

APPENDIX A

Doral Trolley/SMART Plan Coordination Study Existing Conditions Report



DORAL TROLLEY

SMART PLAN COORDINATION STUDY

EXISTING CONDITIONS
REPORT

APRIL 2019

CITY OF **DORAL**
MIAMI-DADE **TPO**

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LIST OF ACRONYMS

Doral Transit System (DTS)

Florida International University's (FIU's)

Miami International Airport (MIA)

Homestead Extension of the Florida's Turnpike (HEFT)

Strategic Miami Area Rapid Transit (SMART)

University Transit Management Association (UTMA)

People's Transportation Plan (PTP)

Transportation Planning Organization (TPO)

Bus Express Rapid Transit (BERT)

Federal Highway Administration (FHWA)

Miami-Dade Department of Transportation and Public Works (DTPW)

Florida Department of Transportation (FDOT)

Florida International University (FIU)

Long Range Transportation Plan (LRTP)

Transportation Improvement Program (TIP)

State Transportation Improvement Program (STIP)

Locally Preferred Alternative Selection (LAP)

Miami Intermodal Center (MIC)

Bus Rapid Transit (BRT)

Heavy Rail Transit (HRT)

Commuter Rail Transit (CRT)

Transportation Systems Management and Operations (TSM&O)

Florida Turnpike Enterprise (FTE)

Miami-Dade Expressway Authority (MDX)

Level of Service (LOS)

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Annual Average Daily Traffic (AADT)
Volume to Capacity (V/C)
Right-of-Way (ROW)
Americans with Disabilities Act (ADA)
Florida Power & Light (FPL)
United States Department of Transportation (USDOT)
American Public Transportation Association (APTA)
Automated Passenger Counter (APC)
Wireless internet routers (Wi-Fi)
Light-emitting Diode (LED)
Sociocultural Effect Issues (SCE)
Transit Oriented Development (TOD)

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INTRODUCTION

From golf course to booming urban center, the City of Doral has progressed immensely in a very short time. Incorporated in 2003, Doral is now one of the major employment centers and a leisure destination within Miami-Dade County. With a burgeoning downtown and growing population, the City recognized the need to increase mobility options through more efficient public transportation. Therefore, in 2008, the City initiated a two-year pilot program to run an intra-city circulator. With a free and convenient service, this program soon became popular. The Doral Transit System (DTS) has grown to four circulator routes connecting major destinations such as the Palmetto Metrorail Station, Miami-Dade College West, Dolphin Mall, Miami International Mall, and the Florida International University's (FIU's) Engineering and Modesto A. Maidique campuses.

HISTORICAL CONTEXT

Hinged around the visionary development of Alfred and Doris Kaskel, the City of Doral transformed from a vacant plain of wetlands and limestone into a modern suburban community. Open in 1962, the Doral Country Club featured three golf courses that imported guests from an accompanying hotel in Miami Beach. Named after a combination of Doris and Alfred, the country clubs popularity became the catalyst for residential growth as the Kaskel family began developing the Doral Estates and Doral Park communities during the 1980s. Confronting environmental and regulatory challenges, growth boomed in 1989 with the formation of the West Dade Federation of Homeowner Associations which helped create the City's first civil services.

The City's growth also benefited from surrounding infrastructure such as Miami International Airport (MIA). With nonstop flight services expanding west beyond St. Louis and New Orleans, and transatlantic flights to Europe beginning operations during the 1970, Miami began its transformation into a major hub for the aeronautical industry. With Air Florida establishing the first hub in the early 1980s, followed by American Airlines in the early 1990s, MIA is now one of the country's largest air freight and international passenger ports.

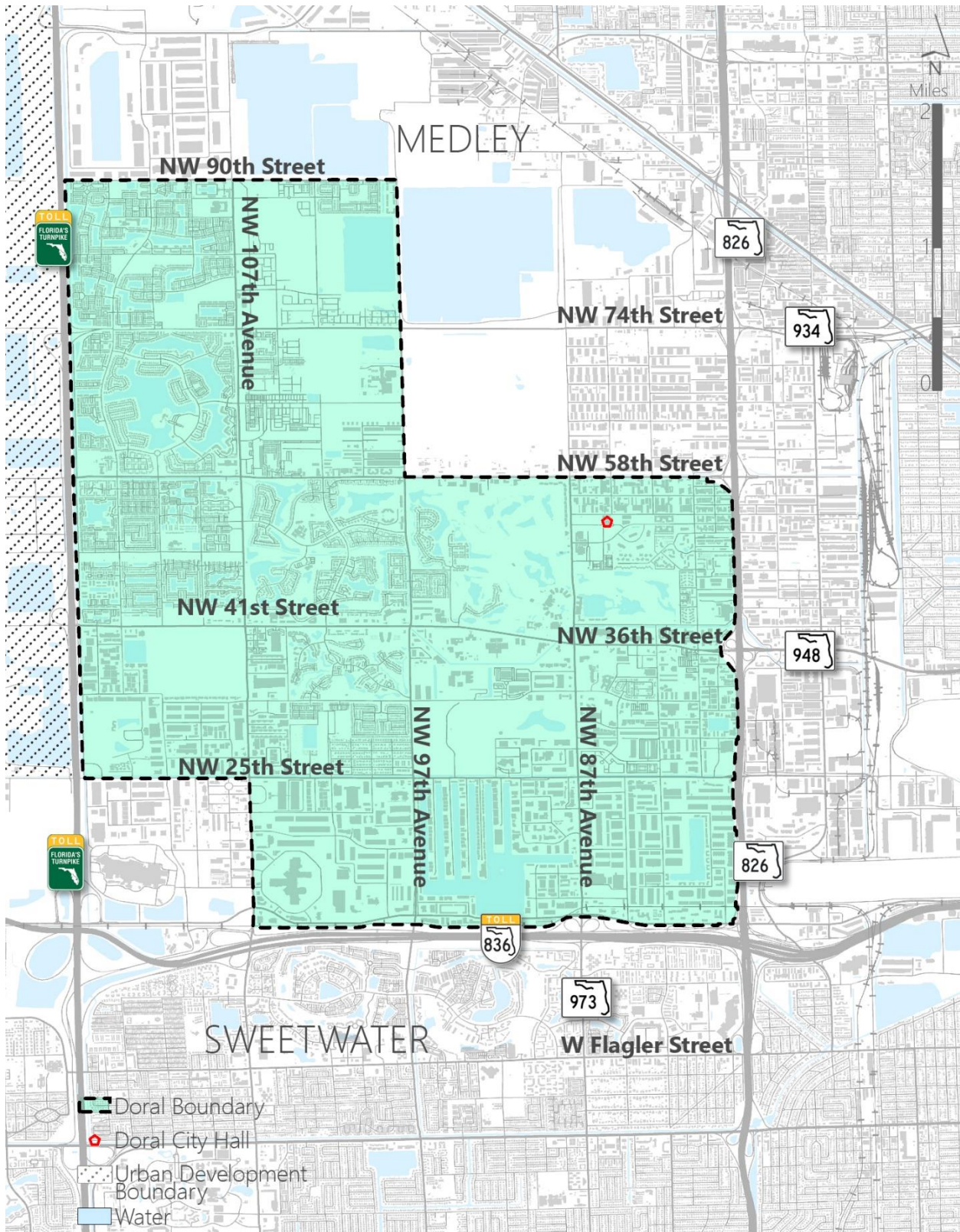


Figure 1: City of Doral Municipal Boundary

In addition to the airport, major roadways developed during the early history of Doral which fueled its growth. With the completion of the Palmetto Bypass Expressway in June 1961, Doral was accessible from SR 948/NW 36th Street which connected with the Florida's Turnpike at the Golden Glades Interchange. Six months after the opening of SR 826, the Airport Expressway opened, connecting Doral with Miami Beach and MIA. As the City grew, it soon overwhelmed the Palmetto Expressway, creating the need for a "bypass to the bypass". Hence, on the western boundary of the City the Homestead Extension of the Florida's Turnpike (HEFT) began its ultimate development with the 1973 mainline connecting the Golden Glades Interchange with US 27/Okeechobee Road. The last section of the HEFT was opened in 1974 connecting Florida City to US 1.

These events placed Doral squarely in central Miami-Dade County with significant international, national, and regional connectivity. Since incorporation in 2003, the City's population has grown from roughly 21,000 residents to 61,000 in 2017. Given its proximity to MIA, the City hosts over 3,000 logistics-related companies, over 250 company headquarters, and 14 business parks. With over 2 million square feet of approved commercial developments, and 9,000 approved residential units, the City is a major business and residential community within the County. Most recently, the City has begun promoting a 120-acre downtown master plan to complete its transformation into a true live, work, and play community.



STUDY PURPOSE

With the understanding that sustainable growth requires diverse transportation solutions that are nimble to change, this study aims to analyze and evaluate the existing DTS to recommend modification, enhancement, and/or expansion solutions to better serve the target travel market over the short-, medium-, and long-term. This study also aims to define the target travel market and connect the DTS with other existing and planned municipal, County, and regional transit services. This purpose will be accomplished through meeting the following objectives:

- Address Title VI of the Civil Rights Act of 1964 regarding nondiscriminatory transportation for all customers and potential customers of the DTS
- Integrate the Strategic Miami Area Rapid Transit (SMART) Plan and University Transit Management Association (UTMA) services with the DTS
- Develop a comprehensive design guideline for transit stop infrastructure and amenities



Figure 2: Doral Country Club (1960s)



Figure 3: Miami International Airport (1970s)



Figure 4: SR 112/Airport Expressway (1970s)

STUDY NEED

Miami-Dade County approved in 2002 a half penny local surtax with the purpose of constructing the People's Transportation Plan (PTP). This plan intended to bring premium transit services to the County. In 2016, the County's Transportation Planning Organization (TPO) voted unanimously to advance six of the PTP's rapid transit corridors. This new development of the PTP has been labeled the SMART Plan and includes a network of Bus Express Rapid Transit (BERT) service in addition to the rapid transit corridors. This renewed effort to implement mass transit in the County comes at a crucial time when Florida has become the third most populous state, with Miami-Dade being the most populous county and part of the country's fourth largest urbanized metro area.

The County's growth is exacerbating the need for mobility options as congestion becomes more widespread and intense throughout the thirty-four municipalities and unincorporated areas of Miami-Dade. The Federal Highway Administration (FHWA) estimates the annual cost of congestion to motorists in urban areas at approximately \$7 billion. Not only does congestion represent a significant cost and economic disadvantage to the citizens of Miami-Dade, it also hinders the County's ability to keep growing and enhancing the well-being of its residents.

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Therefore, the County has devised a strategy around the SMART Plan's six premium corridors serving as the main options for regional and national mobility. Hence, this strategy requires local services to provide short-to-medium distance trips to feed riders into the primary corridors and to mobilize customers locally. This is where systems such as the DTS have been established to support the County's Metrobus system. By enhancing the local circulators, services can be connected, coordinated, and synchronized to function as an efficient distribution network.

STUDY SCOPE

This study begins with an analysis of the existing transit system. This analysis looks at current transit services and operations, planned improvements, City demographics, and environmental conditions with the intention of understanding how well the current transit systems performs in meeting the City's needs. This requires an understanding of travel markets within the City and how commuter, student, business, and leisure trips interact.

After analyzing the existing conditions, this study focuses on peer systems to compare conditions, infrastructure, and operations. These insights will aid in developing infrastructure guidelines and transit strategy alternatives that improve the existing transit system. These strategies will detail supporting pedestrian and bicycle environments, transit infrastructure, and transit operations that are fully integrated with future mobility options and adjacent land uses. These alternatives will then be evaluated to determine associated benefits and tradeoffs. One alternative will be recommended for implementation with an accompanying action plan.

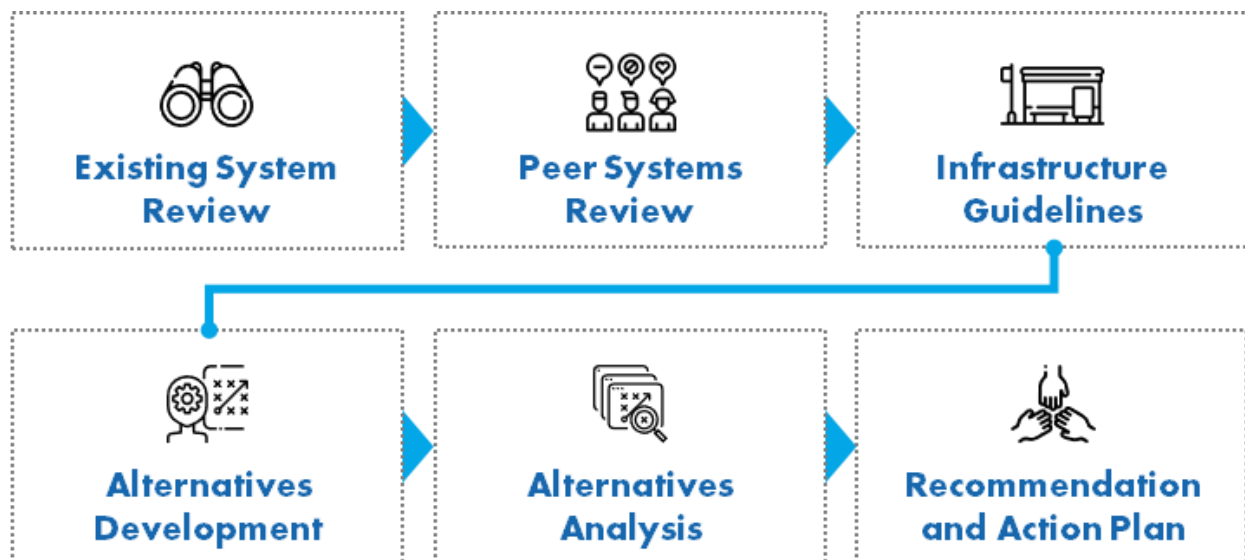


Figure 5: Study Scope

LITERATURE REVIEW

Before delving into the Existing System Review a comprehensive literature review was performed to understand the context of ongoing and planned improvements within the City of Doral and its surroundings. **Table 1** identifies the documents reviewed. These documents contain everything from specific corridor recommendations to regionwide work programs and master plans listing current and future projects.

Table 1: Documents Reviewed

Sponsor	Document	Date Published
Miami-Dade County TPO	2040 Long Range Transportation Plan (LRTP)	2014
	Transportation Improvement Program (TIP)	2019
	2040 Bicycle/Pedestrian Plan	2014
	Non-motorized Network Connectivity Plan	2016
	Protected Bicycle Lanes Demonstration Project	2017
Florida Department of Transportation (FDOT)	State Transportation Improvement Program (STIP)	2019
	Work Program	2019
	Doral Subarea Freight Improvement Plan	2017
	Medley Subarea Freight Improvement Plan	2016
Miami-Dade Department of Transportation and Public Works (DTPW)	2028 Transit Development Plan	2019
Florida International University (FIU)	107 th Avenue Pedestrian Transit Greenways Corridor at City of Sweetwater	2003
	Modesto A. Maidique Campus and Engineering Center Master Plans	2019
Town of Medley	Multimodal Mobility Study	2018
City of Doral	Transportation Master Plan	2017
	Transit Mobility Plan	2014
	Bicycle Network Plan	2015
	FIU Trolley Expansion Feasibility Study	2017
	Trolley On-Board Survey	2016
	Doral Design District Master Plan	2010
	Doral Boulevard Beautification Master Plan	2017
	Low Impact Development Plan Master Plan	2016
	Housing Master Plan	2017
	Green Master Plan	2008
	Parks and Recreation Master Plan	2010

MIAMI-DADE TPO

2040 LRTP

The Miami-Dade TPO's 2040 LRTP is intended to assist stakeholders, citizens, community leaders, businesses, and elected officials in achieving the County's transportation vision through 2040. The LRTP serves as a tool to identify needed improvements to the transportation network and provides a long-term investment framework to address current and future challenges.

SMART Plan

A big component of the 2040 LRTP is the SMART Plan. To ensure the selection of the most suitable technology, two major activities are ongoing as part of the planning and visioning process of the SMART Plan. These activities include:

- Land Use and Visioning studies headed by the TPO
- Project Development and Environmental (PD&E) Studies headed by FDOT and Miami-Dade DTPW

Table 2: SMART Plan Rapid Transit Corridors

Corridor	From	To	Locally Preferred Alternative Selection (LAP) Date
Beach Corridor	Midtown Miami	Miami Beach Convention Center	August 2018
East-West Corridor	Miami Intermodal Center (MIC)	Florida International University	December 2018
Kendall Corridor	Dadeland Area Metrorail Stations	Krome Avenue	Summer 2019
North Corridor	Martin L. King, Jr. Metrorail Station	NW 215 th Street	Summer 2019
Northeast Corridor	Downtown Miami	City of Aventura	Fall 2019
South Dade Transitway	Dadeland South Metrorail Station	SW 344 th Street Transit Terminal (Florida City)	Fall 2019

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Table 3: SMART Plan BERT Corridors

Corridor	Description
Beach Express	North – Miami Beach Convention Center to Golden Glades via I-95
	Central – Miami Beach Convention Center to Civic Center via Julia Tuttle Causeway
	South – Miami Beach Convention Center to Downtown Miami via MacArthur Causeway
Flagler Corridor	Downtown Miami to West Dade via Flagler Street
Florida's Turnpike Express	North – Dolphin Station to North Miami-Dade via the HEFT
	South – Dolphin Station to SW 344th Street via the HEFT
Northwest Miami-Dade Express	Palmetto Metrorail Station to Miami Gardens Drive Park-n-Ride via Palmetto Expressway and I-75
South Miami-Dade Express	Dadeland North Metrorail Station to southern Miami-Dade County via SR-878, SR-874, and Florida's Turnpike
Southwest Miami-Dade Express	Dadeland North Metrorail Station to Miami Executive Airport via SR-878 and SR-874

Four corridors are of particular interest due to their potential interface with the DTS. These corridors are:

- Rapid Transit
 - East-West Corridor
- BERT
 - Flagler Corridor
 - Florida's Turnpike Express
 - Northwest Miami-Dade Express

There are no ongoing studies for the Florida's Turnpike Express and Northwest Miami-Dade Express BERT Corridors.

East-West Corridor

This rapid transit corridor is envisioned to run along SR 836/Dolphin Expressway from the MIC to the Panther Station in SW 8th Street and SW 109th Avenue, next to the FIU Modesto A. Maidique campus. The ongoing PD&E study is evaluating alignment alternatives as well as the location and design of transit stations and Park-and-Ride transit terminals. The first phase of the evaluation explored Bus Rapid Transit (BRT), Heavy Rail Transit (HRT), and Commuter Rail Transit (CRT) as alternative modes of transportation. From this phase, only the BRT and HRT alternatives advanced for further consideration. Currently, the second phase of the study is ongoing to select the LPA.

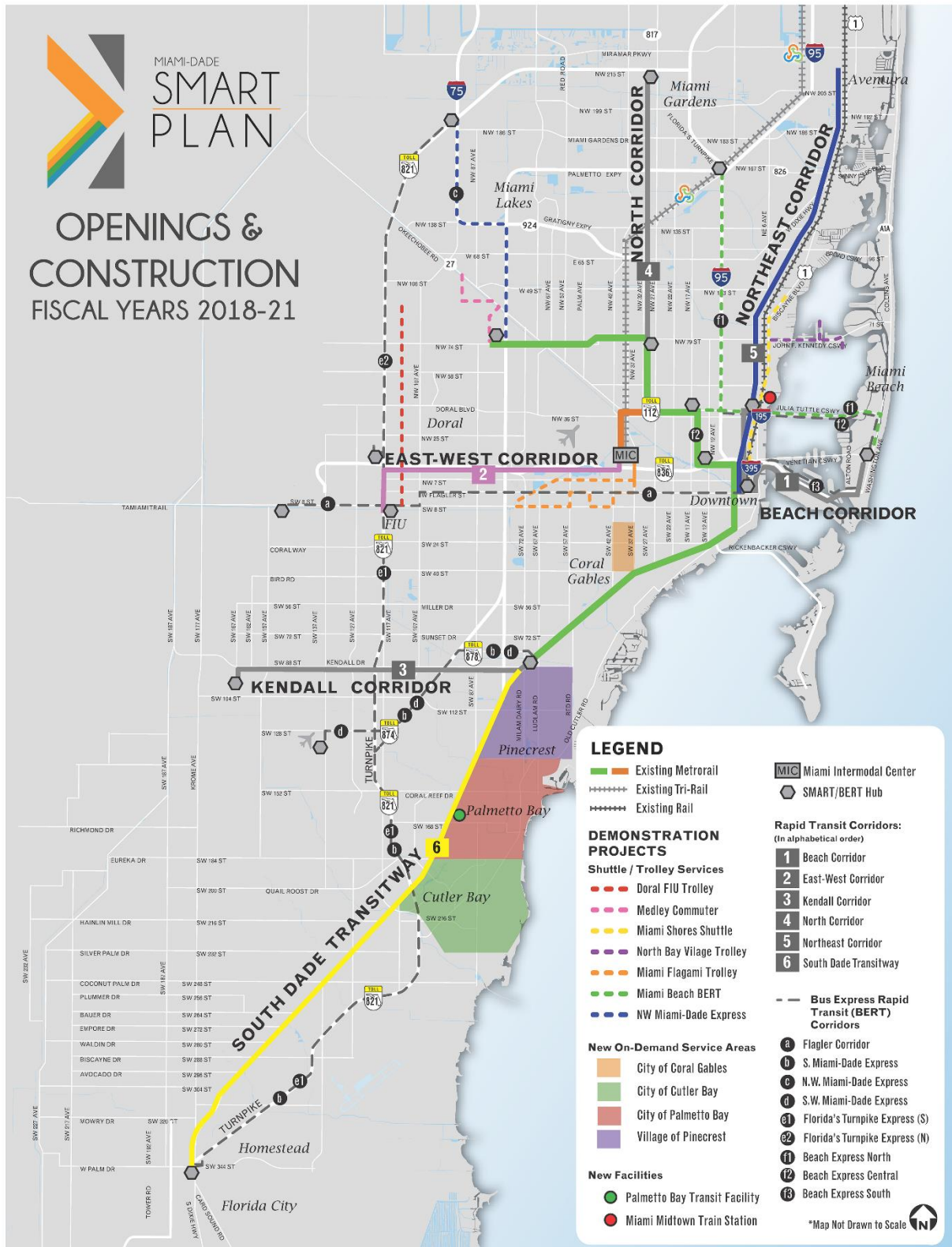


Figure 6: SMART Plan Map

Moreover, the first hub for this corridor broke ground in January 2017. This hub is located on NW 12th Street and NW 122nd Avenue, just west of the HEFT, and is called the Dolphin Station Park-and-Ride Transit Terminal Facility. Two other hubs have already been identified and will soon commence construction. These hubs are the Panther Station at FIU and the Tamiami Station, which will be located at the corner of SW 8th Street and SW 147th Avenue.

Flagler Corridor BERT

FDOT is conducting the Flagler PD&E Study. This BERT corridor covers from approximately the HEFT to the Downtown Multimodal Terminal in NW 1st Avenue. The proposed corridor also includes a segment of SW 8th Street from SW 147th Avenue to SW 107th Avenue, SW 107th Avenue from SW 8th Street to NW 12th Street, and NW 12th Street from approximately NW 122nd Avenue to NW 107th Avenue. The PD&E Study is considering three alternatives, Business Access and Transit (BAT) Lanes, Exclusive Left Lane BRT Separated by Traffic, and an Exclusive Left Lane BRT



Figure 7: Flagler Corridor BERT Map

Other Projects

Table 4 through lists all other projects in the 2040 LRTP that are near or within the City of Doral.

Table 4: 2040 LRTP Projects

Priority	Project	Roadway	Limits	Project Description
1 (2015 – 2020)	1	NW 74 th St.	HEFT to SR 826	Add 2 lanes and reconstruct
	2	NW 97 th Ave.	NW 70 th St. to NW 74 th St.	New 4 lane road reconstruction
	3	NW 97 th Ave.	NW 58 th St. to NW 70 th St.	Add 2 lanes and reconstruct
	4	HEFT	SR 826 to NW 106 th St.	Add lanes and reconstruct
	5	SR 826 & SR 836	North of SW 8 th St./NW 87 th Ave. to south of 25 th St./NW 57 th Ave.	Interchange improvements
	6	SR 836	NW 107 th Ave.	Construction of access ramp
	7	SR 836 Interchange at 87 th Ave.	SR 836 West of 82 nd Ave. to NW 97 th Ave.	Interchange improvements
2 (2021 – 2025)	8	NW 107 th Ave.	NW 41 st St. to NW 25 th St.	Add 2 lanes and reconstruct
	9	NW 107 th Ave.	NW 12 th St. to NW 74 th St.	Operational and capacity improvements where feasible
	10	NW 117 th Ave.	NW 25 th St. to NW 41 st St.	New 2 lane road to support the flow of truck traffic to HEFT
	11	NW 12 th St.	NW 107 th Ave. to SR 826	Widening
	12	NW 25 th St.	NW 89 th Ct. to SR 821	Capacity and operational improvements
	13	NW 79 th Ave.	NW 48 th Way to NW 36 th St.	Merge and reduce access points if possible
3 (2026 – 2030)	14	NW 36 th St./NW 41 st St.	NW 42 nd Ave. to HEFT	Operational improvements
	15	NW 58 th St.	NW 107 th Ave. to NW 82 nd Ave.	Corridor traffic operational improvements
	16	SR 836 Managed Lanes	HEFT to SR 826/SR 836 Interchange	2 new managed lanes
4 (2031 – 2040)	17	NW 97 th Ave.	NW 58 th St. to NW 52 nd St.	Add 2 lanes and reconstruct
	18	HEFT	NW 12 th St. to NW 74 th St.	Transportation Systems Management and Operations (TSM&O)
	19	SR 826	SR 836 to NW 103 rd St.	Add 4 special use lanes

Table 5: 2040 LRTP Freight Management & Non-motorized Projects

Project	Roadway	Limits	Project Description
1	NW 97 th Ave.	NW 74 th St. to NW 58 th St.	Bicycle facility improvements
2	NW 82 nd St.	NW 114 th Path to NW 109 th Ave.	Pedestrian facility improvements
3	NW 58 th St.	NW 82 nd Ave. to NW 74 th Ave.	Freight Management – High number of access points on the south side of NW 58 th St. Merge and reduce access points close to busy intersections if possible.
4	NW 82 nd Ave.	NW 41 st St. to NW 25 th St.	Freight management – widen from 2 to 4 lanes

Table 6: 2040 LRTP Private Sector Projects

Project	Roadway	Limits	Project Description
1	NW 90 th St.	NW 107 th Ave. to NW 87 th Ave.	New 4 lane road construction
2	NW 97 th Ave.	NW 74 th St. to NW 90 th St.	New 4 lane road construction

2019 TIP

The TIP is a subset of the LRTP that highlights the projects planned within the first five years (Priority 1). The TIP is split into six different improvement categories: intermodal, highway, transit, aviation, seaport and non-motorized improvements. The first year of the TIP is comprised of projects that are fully funded while the remaining four years comprises of unfunded high priority projects for which capital funding outlay must be considered. **Table 7** lists funded projects within the City of Doral. **Table 8** lists funded projects within the influence area of the East-West Corridor.

Table 7: TIP Funded Projects

Project	Roadway	Limits	Agency	Project Description
DT4056153	NW 87 th Ave.	From NW 74 th St. to NW 103 rd St.	City of Doral	New Road Construction
DT4408471	Citywide sidewalk, curb ramp, and crosswalk improvements		City of Doral	Sidewalk
DT4416421	Bicycle and pedestrian bridge over Doral Blvd.		City of Doral	Pedestrian/wildlife overpass

Table 8: Funded Projects within ½ Mile Vicinity of East-West Corridor

Project	Roadway	Limits	Agency	Project Description
TP4355451	HEFT	From SR 836 (MP 26) to NW 74 th St. (MP 31)	Florida Turnpike Enterprise (FTE)	Add lanes & reconstruct
PW000851	NW 107 th Ave.	NW 12 th St. to NW 25 th St.	DTPW	Resurfacing
PW000853	NW 107 th Ave. and NW 12 th St.		DTPW	Intersection Improvement
TA000105	Dolphin Station at HEFT and NW 12 th St.		DTPW	Transit Center with Park-and-Ride lot
XA50001	Dolphin Station Park-and-Ride		Miami-Dade Expressway Authority (MDX)	Parking Facility

2040 BICYCLE/PEDESTRIAN PLAN

The 2040 Bicycle/Pedestrian Plan serves as the non-motorized element of the 2040 LRTP and presents a vision to enhance the transportation network of Miami-Dade County. The plan analyzes the bicycle and pedestrian Level of Service (LOS) on major arterials and highlights several showcase projects for the Greenways and Trails Network. Among these projects is the Atlantic Trail, Rickenbacker Causeway, Biscayne Boulevard, Flagler Trail, Ludlam Trail, and several others.

The Bicycle and Pedestrian Plan includes a bicycle needs assessment to identify facilities that should be more bicycle friendly. The evaluation criteria used for the assessment are:

- Operations and Safety (LOS and Crash Data)
- Connectivity (Existing Facilities and Missing Gaps)
- Local Support (Funding)
- Cost Feasibility (Right-of-Way Availability)

Table 9: 2040 LRTP Funded Bicycle and Pedestrian Projects

Project Type	Roadway	Limits	Length (Miles)
On-Road Bicycle Facility Improvements	NW 87 th Ave.	From NW 74 th St. to NW 103 rd St.	1.87
On-Road Bicycle Facility Improvements	NW 97 th Ave.	NW 74 th St. to NW 58 th St.	1.029



Figure 8: 2040 Bicycle/Pedestrian Plan Proposed Projects

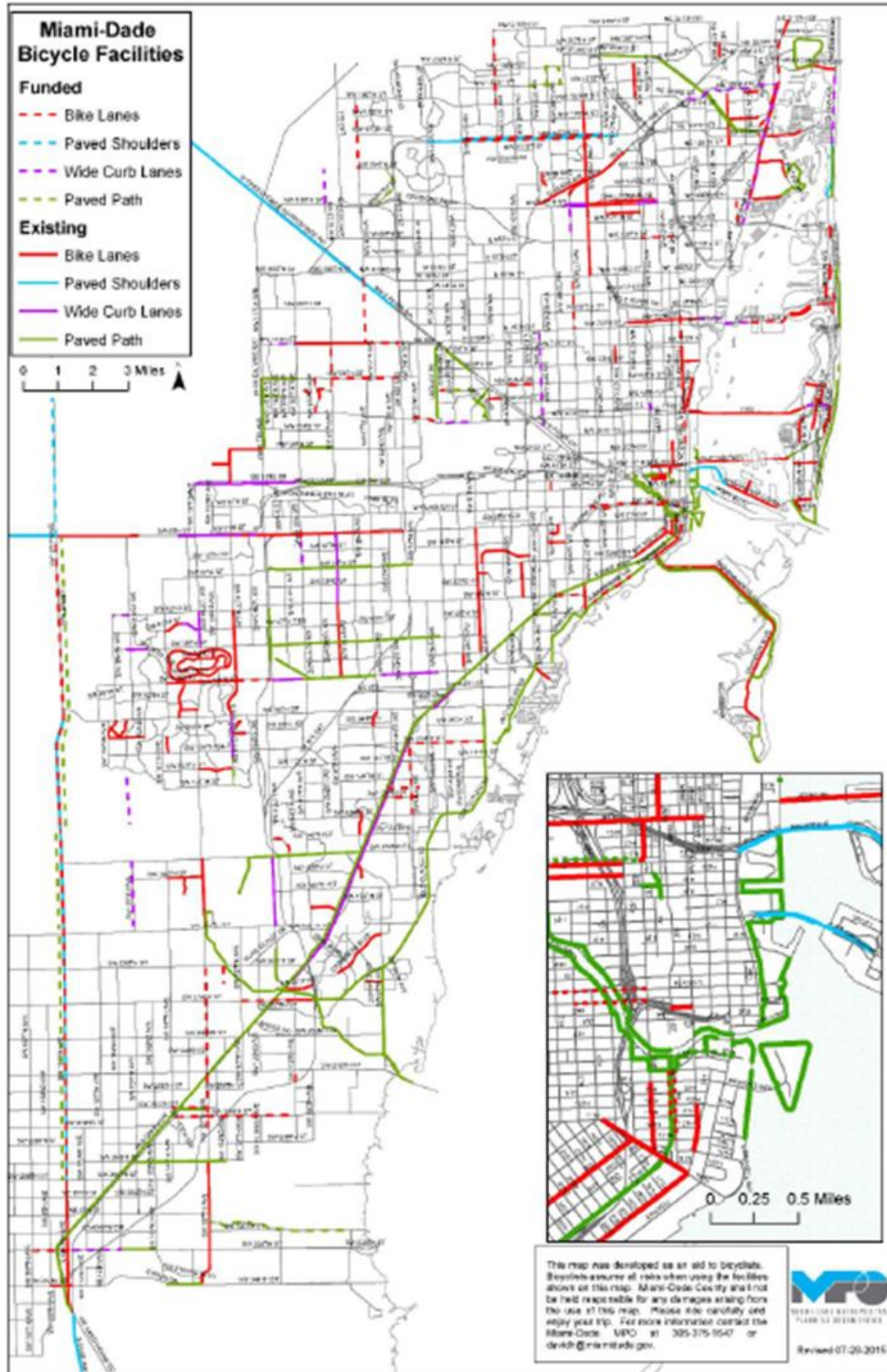


Figure 9: 2016 Existing and Future Bicycle Facilities in Miami-Dade County

NON-MOTORIZED NETWORK CONNECTIVITY PLAN

The Non-motorized Mobility Network Connectivity Plan presents a vision for enhancing non-motorized transportation mobility and accessibility in Miami-Dade County to connect the county's cities, neighborhoods, key destinations, and existing infrastructure investments. The plan identified a preliminary list of fourteen potential projects, of which six were selected for further study and are listed below:

- Miami Gardens connection to the Golden Glades Tri-Rail Station;
- Snake Creel Trail extension to Unity Station (NW 27th Avenue) and NW 199th Street BRT Stations;
- Snake Creek Trail extension to Greynolds Park and Sunny Isles Causeway;
- Coral Way shared use path connection to A.D. "Doug" Barnes Park and Tropical Park;
- Commodore Trail connection to the Rickenbacker Causeway; and
- Miami Springs and Medley connection to Okeechobee Metrorail Station.

Of note are the relevant additional projects that were identified as key gaps in the non-motorized network but were not selected for future study. These projects included the Kitty Roedel Trail Connection to Doral Turnpike Trail. Not only would this proposed project provide a connection to the Dolphin Station Park-and-Ride but would also close the gap between the Kitty Roedel Trail on NW 12th Street and the Doral Turnpike Trail.

PROTECTED BICYCLE LANES DEMONSTRATION PROJECT

The primary objective of the Protected Bicycle Lanes Demonstration Plan is to provide Miami-Dade County with two protected bicycle lane concept designs that are fit for fast-track demonstration project implementation. The plan also focuses on identifying demonstration-friendly segments that possess most of the following attributes:

- Connectivity to the SMART plan and transit,
- Low Annual Average Daily Traffic (AADT),
- Low Volume to Capacity (V/C) ratios,
- Ample Right-of-Way (ROW),
- Existing on-street parking,
- Existing bike facilities, and
- Connectivity to numerous destinations.

Background research was conducted on current Miami-area protected/separated bike-lane projects and a Study Advisory Committee was formed that comprised of municipal agency stakeholders who represented public works, bicycle and pedestrian planning, parks and

EXISTING CONDITIONS REPORT



FDOT

2019 STIP

The STIP is designed to be a multi-year, statewide intermodal program of transportation projects, consistent with the statewide transportation plan and planning processes. This includes metropolitan plans, TIPs, and planning processes. The following FDOT projects are fully funded and planned within the next five years (FY 2017/2018 – 2020/21).

Table 10: 2019 STIP Projects

Item #	Project Description	Type of Work	Fiscal Year Funded
432410 - 1	NW 52 nd St./NW 107 th Ave. and NW 102 nd Ave./NW 41 st St. to NW 58 th St.	Bike Lane/Sidewalk	2019 and prior
440838 - 1	City of Doral – Bike/Pedestrian Shared Use Path Canal Bank Stabilization and Improvement	Bike Path/Trail	2019
440847 - 1	City of Doral – Citywide Sidewalk, Curb Ramp, and Crosswalk Improvements	Sidewalk	2019
441642 - 1	City of Doral – Bicycle/Pedestrian Bridge over Doral Blvd.	Pedestrian/Wildlife Overpass	2020 & 2022
437945 - 1	Doral Freight Improvement Plan Study	PTO Studies	2019 and prior
249112 - 2	SR 826 from NW 14 th St. to NW 31 st St.	Landscaping	2019 and prior
414731 - 1	SR 934/NW 74 th St. from HEFT to SR 826	PD&E/EMO Study	2019 and prior
437143 - 1	Dolphin Station at HEFT and NW 12 th St.	Park and Ride Lot	Prior to 2019

2019 WORK PROGRAM

The Work Program is a five-year planned developed and maintained to maximize the department's production and service capabilities. The work program prioritizes the innovative use of resources, increased productivity, reduced cost, and strengthened organizational effectiveness and efficiency. **Figure 11** through Figure 14 illustrate all the projects within the 2019 Work Program. Table 11 lists the projects within or adjacent to the City of Doral.

Table 11: 2019 FDOT Work Program Projects

Item #	Project Description	Type of Work	Fiscal Year Funded
44162 - 1	City of Doral – Bicycle/Pedestrian Bridge over Doral Blvd	Pedestrian/wildlife overpass	2020 & 2022
440838 - 1	City of Doral – Bike/Pedestrian Use Path Canal Bank Stabilization & Improvements	Bike Path/Trail	2019
440847 - 1	City of Doral – Citywide Sidewalk, curb ramp & crosswalk improvements	Sidewalk	2019
444352 - 1	City of Doral – FIU/ Panther Station Trolley Route	Transit Service Demonstration	2019, 2020, and 2021

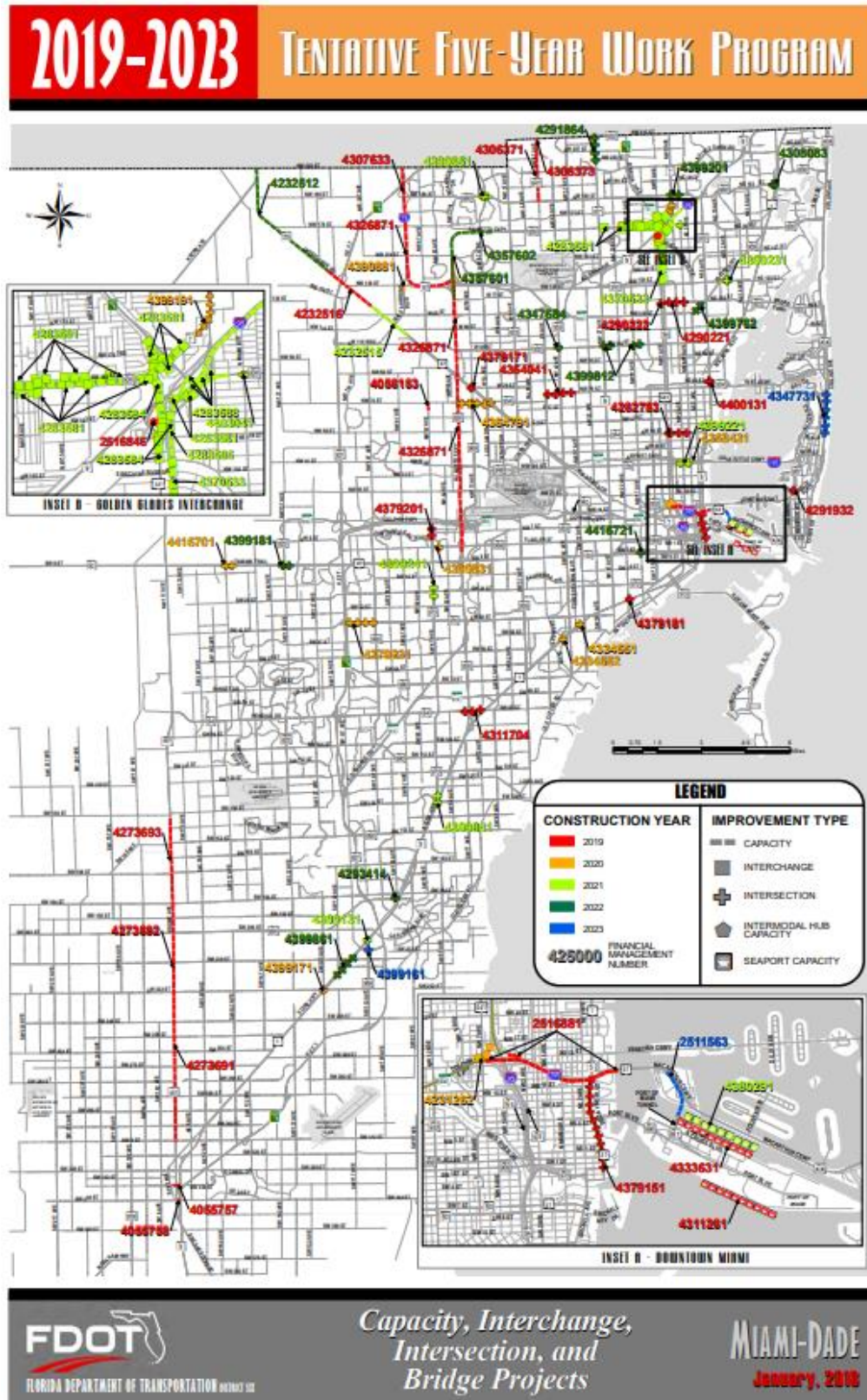


Figure 11: 2019 FDOT Work Program Roadway Projects

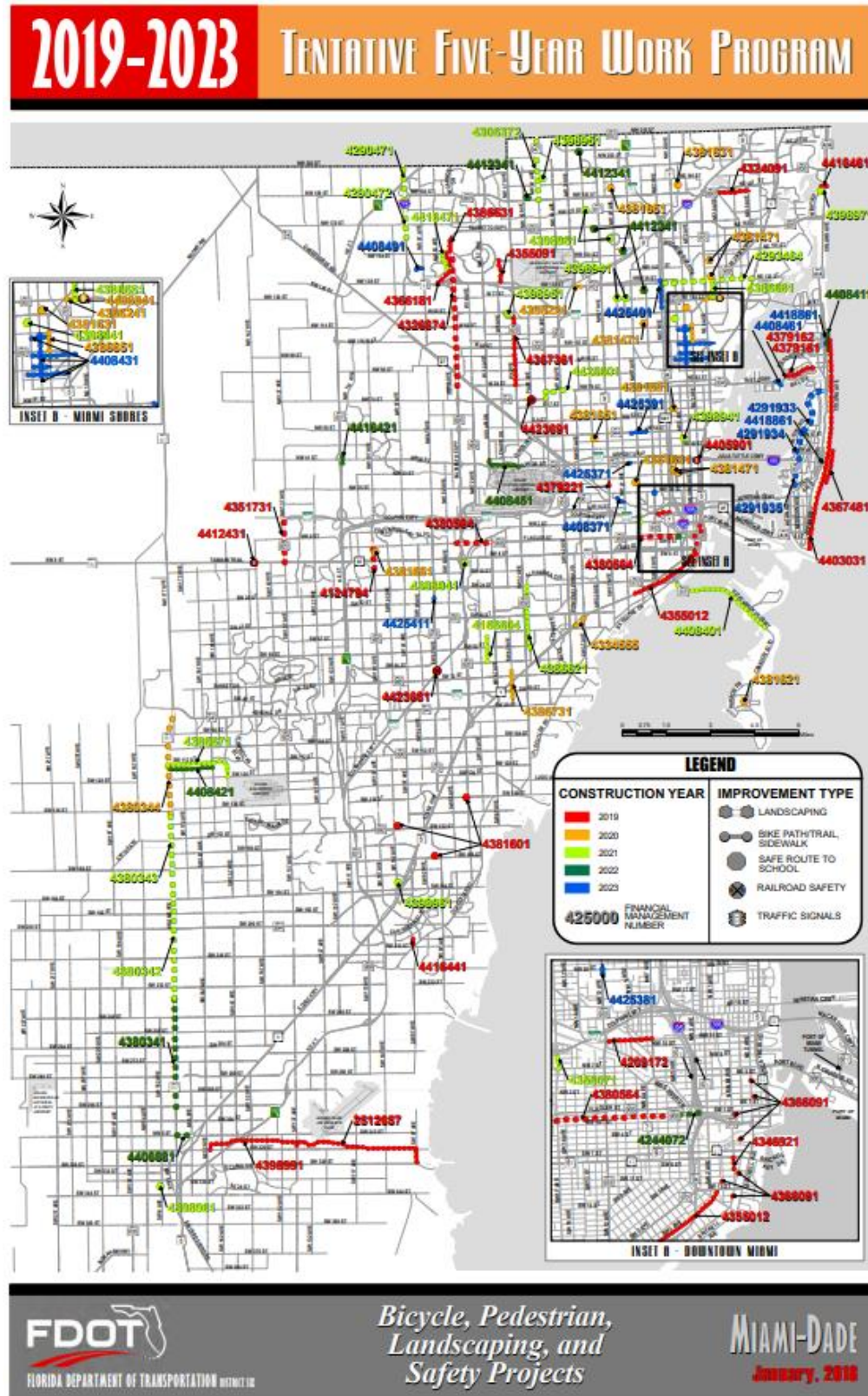


Figure 12: 2019 FDOT Work Program Non-motorized and Safety Projects

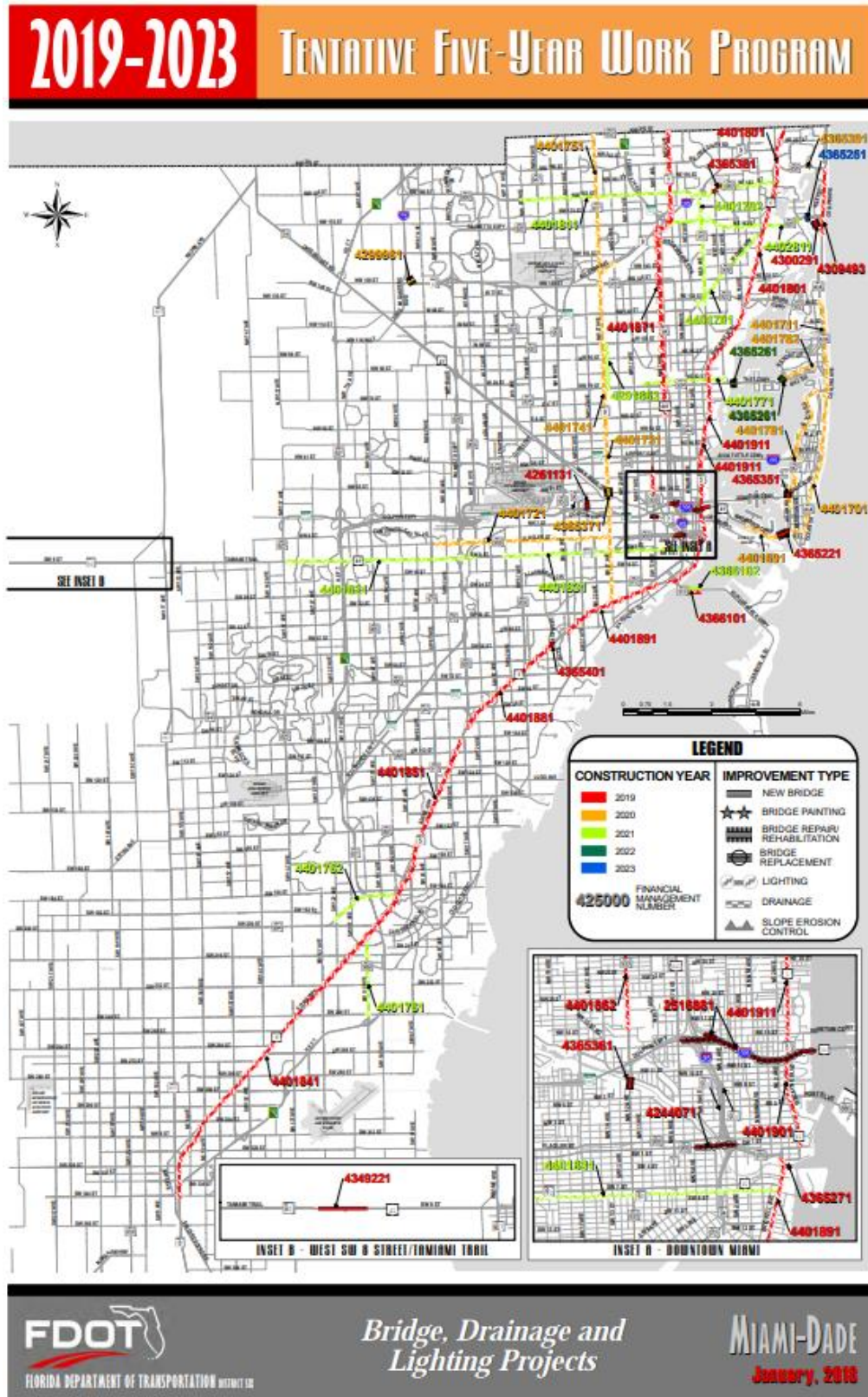


Figure 13: 2019 FDOT Work Program Structural and Lighting Projects

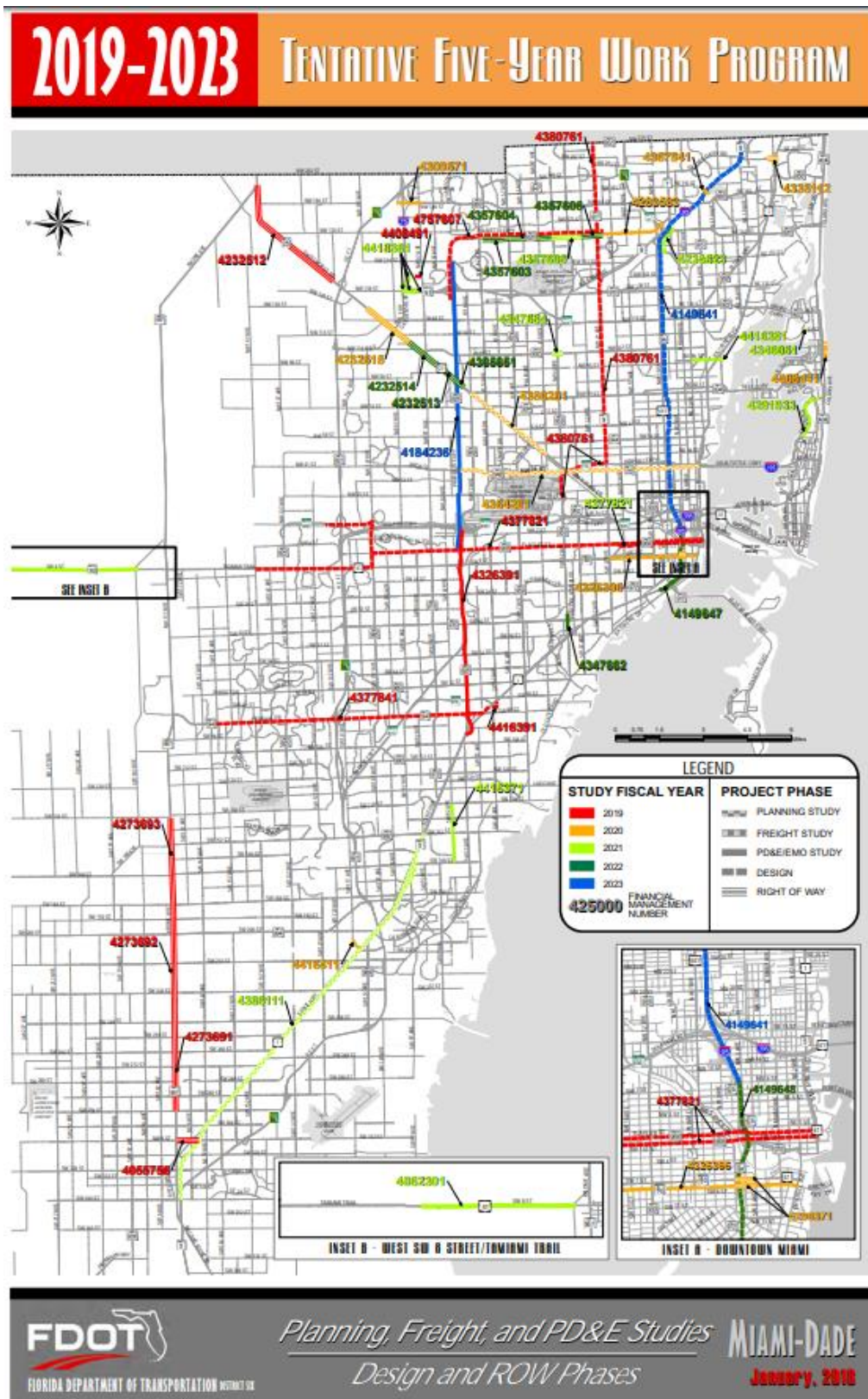


Figure 14: 2019 FDOT Work Program Planning Projects

Doral Subarea Freight Mobility Improvement Plan

This study is the fourth installment in a series of subarea studies conducted by FDOT to understand freight mobility needs throughout the County. The study performed data collection, analysis of freight movements, analysis of roadway system impacts, and traffic engineer analysis to develop specific recommendations that benefit freight. **Table 12** documents the recommendations provided within this study.

Table 12: Doral Subarea Freight Mobility Improvement Plan Short-Term Recommendations

Term	Corridor	Limits	Project Description
Short	NW 25 th St.	NW 87 th Ave. to NW 74 th Ave.	Signal timing improvement.
Short	NW 25 th St.	NW 74 th Ave. to MIA Cargo Area	Signal timing improvement.
Short	NW 36 th St.	NW 7100 Block to NW 79 th Ave.	Signal timing improvement.
Short	NW 74 th St.	NW 74 th Ave. to SR 826	Signal timing improvement.
Short	Okeechobee Rd.	W 8 th Ave. to NW 74 th Ave.	Signal timing improvement.
Short	NW 72 nd Ave.	Corporate Way to NW 25 th St.	Signal timing improvement.
Short	NW 72 nd Ave.	NW 74 th St. to NW 74 th St. Connector	Signal timing improvement.
Short	Port Blvd.	I-395 to Port Blvd. via 2 nd Ave. and 5 th St.	Signal timing improvement.
Short	Port Blvd.	I-395 to Port Blvd. via 1 st Ave. and 6 th St.	Signal timing improvement.
Short	NW 117 th Ave.	NW 12 th St. to NW 25 th St.	Add 2 lanes to obtain 4-lane divided typical section.
Short	NW 117 th Ave.	NW 25 th St. to NW 41 st St.	Add 2 lanes to obtain 4-lane divided typical section.

Table 13: Doral Subarea Freight Mobility Improvement Plan Mid-Term Recommendations

Term	Corridor	Limits	Project Description
Mid	SR 836	NW 137 th Ave. to NW 127 th Ave.	Add 2 lanes.
Mid	SR 836	NW 127 th Ave. to HEFT	Add 2 lanes.
Mid	NW 12 th St.	NW 127 th Ave. to HEFT	Add 2 lanes to obtain 6-lane divided typical section plus TSM&O improvements.
Mid	NW 25 th St.	NW 137 th Ave. to NW 127 th Ave.	NC Add 2 lanes.
Mid	NW 25 th St.	NW 127 th Ave. to HEFT	Add 2 lanes to obtain 6-lane divided typical section plus TSM&O improvements.
Mid	NW 25 th St.	At NW 67 th Ave.	Intersection modification.
Mid	NW 33 rd St.	NW 117 th Ave. to NW 107 th Ave.	New construction of 4-lane divided roadway and widening of existing roadway by 2 lanes to obtain 6-lane divided roadway typical section.
Mid	NW 36 th St.	At NW 79 th Ave.	Intersection modification.
Mid	NW 36 th St.	At NW 72 nd Ave.	Intersection modification.
Mid	NW 36 th St.	At NW 7100 Block	Conduct signal warrant analysis.
Mid	NW 41 st St.	NW 127 th Ave. to HEFT	Add 2 lanes to obtain 4-lane divided typical section.
Mid	NW 58 th St.	SR 826 to NW 72 nd St.	Add 1 lane to obtain 6-lane divided typical section.
Mid	NW 74 th St.	NW 87 th Ave. to SR 826	TSM&O improvements.
Mid	NW 74 th St.	SR 826 to Okeechobee Rd.	Add 2 lanes to obtain 8-lane divided typical section plus TSM&O improvements.
Mid	NW 74 th St.	At NW 77 th Ct.	Intersection modification.
Mid	NW 74 th St.	At NW 72 nd Ave.	Intersection modification.
Mid	NW 74 th St.	At NW 69 th Ave.	Intersection modification.
Mid	NW 90 th St.	NW 117 th Ave. to NW 112 th Ave.	New construction 4-lane divided roadway.
Mid	NW 90 th St.	NW 112 th Ave. to NW 107 th Ave.	Add 2 lanes to obtain 4-lane divided typical section.
Mid	NW 90 th St.	NW 107 th Ave. to NW 97 th Ave.	Add 2 lanes to obtain 4-lane divided typical section.
Mid	NW 90 th St.	NW 97 th Ave. to NW 87 th Ave.	New construction 4-lane divided roadway.
Mid	NW 90 th St.	NW 84 th St. to NW 79 th Ave.	New construction 4-lane divided roadway.
Mid	Port Blvd.	I-395 to Port Blvd. via 2 nd Ave. and 5 th St.	Geometric modifications.

Mid	NW 137 th Ave.	NW 25 th St. to NW 41 st St.	New construction 2-lane undivided roadway.
Mid	NW 127 th Ave.	NW 25 th St. to NW 41 st St.	New construction 4-lane divided roadway.
Mid	NW 122 nd Ave.	NW 12 th St. to NW 25 th St.	New construction 4-lane divided roadway.
Mid	NW 122 nd Ave.	NW 25 th St. to NW 41 st St.	New construction 4-lane divided roadway.
Mid	NW 122 nd Ave.	NW 41 st St. to NW 58 th St.	New construction 4-lane divided roadway.
Mid	NW 117 th Ave.	NW 41 st St. to NW 58 th St.	Add 2 lanes to obtain 4-lane divided typical section.

Table 14: Doral Subarea Freight Mobility Improvement Plan Long-Term Recommendations

Term	Corridor	Limits	Project Description
Long	SR 836	NW 137 th Ave. to NW 127 th Ave.	Add 2 lanes.
Long	SR 836	NW 127 th Ave. to HEFT	Add 2 lanes.
Long	NW 12 th St.	HEFT to NW 107 th Ave.	Add 2 lanes to obtain 6-lane divided typical section plus TSM&O improvements.
Long	NW 12 th St.	NW 107 th Ave. to NW 97 th Ave.	Add 2 lanes to obtain 6-lane divided typical section.
Long	NW 12 th St.	NW 97 th Ave. to NW 78 th Ave.	Add 2 lanes to obtain 6-lane divided typical section.
Long	NW 25 th St.	NW 117 th Ave. to NW 107 th Ave.	Add 2 lanes or viaduct.
Long	NW 25 th St.	SR 826 to MIA Cargo Area	SB left-turn lane ramp study.
Long	NW 25 th St.	At NW 75 th Ave.	Intersection modification.
Long	NW 25 th St. Viaduct	NW 117 th Ave. to NW 107 th Ave.	Add viaduct.
Long	NW 25 th St. Viaduct	NW 107 th Ave. to NW 97 th Ave.	Add viaduct.
Long	NW 25 th St. Viaduct	NW 97 th Ave. to NW 82 nd Ave.	Add viaduct.
Long	NW 25 th St. Viaduct	MIA Cargo Area to MIC	Add viaduct extension.
Long	NW 36 th St.	At NW 79 th Ave.	Lane reconfiguration.

Long	NW 36 th St.	At NW 67 th Ave., NW 66 th Ave., and Perimeter Rd.	Intersection modification.
Long	NW 74 th St.	At NW 72 nd Ave.	Access management.
Long	Port Blvd.	I-395 to Port Blvd. via 1 st /2 nd Ave. and 5 th /6 th St.	Reevaluated access to Port Blvd. once I-395 project is completed.
Long	HEFT	SR 836 to NW 41 st St.	AV/CV technology.
Long	HEFT	NW 41 st St. to NW 74 th St.	AV/CV technology.
Long	HEFT	NW 74 th St. to NW 106 th St.	AV/CV technology.
Long	NW 117 th Ave.	NW 58 th St. to NW 74 th St.	Add 2 lanes to obtain 4-lane divided typical section.
Long	NW 117 th Ave.	NW 74 th St. to NW 90 th St. including an interchange at NW 74 th St.	Reconstruct interchange to accommodate 4-lane divided typical section.
Long	NW 107 th Ave.	NW 90 th St. to NW 122 nd St.	Add 2 lanes to obtain 4-lane divided typical section.
Long	NW 102 nd Ave.	NW 58 th St. to NW 74 th St.	New construction 4-lane divided roadway.
Long	NW 102 nd Ave.	NW 74 th St. to NW 90 th St.	New construction 4-lane divided roadway.
Long	NW 97 th Ave.	NW 12 th St. to NW 25 th St.	TSM&O improvements.
Long	NW 87 th Ave.	NW 12 th St. to NW 25 th St.	TSM&O improvements.
Long	NW 87 th Ave.	NW 25 th St. to NW 36 th St.	TSM&O improvements.
Long	NW 87 th Ave.	NW 36 th St. to NW 58 th St.	TSM&O improvements.
Long	NW 87 th Ave.	NW 58 th St. to NW 74 th St.	Add 2 lanes to obtain 6-lane divided typical section plus TSM&O improvements.
Long	SR 826	SR 836 to Okeechobee Rd.	AV/CV technology.
Long	NW 72 nd Ave.	SR 836 to NW 25 th St.	Add 2 lanes to obtain 8-lane divided typical section plus TSM&O improvements.
Long	NW 72 nd Ave.	NW 25 th St. to Okeechobee Rd.	TSM&O improvements.

Table 15: Doral Subarea Freight Mobility Improvement Plan Other Recommendations

Term	Corridor	Limits	Project Description
Other	N/A	N/A	Potential intermodal facility in privately-owned vacant property (Folio No. 30-3009-001-0030) located between NW 74 th St., NW 90 th St., NW 97 th Ave., and NW 87 th Ave. Another vacant property studied was a group of parcels located west of HEFT bounded by NW 90 th St. to the north and NW 58 th St. to the south.
Other	N/A	N/A	Potential transloading facility in privately-owned vacant property (Folio No. 30-2936-000-0020) located west of HEFT and south of NW 114 th St.
Other	N/A	N/A	Coordinate with the City of Doral's Traffic Relief Plan which is implementing strategies to manage and alleviate traffic congestion on short-, mid-, and long-term timeframes.
Other	N/A	N/A	Coordinate with the City of Doral to improve freight mobility through the use of Smart City strategies. These digital strategies could be used to better understand freight movement as well.
Other	N/A	N/A	Freight bottlenecks were identified for the PM Peaks on a Wednesday at SR 826 NB between NW 12 th St. and NW S. River Dr./Okeechobee Rd., SR 826 SB between NW 74 th St. and NW 25 th St., and Okeechobee Rd. NB between NW 74 th St. and SR 826. Consider performing a more comprehensive bottleneck analysis study and determining potential improvements for identified locations.
Other	N/A (Enforcement)	N/A	Evaluation of WIM Data revealed that some truckers were overweight and speeding. As the City has four posted "No Thru Truck" zones which are strictly enforced, similar enforcement could be extended to trucks that are overweight or speeding. This enforcement could be done at a WIM station similar to the one on the Turnpike, equipped with cameras with optical character recognition to identify, sort and screen commercial motor vehicles for enforcement action should its weight exceed Federal or Doral regulations.

Medley Subarea Freight Mobility Improvement Plan

Similar to the Doral study, FDOT conducted a freight mobility analysis of the Town of Medley. Being the first installment in the series, this study documents important recommendations that affect Doral and its context on the northern boundary. **Table 16** Table 12 documents the recommendations provided within this study.

Table 16: Medley Subarea Freight Mobility Improvement Plan Short-Term Recommendations

Term	Corridor	Limits	Project Description
Short	NW 121 st Way	S. River Dr. to NW 102 nd Rd.	Resurfacing to fix potholes/slippy pavement when wet.
Short	NW 138 th St.	At NW 115 th Ave.	Resurfacing to fix flood retention issues during raining conditions.
Short	NW 105 th Way	At Okeechobee Rd.	Widen turning radius.
Short	NW 106 th St.	HEFT to Okeechobee Rd.	Transportation Systems Management and Operations (TSM&O).
Short	NW 138 th St.	Okeechobee Rd. to NW 115 th Ave.	Access management, operational, and drainage improvements.
Short	NW 72 nd Ave.	At Hialeah Expressway	Operational improvements.
Short	NW 116 th Way	Okeechobee Rd. to South River Dr.	Signal re-timing and coordination.
Short	NW 74 th St.	NW 84 th Ave. to NW 74 th Ave.	Merge and close some access points on the south side of NW 74 th St. if possible. Provide advance signage WB lane drops after NW 79 th Pl. and other congestion management strategies.
Short	Okeechobee Rd.	HEFT to NW 74 th St.	Use of Traffic Adaptive Signal System throughout the corridor.
Short	NW 106 th St.	HEFT to I-75/NW 138 th St.	Use of Traffic Adaptive Signal System throughout the corridor.
Short	NW 74 th St.	HEFT to Okeechobee Rd.	Use of Traffic Adaptive Signal System throughout the corridor.
Short	NW 138 th St.	Okeechobee Rd. to SR 826	Use of Traffic Adaptive Signal System throughout the corridor.
Short	NW 122 nd St.	Okeechobee Rd to SR 826	Use of Traffic Adaptive Signal System throughout the corridor.
Short	NW 103 rd St.	Okeechobee Rd. to SR 826	Use of Traffic Adaptive Signal System throughout the corridor.

Table 17: Medley Subarea Freight Mobility Improvement Plan Mid-Term Recommendations

Term	Corridor	Limits	Project Description
Mid	NW 121 st Way	S. River Dr. to NW 102 nd Road	Widen from 2 to 4 lanes.
Mid	NW 106 th St.	S. River Dr. to NW 116 th Way	Widen from 2 to 4 lanes.
Mid	NW 102 nd Rd.	NW 116 th Way to NW 121 st Way	Widen from 2 to 4 lanes.
Mid	NW 100 th Rd.	NW 116 th Way to NW 121 st Way	Acquire ROW and construct roadway.
Mid	NW 90 th St.	NW 87 th Ave. to NW 97 th Ave.	Acquire ROW and construct roadway.
Mid	NW 97 th Ave.	North of NW 74 th St. to NW 90 th St.	Acquire ROW and construct roadway.
Mid	NW 97 th Ave.	North of NW 90 th St. to NW 106 th St.	Acquire ROW and construct roadway.
Mid	NW 107 th Ave.	South of NW 122 nd St. to NW 106 th St.	Acquire ROW and construct roadway.
Mid	NW S. River Dr.	NW 107 th Ave. to NW 74 th Ave.	Roadway and operational improvements; add dedicated left turn lane(s) that can accommodate truck movements.
Mid	NW 107 th Ave.	Okeechobee Rd. to 1,000 feet North of NW 122 nd St.	Widen Bridge over Miami Canal, re-time and improve signal coordination.
Mid	SR 826 Express Bus (East)	Palmetto Intermodal Terminal to Golden Glades Interchange	Implement express bus service on managed lanes between terminals.
Mid	SR 826 Express Bus (North)	Palmetto Intermodal Terminal to I-75/NW 138 th St. Interchange	Express commuter transit service.

Table 18: Medley Subarea Freight Mobility Improvement Plan Long-Term Recommendations

Term	Corridor	Limits	Project Description
Mid - Long	Okeechobee Rd.	Entire corridor within the Town of Medley.	Implement Active Arterial Management Techniques, including dynamic message sign system, CCTV coverage and detection systems that can collect traffic data.
Mid - Long	Citywide	N/A	Implementation of a Virtual Freight Network (VFN) that identifies operational strategies using intelligent transportation technology to improve freight mobility within the area.
Mid - Long	Citywide	N/A	Dynamic routing of freight vehicles.
Long	Okeechobee Rd.	SR 826 to Palm Beach County Line	Build truck only lane.
Long	Palmetto Intermodal Terminal	SR 826 Managed Lanes to Palmetto Intermodal Center	Direct access ramps for transit. Coordinate with multimodal study.
Long	Okeechobee Enhanced Bus Intermodal Terminal	HEFT to MIC	Implement limited stop enhanced bus service.
Other	Citywide (Policy)	At-grade railroad crossings	Monitor rail movements along the Florida East Coast (FEC) railroad corridor in the study area on an annual basis. Collect delay data at rail crossings in Medley to track crossing interruptions and delay impacts.
Other	Citywide (Coordination)	Multimodal Project per Multimodal Mobility Plan	Recommendations from the Town of Medley Mobility plan (including TDM strategies) that reduce the demand for local automobile travel, specifically for employees (i.e. bus circulator, bicycle/pedestrian facilities).
Other	Citywide (Policy)	At-grade railroad crossings	Evaluate the need for rail grade separations at affected locations.

Miami-Dade DTPW

2028 Transit Development Plan

The Transit Development Plan is aimed at evaluating the County's existing transit systems and prioritizing areas that require improvements. This plan documents DTPW's visions, goals, and strategies for the next ten years and achievements from the previous fiscal year. The plan lists all transit projects by order of priority between 2019 and 2028. **Table 19** through **Table 21** list the projects within or near Doral.

Table 19: Miami-Dade DTPW Funded Transit Projects FY 2019 – 2028

Project Name	Limits	Project Description
NW 12 th St. Roadway Improvements (Bus-Only) Project for Dolphin Station	Along NW 12 th St. between NW 122 nd Ave. and NW 114 th Ave.	This project includes widening and resurfacing along NW 12th Street to add bus-only lanes from NW 122nd Avenue to NW 114th Avenue. These new bus-only lanes will allow buses to bypass traffic congestion along this segment of NW 12th Street and will thereby reduce travel time for buses traveling between the Dolphin Station Park-and-Ride/Transit Terminal and Dolphin Mall. This roadway project is an integral component of the Dolphin Station Park-and-Ride/Transit Terminal Facility. The Dolphin Station Park-and-Ride/Transit Terminal Facility is part of the East West Corridor Rapid Transit Project which connects the largest employment areas of Miami-Dade County (Florida International University (FIU), City of Doral, Miami International Airport (MIA), Miami Health District, Downtown Miami and Brickell). The East West Corridor Rapid Transit Project will also connect to the Miami Intermodal Center (MIC) – the County's major ground transportation hub.
SR 836 Express Bus A Line Express	From the Tamiami Station (SW 8 th St. and SW 147 th Ave.) to the proposed Downtown Miami Intermodal Terminal (NW 1 st St. and NW 1 st Ave.)	A Line Express would provide premium express transit service along SR 836, SW 8 th Street, and SW 137 th Avenue. This route will operate during peak periods only. Service headways will be 10 minutes during the AM/PM peak hours. Service hours are weekdays 6:00 AM to 9:00 AM and 3:00 PM to 7:00 PM. DTPW is coordinating with MDX to potentially operate this service. This project will include the addition of ten new articulated buses.

Table 20: Miami-Dade DTPW Partially Funded Transit Projects FY 2019 – 2028

Project Name	Limits	Project Description
Palmetto Intermodal Terminal (Phase 1)	SR 826 at NW 74 th St.	Purchase of an approximately 11.9 acres semi-vacant parcel of land located immediately south of the Palmetto Metrorail Station for the purpose of constructing the Palmetto Intermodal Terminal. A second phase of the project will include the design and construction of the Palmetto Intermodal Terminal.
East-West Corridor	MIA west along the SR 836 to the HEFT in the vicinity of FIU	This project will provide multimodal solutions for severe traffic congestion along SR 836, the only east-west expressway in central Miami-Dade County. This project will also serve major activity centers including FIU, MIA, the MIC, Downtown Miami, and PortMiami, while transporting riders to and from major employment areas (Doral, Health District, Central Business District, Brickell, etc.). The East-West Corridor is being studied as part of the Strategic Miami Area Rapid Transit, or SMART Plan.

Table 21: Miami-Dade DTPW Unfunded Transit Projects FY 2019 – 2028

Project Name	Limits	Project Description
Direct Ramps to Dolphin Station Transit Terminal	HEFT Express Lanes to Dolphin Station	Construct direct access ramps to connect the HEFT Express Lanes to Dolphin Station
NW 122 nd Ave.	NW 12 th St. to NW 41 st St.	Construction of new two-lane road
Palmetto Intermodal Terminal (Phase 2)	SR 826 at NW 74 th St.	Construction of a 1,000-space parking garage including long-term and short-term parking, kiss-and-ride, pool-and-ride, and a minimum of a 12-bus bay terminal
Florida's Turnpike Express (North)	FIU Panther Station/Dolphin Station/Miami Gardens Station/American Dream Mall Station	Route will provide express bus service from the FIU Panther Station to Dolphin Station, the I-75/Miami Gardens Dr Station and the American Dream Mall Station. Headways will be 15 minutes during peak hours and 30 minutes during off-peak hours. This project will include the addition of four new articulated buses.

FIU

107th Avenue Pedestrian Transit Greenways Corridor at City of Sweetwater

In 2003, the City of Sweetwater published a report to illustrate a community transportation system that can generate new opportunities in residential, commercial and recreational growth as well as adhere to the City's planning, development, and redevelopment efforts. Transit greenways are designed to be a place where residents can enjoy nature and green space in an urban environment. This study was designed to further advance the community's goals which are:

- Improving the quality of life for all, students of FIU and citizens of Sweetwater
- Natural resource conservation
- Recreation
- Economic development and redevelopment;
- Increasing property values; and,
- Providing improved economic and cultural opportunities for its citizens.

Specifically, the goals of the survey included undertaking a nontraditional transportation projects that would promote infrastructure development for a more walkable community and improve mobility and intermodal connections through alternate modes of transportation. The survey's goals also include identifying transit greenway opportunities for both the City of Sweetwater and FIU as well as identifying appropriate accessible funding sources for transit greenway project development. The report documents the following recommendations.

- Install chokers on SW 2nd St. and SW 3rd St. along SW 109th Ave.
- Install round about or speed humps on SW 2nd St. near the intersection of SW 108th Ave. and SW 2nd St.
- Install median barriers or chokers at the intersection of SW 109th Ave. and SW 8th St.
- Install roundabout or speed humps near the intersection SW 109th Ave. and SW 7th St.
- The traffic signals at the intersection of SW 109th Ave. and SW 4th St. can be replaced by a Traffic Circle.
- Install Raised Crosswalks or Raised Intersection or Speed Tables at the intersections of SW 107th Ave. and West Flagler and SW 107th Ave. and SW 8th St.
- Pavement markings have to be painted at West Flagler and SW 8th St. along SW 109th Ave. The left turn marking has to be painted at southbound instead of a through marking.
- The heavy traffic volume at the two major intersections (SW 8th St. and West Flagler St. along NW 109th Ave.) influences level of service. There is a need for improving geometric configuration at the said intersections to improve the traffic operations.

- In order to enhance the traffic operation of SW 109th Ave., Arterial Analysis that will include access management alternatives and operational and geometric improvements at the signalized intersection is recommended.
- Close the east-west traffic path by constructing a raised median at SW 7th terrace and SW 109 Avenue to avoid the left turning violation.

Furthermore, this study conceptualized four premium transit alternatives to connect FIU with a potential superblock neighborhood concept in Sweetwater. **Figure 15** through Error! Reference source not found. illustrate the four potential alignments for either a light rail or bus circulator.

FIU Modesto A. Maidique Campus and Engineering Center Master Plans

The draft master plans illustrate all developments, both in construction and planned, to occur between 2015 – 2025 at Florida International University's Modesto A. Maidique Campus and Engineering Center. Future projects include the expansion of several existing buildings as well as new developments and improvements. These enhancements at both campuses indicate possible population density increase in that area, resulting in potential transportation improvement needs.

Of note, the plans include a pedestrian bridge and plaza across SW 8th Street and adjacent to SW 109th Avenue, the Panther Station near the new PG6 parking garage, and expansion of the Engineering Center as well as recreational facilities in this campus. FIU also recently began construction on a new 150-bed hotel which will feature a 32,000-square-foot conference center and a 13,700-square-foot Alumni Center on the northwest corner of the Modesto A. Maidique campus (see development 60 in **Figure 17**). **Figure 18** illustrates the developments planned for the Engineering Center.



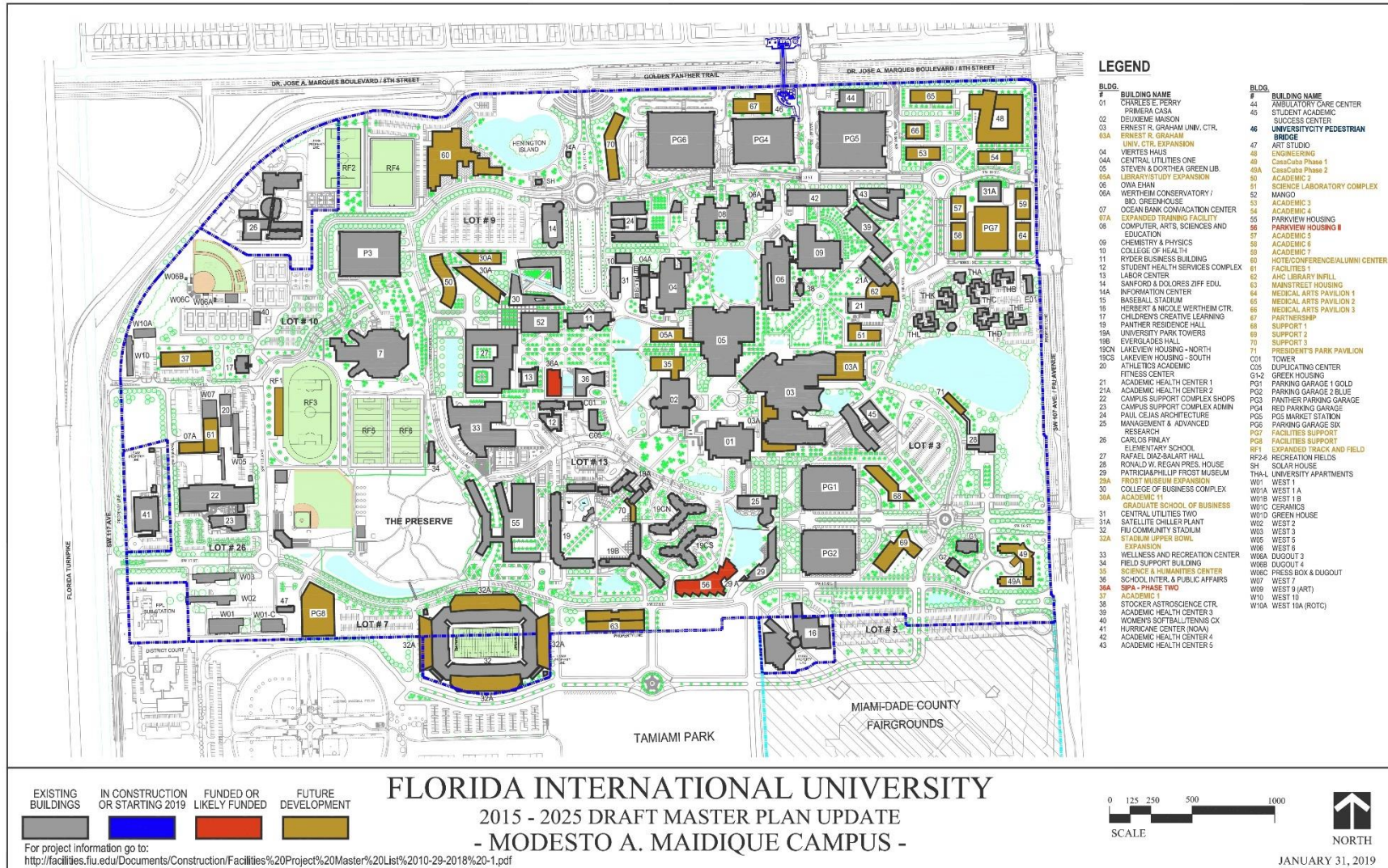


Figure 17: FIU Modesto A. Maidique Master Plan

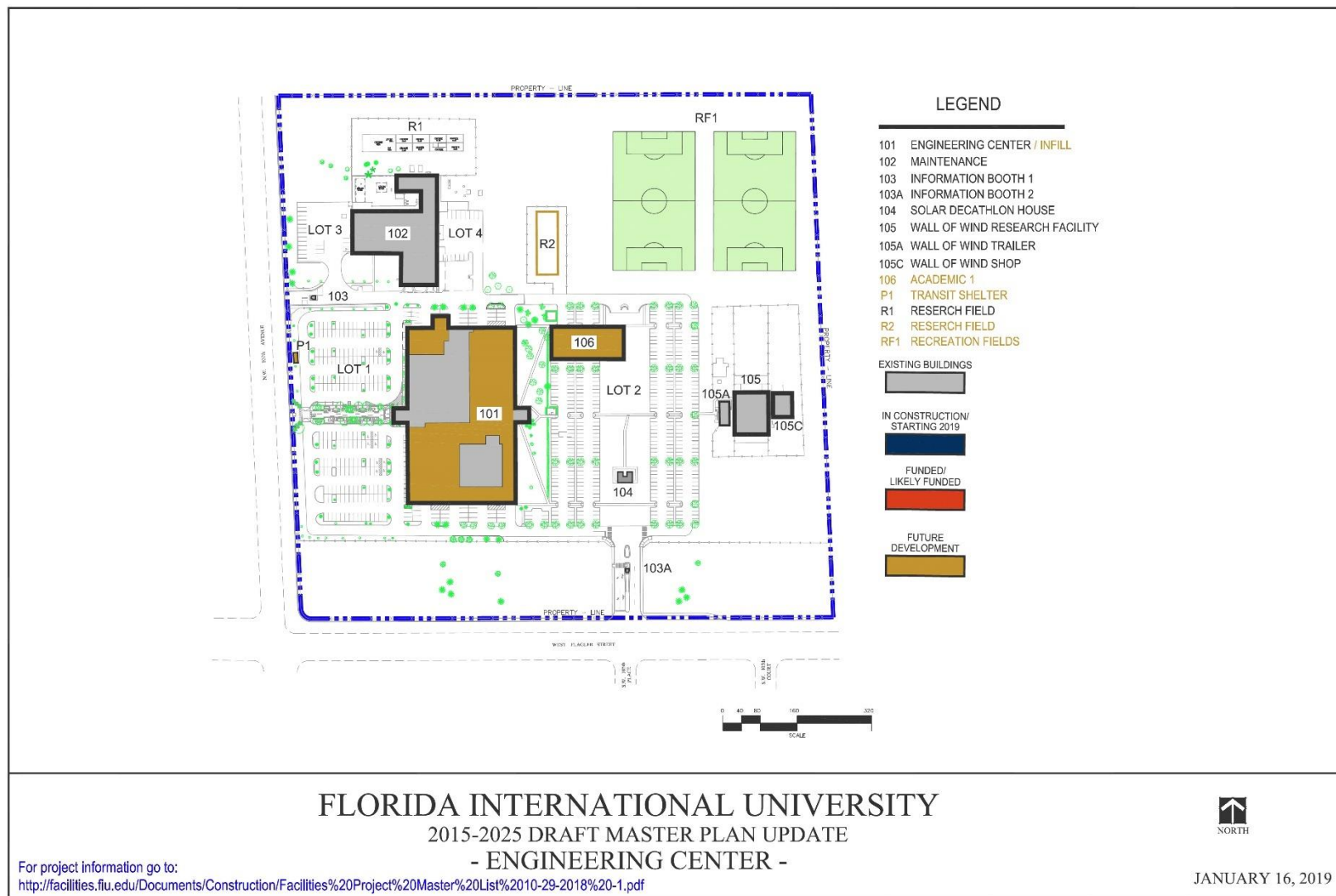


Figure 18: FIU Engineering Center Master Plan

TOWN OF MEDLEY

Multimodal Mobility Plan

The Town of Medley conducted the Multimodal Mobility Study to improve bicycling, walking, and public transit as viable alternative modes of transportation. The Multimodal Mobility Study identifies specific transit and non-motorized transportation improvements that will become part of the City's work program or recommended to sister transportation agencies. It includes recommendations for bicycle and pedestrian facility improvements, as well as recommendations regarding a future Medley circulator service. **Table 22** and Figure 19 through Figure 21 present the bicycle and pedestrian recommendations of this plan. Figure 22 illustrates recommended potential trolley routes.

Table 22: Medley Multimodal Mobility Plan Recommendations

Corridor	Limits	Project Description
NW S. River Dr.	From NW 74 th St. to existing shared use path 580 feet south of 1401 N Royal Poinciana Blvd.	10 – 14 ft. wide Shared Use Path
NW S. River Dr.	From Palmetto Expressway Southbound On-Ramp to NW 79 th Ave.	10 – 14 ft. wide Shared Use Path
NW S. River Dr.	From 645 feet north of NW 96 th St. to 710 feet north of NW 106 th St.	10 – 14 ft. wide Shared Use Path
NW S. River Dr.	From NW 121 st Way to NW 122 nd St.	10 – 14 ft. wide Shared Use Path
NW S. River Dr.	From NW 122 nd St. to 500 existing sidewalk 500 feet north of NW 122 nd St.	10 – 14 ft. wide Shared Use Path
NW S. River Dr.	From 905 feet south of NW 127 th St. to the HEFT	10 – 14 ft. wide Shared Use Path
Eastern ROW of HEFT	From NW S. River Dr. to NW 106 th St.	10 – 14 ft. wide Shared Use Path
NW 106 th St.	From HEFT to NW 107 th Ave.	10 – 14 ft. wide Shared Use Path
NW 106 th St.	From NW 107 th Ave. to NW 110 th Rd.	10 – 14 ft. wide Shared Use Path
NW 107 th Ave.	From NW 106 th St. to NW 90 th St.	10 – 14 ft. wide Shared Use Path
NW 90 th St./NW 89 th St./NW 81 st Rd.	From NW 107 th Ave. to NW 79 th Ave.	10 – 14 ft. wide Shared Use Path
NW 74 th St.	From existing sidewalk at NW 77 th Ct. to SR 826 northbound ramps	10 – 14 ft. wide Shared Use Path
Metrorail Tracks	Form NW 76 th St. to the Palmetto Metrorail Station	10 – 14 ft. wide Shared Use Path
NW S. River Dr.	From NW 74 th St. to NW 72 nd Ave.	8 ft. or wider Sidewalk

Corridor	Limits	Project Description
NW S. River Dr.	From 470 feet south of SR 826 northbound off-ramp to SR 826 southbound on-ramp	8 ft. or wider Sidewalk
NW S. River Dr.	From NW 79 th Ave. to 645 feet north of NW 96 th St.	8 ft. or wider Sidewalk
NW S. River Dr.	From 710 feet north of NW 106 th St. to NW 121 st Way	8 ft. or wider Sidewalk
NW 106 th St.	From NW S. River Dr. to NW 100 th Rd.	8 ft. or wider Sidewalk
NW 93 rd St.	From NW S. River Dr. to NW 89 th Ave.	8 ft. or wider Sidewalk
NW 79 th Ave.	From the Palmetto Metrorail Station to NW 79 th Pl.	8 ft. or wider Sidewalk
NW 74 th Ave.	From NW S. River Dr. to NW 77 th St.	8 ft. or wider Sidewalk
NW 74 th St./NW 74 th Ave./NW 76 th St.	From NW 72 nd Ave. to the western limit of NW 76 th St.	8 ft. or wider Sidewalk
NW 79 th Pl.	From NW 74 th St. to NW S. River Dr.	8 ft. or wider Sidewalk
NW 75 th St.	From NW S. River Dr. to NW 69 th Ave.	8 ft. or wider Sidewalk
NW 69 th Ave.	From NW 75 th St. to NW 74 th St.	8 ft. or wider Sidewalk
NW 77 th St.	From NW 79 th Pl. to Palmetto Metrorail Station	8 ft. or wider Sidewalk
NW S. River Dr.	At NW 74 th St.	Sidewalk Reconstruction
NW S. River Dr.	From Medley Mobile Home Park Sections B Entrance to 620 feet north of NW 74 th Ave.	Sidewalk Reconstruction
NW S. River Dr.	From 500 feet north of NW 122 nd St. to 905 feet south of NW 127 th St.	Sidewalk Reconstruction
NW 79 th Pl./NW 79 th Ave.	From NW 74 th St. to NW S. River Dr.	4 ft. or wider Bicycle Lane
NW 87 th Ave.	From NW 74 th St. to NW S. River Dr.	4 ft. or wider Bicycle Lane
<i>Location not described</i>	Over NW 138 th St. and the adjacent canal to the east	Bicycle/Pedestrian Bridge or Underpass
<i>Location not described</i>	Under NW 107 th Ave.	Bicycle/Pedestrian Bridge or Underpass
Connection to the Okeechobee Metrorail Station	Over the Miami Canal between Crane Avenue and the Florida East Coast Railway Bridge	Bicycle/Pedestrian Bridge or Underpass
NW 74 th Ave.	Florida East Coast Railway	Bicycle/Pedestrian Bridge or Underpass

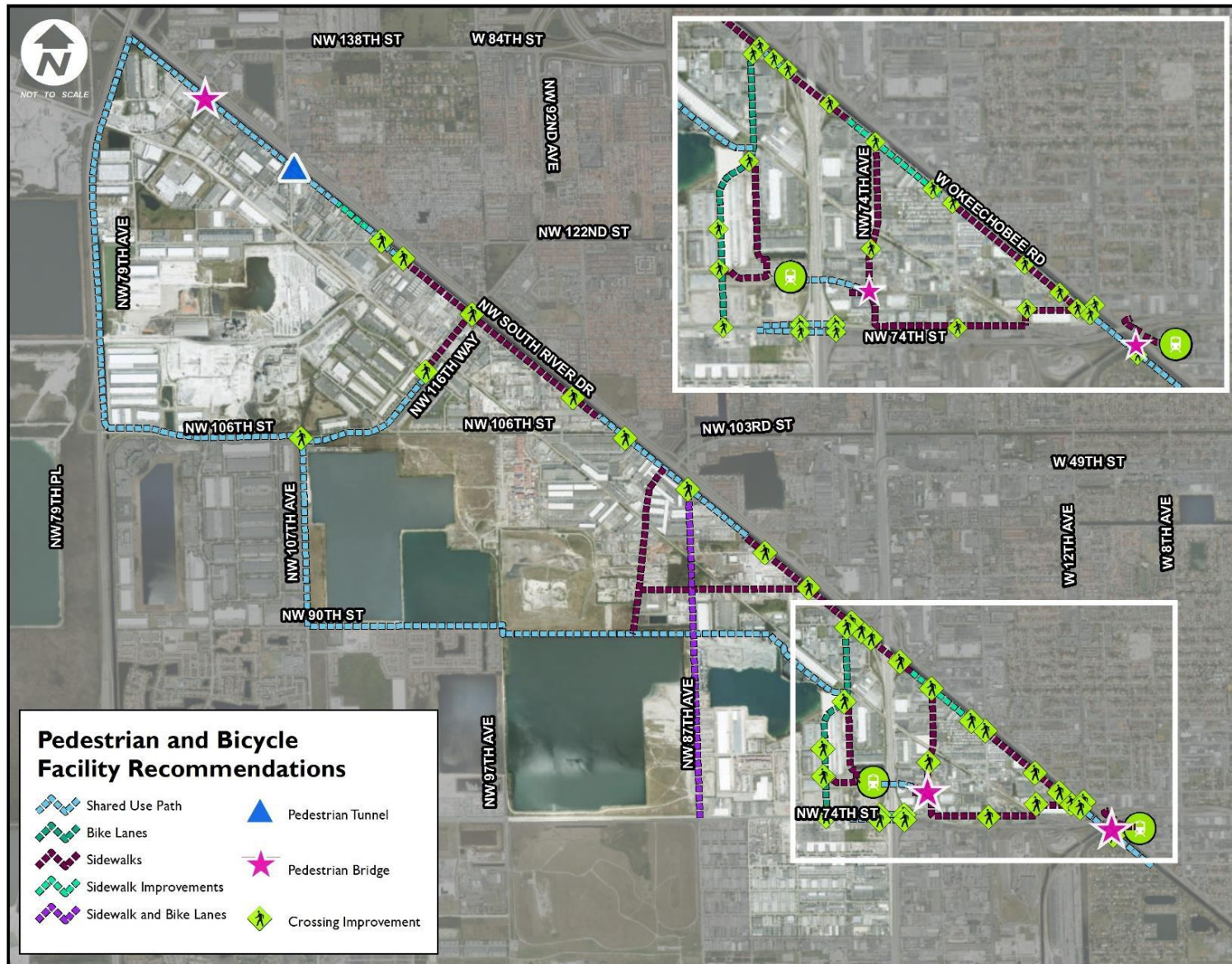


Figure 19: Medley Bicycle and Pedestrian Facility Recommendations

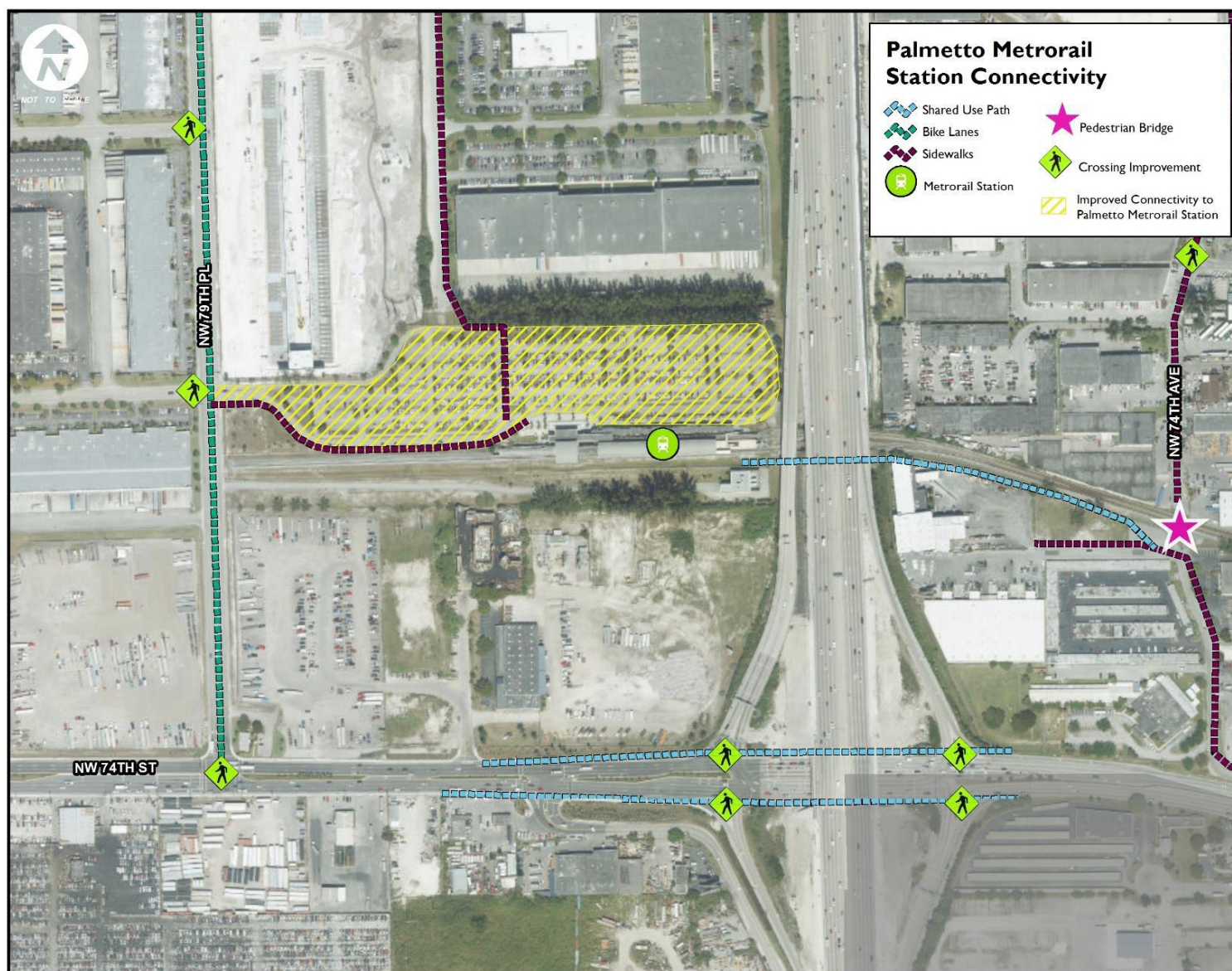


Figure 20: Medley Palmetto Metrorail Station Connectivity Recommendations

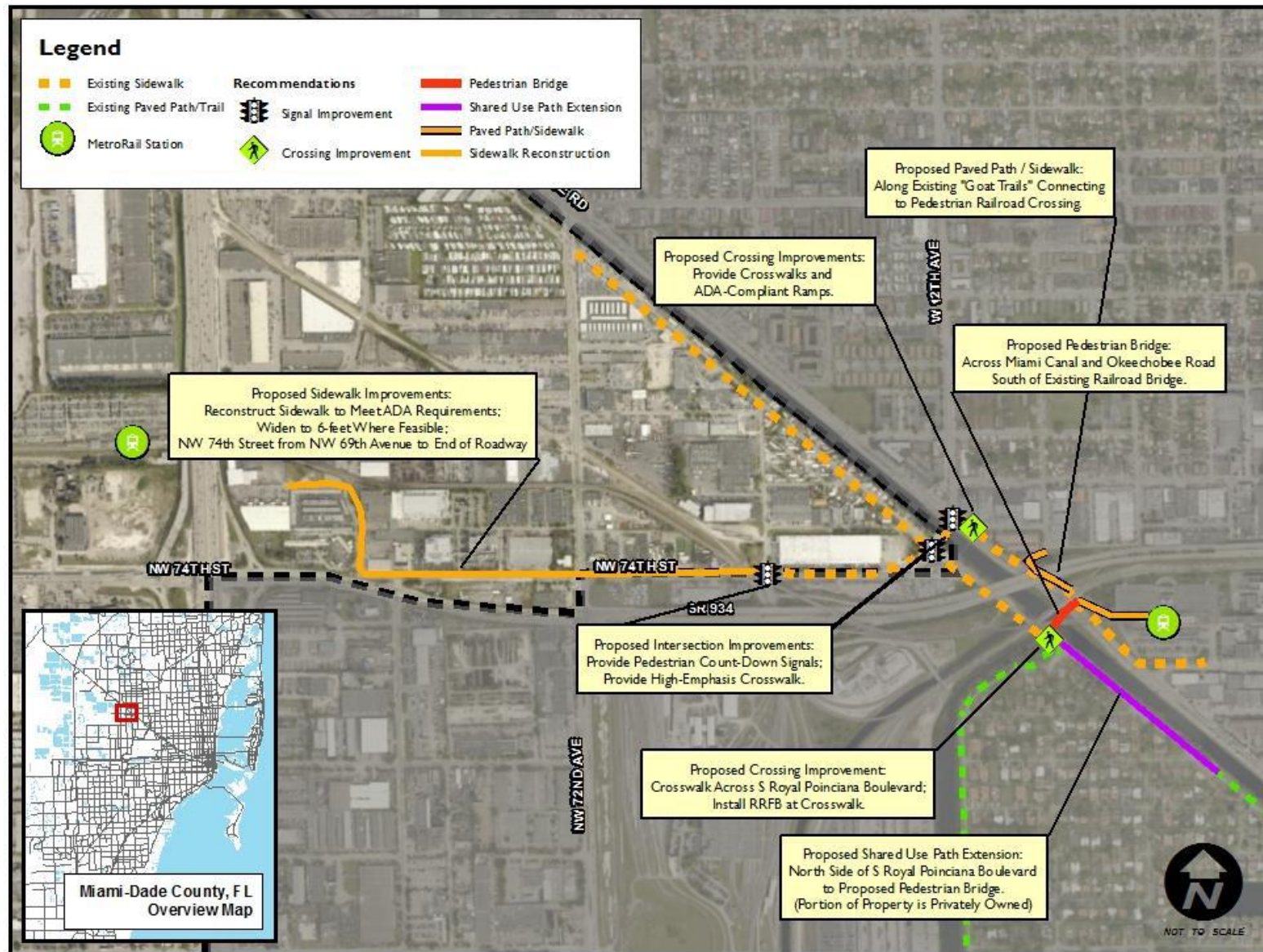


Figure 21: Medley Okeechobee Metrorail Station Connectivity Recommendations



Figure 22: Medley Proposed Trolley Routes

The Town of Medley is proceeding in implementing a pilot trolley project based on the recommended Route 1. Currently, the Town is refining the trolley alignment and stop locations before procuring needed infrastructure to begin operations.

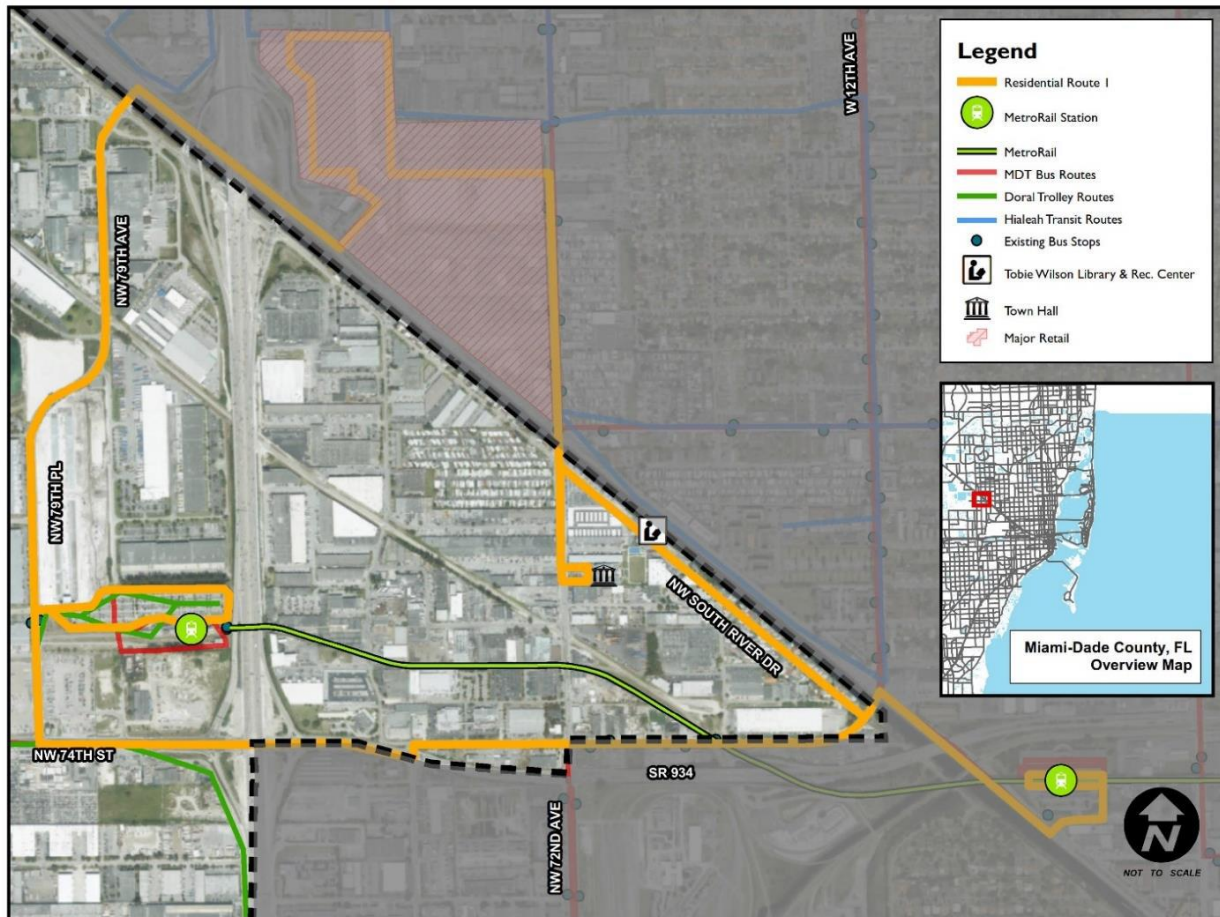


Figure 23: Medley Proposed Trolley Route 1

City of Doral

Transportation Master Plan

The City of Doral's Transportation Master Plan provides multimodal, roadway, "complete roadway grid" and transit projects in a prioritized program to build local multimodal capacity and relieve congestion.

The plan aims to identify specific projects and programs to address transportation needs and objectives. Detailed in the plan is a review of the City's Comprehensive Plan's Transportation Element, updated new plans for roadways, transit, pedestrian, bicycles and how to coordinate and connect these modules, as well as recommendations to participate in regional projects and studies of high transit capacity. The Master Plan proposes 22 multimodal, 45 roadway, and 13 transit projects in a prioritized program to build local multimodal capacity and further enhance the quality of life for the City's inhabitants. **Table 23** through

Table 25 list all the recommendations found in the Transportation Master Plan.

