



Bicycle Pedestrian Master Plan

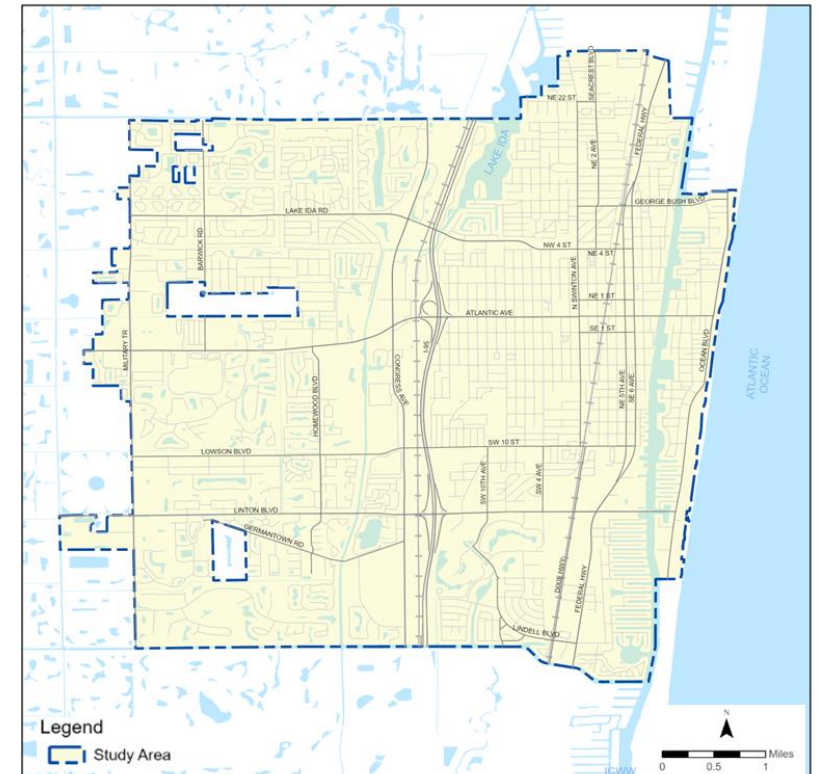
**Planning and Zoning Board Meeting
Draft Master Plan**

December 18, 2023



Agenda

- Master Planning Process
 - Vision Statement and Master Plan Goal(s)
 - Public Involvement and Technical Analyses
- Draft Bicycle Pedestrian Master Plan
 - Recommended Bicycle & Pedestrian Improvements
 - Recommended Bike/Ped. Safety Projects
 - Recommended Bike/Ped. Network Improvement Priority Bundles
 - Planning Level Construction Cost Estimates
 - Funding Opportunities
 - Other Initiatives & Programs
 - Implementation Strategy
- Next Steps

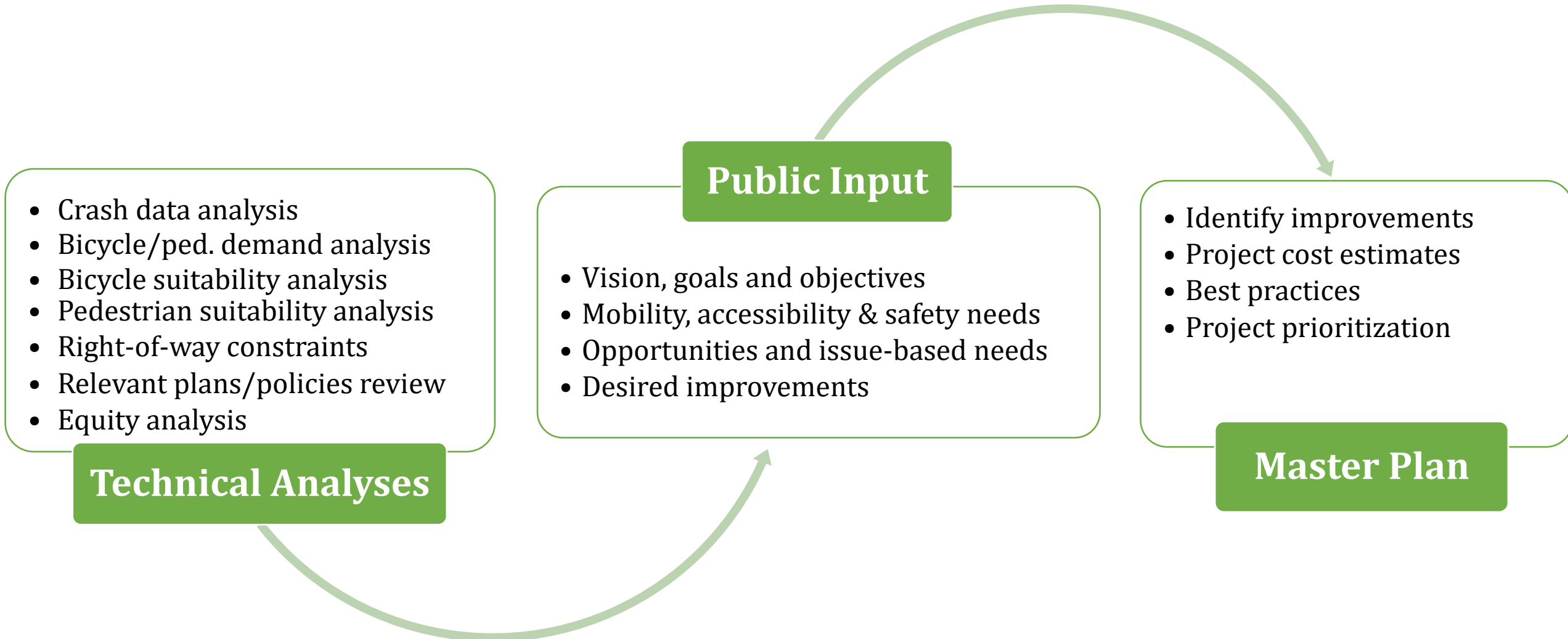


Meeting Objectives

- To discuss Draft Master Plan development process, public involvement and technical analyses/findings, recommendations and implementation strategy.
- To obtain feedback on the Draft Master Plan.

Master Planning Process

Master Planning Process



Vision Statement

Integrate bicycle and pedestrian modes as key components of Delray Beach's overall mobility strategy through a connected, safe, comfortable, and convenient bicycle and pedestrian network for people of all ages and abilities that encourages economic development and recreational activities, promotes healthy lifestyle, enhances quality of life and environmental stewardship.

Master Plan Goals

GOAL

1

Convenient

Integrate bicycle and pedestrian facilities with the existing and future transportation and transit network in Delray Beach and the region to foster economic development and improve livability while protecting the environment.

GOAL

2

Connected

Develop a citywide interconnected bicycle and pedestrian network that provides viable transportation options for residents and visitors to meet their commute, recreational and other mobility needs.

GOAL

3

Safety

Develop a safe bicycle and pedestrian network for people of all ages and abilities.

GOAL

4

Comfortable

Develop a comfortable and convenient bicycling and walking environment for people of all ages and abilities.

GOAL

5

Collaboration

Collaborate with partner agencies, interest groups and residents to encourage and promote cycling and walking through education and enforcement programs.

Public Involvement

- Key Stakeholder Meetings, Dec. 2021/Jan. 2022
- Project Website (www.walkbikedelraybeach.com), Dec. 2021
- Online Survey, Dec. 2021 to Apr. 2022
- Public Meetings – Project Kickoff, Mar. 2022
- Focus Group Meetings, Jun. 2022-Dec. 2023



Technical Analysis: Bicycle and Pedestrian Demand

Socioeconomic, Demographic and Land Use Characteristics Scoring Criteria

Characteristic	GIS Feature Type	Geoprocessing	Categories	Score
Population	Polygon	Density	Based on data distribution using standard deviation and mean as key thresholds	1 to 4 indicating low to high demand
Jobs/Employment	Polygon	Density	Based on data distribution using standard deviation and mean as key thresholds	1 to 4 indicating low to high demand
Schools	Point	Buffer	¼ mile (1,320 feet); ½ mile (2,640)	4, 3
Bus Stops	Point	Buffer	¼ mile (1,320 feet)	4
Tri-Rail Station	Point	Buffer	¼ mile (1,320 feet); ½ mile (2,640)	4, 3
Key Bike/Ped Destinations (Recreational Facility, Community Facilities, Mixed Use Zoning, City Owned Facilities, Food Markets, City Hall, Fire Stations, Religious Facilities, Hospitals)	Point	Buffer	¼ mile (1,320 feet); ½ mile (2,640)	4, 3
Equity Areas (Zero Auto Households, Minority Population, LEP, Elderly Population, Low Income Population)	Polygon	Data Distribution	Based on data distribution using standard deviation and mean as key thresholds	1 to 4 indicating low to high concentration

Technical Analysis: Bicycle and Pedestrian Demand

Socioeconomic, Demographic
& Land Use Characteristics

Geoprocessing

Assign Scores
(1 through 4)

Convert Vector Data to Raster

Add Raster
Data

Reclassify
Composite
Results

Bike/Ped Demand

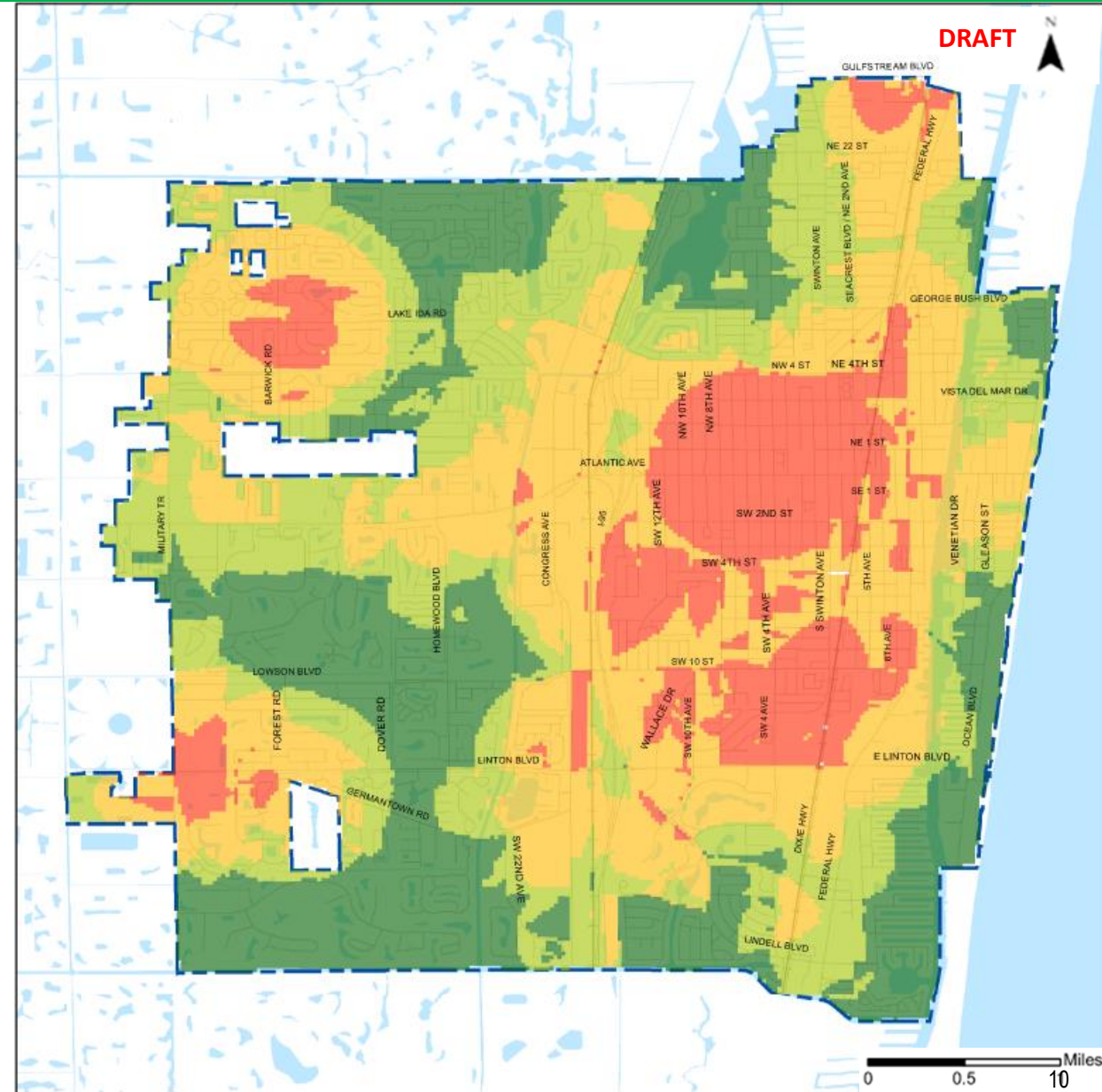
Low

Medium

Medium-High

High

City Boundary



Bicycle Suitability Analysis

Bicycle Level of Traffic Stress (LTS) vs. Target User Group

Level of Traffic Stress (LTS)	Target Bicycle User Group
LTS 1	All ages and abilities
LTS 2	Interested but Concerned (Mainstream Adults)
LTS 3	Enthused and Confident (Adult Commuters)
LTS 4	Strong and Fearless (Long-Distance Recreational Bicyclists)



8 to 80



Interested but
concerned



Enthused and
confident



Strong and
fearless

Bicycle Level of Traffic Stress (LTS) for Roadway Segments

Segment Type	Level of Traffic Stress (LTS)
Stand-alone path (trails and shared use path)	LTS =1
Segregated lanes or protected bike lanes	LTS can vary from 1 to 3
Bike lanes	LTS can vary from 1 to 4
Shared lanes or mixed traffic	LTS can vary from 1 to 4

