



KITTELSON
& ASSOCIATES

Existing Conditions Tech Memo

Understanding the NPF CRA's transportation, socioeconomic, and land use context



August 2019

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MEMORANDUM

Date: October 17, 2019

Project #: 19196.021

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Project: NPF Mobility Master Plan
Subject: Existing Conditions Technical Memorandum

INTRODUCTION

The Northwest-Progresso-Flagler (NPF) Community Redevelopment Agency (CRA) and the City of Fort Lauderdale are advancing a mobility master plan to analyze and assess the existing transportation network conditions and generate a comprehensive list of transportation improvements that will define the mobility vision for this area.

The Northwest-Progresso-Flagler Heights Community Redevelopment Agency (NPF CRA) was created in 1995 to eliminate slum and blighting conditions in the areas near downtown Fort Lauderdale and northwest Fort Lauderdale. The NPF CRA is a 30-year community redevelopment program set to expire in 2025.

This area has been the focus of a number of studies and planning efforts since the 1960's. A variety of interactive meetings have been held to discuss community needs and help create a vision for the area to further refine and guide planning and redevelopment trends. Beyond the ongoing redevelopment activity, as this area continues to grow and evolve, a question that should remain in the forefront as plans move forward, is if the transportation network—including physical infrastructure and transportation services—meet the needs of those that live, work, and visit here? The goal for this area is to create a balanced transportation system that provides real mobility choices and help foster places where people want to invest their time and money. Real mobility choices mean that people have the option to walk, bike, ride, or drive in a safe and comfortable environment.

ALIGNMENT WITH CITY POLICIES

This project advances the Fast Forward Fort Lauderdale 2035 Vision Plan. It's also an initiative (infrastructure) from the City's Press Play Fort Lauderdale Strategic Plan 2018. Each initiative on the Strategic Plan brings the community one step closer to achieving its Vision.

FAST FORWARD FORT LAUDERDALE: VISION 2035 Vision Statement



WE ARE CONNECTED.

We move seamlessly and easily through a safe transportation system where the pedestrian is first.

FAST FORWARD FORT LAUDERDALE 2035 VISION PLAN: VISION DIRECTIONS						
<p><i>Press Play Fort Lauderdale 2018 is holistic, rather than a series of separate and distinct goals. Goals are inter-related, success in one area can bring benefits in another. Each goal and its initiatives bring our community one step closer to achieving our community Vision. Here we present the Vision directions and the Strategic Plan goals in one place, demonstrating inter-dependence and alignment.</i></p>						
	WE ARE CONNECTED	WE ARE READY	WE ARE COMMUNITY	WE ARE HERE	WE ARE PROSPEROUS	WE ARE UNITED
STRATEGIC GOALS						
INFRASTRUCTURE	BE A PEDESTRIAN FRIENDLY, MULTI-MODAL CITY	●	●	●	●	
	BE A SUSTAINABLE AND RESILIENT COMMUNITY	●	●		●	

The Strategic Plan calls for infrastructure improvements to be focused in the planning, design and construction of pedestrian friendly streets. The plan aims for the City’s infrastructure to be adaptive, well-designed and constructed to facilitate an easy and safe pedestrian-first experience, with shaded streets that are a pleasure to walk. Neighbors will have more connected mobility options, including increased sidewalks and greenways, additional bicycle amenities, and more public transportation options that are safe, reliable and accessible. Key focus was given on completing the studies and design of projects with co-benefits that will result in a more connected Fort Lauderdale. All of which will position the City to apply for federal and regional grant investment dollars to fund final construction. These public infrastructure investments will position the city for continuous economic growth.

PRESS PLAY FORT LAUDERDALE: Strategic Plan 2018 Goals

INFRASTRUCTURE

G1 *GOAL 1: Be a pedestrian friendly, multi-modal City.*

The focus for infrastructure improvements in the next five years will be the planning, design and construction of pedestrian friendly streets. Our Infrastructure will be adaptive, well-designed and constructed to facilitate an easy and safe pedestrian-first experience, with shaded streets that are a pleasure to walk. Neighbors will have more connected mobility options, including increased sidewalks and greenways, additional bicycle amenities, and more public transportation options that are safe, reliable and accessible. Focus will be placed on completing the studies and design of projects with co-benefits that will result in a more connected Fort Lauderdale. As a result, the City will be well-positioned to apply for federal and regional grant investment dollars to fund final construction. These investments will also position us for economic growth.

- Improve transportation options and reduce congestion by working with agency partners
- Integrate transportation land use and planning to create a walkable and bikeable community
- Improve pedestrian, bicyclist and vehicular safety

This initiative advances the following goals and objectives:

Goal 1: Be a Pedestrian Friendly City

- *Objective 1: Improve transportation options and reduce congestion by working with agency partners.*
- *Objective 2: Integrate transportation, land use, and planning to create a walkable and bikeable community.*

- *Objective 3: Improve pedestrian, bicyclist, and vehicular safety.*

The City of Fort Lauderdale's goal is to enhance the quality of life by improving livability. This study will help the City of Fort Lauderdale and the NPF CRA overcome some of the existing transportation infrastructure, safety, and access issues, which have created undesirable conditions for residents and compromised their quality of life.

Study Area

The Northwest-Progresso-Flagler Heights (NPF) CRA (**Figure 1**) is situated in Fort Lauderdale, Florida; generally bounded by Sunrise Blvd to the north, NW 24th Avenue to the west, Broward Blvd to the south, and Andrews Ave and US 1/Federal Hwy to the east. The NPF CRA boundary area is herein referred to as the 'Study area'. The Study area consists of multiple neighborhoods; including Flagler Village, Progresso Village, City View Townhomes, Home Beautiful Park, Dorsey-Riverbend, Durrs, and River Garden Sweeting Estate.

Study Objectives

The Transportation and Mobility Department of the City of Fort Lauderdale commissioned professional traffic and transportation engineering services to develop a comprehensive mobility master plan for the Northwest-Progresso-Flagler Heights Community Redevelopment Agency (CRA). The scope of work covered by this study addresses transportation, mobility, and access issues and the identification of potential solutions within the study area, including but not limited to: analyzing existing and future traffic conditions; analyzing current access mitigation measures; inventorying and addressing transportation and access issues such as cut-through traffic, speeding, inadequate sidewalks, bicycle facility gaps, and safer and more connected routes. The outcomes of this effort include developing a tiered implementation approach that includes short, mid, and long-term strategies and solutions to address community concerns and existing issues.

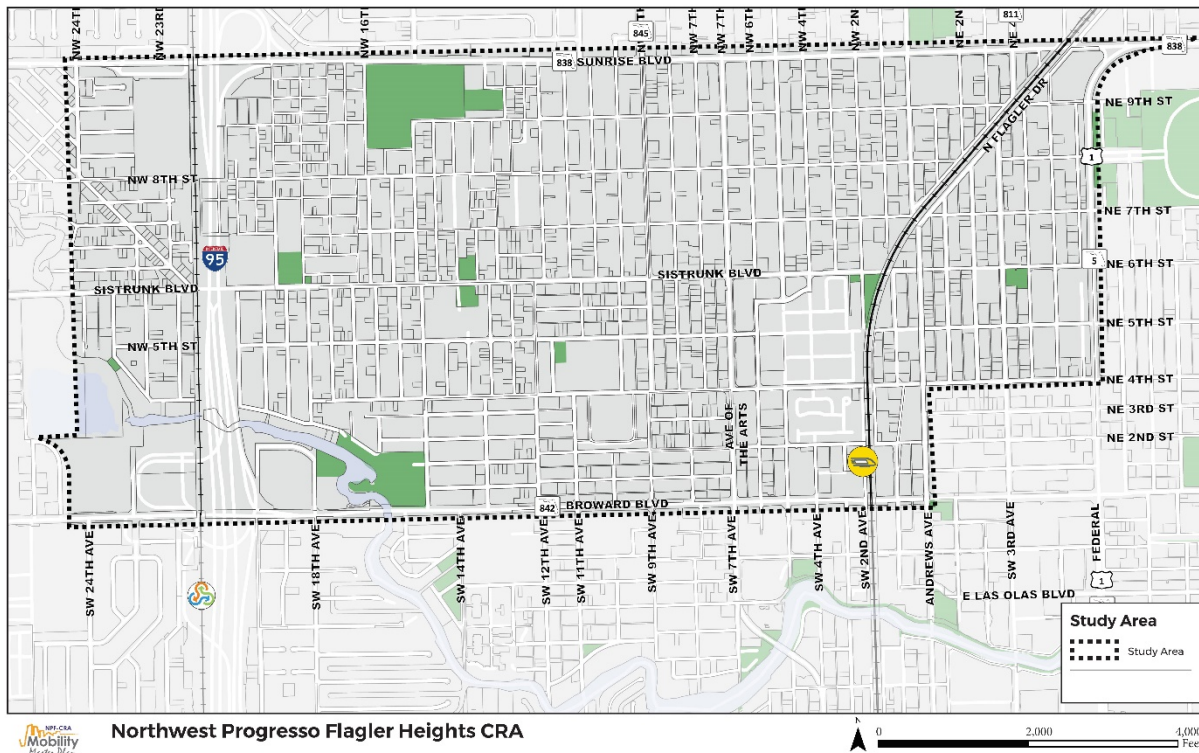


Figure 1 : Study Area

Project Approach

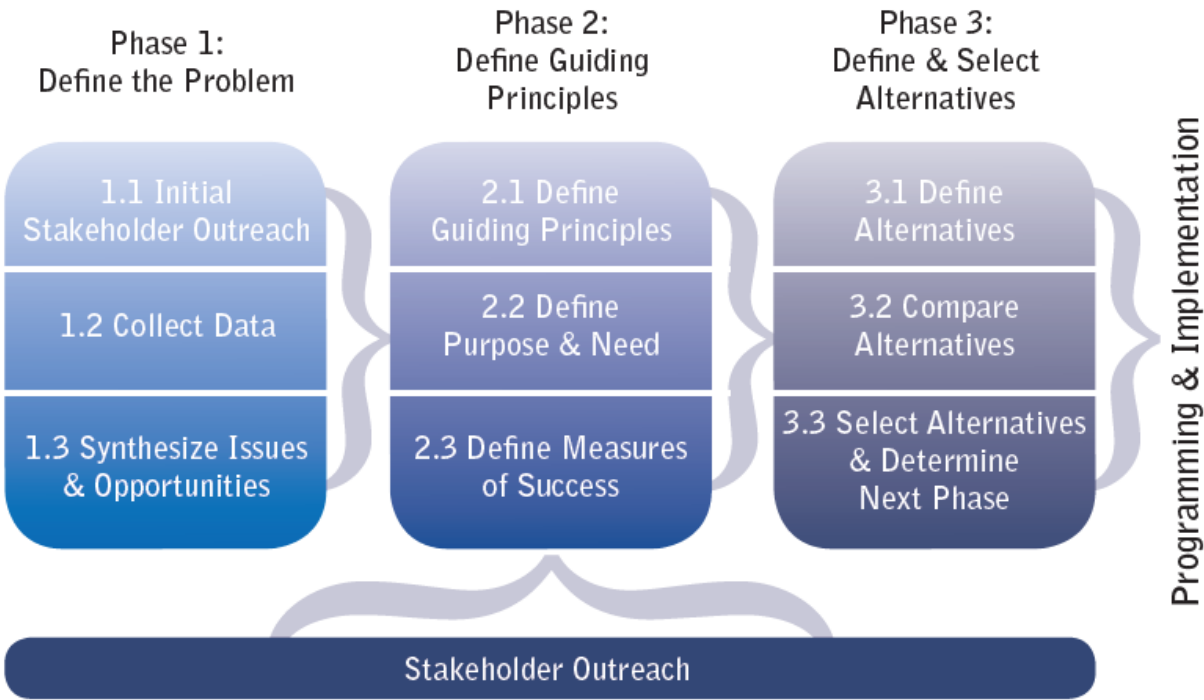
Our Team is intimately familiar with the challenges and opportunities that faces the City and its stakeholders in implementing a multimodal City and understands the process that need to be undertaken to ensure the successful implementation of recommendations.

Our approach is based on the following process:

1. Defining the Problem: Identifying Issues & Opportunities
 - Understanding the Context through:
 - Effective Stakeholder Engagement
 - Review of Previous and Ongoing Planning Studies
 - Traffic Data Analysis
 - Safety Analysis
 - Future Travel Patterns and Multimodal Needs
2. Defining Purpose & Need derived from data and analysis related to stakeholder values and priorities built and refined through
 - Guiding Principles
 - Evaluation Criteria / Metrics
3. Identifying and Evaluating Alternatives and the development of
 - Alternatives Comparative Analysis

- Technical Assessments

4. Recommendations & Implementation Strategies



The purpose and need for the NPF CRA mobility master plan is defined as follows:

The NPF-CRA is experiencing transportation, safety, mobility, and access issues, which are exacerbated by aging multimodal infrastructure that create gaps in the overall network which have contributed to increased undesirable driving behavior, creating inadequate and inequitable conditions for all street users.

Planning Context

Previous/Ongoing Studies and Future Improvements

Existing Ownership/Projects/Plans

Relevant projects and studies from the Capital Improvement Plan (CIP), Transportation Improvement Plan (TIP), and the Florida Department of Transportation (FDOT) 5 Year Work Program were screened as part of the data collection and review process. The following 29 projects/studies were identified and considered relevant within the vicinity of the study area:

Capital Improvement Program (CIP):

Dorsey Riverbend Area Stormwater Improvements

This project consists of providing improved stormwater infrastructure for the Dorsey Riverbend Neighborhood area. This project will include a survey, conceptual and final design, and hydraulic modeling. Construction is currently unfunded. This area is bound by NW 6 Street to the north, NW 7 Avenue to east, I-95 to the west, and Broward Boulevard to the south. This project will improve the infrastructure in the area, address water quality, and provide flood protection for the neighborhood, which will increase pedestrian and vehicle safety.

Durrs Area Stormwater Improvements

This project consists of providing improved stormwater infrastructure for the Durrs Neighborhood area. This area is bound by NW 6 Street to the south, NW 5 Avenue to the east, I-95 to the west, and Sunrise Boulevard to the north. This project will include a survey, conceptual and final design, hydraulic modeling, and permitting. Construction is currently unfunded. This project will improve the infrastructure in the area, address water quality, and provide flood protection for the neighborhood, which will increase pedestrian and vehicle safety.

Progresso Area Stormwater Improvements

This project consists of providing improved stormwater infrastructure in the Progresso Neighborhood Area. This area is bound by Sunrise Boulevard to the north, Florida East Coast Railroad to the east, NW 11th Avenue to the west, and Broward Boulevard to the south. This project will improve the infrastructure in the area, address water quality, and provide flood protection for the neighborhood, which will increase pedestrian and vehicle safety.

Holiday Park Improvements

This project will provide many upgrades and improvements to one of the City 's most heavily used recreational parks. Improvements include upgrading landscaping throughout the park, fencing and access control to help secure fields and various assets stored throughout the park, new signage to reflect new amenities at the park while provide a welcoming feel, lighting and upgrades to the dog park and sand volleyball courts, improvements to the irrigation system throughout the park, new furnishings at the two concession areas, and converting one of the roller hockey rinks to small sided soccer in order to better utilize the space by providing additional practice and game space for both younger and older participants. The recently completed, Parks and Recreation System Master Plan has recommended reinvestments to improve access to consider bringing facilities to current standards and use patterns. This project supports improvements to address deferred maintenance and the upgrade and enhancements of existing amenities.

Victoria Park Tidal and Stormwater Improvements

This project consists of providing improved stormwater infrastructure for the Victoria Park Neighborhood area. This is bound by Sunrise Boulevard to the north, Middle River to east, Federal Highway to the west, and Broward Boulevard to the south. This project will include a survey, a conceptual and a final design, a hydraulic modeling, and construction. This project will improve the infrastructure in the area and address water quality.

Transportation Improvement Program (TIP):

US 1 Transit Corridor

This project will involve capital improvements for transit service performance. The limits of this project are US 1 from Palm Beach County to Aventura Mall. The project is listed as TIP priority #10.

Sunrise Boulevard Transit Corridor

This project will involve capital improvements for transit service performance. The limits of this project are Sunrise Boulevard from Sawgrass Mall to A1A. Study efforts are underway by FDOT for the eastern and western portions of this corridor. The project is listed as TIP priority #12.

US 1

This project will involve a project development and environment study (PD&E) for multimodal, operational, and congestion management improvements. The project is located at US 1 and Sunrise Boulevard. The project is listed as TIP priority #24.

Broward Signal Network

This project will involve installing fiber-optic signal components. The project is bounded within Broward County. The project is listed as TIP priority #28.

FDOT 5 Year Work Program:

Sunrise Boulevard

This project will involve traffic signals. The limits of this project are Sunrise Boulevard from NW 15th Avenue to N Flagler Drive. The project is in the Railroad & Utilities phase. The project is funded for fiscal year 2020.

Sunrise Boulevard

This project will involve street lighting. The limits of this project are Sunrise Boulevard from the Motorola entrance to Andrews Avenue. The project is in the Railroad & Utilities phase. The project is funded for fiscal year 2019.

Sunrise Boulevard

This project will involve traffic signals. This project will occur at Sunrise Boulevard and NW 16th Avenue. The project is in the Railroad & Utilities phase. The project is funded for fiscal year 2020.

Sunrise Boulevard

This project will involve traffic signals. This project will occur at Sunrise Boulevard and NW 16th Avenue. The project is in the Right of Way phase. The project is funded for fiscal year 2019.

Sunrise Boulevard

This project will involve ITS communication systems. The limits of this project are Sunrise Boulevard from US 1/Searstown to US 1/Gateway. The project is in the preliminary engineering phase. The project is funded for fiscal year 2020.

Sunrise Boulevard

This project will involve traffic signal updates. This project will occur at Sunrise Boulevard and Powerline Road. The project is in the preliminary engineering phase. The project is funded for fiscal year 2020.

Broward Boulevard

This project will involve fixed route transit operations. The limits of this project are Broward Boulevard from Flamingo Road to SW 1st Avenue. The project is in the operations phase. The project is funded for fiscal year 2020.

Broward Boulevard

This project will involve fixed route transit operations. The limits of this project are Broward Boulevard from Flamingo Road to SW 1st Avenue. The project is in the operations phase. The project is funded for fiscal year 2019.

Sunrise Boulevard

This project will involve traffic signals. This project will occur at Sunrise Boulevard and NW 16th Avenue. The project is in the environmental phase. The project is funded for fiscal year 2019.

Sunrise Boulevard

This project will involve ITS communications. The limits of this project are Sunrise Boulevard from US 1/Searstown to US 1/Gateway. The project is in the environmental phase. The project is funded for fiscal year 2020

Sunrise Boulevard

This project will involve street lighting. The limits of this project are Sunrise Boulevard from the Motorola Entrance to Andrews Avenue. The project is in the environmental phase. The project is funded for fiscal year 2019.

Sunrise Boulevard

This project will involve traffic signals. The limits of this project are Sunrise Boulevard from NW 15th Avenue to N Flagler Drive. The project is in the construction phase. The project is funded for fiscal year 2020.

US 1

This project will involve street lighting. The limits of this project are US 1 from SE 9th Street to Sunrise Boulevard. The project is in the construction phase. The project is funded for fiscal year 2019.

