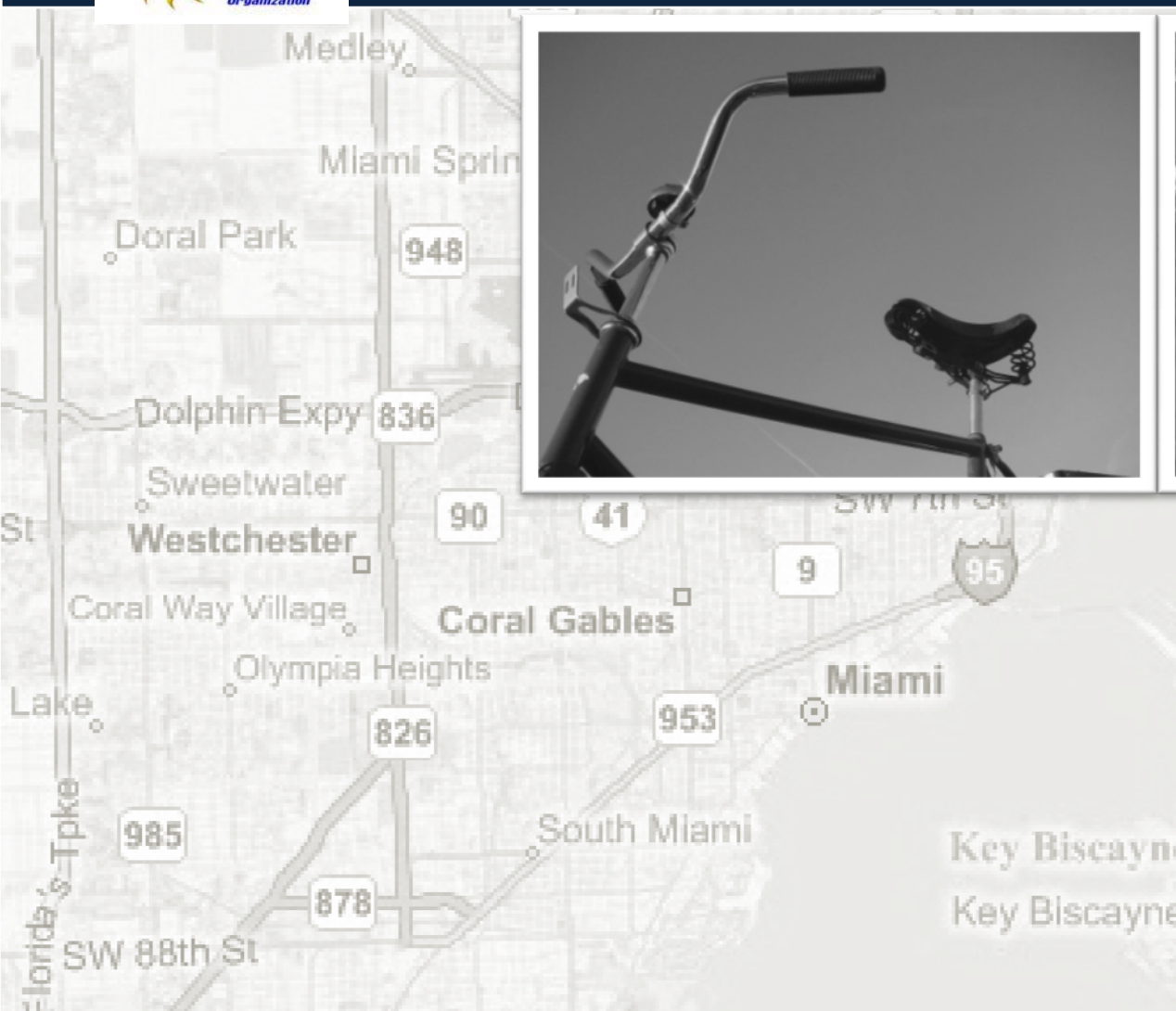


Bicycle and Pedestrian Plan Update



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2009

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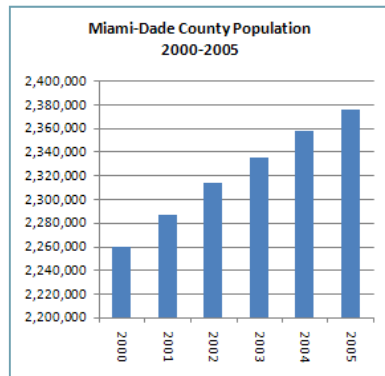
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1. PREFACE

Miami-Dade County (County) is in one of the fastest growing metropolitan areas in the U.S. and has witnessed 4.9 percent population growth from 2000 through 2005 (Figure 1). The County estimates the current population of 2.4 million will increase by approximately 1 million inhabitants by the year 2035.

Figure 1: Population Growth



Source: U.S. Census Bureau

Due to limits to roadway expansion, provisions for walking and bicycle modes will become increasingly important to maintain mobility within the County. Bicycle and pedestrian modes also have many health related benefits. Additionally, there are a number of contextual factors encouraging cycling and walking as alternative modes of transportation in the County. These factors are:

- The passage of the first Intermodal Surface Transportation Efficiency Act (ISTEA), as well as its successor Transportation Equity Act for the 21st Century (TEA-21), and the Clean Air Act Amendments (CAAA) have renewed incentives for planning agencies to emphasize walking and bicycling as significant components of the transportation mix.
- The County has long supported the walk and bicycle modes of transportation as low-cost and effective means of transportation that are healthy, flexible, environment-friendly, and energy-efficient.



Source: Mike Lydon

- The regional geography and weather provides an opportunity to offer year-round walking and bicycling given the yearly average temperature of 75 degree and exceptionally level terrain.
- Several land use agencies have plans to encourage dense, mixed-use developments that encourage walking and bicycling.
- State law requires that full consideration be given to bicycle lane improvements during road widening or resurfacing projects.
- The County has numerous parks and greenways, to support walking and bicycling activities.

Bicycling and walking are important components of the County's multimodal transportation mix. This plan is a tool to enhance County residents' transportation choices.

1.1 Purpose

The purpose of this planning effort is to make the County a place where cycling and pedestrian activities are safe, easy, attractive, and convenient modes of transportation and recreation for people of all ages and abilities. The plan accomplishes the following:

- Defines goals and objectives for bicycle and pedestrian infrastructure development in the County;
- Allows inclusion of bicycle and pedestrian planning efforts in the County's Long-range Transportation Plan (LRTP);
- Guides State, County, and local agencies in developing bicycle and pedestrian facilities;
- Allows coordination of plans and policies of different state, county, and local agencies so that the needs of cyclists and pedestrians are weighed equally with the needs of other travel modes;
- Provides with a set of policy recommendations to implement identified goals and objectives; and,
- On a more practical level, the Plan will allow the County to access grants through such programs as the Transportation Enhancement Program, People's Transportation Plan, and Florida Department of Transportation's (FDOT) Safety Office's Bicycle and Pedestrian Safety Grant Program.



1.2 Organization of the Plan

This document consists of five sections with supplemental data within the appendices:

- Section 2: Vision, Goals and Objectives: The vision defines the County's desired future for bicycle and pedestrian facilities and activities. The goals and objectives provide a road map, intended to guide future policy decisions.
- Section 3: Existing Bicycle and Pedestrian Facilities, Users, Activities, and Initiatives: This section describes the existing state of the County's bicycle and pedestrian facilities and related activities.
- Section 4: Needs Assessment: This section analyzes the existing conditions of bicycle and pedestrian facilities and identifies facilities where improvements are most needed.
- Section 5: Prioritization and Phasing: A list of prioritized improvements is included based upon the analysis and public involvement efforts.
- Section 6: Recommendations: Based upon the vision, status of existing bicycle and pedestrian facilities and the needs assessment, a series of recommendations have been created to guide the overall direction of the County's future policy and funding decisions.

1.3 Previous Efforts

The County's Bicycle and Pedestrian Facilities Plans were prepared in 2001 and last updated in 2004. This plan update essentially builds upon that effort and combines bicycle and pedestrian plans into one document.

The 2001/2004 Bicycle Facilities Plan utilized FDOT's bicycle Level Of Service (LOS) methodology to identify facility needs. A Year 2025 Minimum Revenue Bicycle Facilities Plan was prepared for incorporation into the Miami-Dade Metropolitan Planning Organization's (MPO) LRTP.

The 2001/2004 Pedestrian Plan examined pedestrian facilities throughout the County. A needs assessment was done and revenue projections were used to develop the 2025 Minimum Revenue Pedestrian Plan.



1.4 Relevant Bicycle and Pedestrian Studies

The MPO and local planning authorities have funded several bicycle and pedestrian modes related studies to identify specific corridor needs and develop associated plans. Some of the recommendations and issues identified in these studies are used in this plan update. The list below summarizes some of the most relevant studies conducted in the County since the Bicycle and Pedestrian Facilities Plan was last updated in 2004.

- **City of North Miami Beach Pedestrian & Bicycle Safety Analysis Study (2004):** This study identified roadway corridors in the City of North Miami Beach that would be most suitable for trails and bikeways projects.
- **Snake Creek Bike Trail Planning and Feasibility Study (2004):** This study recommended a bicycle path along the Snake Creek canal right-of-way. The construction cost of this project was estimated to be around \$3.7. Construction of one of the segments of this trail may begin in 2010.
- **Metrorail M-Path Master Plan (2006):** The M-Path, which runs along the Miami-Dade Transit's Metrorail, is a nine-mile long multi-use path built in 1983. The plan calls for improving connections, signage, pavement conditions, and security along this corridor.
- **Black Creek Trail Segment B Study (2006):** The Black Creek Trail has two components called Sections A & B. Section A is currently under the design phase. This plan addresses segment B which will be a 17-mile long greenway corridor that connects parks, schools, and other trails. The initial concept of this plan was derived from the South Dade Greenway Master Plan.

- **Bicycle and Pedestrian Traffic Count Program (2006):** This study is part of the National Bicycle and Pedestrian Documentation Project from the Institute of Transportation Engineers (ITE). Surveys were conducted across the County in high bicycle and pedestrian activity areas. The data helps the County prioritize projects to improve conditions for these travel modes.
- **Miami River Corridor Multimodal Transportation Plan (2006):** This plan addressed various modes of transportation along the Miami River. It included an existing conditions analysis and recommended improvements for greenways, pedestrians, bicycles, transit, and freight.
- **Safe Routes to School (SRTS) Program Study (2006):** Safe Routes to School is a national program that is managed by the Florida Department of Transportation. The study helped gain funding to improve infrastructure around 15 Liberty City area elementary schools.
- **Parks and Open Space Master Plan (2007):** A plan was set for a system of parks and open spaces through a series of interconnected trails that include greenways, waterways, cultural areas, and natural spaces. One of the guiding principles of this plan is to improve access so that every resident can utilize the network to walk, bike, or ride transit to their destinations.
- **Miami Beach Atlantic Greenway Network Master Plan:** This plan addressed connectivity issues between the existing bicycle and pedestrian network within the City of Miami Beach. It analyzed the best routes for bicycle facilities, developed proposals for reconstructing and upgrading existing facilities, and created a methodology to implement the proposed network.



Source: Keri, CommuterOrlando.com

1.5 The Bicycle and Pedestrian Plan & the Long Range Transportation Planning Process

The MPO's LRTP drives all transportation planning in the County. The modal plans, including this update of the Bicycle and Pedestrian Plan, are elements of the LRTP. Modal projects, including bicycle and pedestrian projects, are then programmed in the County's TIP. This plan identifies need for improvements and establishes cost-feasible priorities that will be incorporated in the MPO's LRTP.

1.6 Community Participation

The public was actively engaged in determining the goals and objectives of this plan. Two kick-off meetings were conducted in June 2008. Participants were asked to identify their areas of concerns and where bicycle and pedestrian improvements were most needed throughout the County. In general, the public showed concern over the following topics; road safety, bicycle road-signage, bicycle parking, connectivity, sidewalk obstacles, and enforcement of traffic laws for motorists and cyclists.

Meetings were also held with Miami-Dade County Bicycle and Pedestrian Advisory Committee (BPAC) to discuss the plan's progress. The BPAC also advised on the proposed evaluation criteria (Section 3.3) used to identify the bicycle and pedestrian facility needs of major roadways within the County.

The progress of the plan was also presented at several workshops concerning the 2035 LRTP. The bicycle needs plan was presented and participants input was sought. These LRTP workshops provided further opportunities for the public to provide input on the identified needs.

2. VISIONS, GOALS, OBJECTIVES

2.1 Vision

The vision statement is important in guiding the overall direction of future efforts in the County, as the recommendations in this study are implemented. Achieving the vision will require a high level of commitment and a sustained funding effort on part of the local and state partners well into the future.

2.2 Goals and Objectives

The goals and objectives are supportive of the County's Comprehensive Development Master Plan (CDMP) objectives, including:

- **CDMP Objective Transportation Element (TE)-2:** In furtherance of pedestrianism as a mode of transportation encouraged in the planned urban area, by 2008 Miami-Dade County shall enhance its transportation plan, programs and development regulations as necessary to accommodate the safe and convenient movement of pedestrians and non-motorized vehicles, in addition to automobiles and other motorized vehicles.
- **CDMP Objective Mass Transit (MT)-8:** Encourage ease of transfer between mass transit and all other modes, where it improves the functioning of the transportation network.

Goal 1: Provide a regional system of safe, convenient and accessible bicycle and pedestrian facilities for all users through the coordinated efforts of governmental agencies, the private sector and the public.

- **Objective 1.1:** Develop a connected system of bicycle and pedestrian facilities that can serve major origin and destination points within regional and local jurisdictions, linking such important land uses as residential and commercial zones, educational and employment areas, health care and service centers, natural, cultural and recreational resources.



- **Objective 1.2:** Coordinate non-motorized connections to facilities in Broward, Collier, and Monroe counties.

- **Objective 1.3:** Ensure the County's transportation system addresses the needs of different users such as the elderly, children, and the disabled.
- **Objective 1.4:** Ensure bicycle and pedestrian facilities are integrated and connected to other modes in the County transportation system (e.g. airport, seaport, local and regional transit) in order to reduce dependence on automobile use, reduce traffic and improve air quality.
- **Objective 1.5:** Ensure the bicycle and pedestrian system complements the existing transportation network by maximizing and preserving the existing system and taking advantage of public right-of-ways and corridors such as utility lines, rail lines, linear waterways, etc., for bicycle and pedestrian facilities in order to minimize public costs.
- **Objective 1.6:** Establish a maintenance program and standards that ensure safe and usable bicycle and pedestrian facilities.
- **Objective 1.7:** Provide ancillary facilities such as bicycle parking and storage, lighting, landscaping, signing, pavement marking and signalization to enhance the value and increase the utility and safety of the bicycle and pedestrian system.
- **Objective 1.8:** Support enforcement of regulations that ensure the safety, operation and proper use of the bicycle and pedestrian system.
- **Objective 1.9:** Develop a bicycle and pedestrian system that meets the highest achievable design and safety standards, including ADA standards.

Goal 2: Promote and encourage cycling and pedestrian travel as viable forms of transportation, as healthy forms of exercise, and as a positive benefit to the environment.

- **Objective 2.1:** Establish an educational and marketing program highlighting public health, economic development and environmental benefits of cycling and walking.
- **Objective 2.2:** Provide and encourage regular bicycle and pedestrian training and safety programs in conjunction with local institutions, organizations and bicycle and pedestrian interest groups.
- **Objective 2.3:** Continue development of non-motorized transportation systems through Safe Route to School, Safe Route to Parks, and Urban Center Safety and Mobility initiatives.
- **Objective 2.4:** Develop and distribute written, graphic and other materials to inform and assist cyclists and pedestrians in making effective and safe use of the system.
- **Objective 2.5:** Establish recognition programs to honor and celebrate significant achievements and programs that support using alternative transportation for daily travel, in developing and implementing exceptional bicycle and pedestrian designs, in achieving safety goals, and in maintaining litter-free facilities.
- **Objective 2.6:** Recognize and promote activities around regional and local events such as Florida Bike Month (March), Bike-To-Work Week, and Walk-to-School Day.
- **Objective 2.7:** Encourage employers to promote bicycle commuting by providing locker rooms, showers and bicycle parking and coordination with South Florida Commuter Services.

