Broward County

Complete Streets

Greenways Integration Study

PO# SC 033 UP101713000000000001

Prepared by Kimley-Horn
and
Urban Health Solutions
for
Broward County Planning and
Redevelopment Division

Kimley-Horn
and Associates, Inc.

Funded by a generous grant from the

Florida Department of Economic Opportunity (FDEO).

REPORT

Table of Contents

This page left blank intentionally.

Executive Summary

The Broward Metropolitan Planning Organization (MPO) endorsed the Complete Streets Guidelines in 2012 to facilitate and assist local governments in the implementation of Complete Streets. The following year the Broward County Commission approved Complete Streets to create a cohesive transportation system that would allow residents to conveniently reach their destinations. Since then, the Broward Complete Streets Team, consisting of two dozen partner organizations participating on the Metropolitan Planning Organization (MPO) Technical Advisory Committee (TAC), has continued efforts, and several Broward County municipalities have adopted Complete Streets policies moving towards making Complete Streets a reality in their communities. The Broward Complete Streets Team has been working on developing a framework for fully implementing the Complete Streets program. The final review of recommendations was presented to the Broward County Commission in February 2014. The Commission approved transmittal of the amendment to the DEO. The ordinance is anticipated to go to the Broward County Commission in June for approval.

This is an exciting time for Broward County. Still, the Broward County Greenways Master Plan should be considered when planning for Complete Streets projects. This conceptual plan along with priority corridors were approved by the Broward County Commission in 2002 to improve the quality of life of residents and provide a regional backbone which may further develop or serve as a foundation for the local trail networks. The Broward County Greenways Master Plan depicts 41 proposed corridors covering more than 370 miles of facilities. The proposed corridors consist of a combination of greenways, bikeways, land and water trails, linear parks, on-road bicycle facilities, sidewalks and multi-purpose paths. In addition, the plan includes detailed recommendations for the Barrier Islands Greenway/SR A1A multi-purpose trail. In addition, Broward County is participating in an exciting regional effort being led by the Treasure Coast Regional Planning Council (TCRPC) to extend the greenways network and connect Broward's greenways to facilities throughout the Southeast Florida region.

In line with Complete Streets, the Broward Greenways Master Plan aims to provide a network of safe alternative modes of transportation, linking neighborhoods to each other and to a variety of points of interest and uses including conservations lands, parks and recreation facilities, cultural and historic sites, schools and business areas. This report aims to identify overlap between Broward County Complete Streets and Greenway Planning initiatives in order to integrate both efforts and work towards a common goal. The report begins by describing ongoing studies, initiatives, and Greenways Master Plan corridor implementation activities. A methodology is developed for identifying connectivity and accessibility opportunities. The study team conducted municipal/agency outreach activities to identify planning and local concerns. Common policies

shared by greenways and Complete Streets were researched and identified that could be capitalized upon for integration. An existing conditions analysis was performed to determine problem areas and identify deficiencies. Finally, the identification of strategies and recommendations developed by the study team to address the problems and deficiencies is presented.

Examples of a few of the primary deficiencies that were noted in the analysis are listed below. For the full list of identified deficiencies, please see the section beginning on Page 48 of this report.

- At locations where greenway trails cross major thoroughfares, direct crossings of the major roadways are not provided.
- There is a general lack of connectivity between adjacent residential neighborhoods/local streets and greenway trails, especially for greenways trails on canal banks.
- There is a lack of connectivity to transit facilities from the greenway and complete street network including transfer terminals and mobility hubs.
- There is often little or no landscaping included in Complete Streets and greenway projects.
- Public health impact assessments are rarely performed in the transportation facility project development process.

A strategies and recommendations summary is listed below. Projects are not yet identified for funding. Potential funding sources could include general roadway funding, future MPO Mobility Projects, and greenways and trails funding such as the Recreational Trails Program. For the full list of strategies and recommendations, please see the section beginning on Page 52 of this report.

- Improve greenway trail crossings through Complete Street strategies by making it safer for trail users to cross the street.
  - ⇒ Mid-block crossings with pedestrian refuges, special emphasis markings and signs
  - ⇒ Use of safety devices such as Rectangular Rapid Flashing Beacons (RRFBs) and Pedestrian Hybrid Beacons, a.k.a. High-Intensity Activated Crosswalk (HAWK) signals
- For greenway trails with an elevation difference between the trail and the street, consider creating an underpass for the trail to cross major arterial roadways.
  - ⇒ Trail underpass and connector path to the cross-street roadway
- Integrate Complete Street elements and streetscaping to create neighborhood greenways and local and collector streets.
  - ⇒ Signage (Bikes May Use Full Lane [R4-11], Bike Route, Wayfinding)
  - ⇒ Pavement Markings (Shared Lane Markings [Sharrows])
  - ⇒ Traffic calming
- Incorporate sustainable design into roadway design to create “green streets”.
  - ⇒ Bioswales, rain gardens, and stormwater reuse
  - ⇒ Permeable pavement in parking areas or other light traffic areas
- Create connections between on-street bike facilities and greenway trails.

⇒ Ramps can connect on-road bike lanes to adjacent greenway trails

- As streets are redesigned or resurfaced, incorporate low-speed design principles to help create safe streets for all users.
  - ⇒ Narrow travel lanes from 12' to 10' or 11'
  - ⇒ Install curb extensions and follow proper sidewalk zone design principles
- Create an integrated countywide bicycle route numbering system using standard MUTCD signs to help give people the sense that each bicycle route is part of a larger system.
  - ⇒ Develop a consistent countywide numbering system that integrates greenways trails and on-road bike lanes that are part of Complete Streets
  - ⇒ Install M-series and D-series signs from the MUTCD and trail map signs
- Build priority missing gaps in the greenway network.
  - ⇒ Examples include the missing New River Trail section between University Drive and Sewell Lock and connecting the Parkland and Coconut Creek greenway sections via Hillsboro Boulevard and U.S. 441
- Update the Broward Greenways Master Plan.
- Promote municipal awareness and integration of the Greenways Master Plan recommendations in future Complete Streets projects.

A summary of the Broward MPO Mobility Projects is provided below. Please see Appendix B for a detailed description of the Broward MPO Mobility Projects.

Broward MPO Mobility Projects Phase I (funded in year 1 TIP according to MPO)		
LRTP Corridor	**Project**	**Cost**
Broward Boulevard	Sidewalks	$1,663,604
	Bike Lanes	$6,510,037
US 1	Sidewalks	$217,064
	Bike Lanes	$2,362,326
Hollywood Boulevard	Sidewalks	$260,200
University Drive	Sidewalks	$847,302
Oakland Park Boulevard	Sidewalks	$80,346
	Bike Lanes	$886,245
Broward MPO Mobility Projects Phase II (funded in years 2-4 TIP according to MPO)		
LRTP Corridor	**Project**	**Cost**
Broward Boulevard	Sidewalks	$968,239
	Bike Lanes	$26,645,832
Oakland Park Boulevard	Bike Lanes	$20,093,933
US 1	Bike Lanes	$1,614,634
Hollywood Boulevard	Bike Lanes	$16,821,605
Broward MPO Mobility Projects Phase III (funded in year 5 TIP according to MPO)		
LRTP Corridor	**Project**	**Cost**
US 1	Sidewalks	$510,795
	Bike Lanes	$13,257,376
Hollywood Boulevard	Sidewalks	$1,377,328
	Bike Lanes	$10,994,880

Introduction

The following report is intended to inform the client of all relevant matters pertaining to past, present and future activities in Broward County, Florida, regarding Complete Streets and greenways corridor planning, and identify improvement and policy strategies for integrating greenways corridor planning with Complete Streets.

Methodology

The project researcher took an exploratory approach which involved investigating all public domains including municipal websites, periodicals and official documents. To have access to the most recent information about Complete Streets and greenways in Broward, the investigator called and emailed the appropriate municipal departments and divisions responsible for such projects. Most often, the departments consulted for this study were Planning and Zoning, Public Works, Engineering, and Community Development. The data gathering of facts and resources occurred between November 6 and December 8, 2013.

Report Sections

1. Studies, Initiatives, and Facilities—Identify and summarize ongoing studies and initiatives throughout Broward County, including municipal level activities, regarding Complete Streets initiatives and greenways corridor planning. Identify existing and planned bicycle and pedestrian facilities.
2. Greenways Master Plan Summary—Review and summarize the corridors, analysis, vision, policies and action items from the Broward County Greenways Master Plan.
3. Connectivity and Accessibility—Develop methodology and identify standards for connectivity and accessibility between the existing and proposed greenways and identified and proposed Complete Streets corridors and networks.
4. Municipal Outreach—Contact municipalities to identify planning and local concerns.
5. Common Policies—Determine common policies shared by greenways and Complete Streets that could be capitalized upon for integration.
6. Existing Transportation Conditions—Analyze transit, bicycle, and pedestrian conditions to determine problem areas.
7. Identification of Deficiencies—Identify deficiencies based on performance measures and standards.
8. Identification of Strategies and Recommendations—Select strategies that address the deficiencies identified in the previous analysis.
9. Policy Recommendations and Next Steps—Identify policies and techniques that will assist addressing safety concerns.

Studies, Initiatives, and Facilities

Identify and summarize ongoing studies and initiatives throughout Broward County, including municipal level activities, regarding Complete Streets initiatives and greenways corridor planning. Identify existing and planned bicycle and pedestrian facilities.

Broward MPO endorsed the Complete Streets Guidelines on July 12, 2012, to facilitate and assist local governments in the implementation of Complete Streets. On March 12, 2013, the Broward County Commission unanimously approved Complete Streets to create a cohesive transportation system that would allow residents to conveniently reach their destination. Subsequently, the Broward County Complete Streets Team was formed to propose the appropriate framework for fully implementing the program, such as land development codes, roadway standards, transportation policies, outreach and funding strategies. Since March, the Broward Complete Streets Team has been working on reviewing and recommending revisions to the County on roadway construction minimum standards, County Land Development Code Criteria, Broward County Trafficways Plan criteria, and the Broward County Land Use Plan and County Comprehensive Plan, including intergovernmental coordination. These revisions are currently undergoing final review.

The Complete Streets Team has also been working on soliciting, compiling, and analyzing short-term "Complete Streets" criteria, implementation, and long-term "Land Use/Transportation" program. In addition, the Complete Streets Team established an outreach program to maintain coordination with federal, regional, municipal, and other interested stakeholders. Furthermore, the Complete Streets Team aims to identify available and potential source(s) of funding (county/state/federal/partnerships, etc.) both to construct demonstration/pilot Complete Streets projects and to sustain long-term implementation of revised "Complete Streets" criteria. The Complete Streets Team has developed a list of "recent and funded" Complete Streets projects and is working collaboratively with the Office of Management and Budget to investigate development of a FY 14/15 funding plan to fund identified/ preferred Complete Streets pilot projects and develop a countywide "Complete Streets" program. Two demonstration projects have been identified to illustrate principles and measure the benefits of a “Complete Street.” A “Complete Street” in a suburban area may look different than a “Complete Street” in the urban core, but both are designed with the same principles. Taking this into account, the two demonstration projects selected for analysis are:

- Urban setting at Hollywood Blvd. – 26th Ave to Dixie Hwy
- Suburban setting at Sunset Strip – NW 72nd Ave to NW 19th St

Both corridors accommodate all modes of transportation. The Complete Streets Team is currently working on final revisions to the Broward Comprehensive Plan to incorporate Complete Streets

standards. The final review of recommendations was presented to the Broward County Commission in February 2014. The Commission approved transmittal of the amendment to the DEO. The ordinance is anticipated to go to the Broward County Commission in June for approval.

Proposed Broward Complete Street County initiatives include:

- Wide sidewalks
- Shaded pathways with trees
- Midblock crossings
- Flashing illuminated pedestrian signs
- Reduced speed limits
- Reducing lane widths where appropriate down from 11' to 10'.
- Adding buffered bike lanes along county roadways to promote bicycle safety.
- Green bike lanes (establishing a bicycle symbol with a green background throughout the county for bicyclists to show the emphasis on bicycle lanes).
- Creation of "parklet" trade spaces for outdoor activities such as dining.

Municipalities across Broward County are joining with Complete Streets by adopting Complete Street Guidelines and creating Complete Streets projects within their own communities. Many others are studying ways to take part. The investigation identified several communities that are undergoing Complete Streets initiatives and or greenways corridor planning: Deerfield Beach, Fort Lauderdale, Hollywood, Pembroke Pines, Hallandale Beach, Tamarac, North Lauderdale, Davie, Coconut Creek, Cooper City and Weston.

Deerfield Beach

Adopted Complete Street guidelines.

A Complete Streets Plan is being created, which will identify target areas that could be improved with elements, such as crosswalk improvements, bicycle facilities and trees along the streets for extra shade. Staff then will be able to apply design elements from the Complete Streets Guidelines to street projects at locations identified in the Complete Streets Plan.

Fort Lauderdale

Adopted Complete Streets Manual – 2013.

Perimeter Road along the Fort Lauderdale-Hollywood International Airport is listed in the pipeline for future Complete Streets development. Perimeter Road is located west of the *Broward Greenways Master Plan* proposed priority corridor of Dixie Highway/FEC Trail; south of the proposed New River Loop (27 mile water trail); and north of the proposed priority corridor of Griffin/Orange Dr. Greenway (13.6 mile multi-purpose path along C-11 Canal).

A Complete Streets/Greenway mobility project has been proposed for SW 4th Avenue between SR 84 and the New River. The SW 4th Avenue greenway will connect to the proposed New River/SR 84 Greenway identified in the *Broward Greenways Master Plan.*

The Florida Department of Transportation working in conjunction with the City of Fort Lauderdale implemented buffered bike lanes on SR A1A between Oakland Park Boulevard and Flamingo Avenue in Fort Lauderdale as part of its A1A Greenway project. The five foot bike lanes are separated from motor vehicle lanes with a two to five foot buffer. This project is in line with recommendations from the *Broward Greenways Master Plan* Barrier Islands Greenway/SR A1A Trail priority phase one corridor.

Hollywood

Adopted Complete Streets Policy.

Hollywood and the Broward MPO are working on the *Hollywood/Pines Boulevard Congestion Management Process/Livability Planning Project* that has three high-priority Complete Streets projects:

- Hollywood Boulevard (City Hall to Dixie Highway): MPO officials recently awarded Hollywood more than $5 million for a "Complete Streets Project" that targets Hollywood Boulevard from Dixie Highway to City Hall. Improvements may include narrower travel lanes, wider sidewalks, bike lanes, improved pedestrian crossings, bus shelters, and landscaped medians. This project connects to the *Broward Greenways Master Plan* priority phase one corridor of Dixie Highway/FEC Trail.
- Johnson Street (C-10 Canal to US 1): The City and MPO have a proposed Complete Streets project on Johnson Street set to include on-street bike lanes and connected, wider sidewalks. The C-10 Canal Trail is a proposed 3.2 mile multi-purpose path in the *Broward Greenways Master Plan*.
- Dixie Highway/21st Avenue (Pembroke Road to Sheridan Street): The Dixie Highway/FEC Trail is a proposed *Broward Greenways Master Plan* phase one priority corridor proposed to be implemented as part of an integrated Complete Streets project along Dixie and 21st Avenue.

Other key recommendations include:

- Johnson Street bike lanes (Flamingo Road to C-10 Canal): Flamingo Road is a proposed priority phase one multi-purpose path in the *Broward Greenways Master Plan*.
- Extend SR 820 TSM&O/ATMS System to Dykes Road: The SR 820 Pines Blvd. right-of-way (R.O.W.) is the location of the *Broward Greenways Master Plan* proposed Pembroke Pines/Hollywood Trail.
- Pedestrian Safety Improvements (Turnpike to SR 7): The Pembroke Pines/Hollywood Trail is a proposed greenway along Hollywood/Pines Boulevard in the *Broward Greenways Master Plan.*

Pembroke Pines

Adopted resolution supporting Smart Growth Principles in October 2013.

Smart Growth partnerships recently awarded the city a grant, and a project is set to begin in January 2014. A landscape architect is working on a greenway nature corridor.

The Pembroke Pines/Hollywood trail located on Pines Blvd R.O.W. was proposed in the *Broward Greenways Master Plan* as a multi-purpose path with bike lanes and sidewalks.

Hallandale Beach

The City of Hallandale Beach has embraced Complete Streets, is working with the MPO, and is preparing a Complete Streets Plan with a consultant. The goal is to survey all infrastructure.

Tamarac and North Lauderdale

Broward County recently completed the Bailey Road Complete Streets Project, which incorporates wide sidewalks with shaded pathways and buffered bike lanes. Also the speed limit was lowered to 35 miles per hour. Bailey Road is located south of the *Broward County Greenways Master Plan* proposed phase one corridors of North Lauderdale South Trail (2.8 mile multi-purpose path north of McNab) and the proposed priority one C-14 Canal/Cypress Creek Greenway (12.9 mile multi-purpose path). Bailey Road also connects to the proposed Rock Island Road Florida Power and Light (FPL) R.O.W Trail (11.1 mile multi-purpose trail parallel to and one mile west of State Road 7).

A corridor study is underway along NW 57th Street in the City of Tamarac to develop a mixed-used district as part of the city's efforts to encourage green development initiatives.

Davie

The Davie Road extension will have buffered bike lanes with a pullout area for buses. A continuous sidewalk will be enhanced with illuminated crosswalks to promote pedestrian safety. In the future, additional streets may have "refuge" areas where pedestrians can safely stop if caught in between traffic signals. Davie Road is located in the City of Davie and connects to the north with the Broward Greenways Master Plan proposed priority corridor of New River/SR 84 Greenway (11.7 mile multi-purpose path along the SR 84/New River R.O.W.). A number of other projects are planned throughout the year. To the south, Davie Road connects to the proposed priority corridor of Griffin-Orange Dr. Greenway (13.6 mile multi-purpose path along C-11 Canal).

Coconut Creek

The Coconut Creek City Commission adopted a Resolution supporting Complete Streets and has implemented Complete Street concepts on Coconut Creek Parkway and as part of the City's Main Street Project Area (downtown plan).

Staff is currently evaluating transit supportive land use categories to coincide with Complete Streets. Staff will be amending the Comprehensive Plan and Land Development Code in February 2014 to incorporate Complete Streets guidelines.

The *Broward County Greenways Master Plan* proposed facilities including multi-purpose paths, bike lanes and sidewalks. The plan also proposed the Creek/Springs FPL R.O.W. multi-purpose path that traverses Coconut Creek. In addition, Coconut Creek is bordered to the north by the proposed Hillsboro Canal Greenway 12.7 mile multi-purpose path and bordered to the east by the proposed Turnpike Greenway 12.1 mile water trail. Coconut Creek has implemented several sections of municipal greenways including the Long Pine Greenway west of Lyons Road and the Hilton Road Greenway, which connects to residential areas west of the end of Hilton Road.

Cooper City

Complete Streets supporting policies: the Cooper City Code of Ordinances requires the construction of sidewalks along both sides of every roadway within the City limits. All new development is required to construct sidewalks in the development consistent with the City's engineering standards. Policy 2.1.1 requires the Growth Management Department to continue implementing land development regulations requiring sidewalks for new development and redevelopment. The City's land development regulations also require that nonresidential developments provide on-site bicycle racks. Policy 2.2.8 provides for additional appropriate bicycle parking.

Cooper City is located near two of the *Broward Greenways Master Plan* proposed priority greenway corridors: south of the Griffin-Orange Dr. Greenway/C-11 Canal and east of the Flamingo Road Trail. In addition, Cooper City is located north of the Greenways Master plan proposed corridors of the Rock Creek FPL R.O.W, West Trail FPL R.O.W and Central Trail R.O.W as well as south of the proposed corridor of Nob Hill Trail.

Weston

The League of American Bicyclists recently designated the City a Bicycle Friendly Community in part due to its Bicycle Master Plan which indicates that bike lanes are currently provided on over 90 percent of all arterial roadways within the City. The Bicycle Master Plan also outlines future strategies to continue providing multi-modal transportation facilities.

The City of Weston lies between two *Broward Greenways Master Plan* priority phase one corridors: Conservation Levee multi-purpose path to the north and west and Griffin-Orange Dr. Greenway multi-purpose path to the south.

Pompano Beach

The City of Pompano Beach has achieved a context-sensitive corridor designation from the Broward County Planning Council for Martin Luther King, Jr. Boulevard from I-95 to Dixie Highway to pave the way for implementing complete streets solutions on this Trafficways Plan corridor.

Other County Initiatives Related to Complete Streets and Greenways

Greenway Pedestrian Crossings

The FDOT District Traffic Operations Office is putting together a task force to address issues on greenway pedestrian crossings and has committed to work with Broward County on this issue.

Broward B-Cycle

The Broward B-Cycle, Broward County's newest mode of public transportation and the first countywide bike-sharing system, is expanding and will complement Complete Streets initiatives in Broward County. A new station has been added at the southwest corner of Las Olas Boulevard and Southeast Eighth Avenue in the City of Fort Lauderdale. Broward B-Cycle currently maintains 275 bikes available for sharing at its 27 station locations in Broward County. The stations are located in the following six cities: Fort Lauderdale, Hollywood, Pompano Beach, Dania Beach, Hallandale Beach and Lauderdale-By-The-Sea.

Commitment 2040 – 2040 Long Range Transportation Plan

***Commitment 2040* – 2040 Long Range Transportation Plan (LRTP)** is currently in the public outreach process to gather the communities' priorities for transportation in the County. Public workshops have been held to identify community goals and objectives, and 29 MPO Board members have been interviewed. Over 1,100 surveys have been collected, which provided more than 800 open-ended comments. Feedback has been sought from all 31 municipalities to identify community needs and priorities, and plans have been collected from service providers, including FDOT, BCT, and SFRTA. Of public comments received, the majority (73%) specifically mentioned transit. This priority also was reflected in Board member interviews, during which roadway improvements and Complete Streets were mentioned as well. Express bus service, commuter rail and light rail also were mentioned. Another survey is now available at www.commitment2040.org to help refine options regarding transit, bicycling, and walking. Community meetings will continue in order to generate as many responses as possible and stimulate public involvement.

The Broward County 2014-2023 Transit Development Plan

The 2014-2023 Transit Development Plan serves as the strategic guide for public transportation in Broward County over the next 10 years. Development of this TDP included a number of activities, including documentation and analysis of the demographic conditions in BCT's service area, an evaluation of existing transit services in Broward County, market research and extensive public involvement efforts, an analysis of immediate and longer term transit service and capital project needs, and a funding analysis and plan which initiate strategic approaches to maintaining and expanding transit services in Broward County within the next 10 years and beyond. The 2014-2023 TDP is also known as "BCT Connected" because its main theme is connectivity, which includes links to other modes of transportation such as bicycle and pedestrian networks.

Greenways Master Plan Summary

Review and summarize the corridors, analysis, vision, policies, and action items from the Broward County Greenways Master Plan.

Introduction

The *Broward County Greenways Master Plan* was developed to improve the quality of life of residents in urban environments and create a countywide system of greenways and trails. Broward Greenway corridors consist of a combination of linear parks, on-road bicycle facilities, sidewalks and multi-purpose paths.