Bicycle Level of Traffic Stress (LTS) Criteria

Roadway Characteristics vs. Bicycle LTS

- Number of lanes
- Traffic volume
- Speed
- On-street parking
- Type of bicycle facility (and separation)

Separated or Protected Bike Lane

Separation	Number of Lanes	<=25 mph	30 mph	35 mph	40+ mph
Substantial (curbs, parking, cycle tracks)	1-3 lanes	LTS 1	LTS 1	LTS 1	LTS 2
	4 lanes	LTS 1	LTS 1	LTS 1	LTS 3
	5+ lanes	LTS 1	LTS 1	LTS 1	LTS 3
Limited (flex posts, bottle dots)	1-3 lanes	LTS 1	LTS 1	LTS 2	LTS 3
	4 lanes	LTS 1	LTS 1	LTS 2	LTS 3
	5+ lanes	LTS 1	LTS 2	LTS 2	LTS 3

Bike Lane Adjacent to a Parking Lane

Number of Lanes	Bike Lane Reach = Bike Lane + Parking Lane Width	<=25 mph	30 mph	35 mph	40+ mph
1 lane per direction	15+ ft	LTS 1	LTS 2	LTS 3	LTS 4
	12 or 14 ft	LTS 2	LTS 2	LTS 3	LTS 4
2 lanes per direction	15+ ft	LTS 2	LTS 3	LTS 3	LTS 4
2- 3 lanes per direction (1-way)	12 or 14 ft	LTS 2	LTS 3	LTS 3	LTS 4
other multilane	any width	LTS 3	LTS 3	LTS 3	LTS 4

Shared Lane Conditions - Mixed Traffic

Number of Lanes	Effective ADT*	<=20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50+ mph
Unlaned 2-way street (No centerline)	0-750	LTS 1	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 3
	751-1500	LTS 1	LTS 1	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
	1501-3000	LTS 2	LTS 2	LTS 2	LTS 3	LTS 4	LTS 4	LTS 4
	3000+	LTS 2	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
1 thru lane per direction (1-way, 1-lane street or 2-way street with centerline)	0-750	LTS 1	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 3
	751-1500	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
	1501+	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4
2 thru lanes per direction	0-8000	LTS 3	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
	8001+	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4
3+ thru lanes per direction	any ADT	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4

*Effective ADT = ADT for two-way roads, 1.67 * ADT for one-way roads

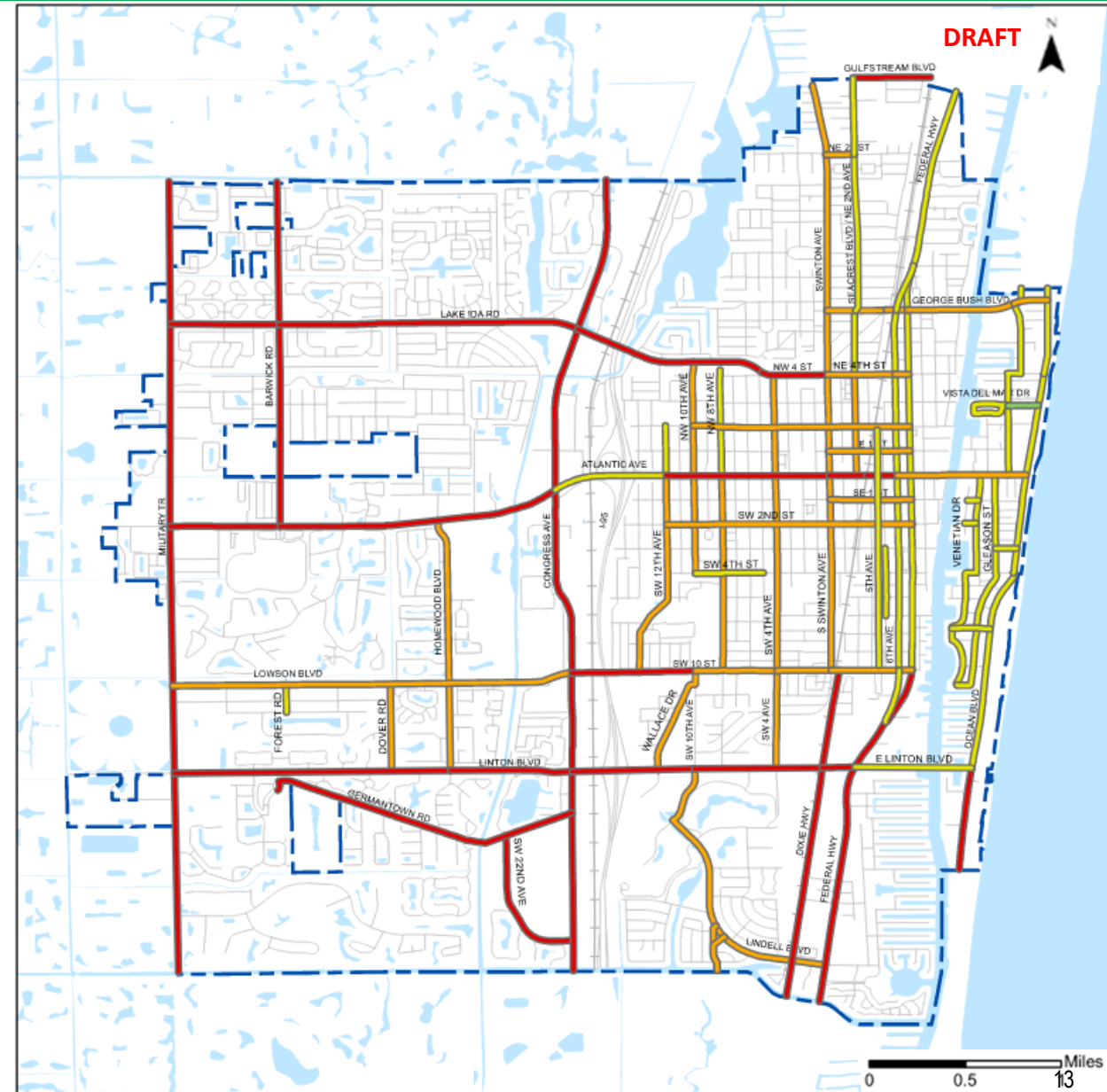
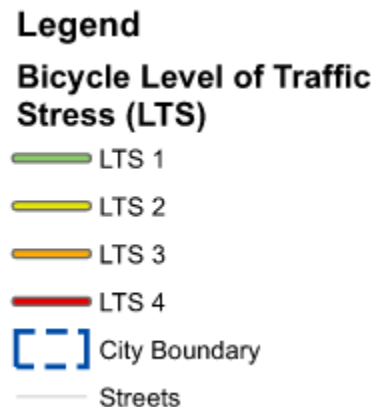
Bike Lane Not Adjacent to a Parking Lane

Number of Lanes	Bike Lane Width (in feet)	<=25 mph	30 mph	35 mph	40 mph	45 mph	50+ mph
1 thru lane per direction, or unlaned	6+ ft	LTS 1	LTS 1	LTS 2	LTS 3	LTS 3	LTS 3
	4 or 5 ft	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4
2 thru lanes per direction	6+ ft	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 3
	4 or 5 ft	LTS 2	LTS 2	LTS 2	LTS 3	LTS 4	LTS 4
3+ lanes per direction	any width	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4

Bicycle Suitability Analysis (Bicycle LTS)

Key Findings

- Majority of principal and minor arterials have bicycle LTS 4 except certain roadway segments on US-1 (LTS 2) and Atlantic Avenue (LTS 2 and LTS 3)
- Most of the collectors exhibit higher level of traffic stress for users at LTS 3 or LTS 4
- Local streets would be assigned bicycle LTS 2 or LTS 3 in most cases based on the assumption that these facilities have one travel lane per direction, 30 mph posted speed limit and ADT ranging between 750 and 3000 vehicles



Bicycle Crash Hotspots vs. Suitability Analysis (Bicycle LTS)

Key Findings

Bicycle crash hotspots along facilities with LTS 3 and 4

■ Along arterials

- Linton Blvd
- Lawson Blvd
- Atlantic Ave
- Lake Ida Rd
- SR-A1A

■ At intersections

- Linton Blvd. and SR-A1A
- Atlantic Ave and Congress Ave
- Atlantic Ave and SR-A1A
- Lake Ida Rd and Congress Ave

■ Two fatalities

- Germantown Rd
- NE 1st St

Legend

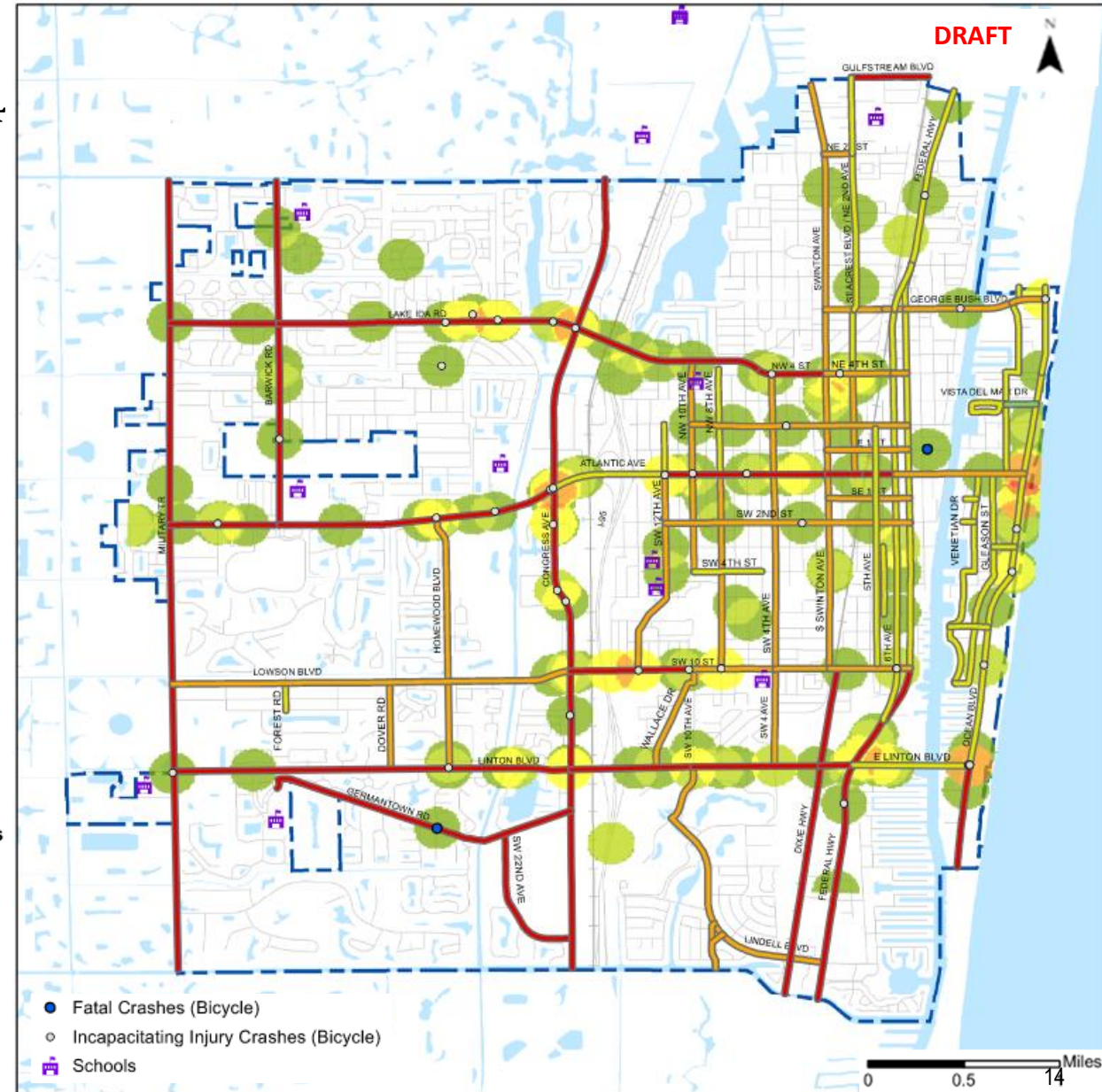
Bicycle Level of Traffic Stress (LTS)

- LTS 1
- LTS 2
- LTS 3
- LTS 4

[] City Boundary

— Streets

Bicycle Crash Hotspots



Pedestrian Suitability Analysis

Pedestrian Level of Traffic Street (PLTS) vs. Target User Group

Level of Traffic Stress (LTS)	Target Pedestrian User Group
PLTS 1	All ages and abilities
PLTS 2	Interested but Concerned (Children over 10, teens, adults, *WhMDs limited)
PLTS 3	Enthused and Confident (Able-bodied adults)
PLTS 4	Strong and Fearless (Trip-purpose driven commuters)

**Wheeled Mobility Device*

Pedestrian Level of Traffic Stress (PLTS) for Roadway Segments

Segment Type	Pedestrian Level of Traffic Stress (PLTS)
Buffered Sidewalk	PLTS can vary from 1 to 3
Sidewalk Present	PLTS can vary from 1 to 4
No Sidewalk Present	PLTS 4

Pedestrian Level of Traffic Stress (PLTS) Criteria

Roadway Characteristics vs. Pedestrian LTS

- Sidewalk (available or not)
- Type of buffer
- Width of buffer
- Number of travel lanes and speed
- Intersection crossing
 - Functional classification (arterial, collector or local)
 - Crosswalk (available or not)
 - Speed limit