Table 23: Doral Transportation Master Plan Multimodal Projects

Project Name	Pedestrian Safety Improvements at Intersections
Purpose	The purpose of these projects is to implement safety improvements at intersections across the City. Improvements include adjusting vehicular turning radii; revising signalization, including pedestrian phases; high visibility cross walks; curb extensions; and other interventions.
Need	Although Doral's ROWs are wide, traffic volumes are high. Given that pedestrian activity can also be high at certain locations, it should be encouraged with more safe conditions. This is accomplished by providing clearly marked crossing points, particularly at intersections as well as crosswalk signals, many of which are conspicuously missing in Doral, leading pedestrians into a guessing game as to timing their crossing in relation to oncoming traffic.
Description	44 locations have been noted with need for improvement. Each intersection should undergo an individual pedestrian safety evaluation to explore the number of crashes, operational characteristics, signal timing, geometry, etc. This is necessary to make specific recommendations for each location. Work should be conducted in coordination with the Miami-Dade County Public Works Department in moving to design and construction.
Cost	<i>Planning:</i> \$ 293,000 <i>Design:</i> \$ 880,000 <i>Construction:</i> TBD (Due to differences in need for each intersection)

Project Name	Sidewalk Infrastructure Gap Infill
Purpose	The purpose of this project is to fill in the gaps in the sidewalk infrastructure to provide increased mobility. The ability to walk unobstructed is inherent in every trip taken, and gaps in the sidewalk system significantly hamper this ability.
Need	Analysis indicates significant gaps in the sidewalk system totaling approximately 182,000 linear feet (as of April 2014). These gaps hinder pedestrian and multimodal transit mobility in Doral by creating more circuitous walking paths, creating non-Americans with Disabilities Act (ADA) compliant bus stops due to a lack of sidewalk connectivity to these stops, and in some instances creating situations where the only alternative for pedestrians is to walk on a non-separated grassy area or in the roadway.
Description	Prioritization of these sidewalk improvements should be based on proximity to residential areas, schools, parks, and bus or trolley stops, and then to existing businesses. Primarily, the purpose is to create a cohesive, connected walking network; thus, in some cases, the need for sidewalks can be bundled with a bicycle path to develop a shared use off-road path.
Cost	Planning: Completed Design: \$ 131,000 Construction: \$2,180,000

Project Name	ADA Master Plan
Purpose	The purpose of this project is to assure that City infrastructure is compliant with ADA rules and regulations.
Need	There are multiple locations in the City where fire hydrants and other public infrastructure (e.g., benches, shelters, traffic cameras, signage, and utility poles) present obstacles in pedestrian paths and transit riders. In some cases, these obstacles present issues for disabled persons in wheelchairs, as well as families with children in strollers and casual cyclists.
Description	Work with Miami-Dade County to determine which of these locations can have the fire hydrants or obstacles located out of the pedestrian paths. Develop a comprehensive inventory of all transit stops, buses, and all transit facilities noting any missing boarding and alighting connectivity. Once these locations have been confirmed, coordination with the owner will allow the obstacle to be removed and new infrastructure constructed to complete the network and bring the City into full compliance.
Cost	Planning: \$75,000 Design: N/A Construction: N/A

Project Name	Sidewalk Repair
Purpose	The purpose of this project is to repair or replace damaged, uneven, or cracked sidewalks.
Need	Analyses of data shows that about 1,750 ft. of sidewalks on NW 97 th Avenue, NW 33 rd Street, NW 25 th Street, NW 41 st Street/NW 36 th Street, and NW 58 th Street need repair.
Description	Sidewalk locations will be prioritized then repaired. During the repair and replacement process, planning and design should be reviewed in regard to materials to be used, as well as areas where existing tree roots impact the sidewalk.
Cost	Planning: \$6,000 Design: \$9,000 Construction: \$150,000

Project Name	Pedestrian Islands at Intersections
Purpose	The purpose of this project is to select the locations for pedestrian safety islands at various intersections throughout the City.
Need	The public wants safer pedestrian access to and from various locations. From site reconnaissance it was noticed that pedestrian street crossings are difficult, with pedestrians not having appropriate time to cross at intersections, poorly marked intersections or pedestrians J-walking at mid-block. A primary solution is to provide pedestrian islands in the middle of typically wide ROW in the City.
Description	Thirty-one locations should see immediate consideration for construction of pedestrian islands. All locations currently have medians. Some intersections may require additional pedestrian islands at specific crossings, but would need median work, and thus were excluded. Work should be coordinated with Public Works and Miami-Dade DTPW to confirm high-access locations in order to prioritize crossings for approval, design, and construction.
Cost	Planning: \$ 2,000 Design: \$ 7,000 Construction: \$ 112,000

Project Name	Mid-block Crosswalks
Purpose	Provide safe pedestrian mid-block crossings along major corridors.
Need	The City is built on a grid of super blocks at the 1 mile and the ½-mile scale. The typical ROW of a major corridor is between 74 ft. and 86 ft., consisting of roads between 4 and 6 lanes. Pedestrian crossing as are typically inadequate, and only located at intersections, which means that pedestrians wishing to semi-safely cross the streets need to walk up to a mile to reach a destination. Often the land-use patterns place origins (office uses) and destinations (restaurants) on opposite sides of the street. The implementation of mid-block crossings up to every ¼-mile would provide pedestrians safe access to cross streets at five locations per block. The fact that there are so few safe crossings discourages walking and encourages auto trips. This project will encourage pedestrianism and help incrementally manage congestion, particularly during mid-day periods.
Description	Locate areas where origins and destination land uses are on opposite sides of the street. Evaluate crossing volumes and accessibility. Design appropriate crossings as necessary to include high visibility striping, reflectors, signage, pedestrian islands, countdown pedestrian signals, etc. Work with property owners and connect via pedestrian paths on private property.
Cost	Planning: \$20, 000 Design: TBD Construction: TBD

Project Name	Complete Streets Design Guidelines
Purpose	The purpose of this project is to create specific and consistent guidelines for streets in order to provide adequate capacity for all modes of travel to the fullest extent possible.
Need	Many roads in Doral predominantly prioritize automobiles. A set of Complete Streets Design Guidelines would foster the design and redevelopment of all streets to improve mobility.
Description	Complete Streets represent an incremental approach to enhancing the safety of the street network. A handbook of design guidelines for Complete Streets should be developed, which would provide measurements for sidewalks, bike lanes, street furniture, landscaping and transit infrastructure to be applied to Doral's streets. These design guidelines should be codified in the City's Land Development Code. Segments which may be completed include NW 87 th Avenue, NW 102 nd Avenue, NW 33 rd Street and NW 50 th Street. An example of Complete Streets can be found on NW 114 th Avenue between NW 58 th Street and NW 74 th Street. Future projects can utilize these concepts to integrate critical infrastructure.
Cost	Planning: \$50,000 Design: N/A Construction: N/A

Project Name	Streetscape Improvements
Purpose	The purpose of this project is to enhance the pedestrian environment within Doral.
Need	Shading for pedestrians to be accomplished by adding trees along walkways and shared-use paths. The pedestrian environment can be improved through the addition of visually appealing infrastructure.
Description	The implementation of shading and rest areas along pedestrian paths is essential toward improving walkability. Sidewalks should be set back from the street by a 6 ft. strip with tree plantings, as part of a Complete Streets system. The City can begin to implement the addition of shade by adopting specific sidewalk design standards which includes streetscape elements. Additional streetscape improvements to increase the appeal of walking include the creation of pocket parks, plazas, public art, and similar elements.
Cost	Planning: \$35,000 Design: TBD Construction: TBD

Project Name	Bicycling Safety and Education Programs
Purpose	The purpose of this project is to assure that cyclists and motorists alike are practicing safe and courteous behavior to minimize accidents and encourage more people to cycle.
Need	South Florida is one of the most dangerous places in the nation to ride a bicycle, in large part for lack of bicycle facilities and the spatial and operational characteristics. Educating cyclists how to properly ride on streets, as well as educating motorists to be aware of and treat cyclists will assist in making roads safer.
Description	Develop a bicycle/driver educational pamphlet, work to educate the public on bicycle and driver safety.
Cost	Planning: \$5,000 Design: \$10,000 Construction: N/A

Project Name	Complete Bicycling Network
Purpose	The purpose of this project is to complete the planned bicycle route system in Doral.
Need	In 2006, the City approved a bicycle master plan with approximately 21 miles of off-road facilities and approximately 12 miles of on-road bike lanes. To date, 8.8 miles have been implemented. Various gaps within the current proposed bicycle system have also been identified. Additional routes are necessary to provide for adequate east-west connections, or connections to the City's boundaries in areas where they can then be connected to a future Miami-Dade network. These pathways would require at least an additional 14 miles to be implemented.
Description	Work to implement the remaining facilities, through ROW acquisition, design and construction.
Cost	Planning: \$27,000 Design: \$ 80,000 Construction: \$ 12,300,000

Project Name	Bicycle Racks and Lockers Installation
Purpose	The purpose of this project is to increase bicycling mobility by installing bicycle racks and lockers throughout the City.
Need	Bicycle parking is scarce in Doral. Bicycles have been observed attached to chain-link fences. The lack of available parking places at many major commercial areas discourages bicycling.
Description	Bicycle rack locations need to be determined based on proximity of bicycling facilities and potential usage. Initial installation of bicycle racks should be at schools, transit-hub transfer areas, and at shopping centers such as the strip malls at NW 97 th Avenue and NW 41 st Street, the Publix shopping area at NW 58 th Street and NW 107 th Avenue, the retail area at NW 107 th Avenue and NW 41 st Street, and the strip mall at NW 87 th Avenue and NW 25 th Street. Further implementation in other areas would occur as funding becomes available. In some instances, the installation of bicycle racks must undergo coordination with a private property owner.
Cost	Planning: \$10,000 Design: TBD based on planning study Construction: TBD based on planning study

Project Name	Eastern Connection to Miami International Mall
Purpose	The purpose of this project is to provide a more direct connection for bicyclists and pedestrians to the Miami International Mall.
Need	This path will provide a less-circuitous route to the Mall, and a viable alternative when driving to the mall. Currently, residents ride their bicycles to the Miami International Mall, which has bicycle racks in its parking area.
Description	Acquisition of a small amount of right-of-way will be needed to develop this path. In addition, landscaping a pedestrian walkway and additional bicycle racks would make this an attractive option which would be closer to existing bicycling-network segments already constructed in Doral. Roadway construction could also be considered as part of this project and would alleviate some traffic caused by circuitous vehicular routes to reach the mall. Depending on the path of the trolley, a stop or bus hub could be affected near this entrance, thereby avoiding the need to route the trolley through roadways with higher congestion. Efforts need coordination with the Miami International Mall and surrounding businesses and property owners.
Cost	Planning: \$3,000 Design: \$9,000 Construction: \$150,000

Project Name	Bicycle Rental Program
Purpose	The purpose of this project is to provide bicycle rentals in Doral.
Need	Increased bicycle access may lead to increased bicycling and increased mobility.
Description	Bicycle rental/sharing systems are a major component of a more sustainable and intermodal transportation system. Bike-sharing provides an additional affordable means of transportation. The City should identify specific locations for implementation of bicycle rental racks. This will be based on proximity to destinations in the City, the needed capacity for bicycle parking in the area, and the ability to regularly maintain the system through manual repositioning of bicycles as necessary. Then the City should contact several bikeshare system providers to assess the feasibility of creating a system in Doral. If the City decided to pursue a system, vendors will be selected through a bid process.
Cost	Planning: \$35,000 Design: TBD based on provider Construction: TBD based on provider

Project Name	NW 74 th Street Bike Lane Conversion
Purpose	The purpose of this project is to convert the current bicycle lane on NW 74 th Street between NW 97 th Avenue and NW 107 th Avenue to a multi-use path.
Need	The current bicycle lane on NW 74 th Street would route bicyclists on the same road with heavy trucking and no separation and poses a safety concern. Observed behavior on NW 74 th Street Bicycle Lanes show runners in the bicycle lanes, and bicycles on the adjacent sidewalks.
Description	Develop a conceptual plan, scope design and bid plan for an off-road shared-use bicycle/pedestrian path on NW 74 th Street for approximately 5,200 ft. of the corridor.
Cost	Planning: \$ 10,000 Design: \$ 25,000 Construction: \$ 400,000

Project Name	Bicycle Signalization Program
Purpose	The purpose of this project is to promote bicycling safety at intersections.
Need	Public response during workshops indicated concerns for safety at intersections, which were noted to be difficult for the average rider to navigate, especially at intersections with high vehicular traffic. Miami-Dade County is requiring special signal phasing where bicycle paths intersect with signalized intersections.
Description	Bicycle signalization separates the bicyclist from vehicular traffic, allows them to pass or turn safely in an intersection, and reduces the level of vehicular-bicycle conflict in a manner similar to left-turn lane signalization. Signals are also differentiated through the usage of colored bicycle icons. Implementation will create a separate signalization system; thus, traffic timing for the intersection will have to be reviewed and adjusted. In addition, signalization may require the addition of dedicated Right-of-Way for bicyclists and should be applied to intersections with existing bicycle lanes or shared paths.
Cost	Planning: \$50,000 Design: NA Construction: NA

Project Name	Bicycle Connections to Miami-Dade System
Purpose	The purpose of this project is to promote bicycling mobility by connecting Doral's bicycling network to the Miami-Dade regional system.
Need	Workshops indicated the public's desire to have connections to the existing regional bicycle system.
Description	The City should determine which routes to connect to and prioritize building of bicycle-network lanes to the City's perimeter at points conducive to continued pathway development to existing bicycle lanes and shared-use paths. The City should also continuously work with the County and neighboring municipalities to ensure continuous connections to regional pathways to the south, east, and north of the City.
Cost	Planning: \$45,000 Design: TBD based on planning study Construction: TBD based on planning study

Project Name	Off-road Bicycle Path Maintenance and Rest Area Development
Purpose	The purpose of this project is to enhance bicycle network and mobility.
Need	Few rest areas exist along current bicycle paths or shared use paths. On some paths, the existence of a rest area will provide necessary shade now lacking. Water facilities, such as bathrooms or drinking fountains, do not exist, causing individuals to haul their own water for the duration of the trip. Path maintenance is also necessary in order to remove rubble.
Description	Rest areas should be developed along existing shared-use, off-road paths at approximately every 0.5 miles. These areas should be off of the path, and provide seating, shade, and water fountains. There should be a shaded area with water facilities incorporated into the site, along with bicycle racks in cases where there are public facilities, such as parks, along the route. Planning of future routes should also incorporate these items into the design of the bikeways.
Cost	Planning: \$10,000 Design: TBD Construction: \$100,000

Project Name	One Stop Personal Mobility Information Center
Purpose	Provide a portable or website app for use by the general public for multimodal trip timing and planning purposes.
Need	The development of this application will fulfill an objective in the City's Comprehensive Plan to provide for a "one-stop" information center for Doral residents and visitors on "Personal Mobility," which should offer access to public transit information, ride-sharing and carpooling, and bicycling and pedestrian routes. The easy availability of such information should allow for better trip planning, which will encourage utilization of alternative modes of transportation. Procurement of real-time bicycling data is possible through user-generated GPS data, and will allow the City to respond faster to the needs of bicycling in the community. It will aid its positioning of bicycle rental stations and future-path development and prioritization. Data collection for bicycling data is costly. This would potentially provide a more budget-friendly snapshot of evolving usage.
Description	Develop a mobile application and incorporate the specifications of personal mobility, such as pathways, and travel and transfer time estimates. Applications such as "Cycletracks" and "Stava Metro" can be used by bicyclists to record their paths by utilizing their phone's GPS. Theoretically, these apps could also be tied into bicycle route planning applications, thereby providing an additional benefit and incentive for usage by a bicyclist.
Cost	Planning: \$100,000 Design: NA Implementation: NA

Project Name	Pedestrian Bridge over NW 41 st Street along NW 117 th Avenue
Purpose	Construct a pedestrian bridge over NW 41 st Street along NW 117 th Avenue
Need	Pedestrian bridge would connect north and south segments of the City's shared use path along canal on the west of the City. Currently, a gap exists, and while a roundabout route is suggested, field observations indicate jaywalking is a frequent problem at this junction.
Description	Design and construction of a pedestrian bridge over NW 41 st Street by NW 117 th Avenue. Project will include any need for ROW acquisition and must account for the entrance to the HEFT in the final design.
Cost	Planning: Completed Design: TBD Construction: \$3,800,000

Project Name	Revisit the City's Bicycle Master Plan
Purpose	Revise the City's Bicycle Master Plan in light of the plan's age and need to account for new bicycle network needs.
Need	The City's Bicycle Master Plan was written in 2007. During study creating the Transit Mobility Plan and in consideration of the overall transportation master plan, it was noted that the proposed routes are recreational in nature, and that a phase 2 should be explored as the City begins to build its routes to provide for increased access to local neighborhoods. In addition, since the development of the plan, the City has gone through rapid growth – a revisit of the report will allow the City to take this into consideration.
Description	Study to assess existing and proposed bicycle facilities, with recommendations. The City should explore existing County and FDOT grant programs, including the TAP grant and the Miami-Dade TPO's Municipal Grant.
Cost	Planning: \$80,000 Design: N/A Construction: N/A

Project Name	Perform a City-wide On-Street Parking Study
Purpose	Conduct assessment of on available on-street parking and associated policies in the City of Doral.
Need	Street parking serves to provide visitors and residents with an additional parking. Lack of parking in an area or close to destinations may result in additional vehicular circling in an area, adding to local VMT and congestion. In some areas, the addition of on-street parking may have a calming effect.
Description	The study should provide the City with a detailed, block-by-block inventory of available on-street parking. It should also determine policies for the City for the future development of street parking, if any, and designate the appropriate areas of the City. This study must also consider the City's total parking supply and potential needs in each neighborhood.
Cost	Planning: \$ 120,000 Design: N/A Construction: N/A

Project Name	Bluetooth and Connected Vehicle Technology Along Major Corridors
Purpose	Provide for the installation of Bluetooth receptors and Connected Vehicle signal technology along the major corridors, including intersections as needed.
Need	Bluetooth and other technology which can “ping” cell phone usage may be utilized to collect traffic data on a regular basis and allow for arterial travel time determination. This can then be used by the City as a monitoring tool to determine and react to transportation needs within the city as they occur in real-time. Connected vehicle signal technology should also be explored as well.
Description	<p>The City should install Bluetooth and connected vehicle technology to create a “Smart” city and take advantage of future technology, such as driverless vehicles. Distance between the Bluetooth device’s placement will vary, though may be on the lower end of the scale on the busier corridors. Installation of devices will generally include the Bluetooth receiver, and GPS systems. Additional study is needed to determine the locations to be emplaced; in addition, the City should explore co-location of the devices with lighting.</p> <p>Connected vehicle technology may be helpful for not only future transit operations, but also in aiding drivers through traffic. Existing systems are already being tested in Florida, and the connected technology has been implemented in various cars. Further, it is important to note that smart, driverless vehicle technology currently being tested in Florida, including a driverless shuttle in Tampa, require these Connected Vehicle Technology as a prerequisite infrastructure for implementation.</p>
Cost	Planning: \$40,000 Design: TBD based on planning study Construction: TBD based on planning study

Table 24: Doral Transportation Master Plan Roadway Projects

Project Name	Extend NW 117 th Avenue between NW 58 th Street to NW 60 th Street
Purpose	The purpose of the project is to provide a perimeter road around Doral Meadows Park and Eugenia B. Thomas K-8 Center.
Need	This project would fill gaps on NW 117 th Avenue at NW 74 th Street and NW 12 th Street, providing for a complete connection. This consists of new roadway between 74 th Street and NW 58 th Street as well as crossings at NW 58 th Street and NW 41 st Street. This would add capacity to the roadway network and mitigate congestion.
Description	This project would fill gaps on NW 117 th Avenue at NW 74 th Street and NW 12 th Street, providing for a complete connection. This consists of new roadway between NW 74 th Street and NW 58 th Street as well as crossings at NW 58 th Street and NW 41 st Street.
Cost	Planning: \$ 45,000 Design: \$135,000 Construction: \$ 2,250,000

Project Name	Flyover ramp to HEFT over NW 41 st Street to connect NW 25 th Street viaduct truck traffic
Purpose	Build a flyover ramp from Northwest 117 th Avenue to the northbound side of the HEFT, giving heavy trucks direct access to the HEFT.
Need	By providing a direct access to the HEFT, truck traffic is reduced along three main avenues.
Description	This project provides for a flyover ramp from NW 117 th Avenue to the northbound side of the Florida Turnpike, giving heavy trucks direct access to the Turnpike. As planned, slip ramp will be utilized for regular traffic. This priority 1 project has already been approved by council, with an agreement with the FTE.
Cost	Planning: Complete Design: TBD Construction: \$3,860,000

Project Name	Northbound connection of NW 117 th Avenue over NW 41 st Street
Purpose	Create a new north-south connection at NW 117 th Avenue and NW 41 st Street
Need	This route may hold potential as a truck bypass route and provides an alternative route for other vehicles within the City.
Description	A new connection at NW 41 st Street and NW 117 th Avenue would require that the current north-south gap at NW 41 st Street, where NW 117 th Avenue is currently two separate cul-de-sacs, be eliminated. Project will include any need for ROW acquisition and must account for the entrance to the HEFT in the final design.
Cost	Planning: \$26,000 Design: \$130,000 Construction: \$1,300,000

Project Name	Connection of NW 112 th Avenue between NW 36 th Street and NW 33 rd Street
Purpose	Construct roadway to infill missing link within Doral's roadway network.
Need	The City of Doral should infill missing connections within the network to provide for a complete roadway grid. A complete grid will provide relief for the major arterials.
Description	Construction of approximately 0.15 miles of a 2-lane roadway. This should then be connected with a hypothetical roadway extension of NW 33 rd Street from NW 107 th Avenue.
Cost	Planning: \$15,000 Design: \$72,000 Construction: \$720,000

Project Name	Connection of NW 84 th Avenue between NW 54 th Street and NW 53 rd Terrace
Purpose	Construct roadway to infill missing link within Doral's roadway network.
Need	The City of Doral should infill missing connections within the network to provide for a complete roadway grid. A complete grid will provide relief for the major arterials.
Description	Construct approximately 0.2 miles of a 2-lane roadway by City Hall.
Cost	Planning: \$2,000 Design: \$10,000 Construction: \$100,000

Project Name	Connection of NW 82 nd Avenue between NW 54 th Street and NW 53 rd Terrace
Purpose	Construct roadway to infill missing link within Doral's roadway network.
Need	The City of Doral should infill missing connections within the network to provide for a complete roadway grid. A complete grid will provide relief for the major arterials.
Description	Construct approximately 0.06 miles of 2 lane roadway in Downtown Doral to extend NW 82 nd Avenue.
Cost	Planning: \$6,000 Design: \$30,000 Construction: \$300,000

Project Name	Connection of NW 14 th Street between NW 84 th Avenue and NW 82 nd Avenue
Purpose	Construct roadway to infill missing link within Doral's roadway network.
Need	The City of Doral should infill missing connections within the network to provide for a complete roadway grid. A complete grid will provide relief for the major arterials. Currently the location is mostly paved, except for a small segment; construction to fill the gap will allow for better mobility and accessibility for the surrounding properties.
Description	Construction and re-pavement of an approximately 0.01-mile segment of roadway on NW 14 th Street between NW 84 th Avenue and NW 82 nd Avenue.
Cost	Planning: \$1,000 Design: \$5,000 Construction: \$50,000

Project Name	Connection of NW 17 th Street between NW 84 th Avenue and NW 82 nd Avenue
Purpose	Construct roadway to infill missing link within Doral's roadway network.
Need	The City of Doral should infill missing connections within the network to provide for a complete roadway grid. A complete grid will provide relief for the major arterials. Currently the location is mostly paved, except for a small segment; construction to fill the gap will allow for better mobility and accessibility for the surrounding properties.
Description	Construction and re-pavement of an approximately 0.01-mile segment of roadway on NW 17 th Street between NW 84 th Avenue and NW 82 nd Avenue.
Cost	Planning: \$1,000 Design: \$5,000 Construction: \$500,000

Project Name	Connection of NW 21 st Street between NW 84 th Avenue and NW 82 nd Avenue
Purpose	Construct roadway to infill missing link within Doral's roadway network.
Need	The City of Doral should infill missing connections within the network to provide for a complete roadway grid. A complete grid will provide relief for the major arterials. Currently the location is mostly paved, with the exception of a small segment; construction to fill the gap will allow for better mobility and accessibility for the surrounding properties.
Description	Construction and re-pavement of an approximately 0.02-mile segment of roadway on NW 21 st Street between NW 84 th Avenue and NW 82 nd Avenue.
Cost	Planning: \$2,000 Design: \$10,000 Construction: \$100,000

Project Name	Connection of NW 14 th Street between NW 98 th Court and NW 97 th Avenue
Purpose	Construct roadway to infill missing link within Doral's roadway network.
Need	The City of Doral should infill missing connections within the network to provide for a complete roadway grid. A complete grid will provide relief for major arterials.
Description	Construction of an approximately 0.17-mile segment of roadway on NW 14 th Street between NW 98 th Court and NW 97 th Avenue.
Cost	Planning: \$16,000 Design: \$82,000 Construction: \$820,000

Project Name	Widen NW 90 th Street between NW 107 th Avenue and NW 97 th Avenue
Purpose	Widen NW 90 th Street between NW 107 th Avenue and NW 97 th Avenue to 4 lanes.
Need	Currently, the roadways services residential properties in the north of Doral. South of these properties are land which are expected to be developed into new mixed-use developments, which will result in a need for additional capacity of NW 90 th Street.
Description	Widen the existing NW 90 th Street from 2 to 4 lanes between NW 107 th Avenue and NW 97 th Avenue. This project will require coordination with the City of Medley in order to procure room for the expansion, and may, depending on the project's needs, merge with Medley's NW 102 nd Avenue.
Cost	Planning: \$95,000 Design: \$470,000 Construction: \$4,700,000

Project Name	Construct new roadways for "White Course" development
Purpose	Future redevelopment of the golf course located between NW 41 st Street, NW 48 th Street, NW 87 th Avenue and NW 79 th Avenue will necessitate new roadways for internal circulation.
Need	To accommodate future growth and development within the City.
Description	Construction of six new local roadways for internal circulations within the new development, "White Course". New roadways will include the following, however the actual layout of the roadways will depend on the final plat. <ul style="list-style-type: none"> • NW 48th Street Between NW 87th Avenue and NW 79th Avenue • NW 82nd Avenue Between NW 41st Street and Geneva Court
Cost	Planning: \$140,000 Design: \$680,000 Construction: \$6,800,000

Project Name	Turbo-lane at the intersection of NW 41 st Street/NW 109 th Avenue
Purpose	Install Turbo-lane at the intersection of NW 41 st Street/NW 109 th Avenue
Need	Flow-through traffic on NW 41 st Street will be enhanced at this intersection.
Description	This project will install a turbo-lane on the intersection to facilitate flow-through traffic. Currently, left turns onto NW 109 th Avenue is from a dedicated lane, but left turns out of NW 109 th Avenue do not have this option. Signalization of the intersection, as well as synchronization with the lights at NW 107 th Avenue and NW 112 th Avenue and NW 114 th Avenue, needs to be studied and implemented as part.
Cost	Planning: \$6,000 Design: \$30,000 Construction: \$300,000

Project Name	Construct new roadways for future growth and development particularly in the north, Sections 08 and 17
Purpose	Future development in the north of the City will necessitate new roadways to complete the grid.
Need	To accommodate future growth and development within the City.
Description	<p>Construction of new main roadways for access and circulation.</p> <p>New roadways will include the following:</p> <ul style="list-style-type: none"> • NW 102nd Ave. from NW 58th St. to NW 90th St. new 4 lane facility • NW 66th St. from NW 97th Ave. to NW 107th Ave. new 2 lane facility • NW 62nd St. from NW 99th Ave. to NW 107th Ave. new 2 lane facility • NW 104th Ave. from NW 58th St. to NW 62nd St. new 2 lane facility • NW 99th Ave. from NW 58th St. to NW 66th St. new 2 lane facility • NW 78th Ter. from NW 97th Ave. to NW 107th Ave. new 2 lane facility • NW 82nd St. from NW 104th Ave. to NW 107th Ave. new 2 lane facility • NW 88th St. from NW 102nd Ave. to NW 107th Ave. new 2 lane facility • NW 80th Ave. from NW 48th St./Geneva Ct. to NW 41st Street new 2 lane facility
Cost	<p>Section 8 Roadways</p> <p>Planning: \$150,000</p> <p>Design: \$740,000</p> <p>Construction: \$7,400,000</p> <p>Section 17 Roadways</p> <p>Planning: \$220,000</p> <p>Design: \$1,100,000</p> <p>Construction: \$ 11,000,000</p>

Project Name	Intersection/Traffic Improvement at NW 12 th Street and NW 107 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of E and PM LOS of F at the eastbound and westbound lanes.
Description	Add westbound right turn lane and signal optimization.
Cost	<p>Planning: \$8,000</p> <p>Design: \$38,000</p> <p>Construction: \$380,000</p>

Project Name	Roadway widening and operational improvements
Purpose	Remedy future roadway level of service deficiencies with road widening and operational improvements.
Need	An analysis of various roadways and future growth within the City indicated unacceptable levels of service along specific segments.
Description	<p>Operational and road widening improvements to various roadway segments as determined by this study.</p> <ul style="list-style-type: none"> NW 25th St. from NW 79th Ave. to NW 97th Ave. widen from 4 to 6 lanes NW 36th St. from NW 79th Ave. to NW 97th Ave. widen from 6 to 8 lanes NW 107th Ave. from NW 25th St. to NW 33rd St. widen from 4 to 6 lanes NW 114th Ave. from NW 34th St. to NW 50th St. widen from 2 to 4 lanes NW 12th St. from NW 87th Ave. to NW 79th Ave. widen from 4 to 6 lanes NW 12th St. from NW 97th Ave. to NW 107th Ave. widen from 4 to 6 lanes NW 33rd St. from NW 107th Ave. to NW 112th Ave. raise speed limit to 40 mph NW 34th St. from NW 112th Ave. to NW 117th Ave. raise speed limit to 40 mph NW 36th St./NW 41st St. from NW 87th Ave. to NW 107th Ave. widen from 6 to 8 lanes NW 97th Ave. from NW 12th St. to NW 25th St. widen from 4 to 6 lanes NW 117th Ave. from NW 34th St. to NW 25th St. widen raise speed limit to 40 mph NW 12th St. from NW 87th Ave. to NW 107th Ave. widen from 4 to 6 lanes NW 25th St. from NW 97th Ave. to NW 107th Ave. widen from 4 to 6 lanes NW 33rd St. from NW 97th Ave. to NW 107th Ave. raise speed limit to 40 mph NW 36th St. from NW 97th Ave. to NW 107th Ave. widen from 6 to 8 lanes NW 58th St. from NW 87th Ave. to NW 97th Ave. widen from 4 to 6 lanes NW 33rd St. from NW 79th Ave. to NW 87th Ave. raise speed limit to 40 mph
Cost	Planning: TBD Design: TBD Construction: TBD

Project Name	Intersection/Traffic Improvement at NW 12 th Street and NW 87 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of F at the eastbound lane and a PM LOS of F at the eastbound lane and Eat the westbound lane.
Description	Add northbound left turn lane, southbound right turn lane and optimize signal.
Cost	Planning: \$14,000 Design: \$68,000 Construction: \$680,000

Project Name	Intersection/Traffic Improvement at NW 25 th Street and NW 117 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of E at the northbound lane and F at the southbound lane, and a PM LOS of F in both the northbound and southbound lanes.
Description	Split phase removal/realignment and signal optimization.
Cost	Planning: \$4,000 Design: \$20,000 Construction: \$200,000

Project Name	Intersection/Traffic Improvement at NW 25 th Street and NW 107 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of E at the northbound and eastbound lanes, and a PM LOS of E at the northbound, southbound, eastbound and westbound lanes.
Description	Add southbound right turn lane and signal optimization.
Cost	Planning: \$8,000 Design: \$38,000 Construction: \$380,000

Project Name	Intersection/Traffic Improvement at NW 25 th Street and NW 97 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has a PM LOS of E at both the southbound and eastbound lanes.
Description	Add northbound, southbound, eastbound and westbound right turn lanes.
Cost	Planning: \$30,000 Design: \$152,000 Construction: \$1,520,000

Project Name	Intersection/Traffic Improvement at NW 25 th Street and NW 82 nd Avenue
Purpose	Improve the intersection for traffic flow and safety.
Need	Intersection has AM LOS of E at the northbound and westbound lanes and F at the southbound lane, and a PM LOS of E at the northbound and southbound lanes. This intersection is also experiencing high crash rates.
Description	Add southbound, eastbound and westbound turn lanes; signal optimization.
Cost	Planning: \$23,000 Design: \$114,000 Construction: \$1,140,000

Project Name	Intersection/Traffic Improvement at NW 25 th Street and NW 79 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of E at the northbound and southbound lanes, and a PL LOS of F at the southbound lane.
Description	Remove split phase by changing the southbound approach to two lefts, one thru and one right turn lane. Add eastbound turn lane, and signal optimization.
Cost	Planning: \$24,000 Design: \$118,000 Construction: \$1,180,000

Project Name	Intersection/Traffic Improvement at NW 33 rd Street and NW 107 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of E at the northbound lane and F at the southbound and eastbound lanes, and a PM LOS of F at the eastbound lane and E at the westbound lane.
Description	Remove split phase eastbound/westbound; signal optimization.
Cost	Planning: \$2,000 Design: \$10,000 Construction: \$100,000

Project Name	Intersection/Traffic Improvement at NW 33 rd Street and NW 97 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of E at the southbound and westbound lanes and F at the eastbound lanes, and a PM LOS of F at the westbound lane.
Description	Add northbound right turn lane; signal optimization.
Cost	Planning: \$8,000 Design: \$38,000 Construction: \$380,000

Project Name	Intersection/Traffic Improvement at NW 33 rd Street and NW 87 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of F at the eastbound lane and E at the westbound lane and a PM LOS of E at the eastbound lane and F at the westbound lane.
Description	Add eastbound and westbound right turn lanes; signal optimization.
Cost	Planning: \$15,000 Design: \$76,000 Construction: \$760,000

Project Name	Intersection/Traffic Improvement at NW 41 st Street and NW 115 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of E at the southbound lane and a PM LOS of E at the northbound lane.
Description	Add dual left northbound turn lanes, signal optimization.
Cost	Planning: \$6,000 Design: \$30,000 Construction: \$300,000

Project Name	Intersection/Traffic Improvement at NW 41 st Street and NW 114 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of E at the northbound and eastbound lanes and F at the southbound lane, and a PM LOS of F at the northbound and southbound lanes.
Description	Add eastbound and westbound right turn lanes; signal optimization.
Cost	Planning: \$15,000 Design: \$76,000 Construction: \$760,000

Project Name	Intersection/Traffic Improvement at NW 41 st Street and NW 107 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of F at the northbound, southbound and westbound lanes, and an E at the eastbound lane. Intersection's PM LOS is of E at the northbound and eastbound lanes and F at the southbound and westbound lanes.
Description	Remove split phase; signal optimization.
Cost	Planning: \$2,000 Design: \$10,000 Construction: \$100,000

Project Name	Intersection/Traffic Improvement at NW 41 st Street and NW 102 nd Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of F at the northbound lane and E at the southbound lane and a PM LOS of E at the northbound and southbound lanes.
Description	Remove split phase; signal optimization.
Cost	Planning: \$2,000 Design: \$10,000 Construction: \$100,000

Project Name	Intersection/Traffic Improvement at NW 36 th Street and NW 87 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of E at the southbound and westbound lanes and F at the eastbound lanes, and a PM LOS of E at the northbound, eastbound and westbound lanes and F at the southbound intersection.
Description	Add southbound and westbound turn lanes; signal optimization.
Cost	Planning: \$15,000 Design: \$76,000 Construction: \$760,000

Project Name	Intersection/Traffic Improvement at NW 36 th Street and NW 82 nd Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has a PM and AM LOS of F at the northbound and southbound lanes.
Description	Add southbound, northbound, eastbound and westbound right turn lanes; signal optimization.
Cost	Planning: \$30,000 Design: \$152,000 Construction: \$1,520,000

Project Name	Intersection/Traffic Improvement at NW 36 th Street and NW 79 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has a PM and AM LOS of F at the northbound and southbound lanes and AM LOS of E at the westbound lane, and a PM LOS of E at both eastbound and westbound lanes.
Description	Split phase removal, add eastbound thru lane, add southbound and westbound right turn lanes; signal optimization.
Cost	Planning: \$17,000 Design: \$86,000 Construction: \$860,000

Project Name	Intersection/Traffic Improvement at NW 58 th Street and NW 114 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of E at the eastbound lane and F at the westbound lane.
Description	Add eastbound and westbound right turn lanes.
Cost	Planning: \$15,000 Design: \$76,000 Construction: \$760,000

Project Name	Intersection/Traffic Improvement at NW 58 th Street and NW 107 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of F at the northbound lane and E at the eastbound and westbound lanes. Intersection's PM LOS is F at the northbound lane and E at the southbound and westbound lanes.
Description	Add southbound, northbound, eastbound and westbound right turn lanes; signal optimization.
Cost	Planning: \$30,000 Design: \$152,000 Construction: \$1,520,000

Project Name	Intersection/Traffic Improvement at NW 58 th Street and NW 97 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of F at both northbound and southbound lanes, and a PM LOS of F at the southbound lane and E at the westbound lane.
Description	Remove split phase, add northbound, southbound, westbound and eastbound right turn lanes; signal optimization.
Cost	Planning: \$30,000 Design: \$152,000 Construction: \$1,520,000

Project Name	Intersection/Traffic Improvement at NW 58 th Street and NW 87 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has a PM and AM LOS of F at both northbound and southbound.
Description	Add northbound, westbound and eastbound right turn lanes; signal optimization.
Cost	Planning: \$23,000 Design: \$114,000 Construction: \$1,140,000

Project Name	Intersection/Traffic Improvement at NW 74 th Street and NW 114 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has a PM and AM LOS of F at both the northbound and southbound lanes, and a PM LOS of E at the westbound lane.
Description	Add northbound right turn lane, southbound right turn lane, eastbound right turn lane and westbound right turn lane.
Cost	Planning: \$30,000 Design: \$152,000 Construction: \$1,520,000

Project Name	Intersection/Traffic Improvement at NW 74th Street & NW 107th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of F at both southbound and eastbound lanes, and a PM LOS of F at the westbound lane.
Description	Add southbound, eastbound and westbound right turn lanes; signal optimization.
Cost	Planning: \$15,000 Design: \$76,000 Construction: \$760,000

Project Name	Intersection/Traffic Improvement at NW 74 th Street and NW 97 th Avenue
Purpose	Improve the intersection for traffic flow.
Need	Intersection has an AM LOS of F at both northbound and westbound lanes, and a PM LOS of F at the northbound.
Description	Signalize intersection.
Cost	Planning: \$4,000 Design: \$20,000 Construction: \$200,000

Project Name	One-Way Pair Conversion to NW 112 th Avenue and NW 114 th Avenue
Purpose	To relieve congestion and traffic in this area of the City.
Need	These roadways are currently experiencing failing LOS at peak periods. There are several vacant lots on Doral Boulevard that are expected to be developed.
Description	Implementation will involve restriping and signing each roadway to create one-way roads which are currently two-way. NW 112 th Avenue and NW 114 th Avenue between Doral Boulevard and NW 58 th Street will be one-way streets in opposite directions. The project will include a protected bike lane on each roadway. Intersection improvements will include changing turn movements and signalization optimization.
Cost	Planning: \$ 30,000 Design: TBD based on alternatives analysis Implementation: TBD based on alternatives analysis

Project Name	Install "Do not Block the Box" at Intersections
Purpose	<p>Install "Do Not Block the Box" signage and intersection markings at the following intersections.</p> <ul style="list-style-type: none"> • NW 87th Avenue/NW 13th Terrace • NW 87th Avenue/NW 14th Terrace • NW 87th Avenue/NW 17th Street • NW 87th Avenue/NW 27th Street • NW 87th Avenue/NW 58th Street • NW 84th Avenue/NW 12th Street • NW 84th Avenue/NW 36th Street • NW 82nd Avenue/NW 12th Street • NW 82nd Avenue/NW 36th Street • NW 107th Avenue/NW 14th Street • NW 107th Avenue/NW 17th Street • NW 107th Avenue/NW 27th Street • NW 79th Avenue/NW 41st Street
Need	City police, staff, and field reviews during the development of the transportation master plan have all indicated that vehicular blocking of various intersections within the City have hindered traffic and exacerbated congestion issues. In addition, blocking the box at intersection crosswalks hinders safe crossings by pedestrians and bicyclists.
Description	Designation of program at specific intersections, with the addition of signage and roadway marking to denote effort to avoid vehicles blocking the box. This must also be conducted in conjunction with an education program for the public.
Cost	<p>Planning: \$1,000</p> <p>Design: \$4,000</p> <p>Construction: \$40,000</p>

Project Name	Intersection/Traffic Improvement at NW 12 th Street and NW 97 th Avenue (Off/On Ramps)
Purpose	Improve the intersection for traffic flow.
Need	LOS D observed
Description	Add westbound and northbound right turn lanes and provide access to southbound 97 th Avenue from 12 th Street.
Cost	<p>Planning: \$15,000</p> <p>Design: \$76,000</p> <p>Construction: \$760,000</p>

Project Name	Doral Boulevard Corridor Safety Study (Between NW 97 th Avenue and NW 87 th Avenue)
Purpose	The purpose of this project is to evaluate safety on the NW 36 th Street/NW 41 st Street corridor between NW 87 th Avenue and NW 97 th Avenue for both vehicles and pedestrians crossing the road.
Need	For the period March 2013 to March 2014, the Doral Police Department has 171 traffic crash case numbers reported on the NW 36 th Street/ NW 41 st Street corridor between NW 87 th Avenue and NW 97 th Avenue. This equates to a crash approximately once every 2 days. Potentially, pedestrians are crossing the roadway in order to reach a bus stop.
Description	A preliminary safety study should be conducted on this corridor to determine the cause of crashes and possible remediating actions which can be undertaken. Additionally, this study should examine the safety and feasibility of mid-block pedestrian crossings, especially by the bus stops. In particular, the stop across Univision should be evaluated, along with those at the NW 97 th Avenue/NW 41 st Street and NW 87 th Avenue/NW 36 th Street intersections.
Cost	Planning: \$25,000 Design: NA Construction: NA

Project Name	Intersection Safety Studies
Purpose	The purpose of this project is to provide for safety analyses at five intersections to adjust at important locations.
Need	Crash Data at these intersections show a high number of crashes, based on the spot rate, which are crashes per AADT per million vehicles.
Description	<p>Safety Studies are necessary at each of these intersections to determine changes that may be needed. Should the intersection merit further review, additional study and implementation of corrective measures should be undertaken.</p> <ul style="list-style-type: none"> • NW 12th Street and SR 836 • NW 36th Street and NW 79th Avenue • NW 41st Street and NW 107th Avenue • NW 41st Street and NW 97th Avenue • NW 33rd Street and NW 82nd Avenue
Cost	Planning: \$125,000 Design: TDB Construction: TDB

Table 25: Doral Transportation Master Plan Transit Projects

Project Name	Bus Stop Amenities Improvements
Purpose	The purpose of this project is to make transit more attractive to potential riders by providing more amenities.
Need	The future of transit will be the traveler who has a choice. Bus-stop amenities are a critical component. Shelter, shade from the sun, protection from the rain, safety, seating, and real-time travel information are all critical components of the system.
Description	Determine the location, cost and feasibility of implementing amenities at transit stops in Doral. At least 38 shelters and 25 benches are needed. In addition, bicycle racks should be installed at major hubs, including bicycle rental stations. Prioritizing improvements should be based on existing and future ridership. The City can also explore installing real-time information signs at all bus stops including updatable electronic signs linked to the current real-time system utilized by the City's website and app. Initial locations for implementation of real-time bus information display systems should be at transfer hub locations, such as NW 87 th Avenue and NW 36 th Street, NW 58 th Street and NW 107 th Avenue, Miami International Mall, and NW 97 th Avenue and NW 41 st Street.
Cost	Planning: \$7,000 Design: TBD Construction: TBD

Project Name	Extend the Metrorail to/from Palmetto Station and Downtown Doral
Purpose	The purpose of this project is to increase mobility by connecting the center of Doral directly to the Metrorail.
Need	Extending the Metrorail would increase mobility and provide alternatives for those entering and exiting the City on a daily basis. By implementing this project, Doral's citizens will have easier access to the locations that Metrorail serves.
Description	Evaluate routing options for ridership, cost, operations and maintenance, capital, and timing, and select preferred option. Work with Miami-Dade Transit to have approved. Develop a timeline for implementation. A potential route may be along NW 79 th Avenue; this would allow for a regional route to South Dade/Kendall areas.
Cost	Planning: \$250,000 Design: 280,000,000 Construction: 2.8 billion

Project Name	Signal Priority for Buses/Trolleys
Purpose	Implement a system by which buses and trolleys receive priority signals in order to improve on-time performance and transit reliability.
Need	On-time transit reliability and in-transit time are both factors for riders. Signal prioritization may allow for better transit-time performance for transit in Doral by reducing dwell time at intersections.
Description	<p>Conduct a study to evaluate on-time performance, ridership, and rider in-transit time. Improvement options include installing technology at traffic signals and transponders on the buses/trolleys. Impact to traffic flow should be examined as part of the evaluation. Coordination with MDCPW and DTPW is important. Potential intersections include:</p> <ul style="list-style-type: none"> • NW 41st Street and NW 97th Avenue • NW 36th Street and NW 87th Avenue • NW 25th Street and NW 87th Avenue • NW 25th Street and NW 97th Avenue • NW 12th Street and NW 107th Avenue
Cost	<p>\$13,500 per intersection, \$75 per transponder per bus</p> <p>Planning: \$ 30,000</p> <p>Design: NA</p> <p>Implementation: TDB</p>

Project Name	FIU Trolley Route Expansion
Purpose	Implement a system by which buses and trolleys receive priority signals in order to improve on-time performance and transit reliability.
Need	The success of the current trolley service could be enhanced by reaching more potential riders needing additional options to reach the university.
Description	Three conceptual routes are being studied to determine the preferred alternative to connect the university with the Metrorail stations and other key destinations within the City. The route would service both the engineering campus and the main campus. Implementation would include purchasing 3 additional trolleys.
Cost	<p>Planning: \$ 30,000</p> <p>Design: NA</p> <p>Implementation: \$600,000</p>

Project Name	Transit Development Plan
Purpose	The purpose of this project is to ensure the efficiency and effectiveness of the Doral Trolley by establishing new routes in response to future growth of the City.
Need	It is customary for transit systems to re-evaluate their routes on a periodic basis. This helps provide responsiveness to shifts in ridership and rider characteristics, and to determine whether capital investments are necessary. Typically, the increase of frequency would increase ridership, further shifting the mode split towards transit, and reducing automobile trips. In addition to headway frequency, new routes may be needed. The plan would include a potential new route between FIU and downtown Doral.
Description	Using available data, and possibly, collecting new data on headways, ridership, boarding and alighting by route and stop, as well as public involvement through ridership surveys or workshops, evaluate the performance of the current routes and stops. Recommendations can then be made for changes, with provided costs for the needed capital, operations and maintenance of the changes. Proposed recommendations should note the transit access areas, based on a ¼-mile walking distance from a trolley stop with headways of at least 30 minutes or less, and should streamline the operations of the trolley in coordination with DTPW bus lines.
Cost	Planning: \$150,000 Design: NA Implementation: TBD

Project Name	Doral Trolley Sunday Service
Purpose	Extending trolley service to Sundays
Need	The public involvement portion of this study showed a desire for more adequate Sunday transit service.
Description	Develop Sunday service route options. Evaluate the capital, operations and maintenance costs. Evaluate headways, buses needed, and potential ridership. Select the service to be provided and test it for a period of 3 months. Then decide on the service's adequacy and reconfigure route as necessary. Based on current ridership and transit coverage areas, Route 1 is currently serving as the pilot route for Sunday service and could be expanded to cover places of worship. This route currently serves most of the City, including the northwestern quadrant which currently has no DTPW bus service.
Cost	Planning: \$ 5,000 (or as part of COA). Design: N/A Implementation: TBD

Project Name	Express Route to MIA/MIC
Purpose	The purpose of this project is to increase the mobility of Doral's citizens to the current Miami-Dade County regional hub.
Need	For transit to be attractive, when compared with other modes of transportation, particularly the automobile, it needs to be competitive in travel time, cost, and amenities. Transit has to be convenient with easy transfers for mid-and long-distance trips to be competitive.
Description	Coordinate with DTPW if this provision is acceptable to it; evaluate the capital, operations, and maintenance costs.
Cost	Planning: \$6,000 (or as part of COA) Design: NA Implementation: TBD

Project Name	Trolley Lunch Route Pilot Program
Purpose	Increase mobility by extending trolley service hours by providing service during lunch hours for the Doral trolley.
Need	The public involvement portion of this study showed a desire for more lunch transit service. Increased lunch service will aid in reducing vehicular traffic.
Description	<p>Develop a lunch service alternative for the trolley. Identify generators, evaluate the capital, operations and maintenance costs. Evaluation of headways, buses needed, and potential ridership are necessary to selecting a service option. The route should run from 11:30 AM to 1:30 PM. Service Routes should have short headways (7 minutes) in order to adequately service the lunch hour, and could run the following routes:</p> <ul style="list-style-type: none"> NW 41st Street/NW 36th Street between NW 87th Avenue and NW 114th Avenue NW 87th Avenue between NW 36th Street and NW 25th Street <p>Post evaluation, the chosen service option should be tested for a period of 3 months. Then a determination on the service's adequacy and a reconfiguration of the route, as necessary, should be made.</p>
Cost	Planning: (As part of COA) Design: NA Implementation: TBD

Project Name	Doral Trolley Passport Program
Purpose	Incentivizing fare reductions, either in parking costs or through lower boarding fares to provide cost advantages versus private automobile usage.
Need	Transit must be competitive with the automobile in travel time and cost to become a viable alternative for the choice riders. Public involvement during this study indicated a partial aversion to transit due to fares for frequent riders.
Description	Various means exist to present transit as a more financially viable method of transportation. People typically tend to treat parking prices in a disproportionate manner, as an extra surcharge to the transit fare; providing free parking in riding transit provides an incentive, especially if the driver would have had to pay for parking at their destination. Additionally, many transit fare programs exist through DTPW, but are not necessarily known by people who qualify or by businesses, and additional outreach may aid enrollment in these programs. The City may also elect to create its own incentive program through partnerships with local businesses, either through the creation of promotional rewards programs for riding public transit or through recognition of businesses within Doral which makes conscious, green efforts in reducing vehicular use.
Cost	Planning: NA Design: NA Implementation: TBD

Project Name	Support DTPW Palmetto Station Redevelopment/Development of Palmetto Intermodal Center
Purpose	The purpose of this project is to increase the attractiveness of the Palmetto Metrorail Station as a viable launching or landing point for a transit trip or a mode transfer.
Need	For transit to be attractive when compared with other modes of transportation (particularly the automobile), it needs to be competitive in travel time, cost, and amenities. The fact is that automobile use, particularly among the young, has been decreasing since 2005. Automakers are responding by developing driverless cars. Transit proponents need to respond with the upgrades in attractions.
Description	Work with DTPW to lend support either politically or financially to such an effort.
Cost	Planning: NA Design: NA Construction: NA

Project Name	Support City-Edge Park-and-Ride Facilities
Purpose	The purpose of this project is to increase mobility, decrease traffic congestion within the City, and provide multimodal access to commuters to and from Doral.
Need	Doral contains one of Miami-Dade County's leading business districts attracting people from throughout the region. Roadway congestion can be severe, thereby lowering the quality of life. Utilization of Park and Ride lots may help alleviate traffic congestion in Doral by intercepting vehicle trips at the City's perimeter and distributing people via transit to their destinations.
Description	<p>Explore options for providing park-and-ride lots, intermodal transfer centers at the edges of the city. Synergy can be gained by linking with the Managed Lanes concepts and projects where Bus Rapid Transit and Variable Tolling are combined on expressway lanes. At the termini of these routes there may be a need to either park a car to utilize transit or transfer to another mode of transit to get from the managed lane to the final destination. Estimate the cost to acquire land, build, design, construct, operate and maintain each parking facility.</p> <p>Potential locations include:</p> <ul style="list-style-type: none"> • Dolphin Mall • Miami International Mall • Palmetto Metrorail Station • Southwest corner of NW 107th Avenue and NW 41st Street • Current White Course area • Future transit hub sites within/near Doral's City boundaries
Cost	<p>Planning: \$50,000</p> <p>Design: TBD</p> <p>Construction: TBD</p>

Project Name	Support DTPW Development of Dolphin Mall Station Park and Ride/Transit Hub
Purpose	The purpose of this project is to encourage DTPW to advance the evaluation of the proposed Dolphin Mall Station Park and Ride.
Need	DTPW is evaluating the feasibility of a Park and Ride location in the area of 12 th Street and the HEFT. This would be part of the future East/West BRT line running along the SR 836. There are multiple planned transit corridors in the county, all vying for funding. The faster components of this corridor advance the more likely the project gets funded and congestion is mitigated by transit.
Description	Work with DTPW to lend support either politically or financially to such an effort.
Cost	<p>Planning: NA</p> <p>Design: NA</p> <p>Construction: NA</p>

Project Name	DTPW Operational Analysis
Purpose	The purpose of this project is to align the location of DTPW stops with ridership trends.
Need	It is customary for transit agencies to reevaluate their systems on a periodic basis. This project would encourage DTPW to evaluate boarding's and alighting's in the City of Doral, coordinate with the Doral Trolley and potentially locate its stops in more advantageous positions.
Description	Encourage DTPW to conduct an operational analysis and gain efficiency in its system. In particular, a movement to a linear/grid-oriented system will help Doral by allowing for highly predictable travel routes in the City, given that Doral operates on a mile section grid system.
Cost	Planning: NA Design: NA Construction: NA

Transit Mobility Plan

The City's Transit Mobility Plan took into consideration all transportation studies impacting Doral over the last 20 years to assess the regional policy toward multimodal transportation in that area. The main focus of the plan was providing alternatives to single occupancy vehicular transit as a form of travel to maximize capacity on its roadway network. To determine these alternatives, the plan identifies missing sidewalk links, potential bicycle facilities, and recommendations on transit and development policies. Extensive data was collected and documented and then further analyzed to identify transportation system enhancements in four areas: Transit Network Analysis, Pedestrian Network Analysis, Bicycle Network Analysis, and Policy Analysis. Transit network analysis concluded that long range planning should position the Doral Trolley to be the exclusive transit for the City, with regional connections stemming from a local hub in the City. **Table 26** summarizes the recommendations presented in this plan.

Table 26: Doral Transit Mobility Plan Recommendations

Project	Project Roadway	Limits	Project Description
1	NW 12 th St.	NW 87 th Ave.	Signal improvements
2	NW 36 th St./41 st St.	NW 42 nd Ave. to HEFT	Express streets (ITS, grade separators, etc.)
3	NW 58 th St.	NW 107 th Ave. to SR 826	Congestion management
4	NW 87 th Ave.	SR 836 to NW 58 St.	Improve SR 836/NW 12 th St./NW 87 th Ave. interconnections: improve intersection to accommodate truck movements
5	NW 112 th Ave.	NW 84 th St. to NW 86 th St.	Pedestrian facility improvements
6	NW 74 th St.	NW 107 th Ave. to NW 84 th Ave.	Bicycle facility improvements
7	NW 82 nd St.	NW 113 th Ave. to NW 117 th Ave.	Pedestrian facility improvements
8	NW 87 th Ave.	NW 58 th St. to NW 74 th St.	Pedestrian facility improvements
9	Eugenia B. Thomas	Safe routes to school	Non-motorized facility improvements
10	NW 36 th St.	NW 79 th Ave. to NW 74 th Ave.	Pedestrian facility Improvements
11	NW 97 th Ave.	NW 74 th St. to NW 58 th St.	Bicycle facility improvements

Bicycle Network Plan

In 2015, the City of Doral prepared a Bikeway Network Plan to develop a network of proposed shared use trails for the City and to serve as an implementation guide for proposed trails and bike lanes. The plan also includes recommended outreach programs for Doral to implement for developing a complete community bicycling program. The proposed multi-use trails will provide dedicated facilities that would provide residents and employees with transportation, recreational, and leisure opportunities.

This plan identifies seven off-street bikeways that connect to residential neighborhoods, schools, parks, shopping areas, and other community facilities.

- Atlas Trail (Ruta Morada)
- Beacon Trail (Ruta Rosada)
- Dressel's Dairy Trail (Ruta Azul)
- Greenway Trail (Ruta Verde)

- Limestone Trail (Ruta Plata)
- Sunshine Trail (Ruta Amarilla)
- Turnpike Trail (Ruta Roja)



Figure 24: City of Doral Proposed Bicycle Network

The proposed trails connect residential neighborhoods of Doral to schools, parks, retail centers, and employment centers. Two primary different types of facilities were identified for Doral (off-street trails and on-street bicycle facilities). **Figure 24** identifies the following potential off-street trails, which include proposed greenway trails identified in the North Dade Greenways Master Plan:

- NW 25th Street canal ROW (identified as the Beacon Trail), which runs east-west across Doral.
- HEFT ROW (identified as the Turnpike Trail), which runs north-south along the western boundary of Doral.
- Canal ROW paralleling Doral Boulevard, NW 53rd Street, and NW 58th Street. This canal meanders across the entire City of Doral from east to west and passes through several important activity centers and residential neighborhoods.
- Florida Power & Light (FPL) easement along the south side of NW 50th Street running east-west between HEFT and NW 107th Avenue.
- FPL easement along NW 107th Avenue running north-south between NW 50th Street and NW 90th Street.
- FPL easement north of and parallel to NW 58th Street between NW 107th Avenue and NW 97th Avenue.
- NW 97th Avenue ROW between the FPL easement and NW 90th Street.
- FPL easement west of and parallel to NW 79th Avenue running north-south between the Doral Boulevard canal and NW 53rd Street.
- Connection to the new park northwest of the NW 74th Street/NW 97th Avenue intersection.

FIU Trolley Expansion Feasibility Study

In 2017, the City of Doral conducted a feasibility study to explore three alternatives for a trolley route expansion that would provide services between FIU and the City. Factors such as population density, activity centers, interconnection to other transit systems, and coverage areas were considered when developing these alternatives. This circulator was proposed because approximately 4,500 FIU students and 600 FIU faculty and staff live in Doral. The alternatives that prepared for the City also provide service to other potential generators besides FIU, such as Ronald W. Reagan Doral Sr. High School and Divine Savior Academy.

The recommended alternative, illustrated in **Figure 25**, is 15.2 miles in length and provides a northern circulation to service NW 90th Street, Ronald W. Reagan Doral Sr. High School Islands at Doral, Landmark, and Midtown. The southern circulation of this alternative services the FIU Engineering Center, the 109 Tower and FIU's main campus. **Table 27** summarizes the recommended alternative's operations. This

Table 27: New FIU Route #4 Operations

Schedule	Weekday	Saturday	Sunday
Route Length	15.2 miles	No Service	No Service
Number of Trolleys	2		
Average Speed	11 mph		
Peak Hour Headways	30 – 45 minutes		
Off-Peak Headways	30 – 45 minutes		
Service Span	6:00 AM – 11:00 PM		
Number of Stops	42		
Number of Stations	9		
Spacing between Stops	500 to 3,500 feet		

In addition to the new FIU route, the City modified its Route 1 to service the soon to open Dolphin Park-and-Ride Station adjacent to the HEFT and NW 12th Street interchange. This modification included service to Dolphin Mall as an interim route until the station opens. The service modifications also included route alignment adjustments to Routes 2 and 3, weekday service hour expansion on Routes 1 and 2, and commencement of Saturday service on Route 2.

Hence, the City held a public outreach workshop on September 5, 2017 and a public hearing on March 14, 2018 to seek public input regarding the proposed modification. On March 21, 2018, the City Commission adopted Resolution No. 18-51 to implement the proposed modifications. On October 2, 2018, the Board of County Commissioners approved the proposed modifications through the approval of Agenda Item No. 8(N)(4) – First Amendment to the Interlocal Agreement between Miami-Dade County and the City of Doral for the Provision of Public Transportation Services.



2016 Trolley On-Board Survey

The City conducts regular on-board surveys of trolley riders. In 2016, the City conducted its fifth survey on-board routes 1, 2, and 3. The surveyors collected 467 forms using paper-and-clipboard approach. Both English and Spanish survey forms were distributed. The survey results are summarized below.

- 60% of trips surveyed began from home.
- 28% of trips surveyed began from a non-work place.
 - 37% of these trips began from schools.
 - 23% of these trips began from colleges/universities.
 - 14% of these trips began from grocery stores/shopping centers.
- 84% of riders were dropped-off to the trolley stop or transferred from DTPW Metrorail.
- 74% of riders chose walking as their last-mile mode of transportation.
- 42% of trips surveyed ended at home.
- 29% of trips surveyed ended at work.
- 24% of trips surveyed ended at a non-work place.
 - 23% of these trips ended at grocery stores/universities.
 - 22% of these trips ended at schools.
- 40% of riders use the trolley 3-5 days a week.
- 31% of riders use the trolley 6-7 days a week.
- 34% of riders solely use the Blue Route (Route 1).
- 64% of riders only use the trolley twice per day.
- 54% of riders do not have a car available or are not able to drive.
- 61% of riders live in the City of Doral.
- 34% of riders work in the City of Doral
- Overall, 77% of all trolley services ratings were Very Good or Good, compared to 27% for Fair and Poor.

Doral Design District Master Plan

The Doral District Design Master Plan that was published in 2010, intends to establish the framework for the future development of a regionally strategic district in a much-desired location within the City of Doral. The framework is designed to emphasize the provision of quality retail, employment, urban housing choices, marketplace with community services, and recreational amenities for both the residents and visitors to Doral.

There are three approved projects – Transal Park, Atrium, and Park Square at Doral - within the District's area of influence that add immense value and potential to the District. Transal Business Park is a proposed mixed-use project located at the northeast intersection of NW 87th Avenue and NW 25th Street. It proposes 374,000 square feet of office space, 9,000 square feet of bank, 52,358 square feet of retail, 282,000 square feet of hotel, 27,410 square feet of restaurant, and 189,750 square feet of warehouse use. The Atrium property proposes a mixed-use urban infill redevelopment project with 660,000 square feet of office space and 450,00 square feet of retail space. Park Square at Doral proposes approximately 2.35 million square feet of mixed-use development. The commercial area, consisting of mostly food and beverage and specialty boutique, will be the main access point for all of the retail area.

The Design District Master plan also outlines three planned roadway improvements – NW 25th Street Viaduct and NW 33rd Street Extension. The NW 25th Street Viaduct planned improvement consists of the reconstruction of NW 25th Street from NW 89th Court to SR 826/Palmetto Expressway. NW 25th Street will be widened from its existing configuration of five lanes undivided to six lanes divided with improved drainage and wide medians. The widening will be to the north into the North Line Canal through bulkhead walls and an at-grade bridge along the canal. The planned improvement to NW 33rd Street is an extension between NW 87th Avenue and NW 97th Avenue. Doing so would provide an arterial connection from the District's core out to the Doral community that would in turn help circulate and alleviate some of the traffic on NW 36th Street and NW 25th Street.

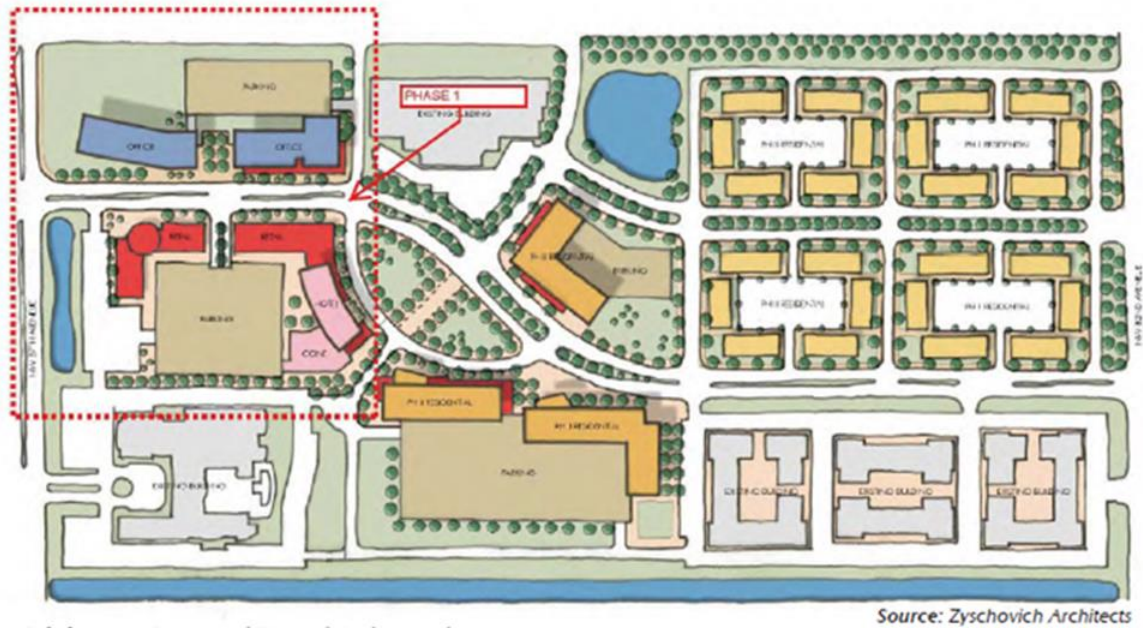


Figure 26: Transal Park Upcoming Development

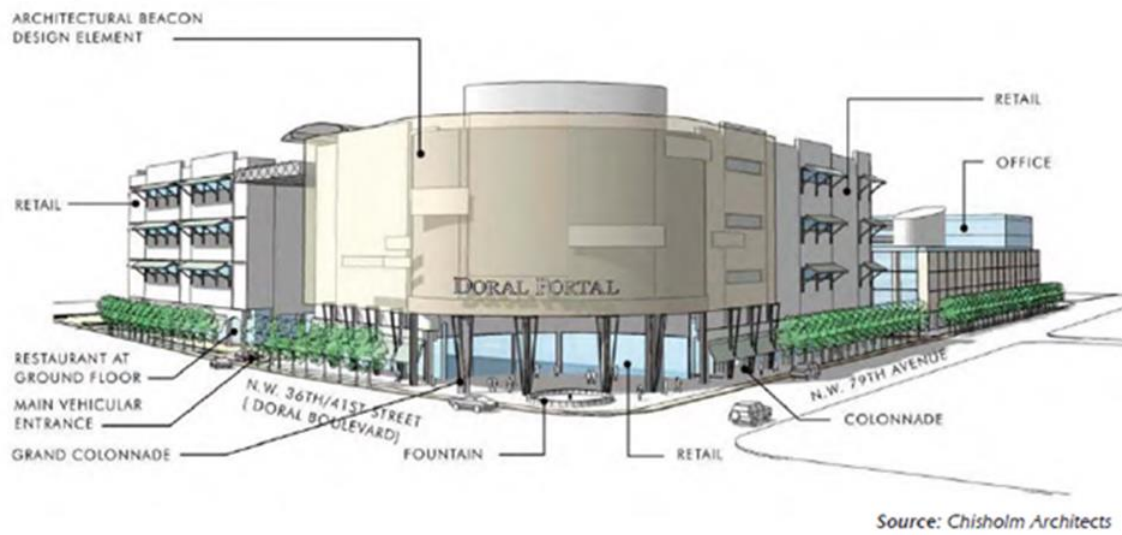


Figure 27: Atrium Upcoming Development



Figure 28: Park Square Upcoming Development

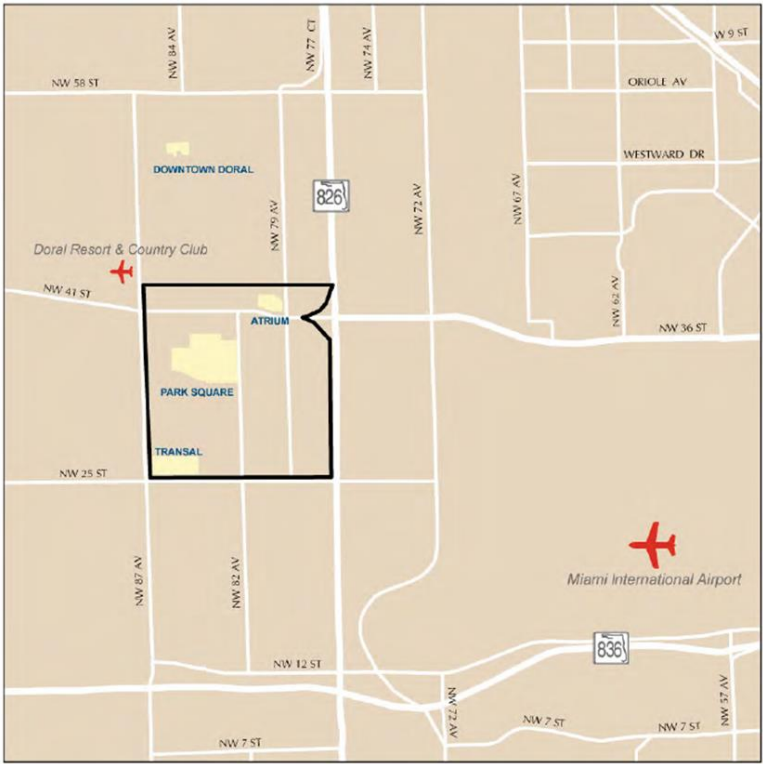


Exhibit 1.1: Regional Location Map

Figure 29: Location Map of Transal Park, Atrium, and Park Square Developments

Doral Boulevard Beautification Master Plan

The Doral Boulevard Beautification Master Plan was created with the intent to address the planning and landscape architectural components of the corridor's beautification process. It is meant to serve as both vision and guidance for how the physical environment along Doral Boulevard should be built and articulated. Given that the Doral area is fairly new and at the early stages of its life, most of the existing conditions along the corridor are in relatively good condition. The corridor has many potential opportunities for improvement and beautification that will benefit the City in the long run. The plan includes designs for gateways, major intersections, roadway medians streetscape improvements, and streetscape details. The boulevard is divided into sections and the possible opportunities are illustrated accordingly.



Figure 30: Doral Boulevard Streetscape Characteristic Segmentation



Low Impact Development Master Plan

The Low Impact Development Master Plan is intended to assist the City in maximizing implementation of LID Integrated Management Practices. This would allow for reduced environmental impacts from anticipated new developments and/or redevelopment projects. Currently, the City is experiencing significant growth in residential and non-residential areas which leads to increased developments including a new downtown, several major mixed-use developments, commercial mixed-use projects, and redevelopment projects. This plan dictates practices that will minimize environmental impacts as well as guidance for LID site planning, hydrologic analysis, and erosion and sediment control practices.

The master plan includes recommendations that provisions for long-term maintenance, monitoring, and enforcement be developed. It was also suggested that Site Planning Regulations should be evaluated to minimize the requirements for property setbacks, traffic distribution network widths, sidewalk widths, and right-of-way areas.

Housing Master Plan

The City of Doral conducted a Housing Master Plan public workshop to both inform the public and gather feedback that would aid in developing a Housing Action Plan. The purpose of Housing Master Plan is to address the shortage of workforce housing in the community and propose policies to address workforce housing and related local housing issues. The plan also facilitates public/private sector solutions to provide more housing opportunities for government workers, young professionals and other members of the workforce. The projected population increase of 78.5% from 2016 to 2030 indicates that there will be an increase in the demand for housing of all types, which leads to a need for a Housing Action Plan to establish a vision, guiding principles/goals and strategies, as well as implementation too and plan recommendations to create action items.

Green Master Plan

In 2008, the City of Doral Green Master Plan was developed with the goal of conserving natural resources, enhancing quality of life, bolstering economic vitality, and leaving a sustainable legacy to future generations of City residents. There are multiple benefits and potential long-term savings for the City that would result from green investments. The City has purchased hybrid vehicles for official City use to decrease the City's carbon footprint. The guiding green principles outlined in the green master plan that be used when creating any future developments or potential projects for the City are as follows:

- Reduce vehicle travel miles
- Strengthen landscape and open space standards
- Create strong energy efficiency standards
- Incentivize alternative urban energy sources
- Interconnect the City's places
- Conserve water
- Reuse and recycle
- Bring back community agriculture
- Strive to be a "carbon-neutral" City government
- Initiate education and outreach

To increase connectivity as a way to reduce automobile related greenhouse gases and increase both social and economic health as well as increase the ease of travel, the City should ensure that all new and proposed streets are connected to existing streets, which would decrease reliance on major arterial roads for travel.

Parks and Recreation Master Plan

Doral's lack of transportation connectivity, such as congested roads, little local roadway network, and few transportation alternatives, provides the Parks Master Plan the opportunity to address these issues. It acts as a platform for proposed solutions to completing the street system and upgrading the existing development pattern to one where motorists, bicyclists, and pedestrians can be accommodated safely and comfortably. This plan aims to achieve a high quality and diverse system of public parks and recreation sites that meet the needs of existing and future residents and businesses of the City of Doral. The City is currently deficient in park acreage according to the current standard of 3.25 acres per 1,000 residents set forth in the comprehensive plan, which increased to 4.25 acres in 2015. An analysis of the LOS facilities revealed that the City needs more bicycling facilities, boat ramps, camping areas, fishing piers, walking/hiking trails, and recreational/athletic spaces. A system wide analysis was conducted that looked at the following characteristics:

- Equitable access
- Community sociability
- Sense of place stewardship
- Protection of the natural environment
- Responsible planning and administration

In addition to recommended improvements to existing conditions, the plan also includes proposed greenways, trails, and bikeways and they are listed below:

- Greenways
 - NW 177th Avenue – 4 miles
 - NW 107th Avenue/NW 50th Street – 3.5 miles
 - NW 62nd Street – 1 mile
 - NW 52nd Street/Canal – 4 miles
 - NW 25th Street– 3 miles
 - NW 80th Avenue/NW 15th Street – 4 miles

- Multi-Purpose Trails
 - Doral Preserve Trail – 0.75 miles
 - NW 58th Street – 2 miles
 - NW 114th Avenue – 0.5 miles
 - NW 112th Avenue/Stormwater Park – 1.8 miles
 - NW 19th Street – 1 mile
 - NW 12th Street – 1 mile
 - NW 84th Street – 1 mile
 - NW 92nd Avenue corridor – 0.75 mile
 - NW 29th Street – 1 mile
 - NW 33rd Street – 1 mile
 - Downtown Doral Waters Edge Loop – 1 mile
 - NW 87th Avenue – 0.75 mile
- Shared Use/Enhanced Sidewalks
 - NW 90th Street – 2 miles
 - NW 82nd Street – 1.3 miles
 - NW 74th Street - 2 miles
 - NW 114th Avenue – 2.1 miles
 - NW 107th Avenue – 1.5 miles
 - NW 41st Street – 1.5 miles
 - NW 20th Street corridor – 1.2 miles
 - NW 12th Street – 1 mile
 - NW 87th Avenue – 2.25 miles
 - NW 82nd Avenue – 1.5 miles
 - NW 53rd Street - 0.8 miles
- On-Street Bicycle Lanes
 - Doral Boulevard – 4 miles
 - NW 79th Avenue – 2 miles
 - NW 33rd Street – 1 mile
 - NW 112th Avenue – 0.5 mile
 - Northern Connector – 1.5 miles

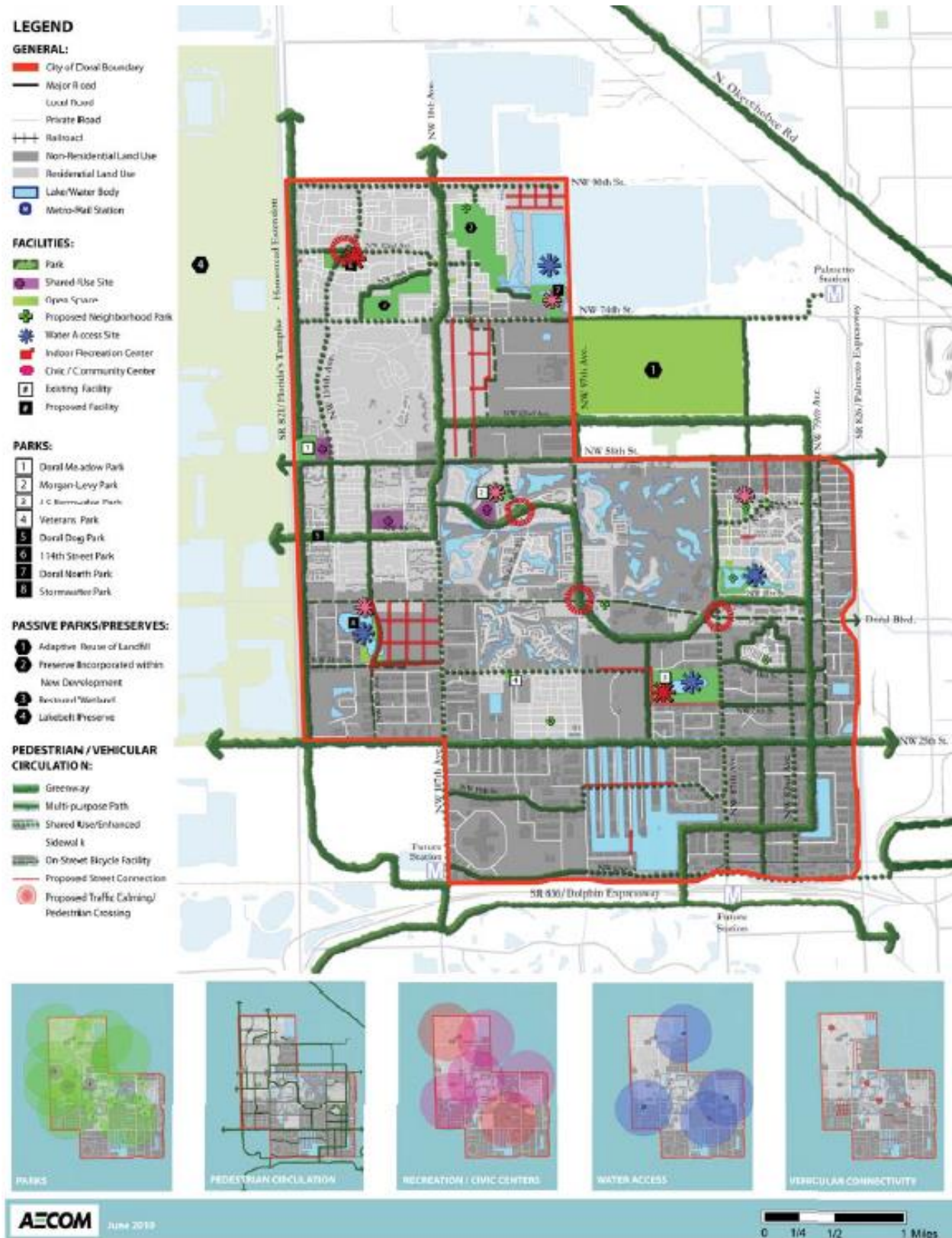


Figure 31: Doral Parks and Recreation Master Plan Vision

EXISTING SYSTEM REVIEW

DORAL TROLLEY SYSTEM

Management and Organizational Structure

The DTS began service on February 2008 as a pilot project organized between the City of Doral and Miami-Dade County ~~as part of the Municipal Transportation Program~~. This program is funded through the County's PTP which calls for 20% of surtax proceeds to be distributed directly to municipalities on a pro rata basis for use on local transportation and transit projects. Furthermore, the PTP stipulates that municipalities must invest at least 20% of their surtax share on transit. In 2016, the City and the County approved a second inter-local agreement to continue DTS operations. This agreement, adopted as resolution number R-1164-16 by the Board of County Commissioners and resolution number 16-167 by the City of Doral's Council, is effective for five years and subject to two five-year automatic renewals. The agreement documents the legal structure of the DTS. Key provisions within the agreement are:

- The City is responsible for bus stop passenger amenities such as bus shelters and benches at all bus stops served by the DTS
- The City may charge a fare similar to other County agreements for service, however, the fare structure must accept all Miami-Dade DTPW passes, transfers, or identifications entitling an eligible passenger to ride the service without paying an additional fare (i.e., Miami-Dade County Patriot Passport or Golden Passport) or at half fare for babies, toddlers, children, and teenagers (i.e., kindergarten through 12th grade students)
- The DTS shall operate with fixed or semi-fixed routes where at least 70% of each route is within City boundaries
- Changes to routes, schedules, or fares may only occur after the following steps have been performed by the City:
 - Advertise a notice of public hearing in English and Spanish
 - Conduct a minimum of one public hearing that gives the community an opportunity to voice their opinion concerning any changes
 - Present evidence of advertisement and completion of public hearing to the County
- The City shall collect and keep on file documentation of insurance of any and all private providers operating the DTS routes, as well as the County, including:
 - Worker's Compensation and Employer's Liability per the statutory limits of the state of Florida
 - Commercial General liability of \$1,000,000.00 per occurrence of bodily injury and property damage
 - Automobile Liability of \$1,000,000.00 for each occurrence of owned/non-owned/hired automobiles
 - Blanket fidelity bond of \$10,000.00

- The City may seek federal or state grant funding and provide grant-matching funds at its own discretion – the County may contribute none, part, or all of the grant-matching funds required
- The County agrees to pay the City its attributable share of federal and state formula funds received from United States Department of Transportation (USDOT) and FDOT in the event the DTS statistics result in an increase to the County's transportation funding

Table 28 summarizes the previous five-year funding amounts received by the City of Doral from Miami-Dade County to operate and maintain the DTS as well as the 2019 projections. Since its inception, the County has invested \$16,262,951.00 in the DTS.

Table 28: Miami-Dade County Five Year Funding Summary of the DTS

Year	Population	Funding per Capita	Total Funding
2019*	64,167	\$41.87	\$2,686,686.00
2018	59,304	\$42.30	\$2,508,438.00
2017	55,660	\$40.11	\$2,232,432.00
2016	52,889	\$40.10	\$2,120,607.00
2015	Data Not Reported		
2014	47,529	\$37.19	\$1,767,800.00

Note: *2019 values projected at 3% growth from FY 2018

Operations

The DTS has four routes identified by color; Blue, Yellow, Green, and Purple. Route 1, the Blue Route, connects Midtown Doral, Dolphin Mall, and the Miami International Mall. Route 2, the Yellow Route, connects the Palmetto Metrorail Station, Doral Government Center, Downtown Doral, Miami-Dade College West, and Doral City Place. Route 3, the Green Route, connects Midtown Doral with the Palmetto Metrorail Station. Lastly, Route 4, the Purple Route, connects Midtown Doral, Miami International Mall, and FIU's Engineer and Modesto A. Maidique campuses. **Table 29** summarizes the amount of stops per route and schedule.

Table 29: DTS Stops and Schedule per Route

Route	Length (miles)	Number of Stops	Schedule					
			Weekday		Saturday		Sunday	
			AM	PM	AM	PM	AM	PM
Route 1 (Blue)	24.8	86	06:00	10:07	07:00	08:03	07:00	08:03
Route 2 (Yellow)	16.7	53	06:00	09:35	06:50	07:53	No Service	
Route 3 (Green)	15.7	46	05:50	09:28	06:50	06:56	No Service	
Route 4 (Purple)	15.2	48	06:00	11:00	No Service		No Service	

The Doral Trolley is free to ride and provides a real-time trolley tracker through mobile and web applications. **Table 30** summarizes the holidays when the system is not operational. Table 31 summarizes the headways per route per period.

Table 30: DTS Holiday Schedule

Holiday		DTS Operational?
New Year's Day	January 1	No
Martin Luther King Day	January 21	Yes
President's Day	February 18	Yes
Memorial Day	May 27	No
Independence Day	July 4	No
Labor Day	September 2	No
Columbus Day	October 14	Yes
Veteran's Day	November 11	Yes
Thanksgiving Day	Fourth Thursday of November	No
Day after Thanksgiving	Fourth Friday of November	Yes
Christmas Day	December 25	No

Table 31: DTS Headways per Route and Period

Route	Period	Headways (min.)		
		Weekday	Saturday	Sunday
Route 1 (Blue)	Peak	25	50	100
	Non-Peak	30	50	100
Route 2 (Yellow)	Peak	35	80	No Service
	Non-Peak	40	80	
Route 3 (Green)	Peak	35	60	No Service
	Non-Peak	40	60	
Route 4 (Purple)	Peak	35	No Service	No Service
	Non-Peak	45		

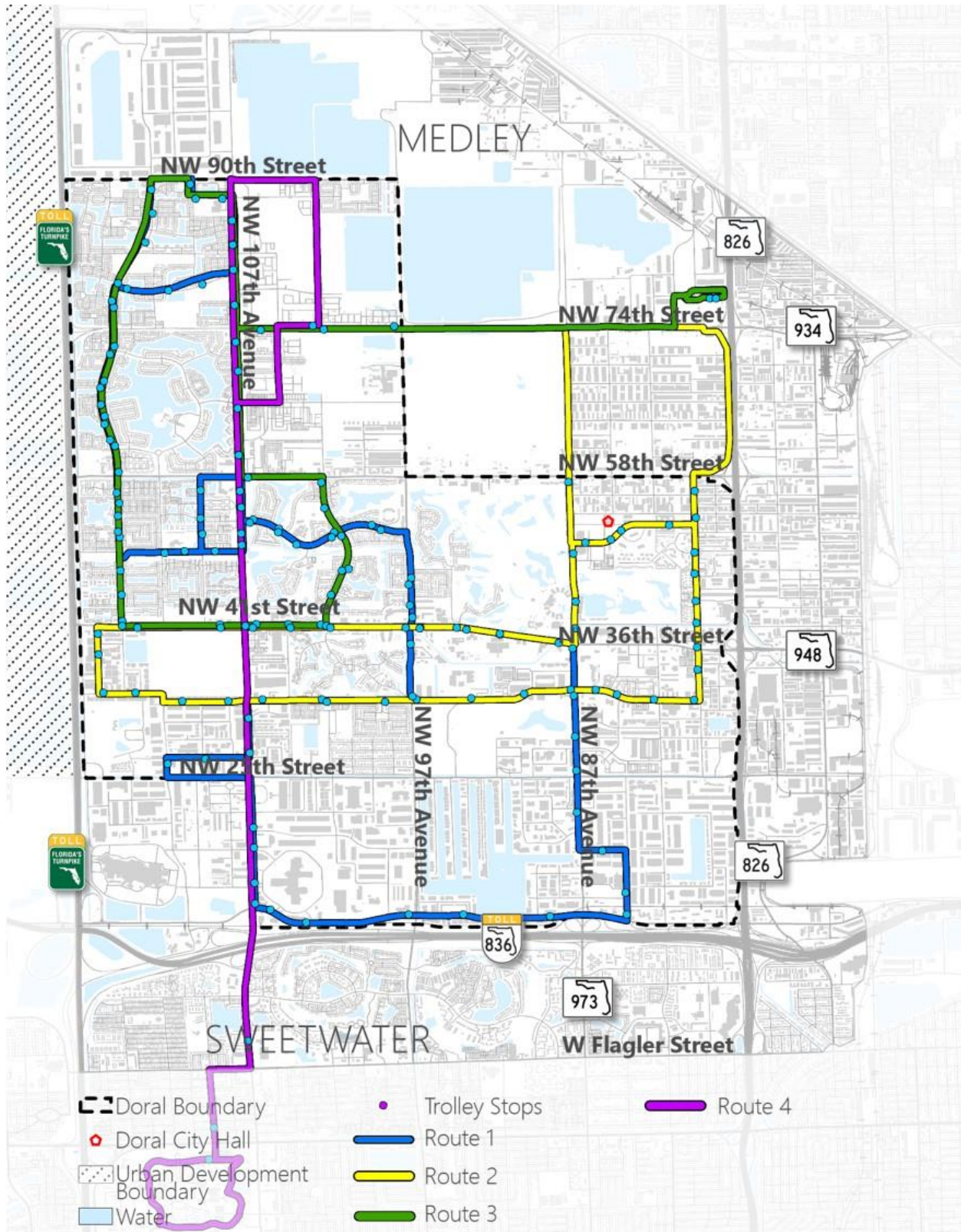


Figure 32: DTS Routes and Stops

The City operates 16 vehicles ranging from 30 to 34 feet in length. These vehicles, depicted in **Figure 33**, resemble old-style streetcars or trams with front pilot/cowcatcher, framed windows, round lights, wooden bench seating, and double roof. Referred to as “trolley-replica buses” by the American Public Transportation Association (APTA), these vehicles have rubber tires, run on biodiesel fuel, and have an estimated service life of 10 years or 350,000 miles. Doral’s fleet has an average age of 4.5 years with five of its 16 vehicles having more than five years in operations.

Table 32 through **Table 34** summarize key characteristics of the City's fleet. These vehicles cost an average of \$173,500 and have the following amenities:

- GPS tracker
- Automated Passenger Counter (APC)
- Security cameras
- Wireless internet routers (Wi-Fi)
- Bicycle racks
- Annunciators
- Light-emitting Diode (LED) display designation signs

Capital investments in IT amenities is of approximately \$21,000. Six of the 16 vehicles have maximum seating and standing capacity of 41 people while the rest have a capacity of 44 people.



Figure 33: Doral Trolley Vehicle

Table 32: DTS Fleet Inventory

Trolley	Make	Fuel Type	Miles	Model Year	Replacement Year	Years in Service
DT01	Freightliner Supreme	Biodiesel	303,241	2009	2019	7.00
DT02	Freightliner Hometown	Biodiesel	57,164	2018	2028	1.00
DT03	Freightliner Supreme	Biodiesel	329,200	2010	2020	9.00
DT04	Freightliner Supreme	Biodiesel	288,474	2011	2021	8.00
DT05	Freightliner Supreme	Biodiesel	265,338	2011	2021	8.00
DT06	Ford Hometown	Gasoline	261,748	2013	2023	6.00
DT07	Freightliner Hometown	Biodiesel	169,178	2014	2024	5.00
DT08	Freightliner Hometown	Biodiesel	205,997	2014	2024	5.00
DT09	Freightliner Hometown	Biodiesel	196,498	2014	2024	5.00
DT10	Freightliner Hometown	Biodiesel	157,116	2015	2025	4.00
DT11	Freightliner Hometown	Biodiesel	177,133	2015	2025	4.00
DT12	Freightliner Hometown	Biodiesel	115,697	2016	2026	1.00
DT13	Freightliner Hometown	Biodiesel	28,020	2018	2028	0.50
DT14	Freightliner Hometown	Biodiesel	31,301	2018	2028	0.50
DT15	Freightliner Hometown	Biodiesel	22,472	2018	2028	0.33
DT16	Freightliner Hometown	Biodiesel	22,823	2018	2028	0.25

Table 33: DTS Fleet Capacity

Trolley	Length (ft.)	Wheel Base (in.)	Aisle Width (in.)	Seating Capacity	ADA Seating	Standing Capacity
DT01	31	208	20	26 - 30	2	18
DT02	34	208	23	26-30	2	18
DT03	31	208	23	26 - 30	2	18
DT04	32	208	23	26 - 30	2	18
DT05	33	228	23	30 - 34	2	21
DT06	32	208	23	24 - 28	2	17
DT07	30	208	23	24 - 28	2	17
DT08	30	208	23	24 - 28	2	17
DT09	30	208	23	24 - 28	2	17
DT10	30	208	23	24 - 28	2	17
DT11	30	208	23	24 - 28	2	17
DT12	32	208	23	26 - 30	2	18
DT13	33	208	22	26 - 30	2	18
DT14	33	208	22	26 - 30	2	18
DT15	33	208	22	26 - 30	2	18
DT16	33	208	22	26 - 30	2	18

Table 34: DTS Fleet Purchasing Cost

Trolley	VIN Number	Purchase Cost	Reimbursement	
			Amount	Source
DT01	4UZAACD39CAH6205	\$143,000.00	-	-
DT02	4UZADEF3JCJZ6552	\$188,483.75	-	-
DT03	4UZAACDU3ACAP8108	\$152,000.00	-	-
DT04	4UZADEDUXBCAV2397	\$161,500.00	-	-
DT05	4UZAACDT3ACAT4844	\$169,531.00	-	-
DT06	1F66F5DY4E0A00017	\$152,137.00	\$152,137.00	Private development contribution (Park Square)
DT07	4UZADEDT7ECFX4450	\$175,750.00	\$127,333.72	SFRTA Grant \$475K
DT08	4UZADEDT4ECFZ4994	\$175,750.00	\$127,333.72	SFRTA Grant \$475K
DT09	4UZADEDT3ECGA0778	\$175,750.00	\$86,740.19	SFRTA Grant \$350K
DT10	4UZADEDT2GCHD9027	\$175,750.00	\$127,333.72	SFRTA Grant \$475K
DT11	4UZADEDT4GCHD9028	\$175,750.00	\$86,740.19	SFRTA Grant \$350K
DT12	4UZADEDT4HCJE9507	\$175,750.00	-	-
DT13	4UZADEF3KCKL6662	\$188,483.75	-	-
DT14	4UZADEF3KCKL6663	\$188,483.75	-	-
DT15	4UZADEF3KCKL6664	\$188,483.75	-	-
DT16	4UZADEF3KCKL6665	\$188,483.75	-	-

Table 35 summarize the number of vehicles assigned to each route and where and when they begin and end their daily journeys. Trolley vehicle assignments are scheduled a week in advance through the TSO Mobile website, a fleet management contractor retained by the City to provide digital tools for tracking and monitoring the DTS.

Table 35: DTS Operating Hours by Vehicle

Day	Route	Block	Start of Route	End of Route	Start Time (AM)	End Time (PM)
Weekday	1	1	NW 109 th Ave. & NW 88 th St.	Dolphin Mall	06:00	09:35
		2	NW 109 th Ave. & NW 88 th St.	Dolphin Mall	06:31	10:07
		3	NW 10500 Blk. & NW 12 th St.	NW 109 th Ave. & NW 88 th St.	06:00	09:32
		4	NW 10500 Blk. & NW 12 th St.	NW 109 th Ave. & NW 88 th St.	06:31	10:04
	2	1	Palmetto Metrorail Station	Palmetto Metrorail Station	06:00	09:12
		2	Palmetto Metrorail Station	Palmetto Metrorail Station	06:40	08:35
	3	1	Palmetto Metrorail Station	Palmetto Metrorail Station	05:50	09:28
		2	Palmetto Metrorail Station	Palmetto Metrorail Station	06:30	08:56
	4	1	NW 107 th Ave. & NW 58 th St.	Doral Academy	06:00	11:00
		2	NW 107 th Ave. & NW 58 th St.	FIU Main Campus	06:40	10:51
Saturday	1	1	NW 10500 Blk. & NW 12 th St.	Dolphin Mall	07:00	08:03
		2	NW 10500 Blk. & NW 12 th St.	Dolphin Mall	07:49	07:14
	2	1	Palmetto Metrorail Station	Palmetto Metrorail Station	06:50	07:53
	3	1	Palmetto Metrorail Station	Palmetto Metrorail Station	06:50	06:56
Sunday	1	1	NW 10500 Blk. & NW 12 th St.	Dolphin Mall	07:00	08:03

Operating and Maintenance Costs

The City outsources operations and maintenance of its trolley vehicles through public bids. Currently, the company contracted to provide these services is Limousines of South Florida (LSF). Based on the advertised RFP 2014-09 and LSF's submitted bid, the quoted cost per service hour is \$59.84 for operations, maintenance, fueling, and storage of trolley vehicles on a yearly basis. With a total of 27,800 hours quantified per year, the total bid amount was of \$1,663,552.00 per year.

Looking at total hours of operations (see **Table 35**), all of Doral trolleys run for approximately 155 hours on weekdays, 50 hours on Saturdays, and 13 hours on Sundays. This represents a total of 42,801 operating hours in 2019 given this year has 261 weekdays, 52 Saturdays, and 52 Sundays and excluding the 6 holidays the trolley is not operational. Given the yearly bid amount, Doral's operating and maintenance cost per hour of operations is \$38.87.

LSF is located at 3737 NW 43rd St, Miami, FL 33142 where they store, repair, and maintain the City's trolley. Drivers report to this facility and deadhead to their designated route starting point. The City does not own any facilities related to Trolley operations.

Furthermore, the City has contracted TSO Mobile to provide and manage the information technology infrastructure. The City spends \$279.82 monthly for IT services including Automatic Vehicle Location (AVL) GPS, Automatic Voice Information System (AVIS), Automatic Text Information System (ATIS), mobile application, one door Automatic People Counter (APC), cameras, AVAS, Wi-Fi, ETA solar signs, and driver tablet application.

Survey of Trolley Drivers

In an effort to understand existing challenges and opportunities a survey of the trolley drivers employed by LSF was conducted on January 23, 2019. The afternoon crew was surveyed at 11:00 AM before they began their shift and the morning crew at 4:00 PM at the end of their shift.

During the meeting the purpose of the study was explained, and drivers were encouraged to provide their feedback, opinions, and recommendations on how to improve the existing trolley system. The drivers and operations personnel from Limousines of South Florida provided the following input:

- Poor lighting exists on bus stops at NW 114th Avenue and NW 58th Street (near the Sedano's Supermarket), and NW 52nd Street.

- Drivers complained about poor signal timing exists at the following intersections:
 - NW 107th Avenue and NW 41st Street
 - NW 107th Avenue and NW 66th Street
 - NW 114th Avenue and NW 41st Street
 - NW 114th Avenue and NW 58th Street
- Queue length exceed the capacity of the eastbound left-turn bay on NW 97th Avenue and NW 33rd Street.
- Passengers have requested the following stops:
 - NW 112th Avenue and NW 41st Street (Potential transfer from Route 1 to Route 2)
 - NW 107th Avenue and NW 14th Street
- Passenger respect for trolley driver and City property is an issue, especially with students on Route 1 since they put themselves and others at risk or disobey trolley policies (such as no drinking/eating, maintaining feet on the ground, etc.).
- Passengers also perform unsafe actions such as standing up and at times descending the door steps before the trolley comes to a full stop at a destination. Some passengers also stand almost in front of the trolley as it approaches bus stops.
- Frequently, the trolley is at capacity when it arrives at the Palmetto Metrorail Station transfer stop between 4:00 PM and 5:00 PM causing some passengers to want to overcrowd the vehicle.
- Due to the expected opening of the Dolphin Station Park-and-Ride, the only route servicing the NW 17th Street stop is Route 4 and not Route 1 and 4 as before. This temporary change is expected to be modified once the Park-and-Ride opens but some customers have expressed desire for Route 1 to service the stop again.
- Drivers suggest using NW 17th Street to connect to the Dolphin Mall as opposed to NW 14th Street due to traffic congestion and like Metrobus.
- Some passengers and drivers have noted that the one-way circulator routes are not efficient given the long distance a passenger must ride to go back to a missed stop or return to its original trip's origin. Some drivers recommended making routes linear and two-way.
- Drivers noted some blind/visually impaired passengers use the trolley with frequency, however, the drivers were unaware of ADA regulations such as making stop announcements inside transit vehicles at main points along a bus or train route. While the drivers have received training, an automated voice-over gives all the announcements through speakers installed in the vehicles. Some drivers reported trolley vehicles with malfunctioning voice-overs and the operations crew noted some vehicles arrived with wires cut to shut-off the system.

A total of 17 questionnaires were collected out of 20 handed out. Some drivers kept copies of the questionnaire and submit at a later time after the encounter. **Appendix A** includes blank samples of the questionnaire provided in both English and Spanish. **Appendix A** also provides a table comprised of answers provided by the trolley drivers.

Ridership Analysis

Throughout the course of this study the trolley vehicle APCs were malfunctioning. City staff and TSO Mobile staff reported double counting and other errors in the data recorded by the APCs. Hence, ridership data was recorded through tally marks by drivers, but this method proved to be unreliable through several audits conducted by City of Doral staff. Furthermore, the City does not maintain a record of ridership data.

In March 2019, the City and TSO Mobile worked to retrofit the trolley vehicles APCs from side mounted systems to ceiling mounted systems to improve the recordkeeping accuracy of boarding and alighting. As of March 27, 2019, all trolley vehicles were retrofitted with the exception of DT09. Hence, ridership data presented in herein corresponds to the period of March 28, 2019 from 12:00 AM through April 10, 2019 at 11:59 PM. Trolley assignments during this period are presented in **Table 39**, where assignments of Trolley DT09 are highlighted given that the ridership data presented may exclude the boarding and alighting in this trolley vehicle.

Table 36 summarizes the total boarding and alighting by route for the period studied. This table shows that Route 1 has the highest ridership, followed by Route 3, Route 2, and then Route 4. The FIU route is the newest route in the system, which began service August 20, 2018, and is the only route not in service during the weekend.

Table 36: Trolley Ridership Summary from 03/28/2019 – 04/10/2019

Route	Boarding	Alighting	Total
1	11,287	11,259	22,546
2	2,543	2,348	4,891
3	5,339	5,321	10,660
4	1,909	1,820	3,729
Total	21,703	21,333	43,036

Route Efficiency Analysis

Using the route schedules and route lengths, Vehicle Miles Travelled (VMT) were estimated for each route. This calculation was performed by multiplying the estimated daily cycles a trolley vehicle does for a specific route and day times the route length. The estimate daily VMT was then multiplied by 10 and 2, depending on weekdays and weekends, to obtain the VMTs travelled by each vehicle in each route for two weeks. Each route's VMT in two weeks was aggregate to obtain an estimated total VMT per route. Hence, route efficiency (boarding per VMT) can be calculated to compare each route. **Table 38** shows that Routes 1 and 3 are the most efficient followed by Route 2 and 4. This proves that even though Route 1 has almost twice as much ridership than Route 3, Route 3 is as efficient in moving people as Route 1. Furthermore, if Route 4 achieves the same boarding as Route 2, Route 4 will become slightly more efficient than Route 2.