Vision

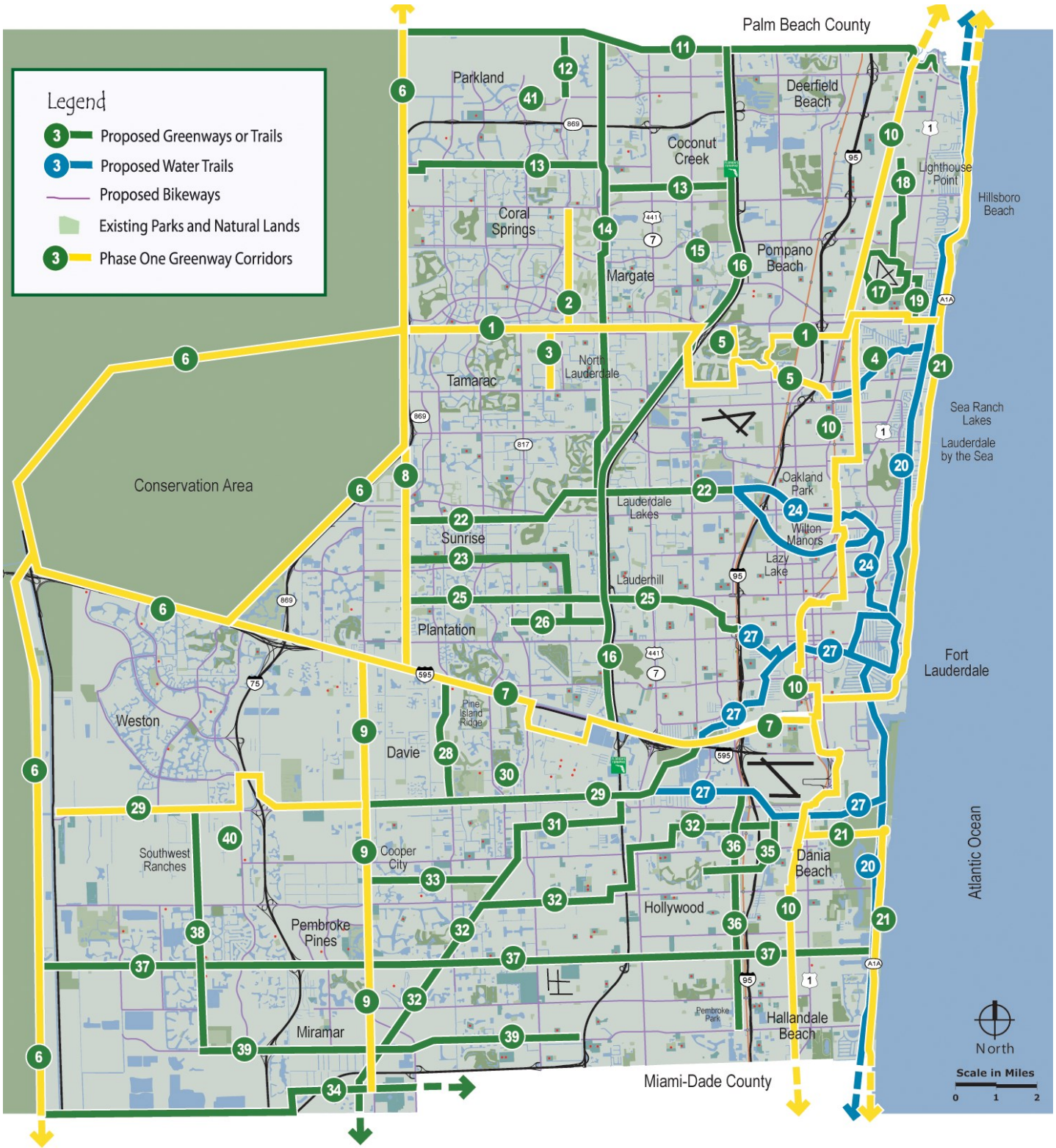
The vision of the *Broward County Greenways Master Plan* is to have a fully-funded countywide network of bicycle and equestrian paths, nature trails and waterways that are safe and clean. The countywide greenway system will connect each neighborhood, from the Everglades to the Atlantic Ocean, to conservations lands, parks and recreation facilities, cultural and historic sites, schools, and business areas. The greenway system would provide opportunities for recreation, restoration and enhancement of native vegetation and wildlife habitat, as well as alternative modes of transportation.

Summary

The *Broward County Greenways Master Plan* contains over 370 miles of regional greenways, bikeways, land trails and water trails delineated on the conceptual master plan. The countywide network of greenways depicted provides a regional backbone which may further develop or serve as a foundation for the local trail networks, such as the trails of Davie, Plantation, Parkland and Southwest Ranches. The plan also serves as a framework for individual municipalities to link together their local planning efforts.

In total, 41 proposed corridors are recognized in the *Broward County Greenways Master Plan*. In addition, select priority "phase one" corridors were identified during the planning process, public input and subsequent planning meetings (see figure on the following page). Furthermore, the following phase one corridors were selected as having the highest priority for development: Dixie Highway/Florida East Coast Railroad Trail; Cypress Creek/C-41 Canal; Conservation Levee; New River/SR 84 Greenway; Flamingo Road Trail/Hiatus Road C-42 Canal Trail; Barrier Islands Greenway SR A1A Trail; and Griffin-Orange Dr. Greenway/C-11 Canal. These corridors effectively form a framework that traverses all parts of the County, and provide a good representation of differing types of trails, from wide paved and unpaved trails through natural and rural areas, to wide sidewalks through urban areas, providing opportunities for all types of Greenway users and interests.

Broward Greenways Master Plan



Note: The Broward County Greenways Master Plan map was produced in 2002 and therefore does not include "The Wedge", which has since been added as part of Broward County via agreement with Palm Beach County.

Map Index*	Name	Approx. Length Miles	Location	Type
1	C-14 Canal / Cypress Creek Greenway	**12.9	C-14 Canal	Multipurpose Path
2	Riverside Dr. Canal Trail	1.5	Riverside Dr. Canal	Multipurpose Path
3	N. Lauderdale South Trail	2.8	Canal	Multipurpose Path
4	Snook Creek	3.0	Snook Creek Canal	Water Trail
5	Cypress Creek	3.0	Cypress Creek Canal	Multipurpose Path
6	Conservation Levee	48.4	Levee	Multipurpose Path
7	New River/SR 84 Greenway	11.7	SR 84/New River R.O.W.	Multipurpose Path
8	Hiatus Rd. C-42 Canal Trail	5.3	C-42 Canal	Multipurpose Path
9	Flamingo Road Trail	10.9	Flamingo Rd. R.O.W.	Multipurpose Path
10	Dixie Highway/FEC Trail	28.6	Dixie Hwy./FEC R.O.W.	M. Path, B. Lnes, Swalks
11	Hillsboro Canal Greenway	12.7	Hillsboro Canal	Multipurpose Path
12	Parkland Trail	1.7	Canal	Multipurpose Path
13	Creek/Springs FPL R.O.W. Trail	7.6	Power Easement	Multipurpose Path
14	Rock Island Road FPL R.O.W. Trail	11.1	Power Easement	Multipurpose Path
15	Coconut Creek Trails		City-wide	M. Path, B. Lnes, Swalks
16	Turnpike Greenway	17.1	Turnpike R.O.W.	Multipurpose Path
17	Pompano Air Park	4.4	Existing Path	Multipurpose Path
18	NE 15 Ave/SE 2 Ave Trail	2.5	NE 15th/SE 2 Ave. R.O.W.	Multipurpose Path
19	NE 26 Ave. Trail	1.5	NE 26 Ave. R.O.W.	Multipurpose Path
20	Intracoastal Waterway	19.7	Water Trail	Water Trail
21	SR A1A Trail	25.7	A1A R.O.W.	M. Path, B. Lnes, Swalks
22	C-13 Canal Trail	8.1	C-13 Canal	Multipurpose Path
23	Sunrise/Plantation Trail	5.0	Canal	Multipurpose Path
24	Middle River Trail	9.2	Water Trail	Water Trail
25	C-12 Canal Trail	6.5	C-12 Canal	Multipurpose Path
26	5th Ave. Trail	2.9	Canal	Multipurpose Path
27	New River Loop	25.0	Water Trail	Water Trail
28	Nob Hill Trail	3.0	Nob Hill R.O.W.	Multipurpose Path
29	Griffin/Orange Dr. Greenway	13.6	C-11 Canal	Multipurpose Path
30	Davie Trails		City-wide	M. Path, B. Lnes, Swalks
31	West Trail FPL R.O.W.	4.0	Power Easement	Multipurpose Path
32	Central Trail FPL R.O.W.	14.3	Power Easement	Multipurpose Path
33	Rock Creek FPL R.O.W.	3.0	Power Easement	Multipurpose Path
34	C-9 Canal Trail	9.6	C-9 Canal	Multipurpose Path
35	C-10 Canal Trail	3.2	C-10 Canal	Multipurpose Path
36	The CSX Trail	5.5	CSX R.O.W.	Multipurpose Path
37	Pembroke Pines / Hollywood Trail	13.6	Pines Blvd. R.O.W.	M. Path, B. Lnes, Swalks
38	172nd Ave. Trail	5.7	172 Ave. R.O.W.	M. Path, B. Lnes, Swalks
39	Miramar Parkway Trail	9.0	Miramar Parkway R.O.W.	M. Path, B. Lnes, Swalks
40	Southwest Ranches Equestrian Trails			Equestrian Trails
41	Parkland Trails		City-wide	M. Path, B. Lnes, Swalks

* Map Index for reference only. Numbers do not indicate priority ranking.
** 10.6 miles are along the C-14 Canal
Phase One Greenway Corridors

All maps and figures in the Greenways Master Plan Summary section of this report are:
Source: Broward County Greenways Master Plan. 2002.
http://www.broward.org/Greenways/Pages/MasterPlan.aspx

Action Items

Recommended action Items for the *Broward County Greenways Master Plan* included:

- Adopt the Broward County Greenways Master Plan
- Continue the Mission of the County's Greenways
- Establish Greenway Funding Sources
- Establish an Implementation Schedule
- Promote Greenway and Trails within Broward County
- Construct Greenway Corridors

Broward County Greenways Master Plan Implementation

The Broward County Board of Commissioners approved the Greenways Master Plan In February of 2002 along with individual plans and funding strategies for the design and construction of select phase one corridors. The Board of Commissioners also established a Selection/Negotiation committee to hire a firm to design and permit four of the selected priority corridors. In November of 2002, the Broward County Board of Commissioners approved a $2.4 million dollar contract for the survey, design, and permitting for the following phase one corridors:

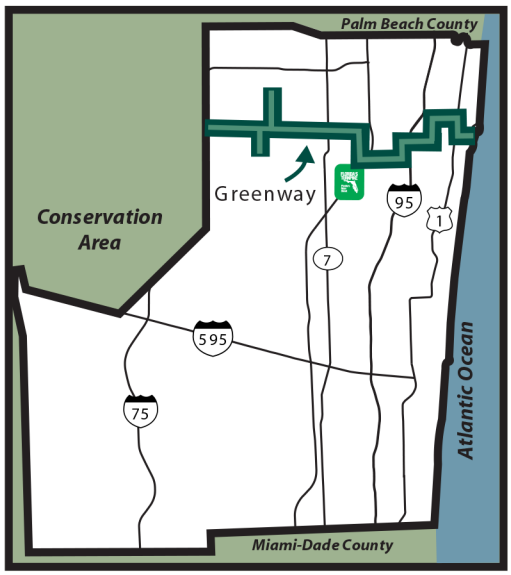
- C-14 Canal (10.6 miles) - Cypress Creek Greenway (12.9 miles)
- Dixie Highway/Florida East Coast Railroad Trail (28.6 miles)
- New River/SR 84 Greenway (11.7 miles)
- Flamingo Road Trail (10.9 miles) - Hiatus Road C-42 Canal Trail (5.3 miles)

Also included in this contract was the Master Plan for the Barrier Islands Greenway/SR A1A Trail (25.7 miles). During 2003, additional field visits and tours of the priority corridors along with public workshops and permitting agency meetings helped verify and finalize the greenway routes within the selected priority corridors.

Summary of Broward Greenways Master Plan Priority Corridors

The following section provides a summary of the phase one priority corridor individual plans included in the *Broward Greenways Master Plan*. Proposed development activities include pedestrian and bicycle friendly features such as paved trails, pedestrian bridges, narrowing of roads, widening of sidewalks, landscaping, signs, bike racks, air stations, drinking fountains and benches.

C-14 Canal/Cypress Creek Greenway



The C-14 Canal-Cypress Creek Greenway comprises over 23 miles of trail, connecting the beach to the Everglades. The trail would originate south of Atlantic Boulevard at a trailhead adjacent to the proposed Conservation Levee Trail. A pedestrian/bicycle overpass is proposed at this location to provide a crossing over the Sawgrass Expressway and the greenway to the east. This trail includes a main segment which follows the C-14 Canal, a portion which follows the meandering Cypress Creek, as well as shorter spurs through Margate and Coral Springs (Riverside Canal) and North Lauderdale. Upon completion, the trail will connect the natural conservation areas of western Broward County to the eastern beachfront area, and the numerous communities between.

The City of Tamarac completed construction of a portion of this greenway within their jurisdiction in 2002. This section runs from University Drive west to the end of Southgate Blvd., along a 2.5 mile path. Veterans Park, located at the northwest corner of Southgate Blvd. and University Dr. has a bike path, picnic area with grill, small boat launching ramp, a Veterans Memorial, restrooms and parking.

Communities: Tamarac, Coral Springs, Coconut Creek, North Lauderdale, Margate and Pompano Beach.

New River/SR 84 Greenway

The New River Greenway will extend over 11 miles through central Broward County from the Everglades to Port Everglades. This corridor is the location of one of Broward County's oldest bicycle and pedestrian paths. Enhancements and upgrades to the path, including better separation from the busy I-595 corridor, would provide a bicycle and pedestrian friendly corridor linking Markham Park and Broward's western conservation area to Port Everglades. The greenway would also reestablish bicycle and pedestrian links to the College/University complex in Davie which were lost when I-595 was constructed. This greenway would utilize wide sidewalks, bicycle and pedestrian paths, as well as a bridge suspended from the SR 7 overpass to maximize connectivity.

In 2002, Broward County worked on the design and construction of a multi-purpose path along two sections of this corridor. The Marina Mile project, located on the north side of SR 84 from I-95 to the New River drawbridge, is an eight to 10 foot-wide paved multi-purpose path that was renovated by the Florida Department of Transportation to include a six foot-wide path on the north side. West of

the New River drawbridge, Broward County completed design of the "Missing Link" project to include a 10 foot-wide multi-purpose landscaped path beginning just east of SR 7 and ending at the Sewell Lock. This project includes a bridge over the New River Canal east of SR 7. The project was named “Missing Link” because it would restore bicycle/pedestrian connections along SR 84 to west Broward County lost when I-595 was constructed.

Communities: Sunrise, Plantation, Davie and Fort Lauderdale.

Dixie Highway/Florida East Coast Railroad Trail

The Dixie Highway Greenway consists of more than 28 miles of multi-purpose path, bike lanes, and sidewalks, creating a trail that connects the historic main streets and downtowns of Broward's eastern cities. The proposed trail originates at Pioneer Park near the Deerfield Beach City Hall complex and travels south through Deerfield Beach, Pompano Beach, Oakland Park, Wilton Manors, Fort Lauderdale, Dania Beach, Hollywood and Hallandale Beach. Potentially, the trail could link to Greynolds Park in Miami-Dade.

Several submittals were made to the Florida East Coast Railway (FEC) in 2003 illustrating the Dixie Highway Greenway Route, including sections showing development of the FEC right-of-way (R.O.W.) within FEC guidelines. The FEC replied to the request, denying the use of the R.O.W. at the time. Subsequently, the design team worked on identifying potential alternatives and held two public workshops in 2004 to gather input for the revised Dixie Highway Greenway design.

Communities: Deerfield Beach, Pompano Beach, Oakland Park, Wilton Manors, Fort Lauderdale, Dania Beach, Hollywood and Hallandale Beach.

Flamingo Road Hiatus Road C-42 Canal Greenways

The Flamingo Road Greenway comprises nearly 11 miles of trail running from Plantation to Miramar along Flamingo Road. The Hiatus Road Greenway comprises more than five miles of trail which run along the C-43 canal from Sunrise to Plantation. Together this corridor connects Broward's western communities from the central County to the Miami-Dade County line. The Flamingo Road and Hiatus Road Greenways pass through a variety of land uses, including suburban and rural areas. This corridor provides a unique opportunity in urban Broward County for development of a rural and semi-rural multi-purpose trail serving equestrians, bicyclists and hikers. In addition, the trail ends in Miramar adjacent to the Snake Creek Canal where opportunities exist for future connection to Miami-Dade County greenways.

Communities: Sunrise, Plantation, Davie, Southwest Ranches, Pembroke Pines, and Miramar.

Barrier Islands Greenway/SR A1A Trail

The Barrier Islands Greenway is over 25 miles in length. The purpose of this greenway is to establish one of the most desirable recreation corridors in the County. Continuous multi-purpose paths along the beach, the A1A roadway itself and various neighborhood streets will link public beaches, resorts, waterside communities, activity centers, marinas, restaurants, municipal centers and other attractions.

This corridor requires roadway reconstruction of A1A due to lack of sidewalks and bike lanes. The corridor plan proposes a bicycle facilities network to link to other neighborhoods through the addition of bike lanes, multi-purpose paths, wide sidewalks and bicycle-friendly bridges over the Intracoastal. In addition, the plan proposes an extended broadwalk to Dania Beach to create a continuous beach-side route.

Through the use of appropriate signs and other markers, the Barrier Islands Greenway has the potential to become the premier attraction in South Florida – further enhancing the unique sense of place along the corridor, as well as being an asset to each local neighborhood.

Communities: Deerfield Beach, Hillsboro Beach, Lighthouse Point, Pompano Beach, Sea Ranch Lakes, Lauderdale-by-the-Sea, Fort Lauderdale, Dania Beach, Hollywood and Hallandale Beach.

Conservation Levee

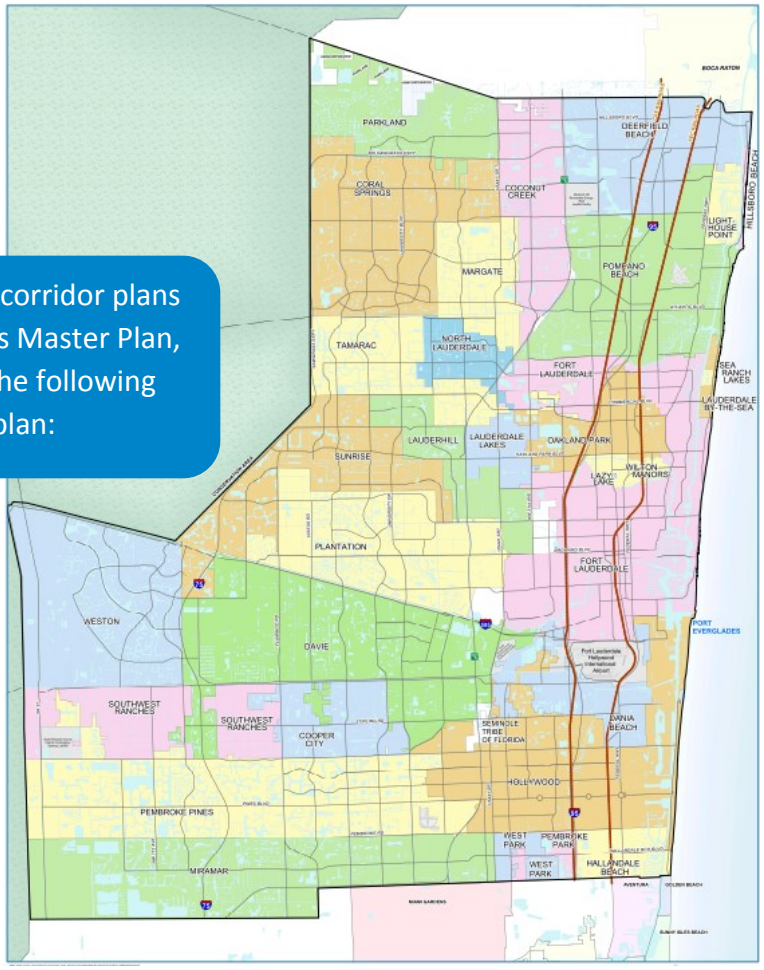
The Conservation Levee covers over 48 miles of western Broward County. The greenway would extend from the Palm Beach County line (and the Loxahatchee National Wildlife Refuge to the north) south along the western edge of the County and the Everglades. This greenway would intersect with several Broward Greenways Master Plan proposed corridors including C-14 Canal-Cypress Creek Greenway, New River/SR 84 Greenway, Hiatus Road C-42 Canal Trail, Griffin-Orange Dr. Greenway, Pembroke Pines/Hollywood Trail and C-9 Canal Trail. Conservation Levee would continue south with potential future connections to Miami-Dade County.

Broward County earmarked $200,000 from the Safe Parks and Land Preservation Bond program in 2002 to design and construct trail heads and access points for the Conservation Levee Trail at Markham Park and Atlantic Blvd. The Parks and Recreation Division also began the design process at Markham Park. Plans were submitted to the South Florida Water Management District (SFWMD) for access at Atlantic Blvd. and the Sawgrass Expressway in 2003. The construction planned improvements included parking, which required the County to petition the District to waive its prohibition of parking on its right-of-way.

Communities: Parkland, Coral Springs, Tamarac, Sunrise, Weston, Southwest Ranches, Pembroke Pines and Miramar.

Municipalities included in the Broward Greenways Master Plan

In addition to the individual phase one priority corridor plans provided in the conceptual Broward Greenways Master Plan, a snapshot of proposed corridors in each of the following Municipalities is also included in the plan:



Coconut Creek

Priority trail passing through municipality: C-14 Canal-Cypress Creek Greenway

Priority trail near municipality: Cypress Creek

Future trails passing through or adjacent to municipality: Hillsboro Canal Greenway; Creek/ Springs FPL R.O.W. Trail; Coconut Creek Trails; and Turnpike Greenway

Future trail near municipality: Rock Island Road FPL R.O.W.

Cooper City

Priority trails passing through municipality: Flamingo Road Trail and Griffin-Orange Dr. Greenway

Future trails passing through or adjacent to municipality: Nob Hill Trail; Griffin-Orange Dr. Greenway; West Trail FPL R.O.W.; Central Trail FPL R.O.W.; Rock Creek FPL R.O.W.

Coral Springs

Priority trails passing through municipality: C-14 Canal-Cypress Creek Greenway; Riverside Dr. Canal Trail; N. Lauderdale South Trail; and Conservation Levee.

Future trails passing through or adjacent to municipality: Creek/Springs FPL R.O.W. Trail and Rock Island Road FPL R.O.W.