Physical Buffer Type

Buffer Type	Prevailing or Posted Speed			
	≤25 mph	30 mph	35 mph	≥40 mph
No Buffer (curb tight or grass)	PLTS 2	PLTS 3	PLTS 3	PLTS 4
On-Street Parking Lane	PLTS 1	PLTS 1	PLTS 1	PLTS 2
Landscaped with trees	PLTS 1	PLTS 1	PLTS 1	PLTS 2
On-Street Parking & Row of Trees	PLTS 1	PLTS 1	PLTS 1	PLTS 2
Guardrail	PLTS 1	PLTS 1	PLTS 1	PLTS 2

Buffer Width

Total Number of Travel Lanes (both directions)	Total Buffering Width				
	≤5	≥5 to <10	≥10 to <15	≥15 to <25	≥25
2	PLTS 2	PLTS 2	PLTS 1	PLTS 1	PLTS 1
3	PLTS 3	PLTS 2	PLTS 2	PLTS 1	PLTS 1
4-5	PLTS 4	PLTS 3	PLTS 2	PLTS 1	PLTS 1
>5	PLTS 4	PLTS 4	PLTS 3	PLTS 2	PLTS 1

Collector & Local Intersection Crossing

Prevailing Speed or Speed Limit (mph)	Crosswalk Not Present			Crosswalk Present		
	Total Lanes Crossed			Total Lanes Crossed		
	1 Lane	2 Lanes	>2 Lanes	1 Lane	2 Lanes	>2 Lanes
<25	PLTS 1	PLTS 1	PLTS 2	PLTS 1	PLTS 1	PLTS 1
30	PLTS 1	PLTS 2	PLTS 2	PLTS 1	PLTS 1	PLTS 1
35	PLTS 2	PLTS 2	PLTS 3	PLTS 1	PLTS 1	PLTS 2
≥40	PLTS 3	PLTS 3	PLTS 4	PLTS 2	PLTS 2	PLTS 3

Arterial Intersection Crossing

Prevailing Speed or Speed Limit (mph)	Crosswalk Not Present		Crosswalk Present	
	Total Lanes Crossed		Total Lanes Crossed	
	4 Lanes	>4 Lanes	4 Lanes	>4 Lanes
<25	PLTS 2	PLTS 3	PLTS 1	PLTS 2
30	PLTS 3	PLTS 3	PLTS 2	PLTS 2
35	PLTS 3	PLTS 4	PLTS 2	PLTS 3
≥40	PLTS 4	PLTS 4	PLTS 3	PLTS 4

Pedestrian Suitability Analysis (PLTS)

Key Findings

- Majority of principal and minor arterials have PLTS 4 except certain roadway segments on US-1 (PLTS 2) and Atlantic Avenue (PLTS 2 and PLTS 3)
- PLTS for collectors varies from PLTS 1 or PLTS 4
- Local streets without sidewalks have PLTS 4
- Local streets with sidewalks would be assigned PLTS 2 or PLTS 3 in most cases based on the assumption that these facilities have one travel lane per direction, 25 or 30 mph posted speed limit and buffer width less than 5 feet

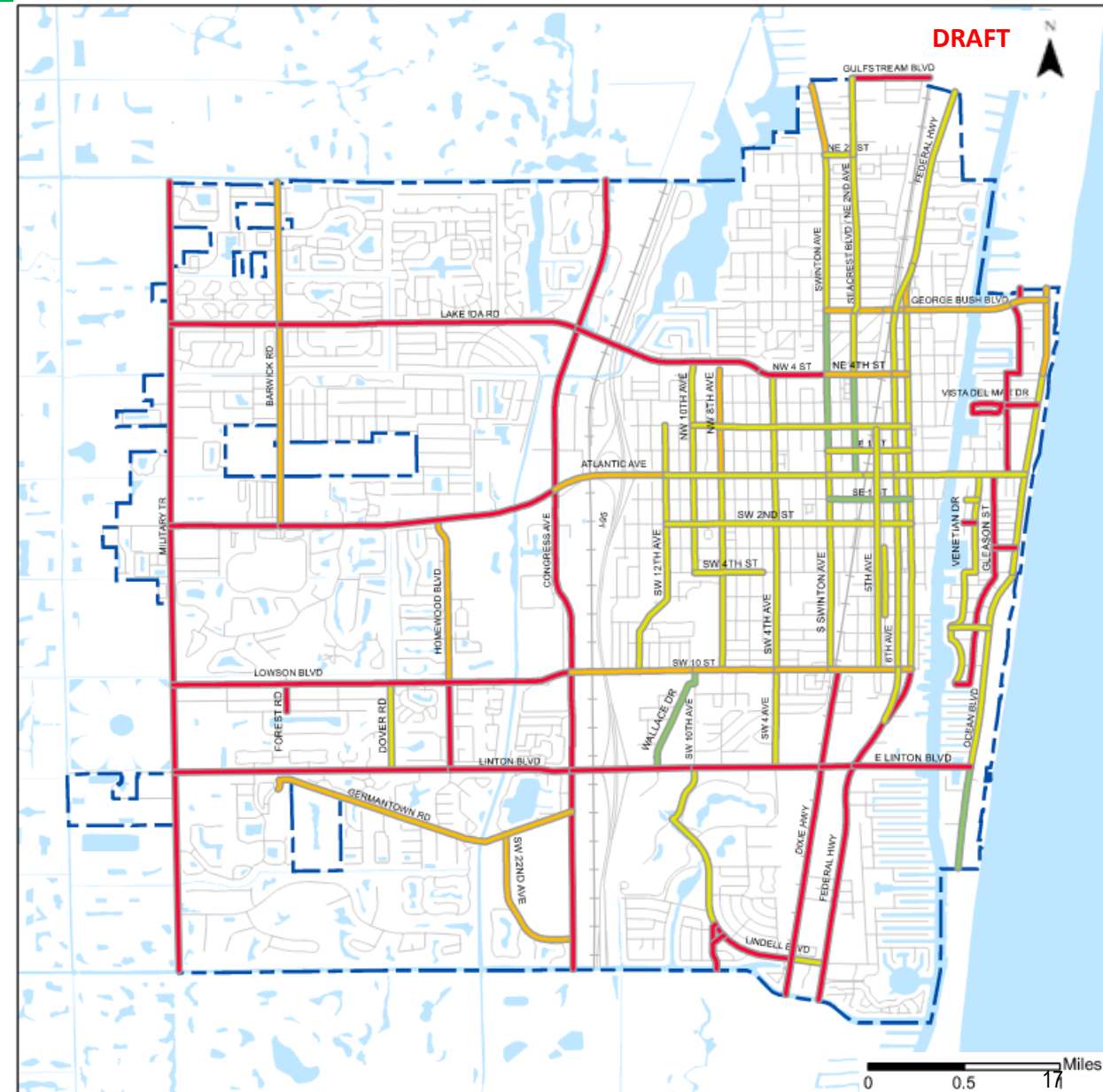
Legend

Pedestrian Level of Traffic Stress (LTS)

- PLTS1
- PLTS2
- PLTS3
- PLTS4

City Boundary

Streets



Pedestrian Crash Hotspots vs. Suitability Analysis (PLTS)

Key Findings

Pedestrian crash hotspots along facilities with LTS 3 and 4

- Along arterials - Linton Blvd, Lowson Blvd, Atlantic Ave
- At intersections
 - Atlantic Ave and Swinton Ave
 - Atlantic Ave and Federal Hwy (5th St and 6th St)
- Seven fatalities
 - Linton Blvd and Congress Ave
 - Atlantic Ave between I-95 and SW/SE 4th St (three fatalities)
 - NW 10th Ave just north of NE 1st St
 - Lake Ida Rd and Congress Ave
 - NE 5th Ave/Federal Hwy just north of NE 4th St
 - Eastview Ave and Federal Hwy

Legend

Pedestrian Level of Traffic Stress (LTS)

PLTS1

PLTS2

PLTS3

PLTS4

City Boundary

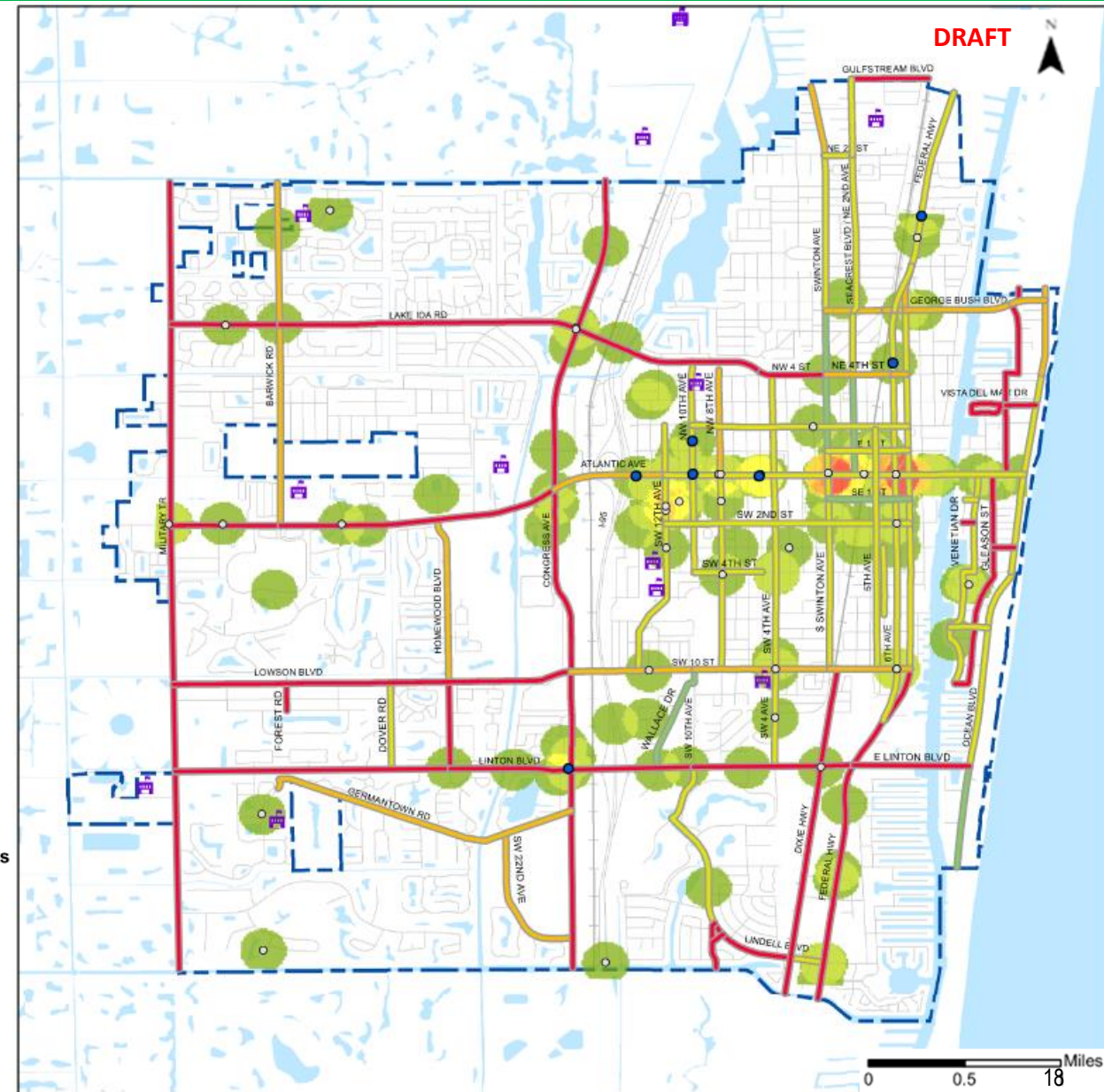
Streets

Pedestrian Crash Hotspots

Low



High



Draft Bicycle Pedestrian Master Plan

Existing Bicycle Network

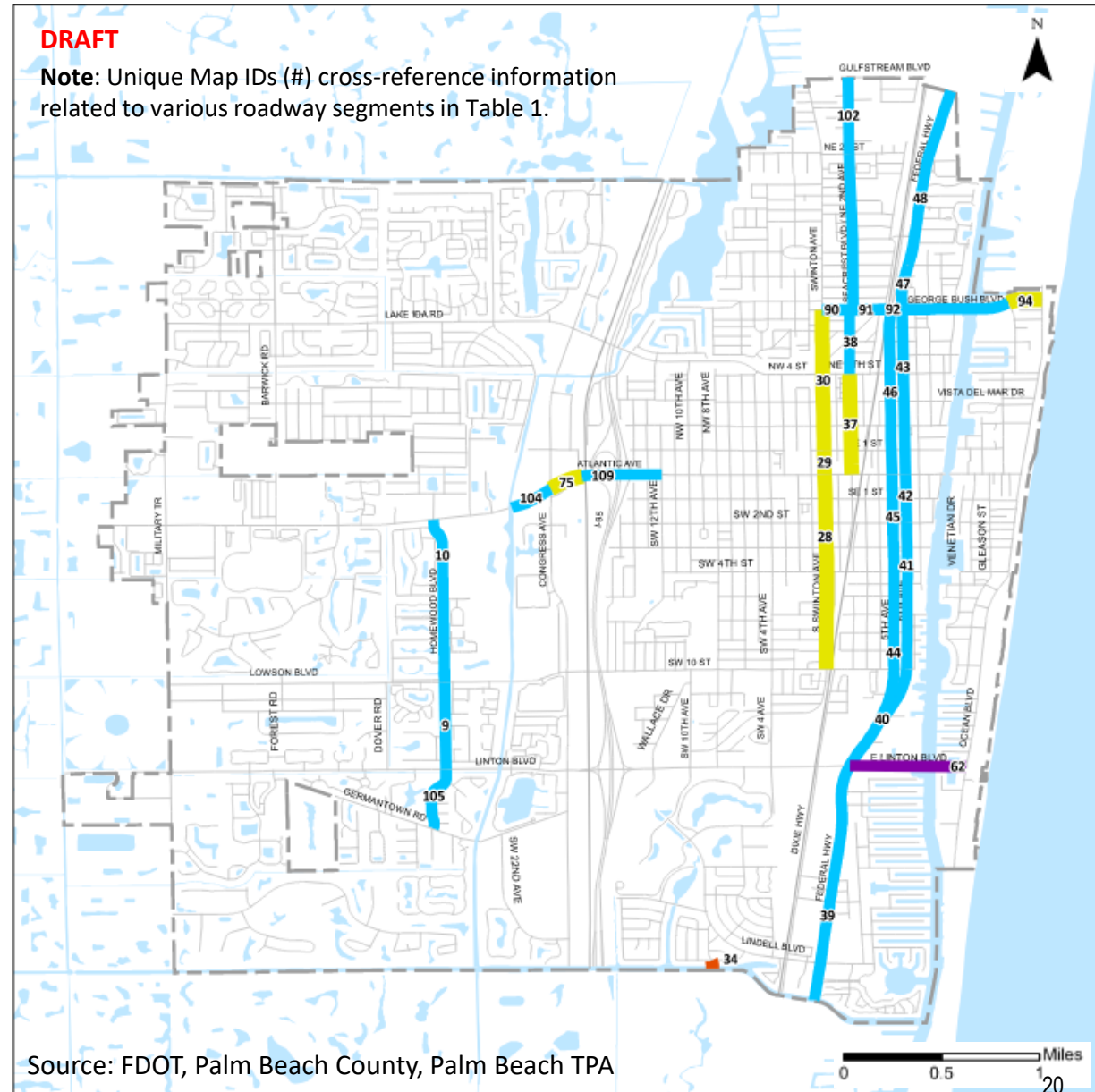
- Buffered bicycle Lanes: 0.6 miles (4%)
- Bicycle lanes: 12.3 miles (75%)
- Sharrow: 3.3 miles (20%)
- Shared Use Path: 0.2 miles (1%)