Table 37: Estimated Trolley Vehicle Miles Travelled (VMT)

Day	Route	Block	Approximate Daily Cycles	Route Length (Miles)	Daily VMT	VMT in Two Weeks
Weekday	1	1	7.5	24.80	186.00	1,860.00
		2	7.5	24.80	186.00	1,860.00
		3	7.5	24.80	186.00	1,860.00
		4	7.5	24.80	186.00	1,860.00
	2	1	12	16.70	200.40	2,004.00
		2	11	16.70	183.70	1,837.00
	3	1	13	15.70	204.10	2,041.00
		2	12	15.70	188.40	1,884.00
	4	1	13	15.20	197.60	1,976.00
		2	12	15.20	182.40	1,824.00
Saturday	1	1	8	24.80	198.40	396.80
		2	7	24.80	173.60	347.20
	2	1	10	16.70	167.00	334.00
	3	1	12	15.70	188.40	376.80
Sunday	1	1	8	24.80	198.40	396.80

Table 38: Trolley Route Efficiency from 03/28/2019 – 04/10/2019

Route	Boarding	Total VMT in 2 Weeks	Efficiency (Boarding per VMT)
1	11,287	8,580.80	1.32
2	2,543	4,175.00	0.61
3	5,339	4,301.80	1.24
4	1,909	3,800.00	0.50

Table 39: Trolley Assignments from 03/28/2019 – 04/10/2019

Date	Route	Block	Trolley
Thursday 03/28/19	1	1	DT07
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT11
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT04
	4	2	DT14
Friday 03/29/19	1	1	DT07 replaced by
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT11
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT04
	4	2	DT14
Saturday 03/30/19	1	1	DT16
	1	2	DT12
	1	3	
	1	4	
	2	1	DT14
	2	2	
	3	1	DT02
	3	2	
	4	1	
Sunday 03/31/19	4	2	DT16
	1	1	DT15
	1	2	
	1	3	
	1	4	
	2	1	No Service
	2	2	
	3	1	No Service
	3	2	
	4	1	No Service
	4	2	

Date	Route	Block	Trolley
Monday 04/01/19	1	1	DT07 replaced by DT05
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT11
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT04
	4	2	DT14
Tuesday 04/02/19	1	1	DT07 replaced by DT08 replaced by DT07
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT11
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT04
	4	2	DT14
Wednesday 04/03/19	1	1	DT09
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT11
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT04
	4	2	DT14
Thursday 04/04/19	1	1	DT05
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT11
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT13
	4	2	DT14

Date	Route	Block	Trolley
Friday 04/05/19	1	1	DT05
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT09
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT13
	4	2	DT14
Saturday 04/06/19	1	1	DT16
	1	2	DT14
	1	3	
	1	4	
	2	1	DT13
	2	2	
	3	1	DT02
	3	2	
	4	1	
	4	2	DT16
Sunday 04/07/19	1	1	DT01
	1	2	
	1	3	
	1	4	
	2	1	No Service
	2	2	
	3	1	No Service
	3	2	
	4	1	No Service
	4	2	
Monday 04/08/19	1	1	DT05 replaced by DT08
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT01 replaced by DT03
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT04
	4	2	DT14

Date	Route	Block	Trolley
Tuesday 04/09/19	1	1	DT08
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT03 replaced by DT01
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT13
	4	2	DT14
Thursday 04/10/19	1	1	DT08
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT01
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT13
	4	2	DT14

Peak Period Analysis

Boarding and alighting data were also obtained per hour for the same two-week period of March 28, 2019 from 12:00 AM through April 10, 2019 at 11:59 PM. Using this data, average daily boarding and average daily alighting were calculated for each route. The following graphs illustrate the distribution of demand on an average weekday. From these graphs the following conclusions were made:

- Route 1
 - Boarding and Alighting AM peak hour is between 6:00 and 7:00 (commuters)
 - Between 9:00 AM and 1:00 PM boarding flatline around 40 people per hour
 - Boarding and Alighting PM peak hour is between 2:00 and 3:00 (commuters/schools)
- Route 2
 - Boarding and Alighting AM peak hours are between 6:00 and 9:00 (commuters)
 - Boarding and Alighting PM peak hours are between 4:00 PM and 6:00 PM
 - Boarding has a second PM peak between 8:00 and 9:00 (commuters)
- Route 3
 - Boarding and Alighting AM peak hour is between 6:00 and 7:00
 - Between 9:00 AM and 1:00 PM boarding flatline around less than 20 people per hour
 - Boarding has a second PM peak between 8:00 and 9:00
- Route 4
 - Boarding and Alighting AM peak hour is between 6:00 and 7:00
 - Boarding and Alighting PM peak hour is between 1:00 PM and 2:00 PM
 - Boarding has a second PM peak between 8:00 and 9:00

Other observations made include:

- Routes 1 and 3 are similar in that they demonstrate typical Directional Flow behavior – imbalanced AM and PM peaks. Providing two-way service may balance the AM and PM demands.
- Existing headways for Routes 1 and 3 may be insufficient during peak demand
- Routes 2 and 4 have more balanced demand throughout the day but also have low demand

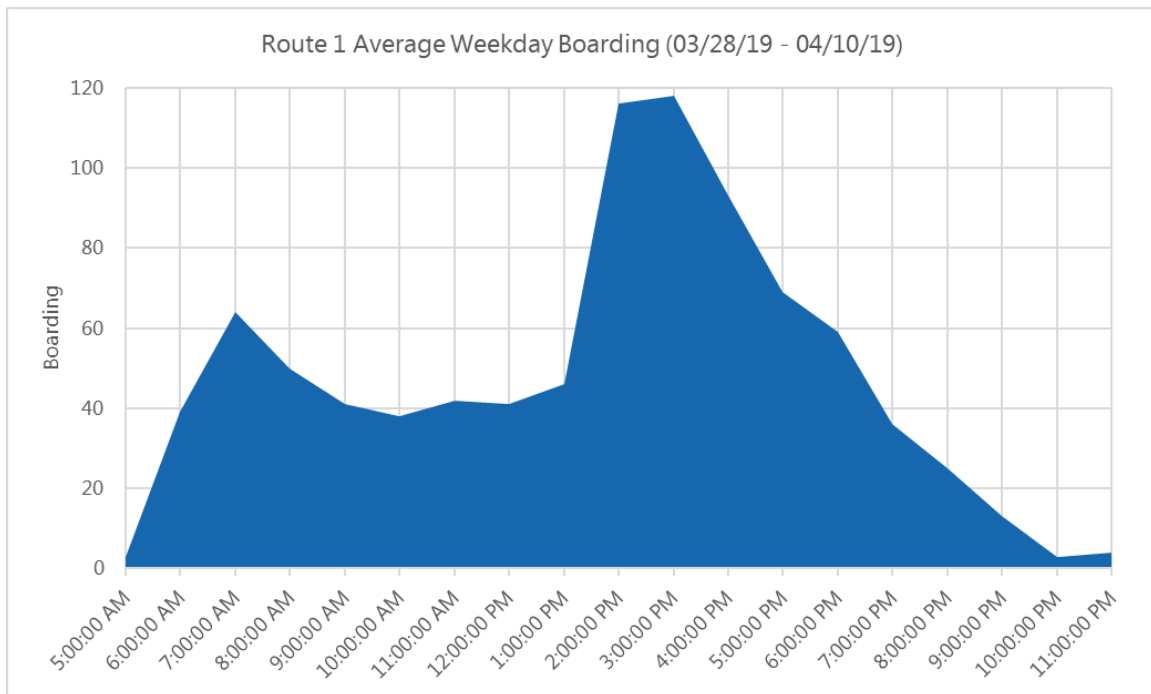


Figure 34: Route 1 Average Weekday Boarding (03/28/2019 – 04/10/2019)

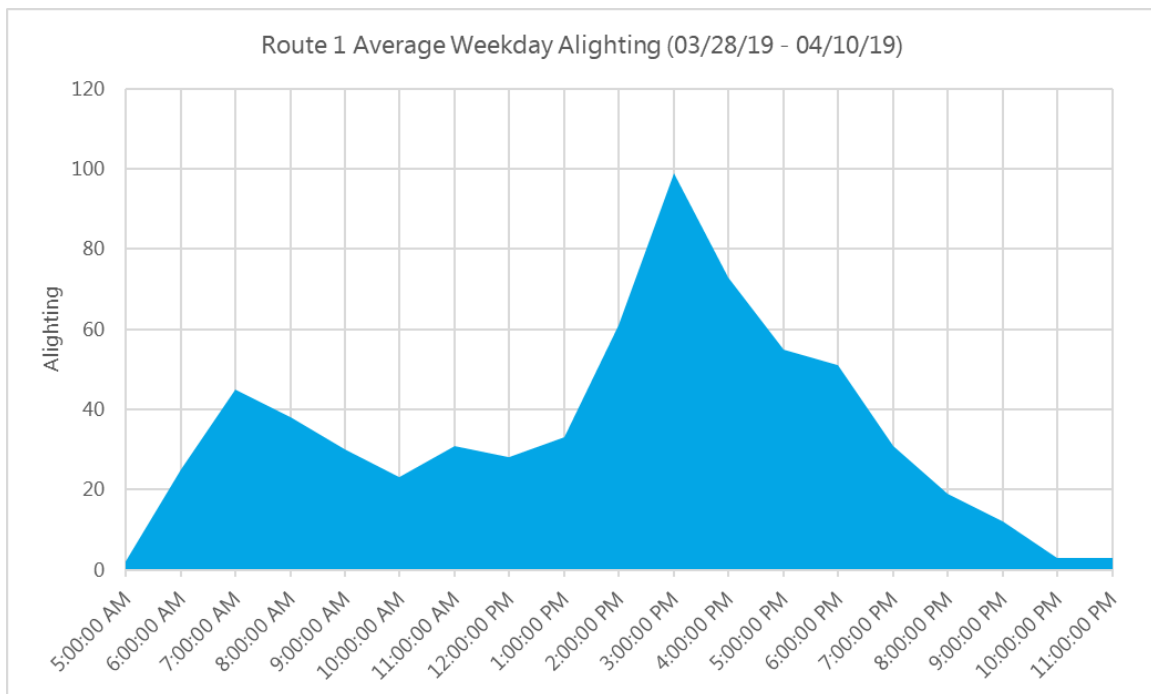


Figure 35: Route 1 Average Weekday Alighting (03/28/2019 – 04/10/2019)

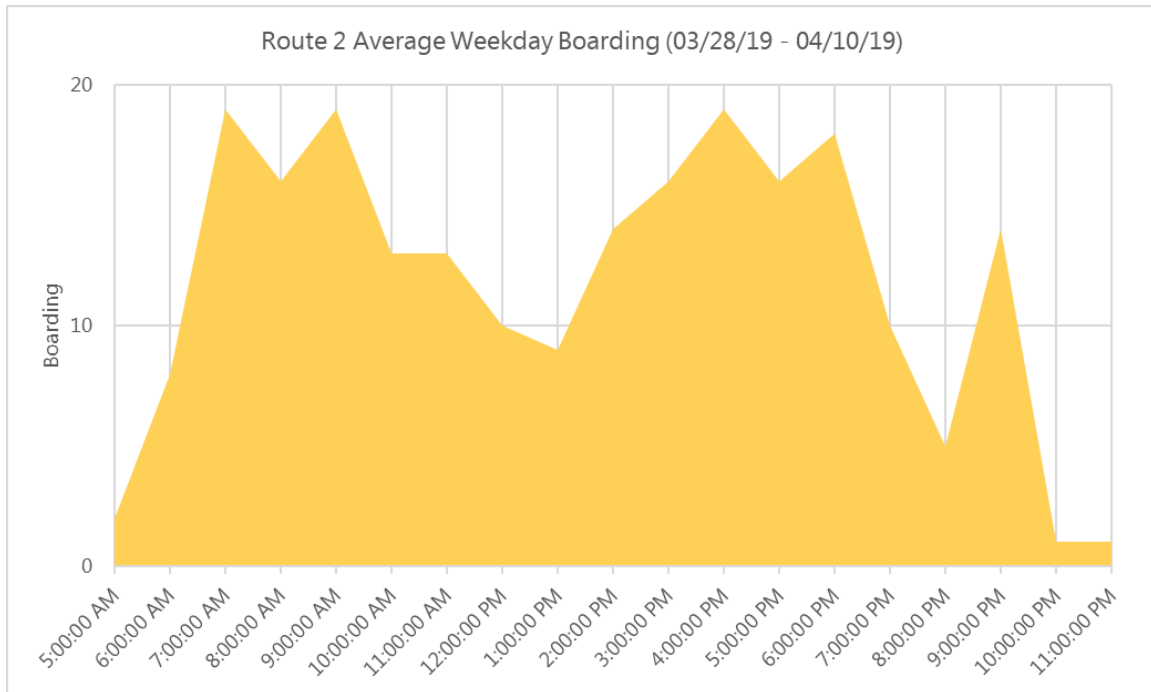


Figure 36: Route 2 Average Weekday Boarding (03/28/2019 – 04/10/2019)

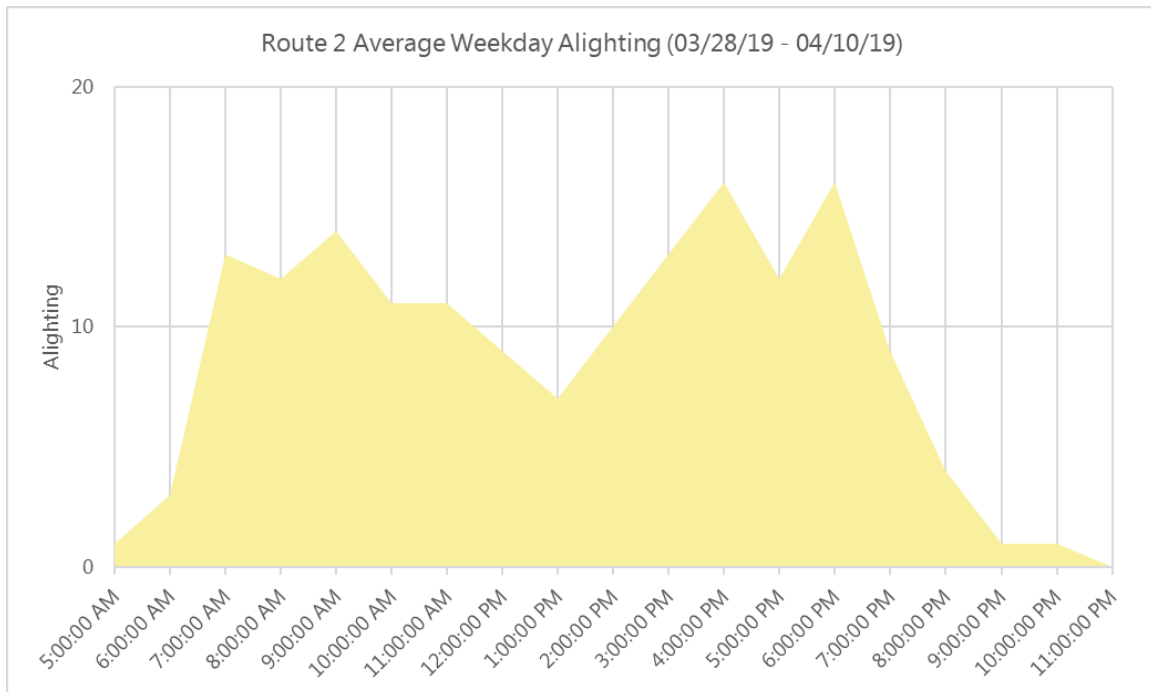


Figure 37: Route 2 Average Weekday Alighting (03/28/2019 – 04/10/2019)

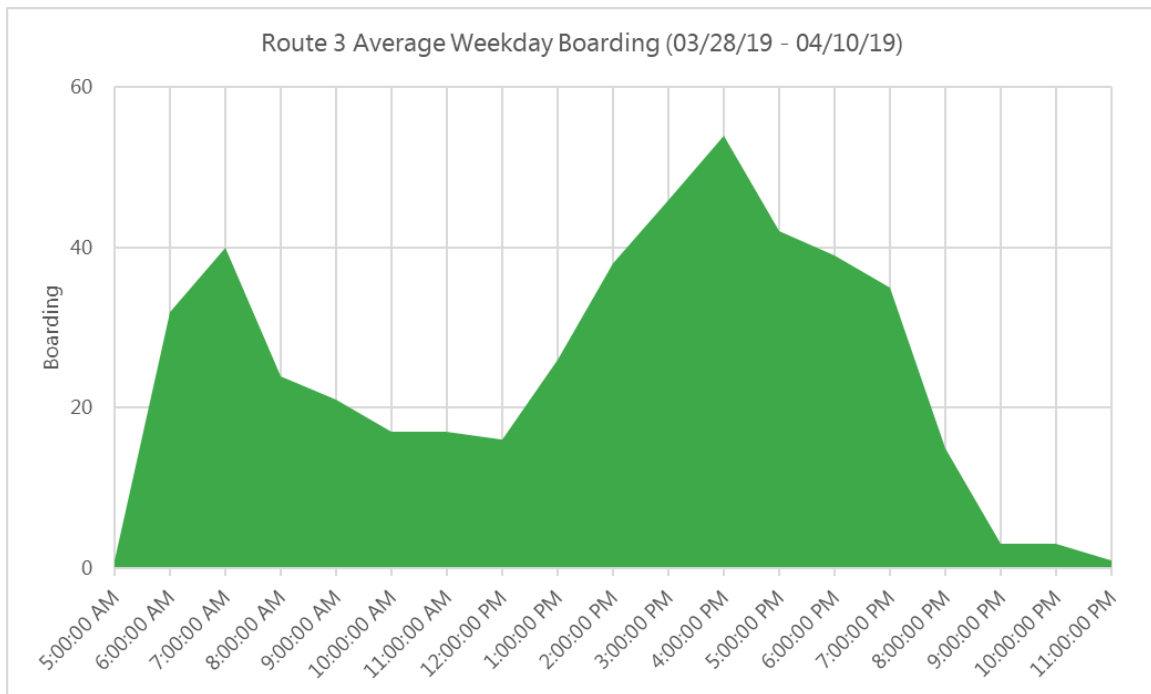


Figure 38: Route 3 Average Weekday Boarding (03/28/2019 – 04/10/2019)

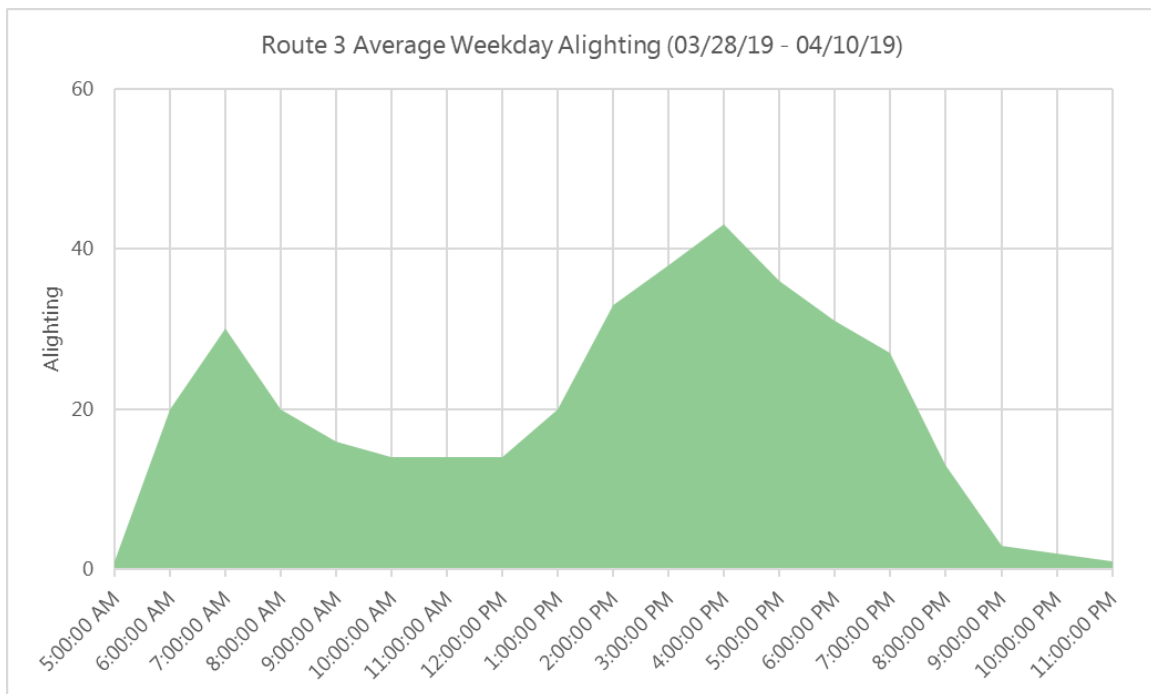


Figure 39: Route 3 Average Weekday Alighting (03/28/2019 – 04/10/2019)

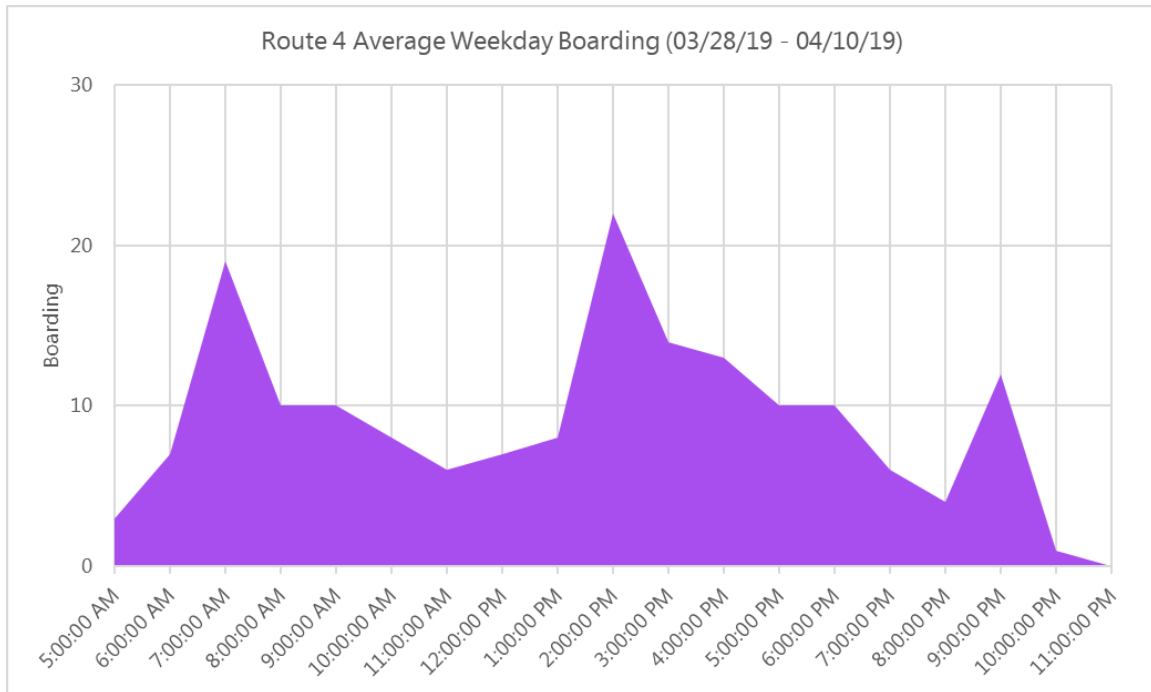


Figure 40: Route 4 Average Weekday Boarding (03/28/2019 – 04/10/2019)

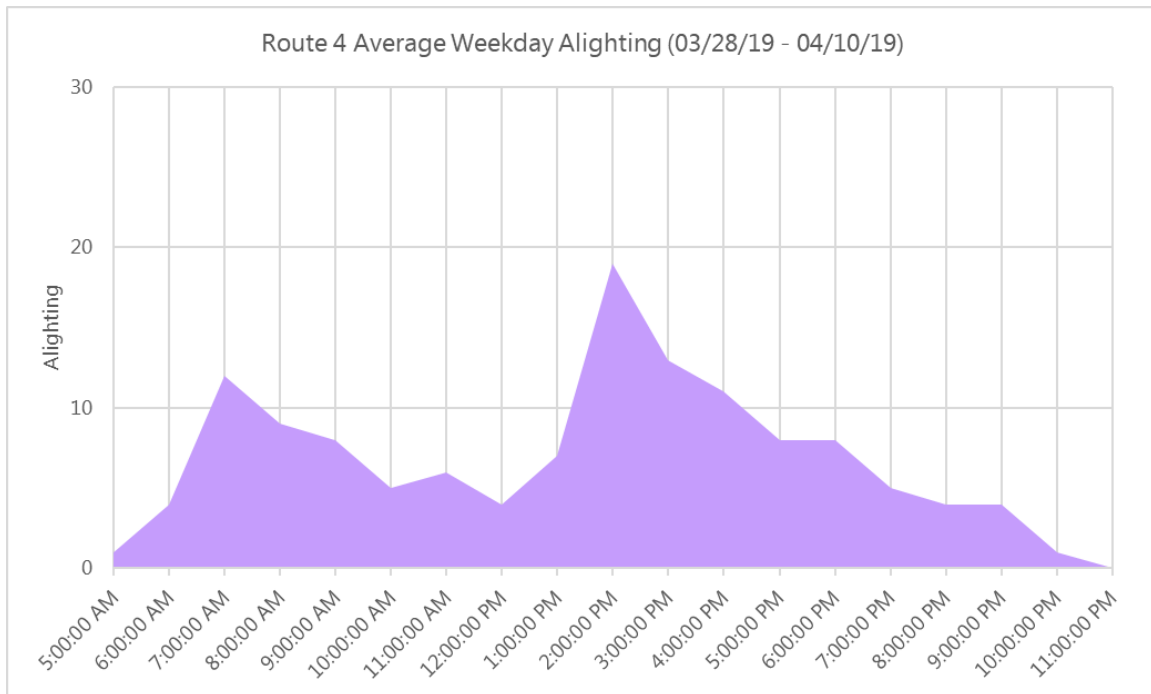


Figure 41: Route 4 Average Weekday Alighting (03/28/2019 – 04/10/2019)

Stop Demand Analysis

Table 40 through Table 47 list the highest and lowest ridership stops by route. Figure 42 through Figure 49 illustrate the average boarding and alighting by stop and by route. These tables and figures lead to the following conclusions:

- Route 1
 - The main customers of Route 1 are transferring from Metrobus at Dolphin Mall or Miami International Mall
 - Most high boarding stops are located in the northern residential area of the City
 - Some customers may be students at Millennia Atlantic University and Ronald Reagan Senior High School
 - Stop 1075 may likely represent trips to Walmart and other venues around NW 87th Avenue
 - It is likely most people using this route are housekeepers commuting to work in the homes of Doral residents or students and residents going home or performing secondary trips such as grocery shopping
- Route 2
 - Most trips are focus along NW 41st Street/NW 36th Street and NW 87th Avenue
 - Most likely users are workers going from Downtown Doral to the multiple commercial and institutional land uses along Doral Boulevard
- Route 3
 - Ridership is highly concentrated around the schools and residences of Doral
 - Palmetto Station is also highly demand along this route, more than Route 2, which confirms field observation
 - Most likely customers are commuters and students
- Route 4
 - Most of the ridership demand is concentrated between NW 12th Street and NW 90th Street
 - Surprisingly, the FIU Modesto A. Maidique Campus had zero boarding and alighting during the period studied and the FIU Engineering Center had 68 boarding and 15 alighting, making it the 15th ranked stop in total count

Table 40: Route 1 Stops with Highest Ridership (03/28/2019 – 04/10/2019)

Stop No.	Description	Boarding	Alighting	Total
1079	Dolphin Mall	769	678	1,447
1006	Miami Int'l Mall (Mattress Firm)	409	508	917
1017	Millennia Atlantic University	405	429	834
1075	Red Lobster	331	429	760
1058	Bella Plaza (Sedanos) and transfer to Route 3	358	309	667
1042	Islands of Doral II	423	243	666
1081	Camden Doral Villas	214	404	618
1053	Brisas of Doral	395	221	616
1041	Ronald Reagan High School and transfer to Route 3	320	247	567
1038	Ibis Villas	307	207	514

Table 41: Route 1 Stops with Lowest Ridership (03/28/2019 – 04/10/2019)

Stop No.	Description	Boarding	Alighting	Total
1067	Miami-Dade Fire Rescue	8	11	19
1083		9	10	19
1057	Costa Linda	12	5	17
1072	Doral Central Park and transfers to DTPW Routes 87 and 95	10	7	17
1008	Bed Bath & Beyond Plaza	7	5	12
1039	NW 109 th Ave.	6	6	12
1025	Doral Terrace	2	9	11
1011	Doral Academy High School	9	0	9
1020	Doral Oaks	3	1	4
1022	John I Smith K-8 Center	2	0	2

Table 42: Route 2 Stops with Highest Ridership (03/28/2019 – 04/10/2019)

Stop No.	Description	Boarding	Alighting	Total
2062		559	371	930
2031	San Ignacio College and transfer to Route 3 and DTPW Route 36B	141	78	219
2029	The Imagination Factory and transfer to Route 3 and DTPW Route 36B	132	62	194
2017	Tony Romas and transfers to Route 1, DTPW Routes 87, and 95	45	90	135
2027	Miami-Dade College West and transfer to DTPW Route 36B	59	71	130
2033	Costa del Sol and transfer to Route 3 and DTPW Route 36B	66	62	128
2035	9690 Plaza (Einstein Bagels) and transfer to Route 1 and DTPW Route 36B	86	40	126
2008	Doral Gardens II and transfers to DTPW Routes 36 and 132	84	38	122
2056		50	72	122
2028	Doral Shops Plaza	66	54	120

Table 43: Route 2 Stops with Lowest Ridership (03/28/2019 – 04/10/2019)

Stop No.	Description	Boarding	Alighting	Total
2021	Costa del Sol (Opp. Veterans Park) and transfer to Route 1	6	21	27
2050		9	18	27
2002	5680 NW 87 th Ave.	2	23	25
2025	11369 - 11373 NW 34 th St. and transfer to DTPW Route 36B	9	16	25
2030	10775 NW 41 st St. and transfer to Route 3 and DTPW Route 36B	7	14	21
2019	Southern Command	6	11	17
2036	Univision and transfer to Route 1 and DTPW Route 36B	9	7	16
2053		5	11	16
2018	Miami Herald	7	6	13
2037	Federal Reserve and transfer to Route 1 and DTPW Route 36B	8	3	11

Table 44: Route 3 Stops with Highest Ridership (03/28/2019 – 04/10/2019)

Stop No.	Description	Boarding	Alighting	Total
3000	Palmetto Metrorail Station and transfers to Route 2, DTPW Metrorail Green Line, and Route 87	1838	995	2833
3016	Palm Springs Mile Shopping Center	222	187	409
3031	Ibis Villas	160	180	340
3033	Ronald Reagan High School	131	202	333
3020	Trails & Tails Park and transfer to Route 1	143	188	331
3037	Antilles	91	236	327
3004	CVS (NW 107 th Ave. South of NW 74 th St.)	96	150	246
3025	Doral Isles	79	167	246
3041	NW 74 th St. West of NW 97 th Ave.	22	223	245
3035	Islands of Doral II	163	75	238

Table 45: Route 3 Stops with Lowest Ridership (03/28/2019 – 04/10/2019)

Stop No.	Description	Boarding	Alighting	Total
3011	Doral Place	12	46	58
3045		42	8	50
3015	Wells Fargo and transfers to Route 2 and DTPW route 36B	41	5	46
3034	Ronald Reagan High School and transfer to Route 1	41	5	46
3032	NW 109 th Ave.	24	18	42
3043		23	18	41
3047		35	4	39
3003	Doral Commons Commercial	2	34	36
3010	NW 102 nd Ave. and NW 52 nd St., Doral Cove, and transfer to Route 1	29	7	36

3040	NW 74 th St. East of NW 102 nd Ave.	15	2	17
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Table 46: Route 4 Stops with Highest Ridership (03/28/2019 – 04/10/2019)

Stop No.	Description	Boarding	Alighting	Total
4024		98	77	175
4003	NW 107 th Ave. North of NW 12 th St.	121	36	157
4026		77	77	154
4048		28	114	142
4047		31	103	134
4022	NW 107 th Ave. North of NW 74 th St.	79	51	130
4041		59	64	123
4039		81	41	122
4014	NW 107 th Ave. North of NW 41 st St.	28	73	101
4001		72	28	100

Table 47: Route 4 Stops with Lowest Ridership (03/28/2019 – 04/10/2019)

Stop No.	Description	Boarding	Alighting	Total
4006		12	9	21
4017	NW 107 th Ave. South of NW 58 th St.	13	6	19
4021		8	10	18
4009	NW 107 th Ave. North of NW 25 th St.	7	3	10
4019		6	4	10
4044		2	6	8
4025		2	5	7
4007		2	1	3
4038	NW 107 th Ave. North of NW 58 th St.	2	1	3
4000	FIU Modesto A. Maidique Campus	0	0	0

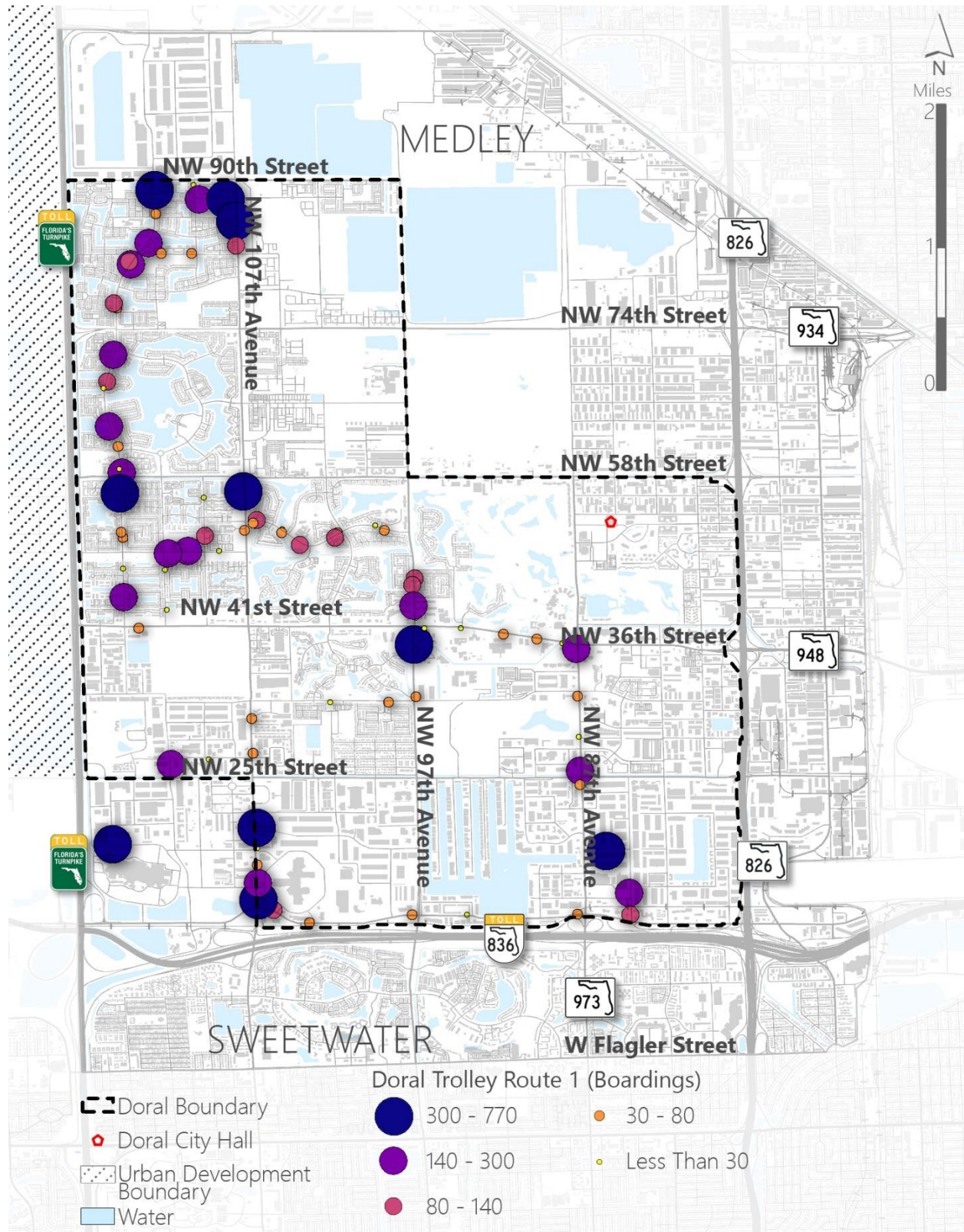


Figure 42: City of Doral Trolley Route 1 Boarding (03/28/2019 – 04/10/2019)

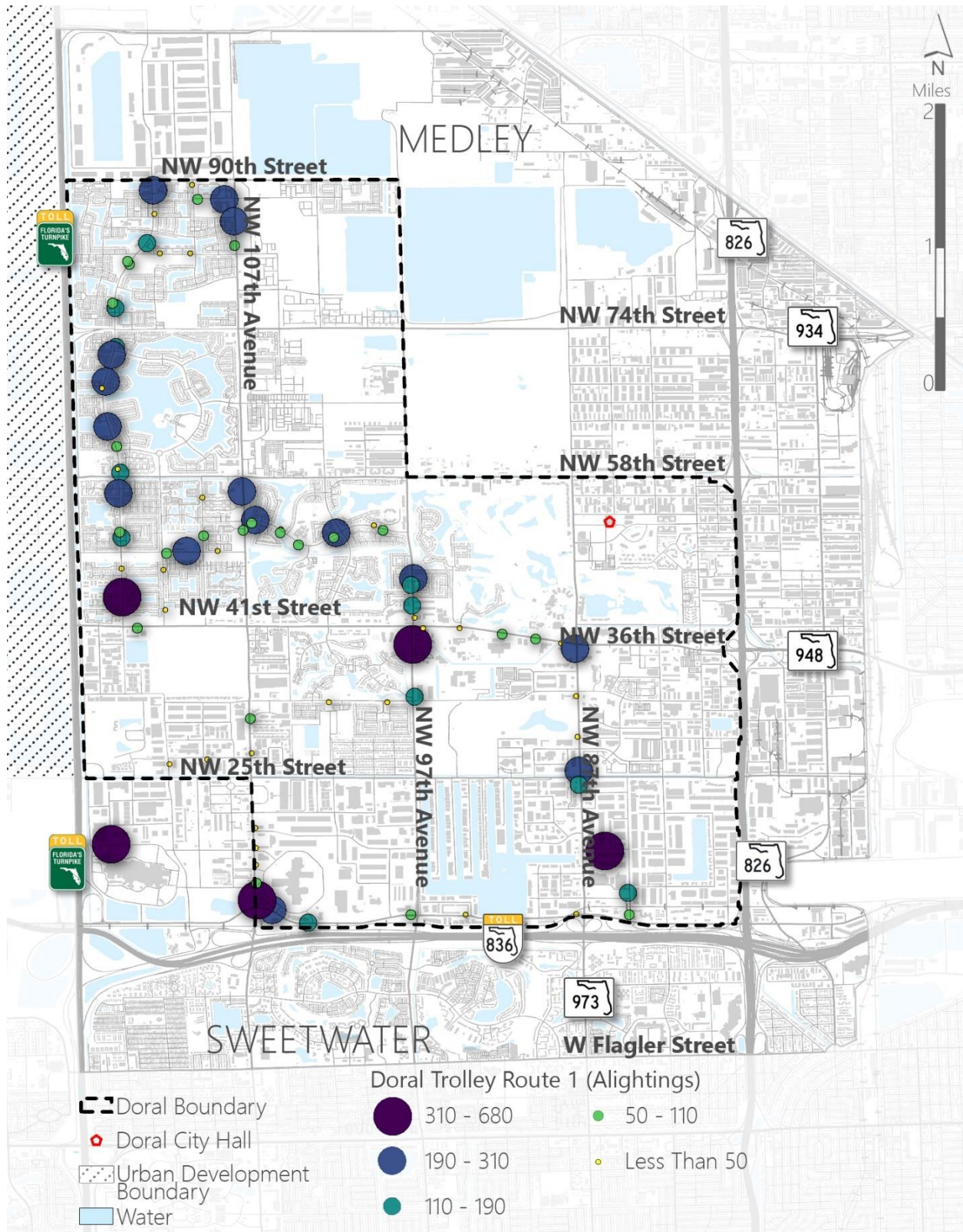


Figure 43: City of Doral Trolley Route 1 Alighting (03/28/2019 – 04/10/2019)

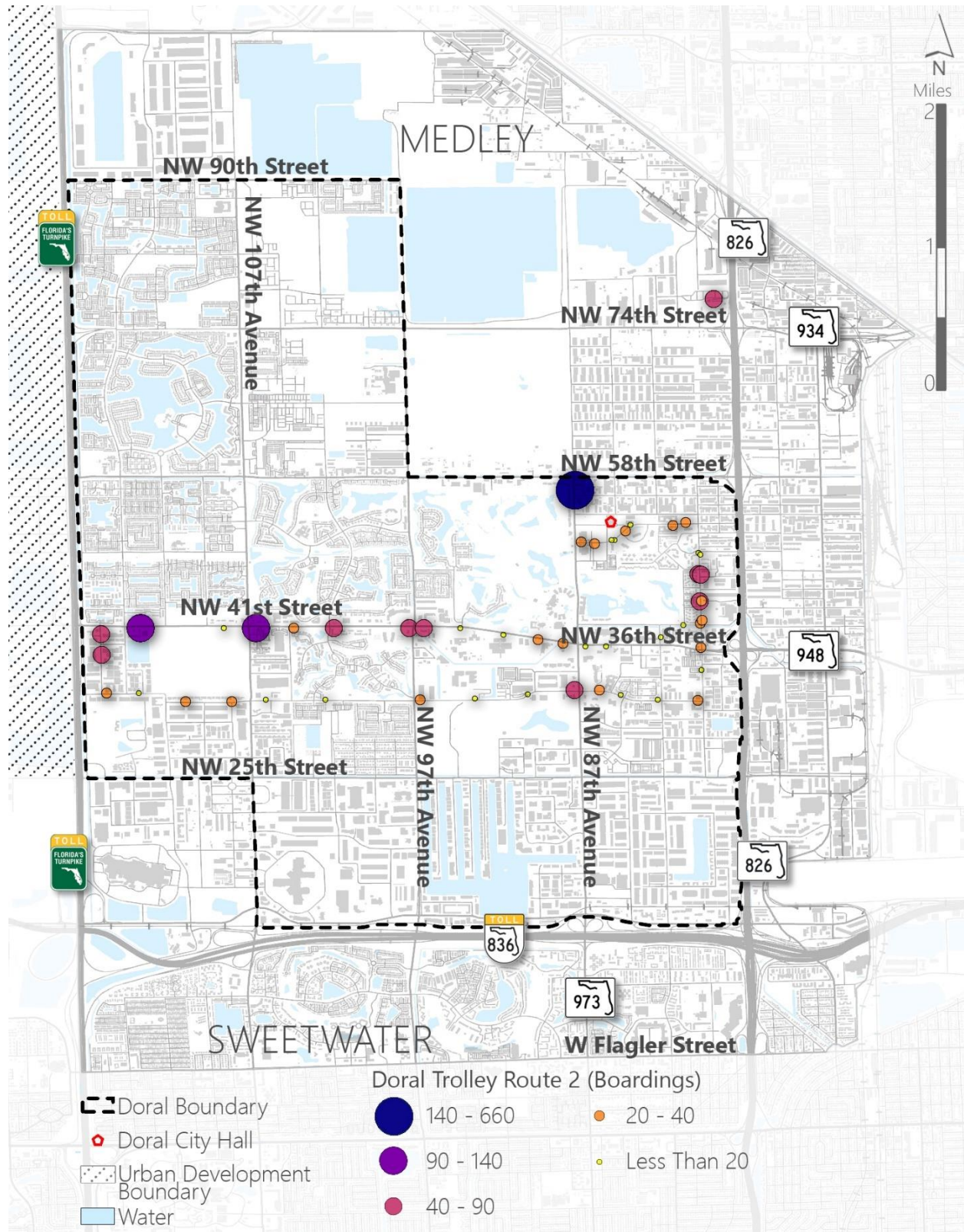


Figure 44: City of Doral Trolley Route 2 Boarding (03/28/2019 – 04/10/2019)

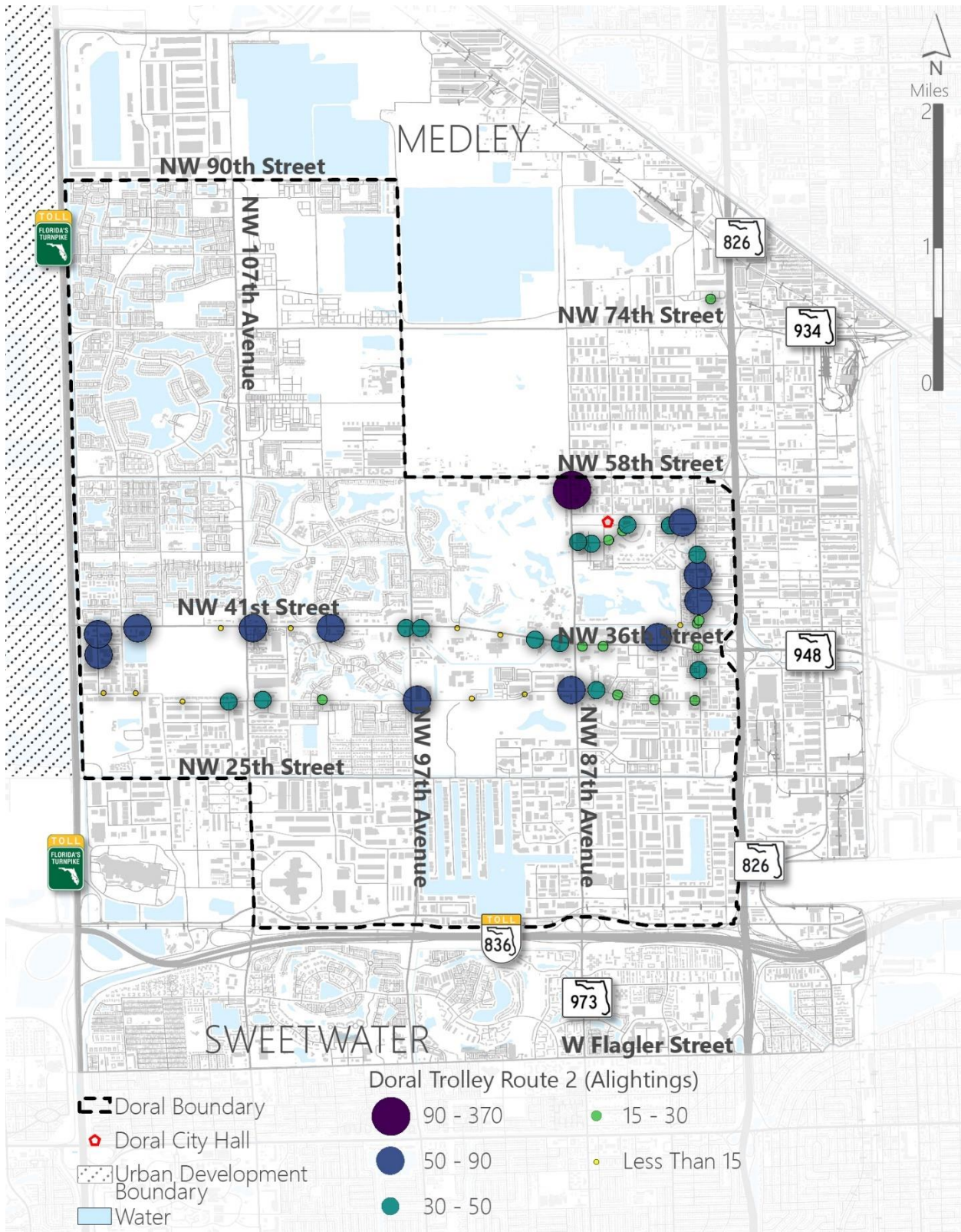


Figure 45: City of Doral Trolley Route 2 Alighting (03/28/2019 – 04/10/2019)

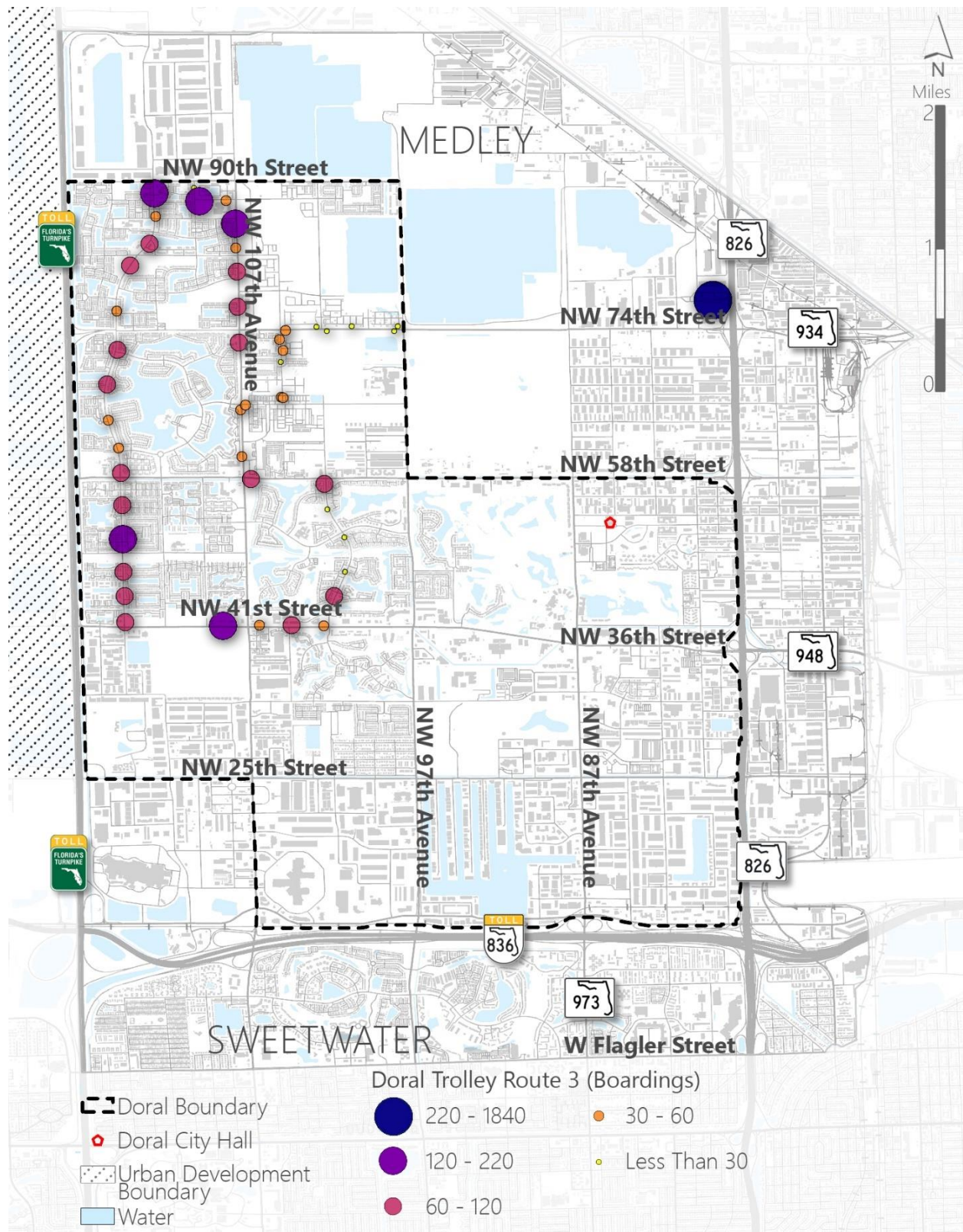


Figure 46: City of Doral Trolley Route 3 Boarding (03/28/2019 – 04/10/2019)

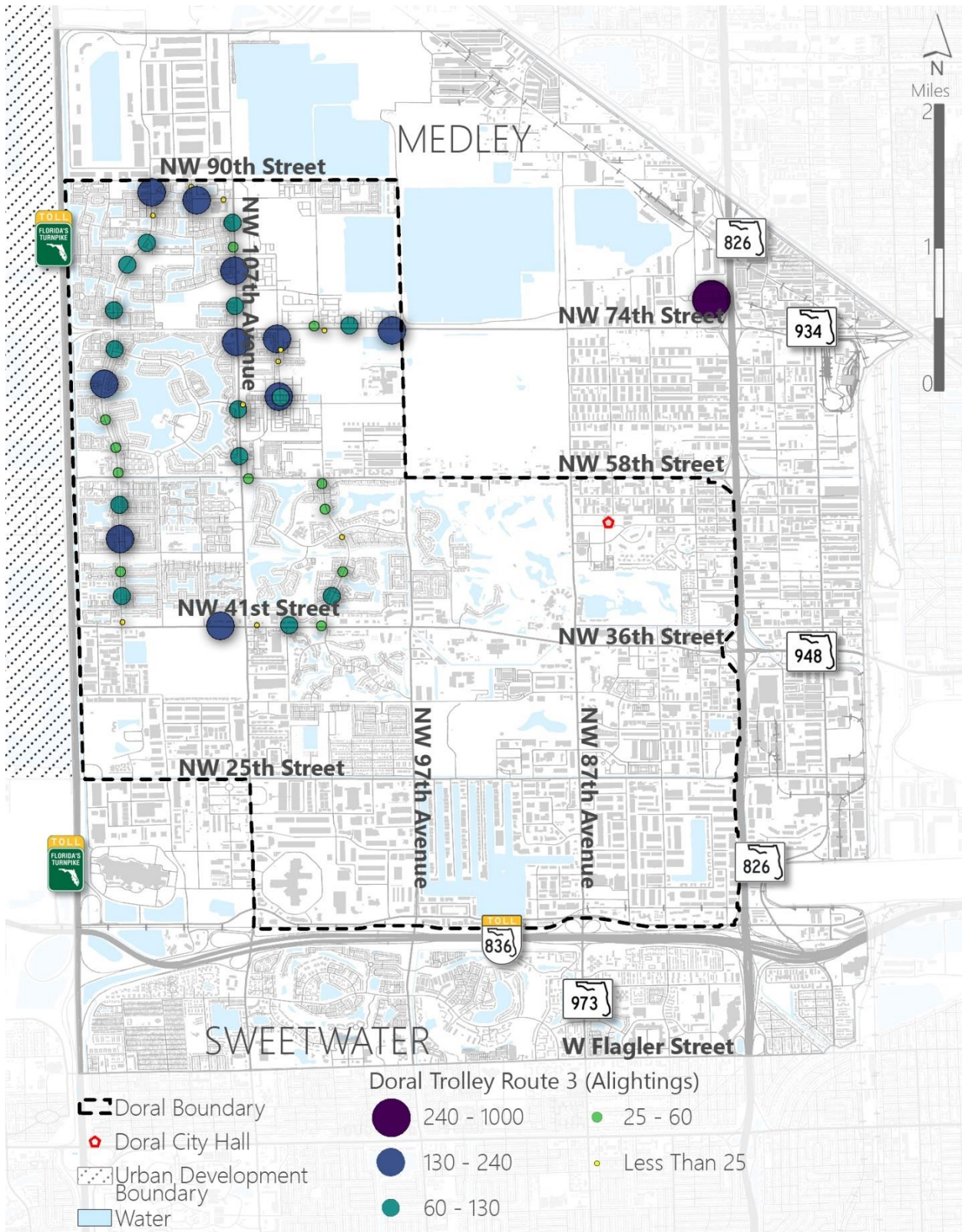


Figure 47: City of Doral Trolley Route 3 Alighting (03/28/2019 – 04/10/2019)

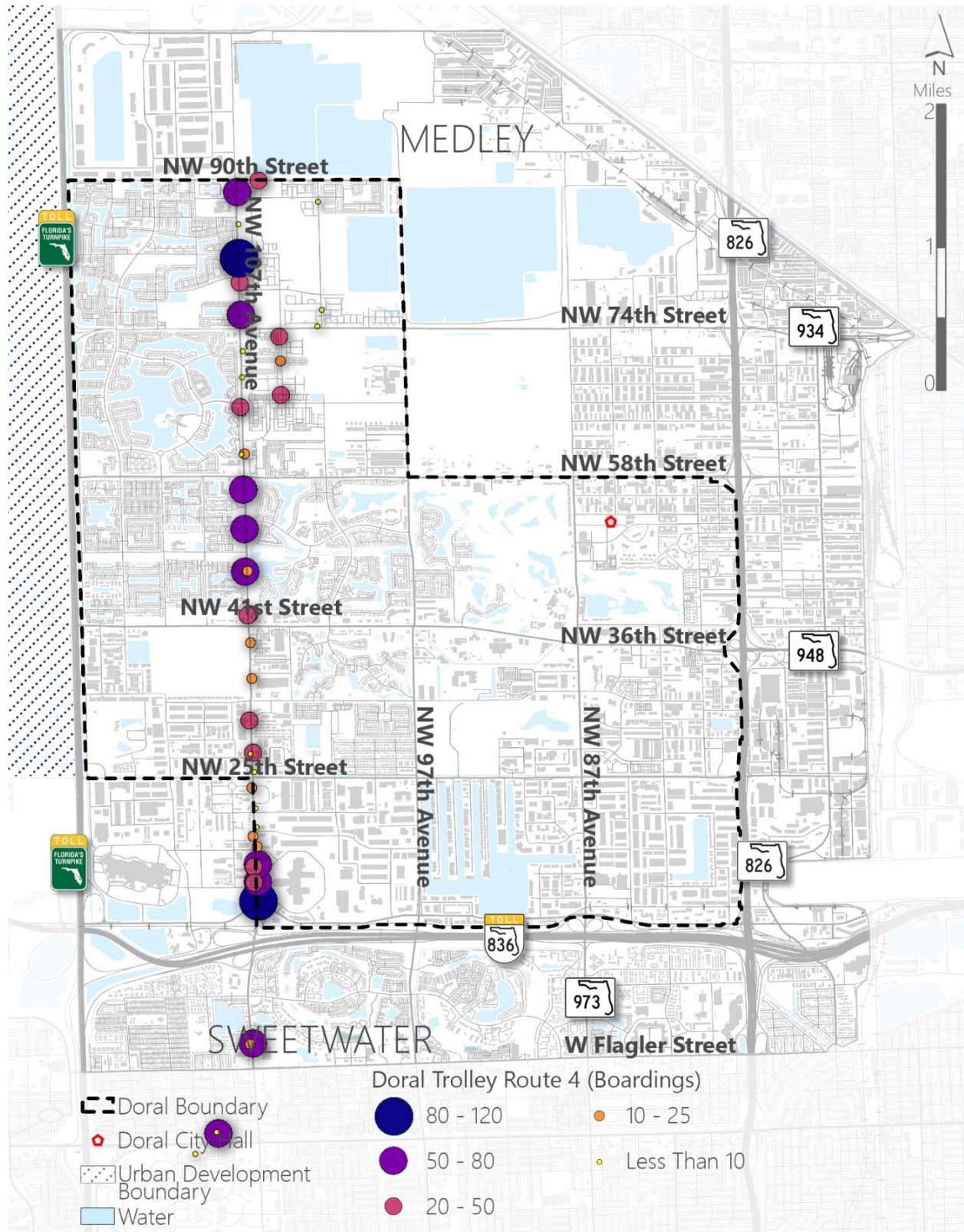


Figure 48: City of Doral Trolley Route 4 Boarding (03/28/2019 – 04/10/2019)

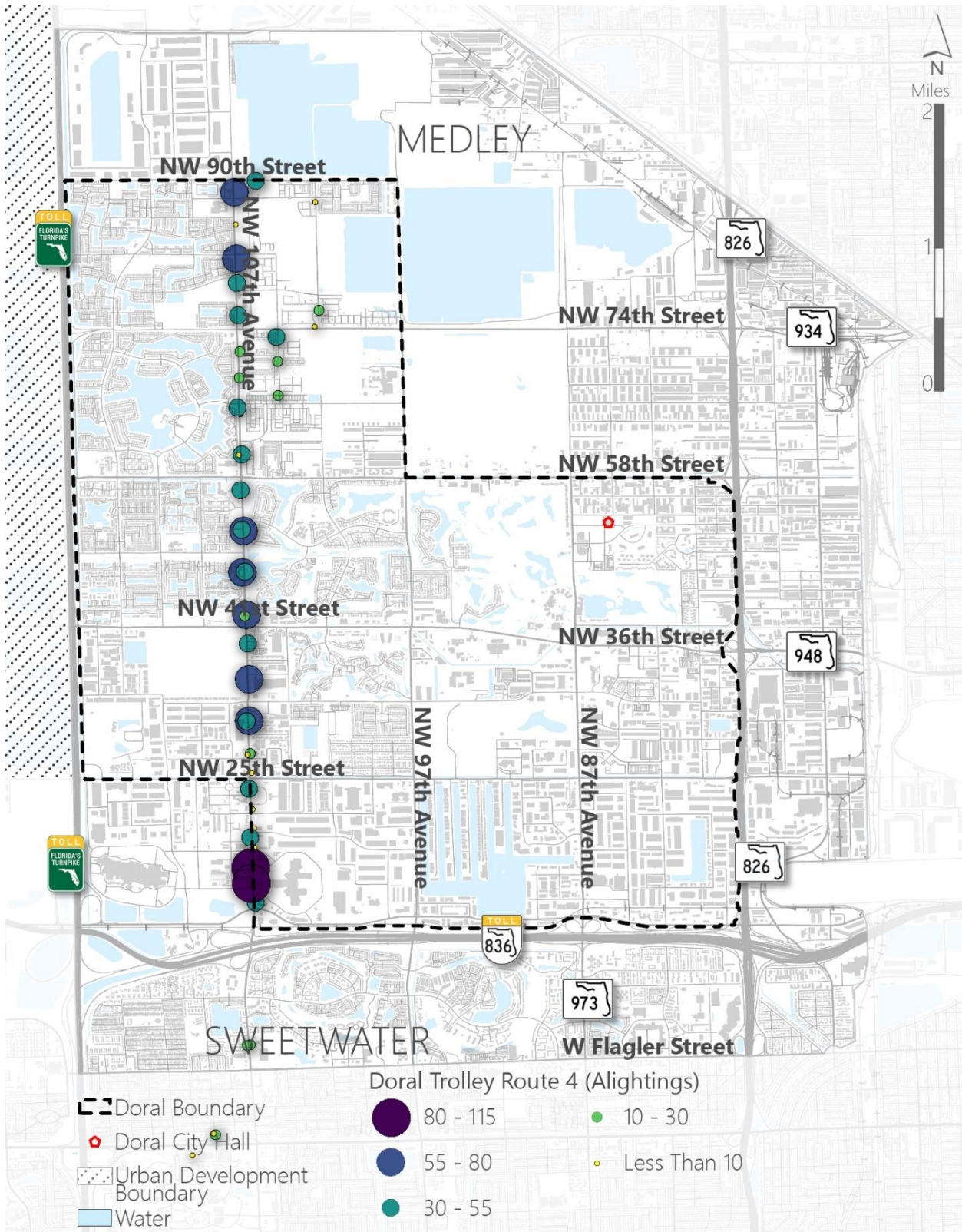


Figure 49: City of Doral Trolley Route 4 Alighting (03/28/2019 – 04/10/2019)

A travel time analysis of existing routes was performed using data automatically reported to TSO Mobile by the GPS trackers in each trolley vehicle. Through the TSO Mobile website, Geofences were created for each signalized intersection, route turning points, and route terminus. The geofences were created at the approach to an intersection or turning bay in order to differentiate the traveling direction of the trolley. **Figure 50** and **Figure 51** display to sample Geofences created for the intersection of NW 107th Avenue and NW 12th Street. Based on the Time In/Time Out reported for each trolley crossing each Geofence, time differences were calculated to obtain the travel time between two points. The analysis was performed for two consecutive weekdays starting on Wednesday, April 3 and ending on Thursday, April 4, 2019 as well as Saturday, April 13, 2019. **Table 48** summarizes the trolley vehicle assignments for these dates.

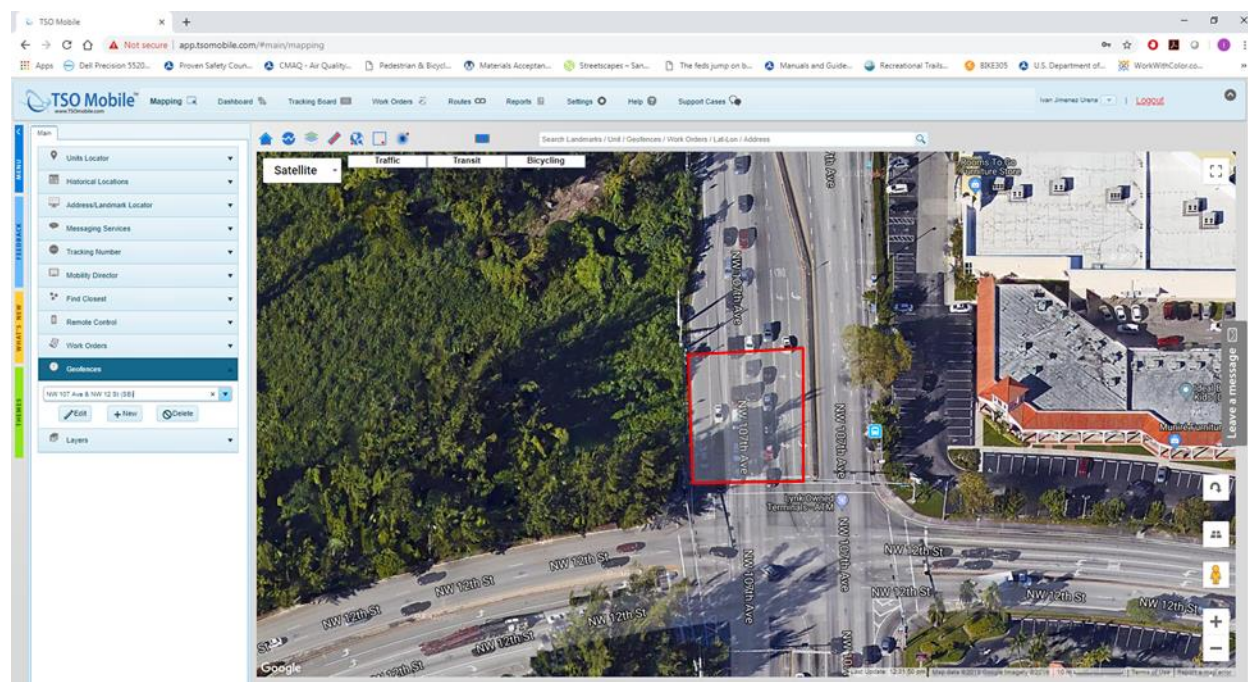


Figure 50: SB NW 107th Avenue and NW 12th Street Geofence

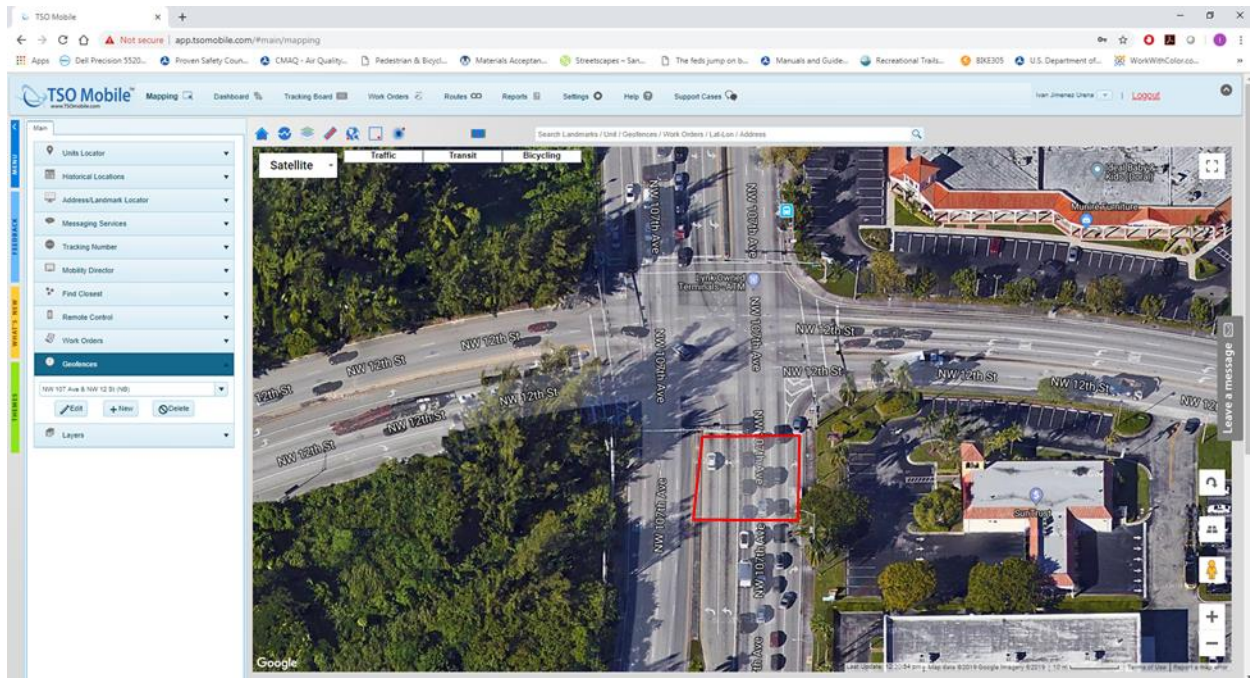


Figure 51: NB NW 107th Avenue and NW 12th Street Geofence

Table 48: Route 4 Ridership by Stop from 03/28/2019 – 04/10/2019

Date	Route	Block	Trolley
Wednesday 04/03/19	1	1	DT09
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT11
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT04
	4	2	DT14
Thursday 04/04/19	1	1	DT05
	1	2	DT16
	1	3	DT15
	1	4	DT02
	2	1	DT11
	2	2	DT10
	3	1	DT06
	3	2	DT12
	4	1	DT13
	4	2	DT14

Field Visit

Three field visits were conducted based on coordination with the City of Doral. The first field visit, on Wednesday, April 10, 2019, occurred from 6:00 AM to 10:00 AM. The second field visit occurred from 3:30 PM to 5:00 PM on Friday, April 13, 2019. The last field visit occurred Monday, April 16, 2019 from 2:20 PM to 4:00 PM. All visits looked at trolley vehicle and stop conditions as well as passenger and driver behaviors. In particular, the following stops were visited due various reasons.

- Stops 1006/4003 and 1007/4004 at International Mall
 - Serviced by Routes 1 and 4
 - Provides transfer to DTPW Routes 7, 36, 71, 137, 238, and 338
 - High ridership
- Stops 1010 and 1011 at Doral Academy Preparatory
 - Serviced by Route 1
 - Reported issues with student behavior
- Stops 1040/3033 and 1041/3034 at Ronald Reagan Senior High
 - Serviced by Routes 1 and 3
 - Reported issues with student behavior
- Stop 2001/3000 at the Palmetto Metrorail Station
 - Serviced by Routes 2 and 3
 - Reported issues with trolley drivers not waiting for passengers or coordinating service with the arrival/departure of Metrorail trains
 - High ridership
- Stops 1076 and 1077 at the Walmart/Sam's Club Commercial Center
 - Serviced by Route 1
 - Knowledge of complaints for lighting
 - Major grocery destination
- Stop 2050 at Doral CitiPlace
 - Serviced by Route 2
 - Newest mixed development in the City
 - Major leisure activity destination
- Stops 2003, 2006, 2058, and 2061 at Downtown Doral
 - Serviced by Route 2
 - Major employment and leisure activity destination

Wednesday, April 10, 2019, from 6:00 AM to 10:00 AM

During this field visit the following observations were made:

- Stop 2001/3000 at the Palmetto Metrorail Station
 - Trolley drivers were seen waiting at the station parking lot for the Metrorail train to arrive and the bus stops to saturate with commuters
 - Wait periods lasted approximately 20 minutes
 - 23 passengers were counted at 6:30 AM, with most riders taking Route 3
- Bus benches at all stops are metal with blue epoxy cover
- All stops have trash receptacles in clean and good condition
- Most stops have the ADA required 5 ft. by 8 ft. unobstructed landing pad for wheelchair access to the trolley
- Stops without shelters do not have route maps or schedules on display
- Some students were observed leaving the school early in morning – a potential indication of truancy, of which trolley drivers have no enforcement authority
- Bus shelters have no interior lighting
- Most stops depended on roadway or surrounding land use for lighting
- Stop 1011 at Doral Academy Preparatory is adjacent to a freight distributor (Carisam-Samuel Meisel) which has limited in-site capacity for loading tractor trailer trucks, hence, trucks line up on the Double Left-Turn Lane for freight pickup in the mornings and afternoons
 - Five tractor trailer trucks were counted occupying the center lane during this visit with three others existing the facility
 - Truck drivers idle their trucks and dismounted to communicate with the operators and gatekeepers of the loading facility
 - Trucks exiting the facility were mounting the raised curbed and in brushing the landscaping located on the southside swale of NW 27th Street
- Trolley exit, ADA, and Title VI signs were clearly displayed
- Lighting within the trolley vehicles was poor
- Ceiling air conditioning units had condensation on the bottom surface which lead to water dripping on riders
- Wooden benches within the trolley vehicles are uncomfortable for long rides
- Hand railings, wheelchair ramp, and wheelchair restrains within the trolley vehicles were observed to be in good condition
- LED display designation signs were operational, but annunciators were not functioning
- TSO Doral mobile application was used but the interface was counterintuitive, difficult to track trolley vehicle, and planned trips based on ETA

Friday, April 13, 2019, from 3:30 PM to 5:00 PM

During this field visit the following observations were made:

- Stops 1040/3033 and 1041/3034 at Ronald Reagan Senior High

- 10 students were observed waiting for the trolley with no issues observed
- Stops 1011 at Doral Academy Preparatory
 - Approximately 25 students were observed waiting for trolley
 - Bus stop was overcrowded
 - Heavy traffic along NW 27th Avenue in the eastbound comprised of mixed vehicle traffic
 - Heavier than normal traffic along NW 112th Avenue, both ways, comprised of mixed vehicle traffic
- Stops 1071 and 1076 at Walmart
 - 3 people were observed waiting for the trolley
- Stop 2011/3000 at Palmetto Metrorail Station
 - 3 people were observed waiting for the trolley
 - Heavy traffic on NW 74th Street
- The City's Trolley Tracker website
 (<http://publictransportation.tsomobile.com/webtracker/webtracker.htm?labels=false&tkn=582EB861-9C13-4C89-B491-15F0AFBF9F47&lan=en>) was used instead of the TSO Doral mobile application and this website was found to be more reliable and easy to use for trip planning purposes
- CitiPlace Doral bus stop 2050 is approximately 1,135 feet away from the main entrance to the shopping center and lacks proper amenities to match existing land use



Figure 52: Palmetto Station Bench Lacks Coverage



Figure 55: Typical Doral Bus Stop with Bench



Figure 53: Typical Doral Bus Stop with Shelter



Figure 56: Trucks in Center Lane on NW 27th St.



Figure 54: Trolley Ceiling Air Conditioning Unit



Figure 57: Dim Lighting in Trolley Vehicles

Monday, April 16, 2019 from 2:20 PM to 4:00 PM

During this field visit the following observations were made:

- Stops 1010 and 1011 at Doral Academy
 - 40 students boarded the trolley, exceeding the stated capacity of 30
 - 14 passengers were standing
- Trolley skipped Stop 1012 (2617 NW 107th Avenue) because it was at maximum capacity
- Stop 1029 at Eugenia B. Thomas K-8
 - 6 students and adults boarded Route 1
- Stop 1030 (NW 114th Avenue just north of NW 60th Street)
 - 19 students boarded Route 1
- Stops 1040/3033 and 1041/3034 at Ronald W. Reagan Senior High School
 - 10 students boarded Route 1, and all had to stand
- Stop 1042 (8600 NW 107th Avenue)
 - 6 more students got on Route 1 and had to stand
- Normal student behavior observed during the whole trip
- Other non-student riders boarded and alighted at different locations
- Stop 1079 at the Dolphin Mall
 - 3 people were waiting for Route 1



Figure 58: Doral Academy Students Waiting



Figure 61: Traffic Congestion Along NW 27th Ave.



Figure 59: Trolley Picking Up Rider on Stop 1077



Figure 62: Trolley Stop 2050 near CitiPlace Doral



Figure 60: Trolley Boarding Ronald Reagan High School Students Outside Landing Pad

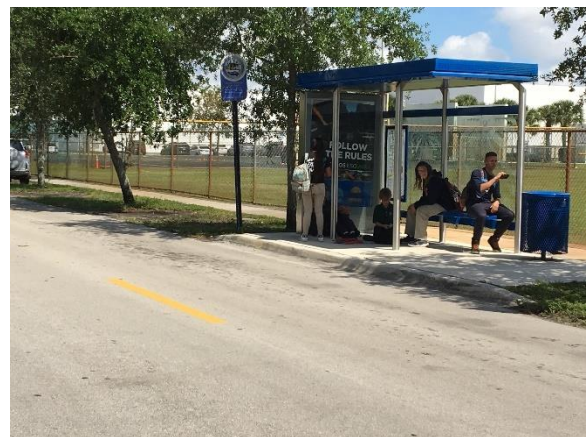


Figure 63: Ronald Reagan High School Students Waiting

MIAMI-DADE COUNTY DTPW

Metrobus

Miami-Dade DTPW operates 11 Metrobus routes servicing the City of Doral. Most routes are concentrated on the southern half of the City, using NW 53rd Street, NW 41st Street/NW 36th Street and NW 25th Street as major east-west corridors; and NW 107th Avenue, NW 97th Avenue, NW 87th Avenue, and NW 79th Avenue as major north-south corridors. Metrobus routes connect Doral Government Center, Downtown Doral, Doral City Place, Miami-Dade College West, Dolphin Mall, Miami International Mall, and FIU's Engineer and Modesto A. Maidique campuses. **Figure 64** illustrates the 11 Metrobus routes and **Table 49** summarizes the major destinations and characteristics per route. **Appendix B** comprises of detailed route maps.

Metrobus ridership data for the period of January 1, 2014 through December 31, 2018 was analyzed using GIS tools. **Figure 65**, illustrates the average boarding per stop during the 4-year period study. This figure illustrates that the following locations have high boarding activity:

- 450 – 800 Weekday Average Boarding
 - Bus Stop D107#122 adjacent to Miami International Mall on NW 107th Avenue
 - Stop ID: D107#192 and Stop ID: D107#194 adjacent to Bed Bath & Beyond Plaza on NW 107th Avenue
 - Stop ID: D25S#825 adjacent to a Marathon gas station and the Miami International Commerce Center on NW 25th Street
- 200 – 450 Weekday Average Boarding
 - Stop ID: D36S#875 and Stop ID: 36ST87AS adjacent to Trump National Doral and the Doral Corporate Center on NW 36th Street
 - Stop ID: D87V#413 and Stop ID: D87V#411 adjacent to Trump National Doral and the American Welding Society (AWS) building on NW 87th Avenue
 - Stop ID: D36S#828 and Stop ID: D36S#825 adjacent to Polytechnic University and near CitiPlace Doral on NW 36th Street
 - Stop ID: D79V#504, Stop ID: D79V#521, Stop ID: 79AV53SW, Stop ID: 79AV53SE, Stop ID: D79V#532, and Stop ID: D56S79V5 adjacent to Downtown Doral and along NW 79th Avenue

Figure 66 illustrates the average alighting per stop during the 4-year period studied. Similar to the average boarding, this figure illustrates that the following locations have high alighting activity:

- 450 – 800 Weekday Average Alighting
 - Bus Stop D107#122 adjacent to Miami International Mall on NW 107th Avenue
 - Stop ID: D107#192 and Stop ID: D107#194 adjacent to Bed Bath & Beyond Plaza on NW 1017th Avenue
 - Stop ID: D53S#848, Stop ID: D53S#845, and Stop ID: DORLP218 adjacent to Downtown Doral Charter Elementary School on NW 53rd Street
 - Stop ID: 79AV53SW, Stop ID: 79AV53SE, Stop ID: D79V#532 near Downtown Doral and at the intersection of NW 79th Avenue and NW 53rd Street
- 200 – 450 Weekday Average Alighting
 - Stop ID: D25S#825 adjacent to a Marathon gas station and the Miami International Commerce Center on NW 25th Street
 - Stop ID: D36S#875 and Stop ID: 36ST87AS adjacent to Trump National Doral and the Doral Corporate Center on NW 36th Street
 - Stop ID: D87V#413 and Stop ID: D87V#411 adjacent to Trump National Doral and the American Welding Society (AWS) building on NW 87th Avenue
 - Stop ID: D36S#828 and Stop ID: D36S#825 adjacent to Polytechnic University and near CitiPlace Doral on NW 36th Street
 - Stop ID: D79V#504, Stop ID: D79V#521, and Stop ID: D56S79V5 adjacent to Downtown Doral and along NW 79th Avenue

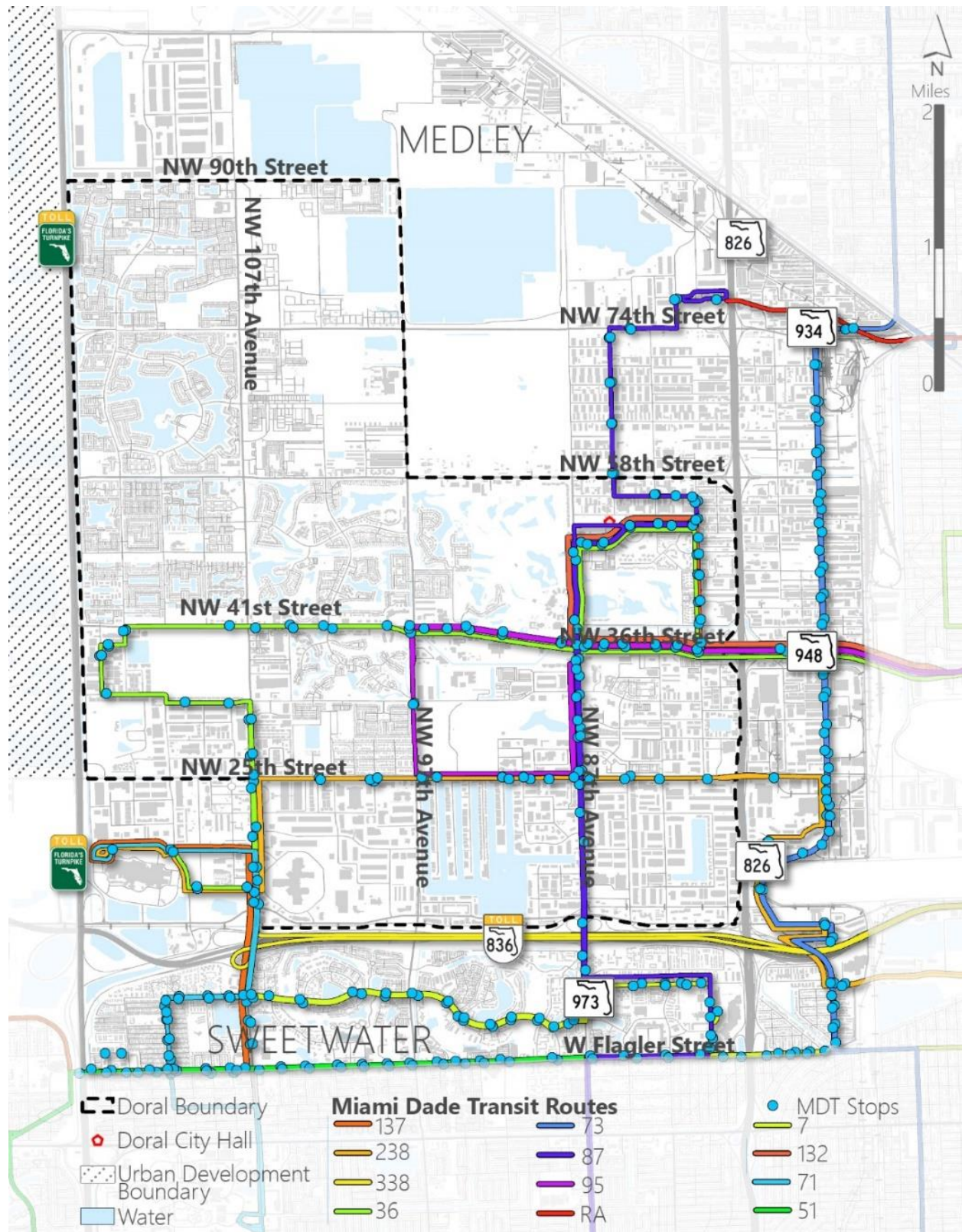





Figure 64: Miami-Dade DTPW Metrobus and Metrorail Routes and Stops within Doral

Table 49: Miami-Dade DTPW Metrobus Routes within Doral

Route	Characteristics	Major Destinations
7		MIA Metrorail station, City of Sweetwater, Dolphin Mall, Miami International Mall, Fontainebleau Blvd., Mall of the Americas, Downtown Bus Terminal, Main Library, Historical Museum of South Florida, Miami Art Museum, MDC Wolfson Campus, and Historic Overtown/Lyric Theatre Metrorail station
36/36A/36B		36B (no Saturday and Sunday service) – Dolphin Mall, Miami International Mall, Miami Dade College West Campus, Doral Center (36A), City of Miami Springs (36), Miami Springs High School (select trips), NW/NE 36 th Street, Allapattah Metrorail station, Biscayne Blvd., NE 36 th St. and 4 th Ave.
51 (Flagler Max)		Weekday service only. SW 137 th Ave./Coral Way, West Miami-Dade, West Flagler St., Downtown Bus Terminal, Government Center Metrorail station, Main Library, Historical Museum, and Miami Art Museum
71		SW 107 th St. and SW 109 th Ct. extended on weekdays during midday hours, Dolphin Mall, Miami International Mall, Florida International University at University Park campus, SW 107 th Ave., Concord Shopping Plaza, and Miami Dade College Kendall campus
73		Miami Gardens Dr., NW 73 rd Ave. Park-and-Ride Lot, Town of Miami Lakes, Hialeah, Palmetto Metrorail Station, NW 72 nd Ave., US Postal Annex, Dadeland Mall, and Dadeland South Metrorail station.
87		NW 80 th St./NW 81 st Pl., Palmetto Metrorail station, NW 74 th St. Connector, Mall of the Americas, SW 87 th Ave., Kendall, Dadeland Mall, and Dadeland North Metrorail station
95 (Express Golden Glades)		Weekday rush-hour service only. Golden Glades Park-and-Ride Lot, Civic Center, Veterans Hospital, Jackson Memorial Hospital, Norwood, Earlington Heights Metrorail station, and Downtown Miami, Brickell
132 (Doral/Tri-Rail Shuttle)		Weekday rush-hour service only. Doral Executive Center, Doral Country Club, Atrium Shopping Center, Miami Springs, Hialeah Market, and Tri-Rail Station
137 (West Dade Connection)		Dolphin Mall, Miami International Mall, Sweetwater, Kendale Lakes, Kendall-Tamiami Executive Airport, Tamiami/Pineland Industrial Park, SW 147 th Ave./180 th St., Serena Lakes, Larry & Penny Thompson Memorial Park, Southland Mall, and South Dade Government Center
238 (East-West Connection)		Weekday service only. Dolphin Mall, Miami International Mall, NW 72 nd Ave./25 th St., Airport Corporate Center, Airport Cargo City, NW 65 th Ave./Blue Lagoon Dr., Airport Hilton Hotel and MIA Metrorail station.
338 (Weekend Express)		Weekend service only. Dolphin Mall and Miami International Airport

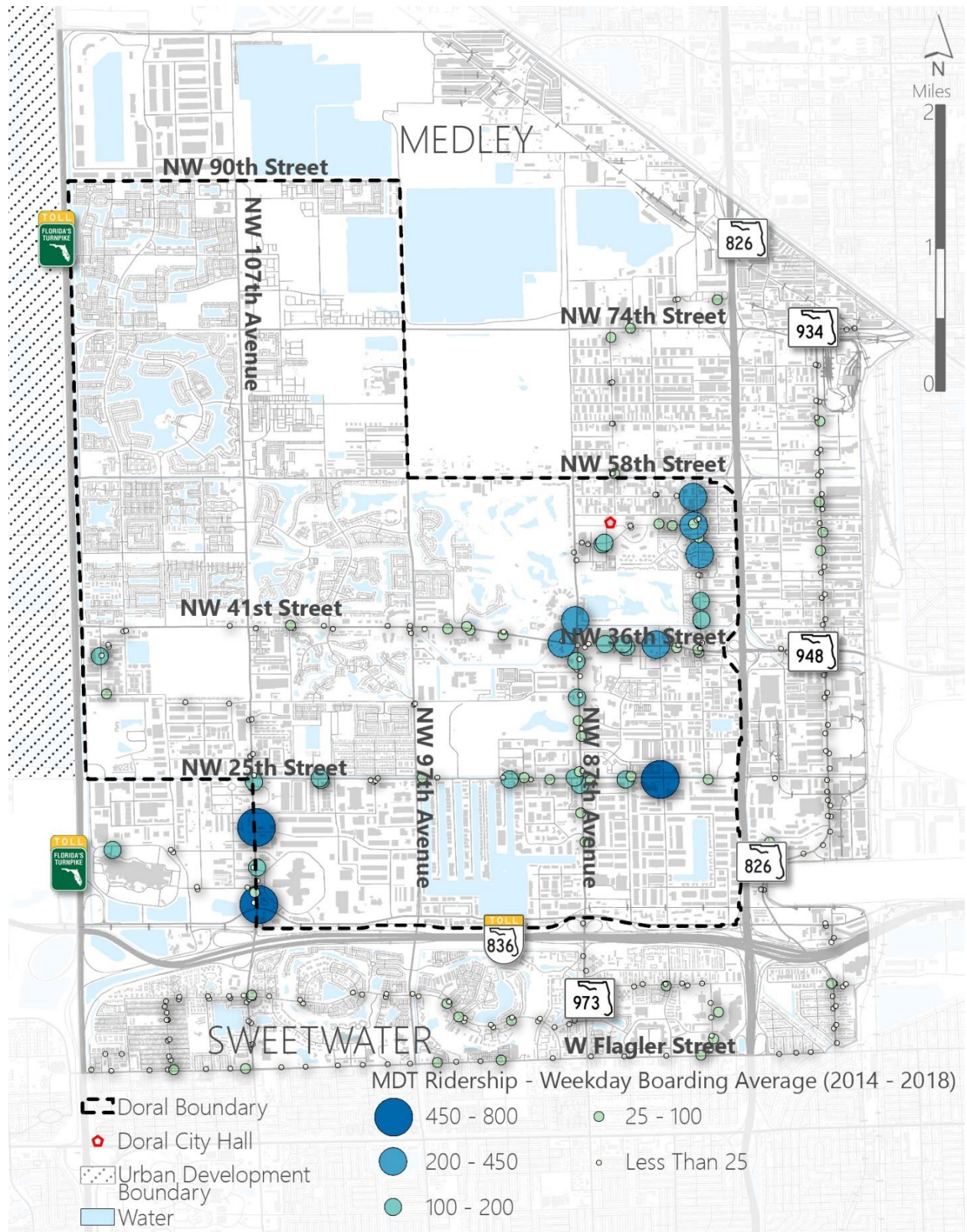


Figure 65: Miami-Dade DTPW Metrobus Average Boarding (2014 – 2018)

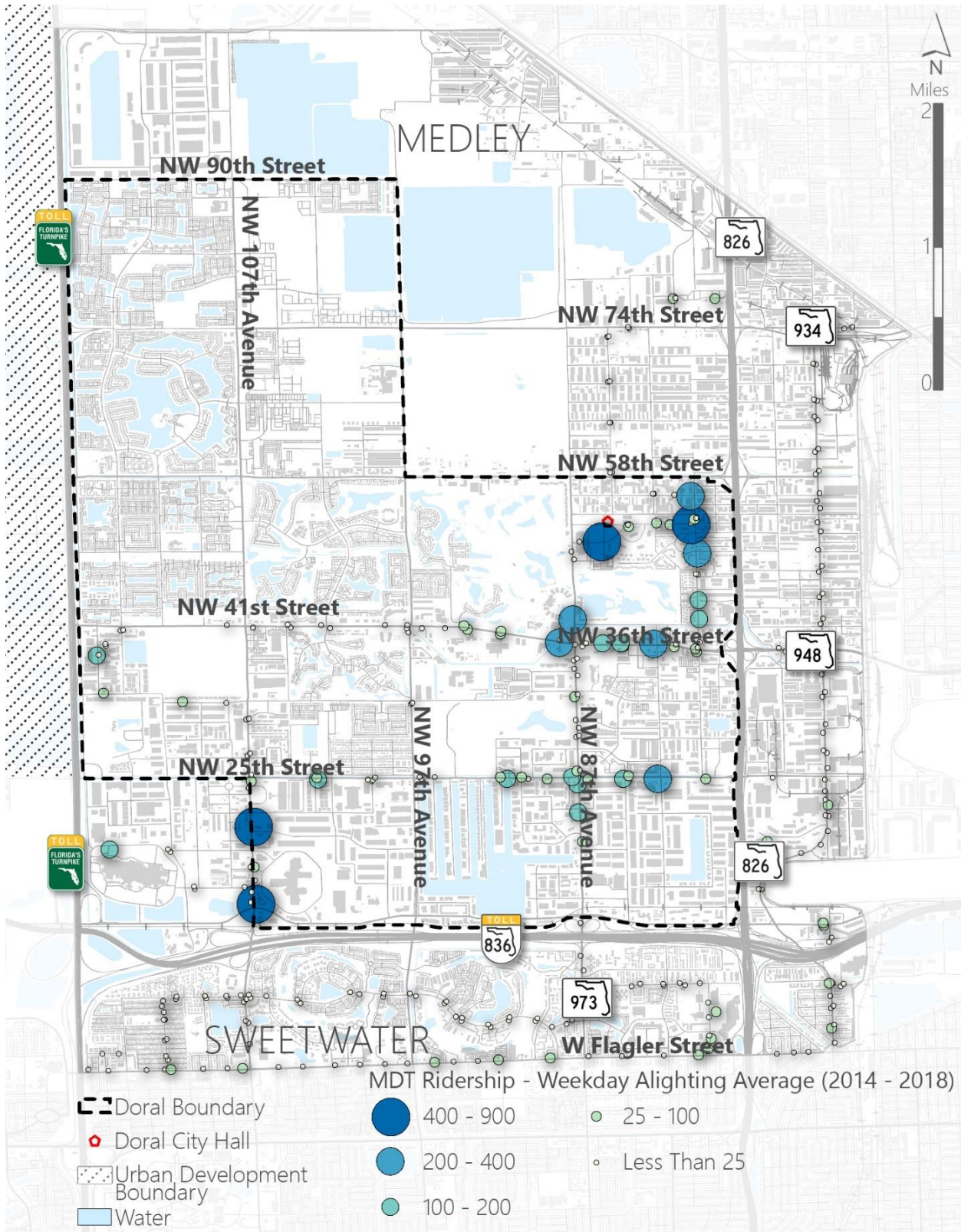


Figure 66: Miami-Dade DTPW Metrobus Average Alighting (2014 – 2018)

Table 50 summarized the routes servicing existing bus stops with high ridership statistics.

Table 50: Miami-Dade DTPW Top 10 Stops with Highest Boarding within Doral

Bus Stop ID	Main Street	Cross Street	Boarding (4-year average)
1843	NW 25 th St.	NW 82 nd Ave.	776
1799	NW 107 th Ave.	NW 12 th St.	754
1800	NW 107 th Ave.	NW 19 th St.	613
1820	NW 36 th St.	NW 82 nd Ave.	433
10275	NW 56 th St.	# 7972	425
1812	NW 36 th St.	NW 87 th Ave.	257
756	NW 53 rd St.	NW 79 th Ave.	245
1751	NW 79 th Ave.	NW 50 th St.	243
1784	NW 87 th Ave.	NW 41 st St.	240
1842	NW 25 th St.	NW 84 th Ave.	203

Table 51: Miami-Dade DTPW Top 10 Stops with Highest Alighting within Doral

Bus Stop ID	Main Street	Cross Street	Alighting (4-year average)
1800	NW 107 th Ave.	NW 19 th St.	907
1799	NW 107 th Ave.	NW 12 th St.	875
1808	NW 53 rd St.	NW 84 th Ave.	755
756	NW 53 rd St.	NW 79 th Ave.	574
1812	NW 36 th St.	NW 87 th Ave.	401
10275	NW 56 th St.	# 7972	391
1843	NW 25 th St.	NW 82 nd Ave.	281
1784	NW 87 th Ave.	NW 41 st St.	241
1820	NW 36 th St.	NW 82 nd Ave.	234
1751	NW 79 th Ave.	NW 50 th St.	221

Metrorail

Miami-Dade County also operates and maintains Metrorail (see **Figure 68**). Even though there are no Metrorail stations within the City, the Palmetto Station, located near NW 74th Street, is close enough to serve Doral's residents and visitors. Three years of ridership data were reviewed.

Table 52 provides Weekday, Saturday, and Sunday average daily boarding statistics for the period from October 2015 through September 2018. **Figure 67** comprises of a line chart showing the average daily boarding per month. The ridership data shows less people are using the Palmetto Station since October 2015, however, the change has been minimal. The spread in average daily boarding, as indicated by the Interquartile Range (IQR), is minimal for Weekdays and Saturdays but significant for Sundays. This means Weekday and Saturday daily boarding stay relatively close to the average of 1,540 and 440, respectively.

Table 52: Palmetto Metrorail Station Average Daily Boarding Statistics (10/2015 – 09/2018)

Statistic	Average Weekday Ridership	Average Saturday Ridership	Average Sunday Ridership
Average	1,540	440	275
Standard Deviation	136	58	47
IQR	161	56	56

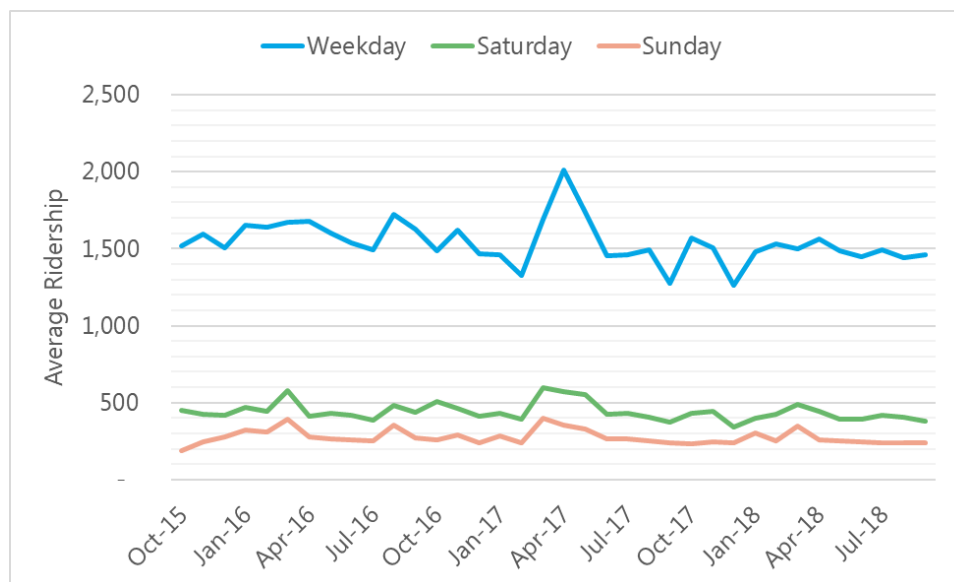


Figure 67: Miami-Dade DTPW Palmetto Metrorail Station Average Daily Boarding (10/2015 – 09/2018)



Figure 68: Miami-Dade DTPW Metrorail Routes

SOCIOCULTURAL CHARACTERISTICS

Sociocultural and economic data were assembled to understand current demand for transit. This data also provides a window into determining underserved communities and residents within the City of Doral and its immediate surroundings. Transportation mobility is extremely important because it gives people freedom of movement and the opportunity to reach socioeconomic progress. Understanding the composition of people and the probability of them using or needing transit creates room for improvement as routes and stops are tailored to serve specific demands. Hence, this section begins the journey in fulfilling two objectives of all transit agencies: improve ridership and provide social justice.

This section focuses on four Sociocultural Effect Issues (SCE):

1. Mobility
2. Land Use
3. Demographics
4. Economic

Mobility comprises of the modal choices, transportation disadvantages, and connectivity options people have depending on where they reside. This SCE highlights natural and artificial barriers to mobility that may need to be eliminated or circumvented to provide adequate transportation services. Land Use answers what activities are performed in the City and where those activities being performed. The purpose of this evaluation is to obtain a rough idea of origins and destinations as well as modes of transportations needed (e.g. trucks in industrial land uses). Demographics and Economic data provide a snapshot of potential transit users and identifies underserved communities that may require affordable transportation to subsist.

Mobility

Roadway Jurisdiction

Roadways within the City of Doral are mostly owned and maintained by private homeowners' associations, organizations, or the City. This means the City has great flexibility in improving its infrastructure but also great responsibility in maintaining safe travel conditions and mobility options. Doral is home to multiple gated communities, large organizations, and industrial parks. Within these large land areas, the City has no maintenance responsibility. Doral's principal roadways are NW 19th Street, NW 33rd Street, NW 50th Street, NW 52nd Street, NW 54th Street, NW 90th Street, NW 112th Avenue/NW 114th Avenue, NW 102nd Avenue, NW 82nd Avenue, and NW 79th Avenue.

Miami-Dade County owns and maintains the major roadways within the City including NW 12th Street, NW 25th Street, NW 41st Street/NW 36th Street, NW 58th Street, NW 107th Avenue, NW 97th Avenue, and NW 87th Avenue. NW 74th Street will soon be transferred from County ownership to State ownership.

FDOT and MDX own and maintain major state roads surrounding the City boundaries. These roadways are SR 821/HEFT, SR 826/Palmetto Expressway, SR 836/Dolphin Expressway, and the NW 25th Street Viaduct.

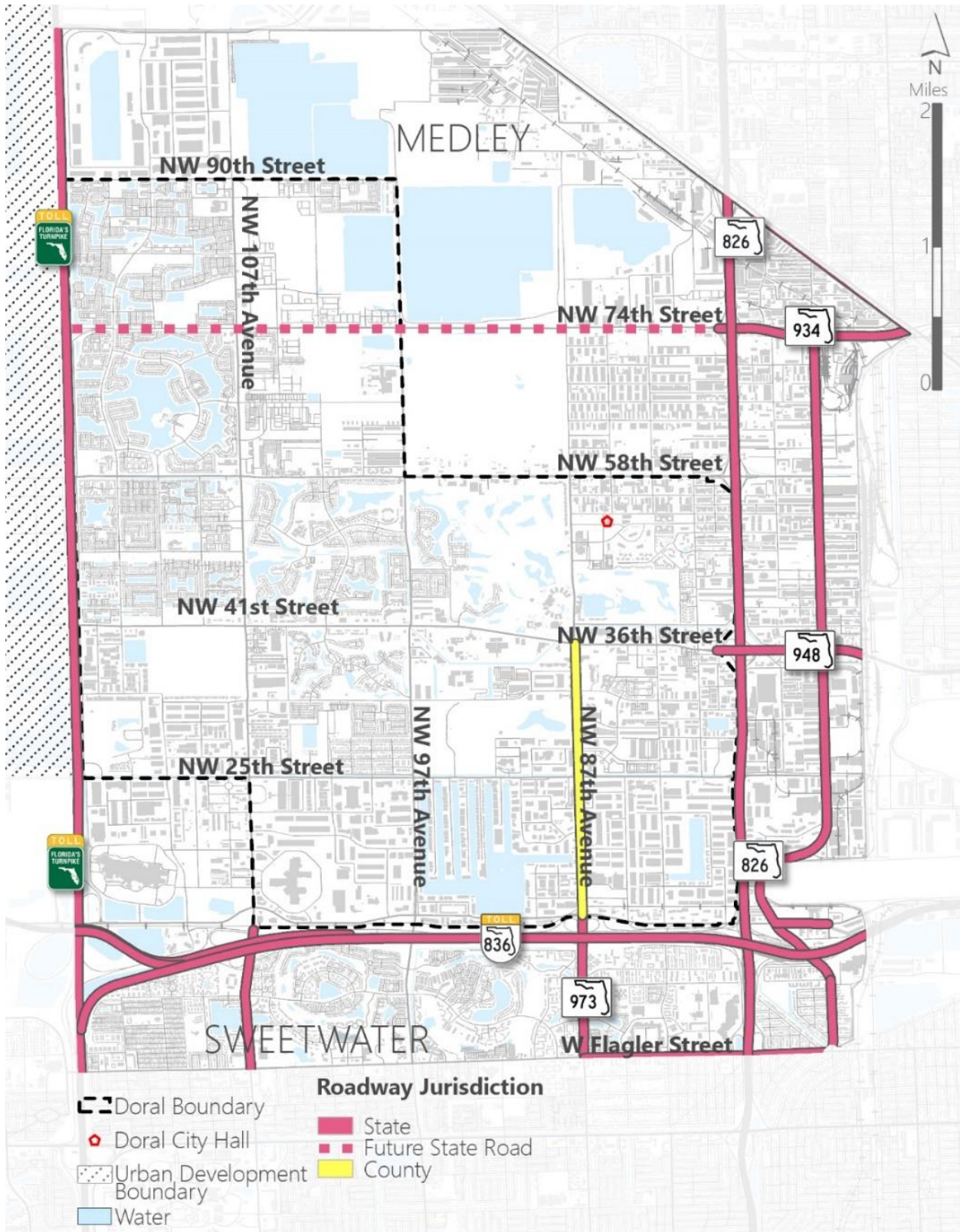


Figure 69: Roadway Jurisdictions

Functional Classification

Table 53 summarizes the functional classification of roadways within the City limits.