Future trails near municipality: Parkland Trail and Parkland Trails

Dania Beach

Priority trail passing through municipality: New River Greenway

Priority trails near municipality: Dixie Highway Greenway and Barrier Islands Greenway

Future trails passing through or adjacent to municipality: Intracoastal Waterway; New River Loop; Griffin-Orange Dr. Greenway; Central Trail FPL R.O.W.; C-10 Canal Greenway; The CSX Greenway

Future Trail near municipality: New River Greenway

Davie

Priority trails passing through municipality: New River Greenway; Hiatus Road Greenway; Flamingo Road Greenway; and Griffin-Orange Dr. Greenway.

Priority trail near municipality: Conservation Levee

Future trails passing through or adjacent to municipality: Intracoastal Waterway; C-12 Canal Trail; 5th Ave. Trail; New River Loop; Nob Hill Trail; Griffin-Orange Dr. Greenway; West Trail FPL R.O.W.; Central Trail FPL R.O.W.; C-10 Canal Trail; and The CSX Trail.

Deerfield Beach

Priority trails passing through municipality: Dixie Highway FEC Trail and Barrier Islands Trail

Future trails passing through or adjacent to municipality: Hillsboro Canal Greenway; Turnpike Greenway; and Intracoastal Waterway

Future trails near municipality: Creek/Springs FPL R.O.W. and Central Trail FPL R.O.W.

Fort Lauderdale

Priority trails passing through municipality: Cypress Creek Greenway; Dixie Highway Greenway; and Barrier Islands Greenway

Future trails passing through or adjacent to municipality: Cypress Creek; Turnpike Greenway; Intracoastal Waterway; Middle River Trail; C-12 Canal Trail; and New River Loop.

Hallandale Beach

Priority trails passing through municipality: Dixie Highway/FEC Trail and Barrier Islands Trail

Future trails near municipality: Intracoastal Waterway; The CSX Greenway; and Pembroke Pines/ Hollywood Trail.

Hillsboro Beach

Priority trails passing through or near municipality: C-14 Canal-Cypress Creek Greenway; Dixie Highway/FEC Trail; and Barrier Islands Greenway.

Future trails near municipality: Hillsboro Canal Greenway; Pompano Air Park; NE 15 Ave/SE 2 Ave Trail; NE 26 Ave Trail; and Intracoastal Waterway.

Hollywood

Priority trails passing through or adjacent to Municipality: New River Greenway; Dixie Highway Greenway; Intracoastal Waterway; and Barrier Islands Greenway.

Future trails in or near municipality: New River Loop; Griffin-Orange Dr. Greenway; West Trail FPL R.O.W.; Central Trail FPL R.O.W.; The CSZ Trail; Pembroke Pines/Hollywood Trail; and Miramar Parkway Trail.

Lauderdale-By-The-Sea

Priority Trails passing through or adjacent to Municipality: Intracoastal Waterway and Barrier Islands Trail.

Future trails near municipality: Snook Creek; NE 26th Ave. Trail; and Middle River Trail

Lauderhill

Future trails passing through or near municipality: Rock Island Road FPL R.O.W. Trail; Turnpike Greenway; C-13 Canal Trail; Sunrise/Plantation Trail; C-12 Canal Trail; and 5th Ave Trail.

Margate

Priority trails passing through municipality: C-14 Canal-Cypress Creek Greenway and Riverside Dr. Canal Trail.

Priority trail near municipality: N. Lauderdale South Trail

Future trails passing through or near municipality: Creek/Springs FPL R.O.W. Trail; Rock Island Road FPL R.O.W.; and Turnpike Greenway

Miramar

Priority trail passing through municipality: Flamingo Road Trail

Priority trail adjacent to municipality: Conservation Levee

Future trails passing through or near municipality: Central Trail FPL R.O.W.; C-9 Canal Trail; Pembroke Pines/ Hollywood Trail; 172nd Ave Trail; and Miramar Parkway Trail.

Parkland

Priority trail adjacent to municipality: Conservation Levee

Future trails passing in or near municipality: Hillsboro Canal Greenway; Parkland Trail; Creek/ Springs FPL R.O.W. Trail; Rock Island Road FPL R.O.W.; and Parkland Trails.

Plantation

Priority trails passing through or adjacent to municipality: New River Greenway; Hiatus Road Greenway; and Flamingo Road Greenway.

Priority trail near municipality: Conservation Levee

Future trails passing through municipality: C-13 Canal Trail; Sunrise/Plantation Trail; C-12 Canal Trail; 5th Ave. Trail; New River Loop; and Nob Hill Trail.

Sunrise

Priority trails passing through or near municipality: New River Greenway; Hiatus Road Greenway; Flamingo Road Greenway; and Conservation Levee.

Future trails passing through municipality: C-13 Canal Trail; Sunrise/Plantation Trail; C-12 Canal Trail; 5th Ave. Trail; and Nob Hill Trail.

Tamarac

Priority trails adjacent to municipality: C-14 Canal-Cypress Creek Greenway; Riverside Dr. Canal Trail; N. Lauderdale South Trail; and Conservation Levee.

Future trails passing through municipality: Cypress Creek; Rock Island Road FPL R.O.W.; Turnpike Greenway; C-13 Canal Trail; and Middle River Trail.

Weston

Priority trail passing through municipality: Conservation Levee; New River/SR 84 Greenway; and Griffin-Orange Dr. Greenway

Future trail near municipality: 172nd Ave Trail

Connectivity and Accessibility

Develop methodology and identify standards for connectivity and accessibility between the existing and proposed greenways and identified and proposed Complete Streets corridors and networks.

Goal

The following goal is proposed for connectivity and accessibility between existing/proposed greenways and identified/proposed Complete Streets corridors and networks.

- Integrate Broward County's existing/proposed greenways network into a comprehensive network of Complete Streets to encourage connectivity to the greenways by sustainable modes of transportation.
  - ◊ The Complete Streets connectivity to greenways may include a Countywide network of on-street bicycle facilities, shared use paths, crossing improvements where greenways cross major thoroughfares, landscaped boulevards, green streets, and linear parks, which link the County's neighborhoods to one another and to the major parks and public transportation hubs.

Source: Kimley-Horn

Source: Kimley-Horn

Greenways should include connectivity for crossing roadway thoroughfares. Safe and frequent crossing facilities are a hallmark of Complete Streets as well.

Methodology

Accomplish the integration of the existing/proposed greenways network into a comprehensive network of Complete Streets through the following methodology steps.

- Identify streets and roads that connect to existing/proposed greenways.
- Identify streets and roads that provide access to trailheads that serve the existing/proposed greenways.
- Identify crossing deficiencies for existing greenway trails where engineering improvements could be implemented to improve safety and mobility along the greenway.
- Develop recommended strategies for enhancing the connectivity between the streets/roads and greenways and improving crossing opportunities for greenway trail users at major thoroughfares.
- Identify policies and techniques that will assist in addressing safety concerns.
- Prioritize strategies by an evaluated order of importance.

Standards

The following standards were developed to provide guidance for the implementation of the methodology identified above.

- The integrated network will primarily serve as sustainable transportation infrastructure (walking, bicycling, and public transportation).
- Direct connections will be provided between the greenway network and the transit network through Complete Street strategies.
- Connectivity strategies will take advantage of recent engineering techniques and innovative ideas for improving connectivity and safety.
- Street users must be able to access the greenway system from cross-streets.
- Greenway trail users should be able to cross major thoroughfares safely and efficiently without significant deviation from the path.
- Intersections between greenway trails and cross-streets should be treated as public street right-of-way intersections.
- Connections will support the physical health and well-being of residents.
- Connections will promote social inclusion and sociability.
- Car-free living will be supported by improving connections to Countywide destinations by sustainable transportation modes.
- Street trees and landscaping will be integrated to enhance shade and improve the aesthetic quality.

Municipal Outreach

Contact municipalities to identify planning and local concerns.

The investigators attempted to contact each Broward County municipality to identify planning and local concerns. Although the investigators were able to obtain valuable feedback from several of the municipalities, further follow up is required to obtain more information. Please see the Appendix (p. 68) for a contact sheet. In addition to individually contacting municipalities, the investigators conducted a literature review of news articles and county meeting minutes to acquire additional information about planning and local concerns.

Recent Broward news articles and surveys have indicated that Broward County residents would walk and bike more if the appropriate infrastructure were in place. This evidence breeds hope that the adopted Broward Complete Streets Guidelines will pave the way for safer and healthier streets across the county.

Concerns for pedestrian and bicycle infrastructure also have been voiced at Broward Metropolitan Planning Organization (MPO) Technical Coordinating Committee (TCC) meetings, where city officials gather from County municipalities. At the August 28, 2013 Broward MPO TCC meeting, there was discussion about public desire for better bicycle and pedestrian connections, real-time passenger information, increased service and frequency, and increased service awareness.

Other concerns are fatalities related to jaywalking and crosswalk issues. During a recent Broward MPO Technical Coordinating Committee Meeting, Jeff Weidner (FDOT) expressed concern with regard to accidents involving individuals who cross mid-block when trying to catch a bus. One source of concern is Oakland Park Boulevard/SR 7, which has on-street transfer points for transit. At this location, riders often run from the eastbound stop to the next bus. At the January 23, 2013 Broward MPO TCC meeting, Sheila Rose (Coconut Creek) expressed concern about the arterial bike lanes in Broward County, stating that if these lanes are not buffered from vehicular traffic, particularly in high-speed corridors, they are almost a waste of funds. Gary Rogers (City of Lauderdale Lakes) cited a crosswalk issue on the C -13 canal trail (a Broward Greenways Master Plan proposed 8.1-mile multi-purpose trail), which was completed on the east and west ends of SR 7. Gary Rogers reported that jaywalking is “out of control” in this location and along a similar canal in Margate, and he said attention should be directed toward the issue. He also noted that there are plans to add more canal trails in the future, which could exacerbate the problem even further. Jeff Weidner reiterated that the first step will be to make pedestrians aware there is a problem, then to follow up with enforcement so individuals will understand why they are being ticketed.

Evidence indicates residents would walk and bike more if the appropriate infrastructure were in place.

Eric Swanson, Regional Planner/Policy Analyst with the South Florida Regional Planning Council, has been working with several Broward County municipalities, including Coconut Creek, Wilton Manors, Hollywood, Pembroke Pines and Hallandale Beach, and has found that there is a perceived disconnect on how the cities can partner with the County to implement pilot projects for Complete Streets. It is recommended that the County work on devising methods and criteria for the County’s cities to follow when seeking to implement a Complete Street project.

Examples of Common Policies

Determine examples of common policies shared by greenways and Complete Streets that could be capitalized upon for integration.

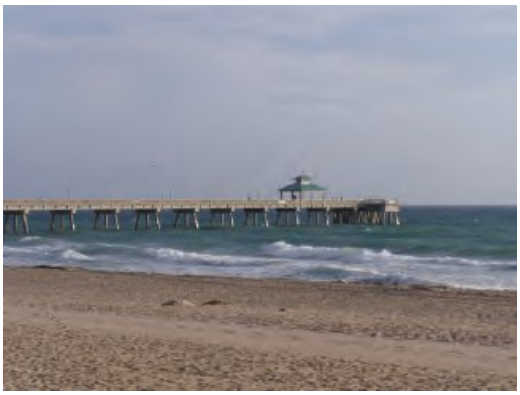
The *Broward County Greenways Master Plan* is a conceptual plan that serves as a framework of a potential countywide system of corridors consisting of a combination of linear parks, on-road bicycle facilities, sidewalks and multi-purpose paths. In line with Complete Streets, the *Broward Greenways Master Plan* aims to provide a connected network of safe alternative modes of transportation linking neighborhoods to each other and to various points of interest and land uses including conservation lands, parks and recreation facilities, cultural and historic sites, schools, and business areas.

The Greenways Master Plan includes 41 proposed corridors with survey and design plans for select priority phase one greenways that include pedestrian and bicycle friendly facilities such as paved trails, pedestrian bridges, landscaping, paving, bike racks, air stations, drinking fountains and benches. In addition, the plan proposes the narrowing of certain streets as well as widening of paths. A more detailed design outline was created for the Barrier Islands Greenway/SR A1A Trail. This proposed greenway spans 25 miles in the communities of Deerfield Beach, Hillsboro Beach, Lighthouse Point, Pompano Beach, Sea Ranch Lakes, Lauderdale-by-the-Sea, Fort Lauderdale, Dania Beach, Hollywood and Hallandale Beach.

The Barrier Islands Greenway/SR A1A Trail improvements detailed in the Master Plan are listed below by community.

Deerfield Beach:

1. A1A Roadway Reconstruction - Roadway requires reconstruction due to lack of sidewalks and bike lanes. New section to include wide sidewalks and bike lanes.
2. Local Links / Bicycle Facilities Network - Link to other neighborhoods through the addition of bike lanes and wide sidewalks. East Hillsboro bridge over the Intracoastal should include bicycle-friendly bridge grates.



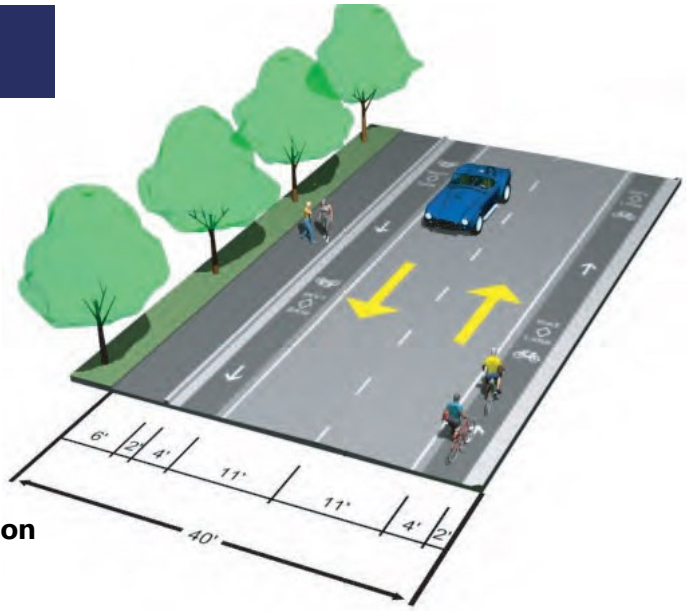
Source: Broward County Greenways Master Plan

3. Beach-side Facilities at Deerfield Beach - Add wayfinding and informational signs to existing pedestrian-friendly facilities which include multi-purpose paths, sidewalks and/or bike lanes.
4. A1A Roadway with Existing Paths - Roadway segment along SE 20th Ave. has a path and bike lanes. It may be possible to widen the path in the future.

Deerfield Beach is proud to be the first city in Broward County to adopt Complete Streets Guidelines and lead the way in creating a healthier community by making their streets *complete.* A Complete Streets Plan is being created, which will outline target areas within the City that could be improved with crosswalk improvements, bicycle facilities, and trees along the streets for extra shade. Staff will then be able to apply the design elements within the Complete Streets Guidelines to street projects at locations identified in the Complete Streets Plan.

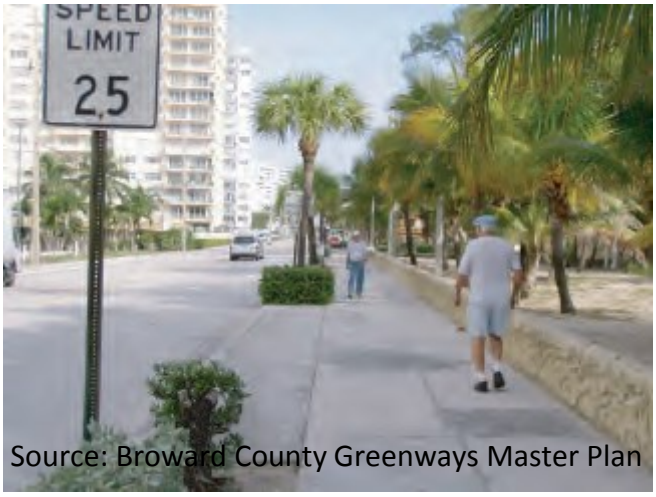
Hillsboro Beach and Lighthouse Point

A1A Roadway (40' right-of-way) – The segment along Hillsboro Mile is the narrowest segment throughout the corridor. Roadway reconstruction will be required to create the Greenway and improve pedestrian/bicycle through this corridor.



Artist's concept of the 40' right-of-way configuration

Source: Broward County Greenways Master Plan



Source: Broward County Greenways Master Plan

Pompano Beach

1. A1A Roadway Restriping - Restripe road along North Ocean Blvd. near Hillsboro Inlet and Lighthouse Point to include bike lanes. Sidewalks are already present. (Right-of-way widths limit the ability to construct paths without major roadway and right-of-way reconfiguration).

2. Local Links / Bicycle Facilities Network - Link to other neighborhoods through the addition of bike lanes and wide sidewalks. Bridges over the Intracoastal along NE 14th St. and E. Atlantic Blvd. should include bicycle-friendly bridge grates.

3. A1A Roadway with Existing Bike Lanes and Sidewalks - Segment along North Ocean Blvd. already includes bike lanes and sidewalks. However, this roadway segment is very wide and would be a good candidate for future roadway narrowing to create a future multi-purpose path.

4. Beach-side Facilities at Pompano Beach - Add wayfinding and informational signs to existing pedestrian-friendly facilities which include multi-purpose paths, sidewalks and/or bike lanes.

Sea Ranch Lakes

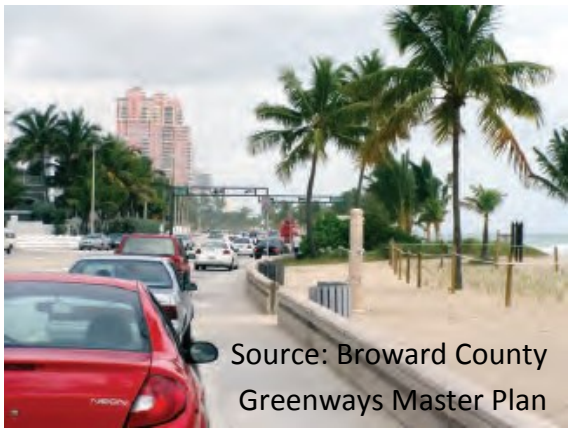
A1A Roadway with Existing Bike Lanes and Sidewalks - Segment already includes bike lanes and sidewalks. However, this roadway segment is very wide and would be a good candidate for future roadway narrowing to create a future multi-purpose path.

Lauderdale-By-The-Sea

1. Two Local Links / Bicycle Facilities Network - Link to other neighborhoods through the addition of bike lanes and wide sidewalks. Commercial Blvd. bridge over the Intracoastal should include bicycle-friendly bridge grates.
2. A1A Roadway Restriping - Restripe road to include bike lanes. Sidewalks already present. (Right of way widths limit ability to construct paths without major roadway and right of way reconfiguration).

Source: Broward County Greenways Master Plan

3. A1A Roadway with Existing Bike Lanes and Sidewalks - Segment along South Ocean Blvd. already includes bike lanes and sidewalks. However, this roadway segment is very wide and would be a good candidate for future roadway narrowing to create a future multi-purpose path.
4. Lauderdale by the Sea - Connect Greenway facilities to the City's proposed multi-purpose path.
5. A1A Roadway Reconstruction - Roadway near Codrington Dr. requires reconstruction due to lack of sidewalks and bike lanes. New section to include wide sidewalks and bike lanes.



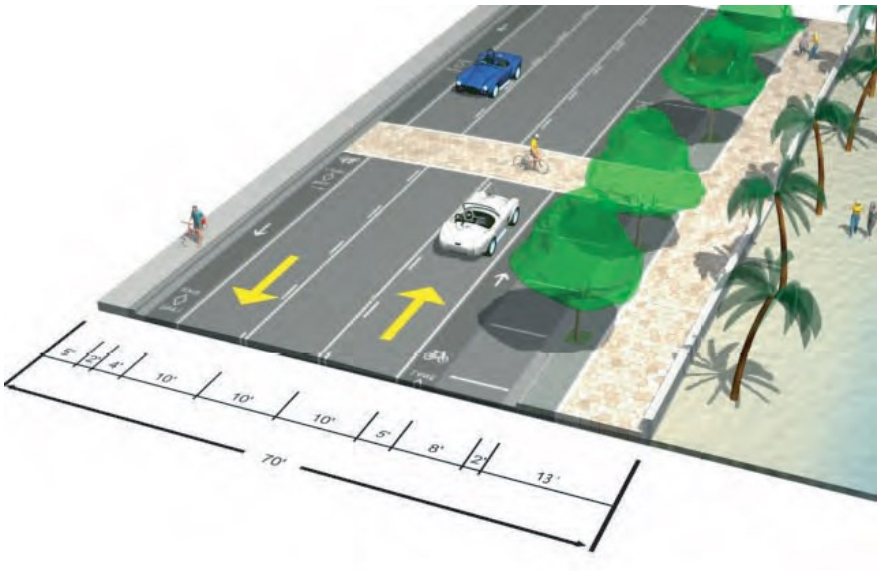
Source: Broward County Greenways Master Plan

Fort Lauderdale

1. A1A Roadway Reconstruction - Roadway near NE 42nd Ct. requires reconstruction due to lack of sidewalks and bike lanes. New section to include wide sidewalks and bike lanes.
2. Connect to Galt Ocean Mile Corridor - Shift Greenway to parallel corridor which includes existing sidewalks and bike lanes.
3. Alternate Local Links - Until improvements are made on A1A including intersection improvements, utilize local streets such as North Ocean Blvd. and Galt Ocean Drive. Some minor improvements must be made, including restoration of sidewalks in these locations as well as the addition of directional signs.

4. Local Links / Bicycle Facilities Network - Link to other neighborhoods through the addition of bike lanes and wide sidewalks. Commercial Blvd., Sunrise Blvd. and Las Olas Blvd. bridges over the Intracoastal should include bicycle-friendly bridge grates.

5. North Fort Lauderdale Beach Blvd. A1A Roadway Section through Ft. Lauderdale Beach - Reconfigure to create a wide path along the beach side of roadway, as well as sidewalks and bike lanes.



Artist's concept of the 70' right-of-way configuration for North Ft. Lauderdale Beach Blvd. A1A Roadway through Ft. Lauderdale Beach.

Source: Broward County Greenways Master Plan

6. Beach-side Facilities - Add wayfinding and informational signs along A1A to existing pedestrian-friendly facilities which include multi-purpose paths, sidewalks and/or bike lanes. (See illustration.)

7. A1A Roadway Reconstruction - Roadway along Sea Breeze Blvd. requires reconstruction due to lack of sidewalks and bike lanes. New section to include wide sidewalks and bike lanes.

