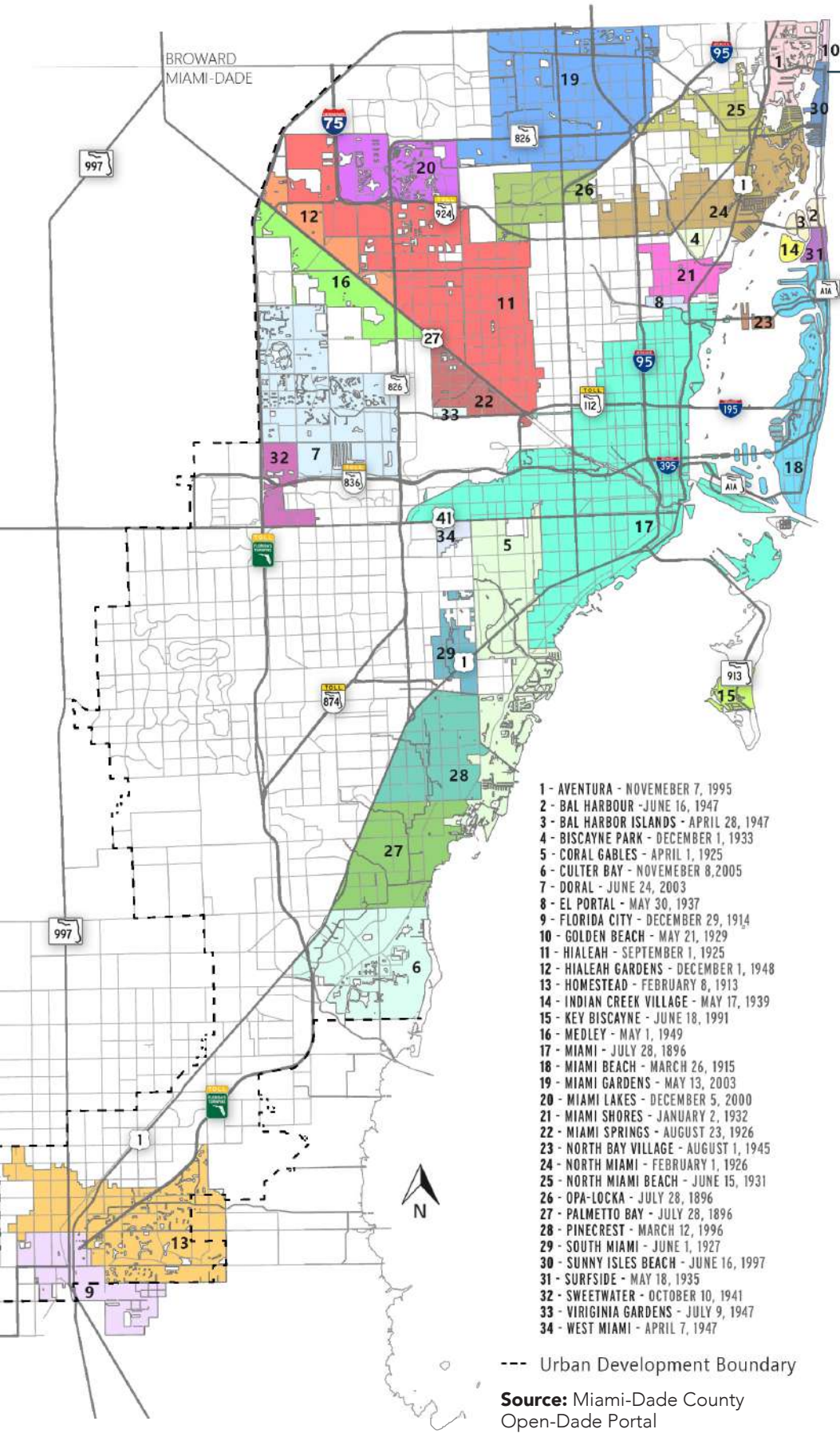
<sup>2</sup> <https://www8.miamidade.gov/global/government/municipalities.page>



While ride-hailing and motorized scooters are becoming more popular, the Metrorail, Metromover, and Metrobus are the primary source of alternate modes of transportation for Miami-Dade County beyond the personal vehicle. With the county's ever-growing population, providing and/or enhancing alternative modes of travel is critical to allow people to move around the county to live and work. The Transportation Planning Organization's (TPO) efforts with the Strategic Miami Area Rapid Transit (SMART) Plan is an example of keeping a multimodal vision front-and-center for a healthy future for this county. "The SMART Plan is a comprehensive plan which advances six (6) rapid transit corridors and nine (9) Bus Express Rapid Transit (BERT) corridors to the Project Development and Environment (PD&E) study phase to determine the costs and potential sources of funding for the projects."<sup>3</sup> Seeking locally appropriate answers to the first mile/last mile question can play a huge role in determining that system's success. Cultivating a non-motorized network that empowers bicyclists and pedestrians, as well as improves their accessibility to the greater transit network is a critical component to that answer. Non-motorized travel and transit working together in a symbiotic relationship can build upon one another, making each other more successful in Miami-Dade County.

