KITTELSON & ASSOCIATES

Network Comfort Assessment

Evaluating the multimodal infrastructure system conditions and identifying the modal priority for streets in the Planning Area

MULTIMODAL COMMUNITY PLANNING STUDY

NEXT STOP FORT LAUDERDALE

Advancing the Vision

September 2019

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MEMORANDUM

Date:	September 16, 2019	Project #: 22317.9
To:	Craig Pinder Transportation and Mobility Department City of Fort Lauderdale 290 N.E. 3rd Avenue Fort Lauderdale, FL 33301	
From:	Mary Raulerson, Fabian De La Espriella and Caitlin Tobin Kittelson & Associates, Inc. Transportation Engineering / Planning 200 SW 1st Avenue, Suite 1070 Fort Lauderdale, FL 33301	
Project:	Fort Lauderdale TOD Program	
Subject:	Network Comfort Assessment Baseline Conditions Technical Memorandum	

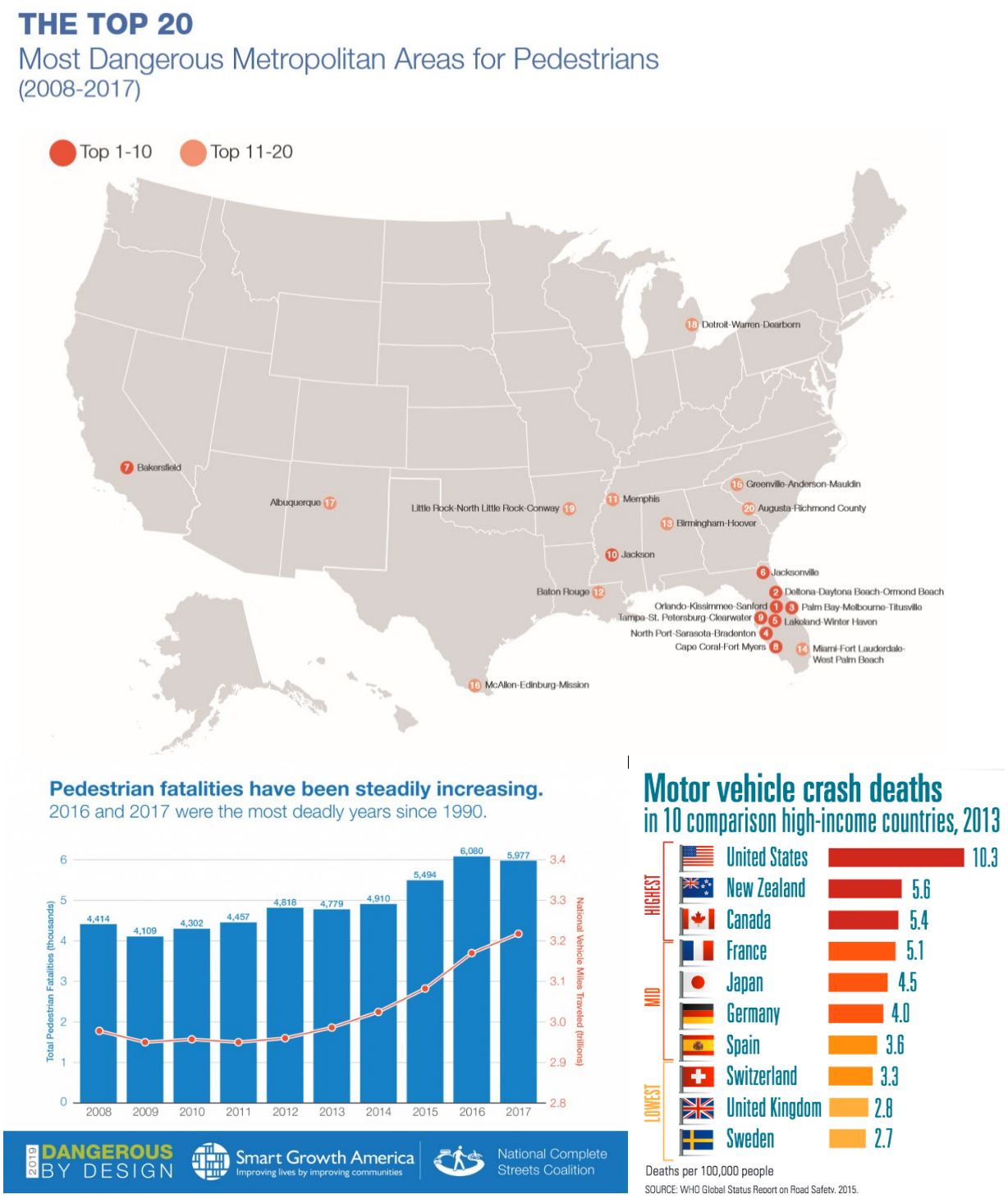
INTRODUCTION

The purpose of the Next Stop Fort Lauderdale planning study is to advance the City's vision. The Fast Forward Fort Lauderdale Vision Plan 2035 states that neighbors want a multimodal community where people have a choice to get around by car, transit, bicycle or walking. Creating a safe and walkable city was identified as a top ranked priority in the plan. This project is exploring mechanisms that the City can use to foster a walkable, connected and livable environment to enhance the quality of life in our community.

In order to provide recommendations to create a connected, multimodal network within the planning area, the Kittelson team worked with City of Fort Lauderdale staff to apply a methodology that evaluates the baseline bicycle and pedestrian conditions in the system, and identifies the modal priority for streets. To meet this goal, the following steps were completed:

- Bicycle Level of Traffic Stress (LTS) Assessment
- Bicycle Intersection Level of Comfort Evaluation
- Pedestrian Use Assessment
- Developed a multi-modal decision-making framework to assign a modal priority to every street in the network based on the bicycle LTS scores and pedestrian use classifications.
- Modal priority map - every street within the planning area is assigned a primary mode priority and a secondary mode priority
- Bicycle priority corridors map

Further details regarding the methodology of each of the analysis is provided in the methodology memo. This memo documents the findings and outcomes of the process outlined above.



"America has one of the highest fatality rates of first world countries and pedestrian fatalities have been rising since 2013. This network comfort assessment seeks to address mobility challenges throughout the planning area by proposing multimodal infrastructure improvements that benefit all roadway users."
Sources / Smart Growth America 2019 Dangerous by Design (Left) and WHO Global Status Report on Road Safety 2015 (Bottom)

PURPOSE

Fundamentally, most people will travel around Fort Lauderdale in a way that gets them where they need to go and feels safe to them. The decision to walk or ride a bike can strongly rely on how comfortable someone will feel making the trip. This is because pedestrians and bicyclist tend to be vulnerable users of the transportation network. They are slower, sensitive to detours, exposed to the elements and are sensitive to conflict points with motor vehicles.

The presence of a facility, such as a bike lane or a sidewalk alone, does not "ensure" pedestrians and bicyclist's safety or comfort. Key design elements that affect a pedestrian or bicyclist interaction with and proximity to traffic are pivotal to whether a facility is safe and comfortable for the user. These design factors also vary by context and roadway characteristic. For instance, a 5-foot sidewalk may be sufficiently comfortable for a pedestrian on a low speed, low volume residential street. However, that same sidewalk next to a 5-lane roadway with traffic speeds posted at 40+ miles per hour is far less comfortable.

There is a direct correlation between the level of comfort a person feels while walking and biking and their likelihood to walk or bike.

The baseline conditions analysis and comfort assessment of the pedestrian and bicycle network in the planning area takes these context considerations into account. A network comfort assessment approach provides a better indicator of how well the existing infrastructure is serving pedestrians and bicyclist, where the barriers are and where existing infrastructure may be deficient.

DATA ANALYSIS

The comfort assessment involved compiling GIS data from various sources. Kittelson worked with the City to identify and obtain all pertinent data. All data requested for the analysis was readily available and the data was not verified in the field.

Table 1 below summarizes the GIS data collected and its source.

Table 1. GIS Data and Sources

Data	Data Layer Name	Source	Date Collected
Street Typology	Roadways2019.shp	City of Fort Lauderdale	2/19/2019
Bike Facilities (on and off street)	ExistingBicycleFacility.shp	City of Fort Lauderdale	2/19/2019 2/24/2015
Land Use	Zoning2019.shp	City of Fort Lauderdale	2/19/2019
Bus Routes	BCT_Routes.shp TMA_Routes.shp ExpressBus.shp	Broward County Transit	4/9/2018
Bus Stops	BCT_Stops.shp	Broward County Transit	4/9/2018
AADT	aadt.shp	Florida Department of Transportation	3/7/2019
On-Street Parking	Roadways_studyarea0329.shp	Digitalize from the City of Fort Lauderdale's 2018 Citywide Parking Study	10/9/2018

The Kittelson team collected and compiled the aforementioned data from the City, Broward County Transit and FDOT. While most data used in the analysis was obtained, Kittelson worked with City staff to supplement available data with the following assumptions:

- The posted speed is assumed to be 25mph for local roads, 35mph for State and County roads, and 30mph for all other roads in the planning area. The City made adjustments to these assumptions as necessary based on local knowledge.
- AADT data for collectors and arterials was used from FDOT's AADT online data mapping. It was assumed that all local roads carry less than 2,500 vehicles AADT.

A map of the posted speed limit and the AADT's used for the analysis are provided in Figure 1 and Figure 2. The AADT thresholds shown in the map is broken down based on the volume thresholds that typically correlate LTS score of a road. For instance, streets with a score of LTS 1 usually have a street volume of less than 2,500 ADT while streets with over 10,000 AADT typically has characteristics aligned with an LTS 4 score.