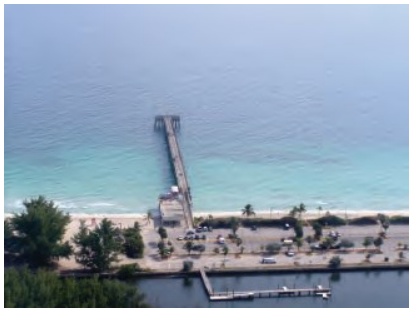
   A recent article from the Sun Sentinel states that the Florida Department of Transportation plans to put in buffered bike lanes on State Road A1A between Oakland Park Boulevard and Flamingo Avenue in Fort Lauderdale as part of its A1A Greenway project. The 4-foot bike lanes will be separated from vehicle lanes with a 2-foot buffer.

8. Alternate Local Links - Until improvements are made on A1A including intersection improvements, local streets such as South Ocean Drive should be utilized. Some minor improvements must be made, including restoration of sidewalks in these locations as well as the addition of directional signs.

9. Beach-side Path - Design and construct a beach-side path or boardwalk along what is one of the widest beaches in Broward. Path would go along South Beach Park and terminate at the inlet.

10. 17th Street Bridge Improvements - Includes existing bike lanes and observation deck. Create an opening in the barrier to allow for safe bicycle access to observation decks. Reconstruct bridge surface with bike-friendly road grates.

11. A1A Roadway Restriping - Restripe 17th Street to include bike lanes. Sidewalks are already present. (Right-of-way widths limit ability to construct paths without major roadway and right-of-way reconfiguration.)



Dania Beach

Local Links - Construct sidewalks, bike lanes and multi-purpose paths along A1A east on NE 2nd St 14 past Frost Park to Gulfstream Rd. then south to East Dania Beach Blvd. then east to Dania Beach Pier.
Source: Broward County Greenways Master Plan

Hollywood

Source: Broward County Greenways Master Plan

1. A1A Roadway with Existing Bike Lanes and Sidewalks - Segment along South Ocean Drive already includes bike lanes and sidewalks. However, this roadway segment is very wide and would be a good candidate for future roadway narrowing to create a multi-purpose path.
2. Beach-side Path - Extend the Broadwalk to Dania Beach Pier to create a continuous beach-side route.
3. Local Links / Bicycle Facilities Network - Link to other neighborhoods through the addition of bike lanes and wide sidewalks. Sheridan St. and Hollywood Blvd. bridges over the Intracoastal should include bicycle-friendly bridge grates.

   Recently, MPO officials awarded Hollywood more than $5 million for a "Complete Streets Project" that targets Hollywood Boulevard from Dixie Highway to City Hall. Improvements may include narrower travel lanes, wider sidewalks, buffered bike lanes, pedestrian lighting, improved pedestrian crossings, bus shelters and landscaped medians. Although this project would complement the proposed priority corridor of Dixie Highway/FEC trail, these Complete Streets efforts could be extended along Hollywood Blvd. to link with SR A1A.

4. Beach-side Facilities Ocean Walk - Add wayfinding and informational signs to existing pedestrian-friendly facilities which include multi-purpose paths, sidewalks and/or bike lanes.

Hallandale Beach

1. Local Links / Bicycle Facilities Network - Link to other neighborhoods through the addition of bike lanes and wide sidewalks. Hallandale Beach Blvd. bridges over the Intracoastal should include bicycle-friendly bridge grates.
2. A1A Roadway with Existing Bike Lanes and Sidewalks - Segment along South Ocean Drive already includes bike lanes and sidewalks. However, this roadway segment is very wide and would be a good candidate for future roadway narrowing to create a multi-purpose path.

Existing Transportation Conditions

Analyze transit, bicycle, and pedestrian conditions to determine problem areas.

A general transportation mobility analysis was conducted to identify transit, bicycle, and pedestrian mobility issues through data analysis using Broward County data and planned projects. The analysis was based on existing conditions, data collected for this Study, and approved plans and programs from transportation agencies. The purpose of this task is to collect data that will allow the study team to properly assess the deficiencies of non-motorized travel modes in Broward County, and to analyze the current and future greenways and Complete Streets integration needs.

Transit Analysis

Existing Conditions

Fixed route public transportation is provided by Broward County Transit (BCT), municipalities through the Community Bus program, and the South Florida Regional Transportation Authority (SFRTA), which operates the Tri-Rail commuter rail system.

BCT's fixed route system comprises 95 percent of the BCT family of services ridership and provides connections to Broward's multimodal transportation network as well as system wide connections at four transfer terminals. The fixed route system comprises 35 bus routes operating seven days per week. The typical daily service span for most routes is from approximately 5:00 AM through approximately 11:00 PM. Service frequencies vary widely depending on route ridership and service needs, but generally range from 15 minute headways on busier routes during peak periods to 60 minute headways on weekends and lower volume routes. All BCT fixed route buses are wheelchair accessible and equipped with bike racks.

On board a Broward County Transit (BCT) bus

Source: Broward County Transit

BCT also operates limited stop "Breeze" service for three of its busiest routes. The Breeze service has limited stops along the route at major intersections only, typically spaced approximately every 1-2 miles, on weekdays during morning and afternoon peak hours. The Breeze routes are listed below.

- 441 Breeze
- University Breeze
- U.S. 1 Breeze

95 Express Bus

Source: Broward County Transit

In addition, BCT operates express bus service between free commuter park-and-ride locations to Miami-Dade County and downtown Fort Lauderdale. The express bus routes operate the majority of their trip length on interstate highways. 595 Express Bus Service provides service along I-595 and I-95 linking Sunrise and Weston to Miami and downtown Fort Lauderdale. 95 Express Bus Service operates from Pembroke Pines, Hollywood, and Miramar to Miami utilizing 95 Express lanes on I-95. It should also be noted that Miami-Dade Transit (MDT) operates 95 Express Bus routes that originate in Broward County and serve destinations in Miami. MDT 95 Express Bus routes operate from the Broward Boulevard/I-95 park-and-ride lot and the Sheridan Street/I-95 park-and-ride lot.

The four BCT transfer terminals are listed below where numerous fixed routes intersect.

- Broward Central Terminal
- Lauderhill Mall Transfer Facility
- Plantation West Regional Terminal
- Pompano Northeast Transit Center

Additional BCT services include the following.

- Paratransit (Transportation Options, or TOPS)
- Community Bus program
- Emergency Services

BCT bus stop with bench, trash receptacle, and newspaper racks

Source: Kimley-Horn

Of particular interest to this Study is the Community Bus program, which supplements BCT's fixed route service with additional fixed route service designed to increase the number of

BCT bus stop without sidewalk connection or passenger waiting infrastructure

destinations within municipalities that residents can access through public transit and serve local trip patterns. Community buses typically serve residential areas and allow larger BCT buses to travel along major thoroughfares as part of the regional network. The Community Bus program routes connect to nearby BCT fixed routes and are wheelchair accessible and equipped with bike racks. Currently BCT's Community Bus program operates in partnership with eighteen (18) municipalities.

Many BCT bus stops are Americans with Disabilities Act (ADA) accessible. However, some bus stops lack sidewalk connectivity and proper surface areas. Benches and shelters are provided at bus stops with higher boarding activity, although many bus stops lack these features. Typically it is the responsibility of the local municipality to provide shelters and benches at bus stops. Few bus stops include bicycle parking racks as part of the design, although new and reconstructed bus stops are being designed with bike racks.

Commuter rail service is provided by the South Florida Regional Transportation Authority (SFRTA) through Tri-Rail operating along the South Florida Rail Corridor (SFRC) primarily adjacent to I-95. Tri-Rail provides north-south service between Miami International Airport (MIA) and Mangonia Park (north of West Palm Beach). The 71-mile long Tri-Rail system has eighteen (18) stations, including seven (7) stations in Broward. Tri-Rail connects directly to Amtrak at several stations including Hollywood, Fort Lauderdale, and Deerfield Beach. Tri-Rail also connects to the MDT Metrorail Green Line at the Metrorail Transfer Station and in the future will connect to the Metrorail Orange Line at the Miami Central Station at Miami International Airport.

Tri-Rail bicycle parking locker

Free Tri-Rail shuttle buses are offered at twelve (12) Tri-Rail stations to connect passengers to the surrounding community. Operating within an active freight corridor, many Tri-Rail stations are located in industrial areas making the shuttle buses and connections to county fixed route bus systems crucial.

Bicycles are allowed on Tri-Rail trains. Tri-Rail riders can also utilize complimentary bike lockers at most train stations. Access to lockers is provided with a refundable deposit of $20. The bike lockers allow secure bicycle parking to a greater degree than conventional bicycle parking racks, which are also

available at most stations. The bike locker program integrates bicycle travel with Tri-Rail commuting allowing a truly green experience and extending the range of travel to and from Tri-Rail stations. Some Tri-Rail commuters keep bikes on both the origin and destination sides of their typical daily commute by utilizing the bike locker program. SFRTA offers approximately 600 bike lockers for bicycle and accessory storage.

Future Conditions

The 2014-2023 Transit Development Plan (TDP) is a useful guide to ensure that the current transit system is operational for the 10-year TDP timeframe and also to outline how transit services can improve over the ten year period. The plans is also necessary to receive funding from FDOT. The plan serves as the strategic guide for public transportation in Broward County over the next 10 years. Development of this TDP included a number of activities, including documentation and analysis of the

Investments
Maintenance of Current Service
Reliability/Capacity Adjustments
The Wave Streetcar
IT Improvements
Cypress Creek Tri-Rail Station Accessibility
Lauderhill Mall Transit Center
Miramar & Westgate Park-n-Ride Lots
Copans Road Facility Rehabilitation
B-Cycle Expansion
Bus Shelter/Stop Replacement

Broward TDP Status Quo Plan

RELIABILITY/CAPACITY ADJUSTMENTS

Source: Broward County Transit

demographic conditions in BCT's service area, an evaluation of existing transit services in Broward County, market research and extensive public involvement efforts, an analysis of immediate and longer term transit service and capital project needs, and a funding analysis and plan which initiate strategic approaches to maintaining and expanding transit services in Broward County within the next 10 years and beyond. The 2014-2023 TDP is also known as "BCT Connected" because its main theme is connectivity, including links to other modes of transportation such as bicycle and pedestrian networks.

The BCT TDP includes a "Status Quo Plan" and a "Vision Plan." The Status Quo Plan ensures the maintenance of the current system, replacement of vehicles at the end of their useful span, and the

Capital Improvements	New Enhanced Bus Routes
Downtown Intermodal Center	US 441
Third Maintenance/Operations Facility	Oakland Park Boulevard
Park-n-Ride Lots	Federal Highway (US 1)
Transit Intermodal Centers	University Drive
Bus Shelter/Bus Stop/Pedestrian Improvements	Broward Boulevard
Vehicle Purchases	Pines/Hollywood Boulevard
	Sample Road

New Service
Nob Hill Road (Fixed Route)
McNab Road (Fixed Route)
I-75 Extension (Express)
Community Bus - Improved Frequency

Broward TDP Vision Plan

Source: Broward County Transit

implementation of programmed improvements. The Status Quo improvements are shown below.

The Vision Plan is intended to enhance the BCT transit system beyond its current capabilities, level of service, and current funding levels.

The Broward MPO 2035 Long Range Transportation Plan (LRTP) is the currently adopted plan to identify transportation projects and priorities with funding that is anticipated to be available through 2035. The Plan identifies a future transit network and mobility hubs in its Cost Feasible Plan (CFP). A map of the 2035 LRTP Cost Feasible Plan (CFP) transit and mobility hub projects is included in the Appendix. The Broward MPO is currently preparing the 2040 LRTP.

SFRTA also is in the midst of planning for expanded future services. SFRTA is working with its partner agencies to create a truly regional transit system. To meet future travel demand, SFRTA is strategically planning for several needed transit projects to provide for the future regional mobility needs of South Florida's residents and visitors. These projects will allow people to rely on transit and enjoy the benefits of avoiding increasingly congested highways, while saving money on gas and automobile maintenance costs. These projects complement existing and planned transit service by SFRTA's transportation partners, and will provide the backbone of an expanded regional transportation system that may include light rail, busways, streetcars, and rapid bus transit. The current planned projects include the following.

- Regional Transit Oriented Development (TOD) Program—SFRTA has initiated an outreach program to assist local communities with maximizing their transit station areas development potential, in ways that are consistent with their community vision. TOD is typified by an urban design that

creates pedestrian friendliness by careful placement of buildings, parking areas, and roadway features. In addition, TOD is characterized by a mix of uses that ideally creates 18 hours of activity. Southeast Florida has already begun to reinvest attention and funds into downtowns and urban cores. In addition, the market acceptance of urban downtown living, the rehabilitation of older urban neighborhoods, and the growing intolerance for traffic congestion and long commutes have all had a tremendous impact.

- The Wave Streetcar in Downtown Fort Lauderdale—The Wave is an environmentally friendly streetcar system planned for downtown Fort Lauderdale. The project seeks to create a livable community by integrating land use, transportation and economic development while being environmentally sustainable. The project is funded through a variety of local, state, and federal funding sources attained by the project partners. The Wave is a 2.7 mile modern streetcar circulator system extending from the Broward General Hospital/17th Street in the south to Sistrunk Boulevard in the north. The project is currently in the 30 percent design stage. Future extensions may include the Fort Lauderdale/Hollywood International Airport and the Broward Convention Center.

- Tri-Rail Coastal Link—The planned Tri-Rail Coastal Link service on the Florida East Coast (FEC) Railroad is a strategic investment for Southeast Florida and has the ability to enhance the long-term economic competitive position of the region. The Coastal Link will provide commuter rail service on the eastern railroad linking the downtowns of Southeast Florida's communities, thereby accessing high density destinations, spurring economic redevelopment, and providing opportunities for transit-oriented development (TOD). The Coastal Link project is currently in the Project Development and Environment phase.

- Tri-Rail Service Enhancements—SFRTA is also planning for service enhancements including completing the double tracking project with bridge improvements over the Miami River, upgrades to existing infrastructure, station renovations, and safety improvements.

Tri-Rail Shuttle

Source: Kimley-Horn

Bicycle Analysis

Bicycle Facilities

Existing and proposed bicycle facilities in Broward County are illustrated within the map series contained herein. Existing bicycle facilities include on-street bike lanes, completed sections of the Broward Greenways Master Plan, and municipal greenways.

Most roadways do not have designated bicycle facilities. The result is that most bicyclists ride on the sidewalk when using major thoroughfares. Only the most experienced and confident cyclists ride in road as traffic on major thoroughfares with no designated bicycle facilities. Many bicyclists limit their in-road riding to local neighborhood streets where traffic volumes and speeds are low.

Proposed facilities include the remaining sections of the Broward Greenways Master Plan, mobility projects (bike lanes and sidewalks), and proposed bicycle projects included in the Long Range Transportation Plan (LRTP).

Existing completed sections of the Broward Greenways Master Plan include the following.

- New River Trail Greenway
- C-13 Canal Middle River Canal Greenway
- C-14 Canal Cypress Creek Greenway
- Pompano Beach Airpark Loop Trail
- Conservation Levee Trail (unpaved trail)

A detailed discussion of the Broward Greenways Plan Network was provided in the Greenways Master Plan Summary chapter of this report.

New River Trail Greenway

Source: Kimley-Horn

Municipal Greenways

Several municipalities are actively working to implement greenways projects as discussed in the Municipal Outreach and Common Policies sections of this report. Municipal greenways are found in Hollywood, Pembroke Pines, Davie, Sunrise, Plantation, Lauderhill, Lauderdale Lakes, Fort Lauderdale, Oakland Park, Margate, Tamarac, Pompano Beach, Coral Springs, Coconut Creek, and Parkland.

Municipal greenways serve an important function in the greenway network providing access to local communities. In addition, municipal greenways are intended to supplement the network of on-road bike lanes, county greenways, and regional greenways. Most municipal greenways are shared use paths that serve as bikeways as well as pedestrian facilities serving a variety of purposes including a healthy recreational opportunity, access to neighborhoods, and commuter routes.

Long Pine Greenway, City of Coconut Creek

Source: Kimley-Horn

Mobility Projects

The Broward Mobility Projects represent a major interagency partnership between FDOT, Broward MPO, Broward County, and many municipalities to implement Complete Streets elements, primarily bike lanes and sidewalks. Several of the Mobility Projects have been programmed in the Broward Transportation Improvement Program (TIP). A list of the Broward Mobility Projects are included in the Appendix.

Bicyclist in a bike lane on S.R. A1A

Source: Kimley-Horn

B-Cycle

Broward B-Cycle, Broward County's newest mode of public transportation and the first countywide bike-sharing system, is expanding and will complement Complete Streets initiatives in Broward County. A new station has been added at the southwest corner of Las Olas Boulevard and Southeast Eighth Avenue in

B-Cycle Station in Lauderdale-By-The-Sea

the City of Fort Lauderdale. Broward B-Cycle currently maintains 275 bikes available for sharing at its 27 station locations in Broward County. The stations are located in the following six cities: Fort Lauderdale, Hollywood, Pompano Beach, Dania Beach, Hallandale Beach, and Lauderdale-By-The-Sea.

Long Range Transportation Plan (LRTP) Projects

The Broward MPO 2035 Long Range Transportation Plan (LRTP) is the currently adopted plan to identify transportation projects and priorities with funding that is anticipated to be available through 2035. The Plan identifies on-street bicycle facility priorities (prioritized 1 through 10) and illustrates greenway priorities for context. A map of the 2035 LRTP Cost Feasible Plan (CFP) bicycle projects is included in the Appendix.

New River Greenway Signage includes a trail map on the sign.

Source: Kimley-Horn

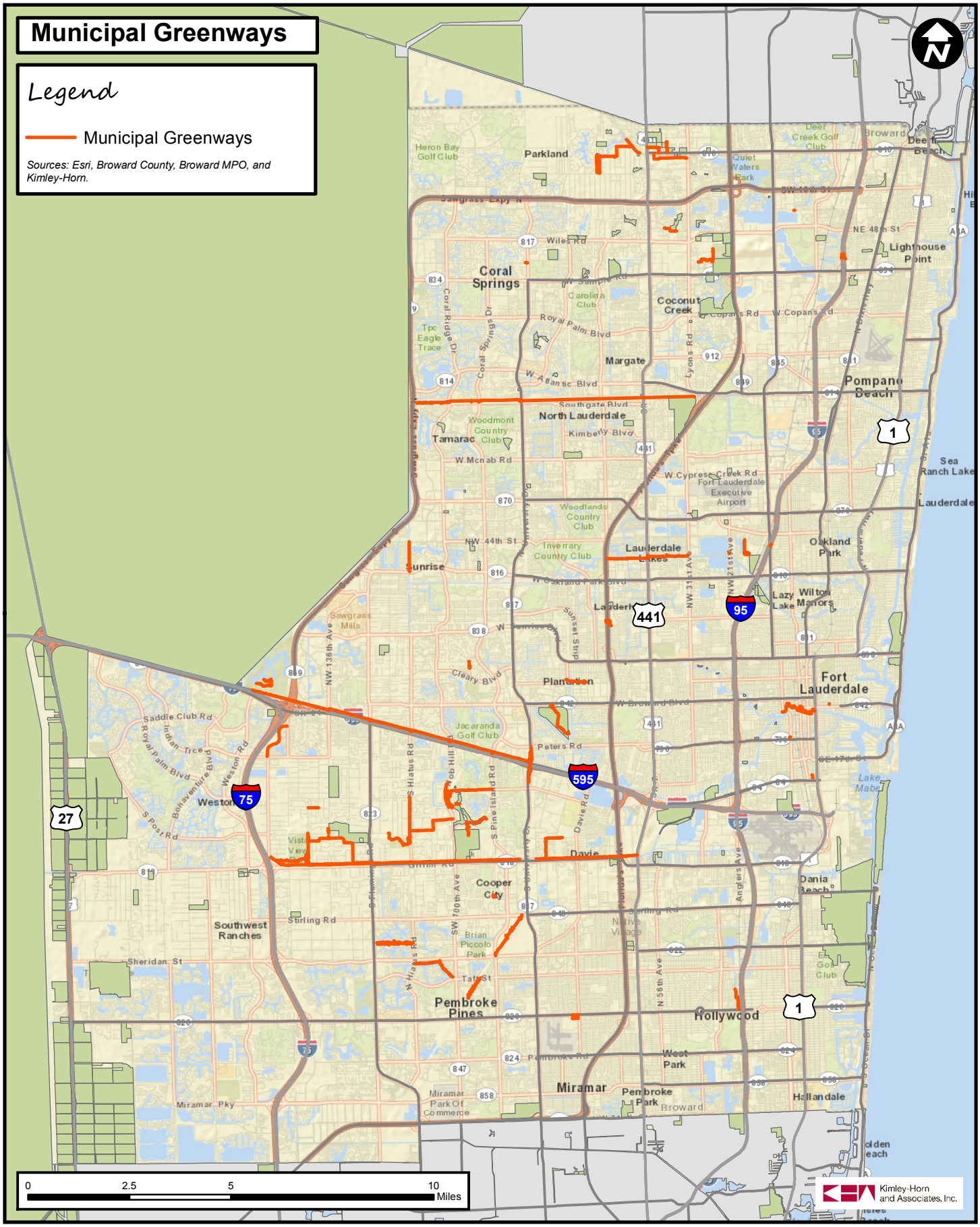
Pedestrian Analysis

Unlike bicycle facilities, there is a wide coverage of pedestrian sidewalks in Broward County on at least one side of the road on collector and arterial roadways and even some local streets, although a few key roadways still lack sidewalks. Despite this fairly extensive sidewalk network, participants in the Broward Complete Streets Initiative public engagement campaign frequently cited numerous examples of pedestrian unfriendliness in Broward County. Many stated that walking conditions are so hostile that they limit their walking activities to far fewer trips than they desire and otherwise would undertake if the community were more walkable.