Broward Boulevard

This project will involve street lighting. The limits of this project are Broward Boulevard from Kentucky Avenue to NW 15th Avenue. The project is in the construction phase. The project is funded for fiscal year 2019.

Sunrise Boulevard

This project will involve ITS communication systems. The limits of this project are Sunrise Boulevard from US 1/Searstown to US 1/Gateway. The project is in the construction phase. The project is funded for fiscal year 2022.

Sunrise Boulevard

This project will involve street lighting. The limits of this project are Sunrise Boulevard from the Motorola Entrance to Andrews Avenue. The project is in the construction phase. The project is funded for fiscal year 2019.

Sunrise Boulevard

This project will involve traffic signals. The project will occur at Sunrise Boulevard and NW 16th Avenue. The project is in the construction phase. The project is funded for fiscal year 2020.

Sunrise Boulevard

This project will involve traffic signal updates. The project will occur at Sunrise Boulevard and Powerline Road. The project is in the construction phase. The project is funded for fiscal year 2022.

Northwest Regional Activity Center (NWRAC) Master Plan

In 2013, City staff was tasked with creating the NWRAC Master Plan using previous plans as the basis for developing Design Standards and Zoning Regulations with the intent to allow a mix of uses along the Sistrunk Corridor and 7th Avenue within the NWRAC. Through a comprehensive public planning process that included input from stakeholders, public outreach and design charrettes that were held, and as an outcome, a vision was developed for the area. From a regulatory perspective, the study area is governed by the NWRAC Master Plan, which was adopted in 2015 by the City commission. The objectives of this master plan include reestablishing this area as the “heart” of the Northwest as it was historically in order to once again become a lively, exciting community, as well as the new “gateway” for Downtown Fort Lauderdale.

Through the adoption of this master plan, the city created the NWRAC Mixed-Use (NWRAC-MU) Zoning Districts, along with associated Zoning Regulations and the NWRAC Illustrations of Design Standards, which help establish ground rules and allow for certainty for future development within the NWRAC Master Plan area. The standards included in the master plan are intended as a road map by which streets and buildings are designed and built, such that they contribute to the creation of a dynamic livable community, providing an urban fabric of walkable, tree-lined streets; distinct public spaces; high quality buildings designed and oriented to provide light, air, and active uses at the street level; all in the service of creating an exceptional urban environment.

In general, the master plan calls for land use to be more compatible with the surrounding uses within the area. Low- to medium-density residential development is encouraged, including single-family housing. On the south side of the Northwest District, rezoning will allow for mixed-use development along the Sistrunk Boulevard corridor, which is considered the heart of this district.

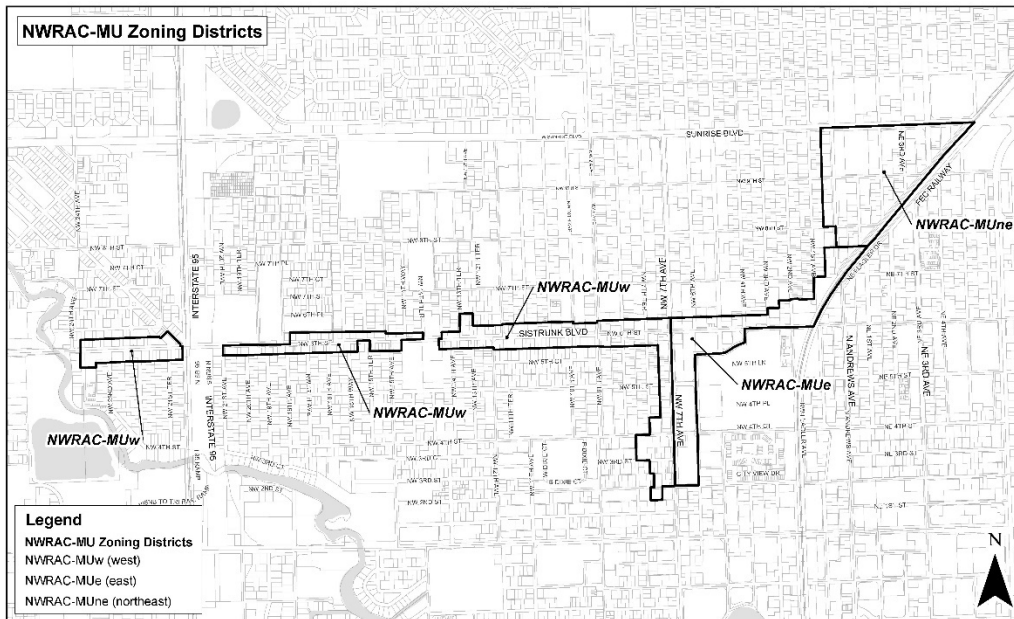


Figure 2 : NWRAC Zoning Districts

Development Activity

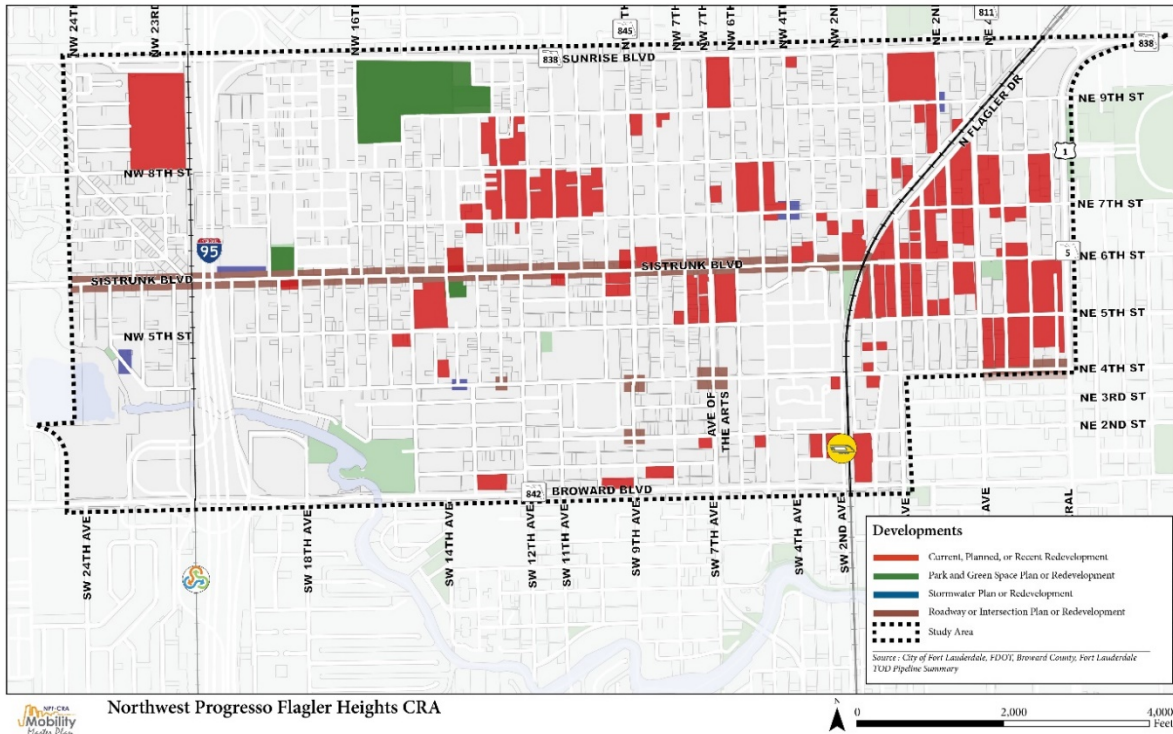


Figure 3 : Future Developments

The project team assessed all the current, approved and planned developments within the study area. Above, a summary graphic documenting the development trend currently occurring in the CRA. This exhibit clearly shows the on-going redevelopment pattern, stemming from the neighborhoods east of the railroad (as an extension of Downtown Fort Lauderdale) and gradually expanding to adjacent areas west of the railroad as parcel consolidation opportunities arise. **Figure 2 and 3** illustrates the current real estate development activity happening in the CRA area. **Figure 4** is a development tracking table provided by City staff and can be found online through the City’s website [HERE](#).

COMMUNITY CHARACTERISTICS

The purpose of the existing conditions analysis is to develop a diagnosis based on the understanding of the study area’s socioeconomic, transportation infrastructure, and traffic operations context to inform possible future public infrastructure investment efforts. Topics assessed include demographics, land uses, environmental characteristics, roadway characteristics, traffic operations, non-motorized user features, and multimodal safety assessment.

DEMOGRAPHIC SNAPSHOT

The study area is made up of demographic range that is worth analyzing as it influences the daily choices people that live and/or work within the study area make to get around.

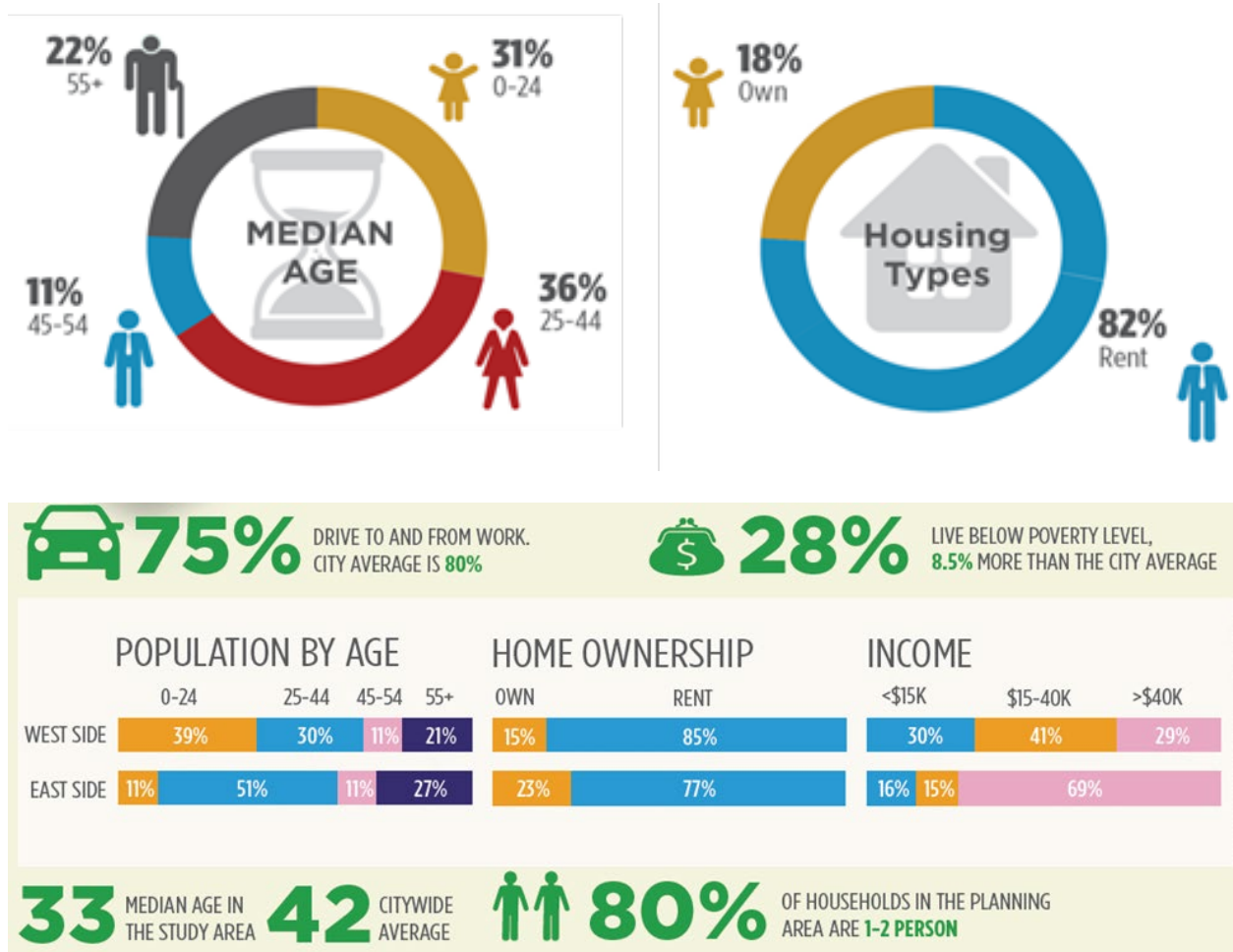


Figure 6: Demographics Snapshot

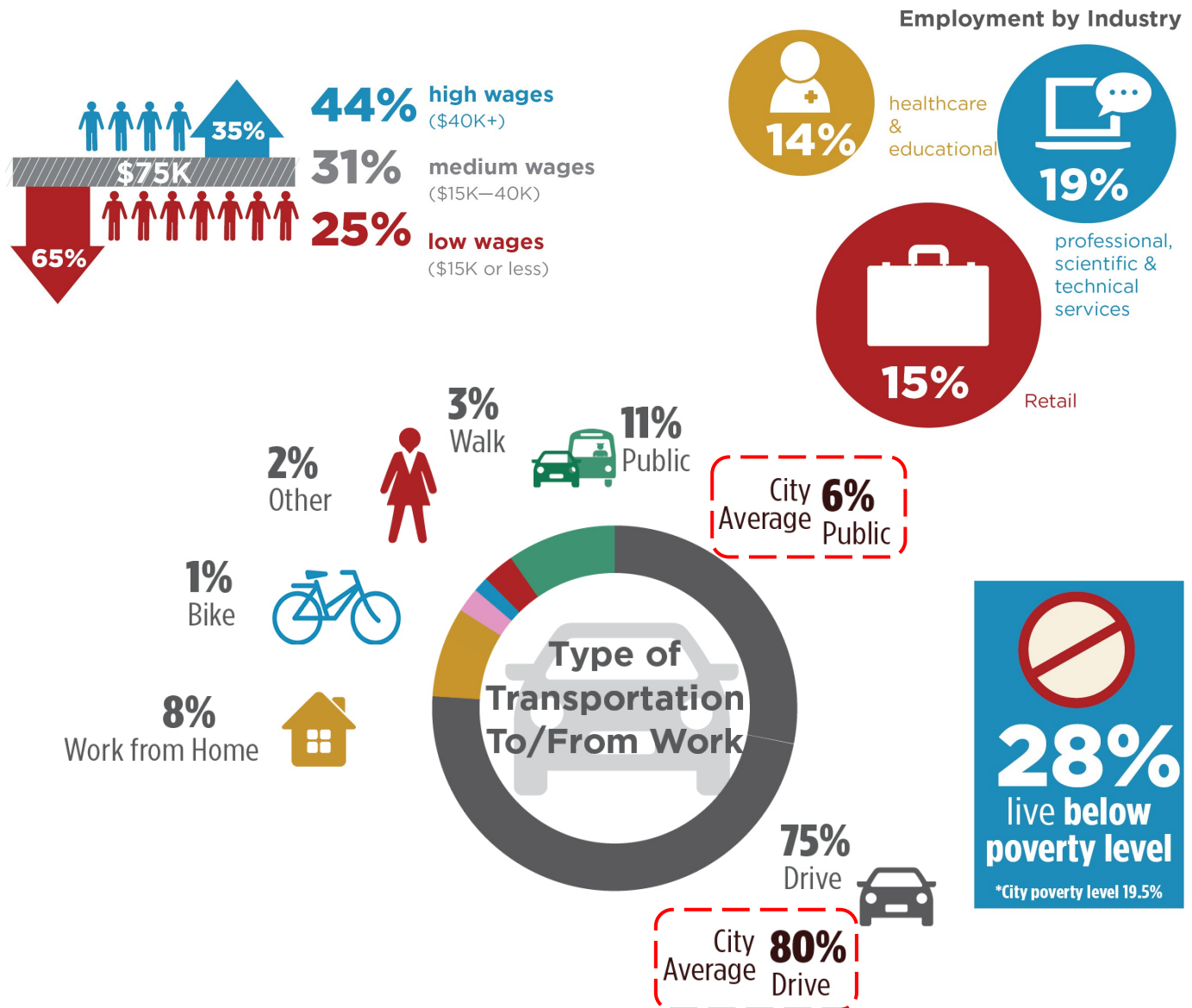


Figure 7 : Demographic Snapshot

POPULATION

The population in the study area is made up of roughly 4,800 residents. The population is at its highest concentration in Flagler Village, followed by the neighborhoods North of Broward Boulevard. These higher density areas support the potential demand for enhanced multimodal transportations options including safer facilities for people walking and riding bicycles and more frequent transit service. There’s also opportunity to connect the study area with the adjacent neighborhoods north of Sunrise Boulevard. The analysis reflects that these neighboring areas to the north also have a population density above the county average. This is an indicator that people find value living within close proximity to downtown, where people tend to have the most convenience of access and supply to jobs and services.

In terms of commuting patterns, the study area tends to experience a higher use of public transit and a lower user of private vehicle compared to the City overall statistics. This is in part a reflection of the demographic and socioeconomic dynamics found in the study area.

AGE

The study area experiences quite a diverse range of age groups. In general, the age group between 24 and 44 years old is the most prominent within the study area. The median age is of 33 years old, which is nine years younger than the citywide average of 42 years old. However, there are some details worth highlighting after data was further analyzed. The areas east and west of the railroad were looked at separately, and this analysis reflects that the west side is generally made up of a younger population (under 24 years old) than the east side. The east side also has 21% more adults between 25-44 and 6% more adults over 55 years old than the west side. See **Figure 6**.

HOUSEHOLD TYPE/OWNERSHIP

In general, the majority (80%) of households in the study area are 1-2 person households. In terms of housing, the majority (82%) of households in the study area rent and only 18% own property. The areas east and west of the railroad were looked at separately, and this analysis reflects that there's a higher proportion of people who own property in the east side than in the west side, and comparatively, there's a higher proportion of renters in the west side than in the east side. See **Figure 6**.

HOUSEHOLD INCOME

A significant percentage of households within the NPF CRA Study area have a median income below the Broward County average of \$54,000 and approximately 28% live below poverty level. This is illustrated in **Figure 6**. Based on this information, approximately 25% of the households within the Study area are making under \$15,000/year. The highest concentrations of lowest income households are in the neighborhoods south of Sunrise Boulevard and west of the Florida East Coast railroad tracks, where 30% of the households are making under \$15,000/year. There's a clear disparity between the wages earned by those in the east side and those in the west side. 69% of workers in the east side are making over \$40K annually, while 29% of workers in the west side are making the same amount.

EDUCATION

The NPF CRA Study area, consists of a high number of residents who do not have at least a high school diploma (12%). Similarly, 26% of study area residents have a bachelors or higher degree, which is 10% lower than the citywide average. There is probably a correlation between the education attainment and the low and middle wage occupations accessible to residents within the study area.

EMPLOYMENT

Fort Lauderdale is the economic driver of the region with the lowest unemployment rate and approximately 17,000 to 30,000 net new jobs added over past few years. Furthermore, the study area's proximity to downtown and the beaches provides access to a high concentration of jobs. However, the majority (56%) of people within the study area are making under 40K annually (or between \$7 and \$20 hourly), which indicates that the majority of jobs are in service industries like retail, accommodation/food services, healthcare and education, which include many low and middle wage occupations. Approximately 19% percent of people are employed in jobs that fall under professional, scientific & professional services, which are office based or public sector jobs. Comparatively, 14% of people are employed in healthcare and educational services and 15% are employed in retail services, which are both considered service industry jobs. See **Figure 7**.