Total existing bicycle network: **16.4 miles**

Legend

Existing Bicycle Network

-  Bike Lane
-  Buffered Bike Lane
-  Shared Use Path
-  Sharrow
-  City Boundary
-  Streets

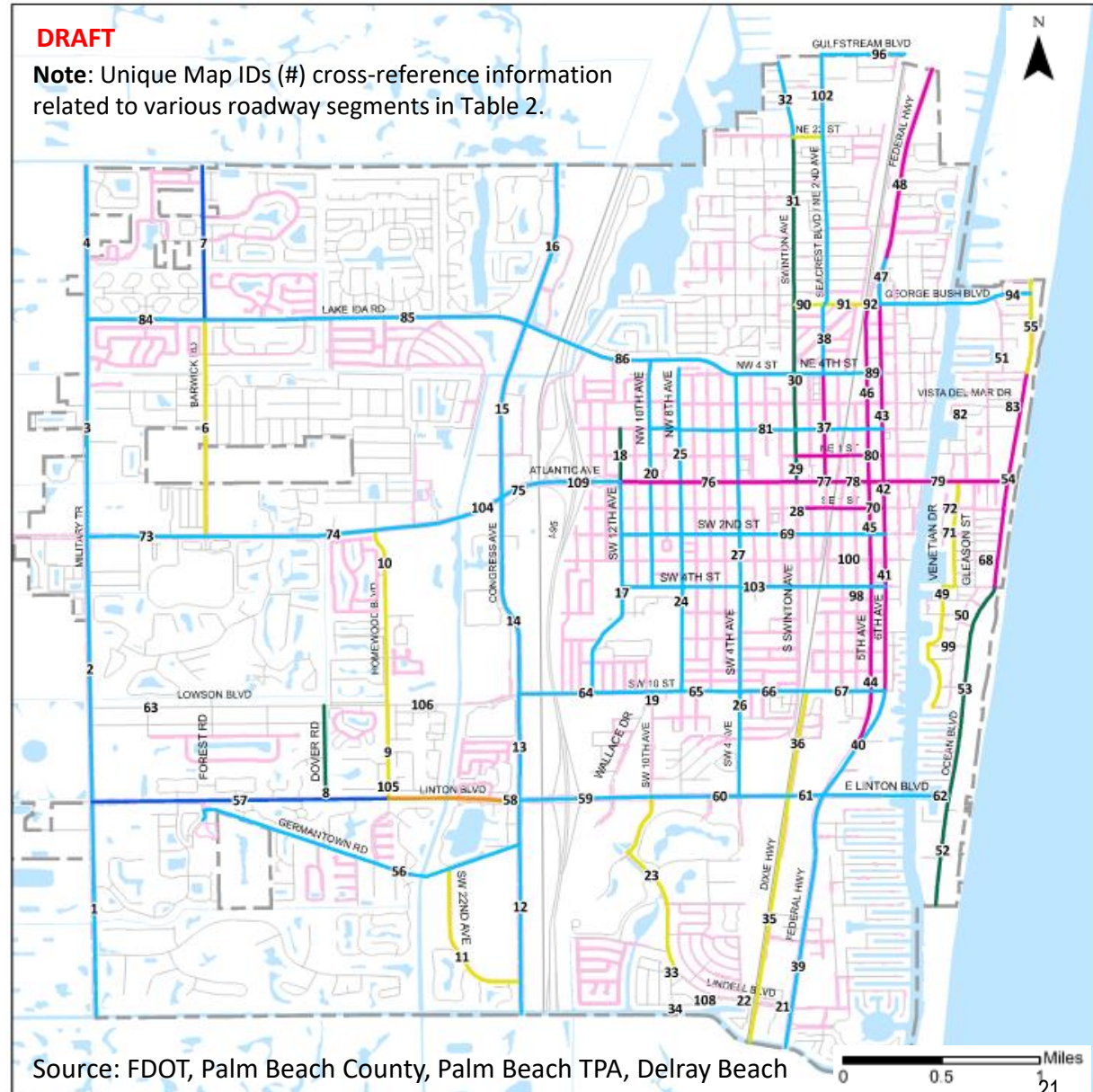


Existing Pedestrian Network

- Sidewalk (both sides): 46.6 miles
- Sidewalk (one side): 13.2 miles
- ✓ Total existing sidewalk network: **59.8 miles**
(without including local City streets)

Legend

- Sidewalks
- Sidewalks with Barriers**
 - Guardrail, Swale
 - On-Street Parking Lane
 - On-Street Parking Lane, Row of Trees/Planters, Utility Poles, etc.
 - Row of Trees/Planters, Utility Poles, etc.
 - Separated Sidewalks
- City Boundary
- Streets



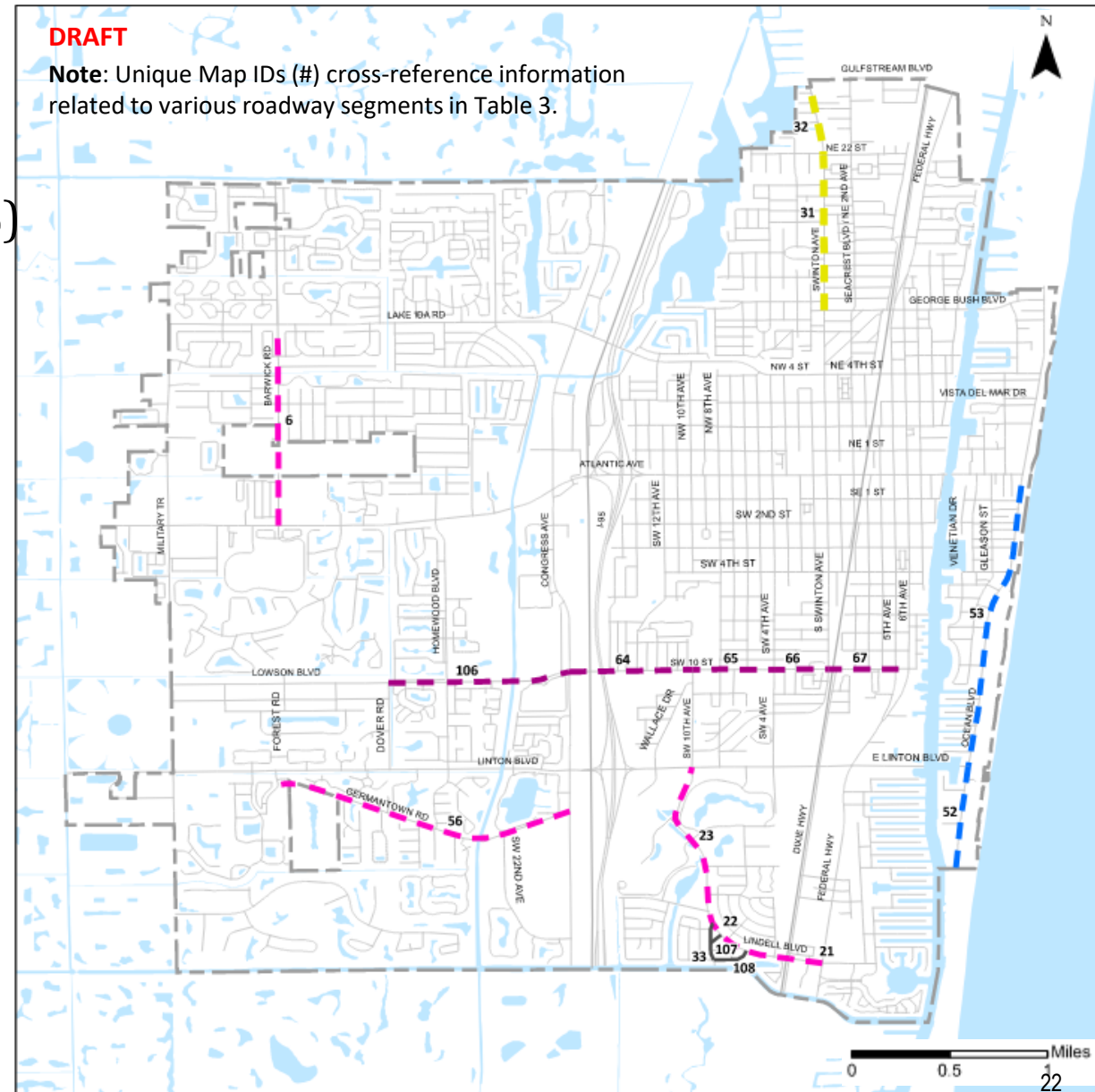
Programmed Bicycle/Pedestrian Improvements

- Shared use path: 4.5 miles (45%)
 - Shared use path (under construction): 2.8 miles (28%)
 - Bicycle lane: 2.1 miles (21%)
 - To Be Determined (TBD): 0.6 miles (6%)
- ✓ Total programmed bicycle network: **10.0 miles**
- ✓ Expanding the existing bicycle network by **61%**

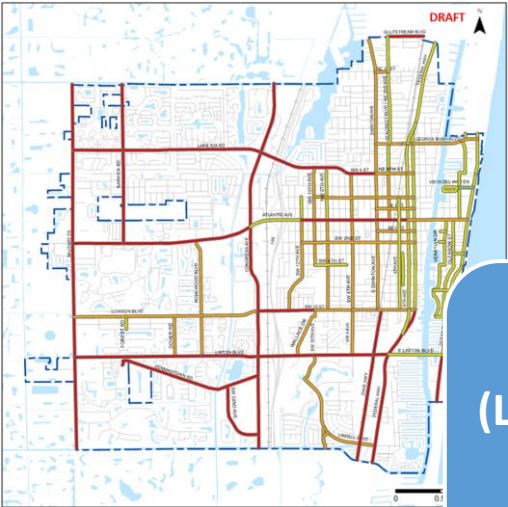
Legend

Programmed Bicycle/Pedestrian Improvements

- Bike Lane
- Shared Use Path
- Shared Use Path (Under Construction)
- Sharrow
- To Be Determined (TBD)
- City Boundary
- Streets



Recommended Bicycle Network Inputs



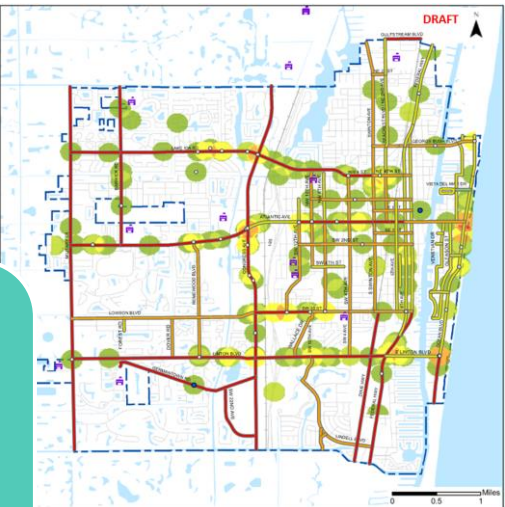
Bicycle Level of Stress
(LTS) & Bike/Ped Demand

Safety
(Bicycle crash hotspots)

Recommended
Bicycle Network

Right-of-way, traffic
volume, existing
network/gaps, and
planned bicycle
improvements