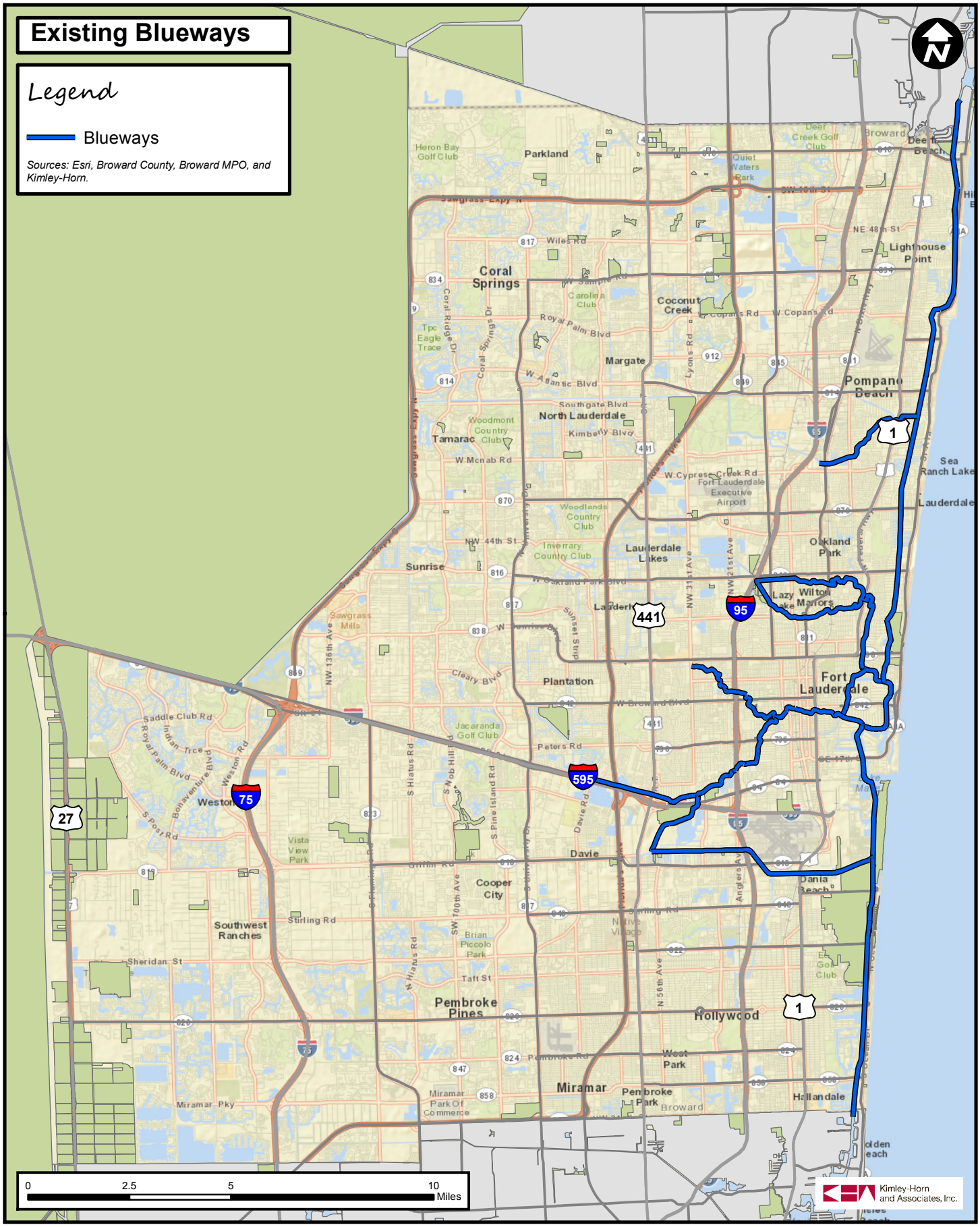
One of the primary deficiencies in the pedestrian network is the infrequency of crosswalks on major thoroughfares. This severely limits pedestrian mobility, creates safety concerns, and restricts accessibility to bus stops. In addition, high traffic volumes and speeds lower pedestrian level of service and these roadways and make them unpleasant experiences to walk.

Making connections between the existing pedestrian network and greenways, train stations, bus transfer facilities, and other multimodal facilities is a necessary first step. Redesigning streets and roads for pedestrian viability is a larger problem that still needs to be addressed. A map of the 2035 LRTP Cost Feasible Plan (CFP) pedestrian projects is included in the Appendix.

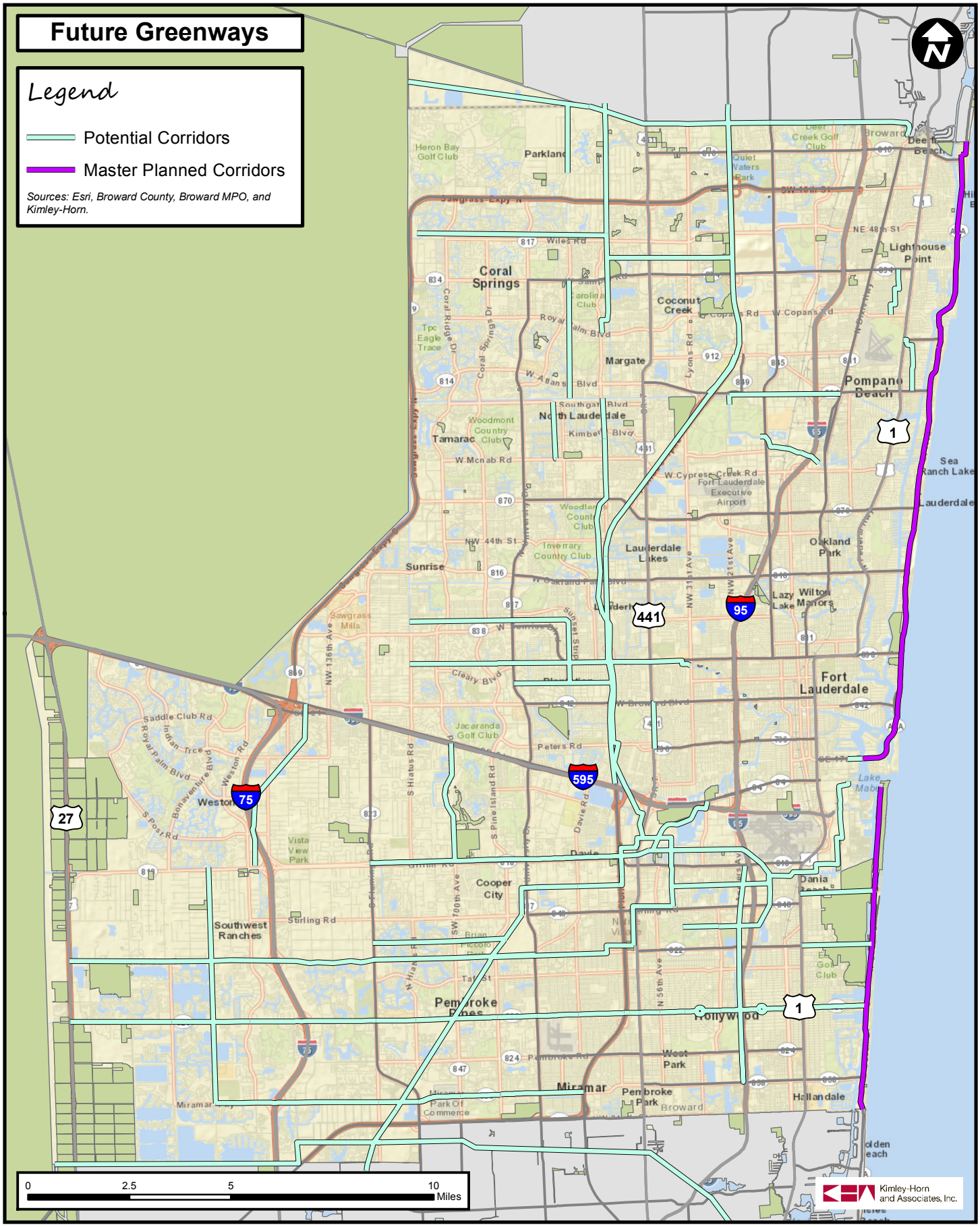
Broward County Complete Streets Greenways Integration Study



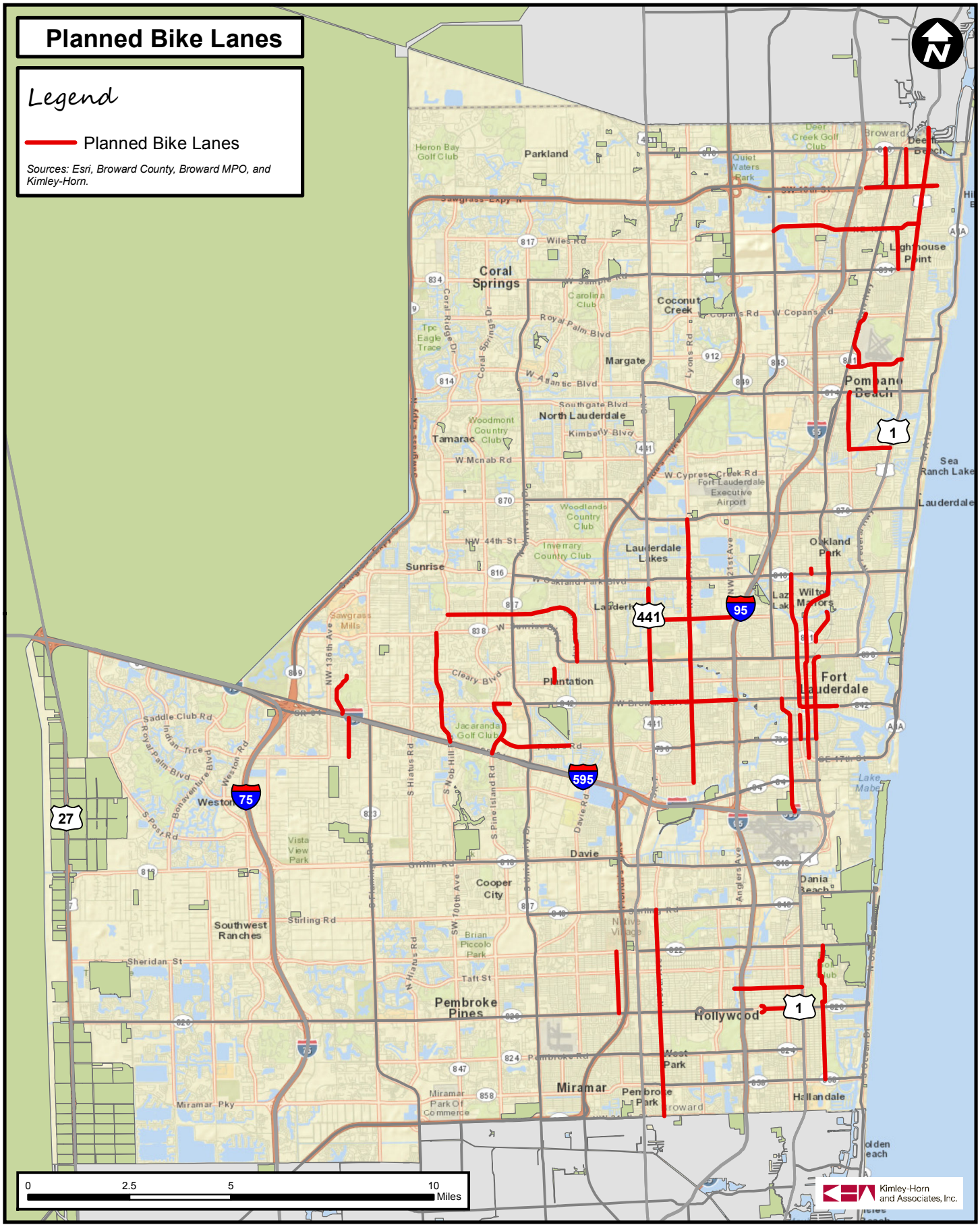
Broward County Complete Streets Greenways Integration Study



Broward County Complete Streets Greenways Integration Study



Broward County Complete Streets Greenways Integration Study



Identification of Deficiencies

Identify deficiencies based on performance measures and standards.

The study team analyzed the current and future greenways and Complete Streets integration needs and identified network deficiencies as well as deficiencies based on the standards identified in the Connectivity and Accessibility section of this report.

Map

The map on the following page presents the existing and proposed greenways, blueways, and municipal greenways.

As described in the map legend, the dark green line represents existing and constructed greenways. Some of the existing and constructed greenways include hard surface shared use paths, such as the New River Trail Greenway. Others include natural surface trails such as the Everglades Levee Conservation Trail.

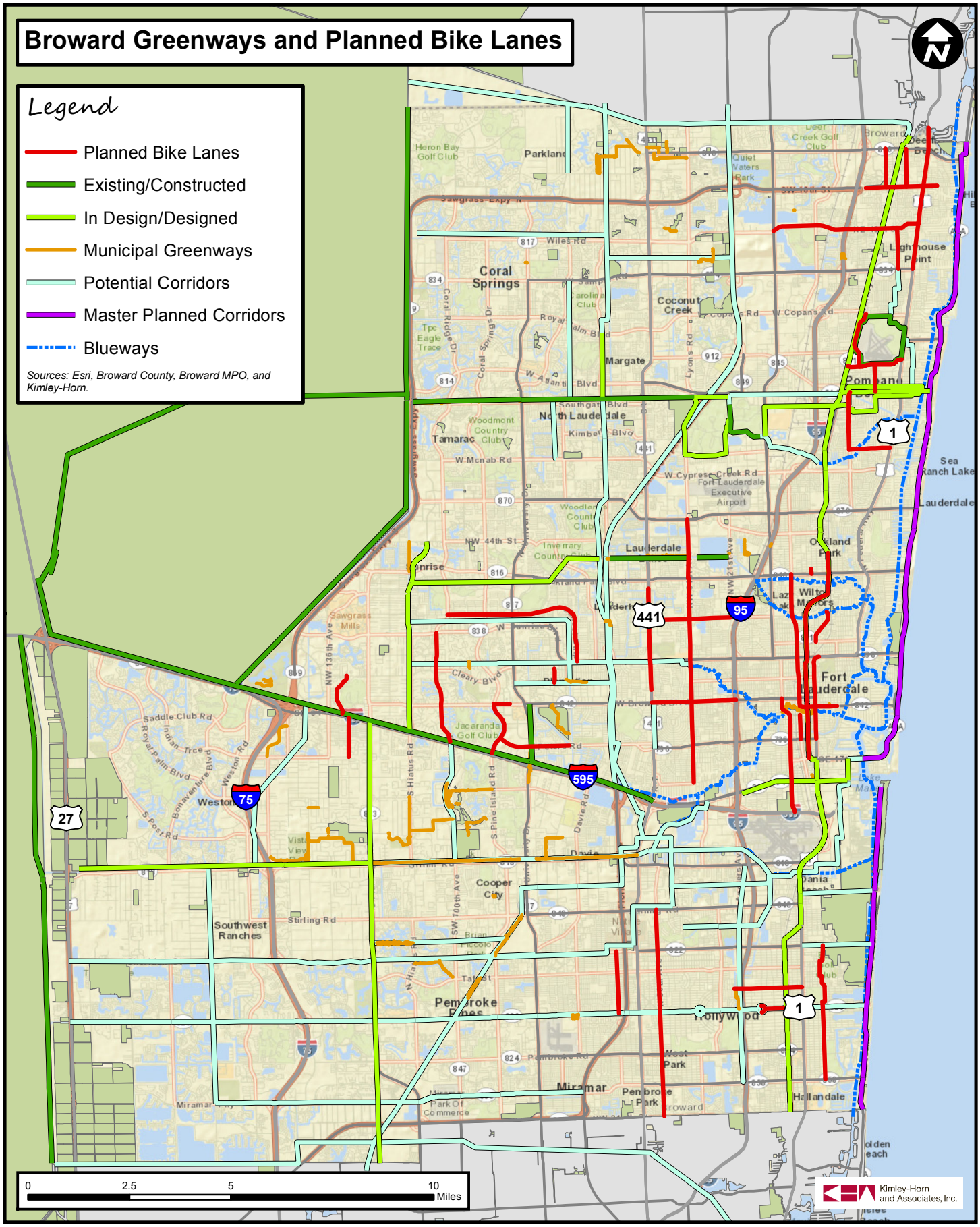
The light green line type on the map represents greenways currently in the design phase according to information received from the County or municipal governments for that project.

The orange line type on the map represents municipal greenways. Although these greenways tend to be shorter than the county and regional greenways, they serve an important local connectivity function to bring the greenway network even closer to residents in their neighborhoods.

The blue dashed line type on the map represents blueways, which are shown here for illustrative purposes. Connectivity to the blueway network can be accomplished through providing kayak/canoe launch areas.

The purple line type on the map represents the gaps in the network—those facilities that have been identified through master planning efforts as potential greenways. These facilities need to be further developed through concept development studies or in some cases design phase and permitting activities.

Broward County Complete Streets Greenways Integration Study



Deficiencies by Performance Standard

The standards developed in the Connectivity and Accessibility section of this report are presented below along with a list of deficiencies determined from the analysis of existing conditions conducted for this Study.

- The integrated network will primarily serve as sustainable transportation infrastructure (walking, bicycling, and public transportation).
- Connections will be high quality between the greenway network and the transit network through Complete Street strategies.
    - Deficiency: There is a lack of connectivity to park-and-ride lots from the greenway and complete street network. Greenways and Complete Streets are often implemented as projects of opportunity based on the geometric characteristics of a corridor rather than based on identifying a needed project based on connecting to a transit facility.
    - Deficiency: There is a lack of connectivity to transfer terminals from the greenway and complete street network. Greenways and Complete Streets are often implemented as projects of opportunity based on the geometric characteristics of a corridor rather than based on identifying a needed project based on connecting to a transit facility.
- Connectivity strategies will take advantage of recent engineering techniques and innovative ideas for improving connectivity and safety.
    - Deficiency: Innovative treatments that have been proven effective in other metropolitan areas through before-and-after studies have not gained widespread use in the Broward network.
- Street users must be able to access the greenway system from cross-streets.
    - Deficiency: Although sidewalks often connect to greenways, there is a lack of ramps from adjoining bike lanes to access greenways at locations where they cross the street network.
    - Deficiency: There is a general lack of pedestrian connectivity between nearby streets and greenway trails, especially in canal rights-of-way. This limits accessibility to the trails and often causes informal access points to develop.
- Greenway trail users should be able to cross major thoroughfares safely and efficiently without significant deviation from the path.
    - Deficiency: At locations where greenway trails cross major roadways, direct crossings of major roadways are often not provided.
- Intersections between greenway trails and cross-streets should be treated as public street right-of-way intersections.
    - Deficiency: According to Florida Statutes, the intersection of two public streets is a legal pedestrian crossing. However, many locations where greenway trail facilities intersect cross-streets are not recognized as transportation intersections, which impacts decisions made regarding connectivity.

- Connections will support the physical health and well-being of residents.
    - Deficiency: Public health impact assessments are rarely performed in the transportation facility project development process.
- Connections will promote social inclusion and sociability.
    - Deficiency: Senior citizens are often geographically limited because they cannot cross streets, which limits age-in-place opportunities and curbs social interaction that would enhance mental health.
- Car-free living will be supported by improving connections to Countywide destinations by sustainable transportation modes.
    - Deficiency: Most of Broward County is still primarily a car-oriented community.
- Street trees and landscaping will be integrated to enhance shade and improve the aesthetic quality.
    - Deficiency: Landscaping is not always included in Complete Streets and greenway projects.

Identification of Strategies and Recommendations

Select strategies that address the deficiencies identified in the previous analysis. Identify policies and techniques that will assist addressing safety concerns.

At-Grade Trail Crossings

The at-grade intersections of greenway trails with roadways are of critical importance to the overall environment and safety experienced by users. Intersections should be designed with crossing safety treatments that assist path users to cross the road. Consistent with FDOT Plans Preparation Manual (PPM) Chapter 8.3.2, curb ramps on shared-use paths should be the same width as the path itself to minimize conflicts between bicyclists and pedestrians. In addition, the following Complete Streets-Greenways integration recommendation would improve greenway trail crossings utilizing the strategies listed below.

Recommendation:

Improve **greenway trail crossings** through Complete Street strategies by making it safer for trail users to cross the street.

Strategies:

- For low-volume unsignalized intersections (approximately < 10,000 AADT), install mid-block crossings with median pedestrian refuges. Utilize the following features.
    - ⇒ Special emphasis crosswalk markings
    - ⇒ Trail crossing warning sign (MUTCD W11-15 sign)
    - ⇒ In-street pedestrian crossing warning sign (MUTCD R1-6a sign)
- For medium-volume unsignalized intersections (approximately 10,000 - 25,000 AADT), install Rectangular Rapid Flashing Beacon (RRFB) solar-powered safety devices at greenway trail crossings. Consider staggered median crossings if space allows.
- For high-volume unsignalized intersections (approximately > 25,000 AADT), install pedestrian hybrid beacon, a.k.a. High-Intensity Activated Crosswalk (HAWK) beacon devices.

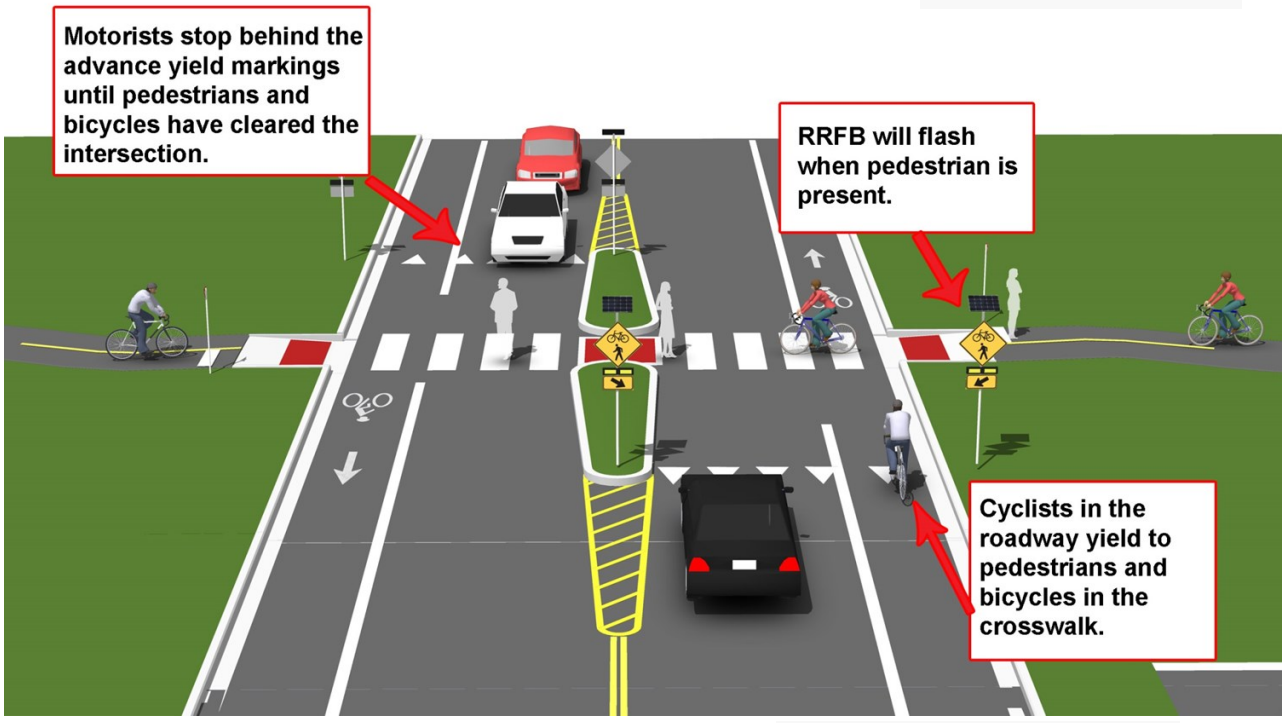
Shared Use Path with direct roadway crossing

Trail Crossing Warning Sign (W11-15)

Mid-Block Crossing with Pedestrian Refuge and RRFB safety device

At-Grade Trail Crossings (continued)

Shared Use Path with direct roadway crossing and median refuge Source: Kimley-Horn



Shared Use Path Crossing Schematic Source: pedbikesafe.org

Shared Use Path with direct roadway crossing and RRFB safety device

Pedestrian Hybrid Beacon (HAWK) Crosswalk

Source: pedbikesafe.org

In-Street Pedestrian Warning Signs can be used in Mid-Block Crossings

Mid-Block Crossing with Staggered Median Crossing on 6-Lane Roadway

Tunnel Trail Crossings

Physical barriers such as major roadway corridors present challenges to the continuity of bicycle and pedestrian trips. In some cases, a grade separated crossing may be feasible to facilitate bicycle and pedestrian safety and mobility in lieu of an at-grade crossing. In particular, several potential trail crossings in Broward County may present opportunities for tunnel trail crossings. Advantages include providing trail continuity without roadway conflict points. Disadvantages include cost, engineering challenges, and potential lost connectivity to the street. One advantage of tunnels instead of bridges is associated with the physics of bicycling—bicyclists can accelerate downgrade entering the tunnel and utilize momentum to help negotiate the upgrade on the far side of the tunnel.