HOUSING + TRANSPORTATION AFFORDABILITY INDEX

A recent Harvard study (The 2018 State of the Nation's Housing report; Joint Center for Housing Studies of Harvard University) stated that Broward County is the most cost-burdened metro area in the country, meaning that more people here are spending over half their monthly income on rent than anywhere else in the country. The percentage of income spent on the combined cost of housing (no more than 30%) and transportation (less than 15%) is another way to assess affordability. Fort Lauderdale households are the most cost-burdened of cities shown here with a housing plus transportation rate of 63% of household income, considerably higher than 45%, the average rate considered as affordable.

To better understand the topic of affordability within the study area, the study team used the Housing and Transportation (H+T) Affordability Index to understand the combined costs of housing and transportation at the neighborhood level. Flagler Village has the highest housing + transportation costs of all neighborhoods in the area (40% housing and 18% transportation costs for a housing plus transportation rate of 58% of household income). Flagler Village is followed by River Garden Sweeting Estate, which has a combined housing plus transportation rate of 50%. H+T rates for all neighborhoods within the study area are shown in **Table 1**.

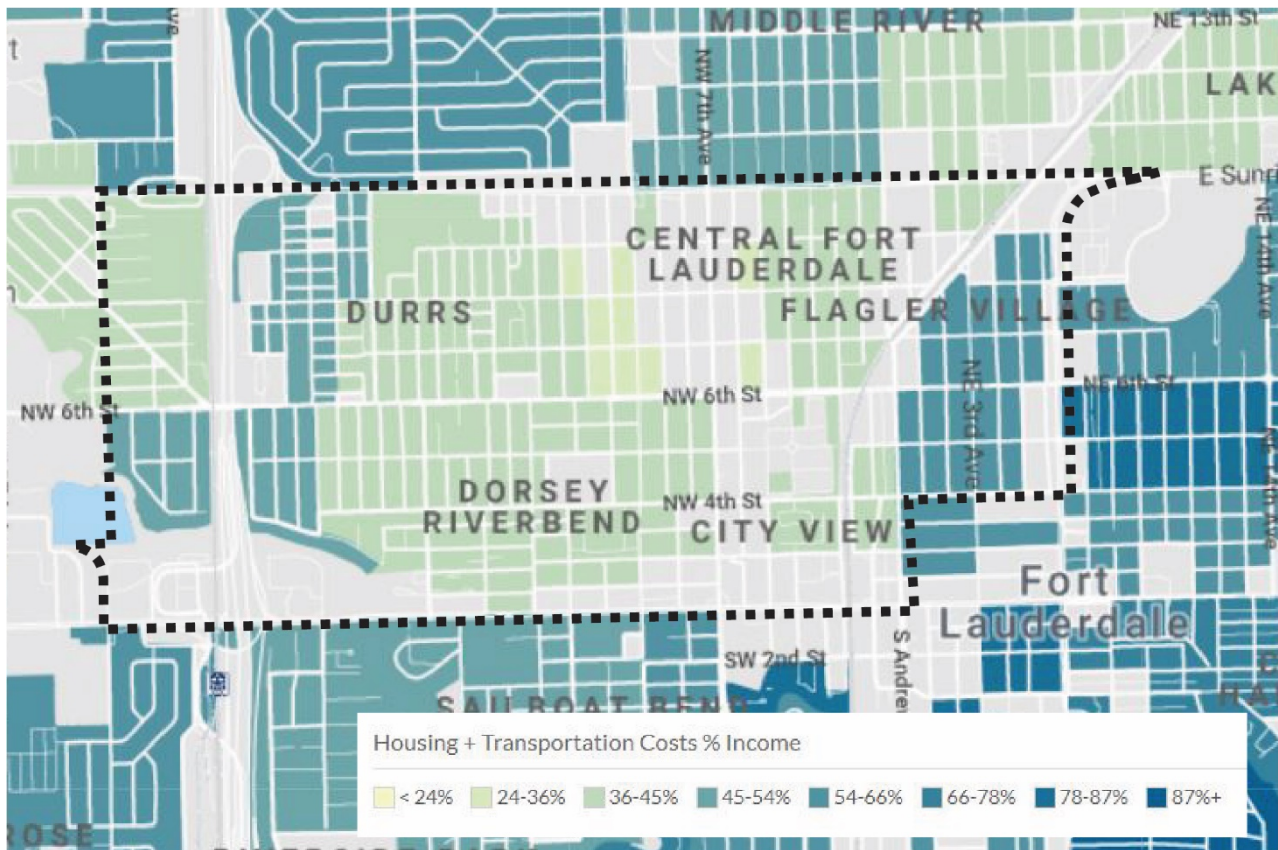


Figure 8: Neighborhood Index

Table 1: Neighborhood H+T Index

Neighborhood	Housing Cost	Transportation Cost	Total H+T
Durrs Community Association	22%	20%	42%
River Garden Sweeting Estate	27%	23%	50%
Home Beautiful Park Civic Association	19%	19%	38%
Historical Dorsey-Riverbend Civic Association	23%	19%	43%
Progresso Village Civic Association	24%	19%	42%
City View Townhomes Association	26%	18%	44%
Flagler Village Civic Association	40%	18%	58%

NEIGHBORHOOD CONTEXT

NEIGHBORHOODS & COMMUNITY AMENITIES

The NPF CRA study area is comprised of seven neighborhoods as seen below on **Figure 9**. **Figure 10** displays the most relevant community features and facilities within these neighborhoods, which are categorized by schools, parks, major institutions, and places of worship for residents and visitors. There are several key features and areas that play an important role in providing the character and sense of place currently experienced within the study area. Some of these include:

- Schools: Walker Elementary School, Sunland Park Academy, and North Folk Elementary School
- Churches: Mt. Bethel Baptist Church, Fort Lauderdale Church of God, Mt. Olive SDA Church, St. John United Methodist Church, Pilgrim Universal Church, New Mt. Olive Baptist Church, Mt. Hermon AME Church, City Church Fort Lauderdale, and First Ebenezer Missionary Church
- Parks: Carter Park, Sunland Park, Sistrunk Park, Peter Feldman Park, and Lincoln Park

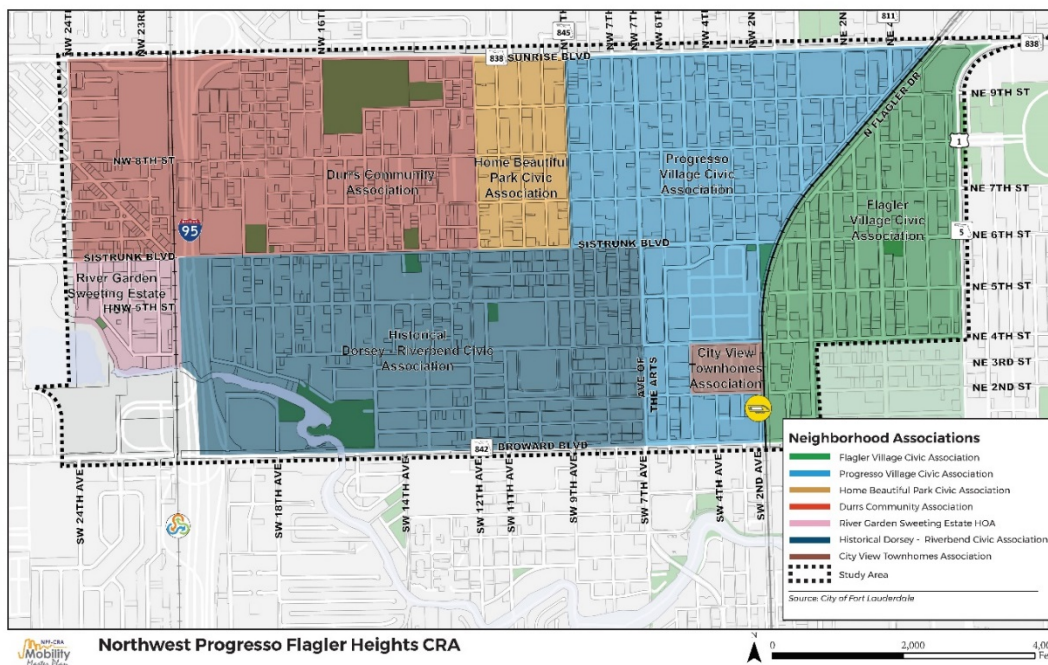


Figure 9: Neighborhoods

- Destinations: Salvation Army, Fort Lauderdale Inspections, Fort Lauderdale Central Terminal, FAT Village Arts District, Broward Motorsports of Fort Lauderdale, and Broward Regional Juvenile Center

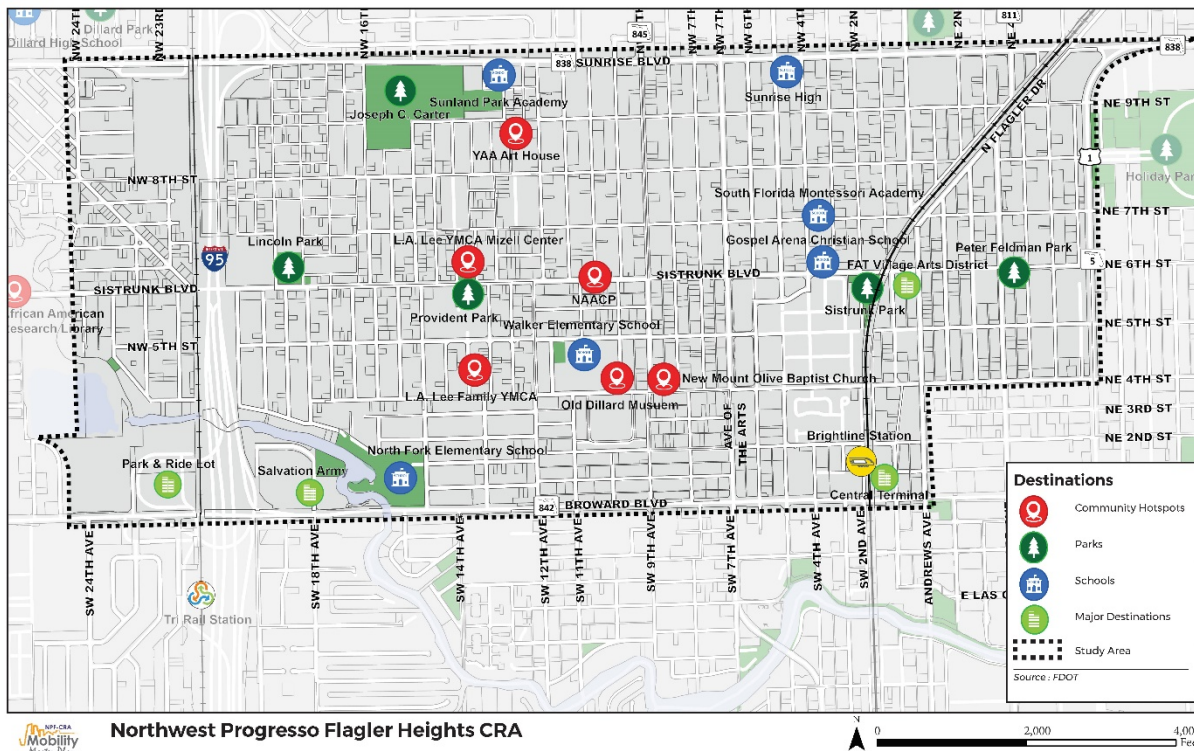


Figure 10: Major Destinations

EXISTING LAND USE, ZONING & FUTURE LAND USE

The NPF CRA study area is mostly comprised of residential uses as shown in **Figure 11**, with a pocket of industrial and transitional uses in the blocks nearby NW 7th Avenue, and commercial uses along major arterial roads. There is a high volume of residential uses including single family and multifamily homes. Highway or neighborhood commercial uses exist along the main north-south and east-west corridors including Sunrise Boulevard, Sistrunk Boulevard, Broward Boulevard, Andrews Avenue, and US 1/Federal Way. Industrial uses are clustered mainly between Sistrunk Boulevard and Sunrise Boulevard. There is a high concentration of industrial uses between Powerline Road/NW 9th and NW 7th Avenue. Industrial uses also exist along Flagler Drive and adjacent to I-95. There are also sporadic institutional and recreational uses throughout the study area. **Figure 12** shows the underlying zoning districts within the study area, which together with the NW Regional Activity Center Masterplan guide new development activity in the area. **Figure 13** shows the boundaries of the NWRAC (Future Land Use).

The implementation of current regulations (NWRAC and underlying zoning) will yield the following outcomes within the study area:

- Increased residential and mixed-use development to create a dynamic urban area with daytime and evening activity.
- Increased attention to building aesthetics and scale so that buildings engage the street and can have active ground floor uses.
- Improved streetscapes and landscaping
- Placement of off-street parking in a way that doesn't dominate development pattern
- The application of safe neighborhood design standards