Figure 1. Posted Speed Limit

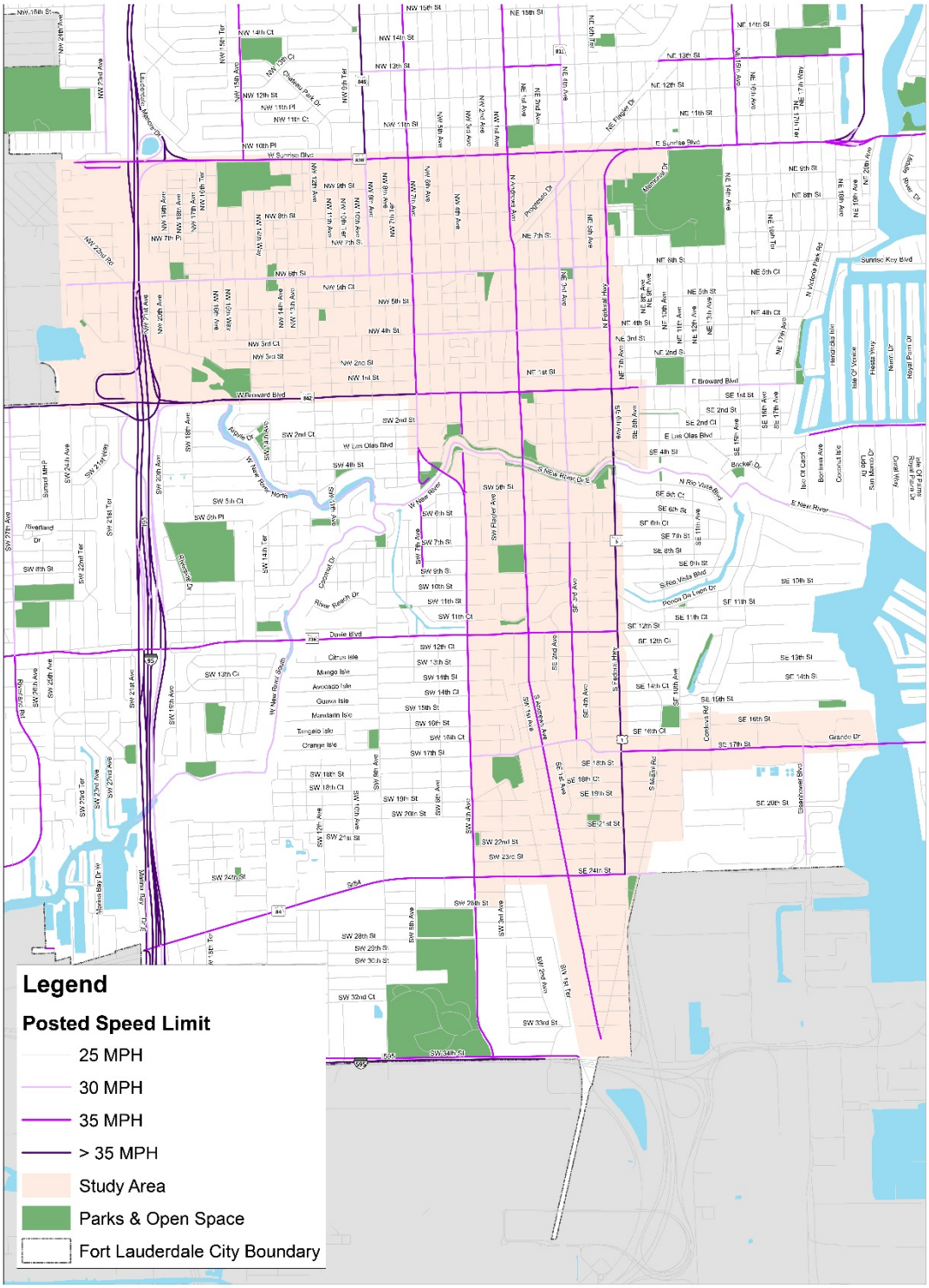
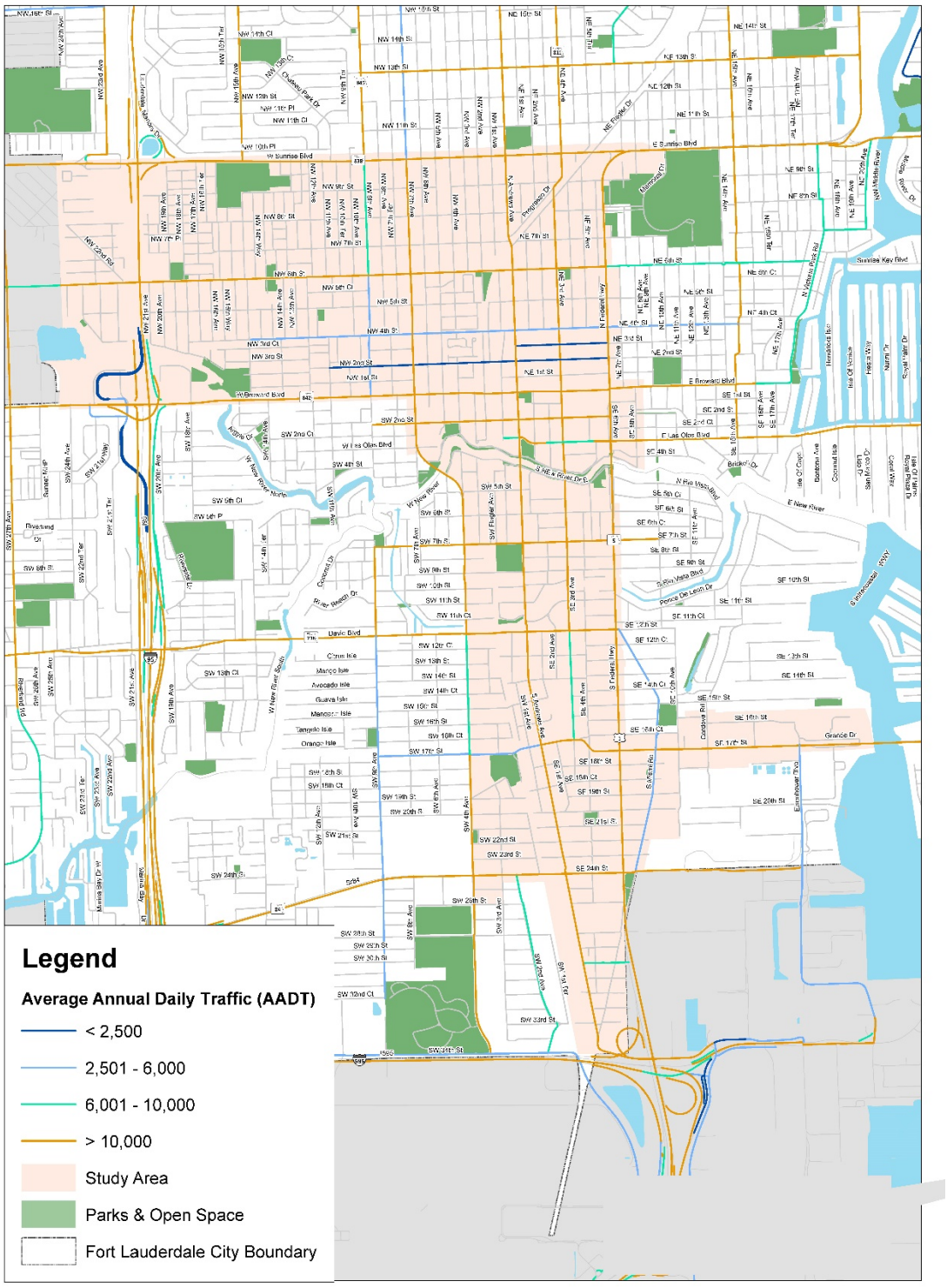


Figure 2. AADT



BICYCLE COMFORT ASSESSMENT

Methodology

A data-driven process to plan a bicycle facility system based on comfort.

Level of Traffic Stress (LTS)

The Bicycle LTS methodology uses roadway characteristics to evaluate the perceived comfort of people riding a bicycle on a particular street or facility. LTS is generally evaluated using the following comfort level thresholds:

- LTS 1: This is the most comfortable level of traffic stress for the general population and is suitable for an 8-year old child. Except in low speed (<30MPH)/low volume (<3,00 AADT) traffic situations, a separated bike facility that has physical separation from traffic is usually present.
- LTS 2: This level is defined as a level of stress that most adults can tolerate, particularly those sometimes classified as "interested but concerned." Except in low speed / low volume traffic situations, cyclists have their own place to ride that keeps them from having to interact with traffic except at formal crossings. Where there is a bike lane, there are low levels of parking turn-over and driveway activity, such as in residential neighborhoods.
- LTS 3: Involves interaction with moderate speed (30 MPH) or multilane traffic, or close proximity to higher speed traffic (>35 MPH). Streets with moderate speeds (30 MPH) and lower traffic volumes (<3,000 AADT) can be an LTS 3, if there is a higher level of parking turnover. These streets tend to be comfortable for "enthused and confident" riders.
- LTS 4: This is the most challenging or difficult level of traffic stress and usually involves interaction with higher speed traffic. These streets are typically greater than 35 MPH, are multi-lane roads and have AADT's that exceed 8,000 AADT. Uncomfortable for most bicycle riders, acceptable only to "strong and fearless" riders.

The LTS methodology, as outlined in the Methodology Memo, evaluated the existing street network based on a "Weakest Link" threshold approach. This reflects the reality that people on bikes experience various types of traffic stress (speed of traffic, volume of traffic, degree of separation from traffic, incursions into their space) simultaneously. In this methodology, every street segment that has continuous characteristics is assigned an LTS score. This methodology used the following data to assign the LTS score:

(1) Posted traffic speeds. This is the posted speed limit on a given street. The speed of traffic is one of the greatest factors in causing stress for bicyclist using the street. In the absence of observed speed data, the posted speed limit is a good first indicator of what the LTS score could be. This was the first level of information assessed for every street section.

(2) Average annual Daily Traffic Volumes (AADT). AADT volumes are an indicator of how often conflicts between bicyclist and cars have the potential to occur. Once traffic speeds are accessed, AADT is used to further determine the LTS score.

(3) Level of separation from traffic. This is relevant to when a bicycle facility is present either adjacent to or in the street. Bike lanes that have vertical separation between the bike lane and the travel lane tend to be a score of LTS 1, no matter what the speed and volume of the road is. Whereas bike lanes that do not have vertical separation are only comfortable for the general population at certain levels of speed and volume (this is further defined below in the methodology).

(4) level of incursion (based on context). High on-street parking activity and driveway access to/from commercial land uses tend to contribute to higher levels of traffic stress for cyclists along mixed traffic segments, increasing the potential for bike/vehicle conflicts. Commercial or mixed land uses will be used to qualify this measure using Fort Lauderdale's existing land use data.

These metrics, in this order, tend to be the street characteristics that have the greatest impact on the LTS scoring system. For example, streets without bicycle facilities that have a posted speed limit of greater than 35 mph is expected to be a score of LTS 4, no matter what the other characteristics of the street are (traffic volumes or presence of parking).

Two separate assessments were developed, one for Mixed traffic assessments where a dedicated bike facility is not present and one for when a dedicated bike facility is present. Street segments within the network were evaluated based on the thresholds developed and explained in the Methodology Memo.

Once the data analysis was completed, every street in the planning area was assigned an LTS score of 1-4, where a score of LTS 1 is comfortable for most users and a score of LTS 4 is uncomfortable stressful for even confident bicyclists. The results from the analysis were provided to City staff for review and truth vetting, aiming for feedback on specific segments that needed refinement based on local knowledge. For instance, a low speed, low volume street may receive a score of 1 or 2 by rule of thumb based on the speed and volume data. However, City staff would identify locations that fit these parameters, but that they regularly received speeding complaints. This "ground truthing" process allows for subjective context considerations to be reflected in the scores. The LTS scores were adjusted based on this feedback.

The LTS scores can help plan a complete bicycle network that is useful to the general population, leverage low-stress streets that are already comfortable for most people, and help identify the appropriate bicycle facility based on key characteristics of the street.