The Miami-Dade 2045 Bicycle/Pedestrian Master Plan assesses opportunities amongst the SMART Plan transit hubs and stations to expand the reach of bicycle and pedestrian trip distances to the entire county, with the help of transit connections. This plan's primary focus is on the daily commuter trip and aims to incentivize projects that safely connect the largest number of people, that need it the most, to the most places, on a daily basis. This plan also looks at other pedestrian and bicycle trip destinations such as educational facilities, major medical centers, high employment areas, and outdoor recreational locations. Realizing these opportunities will help manage the ever-present issue of traffic any metropolitan area deals with and further encourages healthy and sustainable communities within the County. This plan serves as the Bicycle and Pedestrian element of the 2045 Long Range Transportation Plan (LRTP).

<sup>3</sup> <https://www.miamidade.gov/citt/smart-plan.asp>



**FIGURE 1**  
STUDY AREA

The study area for this Bicycle/ Pedestrian Master Plan is focused upon the urbanized environment of Miami-Dade County highlighted by the dashed line, in Figure 1, which represents the Urbanized Development Boundary (UDB).

The alignment of the UDB is assessed every seven years, as part of the Comprehensive Development Master Plan (CDMP), with the most recent adoption by the Board of County Commissioners (BCC) occurring in 2018. This boundary identifies the area where urban development may occur through the year 2020. Development orders permitting urban development will generally be approved within the UDB at some time through the year 2020 provided that level-of-service standards for necessary public facilities will be met. Adequate countywide capacity will be maintained within the UDB by increasing development densities or intensities inside the UDB or by expanding the UDB when the need for such change is determined to be necessary through the amendment process.

The 34 municipalities which preside in the county can also be observed within Figure 1.

# 04

The vision of the Miami-Dade 2045 Bicycle and Pedestrian Master Plan is to enhance the accessibility, safety, public health, social equity, environment, and overall quality of life within Miami-Dade County for all users of all abilities, at all times. This Plan also seeks to strengthen bicycle and pedestrian friendly communities' connections with existing and future transit opportunities to further encourage alternate modes of transportation throughout the county.

This vision is guided by goals set forth to achieve an overall multimodal vision for the County's transportation network. Thus, this plan reflects other state, agency and municipal planning efforts such as area plans, corridor studies, or other decisions that modify and enhance the mobility and connectivity of the residents as well as its visitors. This study shares the following goals and/or strategies with the Miami-Dade 2045 L RTP to develop recommendations and suggest improvements that benefit all who visit and live in Miami-Dade County.



Maximize Mobility Choices Systemwide



Increase the Safety of the Transportation System for All Users



Increase the Security of the Transportation System for All Users



Support Economic Vitality





GOAL  
5

Protect and Preserve the Environment and Quality of Life and Promote Energy Conservation

GOAL  
6

Enhance the Integration & Connectivity of the System, Across & Between Modes for the Benefit of People