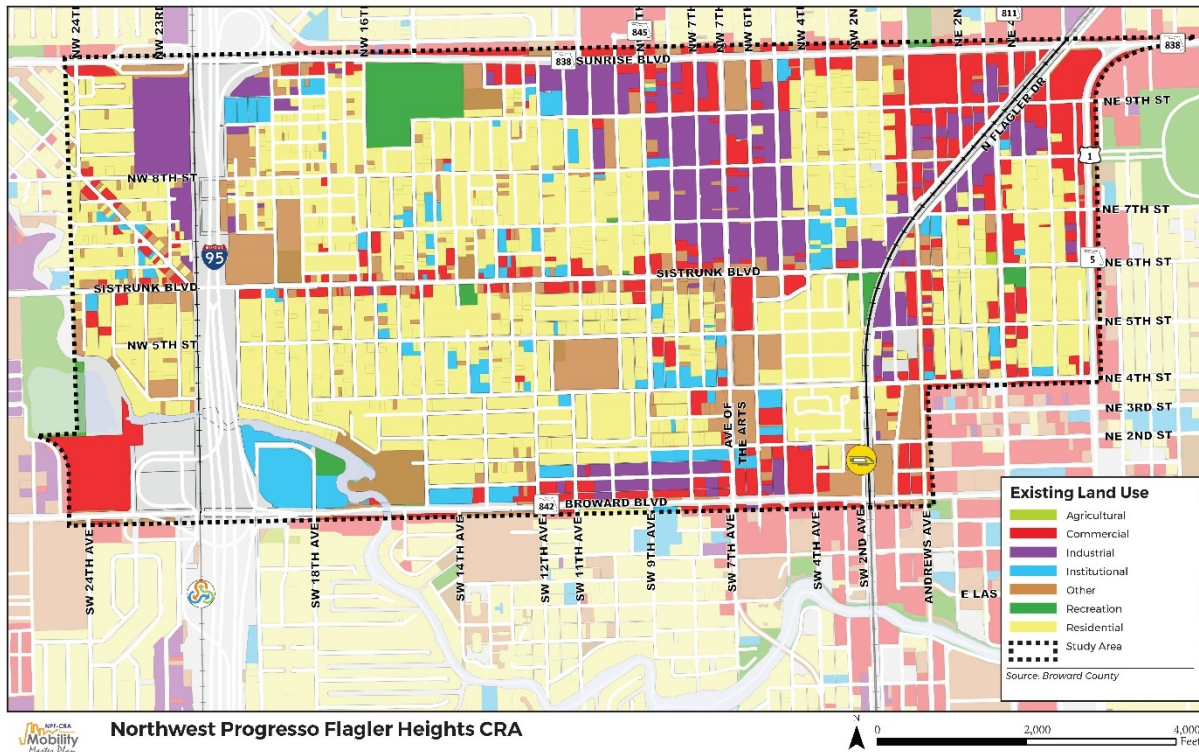


Figure 11 : Existing Land Use

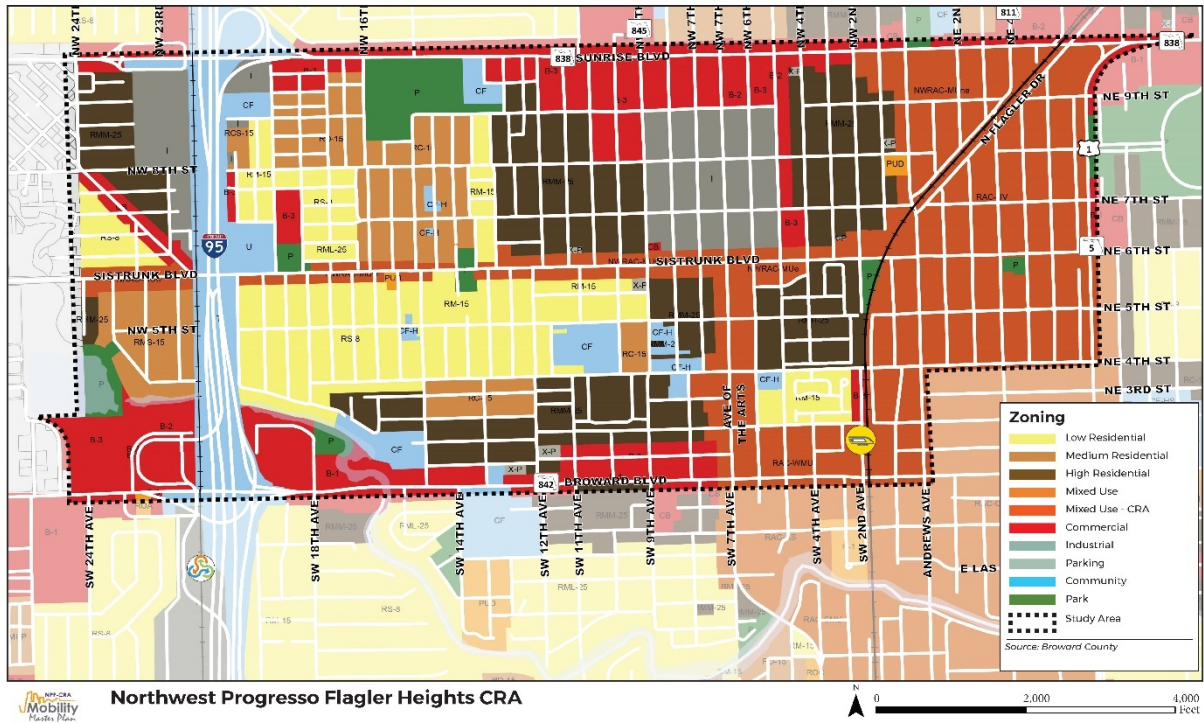


Figure 12: Zoning

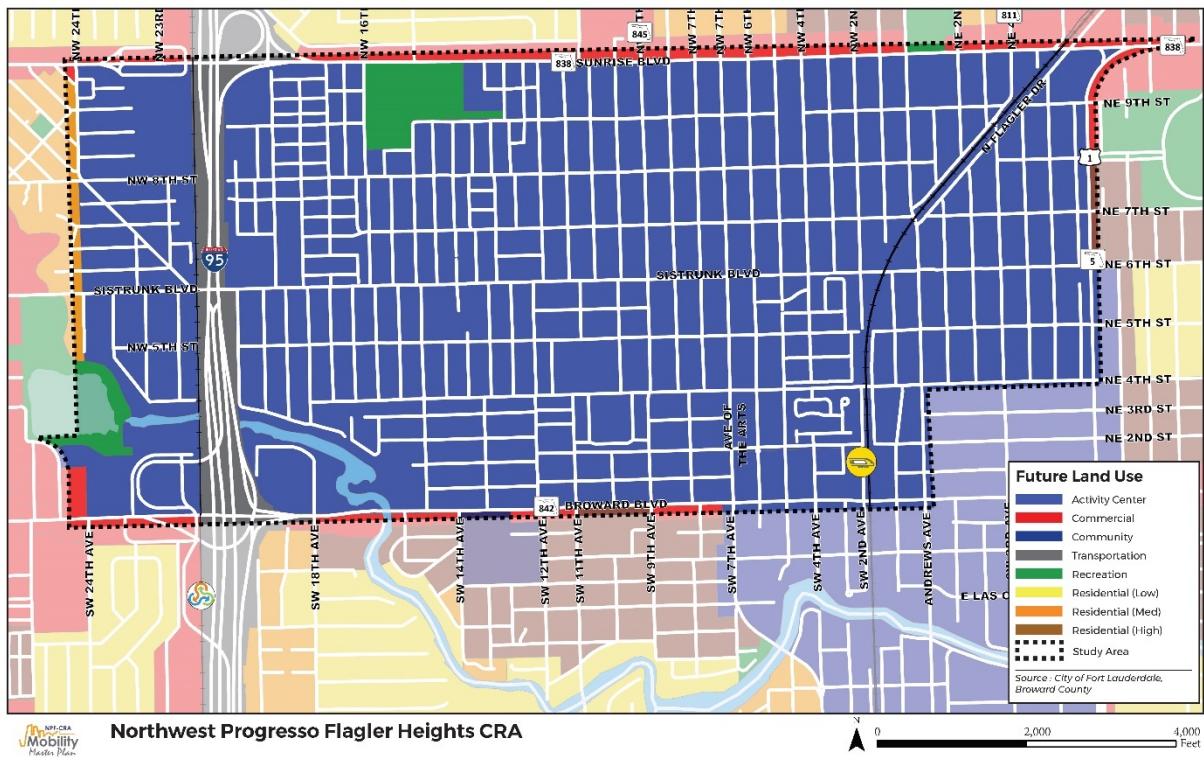


Figure 13: Future Land Use

TRANSPORTATION AND TRAVEL MODE CHARACTERISTICS

AREA-WIDE CONDITIONS

Commuting Patterns

To better understand mobility trends, the study team used the U.S. Census Bureau and Department of Labor’s Longitudinal Employer-Household Dynamics (LEHD) data from 2017 to review commuting patterns in and out of the study area. As development increases within the study area it is expected to see further demographic changes and impacts in the transportation network as commuting patterns are also expected to change. There are an estimated 13,600 people in the Study area that make up the working population, which is defined as those people who: (1) live locally, but leave the area for work, (2) work locally, but live outside of the area, and (3) both live and work within the Corridor. There are over 4,700 employees that come into the study area every day to work. There are over 6,700 residents who commute outside of the study area to work. The working population that both lives and works in the Corridor represents 1% of the total working population. The daily inflow and outflow of workers and residents through the Study area is shown in **Figure 14**.

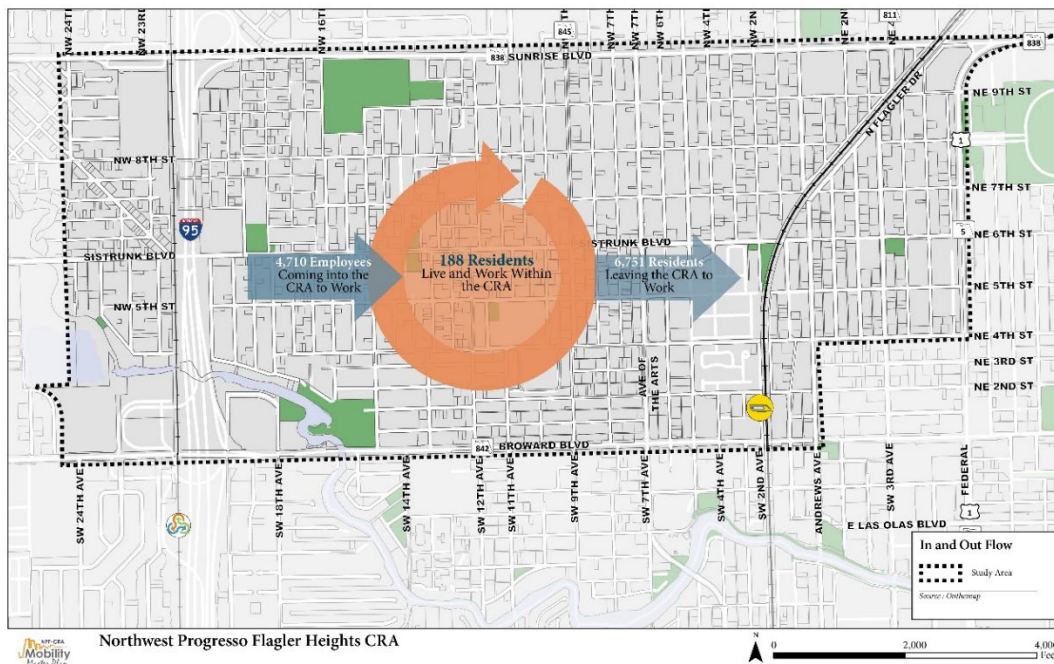


Figure 14: Inflow and Outflow

STREET NETWORK CONNECTIVITY

The ability of cities to be walkable and connected places has a lot to do with their bone structure. Street networks come in a variety of designs, which affect the number of intersections. In traditional grid designs, roads are connected at regular intervals leading to frequent intersections. Modern loop and cul-de-sac patterns have fewer road connections and therefore a lower density of intersections. Grid patterns offer the most direct routes to navigate an area and therefore have higher connectivity, while loops and cul-de-sacs may require travel on an arterial road to reach geographically close locations.

The project team examined the existing network and the overall block density within the study area. In order to reveal to the effective network, the team identified roadway segments within the study area that don't have a connecting function in the system. **Figure 15** shows the "effective" network. Furthermore, the robust street network grid in the study area reflects that the area has 'good bones' and very strong potential to be a highly connected place, provide for multiple routing options and good access to public spaces within its own ecosystem and the surrounding neighborhoods. In addition to a healthy street network and a robust block density, the project team also looked and compared the typical block size within the study area with those from other places. Typical block size in the study area is of 300' by 650', which is a block twice as long as those in Portland, OR, but very similar to typical blocks in Orlando or Miami.

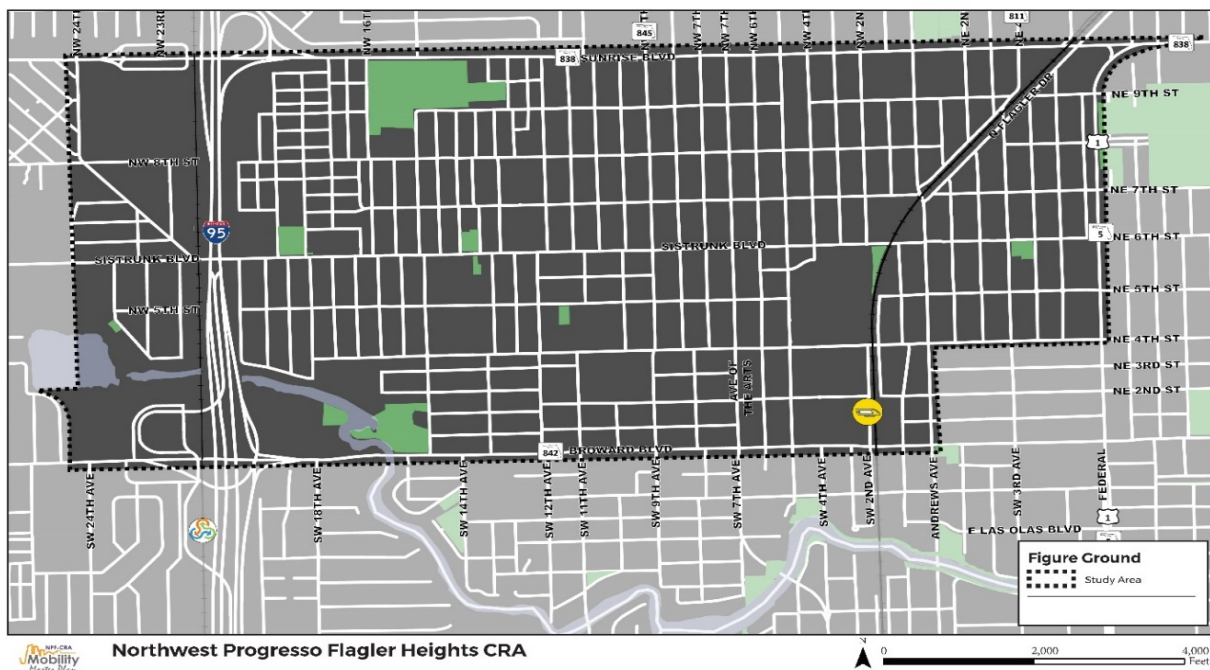


Figure 15 : Effective Street Network

Intersection Density

Intersection density is an objective method of assessing one aspect of a community’s built environment. Intersection density refers to the number of intersections in an area. The density of intersections relays information about street design and connectivity, both of which impact walkability. It corresponds closely to block size — the greater the intersection density, the smaller the blocks. High intersection density may correspond to a more walkable and therefore health-promoting environment.

Though intersection density is just one facet of walkability, it is an important one. An entry from the Journal of the American Planning Association in 2010 (Ewing, R., and R. Cervero. 2010. *Travel and the built environment*) stated that Scientific literature has consistently identified a positive association between intersection density and walking for transportation. Not only is the link between intersection density and walking well established, but it is also easy to objectively measure with geographic information systems (GIS). Other factors that contribute to a walkable environment include availability of destinations, sidewalks, and environmental features. **Figure 16** illustrates the GIS intersection density analysis done for the study area.

Of all the built environment measurements, intersection density has the largest effect on walking — more than population density, distance to a store, distance to a transit stop, or jobs within one mile. Intersection density also has large effects on transit use and the amount of driving.

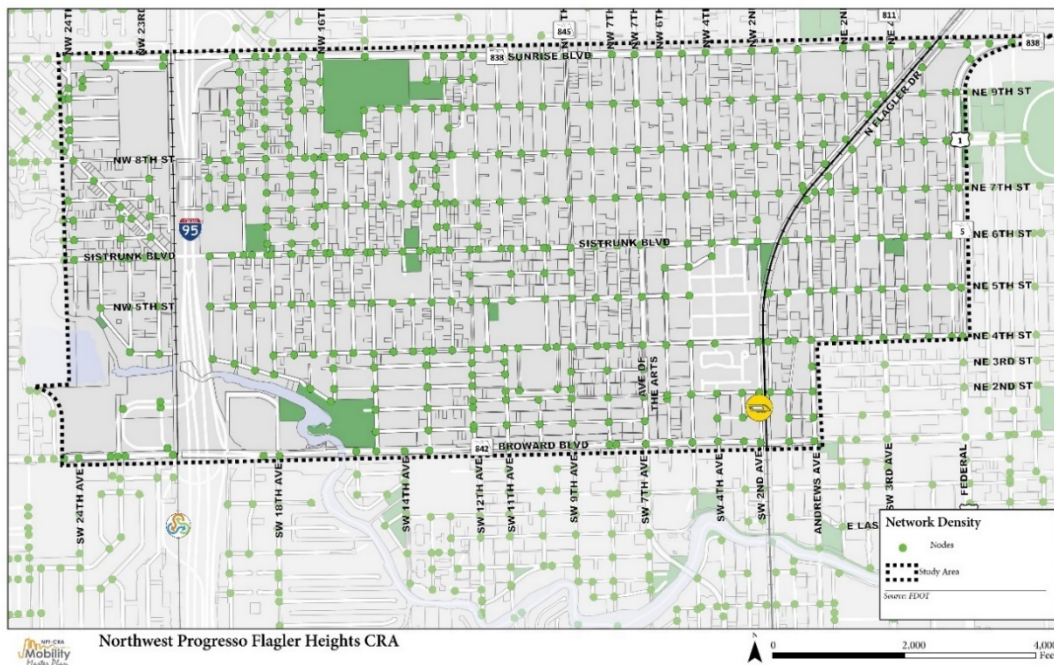


Figure 16 : Network Density

Street Hierarchy (Arterial, Collector, Local)

The study area is generally bordered by high volume roadways on all sides. The west side is bordered by Interstate 95; US 1, classified as a principal arterial, runs along the east side and Sunrise Boulevard and Broward Boulevard, also classified as principal arterials, run along the north and south edges of the Study area.

The interior is made up of several important east-west and north-south connectors. The main east-west roadways include:

- Sistrunk Boulevard (*Minor Collector*)
- NE 4th Street (*Minor Collector*) – from NW 9th Avenue to US 1
- NE 2nd Street (*Minor Collector*) – from NW 9th Avenue to US 1

The main north-south roadways include:

- NW 9th Avenue (*Minor Collector*) – from Broward Boulevard to Sistrunk Boulevard
- NW 9th Avenue (*Major Collector*) – from Sistrunk Boulevard to Sunrise Boulevard
- NW 7th Avenue (*Minor Arterial*)
- Andrews Avenue (*Minor Arterial*)
- NE 3rd Avenue (*Minor Arterial*)

The remaining roadways within the Study area are classified as local streets, providing connection to the main north-south and east-west routes through a well-structured grid network. The roadway network classifications are illustrated in **Figure 17**.

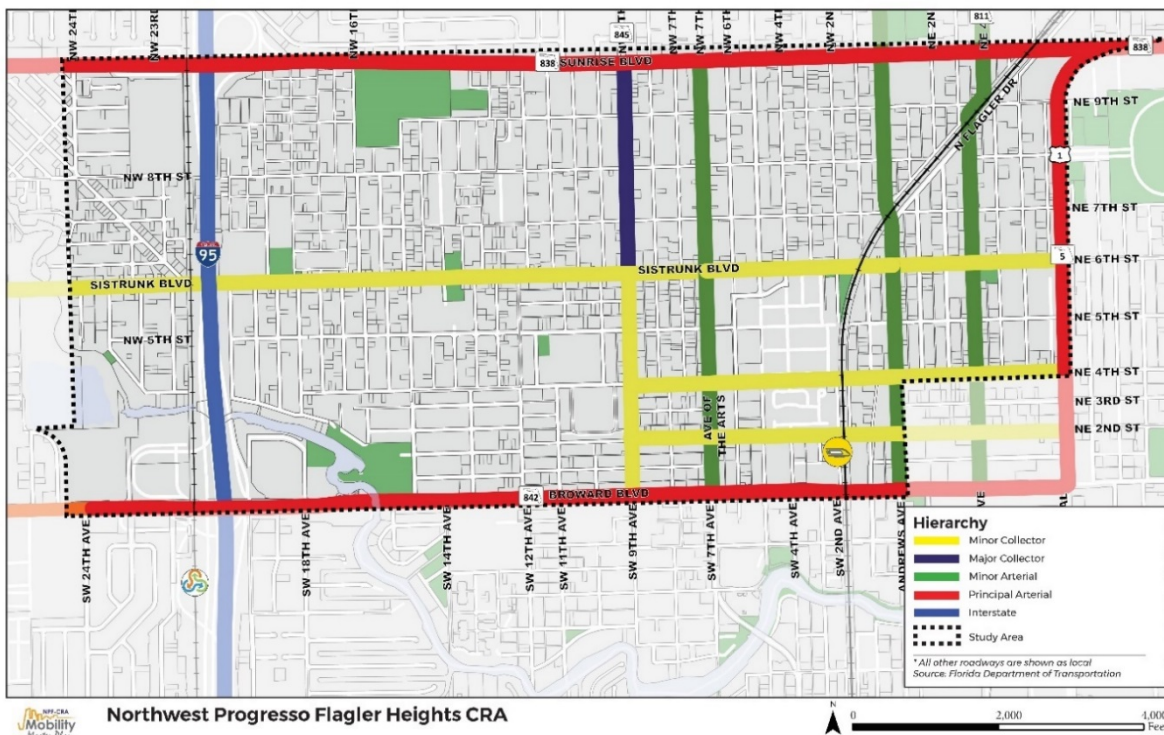


Figure 17 : Road Hierarchy

Access Points

The study area, despite having a healthy street network, is constrained by features such as the I-95 and two railroads, which create access issues in relation to the number of points of access available to get in and out of the area. **Figure 18** below, illustrates the access points and through routes available in the study area.

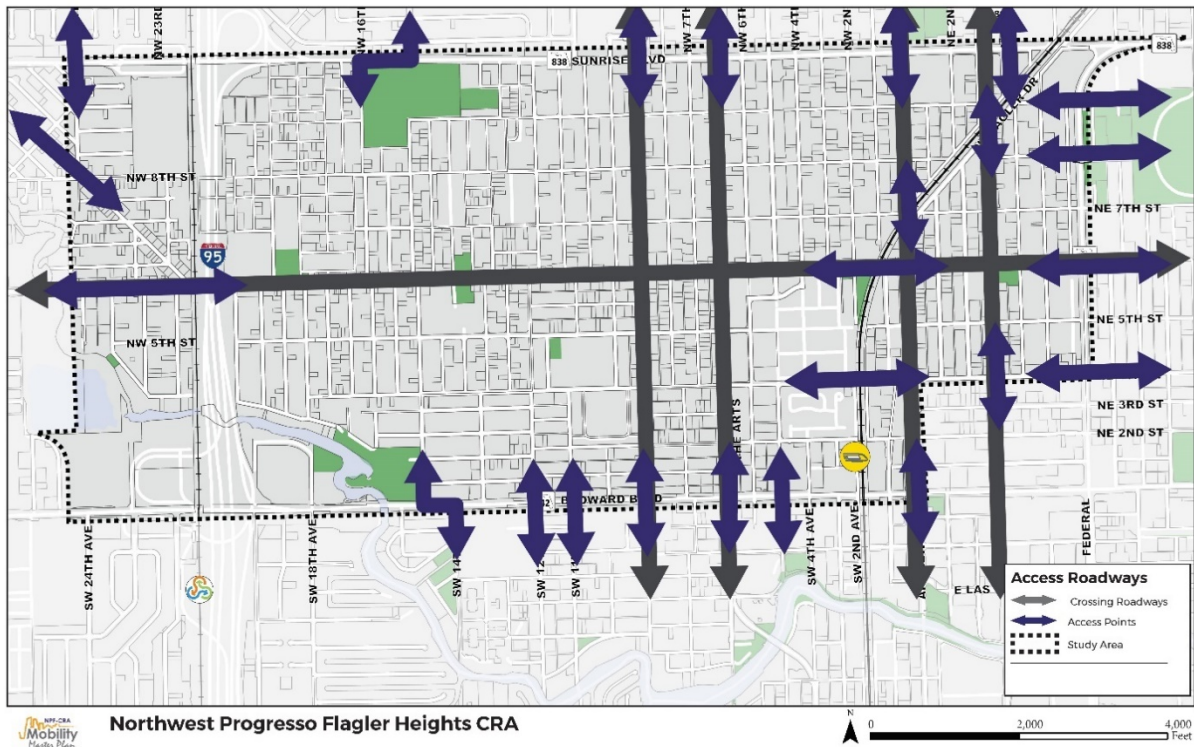


Figure 18: Access & Connectivity

TRAFFIC CONDITIONS

Traffic data was collected for the study area to review the existing traffic conditions. This section describes the data collection, AM and PM peak hour field observations, and the results of the existing conditions traffic analysis.