Public & stakeholder
input



Map ID	Orientation	Street Name	From	To	Length_Miles	Functional Classification	Jurisdiction	Ultimate ROW_Feet	Number of Ultimate Through Lanes	Base Year Daily Traffic Volume_2010	Planned Speed Limit_MPH	On-Street Parking	Bicycle LTS Rating	Existing Bicycle Facility	Planned Bicycle Improvement	Proposed
1	North-South	Military Trail	South City Limit	Union Boulevard	1.100	Principal Arterial	County	120	6.D	34,688	45	No	175.4		Buffered Blue Lane	No
2	North-South	Military Trail	Union Boulevard	Atlantic Avenue	1.400	Principal Arterial	County	120	6.D	45,154	45	No	175.4	Painted Shoulder	Buffered Blue Lane	Yes
3	North-South	Military Trail	Atlantic Avenue	Lake Ida Road	1.170	Principal Arterial	County	120	6.D	45,860	45	No	175.4	Painted Shoulder	Buffered Blue Lane	Yes
4	North-South	Military Trail	Lake Ida Road	North City Limit	0.800	Principal Arterial	County	120	6.D	36,138	45	No	175.4	Painted Shoulder	Buffered Blue Lane	Yes
5	North-South	Forest Road	Lakeview Boulevard	Lowson Boulevard	0.500	Local	City	80	2.	No Forward Speed Lanes (FS)	30	No	175.2		Sharrows	No
6	North-South	Barkwick Road	Atlantic Avenue	Lake Ida Road	1.100	Collector	City	80	2.	30,088	30	No	175.4		Shared Use Path	Yes
7	North-South	Barkwick Road	Lake Ida Road	North City Limit	0.800	Collector	City	80	2.	30,088	30	No	175.4		Shared Use Path	Yes
8	North-South	Dover Road	Union Boulevard	Lowson Boulevard	0.500	Collector	City	80	2.	30	30	No	175.3		Separated Blue Lane	Yes
9	North-South	Homestead Boulevard	Union Boulevard	Lowson Boulevard	0.500	Collector	City	80	4.D	6,970	30	No	175.3		Blue Lane	Yes
10	North-South	Homestead Boulevard	Lowson Boulevard	Atlantic Avenue	0.800	Collector	City	80	2.	4,970	30	No	175.3		Blue Lane	Yes
11	North-South	SW 23rd Avenue	Congress Avenue	Old Congress Road	0.800	Collector	City	80	2.	30	30	No	175.4		Blue Lane	Yes
12	North-South	Congress Avenue	South City Limit	Union Boulevard	1.100	Principal Arterial	County	120	6.D	22,462	45	No	175.4		Separated Blue Lane (Road Court)	Yes
13	North-South	Congress Avenue	Union Boulevard	Lowson Boulevard	0.500	Principal Arterial	County	120	6.D	22,462	45	No	175.4		Separated Blue Lane (Road Court)	Yes
14	North-South	Congress Avenue	Lowson Boulevard	Atlantic Avenue	0.500	Principal Arterial	County	120	6.D	26,723	45	No	175.4		Separated Blue Lane (Road Court)	Yes
15	North-South	Congress Avenue	Atlantic Avenue	Lake Ida Road	0.500	Principal Arterial	County	120	6.D	34,906	45	No	175.4	Painted Shoulder	Separated Blue Lane (Road Court)	Yes
16	North-South	Congress Avenue	Lake Ida Road	North City Limit	0.800	Principal Arterial	County	120	6.D	36,338	45	No	175.4	Painted Shoulder	Separated Blue Lane	Yes
17	North-South	SW 23rd Avenue / SW 24th Avenue / Public Avenue	SW 23rd Street	Atlantic Avenue	1.100	Collector	City	50	2.	6,378	25	No	175.3		Sharrows	Yes
18	North-South	SW 23rd Avenue / SW 24th Avenue / Public Avenue	Atlantic Avenue	Lake Ida Road	0.500	Collector	City	50	2.	3,388	25	No	175.2		Sharrows	Yes
19	North-South	Highway Drive	Union Boulevard	SW 23rd Street	0.800	Collector	City	80	2.	5,998	25	No	175.3		Shared Use Path	Yes



Recommended Bicycle Network Improvements

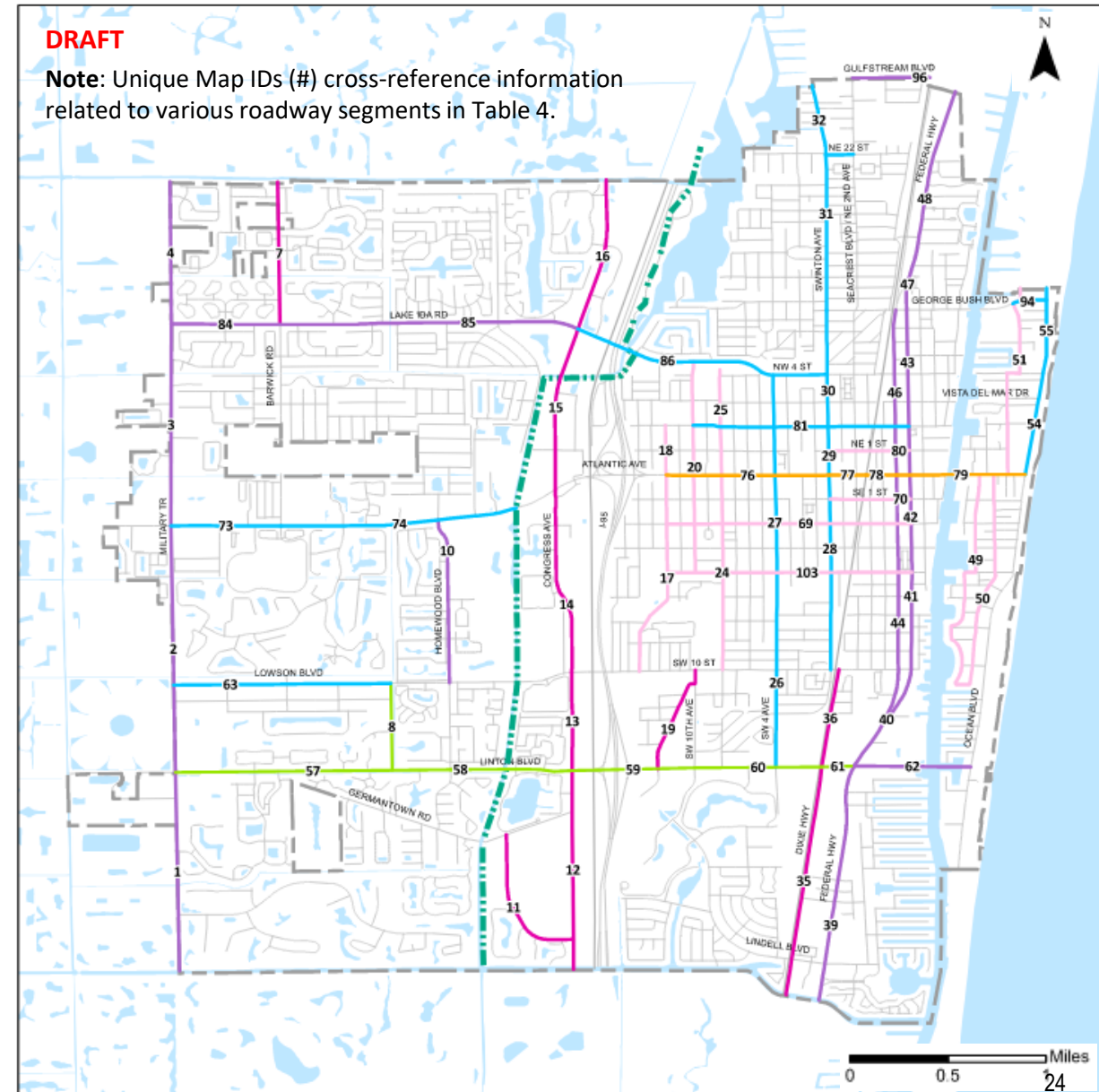
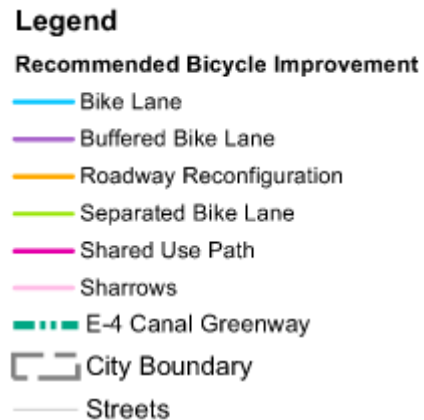
- Separated bicycle lanes: 4.0 miles (8%)
- Buffered bicycle lanes: 16.1 miles (31%)
- Bicycle lanes: 12.1 miles (23%)
- Sharrow/Neighborhood byways : 11.5 miles (22%)
- Shared use path: 8.8 miles (17%)

Roadway Reconfiguration Study: 1.9 miles

E-4 Canal Greenway: 4.4 miles

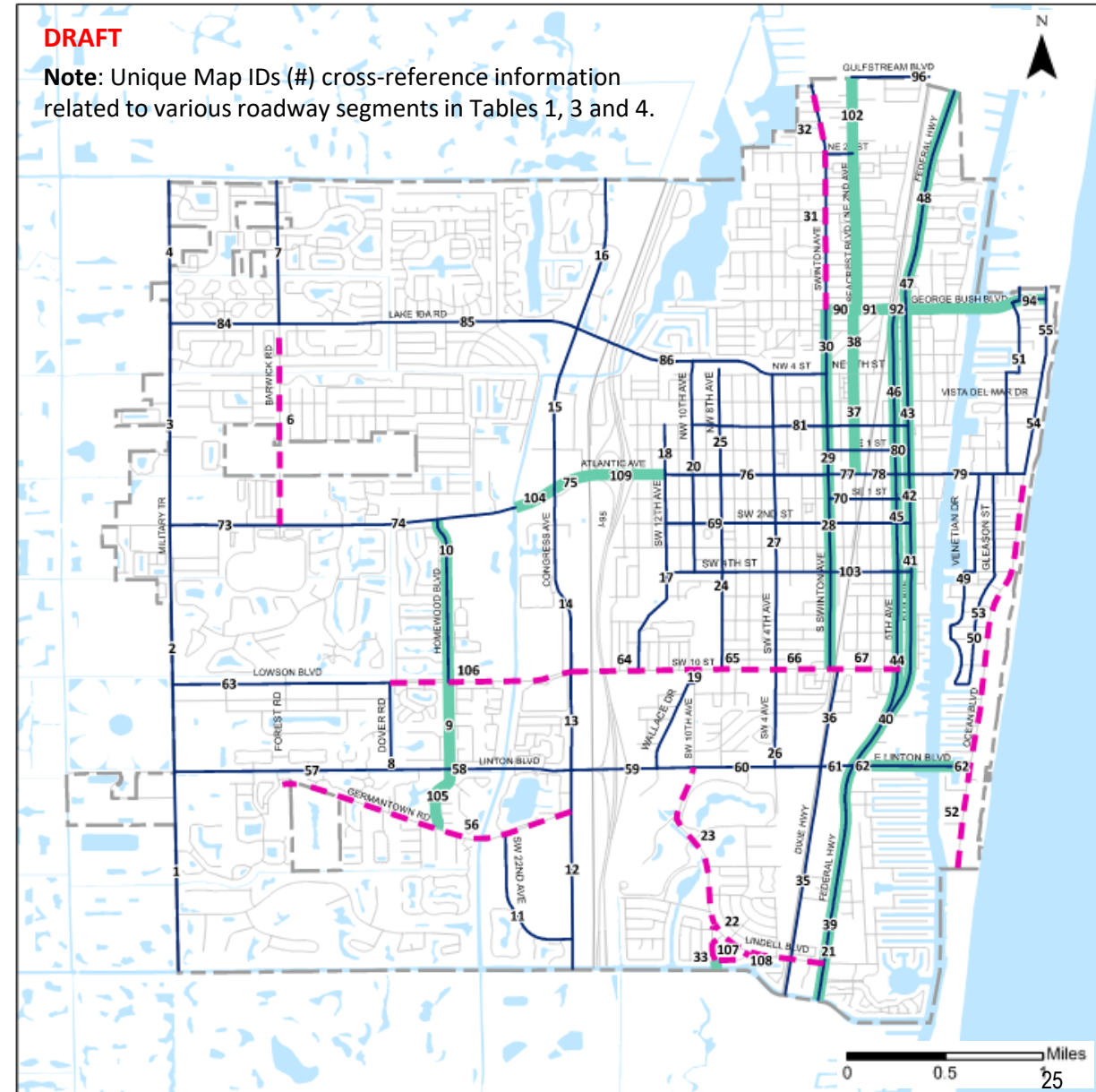
- ✓ Total recommended bicycle network: **52.5 miles**
- ✓ Expanding the existing + programmed bicycle network **by 199% or 1.9X**

- *Alleyways: Goal is to include permeable pavement and decorative lighting wherever possible*