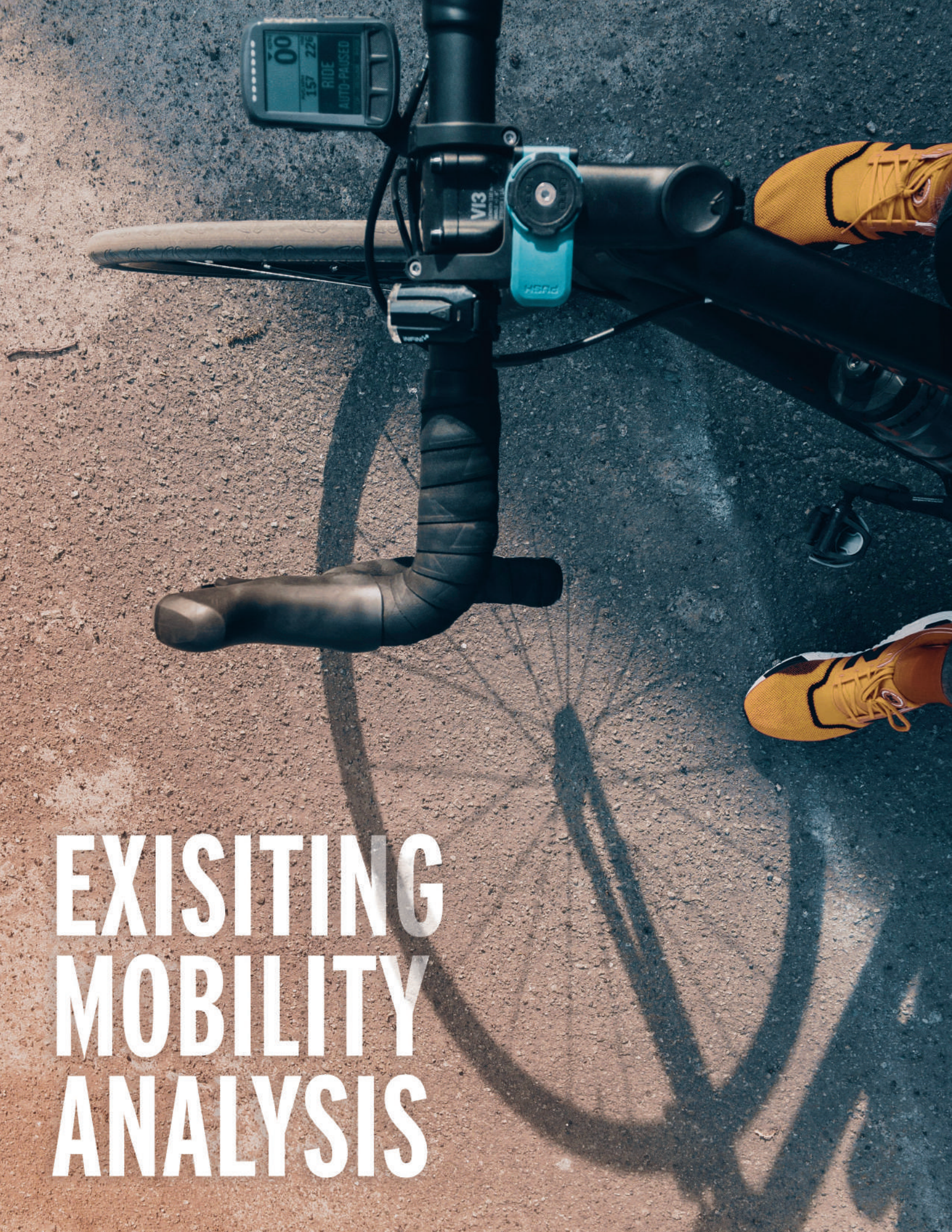
GOAL  
7

Optimize Sound Investment Strategies for System Improvement and Management/ Operations

GOAL  
8

Improve and Preserve the Existing Transportation System





# EXITING MOBILITY ANALYSIS



Long distance bicycle trips and hiking are popular recreational activities for everyone. However, nationwide, state, and local studies have shown residents reject walking and biking as a mode of travel for daily trips exceeding comfortable distances. Providing non-motorized travelers with mobility options for easy access to transit within the desirable two-mile bicycle trip and the half-mile pedestrian trip lengths is a strategy that may help shift mode-share away from personal vehicle usage. These distances are based on the research from the Federal Transit Administration (FTA) and the Mineta Transportation Institute (MTI).

To organize the evaluation of non-motorized projects throughout the county, this plan will use TPO's SMART Plan as a point of reference for evaluation. Its long-term focus towards improving multimodal transportation in the county aligns with this report's goal to connect to transit.

MOST DESIRABLE  
DISTANCES TO TRANSIT



## SOURCES

FTA 2011 Final Policy Statement on Eligibility of Pedestrian and Bicycle Improvements under Federal Public Transportation Law (76 FR 52046)

Mineta Transportation Institute 2012 Integration of Bicycling and Walking Facilities into the Infrastructure of Urban Communities Report