DATA COLLECTION

Traffic data was collected as part of the existing conditions analysis. Traffic data was reviewed and analyzed to identify existing issues and make recommendations. There are multiple FDOT count stations throughout the study area. Historical AADT volumes were obtained through the FDOT Florida Traffic Online database from the count stations. Existing data was also collected in the field. 24-hour classification counts were collected at thirty-two locations throughout the study area. These counts included vehicle classification, volume data, and speed data. Intersection turning movement data was collected at twenty-seven intersections throughout the study area. **Figure 19** shows the data collection locations for the vehicle classification/volume/speed data and the turning movement counts.

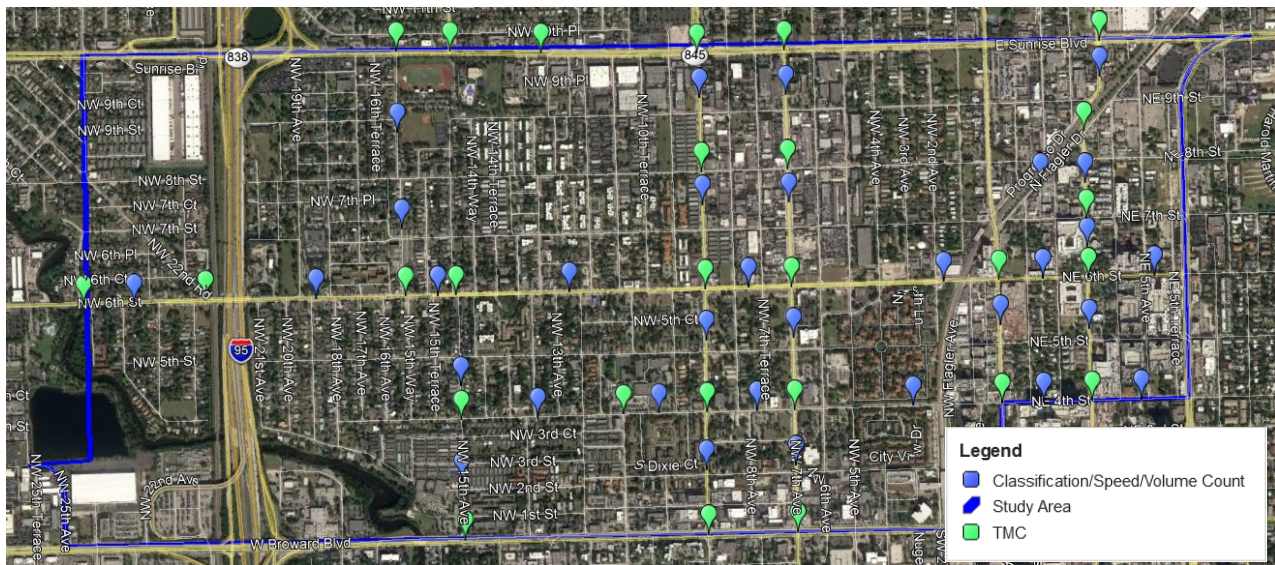


Figure 19: Data Collection Locations

TRAFFIC ANALYSIS

Traffic data was collected for the study area to understand vehicle segment and intersection volumes as well as peak period intersection pedestrian volumes and nighttime pedestrian volumes and vehicle speeds. Analysis was conducted at the intersection and segment level to understand the existing conditions of the study area.

Table 2: Roadway Segment Analysis

Roadway Segment	Existing AADT	No. Lanes	LOS Target	LOS D Threshold	Adjusted LOS D Threshold	Existing LOS
Sistrunk Boulevard between NW 24th Avenue and NW 22nd Road	20,000	4LD	D	32,400	29,160	D
Sistrunk Boulevard between NW 22nd Road and NW 15th Way	15,000	4LU	D	32,400	21,060	D
Sistrunk Boulevard between NW 15th Way and NW 15th Avenue	15,000	4LU	D	32,400	21,060	D
Sistrunk Boulevard between NW 15th Avenue and NW 9th Avenue	12,000	4LU	D	32,400	21,060	D
Sistrunk Boulevard between NW 9th Avenue and NW 7th Avenue	16,000	4LD	D	32,400	29,160	D
Sistrunk Boulevard between NW 7th Avenue and Andrews Avenue	14,000	4LD	D	32,400	29,160	D
Sistrunk Boulevard between Andrews Avenue and NE 3rd Avenue	10,000	2LD	D	14,800	13,320	D
Sistrunk Boulevard between NE 3rd Avenue and US 1	8,300	2LD	D	14,800	13,320	D
NW 4th Street between NW 15th Avenue and NW 11th Avenue	3,400	2LU	D	14,800	10,360	C
NW 4th Street between NW 11th Avenue and NW 9th Street	3,800	2LU	D	14,800	10,360	C
NW 4th Street between NW 9th Street and NW 7th Street	3,300	2LU	D	14,800	10,360	C
NW 4th Street between NW 7th Street and Andrews Avenue	5,300	2LU	D	14,800	13,320	C
NE 4th Street between Andrews Avenue and NE 3rd Avenue	4,800	2LU	D	14,800	13,320	C
NE 4th Street between NE 3rd Avenue and US 1	6,000	2LU	D	14,800	13,320	C
NW 16th Avenue between Sunrise Boulevard and NW 8th Street	4,800	2LU	D	14,800	13,320	C
NW 15th Way between NW 8th Street and Sistrunk Boulevard	2,900	2LU	D	14,800	13,320	C
NW 15th Avenue between Sistrunk Boulevard and NW 4th Street	7,500	2LU	D	14,800	13,320	D
NW 15th Avenue between NW 4th Street and Broward Boulevard	8,000	2LU	D	14,800	13,320	D
NW 9th Avenue between Sunrise Boulevard and NW 8th Street	8,400	2LU	D	14,800	13,320	D
NW 9th Avenue between NW 8th Street and Sistrunk Boulevard	8,500	2LU	D	14,800	13,320	D
NW 9th Avenue between Sistrunk Boulevard and NW 4th Street	4,500	2LU	D	14,800	13,320	C
NW 9th Avenue between NW 4th Street and Broward Boulevard	3,500	2LU	D	14,800	13,320	C
NW 7th Avenue between Sunrise Boulevard and NW 8th Street	14,000	4LD	D	32,400	29,160	D
NW 7th Avenue between NW 8th Street and Sistrunk Boulevard	14,000	4LD	D	32,400	29,160	D
NW 7th Avenue between Sistrunk Boulevard and NW 4th Street	16,000	4LD	D	32,400	29,160	D
NW 7th Avenue between NW 4th Street and Broward Boulevard	15,000	4LD	D	32,400	29,160	D
Andrews Avenue between Sistrunk Boulevard and NE 4th Street	17,000	4LD	D	32,400	29,160	D
NE 3rd Avenue between Sunrise Boulevard and Flagler Drive	12,000	4LD	D	32,400	29,160	C
NE 3rd Avenue between Flagler Drive and NW 7th Avenue	14,000	4LD	D	32,400	29,160	D
NE 3rd Avenue between NW 7th Avenue and Sistrunk Boulevard	14,000	4LD	D	32,400	29,160	D
NE 3rd Avenue between Sistrunk Boulevard and NE 4th Street	15,000	4LD	D	32,400	29,160	D
N Flagler Drive between Andrews Avenue and NE 3rd Avenue	2,300	2LU	D	14,800	13,320	C

Turning Movement Counts

This study includes 4-hour weekday AM and PM peak period turning movement counts. The raw turning movement counts are included in **Appendix A**.

NW 7th Avenue Peak Hour Intersection Operations Analysis

The existing intersection operating conditions were evaluated for the weekday AM and PM peak hour traffic volume conditions along NW 7th Avenue between Broward Boulevard and Sunrise Boulevard. Current signal timing plans were obtained from Broward County for use in the analysis and are included in **Appendix B**. The intersection LOS was analyzed using HCM methodologies as implemented by Synchro Version 10. **Table 3** summarizes the existing AM and PM peak hour intersection operations along NW 7th Avenue. For the signalized intersections, average delay and LOS are presented for each approach and for the overall intersection. For the unsignalized intersection, average delay and LOS are presented for the critical movement on each approach. Detailed HCM output reports are provided in **Appendix B**.

Table 3: NW 7th Avenue Intersection Operations Analysis

Intersection	Measure	AM Peak Hour					PM Peak Hour				
		EB	WB	NB	SB	Overall	EB	WB	NB	SB	Overall
Sunrise Blvd & 7th Ave	Delay [LOS]	59.1 [E]	19.4 [B]	74.4 [E]	77.3 [E]	50.6 [D]	55.7 [E]	24.2 [C]	154.0 [F]	70.8 [E]	69.0 [E]
8th St & 7th Ave		20.1 [C]	20.7 [C]	9.6 [A]	8.6 [A]	-	30.6 [D]	64.7 [F]	8.7 [A]	9.8 [A]	-
Sistrunk & 7th Ave		30.7 [C]	22.0 [C]	10.6 [B]	26.3 [C]	23.6 [C]	26.1 [C]	33.7 [C]	83.2 [F]	20.3 [C]	48.3 [D]
4th St & 7th Ave		35.2 [D]	31.9 [C]	5.7 [A]	1.1 [A]	8.7 [A]	26.5 [C]	40.3 [D]	10.8 [B]	16.0 [B]	19.4 [B]
Broward Blvd & 7th Ave		36.8 [D]	27.8 [C]	91.9 [F]	88.8 [F]	53.6 [D]	34.9 [C]	31.2 [C]	82.2 [F]	99.5 [F]	50.9 [D]



All intersection approaches are operating at LOS E or better except for the following:

- Northbound approach at Sunrise Boulevard & 7th Avenue in the PM peak hour
- Westbound approach at 8th Street & 7th Avenue in the PM peak hour
- Northbound approach at Sistrunk Boulevard & 7th Avenue in the PM peak hour
- Northbound and southbound approaches at Broward Boulevard & 7th Avenue in the AM and PM peak hour

Nighttime Pedestrian Counts

During the opportunities and needs workshop (charrette #1) we heard through stakeholder and public input, that NW 15th Avenue from Sistrunk Boulevard to Broward Boulevard and NW 9th Avenue from Sunrise Boulevard to Sistrunk Boulevard were identified as having poor lighting at night. During a nighttime field review it was confirmed that these segments were poorly lit, and pedestrians do use these roads at night. Nighttime pedestrian count data was collected at six intersections along NW 15th Avenue and NW 9th Avenue. **Figure 21** shows the data collection locations. Data was collected from 8 PM to 10 PM. **Table 4** shows the pedestrian volumes at the six identified intersections. NW 15th Avenue & Sistrunk Boulevard

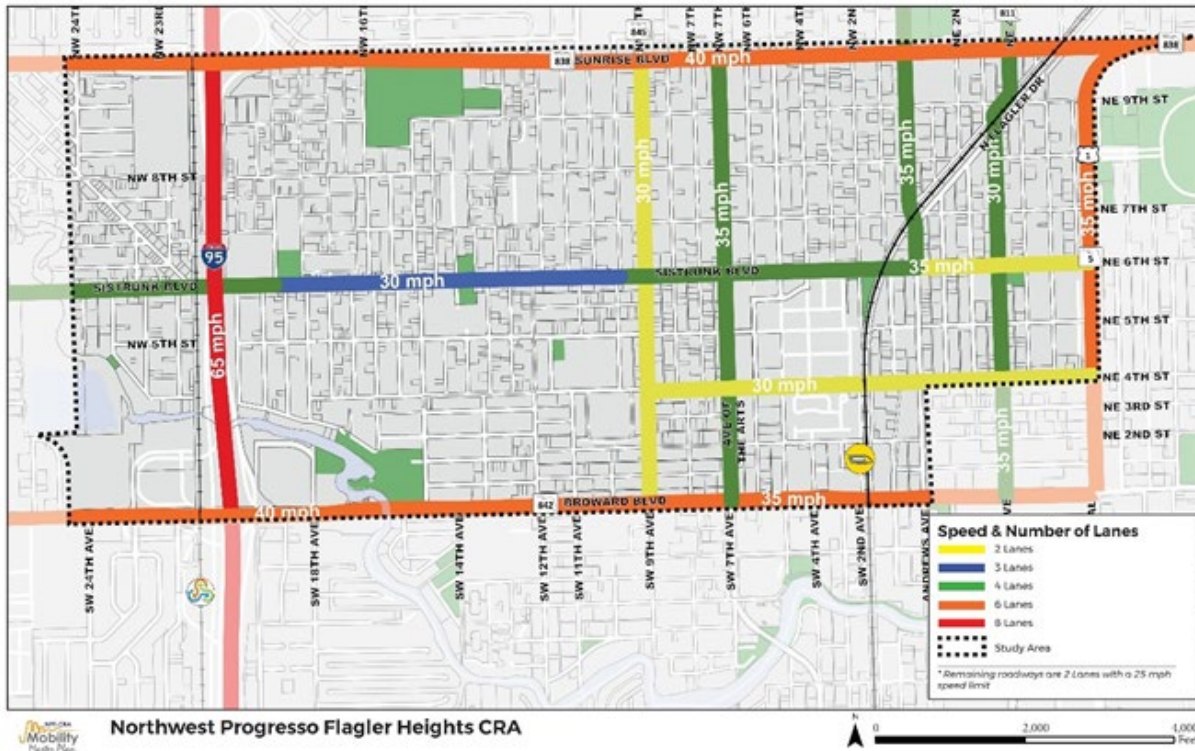


Figure 22: Posted Speed and Number of Lanes

Table 5: Daily Segment Speed

Roadway Segment	Eastbound / Northbound		Westbound / Southbound	
	85 th Percentile Speed (MPH)	Average Speed (MPH)	85 th Percentile Speed (MPH)	Average Speed (MPH)
Sistrunk Boulevard between NW 24th Avenue and NW 22nd Road	39	32	39	33
Sistrunk Boulevard between NW 22nd Road and NW 15th Way	38	31	30	25
Sistrunk Boulevard between NW 15th Way and NW 15th Avenue	34	28	29	23
Sistrunk Boulevard between NW 15th Avenue and NW 9th Avenue	34	28	32	26
Sistrunk Boulevard between NW 9th Avenue and NW 7th Avenue	35	29	34	28
Sistrunk Boulevard between NW 7th Avenue and Andrews Avenue	38	32	35	29
Sistrunk Boulevard between Andrews Avenue and NE 3rd Avenue	28	22	28	23
Sistrunk Boulevard between NE 3rd Avenue and US 1	28	22	28	22
NW 4th Street between NW 15th Avenue and NW 11th Avenue	33	27	34	28
NW 4th Street between NW 11th Avenue and NW 9th Street	31	25	32	25
NW 4th Street between NW 9th Street and NW 7th Street	32	26	32	26
NW 4th Street between NW 7th Street and Andrews Avenue	34	29	37	31
NE 4th Street between Andrews Avenue and NE 3rd Avenue	29	24	29	25
NE 4th Street between NE 3rd Avenue and US 1	29	24	29	22
NW 16th Avenue between Sunrise Boulevard and NW 8th Street	26	20	27	21
NW 15th Way between NW 8th Street and Sistrunk Boulevard	32	25	33	25
NW 15th Avenue between Sistrunk Boulevard and NW 4th Street	32	26	31	26
NW 15th Avenue between NW 4th Street and Broward Boulevard	28	22	29	22
NW 9th Avenue between Sunrise Boulevard and NW 8th Street	32	26	32	26
NW 9th Avenue between NW 8th Street and Sistrunk Boulevard	31	26	31	26
NW 9th Avenue between Sistrunk Boulevard and NW 4th Street	29	25	23	18
NW 9th Avenue between NW 4th Street and Broward Boulevard	30	25	31	25
NW 7th Avenue between Sunrise Boulevard and NW 8th Street	35	28	43	36
NW 7th Avenue between NW 8th Street and Sistrunk Boulevard	45	38	46	40
NW 7th Avenue between Sistrunk Boulevard and NW 4th Street	37	27	38	31
NW 7th Avenue between NW 4th Street and Broward Boulevard	37	29	34	27
Andrews Avenue between Sistrunk Boulevard and NE 4th Street	34	27	33	27
NE 3rd Avenue between Sunrise Boulevard and Flagler Drive	33	27	28	22
NE 3rd Avenue between Flagler Drive and NW 7th Avenue	37	32	38	32
NE 3rd Avenue between NW 7th Avenue and Sistrunk Boulevard	39	33	34	28
NE 3rd Avenue between Sistrunk Boulevard and NE 4th Street	39	31	37	31
N Flagler Drive between Andrews Avenue and NE 3rd Avenue	37	30	37	30



The daily, directional, 85th percentile speed is within 10 mph of the posted speed limit on all segments except for the northbound and southbound speeds along NW 7th Avenue between NW 8th Street and Sistrunk Boulevard.

TRAFFIC SIGNALIZATION / OPERATIONS ANALYSIS

Following the first charrette, Sistrunk Boulevard and NW 4th Street were identified by the public as being primary east/west routes through the study area. It was noted that high volumes exist along these routes during the peak periods and congestion is an issue. Seven signalized intersections including the pedestrian signal along Sistrunk Boulevard from NW 22nd Avenue to NE 3rd Avenue and four signalized intersections along NW 4th Street from NW 9th Avenue to NE 3rd Avenue were reviewed. The signal timing plans are included in **Appendix B**. The review was conducted from 5/21/19-5/22/19 during the AM (7-9 AM) and PM (4-6 PM) peak periods. Traffic signals were observed to ensure that signalization was running according to the signal timing plans received from Broward County and to ensure that no vehicle or pedestrian signal failures were occurring. A vehicle signal failure was considered to be a movement that did not process the standing queue during the allotted green time. A pedestrian signal failure was considered to be a pedestrian signal that failed to provide crossing time within one signal cycle following a pedestrian call where pedestrian push buttons were available.