Goal 3: Promote coordinated and continuous bicycle and pedestrian planning and development programs at the County and local levels.

- **Objective 3.1:** Encourage and provide assistance for establishing permanent bicycle and pedestrian planning functions within city governments.
- **Objective 3.2:** Continue providing a forum for bicycle and pedestrian planning and discussion through the BPAC and encourage additional membership, including utility and railroad representation, schools, parks and recreation staff, public health representatives and other stakeholders.
- **Objective 3.3:** Establish mechanisms to ensure full public participation in developing countywide bicycle and pedestrian policies, plans and programs.
- **Objective 3.4:** Encourage the development of local bicycle and pedestrian plans that complement and support countywide bicycle and pedestrian objectives.
- **Objective 3.5:** Establish policies that track and report systems use and progress in implementing projects.
- **Objective 3.6:** Establish policies consistent with the Complete Street concept that requires bicycle and pedestrian design elements in all transportation and major development projects, including options for accommodating bicycles and pedestrians on all streets.
- **Objective 3.7:** Encourage and provide technical assistance to zoning, land use and roadway design changes to promote bicycle and pedestrian friendly development.

Goal 4: Provide adequate funding resources for planning, developing and maintaining high quality bicycle and pedestrian systems.

- **Objective 4.1:** Actively advertise all eligible federal and state grants for bicycle and pedestrian planning and development.
- **Objective 4.2:** Coordinate the development of bicycle and pedestrian projects to make maximum use of opportunities for joint development using other public or private resources.
- **Objective 4.3:** Provide technical assistance to local jurisdictions implementing creative financing options for bicycle and pedestrian facilities including local sales tax programs, capital improvement programs, user fee systems that provide funds to help offset operations and maintenance costs, and programs to encourage tax-free contributions of funds or property for bicycle and pedestrian projects.
- **Objective 4.4:** Ensure an equitable amount of transportation funding for bicycle and pedestrian projects incorporating design, right-of-way and construction.



3. EXISTING BICYCLE AND PEDESTRIAN FACILITIES, USERS, ACTIVITIES, AND INITIATIVES



The Bicycle and Pedestrian Plan Network is based on the 2005 roadway network used for the County's LRTP. Although, the LRTP network includes freeways, toll roads, arterials, and collector streets, the Bicycle and Pedestrian network does not include freeway or toll roads.

3.1 Bicycle Facilities and Users

The bicycle facilities in the County are divided into two categories:

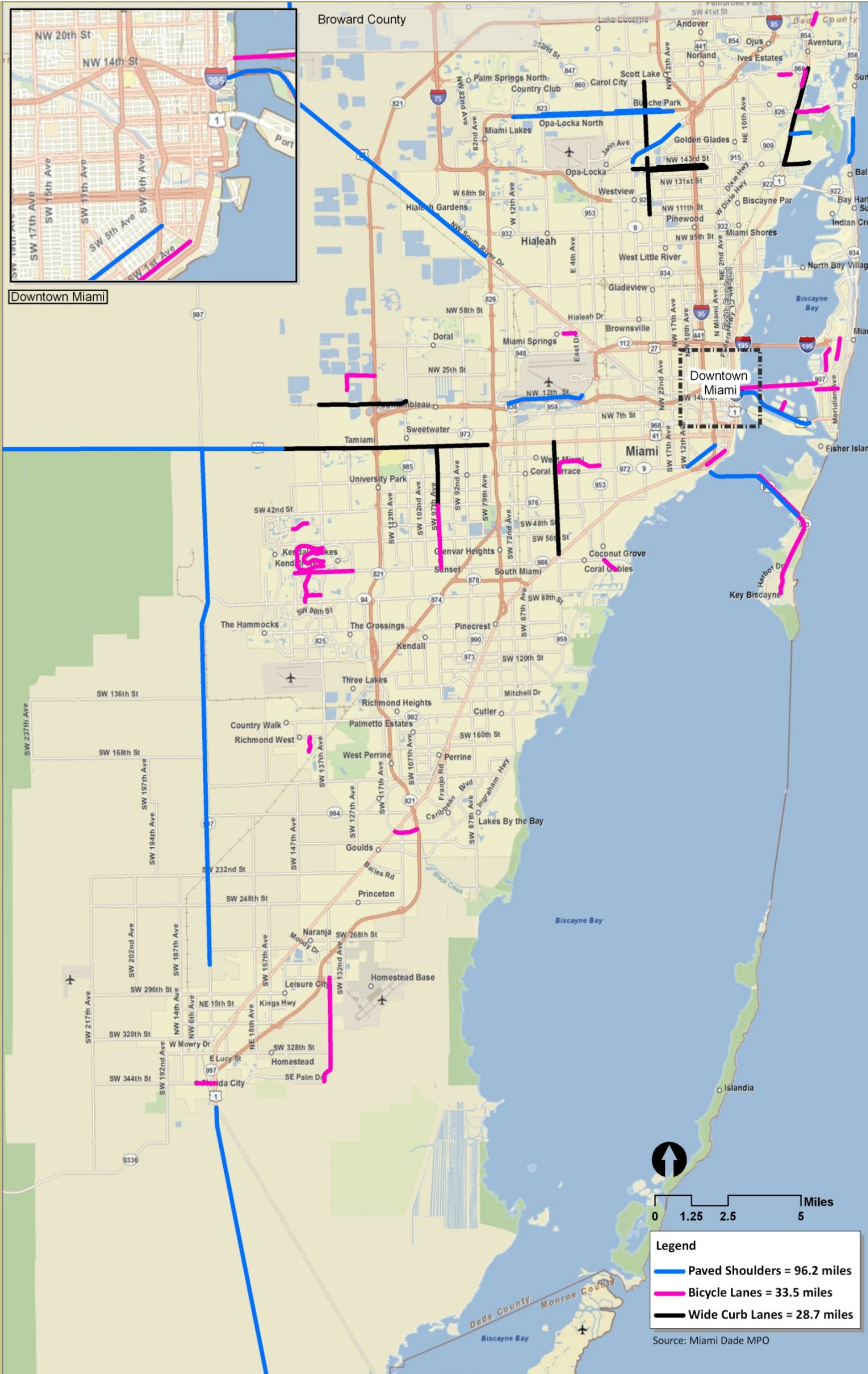
3.1.1 On-road Facilities

On-road facilities (Figure 2) are comprised of the entire roadway network, since cyclists can travel on any public road, except where prohibited (i.e. highways). On-road bicycle facilities include bicycle lanes, paved shoulders, and wide curb lanes. The County has approximately 160 miles of existing or under-construction on-road facilities.

- **Bicycle Lanes:** A typical designated bicycle lane is at least 4 feet wide and have signage and pavement marking . State, county, and local agencies may have different requirements for specific conditions. For example, the FDOT requires a minimum width of 5 feet along state roads when bicycle lane is adjacent to on-street parking, a right-turn lane, guardrail or other barrier (FDOT 2009 Plans Preparation Manual).
- **Paved Shoulders:** Paved shoulders have a varying width and are meant to serve vehicles with some type of mechanical trouble, roadway service vehicles, as well as bicycles. Paved shoulders are generally used as undesignated bicycle facilities along sub-urban and rural roadways.
- **Wide Curb Lanes:** Wide curb lanes are generally more than 13 feet wide and are considered wide enough to provide a safe operational environment for both motorists and cyclists.

Many on-road cyclists prefer a bicycle lane since that space is designated for their use.

Figure 2: On-Road Bicycle Facilities



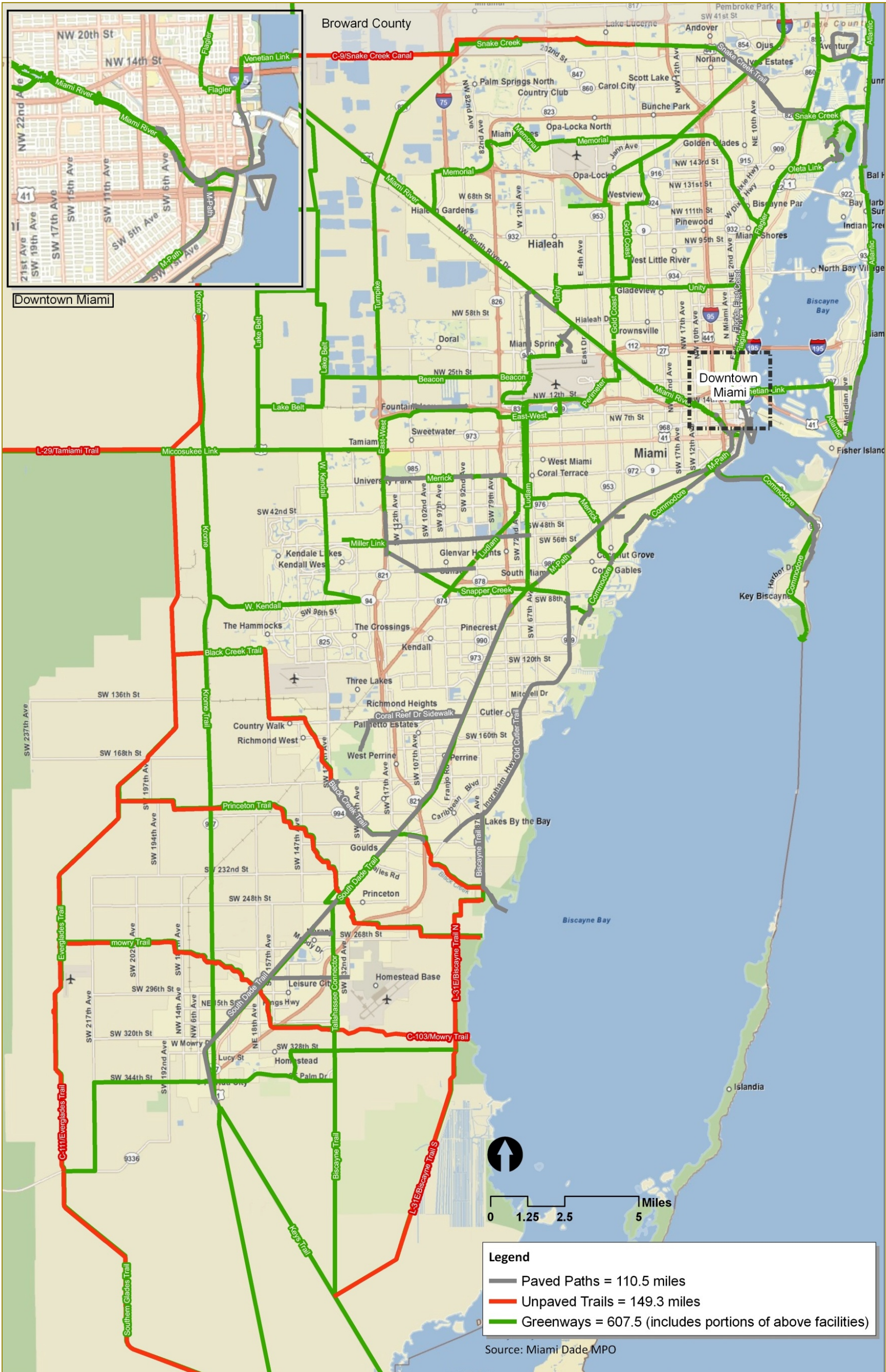
3.1.2 Off-road Facilities:

Off-road bicycle facilities (Figure 3) are separated from the roadway surface by a curb or some other type of border. They may also include greenways, trails, and shared-use paths and are often considered more suitable for mountain biking.

- **Unpaved Trails:** The existing unpaved trail network is approximately 150 miles long and contains both significant north-south and east-west elements. These facilities are mainly located in the south and west parts of the County.
- **Shared-use Trails:** The existing paved path network is approximately 110 miles long and runs mainly north-south in two parallel branches through areas along the shore or close to it. Paved shoulders can be found along three or four of the main thoroughfares in the region – portions of US 1, US 41, US 27, and SR-997/Krome Avenue.



Figure 3: Planned Off-Road Bicycle Facilities



3.1.3 Bicycle Parking Facilities

Secure parking is often identified as critical to increasing the number of people who choose to bicycle. Bicycling in the County can be increased at low cost by eliminating barriers and providing bicycle parking at transit station, shopping, and employment destinations.

The availability of safe and convenient parking is as critical to cyclists as it is for motorists. Miami-Dade County requires that bicycle racks or other means of storage be provided for all parks, shopping centers, offices and restaurants that have parking lots. Other uses (with the exception of airport terminals, single-family houses, duplexes, and townhouses, which are exempt) are required to provide bicycle storage if their total parking lot has more than 100 spaces.

There are many types of bicycle racks and lockers available in the market. There are two general categories of bicycle parking requirements:

- **Short-term Parking:** The bicycle parking devices of Class II and III are meant for short-term parking. Short-term parking is needed where bicycles will be left for short stops. It requires a high degree of convenience (as close to destination as possible). At-least some short-term bicycle parking should be protected from the weather.



Short-term parking at various public and private buildings is available. However, such parking facilities are mainly available at larger facilities in the Miami Downtown

area. In other parts of the County, short-term parking facilities such as bicycle racks are less visible and accessible.

Inverted U-racks, rolling racks, and traditional “wheel-bender racks” are often used for short-term parking.

- **Long-term Parking:** Long-term parking is needed at major employment centers and transit station where commuters complete their last leg of work-trip on a bicycle. This may include Class II or III type of parking facilities.

The County has installed bicycle lockers and other long-term parking facilities at several public buildings and at 12 Metrorail stations including Okeechobee, Hialeah, Northside, Brownsville, Earlington Heights, Allapattah, Vizcaya, Douglas Road, University, South Miami, Dadeland North, Dadeland South stations. Lockers can be rented for up to three months at a time.



A limited windshield bicycle parking inspection conducted for this Plan found that bicycle facilities are mainly available in Miami Beach, Downtown Miami, and Coral Gables area. However, due to high bicycle usage in these areas, many of bicycle parking facilities observed were inadequate. In other parts of the County, bicycle parking facilities are less prevalent and accessible. In major employment and shopping destinations such as Miami Gardens Downtown, Downtown Kendall, and malls throughout the County, bicycle parking does not meet standard parking requirements in terms of planning, capacity, and accessibility.

3.1.4 Characteristics of Cyclists:

Cyclists are legitimate road users. However, they are slower, less visible and more vulnerable than motorists are. Since the Federal policy goal is to accommodate existing cyclists and encourage increased bicycle use, there will likely be more novice cyclists on facilities than experienced riders. Therefore, any treatment intended to accommodate bicycle use must address the needs of both experienced and less experienced riders:

It is important to understand the range of cyclists' abilities and preferences. Bicycle facilities should be planned and designed to accommodate the abilities, needs, preferences and trip purposes of all bicycles. For the purpose of this plan, the classifications are as follows:

Table 1: Rider Group Characteristics

Rider Group / Characteristic	Characteristics	Preferences	Transportation Improvements
Group A: Advanced Cyclist	<ul style="list-style-type: none"> Experienced riders who bike regularly and frequently More likely to choose bicycling over other available modes of transportation More likely to use bicycles to complete longer trips (5 miles or longer) Operate at high speed under most traffic conditions Daily commuters, racers, bicycle messengers, recreational cyclist More likely to repeat trip along the same route to destination Well aware of their route characteristics 	<ul style="list-style-type: none"> Prefer route that provides direct access to destination Comfortable sharing roadway with vehicular traffic More aware of traffic rules as they relate to bicycles More likely to prefer wide outside curb lanes that allow vehicular traffic to pass without altering their line of travel 	<ul style="list-style-type: none"> Enforcement of traffic rules and traffic calming measures Wide outside lanes along urban roadways Usable roadway shoulder along rural and sub-urban roadways
Group B: Intermediate Cyclists	<ul style="list-style-type: none"> Skilled bicyclist who bike with varying regularity More likely to be captive bicyclists More likely to use bicycling to complete one or more legs of their trip (e.g. origin to bus stop and bus stop to destination) 	<ul style="list-style-type: none"> Prefer route with low-speed, low traffic-volume that may not provide direct access; likely to use sidewalks Prefer separation from vehicular traffic Have varying understanding 	<ul style="list-style-type: none"> Low-speed, low-volume streets and traffic calming Provide designated on- or off-road bicycle facilities along urban roadways Usable roadway shoulder along rural and sub-urban

Rider Group / Characteristic	Characteristics	Preferences	Transportation Improvements
	<ul style="list-style-type: none"> • Operate at medium to low speed along low traffic-volume streets or designated bicycle facilities • Daily commuters, utility riders • More likely to change route depending on traffic and other factors • Have some understanding of their area roadways 	<ul style="list-style-type: none"> • of traffic rules as they relate to cycling • More likely to prefer designated bicycle lanes and other facilities such as sidewalks 	<ul style="list-style-type: none"> • roadways
Group C: Basic Cyclists	<ul style="list-style-type: none"> • Beginners with low-skills who bike occasionally • More likely to be recreational cyclists • More likely to use bicycle to complete short trips to schools, recreation facilities, shopping, or other residential areas • Operate at low-speed along low traffic-volume streets • Teenagers, utility riders • Do not have a fixed route as trips are not to same destination regularly 	<ul style="list-style-type: none"> • Prefer route with low-speed, low traffic-volume that may not provide direct access; likely to use sidewalks • Prefer separation from vehicular traffic • Have limited understanding of traffic rules as they relate to bicycling • More likely to prefer designated bicycle lanes and other facilities such as sidewalks 	<ul style="list-style-type: none"> • Low-speed, low-volume streets and traffic calming • Provide designated on- or off-road bicycle facilities along urban roadways • Usable roadway shoulder along rural and sub-urban roadways

Group A riders are best served by making every street as “bicycle-friendly” as possible. This may be accomplished by utilizing sound roadway design engineering principles and standards that may include wide curb lanes and paved shoulders to accommodate shared use by bicycles and motor vehicles. Signage can be an effective measure to inform motorists of the presence of cyclists within the corridor. For the purpose of bicycle facility planning and design, cyclists in Groups B and C are often combined, resulting in a two-tiered approach to meeting cyclists needs. These riders are best served by providing designated bicycle facilities and educating cyclists and motorists so both are aware of each other’s rights.