Recommendation:

For greenway trails with an elevation difference between the trail and the street, consider creating an underpass for the trail to safely cross major roadways.

Strategies:

- Provide trail continuity with underpasses along canal corridors under major roadways and railroads.
- Provide a connector path to the cross-street roadway.

Shared Use Path Underpass Source: Kimley-Horn

Bicyclists prefer underpasses if they are well-designed

Shared Use Path Underpass

Neighborhood Greenways

Neighborhood greenways combine elements of off-street paths and traffic calming on local and collector streets to create a bike route that is an “arterial for bicyclists.” Neighborhood greenways are sometimes called “bicycle boulevards.” Neighborhood greenways take the shared roadway bike facility to a new level, creating an attractive, convenient, and comfortable bicycling environment that is welcoming to bicyclists of all ages and skill levels. In essence, neighborhood greenways are low-volume, low-speed streets that have been optimized for bicycle travel. Providing a network of neighborhood greenways is anideal way of integrating the greenway concept onto the street network consistent with the Complete Streets movement.

Recommendation:

Integrate Complete Street elements and streetscaping to create neighborhood greenways on local and collector streets that prioritize bicycle travel.

Strategies:

- Provide bicycle shared lane markings (sharrows).
- Install Bikes May Use Full Lane (R4-11) signs.
- Implement appropriate traffic calming techniques including speed cushions, traffic circles, etc.
- Install bicycle route and wayfinding signage.
- Orient stop control so bicyclists don’t have to stop, which prioritizes bicycling and conserves energy.

Source: huffingtonpost.com

Neighborhood Greenway Elements

R4-11

Source: MUTCD

D1-2c

Source: streetsblog.org

Source: wikipedia

Source: streetsblog.org

Neighborhood Greenway Elements

Source: streetsblog.org

Source: ladotbike.gov

Green Streets

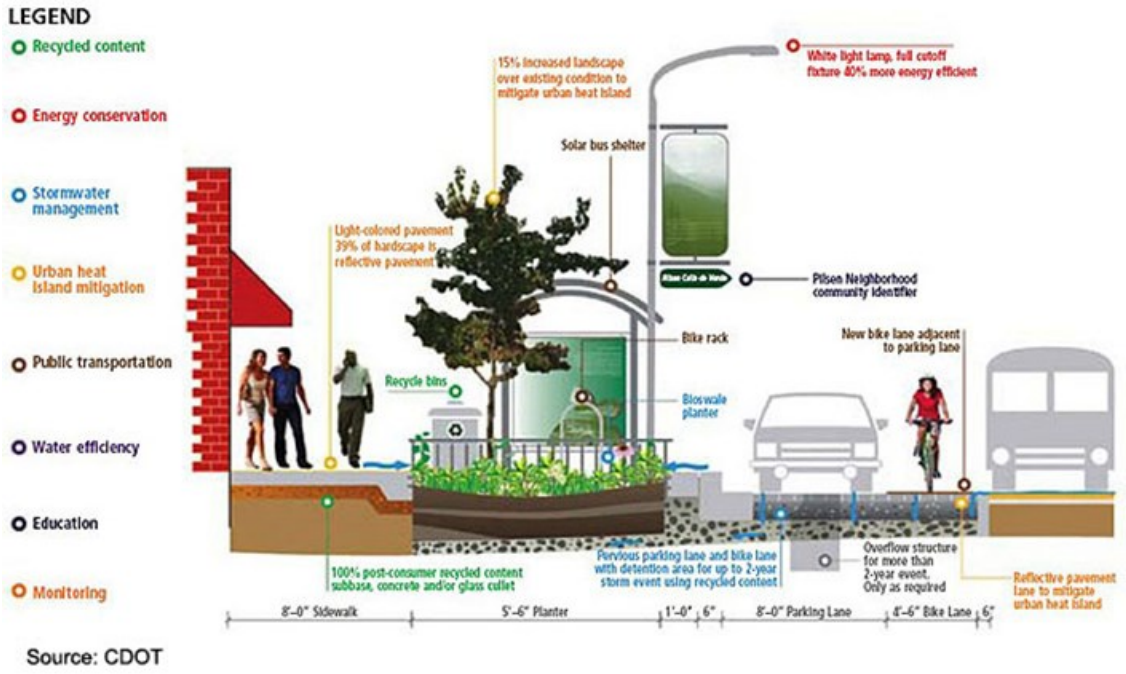
Green streets incorporate sustainability measures that reduce carbon emissions, utilize stormwater, provide healthy recreation opportunities, and benefit the overall ecosystem. The philosophy of a streetscape ecosystem is to mimic nature, building reciprocal relationships within an interconnected system to sustainably enhance the local environment. Traditional roadway design has focused on speedy removal of water from the street and disposal of the water as waste in storm drains. Green streets reclaim streetwater as a resource and allow it to nourish trees and soils on its path to ground or surface waters.

Recommendation:

Incorporate sustainable design principles into roadway design to create “green streets”.

Strategies:

- Install linear, vegetated bioswales that capture rainfall and runoff from adjacent surfaces.
- Install rain gardens, which are shallow, vegetated depressions in the landscape that are planted with deep-rooted plants and grasses.
- Utilize permeable pavement in parking lanes and other low-traffic areas.
- Utilize curb extensions for pedestrian safety and as landscaping opportunities.
- Integrate stormwater use and reuse principles into the myriad of street design elements.

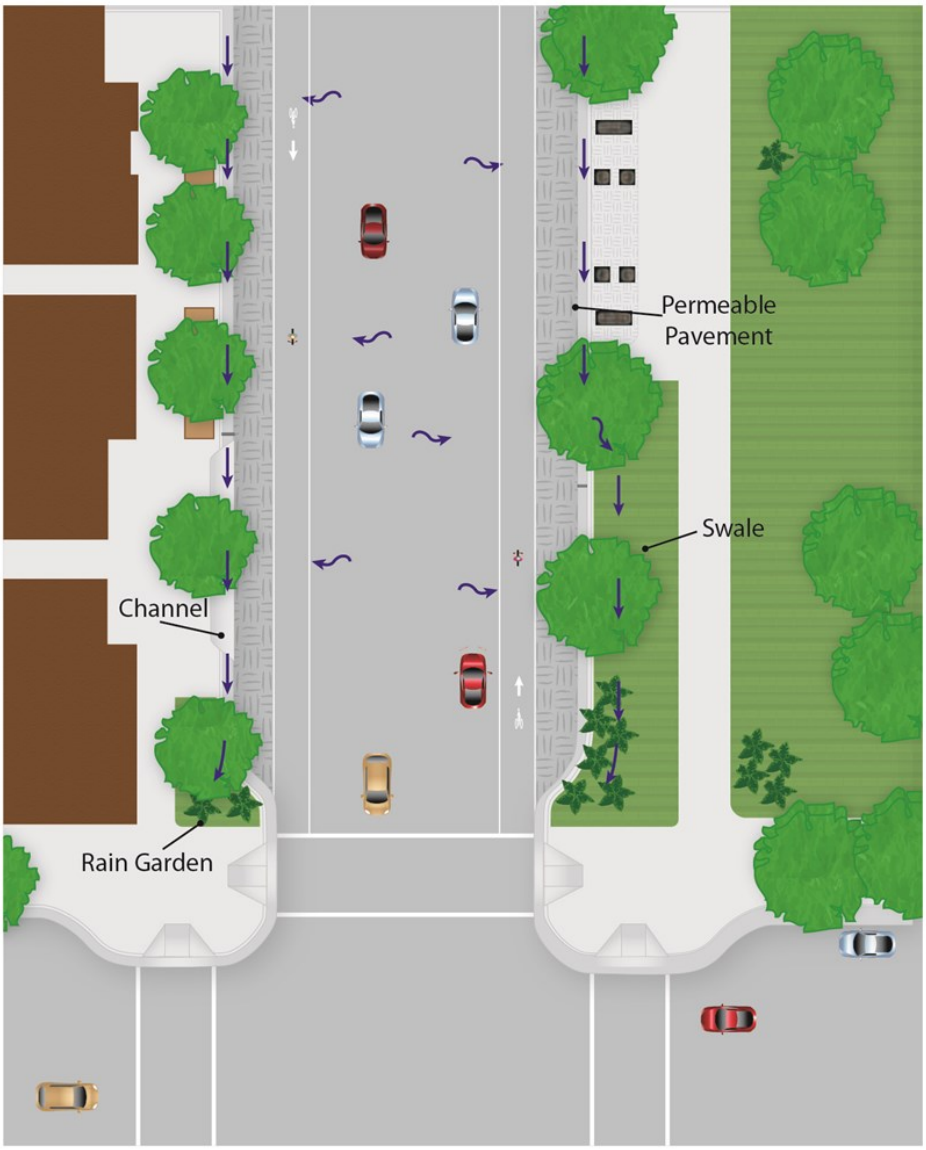


Green Street Elements

Source: Federal Highway Administration

Source: Kimley-Horn

Source: Kevin Robert Perry



Source: Michele Weisbart

Green Street Elements

Bike Ramps

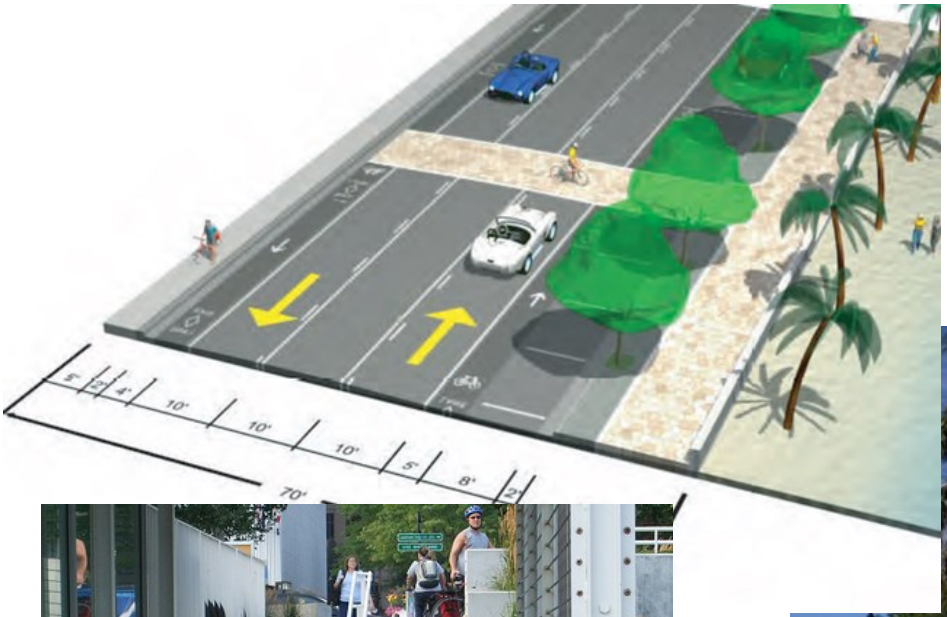
Bike ramps provide channels within the built environment for bicycle mobility. Bike ramps can take the form of wide curb ramps, wheel gutters on stair cases, and connections between sidewalks and bike lanes at roundabouts and other traffic control devices.

Recommendation:

Create connections between on-street bike facilities and greenway trails.

Strategies:

- Utilize ramps to connect on-road bike lanes to adjacent greenway trails.
- Install wheel gutters on staircases to improve bicycle mobility and access.



Source: Broward County Greenways Master Plan

Source: Steven Vance

Source: Kimley-Horn

Examples of Bike Ramps

Low Speed Design Principles

Low speed design principles utilize engineering strategies to encourage motorists to drive at a slower target speed.

Recommendation:

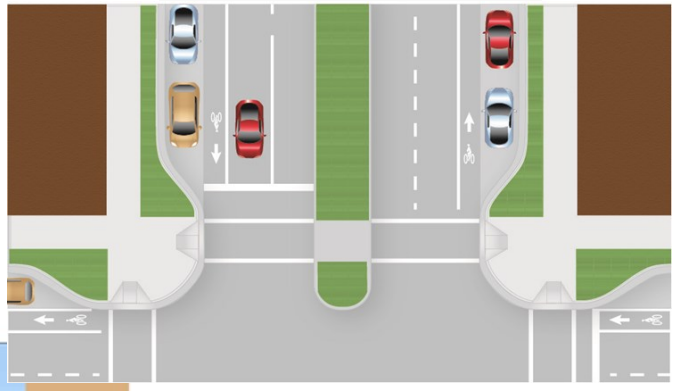
As streets are redesigned or resurfaced, incorporate low-speed design principles to help create safe streets for all users.

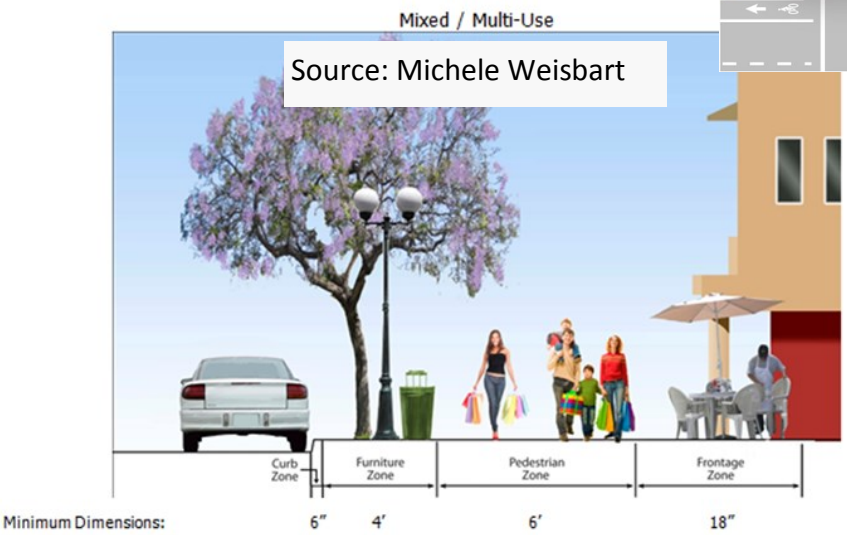
Strategies:

- Narrow travel lanes from 12’ to 10’ or 11’.
- Install curb extensions.
- Follow sidewalk zone design principles including frontage zone, pedestrian zone, furniture zone, and curb zone.
- Install median refuges.

Source: Dan Burden

Source: Michele Weisbart





Source: Michele Weisbart

Source: Kimley-Horn

Low Speed Design Principles

Integrated Countywide Bicycle Route Numbering System

A integrated countywide bicycle route numbering system utilizes signs and maps to promote the sense that each bicycle route is part of a larger system. Greenway trails and bike lanes can be part of the integrated countywide system. Maps can be printed on signs and placed around the system at various locations and can also be produced on community bike maps that are provided to interested parties to promote bicycling in the area. Typically routes are numbered in a logical order, such as odd numbers for north-south routes and even numbers for east-west routes.

Recommendation:

Create an integrated countywide bicycle route numbering system using standard MUTCD signs to help give people the sense that each bicycle route is part of a larger system.

Source: Kimley-Horn

Strategies:

- Develop a consistent numbering system that integrates greenway trails and on-road bike lanes that are part of Complete Streets.
- Install M-series and D-series signs from the MUTCD.
- Develop trail map signs to supplement the sign strategy.

Source: Kimley-Horn

Bicycle Route Numbering System

Source: MUTCD

M1-8

Source: Kimley-Horn

Priority Missing Gaps

The study team identified priority missing gaps in the greenways network that could be implemented through integrating greenways and Complete Streets strategies.

Recommendation:

Build priority missing gaps in the greenway network.

Strategies:

- Implement the missing section of the New River Trail between University Drive and Sewell Lock (west of Davie Road)
- Connect New River Canal Road to the New River Trail.
- Implement a pilot project crossing for the New River Trail crossing mid-block at one of the major cross-streets.
- Explore Options for Mid-Block Trail Crossing across U.S. 441 for C-13 Greenway.
- Connect Parkland and Coconut Creek Greenway Systems via Hillsboro Boulevard and U.S. 441.

Source: Kimley-Horn

The eastern section of the New River Trail Greenway terminates at Sewell Lock

Policy Recommendations and Next Steps

1. Update Broward Greenways Master Plan

The Broward Greenways Master Plan was developed in 2002, therefore its maps and recommendations need to be revised to indicate which of the 370 miles of proposed corridors have been completed to date. These revisions should also include which of the specific Barrier Islands Greenway/SR A1A Trail recommendations have been completed or are being planned for future development. In addition, updates to the Greenways Master Plan should include a revised map of priority corridors.

Next Steps:

A.) Identify progress made from 2002-2013 on the proposed corridors depicted in the Greenways Master Plan.

I. The Greenways Master Plan Countywide corridor map should be presented to the Broward Complete Streets Team Technical Advisory Committee (TAC), Complete Streets Task Team, as well as the MPO and Broward County Planning and Redevelopment Agencies to receive input on the development progress of the corridors depicted on the 2002 map.

II. The Greenways Master Plan individual community concept maps should be presented to each of the 19 municipal planning departments to identify what proposed corridor recommendations within these communities have been completed to date. This could be accomplished through a public engagement session where planning officials from each of these municipalities are asked to attend and provide feedback on the Greenways Master Plan proposed 2002 corridor map.

III. Furthermore, individual meetings or a subgroup at the public engagement session should be held with planning officials from the municipalities located along the Barrier Islands Greenway/SR A1A corridor to identify which of the greenway plan's specific recommendations listed for this corridor have been completed or are planned for future development. In addition, these communities should verify which recommendations are still valid and prioritize as well as create action items and timelines for those improvements that are yet to be made. The specific recommendations for improvements along the Barrier Islands Greenway/SR A1A corridor are presented in this report, which lists them by community within the corridor (Deerfield Beach, Hillsboro Beach, Lighthouse Point, Pompano Beach, Sea Ranch Lakes, Lauderdale-by-the-Sea, Fort Lauderdale, Dania Beach, Hollywood and Hallandale Beach).

IV. An updated map of the Greenways Master Plan proposed corridors showing progress made on corridor development from 2002-2013 and illustrating gaps should be created and uploaded to the Broward Greenways Master Plan website (https://www.broward.org/Greenways/Pages/masterplan.aspx).

B.) Revise Broward Greenways Master Plan Priority Corridors

Once the development progress of the Greenways Master Plan proposed corridors has been updated, it will be necessary to update the list of priority corridors.

I. It is recommended that the Complete Streets Team TAC assist in identifying priority corridors for the updated Greenways Master Plan. During the process of identifying priority corridors, the following should be referenced:

   a. MPO Long Range Transportation Plan proposed greenway corridors, bikeways, and pedestrian facilities.

   b. Complete Streets Team TAC identified a preferred list of Complete Streets pilot projects.

   c. Complete Streets Team TAC list of “recent and funded" Complete Streets projects.

II. At least one public engagement session should be held with community stakeholders to receive input for revising and updating the Greenways Master Plan priority corridors.

III. An updated map of the Greenways Master Plan proposed priority corridors should be created and presented to the Broward County Board of Commissioners for approval.

2. Promote Municipality Awareness and Integration of the Greenways Master Plan Recommendations in Future Complete Streets Projects

The Broward Complete Streets Team TAC as well as individual municipalities should refer to the Broward Greenways Master Plan proposed framework of corridors when considering locations for Complete Streets projects and/or development in general. The County should encourage municipalities to incorporate the Greenways Master Plan recommendations and priority corridors once they have been updated in order to help achieve the Broward Greenways Master Plan vision. In this fashion, the County and its municipalities can work collectively toward a countywide network of interconnected trails and greenways, which provide safe alternative modes of transportation for everyone and raise the quality of life of Broward County residents. Communities that are currently working on identifying Complete Streets and or greenway Projects, such as Deerfield Beach, Tamarac, Hollywood, Fort Lauderdale, Cooper City, Coconut Creek, Davie and North Lauderdale, should be contacted as soon as possible to ensure that the Greenways Master Plan recommendations are integrated into their upcoming plans. In addition, elevating awareness of the importance for municipalities to connect to the greenway network can weigh in on the MPO Board annual revision and vote for priority rankings within the unfunded multi-modal surface transportation project list.

3. Establish Performance Measures to Advance the Greenways Master Plan Vision through Complete Streets Projects

The Broward Complete Streets Team TAC should work with the County on defining performance measures for accomplishing completion of the updated Greenways Master Plan priority corridors and recommendations. In order to accomplish the vision of the Greenways Master Plan, goals, action items, as well as a timeline should be established for the County as well as the various municipalities and agencies working towards Complete Streets.

4. Promote and Facilitate Communication between Municipalities and the County Regarding Complete Streets Guidelines

The County should continue to promote Complete Streets guidelines to its municipalities. In addition, methods and criteria which municipalities can use for guidance when seeking to implement a Complete Streets project should be developed and clearly communicated to all municipalities. Regular communication between municipalities and the County should be encouraged in order to provide assistance and facilitate the implementation of Complete Streets throughout the county.

The Broward Complete Streets Guidelines contain recommendations for a policy framework that help cultivate an understanding and expedite the adoption of Complete Streets practices. A successful policy framework will help local jurisdictions achieve Complete Streets infrastructure improvements. Recently, the Broward Complete Streets Team TAC created a "Model Policy Taskforce" and "Model Plan Taskforce" to develop a Complete Streets model policy and a model plan. The model Policy and model Plan will guide local governments in revising internal policies and regulations to help implement Complete Streets. They will also help identify and prioritize Complete Streets corridors, leading to the funding and construction of projects.