Bicycle LTS Results

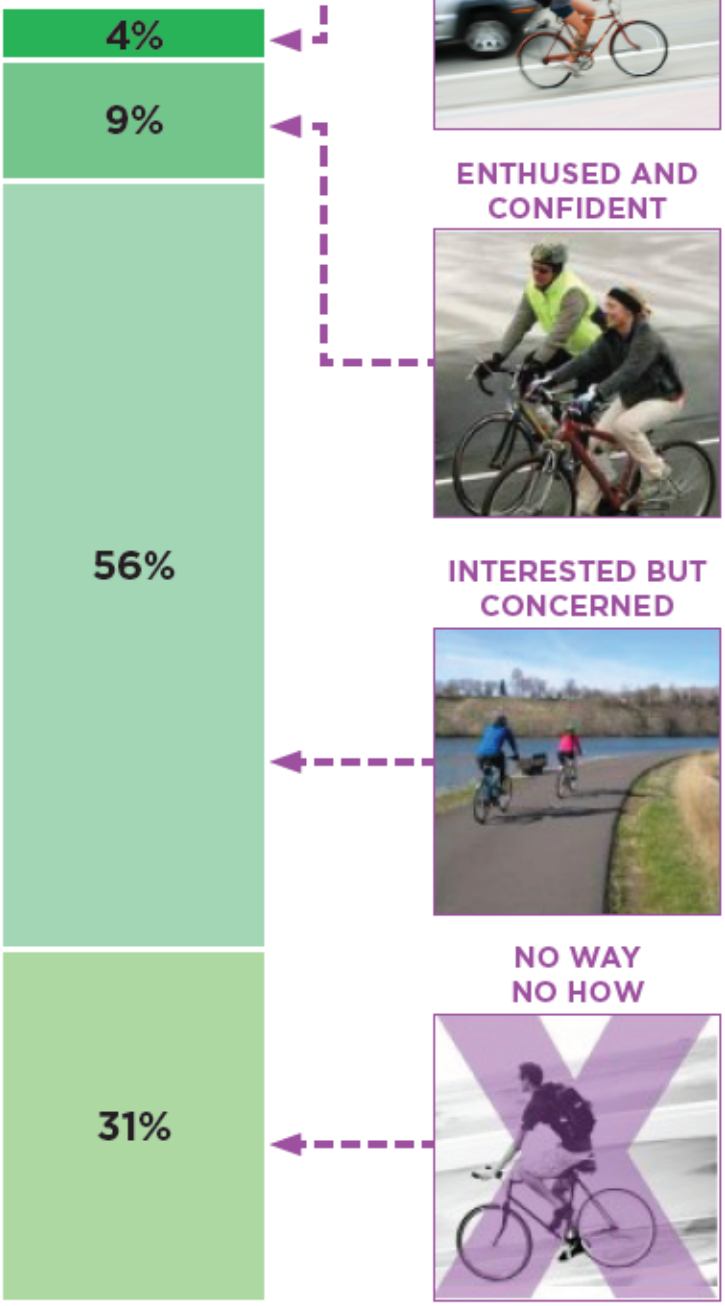
The map in Figure 3 summarizes the results of the LTS analysis. The majority of streets in the planning area are scored at an LTS 1 or 2, which is generally considered a Low Stress street. However, there are several roads in the network that have an LTS score of 3 or 4 that are acting as barriers in the network. Streets such as Broward Boulevard, Andrews Avenue, NW/SW 7th Avenue and Federal Highway have higher traffic volumes, speeds and/or have wide rights-of-way. These streets can be difficult to cross without bicycle-specific accommodation. These streets are also typically the most direct route across the network and are critical to minimize diversion.

These barriers created by high stress streets create “islands” in the network. These are areas where a person can continuously ride on a low stress street or bike facility until they hit a barrier such as a high stress street or a physical barrier (such as a river or a railroad crossing). These barriers are critical reasons people choose not to bike. While the streets near their origin or destination may be comfortable, their decision is driven by a need to feel safe for the entire trip. Figure 4 shows where the low stress islands are within the planning area. This visualization helped identify crossings and street segments that are critical to prioritize for bike infrastructure in order to create a complete network.

Bicycle Level of Traffic Stress

Methodology

Research has identified that there are 4 types of bicyclist, Strong and fearless, Enthused and confident, Interested but Concerned and No way, No how.[1] Bicyclists categorized as Strong and Fearless are comfortable riding on busy roads with little physical separation from motorist through travel lanes. Enthused and Confident cyclists are generally recreational and utilitarian riders who will ride on busy streets if there are facilities provided, but may also deviate from the most direct route to ride on low-traffic or shared use paths. The No way no how group will not choose to bicycle for transportation or recreation, regardless of provided infrastructure.



1 *Dill, Jenifer and McNeil, Nathan, Four Types of Cyclists?: Testing a Typology to better Understand Bicycling Behavior and Potential. Portland State University, 2012.*

Figure 3. Level of Traffic Stress Results

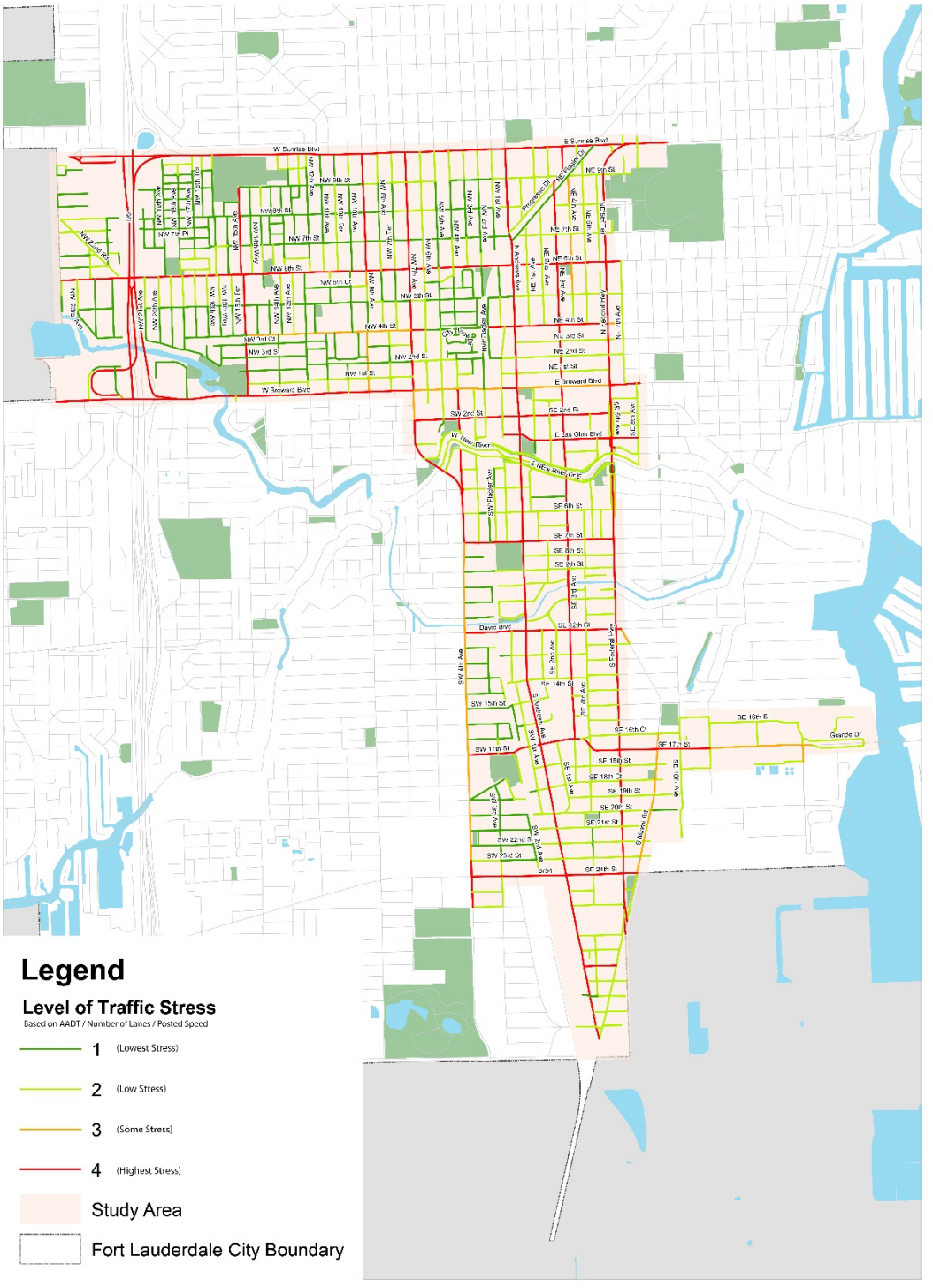
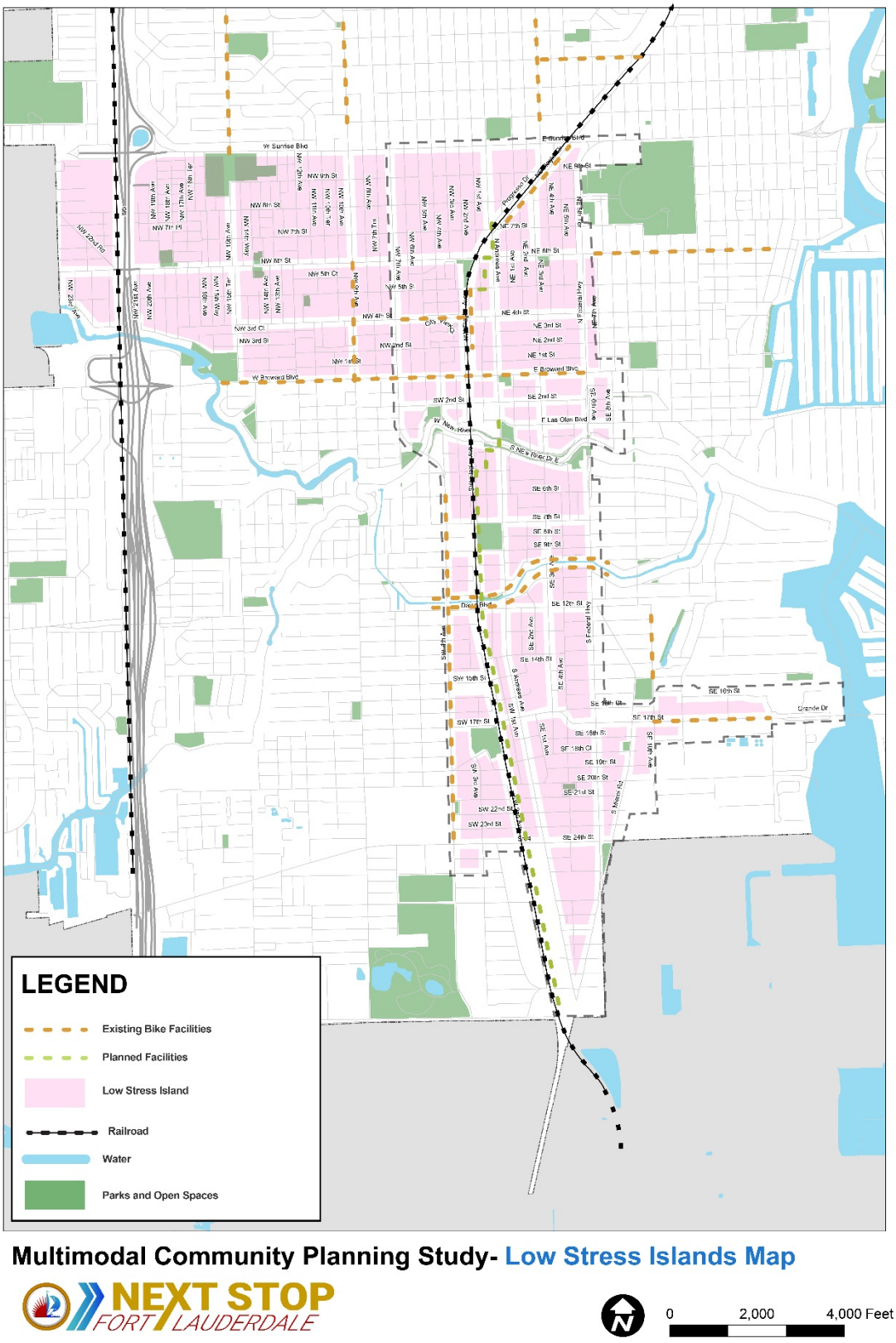


Figure 4. Low Stress Islands Map



Bicycle Intersection Comfort Evaluation

Roadway intersections are where the greatest interaction between cars and bicycles occur and where the highest likelihood for conflict exists. This means that intersections can represent critical barriers to a continuous low-stress trip.