Table 53: Routes Servicing High Boarding and Alighting Stops

Roadway	Functional Classification
SR 821/HEFT	Principal Arterial – Other Freeways and Expressways
SR 826/Palmetto Expressway	Principal Arterial – Other Freeways and Expressways
SR 836/Dolphin Expressway	Principal Arterial – Other Freeways and Expressways
NW 25 th Street Viaduct	Principal Arterial – Other Freeways and Expressways
NW 74 th Street	Principal Arterial – Other
NWW 41 st Street/NW 36 th Street/Doral Boulevard	Principal Arterial – Other
SR 973/NW 87 th Avenue south of NW 36 th Street	Principal Arterial – Other
NW 12 th Street	Minor Arterial
NW 25 th Street	Minor Arterial
NW 58 th Street east of NW 107 th Avenue	Minor Arterial
NW 107 th Avenue south of NW 58 th Street and north of NW 74 th Street	Minor Arterial
NW 87 th Avenue north of NW 36 th Street	Minor Arterial
NW 25 th Street west of NW 107 th Avenue	Major Collector
NW 33 rd Street	Major Collector
NW 52 nd Street between NW 107 th Avenue and NW 97 th Avenue	Major Collector
NW 58 th Street west of NW 107 th Avenue	Major Collector
NW 112 th Avenue/NW 114 th Avenue	Major Collector
NW 107 th Avenue between NW 58 th Street and NW 74 th Street	Major Collector
NW 102 nd Avenue between NW 36 th Street and NW 58 th Street	Major Collector
NW 97 th Avenue	Major Collector
NW 82 nd Avenue	Major Collector
NW 79 th Avenue	Major Collector
NW 19 th Street between NW 107 th Avenue and NW 97 th Avenue	Minor Collector
NW 50 th Street between NW 117 th Avenue and NW 107 th Avenue	Minor Collector
NW 54 th Street between NW 87 th Avenue and NW 79 th Avenue	Minor Collector

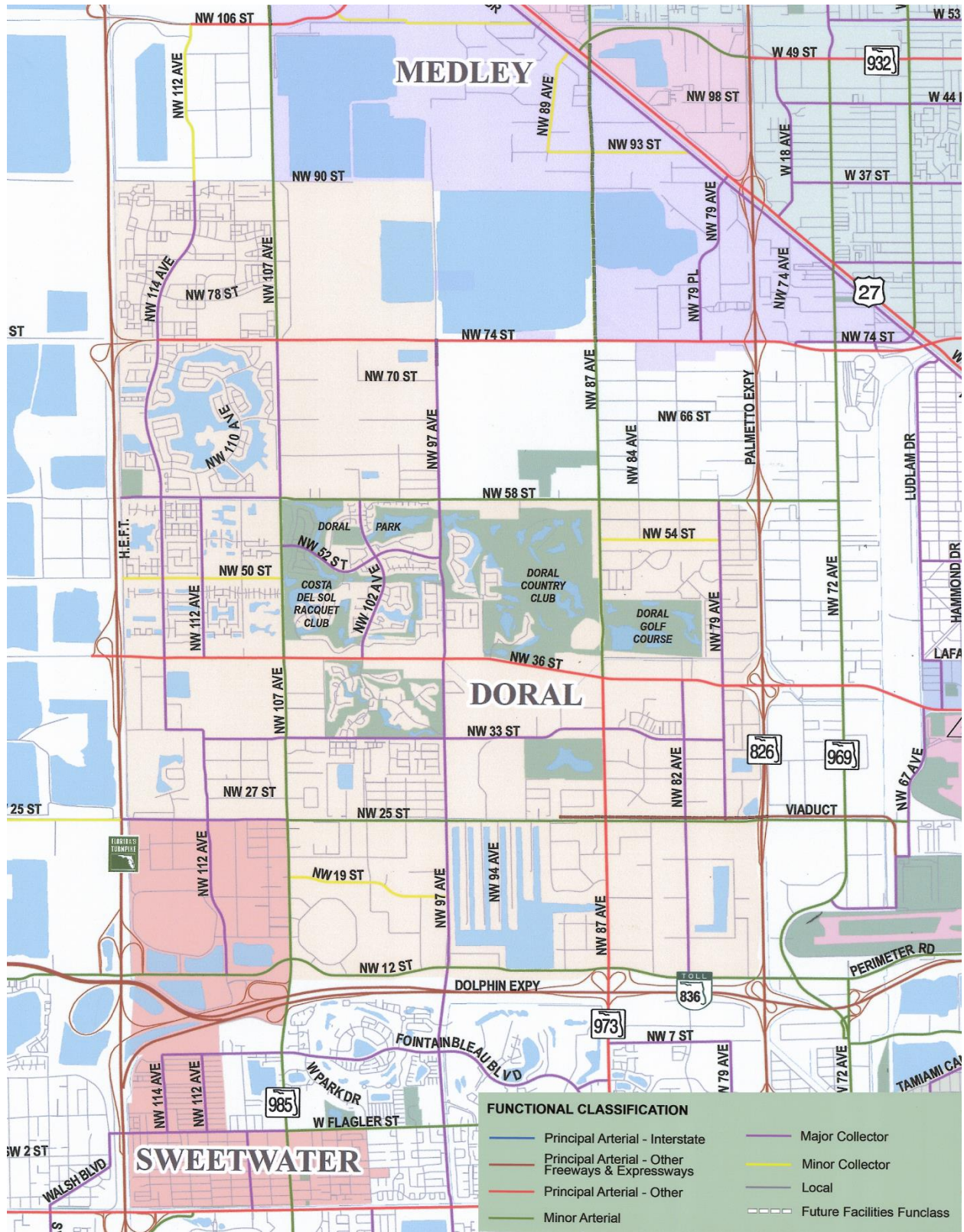


Figure 70: Roadway Functional Classification

Walkability

Redfin®, a real estate brokerage firm, developed a measure of walkability called Walk Score®. For each address, Walk Score® analyzes hundreds of walking routes to nearby amenities. Points are awarded based on the walking distance to certain amenities. Amenities within a 5-minute walk (or 0.25 miles) are given maximum points of 100. A decay function is used to give points to more distant amenities, with no points given for amenities 30-minute away.

Walk Score® also measures pedestrian friendliness by analyzing population density and road metrics such as block length and intersection density. Data sources include Google, Education.com, Open Street Map, the U.S. Census, Localeze, and places added by the Walk Score user community.

Table 54: Routes Servicing High Boarding and Alighting Stops

Walk Score®	Description
100 – 90	Daily errands do not require a car
89 – 70	Most errands can be accomplished on foot
69 – 50	Some errands can be accomplished on foot
49 – 25	Most errands require a car
24 – 0	Almost all errands require a car

Doral has a Walk Score® of 42 points, meaning most errands require a car. Place in Doral where walkability is excellent include Downtown Doral and the neighborhoods immediately adjacent to the intersection of NW 107th Avenue and NW 41st Street, and NW 107th Avenue and NW 58th Street. These locations are similar because some residential units have sidewalk access to large commercial plazas that are anchored by supermarkets. These plazas usually have pharmacies and banks as well as restaurants and other amenities where most daily errands occur.

Walkability is an important mobility measure, especially for transit, because it is the cheapest mode of transportation and provides convenient first-last mile trips when the correct amenities and infrastructure are in place.

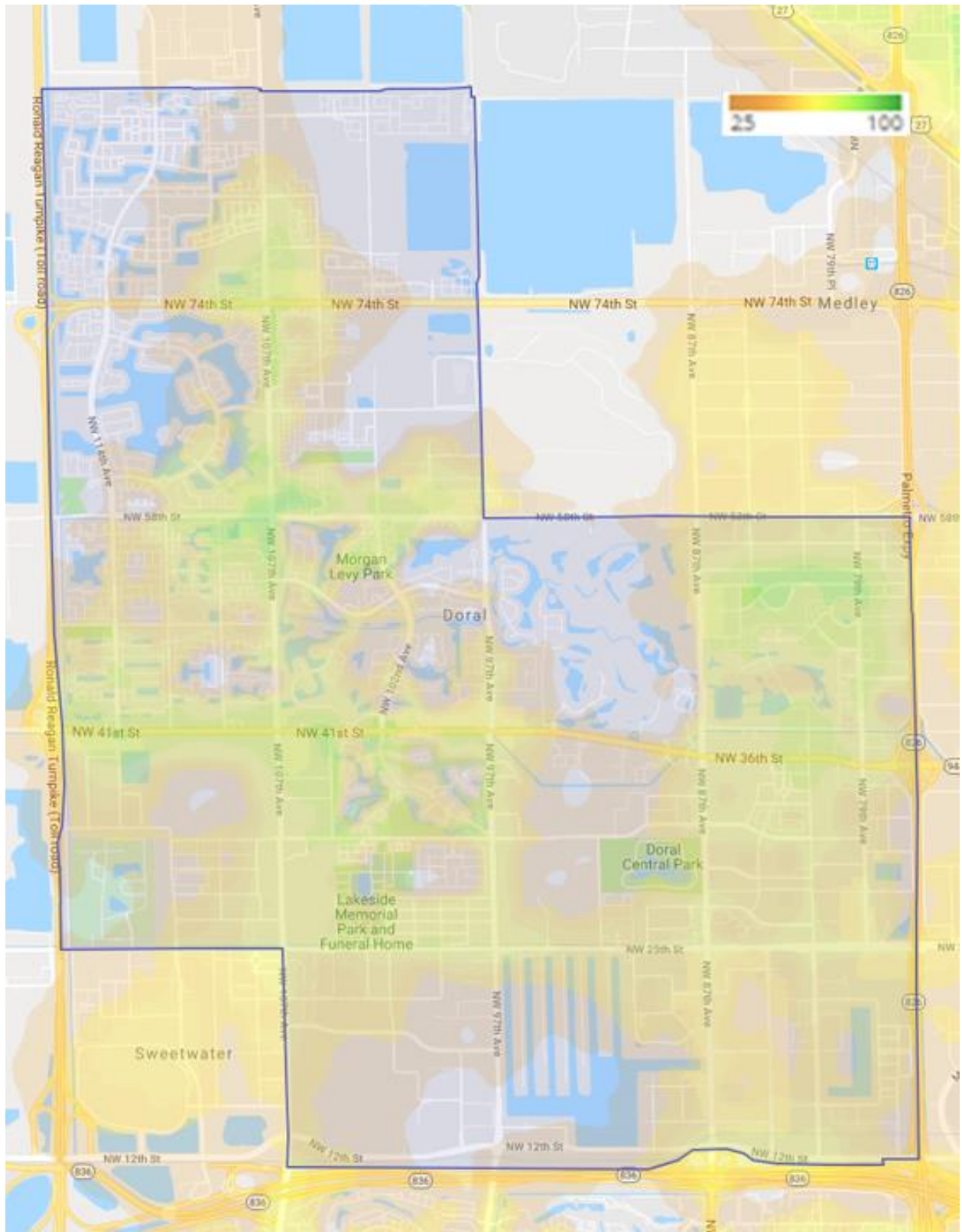


Figure 71: Red Fin Walk Score

Existing and Planned Bicycle Network

The existing bicycle network within the City is fragmented but plans are in place to complete this network. Most bicycle facilities are exclusive of other modes which is preferable over “sharrows”. Most bicycle facilities are concentrated in the northern half of the City which also contains most of the residential areas in the City. South of NW 41st Street/NW 36th Street, the City is mostly comprised of industrial land use which tends to discourage cycling. However, providing mobility options for commuters in these industrial hotspots should not be overlooked. Looking at both existing and future bicycle infrastructure, the following gaps still exists:

- NW 114th Court/Path from NW 82nd Street to NW 90th Street
- NW 41st Street from NW 114th Avenue to NW 79th Avenue
- NW 97th Avenue from NW 52nd Street to NW 62nd Street
- NW 33rd Street from NW 112th Avenue to NW 107th Avenue
- NW 34th Street from Turnpike Trail to NW 112th Avenue
- NW 114th Avenue from NW 41st Street to NW 34th Street
- NW 87th Avenue from NW 41st Street to NW 25th Street
- NW 25th Street from NW 87th Avenue to NW 79th Avenue
- NW 79th Avenue from NW 25th Street to NW 41st Street

Similar to walking, cycling is a cheap alternative mode of transportation that is easily integrated with public transportation. Providing a complete network of exclusive bicycle facilities gives residents and commuters the option to bike between their final destinations and desired transit stop. This is essential in order to design an optimal transit system that is not extremely costly while meeting the highest transportation demands which are usually along principal corridors.

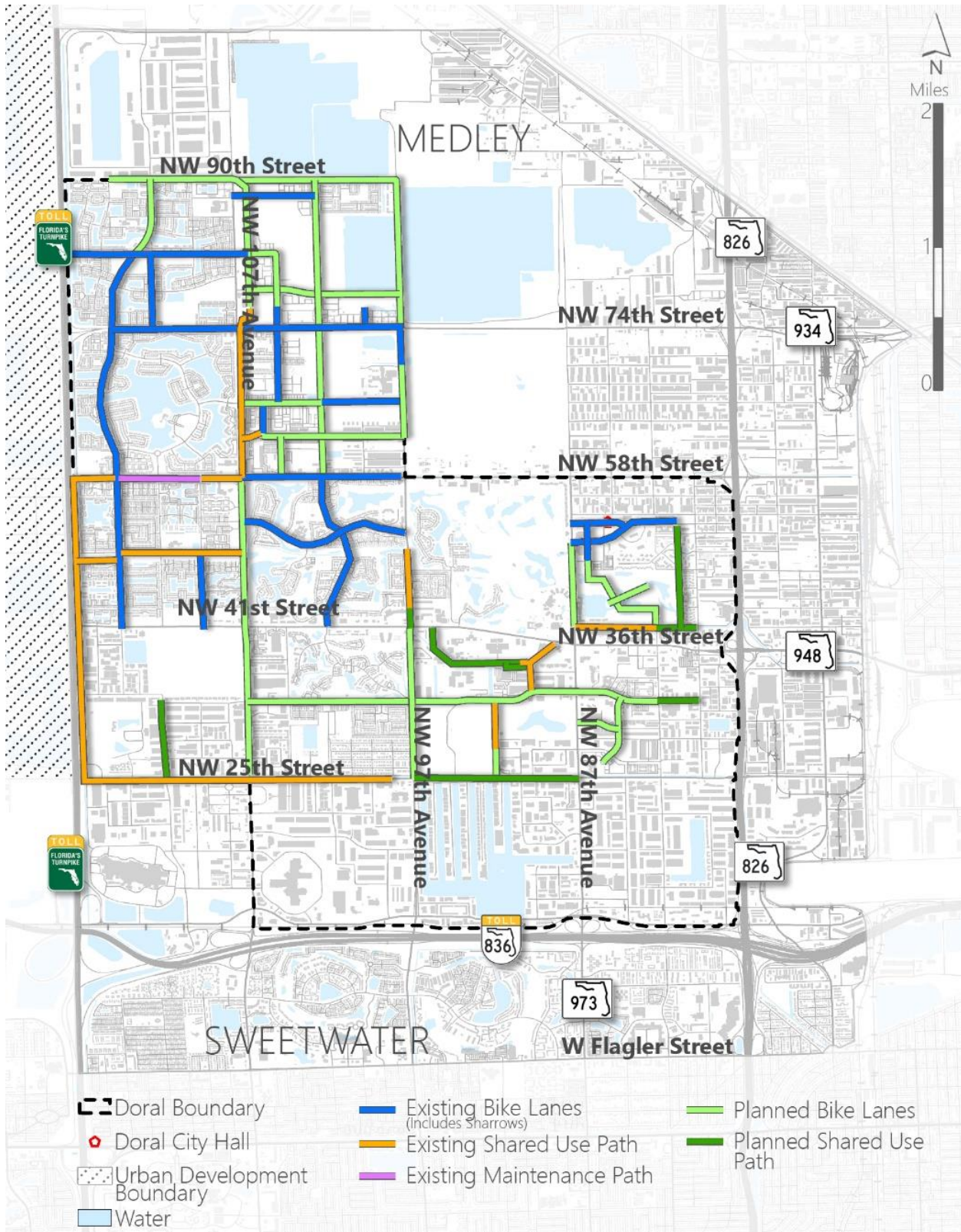


Figure 72: Existing and Planned Bicycle Network

Land Use

Existing Land Use

Provided its history and presence of large organizations, Doral is full of industrial and commercial land uses. These job centers are mostly located south of NW 41st Street/NW 36th Street. It is important to distinguish sectors of the City since industrial areas have different transportation needs than residential or commercial areas. **Figure 76** illustrates the existing land use in the City of Doral.

However, the importance of Doral's industrial land use cannot be overlooked. With MIA ranking first in international freight and third in international passengers among United States airports in 2017, and PortMiami servicing over 5.5 million cruise passengers and 9.6 million freight tons, Miami has bolstering freight, logistics, and tourism industries. These industries require efficient distribution and logistics operations. Hence, Doral has grown as an industrial sector due to its proximity to the airport and railroad assets. **Table 55** illustrates the importance of the City to the County's overall freight and logistic industry. The Airport/Doral submarket, illustrated in **Figure 73**, is has the biggest inventory of warehouse and industrial real estate in the County. Provided industrial inventory construction, Doral is likely to remain as one of the top industrial area in the County.

Table 55: CBRE® Miami-Dade Industrial Market Statistics (Q4 2018)

Submarket	Total Inventory (Sq. Ft.)	Under Construction (Sq. Ft.)	Average Asking Lease Rate (\$/Sq. Ft./Industrial Gross Lease Rate)
Airport/Doral	59,510,516	208,000	10.28
Medley	43,128,546	350,000	9.10
Central Dade	38,318,817	59,959	8.64
North Central Dade	37,359,688	1,666,238	8.97
Hialeah	13,632,107	0	8.69
Kendall/Tamiami	12,364,984	0	11.06
Miami Lakes	8,355,691	724,117	9.41
Hialeah North	2,834,536	614,207	9.00
South Dade	4,812,833	0	10.07
North East Dade	2,832,607	0	12.78
Total	220,315,789	3,008,314	9.44

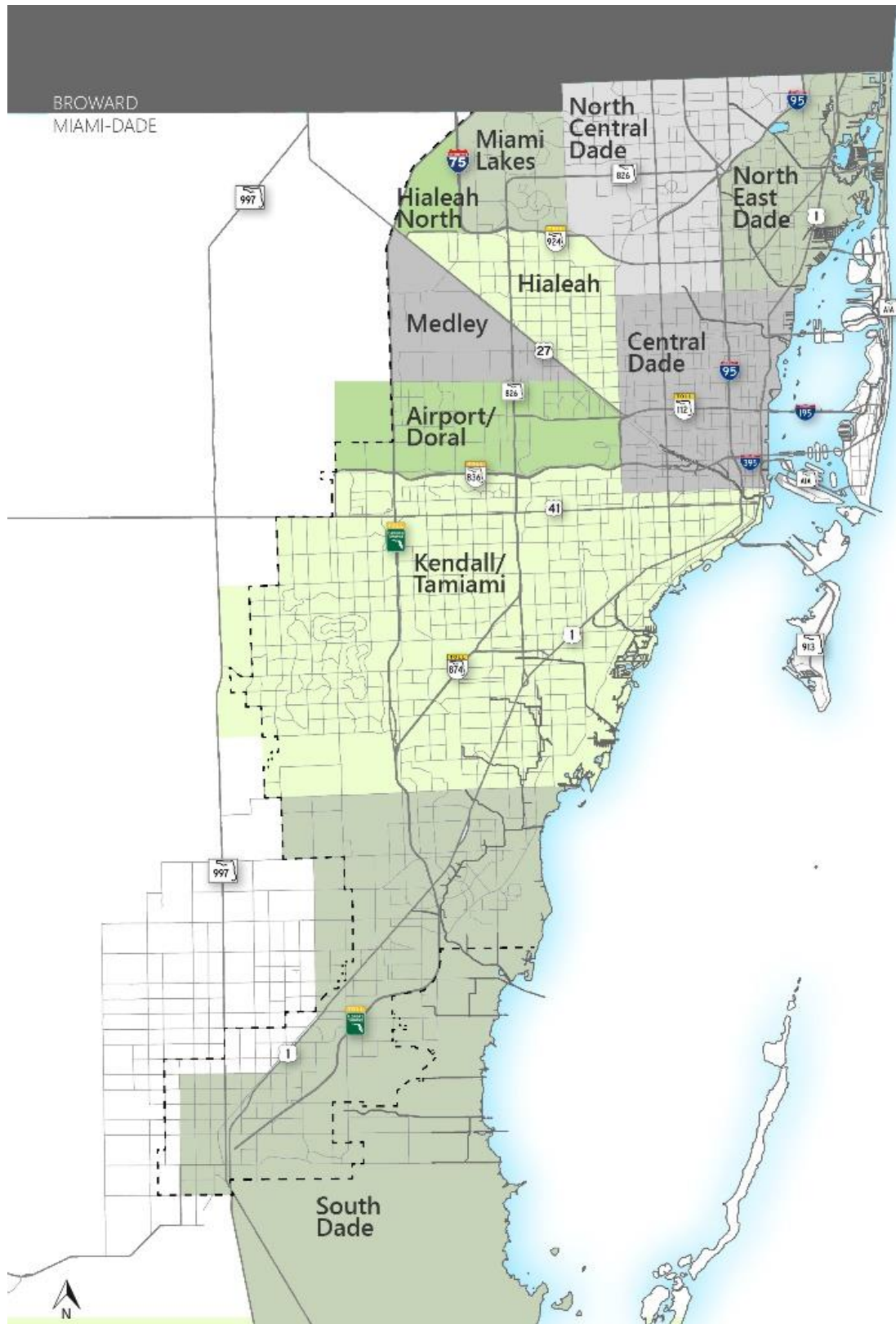


Figure 73: Miami-Dade Industrial Submarkets

The City, however, has no shortage of residential, commercial, and high-density mixed-used developments. Several major construction projects are ongoing which will bring a vast inventory of mixed uses to the City. **Table 56** and **Figure 77** through **Figure 79** summarize these developments.

Table 56: New Developments in Doral

Project Name	Project Description	Estimated Build Out
Downtown Doral	Retail: 213,895 Sq. Ft. Office: 1,800,000 Sq. Ft. Residential: 3,340 units Civic: 60,000 Sq. Ft. School: 800 students	2021
Downtown Doral South	Retail: 30,000 Sq. Ft. Office: 150,000 Sq. Ft. Residential: 2,207 units Civic: 164,790 Sq. Ft. School: 7 acres	2021
Baywood	Hotel: 246 units	2018
Atrium	Retail: 260,000 Sq. Ft. Residential: 350 units	2020
District 79	Industrial: 60,000 Sq. Ft. Retail: 500,000 Sq. Ft.	TBD
Doral Court	Retail: 155,00 Sq. Ft. Office: 150,000 Sq. Ft.	2020
Midtown Doral	Retail: 300,000 Sq. Ft. Office: 75,000 Sq. Ft. Residential: 1,548 units	2020
Grand Doral 1 and 2	Residential: 195 units	2020
Grand Bay South	Residential: 1,699 units	2018
Doral Modern	Residential: 664 units	2018
Doral 10 LLC	Residential: 64 units Retail: 31,800 Sq. Ft.	2019/2020
Mansions at Doral	Residential: 66 units	2017
Neovita South	Residential: 81 units	2018
Landmark North	Residential: 785 units	2018
Landmark East	Residential: 134 units	2018
Doral 4200	Residential: 250 units	2019
Doral Glades Park	Undefined	2019
Doral Professional Plaza	Undefined	2019
Carlos and Carlos Warehouse	Semi-Retail: 20,337 Sq. Ft.	2019
Flightway Ten	Retail: 16,120 Sq. Ft. Office: 91,710 Sq. Ft.	2021
97 Property LLC	Undefined	2020

Project Name	Project Description	Estimated Build Out
Doral 87 Group	Undefined	2020
Super Autos Miami	Undefined	2019
Doral Medical Plaza	Medical: 11,137 Sq. Ft.	2019
Doral Retail Building	Retail: 10,752 Sq. Ft.	2021
Wawa Gas Station	Undefined	2019
Skilled Nursing Facility	Medical: 20,000 Sq. Ft.	2021
Hawthorne	82 units	2019
Elite Centre at Doral	Retail: 21,550 Sq. Ft. Restaurant: 5,900 Sq. Ft.	2019
Self-Storage at Doral Center	Storage: 109,899 Sq. Ft. Office: 1,100 Sq. Ft.	2020
Miami Free Zone	Industrial: 960,335 Sq. Ft.	2021
Bringer Corporation	Industrial: 39,238 Sq. Ft. Office: 10,194 Sq. Ft.	2020
Holiday Inn Express	Hotel: 75 units	2020
Residence Inn	Hotel: 135 units	2020
ICP Auto Center	Retail: 2,000 Sq. Ft.	2020
Jackson Health	Hospital: 640,759 Sq. Ft.	2020

Within the vicinity of the City major developments have also been complete or are underway. The Dolphin Park-and-Ride Station has been constructed but has not begun operating (see **Figure 74**). Adjacent to the station there are planned commercial and industrial developments (see **Figure 75**) and potential Transit Oriented Development (TOD). Within the City of Sweetwater, major densification is underway as part of the University City vision. And summarizes these developments.

Table 57: New Developments in Sweetwater

Project Name	Project Description	Location
109 Tower	Retail: 4,500 Sq. Ft. Residential: 149 units	737 SW 109 th Ave.
Identity Miami	Retail: Ground-floor bank Residential: 187 units	400 SW 107 th Ave.
University Bridge Residences	Residential: 492 units	10940 SW 7 th St.
4 th Street Commons	Residential: 208 units	10899 SW 4 th St.
San Ignacio University	Retail & Office: 50,000 Sq. Ft. Hotel: 139 units	1401 NW 110 th Ave.
Dolphin Park of Commerce III	Retail: 32,500 Sq. Ft. Industrial: 57,600 Sq. Ft.	10887 NW 17 th St.
Dolphin Professional Centre	Office: 54,000 Sq. Ft. Retail: 26,000 Sq. Ft.	1695 NW 110 th Ave.
Residences at Dolphin Citi Center	Residential: 113 units	1690 NW 108 th Ave.

Furthermore, FIU has begun construction on 3,700 square-foot alumni center, 33,000 square feet of meeting space and a 150-bed hotel adjacent to SW 8th Street and SW 112th Avenue.



Figure 74: Newly Constructed Dolphin Park-and-Ride Station

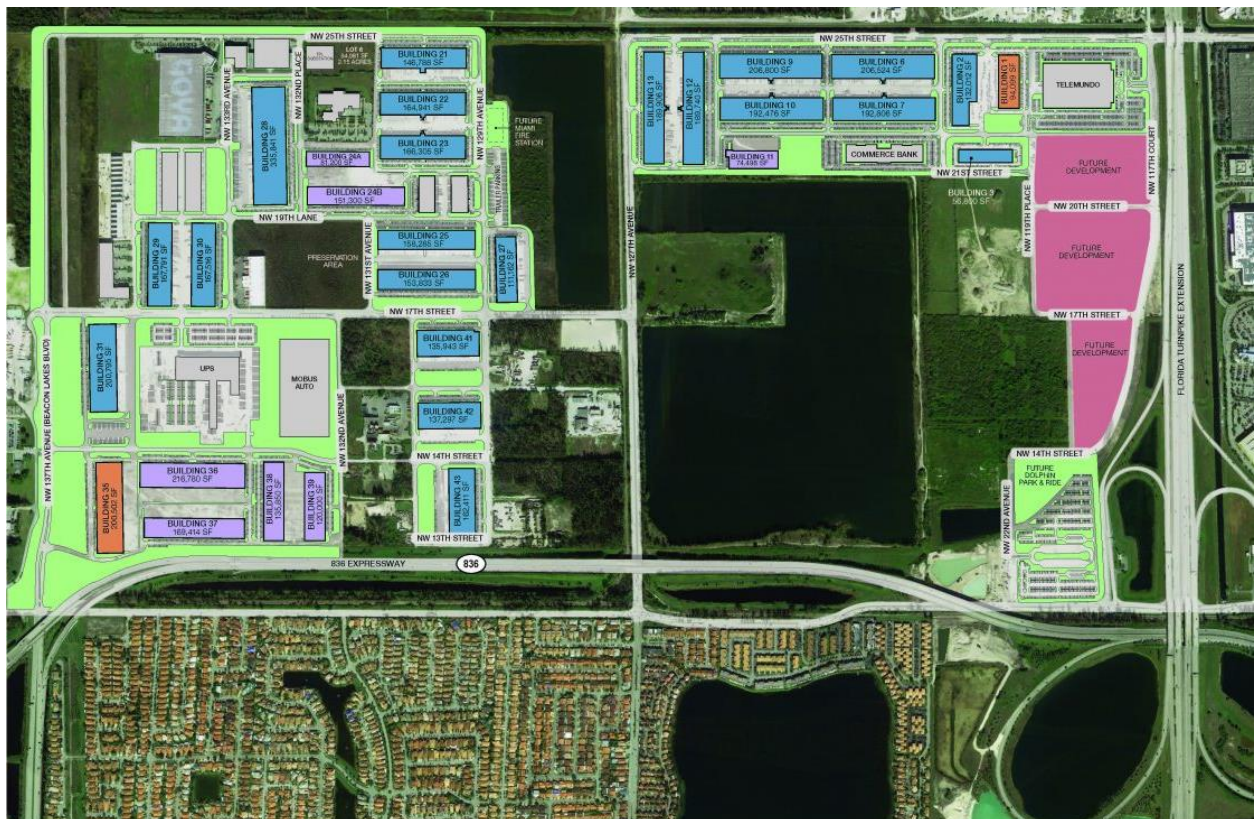


Figure 75: Planned Development around the Dolphin Park-and-Ride Station

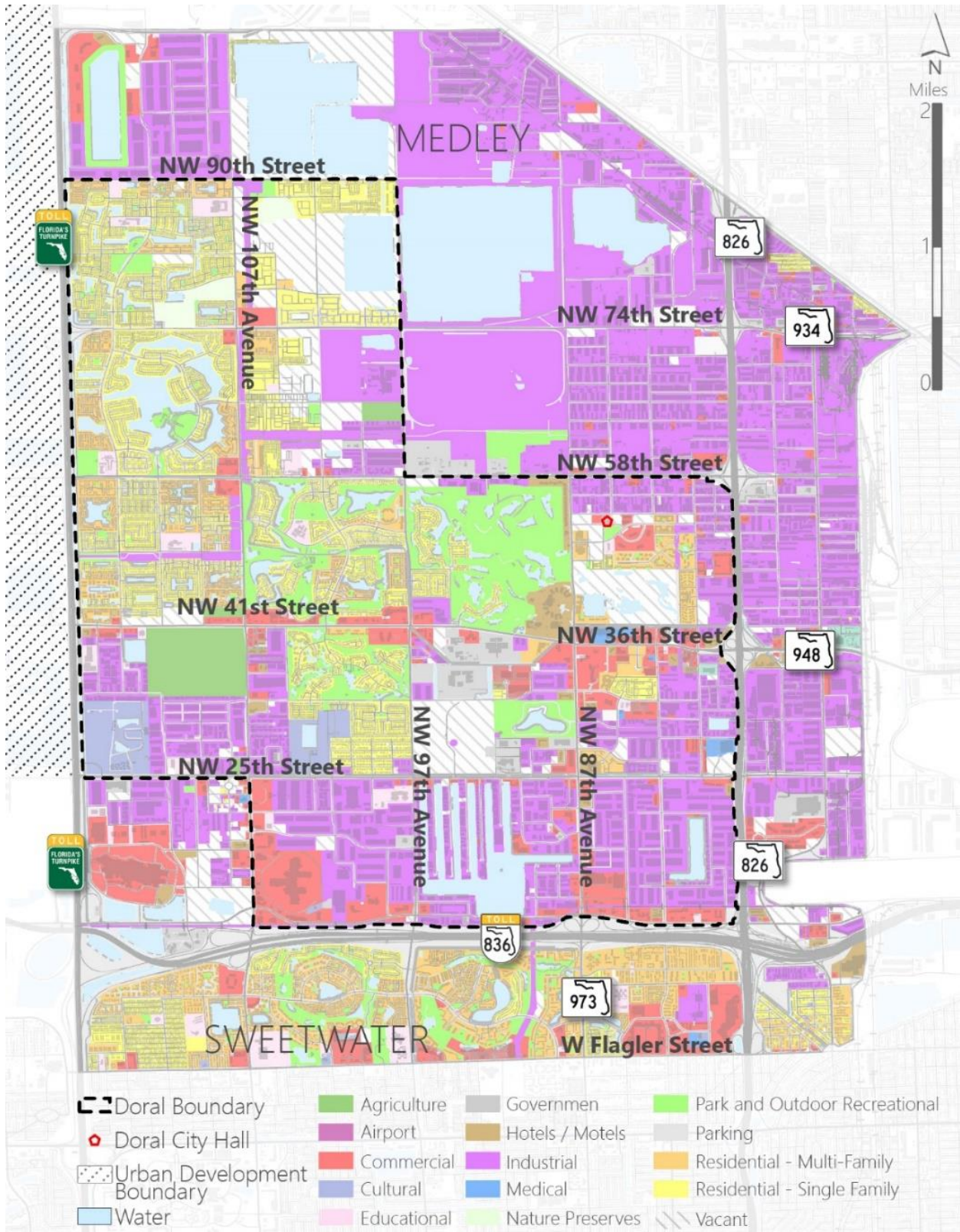


Figure 76: Existing Land Use

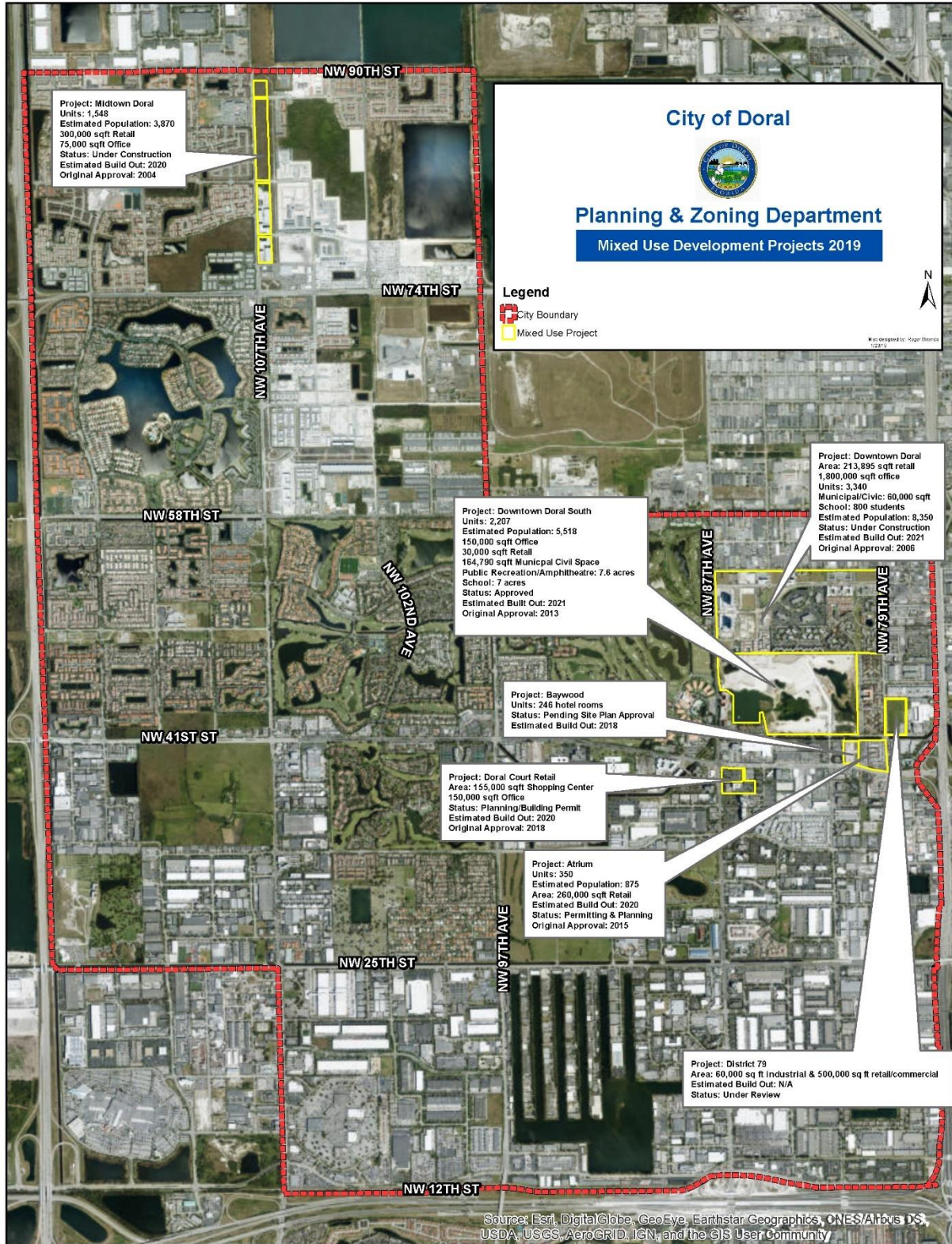


Figure 77: Doral Approved Mixed-Use Developments

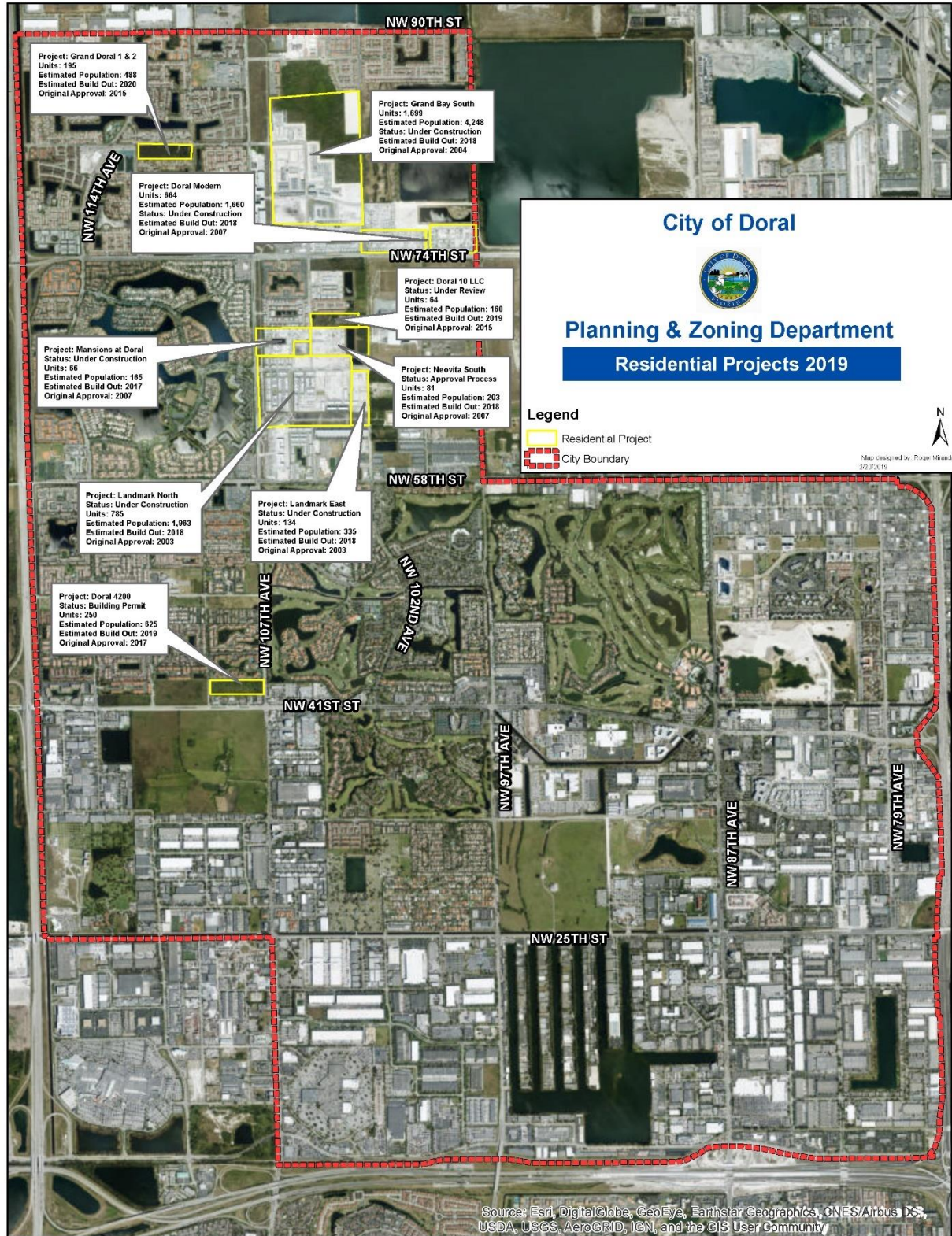


Figure 78: Doral Approved Residential Developments

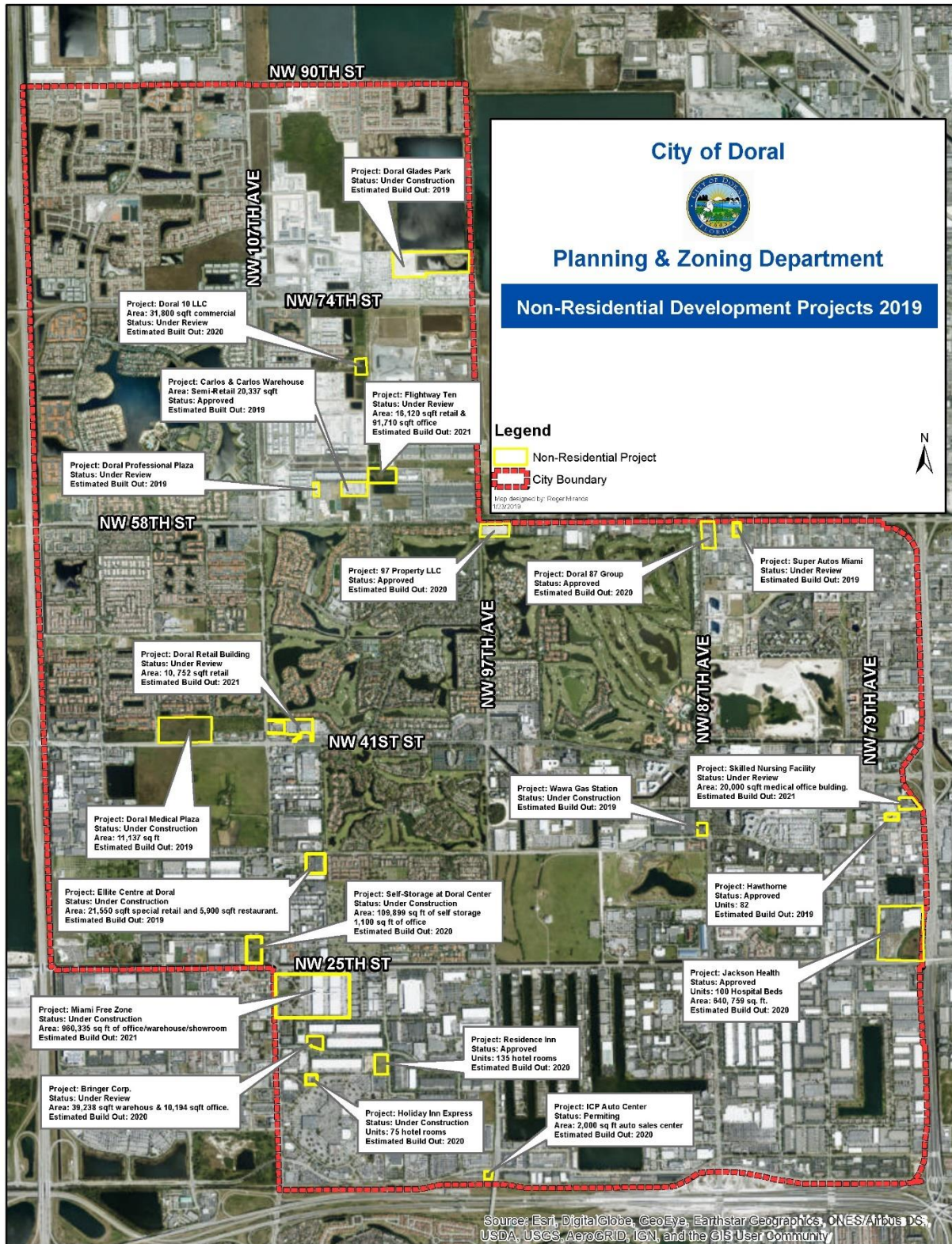


Figure 79: Doral Approved Non-residential Developments

Future Land Use

Doral's adopted future land use map follows a similar trend as presented in the existing land use map. The City is expected to remain freight-intensive south of NW 41st Street/NW 36th Street and residential north of this east-west corridor.

Areas of anticipated redevelopment include the blocks of:

- NW 107th Avenue to NW 97th Avenue and NW 74th Street to NW 90th Street
 - Vacant and residential land use to high-activity commercial land use
- NW 87th Avenue to SR 826/Palmetto Expressway and NW 36th Street to NW 58th Street
 - Vacant and single family to multi-family residential
- NW 117th Avenue to NW 107th Avenue and NW 25th Street to NW 41st Street
 - Vacant to industrial land use



Figure 80: Future Land Use

Future Annexations

The City of Doral has submitted several annexation applications to the County. If approved, these annexations will grant land use planning jurisdiction to the City for the following areas:

- Section 6, Township 53 South, Range 40 East bounded by NW 90th Street on the south, NW 107th Avenue on the east, NW 106th Street on the north, and the NW 117th Avenue Canal and Road Right-of-Way on the west
- Section 15, Township 53 South, Range 40 East bounded by the SR 826 to the east, NW 58th Street to the south, NW 87th Avenue to the west, and the north (said municipal boundary varies between NW 71st Street and NW 74th Street)
- Section 16, Township 53 South, Range 40 East, bounded by NW 58th Street on the south, NW 87th Avenue on the east, NW 74th Street on the north, and NW 97th Avenue on the west

Adjacent municipalities have also filed annexation applications. The Town of Medley, City of Miami Springs, City of Virginia Gardens, and City of Doral entered into an agreement, titled "Four City Agreement", in 2004 which defined the proposed new municipal boundaries. **Figure 81** illustrates the proposed new boundaries for the City's adjacent municipalities and the proposed annexations by the City of Doral.

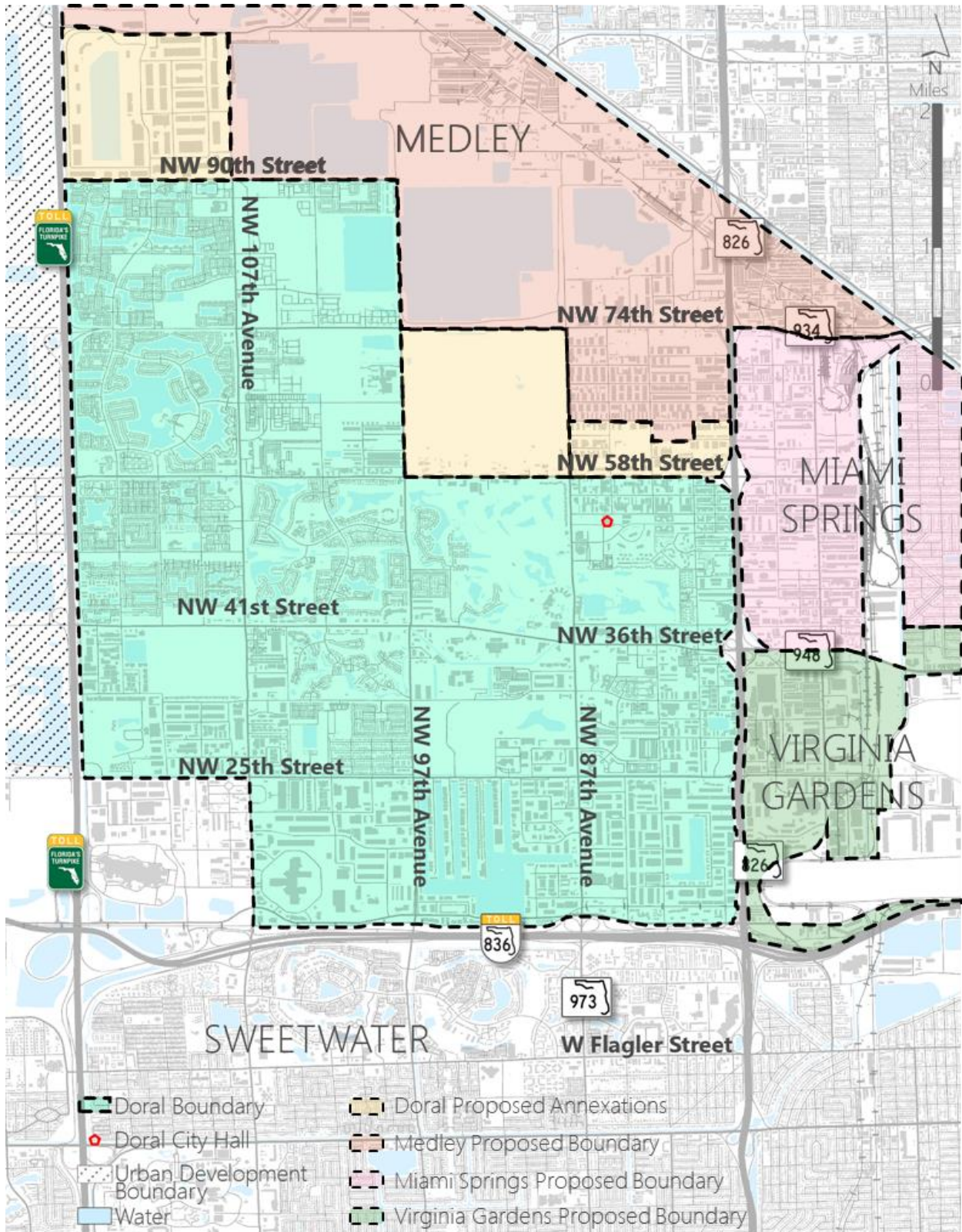


Figure 81: City of Doral and Adjacent Municipalities Annexations and Modified Boundaries

Neighborhood Fixtures

Providing transit service to neighborhood fixtures is an important mobility option for students, families, and elderly residents that spend most of their time at educational or public/open spaces. These fixtures are usually comfortable settings for low stress leisure pass-times such as reading and playing board games as well as sports. While transit may not always reach these locations due to balancing demands, understanding the location of these important fixtures also for an exploration of first-last mile connections and amenities needed to satisfy these types of trips.

Throughout the City of Doral there are multiple educational facilities. Most of these facilities are located along major roadways such as NW 25th Street, NW 41st Street/NW 36th Street/Doral Boulevard, and NW 107th Avenue. Public parks are more scattered but accessible through the existing DTS routes.

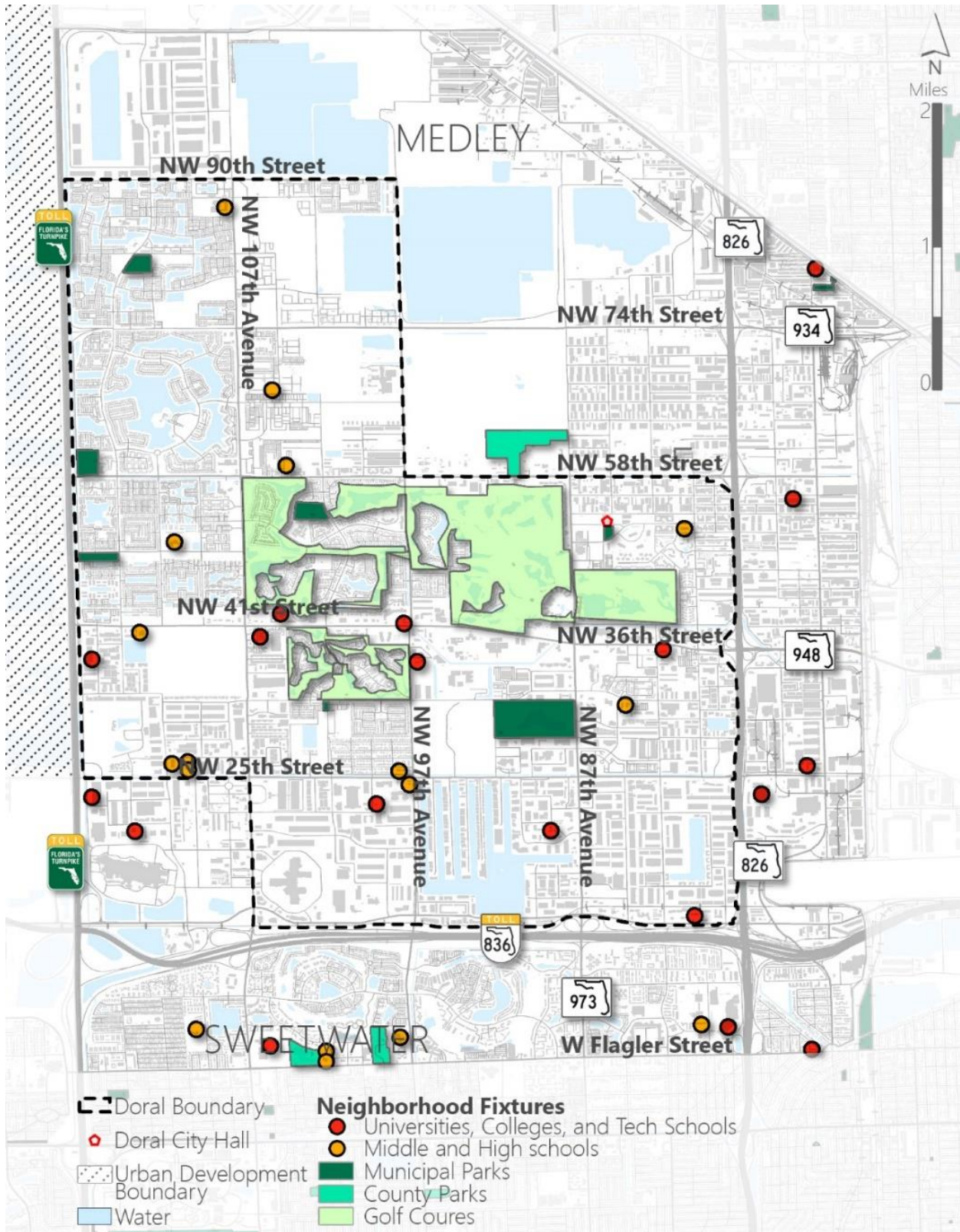


Figure 82: Neighborhood Fixtures

Commercial Fixtures

Aside from schools, universities, and parks, most non-commuting trips are between supermarkets/grocery stores and shopping centers. Grocery stores are usually co-located with pharmacies and other household essential supply stores. A successful transit system meets the greatest transportation demands. Since most trips occur either to work, school, or running errands, it is important to understand where these commercial fixtures are located within the City.

Aside from Dolphin Mall and Miami International Mall, most of these commercial fixtures are located along NW 107th Avenue, NW 41st Street/NW 36th Street, and NW 87th Avenue. These corridors are well served by existing DTS routes.

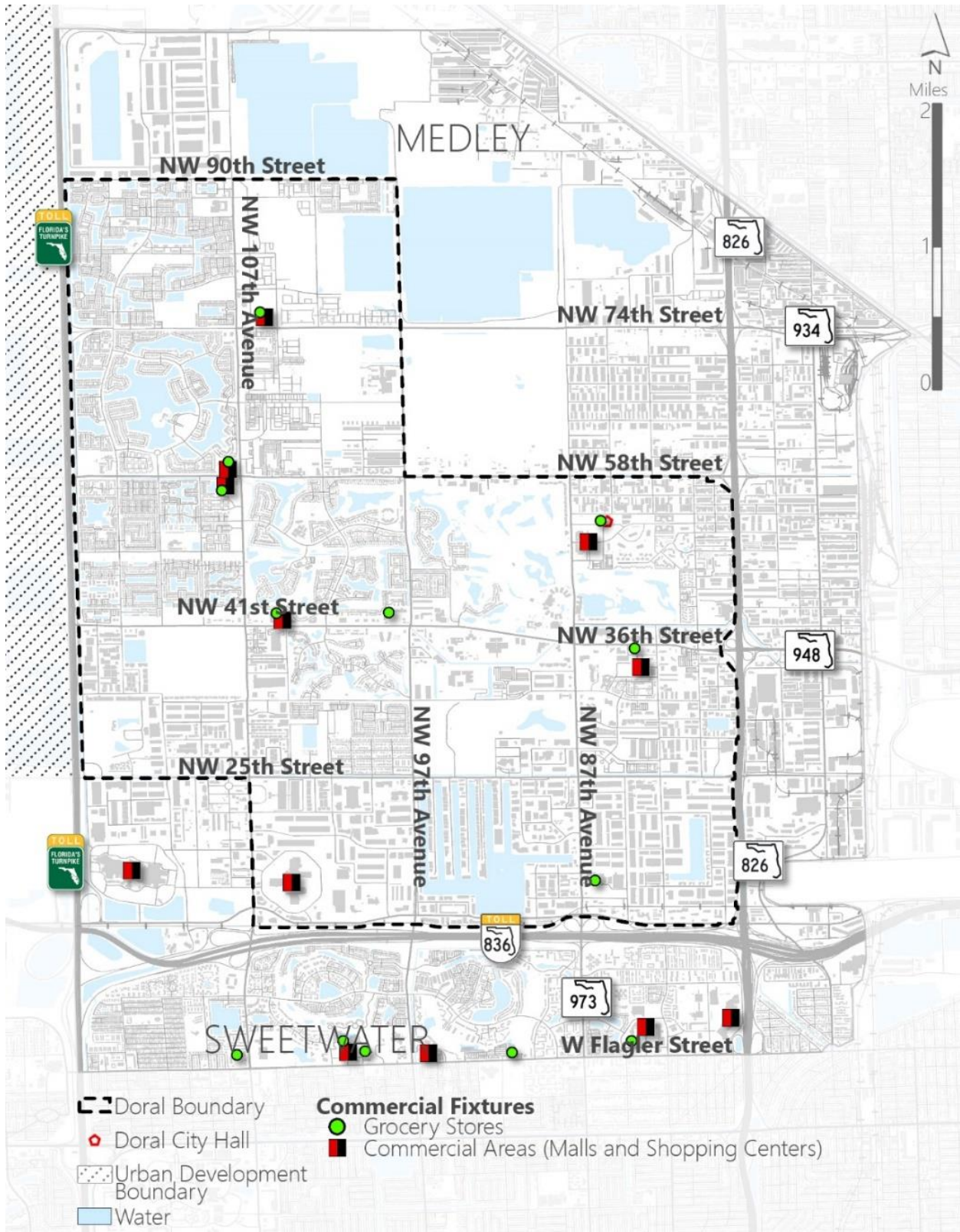


Figure 83: Grocery Stores and Shopping Centers

Density of Restaurants and Bars

Similar to the Walk Score®, Redfin® also provides a density map of restaurants and bars throughout the City. The website states that there are approximately 415 restaurants, bars, and coffee shops in Doral. Most people in the City can walk to an average of 1 restaurant, bar or coffee shop in 5 minutes.

The food industry in Doral is mostly located in Downtown Doral, Doral CitiPlace, and the intersections of NW 107th Avenue and NW 41st Street, and NW 107th Avenue and NW 58th Street.

Figure 84 highlights five corridors where most restaurants, bars, and coffee shops are concentrated:

- NW 41st Street/NW 36th Street
- NW 25th Street
- NW 107th Avenue
- NW 87th Avenue
- NW 79th Avenue

These corridors represent high demand and may be suitable for lunch routes or other specialized transit services.

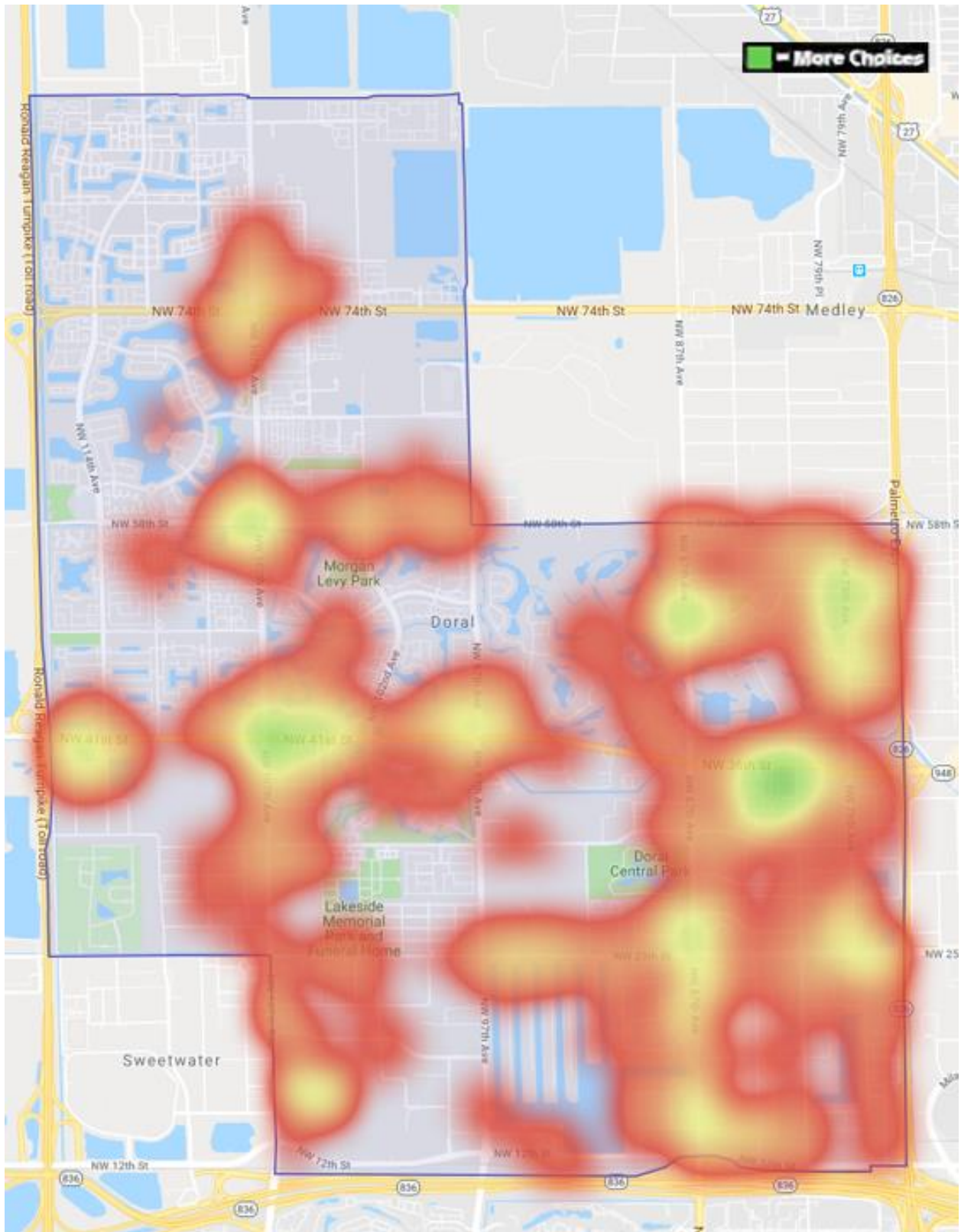


Figure 84: Density of Restaurants and Bars

Employment Density

Employment destinations are important attractors to capture commuter trips. Doral is a major employment center within the County. Hence, it is imperative to understand where these destinations are located. **Figure 85** illustrates that most of the jobs in Doral are located south of NW 41st Street/NW 36th Street. This location coincides with the abundant warehouses and industrial parks within the City. North of NW 41st Street/NW 36th Street, the second area with most employment density in the City is around Downtown Doral and the Palmetto Metrorail Station.

Doral hosts major employers such as Carnival Cruise Lines, Blue Cross and Blue Shields of Florida, Brinks, Miami Herald, Perry Ellis, Univision, and many more. In addition, many important institutional agencies are in Doral such as U.S. Southern Command, Federal Reserve Bank of Atlanta, Miami-Dade Fire Rescue Headquarters, and Miami-Dade Police Department. These employers and public agencies are key stakeholders for the improvement and evolution of the DTS since they are major destinations.

Furthermore, many of the big organizations within the City have brand recognition and loyalty. Under certain circumstances, cobranding transit may be a good strategy to boost ridership, improve communication of route destinations, and as an additional revenue source. This strategy can also serve to provide specialized commuter routes where enough demand exists for an efficient operation.

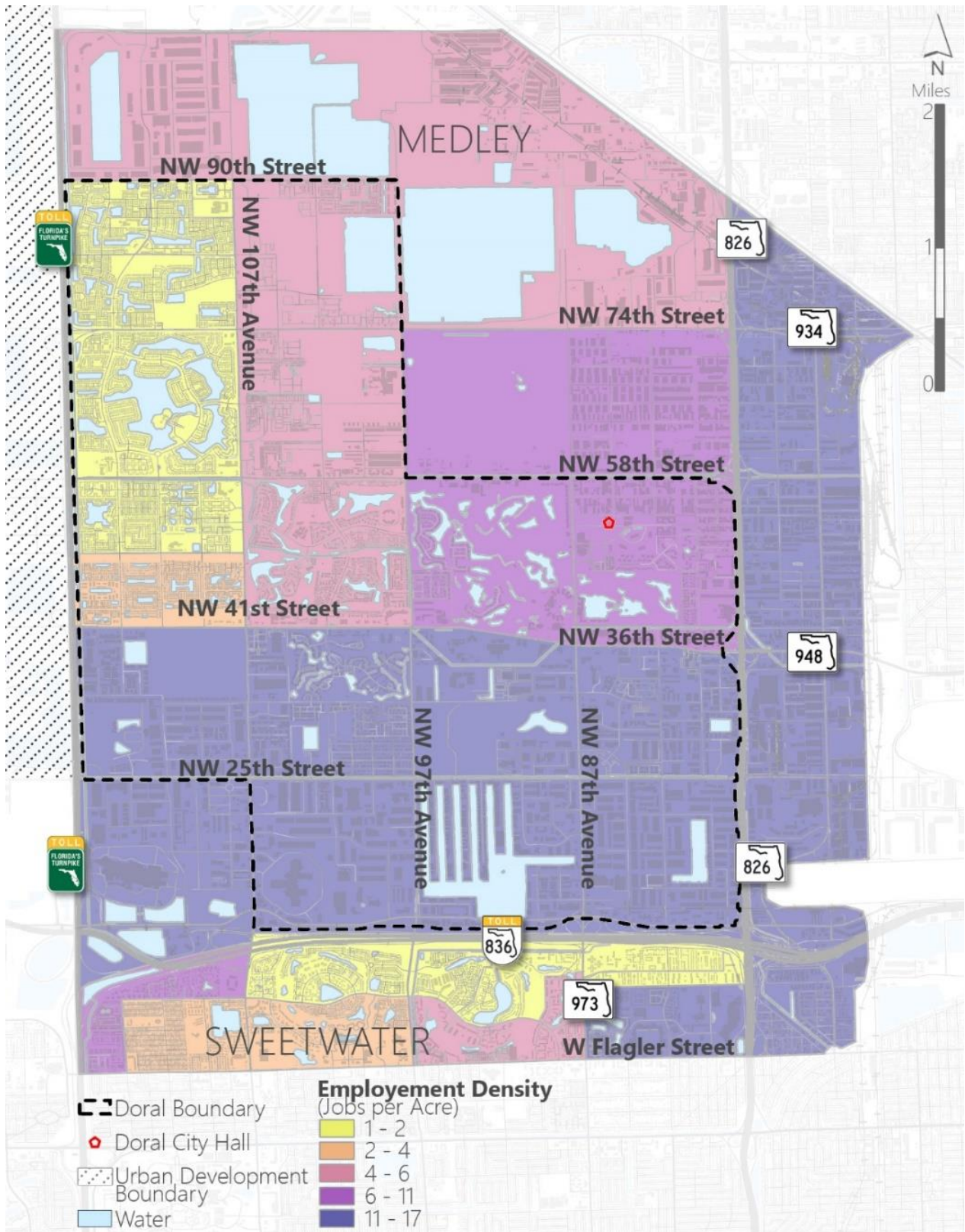


Figure 85: Employment Density

Demographics

Population Density

Doral is a quasi-suburban city of Greater Miami. While very metropolitan, the City has low population density due the presence of expansive industrial and office land uses. Throughout the northern half of the City, the population density is greater due to the concentration of residential land uses. This highlights a unique transportation characteristic of the City – the need to balance a high influx of commuters with the mobility demands of residents.

Given the City is also transforming into a major leisure destination with new entertainment centers, the City needs to accommodate additional trips from visitors/non-residents attracted to these centers. Hence, while population density may appear to be generally low throughout the City, Doral has a great influx of people every day.

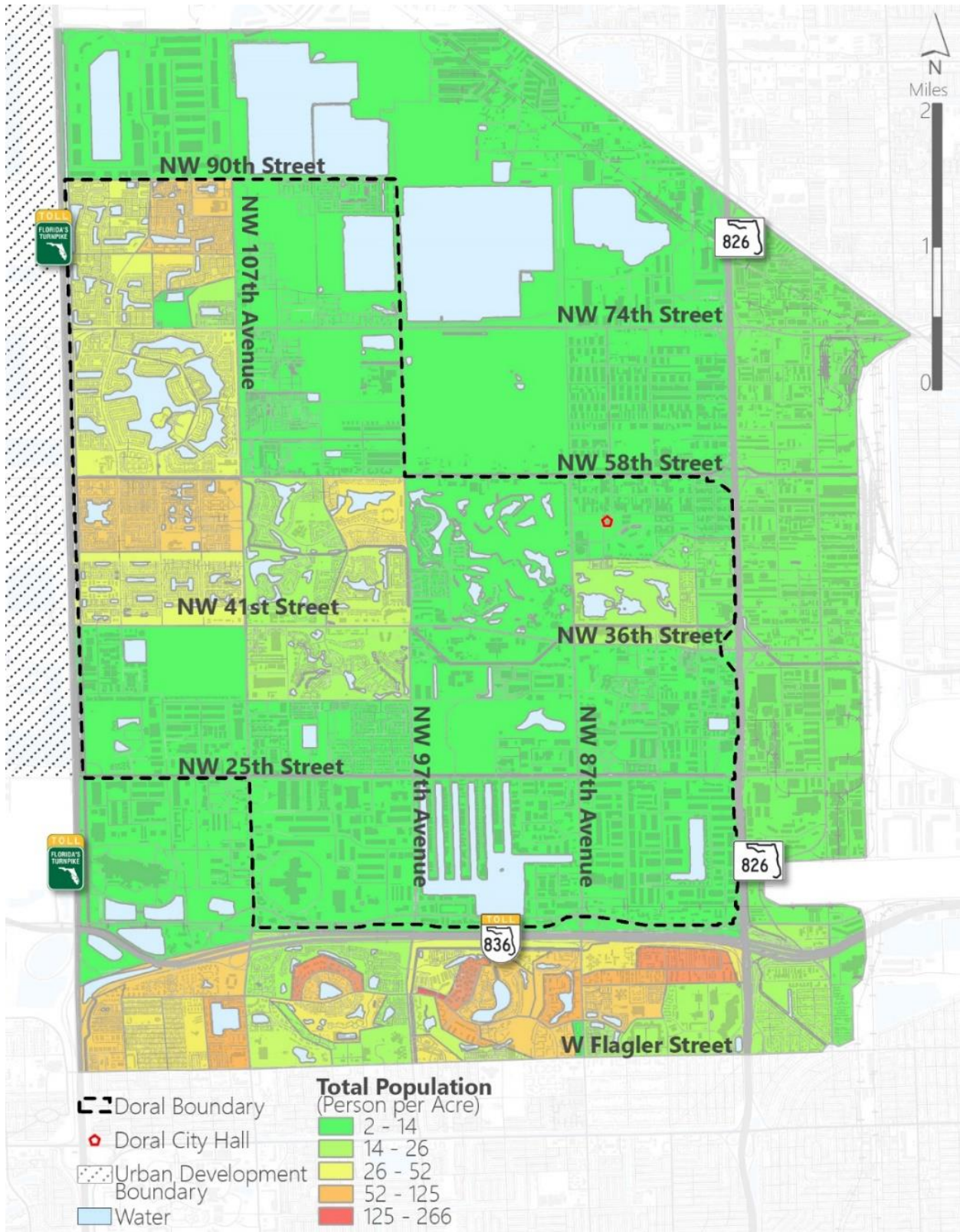


Figure 86: Population Density

Youth Population Density

Youth are considered a transit-dependent population given they commute to education centers, jobs, and parks while not yet being able to drive for themselves. Providing safe and efficient transit mobility for this demographic removes the burden of chauffeuring youth from parents; removing redundant trips from the roadway, improving parent's work stability, and potentially reducing family stress.

As expected, most of the City's youth population lives in the northern residential areas. The DTS currently provides good connections between these blocks and the Neighborhood Fixtures presented in **Figure 82**.

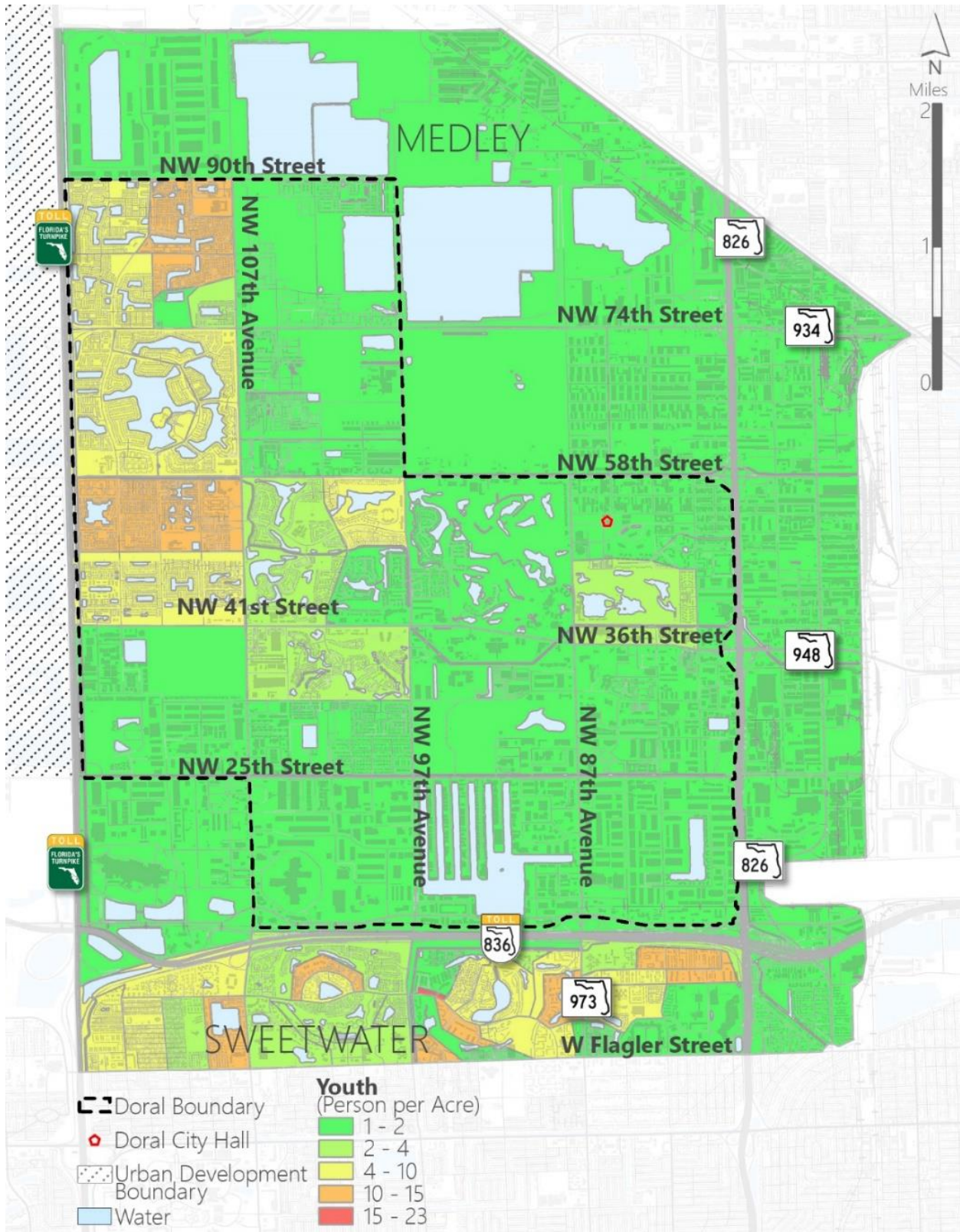


Figure 87: Youth Population Density

Elderly Population Density

Elderly individuals are also considered transit-dependent due to the higher probability of mobility impairments such as impaired vision or reduced physical mobility restricting their ability to drive.

Overall, the City is comprised of a young population with an estimated median age of 35.3 ([2013 – 2017 American Community Survey 5-Year Estimate](#)). While the senior population is not significant (7.2% over 65 years old) and is mostly spread-out within the City, one location of stands out due to its high concentration of elderly citizens. This location is the quarter block bounded by NW 102nd Avenue to NW 97th Avenue and NW 52nd Street to NW 58th Street which comprises of the following residential associations surrounding Lake Lucas:

- Doral House Condominium
- Village of Doral Lakes
- Village of Doral Pines

The Green and Blue routes of the DTS serve this area through stops along NW 102nd Avenue and NW 52nd Street.

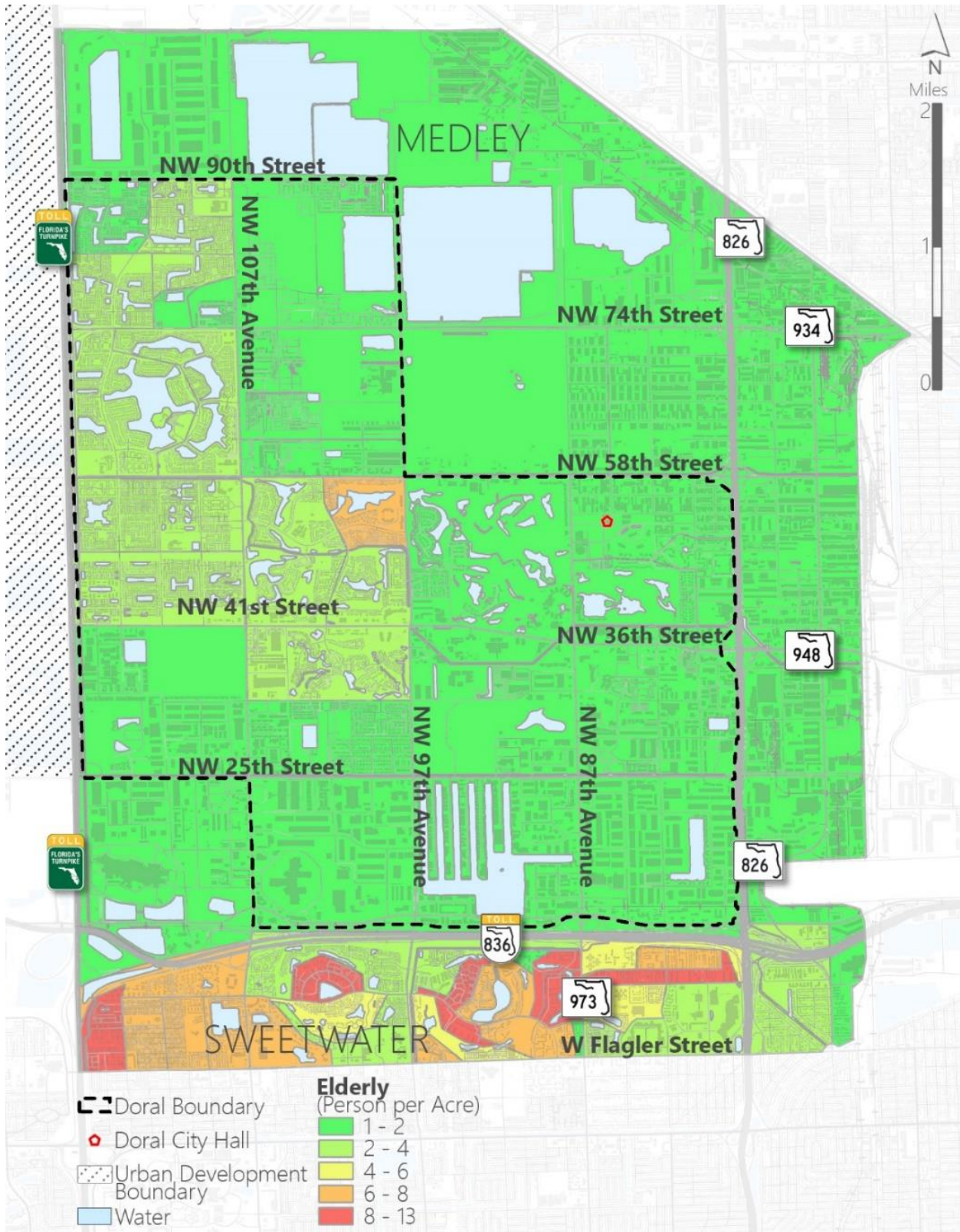


Figure 88: Elderly Population Density

Minority Population Density

Historically, minority populations may be inadvertently segregated by mobility options due to the priorities of the majority being prioritized. It is extremely important that the DTS ensures minority populations' needs and concerns are heard and that the system is safe, non-discriminatory, and accessible for people to voice their concerns.

Within the City, most minority populations are located within the quarter block bounded by NW 102nd Avenue to NW 97th Avenue and NW 52nd Street to NW 58th Street. Other partial blocks that include minorities are bounded by:

- NW 112th Avenue to NW 107th Avenue and NW 82nd Street to NW 90th Street
- NW 117th Avenue to NW 107th Avenue and NW 50th Street to NW 58th Street

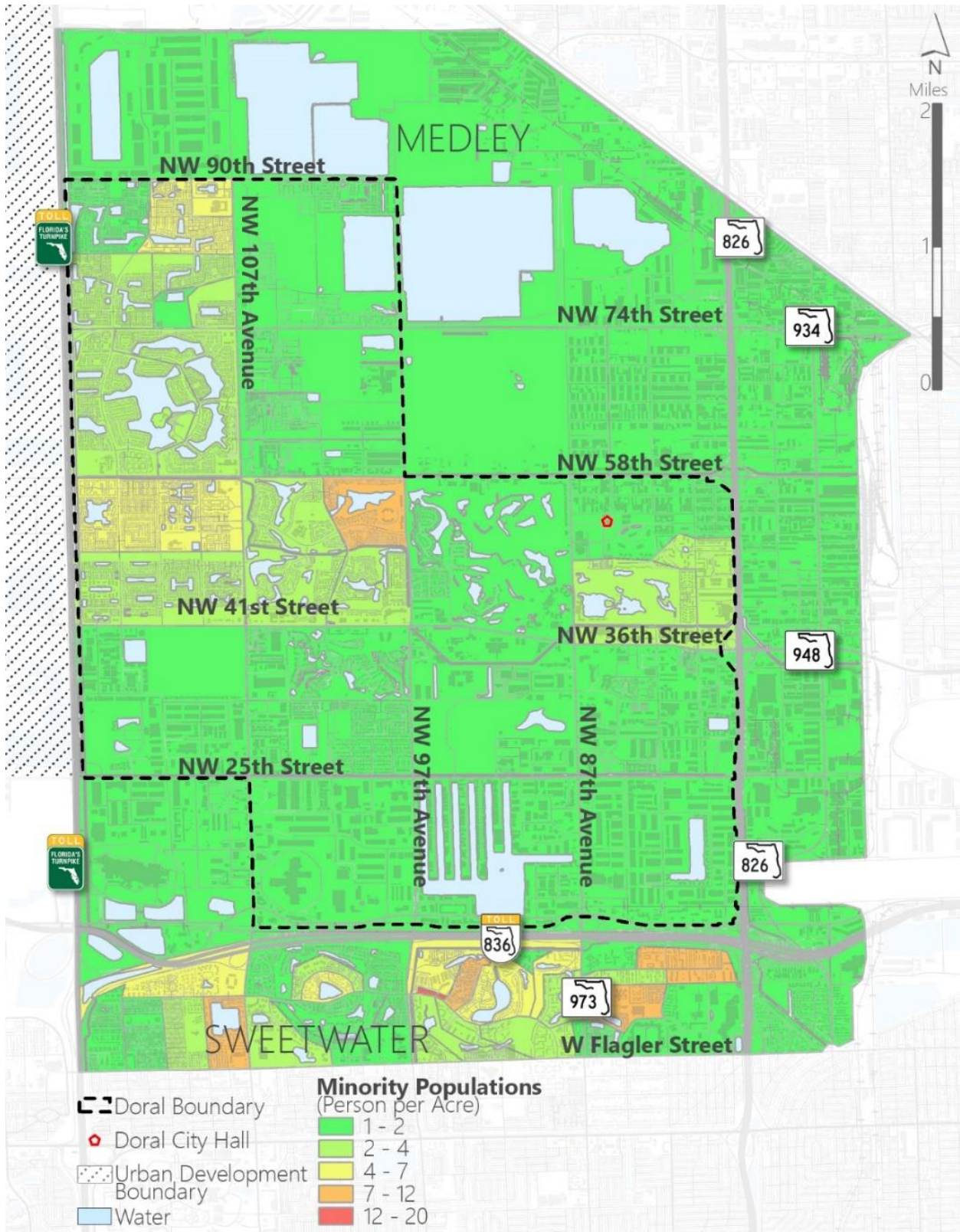


Figure 89: Minority Population Density

Limited English Comprehension Population Density

Individuals with limited-English comprehension may find navigating the transportation network difficult. Additionally, these individuals may have difficulties securing jobs and achieving economic development. Providing a transit system that is accessible by residents of all ages and abilities is critical to protect the social justice these systems provide.

While the City's population has a strong English comprehension, one small pocket of medium English proficiency exists within the population of the Coronado at Doral homeowner's association.



Figure 90: Limited English Comprehension Population Density

Low Educational Attainment Population Density

Low educational attainment is highly correlated to low economic development and income. Providing cheap and convenient transportation to individuals with such characteristics allows them to access higher paying jobs while maintaining their transportation expenses low.

Fortunately, the City of Doral is well educated with 95.4% attaining high school graduate or higher education. The current DTS routes provide good access to existing schools, universities, and other educational facilities. While the current population may not be as dependent on transit as other cities, it is still beneficial to maintain and improve access to educational facilities given higher education brings more specialized work that is beneficial to the local economy.

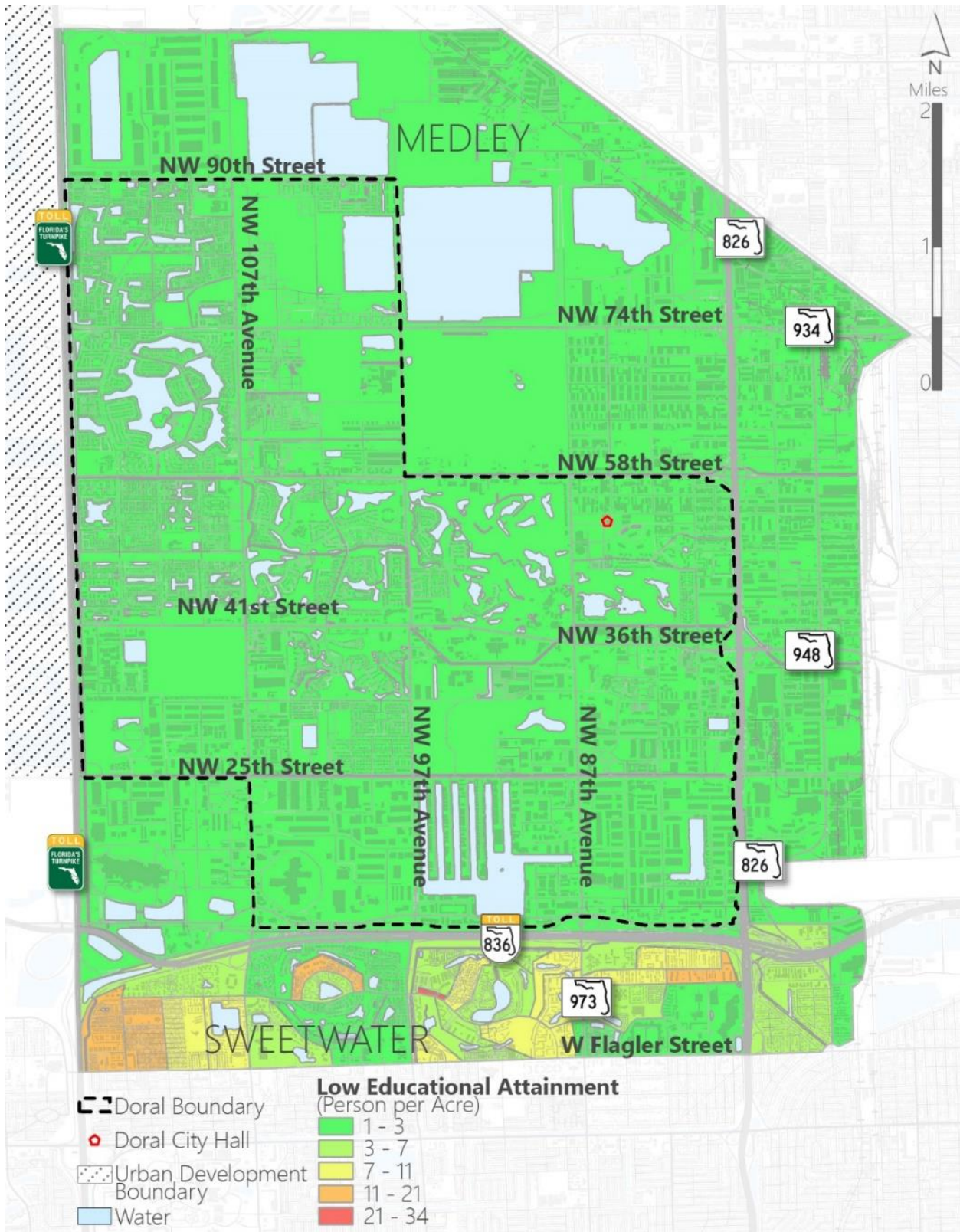


Figure 91: Low Education Attainment Population Density

Veteran Population Density

Mobility impairments and disability are more probable to be present in within the City's veteran population than civilian population. This makes veteran's highly susceptible to depend on transit for transportation. Two areas of medium veteran concentration include the following blocks:

- NW 117th Avenue to NW 107th Avenue and NW 41st Street to NW 58th Street
- NW 102nd Avenue to NW 97th Avenue and NW 52nd Street to NW 58th Street

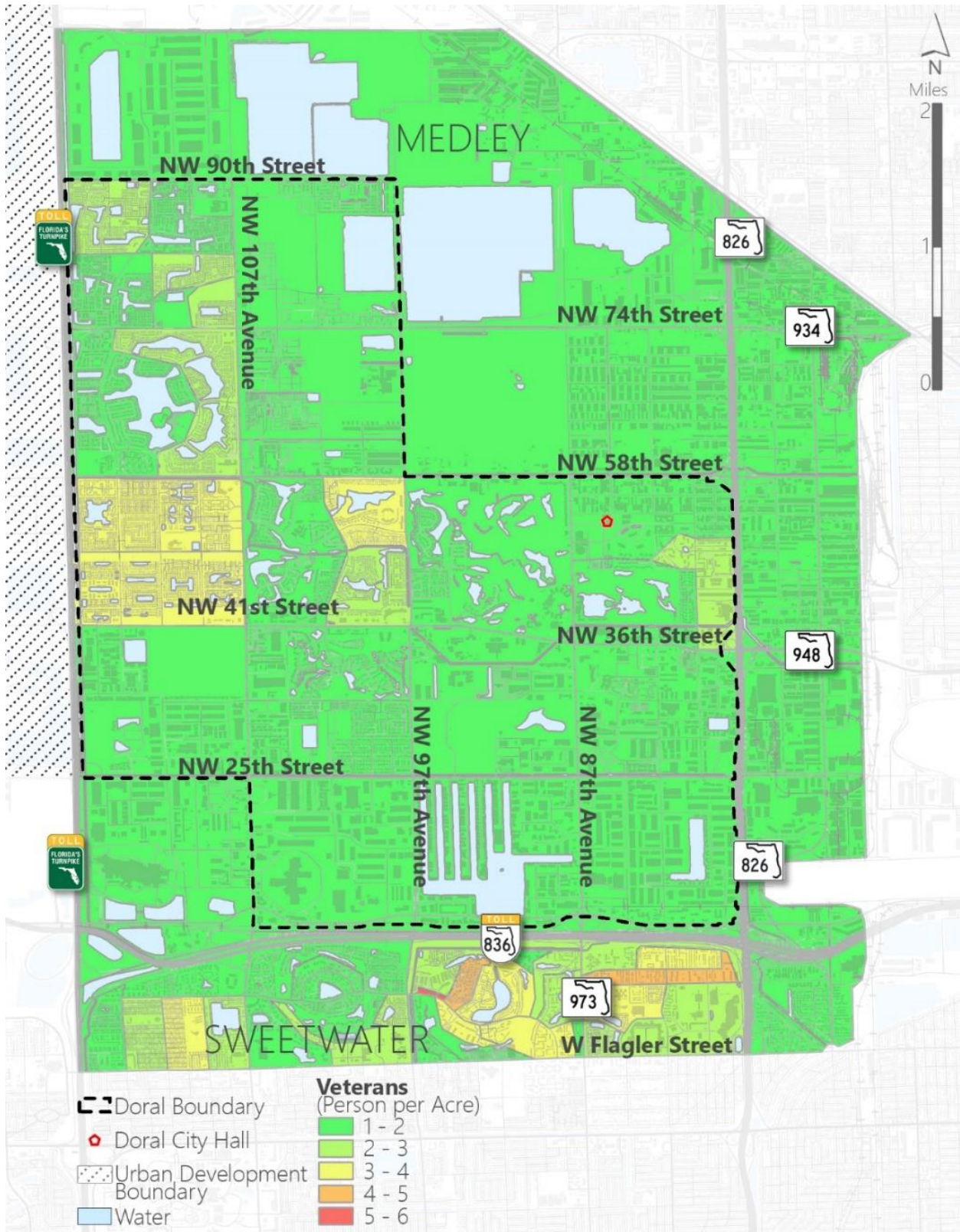


Figure 92: Veteran Population Density

Economic

Unemployed Population Density

While unemployment data varies given economic cycles, looking at the data can provide a snapshot of the City's more affordable hotspots given these areas may include workers with low skillsets contributing to structural unemployment.

As present in other data reviewed, the same locations pop-up in **Figure 93**. These locations are generally bounded by:

- NW 112th Avenue to NW 107th Avenue and NW 82nd Street to NW 90th Street
- NW 117th Avenue to NW 107th Avenue and NW 41st Street to NW 58th Street
- NW 102nd Avenue to NW 97th Avenue and NW 52nd Street to NW 58th Street
- NW 107th Avenue to NW 97th Avenue and NW 33rd Street to NW 41st Street
- NW 87th Street to SR 826/Palmetto Expressway and NW 36th Street to NW 53rd Street

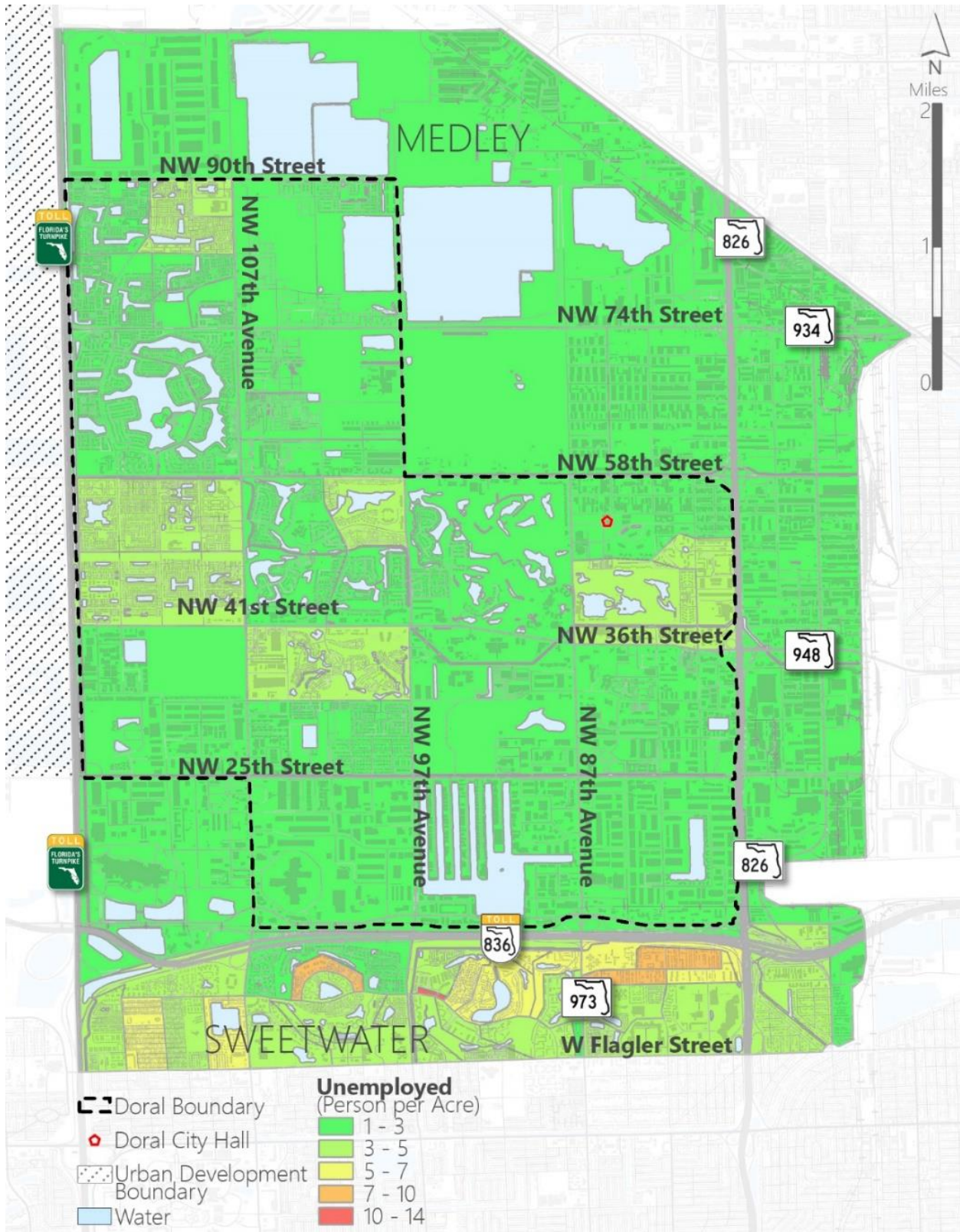


Figure 93: Unemployed Population Density

Low Income Households

The citizens of Doral are wealthy compared to the rest of the County with a median household income almost \$30,000 greater than the County (2013-2017 American Community Survey 5-Year Estimates). While low-income household face challenging decisions regarding transportation affordability, this does not seem to be an issue for the households of Doral.

Like other socioeconomic data review, some spots within the City have relative lows, however, these areas are still well-off compared to the rest of the County. One alternative to consider is extending the DTS to serve less privileged communities outside of the City. This could be helpful by providing free transportation to low-wage workers that are unable to live within the City do to housing affordability. This allows for a double benefit: business within Doral can grow as accessibility is increased to workers while the lifestyle of non-resident workers improves.

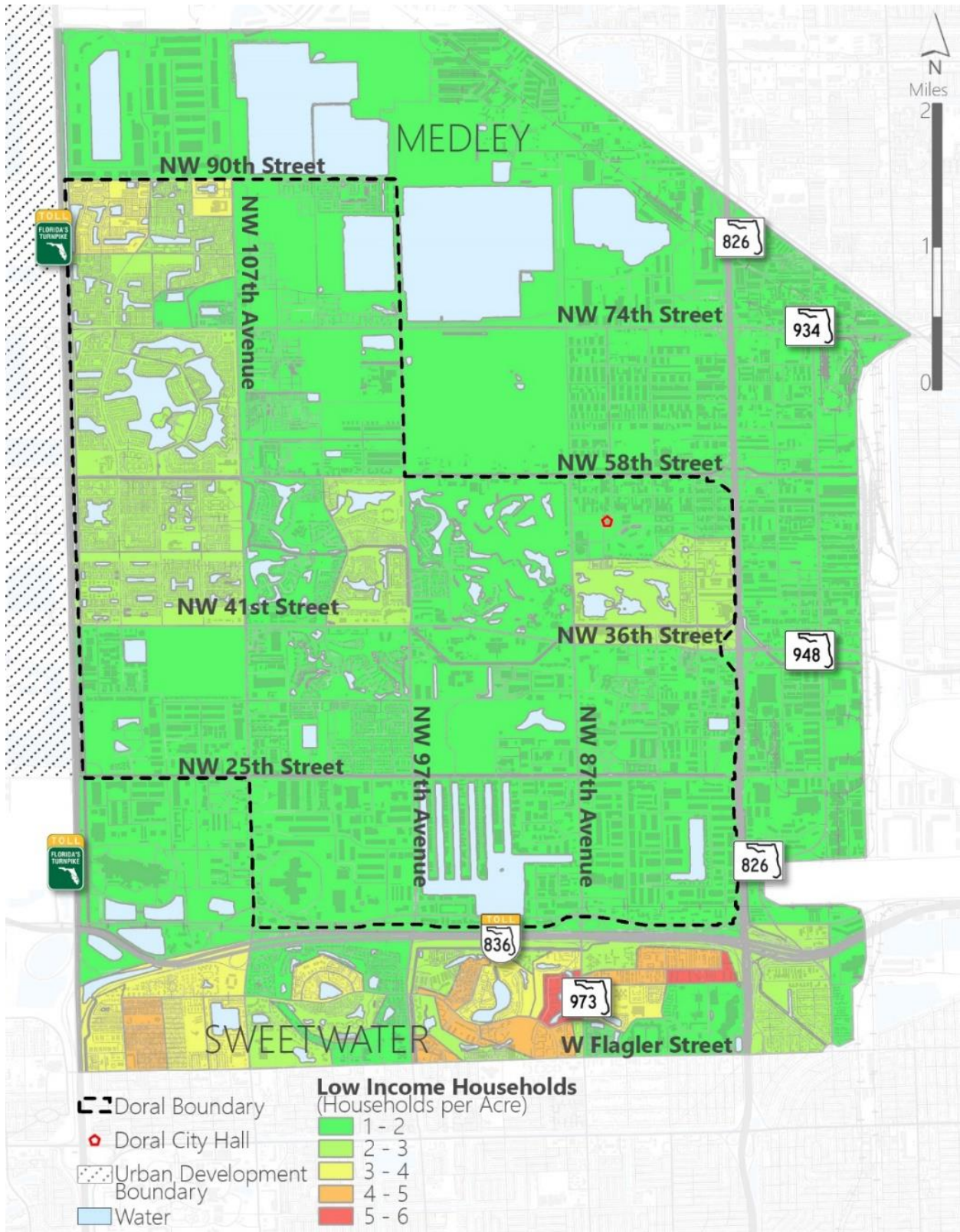


Figure 94: Low Income Households

Zero-Car Households

Zero-car households are transit dependent given they do not have the opportunity to drive a leased or owned vehicle. While these households are few in metropolitan, car-centric, cities such as Doral, it is important to target their location and provide transit accessibility.

In Doral, several developments stand out as potential targets for improved transit service/accessibility:

- Coronado at Doral
- Antilles Island of Doral
- Windsor at Doral
- Marriot's Villa at Doral
- Gran Vista at Doral

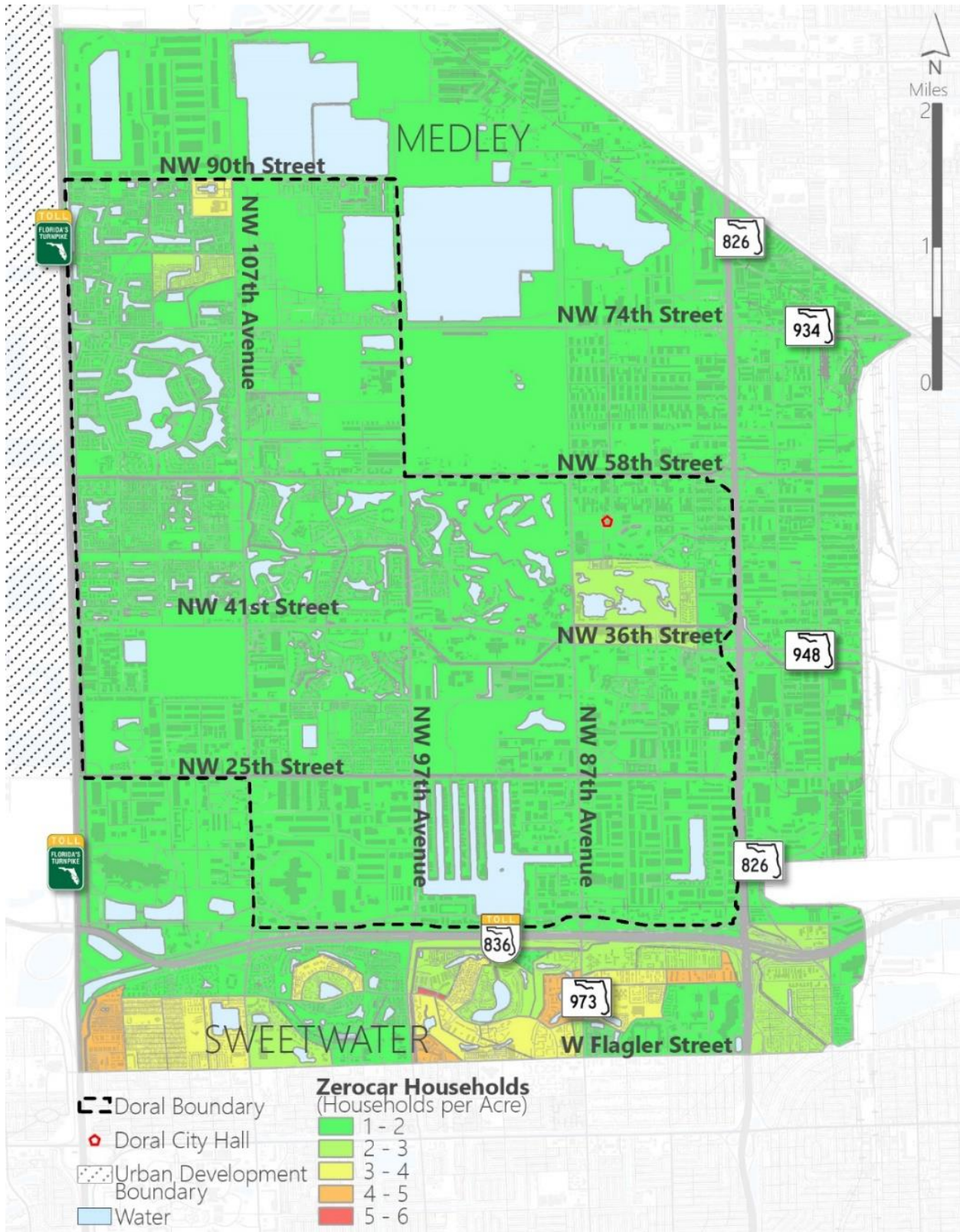


Figure 95: Zero-Car Households

Transit Reliant Population Density

Transit reliant or transit dependent populations have limited mobility options due to one or multiple reasons including low-income, disability, low physical endurance, low-education, or lack of mobility options (e.g. zero-car households). **Figure 96** provides a snapshot of the transit dependent population in City and surrounding neighborhoods. Within the City of Doral, the highest concentration of transit reliant population resides within:

- Coronado at Doral
- Around Lake Lucas in the Villages of Doral Pines Guard and Doral Lakes as well as Doral House condominiums
- Within the area bounded by NW 50th Street to the south, NW 58th Street to the north, NW 117th Avenue to the west, and NW 107th Avenue to the east

However, more transit dependent people reside outside of Doral. These people are located within the City of Sweetwater and Fontainebleau census-designated area.