AM Signal Review

Ten signalized intersections were reviewed along Sistrunk Boulevard and NW 4th Street during the AM (7-9 AM) peak period over two weekdays. The following issues were observed:

1. The westbound left turn movement was observed failing to clear the standing queue during the allotted green time due to the heavy eastbound movement. Vehicles were observed making the left turn movement during the yellow and all-red portion of the cycle. This issue was observed at the following intersections:
 - Sistrunk Boulevard & NW 15th Avenue
 - Sistrunk Boulevard & NW 9th Avenue
 - Sistrunk Boulevard & NW 7th Avenue
 - **Recommendation: Conduct a review of the signalized intersections to determine if a protected westbound left turn is needed.**
2. The eastbound through movement failed to process the standing queue during the allotted green time. This issue was observed at the following intersection:
 - Sistrunk Boulevard & NW 7th Avenue
 - **Recommendation: Conduct a review of the signalized intersection to determine if signal timing adjustments are needed.**
3. The pedestrian signal on the north leg failed to provide pedestrian crossing time when a call was made with the pedestrian push button. This issue was observed at the following intersections:
 - Sistrunk Boulevard & NW 9th Avenue
 - Sistrunk Boulevard & NE 3rd Avenue
 - **Recommendation: Conduct a review of the pedestrian signals and push buttons to determine if maintenance is needed.**

PM Signal Review

Ten signalized intersections were reviewed during the AM (7-9 AM) peak period over two weekdays. The following issues were observed:

1. The westbound through movement failed to process the standing queue during the allotted green time. This issue was observed at the following intersection:
 - Sistrunk Boulevard & NW 15th Avenue
 - **Recommendation: Conduct a review of the signalized intersection to determine if signal timing adjustments are needed.**
2. The eastbound left turn movement was observed selecting small gaps to make their turning movement. The queue did clear, but likely would not have if vehicles waited for a safe gap in the oncoming traffic to make their turning movement. This issue was observed at the following intersection:
 - Sistrunk Boulevard & NW 9th Avenue
 - **Recommendation: Conduct a review of the signalized intersection to determine if a protected eastbound left turn is needed.**
3. The eastbound left turn movement was observed failing to clear the standing queue during the allotted green time due to the heavy westbound movement. Vehicles were observed making the left turn movement during the yellow and all-red portion of the cycle. This issue was observed at the following intersection:
 - Sistrunk Boulevard & Andrews Avenue
 - **Recommendation: Conduct a review of the signalized intersection to determine if a protected eastbound left turn is needed.**
4. The westbound queue was observed spilling back from Andrews Avenue to NE 3rd Street due to a lack of allocated green time. This issue was observed at the following location:
 - Sistrunk Boulevard & Andrews Avenue
 - **Recommendation: Conduct a review of the signalized intersection to determine if signal timing adjustments are needed.**

FIELD REVIEW OBSERVATIONS

A field review of the study area was conducted on December 3-4, 2018. The field review included review of the existing traffic signals, lighting, pedestrian and bicycle facilities, high crash locations, low level of service locations, as well as an AM and PM peak hour review of Sunrise Boulevard and Broward Boulevard.

Large queues were observed eastbound on Broward Boulevard in the AM peak period and westbound on Broward Boulevard in the PM peak period. The AM eastbound queue was observed along Broward Boulevard beginning near NW 7th Avenue backing up to the I-95 northbound ramp intersection. The PM westbound queue was observed along Broward

Boulevard and began near the I-95 northbound ramp intersection and was observed backing up to Andrews Avenue.

NETWORK CAPACITY ANALYSIS

Analysis was conducted to determine the existing capacity constraints on the local network. The roadway segment analysis revealed that all segments are operating at LOS D or better based on daily volumes. Due to intersections often functioning as bottlenecks on roadway networks, it was decided that FDOT’s CAP-X tool would be used to provide a planning level volume to capacity (V/C) ratio at the intersection level for the AM and PM peak hours. This analysis provides a high-level assessment of the locations where AM and PM peak hour traffic volumes are nearing or exceeding the provided capacity. A V/C ratio demonstrates the percentage of capacity used at an intersection. **Table 6** shows the results of the CAP-X analysis at each intersection.

Table 6: CAP-X Volume to Capacity Results

ID	Intersection	Existing V/C	
		AM	PM
1	Sunrise Blvd and NW 16th Ave	0.76	0.80
2	Sunrise Blvd and NW 15th Ave	0.61	0.79
3	Sunrise Blvd and Ped Signal	0.56	0.48
4	Sunrise Blvd and NW 9th Ave	0.93	1.03
5	Sunrise Blvd and NW 7th Ave	0.76	0.78
6	Sunrise Blvd and NE 4th Ave	0.62	0.72
7	Sistrunk Blvd and Ped Crossing	0.40	0.35
8	Sistrunk Blvd and NW 22nd Rd	0.43	0.38
9	Sistrunk Blvd and NW 15th Way	1.68	0.92
10	Sistrunk Blvd and NW 15th Ave	0.59	0.63
11	Sistrunk Blvd and NW 9th Ave	0.52	0.67
12	Sistrunk Blvd and NW 7th Ave	0.59	0.59
13	Sistrunk Blvd and Andrews Ave	0.59	0.67
14	Sistrunk Blvd and NE 3rd Ave	0.45	0.53
15	NW 4th St and NW 15th Ave	0.28	0.49
16	NW 4th St and NW 11th Ave	0.26	0.59
17	NW 4th St and NW 9th Ave	0.27	0.36
18	NW 4th St and NW 7th Ave	0.51	0.61
19	NE 4th St and Andrews Ave	0.51	0.60
20	NE 4th St and NE 3rd Ave	0.48	0.54
21	NW 8th St and NW 9th Ave	0.27	0.39
22	Broward Blvd and NW 9th Ave	0.49	0.50
23	NW 8th St and NW 7th Ave	0.37	0.81
24	Broward Blvd and NW 7th Ave	0.76	0.77
25	Flagler Dr and NE 3rd Ave	0.28	0.36
26	NE 7th St and NE 3rd Ave	0.43	0.74
27	Broward Blvd and NW 15th Ave	0.57	0.76



Sistrunk Boulevard & NW 15th Way is over capacity with a V/C ratio of 1.68 in the AM peak hour. Heavy east-west commuting traffic along Sistrunk Boulevard is likely conflicting with vehicles entering southbound onto Sistrunk Boulevard from NW 15th Way. In the AM peak hour 1,349 vehicles are traveling eastbound through the intersection and 655 vehicles are traveling westbound through. The traffic volume on NW 15th Way is light (approximately 70 vehicles), but due to the intersection operating under two-way stop control it may be difficult for vehicles on NW 15th Way to find a gap in the heavy traffic on Sistrunk Boulevard.

Sunrise Boulevard & NW 9th Avenue is over capacity in the PM peak hour with a V/C ratio of 1.03. Sunrise Boulevard carries heavy east-west commuting traffic in the PM peak hour with over 2,800 vehicles traveling east-west through the intersection. Combining the heavy east-west volume with significant northbound-southbound volumes on NW 9th Ave leads to saturated conditions. Signal timing optimization would likely have minimal impacts on improving this intersection. Improved intersection geometry and/or increased north-south overall network connectivity are likely needed to reduce congestion.

Sunrise Boulevard & NW 9th Avenue is nearing capacity in the AM peak hour and Sistrunk Boulevard & NW 15th Way is nearing capacity in the PM peak hour due to issues previously described. **Figure 23** shows the intersections included in the analysis.

Several traffic signal projects are programmed in the FDOT 5-Year Work Program. Signal timing adjustments may provide relief to intersections with manageable volumes. Broward County is looking into adaptive signal control measures along Broward Boulevard and Sunrise Boulevard. This may help traffic flow at intersections during off-peak periods, but will likely have minimal effect when conditions are saturated. Long-term improvements to the conditions on Broward Boulevard and Sunrise Boulevard may be increased use of transit and increased roadway network to provide additional route alternatives.

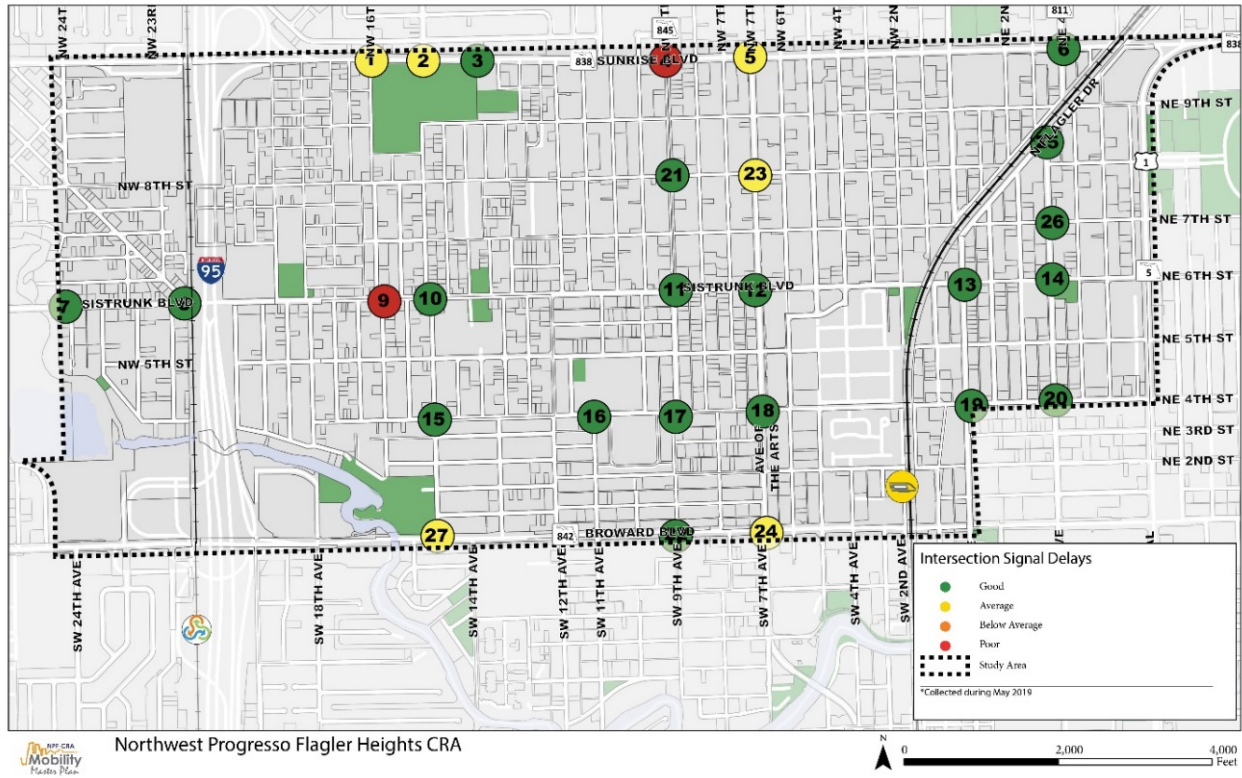


Figure 23: Network Capacity Analysis

TRANSIT CONDITIONS

Transit plays a key role in providing access into and out of the Study area. The following section summarizes the existing transit conditions.

ROUTES AND TYPES

Broward County Transit (BCT) provides bus service throughout the area as illustrated in **Figure 24**. East-west routes generally run along Sunrise Boulevard, Sistrunk Boulevard, and Broward Boulevard providing access into, out of, and within the Study area. These routes run with a range of headways from 15 minutes to 45 minutes on weekdays. North-south routes generally run along NW 7th Avenue, Andrews Avenue, NE 3rd Avenue, and US 1. These routes run with a range of headways from 15 to 45 minutes on weekdays. North-south transit access is generally available east of NW 7th Avenue.

The Sun Trolley increases local access to transit. Routes generally run east-west as illustrated in **Figure 25**, with the exception of the NW Community Link trolley routes, which run along NW 9th Avenue. Most routes run Monday through Friday and have headways of 15 minutes or longer.

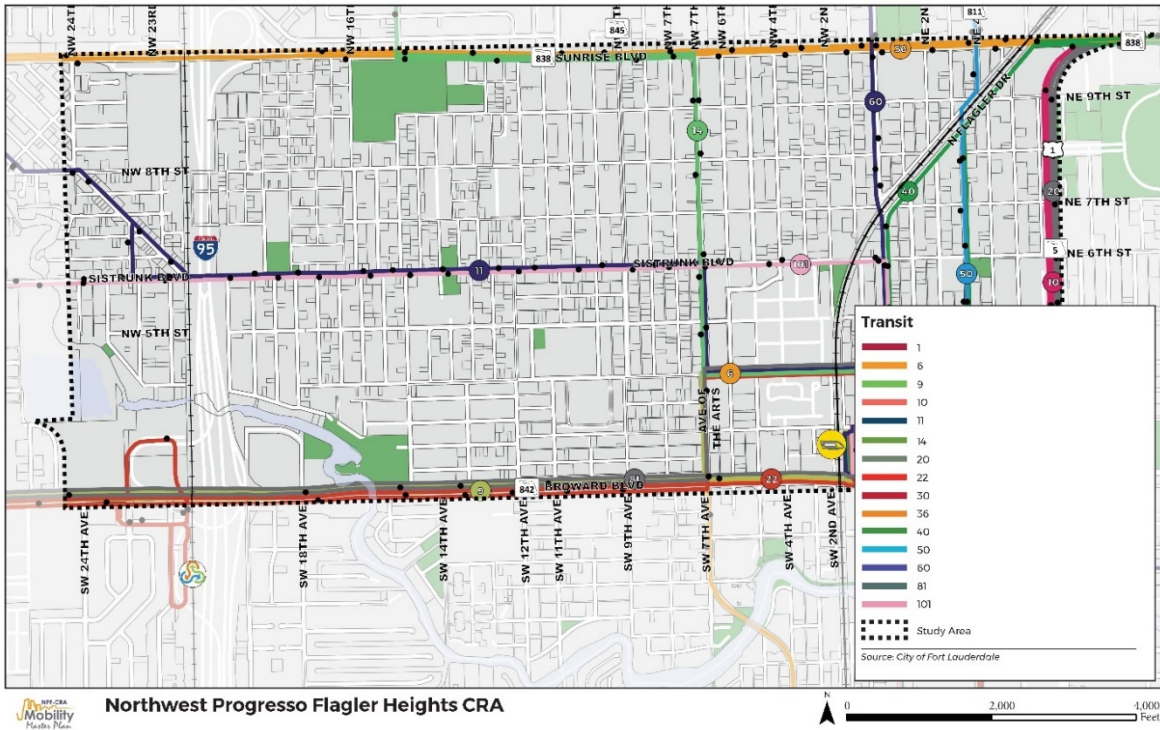


Figure 24: Bus Routes and Stops

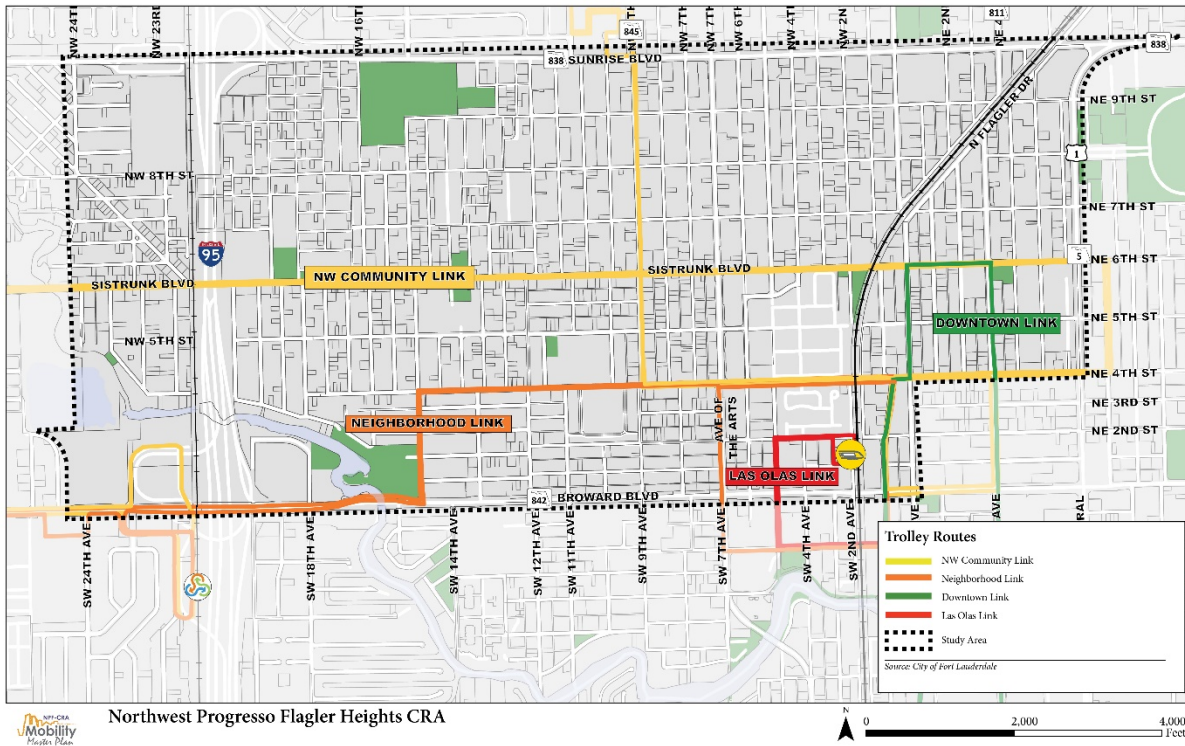


Figure 25: Trolley Routes

RIDERSHIP AND FREQUENCY

NW 7th Avenue is a key transit route, providing north-south regional access to and from the study area as well as opportunity for local trips within the Study area. There are several routes that run along NW 7th Avenue during the week. The study team reviewed the ridership and bus frequency per hour at each stop along NW 7th Avenue.

BCT provides consistent service during peak periods throughout the week. **Table 7** shows the weekday bus frequency along NW 7th Avenue during the AM, midday, and PM peak periods. Bus frequency is higher between Broward Boulevard and NW 4th Street due to an increased number of routes running along the segment.

Table 7: Broward County Transit – NW 7th Avenue Weekday Bus Frequency

NW 7th Ave, From	7 AM - 9AM		12 PM - 2 PM		4 PM - 6 PM	
	NB	SB	NB	SB	NB	SB
Sistrunk Blvd to Sunrise Blvd	12	12	10	10	12	12
NW 4th Ave to Sistrunk Blvd	14	15	13	13	15	15
Broward Blvd to NW 4th Ave	18	-	16	-	16	-

Bus stop ridership data from 2014 shows that the stop at Sunrise Boulevard and NW 7th Terrace experiences the highest ridership of east-west routes with approximately 240 daily riders. The stop at NW 7th Avenue and NW 5th Street experiences the highest ridership with approximately 80 daily riders. Sunrise Boulevard and NW 7th Avenue routes have the highest ridership for east-west and north-south bus routes. Ridership numbers reveal that many transit riders are boarding transit on Sunrise Boulevard near NW 7th Avenue, with other high ridership stops at NW 15th Avenue and NW 10th Avenue. Many of these riders are likely coming from nearby residential neighborhoods. There are currently no transit routes running north-south in the western half of the Study area. Additional bus routes or trolley routes running north-south, west of NW 7th Avenue, would likely improve connections between residences and major east-west transit routes.

Trolley ridership data was provided by the City of Fort Lauderdale. Ridership data was provided on an annual basis. The total ridership on all community trolley routes in 2018 was 344,695. The most recent five years of ridership data for the routes within the study area is provided in **Table 8**. The ridership trend seems to decrease over the five-year period for the Downtown Link, Las Olas Link, and NW Community Link. The Neighborhood Link ridership has remained relatively consistent of the five-year period.

Table 8: Trolley Annual Ridership

Trolley Route	2014	2015	2016	2017	2018	Annual Average
Downtown Link	81,627	92,385	65,830	35,802	53,523	65,833
Las Olas Link	52,633	40,817	40,218	25,188	33,630	38,497
NW Community Link	115,343	111,468	96,417	47,379	63,257	86,773
Neighborhood Link	33,555	35,520	46,602	41,205	36,121	38,601

BICYCLE AND PEDESTRIAN INFRASTRUCTURE CONDITIONS

Bicycle and pedestrian infrastructure is an integral part of a community's access to transportation. The Study area contains sidewalks, bike lanes, buffered bike lanes, sharrows, and shared use paths that increase connection and allow for movement throughout the Study area.