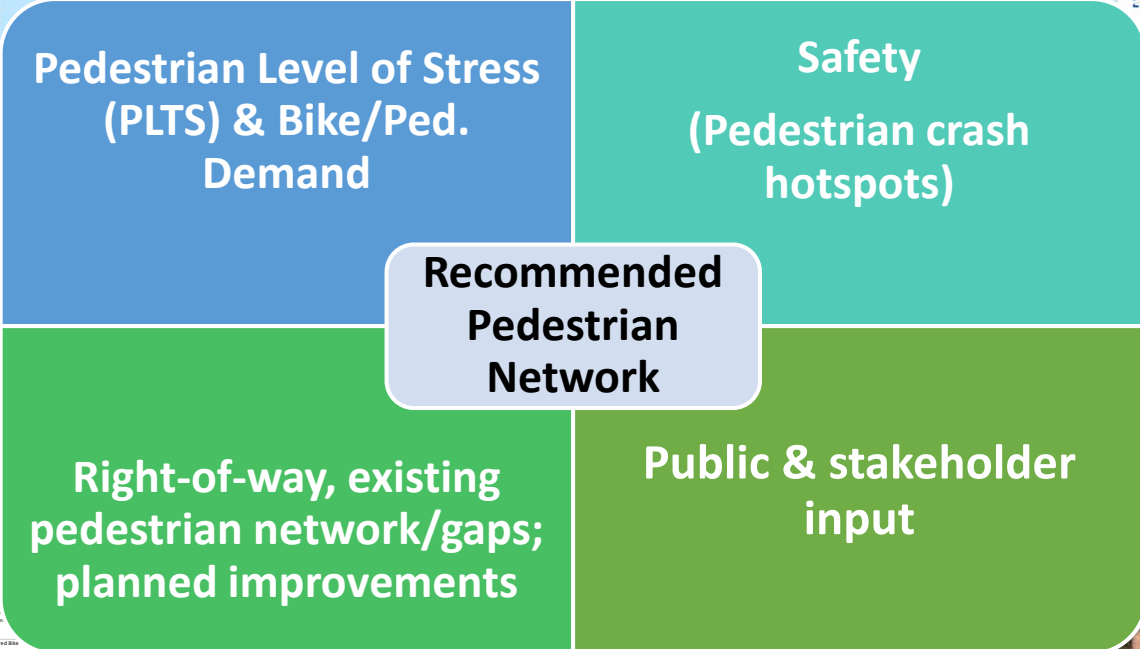
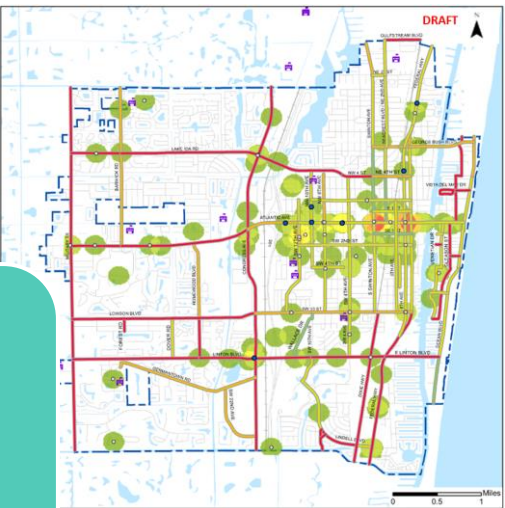
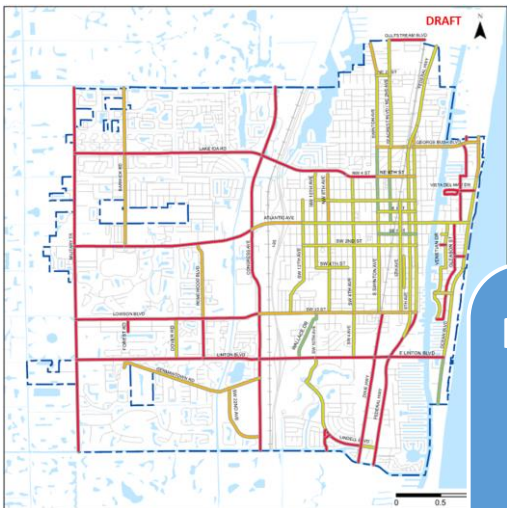


Existing + Programmed + Recommended Bicycle Network

- ✓ Total bicycle network: 78.9 miles providing **local and regional connectivity**
- ✓ Approx. 26% of the total bicycle network will consist of buffered or separated bicycle lanes, providing **safer environment for bicyclists** away from vehicular traffic.
- ✓ Approx. 21% of the network will comprise shared use path.
- ✓ **Lower LTS** for nearly 47% of the total bicycle network
- ✓ Opportunity to enhance regional connectivity through E-4 Canal greenway
- ✓ Roadway Reconfiguration Study: 1.9 miles



Recommended Pedestrian Network Inputs



Map ID	Orientation	Street Name	From	To	Length_Miles	Functional Classification	Jurisdiction	Ultimate ROW_Feet	Number of Ultimate Through Lanes	Base Year Daily Traffic Volume_2020	Posted Speed Limit_MPH	On-Street Parking	Bicycle_LTS Existing	Existing Bicycle Facility	Planned_Bicycle Improvement	Prop. Imp.
1	North-South	Military Trail	South City Limit	Union Boulevard	1.158	Principal Arterial	County	120	6.D	34,688	45	No	17.5		Buffered Blue Lane	
2	North-South	Military Trail	Union Boulevard	Atlantic Avenue	1.425	Principal Arterial	County	120	6.D	45,154	45	No	17.5	Painted Shoulder	Buffered Blue Lane	Yes
3	North-South	Military Trail	Atlantic Avenue	Lake Ida Road	1.175	Principal Arterial	County	120	6.D	45,860	45	No	17.5	Painted Shoulder	Buffered Blue Lane	Yes
4	North-South	Military Trail	Lake Ida Road	North City Limit	0.850	Principal Arterial	County	120	6.D	36,138	45	No	17.5	Painted Shoulder	Buffered Blue Lane	Yes
5	North-South	Forest Road	Lakeview Boulevard	Lowson Boulevard	0.108	Local	City	80	2.	No Posted Speed Limit (25)	30	No	17.5		Shared Use Path	Shamrock
6	North-South	Barkwold Road	Atlantic Avenue	Lake Ida Road	1.748	Collector	City	80	2.	30,088	30	No	17.5		Shared Use Path	Yes
7	North-South	Barkwold Road	Lake Ida Road	North City Limit	0.850	Collector	City	80	2.	30,088	30	No	17.5		Shared Use Path	Yes
8	North-South	Dover Road	Union Boulevard	Lowson Boulevard	0.504	Collector	City	80	2.	6,970	30	No	17.5		Shared Use Path	Yes
9	North-South	Homestead Boulevard	Union Boulevard	Lowson Boulevard	0.504	Collector	City	80	2.	6,970	30	No	17.5		Shared Use Path	Yes
10	North-South	Homestead Boulevard	Lowson Boulevard	Atlantic Avenue	0.850	Collector	City	80	2.	6,970	30	No	17.5		Shared Use Path	Yes
11	North-South	SW 23rd Avenue	Congress Avenue	Old Congress Avenue	0.850	Collector	City	80	2.	6,970	30	No	17.5		Shared Use Path	Yes
12	North-South	Congress Avenue	South City Limit	Union Boulevard	1.158	Principal Arterial	County	120	6.D	34,688	45	No	17.5		Buffered Blue Lane	Yes
13	North-South	Congress Avenue	Union Boulevard	Lowson Boulevard	0.504	Principal Arterial	County	120	6.D	22,184	45	No	17.5		Buffered Blue Lane	Yes
14	North-South	Congress Avenue	Lowson Boulevard	Atlantic Avenue	0.527	Principal Arterial	County	120	6.D	36,138	45	No	17.5		Buffered Blue Lane	Yes
15	North-South	Congress Avenue	Atlantic Avenue	Lake Ida Road	1.076	Principal Arterial	County	120	6.D	36,138	45	No	17.5	Painted Shoulder	Buffered Blue Lane	Yes
16	North-South	Congress Avenue	Lake Ida Road	North City Limit	0.850	Principal Arterial	County	120	6.D	36,138	45	No	17.5	Painted Shoulder	Buffered Blue Lane	Yes
17	North-South	SW 23rd Avenue / SW 24th Avenue / Public Avenue	SW 23rd Street	Atlantic Avenue	1.188	Collector	City	50	2.	6,970	25	No	17.5		Shamrock	Yes
18	North-South	SW 23rd Avenue / SW 24th Avenue / Public Avenue	Atlantic Avenue	Lake Ida Road	0.288	Collector	City	50	2.	3,888	25	No	17.5		Shamrock	Yes
19	North-South	Highway Drive	Union Boulevard	SW 23rd Street	0.850	Collector	City	80	2.	5,988	25	No	17.5		Shared Use Path	Yes



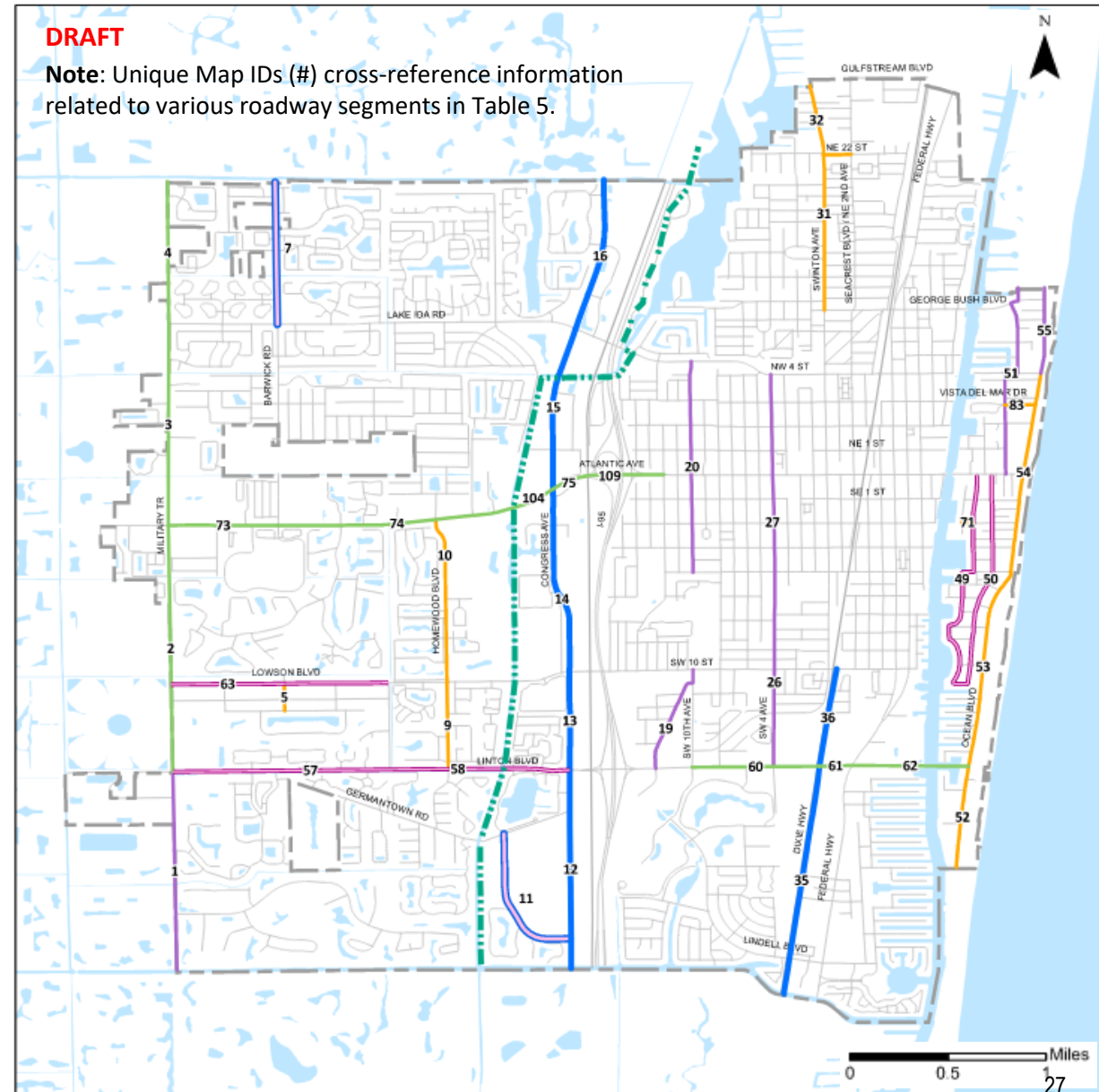
Recommended Pedestrian Network Improvements

- Add Buffer : 7.2 miles
 - Fill gaps: 6.5 miles
 - Sidewalk (one side): 6.6 miles
 - Sidewalk (both sides): 5.8 miles
 - *Shared use path: 8.2 miles
- ✓ Recommended sidewalk network: **18.9 miles**
and **7.2 miles** of enhancements (buffer)