3.2 Pedestrian Facilities and Users

Miami-Dade County has a large network of pedestrian facilities. That can be divided into following two categories:

- **Sidewalk / Separated Path:** Pedestrian facilities in the County include sidewalks along a significant part of the arterial and collector roadway network. The Miami-Dade Code of Ordinances requires a minimum five-foot wide obstacle-free clearance for pedestrian circulation along sidewalks in Urban Center districts, and 3.5 feet clearance in Traditional Neighborhood Development (TND) districts. It also requires that new or modified streets will have a minimum sidewalk width of 6 feet. The Florida Highway Administration requires 5 feet as a minimum sidewalk width to allow access for disabled persons and to allow at least two people to walk side by side.

Cyclists can travel along sidewalks in the direction of traffic; however, pedestrians have the right-of-way.

- **Shared-use Lanes:** Shared use paths are exclusive right-of-way with minimal cross flow by motor vehicles. Pedestrians and cyclists share these facilities.

3.2.1 Characteristics of Pedestrians

Pedestrians, like cyclists, vary widely in their abilities. Virtually all travel trips at one point or another include a pedestrian element. It could be as little as the walk from the front door to the car in the driveway and from the parking place to the office. However, most of the trips include running errands to nearby businesses during lunch hours or after work, or a trip to a shopping center near home.



In developing plans and programs to meet the needs of pedestrians we must keep in mind not only the "typical" or "average" person, but nearly any other category one could define. For example, the elderly, the young, the poor, and people with disabilities all have different needs and concerns.

3.3 Bicycle Level of Service

A Bicycle Level of Service (BLOS) analysis was conducted to identify compatibility of bicycle travel along the Base Year (2005) Bicycle Network. The results help understand cycling conditions as experienced by an average user.

3.3.1 BLOS Model

The BLOS model is based on a methodology adopted by the FDOT which includes physical attributes of a given roadway segment including the vehicle volume and speed on the adjusted roadway, the presence or absence of a striped bike lane, and the presence or absence of occupied on-street parking..

The model identifies the bicycle level of service for a segment of the Bicycle Network on a scale of A through F based on a numerical model score. An LOS of “A” indicates good cycling conditions and “F” indicates the least favorable conditions.

The BLOS model results are not equivalent to the corresponding level of service for motorized vehicles that has been long recognized by engineers and planners in Florida. As mentioned, BLOS is a measure of compatibility for bicycle travel on a given roadway network and not a measure of capacity. The BLOS level of service is not a function of congestion on the network facility but rather the quality of service experienced by the cyclist along a given segment. For this study, a BLOS of E and F are both considered failing scores.

3.3.2 Results

The results indicate that a majority of roadways included in the analysis are not compatible for cycling (Figure 4). Over 1500 miles of roadway segments were analyzed, of which 3.23 percent had an acceptable level of service of “C” or better (Table 2). Over 95 percent of the roadway miles received an unacceptable BLOS score of “D” or worse, with approximately 43 percent of segments receiving an LOS score of “E” and 34 percent a BLOS of “F”.

Table 2: Bicycle BLOS Value Percentage

LOS	LOS Range	Conditions	Length (Miles)	Percentage of Total
A	≤ 1.5	Very good	15	1.20%
B	> 1.5 and ≤ 2.5	Good	9	0.71%
C	> 2.5 and ≤ 3.5	Moderate	16	1.32%
D	> 3.5 and ≤ 4.5	Poor	240	19.44%
E	> 4.5 and ≤ 5.5	Very Poor	533	43.14%
F	> 5.5	Very Poor	423	34.19%
Missing Data			269	21.76%
Total			1505	100.00%

Due to difference in data sources, the BLOS results included in this plan may not be directly comparable to those included in the 2001 plan update.

Figure 4: Bicycle Level of Service



3.4 Existing Bicycle and Pedestrian Activity

This section presents data describing bicycle and pedestrian usage in the County. This data was also used to frame recommendations. The compiled data is from the Bicycle and Pedestrian Counts conducted by the MPO, Journey-To-Work (JTW) data from the US Census, the National Household Travel Survey, and bicycle and pedestrian crash data compiled by the FDOT.

3.4.1 Bicycle and Pedestrian Counts

In 2007, a countywide count survey was conducted for bicycles, pedestrians and other non-motorized travelers taken at various point locations and intersections. The survey results are shown in Tables 3 and 4. The results show that walkers make up approximately 70 to 80 percent of the recorded traffic, cyclists account for another 14 to 23 percent of the traffic, and other travel modes generally account for less than 5 percent of the traffic. Not surprisingly, bicycle and pedestrian traffic is heavier overall on Saturdays than on weekdays.

Table 3: Bicycle/Pedestrian Counts (Winter 2007)

Mode	Weekday		Saturday	
	Total	Percentage	Total	Percentage
Bicycle	367	14%	577	15%
Rollerblades / Skates / Scooter	64	3%	71	2%
Jogger	182	7%	93	2%
Walker	1,857	73%	3,010	77%
Walker with Dog	62	2%	73	2%
Walker with Stroller	15	1%	63	2%
Wheelchair User	0	0%	1	0%
Total	2,547	100%	3,888	100%

Source: Miami-Dade MPO

Table 4: Bicycle/Pedestrian Counts (Summer 2007)

Mode	Weekday		Saturday	
	Total	Percentage	Total	Percentage
Bicycle	444	16%	977	23%
Rollerblades / Skates / Scooter	48	2%	264	6%
Jogger	208	7%	137	3%
Walker	2,031	71%	2,635	62%
Walker with Dog	65	2%	139	3%
Walker with Stroller	40	1%	108	3%
Wheelchair User	15	1%	20	0%
Total	2,851	100%	4,280	100%

Source: Miami-Dade MPO

3.4.2 Journey to Work Data

The U.S. Census Bureau collects Journey to Work (JTW) data which can show trends in the modes used to travel to work over time. This data only represents commute to work trips for working adults, and it does not fully account for bicycle and pedestrian trips to shopping, school, recreation, or small commute trips. Smaller trips tend to be more attractive for bicycle and pedestrian activity.

The table on the right (Table 5) shows the methods used by workers travelling to work from the years 1990 and 2000. The percentage of commuters who bicycle or walk to work in Miami-Dade County declined between 1990 and 2000. The percentage of commuters who bicycle to work changed from 0.48 percent to 0.45 percent of total commuters. The percentage of commuters who walk to work declined from 2.53 to 2.15 percent of total commuters. The absolute numbers of bicycle and pedestrian commuters also declined in this period. Bicycle commuters decreased from 4,263 to 4,079, a 4.3percent decline, while pedestrian commuters decreased from 22,454 to 19,367, a 13.7percent decline. It is worth noting that the “car, truck or van” mode was the only travel mode that increased its share of work commute trips (except for a small increase for the railroad mode). Within this mode, the proportion of trips by single-occupancy vehicle increased, while the proportion of trips involving carpooling decreased.

The table on the right (Table 6) compares the results of the National Personal Transportation Survey with the 2001 National Household Travel Survey (the categories are those used in the NHTS). Travel by personal vehicle shows a slight decline over the six-year period, dropping by 3.2 percent. Travel by transit also shows a notable decline,

dropping by 17 percent. Travel by walking, on the other hand, shows a distinct increase, growing by 55 percent.

Table 5: Means of Transportation to Work in Miami-Dade County
(Workers 16 Years and Over)

Mode	Census 1990		Census 2000	
	# Workers	Percentage	# Workers	Percentage
Car, truck or van	780,997	87.95%	795,204	88.42%
Drove alone	642,669	72.37%	663,902	73.82%
Carpooled	138,328	15.58%	131,302	14.60%
Public Transportation	52,162	5.87%	47,087	5.24%
Bus or trolley bus	42,964	4.84%	38,249	4.25%
Streetcar or trolley car	340	0.04%	335	0.04%
Subway or elevated	6,359	0.72%	5,701	0.63%
Railroad	1,155	0.13%	1,385	0.15%
Ferryboat	21	0.00%	65	0.01%
Taxicab	1,323	0.15%	1,352	0.15%
Motorcycle	1,408	0.16%	890	0.10%
Bicycle	4,263	0.48%	4,079	0.45%
Walk	22,454	2.53%	19,367	2.15%
Other means	8,621	0.97%	8,547	0.95%
Worked at home	18,091	2.04%	24,149	2.69%
Total	887,996	100.00%	899,323	100.00%

Source: US Census Bureau

Table 6: Person Trips by Mode US Total (Millions of Trips)

Mode	1995 ⁽¹⁾	2001 ⁽²⁾
Personal Vehicle	89.3%	86.5%
Transit	1.8%	1.5%
School Bus	1.8%	1.7%
Walking	5.5%	8.6%
Other	1.5%	1.7%
Total	100.0%	100.0%

1. 1995 Nationwide Personal Transportation Survey

2. 2001 National Household Travel Survey

3.4.3 Safety

Bicycle injuries and fatalities in the County have generally declined between 1990 and 2006. Annual injuries dropped from 935 to 391, a decline of 58.2 percent, while annual fatalities dropped from 25 to 8 percent, a decline of 68 percent (Figure 5).

Pedestrian injuries and fatalities have likewise declined, although more gradually. Annual injuries dropped from 1,785 to 1,329, a decline of 25.8 percent. Annual fatalities dropped from 114 to 90, a decline of 21.1 percent (Figure 6). However, the number of pedestrian fatalities increased since 2004.

Miami-Dade County showed more significant declines in both bicycle and pedestrian injuries and fatalities than the State of Florida as a whole during the same period. Bicycle injuries and fatalities in Florida declined 37.7 percent and 13.3 percent, respectively. Pedestrian injuries and fatalities declined 4.5 percent and 8.5 percent respectively.

The results indicate that bicycling and walking in Miami-Dade County has become safer over the years. However, if bike and walk are to be promoted as attractive modes, additional measures would be needed to further reduce number of crashes involving cyclists and pedestrians.

Figure 5: Historical Tend – Crashes Involving Cyclists (1990-2006)

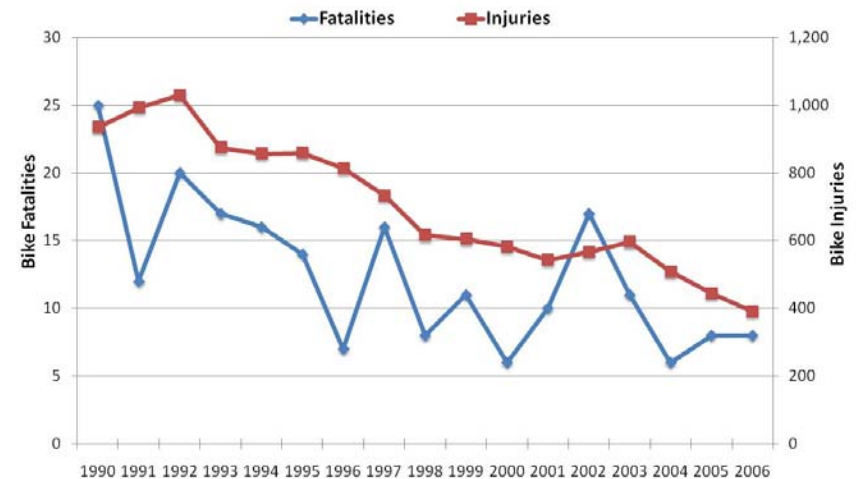
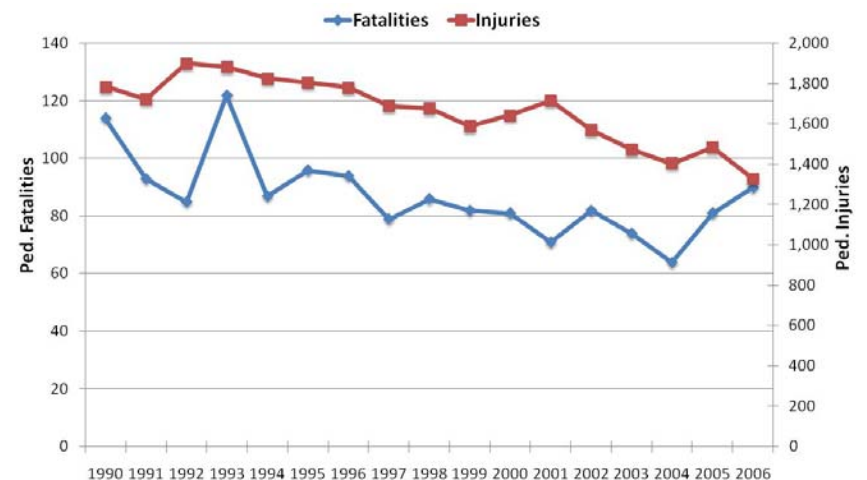


Figure 6: Historical Tend – Crashes Involving Pedestrians (1990-2006)



3.5 Existing Bicycle and Pedestrian Initiatives

Several agencies in the County provide a number of educational and recreational opportunities for pedestrians and cyclists. The initiatives described below have promoted awareness of bicycle and pedestrian issues across the County. The continuation and expansion of these programs are essential to help reduce the number of bicycle and pedestrian related incidents as described in the previous section.

3.5.1 Safe Routes to School (SRTS)

Miami-Dade County elementary students currently participate in the SRTS program with funding from the Federal Highway Administration (FHWA). The program's purpose includes developing safe routes to schools by educating students about crossing streets safely, health, fitness, and environmental awareness. In conjunction with these educational initiatives, the County improves crosswalks and pathways, and provides traffic control devices where needed (ex. signals, signs, pavement markings, speed bumps) to reduce the chances of pedestrian related automobile collisions. The County provides students and parents with maps regarding safe routes.

3.5.2 WalkSafe

In support of SRTS, the University Of Miami Miller School Of Medicine initiated the WalkSafe program in 2001. After a few successful demonstration projects, WalkSafe was mandated by the Miami-Dade Public School Board in 2003. The purpose of the program is to improve pediatric pedestrian safety, increase physical activity levels, and improve pedestrian access around elementary schools. The program builds upon the SRTS program by coordinating efforts with state and local government agencies, and providing educational materials free of

charge to all Miami-Dade County public schools. The materials provide guidance to teachers on how to teach pedestrian safety based upon the children's educational level.



3.5.3 Bike & Hike

The Miami-Dade County Parks department provides recreational opportunities for cyclists and pedestrians through their ECO Adventures program. Participants receive safety equipment and get to enjoy a variety of natural landscapes at a cost.