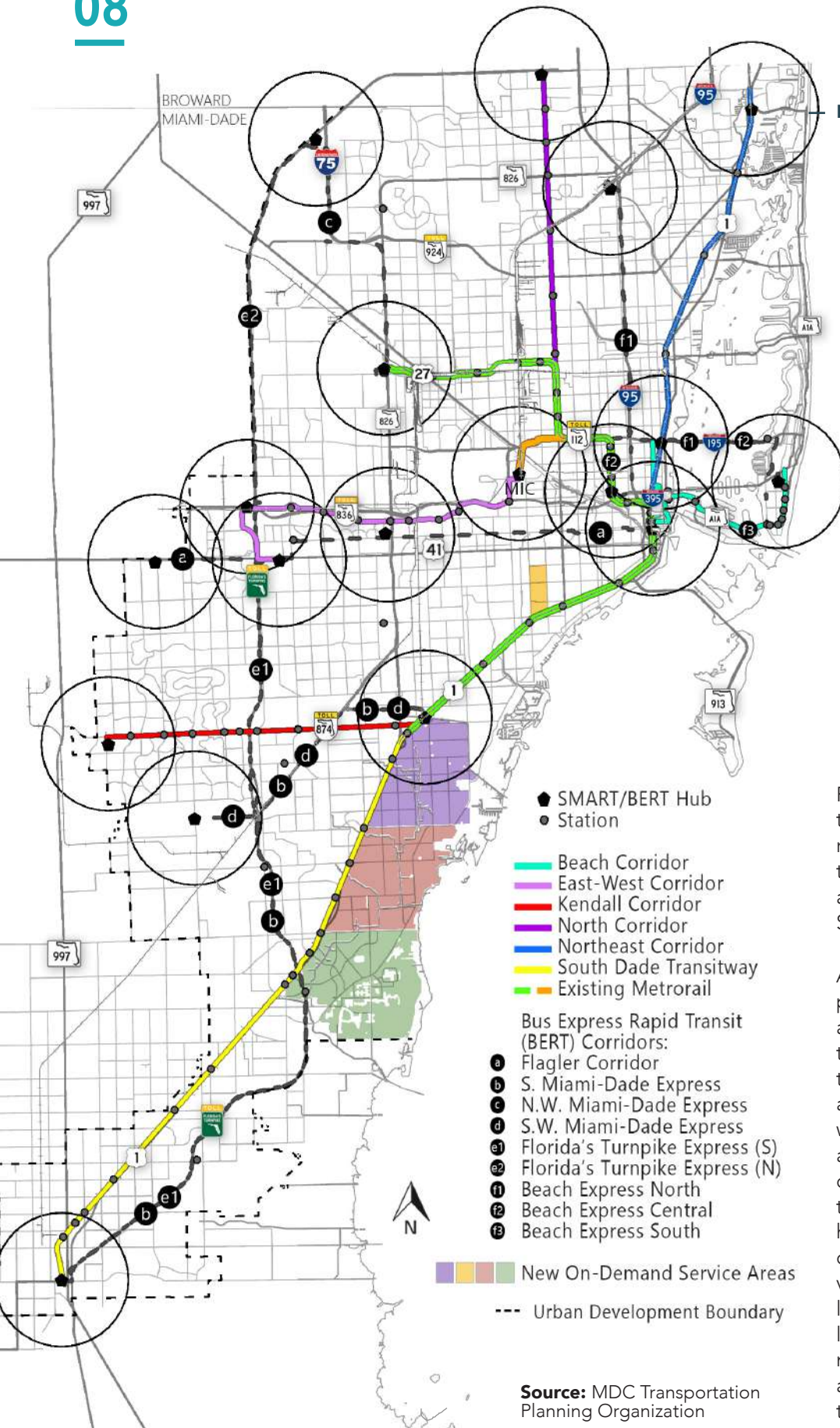


FIGURE 2 SMART PLAN MAP

Figure 2 displays the six (6) rapid transit corridors and nine (9) BERT routes, as well as the SMART Plan terminals/hubs. Currently, there are 18 proposed and/or existing SMART Plan transit terminals/hubs.

As seen in Figure 2, each terminal possesses a two-mile radius drawn around it, indicating the ideal bicycle trip distance. In the following subsections, the location of these terminals and two-mile radii for every data set will become apparent. Terminals are an ideal focus for first mile/last mile connections in the County. Within transportation networks, terminals have multiple transit routes converge on their location. This entices a more varied group of transit riders to these locations. These facilities enable a larger concentration of various travel modes. Typically, these transit facilities attract more people due to the location's memorability and permanence.

Source: MDC Transportation Planning Organization

# SUMMARY OF EXISTING MOBILITY ANALYSIS



## MULTIMODAL FACILITIES

- » Existing Bicycle Network
- » Existing Sidewalk Network
- » Bicycle and Pedestrian Crash Analysis
- » Existing Transit Network
- » Transit Ridership



## POPULATION DATA

- » Population Density
- » Communities of Concern
- » Employment Density



## LAND USE CHARACTERISTICS

- » Existing Land Use
- » Future Land Use
- » Points of Interests



## TRAFFIC DATA

- » Average Annual Daily Traffic
- » Posted Speed Limits
- » Number of Lanes
- » Truck Volumes
- » Signalized Intersections



# NON-MOTORIZED BEST PRACTICES

Five (5) non-motorized best practices were reviewed to identify opportunities for improvement and to continue to grow the County's bicycle/pedestrian friendliness. Through this analysis, six (6) recommendations can be applied to the existing bicycle and pedestrian network of Miami-Dade County to increase the comfort and safety for users. A Summary of these recommendations are on the following pages.

## 01 COMPLETE STREETS

Complete Streets is an approach to roadway design that focuses on safe access for users of all ages and abilities. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work. They allow transit to maintain its schedule and make it safe for people to walk to and from terminals and stations.

## 02 CONTEXT CLASSIFICATION

Context Classification is the Florida Department of Transportation's (FDOT) initiative of further implementing land use into roadway design. It utilizes a set of criteria to evaluate the land use adjacent to roadways to determine if the roadway falls within 8 distinct classifications: Natural, Rural, Rural Towns, Suburban Residential, Suburban Commercial, Urban General, Urban Center, and Urban Core. When an engineer knows the context classification of a roadway, they can make more context sensitive recommendations.

## 03 TYPE OF USERS

The Florida Highway Administration's (FHWA) Bikeway Selection Guide outlines the importance of understanding the different types of bicycle users and how this assists with choosing the proper bicycle facility recommendation. The three primary categories of users are "Interested but Concerned," "Somewhat Confident," and "Highly Confident."

## 04 LEVEL OF TRAFFIC STRESS

Level of Traffic Stress (LTS) is a four-point ranking system that suggests the amount of stress or amount of perceived danger a user feels while utilizing a bicycle facility. A LTS 1 is considered a stress free facility that attracts all users, while a LTS 4 is considered extremely stressful and only meant for the most confident riders.