Legend

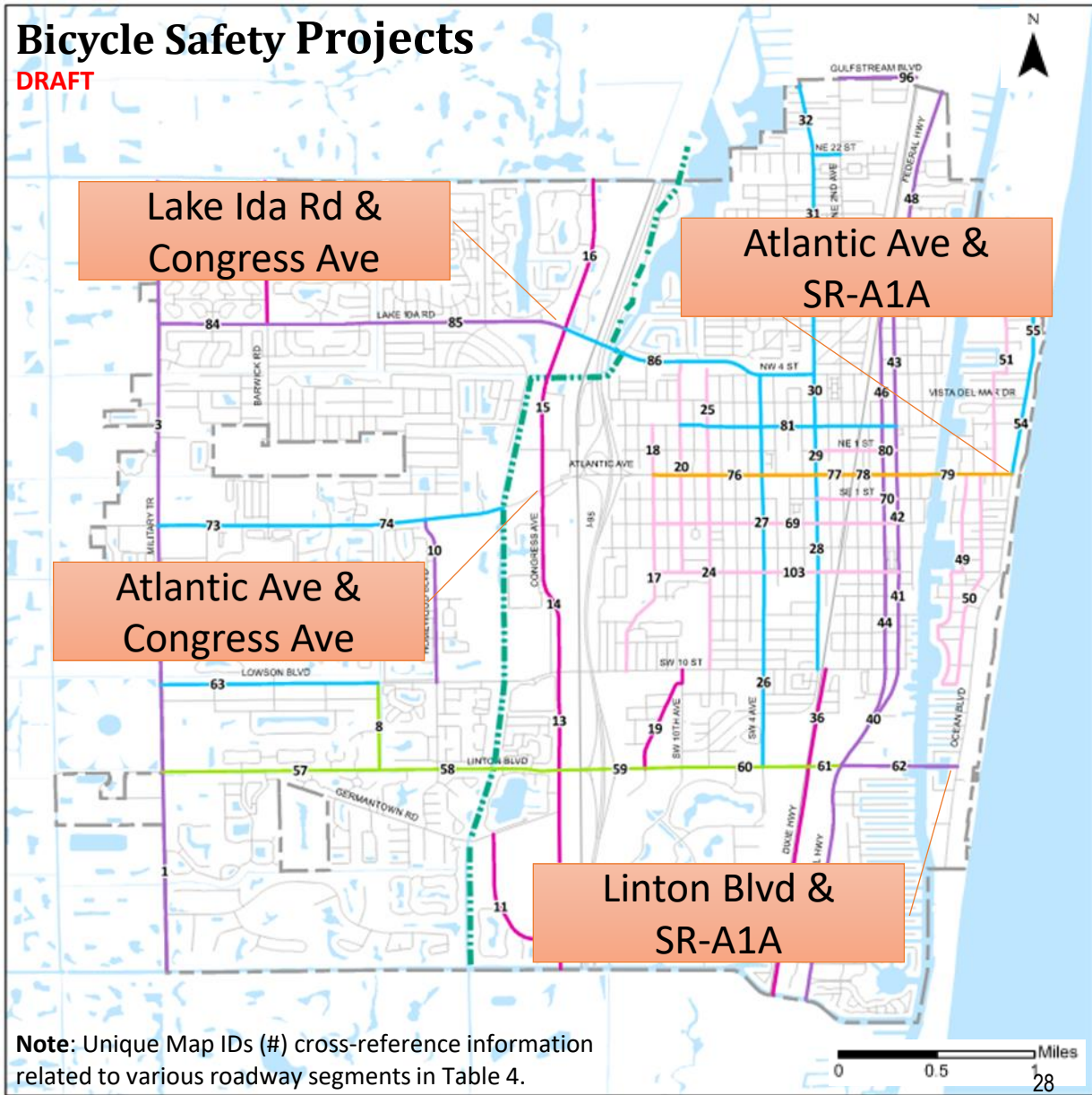
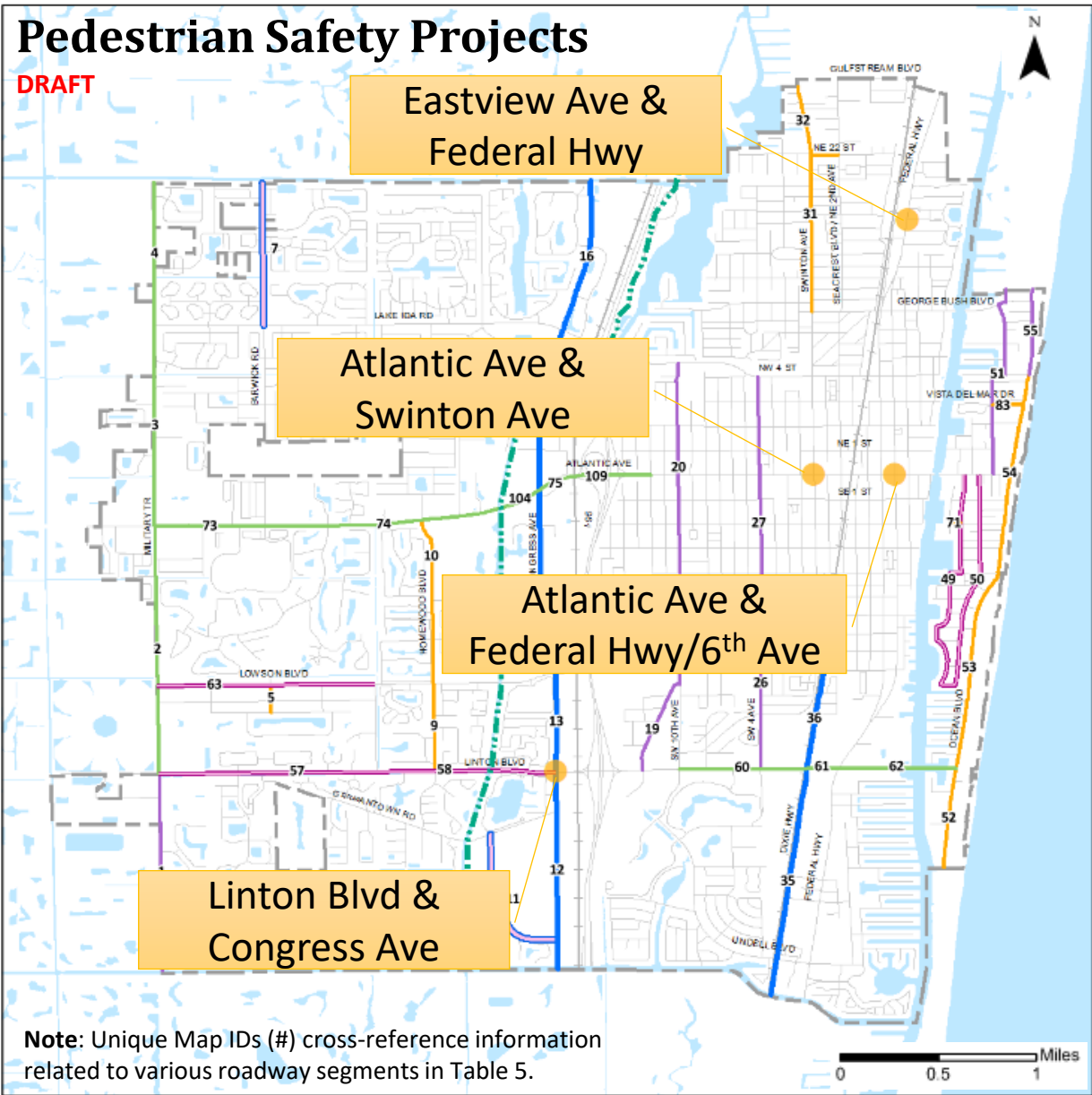
Recommended Pedestrian Improvement

- Add Buffer
- Fill Gaps
- Shared Use Path
- Shared Use Path + Sidewalk
- Sidewalk (one side)
- Sidewalk (both sides)
- City Boundary
- Streets

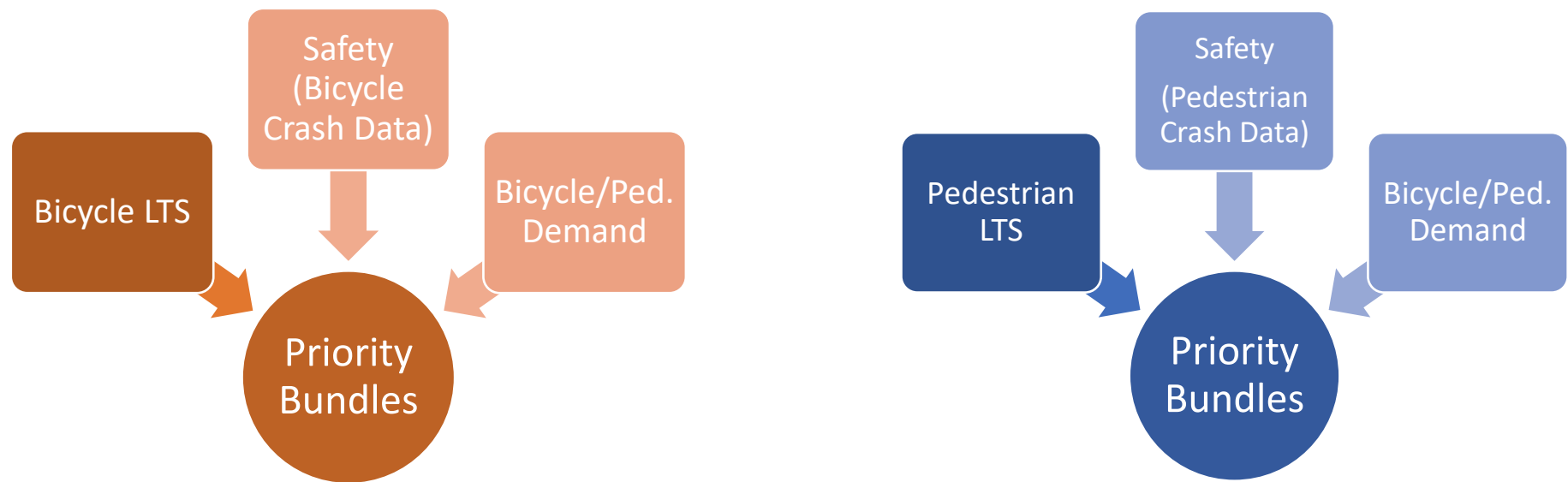


*Overlapping with recommended bicycle network improvements

Recommended Bicycle & Pedestrian Safety Projects (Intersections)



Bicycle/Ped. Network Improvement Priority Bundles Methodology



Level of Traffic Stress	Score
LTS 1/PLTS 1	1
LTS 2/PLTS 2	2
LTS 3/PLTS 3	3
LTS 4/PLTS 4	4

+

Bicycle/Pedestrian Crash Hotspot	Score
Not hotspot but serious injury	1
Crash hotspot	2
Crash hotspot w/ serious injury	3
Fatality	4

+

Bicycle/Pedestrian Demand	Score
Low	1
Medium	2
Medium-High	3
High	4

= **Aggregate Score***

*Stratify aggregate score based on data distribution (using percentile) to develop priority bundles

Recommended Bicycle Network Improvement Priority Bundles

- Tier 1 (20.5 miles)

- Shared use path: 3.4 miles
 - Separated bicycle lanes: 3.5 miles
 - Buffered bicycle lanes: 6.8 miles
 - Bicycle lanes: 5.2 miles
 - Sharrow/Nbhd. Byways: 1.6 miles
- Roadway reconfiguration study: 1.0 mile

- Tier 2 (15.5 miles)

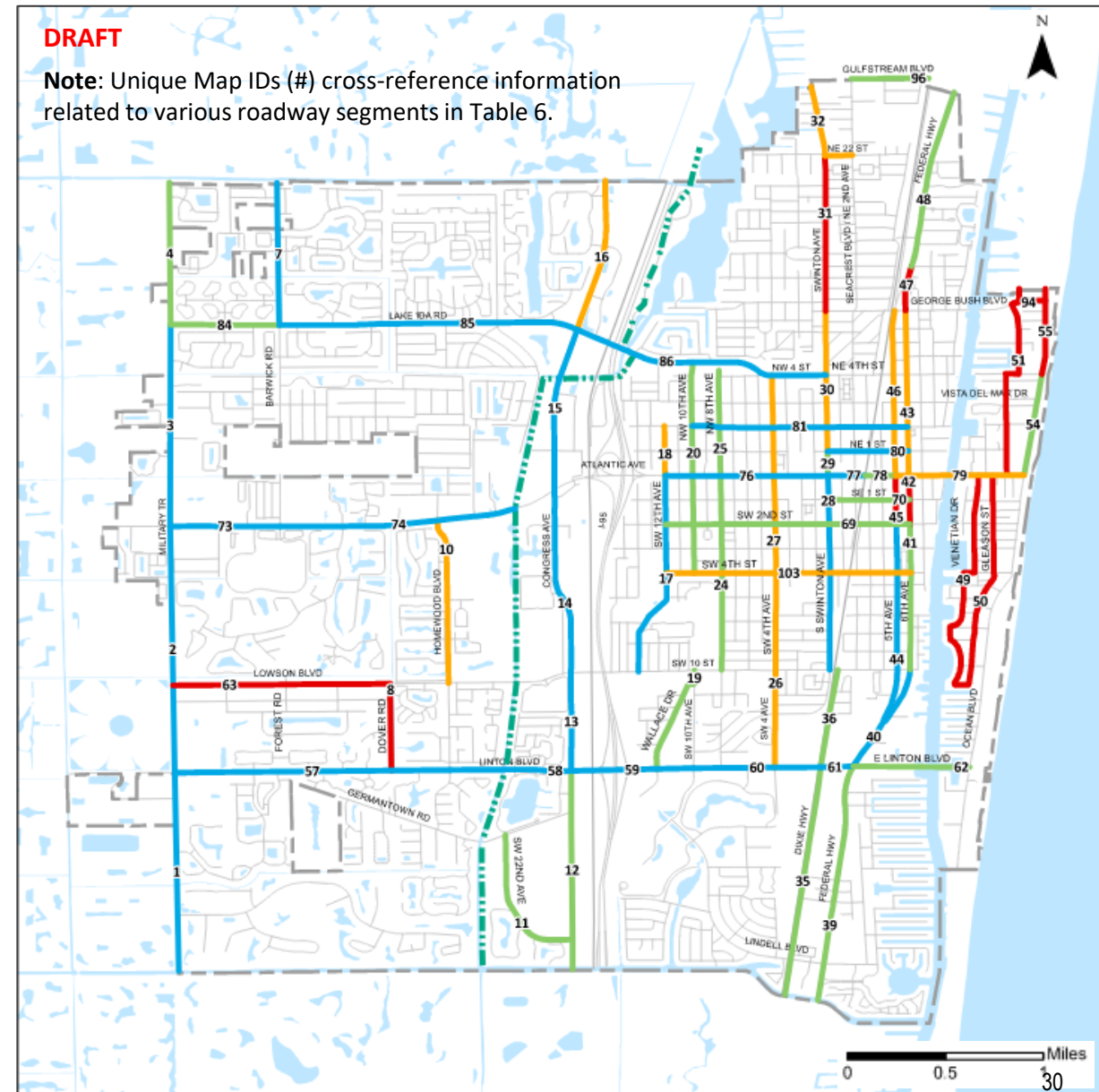
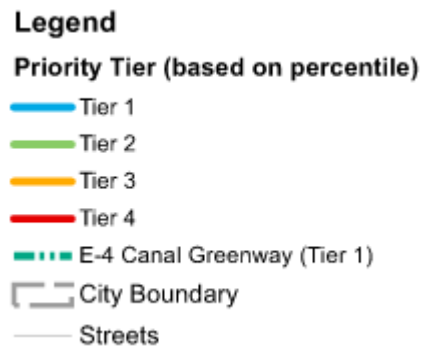
- Shared use path: 4.5 miles
 - Buffered bicycle lanes: 5.7 miles
 - Bicycle lanes: 1.3 miles
 - Sharrows/Nbhd. Byways: 4.7 miles
- Roadway reconfiguration study: 0.2 mile