3.5.4 Bike Miami Days

As of 2008, the City of Miami has participated in a global “close-the-road” initiative, where public roads are closed to traffic for a small portion of a selected day so that cyclists and pedestrians can enjoy the space free of automobiles. The initiative is known locally as Bike Miami Days. The initiative has been successful in promoting healthy exercise through cycling and pedestrian activity. The initiative has grown in popularity and currently takes place once a month in downtown Miami.



3.5.5 Bicycle Rodeo

The Town of Miami Lakes provides an annual cycling safety course designed for children, known as the Bicycle Rodeo. Participating children receive bicycle helmets, safety lessons, and interact with law enforcement officers. The event is sponsored annually by neighboring businesses.

3.5.6 Share the Road

County and several local governments have initiated “Share the Road” program to educate motorists and bicyclists of traffic laws. For example, the MPO distributed “Share the Road” material in Miami Beach that has a high number of crashes involving bicyclists.

4. NEEDS ASSESSMENT

The bicycle needs assessment process is different from conventional roadway needs assessment that includes analysis of roadway LOS to identify need for new/additional roadway capacity. For this plan, bicycle needs assessment seeks to identify facilities that should be made more bicycle-friendly. This section includes a detailed description of the process and results of bicycle and pedestrian facility needs assessment task.

4.1 Process

The Plan's Goals and Objectives, developed in consultation with the MPO's BPAC, were used to identify evaluation criteria. The evaluation criteria were broadly divided into four parameters: Existing Conditions, Connectivity, Local Support, and Cost Feasibility. Each parameter included one or more variables measuring different aspects of a given parameter.

To identify locations where pedestrian facilities are needed, the pedestrian projects listed in the 2001 Plan Update was evaluated.

4.2 Evaluation Criteria

The BPAC chose connectivity as one of the most important factors in weighing the decisions for future improvements. A summary of results are shown in Figures 7 and 8.

Figure 7: Evaluation Criteria – On-road Facilities

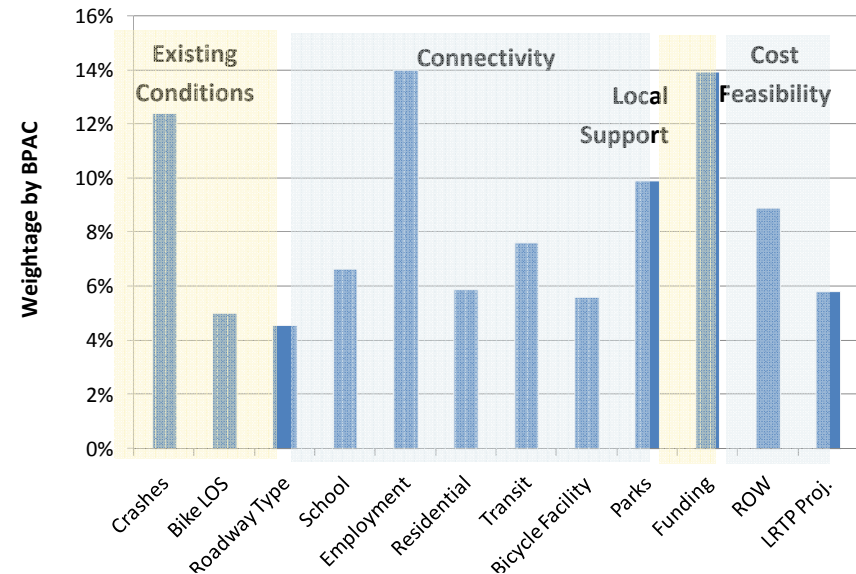
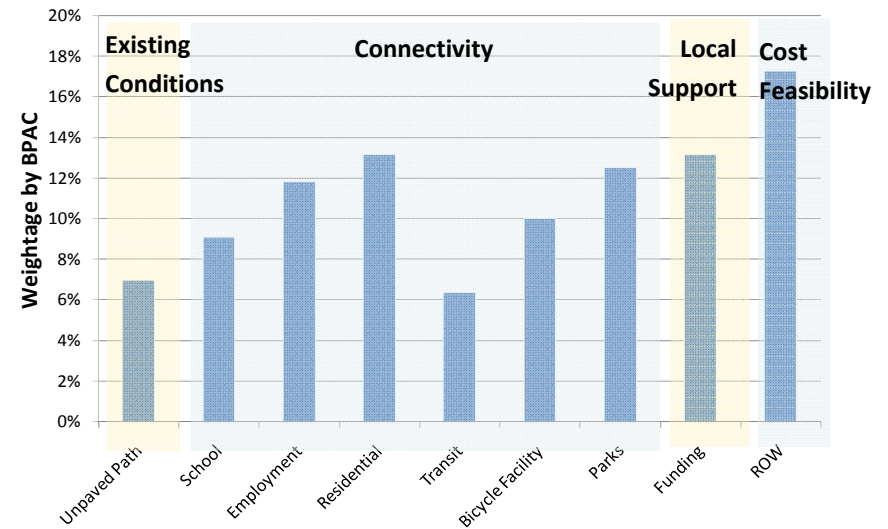


Figure 8: Evaluation Criteria – Off-road Facilities



As shown in Figures 7 and 8, BPAC members placed a greater emphasis on connectivity to schools, employment centers, high-density residential areas, and existing bicycle facilities than other criteria. For on-road facilities, safety, as measured by reported incidents involving cyclists and pedestrians, was considered an important issue. For off-road facilities, the availability of right-of-way was an important consideration.

The BPAC member's priorities as reflected in this exercise were also used to frame recommendations. For instance, one of the recommendations of this plan is to prioritize bicycle and pedestrian projects where connections to schools, employment centers, residential communities, transit, and parks can be enhanced.

4.3 Results of Bicycle Facility Needs Assessment

Evaluation Criteria and weights assigned by BPAC members were used to conduct a needs assessment analysis for on-road and off-road facilities.

4.3.1 On-Road Facility Needs Assessment

The results indicate that there is a high or very high need along more than a third (approximately 535 miles) of the roadway network included in this analysis (Table 7). US-1 and roadways in or connecting to Downtown Miami have a higher need for on-road bicycle facility improvements (Figure 9). On the other hand, there appears to be a low or very low need in western areas of the County.

4.3.2 Off-road Facility Needs Assessment

The results indicate that there is a high or very high need to improve approximately 235 miles of off-road facilities (Table 8). Need is higher for facilities that connect to major regional parks and parts of the Miami Downtown (Figure 10).

Table 7: On Road Facility Needs Assessment

Need	Total Miles	Evaluation Criteria Percentage
Very Low Need	282	18.7%
Low Need	369	24.5%
Moderate Need	320	21.3%
High Need	328	21.8%
Very High Need	206	13.7%
Total	1505	

Table 8: Off Road Facility Needs Assessment

Need	Total Miles	Evaluation Criteria Percentage
Very Low Need	153	21.6%
Low Need	210	29.6%
Moderate Need	111	15.7%
High Need	109	15.4%
Very High Need	126	17.7%
Total	709	100.00%

Figure 9: On-Road Bicycle Facility Needs

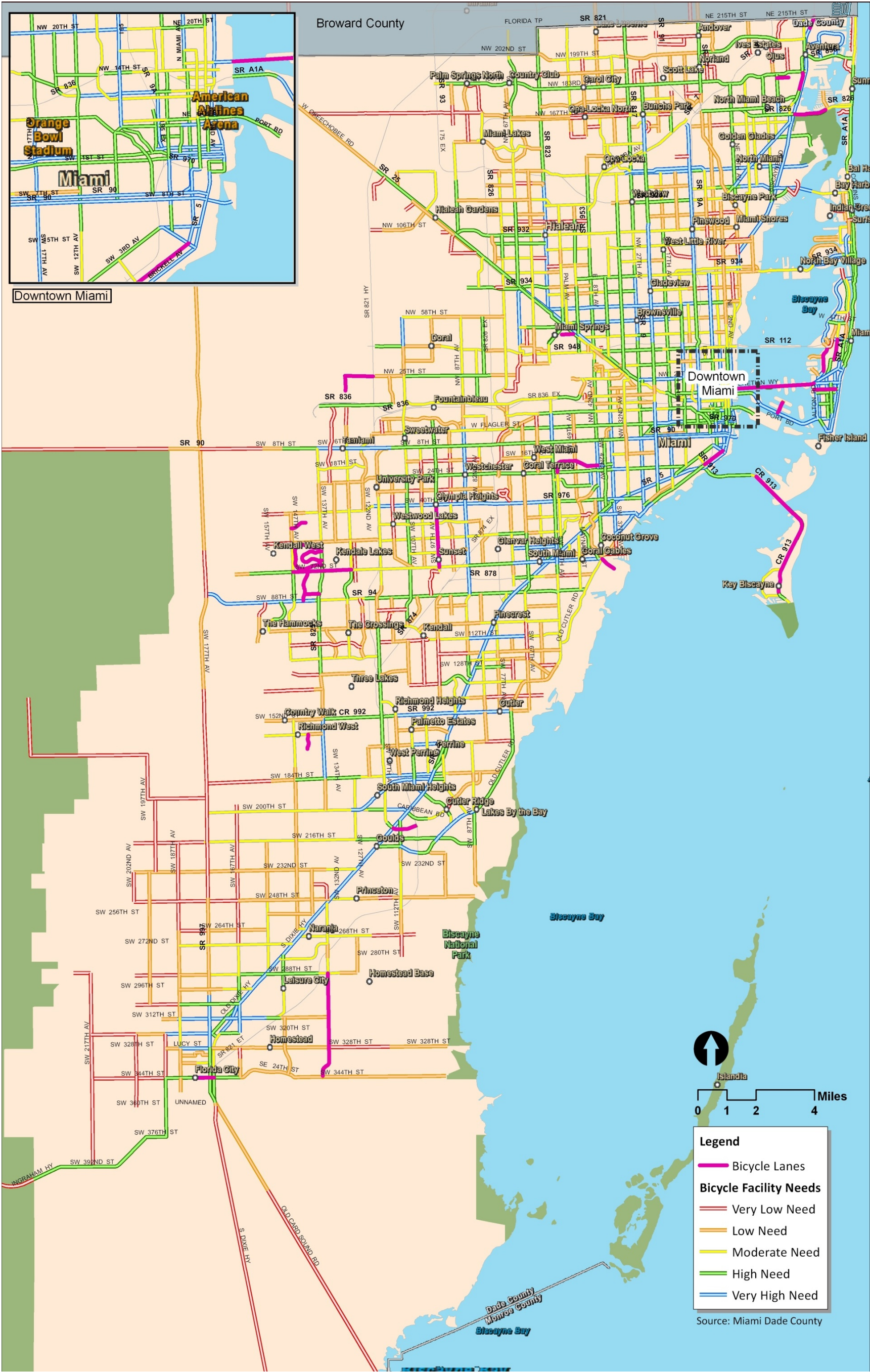
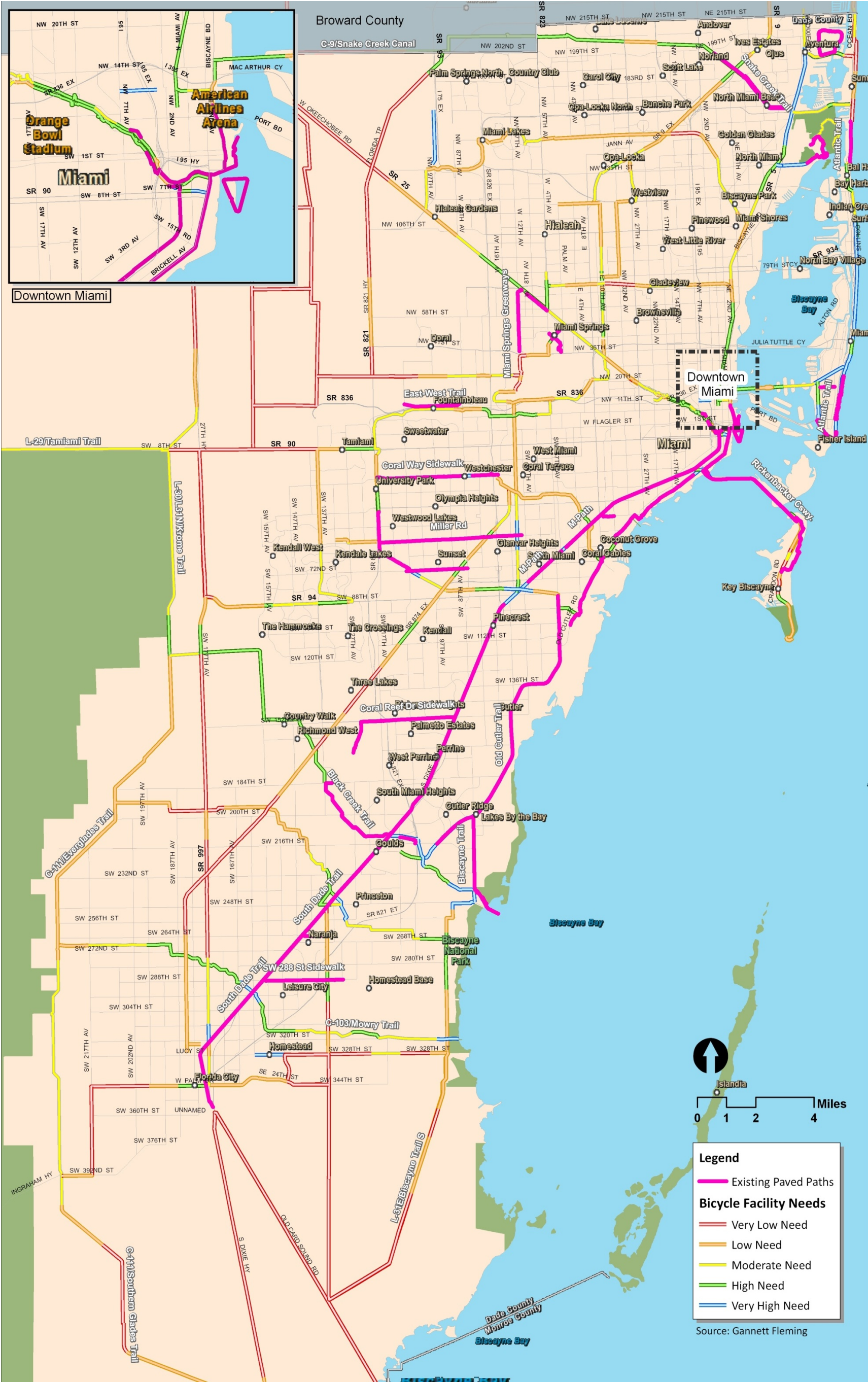


Figure 10: Off-road Bicycle Facility Needs



4.4 Results of Pedestrian Facility Needs Assessment

Funded and unfunded facilities included in the 2001 Plan Update were reviewed in order to identify projects that are not 100 percent complete

(Table 9). It was determined that these projects represent an unmet need.