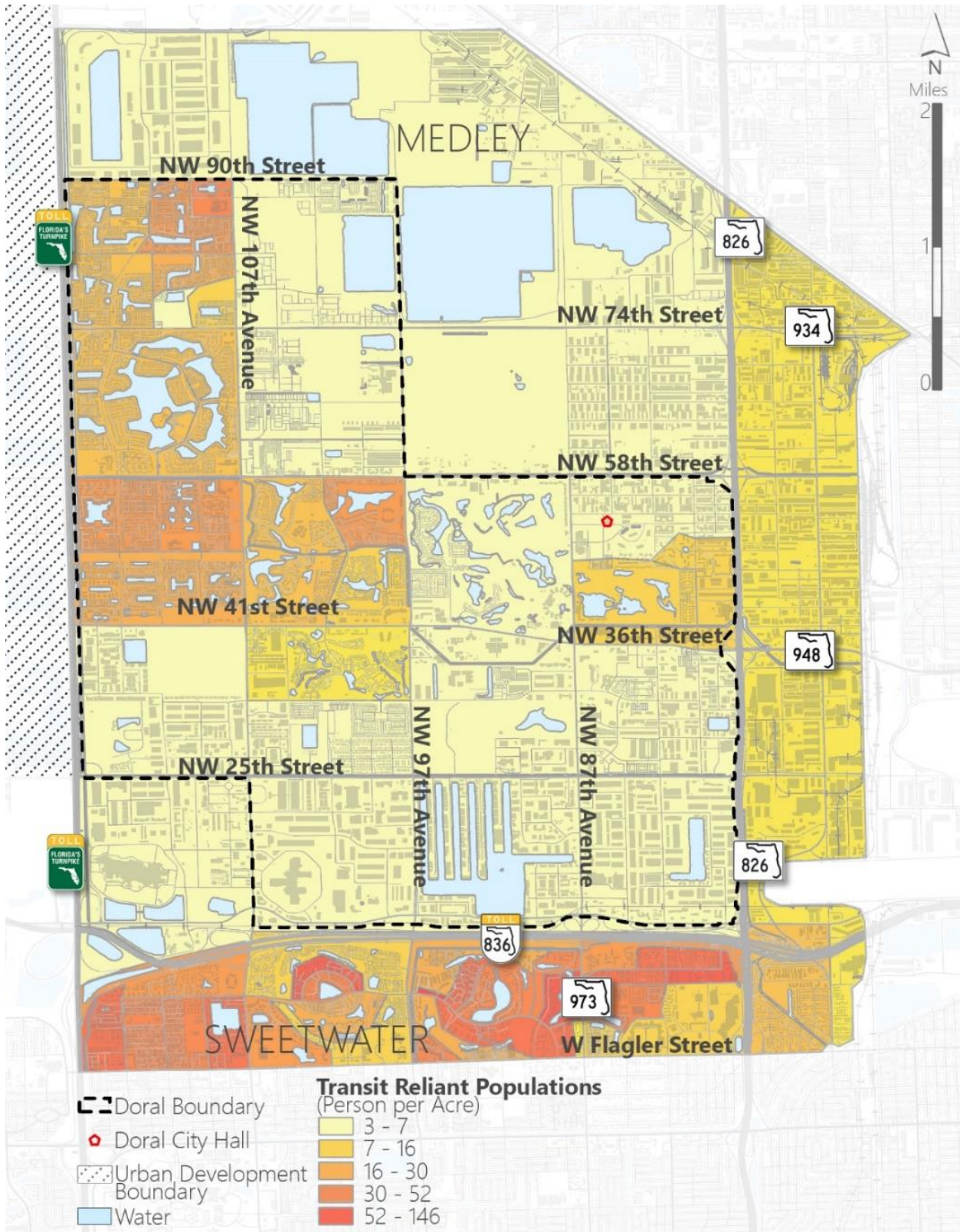


Figure 96: Transit Reliant Population Density

Affordable Housing

Affordable housing is a subject of concern in Miami-Dade County. Researchers at [Harvard University's Joint Center for Housing Studies](#) have determined that the greater Miami metro area has the highest percentage of renters spending over half of their income on housing costs. Without affordable housing, people are not able to live close to employment and recreational locations. This creates a rise in long-distance transportation demand which is more expensive to service than short-distance transportation such as walking. Providing affordable housing promotes regional economic growth and helps employers attract and retain talent locally.

The University of Miami's Office of Civic and Community Engagement maintains an interactive online map called the [Miami Affordability Project \(MAP\)](#) which uses U.S. census data to illustrate housing affordability in the greater Miami area. This tool was used to develop **Figure 103** through **Figure 108**. From these figures, and the graphs preceding them, the following observations were made:

- The City of Doral has only one assisted housing development, called Doral Terrace, located on 10825 NW 50th Street. This For-Profit development has 256 units of which 184 (71%) have assisted-living.
- According to the 2017 American Community Survey performed by the U.S. Census Bureau, the median household income in Miami-Dade County was of \$46,338.00, in the U.S. was of \$60,336.00, and in the City of Doral was of \$76,184.00
- Approximately 30% of Doral residents have an income less than or equal to \$49,999.00
- Of 15,078 occupied housing units analyzed, 7,729 (51%) are owner-occupied and 7,349 (49%) are renter-occupied
- In the City, the *average median* household income of owners is of \$83,276.00 as compared with renters which is of \$59,604.40
- In Miami-Dade County, the median monthly owner cost of housing is of \$1,704 with a mortgage and of \$581 without a mortgage while the median gross rent is of \$1,195
- In the City of Doral, the median monthly owner cost of housing is of \$2,215 with a mortgage and of \$798 without a mortgage while the median gross rent is of \$1,834
- On average, approximately 49% of owners with mortgages, 19% of owners without mortgages, and 61% of renters are cost-burdened

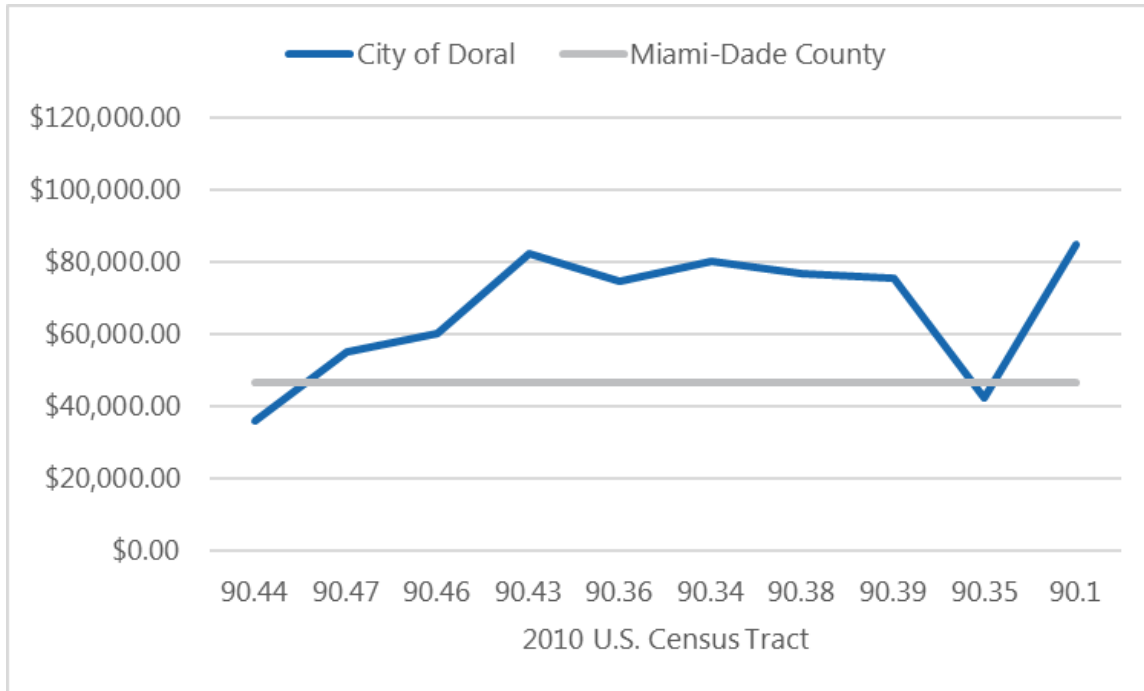


Figure 97: Median Household Income

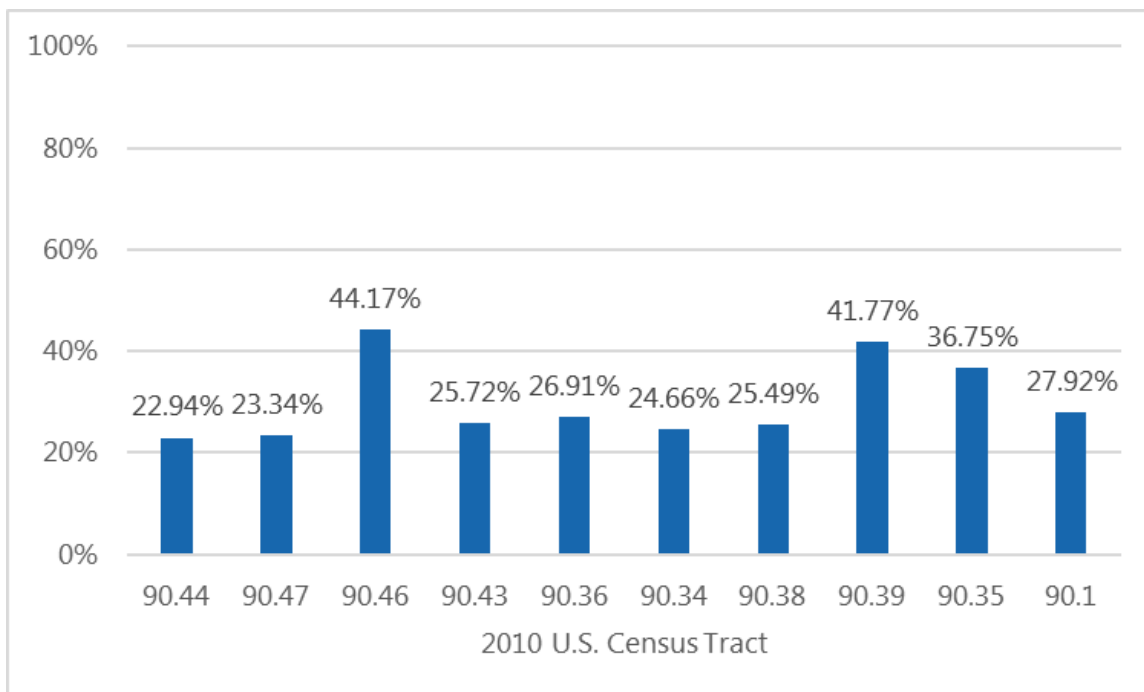


Figure 98: Percent of Households with Annual Incomes of \$0 to \$49,999

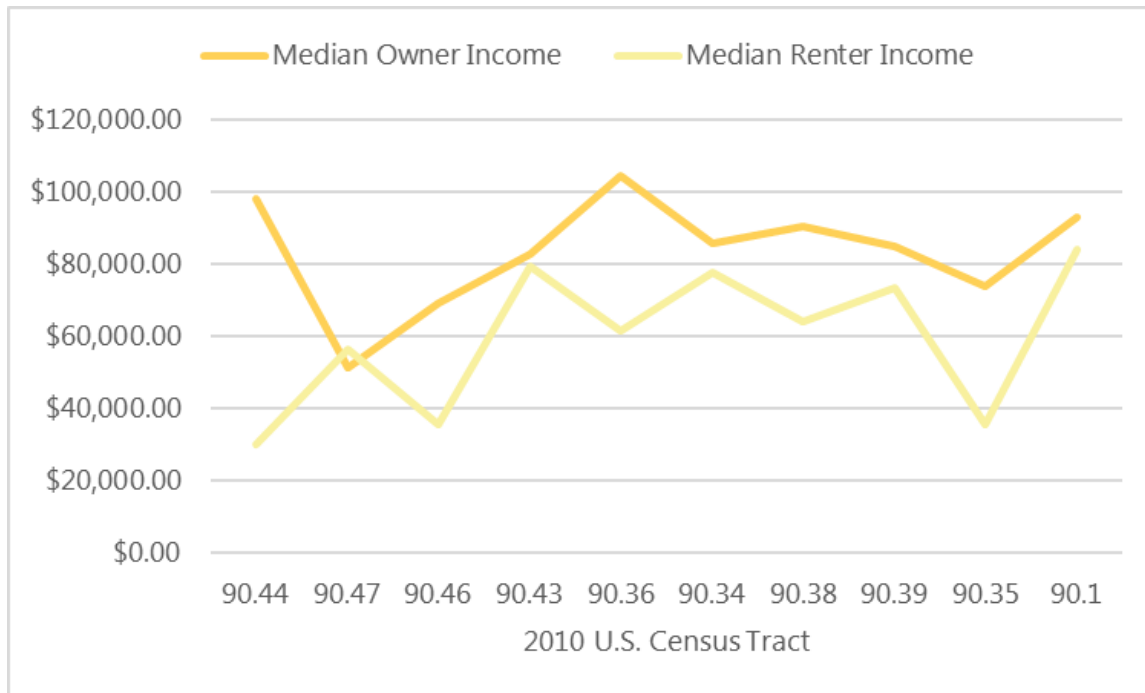


Figure 99: Owner- vs Renter-Occupied Median Household Income

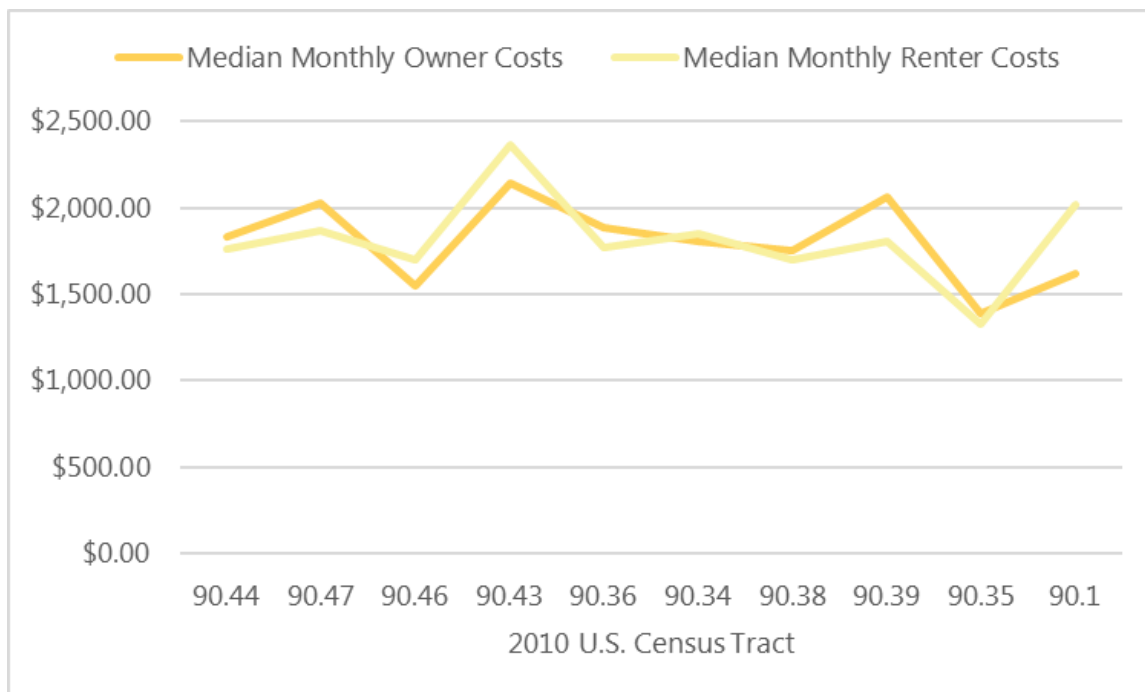


Figure 100: Owner- vs Renter-Occupied Median Housing Cost

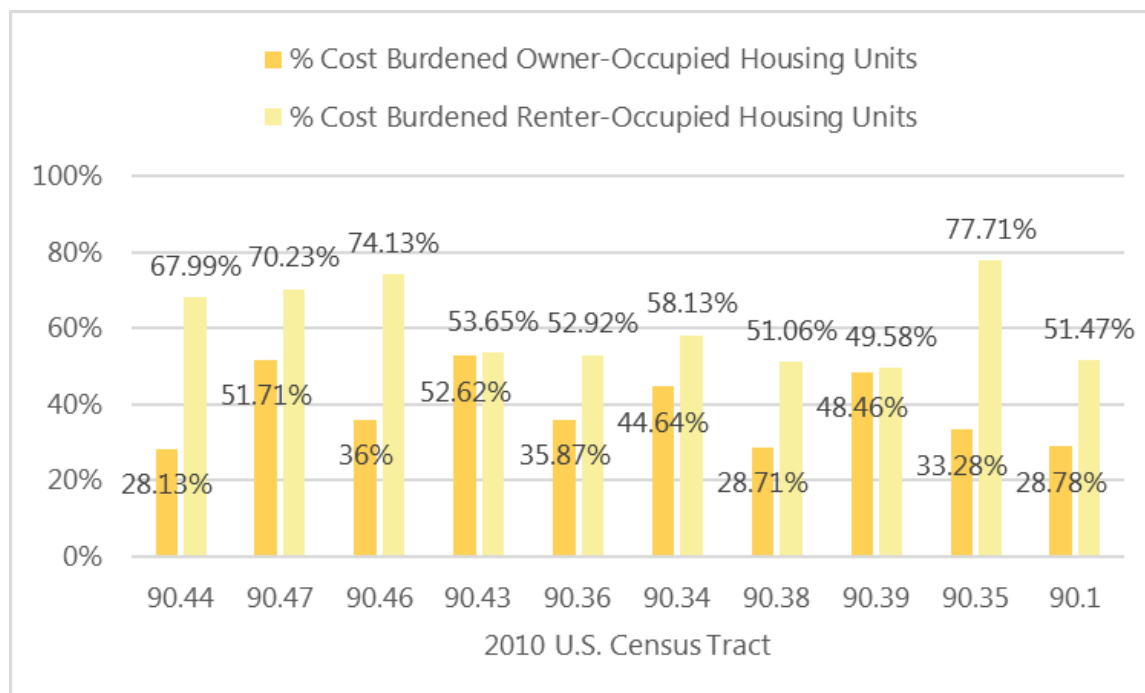


Figure 101: Percent of Cost-Burdened Owner- vs Renter-Occupied Housing Units

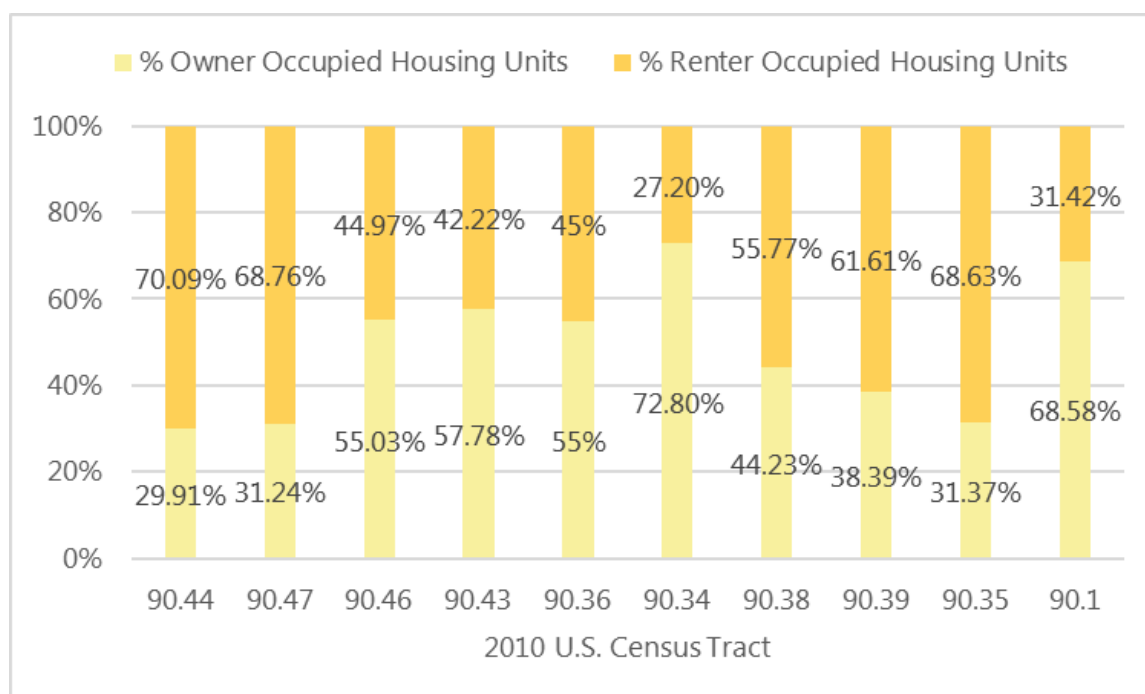


Figure 102: Owner- vs Renter-Occupied Housing Units

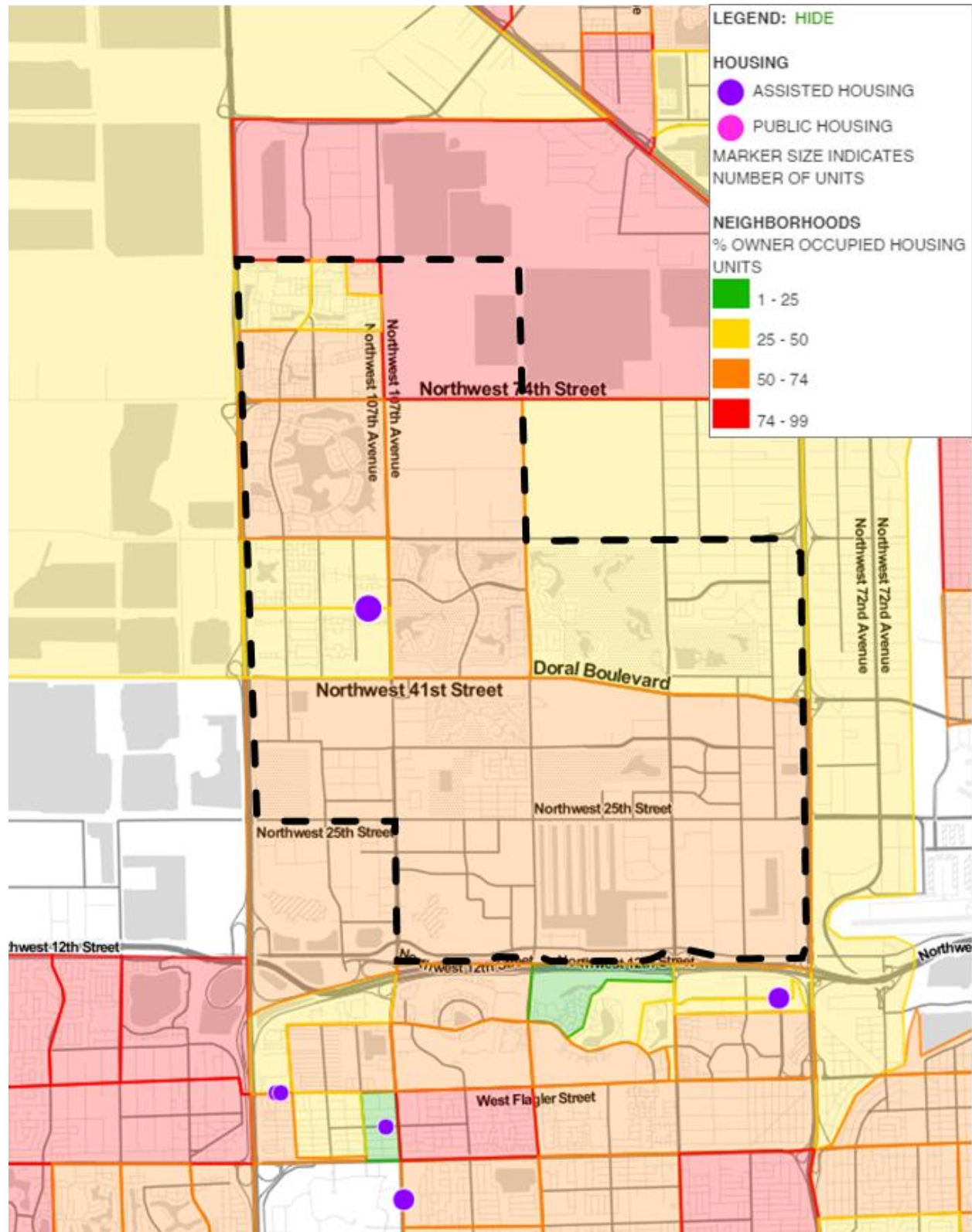


Figure 103: Percent of Owner-Occupied Housing Units



Figure 104: Percent of Renter-Occupied Housing Units





Figure 106: Median Monthly Renter Costs

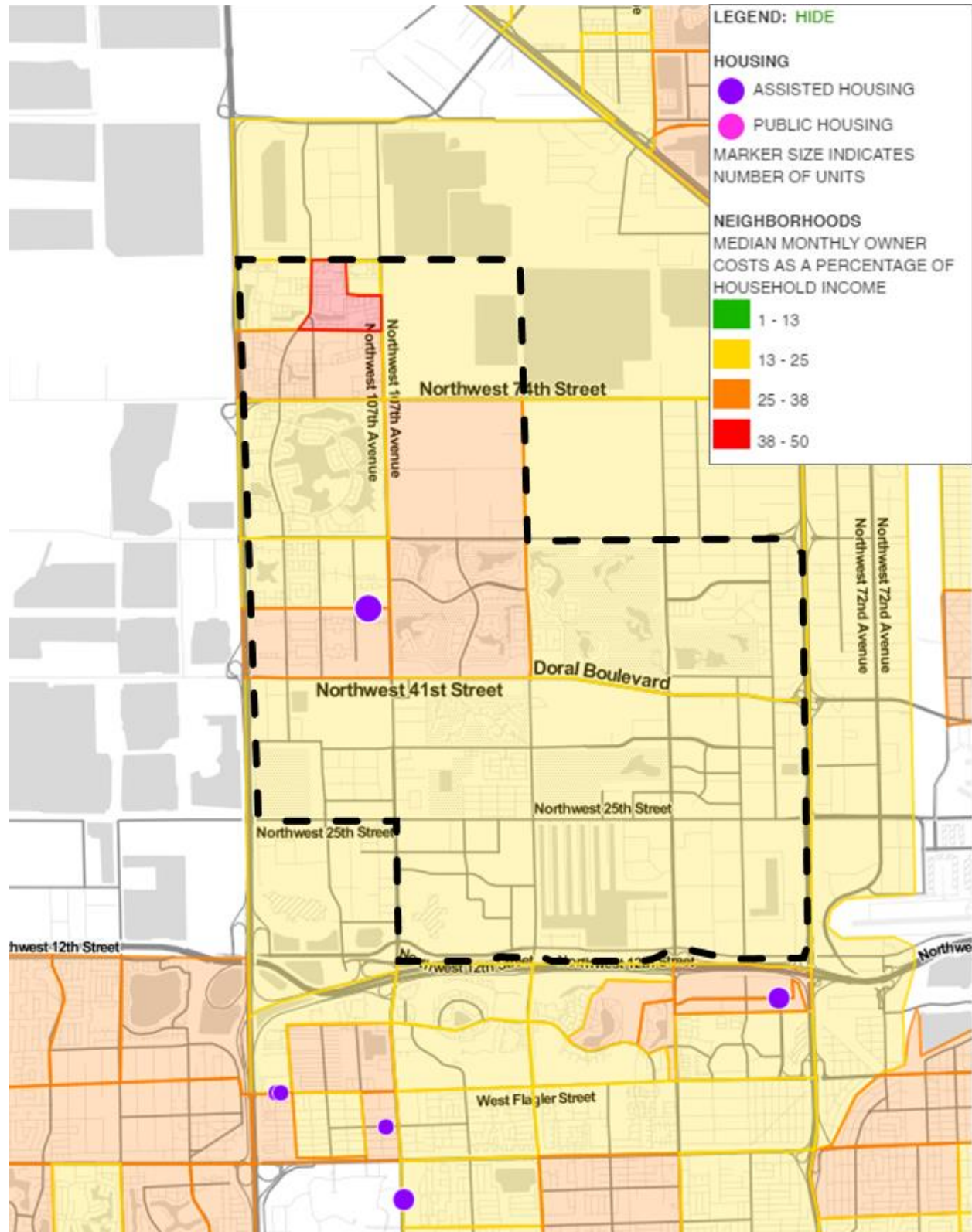


Figure 107: Median Monthly Owner Costs as a Percentage of Household Income



Figure 108: Median Monthly Renter Housing Costs as a Percentage of Household Income

ISSUES AND OPPORTUNITIES

Throughout the existing conditions review many issues and opportunities came to light provided the multiple changes occurring around Doral; the operations, maintenance, and organization of the DTS; and the City's sociocultural characteristics. This concluding section summarizes the main challenges and areas of improvement for the DTS – therefore ending the review of existing conditions. Following this report, the study team will focus on developing infrastructure guidelines and alternative scenarios that will correct the identified issues and exploit the recognized opportunities to make the DTS efficient and convenient.

ISSUES

Operations

Issues observed with the existing trolley operations are mostly related to existing routing. All four routes provided are circuitous/long and have one-way operations. This means travelers sometimes need to travel through the entire route to reach a destination that was several miles in the other direction of the trolley route. In addition, the mobile trolley tracker application is counterintuitive to use and sometimes inaccurate. This leads to poor trip planning and inconvenience for trolley users. Moreover, the application is not synched with Miami-Dade DTPW's Metrorail and Metrobus tracking applications, making trip planning even more of a hassle. Lastly, the street grid within the City is disjointed and has few north-south and east-west arterials. This leads to congestion on major roadways and delays. Hence, long routes are at risk of delays, which is especially worrisome during peak periods. Lastly, trolley capacity is often exceeded when school dismissal occurs. This can be solved with increased headways, increased frequencies, or specialized routing to tackle demand at key locations and during key periods of any given day.

Vehicles

The old-timey trolley vehicle look may be adorable, but it surely is not comfortable. Wooden benches within the vehicles are hard on passengers riding the trolley for long to medium trips. Air conditioning units within the vehicles were also observed to condense water droplets that fall on passengers. These factors add up to more justifications for not using the trolley.

Trolley vehicles also have a steep step to board. This puts elderly and other populations at risk of falling or tripping. This characteristic, plus poor interior lighting, creates unwanted risk against safety and security in the trolleys. In addition, annunciators are usually disabled or not operational. This amounts to ADA concerns for visually and hearing-impaired riders that need to be informed of next stops and important locations to properly orient themselves.

Infrastructure

Bus stops were observed to be in new conditions, however, they can be slightly improved. Stops with only lollipop signs and benches did not display route maps and schedules and did not have trash cans. Stops with shelters generally had trash cans but were missing bicycle parking and amenities. All stops had poor lighting and usually depend on adjacent developments or roadway lighting. Without proper lighting, safety and security become a concern for passengers. Trolley drivers also have a hard time identifying waiting customers during dark conditions.

Sociocultural Characteristics

The City of Doral is fortunate since most of its residents are not transit-reliant and have high incomes as compared to the County and the nation. This however, creates a challenging environment for transit. Incentivizing residents to use the trolley means transit trips need to be more convenient than car trips and serve secondary destinations such as restaurants, leisure centers, and malls. Today, however, a lot of the existing users are transit-reliant and come into the City to work. Commuters transferring from Metrorail and Metrobus, as well as students moving around the City, have different demands than residents.

Mobility wise, the City also has poor first/last mile connections. Walking and cycling trips are rare within Doral and will likely stay this way until a comprehensive network of bicycle facilities and wide sidewalks is complete. While opposition to this idea may exist, walking and bicycling around major transit stops should be prioritized in order to increase safety and convenience of using the trolley.

OPPORTUNITIES

Operations

Improvements to existing routes can take the shape of shorter routes with two-way service. This allows the DTS to service high demand corridors really well and grow its ridership. With growing ridership, demand pressures will lead to new routes that may expand coverage and better serve all residents. This strategy also leads to a focalized infrastructure plan where bus lanes, queue jumps, and Transit Signal Priorities can be implemented on select arterials. This will further encourage users to use the trolley and improve reliability. Lastly, integration of tracking applications is key to providing customer service. Not only does the trolley tracker need to synch with DTPW services, but also other trolleys on the peripheries of the City.

Vehicles

Trolley vehicles can be upgrade to a more modern design to attract more riders. This change can also lead to increase customer service through innovative designs that make boarding and alighting easy, safe, and convenient for users of all ages and abilities. Vehicles should also strictly conform to ADA guidelines. Furthermore, the City can explore vehicle automation and launch pilot projects to energize transit discussions and innovate as a Smart City.

Lastly, cobranding opportunities exists. With refined routes and discussions with major employers and organizations, the DTS can be easily associated with great brands that lead to easy destination recognition and increased customer awareness. A great example of a cobranding opportunity is Route 4 and FIU.a

APPENDIX B

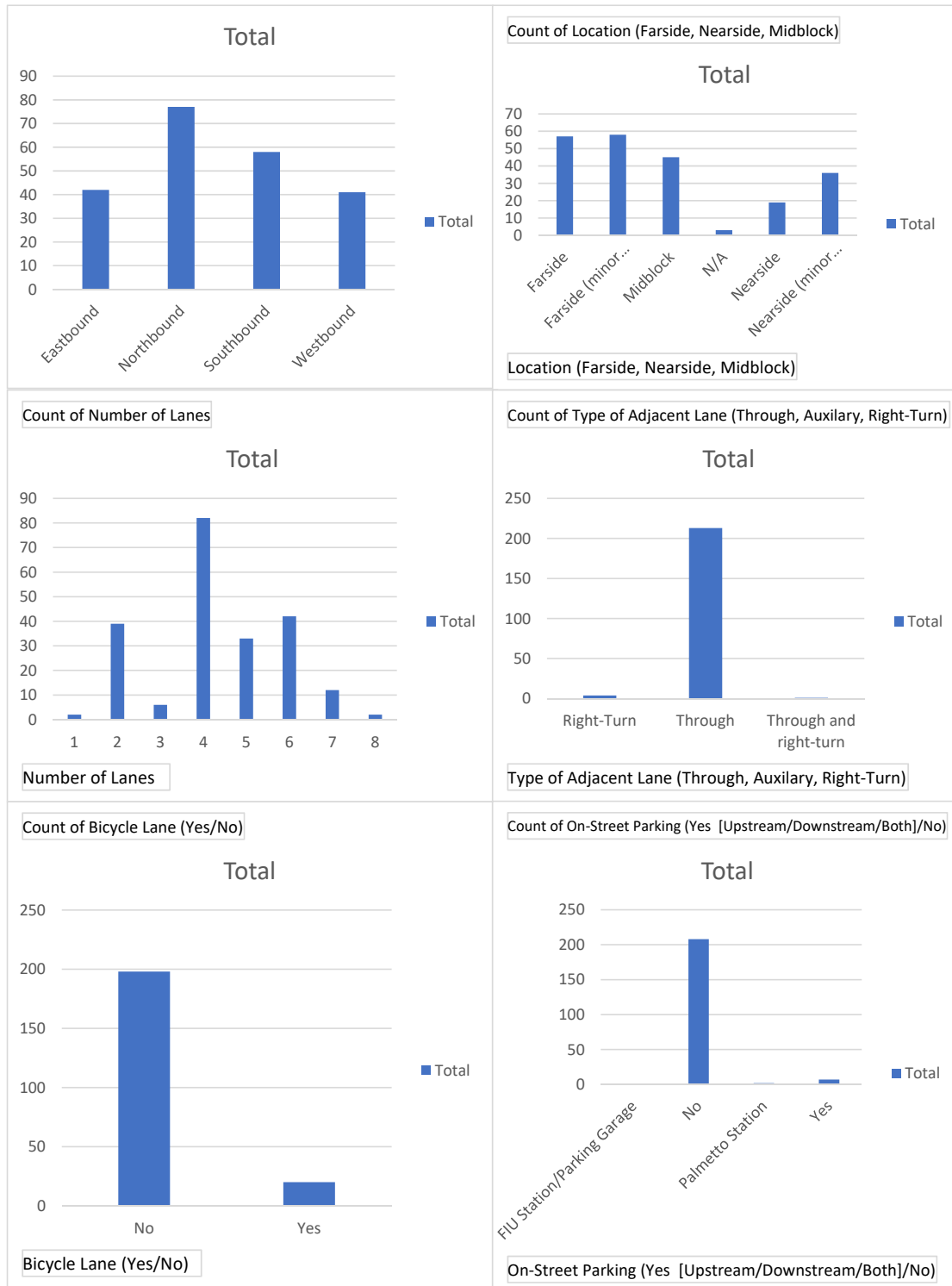
Doral Existing Bus Stop Inventory

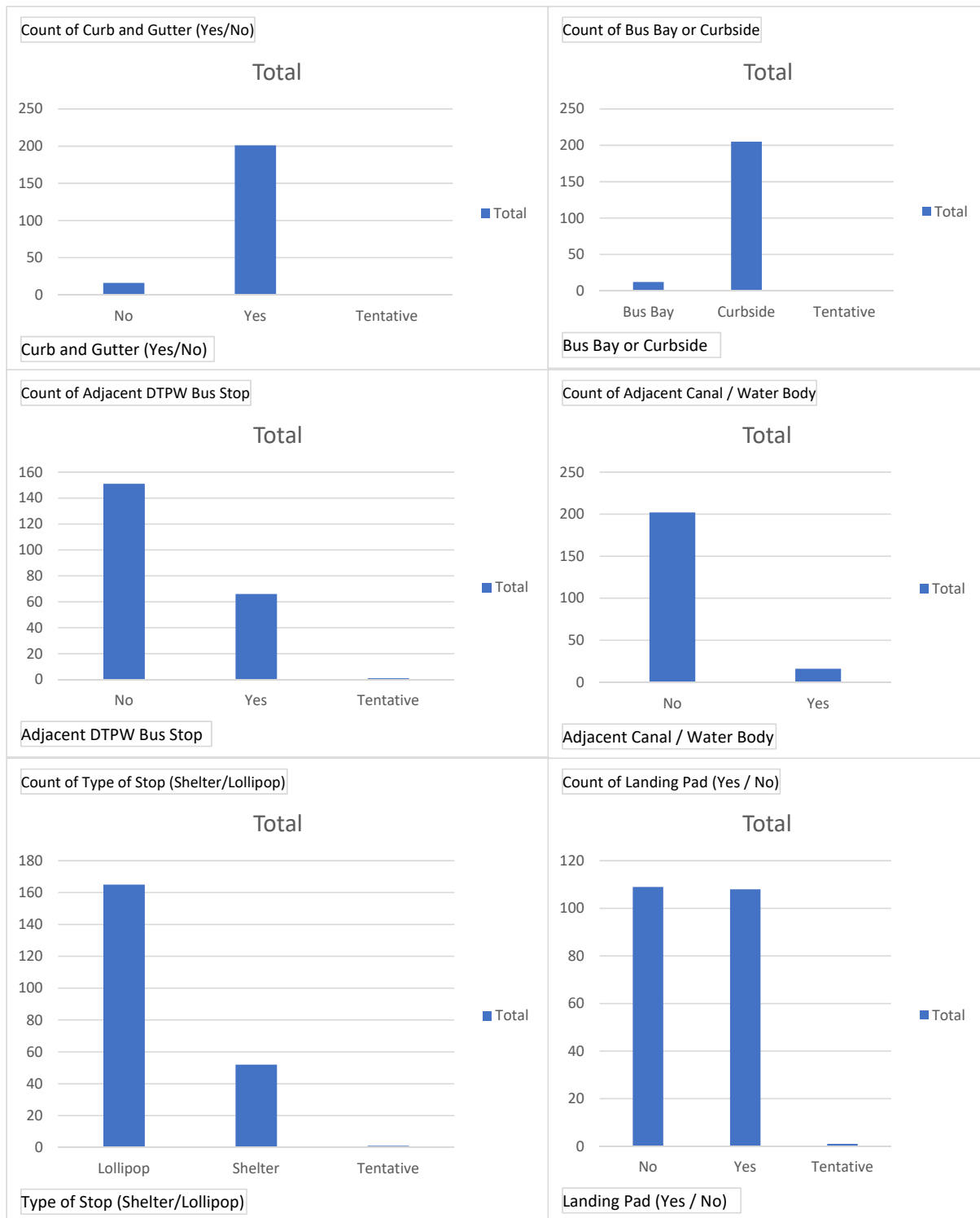
City of Doral

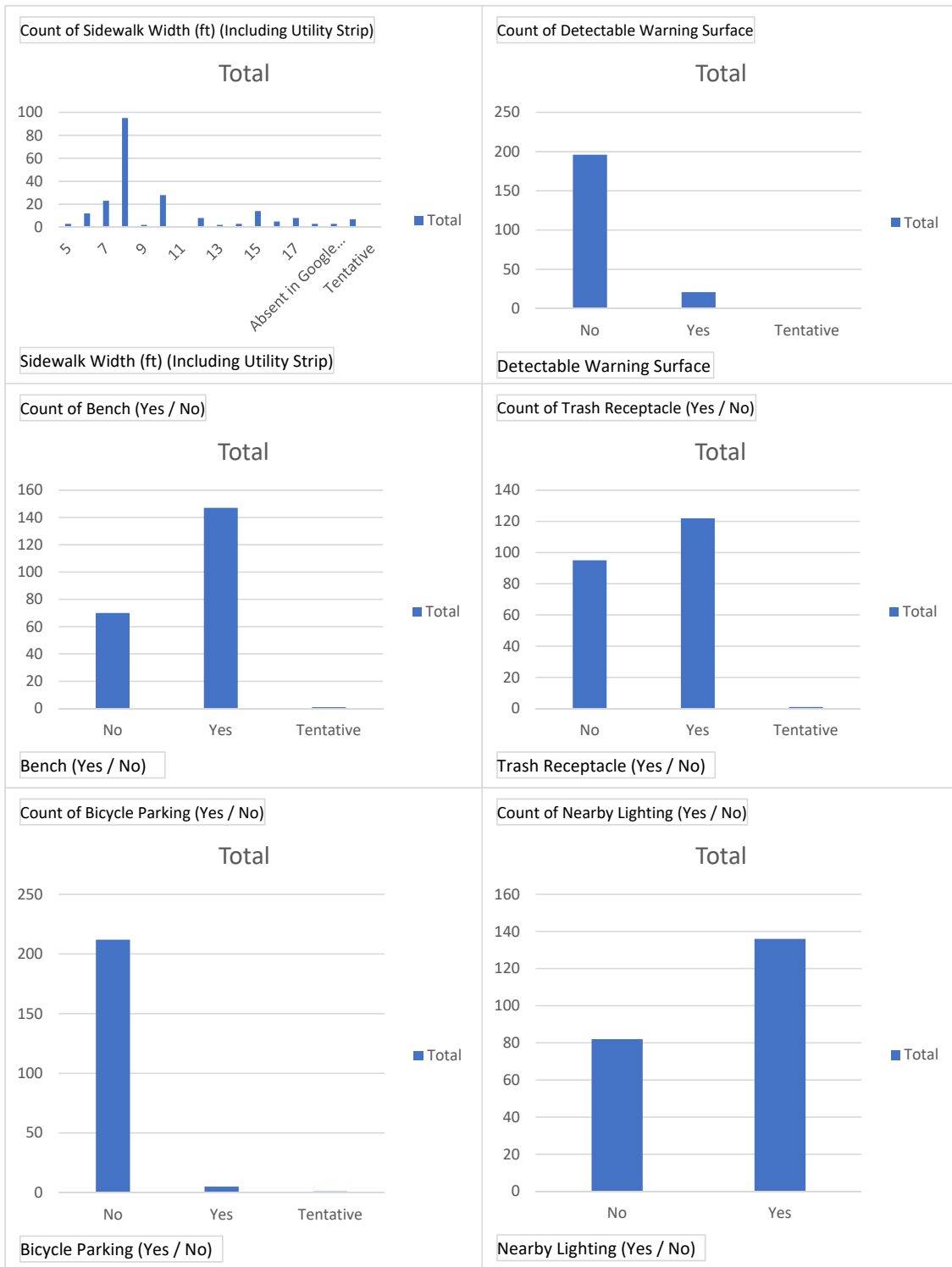
Existing Bus Stop Inventory

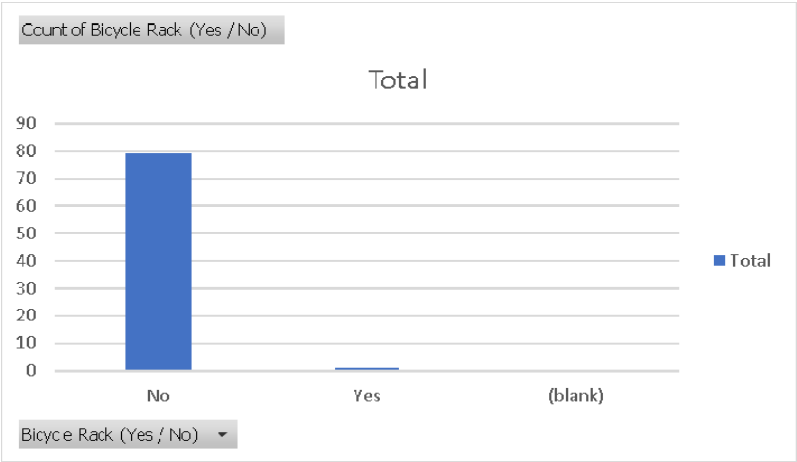
Bus Stop ID	Direction (Northbound, Southbound, etc.)	Route/way	Location (Farside, Nearside, Midblock)	Number of Lanes	Type of Adjacent Lane (Through, Auxiliary, Right-Turn)	Bicycle Lane (Yes/No)	On-Street Parking (Yes, Disabled/Downstream/Both/No)	Curb and Curb (Yes/No)	Bus Bay or Outside	Adjacent DTPW Bus Stop	Adjacent Canal / Water Body	Type of Stop (Shelter, Lifeline)	Landing Pad (Yes / No)	Steepest Width (ft) (Including Utility Strip)	Detectable Warning Surface	Benches (Yes / No)	Trash Recycle (Yes / No)	Bicycle Parking (Yes / No)	Neatly Lighting (Yes / No)
3000	Eastbound	NW 77 St at Palmetto Memorial Station	N/A	1	Through	No	Palmetto Station	Yes	Bus Bay	Yes	No	Shelter	Yes	Absent in Google Earth	No	Yes	Yes	Yes	Yes
3001	Westbound	NW 74 St East of NW 97 Ave	Farside (minor intersection)	7	Through	Yes	No	Yes	Outside	No	No	Lifeline	Yes	10	No	No	No	Yes	
3002	Westbound	NW 74 St East of NW 102 Ave	Midblock	7	Through	Yes	No	Yes	Outside	No	No	Lifeline	Yes	10	No	No	No	Yes	
3004	Southbound	NW 102 Ave just south of NW 98 St	Farside	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	10	No	Yes	Yes	Yes	
3008	Southbound	NW 102 Ave just South of NW 98 St	Farside	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	Yes	No	Yes	
3010	Southbound	NW 102 Ave just South of NW 98 St	Farside	4	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	10	No	No	No	Yes	
3011	Southbound	NW 102 Ave just South of NW 98 St	Midblock	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	15	No	No	No	Yes	
3011	Southbound	NW 102 Ave just North of NW 102 Ct	Midblock	4	Through	Yes	No	No	Outside	No	No	Lifeline	Yes	15	No	Yes	No	Yes	
3013	Southbound	NW 102 Ave just South of NW 98 St	Midblock	5	Through	Yes	No	No	Outside	No	No	Lifeline	Yes	15	No	Yes	No	Yes	
3013	Westbound	NW 41 St West of NW 102 Ave	Farside	7	Through	Yes	No	Yes	Outside	Yes	Yes	Lifeline	Yes	7	No	No	No	Yes	
3014	Westbound	NW 41 St just East of NW 102 Ave	Farside	8	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	7	Yes	Yes	Yes	Yes	
3015	Westbound	NW 41 St just East of NW 107 Ave	Nearside	8	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	7	No	Yes	Yes	Yes	
3016	Westbound	NW 41 St just West of NW 107 Ave	Midblock	7	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	7	No	Yes	No	Yes	
3017	Northbound	NW 114 Ave just North of NW 41 St	Farside	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	Yes	Yes	Yes	
3018	Northbound	NW 114 Ave just North of NW 44 St	Midblock	3	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	15	No	No	No	Yes	
3019	Northbound	NW 114 Ave just South of NW 48 Ter	Farside (minor intersection)	3	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	17	No	Yes	No	Yes	
3020	Northbound	NW 114 Ave just North of NW 51 Ter	Farside (minor intersection)	3	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	17	No	Yes	No	Yes	
3021	Northbound	NW 114 Ave just South of NW 55 Ter	Farside (minor intersection)	2	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	17	No	Yes	No	Yes	
3022	Northbound	NW 114 Ave just North of NW 58 St	Farside	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	10	No	Yes	No	Yes	
3023	Northbound	NW 114 Ave just North of NW 60 St	Farside (minor intersection)	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	10	No	Yes	No	Yes	
3024	Northbound	NW 114 Ave just North of NW 62 Ter	Midblock	4	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	10	No	Yes	No	Yes	
3025	Northbound	NW 114 Ave just North of NW 64 Ter	Midblock	4	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	Yes	No	Yes	
3026	Northbound	NW 114 Ave just North of NW 72 St	Farside (minor intersection)	4	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
3027	Northbound	NW 114 Ave just North of NW 74 St	Farside (minor intersection)	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
3028	Northbound	NW 114 Ave just North of NW 80 St	Midblock	4	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	Yes	No	Yes	
3029	Northbound	NW 114 Ave just North of NW 88 St	Farside (minor intersection)	4	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	Yes	No	Yes	
3031	Northbound	NW 114 Ave just South of NW 90 St	Farside (minor intersection)	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	10	No	Yes	No	Yes	
3032	Southbound	NW 108 Ave just South of NW 90 St	Farside (minor intersection)	4	Through	No	Yes	Yes	Outside	No	No	Lifeline	Yes	10	No	No	No	Yes	
3033	Southbound	NW 108 Ave just East of NW 107 Ave	Farside (minor intersection)	2	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	10	No	No	No	Yes	
3034	Eastbound	NW 98 St Just West of NW 107 Ave	Nearside (minor intersection)	2	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	15	No	No	No	Yes	
3035	Southbound	SW 107 Ave Just North of NW 80 St	Midblock	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
3036	Southbound	SW 107 Ave Just North of NW 80 St	Midblock	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
3037	Southbound	SW 107 Ave Just North of NW 80 St	Midblock	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
3038	Southbound	SW 107 Ave Just North of NW 75 Ln	Midblock	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
3040	Eastbound	NW 74 St East of NW 102 Ave	Farside	7	Through	Yes	No	Yes	Outside	No	No	Lifeline	Yes	12	No	No	No	Yes	
3041	Eastbound	NW 74 St East of NW 97 Ave	Farside	7	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	12	No	No	No	Yes	
4000	Eastbound	SW 8 St at FIU East of University Dr	N/A	4	Through	Yes	FIU Station/Parking Garage	Yes	Bus Bay	No	No	Shelter	Yes	8	No	Yes	Yes	Yes	
4001	Northbound	SW University Dr South of SW 7 St	Nearside (minor intersection)	3	Through	No	Yes	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
4002	Northbound	SW 107 Ave Just North of W Flagler St	Farside (minor intersection)	7	Through	No	Yes	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4003	Northbound	SW 107 Ave Just North of NW 15 St	Farside	6	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4004	Northbound	SW 107 Ave Just North of NW 14 St	Farside	6	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	Yes	No	Yes	
4005	Northbound	SW 107 Ave Just North of NW 16 St	Nearside (minor intersection)	6	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	Yes	No	Yes	
4006	Northbound	SW 107 Ave Just North of NW 17 St	Farside	6	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	7	No	Yes	No	Yes	
4007	Northbound	SW 107 Ave Just North of NW 18 St	Farside	6	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	7	No	Yes	No	Yes	
4008	Northbound	SW 107 Ave Just North of NW 21 St	Farside (minor intersection)	7	Through	No	Yes	Yes	Outside	No	Yes	Lifeline	Yes	7	No	Yes	No	Yes	
4009	Northbound	SW 107 Ave Just North of NW 24 St	Farside	6	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	Yes	No	Yes	
4010	Northbound	SW 107 Ave Just North of NW 27 St	Farside	5	Through	No	No	Yes	Outside	Yes	Yes	Lifeline	Yes	8	No	Yes	No	Yes	
4011	Northbound	SW 107 Ave Just South of NW 31 Ter	Nearside (minor intersection)	5	Through	Yes	Yes	Yes	Outside	Yes	Yes	Lifeline	Yes	8	No	Yes	No	Yes	
4012	Northbound	SW 107 Ave Just South of NW 35 St	Nearside (minor intersection)	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	Yes	No	Yes	
4013	Northbound	SW 107 Ave Just South of NW 41 St	Nearside (minor intersection)	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4014	Northbound	SW 107 Ave Just North of NW 41 St	Farside	4	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4015	Northbound	SW 107 Ave Just South of NW 48 Ln	Midblock	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4016	Northbound	SW 107 Ave Just South of NW 51 St	Midblock	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4017	Northbound	SW 107 Ave Just South of NW 58 St	Midblock	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4018	Northbound	SW 107 Ave Just North of NW 60 St	Farside	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4019	Northbound	SW 107 Ave Just South of NW 64 St	Nearside (minor intersection)	6	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4020	Northbound	SW 107 Ave Just South of NW 74 St	Midblock	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4021	Northbound	SW 107 Ave Just South of NW 74 St	Midblock	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4022	Northbound	SW 107 Ave Just North of NW 74 St	Midblock	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4023	Northbound	SW 107 Ave Just North of NW 75 Lane	Midblock	4	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4024	Northbound	SW 107 Ave Just North of NW 82 St	Nearside (minor intersection)	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4025	Northbound	SW 107 Ave Just North of NW 84 Ct	Midblock	5	Through	No	Yes	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
4026	Northbound	NW 102 Ave East of NW 88 St	Farside (minor intersection)	6	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
4027	Westbound	NW 90 St East of NW 107 Av	Midblock	2	Through	No	No	Yes	Outside	Yes	Yes	Lifeline	Yes	8	No	No	No	Yes	
4028	Southbound	NW 102 Ave East of NW 102 Ave	Nearside (minor intersection)	5	Through	No	Yes	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
4032	Southbound	NW 102 Ave East of NW 98 St	Nearside (minor intersection)	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
4033	Southbound	SW 107 Ave Just South of NW 58 St	Midblock	5	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	No	No	Yes	
4034	Southbound	SW 107 Ave Just South of NW 51 Way	Farside (minor intersection)	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
4040	Southbound	SW 107 Ave Just South of NW 48 Ln	Midblock	5	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
4041	Southbound	SW 107 Ave Just North of NW 41 St	Nearside	5	Through	No	No	Yes	Outside	Yes	Yes	Lifeline	Yes	10	No	Yes	No	Yes	
4042	Southbound	SW 107 Ave Just South of NW 51 St	Midblock	5	Through	No	No	Yes	Outside	Yes	Yes	Lifeline	Yes	8	No	Yes	No	Yes	
4043	Southbound	SW 107 Ave Just South of NW 51 Ter	Midblock	5	Through	No	No	Yes	Outside	Yes	Yes	Lifeline	Yes	8	No	Yes	No	Yes	
4044	Southbound	SW 107 Ave Just North of NW 27 St	Nearside	6	Through	No	Yes	Yes	Outside	Yes	Yes	Lifeline	Yes	8	No	Yes	Yes	Yes	
4045	Southbound	SW 107 Ave Just South of NW 24 St	Farside (minor intersection)	7	Through	No	No	Yes	Outside	Yes	Yes	Lifeline	Yes	8	No	Yes	No	Yes	
4046	Southbound	SW 107 Ave Just South of NW 15 St	Farside	6	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	Yes	No	Yes	
4047	Southbound	SW 107 Ave Just North of NW 16 St	Nearside (minor intersection)	6	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	8	No	Yes	No	Yes	
4048	Southbound	SW 107 Ave Just North of NW 16 St	Farside	6	Through	No	Yes	Yes	Outside	Yes	No	Lifeline	Yes	8	No	Yes	No	Yes	
4049	Southbound	SW 107 Ave Just North of W Flagler St	Midblock	7	Through	No	No	Yes	Outside	Yes	No	Lifeline	Yes	7	No	Yes	No	Yes	
5007 / 4037	Southbound	SW 107 Ave Just South of NW 66 St	Farside	4	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	Yes	No	Yes	
5006 / 4038	Southbound	SW 107 Ave Just North of NW 60 St	Nearside	4	Through	No	No	Yes	Outside	No	No	Lifeline	Yes	8	No	Yes	No	Yes	
4039 / 5003	Westbound	NW 74 St West of NW 102 Ave	Farside	7	Through	Yes	No	Yes	Outside	No	No	Lifeline	Yes	10	No	No	No	Yes	
5002 / Terawala	Southbound	SW University Dr South of SW 7 St	Nearside (minor intersection)	3	Through	No	Yes	Yes	Outside	No	No	Lifeline	Yes	8	No	No	No	Yes	
9078	Westbound	NW 17 St/Dolphin Mall/Peñonero Rd	Midblock	2	Through	No	Yes	Yes	Bus Bay	Yes	Yes	Shelter	Yes	14	No	Yes	Yes	Yes	
1007	Northbound	NW 107 Ave	Farside	6	Through	No	No	Yes	Outside	Yes	No	Shelter	Yes	8	No	Yes	No	Yes	
1018	Northbound	NW 107 Ave	Midblock	6	Through	No	No	Yes	Outside	Yes	No	Shelter	Yes	8	No	Yes	No	Yes	
1008	Northbound	NW 107 Ave	Farside	6	Through	No	No	Yes	Outside	No	No	Lifeline	No	8	No	Yes	No	Yes	
1009	Northbound	NW 107 Ave	Farside	6	Through	No	No	Yes	Outside	No	No	Lifeline	No	8	No	Yes	No	Yes	
1010	Northbound	NW 112 Ave	Midblock	2	Through	No	No	Yes	Outside	No	No	Lifeline	No	8	No	Yes	No	Yes	
1011	Eastbound	NW 27 St	Farside (minor intersection)	2	Through	No	Yes	Yes	Outside	No	Yes	Shelter	Yes	17	No	Yes	No	Yes	
1012	Northbound	NW 107 Ave	Farside	4	Through	No	No	Yes	Outside	Yes	No	Lifeline	No	6	No	Yes	No	Yes	
1013	Northbound	NW 107 Ave	Nearside (minor intersection)	4	Through	No	No	Yes	Outside	Yes	No	Lifeline	No	11	No	Yes	No	Yes	
1014	Eastbound																		

1065	Eastbound	NW 36 St	Farside (minor intersection)	6	Through	No	No	No	Yes	Outside	Yes	No	No	Shelter	Yes	10	No	Yes	Yes	No	Yes
1069	Eastbound	NW 36 St	Nearside (minor intersection)	6	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	6	No	No	Yes	No	Yes
1070	Southbound	NW 67 Ave	Farside (minor intersection)	6	Through	No	No	No	Yes	Outside	Yes	No	No	Shelter	No	10	No	Yes	Yes	No	No
1071	Westbound	NW 67 Ave	Farside	6	Through	No	No	No	Yes	Outside	No	No	No	Shelter	No	10	No	Yes	Yes	No	No
1072	Southbound	NW 67 Ave	Nearside (minor intersection)	6	Through	No	No	No	Yes	Outside	No	Yes	No	Shelter	No	10	No	Yes	No	Yes	No
1073	Southbound	NW 67 Ave	Nearside	6	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	8	No	Yes	Yes	No	No
1074	Southbound	NW 67 Ave	Nearside	6	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	8	No	Yes	Yes	No	No
1075	Southbound	NW 12 St	Farside	4	Through	No	No	No	Yes	Outside	No	No	No	Shelter	Yes	8	No	Yes	Yes	No	No
1076	Southbound	NW 84 Ave	Midblock	4	Through	No	No	No	Yes	Outside	No	No	No	Shelter	No	8	No	Yes	Yes	No	Yes
1077	Southbound	NW 84 Ave	Nearside (minor intersection)	4	Right Turn	No	No	No	Yes	Outside	No	No	No	Shelter	Yes	8	No	Yes	Yes	No	Yes
1081	Westbound	NW 12 St	Nearside	6	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	8	No	Yes	No	Yes	No
1082	Westbound	NW 12 St	Nearside	4	Through	No	No	No	No	Outside	No	No	No	Lollipop	Yes	12	No	Yes	No	No	No
1083	Westbound	NW 12 St	Nearside	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	8	No	Yes	No	No	Yes
1084	Westbound	NW 12 St	Nearside	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	7	No	Yes	No	No	No
1085	Westbound	NW 12 St	Nearside	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	7	No	Yes	Yes	No	Yes
1086	Northbound	NW 107 Ave	Nearside	6	Through	No	No	No	Yes	Outside	Yes	No	No	Shelter	No	8	No	Yes	Yes	No	Yes
1091	Westbound	NW 77 St at Palmetto Metrolink Station	N/A	1	Through	No	No	No	Palmetto Station	Yes	Bus Bay	Yes	No	Shelter	Yes	7	Absent in Google Earth	No	Yes	Yes	Yes
1092	Southbound	NW 67 Ave	Farside	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	7	No	Yes	No	No	No
1093	Eastbound	NW 53 St	Farside (minor intersection)	2	Through	No	Yes	Yes	Outside	No	Yes	No	No	Lollipop	Yes	12	No	Yes	Yes	Yes	Yes
1094	Eastbound	NW 53 St	Nearside (minor intersection)	2	Through	No	No	No	Yes	Bus Bay	Yes	No	No	Lollipop	No	16	No	No	No	No	Yes
1095	Eastbound	NW 53 St	Farside (minor intersection)	2	Through	No	No	No	Yes	Bus Bay	Yes	No	No	Lollipop	No	16	No	No	No	No	Yes
1096	Eastbound	NW 53 St	Farside (minor intersection)	2	Through	Yes	Yes	Yes	Bus Bay	Yes	No	No	No	Lollipop	No	8	No	Yes	Yes	Yes	Yes
1097	Southbound	NW 79 Ave	Farside (minor intersection)	4	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	8	No	Yes	Yes	No	No
1098	Southbound	NW 79 Ave	Nearside	4	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	8	No	Yes	Yes	No	No
1099	Southbound	NW 79 Ave	Farside (minor intersection)	4	Through	No	No	No	Yes	Outside	No	Yes	No	Lollipop	No	8	No	Yes	No	No	No
1100	Southbound	NW 79 Ave	Nearside	4	Through	No	No	No	Yes	Outside	Yes	No	No	Shelter	No	10	No	Yes	Yes	No	No
1101	Southbound	NW 79 Ave	Nearside	6	Through and right turn	No	No	No	Yes	Outside	No	No	No	Lollipop	Yes	10	No	Yes	Yes	No	Yes
1112	Southbound	NW 79 Ave	Farside (minor intersection)	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	8	No	Yes	No	No	No
1113	Westbound	NW 33 St	Farside (minor intersection)	2	Through	No	Yes	No	No	Outside	No	No	No	Lollipop	No	No	No	No	No	No	No
1114	Westbound	NW 33 St	Farside	4	Through	No	No	No	Yes	Outside	No	Yes	No	Lollipop	No	8	No	No	No	No	No
1115	Westbound	NW 33 St	Nearside (minor intersection)	4	Through	No	No	No	Yes	Bus Bay	No	No	No	Lollipop	No	7	No	No	No	No	No
1116	Westbound	NW 33 St	Nearside (minor intersection)	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	7	No	Yes	No	No	No
1117	Westbound	NW 33 St	Farside	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	8	No	Yes	No	No	No
1118	Westbound	NW 33 St	Farside (minor intersection)	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	9	No	Yes	No	No	No
1119	Westbound	NW 33 St	Farside	4	Through	No	No	No	Yes	Bus Bay	No	No	No	Lollipop	No	7	No	Yes	Yes	No	No
1120	Westbound	NW 33 St	Nearside	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	7	No	No	No	No	No
1121	Westbound	NW 33 St	Nearside (minor intersection)	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	No	Sidewalk	Yes	No	No	No
1122	Westbound	NW 33 St	Farside (minor intersection)	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	7	No	No	No	No	No
1123	Westbound	NW 33 St	Farside (minor intersection)	2	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	8	No	Yes	No	No	No
1124	Westbound	NW 33 St	Midblock	2	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	6	Yes	Yes	Yes	No	No
1125	Westbound	NW 33 St	Farside (minor intersection)	2	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	8	Yes	Yes	No	No	No
1126	Westbound	NW 33 St	Nearside (minor intersection)	2	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	No	Sidewalk	No	No	No	No
1127	Northbound	NW 115 Ave	Farside (minor intersection)	2	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	8	No	Yes	No	No	No
1128	Northbound	NW 115 Ave	Midblock	2	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	No	Sidewalk	No	No	No	No
1129	Eastbound	NW 41 St	Farside	6	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	8	No	Yes	No	Yes	Yes
1130	Eastbound	NW 41 St	Midblock	6	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	7	No	Yes	No	No	No
1131	Eastbound	NW 41 St	Farside	6	Through	No	No	No	Yes	Outside	Yes	No	No	Shelter	No	7	No	Yes	No	No	Yes
1132	Eastbound	NW 41 St	Farside	6	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	5	No	Yes	Yes	No	Yes
1133	Eastbound	NW 41 St	Farside	6	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	7	No	Yes	Yes	No	Yes
1134	Eastbound	NW 41 St	Nearside	6	Through	No	No	No	Yes	Outside	Yes	No	No	Shelter	No	8	No	Yes	Yes	No	Yes
1135	Eastbound	NW 41 St	Farside	6	Through	No	No	No	Yes	Outside	Yes	No	No	Shelter	No	8	No	Yes	Yes	No	Yes
1136	Eastbound	NW 41 St	Nearside	6	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	7	No	Yes	Yes	No	Yes
1137	Eastbound	NW 36 St	Midblock	6	Through	No	No	No	Yes	Outside	No	Yes	No	Lollipop	No	8	No	No	No	No	Yes
1147	Eastbound	NW 36 St	Farside (minor intersection)	6	Through	No	No	No	Yes	Outside	Yes	No	No	Shelter	Yes	10	No	Yes	Yes	No	Yes
1148	Eastbound	NW 36 St	Nearside (minor intersection)	6	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	5	No	No	No	No	Yes
1149	Eastbound	NW 36 St	Farside	6	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	Yes	7	No	Yes	Yes	No	Yes
1150	Eastbound	NW 36 St	Nearside	6	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	7	No	Yes	No	No	No
1152	Northbound	NW 62 Ave	Farside	2	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	No	Sidewalk	No	No	No	No
1153	Eastbound	NW 41 St	Midblock	2	Through	No	No	No	Yes	Outside	No	No	Yes	Lollipop	No	No	Sidewalk	No	No	No	No
1154	Northbound	NW 79 Ave	Farside	4	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	8	No	Yes	Yes	No	No
1155	Northbound	NW 79 Ave	Midblock	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	8	No	Yes	No	No	No
1156	Northbound	NW 79 Ave	Farside	4	Through	No	No	No	Yes	Outside	Yes	No	No	Lollipop	No	7	No	No	No	No	No
1157	Northbound	NW 79 Ave	Nearside (minor intersection)	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	7	No	Yes	Yes	No	No
1158	Westbound	NW 53 St	Farside (minor intersection)	2	Through	Yes	Yes	Yes	Bus Bay	No	No	No	No	Lollipop	No	16	No	No	No	Yes	Yes
1159	Westbound	NW 53 St	Nearside (minor intersection)	2	Through	Yes	Yes	Yes	Bus Bay	Yes	No	No	No	Lollipop	No	15	No	No	No	No	No
1160	Westbound	NW 53 St	Nearside (minor intersection)	2	Through	No	Yes	Yes	Bus Bay	Yes	No	No	No	Lollipop	No	16	No	Yes	Yes	No	No
1161	Westbound	NW 53 St	Nearside	4	Right Turn	No	No	No	Yes	Outside	No	No	No	Lollipop	No	14	No	Yes	Yes	No	Yes
1162	Northbound	NW 67 Ave	Farside	4	Through	No	No	No	Yes	Outside	No	No	No	Lollipop	No	10	No	No	No	No	No









APPENDIX C

Metrobus System Map



METROBUS SYSTEM

MAY 2019

METROBUS ROUTES

- Limited-Stop Service
- Express Service
- Non-stop Service
- East-West Local-Stop Service
- North-South Local-Stop Service
- Local Shuttle or Circulator Service

METROBUS DESTINATIONS

- Service Endpoint - Single Route Type
- Service Endpoints - Multiple Route Types
- Terminal
- Park and Ride Lot
- South Dade TransitWay Station
- MetroRail & Station - Routes Serving Station
- Tri-Rail
- Brightline

THIS IS A GENERAL REFERENCE MAP. CONSULT INDIVIDUAL ROUTE MAPS FOR DETAILS.

BROWARD COUNTY



FLORIDA KEYS



DOWNTOWN MIAMI



Connects with MetroRail Serves Park & Ride Lot Overnight Service Serves Miami International Airport Connects with Tri-Rail Connects with Brightline

- 1 Perrine ↔ Quail Roost Dr/SW 117 Ave
- 2 163 St Mall, 84 St ↔ Downtown Miami
- 3 Aventura Mall ↔ Downtown Miami
- 7 Dolphin Mall, Miami Intl Airport ↔ Downtown Miami
- 8 FIU Maidique Campus ↔ Brickell Metrorail
- 9 Aventura, 163 St Mall ↔ Downtown Miami
- 10 Skylake Mall ↔ Omni Metrobus Terminal
- 11 FIU Maidique Campus, Mall of the Americas ↔ Downtown Miami
- 12 Northside Metrorail ↔ Mercy Hospital
- 16 163 St Mall ↔ Omni Metrobus Terminal
- 17 Norwood ↔ Vizzaya Metrorail
- 19 (WEEKDAYS ONLY) MDC North Campus ↔ 163 St Mall
- 21 Northside Metrorail ↔ Downtown Miami
- 22 163 St Mall ↔ Coconut Grove Metrorail
- 24 CORAL WAY LIMITED - West Dade ↔ Brickell Metrorail
- 27 Miami Gardens ↔ Coconut Grove Metrorail
- 29 (WEEKDAYS ONLY) Miami Lakes Education Center ↔ Hialeah
- 31 BUSWAY LOCAL - South Dade Government Center ↔ Dadeland South Metrorail
- 32 Carol City ↔ Omni Metrobus Terminal
- 33 Hialeah ↔ NE 79 St/Biscayne Blvd
- 34 EXPRESS (WEEKDAY RUSH-HOUR ONLY) Florida City ↔ Dadeland South Metrorail
- 35 MDC Kendall Campus ↔ Florida City
- 36 Dolphin Mall, Doral, Miami Springs ↔ Midtown Miami
- 37 Hialeah ↔ South Miami Metrorail
- 38 BUSWAY MAX Dadeland South Metrorail ↔ Florida City
- 39 EXPRESS (WEEKDAY RUSH-HOUR ONLY) Dade Govt Ctr ↔ Dadeland South Metrorail
- 40 Lakes of the Meadow, Tamiami Trail/SW 132 Ave ↔ Douglas Road Metrorail
- 42 Opa-locka Tri-Rail ↔ Douglas Road Metrorail
- 46 LIBERTY CITY CONNECTION (WEEKDAY RUSH-HOUR ONLY) Brownsville Metrorail ↔ Seventh Avenue Transit Village
- 51 FLAGLER MAX (WEEKDAYS ONLY) West Dade ↔ Downtown Miami
- 52 Dadeland South Metrorail ↔ South Dade Health Center
- 54 Miami Gardens Dr/NW 87 Ave, Hialeah Gardens ↔ Biscayne Blvd/NE 54 St
- 56 (WEEKDAYS ONLY) West Dade ↔ Miami Children's Hospital
- 57 (WEEKDAYS ONLY) Miami Intl Airport ↔ Jackson South Hospital
- 62 Hialeah ↔ Biscayne Blvd / 62 St
- 71 Dolphin Mall ↔ MDC Kendall Campus
- 72 West Kendall Terminal, Miller Square ↔ South Miami Metrorail
- 73 Miami Gardens Dr & NW 73 Ave Park & Ride ↔ Dadeland South Metrorail
- 75 Miami Lakes Educational Center ↔ FIU Biscayne Bay Campus
- 77 Norwood ↔ Downtown Miami
- 79 79 STREET MAX (WEEKDAY RUSH-HOUR ONLY) Northside Metrorail ↔ 72 St / Miami Beach
- 82 WESTCHESTER CIRCULATOR (NO SUNDAYS) FIU Maidique Campus ↔ Flagami
- 87 Palmetto Metrorail, Doral ↔ Dadeland North Metrorail
- 88 Dadeland North Metrorail ↔ West Kendall Terminal
- 93 BISCAYNE MAX (WEEKDAYS ONLY) Downtown Miami ↔ Aventura Mall
- 95 EXPRESS GOLDEN GLADES (WEEKDAY RUSH-HOUR ONLY) Carol City, Aventura Mall, Golden Glades ↔ Downtown Miami, Civic Center
- 95 EXPRESS DADE BROWARD (WEEKDAY RUSH-HOUR ONLY) ROUTE 195: Broward Blvd ↔ Downtown Miami
- ROUTE 196: Sheridan St ↔ Downtown Miami
- ROUTE 295: Broward Blvd ↔ Civic Center
- ROUTE 296: Sheridan St ↔ Civic Center

- 99 Miami Gardens Dr & NW 73 Ave Park & Ride ↔ Aventura Mall
- A ROUTE 101: Omni ↔ 20th Street & West Avenue / Miami Beach
- B ROUTE 102: Brickell Metrorail ↔ Key Biscayne
- C ROUTE 103: South Beach ↔ Mt. Sinai Medical Center
- 104 West Kendall Terminal ↔ Dadeland North Metrorail
- E ROUTE 105: Golden Glades ↔ Hallandale Beach
- G ROUTE 107: 94 St / Miami Beach ↔ MDC North Campus
- H ROUTE 108: 163 Street Mall ↔ Haulover Park
- J ROUTE 110: Miami Intl Airport ↔ 41 St / Miami Beach
- L ROUTE 112: Lincoln Rd ↔ Hialeah Metrorail
- M ROUTE 113: Civic Center ↔ Mt. Sinai Hospital
- 115 MID-NORTH BEACH CONNECTION - Collins Ave / 88 St ↔ Lincoln Rd
- S ROUTE 119: Downtown Miami ↔ Aventura Mall
- 120 BEACH MAX Downtown Miami ↔ Haulover Park, Aventura Mall
- 132 TRI-RAIL DORAL SHUTTLE (WEEKDAY RUSH-HOUR ONLY): Doral ↔ Hialeah Market Tri-Rail
- 135 Hialeah Metrorail, Miami Lakes ↔ FIU Biscayne Bay Campus
- 136 (WEEKDAY RUSH-HOUR ONLY) SW 136 St / US1 ↔ Douglas Road Metrorail
- 137 WEST DADE CONNECTION Dolphin Mall ↔ South Dade Gov Center
- 150 MIAMI BEACH AIRPORT EXPRESS Miami Intl Airport ↔ South Beach
- 155 BISCAYNE GARDENS CIRCULATOR (WEEKDAYS ONLY)
- 183 Miami Gardens Dr & NW 73 Ave Park & Ride ↔ Aventura Mall
- 200 CUTLER BAY LOCAL
- 202 LITTLE HAITI CONNECTION Biscayne Shopping Plaza, NW 5 Ave / 83 St ↔ Miami Design District
- 204 KILLIAN KAT (WEEKDAY RUSH-HOUR ONLY) West Kendall Terminal ↔ Dadeland North Metrorail
- 207 LITTLE HAVANA CONNECTION (CLOCKWISE) Downtown Miami, Brickell ↔ SW 25 Ave via SW 1 St & SW 7 St
- 208 LITTLE HAVANA CONNECTION (COUNTERCLOCKWISE) Downtown Miami, Brickell ↔ SW 27 Ave via W Flagler St & S
- 210 SKYLAKES CIRCULATOR Skylake Mall ↔ 163 Street Mall
- 211 OVERTOWN CIRCULATOR (WEEKDAYS ONLY)
- 212 SWEETWATER CIRCULATOR (WEEKDAYS ONLY)
- 217 BUNCHE PARK CIRCULATOR (WEEKDAYS ONLY) NW 127 St / 22 Ave ↔ N Dade Health Center
- 238 EAST-WEST CONNECTION (WEEKDAYS ONLY) Dolphin Mall ↔ Miami Intl. Airport
- 246 NIGHT OWL Downtown Miami ↔ 163 St Mall
- 248 PRINCETON CIRCULATOR Southland Mall ↔ SW 264 St, Naranja (Weekdays Only)
- 252 CORAL REEF MAX Country Walk ↔ Dadeland South Metrorail, Zoo Miami (Weekends Only)
- 254 BROWNSVILLE CIRCULATOR (WEEKDAYS ONLY) Caleb Center ↔ Jefferson Reeves Park, Hialeah (Thursday only)
- 267 LUDLAM LIMITED (WEEKDAY RUSH-HOUR ONLY) NW 186 St/87 Ave ↔ Okeechobee Metrorail
- 272 SUNSET KAT (WEEKDAY RUSH-HOUR ONLY) West Kendall Terminal ↔ Dadeland North Metrorail
- 277 NW 7 AVENUE MAX (WEEKDAY RUSH-HOUR ONLY) Downtown Miami ↔ Golden Glades Park & Ride
- 286 NORTH POINTE CIRCULATOR (NO SUNDAYS) Miami Gardens Dr & NW 73 Ave Park & Ride ↔ NW 57 Ave/NW 176 St
- 287 SAGA BAY MAX (WEEKDAY RUSH-HOUR ONLY) S Dade Health Center ↔ Dadeland South Metrorail
- 288 KENDALL CRUISER (WEEKDAY RUSH-HOUR ONLY) West Kendall Terminal, SW 127 Ave Park & Ride ↔ Dadeland North Metrorail
- 297 27th AVE ORANGE MAX (WEEKDAYS ONLY) Miami Intl Airport ↔ Miami Gardens
- 301 DADE-MONROE EXPRESS Florida City ↔ Marathon Key
- 302 CARD SOUND EXPRESS Florida City ↔ Ocean Reef Club
- 338 WEEKEND EXPRESS (WEEKENDS ONLY) Miami Intl Airport ↔ Dolphin Mall
- 344 (WEEKDAYS ONLY) Florida City ↔ MDC Homestead Campus
- 500 MIDNIGHT OWL Dadeland South Metrorail ↔ Downtown Miami

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APPENDIX D

Limousines of South Florida Driver Questionnaire and Results

Limousines of South Florida (LSF)
CITY OF DORAL TROLLEY DRIVERS QUESTIONNAIRE

Driver Age: <19 20 – 29 30 – 39 40 – 49 50 – 59 60 – >69

Total Driver Experience: _____ (years)

Driver's Experience with the City of Doral: _____ (years)

Currently Assigned Route: _____

Currently Assigned Shift: _____

PERFORMANCE

1. How often are scheduled times met?
2. In your opinion, what is/are the biggest factor(s) affecting on-time performance?
3. At what time does the peak period occur?
4. What intersection(s) experiences the most delays?
5. What segment of your route experiences the most traffic and delays?

CUSTOMER SATISFACTION

6. Are there any additional stops requested by riders?
7. Are there any additional streets/corridors requested by riders to be serviced?
8. What are some complaints made by the riders?

9. How can the on-board experience be improved for passengers?

INFRASTRUCTURE

10. How can the trolley stops/shelters be improved?
11. How accessible are the vehicles for all riders? (i.e. passengers with disabilities, bicyclist, etc.)
12. Are there any issues with seating capacity of the vehicle?
13. How well do the vehicles perform?
14. Are there any mechanical issues frequently experienced by the vehicles?
15. Are there any suggestion that could improve passenger or driver safety?
16. Is there any technology you could envision improving the Trolley experience?

SYSTEM OVERVIEW

17. What are some system deficiencies you have observed?
18. What could improve the overall performance of the Trolley System?
19. What policy changes could help you do your job better?

Limousines of South Florida (LSF)**ENCUESTA PARA LOS CONDUCTORES DEL TRANVÍA DE LA CIUDAD DEL DORAL**

Edad del conductor: <20 – 29 30 – 39 40 – 49 50 – 59 60 – >69

Experiencia total del conductor: _____ (años)

Experiencia del conductor con la ciudad del Doral: _____ (años)

Ruta actualmente asignada: _____

Jornada actualmente asignada: _____

DESEMPEÑO

1. ¿Con qué frecuencia se cumplen los horarios programados?
2. En su opinión, ¿cuál es/son los factores más importantes que afectan el rendimiento a tiempo?
3. ¿A qué hora ocurre la mayor congestión de tráfico?
4. ¿Qué intersección(es) experimenta(n) más retraso(s)?
5. ¿Qué segmento de su ruta experimenta más tráfico y retrasos?

SATISFACCIÓN DEL CLIENTE

6. ¿Hay paradas adicionales solicitadas por los pasajeros?
7. ¿En cuales calles fuera de la ruta solicitan parar los pasajeros?
8. ¿Cuáles son algunas quejas hechas por los pasajeros?

9. ¿De qué manera se puede mejorar la experiencia del pasajero a bordo del tranvía?

INFRAESTRUCTURA

10. ¿Cómo se pueden mejorar las paradas del tranvía?

11. ¿Qué tan accesibles son los vehículos para todos los pasajeros? (es decir, pasajeros con discapacidades, ciclistas, etc.)

12. ¿Hay algún problema con la cantidad de asientos en los vehículos?

13. ¿Qué tan bien funcionan los vehículos?

14. ¿Hay algún problema mecánico que ocurre con frecuencia?

15. ¿Hay alguna sugerencia que podría mejorar la seguridad de los pasajeros o del conductor?

16. ¿Hay alguna tecnología que pueda para mejorar la experiencia en el tranvía?

RESUMEN DEL SISTEMA

17. ¿Cuáles son algunas deficiencias del sistema de tranvía que ha observado?

18. ¿Qué podría mejorar el rendimiento general del sistema de tranvía?

19. ¿Qué cambios de póliza podrían ayudarte a hacer un mejor trabajo?

Age Group	Total Driver Experience	Driver's Experience with the DTS	Currently Assigned Route	Currently Assigned Shift	1 How often are scheduled times met?	2 In your opinion, what is/are the biggest factor(s) affecting on-time performance?	3 At what time does the peak period occur?	4 What intersection(s) experiences the most delays?	5 What segment of your route experiences the most traffic and delays?	6 Are there any additional stops requested by riders?	7 Are there any additional streets/corridors requested by riders to be serviced?	8 What are some complaints made by the riders?	9 How can the on-board experience be improved for passengers?	10 How can the trolley stops/shelters be improved?	11 How accessible are the vehicles for all riders? (i.e. passengers with disabilities, bicyclist, etc.)	12 Are there any issues with seating capacity of the vehicle?	13 How well do the vehicles perform?	14 Are there any mechanical issues frequently experienced by the vehicles?	15 Are there any suggestion that could improve passenger or driver safety?	16 Is there any technology you could envision improving the Trolley experience?	17 What are some system deficiencies you have observed?	18 What could improve the overall performance of the Trolley System?	19 What policy changes could help you do your job better?
50 - 59	10	5	4	PM	Frequently	Traffic	2:00 PM - 7:30 PM	107 Ave & 41 St	107 Ave from 33 St to 58 St	107 Ave & 7 St	109 Ave & Flagler St	Distance between stops in Sweetwater Stop illumination	-	-	No problems	No	-	-	Front mirrors	-	-	-	-
50 - 59	1	1	1	PM	Infrequently	Traffic Schools	In the afternoon	-	107 Ave 97 Ave 114 Ave 87 Ave	107 Ave & 19 St	No	Street and stop illumination	Passenger discipline	Improve stop illumination	Trolleys are good as they are	No	Good	No	No	No	None	Street and stop illumination	Salary increase
60 - 69	30	-	1	PM	Varies with Traffic	Varies with Traffic	5:00 PM	107 Ave & 12 St 97 Ave & 12 St 87 Ave & 12 St	107 Ave 97 Ave 114 Ave 87 Ave	No	None	Street and stop illumination	Passenger discipline	Improve stop illumination	Trolleys are good as they are	No	Good	No	No	No	None	Street and stop illumination	Salary increase
60 - 69	40	6	4	PM	Infrequently	Traffic Signal coordination	3:00 PM - 7:00 PM	107 Ave & 19 St 107 Ave & 12 St 107 Ave & 41 St	-	107 Ave & 7 St 109 Ave & 4 St	Flagler St	Distance between stops	-	-	Okay	No	Okay	No	Improve stop illumination	-	-	-	-
60 - 69	21	3	2	PM	Frequently	Traffic	After 4:00 PM	114 Ave & 41 St 87 Ave & 41 St	79 Ave & 36 St	None	None	To extend service past 9:00 PM	-	Stops are not visible by the driver sometimes	Trolleys are accessible	Good	Good	No	Passenger stand-up while the trolley is moving and reaching a stop instead of when the trolley is stopped	-	Frequent delays in schedule	-	-
-	40	5	2	PM	80%	Traffic	3:00 PM - 7:00 PM	All intersections	The entire route	Yes	None	Front mirrors	-	Add shelters and increase visibility	Good	No	Fair	Air condition	No	Yes	None	Better maintenance	-
50 - 59	40	4	3	PM	Frequently	-	2:00 PM - 6:00 PM	-	41 St	-	-	-	-	-	-	No	Good	No	-	-	-	-	Salary increase
50 - 59	38	4	1	PM	Frequently	Traffic congestion, passengers asking to stop at un-designated locations	5:00 PM - 7:00 PM	87 Ave from 36 St to 12 St 87 Ave & 33 St 107 Ave & 33 St	87 Ave and 36 St, 107 Ave and 33 street. 87 Avenue, 87 Avenue and 114 avenue. 114 Ave from 52 St to 58 St	Yes	All throughout the route	Trolley is not frequent, Air conditioning is deficient	Improving orientation by providing graphics and other write-ups	Stops are well kept	Very accessible	None	Vehicles are efficient	Air conditioning	None	-	Loop / circular design of the routes	Changing routes from loop / circulator to directional along a roadway	None
30 - 39	18	3 weeks	3	PM	Frequently	Traffic	3:30 - 5:00 PM	107 Ave and 41 St	NW 74 St 79 Pl	No	No	None since 1/8/19	Time schedule for trolley arrival	More lights / lighting	Very accessible	Only during peak hours	6.5 / 10	Air conditioning / heater	Respect from all	No	Two-way radio (communication)	Additional trolleys during peak traffic hours	Can't comment on the policy because I haven't finished going over them
60 - 69	4	4 months	Stand-by	Stand-by	Frequently	Traffic and Stop light timing	Peak hours	107 Ave and 33 St	97 Ave and 41 St (Northbound)	Some	-	More frequent bus stops	Teaching them about rules and regulations	-	-	-	-	-	-	Trolley maintenance	More trolleys	-	
60 - 69	6	2.5	1	AM	90% (Route 1)	Traffic	7 - 10 AM	114 Ave. and 41 St., 107 Ave and 12 St.	114 Ave and 87 Ave	No	-	Add Sunday service, Route 1 for 2 trolleys	More information and communication with users.	Illumination, create bus shelters on new stops on 114 Ave and 112 Ave.	Good	Good	Good	None	Make public campaigns about improving passenger behavior with signs posted.	Improve quality of the trolleys (mechanical)	Improve quality of the trolleys (mechanical)	Improve meeting the schedule and vehicle quality	Better salary, paid holidays, more drivers.
50 - 59	14	9	1	AM	100%	School zone traffic	7:30 - 8:50AM	114 Ave	114 Ave	Route 3, 87 Ave -	Sunday service for Route 2 and 3	Programs explaining the different forms of sing the services: GPS, TSO, and explain how to place and remove bikes in the rack and safety needed.	Bus stop lighting	Increase ramps and structures for wheelchairs and other systems to ride the trolleys.	No	Ok	Ok	Air conditioning	Have inspector to check the different situation on the trolley.	-	-	-	Salary increase. At the intersection of 33 St and 97 Ave try to diminish the thickness of the concrete (median) where the trolleys turn left, so that there is 3 active lanes, increase the distance.
<20 -29	1.5	1	1	AM	Met but depends	Traffic	8 - 9AM	114 aver and by the schools	114 Ave, 87 Ave	Entering by the Dolphin Mall	by the Dolphin Mall entrance	-	Wi-Fi in some of the trolleys	Put shelters on all bus stops.	All good while wheelchair ramps functions	None	-	Air conditioning	-	-	-	-	-
50 - 59	25	3	2	AM	Always / 1/2 hour	Traffic	8:30 AM	82 before it's ok now	on 41 St and 79 Ave	-	No	-	-	None	Good	None	Very good	No	More lights on stop	None	-	Have a system that	-
60 - > 69	50	8	3	10 hours	Normal	Peak hour traffic	7 - 9AM	-	-	-	-	-	Place signs	-	Good	Yes, they are not m	-	-	-	-	-	-	-
60 - > 69	48	6.5	3	AM	First and second lo	Schools (Cell phone	7 - 10AM	104 Ave. - 74 St and 66	104 Ave. - 74 St and 66	41 St before 112 A	-	Trolley delays in th	Talking everyday w	-	Good	None	They have many pr	Air conditioning an	-	-	-	Place more drivers	Salary increase
60 - > 69	12	7	2	AM	Very frequent	Mechanical proble	8 - 9:30AM	115 Ave and 41 St. 41	-	They solicited stop	-	The Trolley schedu	Improve trolleys' c	Place seats and lig	Good	None	-	Air conditioning	-	-	Bus drivers with lit	Driver salary increa	-

APPENDIX E

Outreach Presentations and Meeting Materials

Limousines of South Florida (LSF)

MEETING MINUTES

Attendees:

Carlos Cejas (Gannett Fleming)

Cecilia Cruz (LSF Operations)

Shirley Forero (City of Doral Transit Operations Manager)

Juan Fraga (LSF General Manager)

Ivan Jimenez (Gannett Fleming)

Jose Millano (LSF Operations Manager)

20 Trolley Drivers (10 drivers during the AM meeting and 10 drivers during the PM meeting)

Time:

11:00 AM – 12:00 PM and 4:00 PM – 5:00 PM

Notes:

During the meeting Shirley Forero and Ivan Jimenez explained the purpose of the transit study, encouraged trolley drivers to provide their feedback, opinions, and recommendations on how to improve the existing trolley system, and review the driver questionnaire to clarify any doubts/questions. The drivers and operations personnel from Limousines of South Florida provided the following input:

- Poor lighting exists on bus stops at NW 114th Avenue and NW 58th Street (near the Sedano's Supermarket), and NW 52nd Street.
- Drivers complained about poor signal timing exists at the following intersections:
 - NW 107th Avenue and NW 41st Street
 - NW 107th Avenue and NW 66th Street
 - NW 114th Avenue and NW 41st Street
 - NW 114th Avenue and NW 58th Street
- Queue length exceed the capacity of the EB left-turn bay on NW 97th Avenue and NW 33rd Street.
- Passengers have requested the following stops:
 - NW 112th Avenue and NW 41st Street (Potential transfer from Route 1 to Route 2)
 - NW 107th Avenue and NW 14th Street

- Passenger respect for trolley driver and City property is an issue, especially with students on Route 1 since they put themselves and others at risk or disobey trolley policies (such as no drinking/eating, maintaining feet on the ground, etc.).
- Passengers also perform unsafe actions such as standing up and at times descending the door steps before the trolley comes to a full stop at a destination. Some passengers also stand almost in front of the trolley as it approaches bus stops.
- Frequently, the trolley is at capacity when it arrives at the Palmetto Metrorail Station transfer stop between 4:00 PM and 5:00 PM causing some passengers to want to overcrowd the vehicle.
- Due to the expected opening of the Dolphin Station Park & Ride, the only route servicing the NW 17th Street stop is Route 4 and not Route 1 and 4 as before. This temporary change is expected to be modified once the park & ride opens but some customers have expressed desire for Route 1 to service the stop again.
- Drivers suggest using NW 17th Street to connect to the Dolphin Mall as opposed to NW 14th Street due to traffic congestion and like Metrobus.
- Some passengers and drivers have noted that the one-way circulator routes are not efficient given the long distance a passenger must ride to go back to a missed stop or return to its original trip's origin. Some drivers recommended making routes linear and two-way.
- Drivers noted some blind/visually impaired passengers use the trolley with frequency, however, the drivers were unaware of ADA regulations such as making stop announcements inside transit vehicles at main points along a bus or train route. While the drivers have received training, an automated voice-over gives all the announcements through speakers installed in the vehicles. Some drivers reported trolley vehicles with malfunctioning voice-overs and the operations crew noted some vehicles arrived with wires cut to shut-off the system.

A total of ten questionnaires were collected out of 20 handed out. Some drivers kept copies of the questionnaire to fill-out and submit later.

Doral Trolley/SMART Plan Study

Internal Coordination

MEETING MINUTES

Attendees:

Rita Carbonell (City of Doral Project Manager)
Shirley Forero (City of Doral Transit Operations Manager)
Nelson Mora (Gannett Fleming Task Manager)
Ivan Jimenez (Gannett Fleming Project Intern)
Phone:
Carlos Cejas (Gannett Fleming Senior Technical Advisor)

Time:

2:00 PM – 4:00 PM

Location:

City of Doral Government Center
8401 NW 53rd Terrace, Doral, FL 33166

Notes:

The following items were discussed during this meeting:

- TSO Mobile website hosts the trolley travel time and route assignment data
- Automated People Counters (APCs) are being installed in the trolleys and installation should be complete by Mar. 8
 - Ridership data may be available at the end of March
- The City could consider adding bicycle automated counters as well
- FR Aleman is preparing a prototype shelter design for the City
- The City is open to new ideas regarding the look of trolley vehicles, branding, and street furniture
- Branding efforts were being coordinated given the Doral Boulevard Master Plan and the opening of Doral Yards (which will incorporate murals and street art)
- A six (6) month pilot program with FreeBee will begin operations soon as well as CitiBikes in Downtown Doral
- The City is going to develop an asset inventory and management system
- Coordination with the City of Medley has occurred before because they are interested in Doral operating a trolley service within Medley
- The City conducts weekly vehicle inspections
- The City is in favor of route simplification by making routes more linear (travelling in both directions) as opposed to circular
- The City is in favor of pedestrian/bicycle improvements
- The City wants to evaluate a Lunch Route and a Sunday Church Route for Lady of Guadalupe

IMAGINE THE FUTURE

Doral Trolley/SMART Plan Coordination Study
Stakeholder Coordination Meeting
03.20.2019

AGENDA

01

Study
Scope

02

Meeting
Purpose

03

Doral
Today

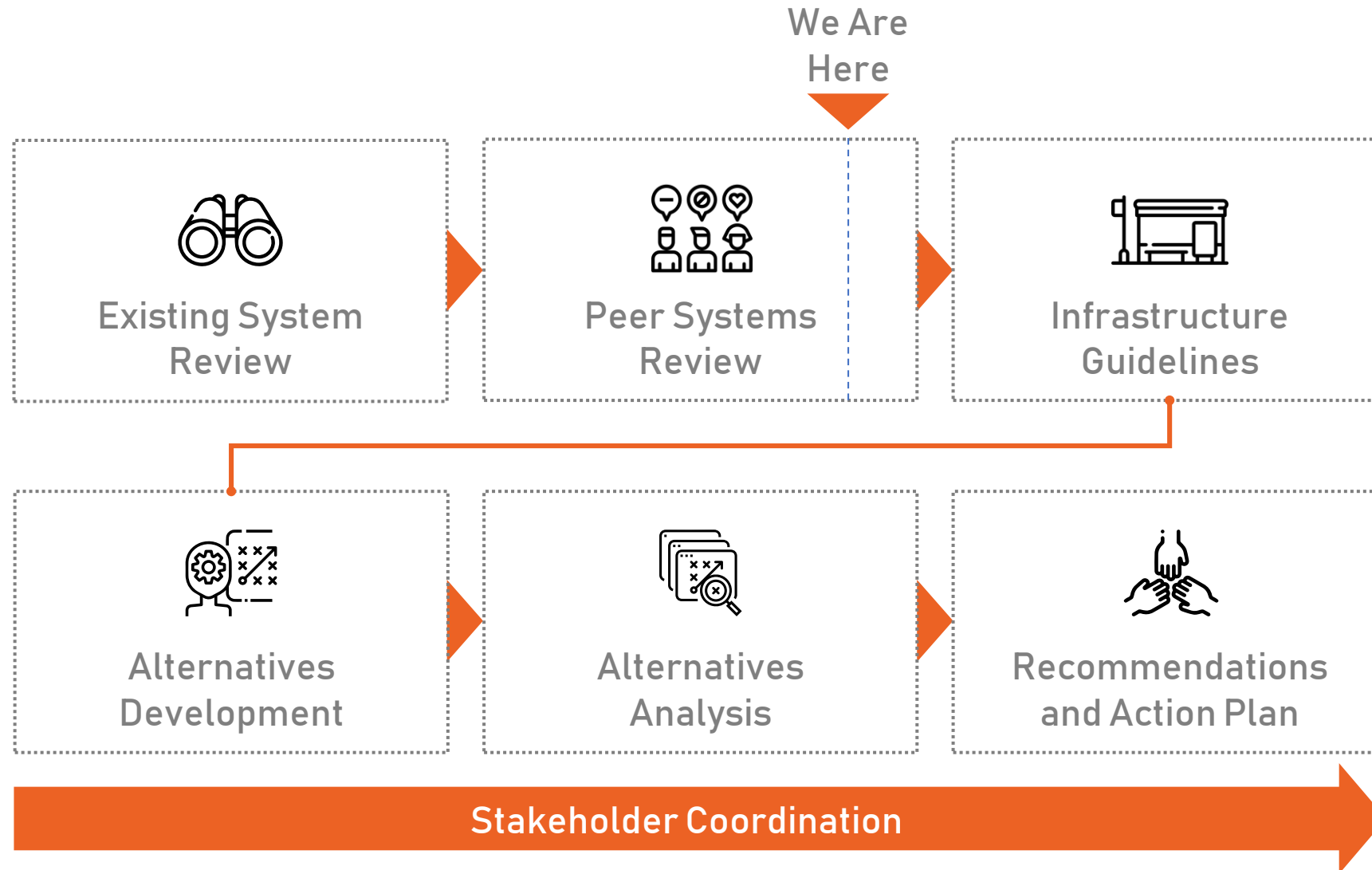
04

Discussion
Points

05

Next
Meeting

STUDY SCOPE



STUDY SCOPE

We Are
Here



Initial Coordination

Intermediate Coordination

Final Coordination



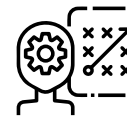
Existing System
Review



Peer Systems
Review



Infrastructure
Guidelines



Alternatives
Development



Alternatives
Analysis



Recommendations
and Action Plan

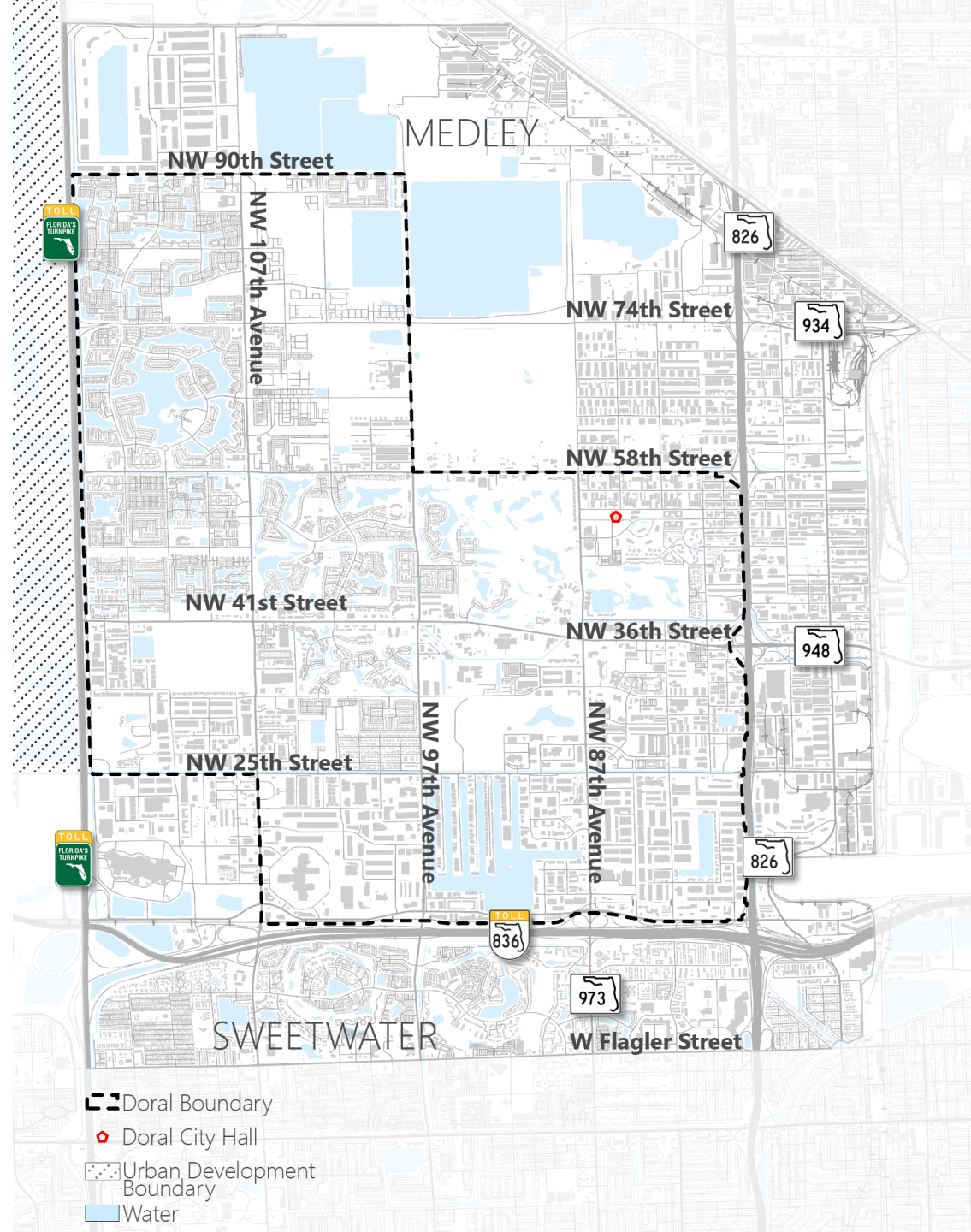
MEETING PURPOSE

We want to gather your organization's thoughts and ideas about the City of Doral's transportation system;

- What are the issues?
- How can it improve?
- How can it evolve?