Once the LTS analysis was completed and critical corridors were identified, Kittelson worked with City Staff to evaluate twenty-three (23) intersections based on their bicycle level of comfort. These intersections included the ones listed below. See Figure 5 for reference.

- Sunrise Boulevard/NE 3rd Avenue
- NW 7th Street/NE 3rd Avenue
- NW 6th Street/NE 3rd Avenue
- NW 6th Street/NW 1st Avenue
- NW 6th Street/NW 2nd Avenue
- NW 6th Street/NW 7th Avenue
- NW 6th Street/NW 9th Avenue
- NW 6th Street/ NW 15th Avenue/NW 15th Way
- NW 4th Street/NE 3rd Avenue
- NW 4th Street/ NW 7th Avenue
- NW 4th Street/NW 9th Avenue
- E Broward Boulevard/NE 3rd Avenue
- W Broward Boulevard/ NW 1st Avenue
- W Broward Boulevard/ NW 7th Avenue
- W Broward Boulevard/ NW 9th Avenue
- E Las Olas Boulevard/NE 3rd Avenue
- SE 6th Street/NE 3rd Avenue
- SW 7th Street/SW 4th Avenue
- Davie Boulevard/SW 4th Avenue
- Davie Boulevard/ S Federal Highway
- SW 17th Street/SW 4th Avenue
- SE 17th Street/SE 3rd Avenue

Each intersection was given a minimum of two scores, one for the main street and one for the side street. This assessment leveraged the segment LTS scores and other existing conditions to evaluate each intersection. Additional factors included in the assessment included: Presence of right-turn lanes, existing turn radius, and type of intersection treatments. Scores were provided in a ranking using the following four categories: **Good**, **Needs Improvement**, **Poor** and **Worst**. Similar to the segment LTS assessment, two separate analyses are provided: 1) for mixed traffic conditions (when a bike lane is not present), and 2) where a bicycle facility goes through the intersection. The specifics of the methodology application is detailed in the Methodology Memo.

Results

The bicycle comfort scores for the intersections analyzed are provided in Figure 6. Many of the intersections selected did not have bike crossing treatments or are an intersection of one or two high stress streets. This has resulted in most of the intersections receiving a score of Worst or Poor.

Figure 5. Proposed Intersections for Bicycle Comfort Evaluation

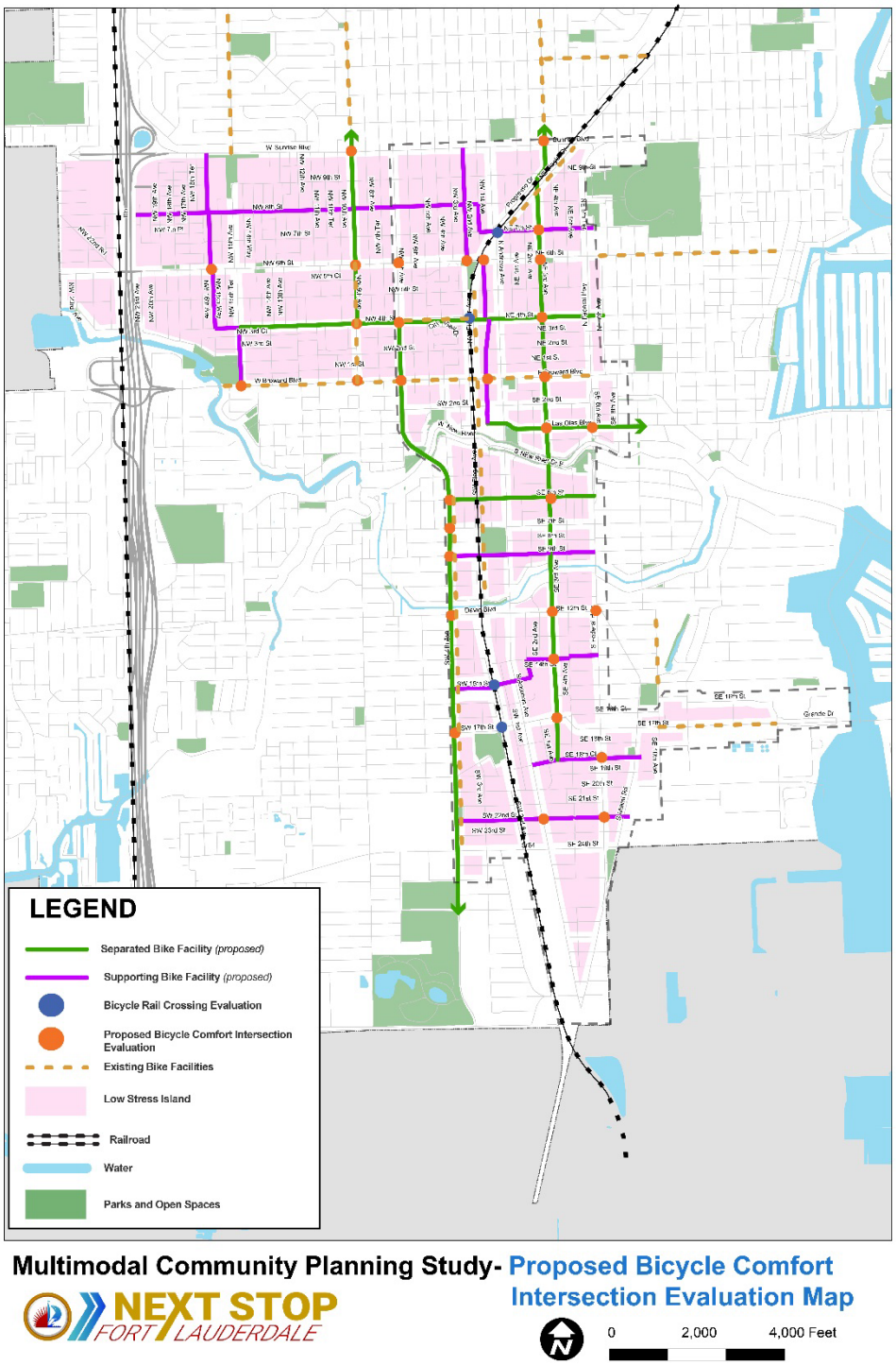
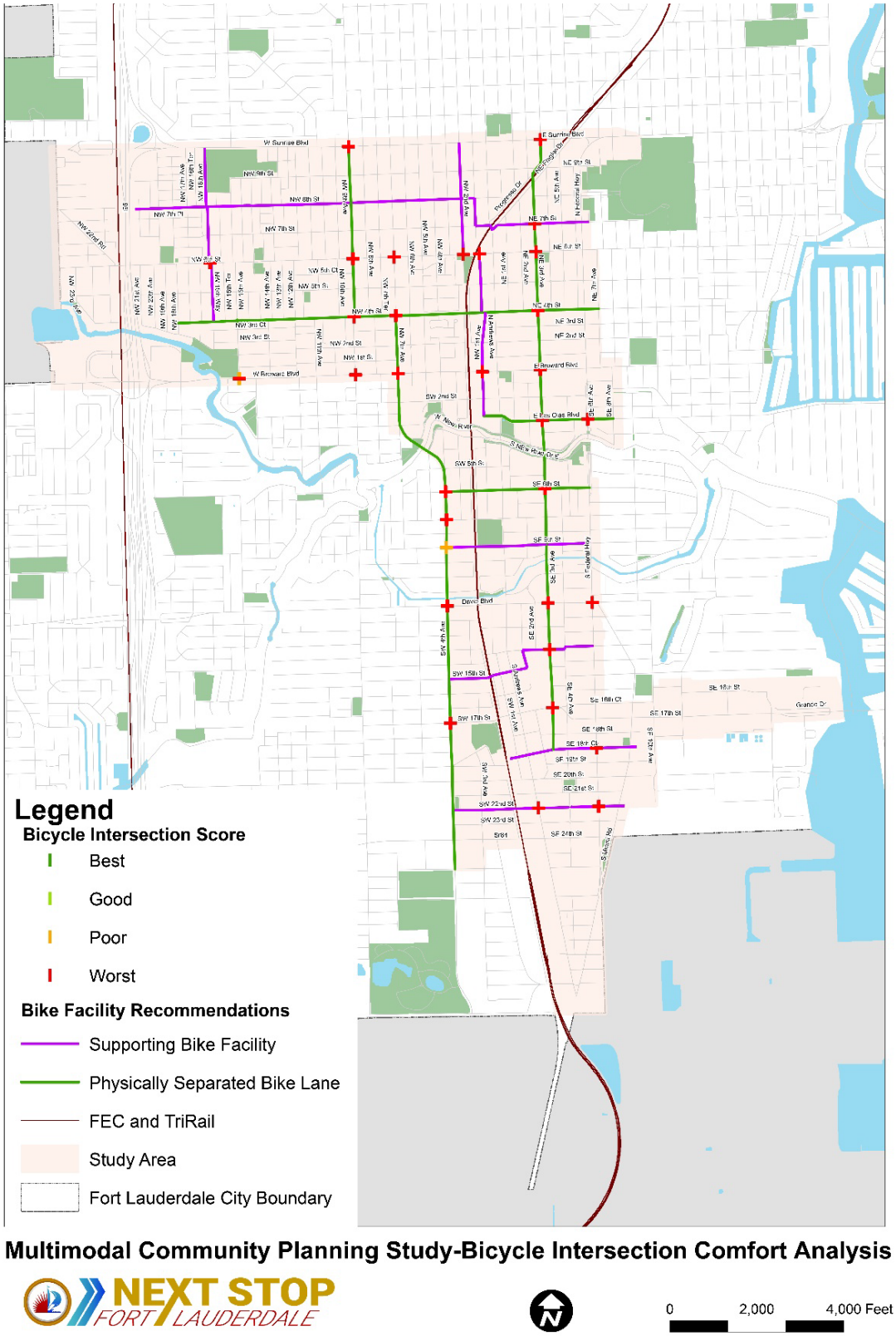


Figure 6. Bicycle Intersection Score results



PEDESTRIAN USE ASSESSMENT

Methodology

Pedestrians are a vulnerable mode, that are extremely sensitive to detours, lack of marked crossings and weather. Creating a robust pedestrian network is the very cornerstone of a walkable community. This methodology recognizes that every street in the planning area provides for pedestrian needs. However, those needs vary based on the adjacent land uses. Mixed-use areas with night life, shopping and dining may need wider sidewalks to match the placemaking needs, while a low-volume residential street may only need a functional, ADA compliant sidewalk.