- Tier 3 (8.8 miles)

- Shared use path: 0.7 miles
 - Buffered bicycle lanes: 2.9 miles
 - Bicycle lanes: 3.6 miles
 - Sharrow/Nbhd. Byways: 1.4 miles
- Roadway reconfiguration: 0.7 mile

- Tier 4 (7.8 miles)

- Separated bicycle lanes: 0.5 miles
- Buffered bicycle lanes: 0.8 mile
- Bicycle lanes: 2.7 miles
- Sharrow/Nbhd. Byways: 3.8miles



Recommended Pedestrian Network Improvement Priority Bundles

■ Tier 1 (2.9 miles)

- Add Buffer : 4.6 miles
- Fill gaps: 2.9 miles
- Sidewalk (one side): -
- Sidewalk (both sides): -

■ Tier 2 (3.3 miles)

- Add Buffer : 2.6 miles
- Fill gaps: 1.2 miles
- Sidewalk (one side): -
- Sidewalk (both sides): 2.1 miles

■ Tier 3 (5.4 miles)

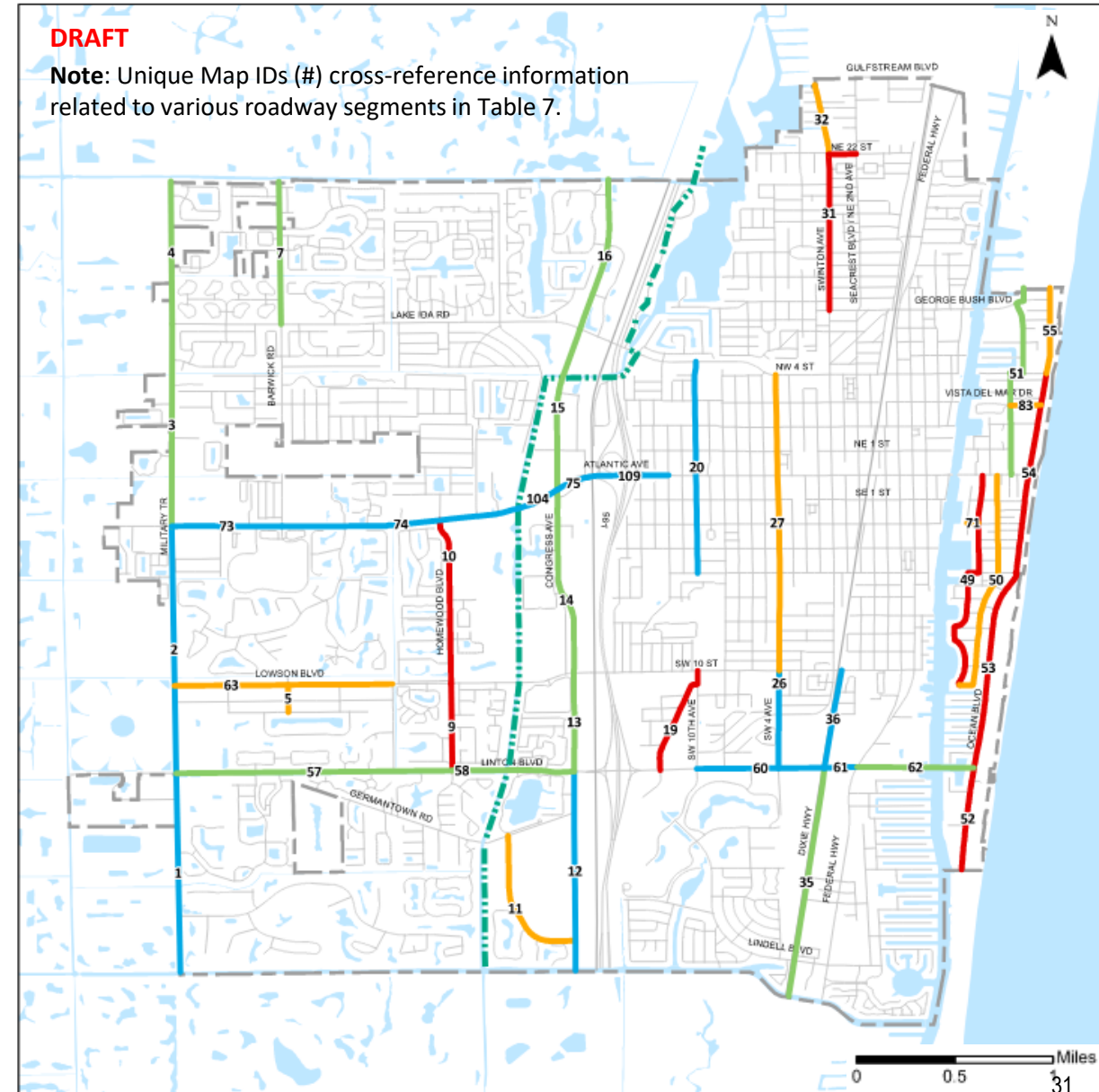
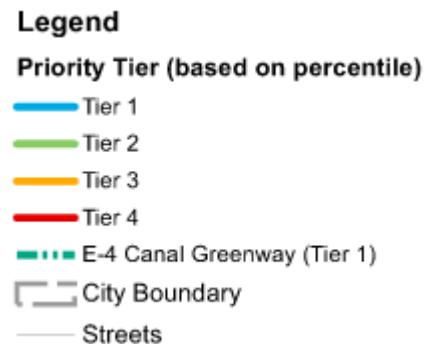
- Fill gaps: 1.7 miles
- Sidewalk (one side): 1.3 miles
- Sidewalk (both sides): 2.4 miles

■ Tier 4 (7.2 miles)

- Fill gaps: 0.6 miles
- Sidewalk (one side): 5.3 miles
- Sidewalk (both sides): 1.3 miles

*Shared use path: 8.2 miles

*Overlapping with recommended bicycle network improvements



Planning Level Construction Cost Estimates

Priority Bundle	Recommended Bicycle Improvements Construction Cost*	Recommended Sidewalk Improvements Construction Cost*
Tier 1	\$55,246,000	\$4,774,000
Tier 2	\$25,787,000	\$4,428,000
Tier 3	\$11,440,000	\$3,020,000
Tier 4	\$10,595,000	\$3,268,000
Total* (All Tiers)	\$103,068,000	\$15,490,000

*Total construction cost for various Tiers differs slightly due to rounding.

- Hard costs based on FDOT's Cost Per Mile model with appropriate modification
- Soft costs include percentages for PE/design, CE&I, MOT and mobilization
- Improvements are assumed to be accommodated within the existing right-of-way

Funding Opportunities

Federal

- **Safe Streets and Roads for All (SS4A)** – *Annual Funding (\$1B)*
- **Rebuilding American Infrastructure with Sustainability and Equity (RAISE)** – *Annual Funding (\$1.5B)*
- **Reconnecting Communities Program (RCP)** – *Annual Funding (\$200M)*
- **Carbon Reduction Program (CRP)**
- **Highway Safety Improvement Program (HSIP)**
- **Areas of Persistent Poverty (AoPP)**
- **Recreational Trails Program (RTP)**
- **National Highway Transportation Safety Administration (NHTSA Section 402 and 405)**

State

- **Safe Routes to School (SRTS)**
- **Shared Use Network (SUN) Trail Program**
- **Resurfacing, Restoration and Rehabilitation (RRR) Project**

Local

- **Transportation Alternatives (TA) Program**
 - Funds (2023): ~5.1M
 - Funding Range: \$250K to \$1.5M
 - Eligibility: On- and off-system Roads
- **State Road Modification (SRM) Program**
 - Funds (2023): ~20.4M
 - Funding Range: \$500K to \$5M
 - Eligibility: On State Roads
- **Local Initiatives (LI) Program**
 - Funds (2023): ~26M
 - Funding Range: \$250K to \$5M
 - Eligibility: On Federal-Aid Roads

Other Recommended Initiatives and Programs

- Walking tours, such as Art Walk and Mural Walk
- Bicycle tours focused on historic preservation and mural tours
- Landscaping/tree canopy to mitigate heat island and hot weather
- Lighting to enhance safety
- Comprehensive wayfinding and signage
- Bicycle parking
 - Outside downtown
 - Indoor parking at schools and mixed-use developments
- Continue Delray Beach's bicycle and safety initiatives and programs
 - High Visibility Pedestrian and Bicycle Safety Enforcement campaign
 - Vision Zero
- Traffic calming

Shared (Micro)Mobility Best Practices

- City regulations – license, permit, contracts including termination clause
- Require operators to maintain insurance, bonds and fees
- Targeted geographic area and/or pilot projects
- Designated parking areas, right-of-way for riders
- Speed restrictions
- Fleet size restrictions, removal/relocation requirements
- Equipment and vehicle maintenance, customer service (multilingual)
- Local staffing and workforce development
- Equitable pricing methods and income-based discounts
- Outreach and education programs



E-Bikes



Bikes



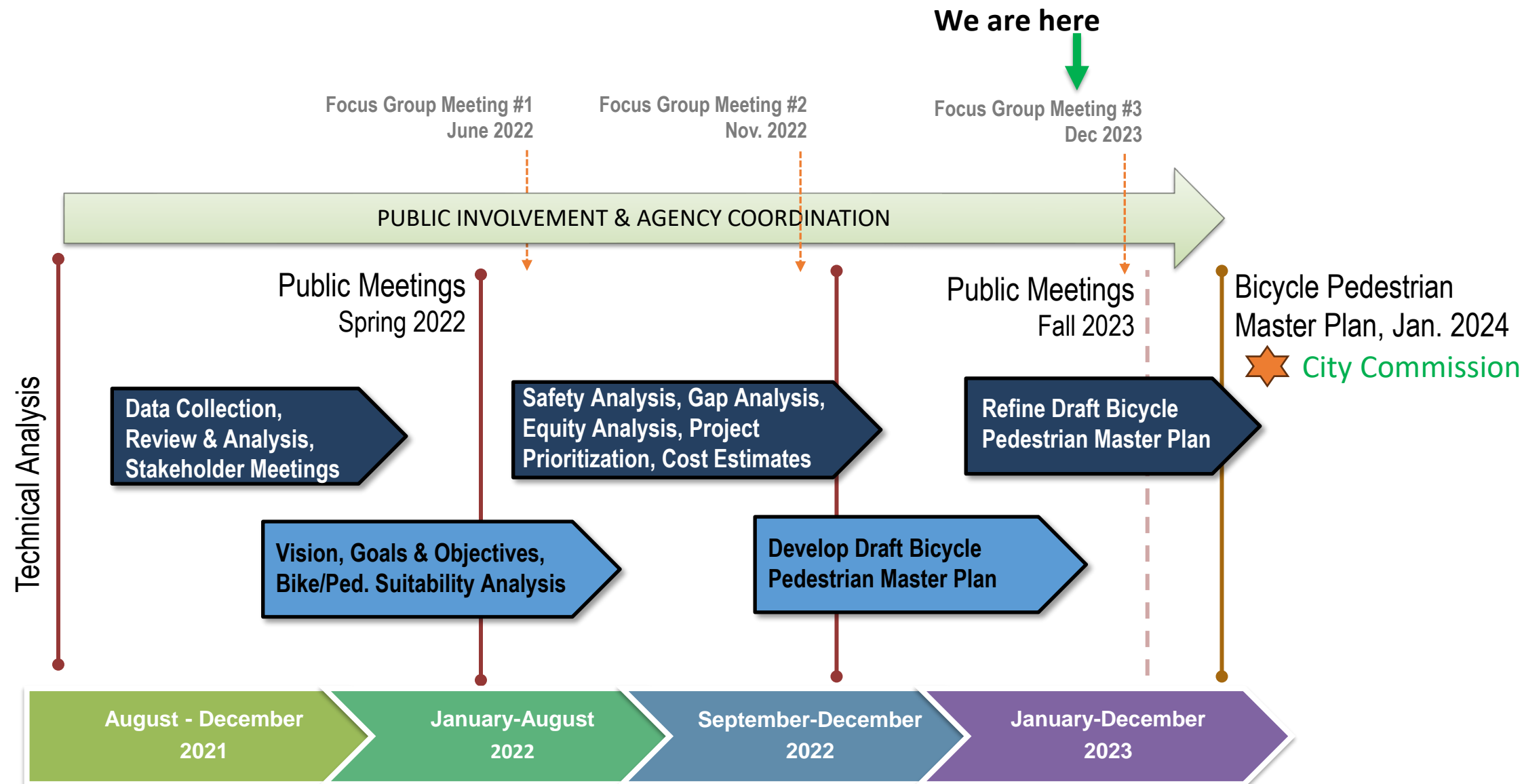
E-Scooters

Implementation Strategy

- Coordinate with Palm Beach TPA to include proposed bicycle and sidewalk improvement projects in the 2050 LRTP
- Continue to coordinate with Palm Beach County and Florida Department of Transportation to accommodate proposed improvements on their facilities
- Evaluate and refine recommended improvements for specific corridors based on detailed traffic analysis, lane repurposing studies and engineering effort
- Evaluate grant opportunities and submit applications to secure discretionary federal, state and local funds; Use regional approach to leverage funds
- Identify opportunities to implement proposed bicycle/sidewalk improvements as part of private developers' projects + City's CIP, County, and FDOT projects
- Collaborate with other departments within Delray Beach to promote bike/ped safety programs as well as implement "other initiatives"
- Update existing bicycle and sidewalk inventory and Bicycle Pedestrian Master Plan on a periodic basis



Next Steps



Thank You

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