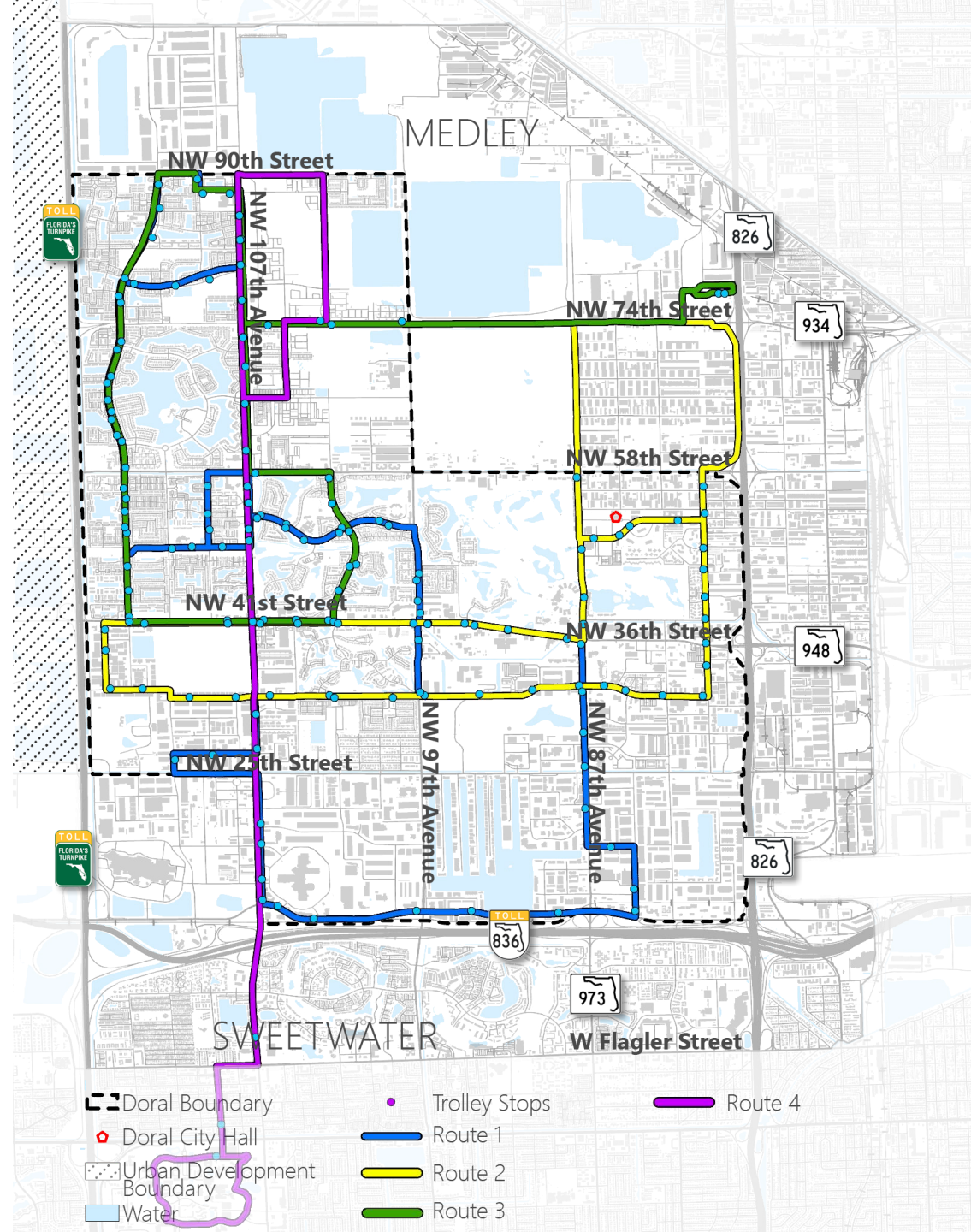
DORAL TODAY

- City Boundary
- Doral Trolley Routes
- MDT Routes
- SMART Plan
- Bike Network
- Existing Land Use
- Employment Density



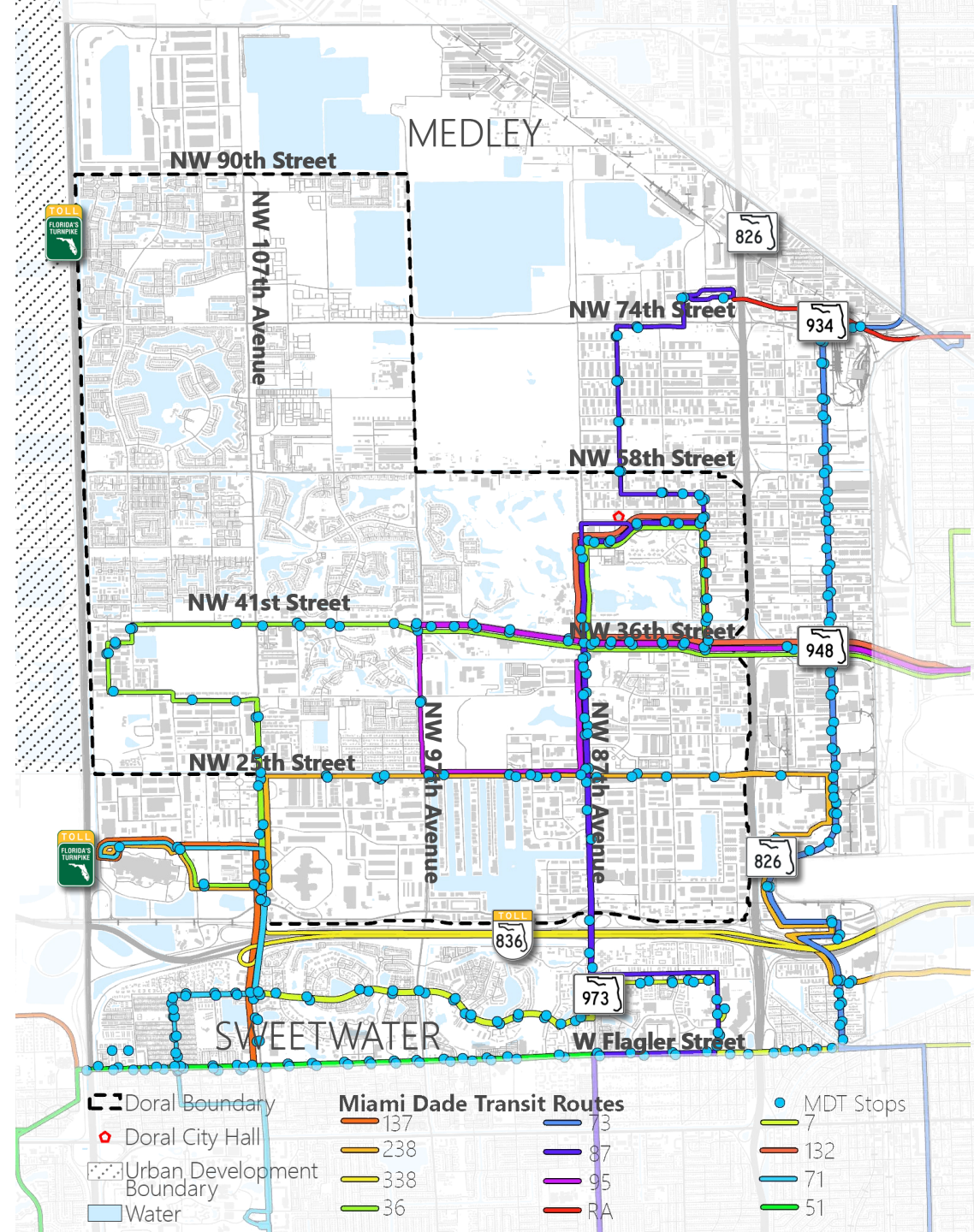
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- MDT Routes
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- Bike Network
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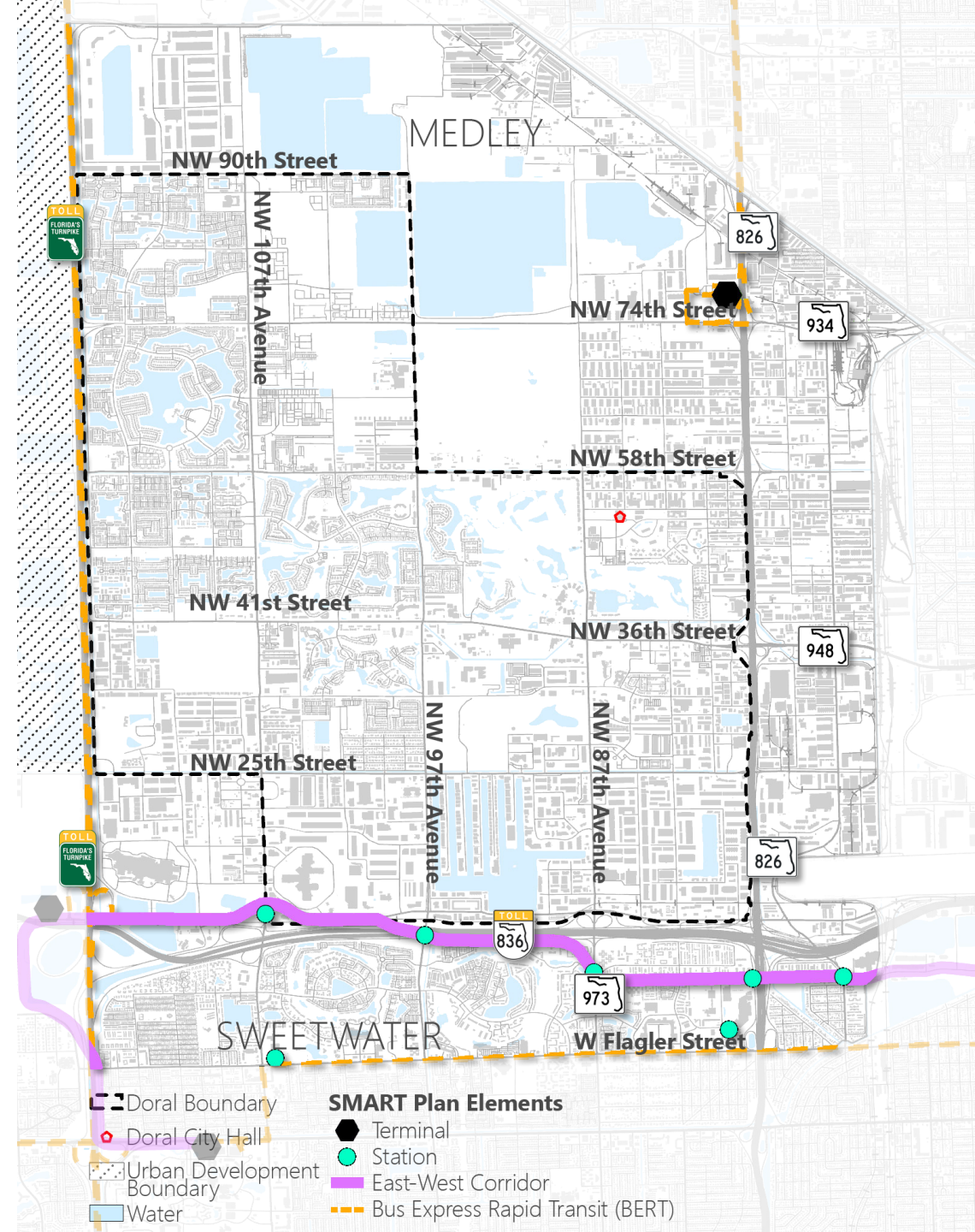
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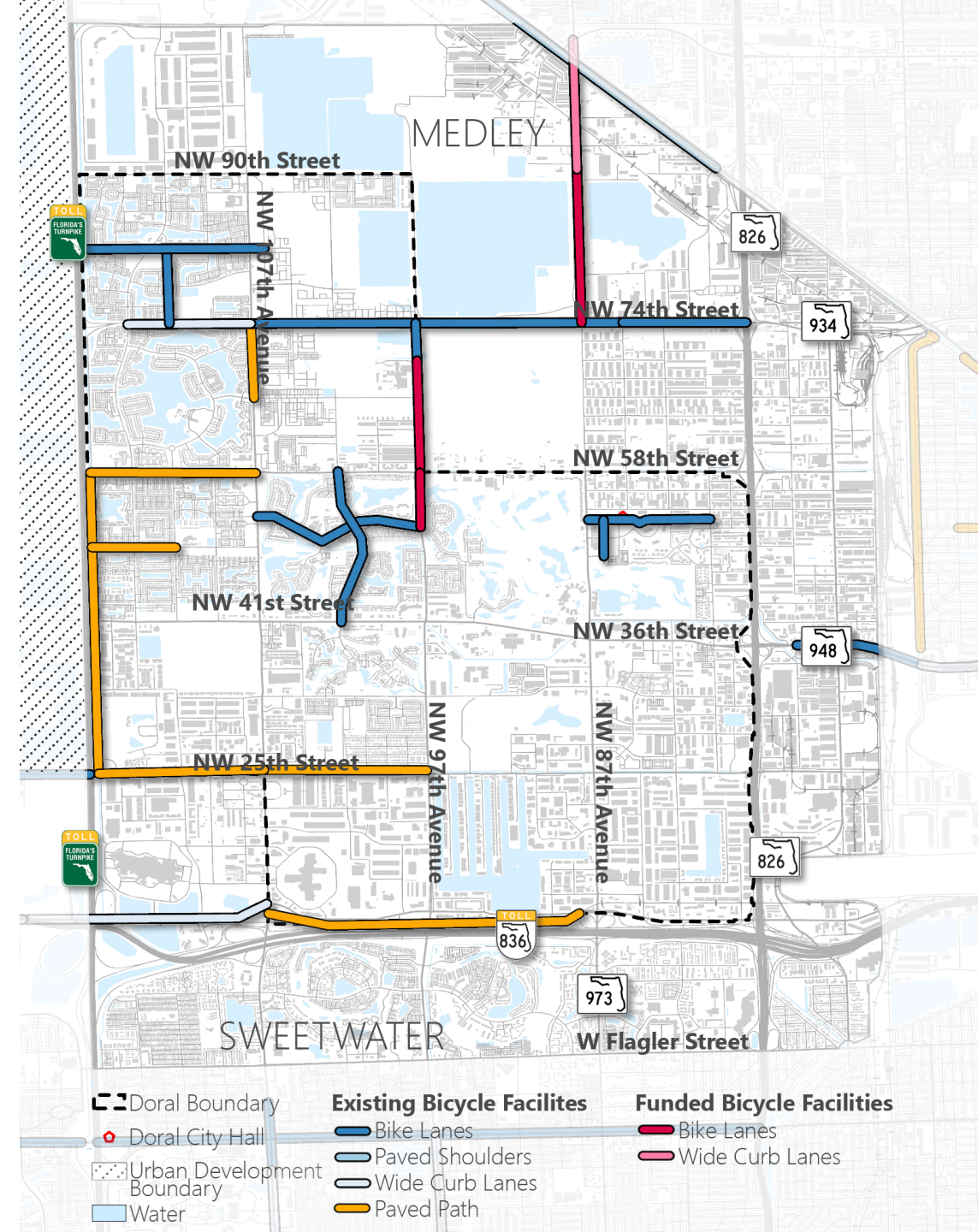
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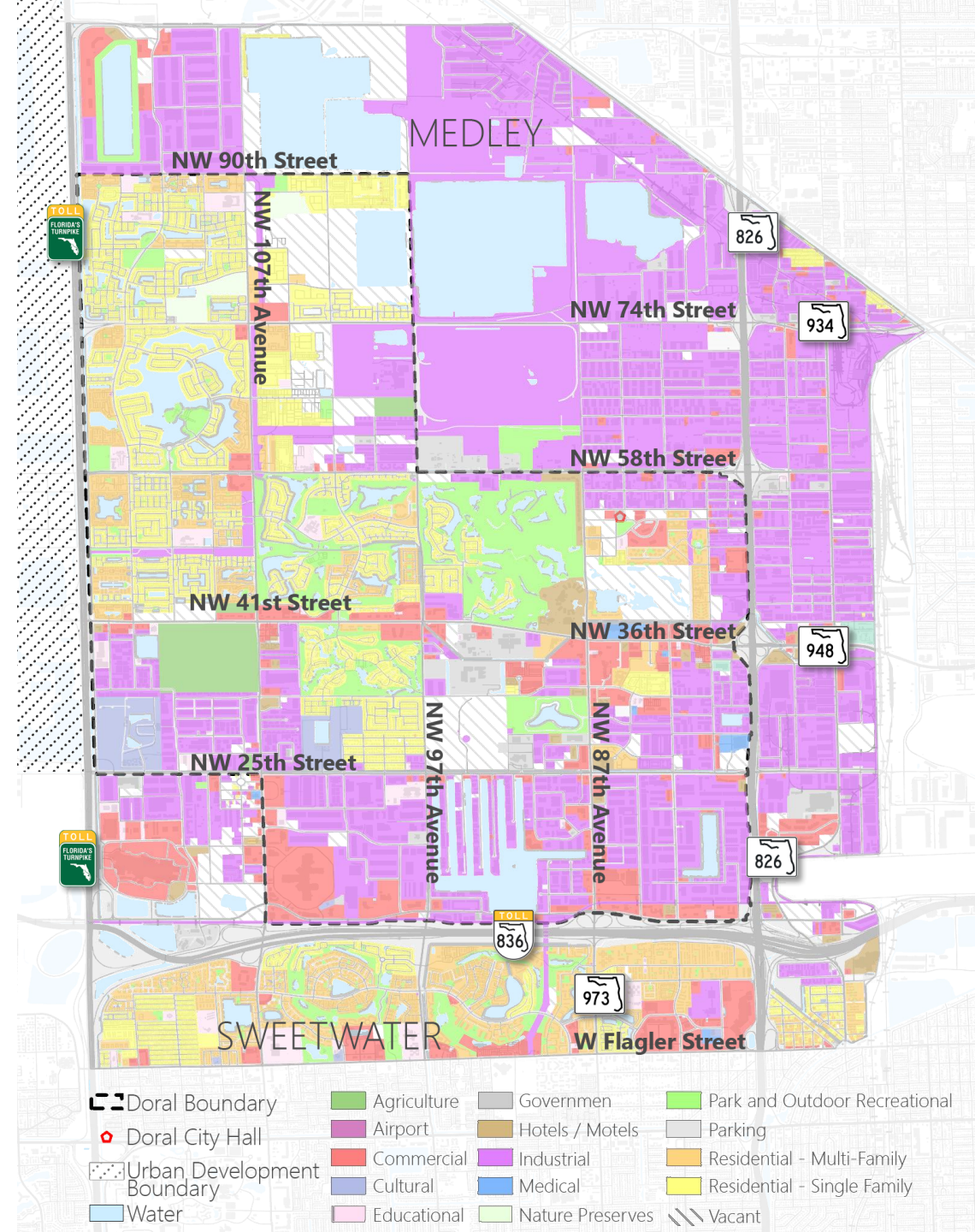
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- Employment Density



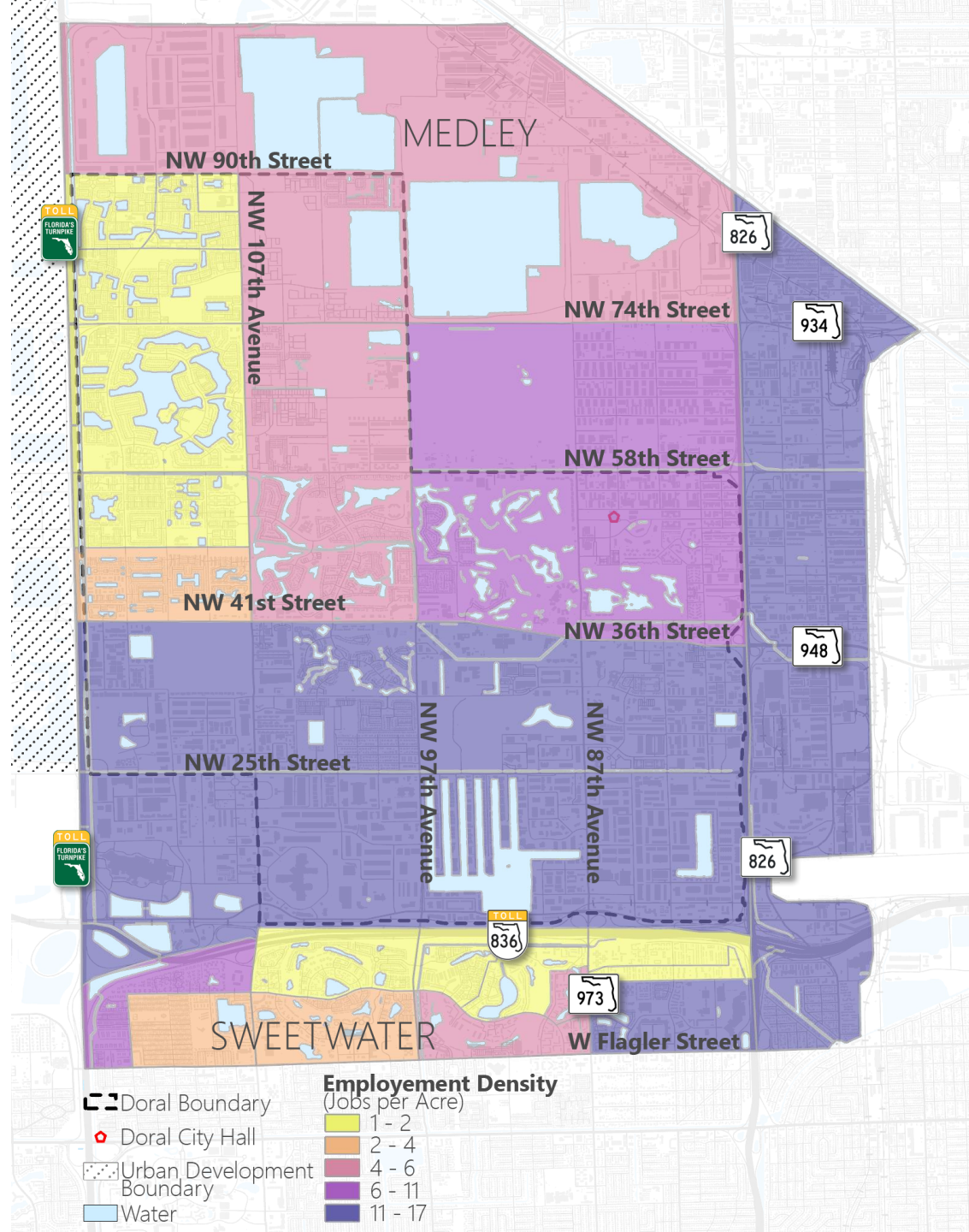
DORAL TODAY

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- Employment Density



DORAL TODAY

- City Boundary
- Doral Trolley Routes
- MDT Routes
- SMART Plan
- Bike Network
- Land Use
- **Employment Density**



DISCUSSION POINTS

1. Land Use
2. Mode
3. Technology
4. Branding
5. Policy



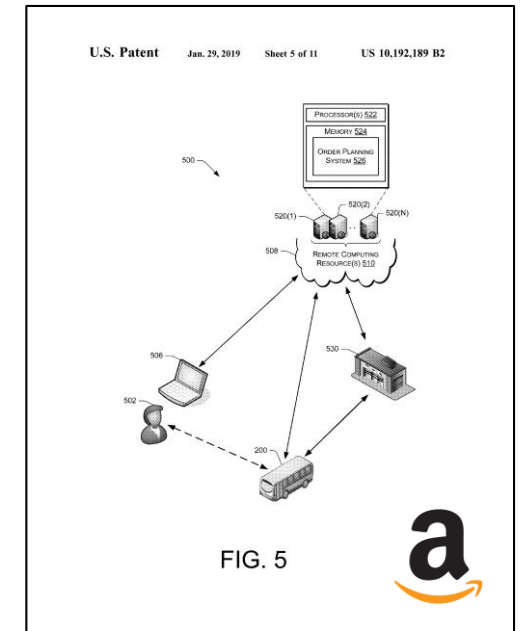
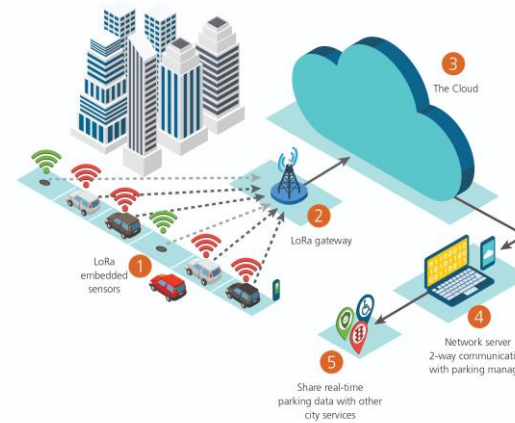
DISCUSSION POINTS

1. Land Use
2. Mode
3. Technology
4. Branding
5. Policy



DISCUSSION POINTS

1. Land Use
2. Mode
3. Technology
4. Branding
5. Policy



DISCUSSION POINTS

1. Land Use
2. Mode
3. Technology
4. Branding
5. Policy



DISCUSSION POINTS

1. Land Use
2. Mode
3. Technology
4. Branding
5. Policy



NEXT MEETING



When:
Summer
2019



Where:
City of
Doral

Doral Trolley/SMART Plan Study
Stakeholder Coordination Meeting #1
SIGN-IN SHEET

[illegible]

Business Stakeholders Meeting #1

POST EVENT SURVEY

Thank you for attending the Doral Trolley/SMART Plan Study stakeholder meeting this past Wednesday. We would like to capture your comments and obtain your feedback to make our next event better. This will only take 2 minutes...

Ok, I got 2 minutes

1. Overall, how would you rate the event?
1 – 5 Stars
2. Thanks! For more detail, how would you rate the following:
 - a. Speakers?
 - b. Content?
 - c. How the event was organized?
3. How likely are you to recommend other businesses to attend the next meeting?
 - a. 0 (Not at all likely) – 10 (Extremely likely)
4. And how likely are you to attend the next meeting?
 - a. 1 (Not at all likely) – 5 (Extremely likely)
5. Great. Now let's talk about the content. Please rank the Discussion Points from most needed to least.
 - a. Land Use
 - i. 1 – 5
 - b. Mode
 - i. 1 – 5
 - c. Technology
 - i. 1 – 5
 - d. Branding
 - i. 1 – 5
 - e. Policy

i. 1 – 5

6. Which of the Discussion Points is your organization *most* likely to adopt?
 - a. Land Use, Mode, Technology, Branding, Policy
7. Now which of the Discussion Points is your organization *least* likely to adopt?
 - a. Land Use, Mode, Technology, Branding, Policy
8. Nearly there. Do you have any comments you would like to share with us?
 - a. (Fill in the blank)
9. Thanks. Please specify in which industry your organization works in?
 - a. (Fill in the blank)
10. Lastly, how many employees does your organization have?
 - a. 1 – 10
 - b. 11 – 50
 - c. 51 – 200
 - d. 201 – 500
 - e. 500+

MINUTES: **STAKEHOLDER MEETING #1**

Call to Order:

A meeting with City of Doral and Gannett Fleming was held on Wednesday, March 20, 2019 from 9:00 AM to 11:00 AM at the City of Doral Government Center, Third Floor Training Room.

Attendees:

Attendees include Rita Carbonell (City of Doral), Shirley Forero (City of Doral), Jorge Gomez (City of Doral), Maria Tery Vilches (Miami-Dade Transportation Planning Organization), Carlos Cejas (Gannett Fleming), Ivan Jimenez (Gannett Fleming), and Edward Aparicio (Gannett Fleming) plus business stakeholders (see attached sign-in sheet).

Minutes:

The stakeholder workshop began with a brief presentation of the study's scope and schedule, purpose for the meeting, and snippets of Doral's transportation network existing conditions. This presentation followed an open-floor discussion around five (5) points: Land Use, Mode, Technology, Branding, and Policy. Below is a summary of topics discussed for each of these points.

- Land Use:
 - Codina is developing most of Downtown Doral and they are supportive of non-motorized transportation and transit. The developer's main office is in Coral Gables by facility management and sales employees live and work in Doral. Over 65 employees work between Doral, Coral Gables, or are in the field.
 - Miami-Dade College West is updating its master plan. There is a large section of the West Campus that is an empty shell, and the college is looking to develop more of this campus to be integrated with businesses in the immediate vicinity. The campus does not have student housing. The cost of living in Doral is high for their student population, so the college is always looking for solutions.
 - Southern Command is planning on developing 160 acres across their campus for housing.

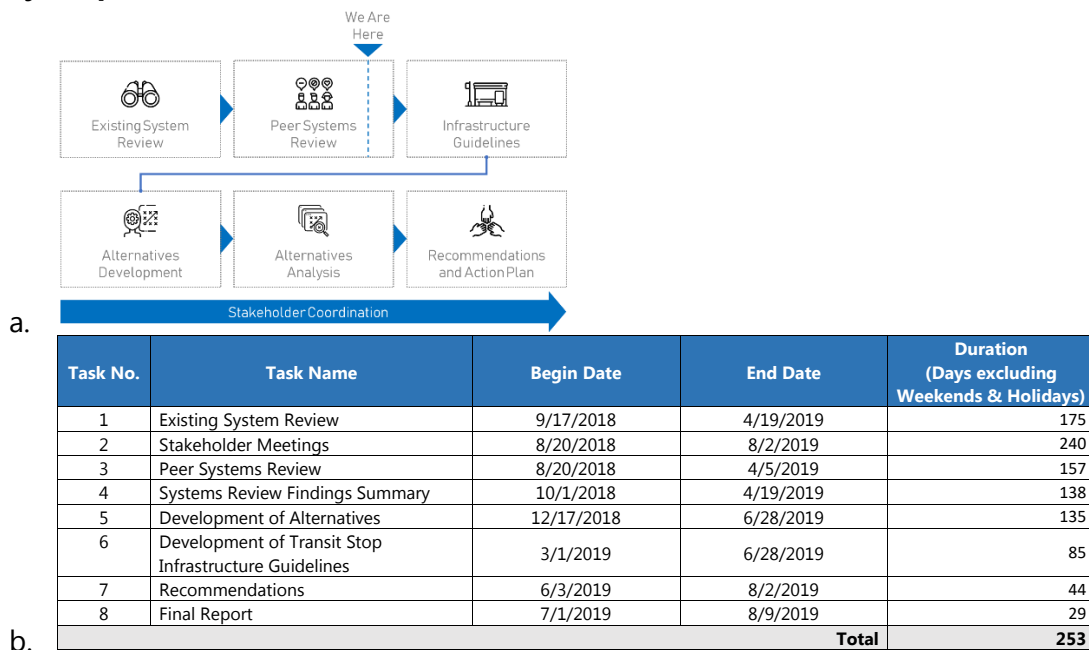
- Mode:
 - Walking and biking was discussed, and a lack of infrastructure was noted. Protected bicycle lanes in Doral are minimal and do not connect to transit stations.
 - FreeBee was discussed as a convenient mode of connecting short distances. The on-demand feature of FreeBee was celebrated.
 - The trolley is seen as a good mode of transportation because of its free fare and it reach to a lot of residential homes. Eventually the trolley would have to grow in scope – vehicle size and coverage.
 - Miami-Dade College West is now offering 4-year degrees which may result in an increased demand for transportation options to the campus.
- Technology:
 - The audience express doubt regarding driverless car completely improving the transportation system. Technology is considered most needed to improve travel and transfer times as well as reliability.
 - One attendee recommended improving the User Interface (UI) of mobile and web applications for the Trolley. Increasing the intuitive design can help attract more ridership and improve reliability.
- Branding
 - Codina proposed focusing on bus shelters. This infrastructure is a great focus for branding and sense of community given they can be practical and aesthetically pleasing. The current bus stops do not protect people from howling rains.
 - One attendee had participated in a project to redevelop the bus shelters for the City of Miami Beach. The design included ample shelter coverage, solar panels, and dynamic displays with route maps and games for kids.
 - Raising awareness of existing services was also proposed given some audience members did not know the trolley service was free until an opportune conversation with a coworker.
- Policy
 - Codina has attempted telecommuting and carpooling but these policies have been unsuccessful. Implementing these policies in Downtown Doral could a be possibility.

- Codina is interested in spearheading a TMA if other employers around Downtown Doral are willing to participate.
- Southern Command gets benefits from the federal government which pay for carpooling, Metrorail passes, vanpool opportunities, and other mobility options. Southern Command is unable to participate in TMA due to federal and state regulations.
- Miami-Dade College has some discount options for students, but other initiatives have not gelled that well.

Meeting with Town of Medley
Doral Government Center
Conference Room 220, 8401 NW 53 Terrace, Doral, FL 33166
11:00 AM

AGENDA

1. Introductions
2. Study Scope & Schedule



3. Stakeholder Coordination
 - a. Summary of the Doral Trolley existing conditions
 - b. Town of Medley transit needs
 - c. Potential Doral Trolley service to the Town of Medley
 - d. Equity and governing structure of potential service
4. Meeting Summary and Wrap-Up
 - a. Review of key decisions
 - b. Review of action items
 - c. Review of miscellaneous items
5. Next Meeting
 - a. To be Determined

Doral Trolley/SMART Plan Study
Meeting with Town of Medley
SIGN-IN SHEET

Name	E-mail	Telephone Number	Organization	Initials
Rita Carbonell	Rita.Carbonell@cityofdoral.com	(305) 593-6740 Ext. 6015	City of Doral	RC
Carlos Cejas	ccejas@gfnet.com	(786) 845-9540 Ext. 5812	Gannett Fleming	
Jorge Corzo	jcorzo@townofmedley.com	(305) 934-6986	Town of Medley	JCo.
Shirley Forero	Shirley.Forero@cityofdoral.com	(305) 593-6740 Ext. 6013	City of Doral	SF
Jorge Gomez	Jorge.Gomez@cityofdoral.com	(305) 593-6740	City of Doral	
Susan Guasch	sguasch@townofmedley.com		Town of Medley	
Ivan Jimenez	ijimenez@gfnet.com	(786) 845-9540 Ext. 5819	Gannett Fleming	
Nelson Mora	nmora@gfnet.com	(786) 845-9540 Ext. 5828	Gannett Fleming	

Meeting Minutes: **TOWN OF MEDLEY MEETING**

Call to Order:

A meeting with City of Doral, Town of Medley, and Gannett Fleming was held on Tuesday, April 9, 2019 from 11:00 AM to 12:15 PM at the City of Doral Government Center, Second Floor Conference Room.

Attendees:

Attendees include Rita Carbonell (City of Doral), Shirley Forero (City of Doral), Jorge Corzo (Town of Medley), Ivan Jimenez (Gannett Fleming), and Nelson Mora (Gannett Fleming)

Minutes:

The purpose of the meeting was to understand the ongoing transit efforts on behalf of the Town of Medley. Jorge Corzo, Town Engineer, discuss an existing paratransit service to the residents of the Medley Lakeside Retirement Park located in near NW 107th Avenue and NW 116th Way. The service typically takes elderly residents to shopping destinations in Hialeah Gardens. Medley uses all its CITT funding for this service which is approximately \$25,000.

In addition to this service, Medley recently complete a Multimodal Mobility Study which proposed a transit circulator. The Town is working on refining one of the proposed routes to begin operations soon. The route will be operated by Miami-Dade Department of Transportation and Public Works with 20-minute headways during peak periods and slower headways during off-peak periods. The new route will service the triangle form by SR 934/Hialeah Expressway, SR 826/Palmetto Expressway, and NW South River Dr. and connect to the Palmetto Metrorail Station. Medley will establish this pilot route with funds from an FDOT grant.

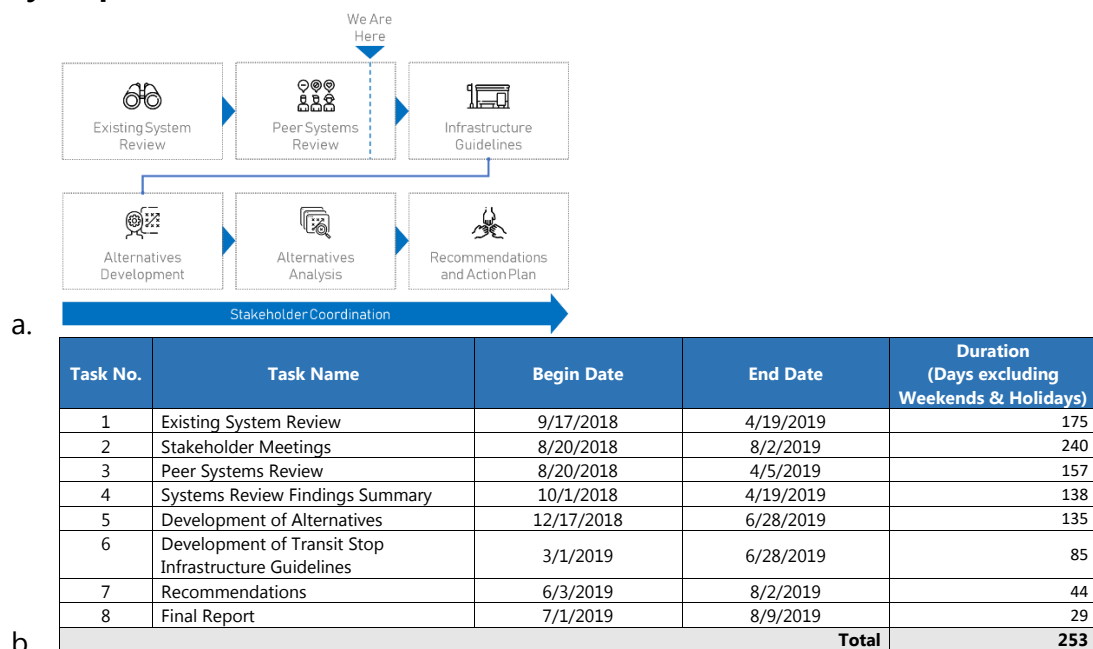
Additional points raised during the meeting but not fully discussed include:

- Proposed annexations by the City of Doral and Town of Medley.
- New roadway construction of NW 87th Avenue between NW 74th Street and NW 103rd Street in Medley. Refer to <http://www.fdotmiamidade.com/current-projects/north-miami-dade/nw-87-ave-from-nw-74-st-to-nw-103-st-1.html>
- Miami-Dade TPO is looking at a new north-south transit service between City of Doral and Town of Medley.

Meeting with City of Sweetwater
Doral Government Center
Sweetwater City Hall, 2nd Floor Conference Room
500 SW 109th Ave, Miami, FL 33174
2:00 PM

AGENDA

1. Introductions
2. Study Scope & Schedule



3. Stakeholder Coordination
 - a. Summary of the Doral Trolley existing conditions
 - b. City of Sweetwater ongoing transit plans/improvements
 - c. Potential coordination between Sweetwater and Doral Trolleys
4. Meeting Summary and Wrap-Up
 - a. Review of key decisions
 - b. Review of action items
 - c. Review of miscellaneous items
5. Next Meeting
 - a. To be Determined

Doral Trolley/SMART Plan Study
Meeting with City of Sweetwater
SIGN-IN SHEET

Name	E-mail	Telephone Number	Organization	Initials
Rita Carbonell	Rita.Carbonell@cityofdoral.com	(305) 593-6740 Ext. 6015	City of Doral	RC
Shirley Forero	Shirley.Forero@cityofdoral.com	(305) 593-6740 Ext. 6013	City of Doral	SF
Robert Herrada	rherrada@cityofsweetwater.fl.gov	(305) 221-0411	City of Sweetwater	R.H.
Ivan Jimenez	ijimenez@gfnet.com	(786) 845-9540 Ext. 5819	Gannett Fleming	IF
Nelson Mora	nmora@gfnet.com	(786) 845-9540 Ext. 5828	Gannett Fleming	NM

Meeting Minutes: **CITY OF SWEETWATER MEETING**

Call to Order:

A meeting with City of Doral, City of Sweetwater, and Gannett Fleming was held on Wednesday, April 10, 2019 from 2:00 PM to 3:30 PM at Sweetwater City Hall, Second Floor Conference Room.

Attendees:

Attendees include Rita Carbonell (City of Doral), Shirley Forero (City of Doral), Robert Herrada (City of Sweetwater), Ivan Jimenez (Gannett Fleming), and Nelson Mora (Gannett Fleming)

Minutes:

The purpose of the meeting was to understand the ongoing transit efforts on behalf of the City of Sweetwater. Robert Herrada, Sweetwater Assistant City Manager, discussed the service and expected changes to the existing Sweetwater trolley route. The City operates its trolley as a flex service with no designated stops. Most residents using the trolley are elderly with principle destinations being Sedano's Supermarket, Walgreens and other pharmacies, and Dolphin Mall. The City owns two trolley vehicles and plans to acquire one additional vehicle. LSF operates Sweetwater's trolleys. The City wants to modify the route slightly to service Ikea and universities north of Dolphin Mall.

According to Mr. Herrada 25% of City residents work or go to school in Sweetwater. The City operates its transit system jointly with FIU through a non-profit organization which operates 6 cutaway vans between the Engineering Center and the Modesto A. Maidique campus. FIU uses Transloc to operate the GPS tracker for their vehicles and an in-house application called Informed Traveler Program App (ITPA) as their main user interface for trip planning and parking occupancy assistance. FIU students riding the trolley have often requested stops in Doral.

Mr. Herrada also discuss land use changes occurring in Sweetwater. As part of the University City vision for Sweetwater, several new developments have been recently completed, are planned or underway, including:

- 400 SW 107th Avenue – Identity Miami, a 187-unit apartment building under construction
- 740 SW 109th Avenue – University Bridge Residences, a 20-story 492-unit rental apartment building with a dedicated Transportation Network Company (TNC) stop
- 1401 NW 110th Avenue – San Ignacio University, a planned eight-story building with capacity for 400 students and potential 139-room hotel and mixed-use project featuring 50,000 square feet of retail and office space
- Dolphin Professional Centre located on the southeast corner of NW 110th Avenue and NW 17th Street will have 54,000 SF of Class A offices and 26,000 SF of ground-floor retail
- Residences at Dolphin Citi Center located on the southwest corner of NW 108th Avenue and NW 17th Street will be an eight-story luxury building with 100 residential units and a retail promenade

NW 109th Avenue is also intended to be the City's main corridor. The City wants to transform it into a Complete Street with bicycle/pedestrian plaza south of SW 6th Street. The City recently obtained a \$20,000.00 grant for landscaping along NW 109th Avenue.

IMAGINE THE FUTURE

Doral Trolley/SMART Plan Coordination Study
Public Workshop Meeting #1
03.28.2019

AGENDA

01

Study
Scope

02

Meeting
Purpose

03

Doral
Today

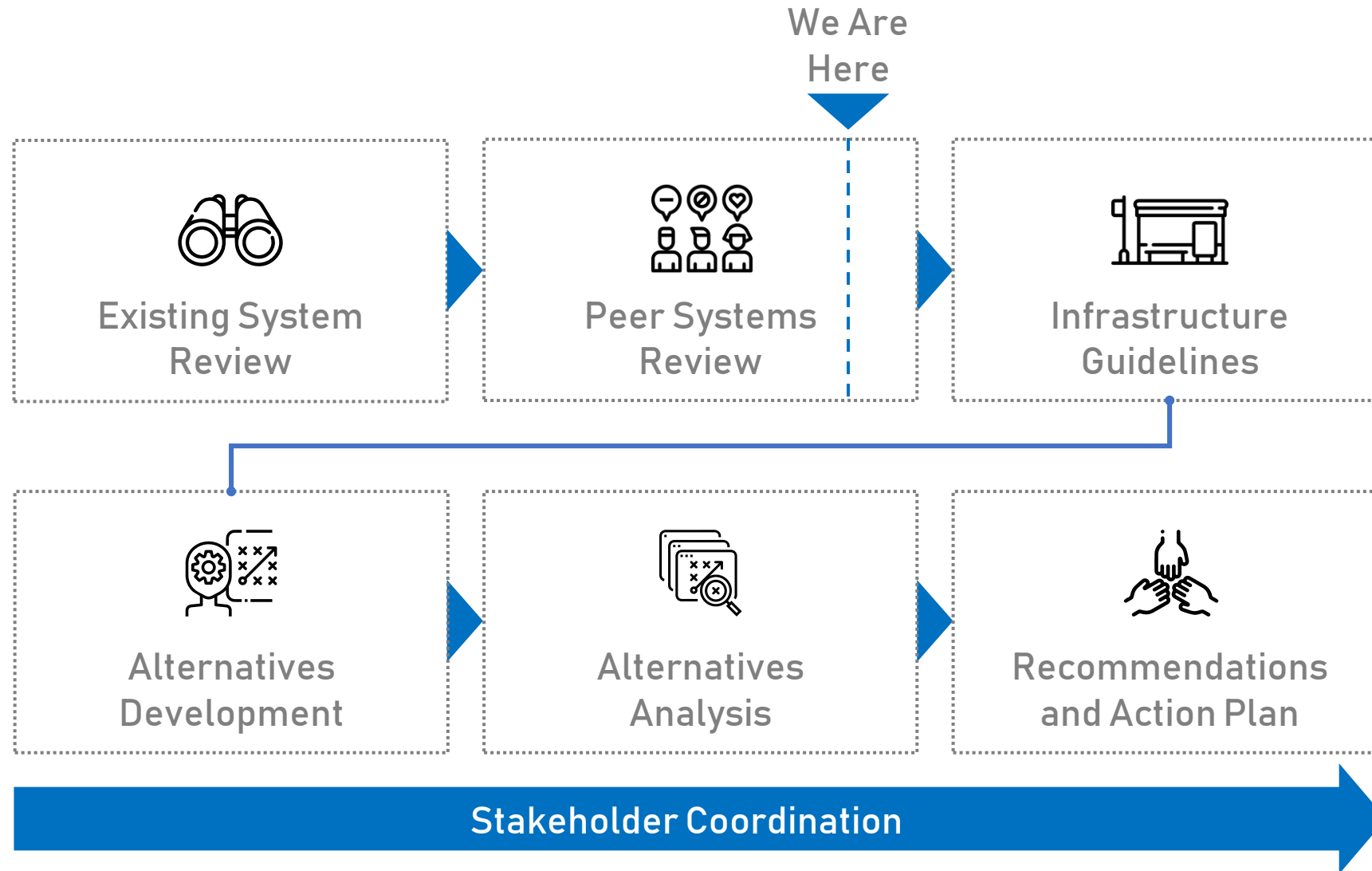
04

Discussion
Points

05

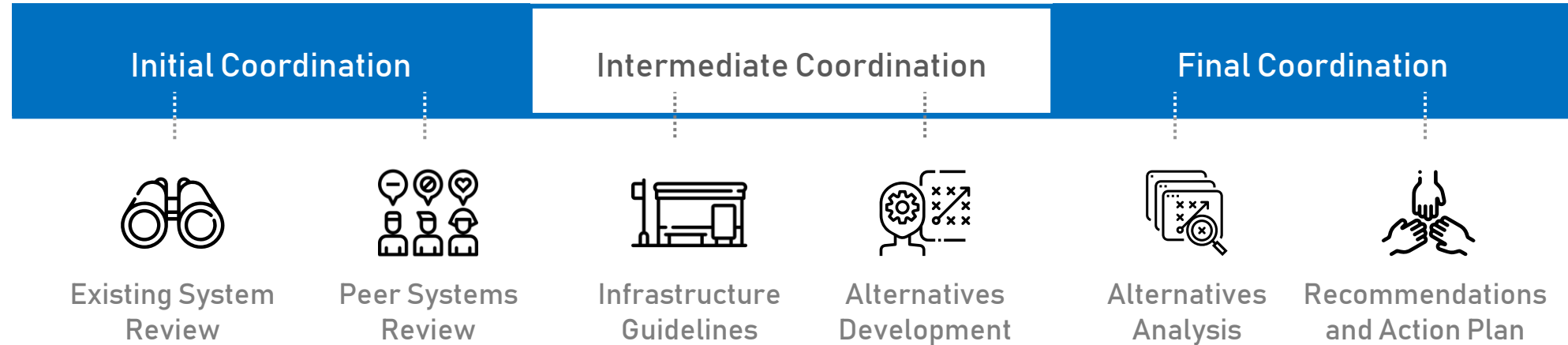
Next
Meeting

STUDY SCOPE



STUDY SCOPE

We Are
Here



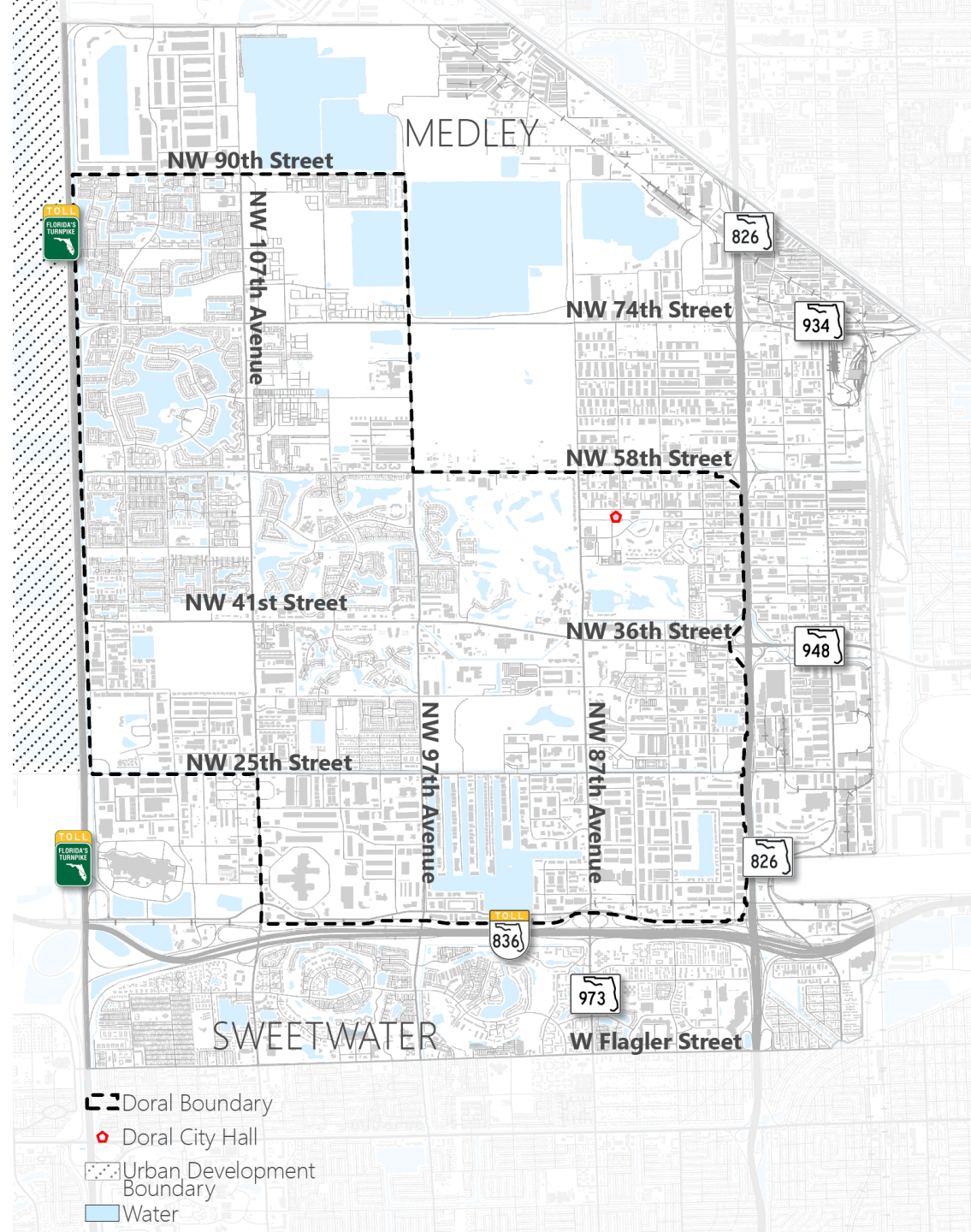
MEETING PURPOSE

We want to gather you and your community's thoughts and ideas about the City of Doral's transportation system;

- What are the issues?
- How can it improve?
- How can it evolve?

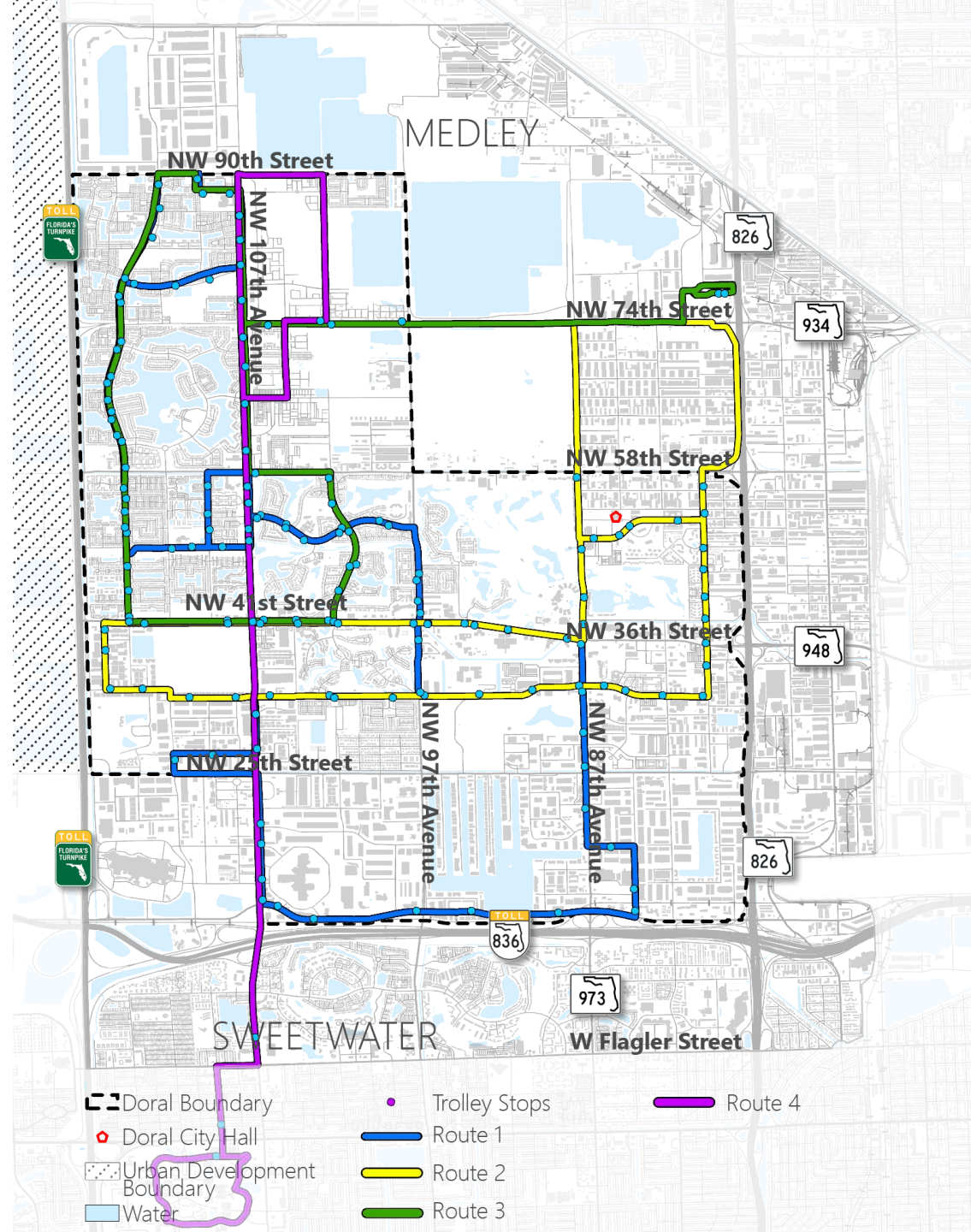
DORAL TODAY

- City Boundary
- Doral Trolley Routes
- MDT Routes
- SMART Plan
- Bike Network
- Existing Land Use
- Population Density



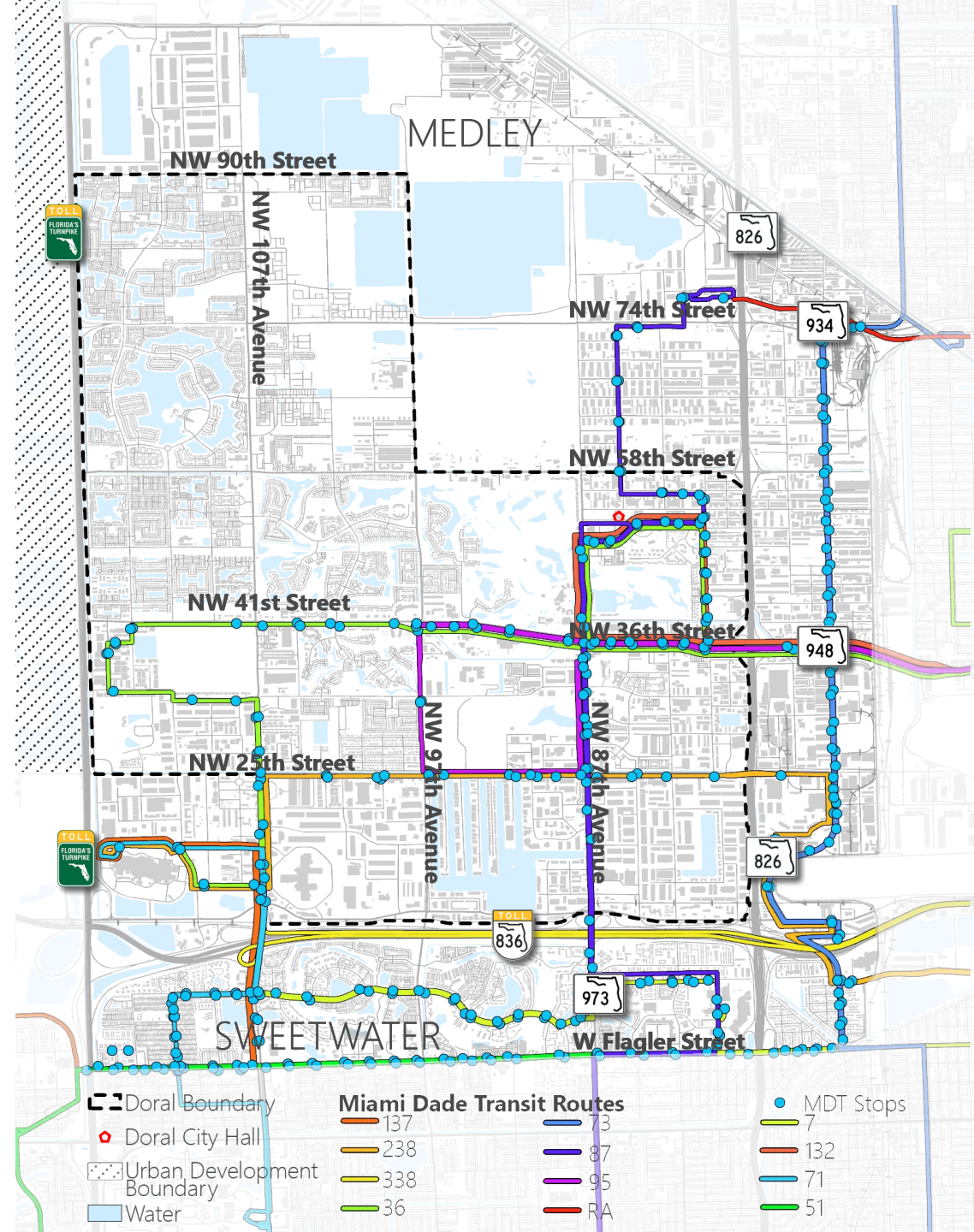
DORAL TODAY

- City Boundary
- **Doral Trolley Routes**
- MDT Routes
- SMART Plan
- Bike Network
- Existing Land Use
- Population Density



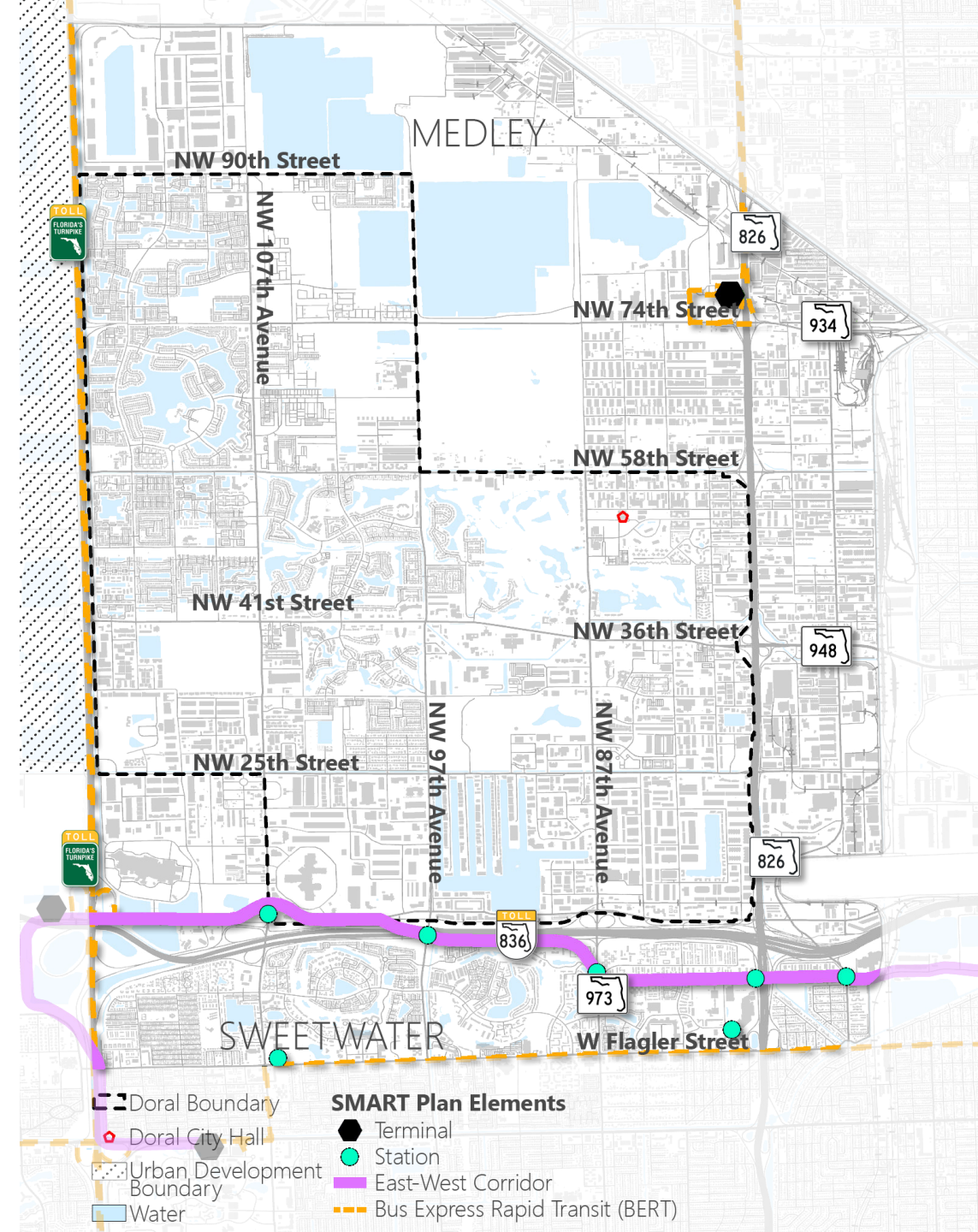
DORAL TODAY

- City Boundary
- Doral Trolley Routes
- **MDT Routes**
- SMART Plan
- Bike Network
- Existing Land Use
- Population Density



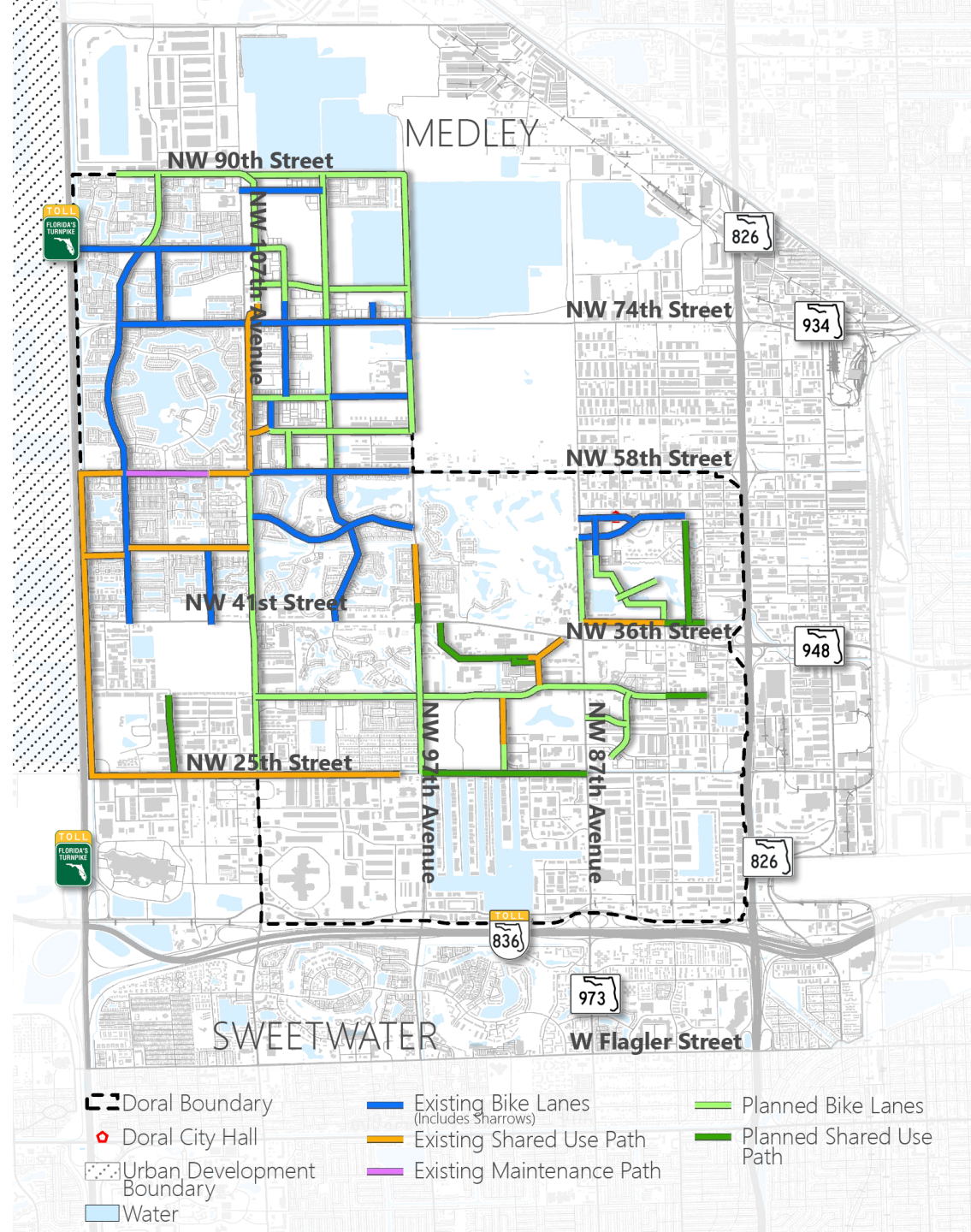
DORAL TODAY

- City Boundary
- Doral Trolley Routes
- MDT Routes
- **SMART Plan**
- Bike Network
- Existing Land Use
- Population Density



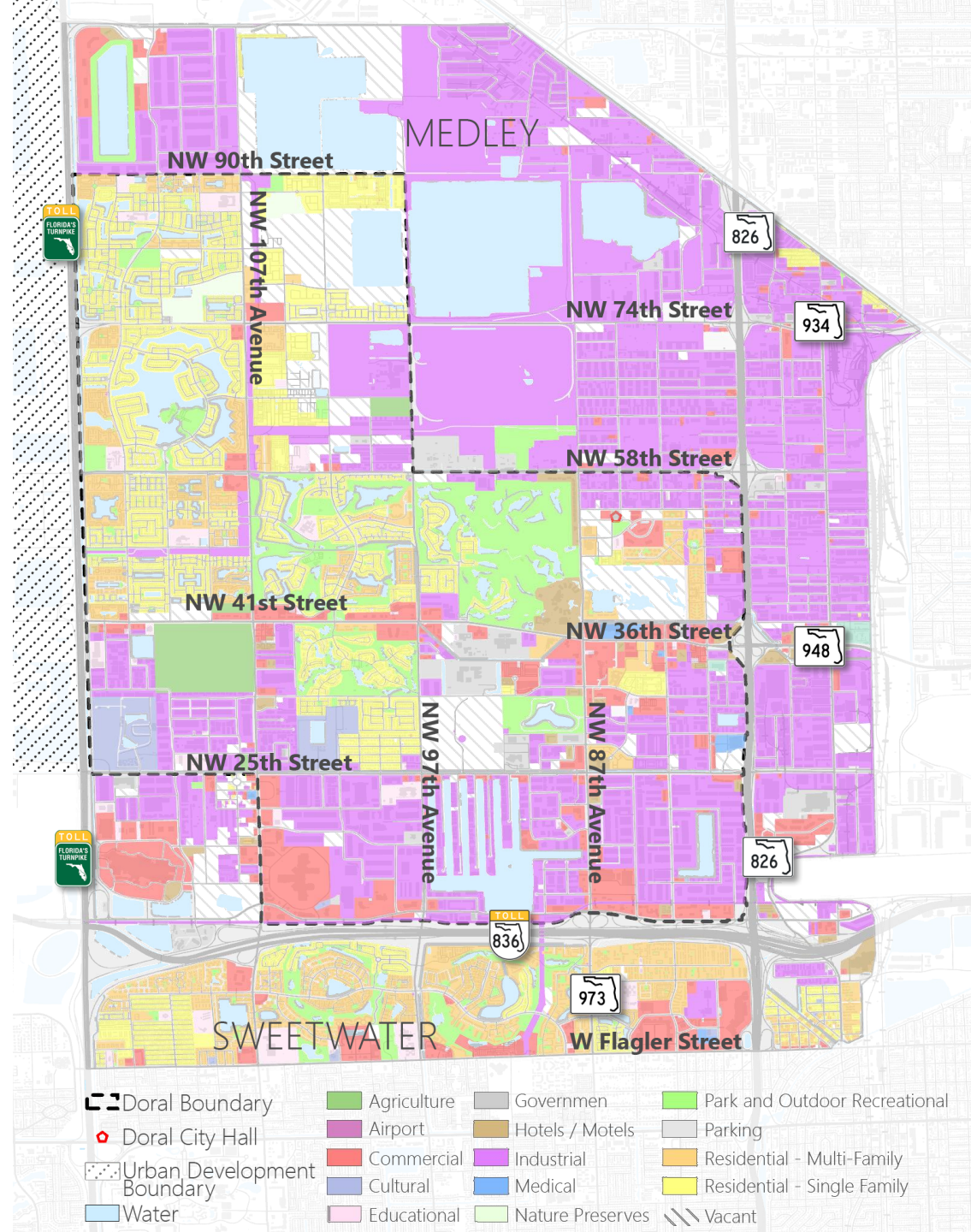
DORAL TODAY

- City Boundary
- Doral Trolley Routes
- MDT Routes
- SMART Plan
- **Bike Network**
- Existing Land Use
- Population Density



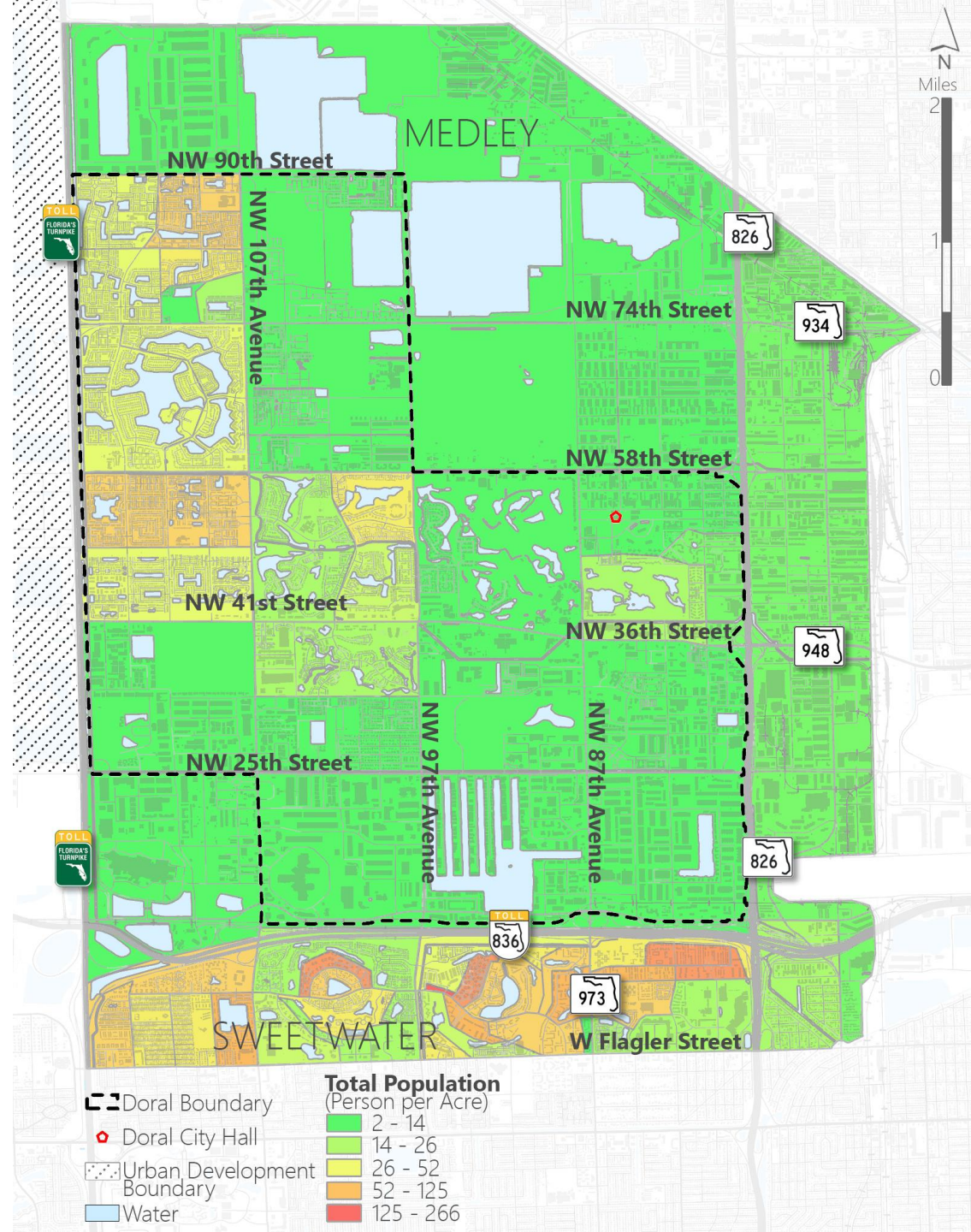
DORAL TODAY

- City Boundary
- Doral Trolley Routes
- MDT Routes
- SMART Plan
- Bike Network
- **Existing Land Use**
- Population Density



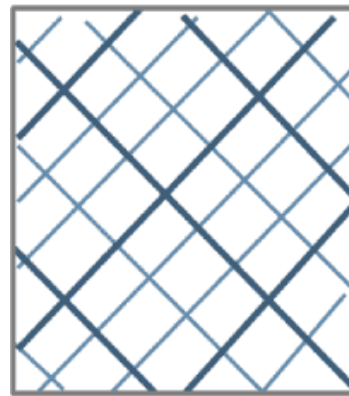
DORAL TODAY

- City Boundary
- Doral Trolley Routes
- MDT Routes
- SMART Plan
- Bike Network
- Land Use
- **Population Density**



DISCUSSION POINTS

1. Land Use
2. Mode
3. Technology
4. Branding
5. Policy



Conventional Grid
Pattern (c 1900)



Curvilinear Loop Pattern &
Beginning of Cul-de-Sacs (1930-1950)



Conventional
Cul-de-Sac Pattern
(since 1950)

— *Arterial road*

— *Local street*

DISCUSSION POINTS

1. Land Use
2. Mode
3. Technology
4. Branding
5. Policy



DISCUSSION POINTS

1. Land Use
2. **Mode**
3. Technology
4. Branding
5. Policy



DISCUSSION POINTS

1. Land Use
2. Mode
3. Technology
4. Branding
5. Policy



U.S. Patent Jan. 29, 2019 Sheet 5 of 11 US 10,192,189 B2

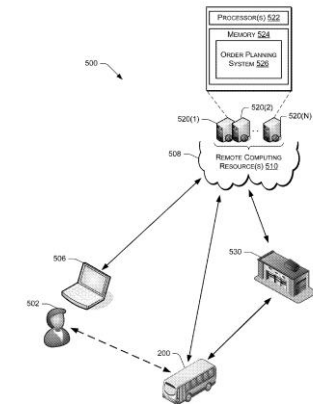


FIG. 5



DISCUSSION POINTS

1. Land Use
2. Mode
3. Technology
4. Branding
5. Policy



DISCUSSION POINTS

1. Land Use
2. Mode
3. Technology
4. Branding
5. Policy



NEXT MEETING



When:
Summer
2019



Where:
City of
Doral

Doral Trolley/SMART Plan Study

Public Workshop Meeting #1

SIGN-IN SHEET

[illegible]

MINUTES:

PUBLIC WORKSHOP MEETING #1

Call to Order:

A meeting with City of Doral and Gannett Fleming was held on Thursday, March 28, 2019 from 6:00 PM to 8:00 PM at the City of Doral Government Center, Third Floor Training Room.

Attendees:

Attendees include Rita Carbonell (City of Doral), Shirley Forero (City of Doral), Jorge Gomez (City of Doral), Maria Tery Vilches (Miami-Dade Transportation Planning Organization), Carlos Cejas (Gannett Fleming), Ivan Jimenez (Gannett Fleming), and Edward Aparicio (Gannett Fleming) plus citizens (see attached sign-in sheet).

Minutes:

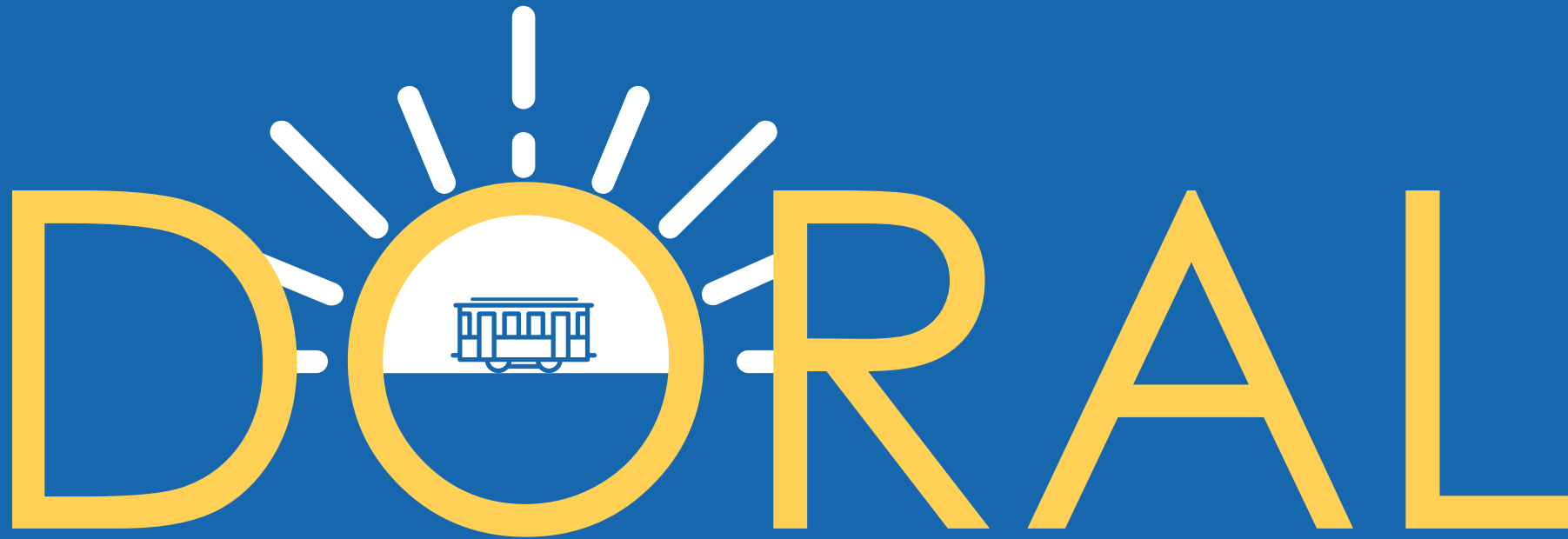
The public workshop began with a brief presentation of the study's scope and schedule, purpose for the meeting, and snippets of Doral's transportation network existing conditions. This presentation followed an open-floor discussion around five (5) points: Land Use, Mode, Technology, Branding, and Policy. Below is a summary of topics discussed for each of these points.

- Land Use:
 - The audience expressed opposition to gated communities and multi-residential developments that prevent the transportation network from having a grid pattern and instead segregate the network by forming a clusters of loops pattern.
 - The audience expressed skepticism to the idea of land use pattern changing in the future. Most attendees believed development of gated communities will continue and existing gated communities will have legal protection against providing paths/roads to create a grid pattern transportation network.
- Mode:
 - A few members of the audience were in favor of prioritizing non-motorized modes of transportation, such as bicycling, but *most* attendees were in favor of prioritizing transit services.
 - Arguments against bicycle infrastructure investment included comfort and convenience issues due to weather/climate, safety issues to existing unsafe

- bicycle facilities on auto-centric roadways, and connectivity issues due missing gaps in the bicycle network.
 - Another argument raised against bicycle investments was a lack of will/culture for using this mode of transportation. This argument was supported by the fact that Spin, a private dockless bicycle/scooter rental company, failed to generate enough ridership to continue operations in the City.
 - Most audience members expressed a need for better transit service to Metrorail and future premium transit services connecting to Downtown Miami. This need is due to most commuters traveling long to medium distances in an east-west direction. The audience express discontent with current travel times and frequencies of the trolley routes to the Palmetto Station.
 - Similarly, most attendees agreed with a proposition of improving the service for students during peak periods; noting that commuters and students have different schedules and demands.
 - Others expressed a need for more on-demand services such as Uber, Lyft, car-sharing (Zipcar) or Personal Rapid Transit (PRT).
 - Zip car was brought up to discuss as an alternative to owning a personal vehicle. Other rebuked this suggestion as creating more a of problem than a solution – more cars in the city, not less.
 - Other modes, such as FreeBee, were considered positive supplements to the trolley service but maintaining and improving the trolley was express as the top priority. A possible solution could be to investigate a mixed fleet solution, with smaller vehicle used during low demand periods of the day, larger occupancy vehicles used during peak periods. Premium transit within Doral was envisioned as far away concept that will not be applicable for many years to come.
- Technology:
 - One attendee suggested partnering with Uber or Lyft to mine origin-destination data. The idea behind this endeavor is to provide reliable public on-demand services or improve trolley service by making routes more flexible and geared towards individual trips.
 - One innovative idea offered was to display QR codes on trolley buses that direct mobile phone users to the City's trolley website or mobile application
 - Most attendees agreed that the existing mobile application is inaccurate in reporting ETA

- Automation of vehicles and signal priority were briefly discussed with a positive attitude. These technologies are needed efficiencies in the future.
- Some people expressed a need to focus on the 100,000 plus people that travel through the City daily but do not necessarily live in the City. Aside from providing mobility to citizens and transit-dependent people, an important travel market are workers commuting into the City.
- Branding
 - The FIU route was brought into question given its specialized service to students and the route going outside of the City boundaries. Attendees claimed FIU should support the trolley route in some manner. This route could incentivize students to rent and live in Doral.
 - More advertising of trolley services was recommended given many students or City outsiders do not know the trolley is free and all the destinations it connects.
 - A lunch route using a combination of FreeBee and Trolley was recommended. This route should be organized through employers, giving potential for co-branding.
 - Co-branding on trolley buses was seen as positive as long as advertisement on the buses is “clean and appropriate”.
 - Attendees minimally discussed transit infrastructure. While some agreed poor infrastructure is a major impediment to using transit, most agreed the City should focus on the reliability of the trolleys; making sure proper frequencies are provided at peak times.
 - East-West connections we need more improvement along 25th and 58th street to be able to move cars east-west of Doral. Getting out int the morning from Doral, it takes forever. 97th Ave and 58th Street needs improvement. Widening appears to be occurring at this intersection. 25th and 58th Street is a major concern to move east-west, possibly dedicated lanes/queue jumping.
- Policy
 - Most audience members understood land use is the guiding policy behind transportation demand. They want to see results and not more studies.
 - While most people disagreed with gated communities, some also expressed dislike for high-rises and mixed-used development. These sentiments are guided by a desire to improve the existing transportation network while maintaining Doral’s suburban environment.

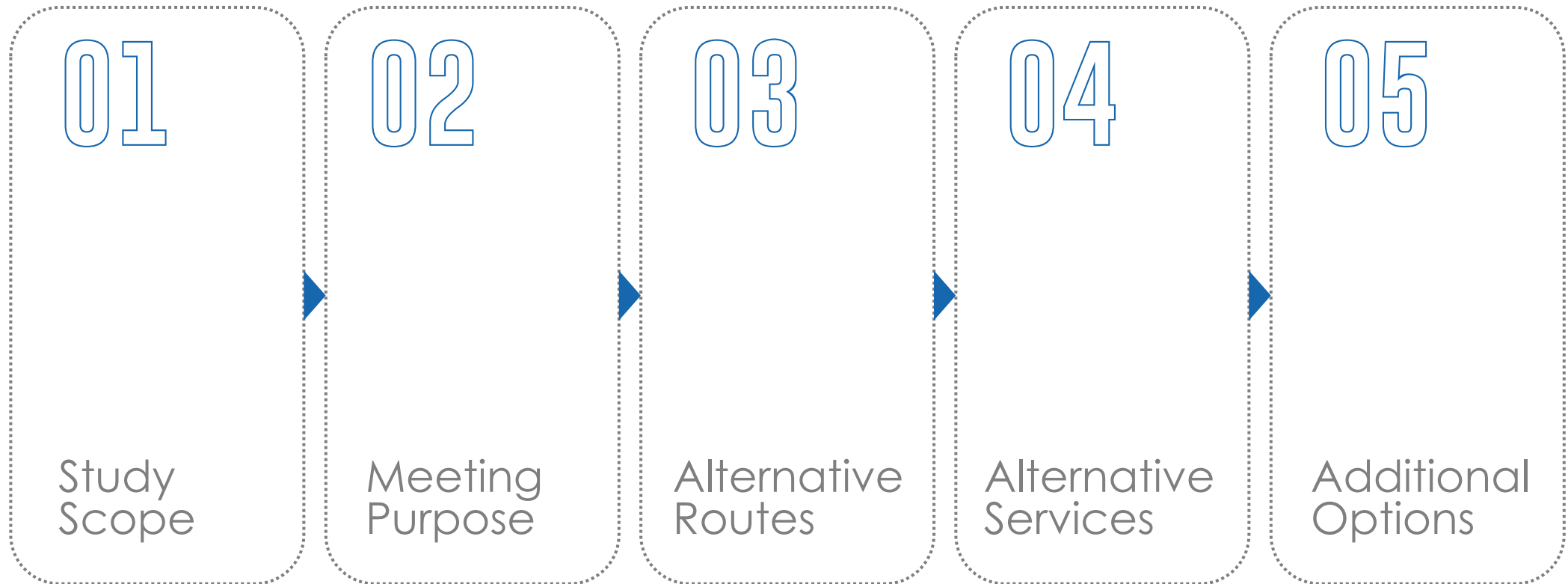
- When can we see action after this study? How long? Much of the action is determined by acquired funding through various sources such as the Half Penny Tax.
- People were very enthusiastic about getting more businesses involved with this study and making businesses aware of their potential benefits from the outcomes of this study.



TROLLEY

SMART PLAN COORDINATION STUDY
ALTERNATIVE DEVELOPMENT PRESENTATION

AGENDA



STUDY SCOPE

WE ARE
HERE



Initial Coordination

Intermediate Coordination

Final Coordination



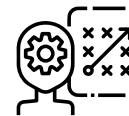
Existing System
Review



Peer
Systems
Review



Infrastructure
Guidelines



Alternatives
Development



Alternatives
Analysis



Recommendations
and Action Plan

MEETING PURPOSE

We want to gather your feedback on alternatives developed to solve existing and future needs of the Doral Trolley.

Which alternative(s) do you prefer?

Which service(s) do you prefer?

Do you have other recommendations?

ALTERNATIVE ROUTES



METHODOLOGY

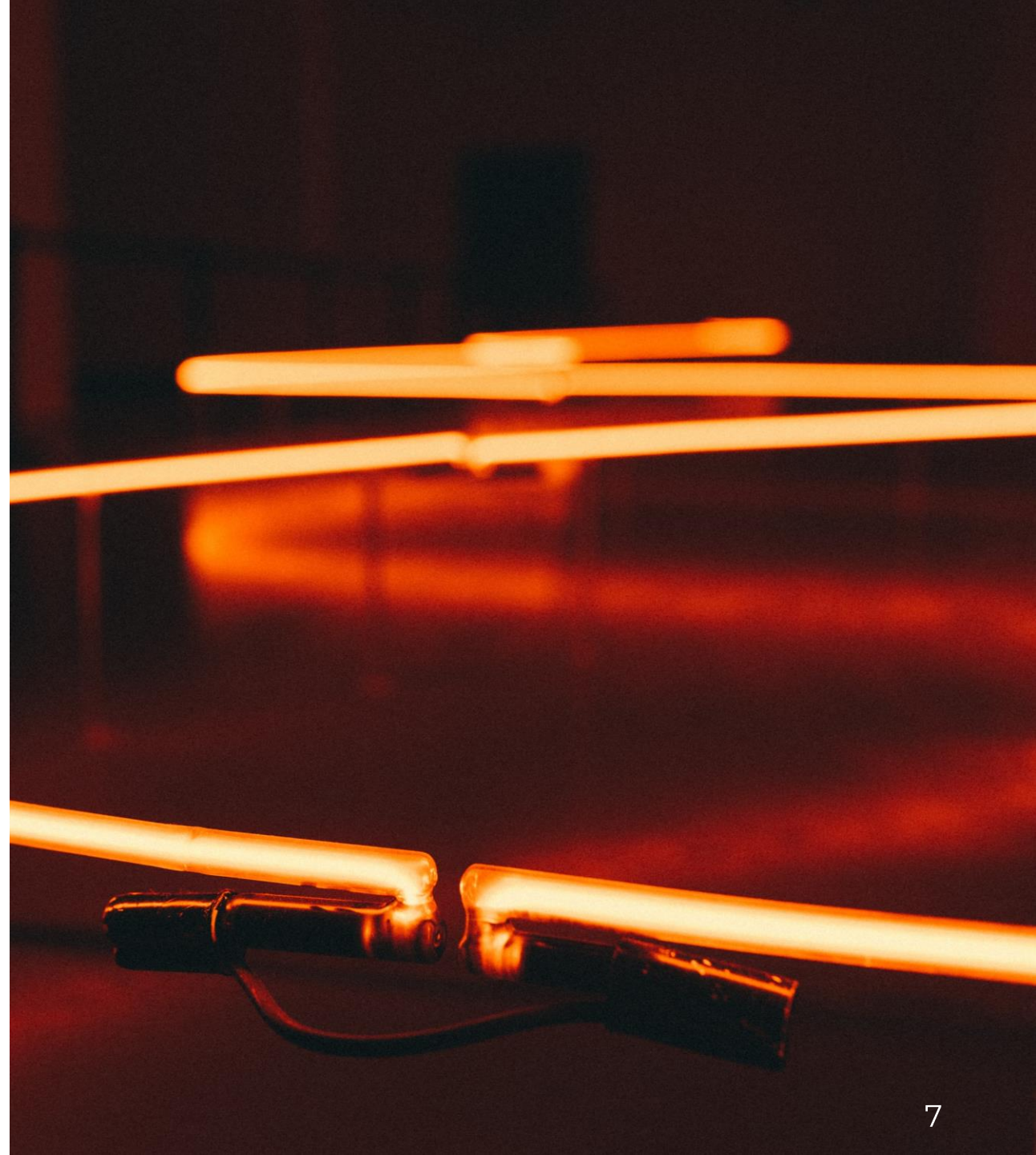
Four distinct route networks = alternatives were created by:

- 1** Modifying existing routes to connect new developments = **“MISSING LINK”** alternative
- 2** Consolidating existing routes to form new connections = **“ONE SEAT RIDE”** alternative
- 3** Developing new routes to connect to a central hub = **“HUB & SPOKE”** alternative
- 4** Reimagining a grid of routes that connects the entire City = **“THE GRID”** alternative

MISSING LINK

alternative

- 1** Modifies existing routes
- 2** Connects new developments
- 3** Serves anticipated City annexations

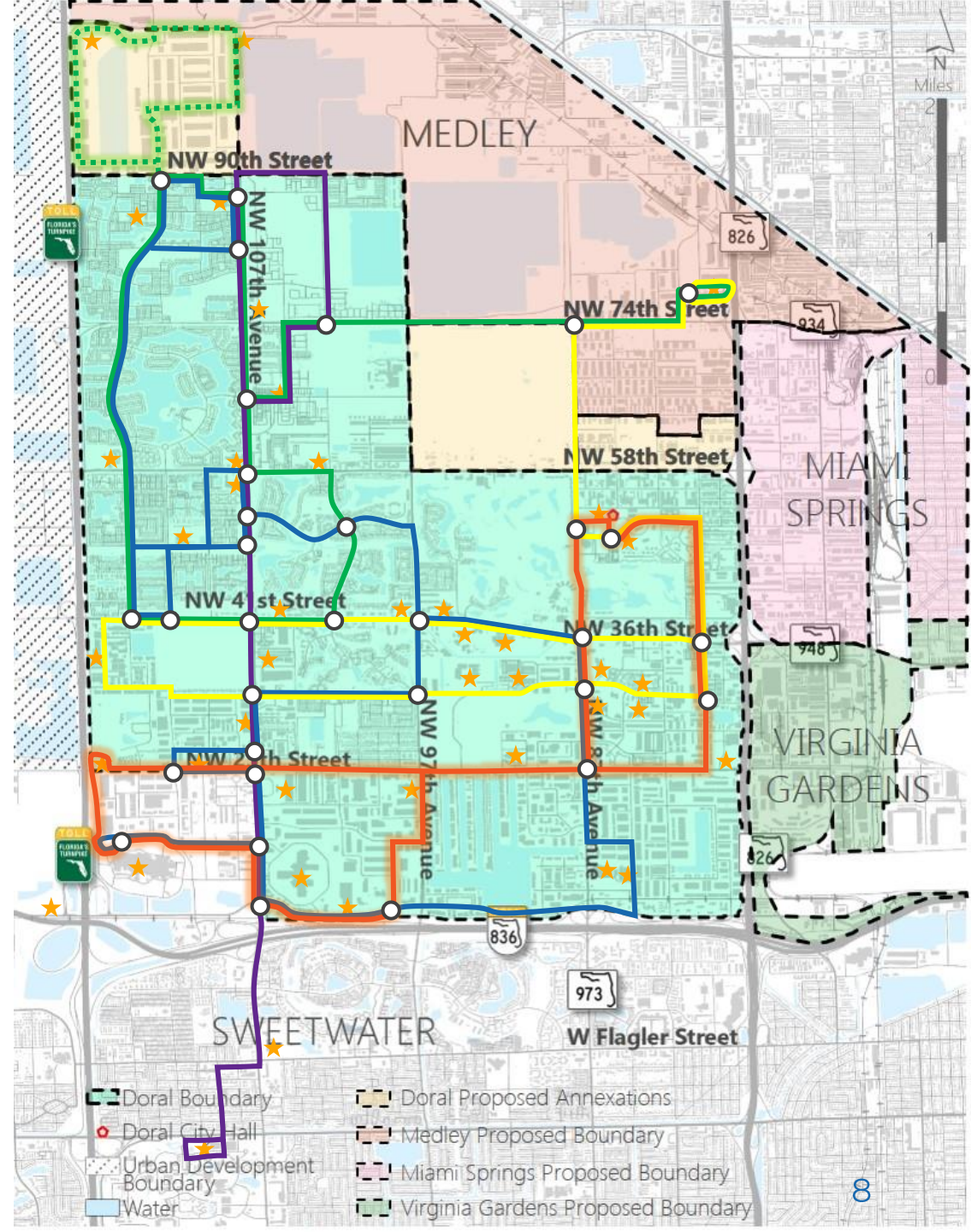


MISSING LINK

alternative

the routes

- Route 1
- Route 2
- Modified Route 3
- Route 4
- New Orange



ONE SEAT RIDE

alternative




- 1** More in-motion time, less wait time
- 2** Easier for riders to memorize routes
- 3** No major transfers required

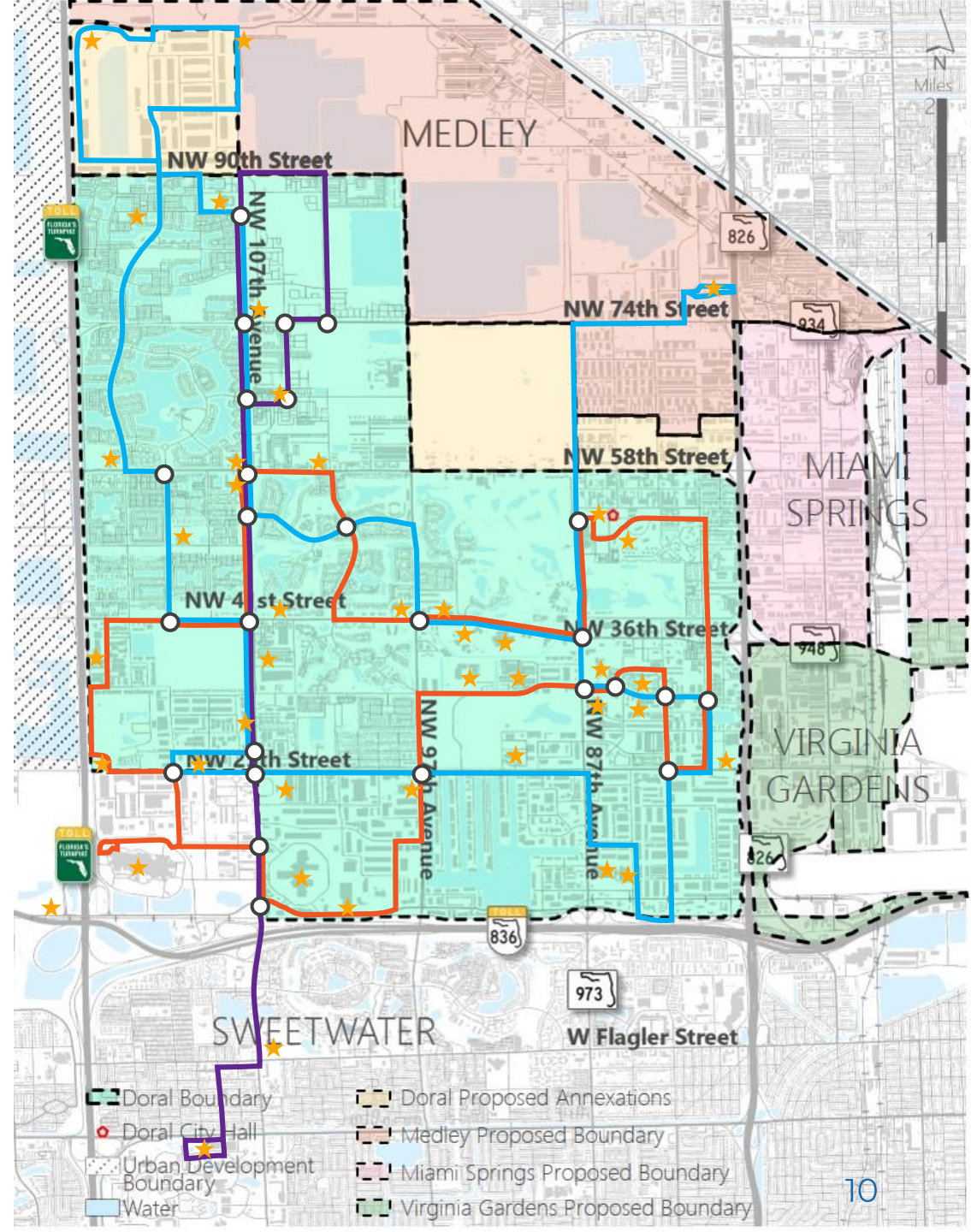


ONE SEAT RIDE

alternative

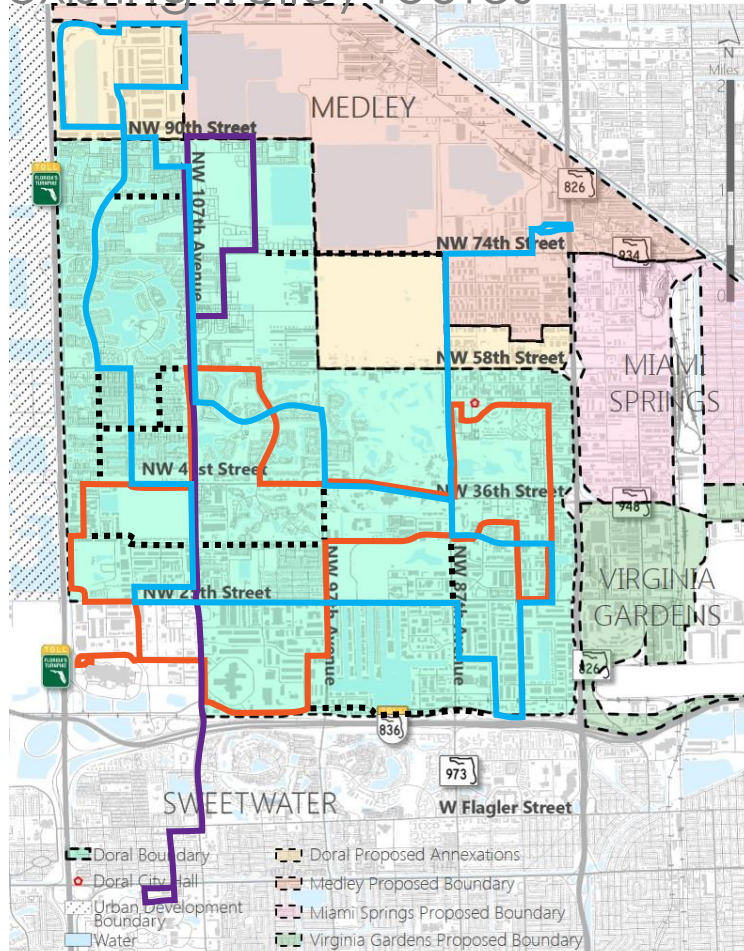
the routes

-  New Blue
-  New Orange
-  Purple

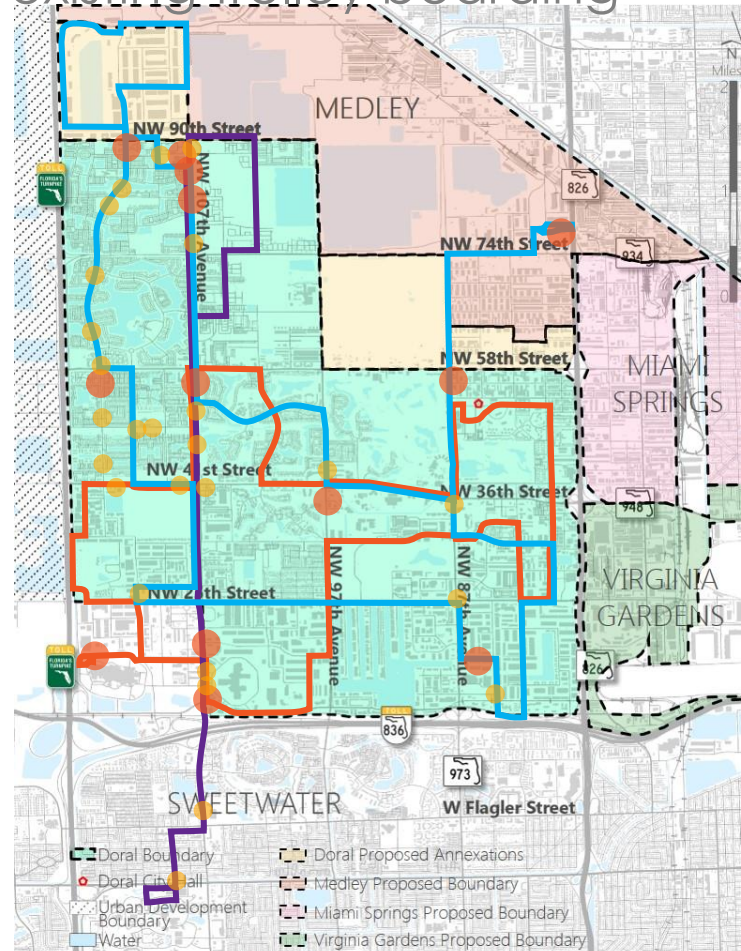


How “One Seat Ride” compares...