Kittelson worked with City staff to develop a list of street categories based on pedestrian use in order to assess and address the needs of the planning area. A pedestrian use was assigned to every block in the planning area based on qualitative information such as local knowledge, street context and information from planning studies. Below is a description of each of the categories identified:

- **Neighborhood Use Streets -** Neighborhood streets are typically in residential neighborhoods. In this context, the street experiences low speeds (25 MPH) and AADT's below 3,000. In many cases the street is comfortable to walk in because traffic volumes are low, however a sidewalk on at least one side of the street is typically available, and sidewalks on both sides of the street is preferred. These are streets where shade is important and many of the trips are shorter distance trips to and from the community link streets. Example Streets include: NE 4th Avenue and NE 4th Street.
- **Community Streets-** These streets serve a mix of trips to commercial/community amenities and daily commuting. These streets tend to have businesses that provide necessary goods and services to the community (banks, pharmacy, dry cleaning, small grocery stores etc.) while there may be some residential uses adjacent to the street as well.
- **Link Streets -** A primary function of these streets is to act as 'connections' between community destinations and amenities. The environment of these streets should recognize the 'pedestrian travel-function' that must occur. Certain characteristics of these streets include:
    - Mixture of land uses, there tends to be nodes of commercial activity along the street,
    - Multimodal features complement these streets
    - May or may not include street level activity, such as gathering spaces, sidewalk dining, major bus stops.
    - Moderate to high levels of pedestrian travel and activity
    - Sidewalk widths are typically between 8 feet and 10 feet wide.
- **Main Streets-** These streets are classified as current or future 'destinations' within the region and the City. They act at times as a destination or a place. Some of the characteristics and considerations for these streets include:
    - Mixture of land uses with street level activity, retail, or eateries
    - High levels of pedestrian use/traffic
    - Pedestrian safety is a high consideration. Consider trade-offs with other intense modes of travel, (i.e. transit, high volumes of vehicles)
    - Focus on Placemaking elements, sense of scale, aesthetics, and enhanced character. This can include art, pedestrian scale lighting, and street furniture.

- **Utility Streets -** Typically in Fort Lauderdale, these occur around business and commercial land uses that are more auto-oriented, such as big-box retail stores, car washes, and drive through restaurants. They must move all modes of traffic and remain true to the pedestrian principles. These streets need to focus on access management, controlled crossing opportunities and having minimum width sidewalks (6 feet) that are unimpeded by objects to provide a safe condition for pedestrians.
- **Industrial Streets-** These streets have higher than usual heavy vehicle and freight activity. The land use is industrial or light industrial/commercial in nature.

Pedestrian Use Criteria and Results

Using the descriptions identified above, Kittelson collaborated in a work session with City staff to assign a pedestrian use category to each street in the planning area. To do this, the team developed a criteria table outlining qualitative and quantitative measures for each pedestrian use category to help with the assignment process. Table 2, below, is a matrix summarizing the criteria developed.

The team compiled a series of existing conditions maps, vision plans, transit plans, and the bicycle comfort assessment and worked through the pedestrian use assignments through an iterative workshop process. This included using the pedestrian use criteria table to assess existing and future street conditions in the planning area and assigning a pedestrian use to each street. The results of the matrix assignments are summarized in the map in Figure 7.

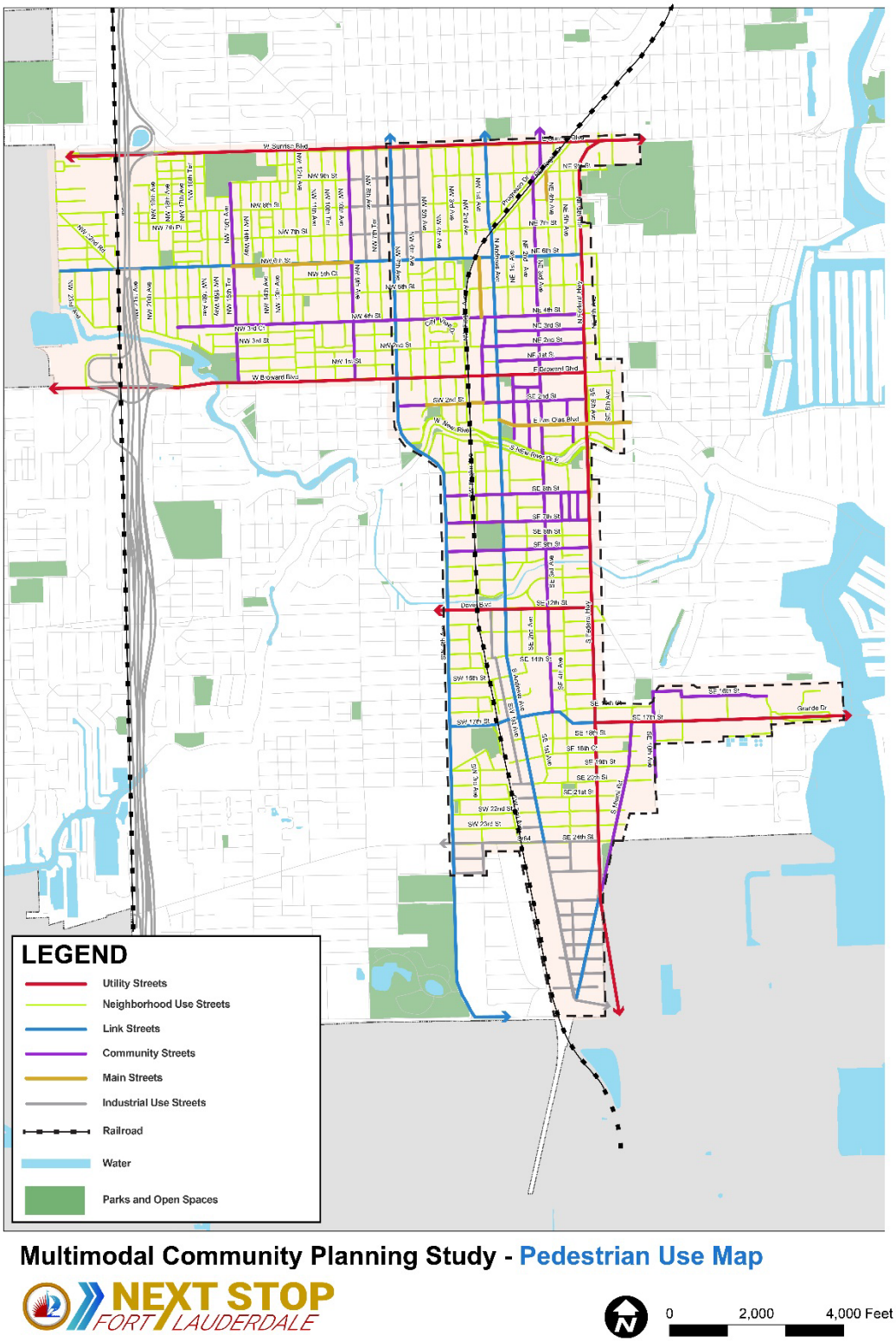
Table 2. Pedestrian Use Criteria Matrix

		QUANTITATIVE MEASURES					QUALITATIVE MEASURES	
	TRIP TYPE	EXPECTED PEDESTRIAN VOLUME	PEDESTRIAN TYPE	LEVEL OF COMFORT (LTS)	LAND USE CONTEXT	BUILDING SETBACK	ROADWAY CHARACTERISTICS	KEY ELEMENTS OF SUCCESS
Neighborhood Use Street	Inter-community trip		Family/ residents	1-2	Residential	Up to 25 feet	Travelway • On-street parking: YES • Total number of travel lanes: 1-2 • Median presence : NO • Curb and Gutter: Maybe • Bike Parking: NO Street Side • Sidewalk presence: At least on one side • Sidewalk width: 5' • Driveway Use: LOW • Street Trees: YES • Street Furnishings (pedestrian scale lighting, furnishings etc.): NO	• Presence of trees / shade • Continuous and unobstructed sidewalk
Community Street	Mix of trips to commercial/ community amenities and daily commuting		Family/ residents	2-3	Mostly mix of residential and	Up to 40 feet	Travelway • On-street parking: YES • Total number of travel lanes: 2 • Median presence: MAYBE • Curb and Gutter: YES • Bike Parking: YES Street Side • Sidewalk presence: On Both Sides • Sidewalk width: 5'-12' • Driveway Use: Medium • Street Trees: YES • Street Furnishings (pedestrian scale lighting, furnishings etc.): MAYBE	• Presence of trees / shade • Pedestrian-scaled lighting • Awnings • Sidewalk on both sides • Access to community amenities
Link Street	Mix of community connections and commuter trips		Family/ residents, transit users, employees/ workers	2-3	Mostly commercial/ office/ institutional uses	Up to 60 feet	Travelway • On-street parking: MAYBE • Total number of travel lanes: 3-4 • Median presence: MAYBE • Curb and Gutter: YES • Bike Parking: YES Street Side • Sidewalk presence: On Both Sides • Sidewalk width: 5'-12' • Driveway Use: MEDIUM • Street Trees: YES • Street Furnishings (pedestrian scale lighting, furnishings etc.): YES	• Presence of trees / shade • Pedestrian-scaled lighting • Awnings • Sidewalk on both sides • Access to community amenities • Bus stops/Shelters
Main Street	Leisure/entertainment		Visitors, families, transit users, residents	N/A	Mixed-used/ commercial	Up to 15 feet	Travelway • On-street parking: YES • Total number of travel lanes:2-4 • Median presence: MAYBE • Curb and Gutter: YES • Bike Parking: YES Street Side • Sidewalk presence: ON BOTH SIDES • Sidewalk width: >12' • Driveway Use: HIGH • Street Trees: YES • Street Furnishings (pedestrian scale lighting, furnishings etc.): YES	• Presence of trees / shade • Pedestrian scaled streetscape elements • Awnings • Buildings up to the street • Active groundfloor • On-street parking • High emphasis crosswalks at every intersection • Pick-up / drop-off zones