## 05 TRANSPORTATION EQUITY

Looking at a transportation network through the eyes of equity can help identify shortcomings for underrepresented populations or households in need. Ensuring these individuals have access to safe and reliable options beyond the personal vehicle is a necessary component to any healthy transportation system.

# 12

The following recommendations are based on the assessment of the identified best practices within the context of Miami-Dade County.

## 01

### **ESTABLISH A NEW COMPLETE STREETS SET-ASIDE FOR FUTURE TRANSPORTATION PROJECTS**

Complete Street design practices help the County's efforts to ensure its roadways, right-of-way (ROW), and transportation corridors are safe for all users, of all ages and abilities. This investment is aimed at facilitating the process of bringing the more Complete Streets projects to fruition by providing a source of "seed" money to be matched by other sources of funding. No two Complete Street projects look alike, therefore the first action item is the development of a criteria to determine the merits of each proposed Complete Streets project and therefore which project receives funding from this new set-side.

(SEE FINAL REPORT PAGES 80 - 83 FOR MORE DETAILS)

## 02

### **DETERMINE THE CONTEXT CLASSIFICATION OF ALL COUNTY AND LOCAL ROADWAYS**

This assessment is to generate a database to help transportation engineers and planners of all projects, including non-motorized, assess the surrounding conditions for each of the roadways they design for and to provide context sensitive solutions. Its recommended that the method used to determine the context class follows the established criteria from FDOT. Their Complete Street implementation plan and Florida Design Manual has been praised by SMART Growth America as one of the most progressive efforts to provide methods of travel for all users.

(SEE FINAL REPORT PAGES 84 - 99 FOR MORE DETAILS)

## 03

### **MIAMI-DADE COUNTY AND MIAMI-DADE TPO'S TYPICAL ROADWAY SECTION AND ZONED RIGHT-OF-WAY UPDATE STUDY**

This recommendation is centered around committing the County to a long-term strategy to address limited ROW and ensure when new ROW is acquired, it is used to provide mobility options for alternate modes of travel. This report is from 2007 and a reexamination of its methods of phasing out adjacent private land use to expand public ROW is required. The goal of updating this report or other reports like it, is to eventually pass a county-wide resolution that sets a long-term strategy in motion.

(SEE FINAL REPORT PAGES 100 - 105 FOR MORE DETAILS)

## 04

### ALL FUTURE ROADWAY CONSTRUCTION WHICH INCLUDES BICYCLE FACILITIES SHALL DESIGN FOR A LEVEL OF TRAFFIC STRESS RATING OF 2 OR LESS

Bicycle facilities can be built to provide optimal connections from high density population centers to highly desired destinations. A level of traffic stress analysis is recommended for proposed roadway projects and incorporate design features to achieve a LTS rating of 1 or 2. Ensuring all future bicycle facilities are low stress would place the County at the forefront of this nation for bike friendly environments and would play a significant role in achieving "Vision Zero" within the State.

(SEE FINAL REPORT PAGES 106 - 139 FOR MORE DETAILS)

## 05

### EXAMINE THE SAFETY AND STRESS OF EXISTING BICYCLE FACILITIES IN UNREPRESENTED AND IMPOVERISHED COMMUNITIES FOR REDESIGN

Existing non-motorized facilities within communities of concern are predominately level of traffic stress 4. This rating indicates these facilities possess sub-par design characteristics that make them unsafe and limit their success in providing an adequate alternative to a personal vehicle in areas that need transportation options the most. It is recommended to perform assessments of these facilities and public outreach to provide lists of improvements to existing facilities for the local residents and growth of their community.

(SEE FINAL REPORT PAGES 140 - 145 FOR MORE DETAILS)

## 06

### COUNTYWIDE STANDARDIZATION OF GEO-SPATIAL DATABASE OF NON-MOTORIZED NETWORK

It is recommended to create a mandatory standardization of GIS data for all future non-motorized studies. All studies by municipalities, the County, FDOT, MDX, the TPO and other transportation partners are to provide a GIS shapefile as part of a final deliverable that adheres to a determined set of "core" attributes to create a detailed list of either existing or proposed non-motorized facilities.

(SEE FINAL REPORT PAGES 156 - 157 FOR MORE DETAILS)



# EVALUATION CRITERIA



The non-motorized transportation needs assessment process began by reviewing the needs identified in the 2040 Bicycle and Pedestrian Plan. Projects that have been built within the last five years were removed from the needs assessment list. Projects that have moved up to the Transportation Improvement Program (TIP) were noted and placed within the TIP project grouping. In addition, prior area-wide plans and studies conducted by the TPO and other governmental bodies were reviewed to identify non-motorized transportation needs. A critical review was conducted to identify projects that connect to transit, fill in gaps, and provide non-motorized access to key destinations.

Evaluation criteria and weights assigned were used to conduct a needs assessment analysis for proposed non-motorized facilities. It was determined that these projects represent an unmet need. The highest priority projects are represented in the Bicycle/Pedestrian Cost Feasible Plan. The unmet needs for which revenue is not anticipated to be available can be reviewed in the unfunded section of the Bicycle/Pedestrian Cost Feasible Plan.