Table 9: Pedestrian Facility Needs

Area	Project or Facility	Limits		Existing Sidewalk Coverage
		From	To	
Beach / CBD	Biscayne Bd	NE 187 th St	NE 191 st St	50%
Beach / CBD	Biscayne Bd	NE 191 st St	Aventura Bd	50%
Beach / CBD	NE 185 th St	NE 10 th Ave	NE 15 th Ave	60%
Beach / CBD	NE 2 nd Ave	NW 111 th St	W Dixie Hwy	75%
Beach / CBD	W Dixie Hwy	NE 171 st St	NE 186 th St	60%
Central	E 9 th St	E 4 th Ave	E 8 th Ave	60%
Central	NW 36 th St	East Dr	N Le Jeune Rd	65%
Central	Sevilla Ave	Alhambra Cr	Anastasia Ave	50%
Central	SW 57 th Ave	SW 40 th St	Seville Ave	75%
Central	SW 64 th St	SW 72 nd Ave	SW 67 th Ave	0%
North	NE 10 th Ave	NE 82 nd St	NE 95 th St	40%
North	NE 12 th Ave	NE 159 th St	N Miami Beach Bd	80%
North	NE 12 th Ave	W Dixie Hwy	NE 151 st St	75%
North	NE 159 th St	N Miami Ave	NE 6 th Ave	70%
North	NE 2 nd Ave	NE 71 st St	NE 79 th St	75%
North	NE 2 nd Ave	NE 61 st St	NE 71 st St	65%
North	NE 2 nd Ave	NE 46 th St	NE 54 th St	85%
North	NW 159 th St	NW 2 nd Ave	N Miami Ave	60%
North	NW 167 th St	NW 57 th Ave	NW 47 th Ave	40%
North	NW 17 th Ave	NW 157 th St	NW 167 th St	10%
North	NW 19 th Ave	NW 71 st St	NW 72 nd St	25%
North	NW 2 nd Ave	N Biscayne River Dr	NW 159 th St	25%

Area	Project or Facility	Limits		Existing Sidewalk Coverage
		From	To	
Beach / CBD	Biscayne Bd	NE 187 th St	NE 191 st St	50%
North	NW 37 th Ave	NW 71 st St	NW 79 th St	25%
North	NW 47 th Ave	NW 199 th St	NW 215 th St	40%
North	NW 6 th Ct	NW 79 th St	NW 81 st St	50%
North	NW 71 st St	NW 32 nd Ave	NW 27 th Ave	60%
North	NW 81 st St	NW 37 th Ave	NW 36 th Ave	0%
North	NW 167 th St	NW 32 nd Ave	NW 27 th Ave	25%
North	NW 167 th St	NW 27 th Ave	NW 22 nd Ave	0%
North	NW 167 th St	NW 22 nd Ave	NW 17 th Ave	0%
North	SR 9 Ex Frontage Rd	NW 27 th Ave	SR 9 Ex	50%
Northwest	Hialeah Ex	NW 72 nd Ave	N Royal Poinciana Bd	0%
Northwest	NW 103 rd St	W 28 th Ave	W 24 th Ave	50%
Northwest	NW 186 th St	NW 77 th Ave	NW 67 th Ave	60%
Northwest	W 4 th Ave	W 53 rd St	NW 114 th St	50%
Northwest	W 4 th Ave	NW 114 th St	NW 119 th St	50%
Northwest	W 4 th Ave	W 33 rd St	W 37 th St	50%
Northwest	W 4 th Ave	W 49 th St	W 53 rd St	50%
South	NE 12 th Ave	NE 8 th St	NE 15 th St	40%
South	S Dixie Hwy	SW 304 th St	SW 296 th St	50%
South	S Dixie Hwy	SW 120 th St	SW 112 th St	50%
South	SW 104 th St	SW 97 th Ave	SW 92 nd Ave	50%
West	SW 102 nd Ave	SW 56 th St	SW 48 th St	50%
West	SW 47 th St	SW 142 nd Ave	SW 137 th Ave	50%
West	SW 56 th St	SW 137 th Ave	SW 132 nd Ave	75%
West	SW 8 th St	SW 132 nd Ave	SW 127 th Ave	50%
West	SW 8 th St	SW 137 th Ave	SW 132 nd Ave	50%
West	SW 97 th Ave	SW 72 nd St	SW 64 th St	60%
West	SW 97 th Ave	SW 64 th St	SW 56 th St	75%
Central	McDonald St	Grand Ave	Bird Rd	40%

Area	Project or Facility	Limits		Existing Sidewalk Coverage
		From	To	
Beach / CBD	Biscayne Bd	NE 187 th St	NE 191 st St	50%
Central	SW 72 nd St	SW 72 nd Ave	SW 67 th Ave	55%
North	NW 95 th St	NW 32 nd Ave	NW 27 th Ave	60%
Northwest	Hialeah Ex	W 10 th Ave	W 8 th Ave	0%
Northwest	Hialeah Ex	W Okeechobee Rd	W 10 th Ave	0%
Northwest	W 68 th St	SR 826 Ex	W 16 th Ave	30%
Northwest	W Okeechobee Rd	NW 103 rd St	W 18 th Ave	0%
West	SW 8 th St	SW 82 nd Ave	SW 76 th Ct	50%
West	SW 8 th St	SW 122 nd Ave	SW 112 th Ave	50%
Beach / CBD	Dade Bd	Alton Rd	Meridian Ave	50%
Beach / CBD	NE 2 nd Ave	NE 103 rd St	NW 111 th St	60%
Beach / CBD	NW 119 th St	NE 2 nd Ave	W Dixie Hwy	90%
Beach / CBD	SE 4 th St	S Miami Ave	SE 1 st Pl	50%
Central	Alhambra Cr	Blue Rd	SW 40 th St	20%
Central	E Okeechobee Rd	E 1 st Ave	East Dr	50%
Central	Granada Bd	Ponce De Leon Bd	Blue Rd	40%
Central	Granada Bd	Hardee Rd	S Dixie Hwy	30%
Central	Granada Bd	Blue Rd	SW 40 th St	0%
Central	Ponce De Leon Bd	Maynada St	Granada Bd	50%
Central	SW 32 nd Ave	S Dixie Hwy	SW 22 nd St	75%
Central	SW 40 th St	University Dr	Segovia St	20%
Central	SW 40 th St	Segovia St	SW 42 nd Ave	25%
Central	SW 57 th Ave	Blue Rd	SW 40 th St	40%
Central	SW 57 th Ave	SW 64 th St	SW 56 th St	75%
Central	SW 67 th Ave	SW 72 nd St	SW 64 th St	75%
North	NE 12 th Ave	NE 125 th St	NE 135 th St	60%
North	NE 16 th Ave	NE 159 th St	NE 163 rd St	85%
North	NW 14 th St	NW 17 th Ave	NW 14 th Ave	90%
North	NW 2 nd Ave	NW 17 th St	NW 20 th St	25%

Area	Project or Facility	Limits		Existing Sidewalk Coverage
		From	To	
Beach / CBD	Biscayne Bd	NE 187 th St	NE 191 st St	50%
North	NW 3 rd Ct	I-95 Ex	NW 8 th St	50%
North	NW 6 th Ave	NW 54 th St	NW 62 nd St	50%
North	NW 72 nd St	NW 22 nd Ave	NW 19 th Ave	0%
Northwest	Hialeah Ex	W 8 th Ave	W 4 th Ave	0%
West	SW 117 th Ave	SW 24 th St	SW 113 th Ave	40%
West	SW 8 th St	SW 107 th Ave	SW 102 nd Ave	50%
Central	Curtiss Py	Hunting Lodge Dr.	Curtiss Py Roundabout	75%
Central	S Miami Ave	SW 17 th Rd	S Dixie Hy	90%
Northwest	NW 103 rd St	W 24 th Ave	W 49 th St	85%
Northwest	W Flagler St	NW 79 th Ave	NW 72 nd Ave	75%
Northwest	W Okeechobee Rd	W 8 th Ave	W 4 th Ave	50%

5. PRIORITIZATION AND PHASING

The intent of this section is to follow the LRTP process closely. Target dates have been developed for bicycle and pedestrian projects.

5.1 Identification of Candidate Bicycle Projects and Pedestrian Projects

The Plan has identified 205 Bicycle and Pedestrian Projects based upon the evaluation criteria developed by the BPAC, the public input received, and the technical data on BLOS. These projects have been evaluated based upon how well they meet the vision, goals and objectives identified with the help of the public and BPAC. The Plan has identified over 62 miles of off-road bicycle projects, 88 miles of on-road bicycle projects, 50 miles of sidewalk projects, and 69 Safe Routes to School projects throughout the County.

5.2 Minimum Revenue Plan

A range of funding options was reviewed including existing County sources of revenue and alternative sources that are available for multimodal projects. Approximately, \$58,200,000 is available for bicycle and pedestrian projects from 2015 through 2035.

Several projects will remain unfunded until additional financial resources are implemented. A list of potential revenue sources is listed under the recommendations section.

A list of identified projects is included in Table 10. Figures 11 and 12 depict identified bicycle on- and off-road projects. Figure 13 depicts the identified sidewalk improvement projects.

Table 10: Minimum Revenue Plan Projects

Type	Facility	From	To	Improvement Description
PRIORITY 1 (2010-2015)				
On-road Bicycle	West Dixie Highway	NE 186 St	Ives Dairy Rd	Bicycle Facility Improvements
On-road Bicycle	NW 74 St	NW 107 Ave	NW 84 Ave	Bicycle Facility Improvements
On-road Bicycle	SW 160 St	SW 147 Ave	SW 137 Ave	Bicycle Facility Improvements
On-road Bicycle	SW 216 St	SW 127 Ave	HEFT	Bicycle Facility Improvements
On-road Bicycle	SW 264 St	US-1	SW 137 Ave	Bicycle Facility Improvements
On-road Bicycle	SW 27 Ave	S Bayshore Dr	US-1	Bicycle Facility Improvements
On-road Bicycle	SW 176 St	SW 107 Ave	US-1	Bicycle Facility Improvements
On-road Bicycle	SW 137 Ave	US-1	SW 184 St	Bicycle Facility Improvements
On-road Bicycle	SW 137 Ave	HEFT	US-1	Bicycle Facility Improvements
On-road Bicycle	NE 2 Ave	NE 20 St	NE 36 St	Bicycle Facility Improvements
On-road Bicycle	NE 2 Ave	NE 36 St	NE 43 St	Bicycle Facility Improvements
On-road Bicycle	NE 2 Ave	NE 43 St	NE 62 St	Bicycle Facility Improvements
On-road Bicycle	NE 2 Ave	NE 62 St	West Little River Canal/ NE 84 St	Bicycle Facility Improvements
On-road Bicycle	SW 8 St	HEFT	SR 826	Bicycle Facility Improvements
On-road Bicycle	NE 15 Ave	NE 163 St	NE 186 St	Bicycle Facility Improvements
On-road Bicycle	SW 137 Ave	SW 184 St	SW 152 St	Bicycle Facility Improvements
On-road Bicycle	Dade Blvd Bike Path	Venetian Causeway	Beachwalk	Bicycle Facility Improvements
On-road Bicycle	NE 135 St	East of Biscayne Boulevard	Bayvista Boulevard at FIU	Bicycle Facility Improvements
Off-road Bicycle	Beachwalk Greenway/5 Street	South end of Lummus Park	South of Washington Avenue	Trail Improvements
Off-road Bicycle	Overtown Greenway	NW 3 Ave	NW 7 Ave	Trail Improvements
Off-road Bicycle	Snake Creek Trail	NW 17 Ave/Turnpike	NW 186 St	Trail Improvements
Off-road Bicycle	Black Creek Trail "A"	Black Point Park	Larry and Penny Thompson Park	Trail Improvements
Off-road Bicycle	Black Creek Trail "B"	SW 184 St	SW 144 St	Trail Improvements
Off-road Bicycle	M-Path Extension	Dadeland South Station	SW 67 Ave	Trail Improvements
Off-road Bicycle	Old Cutler Rd Path Phase 1	SW 224 St	SW 136 St	Trail Improvements
Off-road Bicycle	Biscayne Trail	Black Point Park	SW 280 St	Trail Improvements (Construction)
Off-road Bicycle	Biscayne Trail	Black Point Park	to Biscayne National Park to US-1	Trail Improvements (PD&E Study)
Off-road Bicycle	Ludlam Trail	Dadeland North Station	NW 12 St	Trail Improvements (PE)
Off-road Bicycle	Snapper Creek Trail	K-Land Park/SW 88 St	SW 72 St	Trail Improvements
Off-road Bicycle	Miami River Greenway	NW 12 Ave	SE 2 Ave	Trail Improvements
Off-road Bicycle	Miami River Greenway	5 St Bridge		Trail Improvements

Type	Facility	From	To	Improvement Description
Off-road Bicycle	Commodore Trail	Coco Plum Circle	SW 27 Ave	Trail Improvements
Off-road Bicycle	Atlantic Trail	44 St	46 St	Trail Improvements
Off-road Bicycle	Atlantic Trail	South Pointe Park	5 St	Trail Improvements
Off-road Bicycle	Atlantic Trail (except portion between 44 and 46 St)	23 St	64 St	Trail Improvements (Design)
Pedestrian	Greenway Bridges	Biscayne and Black Creek	Trail Bridges	Pedestrian Underpass
Pedestrian	El Portal/87 St	NE 2 Ave	Biscayne Blvd (E) and NW 5 Ave (W)	Pedestrian Facility Improvements
Pedestrian	School Safety Enhancement Program			Pedestrian Facility Improvements
Pedestrian	SR 948/ NW 36 St	NW 79 Ave	NW 74 Ave	Pedestrian Facility Improvements
Pedestrian	East of Little Havana	Greenways/South River Dr	SW 12 Ave to J. Marti Park	Pedestrian Facility Improvements
Pedestrian	NW 87 Ave	NW 58 St	NW 74 St	Pedestrian Facility Improvements
Pedestrian	SR 953 / LeJeune Rd	SR 5/ US-1/ S Dixie Hwy	SR 90 / SW 8 St	Pedestrian Facility Improvements
Pedestrian	SW 142 Ave	SW 42 St	SW 26 St	Pedestrian Facility Improvements
Pedestrian	SW 142 Ave	SW 26 St	SW 8 St	Pedestrian Facility Improvements
Pedestrian	Dade Bd	Purdy Dr	23 St	Pedestrian Facility Improvements
Pedestrian	NW 112 Ave	NW 84 St	NW 86 St	Pedestrian Facility Improvements
Pedestrian	NW 82 St	NW 113 Ave	NW 117 Ave	Pedestrian Facility Improvements
Pedestrian	SW 152 Ave	SW 182 St	SW 184 St	Pedestrian Facility Improvements
Pedestrian	N 20 St	Civic Center	Biscayne Bd	Pedestrian Facility Improvements
Pedestrian	Safe Route to School Improvements	Doctors Charter School		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Southside		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	NOR Miami Elementary		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Peskoe		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	W Homestead		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Saunders		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	LUD Pine Villa		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Avocado Elementary		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	WM Chapman		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Cambell Drive		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	WJ Brian		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Riverside, Fulford		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Henry M Flagler Elementary		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Caribbean		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	South Pointe		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	South Miami Heights Elementary School		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Poinciana Park		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Thena Chowder		Non-motorized Facility Improvements

Type	Facility	From	To	Improvement Description
Pedestrian	Safe Route to School Improvements	Amelia Earhart		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Bob Graham		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Miami Shores		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Barbara Hawkins		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Eugenia B Thomas		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Flamingo		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Joella Good Elementary School		Non-motorized Facility Improvements
Pedestrian	Safe Route to School Improvements	Van Blanton		Improve safety by public outreach initiatives
PRIORITY 2 (2016-2020)				
On-road Bicycle	NW 22 Ave	NW 36 St	NW 183 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	NW 2 Ave	NW 20 St	NW 79 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	Federal Highway/NE 4 Ct	NE 39 St	NE 61 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	SW 137 Ave	SW 72 St	SW 56 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	SW 3 Ave	US-1	SW 22 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	SW 2 Ave	SW 15 Rd	SW 8 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	SW/NW 1 Ave	SW 2 St	NW 20 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	Tamiami Canal Rd	SW 8 St	NW 7 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	South Miami Ave	SW 14 Ter	SW 12 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	South Miami Ave	SW 6 St	SW 3 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	North Miami Ave	NW 14 St	NW 20 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	North Miami Ave	NW 14 St	NW 5 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	SW 72 Ave	SW 4 St	West Flagler	Bicycle Facility Improvements (Restriping)
On-road Bicycle	NE 62 St	Biscayne Blvd	NE 2 Ave	Bicycle Facility Improvements (Restriping)
On-road Bicycle	NE 61 St	Biscayne Blvd	NE 2 Ave	Bicycle Facility Improvements (Restriping)
On-road Bicycle	SW 32 Rd	Vizcaya Metrorail Station	Coral Way	Bicycle Facility Improvements (Restriping)
On-road Bicycle	SW 32 Rd	Brickell Ave	Vizcaya Pedestrian Bridge	Bicycle Facility Improvements (Restriping)
On-road Bicycle	SW 25 Rd	Brickell Ave	Coral Way	Bicycle Facility Improvements (Restriping)
On-road Bicycle	NW 5 Ave	NW 29 St	NW 36 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	NW 11 St	NW 22 Ave	NW 27 Ave	Bicycle Facility Improvements (Restriping)
On-road Bicycle	NW 23 Ave	NW 11 St	NW 7 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	NW 35 Court	NW 11 St	NW 7 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	Tamiami Canal Rd	West Flagler St	SW 8 St	Bicycle Facility Improvements (Restriping)
On-road Bicycle	NW 5 Ave	NW 4 St	NW 11 St	Bicycle Facility Improvements (Restriping)
Off-road Bicycle	Miami River Greenway	NW 36 St	NW 12 Ave	Trail Improvements
Off-road Bicycle	Snapper Creek Trail	North of 56 St	SW 8 St	Trail Improvements
Off-road Bicycle	Snapper Creek Trail "B"	SW 94 Ave	SW 57 Ave	Trail Improvements (PD&E Study)
Off-road Bicycle	M-Path Master Plan	Miami River	SW 37 Ave	Trail Improvements