Table 2. Pedestrian Use Criteria Matrix (Continued)

		QUANTITATIVE MEASURES					QUALITATIVE MEASURES	
	TRIP TYPE	EXPECTED PEDESTRIAN VOLUME	PEDESTRIAN TYPE	LEVEL OF COMFORT (LTS)	LAND USE CONTEXT	BUILDING SETBACK	ROADWAY CHARACTERISTICS	KEY ELEMENTS OF SUCCESS
Utility Street	Transit connection for commuter/regional trips		Commuters	4	Single land use/ stand-alone commercial	>60 feet	Travelway • On-street parking: NO • Total number of travel lanes:4-7 • Median presence: MAYBE • Curb and Gutter: YES • Bike Parking: NO Street Side • Sidewalk presence: On Both Sides • Sidewalk width: 5' • Driveway Use: High • Street Trees: MAYBE • Street Furnishings (pedestrian scale lighting, furnishings etc.): MAYBE	• Minimum standard sidewalks • Bus stops/Shelters • Safe pedestrian crossing opportunities • Lighting
Industrial Street	Industrial work trips		Limited Use	4	Industrial	>60 feet	Travelway • On-street parking: MAYBE • Total number of travel lanes: 2-4 • Median presence: NO • Curb and Gutter: MAYBE • Bike Parking: NO Street Side • Sidewalk presence: At least on one side • Sidewalk width: 5' • Driveway Use: Medium • Street Trees: MAYBE • Street Furnishings (pedestrian scale lighting, furnishings etc.): NO	• Minimum Standard Sidewalk

Figure 7. Pedestrian Use Assignments Map



MODAL PRIORITY ASSIGNMENT

Methodology

Complete Streets principles provide for accommodating every transportation mode in every street. While these principles are important, there are cost and right-of-way constraints that make it difficult for every street in the network to contain all of the elements included in the "complete streets" kit of parts. However, cities have started to move towards planning complete networks and complete districts, where streets in the system are tagged with primary and secondary modal priorities. For example, a downtown street with a high number of shops and restaurants may be prioritized for walking and transit, while a parallel street may be prioritized for biking. This model allows for places to be accessible by all modes and manage the tradeoffs of "fitting" everything on one main thoroughfare, or expecting all streets to have equal roles.

In order to assign modal priorities, a decision-making framework or parameters was developed and vetted with City staff. The decision-making framework was developed with input from the critical bicycle corridors identified through the LTS analysis, the pedestrian use assignments, existing and future transit routes and stop location data, AADT data, land use, and long-range master plans (Uptown and Tri-Rail Coastal Link).

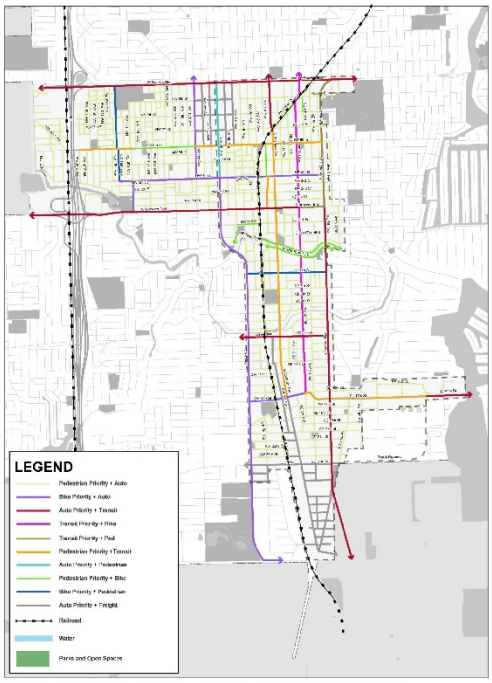
Using the decision making framework detailed in Table 3 and after incorporating the above information, Kittelson worked with City staff to develop and refine assigned modal priorities, determining the primary and secondary modal priorities for each street. The master modal priority map is provided in Figure 8. Each street is assigned a primary mode priority and a secondary mode priority.

Table 3. Modal Priority Decision making Framework

Decision-Making Framework

Pedestrian Priority Streets

- For **Main Streets**, the primary user is always the pedestrian
- For **Neighborhood-Use Streets**, the primary user is always the pedestrian (except when on a special condition, bicycle users can be considered the primary user)
- **Link Streets** have the potential of having segments where pedestrians can be considered the primary user based on special roadway characteristics and land use context

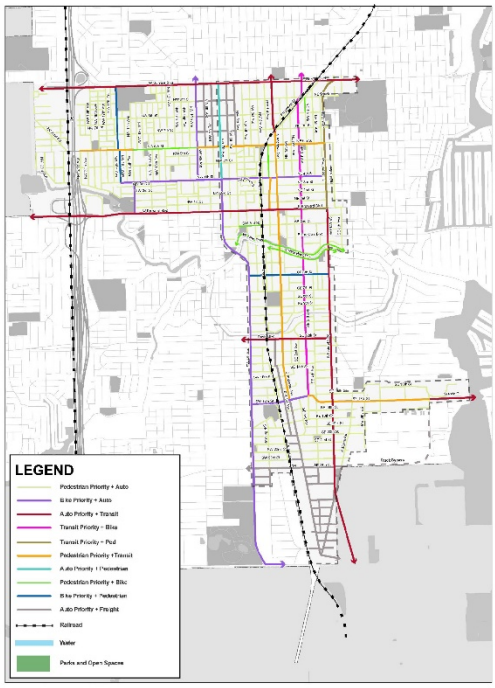


Multimodal Community Planning Study- Modal Priority Map

Decision-Making Framework

Transit Priority Streets

- Along KEY **Community Streets**, transit can be considered the primary user OR secondary user based on roadway characteristics and land use context
- On key segments of **Utility Streets** transit can be considered the primary user and pedestrians can be considered the secondary user based on land use context.
- For **Utility Streets**, transit is almost always considered the secondary users



Multimodal Community Planning Study- Modal Priority Map

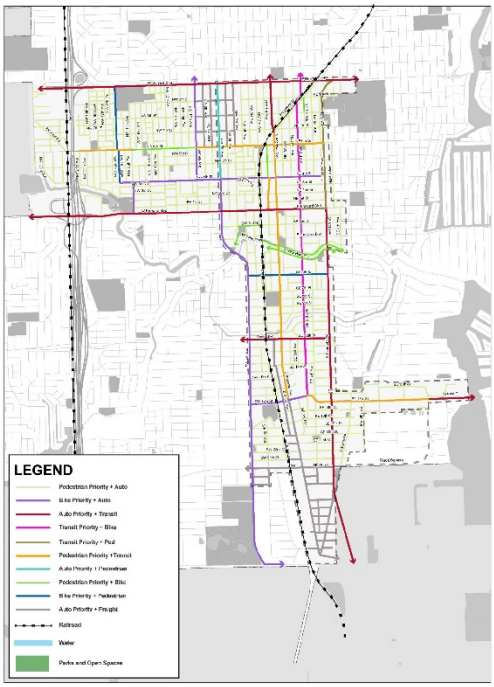
Decision-Making Framework

Bike Priority Streets

- For **Community Streets** and **Link Streets,** bicycle users can be considered primary or secondary users
- Along KEY **Main Streets**, bicycle users can be considered secondary users
- Along KEY **Neighborhood Use Streets**, bicycle users can be considered primary users *(these streets are identified as supporting facilities in the bike facilities map per LTS analysis)*

**KEY Main Streets:*

- *Have a connecting function to major destinations*
- *Are considered a distinct entertainment district*
- *Have a higher intensity of mixed uses*