TOTAL NUMBER OF PROJECTS ASSESSED



TOTAL MILES OF OFF-ROAD PROJECTS ASSESSED







TOTAL MILES OF ON-ROAD PROJECTS ASSESSED



The following 12 data points represent the project bank evaluation criteria. These are added to the intention of aligning the future of cyclists and pedestrians with the future of premium transit via the SMART plan. This evaluation process is geared towards connecting the most people, to the most places, that need mobility options, on a day-to-day basis. The maximum number of points a project can score is 69. Developed in consultation with the TPO's BPAC, these criteria incentivize non-motorized facility use which creates transit connections with population centers, provides new facilities to address social injustice, safety, connectivity/filling gaps, and increased accessibility to desired destinations.

TABLE 1 FINAL EVALUATION CRITERIA

SPATIAL ANALYSIS	DESCRIPTION	WEIGHTED POINTS
	<p><b>SMART Plan Terminal Connections</b> Points are awarded to projects making direct connections to SMART plan terminals to encourage non-motorized opportunities to these transit hubs in the county. 8 points are awarded for a direct connection, and 4 points are awarded for projects within the ½-mile vicinity of a terminal hub.</p>	<p>8 OR 4</p>
	<p><b>North/South SMART Plan Corridor Connections</b> Based on Miami Dade County's TPO resolution 47-17, to take necessary steps to move forward with the North and South corridors of the SMART plan, points are awarded towards projects proposed within a ½-mile of either corridor. Eight (8) points are awarded for a non-motorized direct connection to a corridor station and 4 points for projects within the ½-mile vicinity.</p>	<p>8 OR 4</p>
	<p><b>Metrorail Connections</b> It is important to connect to existing Metrorail stations to further support Miami Dade's existing premium transit facilities servicing high population and job sectors. A non-motorized facility is awarded 8 points for a direct Metrorail Station connection or 4 points if within a ½-mile radius to encourage further non-motorized development near the station.</p>	<p>8 OR 4</p>
	<p><b>High Ridership Bus Stop Connections</b> If a non-motorized facility is not connecting to a dedicated form of transit, it still may provide a direct connection to a DTPW bus stop with +50 average daily boarding and alighting ridership.</p>	<p>4</p>






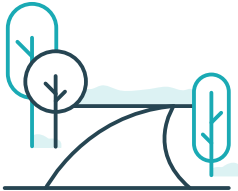


SPATIAL ANALYSIS	DESCRIPTION	WEIGHTED POINTS
	<p><b>High Potential Demand Areas</b> Points are awarded if the project is proposed in a high potential demand area (based on FDOT's Context Classification System). The included factors act as good indicators of Population and Job centers, as well as land use conditions typically associated with urbanized areas. The awarded points are based on the eight (8) sections of the FDOT Context Classification System. Zones comparable to C1 - Nature receive 1 point, and zones comparable to C6 - Urban Core receive 8 points.</p>	<p>1 - 8</p>
	<p><b>Transportation Equity</b> Miami-Dade County Communities of Concern are identified in the Federal PEAs as part of a Miami-Dade County study conducted in 2017 for the Miami-Dade TPO. These areas are identified as census tracts that are at least one standard deviation above the average percentage and/or average density of Families below the Poverty Level or Households with Zero Vehicles. Non-motorized facilities are awarded 8 points if located in a community with a high concentration of Zero-Car Households that also operate under the poverty level. Non-motorized facilities awarded 4 points are proposed in communities that have a distinct concentration of either Zero-Car Households or Low-Income Households.</p>	<p>8 OR 4</p>
	<p><b>High Density Trip Generator Areas</b> Examining Trip Generator Density (locations per square mile) helps identify where the greatest concentration of trip destinations is located. Incentivizing non-motorized facilities that connect to these areas moves the County closer to addressing first mile/last mile connections. Eight (8) categories were determined by density of trip generators.</p>	<p>1 - 8</p>
	<p><b>Future Commercial Land Use Connections</b> Non-motorized projects that will serve future commercial land uses are awarded 1 point.</p>	<p>1</p>