Type	Facility	From	To	Improvement Description
Pedestrian	SW 32 Ave	S Dixie Hwy	SW 22 St	Pedestrian Facility Improvements
Pedestrian	SW 8 St	SW 107 Ave	SW 102 Ave	Pedestrian Facility Improvements
Pedestrian	NE 185 St	NE 10 Ave	NE 15 Ave	Pedestrian Facility Improvements
Pedestrian	SW 8 St	SW 122 Ave	SW 112 Ave	Pedestrian Facility Improvements
Pedestrian	SW 97 Ave	SW 72 St	SW 64 St	Pedestrian Facility Improvements
Pedestrian	Granada Bd	Ponce De Leon Bd	Blue Rd	Pedestrian Facility Improvements
Pedestrian	SW 57 Ave	Blue Rd	SW 40 St	Pedestrian Facility Improvements
Pedestrian	SW 57 Ave	SW 64 St	SW 56 St	Pedestrian Facility Improvements
Pedestrian	SW 117 Ave	SW 24 St	SW 113 Ave	Pedestrian Facility Improvements
Pedestrian	S Miami Ave	SW 17 Rd	S Dixie Hy	Pedestrian Facility Improvements
Pedestrian	SW 57 Ave	SW 40 St	Seville Ave	Pedestrian Facility Improvements
Pedestrian	SW 102 Ave	SW 56 St	SW 48 St	Pedestrian Facility Improvements
Pedestrian	SW 8 St	SW 132 Ave	SW 127 Ave	Pedestrian Facility Improvements
Pedestrian	SW 97 Ave	SW 64 St	SW 56 St	Pedestrian Facility Improvements
Pedestrian	SW 8 St	SW 82 Ave	SW 76 Ct	Pedestrian Facility Improvements
Pedestrian	NW 3 Ct	I-95 Ex	NW 8 St	Pedestrian Facility Improvements
Pedestrian	W Dixie Hwy	NE 171 St	NE 186 St	Pedestrian Facility Improvements
Pedestrian	NW 167 St	NW 27 Ave	NW 22 Ave	Pedestrian Facility Improvements
Pedestrian	Curtis Pkwy	Hunting Lodge Dr	Curtiss Py Roundabout	Pedestrian Facility Improvements
Pedestrian	W 68 St	SR-826	W 16 Ave	Pedestrian Facility Improvements
Pedestrian	Hialeah Ex	W Okeechobee Rd	W 10 Ave	Pedestrian Facility Improvements
Pedestrian	W Okeechobee Rd	NW 103 St	W 18 Ave	Pedestrian Facility Improvements
Pedestrian	Hialeah Ex	W 8 Ave	W 4 Ave	Pedestrian Facility Improvements
Pedestrian	NW 167 St	NW 22 Ave	NW 17 Ave	Pedestrian Facility Improvements
Pedestrian	SW 8 St	SW 137 Ave	SW 132 Ave	Pedestrian Facility Improvements
Pedestrian	E 9 St	E 4 Ave	E 8 Ave	Pedestrian Facility Improvements
Pedestrian	NW 2 Ave	NW 17 St	NW 20 St	Pedestrian Facility Improvements
Pedestrian	W Okeechobee Rd	W 8 Ave	W 4 Ave	Pedestrian Facility Improvements
Pedestrian	Biscayne Bd	NE 187 St	NE 191 St	Pedestrian Facility Improvements
Pedestrian	NW 36 St	East Dr	N Le Jeune Rd	Pedestrian Facility Improvements
Pedestrian	SW 64 St	SW 72 Ave	SW 67 Ave	Pedestrian Facility Improvements
Pedestrian	NW 37 Ave	NW 71 St	NW 79 St	Pedestrian Facility Improvements
Pedestrian	Hialeah Ex	NW 72 Ave	N Royal Poinciana Bd	Pedestrian Facility Improvements
Pedestrian	S Dixie Hwy	SW 304 St	SW 296 St	Pedestrian Facility Improvements
Pedestrian	S Dixie Hwy	SW 120 St	SW 112 St	Pedestrian Facility Improvements
Pedestrian	SW 72 St	SW 72 Ave	SW 67 Ave	Pedestrian Facility Improvements
Pedestrian	Hialeah Ex	W 10 Ave	W 8 Ave	Pedestrian Facility Improvements
Pedestrian	Dade Bd	Alton Rd	Meridian Ave	Pedestrian Facility Improvements
Pedestrian	SW 67 Ave	SW 72 St	SW 64 St	Pedestrian Facility Improvements

Type	Facility	From	To	Improvement Description
Pedestrian	NW 103 St	W 28 Ave	W 24 Ave	Pedestrian Facility Improvements
Pedestrian	NW 103 St	W 24 Ave	W 49 St	Pedestrian Facility Improvements
Pedestrian	Biscayne Bd	NE 191 St	Aventura Blvd	Pedestrian Facility Improvements
Pedestrian	SW 56 St	SW 137 Ave	SW 132 Ave	Pedestrian Facility Improvements
Pedestrian	NE 2 Ave	NE 71 St	NE 79 St	Pedestrian Facility Improvements
Pedestrian	NE 2 Ave	NE 61 St	NE 71 St	Pedestrian Facility Improvements
Pedestrian	NW 71 St	NW 32 Ave	NW 27 Ave	Pedestrian Facility Improvements
Pedestrian	NW 81 St	NW 37 Ave	NW 36 Ave	Pedestrian Facility Improvements
Pedestrian	SR 9 Ex Frontage Rd	NW 27 Ave	SR 9 Ex	Pedestrian Facility Improvements
Pedestrian	W 4 Ave	W 33 St	W 37 St	Pedestrian Facility Improvements
Pedestrian	NE 12 Ave	NE 8 St	NE 15 St	Pedestrian Facility Improvements
Pedestrian	NW 95 St	NW 32 Ave	NW 27 Ave	Pedestrian Facility Improvements
Pedestrian	Alhambra Cr	Blue Rd	SW 40 St	Pedestrian Facility Improvements
Pedestrian	E Okeechobee Rd	E 1 Ave	East Dr	Pedestrian Facility Improvements
Pedestrian	Granada Bd	Hardee Rd	S Dixie Hwy	Pedestrian Facility Improvements
Pedestrian	Granada Bd	Blue Rd	SW 40 St	Pedestrian Facility Improvements
Pedestrian	SW 40 St	University Dr	Segovia St	Pedestrian Facility Improvements
Pedestrian	SW 40 St	Segovia St	SW 42 Ave	Pedestrian Facility Improvements
Pedestrian	NE 2 Ave	NE 46 St	NE 54 St	Pedestrian Facility Improvements
Pedestrian	W 4 Ave	W 49 St	W 53 St	Pedestrian Facility Improvements
Pedestrian	NE 2 Ave	NW 111 St	W Dixie Hwy	Pedestrian Facility Improvements
Pedestrian	NE 10 Ave	NE 82 St	NE 95th St	Pedestrian Facility Improvements
Pedestrian	NE 12 Ave	NE 159 St	N Miami Beach Blvd	Pedestrian Facility Improvements
Pedestrian	NE 159 St	N Miami Ave	NE 6th Ave	Pedestrian Facility Improvements
Pedestrian	NW 159 St	NW 2 Ave	N Miami Ave	Pedestrian Facility Improvements
Pedestrian	NW 167 St	NW 57 Ave	NW 47 Ave	Pedestrian Facility Improvements
Pedestrian	NW 47 Ave	NW 199 St	NW 215 St	Pedestrian Facility Improvements
Pedestrian	NW 186 St	NW 77 Ave	NW 67 Ave	Pedestrian Facility Improvements
Pedestrian	W 4 Ave	W 53 St	NW 114 St	Pedestrian Facility Improvements
Pedestrian	W 4 Ave	NW 114 St	NW 119 St	Pedestrian Facility Improvements
Pedestrian	NE 2 Ave	NE 103 St	NW 111 St	Pedestrian Facility Improvements
Pedestrian	NE 119 St	NE 2 Ave	W Dixie Hwy	Pedestrian Facility Improvements
Pedestrian	NE 16 Ave	NE 159 St	NE 163 St	Pedestrian Facility Improvements
Pedestrian	W Flagler St	NW 79 Ave	NW 72 Ave	Pedestrian Facility Improvements
Pedestrian	NW 17 Ave	NW 157 St	NW 167 St	Pedestrian Facility Improvements
Pedestrian	NW 167 St	NW 32 Ave	NW 27 Ave	Pedestrian Facility Improvements
Pedestrian	SW 104 St	SW 97 Ave	SW 92 Ave	Pedestrian Facility Improvements
Pedestrian	NW 2 Ave	N Biscayne River Dr	NW 159 St	Pedestrian Facility Improvements
Pedestrian	Sevilla Ave	Alhambra Cr	Anastasia Ave	Pedestrian Facility Improvements

Type	Facility	From	To	Improvement Description
Pedestrian	Urban Center Pedestrian Safety and Mobility Improvements	Various Locations		Pedestrian Facility Improvements
Non-motorized	Safe Route to School Improvements	Various Locations		Non-motorized Facility Improvements
Non-motorized	Non-motorized Safety Program	Various Locations		Improve safety by public outreach initiatives
PRIORITY 3 (2021-2025)				
On-road Bicycle	Bike Blvd Demo Project	NW 32 Ave/NW 41 St	NW 11 Ave/Little River Dr	Bike Blvd improvements
On-road Bicycle	NW/NE 131 St	NW 22 Ave	NE 16 Ave	Bicycle Facility Improvements
Off-road Bicycle	Biscayne Trail "C"	SW 280 St	SW 328 St	Trail Improvements
Off-road Bicycle	Overtown Greenway (except portion between NW 3 and 7 Ave)	Miami River Greenway	Bicentennial Park	Trail Improvements
Off-road Bicycle	M-Path Master Plan	SW 37 Ave	SW 67 Ave	Trail Improvements
Off-road Bicycle	Snapper Creek Trail	North of SW 56 St	SW 72 St	Trail Improvements
Pedestrian	Urban Center Pedestrian Safety and Mobility Improvements	Various Locations		Pedestrian Facility Improvements
Non-motorized	Safe Route to School Improvements	Various Locations		Non-motorized Facility Improvements
Non-motorized	Non-motorized Safety Program	Various Locations		Improve safety by public outreach initiatives
PRIORITY 4 (2026-2035)				
On-road Bicycle	SW 48 St	SW 117 Ave	SW 82 Ave	Bicycle Facility Improvements
On-road Bicycle	SW 344 St	SW 192 Ave	NW 6 Ave	Bicycle Facility Improvements
On-road Bicycle	SW 376 St	Ingraham Hwy	SW 192 Ave	Bicycle Facility Improvements
On-road Bicycle	Ingraham Hwy	SW 376 St	SW 392 St	Bicycle Facility Improvements
On-road Bicycle	SW 392 St	Ingraham Hwy	Everglades National Park	Bicycle Facility Improvements
On-road Bicycle	SW 192 Ave	SW 344 St	SW 376 St	Bicycle Facility Improvements
Off-road Bicycle	Atlantic Trail (except portion between 44 and 46 St)	23 St	64 St	Trail Improvements
Off-road Bicycle	Old Cutler Rd Path Phase 2	SW 136 St	SW 88 St	Trail Improvements
Off-road Bicycle	Biscayne Trail "D"	SW 97 Ave	US-1	Trail Improvements
Pedestrian	Urban Center Pedestrian Safety and Mobility Improvements	Various Locations		Pedestrian Facility Improvements
Non-motorized	Safe Route to School Improvements	Various Locations		Non-motorized Facility Improvements
Non-motorized	Non-motorized Safety Program	Various Locations		Improve safety by public outreach initiatives