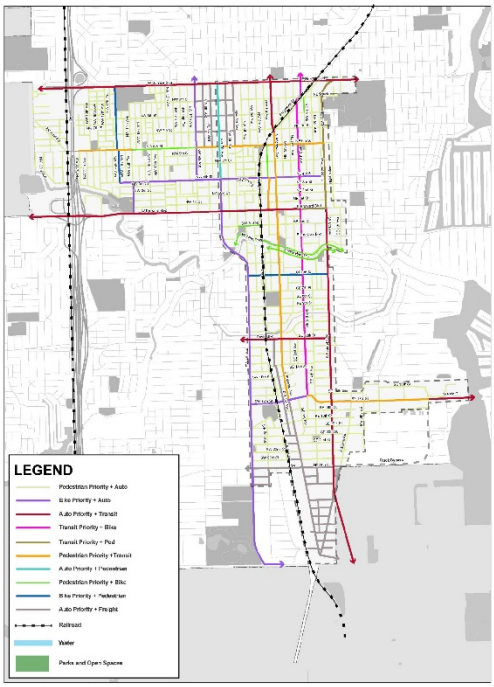


Multimodal Community Planning Study- Modal Priority Map

Decision-Making Framework

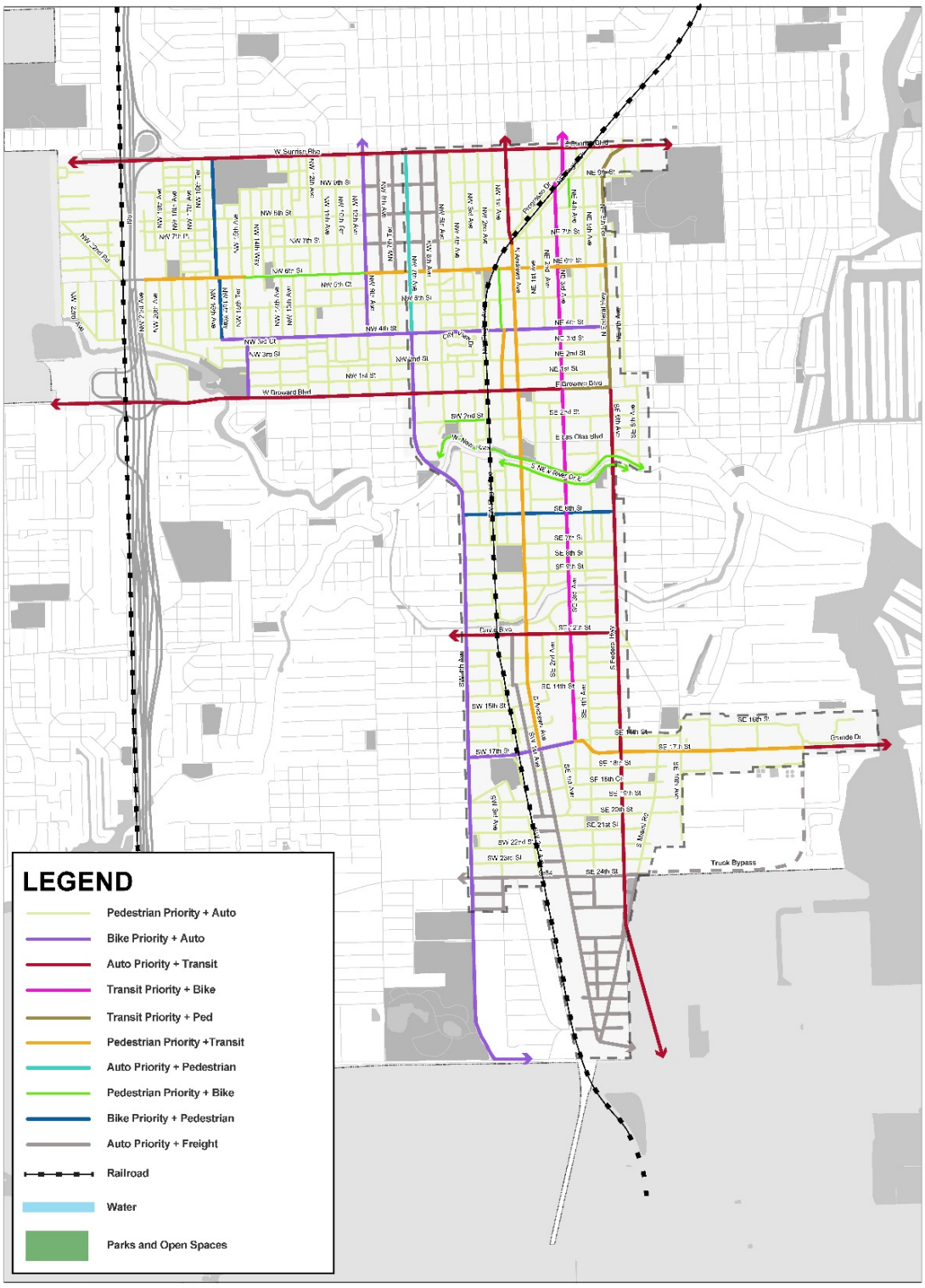
Auto Priority Streets

- For **Utility Streets**, the primary users is always auto/freight
- For **Utility Streets**, transit is almost always considered the secondary users
- Key **Utility Streets** have the potential of having segments where pedestrians can be considered the secondary user based on land use context



Multimodal Community Planning Study- Modal Priority Map

Figure 8. Master Modal Priority Map



FINDINGS AND NEXT STEPS

Findings

The master modal priority map demonstrates some key themes and findings throughout the planning area. These included:

- Roads that carried high AADT volumes and served as Utility streets for pedestrians tended to be a "Car + Transit" priority. This is largely due to the direct route nature of these corridors and the higher capacity along these routes.
- Collectors tended to serve as a bike + pedestrian priority due to their critical place in connecting many of the low stress streets while also typically having some commercial and mixed uses along them.
- Main Streets were identified as pedestrian priority streets. While these are streets that would particularly benefit from pedestrian enhancements and placemaking elements, there was also a desire to identify changes that would improve pedestrian safety and mobility particularly through the downtown core, on all streets. Systemic changes to support this goal will be identified in the infrastructure needs assessment technical memorandum.
- All neighborhood and low-density residential streets were identified as a pedestrian + auto priority.

The findings and results of the modal priority map were used to develop prototype street sections that illustrate the various contexts and conditions for each of the modal priority street categories.

Moving Forward

The modal priority map will provide valuable guidance to future decision-making. It will help identify and prioritize multi-modal infrastructure that will have the highest impact throughout the network and can be incorporated incrementally through future development and implemented through capital improvement projects.

The baseline assessment highlights there is a gap in infrastructure that hinders the City's vision in relation to the quality and comfort of the walking and biking experience. The bicycle network comfort assessment highlights where high-quality bike infrastructure that is comfortable for all ages and abilities should be prioritized. This can help the City focus efforts on implementing bike infrastructure in a systematic and impactful way. It also aides the decision-making during the planning and concept development process when trade-offs on different corridors are being discussed.

The pedestrian network comfort assessment sets up a framework for what the network needs to achieve keeping in mind the City's goals of becoming a more connected and livable place where pedestrians comes first. It identifies permeable challenges in the network and also highlights the characteristics of the street that impact the pedestrian comfort and safety, including sidewalk width,

sidewalk amenities and building frontages. This framework can provide guidance for decision-making in the planning and development review processes.

It is critical to identifying the infrastructure that is most appropriate for the priority mode assigned to each street based on current or envisioned use. Kittelson is working with the City to complete a high level infrastructure needs assessment across the network, which will identify opportunities that are consistent and complementary of the modal priority designations done through this process. The team will also screen and cross-reference projects identified in the Connecting the Blocks Program to identify planned projects in the short, medium, and long term that are relevant and consistent (or inconsistent) with the Master Modal Priority map.

Multimodal Community Planning Study-Level of Traffic Stress Analysis

Legend

Level of Traffic Stress

Based on AADT / Number of Lanes / Posted Speed

- 1 (Lowest Stress)
- 2 (Low Stress)
- 3 (Some Stress)
- 4 (Highest Stress)
- Study Area
- Fort Lauderdale City Boundary

NEXT STOP FORT LAUDERDALE

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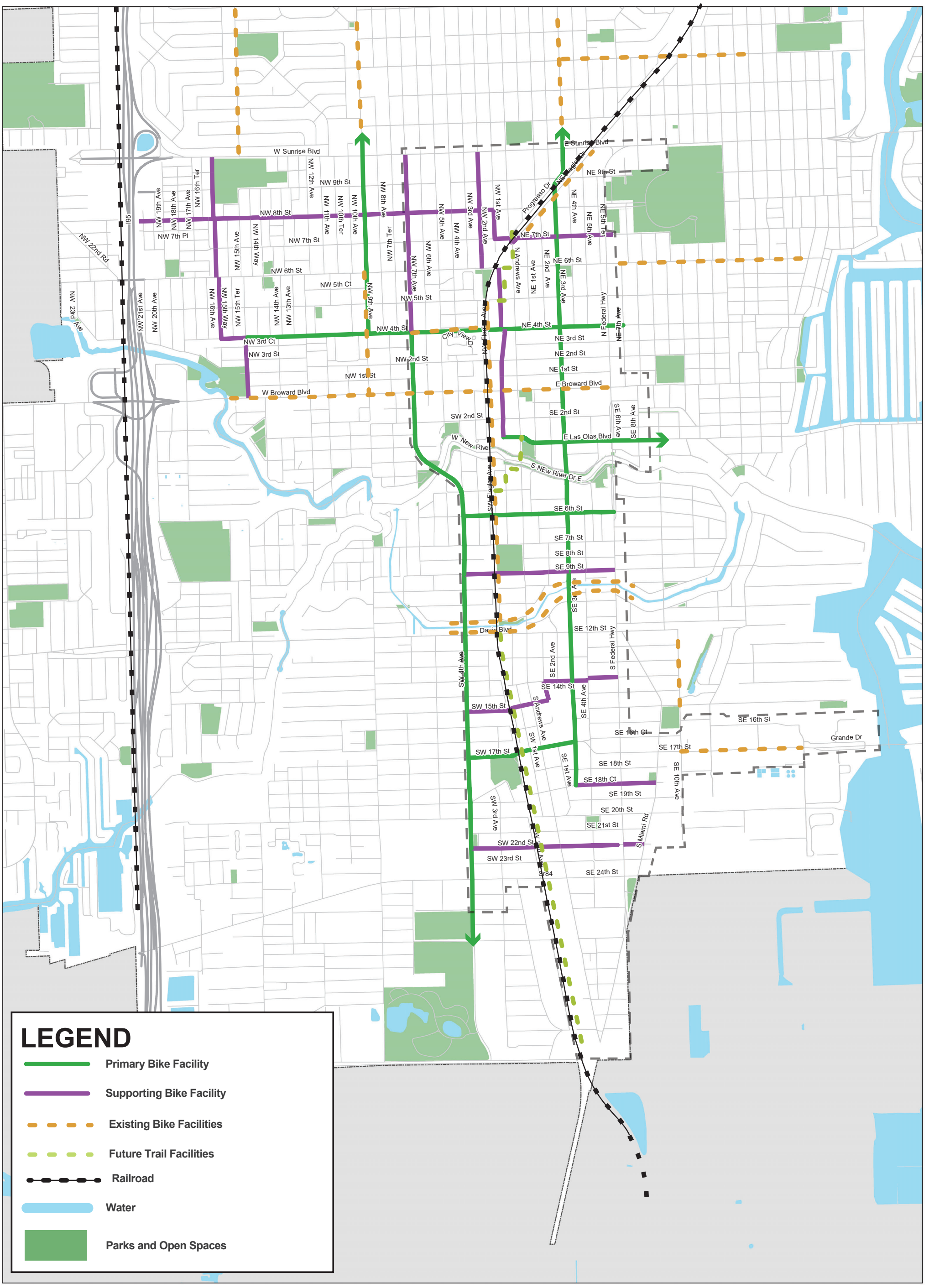

Multimodal Community Planning Study- Bicycle Priority Corridors Map

NEXT STOP FORT LAUDERDALE

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Multimodal Community Planning Study- Low Stress Islands Map

NEXT STOP FORT LAUDERDALE

PEDESTRIAN USE: STREET CATEGORIES

NEXT STOP Fort Lauderdale
Advancing the Vision

		QUANTITATIVE MEASURES					QUALITATIVE MEASURES	
	TRIP TYPE	EXPECTED PEDESTRIAN VOLUME	PEDESTRIAN TYPE	LEVEL OF COMFORT (LTS)	LAND USE CONTEXT	BUILDING SETBACK	ROADWAY CHARACTERISTICS	KEY ELEMENTS OF SUCCESS
Neighborhood Use Street	Inter-community trip		Family/ residents	1-2	Residential	Up to 25 feet	Travelway • On-street parking: YES • Total number of travel lanes: 1-2 • Median presence : NO • Curb and Gutter: Maybe • Bike Parking: NO Street Side • Sidewalk presence: At least on one side • Sidewalk width: 5′ (MINIMUM) • Driveway Use: LOW • Street Trees: YES • Street Furnishings (pedestrian scale lighting, furnishings etc.): NO	• Presence of trees / shade • Continuous and unobstructed sidewalk
Community Street	Mix of trips to commercial/ community amenities and daily commuting		Family/ residents	2-3	Mostly mix of residential and	Up to 40 feet	Travelway • On-street parking: YES • Total number of travel lanes: 2 • Median presence: MAYBE • Curb and Gutter: YES • Bike Parking: YES Street Side • Sidewalk presence: On Both Sides • Sidewalk width: 5’-12’ • Driveway Use: Medium • Street Trees: YES • Street Furnishings (pedestrian scale lighting, furnishings etc.): MAYBE	• Presence of trees / shade • Pedestrian-scaled lighting • Awnings • Sidewalk on both sides • Access to community amenities
Link Street	Mix of community connections and commuter trips		Family/ residents, transit users, employees/ workers	2-3	Mostly commercial/ office/ institutional uses	Up to 60 feet	Travelway • On-street parking: MAYBE • Total number of travel lanes: 3-4 • Median presence: MAYBE • Curb and Gutter: YES • Bike Parking: YES Street Side • Sidewalk presence: On Both Sides • Sidewalk width: 5’-12’ • Driveway Use: MEDIUM • Street Trees: YES • Street Furnishings (pedestrian scale lighting, furnishings etc.): YES	• Presence of trees / shade • Pedestrian-scaled lighting • Awnings • Sidewalk on both sides • Access to community amenities • Bus stops/Shelters
Main Street	Leisure/entertainment		Visitors, families, transit users, residents	N/A	Mixed-used/ commercial	Up to 15 feet	Travelway • On-street parking: YES • Total number of travel lanes:2-4 • Median presence: MAYBE • Curb and Gutter: YES • Bike Parking: YES Street Side • Sidewalk presence: ON BOTH SIDES • Sidewalk width: >12’ • Driveway Use: HIGH • Street Trees: YES • Street Furnishings (pedestrian scale lighting, furnishings etc.): YES	• Presence of trees / shade • Pedestrian scaled streetscape elements • Awnings • Buildings up to the street • Active groundfloor • On-street parking • High emphasis crosswalks at every intersection • Pick-up / drop-off zones