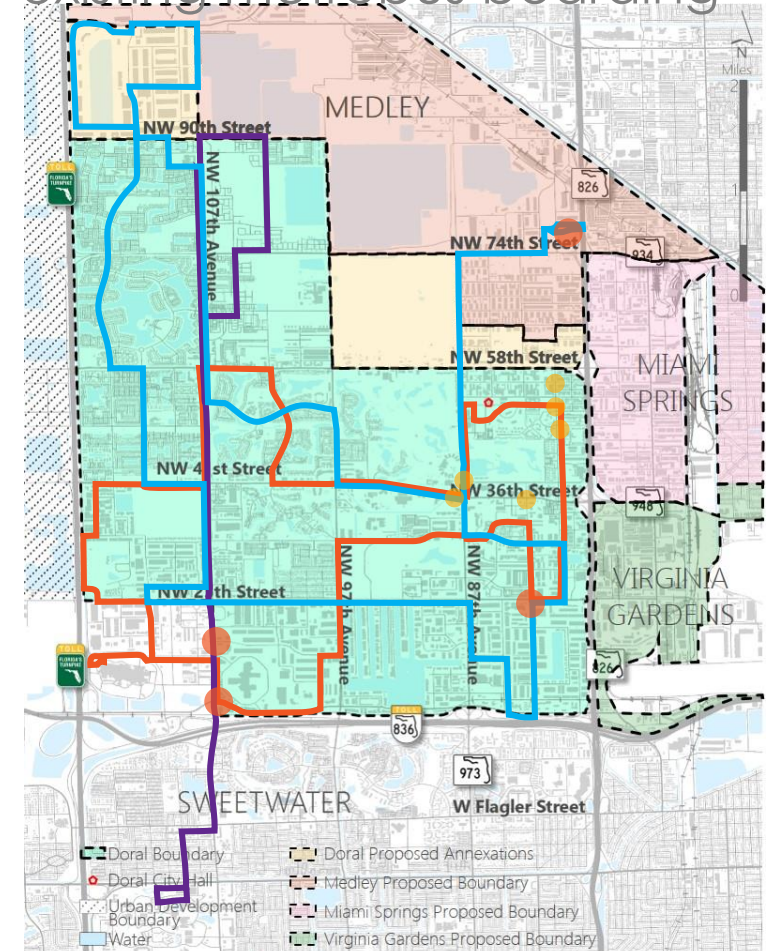
existing trolley routes



existing trolley boarding



existing metrobus boarding



HUB & SPOKE

alternative

- 1 More connections,
with a single transfer
- 2 Highly active and
practical transfer point
- 3 Good connectivity
to regional transit

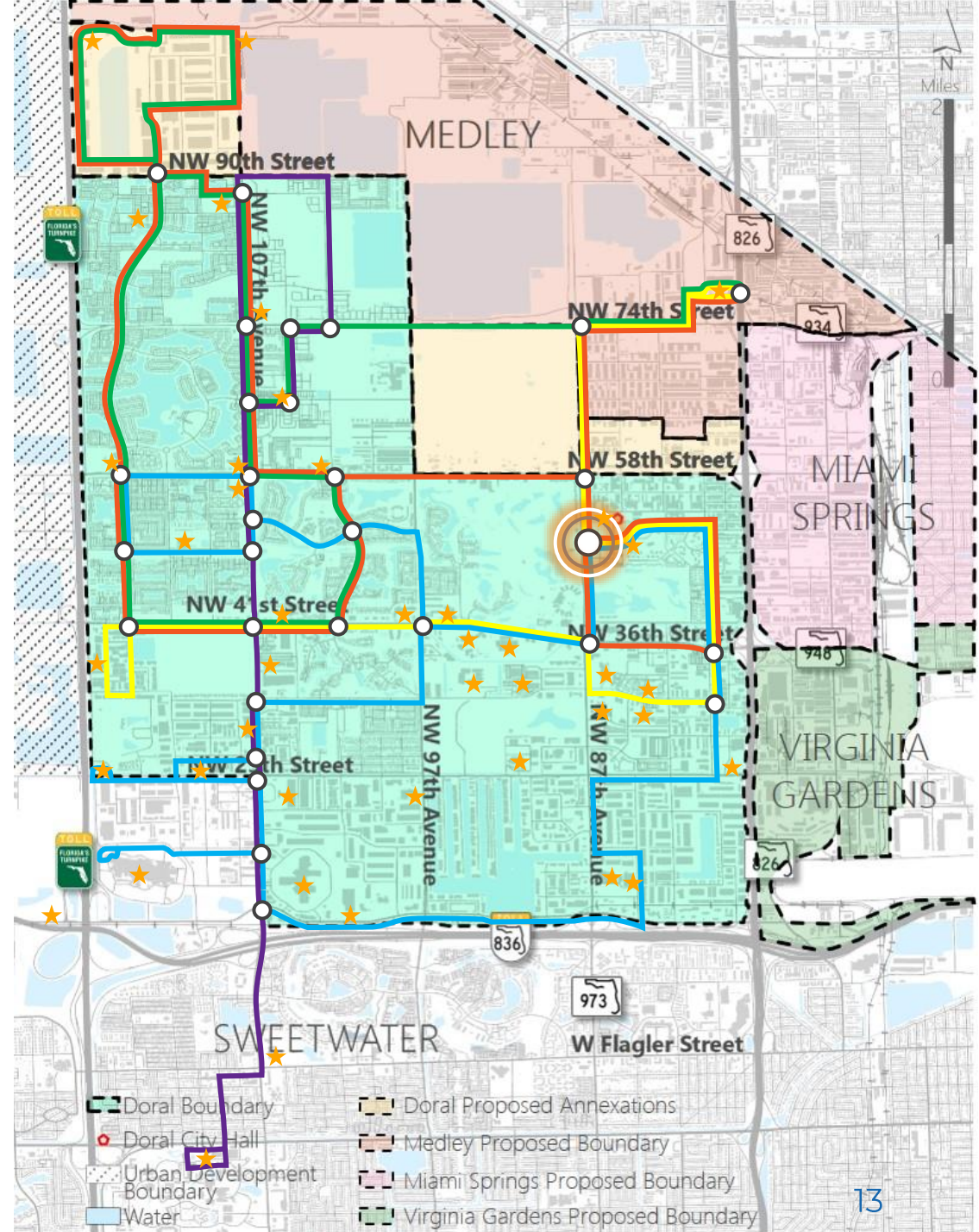


HUB & SPOKE

alternative

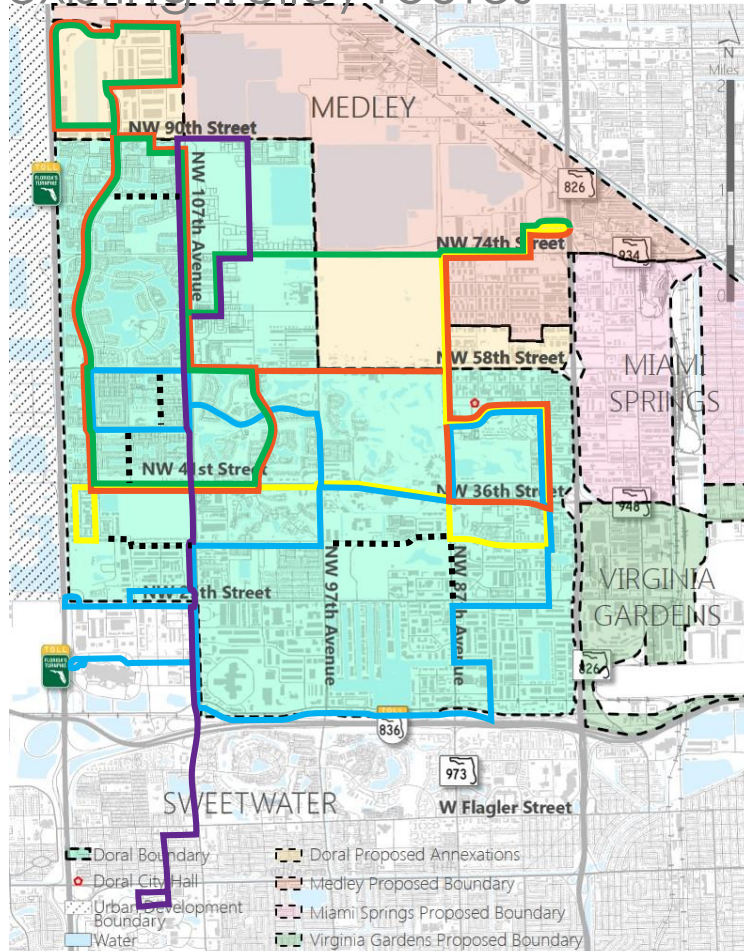
the routes

-  New Blue
-  New Orange
-  New Yellow
-  New Green
-  Purple

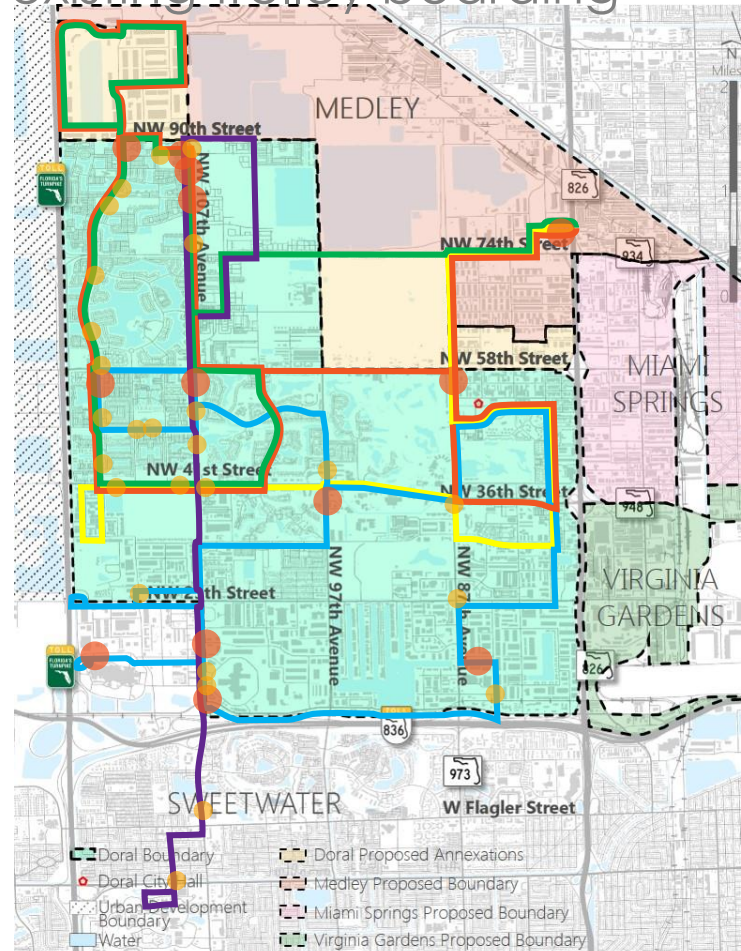


How “Hub & Spoke” compares...

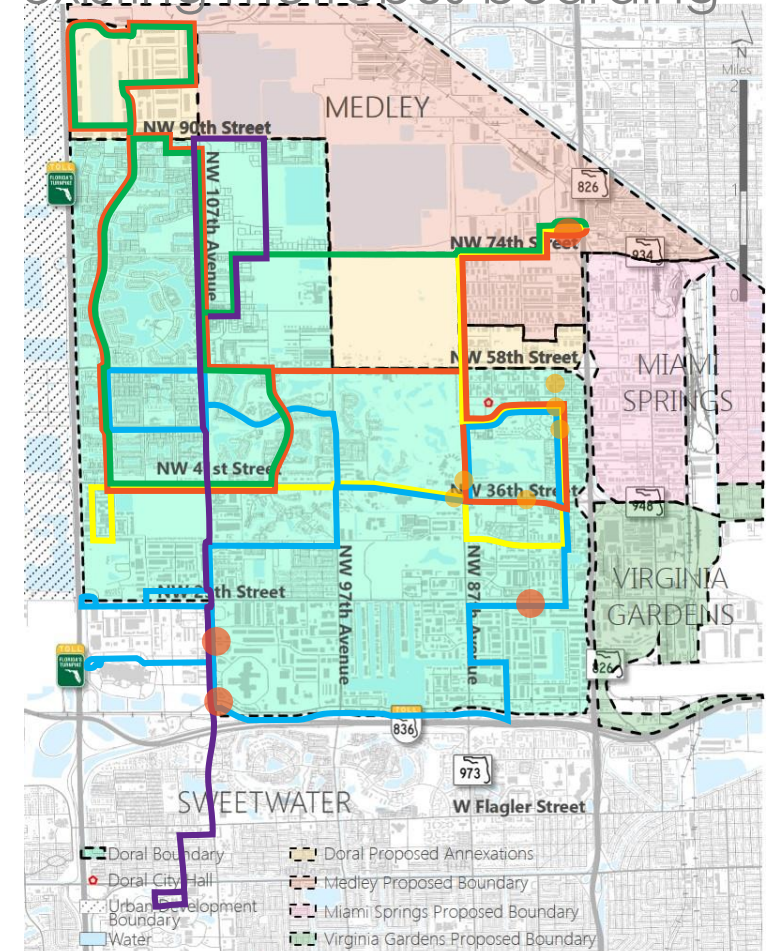
existing trolley routes



existing trolley boarding



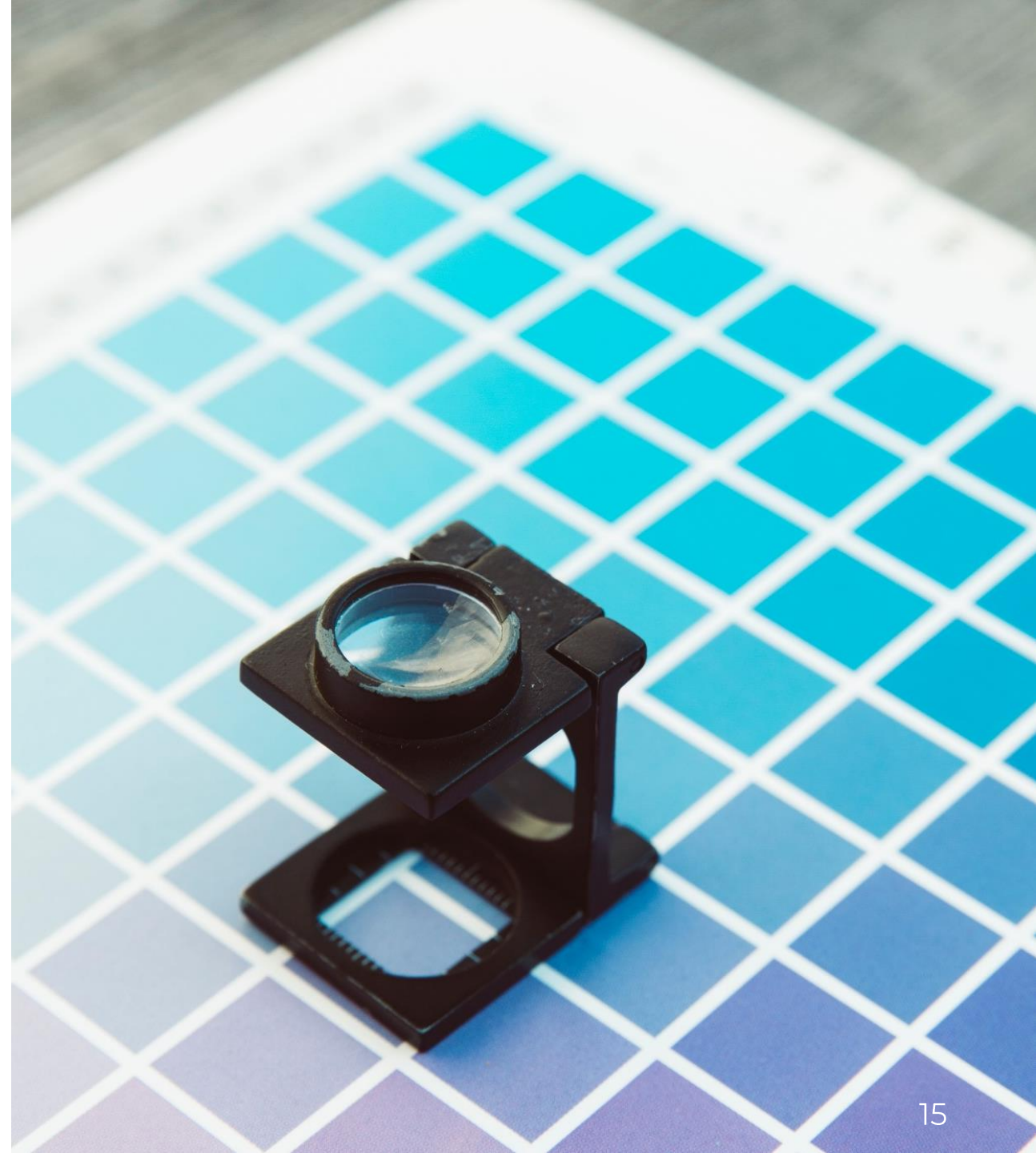
existing metrobus boarding



THE GRID

alternative

- 1 Full coverage,
with a single transfer
- 2 Focused on high
activity corridors
- 3 Reliable and
intuitive routes

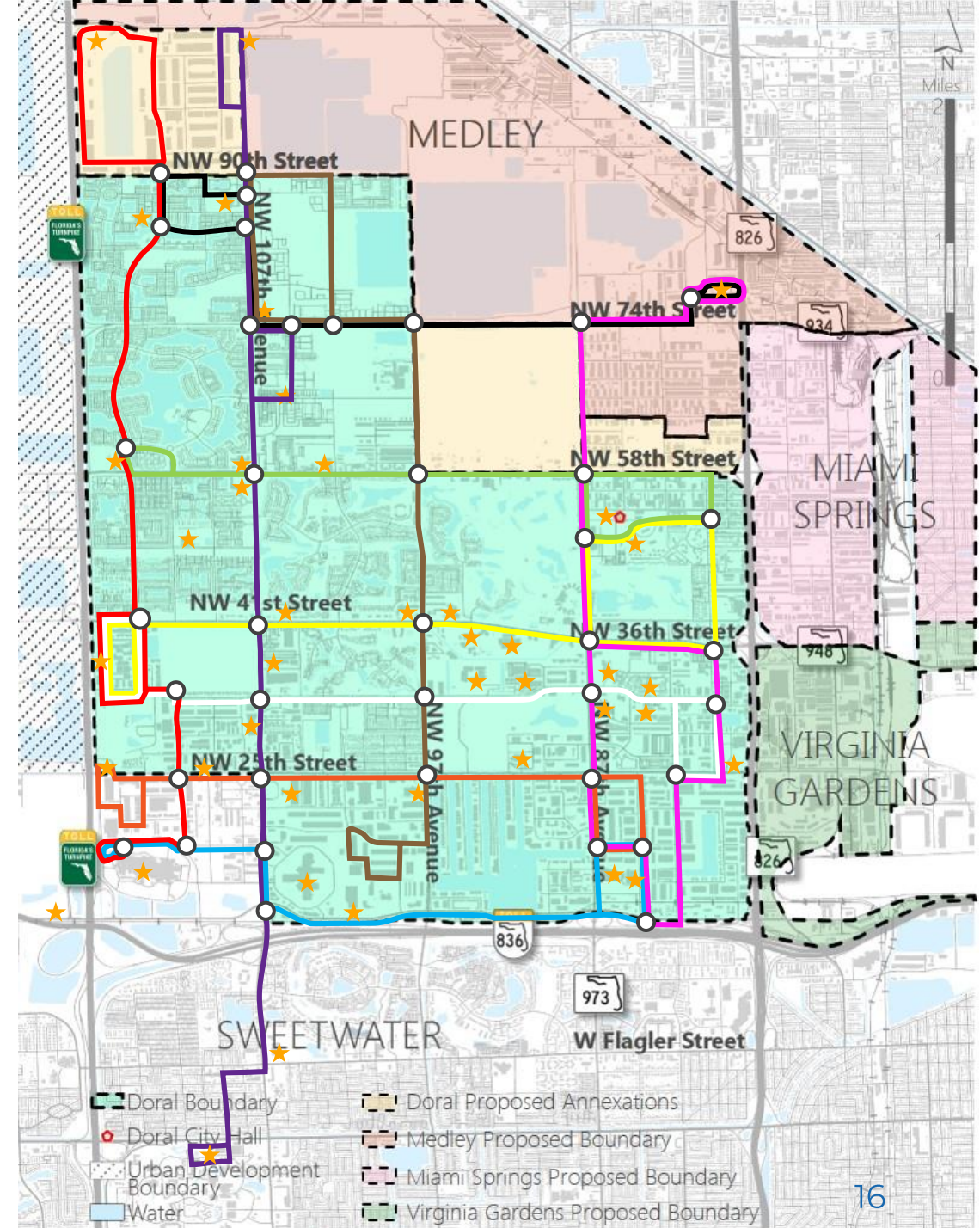


THE GRID

alternative

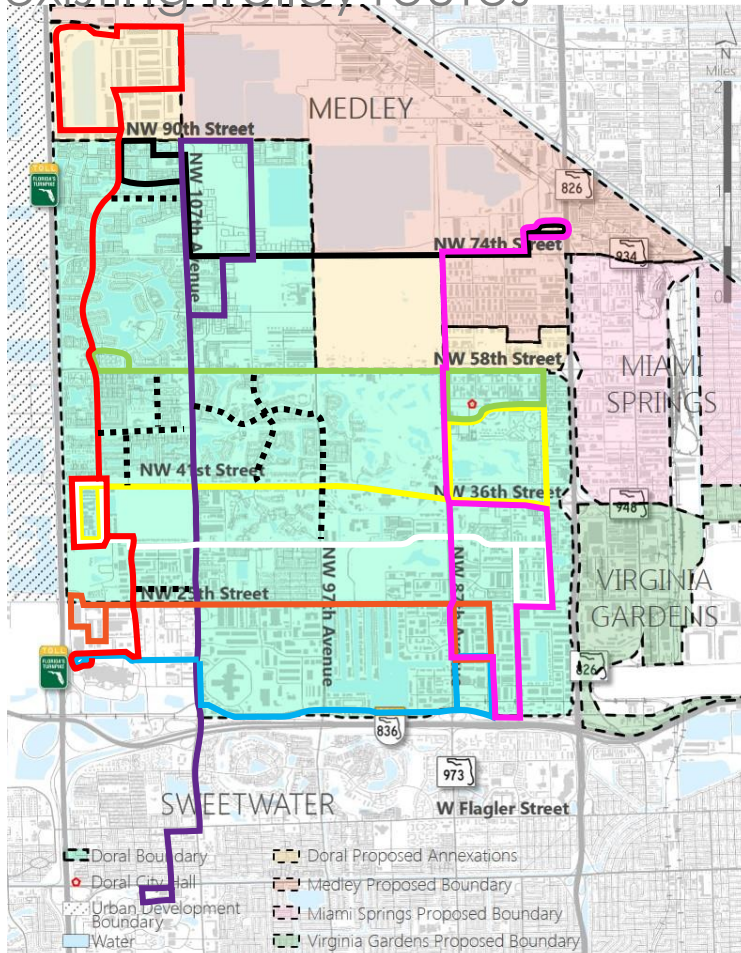
the routes

	New Blue		New Black
	New Orange		New Red
	New White		New Brown
	New Yellow		New Pink
	New Green		Purple

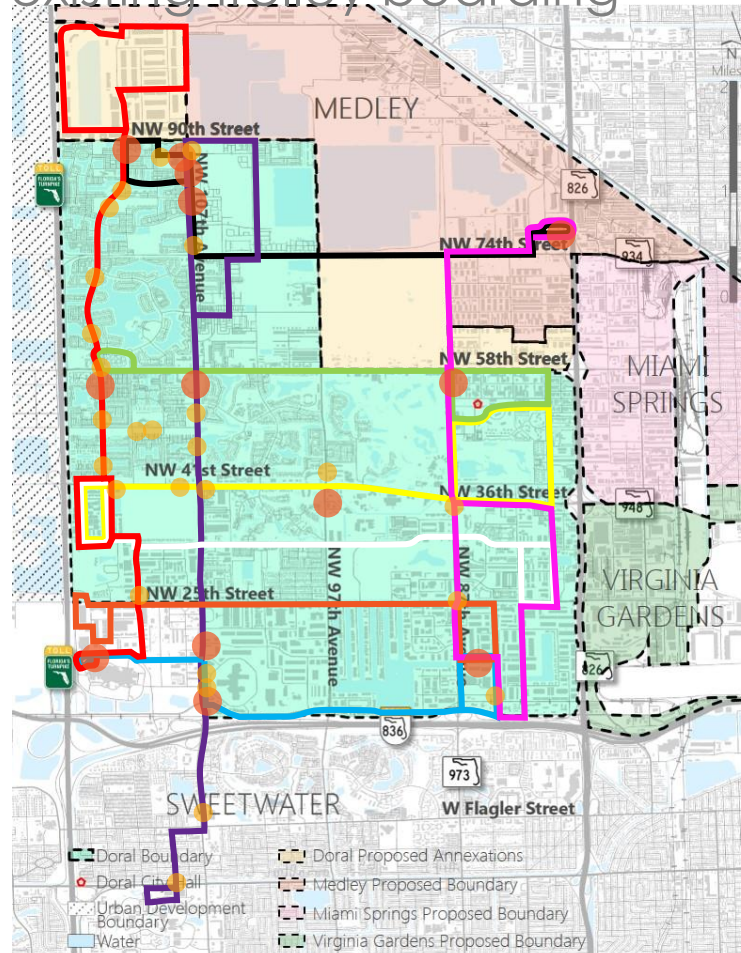


How the grid compares...

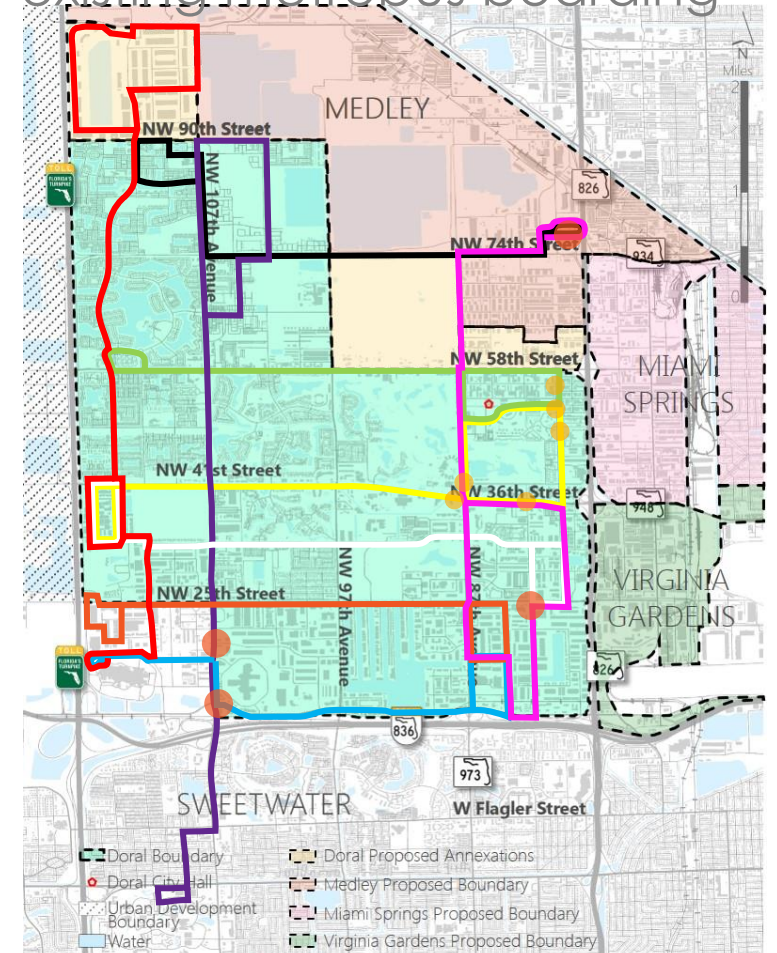
existing trolley routes



existing trolley boarding



existing metrobus boarding



THE HYBRID

alternative

- 1 Tries to combine the most useful traits
- 2 Balances coverage and ridership
- 3 Provides opportunity for flexibility



ALTERNATIVE SERVICES



improving
SERVICE QUALITY



Two-way
Service

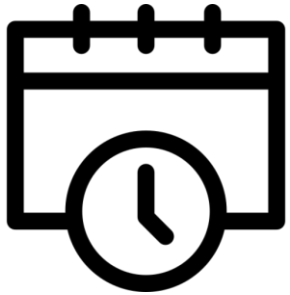


Increasing
Frequency

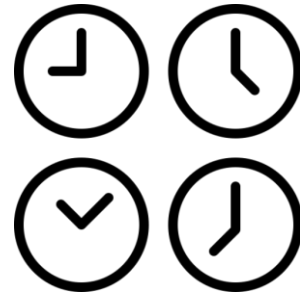
understanding

FLEXIBLE TRANSIT SERVICE

Flexible Timing



Fixed
Schedule



Advance
Reservation



On-Demand

understanding

FLEXIBLE TRANSIT SERVICE

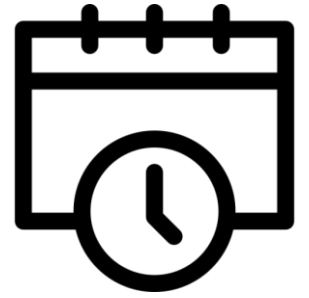
Flexible Routing



Fixed
Routes



Route
Deviation
(Bounded)

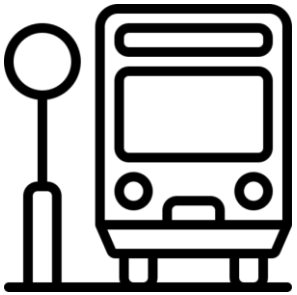


Route
Deviation
(Unbounded)

understanding

FLEXIBLE TRANSIT SERVICE

Flexible Stops



Fixed
Stops



Requested
(Bounded)



Requested
(Unbounded)

SURVEY

Please scan the QR Code
with your mobile phone's
camera

OR visit:

<https://www.surveymonkey.com/r/BWN3JC5>



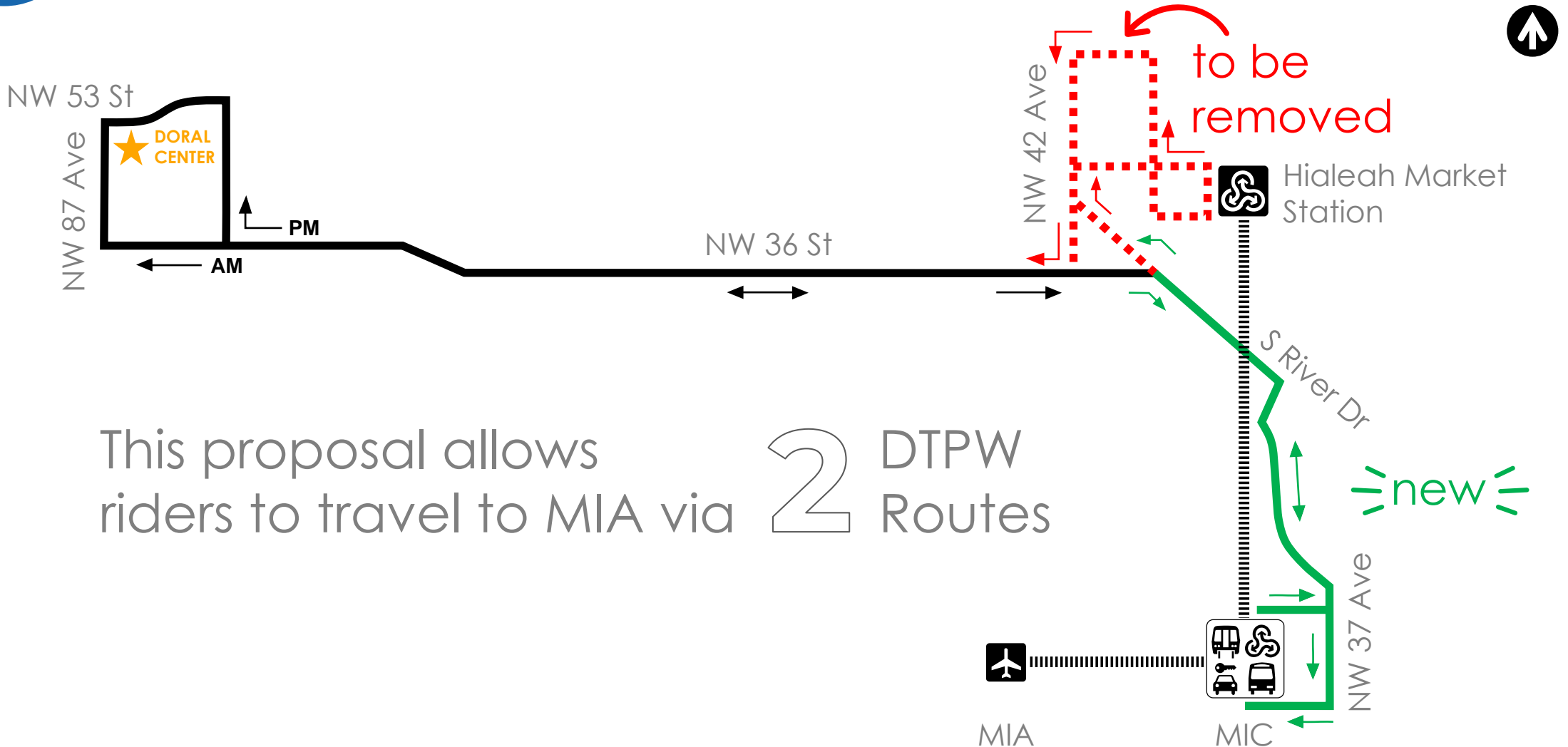
ADDITIONAL OPTIONS

A photograph of a neon sign at night. The sign is rectangular and features a white arrow pointing up and to the left, followed by the words "MORE" and "THIS WAY" in white capital letters. The sign is mounted on a dark structure, and the background is dark with some faint lights and a building visible in the distance.

← MORE
THIS WAY



modifying existing **DTPW ROUTE 132**



This proposal allows riders to travel to MIA via **2** DTPW Routes

integrating **TRACKING APPS**



Separate systems can lead to...



commuters frustrated for missing Metrorail, or...

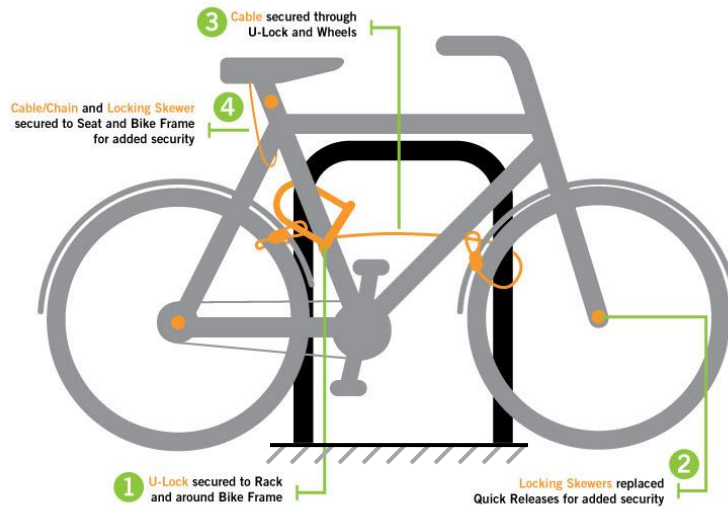


riders unaware of other mobility options.

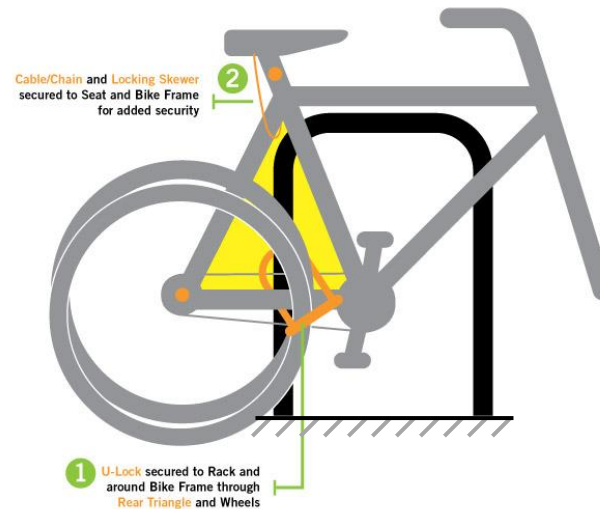
providing **BICYCLE PARKING**

Concrete embedded U-Racks are the most secure bicycle racks because they accommodate:

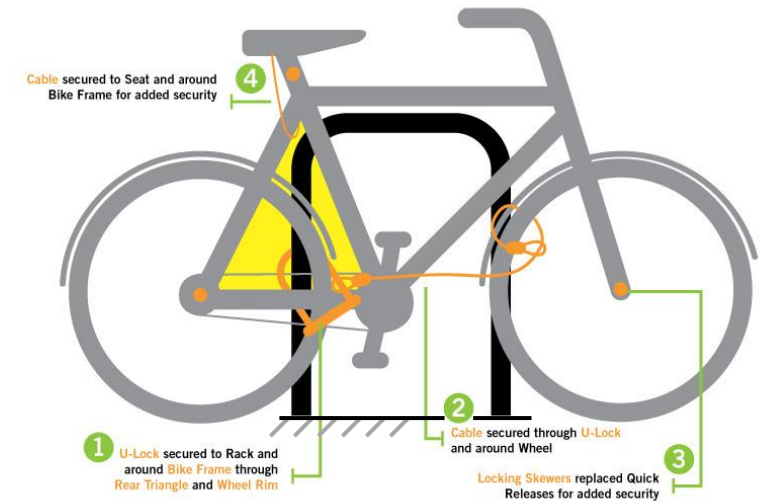
Using Multiple Locks



Removing the Front Wheel



Using the Rear Triangle



adding **PEDESTRIAN LIGHTING**



Improves passenger safety
and security...



provides opportunity to
enhance stop aesthetics...



and can enhance
wayfinding and contribute
to placemaking.

developing a new centralized **TROLLEY & BUS TERMINAL**



A centralized bus terminal can create a community center rich with...



culture and activity, and with sense of safety and security.

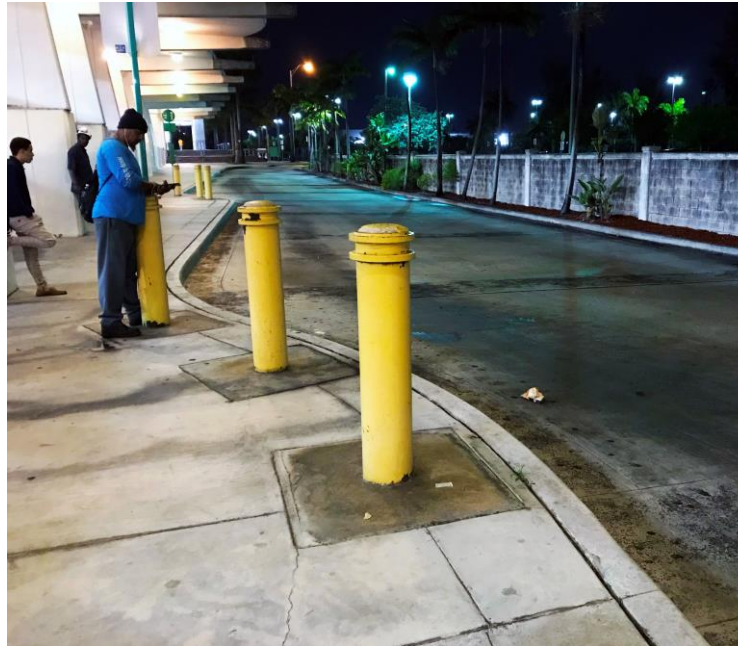


It also provides opportunities for mixed development.

improving **PALMETTO STATION**



This hub needs improved lighting, wayfinding,...



improved ADA facilities and security features,...

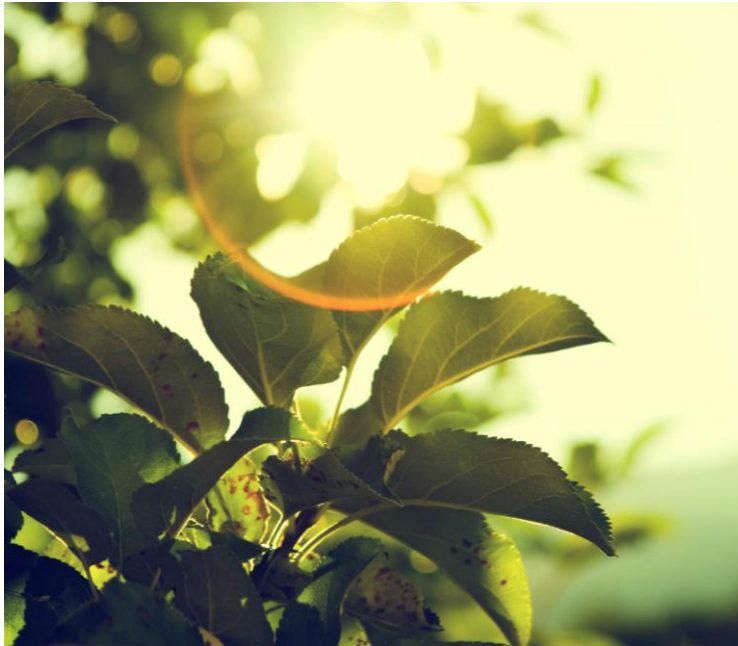


and improved protection from the elements.

replacing the
EXISTING FLEET with vehicles that offer



1 Improved
comfortability and
accessibility



2 Energy Efficiency



3 City unique design
and branding

connecting to

DOLPHIN STATION

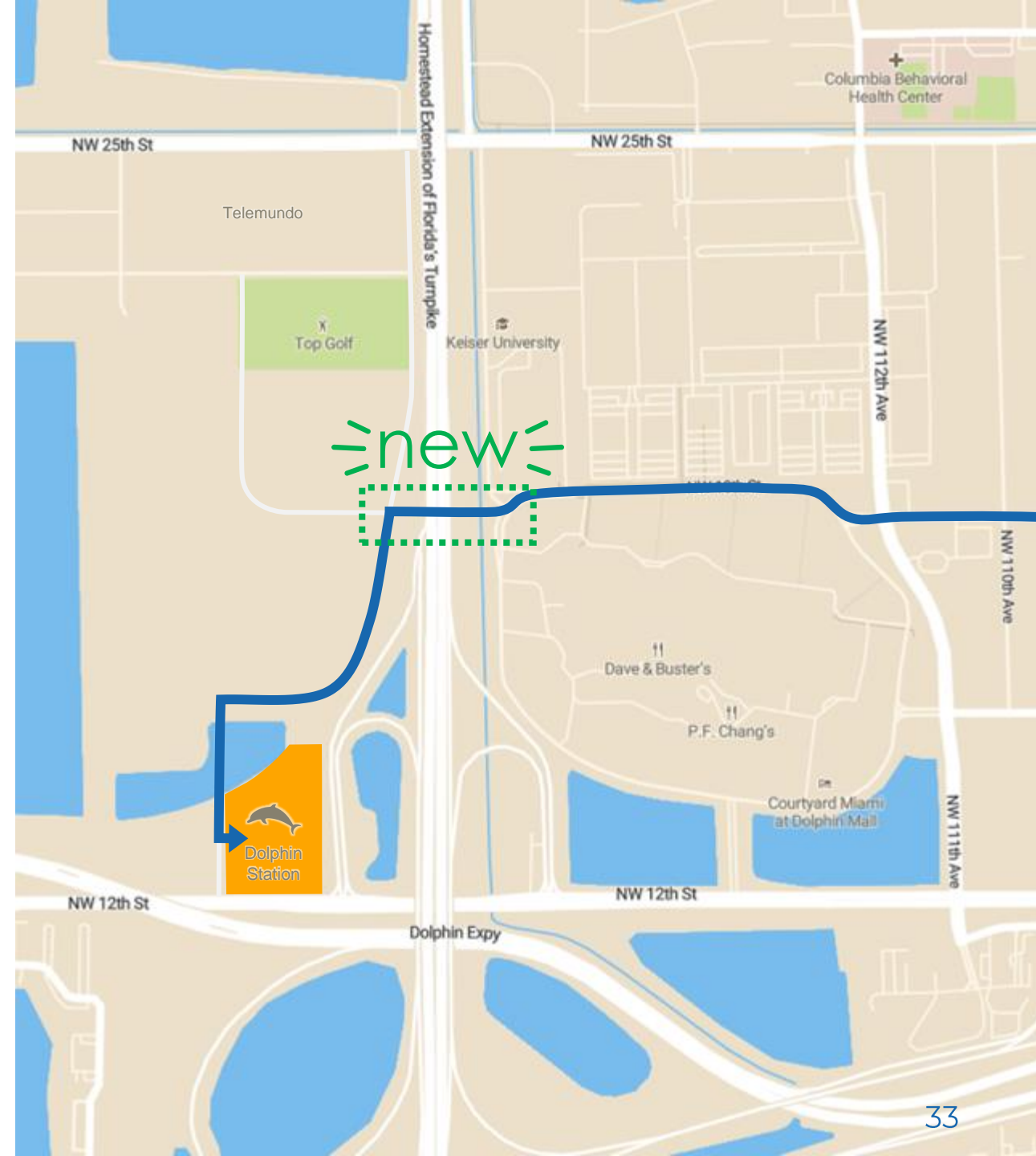
...provides access to

836 Express 

East-West Corridor
(SMART Plan Corridor) 

Turnpike Express BERT
(SMART Plan Corridor) 

DTPW Local Routes
7, 36, 71, 137, 238, and 338 



connecting to

DOLPHIN STATION



1 Pedestrian Bridge



2 Moving Walkway



3 Turnpike Underpass

NEXT MEETING



When:
JULY
2019



Where:
City of
Doral

Doral Trolley/SMART Plan Study

Business Stakeholder Meeting #2

SIGN-IN SHEET

[illegible]

MINUTES: **STAKEHOLDER MEETING #2**

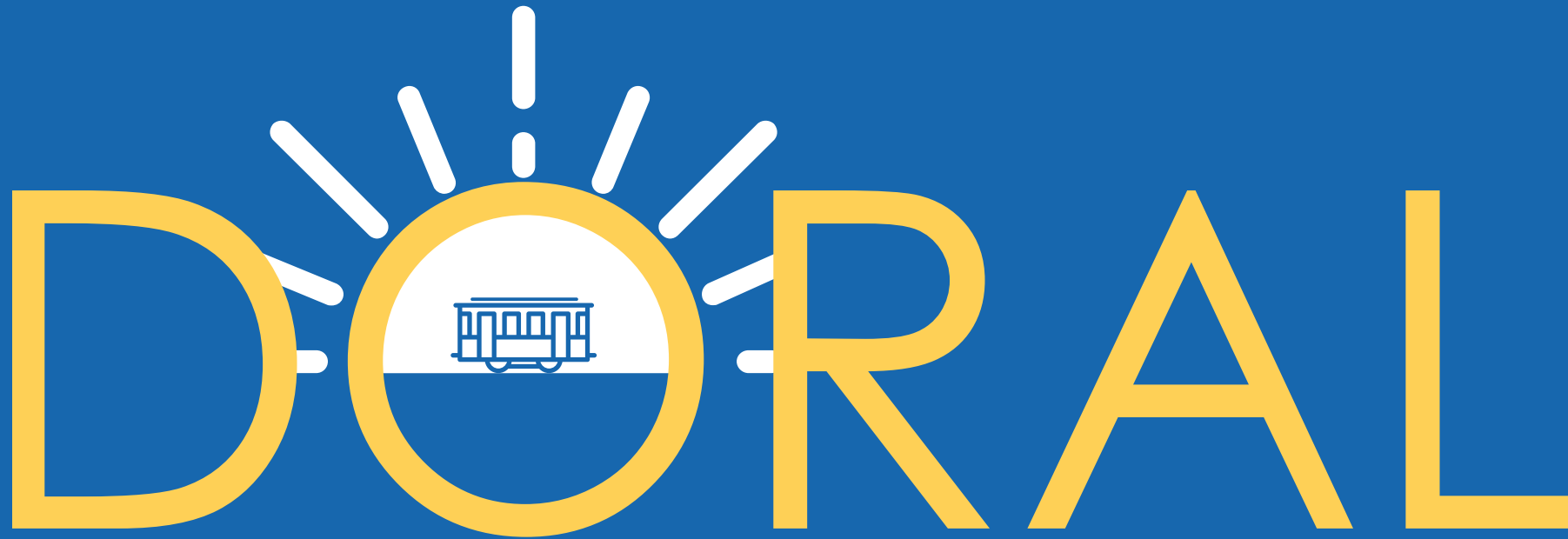
Call to Order:

A meeting with City of Doral and Gannett Fleming was held on Wednesday, June 19, 2019 from 10:00 AM to 12:00 PM at the City of Doral Government Center, Third Floor Training Room.

Minutes:

The stakeholder workshop began with a brief presentation of different proposed alternative routes, service options, and other recommendations. Viewers were also informed of an online survey to cast their votes on their preferred alternative and service option. The survey results and attendance list are attached to this document. The following notes/comments were record as express by representatives of attending businesses and organizations.

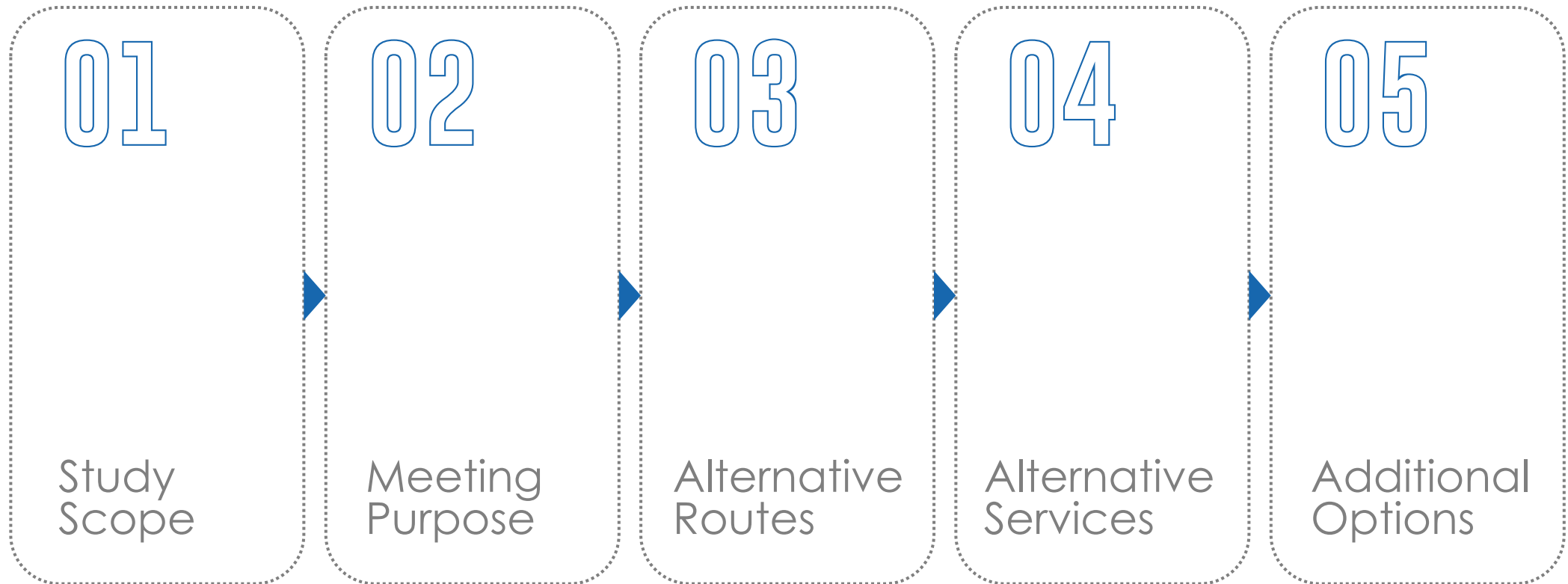
- One attendee wanted to ensure a connection to the “Our Lady of Guadalupe” religious center is provided on the recommended route. This religious center should be served during the weekends, specifically Sundays.
 - All alternative routes presented provide a connection to the religious center in reference. Sunday service will be accommodated for this destination.
- One attendee inquired about the Dolphin Station and whether the trolley will access this terminal in the future.
 - All alternative routes presented, and the existing system, connect to Dolphin Mall as an interim condition until the Dolphin Station begins operating.
- One attendee called attention to the new “Downtown Doral Charter Upper School” currently under development at the corner of NW 79th Avenue and NW 53rd Street.
- Attendees responded positively to the Hub & Spoke route alternative, fixed service options, and modifying DTPW Route 126 as proposed
- Attendees had mixed reactions to the idea of a transit terminal in Downtown Doral. Some worried about the terminal’s cost due to high-value limited real estate in Downtown Doral, others worried about congestion in this area, and others view the central stop/terminal as a good mobility option for the new middle/high school.



TROLLEY

SMART PLAN COORDINATION STUDY
ALTERNATIVE DEVELOPMENT PRESENTATION

AGENDA



STUDY SCOPE

WE ARE
HERE



Initial Coordination

Intermediate Coordination

Final Coordination



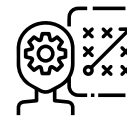
Existing System
Review



Peer
Systems
Review



Infrastructure
Guidelines



Alternatives
Development



Alternatives
Analysis



Recommendations
and Action Plan

MEETING PURPOSE

We want to gather your feedback on alternatives developed to solve existing and future needs of the Doral Trolley.

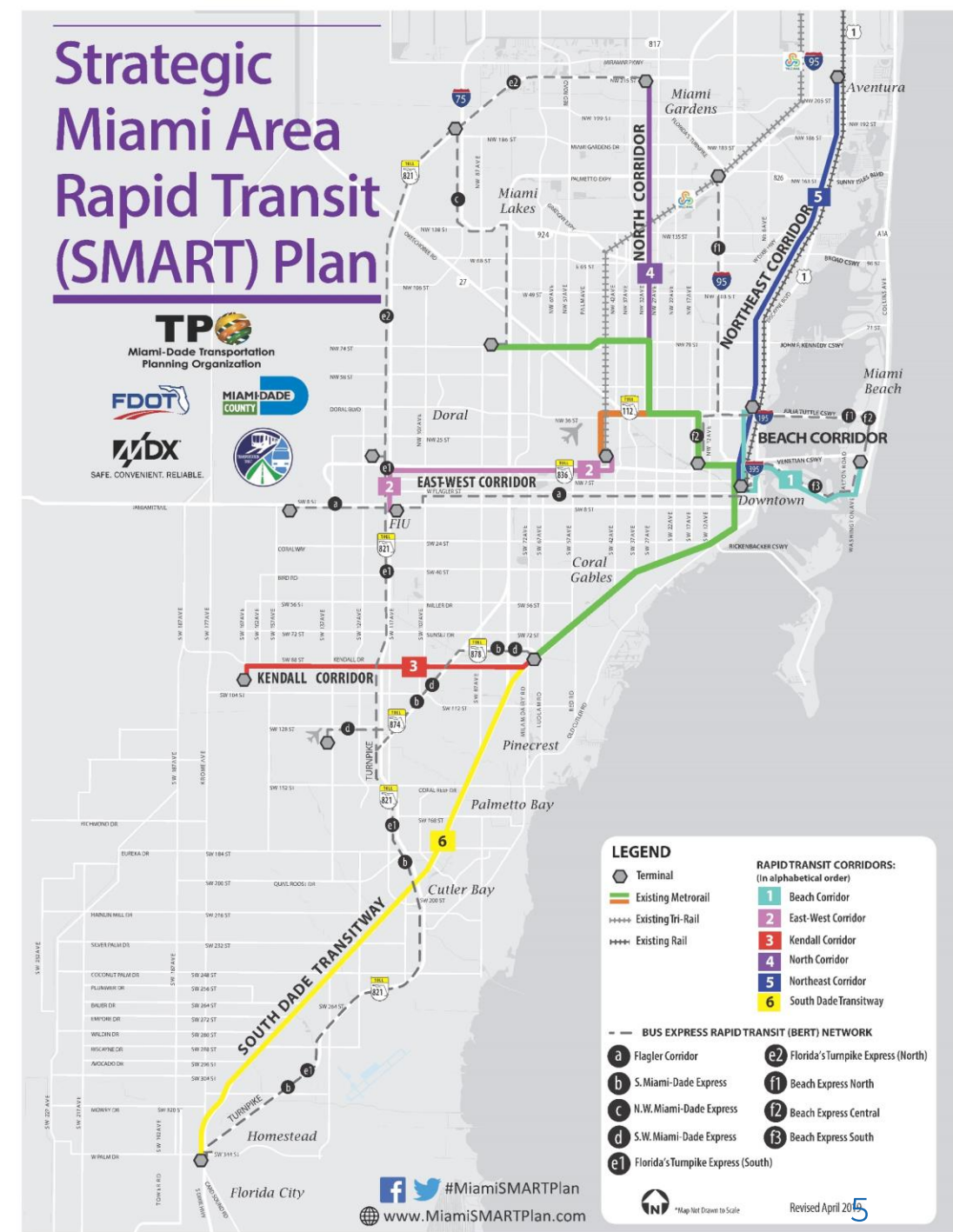
Which alternative(s) do you prefer?

Which service(s) do you prefer?

Do you have other recommendations?

MEETING PURPOSE

This study is meant to coordinate the future of the Doral Trolley System with the ongoing **SMART Plan**



ALTERNATIVE ROUTES



METHODOLOGY

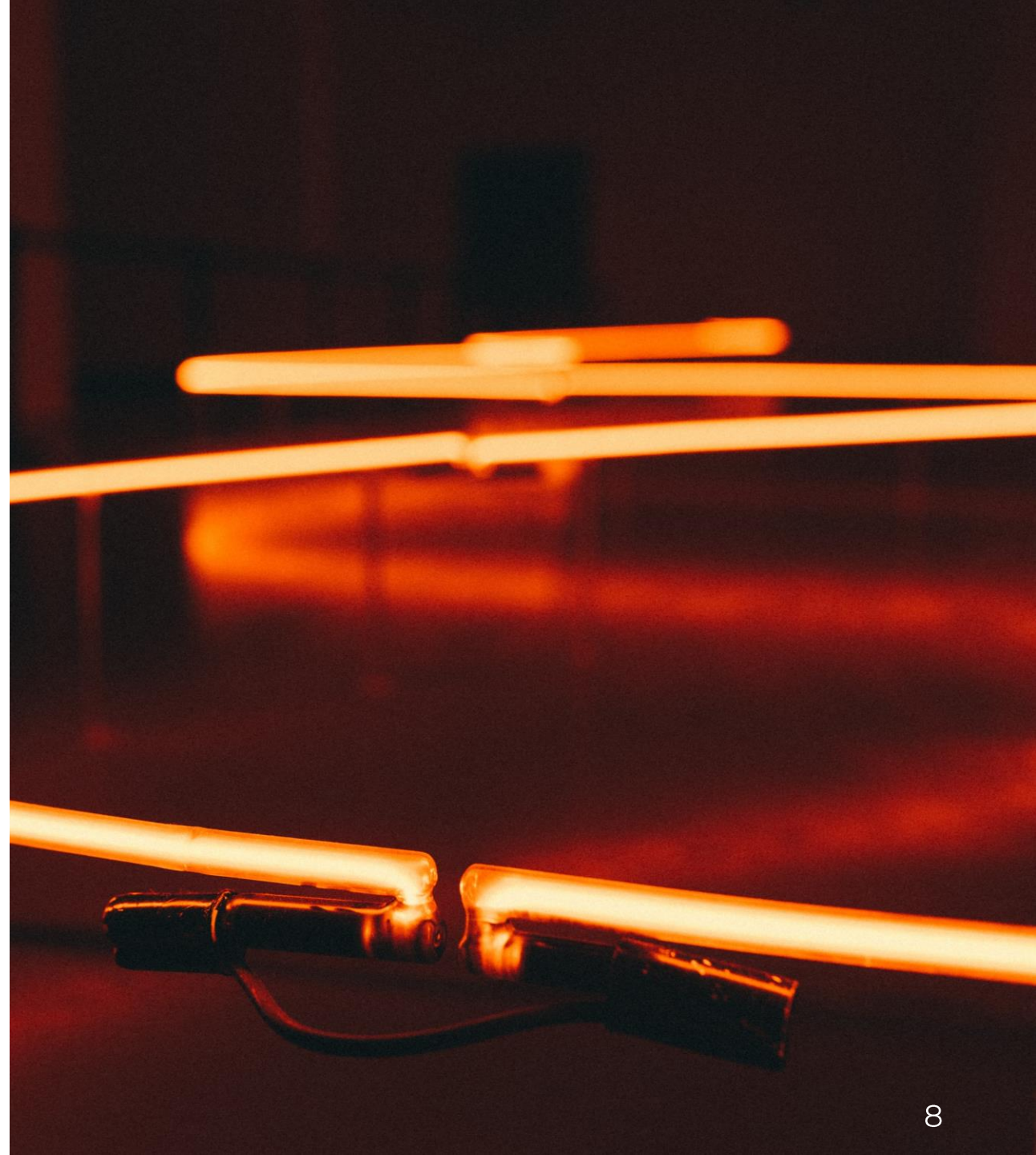
Four distinct route networks = alternatives were created by:

- 1** Modifying existing routes to connect new developments = **“MISSING LINK”** alternative
- 2** Consolidating existing routes to form new connections = **“ONE SEAT RIDE”** alternative
- 3** Developing new routes to connect to a central hub = **“HUB & SPOKE”** alternative
- 4** Reimagining a grid of routes that connects the entire City = **“THE GRID”** alternative

MISSING LINK

alternative

- 1** Modifies existing routes
- 2** Connects new developments
- 3** Serves anticipated City annexations

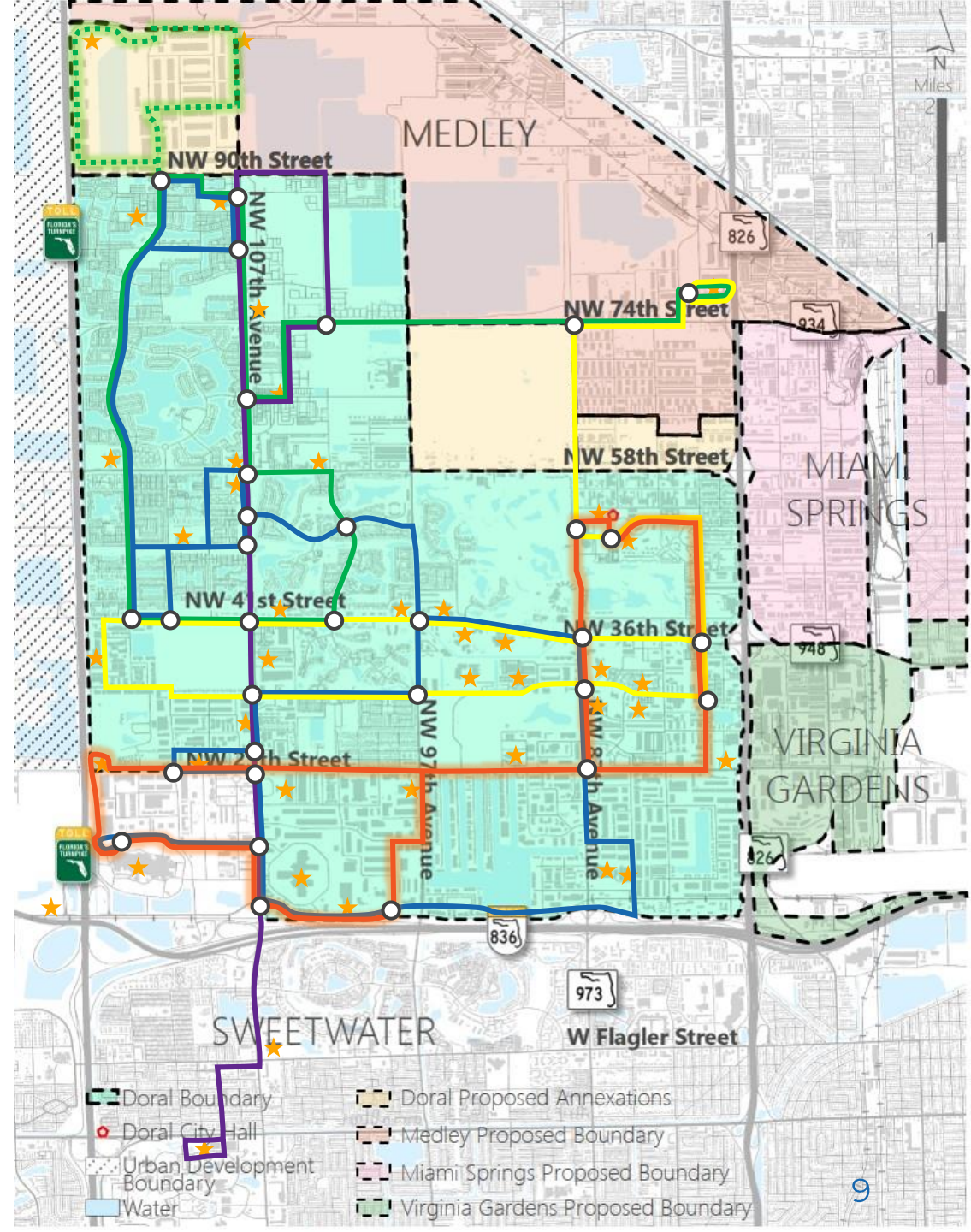


MISSING LINK

alternative

the routes

- Route 1
- Route 2
- Modified Route 3
- Route 4
- New Orange



ONE SEAT RIDE

alternative




- 1** More in-motion time, less wait time
- 2** Easier for riders to memorize routes
- 3** No major transfers required

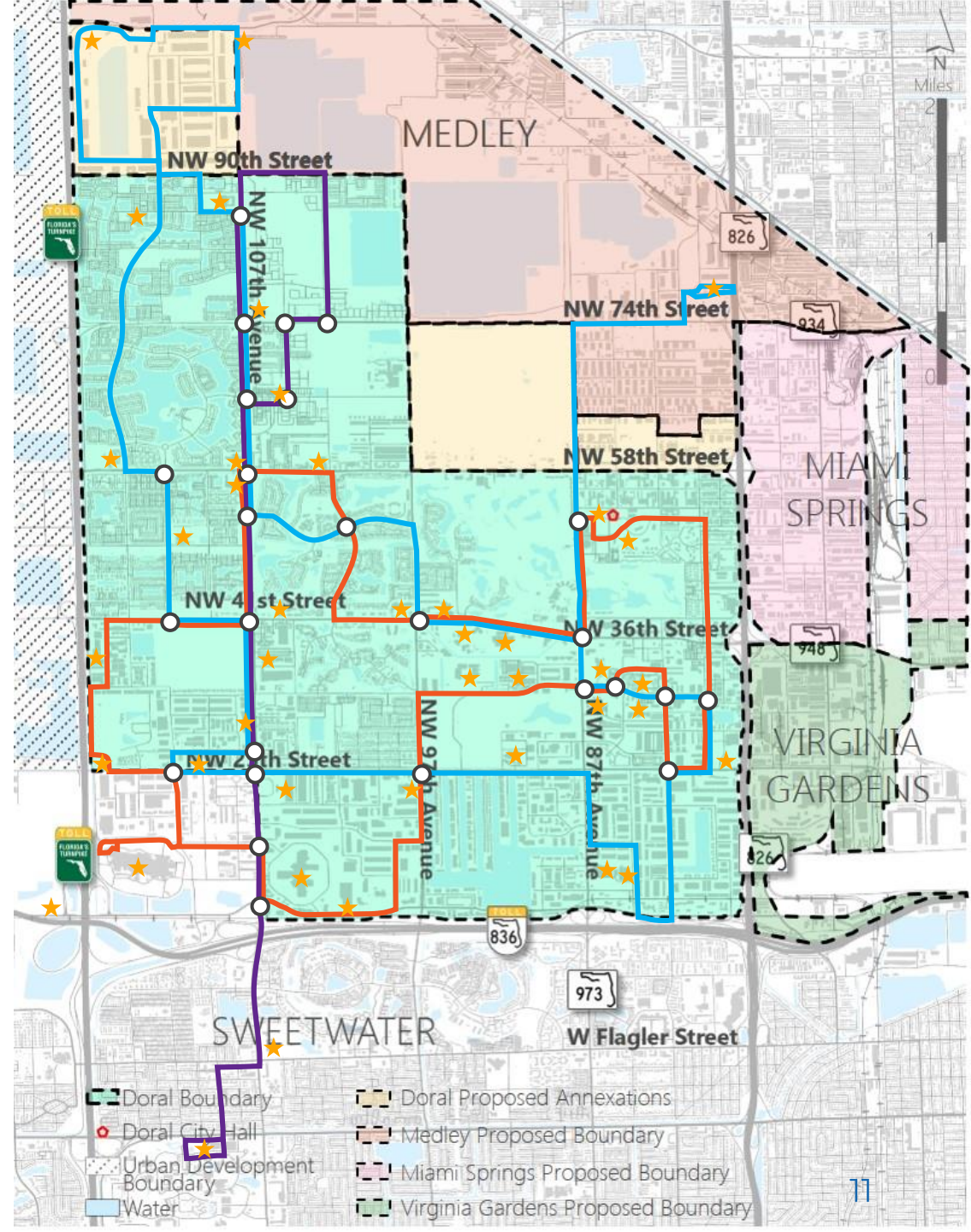


ONE SEAT RIDE

alternative

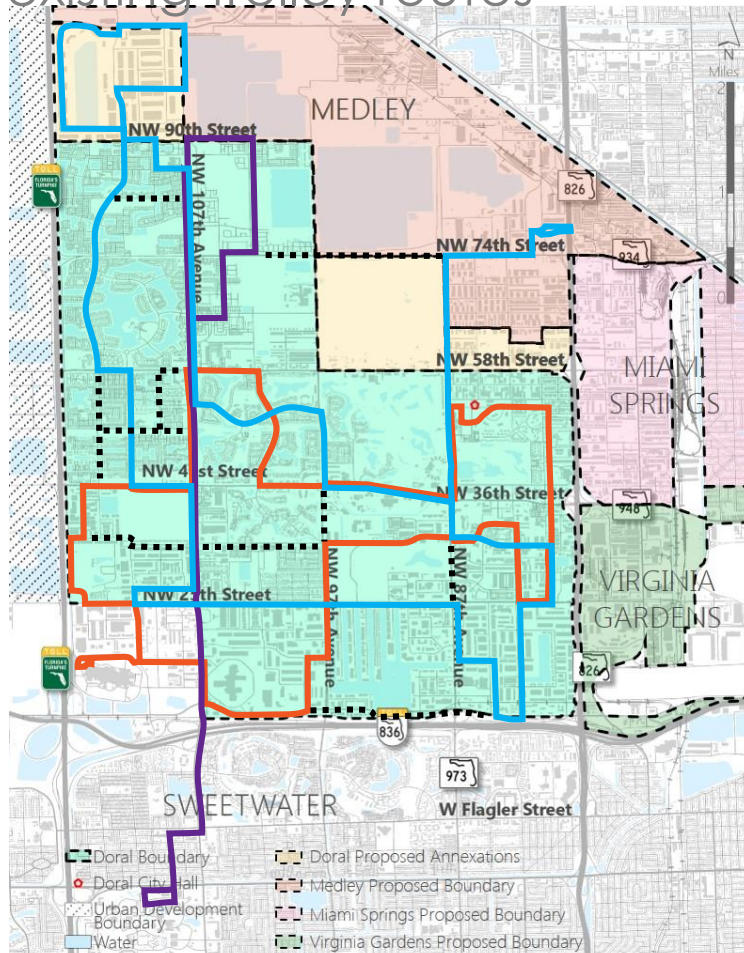
the routes

-  New Blue
-  New Orange
-  Route 4

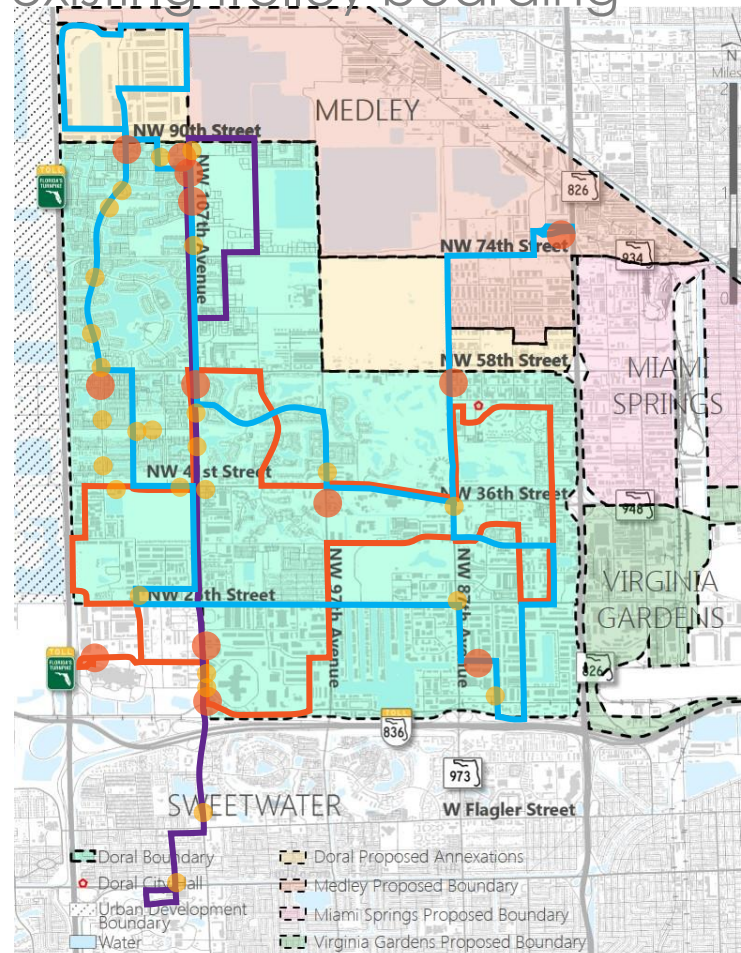


How “One Seat Ride” compares...

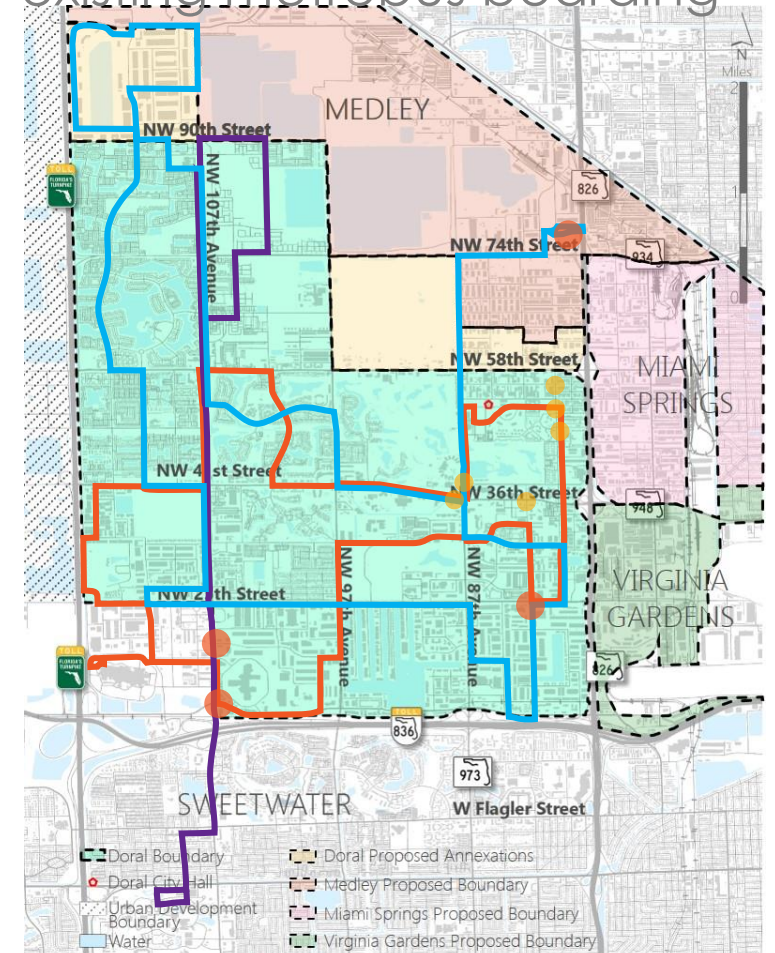
existing trolley routes



existing trolley boarding



existing metrobus boarding



HUB & SPOKE

alternative

- 1 More connections,
with a single transfer
- 2 Highly active and
practical transfer point
- 3 Good connectivity
to regional transit

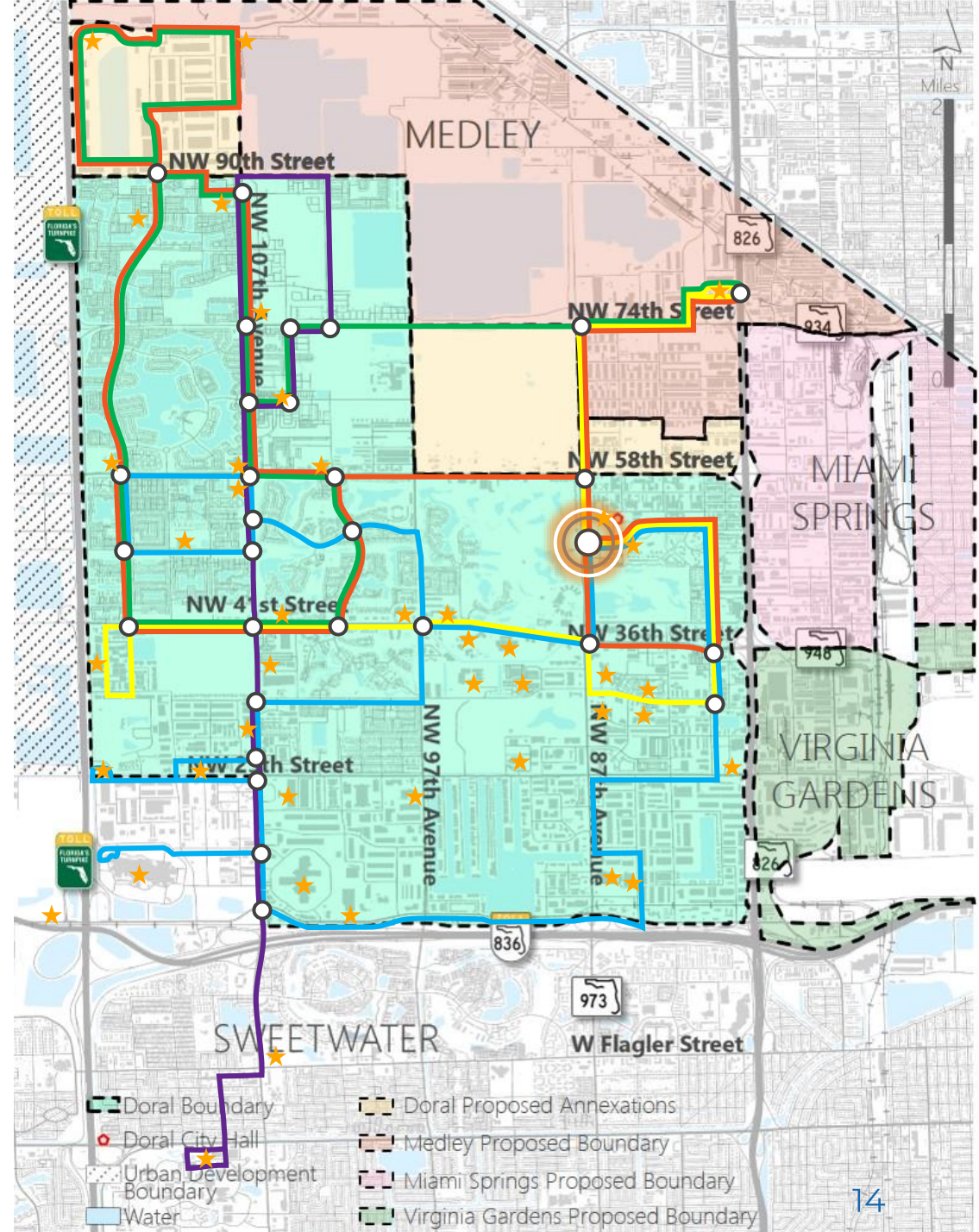


HUB & SPOKE

alternative

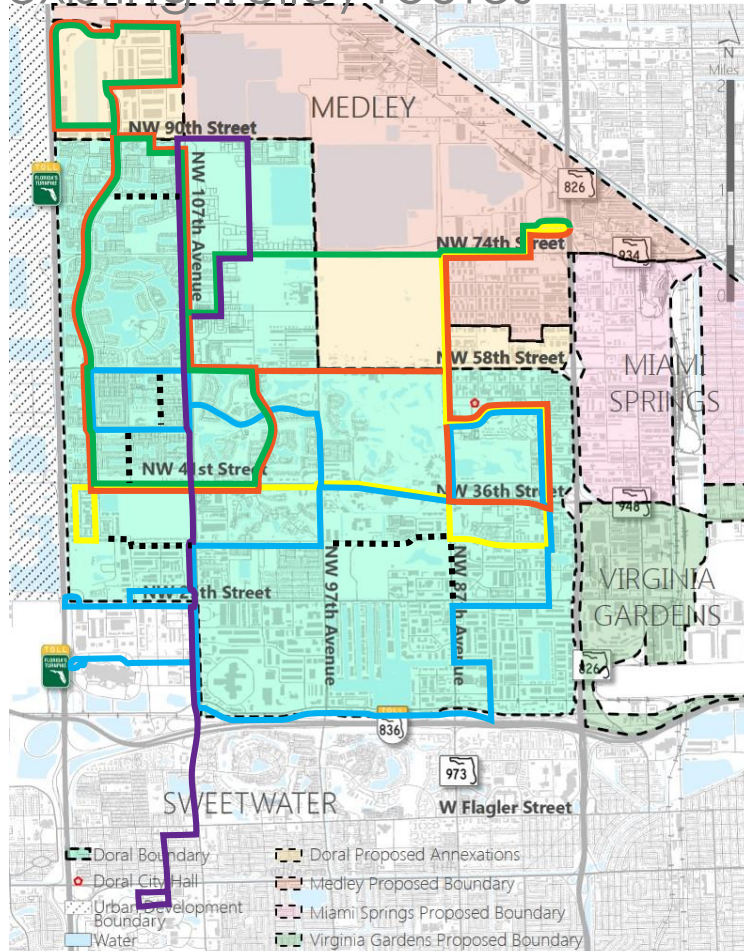
the routes

-  New Blue
-  New Orange
-  New Yellow
-  New Green
-  Route 4

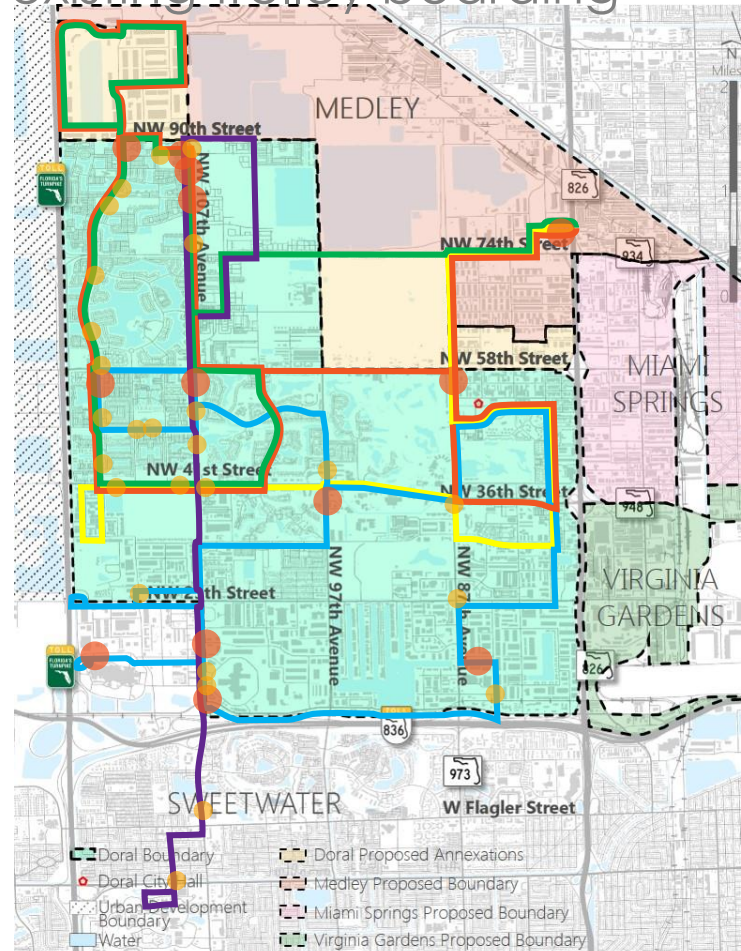


How “Hub & Spoke” compares...

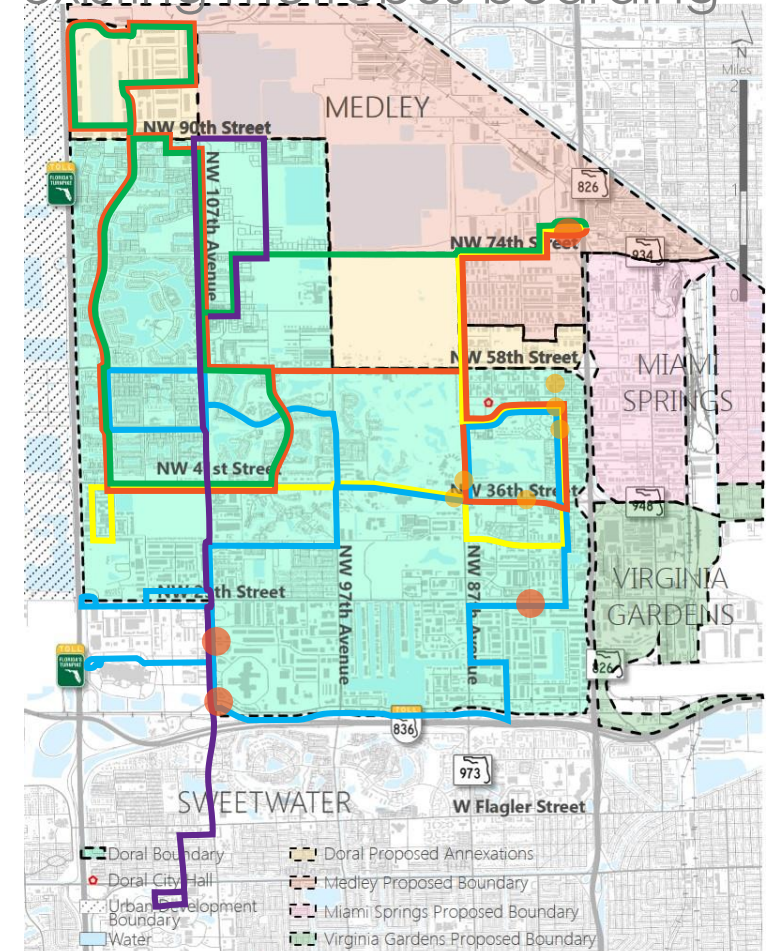
existing trolley routes



existing trolley boarding



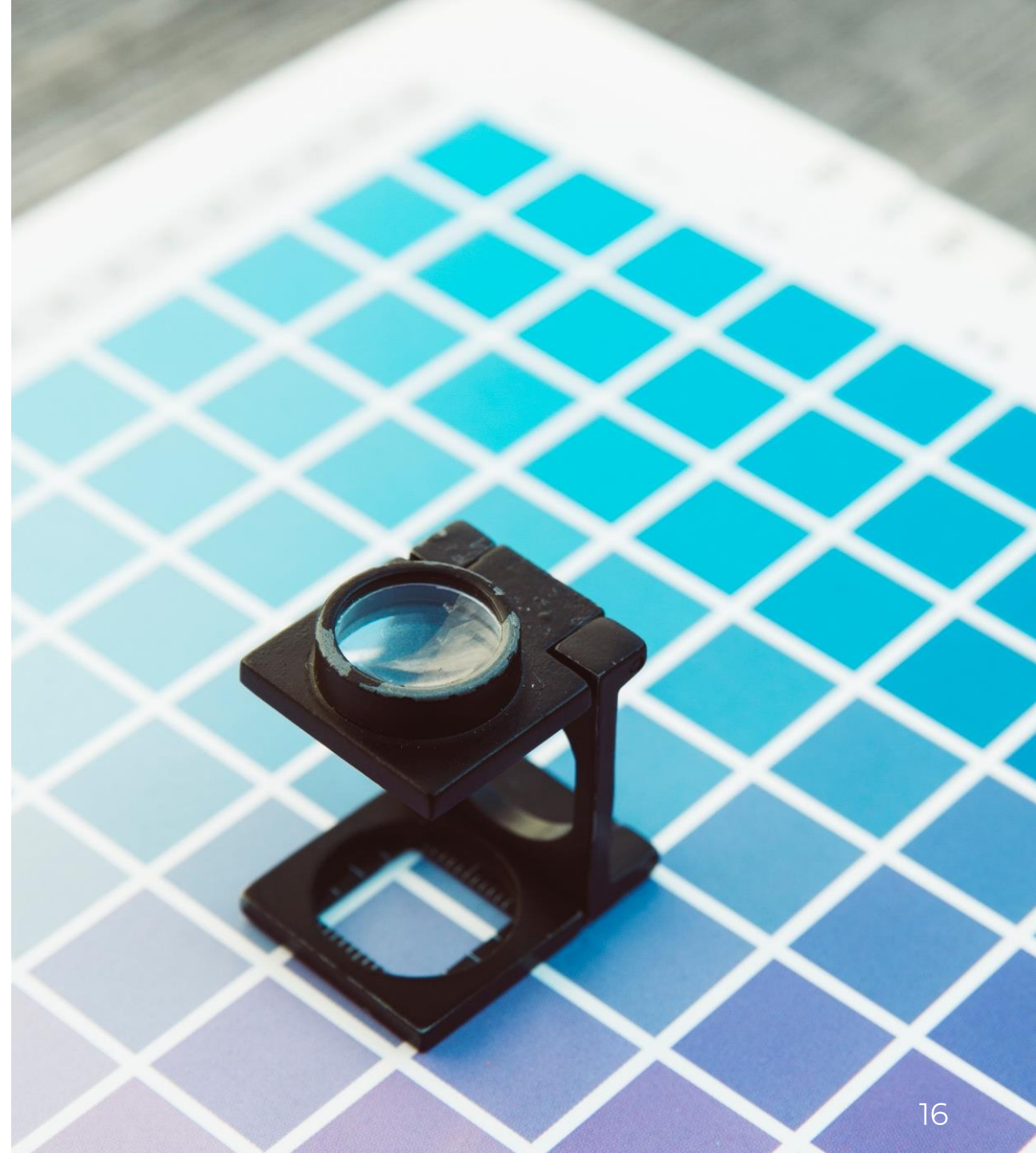
existing metrobus boarding



THE GRID

alternative

- 1 Full coverage,
with a single transfer
- 2 Focused on high
activity corridors
- 3 Reliable and
intuitive routes

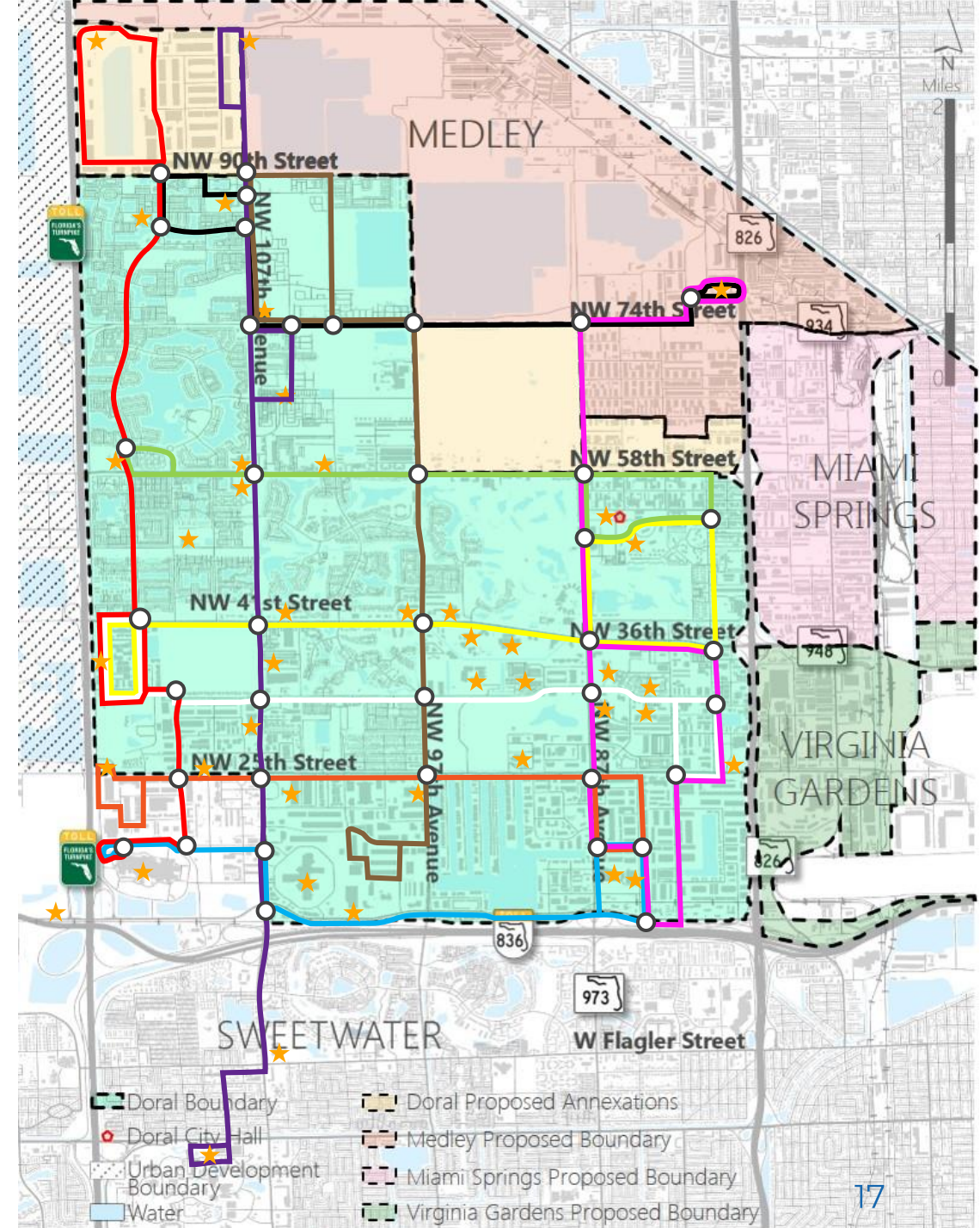


THE GRID

alternative

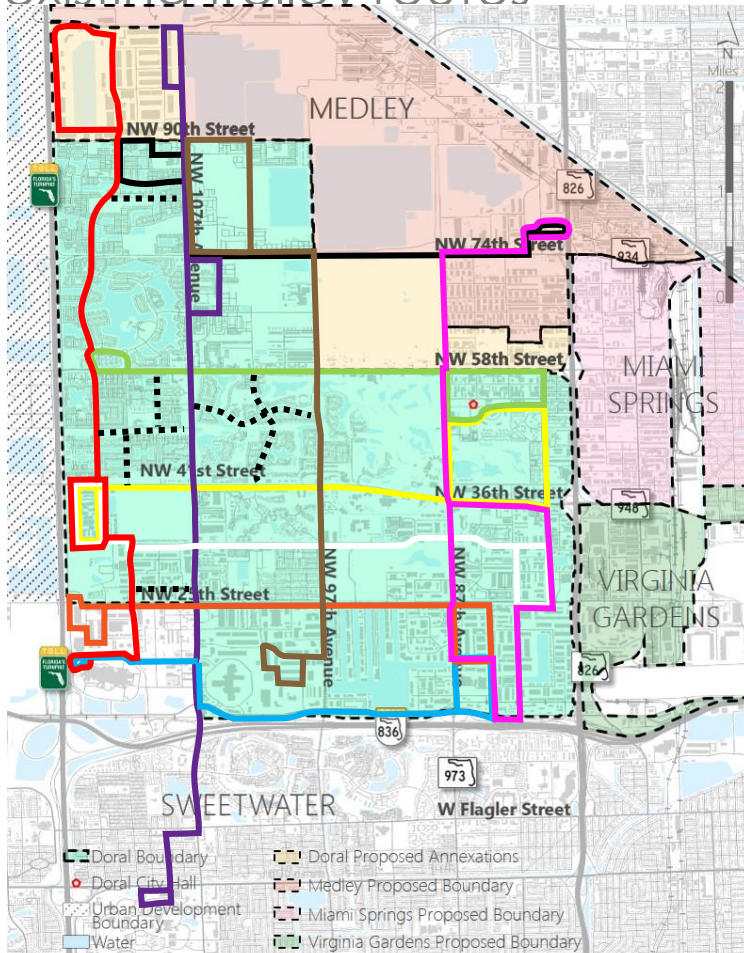
the routes

	New Blue		New Black
	New Orange		New Red
	New White		New Brown
	New Yellow		New Pink
	New Green		Modified Route 4

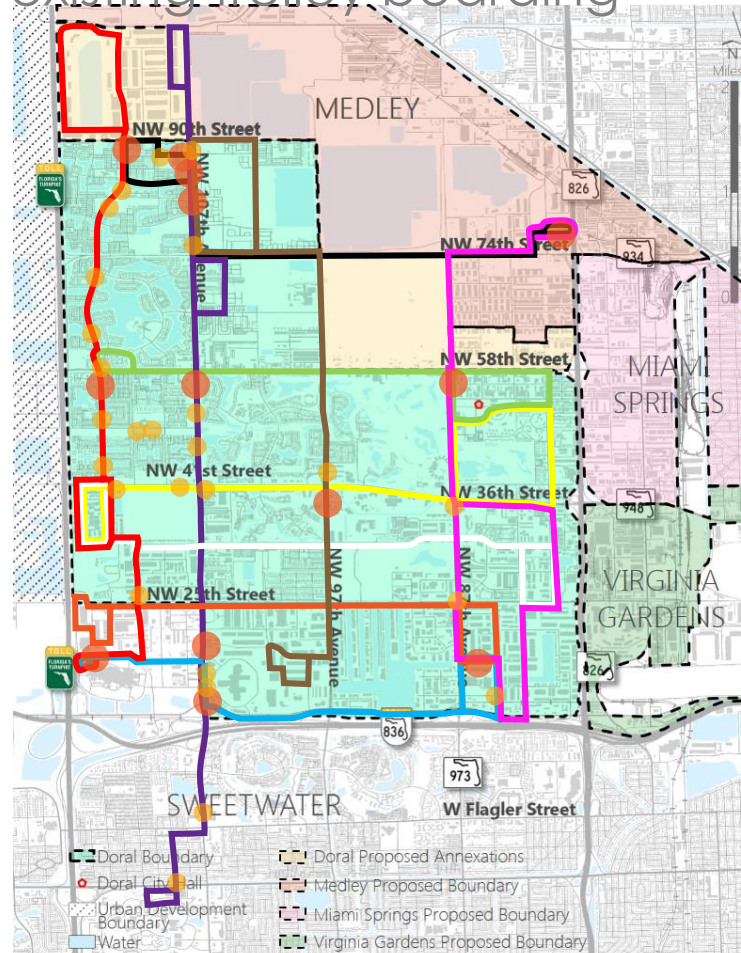


How the grid compares...

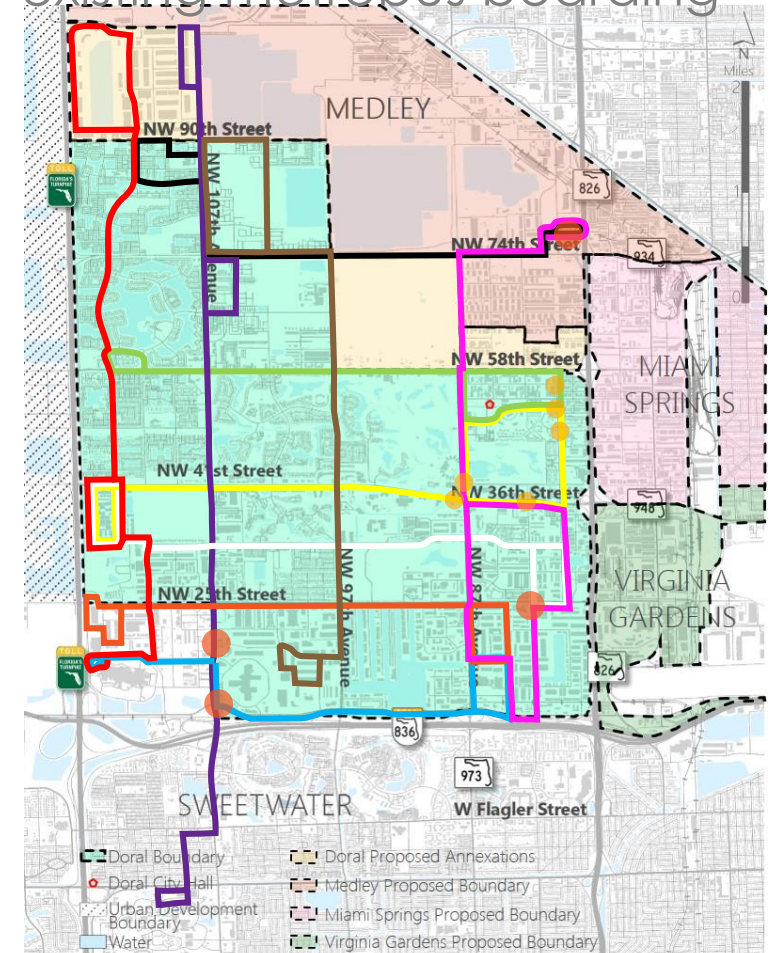
existing trolley routes



existing trolley boarding



existing metrobus boarding



THE HYBRID

alternative

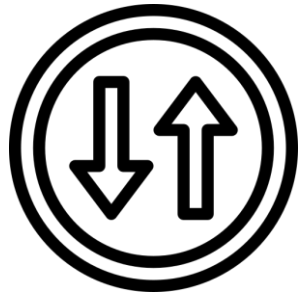
- 1 Tries to combine the most useful traits
- 2 Balances coverage and ridership
- 3 Provides opportunity for flexibility



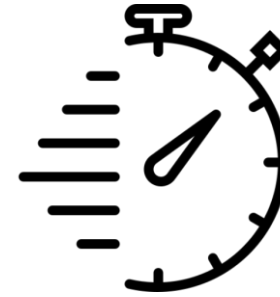
ALTERNATIVE SERVICES



improving
SERVICE QUALITY



Two-way
Service

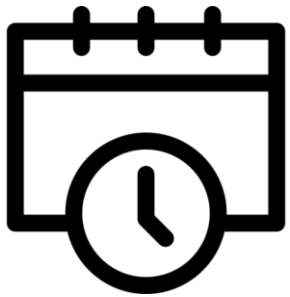


Increasing
Frequency

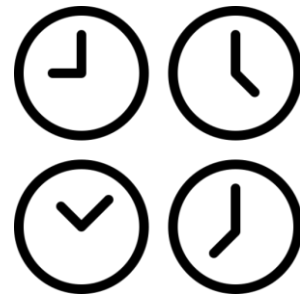
understanding

FLEXIBLE TRANSIT SERVICE

Flexible Timing



Fixed
Schedule



Advance
Reservation



On-Demand

understanding

FLEXIBLE TRANSIT SERVICE

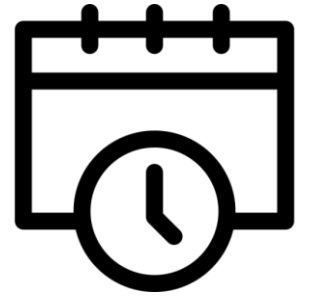
Flexible Routing



Fixed
Routes



Route
Deviation
(Bounded)

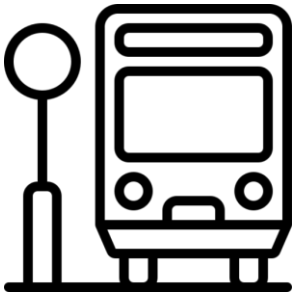


Route
Deviation
(Unbounded)

understanding

FLEXIBLE TRANSIT SERVICE

Flexible Stops



Fixed
Stops



Requested
(Bounded)



Requested
(Unbounded)

SURVEY

Please scan the QR Code
with your mobile phone's
camera

OR visit:

<https://www.surveymonkey.com/r/BWN3JC5>



ADDITIONAL OPTIONS



integrating **TRACKING APPS**



Separate systems can lead to...



commuters frustrated for missing Metrorail, or...

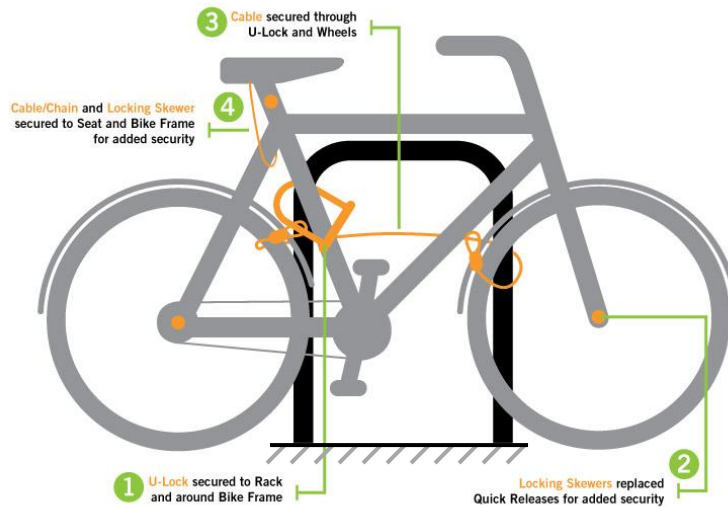


riders unaware of other mobility options.