Figure 11: Bicycle Projects by Facility Type

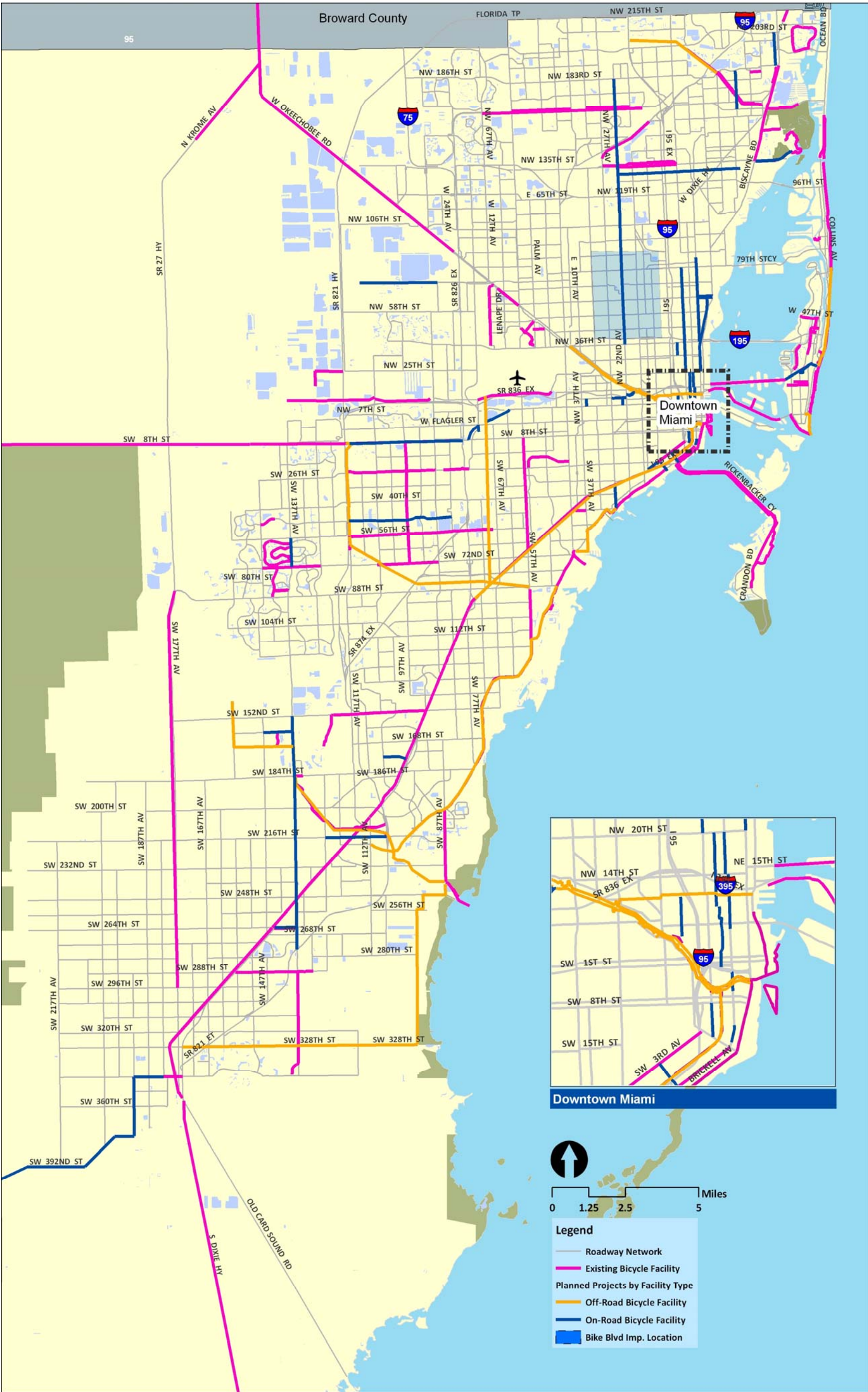


Figure 12: Bicycle Projects by Priority

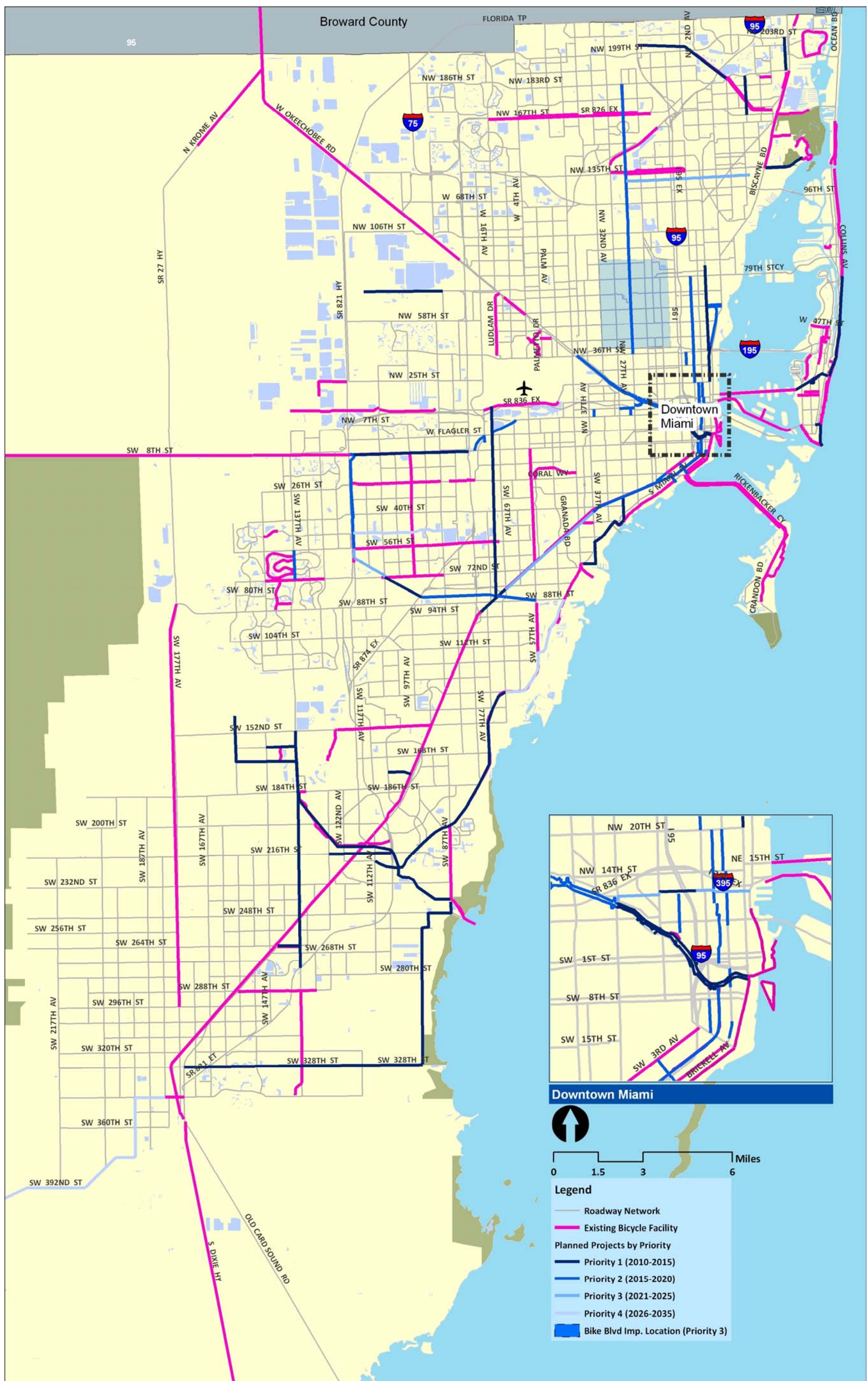
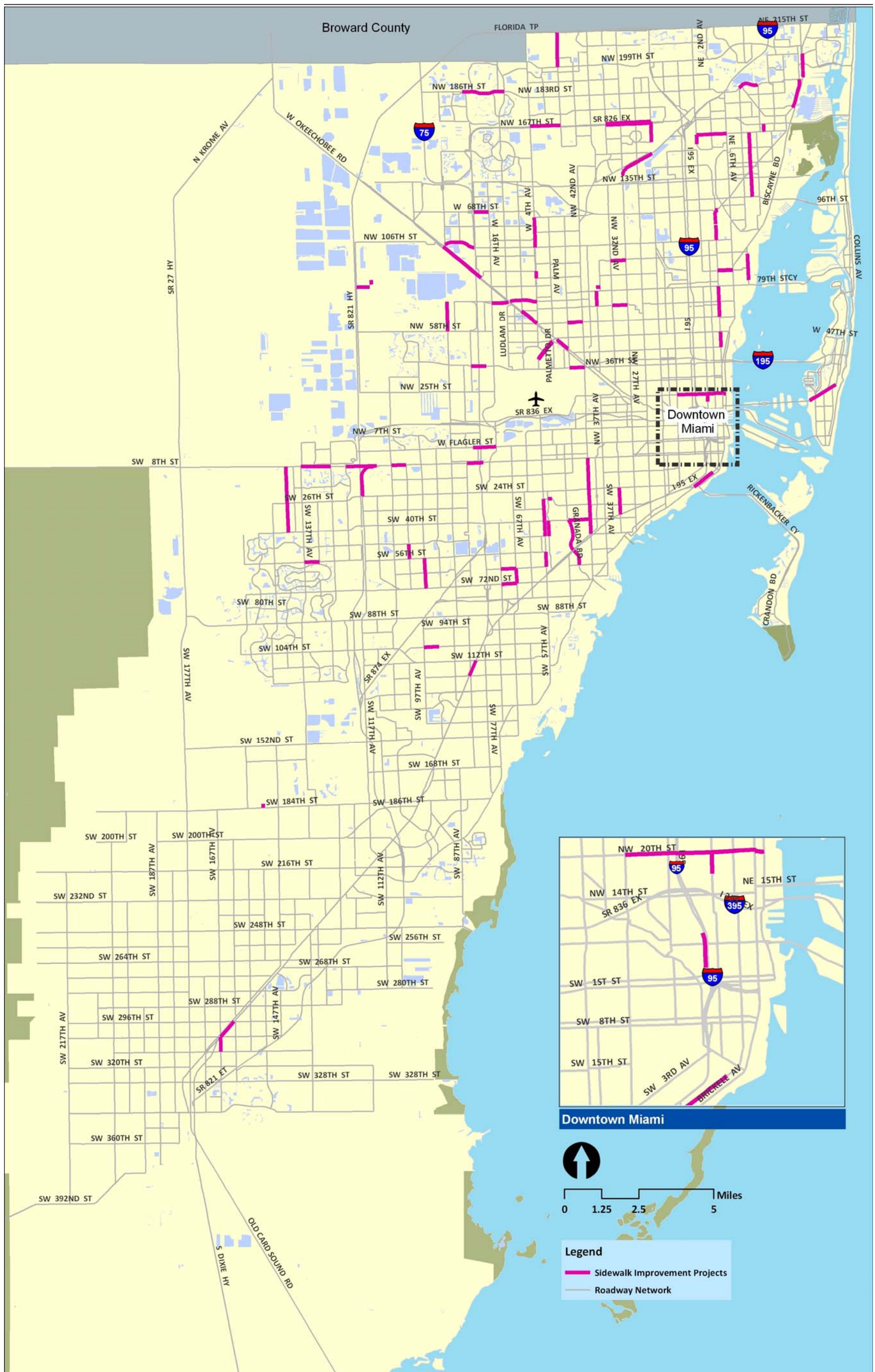


Figure 13: Sidewalk Improvement Projects



6. RECOMMENDATIONS

This section covers a wide range of issues raised by County residents and BPAC members. Bicycle mode related recommendations are based upon the Bicycle Friendly Communities model from the League of American Cyclists. The model approach examines engineering, education, encouragement, and enforcement, otherwise known as the four E's. These categories are essential in developing a complete bicycle program. It is expected that a similar approach is also necessary for pedestrian facility related improvements.

6.1 Bicycle and Pedestrian Facilities

6.1.1 Bicycle Boulevards

The County should implement bike boulevards in areas with high bicycle activity. Bike Boulevards are generally defined as shared roadways where local street traffic is modified to function as a through-street for bicycles. They discourage cut-through motor vehicle traffic but allow local motor vehicle traffic.

The MPO is conducting a Bicycle Boulevard Study in coordination with the County's Parks and Recreation Department.

It is recommended that on-road bicycle facility needs assessment be used to guide development of bicycle boulevards in the County.



6.1.2 Multi-Use Paths

The implementation of multi-use paths, separated from roadway surfaces, is recommended in areas with high bicycle and pedestrian activities. The M-Path, located along US-1 under Metrorail, is a local example of multi-use path.

Off-street paths are particularly suitable for 'basic cyclists', children, and the elderly. Given the proportionally high number of novice / recreational cyclists in the County, this facility type is likely to encourage County residents to take up or continue bicycling and walking related activities.

The MPO has identified potential multi-use corridors. Several of these corridors were analyzed as off-road bicycle facilities. It is expected the implementation of these facilities can be conducted independent of

adjacent roadway improvements. Therefore, there is a greater control on timing, scheduling, and pedestrian and bicycle-specific features to be included.

It is recommended that off-road bicycle facility needs analysis be used as a guide to develop multi-use facilities in the County.



6.1.3 Rails-To / With-Trails

The County should consider the creation of multi-use paths within abandoned railroad right-of-way and alongside existing railroad tracks. A railway path would help County cyclists reach their destinations with few obstacles except at intersections. The following steps should be taken to determine the possibility of a trail along a railway.

Several potential 'Rail to/With Trails' corridors have been included in the off-road bicycle facility network. The MPO and other agencies in the County have conducted feasibility studies. However, it is recommended

that initial legal research be done early in the process to identify feasible and implantable corridors that address specific area- or region-wide need.

The legal analysis should, at a minimum, include ownership, easement, and license agreements in the railroad corridor; legal protections available at the State level (e.g., Indemnification, applicable State statutes, and strength of local trespassing ordinances); local or State property rights ordinances and information; and trail insurance protection. Competitive Federal and private grants specific for this type of facility can potentially supplement limited amount available for bicycle and pedestrian projects in the County.

6.1.4 Sidewalks

The sidewalk projects listed in Table 9 should be completed in order to improve connectivity between destinations, including connections between the on and off-road facilities network. Sidewalk projects should be coordinated with utility companies, Miami-Dade Transit, Public Works, and the Miami-Dade MPO to prevent improvements (i.e. bus shelters, bicycle parking, light poles, fire hydrants, landscaping) from becoming obstacles that may hinder pedestrian activity. Sidewalk projects should also be coordinated with the SRTS and WalkSafe Initiatives described in section 3 to improve pedestrian facilities near schools. In general, sidewalk projects should be prioritized in highly populated areas and near schools. Sidewalk improvements should also include projects which increase safety for pedestrians as they cross sidewalks (i.e. advanced stop lines, crossing islands, pedestrian signals or signs, and curb ramps).

6.1.5 Scenic Bicycle Route Network

Bicycle facilities connecting to State and National Parks, waterfronts, and historic sites are recommended. These types of facilities typically target tourists and recreational cyclists who may prefer to use a bicycle as an option to explore new places. Coordinated infrastructure development along scenic routes can be supported through local economic activities. It is recommended that tourism agencies such as Conventions and Visitors Bureau, major travel agents, cruise line companies be contacted for promotion and funding related activities.

6.1.6 Bicycle Parking

Regulations

Detailed bicycle parking requirements are recommended to be added to local and county building codes. The County and several local municipalities have bicycle parking related requirements however, in the absence of detailed guidance, these parking facilities are less accessible. Bicycle parking regulations should, at a minimum, include:

- Guidance on location and access within development
- Signage guiding to bicycle parking space
- Provisions of cyclists on route to bicycle parking
- Capacity

The County and local agencies may consider tax exemptions for expenses on bicycle parking facilities to encourage existing building owners.

Connection to Transit

Bicycle and walk access to transit stations and bus stops should be improved. Many of the recommendations mentioned in the 2002 Bicycle Parking Plan currently apply; including:

- Replace old lockers, with high quality lockers that permit viewing of locker contents where they have not yet been installed
- Install bicycle lockers at park-and-ride locations throughout the County
- Where feasible, locate lockers and racks within view of transit security personnel, under cover, and within rail stations.
- If necessary, make minor station modifications to improve visibility for security personnel and patrons.
- Include specific language regarding bicycle parking at Metrorail and Metrobus stations within the County's Comprehensive Plan
- Provide appropriate signage at transit stations, park-and-ride locations, and on transit vehicles to assist bicycle-commuting patrons
- Track bicycle usage on Metrorail and Metrobus to determine the impact of policy changes and plan recommendations.

The County should consider working with Miami Dade Transit (MDT) to pursue the transit parking recommendations as identified in the "Bicycle Parking Plan for Miami-Dade Transit" into the parking code.

In addition to the above, the County should consider working with MDT to improve bicycle parking inside commuter rail cars. Upright bicycle racks inside commuter trains will help reduce conflict between bicycle commuters and other passengers in trains.



Source: Metro Transit,
St. Paul, Minnesota

The County should also identify bus stops with a higher need for bicycle parking. The bus network in the County is most extensive and therefore, connections to bus modes should be given a high priority. Wherever right-of-way constraints exist, agreements with developers and property owners adjacent to bus stops should be explored.

Parking at Schools and Special-Event Locations

Coordination with the Miami-Dade County School board is recommended to provide secure long-term parking that prevents vandalism, and encourages ridership.

Secured bicycle parking facilities should be provided at special events such as major sports venues. Bicycling can relieve traffic congestion before and after an event and can provide substantial travel timesavings to users. Agencies should encourage bicycle valets at special events.



Source: Green Mobility Network

Promotion of Bicycle Parking

The County should consider bicycle rack design competitions. It is expected that visually pleasing bicycle parking can ensure that bicycle parking is provided at visible and accessible locations with development.

6.1.7 Ancillary Supporting Facilities

Lockers and Showers

The County and South Florida Commuter Services have programs designed to encourage employers to provide ancillary facilities such as shower, and locker rooms. It is recommended that such programs be continued and promoted by providing attractive financial incentives and increasing awareness. Other incentives methods such as subsidizing gym memberships to nearby facilities should be considered.

Supporting Infrastructure

Supportive facilities such as provision of air for tires, public restrooms, and drinking water fountains should be provided at major employment, tourist and recreational destinations.

Trailheads along off-road facilities can provide some of these amenities and should be placed at strategic locations along off-road facilities (ex. entrance to a neighborhood, park, and activity centers). On-road facility amenities should be provided at public institutions such as civic centers and libraries.

6.2 Data Collections Strategies

6.2.1 Data Needs

In 2005, the FHWA conducted a comprehensive study on data collection processes entitled “Pedestrian and Bicycle Data Collection in United States Communities”. This case study report provides several examples of data collection strategies and associated costs that can be applied to the Miami-Dade area. According to the report, data collection can be divided into three categories:

- Quantifying use – Manual and automated field counts
- Surveying users – Non-motorized users and general population
- Documenting facility extent – Inventory of existing facilities, spatial analyses

The County should first identify what data is required to meet and evaluate its bicycle and pedestrian goals and objectives. Such data may include:

- Trip Characteristics – Trip purpose, path, origins and destinations, time of day, frequency of use, extent of use
- User Characteristics – Demographic profile, mode dependence

The County should set consistent methods of data collection and repeat them at regular intervals.

6.2.2 Venues for Data Collection

It is recommended that transit surveys done in the County include additional questionnaires for riders using walk or bike mode for access and egress. Integrating non-motorized data collection in existing motor vehicle data collection program is highly recommended. One such example includes manual counts done at major intersections.

The County should also continue to take advantage of national data sources such as the US Census, National Household Transportation Survey, Omnibus Household Survey, and the National Survey of Pedestrian and Bicycle Attitudes and Behaviors.

It is recommended that pertinent data be made available on the MPO’s and other agencies’ websites.

6.2.3 Implementation of Data Collection Exercise

It is recommended that volunteers and students be involved in data collection exercises whenever feasible. This activity is expected to increase awareness of bicycle and pedestrian modes.



6.2.4 Funding for Data Collection

It is recommended that dedicated funding for data collection activities be included in the County's LRTP program. Other agencies such as County's Parks and Recreational Department and local governments should be encouraged to participate in the data collection exercise.