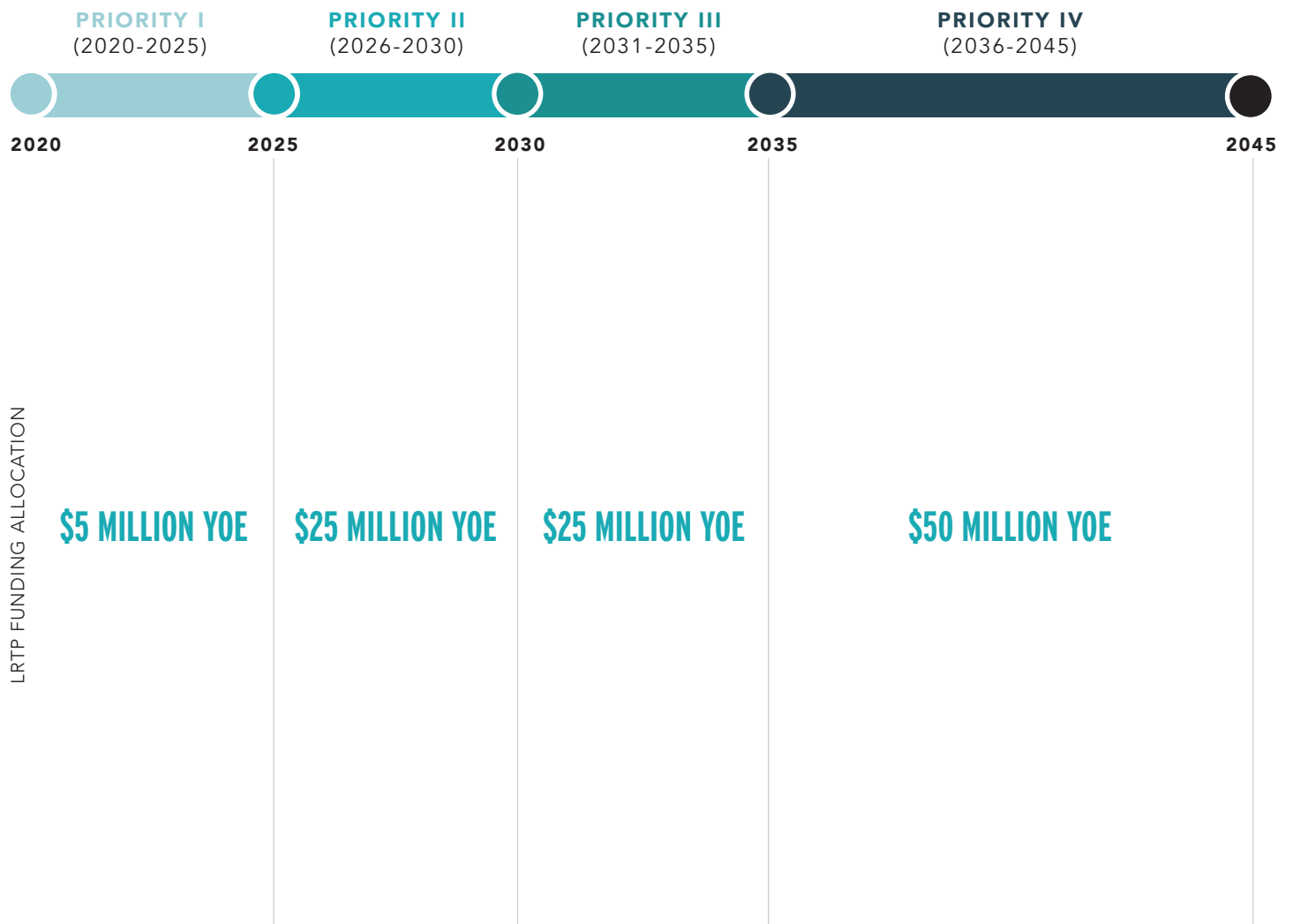
TABLE 1 FINAL EVALUATION CRITERIA CONTINUED

SPATIAL ANALYSIS	DESCRIPTION	WEIGHTED POINTS
	<p><b>Existing and Proposed Non-Motorized Connections</b></p> <p>Two (2) points are awarded to a project if it connects to an existing non-motorized facility. An additional two (2) points are allocated if the project's alignment will create a future connection to another proposed facility.</p>	<p><b>2 OR 4</b></p>
	<p><b>Off-Road Facilities (Greenways, Shared Use Paths, Sidepaths)</b></p> <p>Four (4) points are awarded to each project proposing low-stress off-road non-motorized facilities. Based off the Mineta Transportation Institute's Low-Stress Bicycling and Network Connectivity report, off-road facilities have the highest probability of attracting users of all ages and abilities.</p>	<p><b>4</b></p>
	<p><b>Safety – Bicycle Crashes</b></p> <p>Proposed projects located within high bicycle crash zones (crashes per mile) are awarded points to help address dangerous locations with improved facilities. Points are awarded based on four crash categories: Low, Medium, High, and Severe.</p>	<p><b>1-4</b></p>
	<p><b>Safety – Pedestrian Crashes</b></p> <p>Proposed projects located within high pedestrian crash zones (crashes per mile) are awarded points to help address dangerous locations with improved facilities. Points are awarded based on four crash categories: Low, Medium, High, and Severe.</p>	<p><b>1-4</b></p>

## LONG RANGE TRANSPORTATION PLAN FUNDING

The Miami Dade 2045 LRTP has specific sources of funding which can be utilized for projects within its planning process. The LRTP includes \$105 million in set aside funding for bicycle and pedestrian projects for the next 21 years (2025 – 2045). This total originates from the Transportation Alternatives (TALU) funding, and from the TMA/SU funds. These funds have been organized within four (4) planning periods. The Transportation Improvement Program (TIP) funds projects from 2020–2024. The LRTP Planning Periods and available funding by priority are depicted in Table 2.