The pedestrian facilities in the study area are well connected along the major routes, including Broward Boulevard, NW 6th Street/Sistrunk Boulevard/NE 6th Street, Sunrise Boulevard, NW 7th Avenue/Avenue of the Arts, Andrews Avenue, NE 3rd Avenue, and US 1/Federal Highway. The pedestrian facilities network is well connected within the NPF CRA south of 6th Street. Pedestrian facilities north of 6th Street are sporadic and often don't connect creating an unfriendly environment for pedestrians.

Bicycle facilities exist along Broward Boulevard from Andrews Avenue to NW 18th Ave. There is a bike facility on NW 4th Street on the south side of the road from NW 7th Avenue to NW 6th Avenue, a buffered bike facility between NW 6th Avenue and the Brightline tracks and a raised shared pedestrian/bicycle facility along Flagler Drive between Andrews Avenue and Sunrise Boulevard, but these facilities end and do not connect to any continuing facilities within the neighborhoods.

FIELD REVIEW OBSERVATIONS

Pedestrian facilities in the study area are present along major routes, but are incomplete, lacking connection along many local streets. Bicycle facilities are present on Broward Boulevard and there is a 3-foot shoulder on Sunrise Boulevard. There are no bike facilities on NW 9th Avenue/Powerline Road north of Sistrunk Boulevard and there are no bike facilities on NW 7th Avenue/Avenue of the Arts.

PEDESTRIAN NETWORK GAP ANALYSIS

The study area is made of a well-structured grid network allowing for substantial access for pedestrians. Although there are significant opportunities for pedestrians to move about, there are a number of gaps that prevent greater access. This is particularly true in the residential neighborhoods north of Sistrunk Boulevard. Many of these streets have sidewalks that continue for several blocks before abruptly disappearing, forcing pedestrians to walk on the street. Although many of these local streets operate with speed limits of 25 miles per hour, pedestrian can feel unsafe walking in the roadway. **Figure 26** illustrates the sidewalk gaps that exist within the study area. A street was considered to meet the minimum sidewalk coverage if it at least had a sidewalk along one side of the street. Most of the gaps registered are

concentrated in residential neighborhoods near schools and parks. Improving the pedestrian infrastructure by closing sidewalk gaps will lead to increased pedestrian safety and comfort as well as increase access to public facilities such as parks and schools.

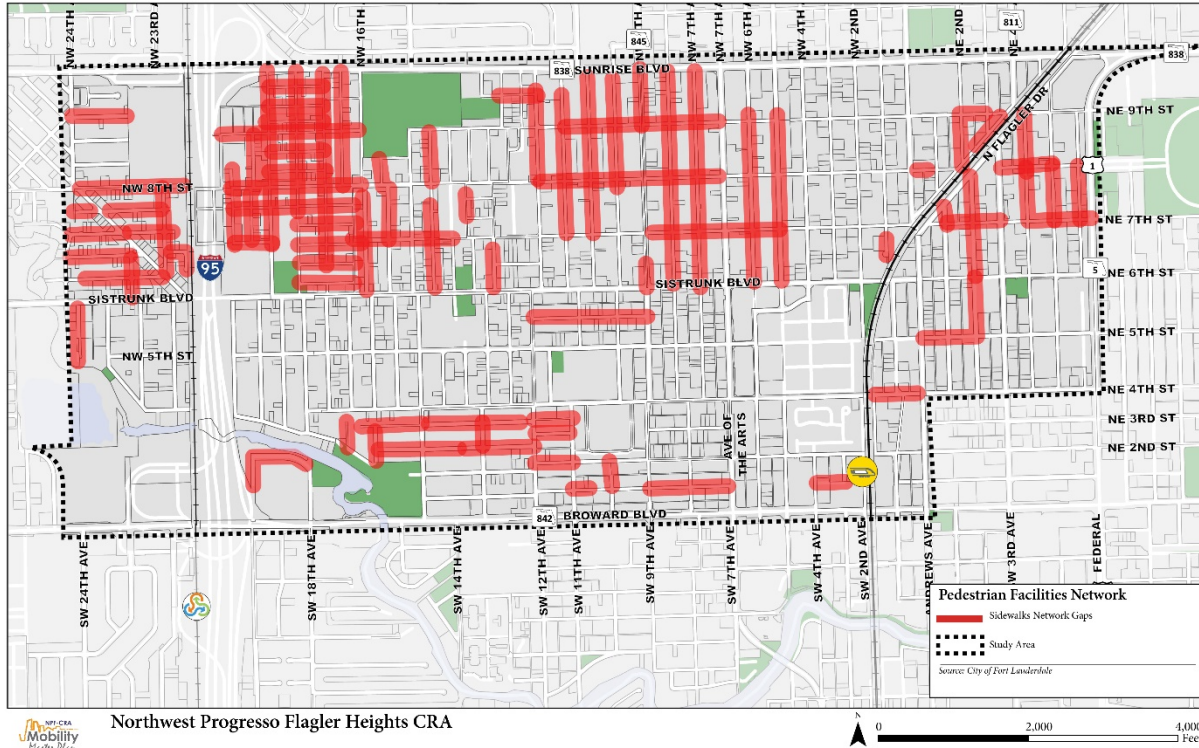


Figure 26: Pedestrian Infrastructure Gaps

BICYCLE NETWORK GAP ANALYSIS

There are few designated bicycle facilities within the study area. Existing north-south bicycle infrastructure runs along NW 9th Avenue, Flagler Drive, and US 1. East-west access runs along Sunrise Boulevard and Broward Boulevard with short segments along NE 4th Street and NE 3rd Street. Bicycle networks can improve 1st / last mile connections for people who are commuting to work as well as for recreational riding. Opportunities to improve the bicycle network exist in connecting NW 9th Avenue from Sistrunk Boulevard to Sunrise Boulevard as well as connecting the shared use path along Progresso Drive from NE 5th Street to NE 7th Street. US 1 currently has sharrows running on the outside lanes of the roadway from NE 8th Street to Broward Boulevard. This bicycle facility type is not considered appropriate as it provides a low level of comfort and safety level along US 1. Additionally, there is a gap from NE 8th Street to Sunrise Boulevard. Addressing this bicycle facility's design flaw and identified gap would improve the north-south regional connection along the eastern side of the study area. **Figure 27** illustrates the existing bicycle infrastructure as well as the identified gaps.

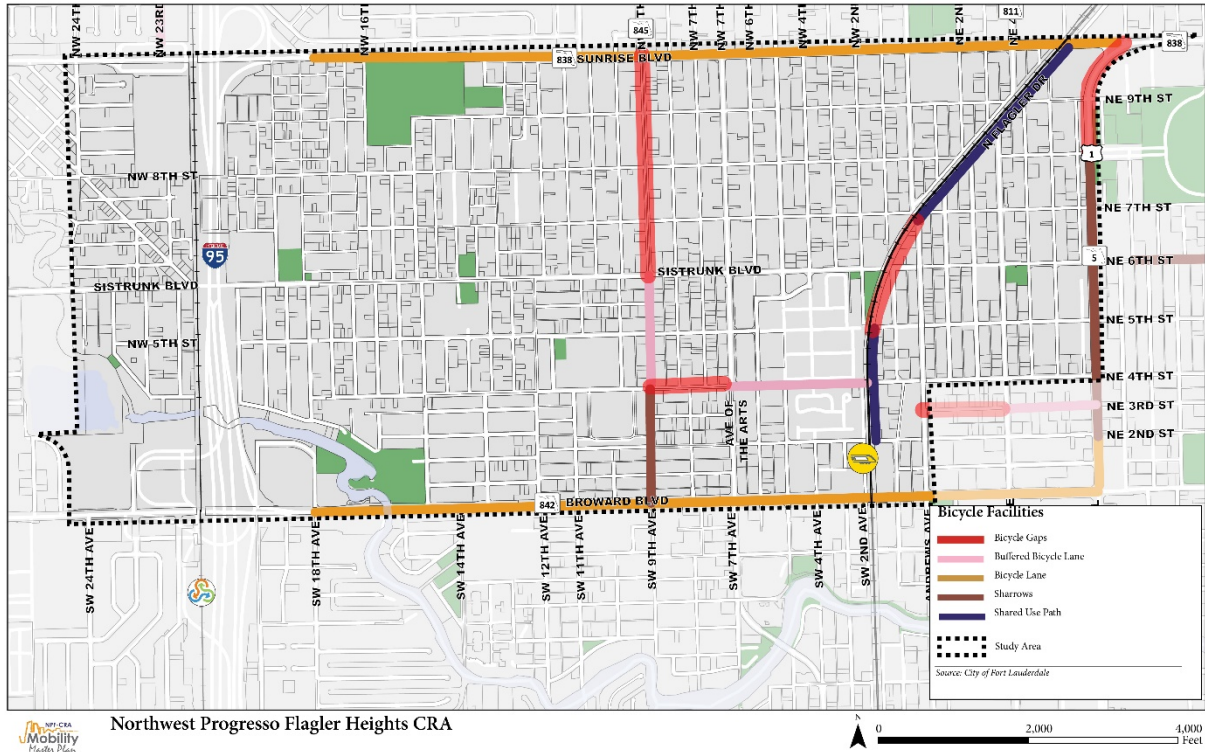


Figure 27: Bicycle Infrastructure Gaps

SAFETY

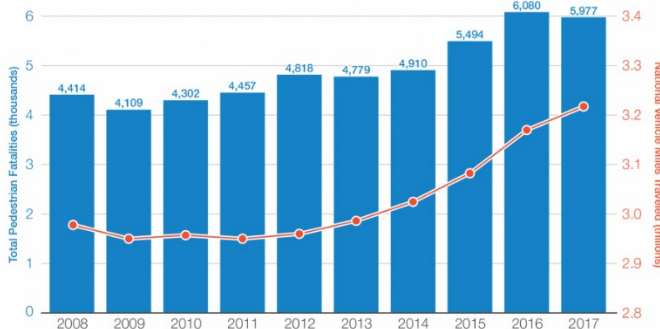
Transportation safety statistics provide insight into the design of existing infrastructure. The following sections reviews historical crash data from the study area.

THE TOP 20

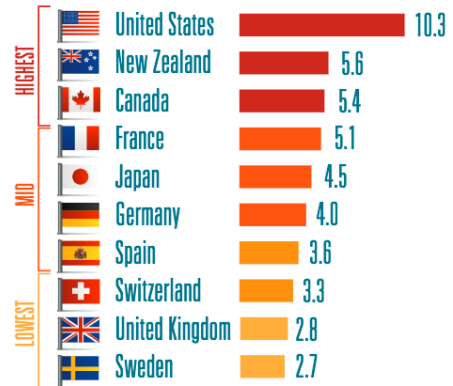
Most Dangerous Metropolitan Areas for Pedestrians (2008-2017)



Pedestrian fatalities have been steadily increasing.
2016 and 2017 were the most deadly years since 1990.



Motor vehicle crash deaths in 10 comparison high-income countries, 2013



Deaths per 100,000 people
SOURCE: WHO Global Status Report on Road Safety, 2015.

“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)

CRASHES

Crash records were obtained from the City of Fort Lauderdale for a five-year period (2013-2017) through University of Florida’s Signal Four Analytics. This section summarizes the NPF CRA area crash statistics and reviews high-crash intersections. A pedestrian/bicycle safety review is also discussed in this section.

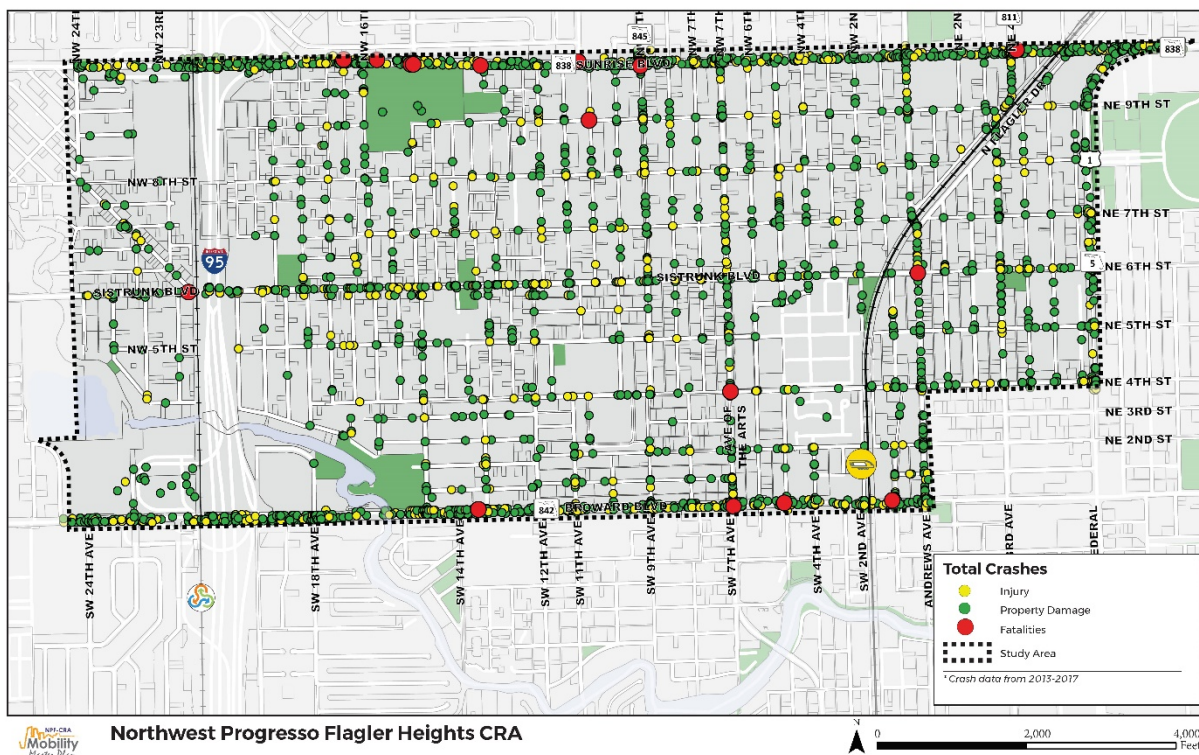


Figure 28: Total Crashes

NPF CRA CRASH STATISTICS

A total of 7,468 crashes were reported during this period, 2,011 of which (26 percent) resulted in at least one injury and 17 of which resulted in at least one fatality. Approximately 73 percent of crashes resulted in property damage only (PDO).

Figure 28 displays the crashes by type and severity for the five-year period. The highest crash type observed was rear-end, comprising 37 percent of the total crashes. Sideswipe (12 percent) and angle (10 percent) were the second and third highest crash types. There were 196 pedestrian and 152 bicycle crashes over the five years resulting in 13 of the 17 fatalities. The other four (4) fatal crashes consisted of two (2) fixed object/run-off the road crashes, one (1) u-turn crash, and one (1) right turn crash. There were 1,990 (27 percent) crashes during non-daylight conditions. There were 131 (2 percent) crashes involving drug or alcohol use.

Crash frequencies throughout the NPF CRA are illustrated in **Figure 29**, and high crash frequency locations were identified. The following intersections experienced more than 200 crashes during the five-year period:

- Sunrise Boulevard and Powerline Road
- Broward Boulevard and NW 7th Avenue/Avenue of the Arts
- Broward Boulevard and NW 18th Avenue
- US 1/ Federal Highway and Sunrise Boulevard
- Sunrise Boulevard and Andrews Avenue
- Sunrise Boulevard and NW 4th Avenue

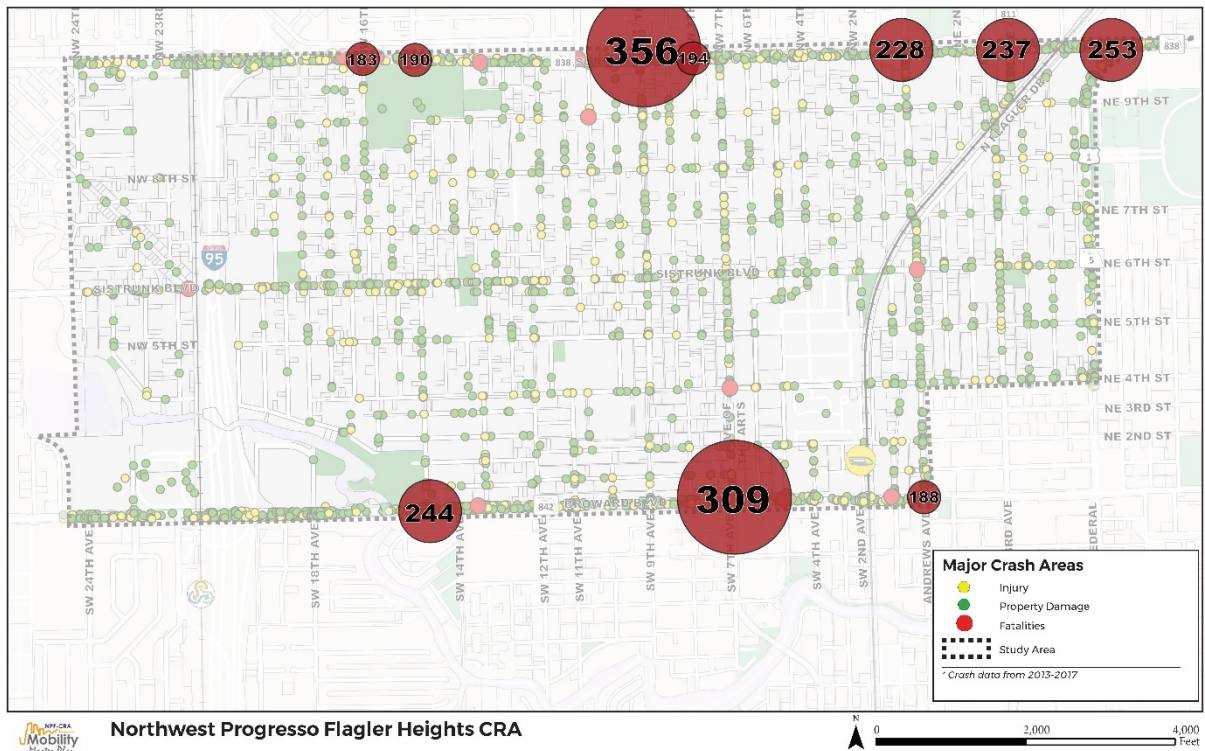


Figure 29 : Major Crash Areas

There were 347 crashes involving pedestrians and bicyclist during the analysis period, of which 195 involved pedestrians and 152 involved bicyclists. Pedestrian and bicycle crashes statistics are summarized below:

- Of the 196 pedestrian crashes, 12 were fatal and 168 resulted in injuries.
- Of the 152 bicycle crashes, one (1) was fatal and 127 resulted in injuries.
- 130 (38 percent) pedestrian/bicycle crashes occurred in non-daylight conditions.
- Alcohol and/or drugs were involved in 23 (7 percent) of the 347 crashes.