References

Broward County Greenways Master Plan. 2003. Accessed December 6, 2013: http://www.broward.org/Greenways/Pages/Default.aspx

Broward Metropolitan Planning Organization Technical Coordinating Committee Meeting Minutes. January 23, 2013. http://www.browardmpo.org/about-us/agendas-minutes

Broward Metropolitan Planning Organization Technical Coordinating Committee Meeting Minutes. August, 28, 2013. http://www.browardmpo.org/about-us/agendas-minutes

Broward Metropolitan Planning Organization Technical Coordinating Committee Meeting Minutes. September 25, 2013. http://www.browardmpo.org/about-us/agendas-minutes

Broward County. 2013. Broward Commission Meeting Minutes from September 24, 2013 retrieved from Municode on December 6, 2013: http://library1.municode.com/713/home.htm?infobase=30036&doc_action=whatsnew

Broward County. 2013. Broward County Moves Forward With Complete Streets Program. Publish September 27, 2013 by Kimberly Maroe. Retrieved December 7, 2013: http://webapps.broward.org/newsrelease/AdminDisplayMessages.aspx?intMessageId=4787

Broward County. 2013. The Broward County 2014-2023 Transit Development Plan. Accessed on December 7, 2013 at: http://www.broward.org/BCT/Pages/TransitDevelopmentPlan.aspx

Broward County. Broward Greenways Master Plan. 2003. Retrieved December 6, 2013 at: http://www.broward.org/Greenways/Pages/masterplan.aspx

Broward MPO. 2009. *2035 Broward Long Range Transportation Plan*. Chapter 5 Strategy Page 56. December 2009. Amended April 18, 2012. Accessed on December 7, 2013 at: http://www.browardmpo.org/mpo/2035lrtp/projectdocuments.html

Broward MPO. 2013 Technical Coordinating Committee Meeting Minutes. January 23, 2013.

Broward MPO. 2013. Community Involvement Roundtable. November 20, 2013. Accessed on December 7, 2013 at: http://www.browardmpo.org/system/agenda/CIR_Agenda_-_November_20,_2013.pdf

City of Deerfield Beach. 2013. Deerfield Beach Complete Streets: Safe Streets, Healthy Community. Accessed on December 8, 2013: http://www.deerfield-beach.com/index.aspx?nid=1079

COMMITMENT 2040 – 2040 Long Range Transportation Plan. http://www.browardmpo.org/commitment-2040

Cooper City. 2007. Comprehensive Plan: Chapter 2 Transportation Element. Adopted by the City Commission of Cooper City on May 28, 2002. Updated December 11, 2007. Accessed on December 6, 2013: http://www.coopercityfl.org

Meeting on December 5, 2013 with Eric Swanson Regional Planner/Policy Analyst, South Florida Regional Planning Council.

Sun Sentinel. 2013. *Hollywood seeks input on improving Hollywood Boulevard.* Published November 3, 2013 by Susannah Bryan. Accessed December 6, 2013: http://articles.sun-sentinel.com/2013-11-03/news/fl-hollywood-streets-meeting-brf-20131103_1_hollywood-boulevard-input-buffered-bike-lanes

Sun Sentinel. 2013. *South Florida Roads May Get More Room for Cyclists*. Published September 2, 2013 By Angel Streeter. Accessed December 6, 2013: http://articles.sun-sentinel.com/2013-09-02/news/fl-protected-bike-lanes-20130831_1_bike-lanes-bret-baronak-oakland-park-boulevard

Transforming our Community's Health (TOUCH). 2013. *Broward Complete Streets Guidelines Pave Way for Safer, Healthier Streets*. Published by Teina Phillips and Christopher Ryan. July 12, 2012. Accessed December 7, 2013: http://www.browardmpo.org/userfiles/files/CompleteStreetsguidelinesrelease_final.pdf

Urban Health Solutions. 2013. Broward Complete Streets. Accessed on December 7, 2013: http://urbanhs.com/initiatives/completestreets/

Urban Health Solutions. 2013. Broward Complete Streets Updates. Accessed on December 7, 2013: http://urbanhs.com/initiatives/completestreets/updates/

Urban Health Solutions. 2013. Complete Streets TAC Members. Accessed on December 7, 2013: http://urbanhs.com/initiatives/completestreets/tacmembers/

Appendix A—Agency/Municipality Contact List

Broward County
Last contacted 12/6/2013 via Phone Call/Email

Mark Horowitz, Broward County Highway Construction and Engineering Division
954-577-4618 | mhorowitz@broward.org

Henry Sniezek, Director Broward County Planning and Environmental Regulation Division
954-357-6670 | hsniezek@broward.org

Scott Brunner, TCC/Broward County Traffic Engineering
954-847-2611 | brunner@broward.org

Broward County Metropolitan Planning Organization
Last contacted 12/6/2013 via Email

Ricardo S. Gutierrez, Broward MPO Transportation Planner/Interim Bicycle and Pedestrian Coordinator
954-876-0044 | gutierrezr@browardmpo.org

South Florida Regional Transportation Authority
Last contacted 12/6/2013 via Email

Joseph Quinty, Planning and Capital Development
954-942-7245 | quintyj@sfrta.fl.gov

South Florida Regional Planning Council
Last contacted 12/5/2013 via Meeting

Eric Swanson, Regional Planner/Policy Analyst
954 985-4416 | eswanson@sfrpc.com

Dr. Kim Delany
772-221-4060 | Kdelaney@tcrpc.org

Coconut Creek
Last contacted 11/20/2013 via Phone Call/Email

Jim Hetzel, Senior Planner, Sustainable City Coordinator
954- 973-6756 | jhetzel@coconutcreek.net

Sheila Rose, Director of Deparment of Sustainable Development
954-973-6756 | srose@coconutcreek.net

Cooper City
Last contacted 11/15/2013 via Phone Call

Matthew Wood, Growth Management Director
954-434-4300, ext. 251 | MWood@coopercityfl.org

Coral Springs
Last contacted 11/20/2013 via Phone Call/Email

Paul Carpenter, TCC/City of Coral Springs
954- 344-1159 | pcarpenter@coralsprings.org

Dania Beach
Last contacted 12/6/2013 via Email

Corinne Lajoie, Dania Beach Principal City Planner
954-924-6800 x3704 | cchurch@ci.dania-beach.fl.us

Davie
Last contacted 11/26/2013 via Phone Call/Email

David Quigley, Planning and Zoning Manager
954-797-1075 | david_quigley@davie-fl.gov

Deerfield Beach
Last contacted 11/15/2013 via Phone Call

Amanda Martinez
954-480-4208 | amartinez@deerfield-beach.com
Jerry Ferguson, TCC/City of Deerfield Beach

Fort Lauderdale
Last contacted 11/20/2013 via Phone Call/Email

Karen Mendrala, Livability Planner
954-828-3798 | KMendrala@fortlauderdale.gov

Heslop Daley, City of Fort Lauderdale

Hallandale Beach
Last contacted 11/14/2013 via Phone Call

Charles Wu, Director of Development Services
954- 457-1375

Beatriz Alvarez, E.I., LEED AP

Hillsboro Beach
Last contacted 11/14/2013 via Phone Call

City's Phone Operator
954-427-4011

Hollywood
Last contacted 11/20/2013 via Phone Call

Leslie Delmonte, City of Hollywood
954-921-3900 | ldelmonte@hollywoodfl.org

Lauderdale-by-the-Sea
Last contacted 11/15/2013 via Phone Call/Email

Linda Conners, Town Planner, Lauderdale by the Sea Development Services Information
954-640-4213 | lindac@lbts-fl.gov

Lauderhill
Last contacted 11/14/2013 via Phone Call

Misty from Department of Environmental and Engineering Services
954-730-2960

Lighthouse Point
Last contacted 11/14/2013 via Phone Call

Mr. Robert Collins, Planning and Zoning Official
954-943-6509

Margate
Last contacted 11/15/2013 via Phone Call

Nick Cucunato, Roads and Building Foreman Public works Department
954-972-8126

Miramar
Last contacted 12/6/2013 via Email

Lori Hall, TCC/City of Miramar
954-602-3245 | llhall@ci.miramar.fl.us

North Lauderdale
Last contacted 11/14/2013 via Phone Call

Andrew Dinsbury, North Lauderdale
954-724-7069 Ext. 443 | adisbury@nlauderdale.org

Oakland Park
Last contacted 11/20/2013 via Phone Call

Ms. Sinclair, Planning and Zoning department
954-630-4333

Pompano Beach
Last contacted 11/20/2013 via Phone Call

Kevin Gurley, City of Pompano Beach

Amanda Baisley-Parkter, City of Pompano Beach
954-786-4667

Chris Clemmons, City of Pompano Beach
954-786-4048 N/A

Parkland
Last contacted 11/20/2013 Phone Call

Sowande Johnson, City Engineer
954-757-4144

Pembroke Park
Last contacted 11/26/2013 via Phone Call

Jeanne Peterson, Pembroke Park
954-966-4600 | jeannep@townofpembrokepark.com

Tom Wilde, Pembroke Park

Pembroke Pines
Last contacted 11/18/2013 via Email

Mike Stamm; Economic Development Director
Sharon Williams, Comprehensive Planner
954-435-6500 | swilliams@ppines.com

Plantation
Last contacted 11/20/2013 via Phone Call

Lisa Bernstein, Engineering department
954-797-2636

Sea Ranch Lakes
Last contacted 11/20/2013 via Phone Call

Vicky Stockamore, Realtor of Sea Ranch Lakes newsletter
877- 668-7089

Southwest Ranches
Last contacted 11/15/2013 via Phone Call

Emily McCord, Southwest Ranches
954-343-7453 | emccord@swranches.org

City of Sunrise
Last contacted 11/14/2013 via Phone Call

Alan Cohen, City of Sunrise
Jo Sesodia, City of Sunrise
Brad Sling, City of Sunrise
954-746-3238 | bswing@sunrisefl.gov

City of Tamarac
Last contacted 11/14/2013 Phone Call

Ann Johnson, City of Tamarac
954- 597-3500

City of Weston
Last contacted 11/26/2013 via Phone Call

Jeffrey Maxwell, City of Weston Transportation Department
954-921-7781

West Park
Last contacted 11/20/2013 via Phone Call/Email

Carol Aubrun, City of West Park
954-989-2688 | caubrun@cityofwestpark.org

Wilton Manors
Last contacted 11/18/2013 via Phone Call/Email

Randy Welker, Economic Development Coordinator
954-390-2187 | rwelker@wiltonmanors.com

Appendix B—Broward Mobility Projects

Broward MPO Mobility Projects Phase I

	PROJECT	SEQUENCE	LOCATION	LIMITS	Cost With Design (20%) estimated	City	LRTP Corridor	Total Project cost by City
	Sidewalks	10	SW 136th Avenue	from SW 14th Street to SR 84	$264,732.98	Davie	Broward Blvd.	
	Bike Lanes	30	SW 130 Ave	from I-595 to SW 14th St	$575,590.06	Davie	Broward Blvd.	**840,323.04**
	Bike Lanes	350	SW 10th St. / SE 10th ST.	from SW 10th way to US-1/Federal Hwy	$673,259.53	Deerfield Beach	US-1	**673,259.53**
	Bike Lanes	151	SW 31 Ave	from Riverland Road to Broward Blvd	$571,526.17	Fort Lauderdale	Broward Blvd.	
	Sidewalks	152	NW 31 Ave	from Riverland Road to Broward Blvd	$29,406.07	Fort Lauderdale	Broward Blvd.	
	Bike Lanes	161	NW 31 Ave	from Broward Blvd to Sunrise Blvd	$0.00	Fort Lauderdale	Broward Blvd.	
	Bike Lanes	170	NW 31 Ave	from Sunrise Blvd to Oakland Park Blvd	$1,201,084.94	Fort Lauderdale	Broward Blvd.	
	Sidewalks	190	SW 30th Ave	from 2nd CT to Broward Blvd	$33,574.75	Fort Lauderdale	Broward Blvd.	
	Sidewalks	200	SW 28th Terr	from SW 4th St to Broward Blvd	$117,407.20	Fort Lauderdale	Broward Blvd.	
	Sidewalks	210	NW 22nd Ave	from Broward Blvd to NW 2nd St	$18,483.52	Fort Lauderdale	Broward Blvd.	
	Sidewalks	220	NW 18th Ave	from Broward Blvd to NW 2nd St	$44,766.86	Fort Lauderdale	Broward Blvd.	
	Sidewalks	230	NW 14th Ave	from Broward Blvd to NW 4th Ave	$41,434.15	Fort Lauderdale	Broward Blvd.	
	Sidewalks	240	SW 12th Ave	from Waverly Rd to Broward Blvd	$248,241.08	Fort Lauderdale	Broward Blvd.	
	Sidewalks	250	SW 11th Ave/Palm Ave	from SW 5th Place to NW 4th St	$87,975.07	Fort Lauderdale	Broward Blvd.	
	Sidewalks	260	NW 9th Ave	from Broward Blvd to NW 6th St	$49,870.21	Fort Lauderdale	Broward Blvd.	
	Sidewalks	270	SW 8th Ave	from SW 2nd Street to Broward Blvd	$45,823.76	Fort Lauderdale	Broward Blvd.	
	Bike Lanes	280	SW 4th Ave	from SW 34th St to Davie Blvd	$800,322.49	Fort Lauderdale	Broward Blvd.	
	Bike Lanes	291	SW 4th Ave	from Davie Blvd to Broward Blvd	$0.00	Fort Lauderdale	Broward Blvd.	**3,289,916.29**
	Sidewalks	300	N/S 13th Street	from Johnson St to Washington St	$180,122.78	Hollywood	Hollywood Blvd.	
	Sidewalks	330	Taft St	from N 20th to Federal Hwy	$217,063.51	Hollywood	US-1	
	Sidewalks	330	Sherman St	from N 20th to Federal Hwy		Hollywood	US-1	
	Sidewalks	330	Thomas St	from N 20th to Federal Hwy		Hollywood	US-1	
	Sidewalks	330	Lee St	from N 20th to Federal Hwy		Hollywood	US-1	
	Sidewalks	330	Scott St	from N 20th to Federal Hwy		Hollywood	US-1	
	Sidewalks	330	Coolidge St	from N 20th to Federal Hwy		Hollywood	US-1	
	Sidewalks	330	Harding St	from N 20th to Federal Hwy		Hollywood	US-1	
	Sidewalks	330	Wilson St	from N 20th to Federal Hwy		Hollywood	US-1	
	Sidewalks	330	Roosevelt St	from N 20th to Federal Hwy		Hollywood	US-1	
	Sidewalks	330	McKinley St	from N 20th to Federal Hwy		Hollywood	US-1	
	Sidewalks	330	Cleveland St	from N 20th to Federal Hwy		Hollywood	US-1	
	Sidewalks	330	Arthur St	from N 20th to Federal Hwy		Hollywood	US-1	
	Sidewalks	340	N 56th St	from Douglas Street to Oak Lake Park	$80,076.90	Hollywood	Hollywood Blvd.	
	Sidewalks	360	Sheridan St	from 66th Ave to 72nd Ave	$529,510.40	Hollywood	University Drive	**1,006,773.60**
	Sidewalks	100	NW 49th Ave.	from NW 26th St to NW 52nd Ave.	$80,345.65	Lauderdale Lakes	Oakland Park Blvd.	**80,345.65**
	Sidewalks	110	NW 36th Ave	from Broward Blvd to 4th Street	$24,694.64	Lauderhill	Broward Blvd.	
	Sidewalks	120	NW 35th Ave	from S of NW 1st Ct to Broward Blvd	$52,867.86	Lauderhill	Broward Blvd.	
	Sidewalks	130	NW 34th Ave	from Broward Blvd to NW 6th Street	$39,377.44	Lauderhill	Broward Blvd.	
	Sidewalks	140	NW 32nd Ave	from Broward Blvd to Dead End	$42,549.43	Lauderhill	Broward Blvd.	**159,489.37**
	Bike Lanes	180	NW 31 Ave	from Oakland Park Blvd to Commercial Blvd	$886,245.23	Oakland Park	Oakland Park Blvd.	**886,245.23**

"These projects have been programmed for funding in the Broward MPO Transportation Improvement Program (TIP), however additional coordination and/or studies may still be required."

Broward MPO Mobility Projects Phase I

	PROJECT	SEQUENCE	LOCATION	LIMITS	Cost With Design (20%) estimated	City	LRTP Corridor	Total Project cost by City
	Sidewalks	310	Pasadena Blvd	from University Dr to Pembroke Tower Apartments	$317,791.97	Pembroke Pines	University Drive	**317,791.97**
	Sidewalks	20	Broward Blvd	from Commodore Dr to Flamingo Rd	$122,368.25	Plantation	Broward Blvd.	
	Sidewalks	40	Broward Blvd	from Flamingo Rd to Hiatus Rd	$192,469.07	Plantation	Broward Blvd.	
	Bike Lanes	50	Nob Hill Road	from SR 84 to Broward Blvd	$556,941.41	Plantation	Broward Blvd.	
	Sidewalks	60	Nob Hill Road	from SR 84 to Central Park Elementary School	$207,561.31	Plantation	Broward Blvd.	
	Bike Lanes	70	Nob Hill Road	from Broward Blvd to Sunrise Blvd	$1,366,684.67	Plantation	Broward Blvd.	
	Bike Lanes	80	Broward Blvd	from Pine Island Road to West of 82nd Ave	$206,608.02	Plantation	Broward Blvd.	
	Bike Lanes	90	NW 70th Ave	from 5th St to 8th St	$281,732.88	Plantation	Broward Blvd.	
	Bike Lanes	320	Pine Island Rd	from SR 84 to Broward Blvd	$949,546.44	Plantation	Broward Blvd.	**3,883,912.04**
	Bike Lanes	370	Cypress Road	from McNab Road to Atlantic Blvd	$1,080,153.95	Pompano Beach	US-1	
	Bike Lanes	380	McNab Road	from Cypress Road to US 1	$608,912.17	Pompano Beach	US-1	**1,689,066.12**
				TOTAL	$12,827,122.85			12,827,122.85
				* TRAFFIC	$1,282,712.28			
				* MOBILIZATION	$1,693,180.22			
				^ **Grand total**	**$15,803,015.35**			

* Maintance of Tarffic (MOT): Cost of maintaining traffic during constructions, according to FDOT and Municipalities standards

^ Total cost based on FDOT's Long Range Estimates (LRE)

"These projects have been programmed for funding in the Broward MPO Transportation Improvement Program (TIP), however additional coordination and/or studies may still be required."

Broward MPO Mobility Projects Phase II

FM #	PROJECT	LOCATION	FROM	TO	Length (Feet)	Length (Miles)	Cost	City	LRTP Corridor	Total Project Cost by City
4316611	BIKE LANE	ANDREWS AVE	NE 6 STREET	OAKLAND PK BLVD	**13,428**	**2.54**	**$941,845**	Fort Lauderdale	Oakland Park Blvd.	
4316761	SIDEWALK	ANDREWS AVE	New River Drive	LAS OLAS	**634**	**0.12**	**$11,407**	Fort Lauderdale	Broward Blvd.	
4316881	BIKE LANE	ANDREWS AVE	DAVIE BLVD	SE 5 ST	**3,168**	**0.60**	**$221,281**	Fort Lauderdale	Broward Blvd.	
4316691	BIKE LANE	LAS OLAS BLVD	ANDREWS AVE	SE 15 AVE	**4,858**	**0.92**	**$341,282**	Fort Lauderdale	Broward Blvd.	
4316731	BIKE LANE	BROWARD BLVD	SR-7	I-95	**11,099**	**2.10**	**$421,404**	Fort Lauderdale	Broward Blvd.	
4316801	BIKE LANE	US-1	BROWARD BLVD	SUNRISE BLVD	**5,597**	**1.06**	**$2,877,794**	Fort Lauderdale	Broward Blvd.	
4316671	BIKE LANE	ANDREWS AVE	LAS OLAS	NE 6 STREET	3,749	**0.71**	**$4,082,380**	Fort Lauderdale	Broward Blvd.	
4316651	BIKE LANE	NW 19 ST	SR-7	NW 21/23 AVE	10,560	**2.00**	**$6,433,150**	Fort Lauderdale	Oakland Park Blvd.	
4316551	BIKE LANE	US-1	SE 12 ST	BROWARD BLVD	5,375	**1.02**	**$2,303,893**	Fort Lauderdale	Broward Blvd.	
4316681	BIKE LANE	NE 3 AVE	LAS OLAS BLVD	SUNRISE BLVD	**6,653**	**1.26**	**$3,061,410**	Fort Lauderdale	Broward Blvd.	
4316811	SIDEWALK	NW 2 ST	NW 3 AVE	NW 1 AVE	**634**	**0.12**	**$956,832**	Fort Lauderdale	Broward Blvd.	
4329491	BIKE LANE	OLD DIXIE HWY	NE 13 ST	NE 19 ST	**4,594**	**0.87**	**$1,944,771**	Fort Lauderdale	Oakland Park Blvd.	
4316781	BIKE LANE	SE 3 AVE	SE 17 ST	LAS OLAS BLVD	**6,600**	**1.25**	**$5,552,748**	Fort Lauderdale	Broward Blvd.	
4316571	BIKE LANE	NE 4 AVE	SUNRISE BLVD	NE 20 ST	**5,776**	**1.09**	**$3,258,029**	Fort Lauderdale	Broward Blvd.	
4316701	BIKE LANE	DIXIE HWY	NE 26 ST	NE 38/40 ST ?	5,317	**1.01**	**$3,749,831**	Fort Lauderdale	Oakland Park Blvd.	**$36,158,057**
NEW	BIKE LANE	Hollywood Blvd	N/S 26 AVE	Dixie Hwy	**2,746**	**0.52**	**$6,857,371**	Hollywood	Hollywood Blvd.	
NEW	BIKE LANE	Johnson St	West of C-10 Canal	US-1	**8,765**	**1.66**	**$9,964,234**	Hollywood	Hollywood Blvd.	**$16,821,605**
4316641	BIKE LANE	SR-7	SUNRISE BLVD	NW 29 ST	**8,744**	**1.66**	**$364,962**	Lauderhill	Oakland Park Blvd.	**$364,962**

"These projects have been programmed for funding in the Broward MPO Transportation Improvement Program (TIP), however additional coordination and/or studies may still be required."

Broward MPO Mobility Projects Phase II

FM #	PROJECT	LOCATION	FROM	TO	Length (Feet)	Length (Miles)	Cost	City	LRTP Corridor	Total Project Cost by City
4316721	BIKE LANE	NE 6 AVE	OAKLAND PARK BLVD	NE 33 ST	5,280	**1.00**	**$428,223**	Oakland Park	Oakland Park Blvd.	**$428,223**
4316911	BIKE LANE	SR-7	NW 3 ST	SUNRISE BLVD	**4,668**	**0.88**	**$178,666**	Plantation	Broward Blvd.	
4316981	BIKE LANE	PETERS RD	PINE ISLAND RD	TROPICAL WAY	**9,293**	**1.76**	**$4,041,320**	Plantation	Broward Blvd.	
4316871	BIKE LANE	COMMODORE DR	SR-84	NW 8 ST	**5,808**	**1.10**	**$305,625**	Plantation	Broward Blvd.	**$4,525,611**
4316661	BIKE LANE	Sunset Strip	Nob Hill Rd	Sunrise Blvd	**22,888**	**4.33**	**$6,231,151**	Sunrise	Oakland Park Blvd.	**$6,231,151**
NEW	BIKE LANE	Perimeter Rd	Griffin Rd	SW 4th Ave	**10,666**	**2.02**	**$1,614,634**	Unincorporated	US-1	**$1,614,634**

$66,144,243

*^ **Grand Total** **31.61** **$66,144,243**

* Maintance of Tarffic (MOT): Cost of maintaining traffic during constructions, according to FDOT and Municipalities standards

^Total cost based on FDOT's Long Range Estimates (LRE)

"These projects have been programmed for funding in the Broward MPO Transportation Improvement Program (TIP), however additional coordination and/or studies may still be required."