6.3 Safety and Security

Physical aspects of bicycle and pedestrian facilities are only one component of a safe and secure bicycle and pedestrian network. In addition to physical attributes such as appropriate lane widths, adequate lighting and ADA accessible pathways, users must know how to safely and legally use those facilities and motorists must be aware of cyclists and pedestrians and their rights.

Safety was a major concern among those who attended public workshops and meetings. Education for motorists, cyclists, and pedestrians as well as engineering solutions can make walking and bicycling in the County safer options. These are discussed in greater detail in the subsequent sections.

To increase security of bicycle and pedestrian facilities, the principles of Crime Prevention through Environmental Design (CPTED) should be adopted. For example, bicycle parking spaces should be located near building entrances, in well-lit, highly visible locations. Bicycle racks should allow the locking of the frame and one wheel, and resist rust, corrosion, vandalism, and removal. Other forms of storage, such as storage rooms, lockers, or cages, would also enhance security.

It is recommended that CPTED techniques be promoted through the County's and local governments' building codes. The BPAC should be consulted for bicycle and pedestrian provisions for major developments.

6.4 Engineering Improvements

Engineering is a broad concept used to describe the design, implementation, operation and maintenance of traffic control devices or physical measures, including low-cost as well as high-cost capital measures.

Specific nature of engineering treatments will depend upon roadway traffic volume, motor vehicle speed, and street width. Strategies included in Table 11 describe common cyclist and pedestrian obstacles and recommended engineering treatments.



Table 11: Engineering Improvements for Bicycle Facilities

Common obstacles	Solutions	Applicable facilities
Physical barrier (ex. Cul-de-sac, river, canal, interstates)	Build an overpass or cut-through path.	Bicycle boulevard, scenic bicycle route, multi-use trails
Bike lane ends at bridge	Restripe bridge lanes. Develop a policy to include smooth surface bike lanes in new bridge construction projects	Bicycle lanes
Motorists on trails	Install barrier such as reflective or potted plant bollards, stop bars	Bicycle boulevard, scenic bicycle route, multi-use trails
Railroad crossing	Warning signs, full concrete or rubberized crossing	Bicycle lanes, bicycle boulevard, scenic bicycle route, multi-use trails
Demand-actuated traffic signals (those that change when traffic is detected)	Adjust signals to detect bikes and motor vehicles	Bicycle lanes
Synchronized traffic signals (for motor-vehicle speeds)	Adjust synchronized timing in dense urban corridors for cyclists traveling at slower speeds (12-16mph).	Bicycle lanes
Signal heads cannot be seen by cyclists	Adjust the signal heads so that they can be seen by cyclists or installs separate signals for them.	Bicycle lanes
Grates and covers that aren't flush with the roadway	Develop a safe bicycle standard for manhole and utility cover adjustments. New utilities locations should be installed away from the line of travel of	Bicycle lanes

Common obstacles	Solutions	Applicable facilities
	cyclists. Replace parallel bar grates with honeycomb grates.	
Lack of road space for bicycle lane	Eliminate on-street parking, eliminate turn lanes, reconfigure existing medians, acquire additional right-of-way or access easement.	Bicycle lanes
High speed vehicles travelling in local streets	Install traffic diverters and partial diverters	Bicycle boulevards
High incidence of automobile right-turn collisions	Install advanced stop lines (i.e. Bike box), bicycle signage	Bicycle lanes
High incidence of bicycle and pedestrian related vehicle crashes	Consider replacing vehicle parking with painted bicycle lanes, advanced stop lines, bicycle signage	Bicycle lanes

Maintenance also plays a major role in the safety of cyclists and pedestrians. Bicycles do not generally have the suspension capabilities of an automobile, so pavement surface irregularities can cause a cyclist to lose control. Curbside debris can hinder cyclist's movement along shoulders, forcing them to maneuver into automobile traffic. Pedestrians on sidewalks may also find problems associated with sidewalks paths such as debris, vegetative overgrowth, cracks and ill-positioned utility structures.

The County and the FDOT have road maintenance programs in place. However, it is recommended that high pedestrian and cyclist traffic areas be prioritized as high use zones that will need regular maintenance. A regular on-going spot improvement program is recommended to fix small walk and bicycle mode-specific maintenance

issues. The program should involve soliciting comments from users to help identify problem areas.



6.4.1 Signage/Way Finding

- The County's Parks and Recreation Department is working on detailed signage requirements. It is recommended that a signage plan be incorporated and educational efforts be conducted to increase awareness of bicycle and walk specific signage.
- Share the road signs should be considered for high traffic corridors, especially where installing a bicycle facility would be of high difficulty or cost.



Source: Florida Bicycle Association

6.5 Education and Enforcement Strategies

As mentioned in Section 6.3, education programs play a significant role in the safety of bicycle and pedestrian users. A comprehensive education and enforcement program must find opportunities for cooperation among multiple organizations including recreation, public health, schools, tourist promotional organizations, and neighborhood organizations. The following subsections includes recommended educational and enforcement programs and strategies that should be implemented in the County.

6.5.1 Programs for Child Cyclists

- It is recommended that the County work with the Miami-Dade County School Board to implement 'Bicycle Rodeos' for all Miami-Dade County public elementary school students on an annual basis. The County should also collaborate with private elementary schools about such a program. As mentioned in section 3.3, the Town of Miami Lakes conducts an annual bike rodeo with the assistance of local sponsors.
- The County's Parks and Recreation Department should consider providing bicycle rodeos for elementary school children at parks around the County on an annual basis.



Source: City of Miami Lakes, Florida

- The County should work with Miami-Dade County School Board, and local governments to expand the SRTS program and WalkSafe initiatives.
- The County should work with Miami-Dade County School Board and Private Schools to incorporate bicycle and pedestrian safety skills including hands-on skills into curriculums. A series of interactive lesson plans can be designed for each grade and taught as a portion of the physical education class.

6.5.2 Programs for Adult Cyclists and Motorists

- It is recommended that local initiatives such as Bike Miami Days be used to educate pedestrians and adult cyclists with Intermediate and Basic skills of traffic rules and laws.
- Many transit patrons use bicycle and walk modes to access and egress from transit stations. Bicycle and walk mode specific educational material should be designed for transit users, and distributed at transit stations and inside transit vehicles.
- Initiatives at local schools to educate schoolchildren should also be used to educate parents.
- Variable Message Signs (VMS) installed along major roadways in the County provide a valuable opportunity to educate motorists. Brief messages such as “Share the Road with Cyclists” or “Yield to Pedestrians” signs can be displayed to educate a significant number of motorists in the County.
- The County should consider helping in developing a curriculum that can be taught to motorists as part of the driver’s license exam.
- It is recommended that bicycle and walk mode specific traffic violators be given options to attend classes that teach bicycle and pedestrian safety in lieu of paying an assessed fine. Certified volunteers may be recruited to undertake this effort.

6.5.3 Programs for Law Enforcement Officials

- The County should continue working with police departments, traffic courts, and city and county attorneys to enforce key laws and impose meaningful penalties for motorists, cyclists, and pedestrian violations.
- The County should work with law enforcement officials to review and modify if necessary, laws that affect cyclists/pedestrians; focus on regulations that may unnecessarily restrict bicycle or pedestrian traffic or that seem out-of-date compared to national models.
- The County should work with local and state officials to ensure police officers enforce bicycle safety regulations as well as uniform roadway regulations. The Florida Bicycle Association provides several resources for law enforcement, including the Florida Bicycle Law Enforcement Guide booklet and video.
- The County should encourage police cadets to volunteer at bicycle safety workshops as instructors for school age children and older adults.
- The County should encourage police patrols by bicycle in urban neighborhoods and special events. If police bikes are present along bicycle paths, it will create a sense of safety and security that will promote cycling and pedestrian activity.

6.6 Promotion and Encouragement

The recommendations below target Advanced Cyclists, as well as Intermediate and/or Basic Cyclists.

- Integration of bicycle and pedestrian subjects into traditional classroom subjects is recommended to increase awareness. For example, a mathematics problem may include calculating average walking speeds or distance. More involved assignments may include voluntary assignment of walking or bicycling a given distance every day.
- As stated in section 3.3, the City of Miami's 'Bike Miami Days' has been very successful. The County should consider working with local governments to expand this program throughout the county. More visibility of cyclists is expected to attract more users.



- Bike Miami Days should also be used to introduce new users to bicycling mode. The County should consider providing brief "Learn to Ride" adult classes.

- Many successful programs began with a limited demonstration phase, and then expanded to a broader, or even system-wide, operation. For example, the County should explore possibilities of restriping roads for bicycle use around universities and major employment centers where future major bicycle projects are planned.
- For Advance Cyclists, large metropolitan areas have promoted bicycle use through the development of annual racing programs. The City of New York has attracted cyclists for their annual New York City Century rides that traverse the five boroughs. The race events (ex. Tour de Miami-Dade) should be promoted with the help of local tourism boards. The County should consider working with local municipalities to attract volunteer law enforcement personnel for such races.

6.6.1 Programs for Tourists

- The County should consider encouraging City or County operated bike rental programs in high use areas. Some of these areas may include Coconut Grove, Miami Beach, and the Miami Downtown.
- The County should consider providing flyers at major tourist attractions, airports, and seaports. The flyers should include information on bicycle rental facilities and charges, bicycle routes, scenic routes, and most pertinent traffic laws.
- The County should consider working with rental car companies to provide rental cars with bicycle racks that may encourage tourists to rent bicycles for use in some part of their trip.



6.6.2 Programs for Employers

- The County should continue working with South Florida Commuter Services to expand use of bicycle and walk mode. Some programs may include:
 - Availability of Bicycles at Employment Site: These are often called company pool bikes. Financial incentives or other forms of encouragement should be considered for employers that can provide bicycles for employee use. Employees may use these bicycles for short trips during the workday.
 - Promote Bicycle Commuting Contests during Winter Months
 - Promote National Bike to Work Month to major employers
 - Encourage employers to institute Bike to Work Week

- The County should consider changing building codes to require employers of certain size to provide facilities such as shower and changing rooms, bicycle storage at work sites.
- Similarly, the County should highlight the benefits of bicycling to employers and developers. For example, there is a higher cost for an automobile parking space than there is for a bicycle parking space since 10 bicycles can fit into that same space.

6.7 Land Use and Transit Considerations

6.7.1 Considerations during Development Review Process

It is important to understand the relationship between the built environment and the success of bicycle and pedestrian environment. It is recommended that the County Planning & Zoning Department works with local governments to update the development review process so that development decisions at least consider:

- Impacts to bicycle and pedestrian trips as a result of development.
- The County should encourage provision of designated bicycle facilities wherever developer improvements are needed as part of traffic mitigation.
- A part of road impact fee should be set aside for bicycle and pedestrian improvements.

6.7.2 Considerations for Transit

The County should work with Miami-Dade Transit and South Florida Regional Transportation Authority to:

- Ensure provision of additional bike racks on buses
- Ensure provision for the transport of bicycles on Metrorail, Metromover, and Tri-Rail. The County should consider working with MDT to secure upright bicycle racks on these commuter trains. Bicycle racks are available on Tri-Rail however; a recent Tri-Rail survey found that bicycle commuters exceed their rack's capacity at times.
- Design improvements at transit stations (curb cuts, signing, and lighting) and links to transit centers (bike lanes, multi-use trails, and widened roadway shoulders);
- Other recommendations related to bicycle parking at transit stations are included in Section 6.1.5.

6.8 Funding

This section gives an overview of the funding sources available for bicycle and pedestrian projects.

6.8.1 Traditional Funding Sources

The County should consider allocating the following traditional funding opportunities to fund bicycle and pedestrian projects, programs, or studies throughout Miami-Dade County:

- National Highway System fund
- Surface Transportation Program funds
- Transportation Enhancement Activities (TEAs)
- Congestion Mitigation and Air Quality Improvement Program funds
- Recreational Trail Program funds
- National Scenic Byways Program funds
- Job Access and Reverse Commute Grants
- High Priority Projects and Designated Transportation Enhancement Activities
- Transportation Equity Act for the 21st Century (TEA-21)
- Section 1302 – Symms National Recreational Trails Fund Act (NRTFA)
- Section 1047 – National Scenic Byways Program – bicycle and pedestrian facilities can be developed in conjunction with scenic roadway project
- Section 1008 – Congestion Mitigation and Air Quality Improvement Program

- Community Development Block Grant Program – Administered through Department of Housing and Urban Development (HUD)
- Land and Water Conservation Fund (LWCF) Grants – distributed by the National Park Service to states annually
- Florida Recreation Development and Assistance Program

6.8.2 Non-Traditional Funding Sources

The County should pursue the following non-traditional funding opportunities to fund bicycle and pedestrian projects, programs, or studies throughout Miami-Dade County.

- Adopt-A-Trail/Path Programs - Program would post signs to indicate which individual or group has contributed to the development.
- Buy-a-Foot Programs – Citizens are encouraged to purchase one linear foot of greenway by donating the cost of construction. The County could sell linear feet at a small cost (ex. \$25/foot) and donors could receive memorabilia celebrating their purchase.
- Memorial Funds - These programs are advertised as potential donor projects to be funded via on-going charitable contributions or funds left to a particular project through a will. Most memorial projects include the location of a memorial plaque at a location specific to the improvement or a scenic vista point.
- Revenue Producing Operations - As part of the development of a trail or bike path, plans can specifically include the location of a revenue producing operation adjacent to the proposed improvement. For example, bicycle rental facilities, food and drink establishments, and/or bike storage facilities and equipment centers would be

appropriate operations. The on-going lease revenues from these operations could then be used for trail/path maintenance.

- Federal, non-transportation funds
 - Funds through National Forest service, National Park Service, Bureau of Land Management (primarily for trails on federal lands)
 - Community Development Block Grants through HUD, Dept of Housing and Urban Development: projects such as sidewalks improvements, SRTS, neighborhood-based facilities that improve local transportation options or help revitalize neighborhoods
- Local Capital Improvement Plans – yearly appropriation for trail development within the CIP; line item budgets for greenway land acquisition
- Greenway Trust Fund – Creation of a trust fund for land acquisition and facility development that is administered by a private greenway advocacy group or local greenway commission; money from municipal and county general funds, private grants and gifts
- State Water Management Funds – Strong links between the development of a greenway and the adjacent/nearby water quality: purchase critical strips of land along rivers and streams for protection which then can also be used for greenways; develop education material/displays; storm water management
- Local Funding Sources
 - Bond Referendums – The County should explore options for introducing a bond referendum to fund bicycle and pedestrian facilities at an appropriate time. A dedicated local source of funding is expected to be necessary for long-term incremental development of capital-improvement projects.
 - Tax Increment Financing / Urban Renewal Funds – the project or portion of the project must be located within the urban renewal area
 - System Development Charges / Developer Impact Fees – typically tied to trip generation rates and traffic impacts of new development; number of trips can be reduction by paying for pedestrian improvements encouraging residents/employees to walk, bike or use transit; only the portion of the new-growth related impact can be charged
 - Local Improvement Districts – cost of local improvements spread out among a group of property owners within a defined area; allocated based on property frontage or other methods such as trip generation
 - Business Improvement Districts – Collect levies on businesses in order to fund area-wide improvements that benefit businesses and improve access for customers
 - City or Regional Sales Tax – Earmarked specific for bicycle, pedestrian or trail improvements. The 34-mile Pinellas Trail in Pinellas County, Florida was built with a one-cent sales tax increase voted for by county residents.

6.8.3 Grant and Foundation Opportunities

The County should consider pursuing the following grant opportunities to fund bicycle and pedestrian projects, programs, or studies throughout Miami-Dade County.

- American Greenways Eastman Kodak Awards – Conservation Fund's. Small grants (up to \$2,000) are available to stimulate the planning, design and development of greenways.
- Private foundations provide excellent opportunities for funding specific capital projects or single event programs.
- REI Environmental Grants – Grants are available to nonprofit organizations ranging from \$500 to \$8,000 which could be used for:
 - protection of lands and waterways and to make them more accessible to more people
 - better utilization or preservation natural resources for recreation
 - increased access to outdoor activities
 - encouraging muscle powered recreation
- Bikes Belong – The American Bicycle Industry has a national discretionary program with a small budget to help communities build TEA-21 funded projects.