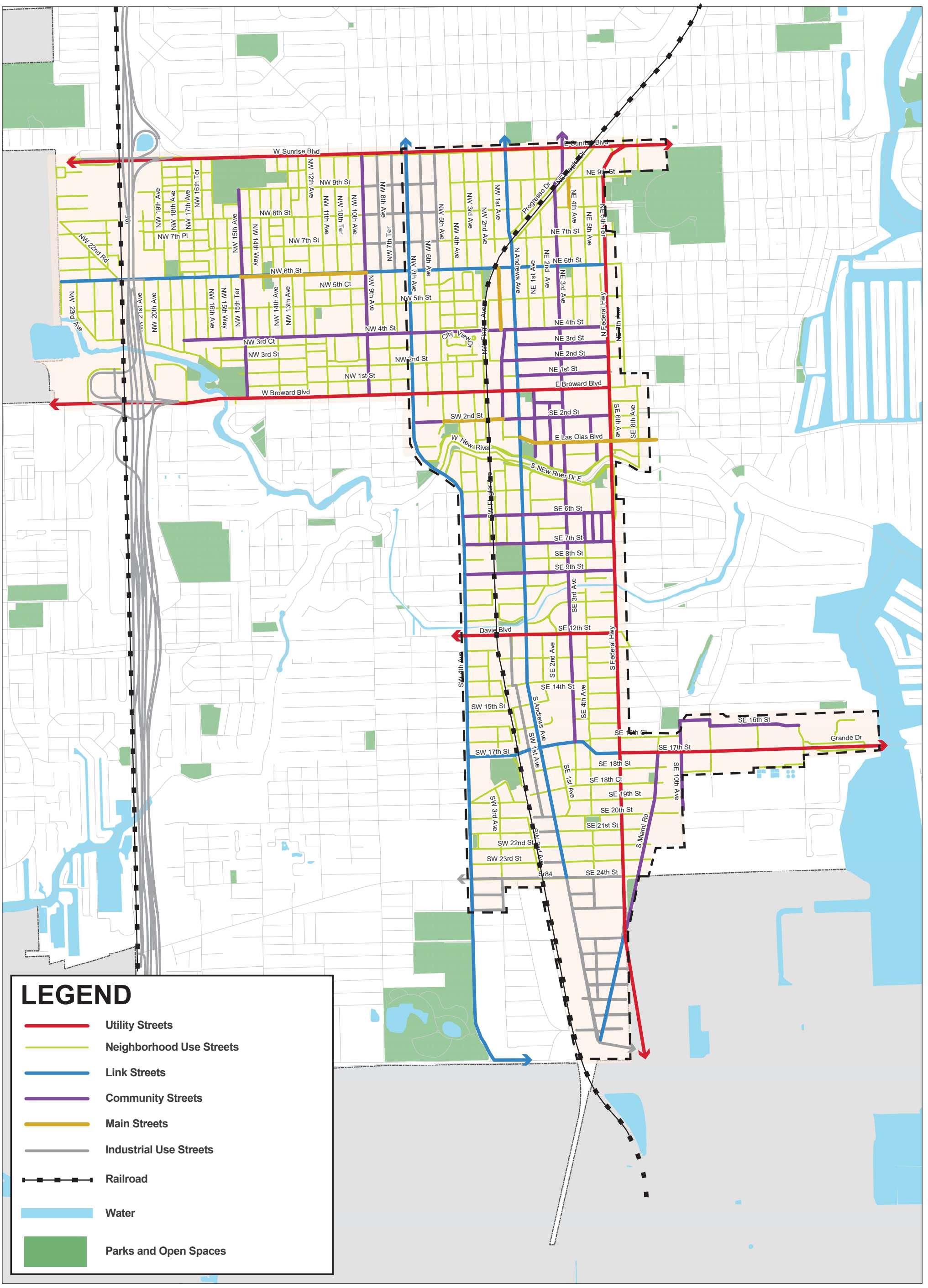
PEDESTRIAN USE

NEXT STOP Fort Lauderdale
Advancing the Vision

QUANTITATIVE MEASURES

QUALITATIVE MEASURES

	TRIP TYPE	EXPECTED PEDESTRIAN VOLUME	PEDESTRIAN TYPE	LEVEL OF COMFORT (LTS)	LAND USE CONTEXT	BUILDING SETBACK	ROADWAY CHARACTERISTICS	KEY ELEMENTS OF SUCCESS
Utility Street	Transit connection for commuter/regional trips		Commuters	4	Single land use/ stand-alone commercial	>60 feet	Travelway • On-street parking: NO • Total number of travel lanes:4-7 • Median presence: MAYBE • Curb and Gutter: YES • Bike Parking: NO Street Side • Sidewalk presence: On Both Sides • Sidewalk width: 5’ • Driveway Use: High • Street Trees: MAYBE • Street Furnishings (pedestrian scale lighting, furnishings etc.): MAYBE	• Minimum standard sidewalks • Bus stops/Shelters • Safe pedestrian crossing opportunities • Lighting
Industrial Street	Industrial work trips		Limited Use	4	Industrial	>60 feet	Travelway • On-street parking: MAYBE • Total number of travel lanes: 2-4 • Median presence: NO • Curb and Gutter: MAYBE • Bike Parking: NO Street Side • Sidewalk presence: At least on one side • Sidewalk width: 5’ • Driveway Use: Medium • Street Trees: MAYBE • Street Furnishings (pedestrian scale lighting, furnishings etc.): NO	• Minimum Standard Sidewalk



Multimodal Community Planning Study - Pedestrian Use Map

NEXT STOP FORT LAUDERDALE

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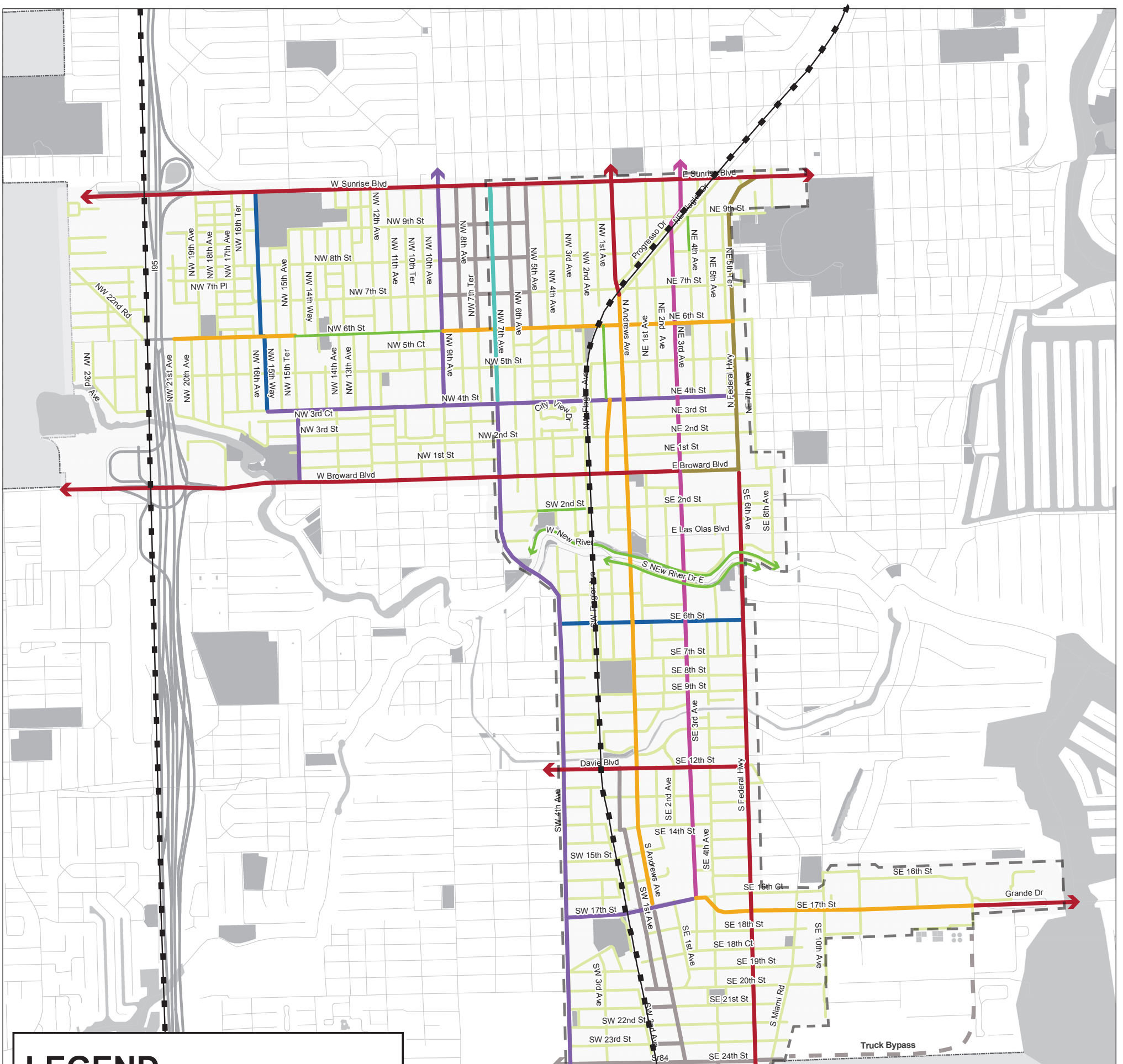

LEGEND

- Pedestrian Priority + Auto
- Bike Priority + Auto
- Auto Priority + Transit
- Transit Priority + Bike
- Transit Priority + Ped
- Pedestrian Priority +Transit
- Auto Priority + Pedestrian
- Pedestrian Priority + Bike
- Bike Priority + Pedestrian
- Auto Priority + Freight
- Railroad
- Water
- Parks and Open Spaces

Multimodal Community Planning Study- Modal Priority Map

NEXT STOP FORT LAUDERDALE

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