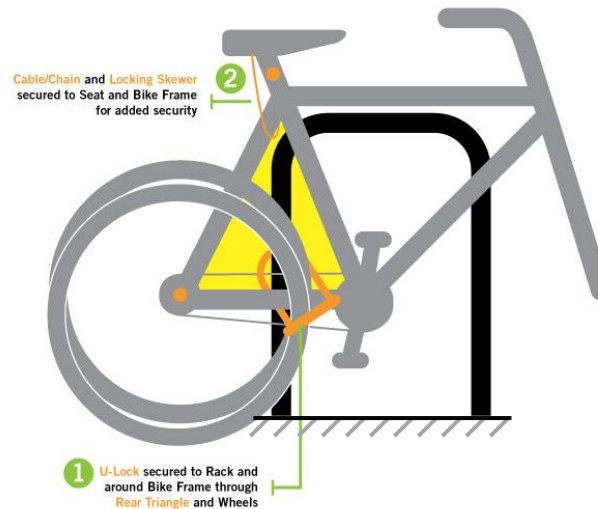
providing **BICYCLE PARKING**

Concrete embedded U-Racks are the most secure bicycle racks because they accommodate:

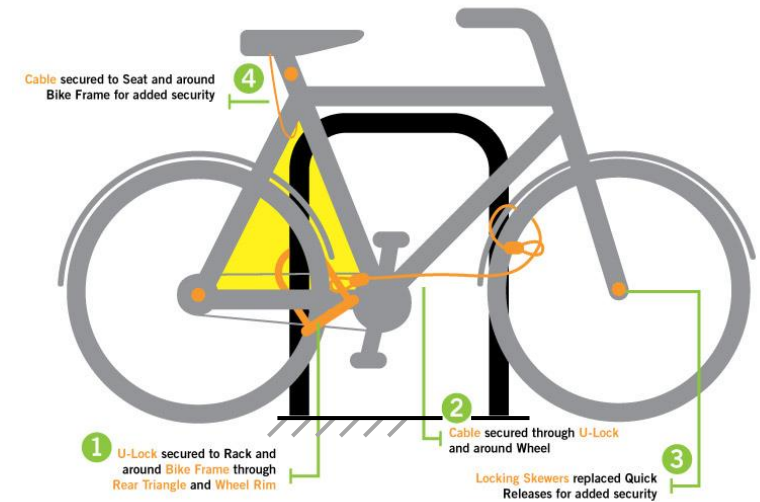
Using Multiple Locks



Removing the Front Wheel



Using the Rear Triangle



adding **PEDESTRIAN LIGHTING**



Improves passenger safety
and security...



provides opportunity to
enhance stop aesthetics...



and can enhance
wayfinding and contribute
to placemaking.

developing a new centralized **TROLLEY & BUS TERMINAL**



A centralized bus terminal can create a community center rich with...



culture and activity, and with sense of safety and security.

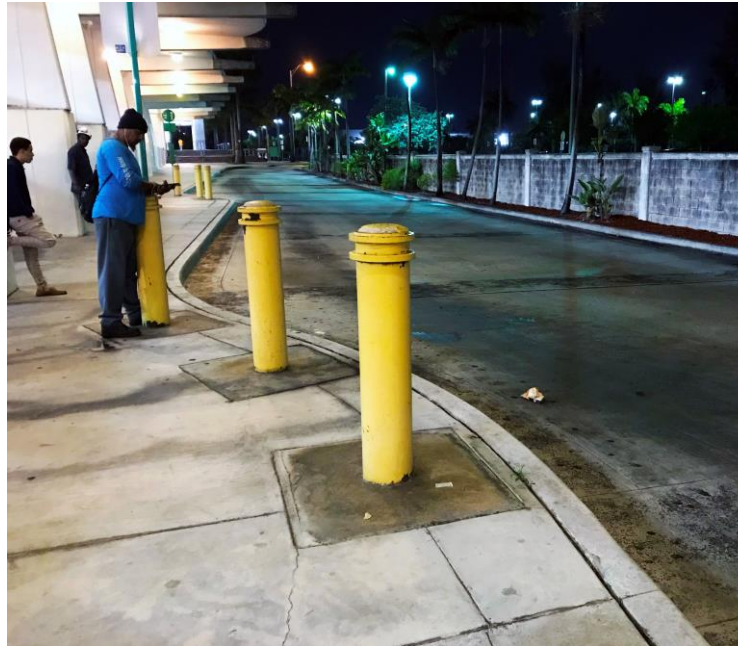


It also provides opportunities for mixed development.

improving **PALMETTO STATION**



This hub needs improved lighting, wayfinding,...



improved ADA facilities and security features,...

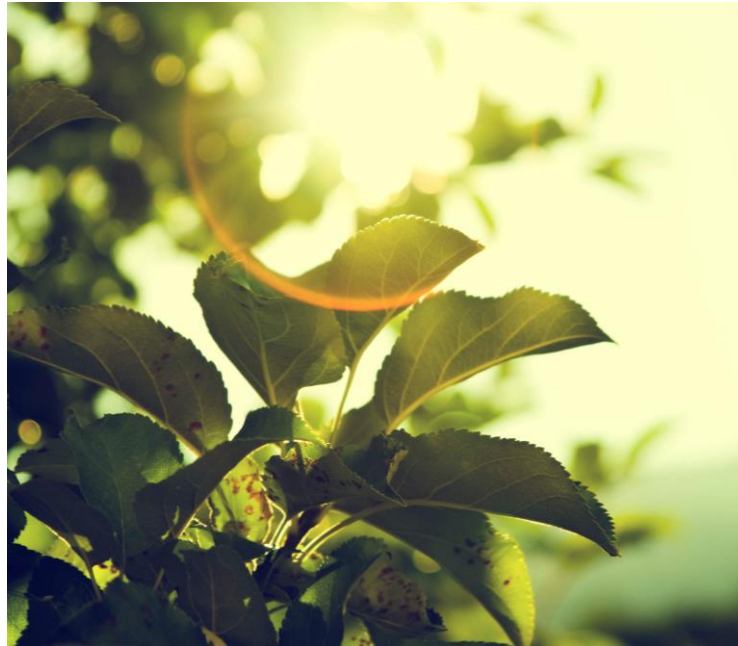


and improved protection from the elements.

replacing the
EXISTING FLEET with vehicles that offer



1 Improved
comfortability and
accessibility



2 Energy Efficiency



3 City unique design
and branding

connecting to

DOLPHIN STATION

...provides access to

836 Express



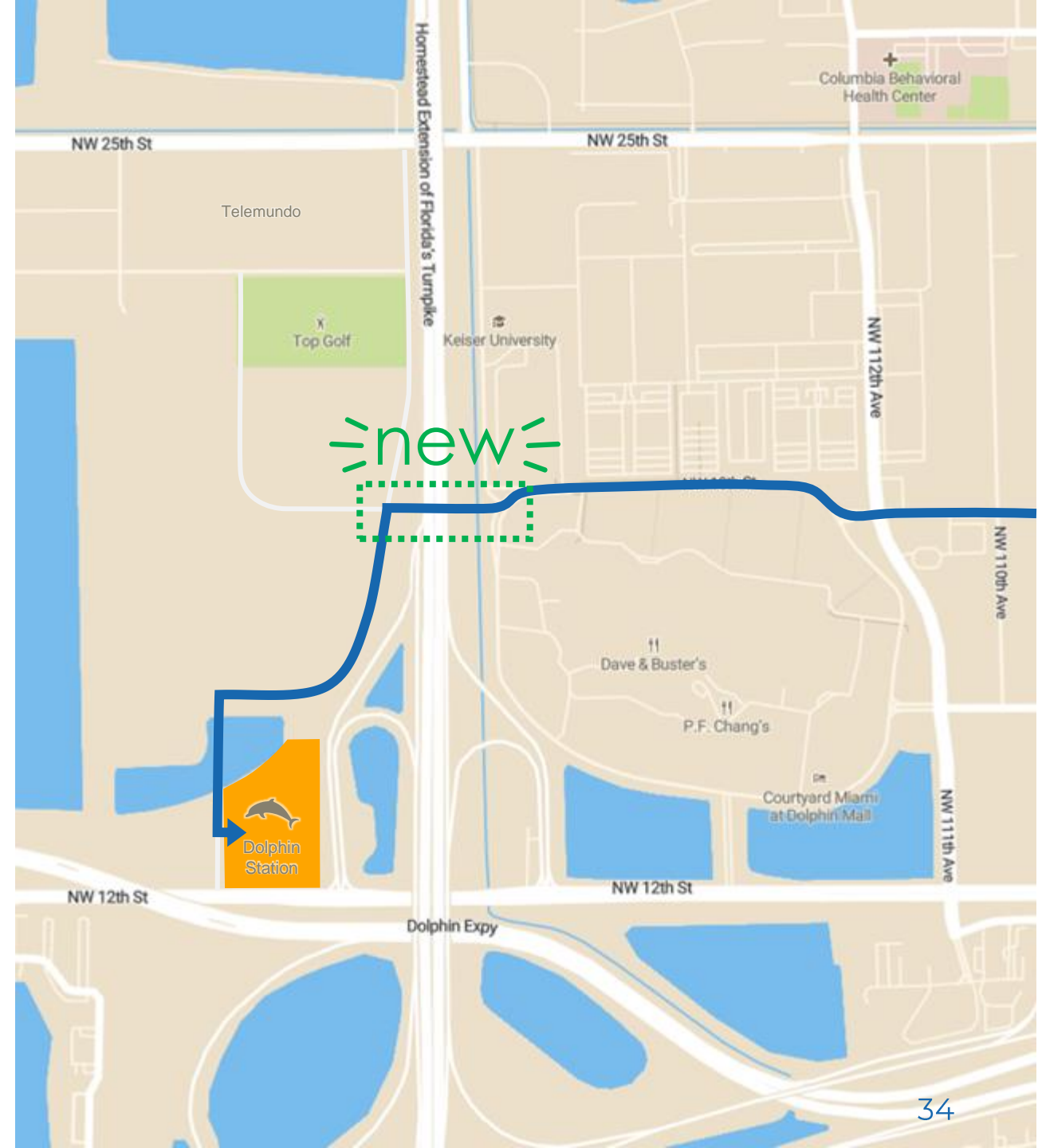
East-West Corridor
(SMART Plan Corridor)



Turnpike Express BERT
(SMART Plan Corridor)



DTPW Local Routes
7, 36, 71, 137, 238, and 338



connecting to

DOLPHIN STATION



1 Pedestrian Bridge



2 Moving Walkway



3 Turnpike Underpass

NEXT MEETING



When:
JULY
2019



Where:
City of
Doral

Public Workshop Meeting #2

[illegible]

MINUTES:

PUBLIC WORKSHOP #2

Call to Order:

A meeting with City of Doral and Gannett Fleming was held on Wednesday, June 19, 2019 from 6:00 PM to 10:00 PM at the City of Doral Government Center, Third Floor Training Room.

Minutes:

The stakeholder workshop began with a brief presentation of different proposed alternative routes, service options, and other recommendations. Viewers were also informed of an online survey to cast their votes on their preferred alternative and service option. The survey results and attendance list are attached to this document. The following notes/comments were record as express by representatives of attending businesses and organizations.

- One attendee expressed his/her issue with the existing Route 1 is that it is too long, and he/she would like to see shorter routes
- Attendees complained about poor customer service on behalf of the trolley drivers (taking long layovers at gas stations [58th Street across Pepito's] and fast food restaurants) and unresponsive or inaccurate tracking application.
 - This attendee also mentioned that the trolley layover at FIU and Palmetto seem too long. If the trolleys are late, then they should shorten their layover.
- Three attendees expressed concern with the idea of a transit terminal in Downtown Doral. They suggested improving the Palmetto Station or developing a small terminal in the outskirts of Downtown, instead of developing a new facility in Doral where real estate is expensive and scarce and a lot of congestion.
- One attendee suggested having routes that divide the City in quadrants (NE, NW, SE, and SW) and overlap on major corridors
 - This attendee also suggested placing transfer stops on side streets and not major corridors
 - One disadvantage with this proposed alternative route is that the City is very segregated in terms of land use and most of the residential land use is in the northwestern area. Hence, residents would require several transfers travel between activity centers/land uses. Another disadvantage is that the City has one-mile blocks. If the proposed routes only loop around major corridors, potential riders in the center of the block will not be served by the trolley and may have inconvenient first/last mile connections.

- One attendee brought to the attention of the team the need to connect to outpatient services such as University of Miami Health System Bariatric Center located on NW 35th Street and NW 82nd Avenue
- One attendee mention adding solar panels to the trolley vehicles and trolley stops
 - Some trolley shelters do have solar panels, however, the attendee pointed out that adding a sticker saying something like “Do you know I am solar” may be beneficial to highlight the investment
- One attendee suggested looking into adding a stop at the public library in Miami International Mall
- One attendee suggested keeping most of the proposed routes within the City boundaries and, when providing connections to terminals outside of the City, keeping those connects as direct as possible (i.e. north-south between the Dolphin Station and NW 25th Street as opposed to travelling on NW 12th Street or within the Dolphin Mall
- One attendee suggested implementing a text application where you text the stop number and receive a response text with the trolley ETA information
 - The City has this capability through existing contract with TSO Mobile but is not exercising this option due to operational budget constraints and other service issues with the vendor
- One attendee commented that the vehicles are unappealing, have poor energy efficiency, and are slow/inefficient
 - This attendee suggested purchasing new vehicles, such as the shuttles used by the City of Miami, and phasing their integration with the existing fleet
- One attendee mentioned that the trolley vehicles are not being washed before beginning operations everyday
- One attendee suggested consolidating bus stop locations
- One attendee suggested creating a new Hybrid Alternative between the “Hub & Spoke” and “The Grid” alternatives

EXPORTS

PAID FEATURE

Export your survey data in .PDF, .XLS, .CSV, .PPTX, or SPSS format.

UPGRADE

Learn more »

RESPONDENTS: 8 of 8

SAVE AS

QUESTION SUMMARIESINSIGHTS AND DATA TRENDSNEW!INDIVIDUAL RESPONSES

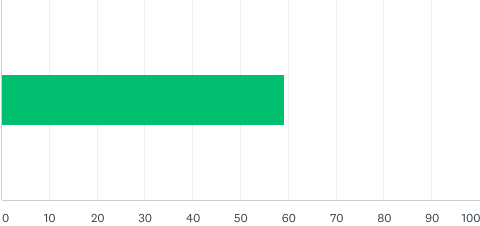
Page 1

Q1

CustomizeSave as

From 0 being "Unfavorable" to 10 being "Excellent", how would you rate the "Missing Link" Alternative?

Answered: 7 Skipped: 1



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
Responses	59	415	7

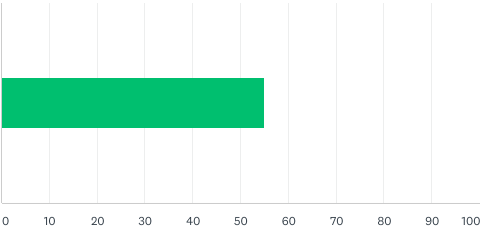
Total Respondents: 7

Q2

CustomizeSave as

From 0 being "Unfavorable" to 10 being "Excellent", how would you rate the "One Seat Ride" Alternative?

Answered: 7 Skipped: 1



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
Responses	55	384	7

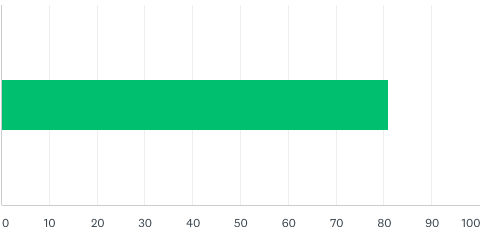
Total Respondents: 7

Q3

CustomizeSave as

From 0 being "Unfavorable" to 10 being "Excellent", how would you rate the "Hub & Spoke" Alternative?

Answered: 8 Skipped: 0



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
Responses	81	648	8

Total Respondents: 8

Q4

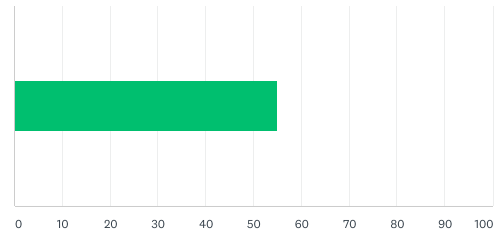


Customize

Save as ▾

From 0 being "Unfavorable" to 10 being "Excellent", how would you rate the "Grid" Alternative?

Answered: 7 Skipped: 1



ANSWER CHOICES ▾

AVERAGE NUMBER ▾

TOTAL NUMBER ▾

RESPONSES ▾

Responses

55

383

7

Total Respondents: 7

Q5

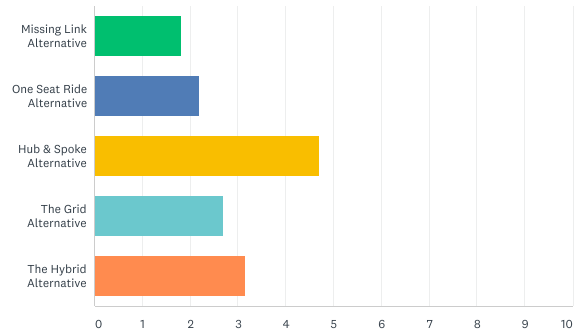


Customize

Save as ▾

Please rank the alternatives in descending order, from most favorable to least favorable.

Answered: 7 Skipped: 1



	1	2	3	4	5	TOTAL	SCORE
Missing Link Alternative	0.00% 0	16.67% 1	0.00% 0	33.33% 2	50.00% 3	6	1.83
One Seat Ride Alternative	0.00% 0	16.67% 1	16.67% 1	33.33% 2	33.33% 2	6	2.17
Hub & Spoke Alternative	85.71% 6	0.00% 0	14.29% 1	0.00% 0	0.00% 0	7	4.71
The Grid Alternative	0.00% 0	16.67% 1	33.33% 2	50.00% 3	0.00% 0	6	2.67
The Hybrid Alternative	0.00% 0	42.86% 3	42.86% 3	0.00% 0	14.29% 1	7	3.14

Q6

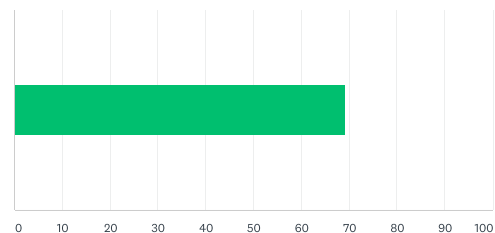


Customize

Save as ▾

From 0 being "Not Important" to 10 being "Very Important", how would you rate having two-way service?

Answered: 5 Skipped: 3



ANSWER CHOICES ▾

AVERAGE NUMBER ▾

TOTAL NUMBER ▾

RESPONSES ▾

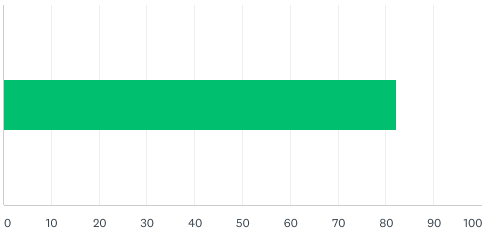
ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
Responses	69	346	5
Total Respondents: 5			

Q7

Customize Save as

From 0 being "Not Important" to 10 being "Very Important", how would you rate increasing the trolley frequency?

Answered: 7 Skipped: 1



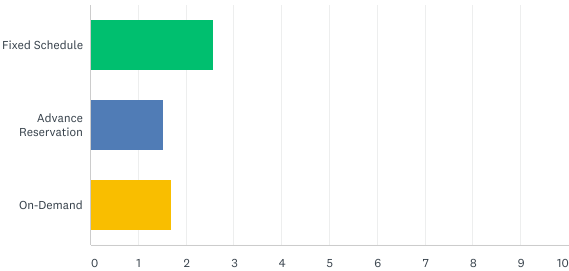
ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
Responses	82	575	7
Total Respondents: 7			

Q8

Customize Save as

Please rank the transit service options in descending order, from most favorable to least favorable.

Answered: 7 Skipped: 1



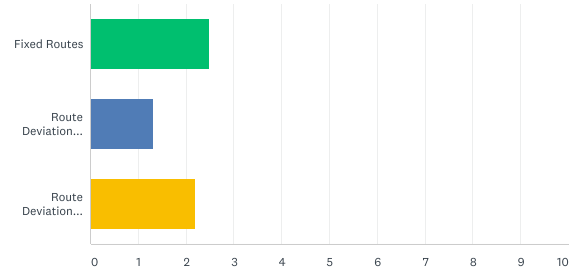
	1	2	3	TOTAL	SCORE
Fixed Schedule	71.43% 5	14.29% 1	14.29% 1	7	2.57
Advance Reservation	0.00% 0	50.00% 3	50.00% 3	6	1.50
On-Demand	16.67% 1	33.33% 2	50.00% 3	6	1.67

Q9

Customize Save as

Please rank the transit service options in descending order, from most favorable to least favorable.

Answered: 7 Skipped: 1



	1	2	3	TOTAL	SCORE
Fixed Routes	66.67% 4	16.67% 1	16.67% 1	6	2.50
Route Deviation	0.00% 0	28.57% 2	71.43% 5	7	1.29

(Unbounded)					
▼ Route Deviation (Bounded)	33.33% 2	50.00% 3	16.67% 1	6	2.17

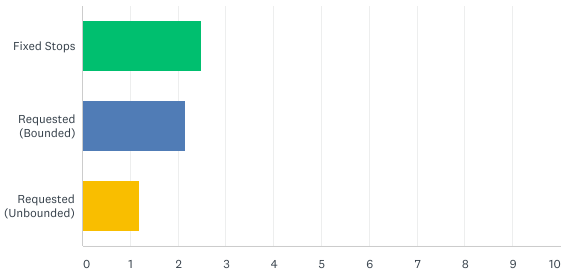
Q10

Customize

Save as ▼

Please rank the transit service options in descending order, from most favorable to least favorable.

Answered: 7 Skipped: 1



	▼ 1	▼ 2	▼ 3	▼ TOTAL	▼ SCORE	▼
▼ Fixed Stops	66.67% 4	16.67% 1	16.67% 1	6	2.50	
▼ Requested (Bounded)	28.57% 2	57.14% 4	14.29% 1	7	2.14	
▼ Requested (Unbounded)	0.00% 0	16.67% 1	83.33% 5	6	1.17	



APPENDIX F

Ridership and Cost Estimates Worksheets

Week Ridership Projection (ML)		Existing Routes				Proposed Routes - Option 1					Proposed Routes - Option 2					Proposed Routes - Option 3					
Factors		Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	
Population within 1/4-mile		27,254	7,194	21,535	14,382	27,254	7,194	22,742	14,382	3,607	27,254	7,194	22,742	14,382	3,607	27,254	7,194	22,742	14,382	3,607	
Peak Headway (min)		25	35	35	30	65	45	50	40	35	25	25	30	25	20	15	15	15	15	15	
Span of Service (HH:MM)		15.6	15.2	15.63	17	15.6	15.2	15.63	17	15.4	15.6	15.2	15.63	17	15.4	15.60	15.20	15.63	17.00	15.40	
Route Length (miles)		24.8	16.7	15.7	15.2	24.8	16.7	19.8	15.2	13.2	24.8	16.7	19.8	15.2	13.2	24.8	16.7	19.8	15.2	13.2	
Average Speed (mph)		12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	
Run Time (mins)		120	81	76	74	120	81	96	74	64	120	81	96	74	64	120	81	96	74	64	
Layover Time (mins)		0	0	0	0	5	9	4	6	6	5	9	4	6	6	5	9	4	6	6	
Total Cycle Time (mins)		120	81	76	74	125	90	100	80	70	125	90	100	80	70	125	90	100	80	70	
Required Number of Vehicles to Meet Headway		4	2	2	2	2	2	2	2	2	5	4	4	4	4	9	6	7	6	5	
Number of Stops		86	53	46	48	86	53	58	48	44	86	53	58	48	44	86	53	58	48	44	
Average Stop Spacing (ft)		1,523	1,664	1,802	1,672	1,523	1,664	1,802	1,672	1,594	1,523	1,664	1,802	1,672	1,594	1,523	1,664	1,802	1,672	1,594	
Average Walk Distance (ft)		2,082	2,152	2,221	2,156	2,082	2,152	2,221	2,156	2,117	2,082	2,152	2,221	2,156	2,117	2,082	2,152	2,221	2,156	2,117	
Average Walk Time (mins)		10	10	11	10	10	10	11	10	10	10	10	11	10	10	10	10	11	10	10	
Average Wait Time (mins)		12.5	17.5	17.5	15	32.5	22.5	25	20	17.5	12.5	12.5	15	12.5	10	7.5	7.5	7.5	7.5	7.5	
Typical 5-mile Trip Time (mins)		93	103	105	98	133	113	120	108	103	93	93	100	93	88	83	83	85	83	83	
Annual Ridership		284,110	92,716	159,998	136,534	198,600	84,500	147,800	123,800	37,500	284,100	102,600	177,400	143,800	43,900	318,300	115,000	208,700	161,200	46,500	
Total Annual Ridership		673,358				592,200					751,800					849,700					
Δ Total Annual Ridership						(81,158)					78,442					176,342					
Difference in Span of Service Factor						100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Difference in Typical 5-mile Trip Time Factor						69.92%	91.15%	87.50%	90.74%	95.15%	100.00%	110.75%	105.00%	105.38%	111.36%	112.05%	124.10%	123.53%	118.07%	118.07%	
Difference in Total Population Factor						100.00%	100.00%	105.60%	100.00%	20.94%	100.00%	100.00%	105.60%	100.00%	20.94%	100.00%	100.00%	105.60%	100.00%	20.94%	
Two-Way Route Factor						100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	
Vehicle Operating and Maintenance Cost (Annual)		\$946,000.00	\$461,000.00	\$474,000.00	\$515,000.00	\$473,000.00	\$461,000.00	\$474,000.00	\$515,000.00	\$467,000.00	\$1,182,000.00	\$921,000.00	\$947,000.00	\$1,031,000.00	\$934,000.00	\$2,128,000.00	\$1,382,000.00	\$1,658,000.00	\$1,546,000.00	\$1,167,000.00	
Information Technology Maintenance Cost (Annual)					\$37,440.00					\$37,440.00					\$49,140.00					\$77,220.00	
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)					\$0.00					\$0.00					\$1,735,000.00					\$4,164,000.00	
Total Opening Year Cost					\$2,433,440.00					\$2,427,440.00					\$6,799,140.00					\$12,122,220.00	
Δ Total Opening Year Cost										-\$6,000.00					\$4,365,700.00					\$9,688,780.00	
Legend					\$2,396,000.00	\$2,588,000.00				\$2,390,000.00	\$2,621,000.00				\$5,015,000.00	\$5,940,000.00				\$7,881,000.00	\$9,464,000.00
Input					\$37,440.00					\$37,440.00					\$49,140.00					\$77,220.00	
Calculated Value					\$0.00					\$0.00					\$1,735,000.00					\$4,164,000.00	
Output																					

ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS
CITY PROVIDED IT MAINTENCE COST OF \$194.89 FOR AVL, GPS, APC, Cameras, ACAS, and WIFI. COST ROUND TO \$195 IN FORMULA.
TWO-WAY ROUTES REDUCE TRAVEL TIME IN ONE DIRECTION. USING THE 1:3 RULE, TRAVEL TIME WAS CALCULTED TO BE REDUCED BY APPROXIMATELY 60%, SIGNIFYING A 180% RIDERSHIP INCREASE.
ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BLUE AND ROUTE 2/YELLOW
ROUTE 4/PURPLE WILL BE KEPT AS ONE-WAY OPERATION

Sat Ridership Projection (ML)					Existing Routes					Proposed Routes - Option 1					Proposed Routes - Option 2					Proposed Routes - Option 3				
Factors		Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange				
Population within 1/4-mile		27,254	7,194	21,535		27,254	7,194	22,742		3,607	27,254	7,194	22,742		3,607	27,254	7,194	22,742		3,607				
Peak Headway (min)		50	80	60		125	90	100		70	35	25	30		20	15	15	15		15				
Span of Service (HH:MM)		13.05	13.05	12.1		13.05	13.05	12.1		13.05	13.05	13.05	12.1		13.05	13.05	13.05	12.10		13.05				
Route Length (miles)		24.8	16.7	15.7		24.8	16.7	19.8		13.2	24.8	16.7	19.8		13.2	24.8	16.7	19.8		13.2				
Average Speed (mph)		12.4	12.4	12.4		12.4	12.4	12.4		12.4	12.4	12.4	12.4		12.4	12.4	12.4	12.4		12.4				
Run Time (mins)		120	81	76		120	81	96		64	120	81	96		64	120	81	96		64				
Layover Time (mins)		0	0	0		5	9	4		6	5	9	4		6	5	9	4		6				
Total Cycle Time (mins)		120	81	76		125	90	100		70	125	90	100		70	125	90	100		70				
Required Number of Vehicles to Meet Headway		2	1	1		1	1	1		1	4	4	4		4	9	6	7		5				
Number of Stops		86	53	46		86	53	58		44	86	53	58		44	86	53	58		44				
Average Stop Spacing (ft)		1,523	1,664	1,802		1,523	1,664	1,802		1,594	1,523	1,664	1,802		1,594	1,523	1,664	1,802		1,594				
Average Walk Distance (ft)		2,082	2,152	2,221		2,082	2,152	2,221		2,117	2,082	2,152	2,221		2,117	2,082	2,152	2,221		2,117				
Average Walk Time (mins)		10	10	11		10	10	11		10	10	10	11		10	10	10	11		10				
Average Wait Time (mins)		25	40	30		62.5	45	50		35	17.5	12.5	15		10	7.5	7.5	7.5		7.5				
Typical 5-mile Trip Time (mins)		118	148	130		193	158	170		138	103	93	100		88	83	83	85		83				
Annual Ridership		26,009	6,286	9,812		15,900	5,800	7,900		3,200	29,700	10,000	13,400		5,100	36,900	11,200	15,800		5,400				
Total Annual Ridership										32,800					58,200					69,300				
Δ Total Annual Ridership										(9,307)					16,093					27,193				
Difference in Span of Service Factor					100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%		100.00%				
Difference in Typical 5-mile Trip Time Factor					61.14%	93.67%	76.47%		96.38%	114.56%	159.14%	130.00%		151.14%	142.17%	178.31%	152.94%		160.24%					
Difference in Total Population Factor					100.00%	100.00%	105.60%		20.94%	100.00%	100.00%	105.60%		20.94%	100.00%	100.00%	105.60%		20.94%					
Two-Way Route Factor					100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%		100.00%					
Vehicle Operating and Maintenance Cost (Annual)		\$78,000.00	\$39,000.00	\$36,000.00		\$39,000.00	\$39,000.00	\$36,000.00	\$0.00	\$39,000.00	\$156,000.00	\$156,000.00	\$145,000.00	\$0.00	\$156,000.00	\$352,000.00	\$235,000.00	\$254,000.00	\$0.00	\$195,000.00				
Information Technology Maintenance Cost (Annual)		ACCOUNTED FOR IN WEEKDAY CALCULATION																						
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)		ACCOUNTED FOR IN WEEKDAY CALCULATION																						
Total Opening Year Cost										\$153,000.00					\$613,000.00					\$1,036,000.00				
Δ Total Opening Year Cost										\$0.00					\$460,000.00					\$883,000.00				
Legend																								
Input																								
Calculated Value																								
Output																								

ASSUMES 52 SATURDAYS MINUS 2 HOLIDAYS FOR A TOTAL OF 50 SATURDAYS
CITY PROVIDED IT MAINTENCE COST OF \$194.89 FOR AVL, GPS, APC, Cameras, ACAS, and WIFI. COST ROUND TO \$195 IN FORMULA.
TWO-WAY ROUTES REDUCE TRAVEL TIME IN ONE DIRECTION. USING THE 1:3 RULE, TRAVEL TIME WAS CALCULTED TO BE REDUCED BY APPROXIMATELY 60%, SIGNIFYING A 180% RIDERSHIP INCREASE.
ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BLUE AND ROUTE 2/YELLOW

Sun Ridership Projection (ML)		Existing Routes				Proposed Routes - Option 1					Proposed Routes - Option 2					Proposed Routes - Option 3				
Factors		Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange
Population within 1/4-mile		27,254	7,194			27,254				3,607	27,254				3,607	27,254				3,607
Peak Headway (min)		100	100			125				70	35				20	15				15
Span of Service (HH:MM)		13.05	13.05	12.1		13.05				13.05	13.05				13.05	13.05	-	-	-	13.05
Route Length (miles)		24.8	16.7	15.7		24.8				13.2	24.8				13.2	24.8				13.2
Average Speed (mph)		12.4	12.4	12.4		12.4				12.4	12.4				12.4	12.4				12.4
Run Time (mins)		120	81			120				64	120				64	120				64
Layover Time (mins)		0	0			5				6	5				6	5				6
Total Cycle Time (mins)		120	81			125				70	125				70	125				70
Required Number of Vehicles to Meet Headway		1	1			1				1	4				4	9				5
Number of Stops		86	53			86				44	86				44	86				44
Average Stop Spacing (ft)		1,523	1,664			1,523				1,594	1,523				1,594	1,523				1,594
Average Walk Distance (ft)		2,082	2,152			2,082				2,117	2,082				2,117	2,082				2,117
Average Walk Time (mins)		10	10			10				10	10				10	10				10
Average Wait Time (mins)		50	50			62.5				35	17.5				10	7.5				7.5
Typical 5-mile Trip Time (mins)		168	168			193				138	103				88	83				83
Annual Ridership		12,963	3,133			11,200				2,000	21,100				3,200	26,200				3,400
Total Annual Ridership					12,963					13,200					24,300					29,600
Δ Total Annual Ridership										237					11,337					16,637
Difference in Span of Service Factor						100.00%				100.00%	100.00%				100.00%	100.00%				100.00%
Difference in Typical 5-mile Trip Time Factor						87.05%				121.74%	163.11%				190.91%	202.41%				202.41%
Difference in Total Population Factor						100.00%				20.94%	100.00%				20.94%	100.00%				20.94%
Two-Way Route Factor						100.00%				100.00%	100.00%				100.00%	100.00%				100.00%
Vehicle Operating and Maintenance Cost (Annual)		\$39,000.00				\$39,000.00	\$0.00	\$0.00	\$0.00	\$39,000.00	\$156,000.00	\$0.00	\$0.00	\$0.00	\$156,000.00	\$352,000.00	\$0.00	\$0.00	\$0.00	\$195,000.00
Information Technology Maintenance Cost (Annual)		ACCOUNTED FOR IN WEEKDAY CALCULATION																		
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)		ACCOUNTED FOR IN WEEKDAY CALCULATION																		
Total Opening Year Cost					\$39,000.00					\$78,000.00					\$312,000.00					\$547,000.00
Δ Total Opening Year Cost										\$39,000.00					\$273,000.00					\$508,000.00
Legend																				
Input																				
Calculated Value																				
Output																				

ASSUMES 52 SUNDAYS MINUS 2 HOLIDAYS FOR A TOTAL OF 50 SUNDAYS
CITY PROVIDED IT MAINTENCE COST OF \$194.89 FOR AVL, GPS, APC, Cameras, ACAS, and WIFI. COST ROUND TO \$195 IN FORMULA.
TWO-WAY ROUTES REDUCE TRAVEL TIME IN ONE DIRECTION. USING THE 1:3 RULE, TRAVEL TIME WAS CALCULTO TO BE REDUCED BY APPROXIMATELY 60%, SIGNIFYING A 180% RIDERSHIP INCREASE.
ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BLUE AND ROUTE 2/YELLOW

DATA FOR EXISTING ROUTE 2/YELLOW WAS NEED TO COMPUTE ORANGE ROUTE. A HYPOTHETICAL ROUTE 2/YELLOW SUNDAY SERVICE WAS CALCULATED BY PROPORTIONALLY REDUCING THE SATURDAY RIDERSHIP BY THAT OF ROUTE 1/BLUE SATURDAY AND SUNDAY RIDERSHIP. THE HEADWAY FOR THIS HYPOTHETICAL ROUTE WAS ALSO INCREASE TO MATCH THAT OF THE ROUTE 1/BLUE SUNDAY SERVICE.

Week Ridership Projection (OSR)														
Factors	Existing Routes				Proposed Routes - Option 1			Proposed Routes - Option 2			Proposed Routes - Option 3			
	Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 4/Purple	Orange	Route 1/Blue	Route 4/Purple	Orange	Route 1/Blue	Route 4/Purple	Orange	
Population within 1/4-mile	27,254	7,194	21,535	14,382	26,309	14,382	12,441	26,309	14,382	12,441	26,309	14,382	12,441	
Peak Headway (min)	25	35	35	30	70	40	45	20	25	25	15	15	15	
Span of Service (HH:MM)	15.6	15.2	15.63	17	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	
Route Length (miles)	24.8	16.7	15.7	15.2	28.2	15.2	17.4	28.2	15.2	17.4	28.2	15.2	17.4	
Average Speed (mph)	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	
Run Time (mins)	120	81	76	74	137	74	85	137	74	85	137	74	85	
Layover Time (mins)	0	0	0	0	3	6	5	3	6	5	3	6	5	
Total Cycle Time (mins)	120	81	76	74	140	80	90	140	80	90	140	80	90	
Required Number of Vehicles to Meet Headway	4	2	2	2	4	2	4	14	4	8	20	6	12	
Number of Stops	86	53	46	48	90	48	58	90	48	58	90	48	58	
Average Stop Spacing (ft)	1,523	1,664	1,802	1,672	1,663	1,672	1,594	1,663	1,672	1,594	1,663	1,672	1,594	
Average Walk Distance (ft)	2,082	2,152	2,221	2,156	2,152	2,156	2,117	2,152	2,156	2,117	2,152	2,156	2,117	
Average Walk Time (mins)	10	10	11	10	10	10	10	10	10	10	10	10	10	
Average Wait Time (mins)	12.5	17.5	17.5	15	35	20	22.5	10	12.5	12.5	7.5	7.5	7.5	
Typical 5-mile Trip Time (mins)	93	103	105	98	138	108	113	88	93	93	83	83	83	
Annual Ridership	284,110	92,716	159,998	136,534	259,700	123,800	150,000	407,300	143,800	182,200	431,800	161,200	204,200	
Total Annual Ridership	673,358				533,500			733,300			797,200			
Δ Total Annual Ridership					(139,858)			59,942			123,842			
Difference in Span of Service Factor					104.49%	100.00%	104.49%	104.49%	100.00%	104.49%	104.49%	100.00%	104.49%	
Difference in Typical 5-mile Trip Time Factor					67.39%	90.74%	82.30%	105.68%	105.38%	100.00%	112.05%	118.07%	112.05%	
Difference in Total Population Factor					96.53%	100.00%	45.65%	96.53%	100.00%	45.65%	96.53%	100.00%	45.65%	
Two-Way Route Factor					134.50%	100.00%	134.50%	134.50%	100.00%	134.50%	134.50%	100.00%	134.50%	
Vehicle Operating and Maintenance Cost (Annual)	\$946,000.00	\$461,000.00	\$474,000.00	\$515,000.00	\$1,031,000.00	\$515,000.00	\$1,031,000.00	\$3,607,000.00	\$1,031,000.00	\$2,061,000.00	\$5,153,000.00	\$1,546,000.00	\$3,092,000.00	
Information Technology Maintenance Cost (Annual)	\$37,440.00				\$37,440.00			\$60,840.00			\$88,920.00			
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)	\$0.00				\$0.00			\$2,776,000.00			\$5,205,000.00			
Total Opening Year Cost	\$2,433,440.00				\$2,614,440.00			\$9,535,840.00			\$15,084,920.00			
Δ Total Opening Year Cost					\$181,000.00			\$7,102,400.00			\$12,651,480.00			
Legend							\$2,577,000.00	\$4,161,000.00		\$6,699,000.00	#####		\$9,791,000.00	\$22,447,000.00
Input							\$37,440.00			\$60,840.00			\$88,920.00	
Calculated Value							\$0.00			\$2,776,000.00			\$5,205,000.00	
Output														

ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS
CITY PROVIDED IT MAINTENCE COST OF \$194.89 FOR AVL, GPS, APC, Cameras, ACAS, and WIFI. COST ROUND TO \$195 IN FORMULA.
TWO-WAY ROUTES REDUCE TRAVEL TIME IN ONE DIRECTION. USING THE 1:3 RULE, TRAVEL TIME WAS CALCULTED TO BE REDUCED BY APPROXIMATELY 60%, SIGNIFYING A 180% RIDERSHIP INCREASE.
BLUE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1, 2 AND 3
ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BUE AND ROUTE 2/YELLOW
ROUTE 4/PURPLE WILL BE KEPT AS ONE-WAY OPERATION

Sat Ridership Projection (OSR)

Factors	Existing Routes				Proposed Routes - Option 1			Proposed Routes - Option 2			Proposed Routes - Option 3		
	Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 4/Purple	Orange	Route 1/Blue	Route 4/Purple	Orange	Route 1/Blue	Route 4/Purple	Orange
Population within 1/4-mile	27,254	7,194	21,535		26,309		12,441	26,309		12,441	26,309		12,441
Peak Headway (min)	50	80	60		140		90	40		25	15		15
Span of Service (HH:MM)	13.05	13.05	12.1		13.05		13.05	13.05		13.05	13.05		13.05
Route Length (miles)	24.8	16.7	15.7		28.2		17.4	28.2		17.4	28.2		17.4
Average Speed (mph)	12.4	12.4	12.4		12.4		12.4	12.4		12.4	12.4		12.4
Run Time (mins)	120	81	76		137		85	137		85	137		85
Layover Time (mins)	0	0	0		3		5	3		5	3		5
Total Cycle Time (mins)	120	81	76		140		90	140		90	140		90
Required Number of Vehicles to Meet Headway	2	1	1		2		2	8		8	20		12
Number of Stops	86	53	46		90		58	90		58	90		58
Average Stop Spacing (ft)	1,523	1,664	1,802		1,663		1,594	1,663		1,594	1,663		1,594
Average Walk Distance (ft)	2,082	2,152	2,221		2,152		2,117	2,152		2,117	2,152		2,117
Average Walk Time (mins)	10	10	11		10		10	10		10	10		10
Average Wait Time (mins)	25	40	30		70		45	20		12.5	7.5		7.5
Typical 5-mile Trip Time (mins)	118	148	130		208		158	108		93	83		83
Annual Ridership	26,009	6,286	9,812		19,100		11,900	36,800		20,200	48,000		22,700
Total Annual Ridership	42,107				31,000			57,000			70,700		
Δ Total Annual Ridership					(11,107)			14,893			28,593		
Difference in Span of Service Factor					100.00%		100.00%	100.00%		100.00%	100.00%		100.00%
Difference in Typical 5-mile Trip Time Factor					56.73%		74.68%	109.26%		126.88%	142.17%		142.17%
Difference in Total Population Factor					96.53%		45.65%	96.53%		45.65%	96.53%		45.65%
Two-Way Route Factor					134.50%		134.50%	134.50%		134.50%	134.50%		134.50%

Vehicle Operating and Maintenance Cost (Annual)	\$78,000.00	\$39,000.00	\$36,000.00		\$396,000.00	\$0.00	\$396,000.00	\$1,582,000.00	\$0.00	\$1,582,000.00	\$3,955,000.00	\$0.00	\$2,373,000.00
Information Technology Maintenance Cost (Annual)	ACCOUNTED FOR IN WEEKDAY CALCULATION												
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)	ACCOUNTED FOR IN WEEKDAY CALCULATION												
Total Opening Year Cost	\$153,000.00				\$792,000.00			\$3,164,000.00			\$6,328,000.00		
Δ Total Opening Year Cost					\$639,000.00			\$3,011,000.00			\$6,175,000.00		

Legend	
Input	
Calculated Value	
Output	

ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS
CITY PROVIDED IT MAINTENCE COST OF \$194.89 FOR AVL, GPS, APC, Cameras, ACAS, and WIFI. COST ROUND TO \$195 IN FORMULA.
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BLUE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1, 2 AND 3
ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BUE AND ROUTE 2/YELLOW

Sun Ridership Projection (OSR)

Factors	Existing Routes				Proposed Routes - Option 1			Proposed Routes - Option 2			Proposed Routes - Option 3		
	Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 4/Purple	Orange	Route 1/Blue	Route 4/Purple	Orange	Route 1/Blue	Route 4/Purple	Orange
Population within 1/4-mile	27,254	7,194	21,535		26,309		12,441	26,309		12,441	26,309		12,441
Peak Headway (min)	100	100	60		140		90	80		50	15		15
Span of Service (HH:MM)	13.05	13.05	12.1		13.05		13.05	13.05		13.05	13.05		13.05
Route Length (miles)	24.8	16.7	15.7		28.2		17.4	28.2		17.4	28.2		17.4
Average Speed (mph)	12.4	12.4	12.4		12.4		12.4	12.4		12.4	12.4		12.4
Run Time (mins)	120	81	76		137		85	137		85	137		85
Layover Time (mins)	0	0	0		3		5	3		5	3		5
Total Cycle Time (mins)	120	81	76		140		90	140		90	140		90
Required Number of Vehicles to Meet Headway	1	1	1		2		2	4		4	20		12
Number of Stops	86	53	46		90		58	90		58	90		58
Average Stop Spacing (ft)	1,523	1,664	1,802		1,663		1,594	1,663		1,594	1,663		1,594
Average Walk Distance (ft)	2,082	2,152	2,221		2,152		2,117	2,152		2,117	2,152		2,117
Average Walk Time (mins)	10	10	11		10		10	10		10	10		10
Average Wait Time (mins)	50	50	30		70		45	40		25	7.5		7.5
Typical 5-mile Trip Time (mins)	168	168	130		208		158	148		118	83		83
Annual Ridership	12,963	3,133	4,890		13,500		8,400	19,100		11,300	34,000		16,100
Total Annual Ridership				12,963			21,900			30,400			50,100
Δ Total Annual Ridership							8,937			17,437			37,137
Difference in Span of Service Factor					100.00%		100.00%	100.00%		100.00%	100.00%		100.00%
Difference in Typical 5-mile Trip Time Factor					80.77%		106.33%	113.51%		142.37%	202.41%		202.41%
Difference in Total Population Factor					96.53%		45.65%	96.53%		45.65%	96.53%		45.65%
Two-Way Route Factor					134.50%		134.50%	134.50%		134.50%	134.50%		134.50%

Vehicle Operating and Maintenance Cost (Annual)	\$39,000.00	\$396,000.00	\$0.00	\$396,000.00	\$791,000.00	\$0.00	\$791,000.00	\$3,955,000.00	\$0.00	\$2,373,000.00
Information Technology Maintenance Cost (Annual)	ACCOUNTED FOR IN WEEKDAY CALCULATION									
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)	ACCOUNTED FOR IN WEEKDAY CALCULATION									
Total Opening Year Cost		\$39,000.00		\$792,000.00			\$1,582,000.00			\$6,328,000.00
Δ Total Opening Year Cost				\$753,000.00			\$1,543,000.00			\$6,289,000.00

Legend	
Input	
Calculated Value	
Output	

ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS
CITY PROVIDED IT MAINTENCE COST OF \$194.89 FOR AVL, GPS, APC, Cameras, ACAS, and WIFI. COST ROUND TO \$195 IN FORMULA.
TWO-WAY ROUTES REDUCE TRAVEL TIME IN ONE DIRECTION. USING THE 1:3 RULE, TRAVEL TIME WAS CALCULTED TO BE REDUCED BY APPROXIMATELY 60%, SIGNIFYING A 180% RIDERSHIP INCREASE.
BLUE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1, 2 AND 3
ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BLEU AND ROUTE 2/YELLOW

Week Ridership Projection (H&S)					Existing Routes					Proposed Routes - Option 1					Proposed Routes - Option 2					Proposed Routes - Option 3																																																				
Factors					Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange																																																	
Population within 1/4-mile					27,254	7,194	21,535	14,382	24,739	5,708	21,848	14,382	24,234	24,739	5,708	21,848	14,382	24,234	24,739	5,708	21,848	14,382	24,234																																																	
Peak Headway (min)					25	35	35	30	110	50	50	40	60	30	25	30	25	35	15	15	15	15	15																																																	
Span of Service (HH:MM)					15.6	15.2	15.63	17	15.6	15.2	15.63	17	15.63	15.6	15.2	15.63	17	15.63	15.60	15.20	15.63	17.00	15.63																																																	
Route Length (miles)					24.8	16.7	15.7	15.2	22	18.2	19.8	15.2	23.7	22	18.2	19.8	15.2	23.7	22.0	18.2	19.8	15.2	23.7																																																	
Average Speed (mph)					12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4																																																	
Run Time (mins)					120	81	76	74	107	89	96	74	115	107	89	96	74	115	107	89	96	74	115																																																	
Layover Time (mins)					0	0	0	0	3	6	4	6	5	3	6	4	6	5	3	6	4	6	5																																																	
Total Cycle Time (mins)					120	81	76	74	110	95	100	80	120	110	95	100	80	120	110	95	100	80	120																																																	
Required Number of Vehicles to Meet Headway					4	2	2	2	2	2	2	2	2	8	4	4	4	4	16	7	7	6	8																																																	
Number of Stops					86	53	46	48	76	58	58	48	69	76	58	58	48	69	76	58	58	48	69																																																	
Average Stop Spacing (ft)					1,523	1,664	1,802	1,672	1,523	1,664	1,802	1,672	1,802	1,523	1,664	1,802	1,672	1,802	1,523	1,664	1,802	1,672	1,802																																																	
Average Walk Distance (ft)					2,082	2,152	2,221	2,156	2,082	2,152	2,221	2,156	2,221	2,082	2,152	2,221	2,156	2,221	2,082	2,152	2,221	2,156	2,221																																																	
Average Walk Time (mins)					10	10	11	10	10	10	11	10	11	10	10	11	10	11	10	10	11	10	11																																																	
Average Wait Time (mins)					12.5	17.5	17.5	15	55	25	25	20	30	15	12.5	15	12.5	17.5	7.5	7.5	7.5	7.5	7.5																																																	
Typical 5-mile Trip Time (mins)					93	103	105	98	178	118	120	108	130	98	93	100	93	105	83	83	85	83	85																																																	
Annual Ridership					284,110	92,716	159,998	136,534	181,200	600	142,000	123,800	145,400	329,100	81,400	170,400	143,800	212,000	388,600	91,200	200,500	161,200	261,900																																																	
Total Annual Ridership									673,358								593,000								936,700								1,103,400																																							
Δ Total Annual Ridership													(80,358)																263,342								430,042																																			
Difference in Span of Service Factor													100.00%				100.00%				100.00%				100.00%				100.00%				100.00%																																							
Difference in Typical 5-mile Trip Time Factor													52.25%				87.29%				87.50%				90.74%				80.77%				94.90%				110.75%				105.00%				105.38%				100.00%				112.05%				124.10%				123.53%				118.07%				123.53%			
Difference in Total Population Factor													90.77%				79.34%				101.45%				100.00%				112.53%				90.77%				79.34%				101.45%				100.00%				112.53%																							
Two-Way Route Factor													134.50%				1.00%				100.00%				100.00%				100.00%				134.50%				100.00%				100.00%				100.00%																											
Vehicle Operating and Maintenance Cost (Annual)					\$946,000.00	\$461,000.00	\$474,000.00	\$515,000.00	\$473,000.00	\$461,000.00	\$474,000.00	\$515,000.00	\$474,000.00	\$1,891,000.00	\$921,000.00	\$947,000.00	\$1,031,000.00	\$947,000.00	\$3,783,000.00	\$1,612,000.00	\$1,658,000.00	\$1,546,000.00	\$1,895,000.00																																																	
Information Technology Maintenance Cost (Annual)								\$37,440.00					\$37,440.00					\$56,160.00				\$102,960.00																																																		
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)								\$0.00					\$0.00					\$2,255,500.00				\$6,419,500.00																																																		
Total Opening Year Cost								\$2,433,440.00					\$2,434,440.00					\$8,048,660.00				\$17,016,460.00																																																		
Δ Total Opening Year Cost													\$1,000.00					\$5,615,220.00				\$14,583,020.00																																																		
Legend													\$2,397,000.00	\$3,753,000.00				\$5,737,000.00	#####			\$10,494,000.00	\$22,341,000.00																																																	
Input													\$37,440.00					\$56,160.00				\$102,960.00																																																		
Calculated Value													\$0.00					\$2,255,500.00				\$6,419,500.00																																																		
Output																																																																								

ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS
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ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BLEUE AND ROUTE 2/YELLOW
ROUTE 3/GREEN, ROUTE 4/PURPLE, AND THE NEW ORANGE ROUTE WILL BE KEPT AS ONE-WAY OPERATION

Sat Ridership Projection (H&S)					Existing Routes					Proposed Routes - Option 1					Proposed Routes - Option 2					Proposed Routes - Option 3								
Factors					Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange					
Population within 1/4-mile					27,254	7,194	21,535		24,739	5,708	21,848		24,234	24,739	5,708	21,848		24,234	24,739	5,708	21,848		24,234					
Peak Headway (min)					50	80	60		110	95	100		120	30	25	30		35	15	15	15		15					
Span of Service (HH:MM)					13.05	13.05	12.1		13.05	13.05	12.1		12.1	13.05	13.05	12.1		12.1	13.05	13.05	12.10		12.10					
Route Length (miles)					24.8	16.7	15.7		22	18.2	19.8		23.7	22	18.2	19.8		23.7	22.0	18.2	19.8		23.7					
Average Speed (mph)					12.4	12.4	12.4		12.4	12.4	12.4		12.4	12.4	12.4	12.4		12.4	12.4	12.4	12.4		12.4					
Run Time (mins)					120	81	76		107	89	96		115	107	89	96		115	107	89	96		115					
Layover Time (mins)					0	0	0		3	6	4		5	3	6	4		5	3	6	4		5					
Total Cycle Time (mins)					120	81	76		110	95	100		120	110	95	100		120	110	95	100		120					
Required Number of Vehicles to Meet Headway					2	1	1		2	1	1		1	8	4	4		4	16	7	7		8					
Number of Stops					86	53	46		76	58	58		69	76	58	58		69	76	58	58		69					
Average Stop Spacing (ft)					1,523	1,664	1,802		1,523	1,664	1,802		1,802	1,523	1,664	1,802		1,802	1,523	1,664	1,802		1,802					
Average Walk Distance (ft)					2,082	2,152	2,221		2,082	2,152	2,221		2,221	2,082	2,152	2,221		2,221	2,082	2,152	2,221		2,221					
Average Walk Time (mins)					10	10	11		10	10	11		11	10	10	11		11	10	10	11		11					
Average Wait Time (mins)					25	40	30		55	47.5	50		60	15	12.5	15		17.5	7.5	7.5	7.5		7.5					
Typical 5-mile Trip Time (mins)					118	148	130		178	163	170		190	98	93	100		105	83	83	85		85					
Annual Ridership					26,009	6,286	9,812		21,000	-	7,600		7,500	38,200	7,900	12,900		22,400	45,100	8,800	15,200		27,700					
Total Annual Ridership									42,107				36,100				81,400				96,800							
Δ Total Annual Ridership													(6,007)				39,293				54,693							
Difference in Span of Service Factor									100.00%				100.00%				100.00%				100.00%							
Difference in Typical 5-mile Trip Time Factor									66.29%				90.80%				76.47%				68.42%							
Difference in Total Population Factor									90.77%				79.34%				101.45%				112.53%							
Two-Way Route Factor									134.50%				1.00%				100.00%				100.00%							
Vehicle Operating and Maintenance Cost (Annual)					\$78,000.00				\$39,000.00				\$36,000.00				\$396,000.00				\$198,000.00				\$183,000.00			
Information Technology Maintenance Cost (Annual)					ACCOUNTED FOR IN WEEKDAY CALCULATION																							
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)					ACCOUNTED FOR IN WEEKDAY CALCULATION																							
Total Opening Year Cost									\$153,000.00								\$960,000.00											
Δ Total Opening Year Cost																	\$807,000.00											
Legend																												
Input																												
Calculated Value																												
Output																												

ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS
CITY PROVIDED IT MAINTENCE COST OF \$194.89 FOR AVL, GPS, APC, Cameras, ACAS, and WIFI. COST ROUND TO \$195 IN FORMULA.
TWO-WAY ROUTES REDUCE TRAVEL TIME IN ONE DIRECTION. USING THE 1:3 RULE, TRAVEL TIME WAS CALCULTED TO BE REDUCED BY APPROXIMATELY 60%, SIGNIFYING A 180% RIDERSHIP INCREASE.
ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BUE AND ROUTE 2/YELLOW
ROUTE 3/GREEN, ROUTE 4/PURPLE, AND THE NEW ORANGE ROUTE WILL BE KEPT AS ONE-WAY OPERATION

Sun Ridership Projection (H&S)		Existing Routes				Proposed Routes - Option 1					Proposed Routes - Option 2					Proposed Routes - Option 3						
Factors		Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange		
Population within 1/4-mile		27,254	7,194	21,535		24,739	5,708				24,739	5,708				24,739	5,708					
Peak Headway (min)		100	100	60		110	95				60	50				15	15					
Span of Service (HH:MM)		13.05	13.05	12.1		13.05	13.05				13.05	13.05				13.05	13.05					
Route Length (miles)		24.8	16.7	15.7		22	18.2				22	18.2				22.0	18.2					
Average Speed (mph)		12.4	12.4	12.4		12.4	12.4				12.4	12.4				12.4	12.4					
Run Time (mins)		120	81	76		107	89				107	89				107	89					
Layover Time (mins)		0	0	0		3	6				3	6				3	6					
Total Cycle Time (mins)		120	81	76		110	95				110	95				110	95					
Required Number of Vehicles to Meet Headway		1	1	1		1	1				4	2				16	7					
Number of Stops		86	53	46		76	58				76	58				76	58					
Average Stop Spacing (ft)		1,523	1,664	1,802		1,523	1,664				1,523	1,664				1,523	1,664					
Average Walk Distance (ft)		2,082	2,152	2,221		2,082	2,152				2,082	2,152				2,082	2,152					
Average Walk Time (mins)		10	10	11		10	10				10	10				10	10					
Average Wait Time (mins)		50	50	30		55	47.5				30	25				7.5	7.5					
Typical 5-mile Trip Time (mins)		168	168	130		178	163				128	118				83	83					
Annual Ridership		12,963	3,133	4,890		14,900	-				20,700	3,500				32,000	5,000					
Total Annual Ridership		12,963				14,900				14,900	24,200				24,200	37,000						
Δ Total Annual Ridership						1,937				1,937	11,237				11,237	24,037						
Difference in Span of Service Factor						100.00%	100.00%				100.00%	100.00%				100.00%	100.00%					
Difference in Typical 5-mile Trip Time Factor						94.38%	103.07%				131.25%	142.37%				202.41%	202.41%					
Difference in Total Population Factor						90.77%	79.34%				90.77%	79.34%				90.77%	79.34%					
Two-Way Route Factor						134.50%	1.00%				134.50%	100.00%				134.50%	100.00%					
Vehicle Operating and Maintenance Cost (Annual)		\$39,000.00				\$198,000.00	\$198,000.00	\$0.00	\$0.00		\$791,000.00	\$396,000.00	\$0.00	\$0.00		\$3,164,000.00	\$1,384,000.00	\$0.00	\$0.00			
Information Technology Maintenance Cost (Annual)		ACCOUNTED FOR IN WEEKDAY CALCULATION																				
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)		ACCOUNTED FOR IN WEEKDAY CALCULATION																				
Total Opening Year Cost		\$39,000.00								\$396,000.00					\$1,187,000.00					\$4,548,000.00		
Δ Total Opening Year Cost										\$357,000.00					\$1,148,000.00					\$4,509,000.00		
Legend																						
Input																						
Calculated Value																						
Output																						

ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS
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ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BUE AND ROUTE 2/YELLOW
ROUTE 3/GREEN, ROUTE 4/PURPLE, AND THE NEW ORANGE ROUTE WILL BE KEPT AS ONE-WAY OPERATION

Week Ridership Projection (GR)					Existing Routes				Proposed Routes - Option 1											
Factors					Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	White	Black	Red	Brown	Pink	Orange		
Population within 1/4-mile					27,254	7,194	21,535	14,382	2,262	5,848	6,809	14,330	2,638	8,333	13,423	6,311	2,589	584		
Peak Headway (min)					25	35	35	30	50	50	45	85	50	50	70	65	60	45		
Span of Service (HH:MM)					15.6	15.2	15.63	17	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00		
Route Length (miles)					24.8	16.7	15.7	15.2	8.4	9.8	8.19	17	9.38	9.7	13.9	12.7	11.9	8.3		
Average Speed (mph)					12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4		
Run Time (mins)					120	81	76	74	41	48	40	83	46	47	68	62	58	41		
Layover Time (mins)					0	0	0	0	9	2	5	2	4	3	2	3	2	4		
Total Cycle Time (mins)					120	81	76	74	50	50	45	85	50	50	70	65	60	45		
Required Number of Vehicles to Meet Headway					4	2	2	2	1	1	1	1	1	1	1	1	1	1		
Number of Stops					86	53	46	48	29	31	25	54	30	28	48	40	904	28		
Average Stop Spacing (ft)					1,523	1,664	1,802	1,672	1,523	1,664	1,733	1,672	1,664	1,802	1,523	1,672	70	1,594		
Average Walk Distance (ft)					2,082	2,152	2,221	2,156	2,082	2,152	2,187	2,156	2,152	2,221	2,082	2,156	1,355	2,117		
Average Walk Time (mins)					10	10	11	10	10	10	10	10	10	11	10	10	6	10		
Average Wait Time (mins)					12.5	17.5	17.5	15	25	25	22.5	42.5	25	25	35	32.5	30	22.5		
Typical 5-mile Trip Time (mins)					93	103	105	98	118	118	113	153	118	120	138	133	120	113		
Annual Ridership					284,110	92,716	159,998	136,534	19,400	69,600	57,900	87,100	31,400	56,500	98,500	44,100	24,300	5,400		
Total Annual Ridership					673,358														494,200	
Δ Total Annual Ridership																			(179,158)	
Difference in Span of Service Factor									104.49%	105.92%	105.14%	100.00%	105.92%	104.38%	104.49%	100.00%	105.19%	105.19%		
Difference in Typical 5-mile Trip Time Factor									78.81%	87.29%	92.04%	64.05%	87.29%	87.50%	67.39%	73.68%	81.67%	81.67%		
Difference in Total Population Factor									8.30%	81.29%	47.40%	99.64%	36.67%	38.70%	49.25%	43.88%	15.03%	3.39%		
Two-Way Route Factor									100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		
Vehicle Operating and Maintenance Cost (Annual)					\$946,000.00	\$461,000.00	\$474,000.00	\$515,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00		
Information Technology Maintenance Cost (Annual)									\$37,440.00											\$37,440.00
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)									\$0.00											\$0.00
Total Opening Year Cost									\$2,433,440.00											\$2,617,440.00
Δ Total Opening Year Cost																				\$184,000.00
Legend																			\$2,580,000.00	
Input																			\$37,440.00	
Calculated Value																			\$0.00	
Output																				

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ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BLUE AND ROUTE 2/YELLOW
ALL PROPOSED ROUTES ASSUMED TO BE ONE-WAY

[illegible]

Sat Ridership Projection (GR)					Proposed Routes - Option 1									
Factors	Existing Routes				Proposed Routes - Option 1									
	Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	White	Black	Red	Brown	Pink	Orange
Population within 1/4-mile	27,254	7,194	21,535	14,382	2,262	5,848	6,809	14,330	2,638	8,333	13,423	6,311	2,589	584
Peak Headway (min)	50	80	60	30	50	50	45	85	50	50	70	65	60	45
Span of Service (HH:MM)	13.05	13.05	12.1	16.59	13.05	13.05	13.05	13.05	13.05	13.05	13.05	13.05	13.05	13.05
Route Length (miles)	24.8	16.7	15.7	15.2	8.4	9.8	8.19	17	9.38	9.7	13.9	12.7	11.9	8.3
Average Speed (mph)	12.4	12.4	12.4	23	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
Run Time (mins)	120	81	76	40	41	48	40	83	46	47	68	62	58	41
Layover Time (mins)	0	0	0	0	9	2	5	2	4	3	2	3	2	4
Total Cycle Time (mins)	120	81	76	40	50	50	45	85	50	50	70	65	60	45
Required Number of Vehicles to Meet Headway	2	1	1	2	1	1	1	1	1	1	1	1	1	1
Number of Stops	86	53	46	48	29	31	25	54	30	28	48	40	904	28
Average Stop Spacing (ft)	1,523	1,664	1,802	1,672	1,523	1,664	1,733	1,672	1,664	1,802	1,523	1,672	70	1,594
Average Walk Distance (ft)	2,082	2,152	2,221	2,156	2,082	2,152	2,187	2,156	2,152	2,221	2,082	2,156	1,355	2,117
Average Walk Time (mins)	10	10	11	10	10	10	10	10	10	11	10	10	6	10
Average Wait Time (mins)	25	40	30	15	25	25	22.5	42.5	25	25	35	32.5	30	22.5
Typical 5-mile Trip Time (mins)	118	148	130	76	118	118	113	153	118	120	138	133	120	113
Annual Ridership	26,009	6,286	9,812	12,499	2,100	6,400	4,700	5,500	2,800	4,200	10,900	2,700	2,600	600
Total Annual Ridership	42,107				42,500									
Δ Total Annual Ridership					393									
Difference in Span of Service Factor					100.00%	100.00%	101.89%	89.33%	100.00%	103.93%	100.00%	89.33%	100.00%	100.00%
Difference in Typical 5-mile Trip Time Factor					100.00%	125.42%	123.01%	49.67%	125.42%	108.33%	85.51%	57.14%	110.83%	110.83%
Difference in Total Population Factor					8.30%	81.29%	47.40%	99.64%	36.67%	38.70%	49.25%	43.88%	15.03%	3.39%
Two-Way Route Factor					100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Vehicle Operating and Maintenance Cost (Annual)	\$396,000.00	\$198,000.00	\$183,000.00		\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00
Information Technology Maintenance Cost (Annual)	ACCOUNTED FOR IN WEEKDAY CALCULATION													
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)	ACCOUNTED FOR IN WEEKDAY CALCULATION													
Total Opening Year Cost	\$777,000.00				\$1,980,000.00									
Δ Total Opening Year Cost					\$1,203,000.00									
Legend														
Input														
Calculated Value														
Output														
ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS														
CITY PROVIDED IT MAINTENCE COST OF \$194.89 FOR AVL, GPS, APC, Cameras, ACAS, and WIFI. COST ROUND TO \$195 IN FORMULA.														
TWO-WAY ROUTES REDUCE TRAVEL TIME IN ONE DIRECTION. USING THE 1:3 RULE, TRAVEL TIME WAS CALCULATED TO BE REDUCED BY APPROXIMATELY 60%, SIGNIFYING A 180% RIDERSHIP INCREASE.														
ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BLUE AND ROUTE 2/YELLOW														
ALL PROPOSED ROUTES ASSUMED TO BE ONE-WAY														

Week Ridership Projection (GRH)		Existing Routes				Proposed Routes - Option 1									
Factors		Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	White	Black	Red	Brown	Pink	Orange
Population within 1/4-mile		27,254	7,194	21,535	14,382	2,291	5,848	6,809	14,382	4,996	8,333	13,423	5,399	2,667	584
Peak Headway (min)		25	35	35	30	50	50	45	85	55	50	70	85	60	45
Span of Service (HH:MM)		15.6	15.2	15.63	17	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00
Route Length (miles)		24.8	16.7	15.7	15.2	8.4	9.8	8.19	17	10.6	9.7	13.9	16.9	11.9	8.3
Average Speed (mph)		12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
Run Time (mins)		120	81	76	74	41	48	40	83	52	47	68	82	58	41
Layover Time (mins)		0	0	0	0	9	2	5	2	3	3	2	3	2	4
Total Cycle Time (mins)		120	81	76	74	50	50	45	85	55	50	70	85	60	45
Required Number of Vehicles to Meet Headway		4	2	2	2	1	1	1	1	1	1	1	1	1	1
Number of Stops		86	53	46	48	29	31	25	54	34	28	48	53	904	28
Average Stop Spacing (ft)		1,523	1,664	1,802	1,672	1,523	1,664	1,733	1,672	1,664	1,802	1,523	1,672	70	1,594
Average Walk Distance (ft)		2,082	2,152	2,221	2,156	2,082	2,152	2,187	2,156	2,152	2,221	2,082	2,156	1,355	2,117
Average Walk Time (mins)		10	10	11	10	10	10	10	10	10	11	10	10	6	10
Average Wait Time (mins)		12.5	17.5	17.5	15	25	25	22.5	42.5	27.5	25	35	42.5	30	22.5
Typical 5-mile Trip Time (mins)		93	103	105	98	118	118	113	153	123	120	138	153	120	113
Annual Ridership		284,110	92,716	159,998	136,534	19,600	69,600	57,900	87,400	57,100	56,500	98,500	32,800	25,000	5,400
Total Annual Ridership		673,358				509,800									
Δ Total Annual Ridership						(163,558)									
Difference in Span of Service Factor						104.49%	105.92%	105.14%	100.00%	105.92%	104.38%	104.49%	100.00%	105.19%	105.19%
Difference in Typical 5-mile Trip Time Factor						78.81%	87.29%	92.04%	64.05%	83.74%	87.50%	67.39%	64.05%	81.67%	81.67%
Difference in Total Population Factor						8.41%	81.29%	47.40%	100.00%	69.45%	38.70%	49.25%	37.54%	15.48%	3.39%
Two-Way Route Factor						100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Vehicle Operating and Maintenance Cost (Annual)		\$946,000.00	\$461,000.00	\$474,000.00	\$515,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00	\$258,000.00
Information Technology Maintenance Cost (Annual)					\$37,440.00										\$37,440.00
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)					\$0.00										\$0.00
Total Opening Year Cost					\$2,433,440.00										\$2,617,440.00
Δ Total Opening Year Cost															\$184,000.00
Legend															\$2,580,000.00
Input															\$37,440.00
Calculated Value															\$0.00
Output															

ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS
CITY PROVIDED IT MAINTENCE COST OF \$194.89 FOR AVL, GPS, APC, Cameras, ACAS, and WIFI. COST ROUND TO \$195 IN FORMULA.
TWO-WAY ROUTES REDUCE TRAVEL TIME IN ONE DIRECTION. USING THE 1:3 RULE, TRAVEL TIME WAS CALCULTED TO BE REDUCED BY APPROXIMATELY 60%, SIGNIFYING A 180% RIDERSHIP INCREASE.
ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BLUE AND ROUTE 2/YELLOW
ALL PROPOSED ROUTES ASSUMED TO BE ONE-WAY

[illegible]

Sat Ridership Projection (GRH)					Proposed Routes - Option 1										
Factors	Existing Routes				Proposed Routes - Option 1										
	Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	White	Black	Red	Brown	Pink	Orange	
Population within 1/4-mile	27,254	7,194	21,535	14,382	2,291	5,848	6,809	14,382	4,996	8,333	13,423	5,399	2,667	584	
Peak Headway (min)	50	80	60	30	50	50	45	85	55	50	70	85	60	45	
Span of Service (HH:MM)	13.05	13.05	12.1	16.59	13.05	13.05	13.05	13.05	13.05	13.05	13.05	13.05	13.05	13.05	
Route Length (miles)	24.8	16.7	15.7	15.2	8.4	9.8	8.19	17	10.6	9.7	13.9	16.9	11.9	8.3	
Average Speed (mph)	12.4	12.4	12.4	23	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	
Run Time (mins)	120	81	76	40	41	48	40	83	52	47	68	82	58	41	
Layover Time (mins)	0	0	0	0	9	2	5	2	3	3	2	3	2	4	
Total Cycle Time (mins)	120	81	76	40	50	50	45	85	55	50	70	85	60	45	
Required Number of Vehicles to Meet Headway	2	1	1	2	1	1	1	1	1	1	1	1	1	1	
Number of Stops	86	53	46	48	29	31	25	54	34	28	48	53	904	28	
Average Stop Spacing (ft)	1,523	1,664	1,802	1,672	1,523	1,664	1,733	1,672	1,664	1,802	1,523	1,672	70	1,594	
Average Walk Distance (ft)	2,082	2,152	2,221	2,156	2,082	2,152	2,187	2,156	2,152	2,221	2,082	2,156	1,355	2,117	
Average Walk Time (mins)	10	10	11	10	10	10	10	10	10	11	10	10	6	10	
Average Wait Time (mins)	25	40	30	15	25	25	22.5	42.5	27.5	25	35	42.5	30	22.5	
Typical 5-mile Trip Time (mins)	118	148	130	76	118	118	113	153	123	120	138	153	120	113	
Annual Ridership	26,009	6,286	9,812	12,499	2,100	6,400	4,700	5,500	5,200	4,200	10,900	2,000	2,700	600	
Total Annual Ridership	42,107														44,300
Δ Total Annual Ridership															2,193
Difference in Span of Service Factor					100.00%	100.00%	101.89%	89.33%	100.00%	103.93%	100.00%	89.33%	100.00%	100.00%	
Difference in Typical 5-mile Trip Time Factor					100.00%	125.42%	123.01%	49.67%	120.33%	108.33%	85.51%	49.67%	110.83%	110.83%	
Difference in Total Population Factor					8.41%	81.29%	47.40%	100.00%	69.45%	38.70%	49.25%	37.54%	15.48%	3.39%	
Two-Way Route Factor					100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	
Vehicle Operating and Maintenance Cost (Annual)					\$396,000.00	\$198,000.00	\$183,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	
Information Technology Maintenance Cost (Annual)					ACCOUNTED FOR IN WEEKDAY CALCULATION										
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)					ACCOUNTED FOR IN WEEKDAY CALCULATION										
Total Opening Year Cost									\$777,000.00						\$1,980,000.00
Δ Total Opening Year Cost														\$1,203,000.00	
Legend															
Input															
Calculated Value															
Output															
ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS															
CITY PROVIDED IT MAINTENCE COST OF \$194.89 FOR AVL, GPS, APC, Cameras, ACAS, and WIFI. COST ROUND TO \$195 IN FORMULA.															
TWO-WAY ROUTES REDUCE TRAVEL TIME IN ONE DIRECTION. USING THE 1:3 RULE, TRAVEL TIME WAS CALCULATED TO BE REDUCED BY APPROXIMATELY 60%, SIGNIFYING A 180% RIDERSHIP INCREASE.															
ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BLUE AND ROUTE 2/YELLOW															
ALL PROPOSED ROUTES ASSUMED TO BE ONE-WAY															

Sun Ridership Projection (GRH)		Existing Routes				Proposed Routes - Option 1								
Factors	Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	White	Black	Red	Brown	Pink	Orange
Population within 1/4-mile	27,254	7,194	21,535	14,382	2,291	5,848	6,809	14,382	4,996	8,333	13,423	5,399	2,667	584
Peak Headway (min)	100	100	60	30	50	50	45	85	55	50	70	85	60	45
Span of Service (HH:MM)	13.05	13.05	12.1	17	13.05	13.05	13.05	13.05	13.05	13.05	13.05	13.05	13.05	13.05
Route Length (miles)	24.8	16.7	15.7	15.2	8.4	9.8	8.19	17	10.6	9.7	13.9	16.9	11.9	8.3
Average Speed (mph)	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
Run Time (mins)	120	81	76	74	41	48	40	83	52	47	68	82	58	41
Layover Time (mins)	0	0	0	0	9	2	5	2	3	3	2	3	2	4
Total Cycle Time (mins)	120	81	76	74	50	50	45	85	55	50	70	85	60	45
Required Number of Vehicles to Meet Headway	1	1	1	2	1	1	1	1	1	1	1	1	1	1
Number of Stops	86	53	46	48	29	31	25	54	34	28	48	53	904	28
Average Stop Spacing (ft)	1,523	1,664	1,802	1,672	1,523	1,664	1,733	1,672	1,664	1,802	1,523	1,672	70	1,594
Average Walk Distance (ft)	2,082	2,152	2,221	2,156	2,082	2,152	2,187	2,156	2,152	2,221	2,082	2,156	1,355	2,117
Average Walk Time (mins)	10	10	11	10	10	10	10	10	10	11	10	10	6	10
Average Wait Time (mins)	50	50	30	15	25	25	22.5	42.5	27.5	25	35	42.5	30	22.5
Typical 5-mile Trip Time (mins)	168	168	130	98	118	118	113	153	123	120	138	153	120	113
Annual Ridership	12,963	3,133	4,890	6,230	1,500	3,600	2,500	3,500	2,900	2,100	7,700	1,300	1,700	300
Total Annual Ridership	12,963				27,100									
Δ Total Annual Ridership					14,137									
Difference in Span of Service Factor					100.00%	100.00%	101.89%	88.38%	100.00%	103.93%	100.00%	88.38%	100.00%	100.00%
Difference in Typical 5-mile Trip Time Factor					142.37%	142.37%	131.86%	64.05%	136.59%	108.33%	121.74%	64.05%	140.00%	140.00%
Difference in Total Population Factor					8.41%	81.29%	47.40%	100.00%	69.45%	38.70%	49.25%	37.54%	15.48%	3.39%
Two-Way Route Factor					100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Vehicle Operating and Maintenance Cost (Annual)					\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00	\$198,000.00
Information Technology Maintenance Cost (Annual)					ACCOUNTED FOR IN WEEKDAY CALCULATION									
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)					ACCOUNTED FOR IN WEEKDAY CALCULATION									
Total Opening Year Cost					\$198,000.00	\$1,980,000.00								
Δ Total Opening Year Cost					\$1,782,000.00									
Legend														
Input														
Calculated Value														
Output														
ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS														
CITY PROVIDED IT MAINTENCE COST OF \$194.89 FOR AVL, GPS, APC, Cameras, ACAS, and WIFI. COST ROUND TO \$195 IN FORMULA.														
TWO-WAY ROUTES REDUCE TRAVEL TIME IN ONE DIRECTION. USING THE 1:3 RULE, TRAVEL TIME WAS CALCULATED TO BE REDUCED BY APPROXIMATELY 60%, SIGNIFYING A 180% RIDERSHIP INCREASE.														
ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BLUE AND ROUTE 2/YELLOW														
ALL PROPOSED ROUTES ASSUMED TO BE ONE-WAY														

Week Ridership Projection (Q)		Existing Routes				Proposed Routes - Option 1					Proposed Routes - Option 2					Proposed Routes - Option 3				
Factors		Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange
Population within 1/4-mile		27,254	7,194	21,535	14,382	10,932	3,643	19,905	14,382	5,982	10,932	3,643	19,905	14,382	5,982	10,932	3,643	19,905	14,382	5,982
Peak Headway (min)		25	35	35	30	55	60	50	40	50	30	35	30	25	30	15	15	15	15	15
Span of Service (HH:MM)		15.6	15.2	15.63	17	15.6	15.2	15.63	17	15.6	15.6	15.2	15.63	17	15.6	15.60	15.20	15.63	17.00	15.60
Route Length (miles)		24.8	16.7	15.7	15.2	10.7	11.3	19.7	15.2	8.93	10.7	11.3	19.7	15.2	8.93	10.7	11.3	19.7	15.2	8.9
Average Speed (mph)		12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
Run Time (mins)		120	81	76	74	52	55	96	74	44	52	55	96	74	44	52	55	96	74	44
Layover Time (mins)		0	0	0	0	3	5	4	6	6	3	5	4	6	6	3	5	4	6	6
Total Cycle Time (mins)		120	81	76	74	55	60	100	80	50	55	60	100	80	50	55	60	100	80	50
Required Number of Vehicles to Meet Headway		4	2	2	2	2	1	4	2	2	4	2	8	4	4	8	4	14	6	8
Number of Stops		86	53	46	48	37	36	58	48	30	37	36	58	48	30	37	36	58	48	30
Average Stop Spacing (ft)		1,523	1,664	1,802	1,672	1,523	1,664	1,802	1,672	1,594	1,523	1,664	1,802	1,672	1,594	1,523	1,664	1,802	1,672	1,594
Average Walk Distance (ft)		2,082	2,152	2,221	2,156	2,082	2,152	2,221	2,156	2,117	2,082	2,152	2,221	2,156	2,117	2,082	2,152	2,221	2,156	2,117
Average Walk Time (mins)		10	10	11	10	10	10	11	10	10	10	10	11	10	10	10	10	11	10	10
Average Wait Time (mins)		12.5	17.5	17.5	15	27.5	30	25	20	25	15	17.5	15	12.5	15	7.5	7.5	7.5	7.5	7.5
Typical 5-mile Trip Time (mins)		93	103	105	98	123	128	120	108	118	98	103	100	93	98	83	83	85	83	83
Annual Ridership		284,110	92,716	159,998	136,534	115,800	50,800	174,000	123,800	73,500	145,400	63,100	208,800	143,800	88,500	171,700	78,300	245,700	161,200	104,500
Total Annual Ridership		673,358				537,900					649,600					761,400				
Δ Total Annual Ridership						(135,458)					(23,758)									
Difference in Span of Service Factor						100.00%	100.00%	100.00%	100.00%	100.65%	100.00%	100.00%	100.00%	100.00%	100.65%	100.00%	100.00%	100.00%	100.00%	100.65%
Difference in Typical 5-mile Trip Time Factor						75.61%	80.47%	87.50%	90.74%	83.05%	94.90%	100.00%	105.00%	105.38%	100.00%	112.05%	124.10%	123.53%	118.07%	118.07%
Difference in Total Population Factor						40.11%	50.64%	92.43%	100.00%	34.73%	40.11%	50.64%	92.43%	100.00%	34.73%	40.11%	50.64%	92.43%	100.00%	34.73%
Two-Way Route Factor						134.50%	134.50%	134.50%	100.00%	134.50%	134.50%	134.50%	134.50%	134.50%	100.00%	134.50%	134.50%	134.50%	100.00%	134.50%
Vehicle Operating and Maintenance Cost (Annual)		\$946,000.00	\$461,000.00	\$474,000.00	\$515,000.00	\$473,000.00	\$230,000.00	\$947,000.00	\$515,000.00	\$473,000.00	\$946,000.00	\$461,000.00	\$1,895,000.00	\$1,031,000.00	\$946,000.00	\$1,891,000.00	\$921,000.00	\$3,316,000.00	\$1,546,000.00	\$1,891,000.00
Information Technology Maintenance Cost (Annual)					\$37,440.00					\$37,440.00					\$51,480.00					\$93,600.00
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)					\$0.00					\$0.00					\$1,908,500.00					\$5,552,000.00
Total Opening Year Cost					\$2,433,440.00					\$2,675,440.00					\$7,238,980.00					\$15,210,600.00
Δ Total Opening Year Cost										\$242,000.00					\$4,805,540.00					\$12,777,160.00
Legend										\$2,638,000.00	\$3,133,000.00				\$5,279,000.00	\$6,416,000.00				\$9,565,000.00
Input										\$37,440.00					\$51,480.00					\$93,600.00
Calculated Value										\$0.00					\$1,908,500.00					\$5,552,000.00
Output																				

ASSUMES 260 WEEKDAYS MINUS 7 HOLIDAYS FOR A TOTAL OF 253 WEEKDAYS
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ORANGE ROUTE ASSUMED TO BE AVERAGE OF EXISTING ROUTE 1/BUE AND ROUTE 2/YELLOW
ROUTE 4/PURPLE WILL BE KEPT AS ONE-WAY OPERATION

Sat Ridership Projection (Q)					Existing Routes					Proposed Routes - Option 1					Proposed Routes - Option 2					Proposed Routes - Option 3								
Factors					Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange					
Population within 1/4-mile					27,254	7,194	21,535		10,932	3,643	19,905		5,982	10,932	3,643	19,905		5,982	10,932	3,643	19,905		5,982					
Peak Headway (min)					50	80	60		55	60	100		50	30	35	30		30	15	15	15		15					
Span of Service (HH:MM)					13.05	13.05	12.1		13.05	13.05	12.1		13.05	13.05	13.05	12.1		13.05	13.05	13.05	12.10		13.05					
Route Length (miles)					24.8	16.7	15.7		10.7	11.3	19.7		8.93	10.7	11.3	19.7		8.93	10.7	11.3	19.7		8.9					
Average Speed (mph)					12.4	12.4	12.4		12.4	12.4	12.4		12.4	12.4	12.4	12.4		12.4	12.4	12.4	12.4		12.4					
Run Time (mins)					120	81	76		52	55	96		44	52	55	96		44	52	55	96		44					
Layover Time (mins)					0	0	0		3	5	4		6	3	5	4		6	3	5	4		6					
Total Cycle Time (mins)					120	81	76		55	60	100		50	55	60	100		50	55	60	100		50					
Required Number of Vehicles to Meet Headway					2	1	1		2	1	2		2	4	2	8		4	8	4	14		8					
Number of Stops					86	53	46		37	36	58		30	37	36	58		30	37	36	58		30					
Average Stop Spacing (ft)					1,523	1,664	1,802		1,523	1,664	1,802		1,594	1,523	1,664	1,802		1,594	1,523	1,664	1,802		1,594					
Average Walk Distance (ft)					2,082	2,152	2,221		2,082	2,152	2,221		2,117	2,082	2,152	2,221		2,117	2,082	2,152	2,221		2,117					
Average Walk Time (mins)					10	10	11		10	10	11		10	10	10	11		10	10	10	11		10					
Average Wait Time (mins)					25	40	30		27.5	30	50		25	15	17.5	15		15	7.5	7.5	7.5		7.5					
Typical 5-mile Trip Time (mins)					118	148	130		123	128	170		118	98	103	100		98	83	83	85		83					
Annual Ridership					26,009	6,286	9,812		13,400	4,900	9,300		8,500	16,800	6,100	15,800		10,200	19,900	7,600	18,600		12,000					
Total Annual Ridership									42,107								36,100				48,900				58,100			
Δ Total Annual Ridership													(6,007)								6,793				15,993			
Difference in Span of Service Factor													100.00%				100.00%				100.00%				100.00%			
Difference in Typical 5-mile Trip Time Factor													95.93%				115.63%				76.47%				112.71%			
Difference in Total Population Factor													40.11%				50.64%				92.43%				34.73%			
Two-Way Route Factor													134.50%				134.50%				134.50%				134.50%			
Vehicle Operating and Maintenance Cost (Annual)					\$78,000.00				\$39,000.00				\$36,000.00				\$78,000.00				\$39,000.00				\$72,000.00			
Information Technology Maintenance Cost (Annual)																	\$0.00				\$78,000.00							
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)																												
Total Opening Year Cost									\$153,000.00								\$267,000.00								\$680,000.00			
Δ Total Opening Year Cost																	\$114,000.00											
Legend																												
Input																												
Calculated Value																												
Output																												

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Sun Ridership Projection (Q)		Existing Routes				Proposed Routes - Option 1					Proposed Routes - Option 2					Proposed Routes - Option 3				
Factors		Route 1/Blue	Route 2/Yellow	Route 3/Green	Route 4/Purple	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange	Route 1/Blue	Route 2/Yellow	Modified Route 3/Green	Route 4/Purple	Orange
Population within 1/4-mile		27,254	7,194	21,535	14,382	10,932		19,905		5,982	10,932		19,905		5,982	10,932		19,905		5,982
Peak Headway (min)		100	100	60	30	55		100		50	30		60		30	15		15		15
Span of Service (HH:MM)		13.05	13.05	12.1	17	13.05		12.1		13.05	13.05		12.1		13.05	13.05		12.10		13.05
Route Length (miles)		24.8	16.7	15.7	15.2	10.7		19.7		8.93	10.7		19.7		8.93	10.7		19.7		8.9
Average Speed (mph)		12.4	12.4	12.4	12.4	12.4		12.4		12.4	12.4		12.4		12.4	12.4		12.4		12.4
Run Time (mins)		120	81	76	74	52		96		44	52		96		44	52		96		44
Layover Time (mins)		0	0	0	0	3		4		6	3		4		6	3		4		6
Total Cycle Time (mins)		120	81	76	74	55		100		50	55		100		50	55		100		50
Required Number of Vehicles to Meet Headway		1	1	1	2	2		2		2	4		4		4	8		14		8
Number of Stops		86	53	46	48	37		58		30	37		58		30	37		58		30
Average Stop Spacing (ft)		1,523	1,664	1,802	1,672	1,523		1,802		1,594	1,523		1,802		1,594	1,523		1,802		1,594
Average Walk Distance (ft)		2,082	2,152	2,221	2,156	2,082		2,221		2,117	2,082		2,221		2,117	2,082		2,221		2,117
Average Walk Time (mins)		10	10	11	10	10		11		10	10		11		10	10		11		10
Average Wait Time (mins)		50	50	30	15	27.5		50		25	15		30		15	7.5		7.5		7.5
Typical 5-mile Trip Time (mins)		168	168	130	98	123		170		118	98		130		98	83		85		83
Annual Ridership		12,963	3,133	4,890	6,230	9,500		4,600		5,300	11,900		6,000		6,400	14,100		9,200		7,600
Total Annual Ridership		12,963				19,400				24,300				30,900						
Δ Total Annual Ridership						6,437				11,337				17,937						
Difference in Span of Service Factor						100.00%		100.00%		100.00%	100.00%		100.00%		100.00%	100.00%		100.00%		100.00%
Difference in Typical 5-mile Trip Time Factor						136.59%		76.47%		142.37%	171.43%		100.00%		171.43%	202.41%		152.94%		202.41%
Difference in Total Population Factor						40.11%		92.43%		34.73%	40.11%		92.43%		34.73%	40.11%		92.43%		34.73%
Two-Way Route Factor						134.50%		134.50%		134.50%	134.50%		134.50%		134.50%	134.50%		134.50%		134.50%
Vehicle Operating and Maintenance Cost (Annual)		\$39,000.00				\$78,000.00	\$0.00	\$72,000.00	\$0.00	\$78,000.00	\$156,000.00	\$0.00	\$145,000.00	\$0.00	\$156,000.00	\$313,000.00	\$0.00	\$507,000.00	\$0.00	\$313,000.00
Information Technology Maintenance Cost (Annual)		ACCOUNTED FOR IN WEEKDAY CALCULATION																		
Capital Expenditure (Assuming Existing Vehicles and Fleet with 20% Spares)		ACCOUNTED FOR IN WEEKDAY CALCULATION																		
Total Opening Year Cost		\$39,000.00								\$228,000.00					\$457,000.00					
Δ Total Opening Year Cost										\$189,000.00					\$418,000.00					

Legend	
Input	
Calculated Value	
Output	

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Option 1 Ridership					
Alternative	Weekday	Saturday	Sunday	Total Annual	Change in Ridership
Existing	673,358	42,107	12,963	728,428	
Missing Link	592,200	32,800	13,200	638,200	-90,228
One-Seat Ride	533,500	31,000	21,900	586,400	-142,028
Hub & Spoke	593,000	36,100	14,900	644,000	-84,428
The Grid	494,200	42,500	24,900	561,600	-166,828
Grid Hub Hybrid	509,800	44,300	27,100	581,200	-147,228
Quadrant Hybrid	537,900	36,100	19,400	593,400	-135,028

Option 2 Ridership					
Alternative	Weekday	Saturday	Sunday	Total Annual	Change in Ridership
Existing	673,358	42,107	12,963	728,428	
Missing Link	751,800	58,200	24,300	834,300	105,872
One-Seat Ride	733,300	57,000	30,400	820,700	92,272
Hub & Spoke	936,700	81,400	24,200	1,042,300	313,872
The Grid	688,700	59,400	35,100	783,200	54,772
Grid Hub Hybrid	711,700	62,000	38,300	812,000	83,572
Quadrant Hybrid	649,600	48,900	24,300	722,800	-5,628

Option 3 Ridership					
Alternative	Weekday	Saturday	Sunday	Total Annual	Change in Ridership
Existing	673,358	42,107	12,963	728,428	
Missing Link	849,700	69,300	29,600	948,600	220,172
One-Seat Ride	797,200	70,700	50,100	918,000	189,572
Hub & Spoke	1,103,400	96,800	37,000	1,237,200	508,772
The Grid	772,600	66,600	39,300	878,500	150,072
Grid Hub Hybrid	804,400	69,900	43,200	917,500	189,072
Quadrant Hybrid	761,400	58,100	30,900	850,400	121,972

Option 1 Cost Estimate					
Alternative	Total O&M Cost	Total IT Maintenance Cost	Total Capital Cost	Total Opening Year Cost	Change in Opening Year Cost
Existing	\$2,588,000.00	\$37,440.00	\$0.00	\$2,625,440.00	
Missing Link	\$2,621,000.00	\$37,440.00	\$0.00	\$2,658,440.00	\$33,000.00
One-Seat Ride	\$4,161,000.00	\$37,440.00	\$0.00	\$4,198,440.00	\$1,573,000.00
Hub & Spoke	\$3,753,000.00	\$37,440.00	\$0.00	\$3,790,440.00	\$1,165,000.00
The Grid	\$6,540,000.00	\$37,440.00	\$0.00	\$6,577,440.00	\$3,952,000.00
Grid Hub Hybrid	\$6,540,000.00	\$37,440.00	\$0.00	\$6,577,440.00	\$3,952,000.00
Quadrant Hybrid	\$3,133,000.00	\$37,440.00	\$0.00	\$3,170,440.00	\$545,000.00

Option 2 Cost Estimate					
Alternative	Total O&M Cost	Total IT Maintenance Cost	Total Capital Cost	Total Opening Year Cost	Change in Opening Year Cost
Existing	\$2,588,000.00	\$37,440.00	\$0.00	\$2,625,440.00	
Missing Link	\$5,940,000.00	\$49,140.00	\$1,735,000.00	\$7,724,140.00	\$5,098,700.00
One-Seat Ride	\$11,445,000.00	\$60,840.00	\$2,776,000.00	\$14,281,840.00	\$11,656,400.00
Hub & Spoke	\$10,763,000.00	\$56,160.00	\$2,255,500.00	\$13,074,660.00	\$10,449,220.00
The Grid	\$17,640,000.00	\$63,180.00	\$2,949,500.00	\$20,652,680.00	\$18,027,240.00
Grid Hub Hybrid	\$17,640,000.00	\$63,180.00	\$2,949,500.00	\$20,652,680.00	\$18,027,240.00
Quadrant Hybrid	\$6,416,000.00	\$51,480.00	\$1,908,500.00	\$8,375,980.00	\$5,750,540.00

Option 3 Cost Estimate					
Alternative	Total O&M Cost	Total IT Maintenance Cost	Total Capital Cost	Total Opening Year Cost	Change in Opening Year Cost
Existing	\$2,588,000.00	\$37,440.00	\$0.00	\$2,625,440.00	
Missing Link	\$9,464,000.00	\$77,220.00	\$4,164,000.00	\$13,705,220.00	\$11,079,780.00
One-Seat Ride	\$22,447,000.00	\$88,920.00	\$5,205,000.00	\$27,740,920.00	\$25,115,480.00
Hub & Spoke	\$22,341,000.00	\$102,960.00	\$6,419,500.00	\$28,863,460.00	\$26,238,020.00
The Grid	\$27,435,000.00	\$98,280.00	\$6,072,500.00	\$33,605,780.00	\$30,980,340.00
Grid Hub Hybrid	\$17,008,000.00	\$100,620.00	\$6,246,000.00	\$23,354,620.00	\$20,729,180.00
Quadrant Hybrid	\$11,987,000.00	\$93,600.00	\$5,552,000.00	\$17,632,600.00	\$15,007,160.00

Option 1 Cost Estimate			
Alternative	Total Opening Year Cost	Total Annual Ridership	Cost per Rider
Existing	\$2,625,440.00	728,428	\$3.60
Missing Link	\$2,658,440.00	638,200	\$4.17
One-Seat Ride	\$4,198,440.00	586,400	\$7.16
Hub & Spoke	\$3,790,440.00	644,000	\$5.89
The Grid	\$6,577,440.00	561,600	\$11.71
Grid Hub Hybrid	\$6,577,440.00	581,200	\$11.32
Quadrant Hybrid	\$3,170,440.00	593,400	\$5.34

Option 2 Cost Estimate			
Alternative	Total Opening Year Cost	Total Annual Ridership	Cost per Rider
Existing	\$2,625,440.00	728,428	\$3.60
Missing Link	\$7,724,140.00	834,300	\$9.26
One-Seat Ride	\$14,281,840.00	820,700	\$17.40
Hub & Spoke	\$13,074,660.00	1,042,300	\$12.54
The Grid	\$20,652,680.00	783,200	\$26.37
Grid Hub Hybrid	\$20,652,680.00	812,000	\$25.43
Quadrant Hybrid	\$8,375,980.00	722,800	\$11.59

Option 3 Cost Estimate			
Alternative	Total Opening Year Cost	Total Annual Ridership	Cost per Rider
Existing	\$2,625,440.00	728,428	\$3.60
Missing Link	\$13,705,220.00	948,600	\$14.45
One-Seat Ride	\$27,740,920.00	918,000	\$30.22
Hub & Spoke	\$28,863,460.00	1,237,200	\$23.33
The Grid	\$33,605,780.00	878,500	\$38.25
Grid Hub Hybrid	\$23,354,620.00	917,500	\$25.45
Quadrant Hybrid	\$17,632,600.00	850,400	\$20.73

	Option 1		Option 2		Option 3	
Alternative	Fleet Size	Add Veh	Fleet Size	Add Veh	Fleet Size	Add Veh
Existing	16		16		16	
Missing Link	16	0	26	10	40	24
One-Seat Ride	16	0	32	16	46	30
Hub & Spoke	16	0	29	13	53	37
The Grid	16	0	33	17	51	35
Grid Hub Hybrid	16	0	33	17	52	36
Quadrant Hybrid	16	0	27	11	48	32

APPENDIX G

Alternative Selection Criteria & Scoring Matrices

Alterantive	Route	Route Total Coverage (sq. miles)	Total Coverage per Alternative (sq. miles)	Removing Double Counting
Existing	All Routes	22.062928	22.062928	6.39824912
Hub and Spoke	New Blue Route (H&S)	8.356367	34.043762	16.00056814
	New Orange Route (H&S)	8.972155		
	New Yellow (H&S)	4.754572		
	New Green Route (H&S)	7.366738		
	FIU Trolley Route	4.59393		
Missing Link	Existing Route 1	8.560966	32.21659	12.886636
	Existing Route 2	5.922777		
	Existing Route 3	5.732818		
	Existing Route 3 Modified	4.59393		
	FIU Trolley Route	1.846367		
	New Route 5 (TSM)	5.559732		
The Grid	New Blue Route (The Grid)	2.424578	33.221459	12.95636901
	New Orange Route (The Grid)	2.468017		
	New White Route (The Grid)	2.729579		
	New Yellow Route (The Grid)	3.234494		
	New Green Route (The Grid)	2.558217		
	New Black Route (The Grid)	3.164092		
	New Red Route (The Grid)	4.103831		
	New Pink Route (The Grid)	4.026895		
	FIU Trolley Route (Modified)	4.647601		
	New Brown (The Grid)	3.864155		
One-Seat Drive	New Blue Route (OSR)	11.454196	23.796849	6.18718074
	New Orange Route (OSR)	7.748723		
	FIU Trolley Route	4.59393		
Quadrant Hybrid	New Blue (Quadrant Hybrid)	4.677803	25.005567	7.5016701
	New Orange (Quadrant Hybrid)	4.179938		
	New Yellow (Quadrant Hybrid)	4.086176		
	New Green (Quadrant Hybrid)	7.46772		
	FIU Trolley Route	4.59393		
The Grid Hub Hybrid	New Blue Route (The Grid)	2.424578	35.096678	15.09157154
	New Orange Route (The Grid)	2.468017		
	New White Route (The Grid)	3.579364		
	New Yellow Route (The Grid)	3.234494		
	New Green Route (The Grid)	2.558217		
	New Black Route (The Grid)	3.164092		
	New Red Route (The Grid)	4.103831		
	New Pink Route (The Grid)	4.026895		
	FIU Trolley Route (Modified)	4.647601		
	New Brown (The Grid)	4.889589		

Alternative	Route	Population per Route	Population per Alternative
Existing	All Routes	110441	110441
Hub & Spoke	FIU Trolley	22572.50588	142686
	New Blue	38828.22063	
	New Green	34290.7261	
	New Orange	38036.60462	
	New Yellow	8958.168597	
Missing Link	Existing Route 1	42776.765	117996
	Existing Route 2	11291.17405	
	Existing Route 3	33800.71983	
	FIU Trolley	22572.50588	
	Modified Route 3	1893.563369	
	New Route 5	5661.516399	
The Grid	FIU Trolley Modified	22491.89434	99085
	New Black	13079.92964	
	New Blue	3551.338947	
	New Brown	9905.362151	
	New Green	10686.8229	
	New Orange	916.8824427	
	New Pink	4064.513338	
	New Red	21068.67491	
	New White	4140.342647	
	New Yellow	9179.550823	
One-Seat Ride	FIU Trolley	22572.50588	83393
	New Blue	41292.80861	
	New Orange	19527.20441	
Quadrant Hybrid	FIU Trolley	22572.50588	86080
	New Blue	17158.65805	
	New Green	31241.71246	
	New Orange	9389.261944	
	New Yellow	5717.598858	
Grid Hub Hybrid	FIU Trolley	22572.50588	101603
	New Black	13079.92964	
	New Blue	3595.840538	
	New Brown	8474.278426	
	New Green	10686.8229	
	New Orange	916.8824427	
	New Pink	4186.013338	
	New Red	21068.67491	
	New White	7842.120425	
	New Yellow	9179.550823	

Route	Existing	Hub & Spoke	Missing Link	The Grid	One-Seat Ride	Quadrant Hybrid	Grid Hub Hybrid
Blue	24.8	22	24.8	8.4	28.2	10.7	8.4
Orange		23.7	13.2	8.3	17.4	8.93	8.3
White				9.38			10.6
Yellow	16.7	18.2	16.7	9.8		11.3	9.8
Green	15.7	19.8	19.8	8.19		19.7	8.19
Black				9.7			9.7
Red				13.9			13.9
Brown				12.7			16.9
Pink				11.9			11.9
Purple/FIU	15.2	15.2	15.2	17	15.2	15.2	17
Total Length (Mi)	72.4	98.9	89.7	109.27	60.8	65.83	114.69
Average Length (Mi)	18.1	19.78	17.94	10.93	20.27	13.17	11.47

Route	Route 1/Blue	Orange	White	Route 2/Yellow	Route 3/Green	Black	Red	Brown	Pink	Route 4/Purple	Total	Average
Existing	20			16	11					9	56	14
Missing Link (ML)	20	14		16	11					9	70	14
One-Seat Ride (OSR)	28	26								9	63	21
Hub & Spoke (H&S)	18	13		14	13					9	67	13.4
The Grid (G)	5	4	9	9	7	4	6	4	6	10	64	6.4
Grid Hub Hybrid (GH)	5	4	11	9	7	4	6	9	6	10	71	7.1
Quadrant Hybrid (Q)	10	12		14	13					9	58	11.6

Number of Connecting Routes	1	2	3	4	SUMPRODUCT
Alternative	Number of Transfer Points				
Existing	17	6			29
Missing Link (ML)	22	10			42
One-Seat Ride (OSR)	19	3			25
Hub & Spoke (H&S)	15	15			45
The Grid (G)	32	8			48
Grid Hub Hybrid (GH)	30	8		1	50
Quadrant Hybrid (Q)	11	3	1		20

Option 3 (15 Minute Headways)					
Alternative	Weekday Ridership	Saturday Ridership	Sunday Ridership	Total	Δ
Existing	673,358	42,107	12,963	728,428	
Missing Link	849,700	69,300	29,600	948,600	220,172
One-Seat Ride	797,200	70,700	50,100	918,000	189,572
Hub & Spoke	1,103,400	96,800	37,000	1,237,200	508,772
The Grid	772,600	66,600	39,300	878,500	150,072
Grid Hub Hybrid	804,400	69,900	43,200	917,500	189,072
Quadrants Hybrid	761,400	58,100	30,900	850,400	121,972

	Option 3 (15 Minute Headways)				
Alternative	Total O&M Cost	Total IT Maintenance Cost	Total Capital Cost	Total Opening Year Cost	Δ
Existing	\$2,588,000.00	\$37,440.00	\$0.00	\$2,625,440.00	
Missing Link	\$9,464,000.00	\$77,220.00	\$4,164,000.00	\$13,705,220.00	\$11,079,780.00
One-Seat Ride	\$22,447,000.00	\$88,920.00	\$5,205,000.00	\$27,740,920.00	\$25,115,480.00
Hub & Spoke	\$22,341,000.00	\$102,960.00	\$6,419,500.00	\$28,863,460.00	\$26,238,020.00
The Grid	\$27,435,000.00	\$98,280.00	\$6,072,500.00	\$33,605,780.00	\$30,980,340.00
Grid Hub Hybrid	\$ 17,008,000.00	\$100,620.00	\$6,246,000.00	\$23,354,620.00	\$20,729,180.00
Quadrants Hybrid	\$11,987,000.00	\$93,600.00	\$5,552,000.00	\$17,632,600.00	\$15,007,160.00

Alternative	Total Walkshed Coverage (sq. miles)	Average Route Length (miles)	Total Accessible Major O-D	Average Accessible Major O-D per Route	Sumproduct of Intrasystem Major Transfer Points and Connecting Routes	Option 3 (15 Minute Headways) Ridership Projection	Opening Year Cost Estimate (\$)
Existing	6.4	18.1	56	14	29	728,428	\$2,625,440.00
Missing Link	12.89	17.94	70	14	42	948,600	\$13,705,220.00
One-Seat Ride	6.19	20.27	63	21	25	918,000	\$27,740,920.00
Hub & Spoke	16	19.78	67	13.4	45	1,237,200	\$28,863,460.00
The Grid	12.96	10.93	64	6.4	48	878,500	\$33,605,780.00
Grid Hub Hybrid	15.09	11.47	71	7.1	50	917,500	\$23,354,620.00
Quadrant Hybrid	7.5	13.17	58	11.6	20	850,400	\$17,632,600.00

Weight	1	1	1	1	1	1	1
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Alternative	Total Walkshed Coverage	Average Route Length	Total Accessible Major O-D	Average Accessible Major O-D per Route	Sumproduct of Intrasystem Major Transfer Points and Connecting Routes	Option 3 (15 Minute Headways) Ridership Projection	Opening Year Cost Estimate
Existing	-	-	-	-	-	-	-
Missing Link	2.01	1.01	1.25	1	1.45	1.3	0.19
One-Seat Ride	0.97	0.89	1.13	1.5	0.86	1.26	0.09
Hub & Spoke	2.5	0.92	1.2	0.96	1.55	1.7	0.09
The Grid	2.03	1.66	1.14	0.46	1.66	1.21	0.08
Grid Hub Hybrid	2.36	1.58	1.27	0.51	1.72	1.26	0.11
Quadrant Hybrid	1.17	1.37	1.04	0.83	0.69	1.17	0.15

[illegible]