Broward MPO Mobility Projects Phase III

PROJECT	LOCATION	FROM	TO	Length [mi]	Length [ft]	COST (includes 20 % design Costs)	City / Town	LRTP Corridor	Total Project Cost by city
Bike Lane	SW 3rd Avenue	Hillsboro Boulevard	SW 10th Street	0.940		$1,499,463.92	Deerfield Beach	US-1	
Bike Lane	SE 2nd Avenue	Hillsboro Boulevard	SE 10th Street	0.920		$886,897.87	Deerfield Beach	US-1	
Bike Lane	Federal Highway/US-1	Sample Rd.	County Line	3.536	18,670	$6,300,838.97	Deerfield Beach	US-1	
Bike Lane	SW 10th Street	SW 12th Avenue	Natura Blvd	0.460	2,429	$394,270.61	Deerfield Beach	US-1	
Bike Lane	48th Street/49th Street	Powerline Road	Federal Highway / US 1	3.020	15,946	$1,560,771.38	Deerfield Beach Pompano Beach	US-1	$10,642,242.76
Sidewalk	Hollywood Gardens	SR-7 & Hollywood Blvd	Johnson St & N 56th Avenue			$1,377,327.77	Hollywood	Hollywood Blvd.	
Bike Lane	N 14th Avenue	Sheridan Street	Johnson Street	1.000	5,280	$585,274.14	Hollywood	Hollywood Blvd.	
Bike Lane	N 14th Avenue	Johnson Street	Washington Street	1.100	5,808	$505,600.00	Hollywood	Hollywood Blvd.	
Bike Lane	N. 64th Avenue	Hollywood Blvd.	Sheridan Street	1.510	7,973	$1,219,708.40	Hollywood	Hollywood Blvd.	
Bike Lane	N 56th Avenue	Washington St	Stirling Road	2.520	13,306	$2,022,052.26	Hollywood	Hollywood Blvd.	
Bike Lane	SW 62nd Ave	Johnson Street	County Line Road / SW 41st Street	3.080	16,262	$5,491,366.80	Hollywood	Hollywood Blvd.	
Sidewalk	Taft Street	N 20th Avenue	Just east of N 14th Avenue	0.760	4,013	$445,238.81	Hollywood	Hollywood Blvd.	
Bike Lane	N 14th Avenue	Washington Street	Hallandale Beach Boulevard	1.280	6,758	$725,639.83	Hollywood Hallandale Beach	Hollywood Blvd.	**$12,372,208.01**
Bike Lane	NE 5th Avenue	10th Street	Copans Rd	1.400	7,392	$312,171.36	Pompano Beach	US-1	
Bike Lane	NE 10th Street	Dixie Highway	US 1 / Federal Highway	1.370	7,234	$722,965.46	Pompano Beach	US-1	
Bike Lane	NE 11th Avenue	Atlantic Boulevard	NE 10th Street	0.660	3,485	$652,103.06	Pompano Beach	US-1	
Sidewalk	SE 2nd Street	SE 11th Avenue	Federal Highway	0.600	3,168	$328,699.45	Pompano Beach	US-1	
Sidewalk	NE 4th Street	NE 14th Avenue	US 1 / Federal Highway	0.420	2,218	$182,095.10	Pompano Beach	US-1	
Bike Lane	NE 15th Avenue	Sample Road	NE 48th ST	1.000	5,280	$927,893.30	Pompano Beach	US-1	**$3,125,927.75**
									$26,140,378.51
						***^ Grand Total**		**$26,140,378.51**	

* Maintance of Tarffic (MOT): Cost of maintaining traffic during constructions, according to FDOT and Municipalities standards

^Total cost based on FDOT's Long Range Estimates (LRE)

"These projects have been programmed for funding in the Broward MPO Transportation Improvement Program (TIP), however additional coordination and/or studies may still be required."

Appendix C—2035 LRTP Cost Feasible Plan (CFP) Transit Projects

Exhibit 23–2035 Cost Feasible Transit Projects & Mobility Hubs Map

LEGEND

PREMIUM TRANSIT PROJECTS

- Premium Rapid Bus
- Premium High Capacity
- Service in Neighboring Counties

BROWARD COUNTY TRANSIT SERVICE

- Existing Local Bus Route
- New Local Bus Route

MOBILITY HUBS

- Community Hub
- Anchor Hub
- Gateway Hub

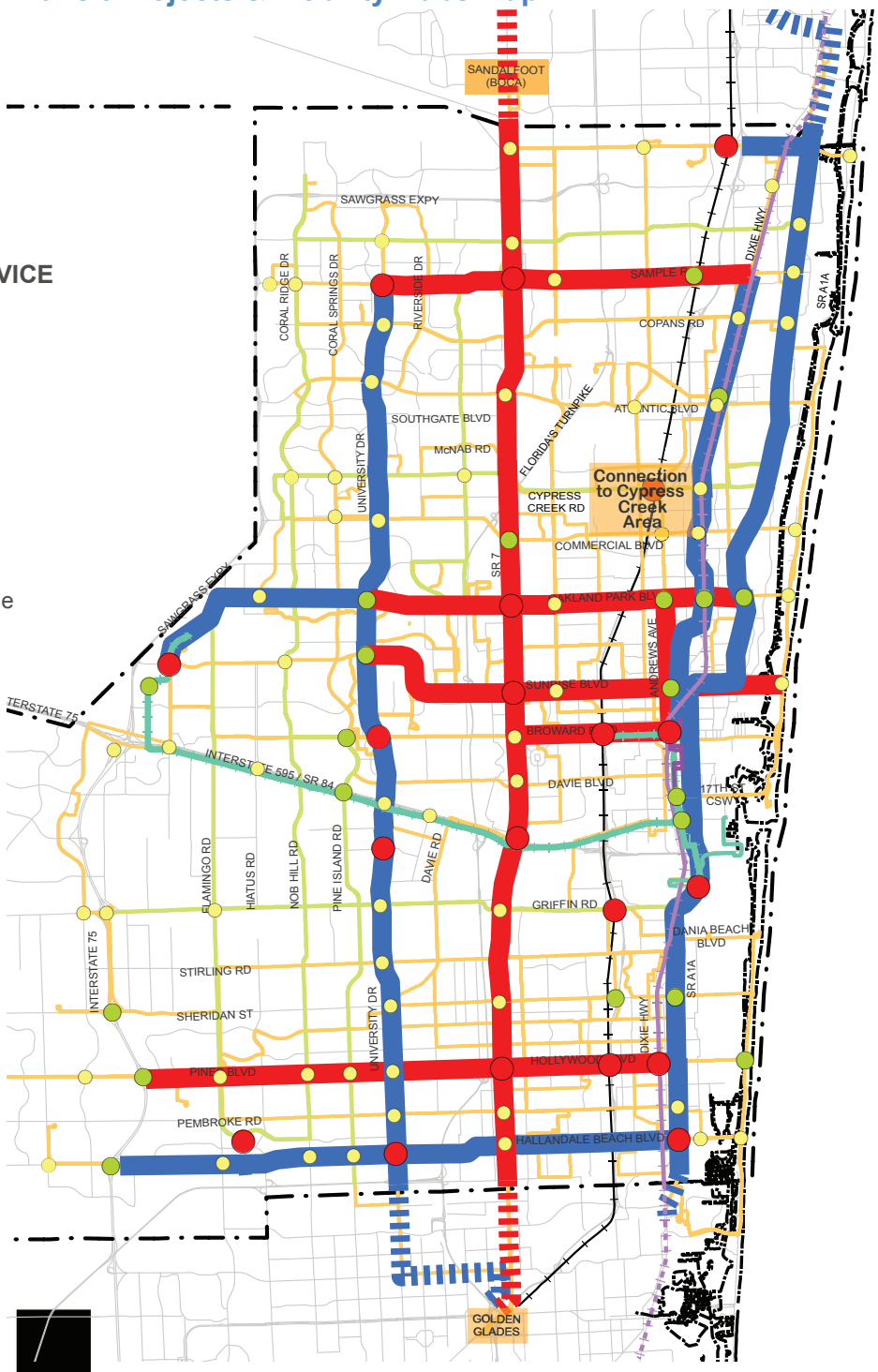
ILLUSTRATIVE PROJECTS

- The Wave (City of Fort Lauderdale Downtown Circulator)
- Peoplemover-SunPort (Airport/Seaport)
- Central Broward Transit (not final routing)
- South Florida East Coast Corridor (FEC)

Notes:

Illustrative projects are shown for context and are not part of the 2035 Cost Feasible Plan.

50% of the existing transit service's operating and maintenance are funded with existing sources. Local bus services that are partially funded may be restructured to better serve mobility hubs and Premium Transit corridors.



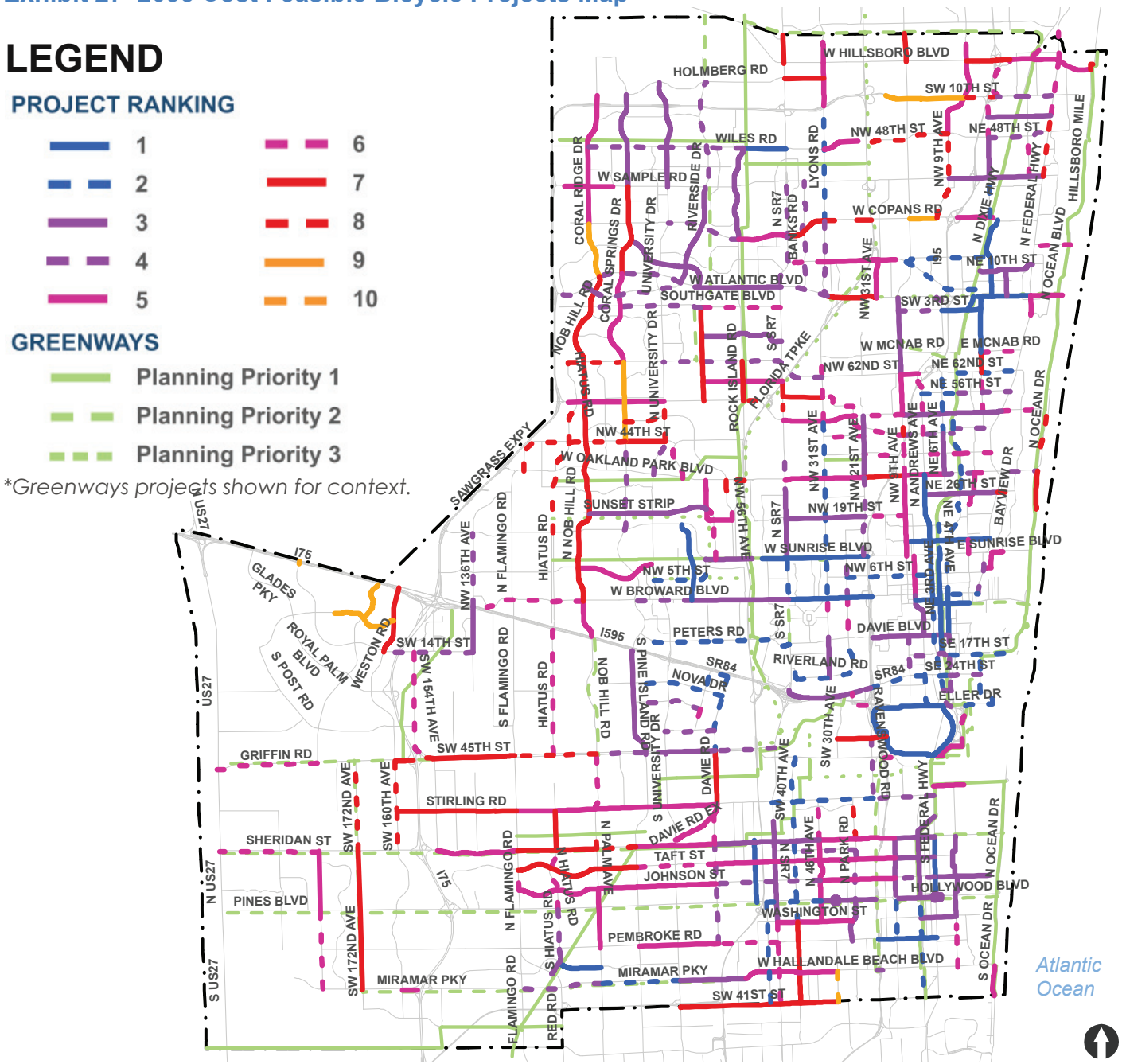
2035 BROWARD LONG RANGE TRANSPORTATION PLAN

JACOBS

JACOBS

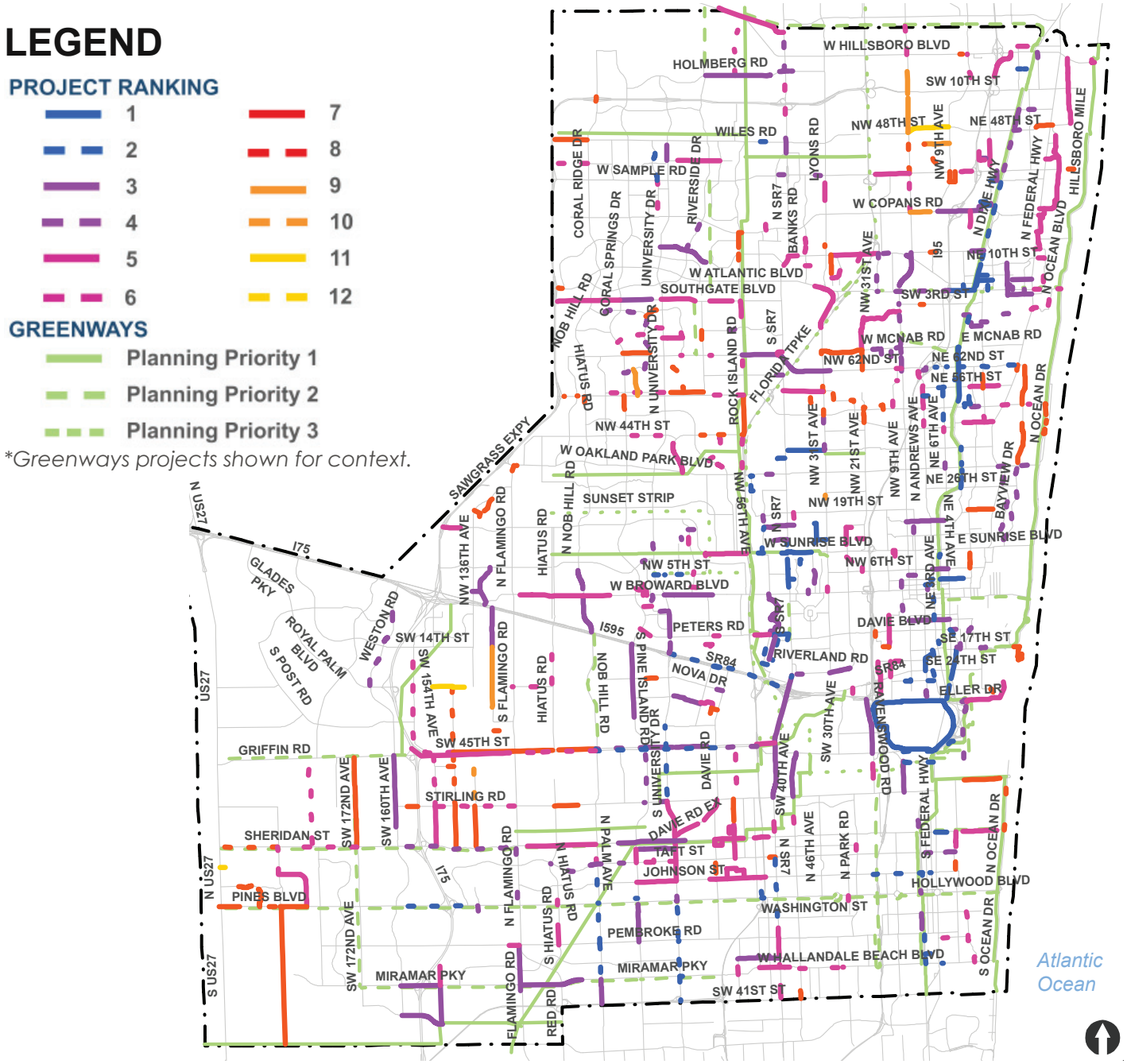
Appendix D—2035 LRTP Cost Feasible Plan (CFP) Bicycle Projects

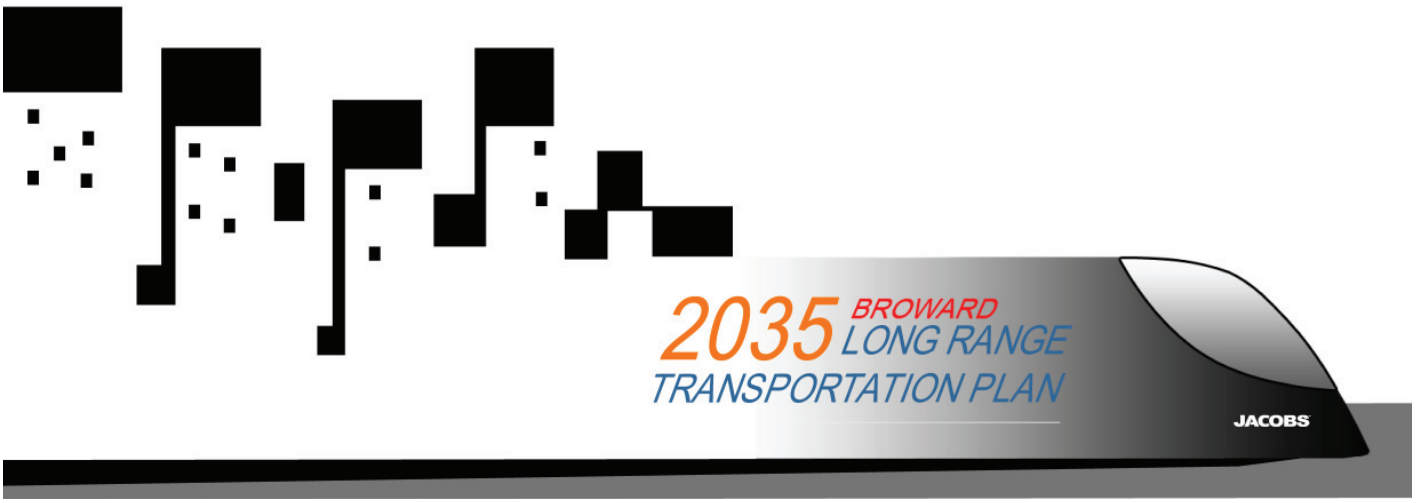
Exhibit 27–2035 Cost Feasible Bicycle Projects Map

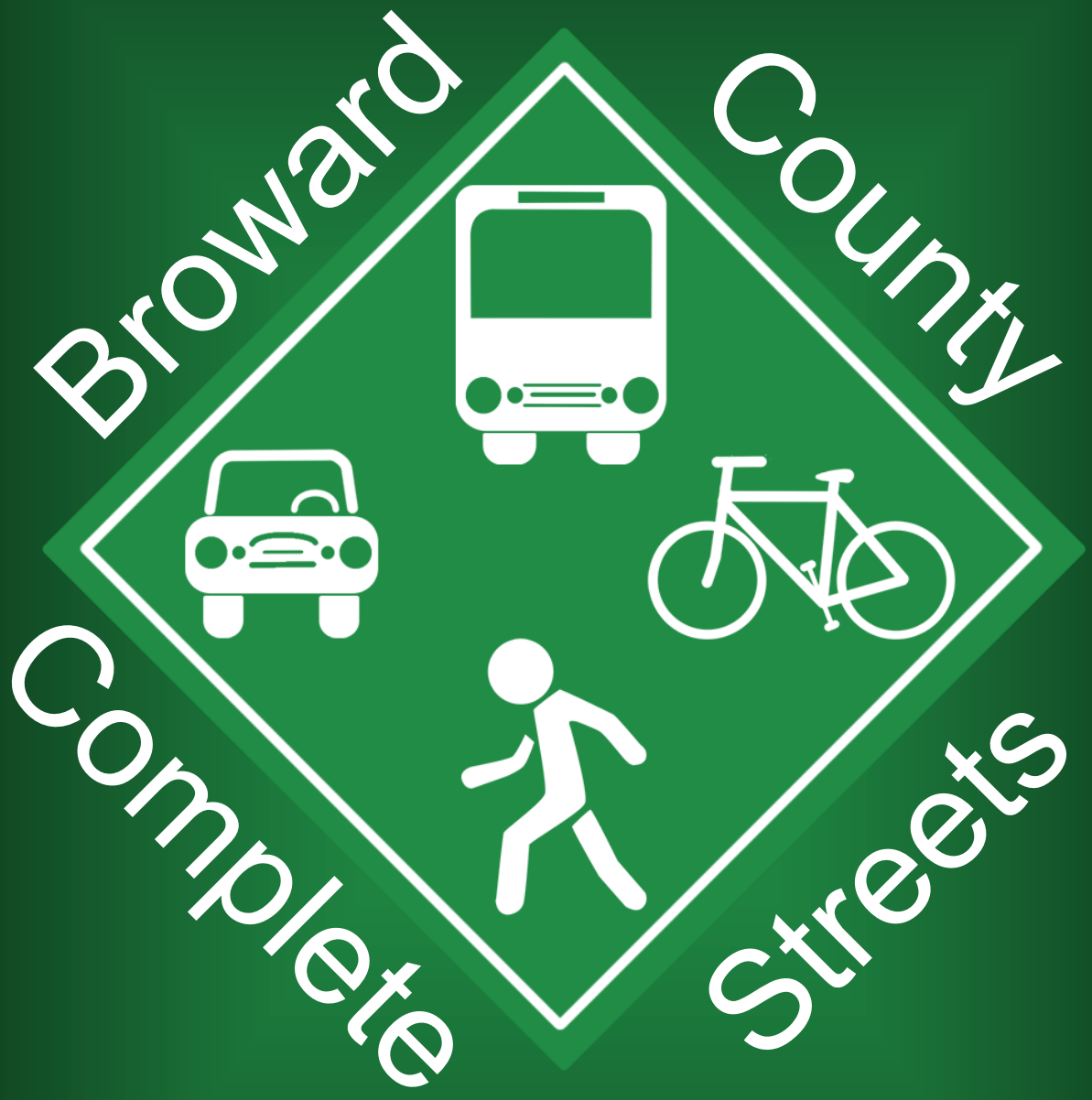


Appendix E—2035 LRTP Cost Feasible Plan (CFP) Pedestrian Projects

Exhibit 26–2035 Cost Feasible Pedestrian Projects Map







Greenways Integration Study