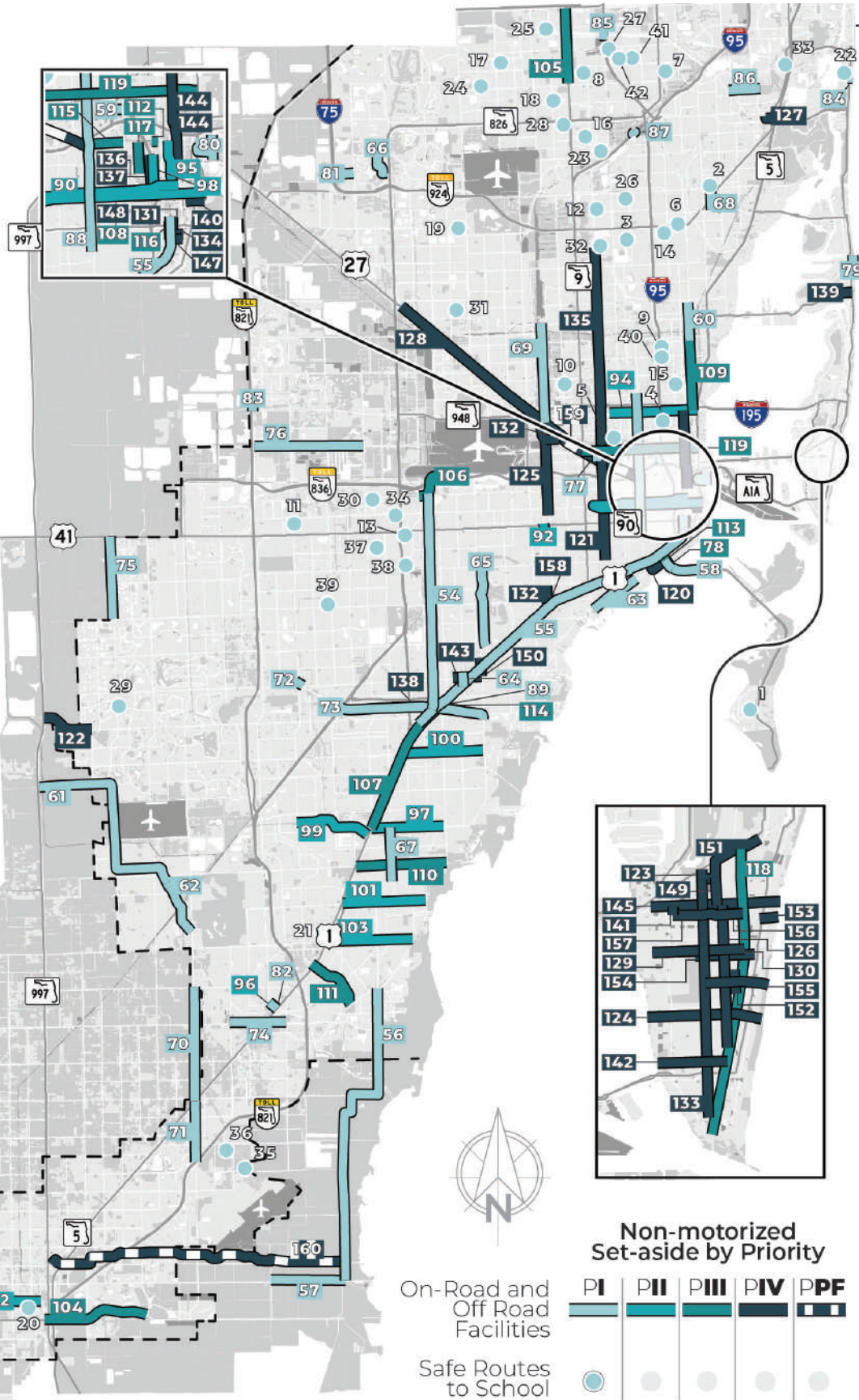
**TABLE 2 FUNDING AND INFLATION MULTIPLIERS PER PRIORITY**



Amounts shown are in YOE (Year of Expenditure) dollars



**COST FEASIBLE PLAN**



**FIGURE 3** 2045 BICYCLE/ PEDESTRIAN COST FEASIBLE PLAN MAP

The 2045 Bicycle/ Pedestrian Master Plan is incorporated into the 2045 Long Range Transportation Plan (LRTP). Figure 3 represents the evaluation of the 552 projects stated in the needs assessment. Based on the available set-aside funding and prioritized projects, 73 projects have been programmed from 2025 to 2045. They range in their proposed facility types and location within the county. The final cost feasible list is comprised of 159 projects (86 TIP range projects and 73 long range programmed projects) all with the aim to better serve the County's sustainable future. See the Miami-Dade 2045 Bicycle/ Pedestrian Master Plan full document for more details about the overall process, including the final cost feasible project list.

**MIAMI-DADE TRANSPORTATION  
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