Figure 30: Crashes by Year and Severity

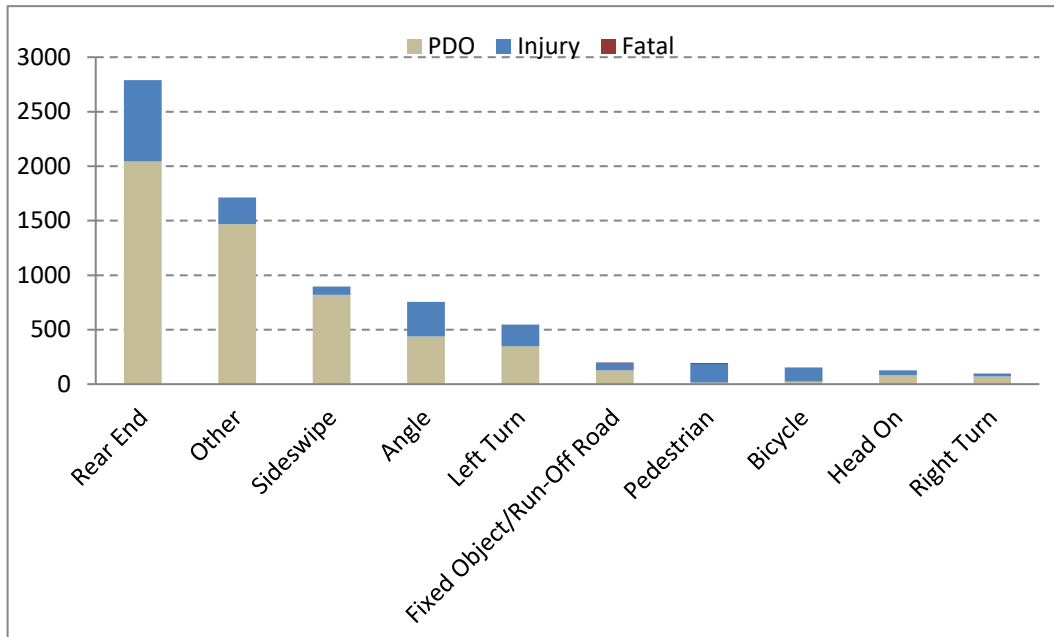
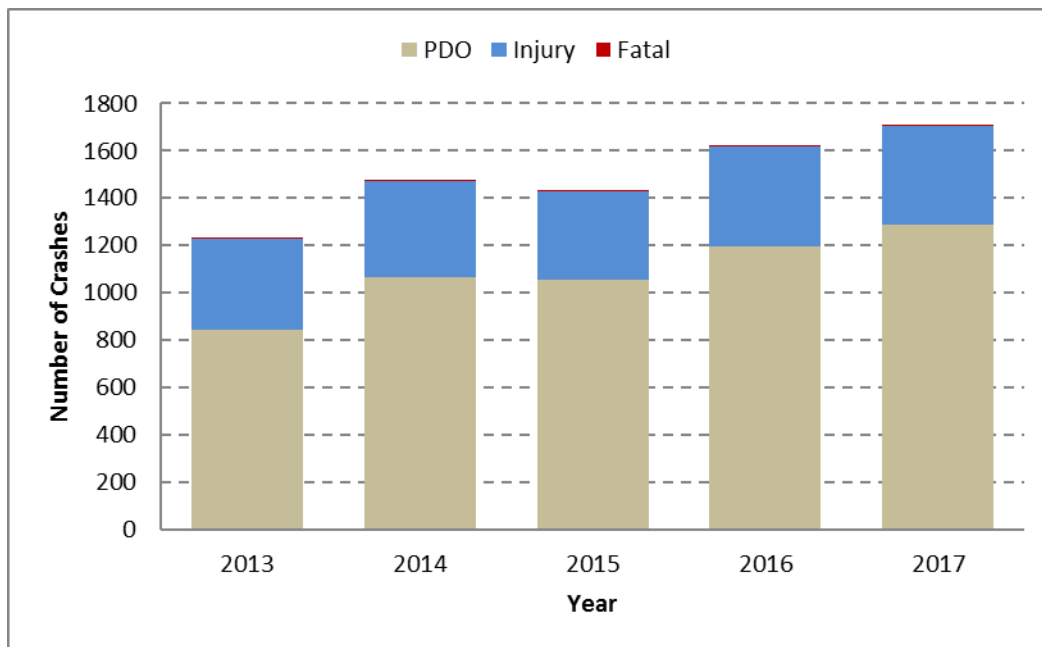


Figure 31: Crashes by Type and Severity



STREET LIGHTING

RESIDENTIAL STREET LIGHTING

Lighting in most traditional residential areas consist of street lights on utility poles on one side of the street. Spacing was inconsistent, however, and where mature shade trees were present, there was often inconsistent light distribution, with areas of light and dark. Some areas also had pedestrian height fixtures, and some of those were solar, but conflicts with landscaping were frequent. Lighting color was predominantly in the yellow tones and likely high-pressure sodium bulbs. This limits color recognition and reduced perceptions of safety. Some fixtures did have whiter light sources, so it does not appear they are prohibited or discouraged.

Private lighting for single family front yards that also illuminated sidewalks was present more in some areas than others, but we did not observe any front yard light poles. Private lighting for multi-family housing was also inconsistent, including some areas of poor coverage on newer structures and sites. Some parking areas next to sidewalks for multi-family units had no lighting, including some parking areas utilizing City right of way. Overall, the majority of sidewalks – and the areas “behind” sidewalks - benefited only marginally from private lighting in these neighborhoods.

Lighting for sidewalks adjacent to City, school, and church facilities/structures was generally poor and inconsistent. Some parks provided good perimeter lighting, but others did not. Carter Park has good lighting for some sidewalks and poor lighting for others.

COMMERCIAL CORRIDOR STREET LIGHTING

Sidewalk lighting along the major commercial corridors is generally good with the exception of Sistrunk Blvd., parts of Andrews Avenue, at railroad crossings (see **Figure 32**) , near parts of I-95 interchanges, at I-95 underpasses, and in some areas with extensive landscaping or tree cover. We did observe some great examples of lighting coming through first floor windows onto sidewalks, but that was not the norm for most parts of the corridors. Some parking lots were very dark adjacent to the sidewalk. Recent housing projects along Andrews and US 1 provided some good sidewalk lighting.



Figure 32: Railroad Crossing Lighting

Lighting color was not consistent, but many areas have white LED fixtures that provide better color recognition that improves safety perceptions. We did observe multiple non-functioning street lights along Sunrise Blvd. and scattered throughout other corridors, including Sistrunk Blvd. Tree-light conflicts were most frequent along Sunrise Blvd.

Vacant properties along Sistrunk, Sunrise, and Andrews created significant areas of dark on and near sidewalks that discourages walking after dark. Finally, there are many new/young street trees along some corridors that will clearly impact existing lighting patterns as they grow.

INDUSTRIAL AREA STREET LIGHTING

Some areas in the industrial districts have very good white lighting, but most do not. This includes portions of collector streets. Most parking areas are dark, and there are many vehicles parked right along sidewalks and pathways, creating potential hiding spots where lighting is insufficient. Street lighting is very limited, and the best sidewalk/pathway lighting is often provided by the private properties (see **Figure 33**).



Figure 33: Industrial Area Street Lighting

NEW MIXED-USE NEIGHBORHOOD STREET LIGHTING

Significant additional pedestrian lighting has been added in this district specifically within Flagler Village and the eastern portion of Progresso Village, both from public poles and from private structures. The resulting lighting is the best in the study area, but it is still inconsistent in areas not yet developed. There is also a notable variation in lighting color – even in the same fixtures – with many street and pedestrian lights using the more yellow color (LED or high-pressure sodium). There is good lighting for most new buildings and some older structures, but others have no lighting and some vacant properties have little or no lighting. Landscape conflicts are considerable and somewhat impact lighting consistency. **Figure 34** illustrates the street lighting gaps in the Study Area.

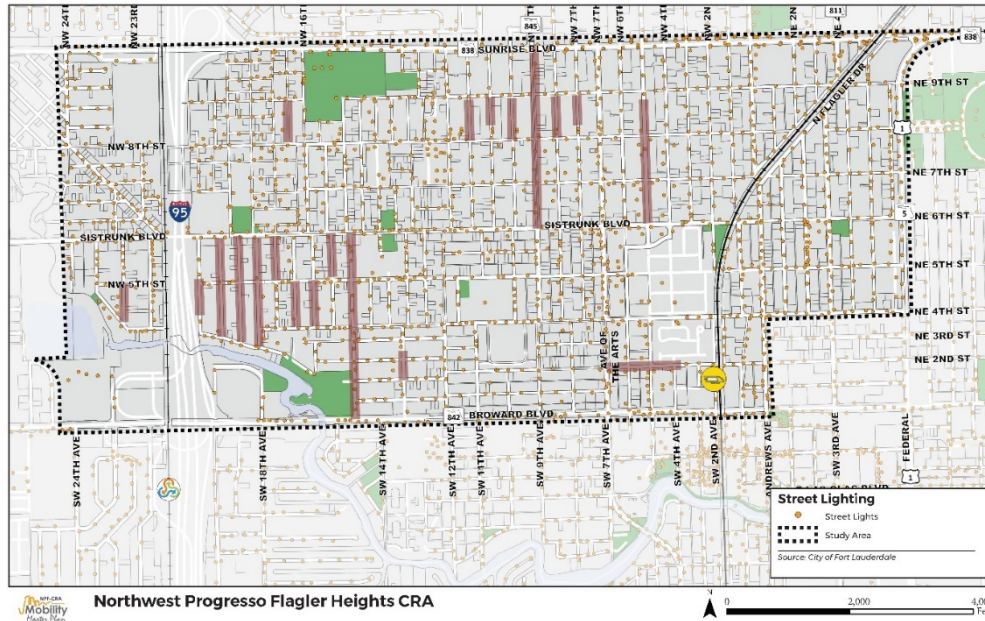


Figure 34: Street Lighting

NETWORK COMFORT ASSESSMENT

METHODOLOGY SUMMARY

In order to provide recommendations to create a connected, multimodal network within the study 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.

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 8** below summarizes the GIS data collected and its source.

Table 9: 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 displayed below in **Figure 35** and **Figure 36**.

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 37** 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.

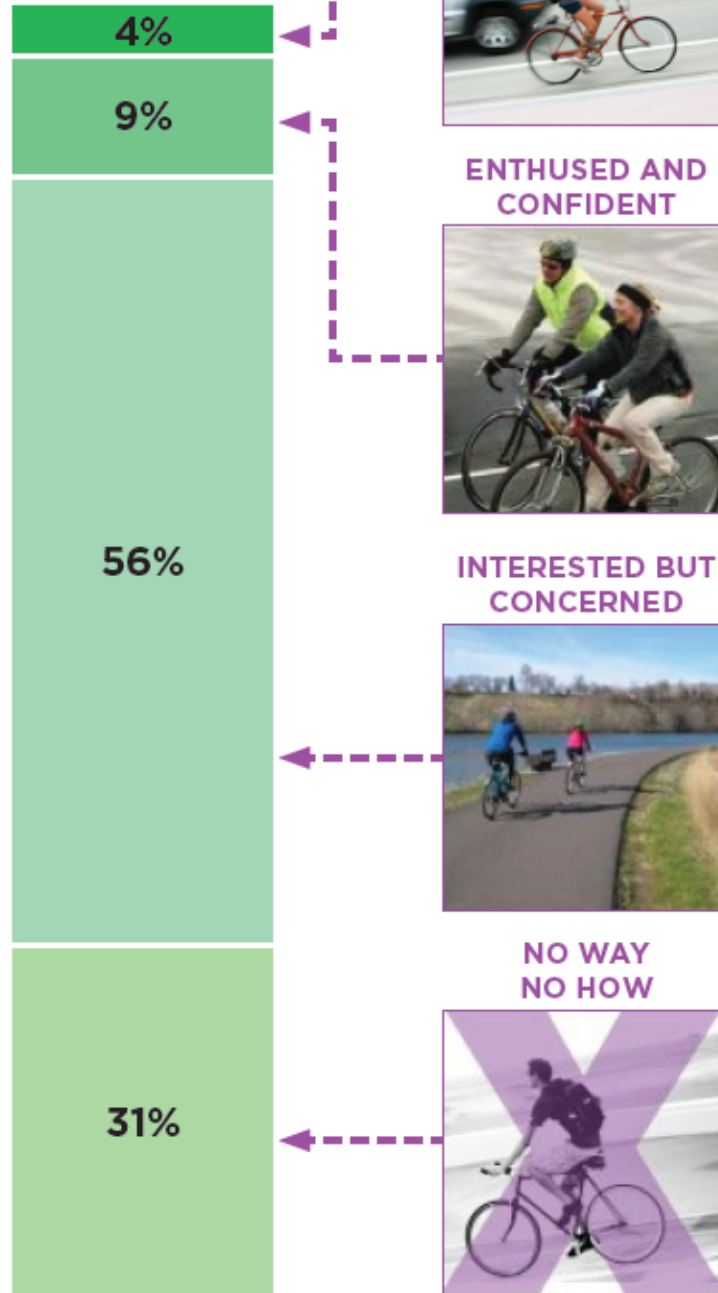
These barriers created by high stress streets create “islands” in the network. These are areas where a person can continuously ride on a low stress street or bike facility until they hit a barrier such as a high stress street or a physical barrier (such as a river or a railroad crossing). These barriers 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 38** 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, Enthusied 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. Enthusied 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.

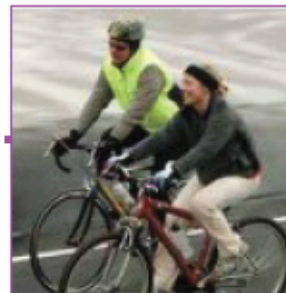
¹ Dill, Jenifer and McNeil, Nathan, *Four Types of Cyclists?: Testing a Typology to better Understand Bicycling Behavior and Potential.* Portland State University, 2012.



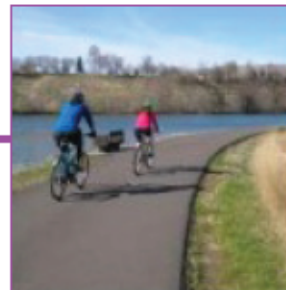
STRONG AND FEARLESS



ENTHUSED AND CONFIDENT



INTERESTED BUT CONCERNED



NO WAY NO HOW



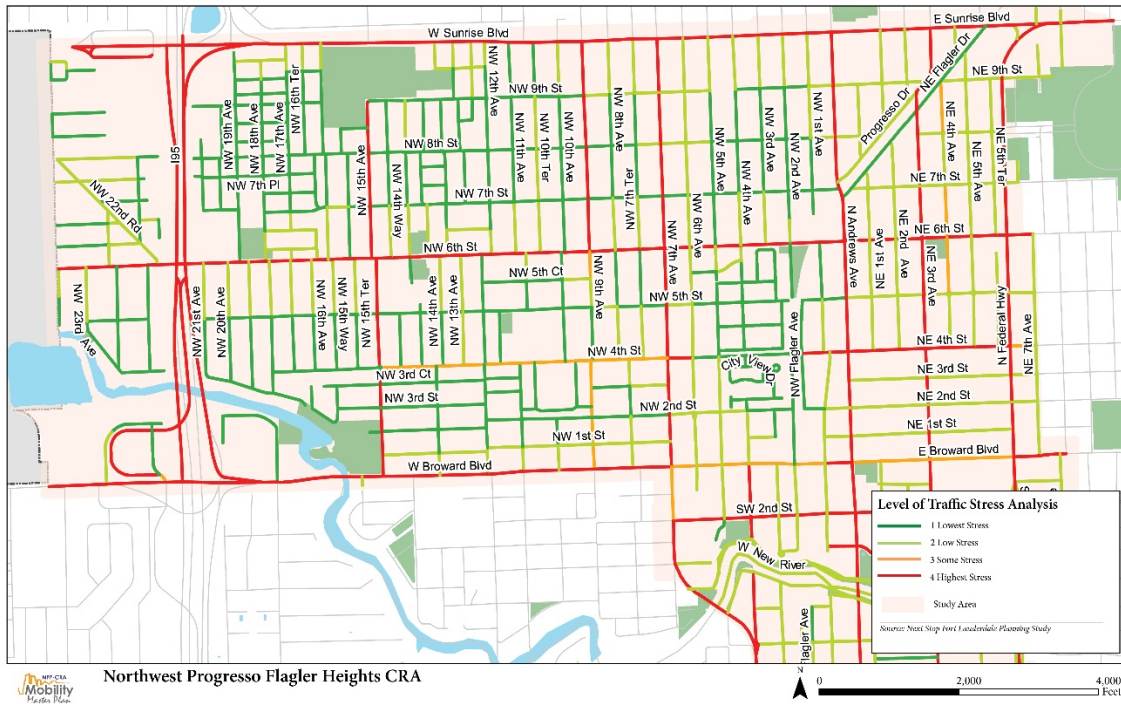


Figure 37: Level of Traffic Stress Results

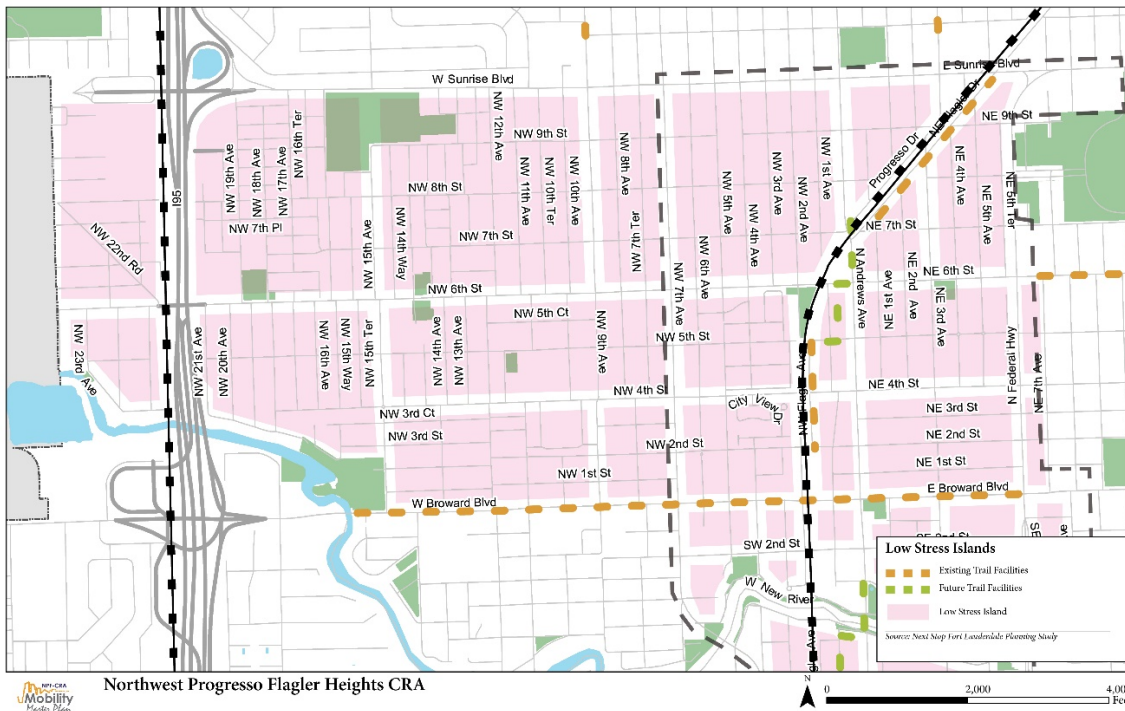


Figure 38: Low Stress Islands

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 sixteen (16) intersections based on their bicycle level of comfort. These intersections included the ones listed below.

- Sunrise Boulevard/NE 3rd Avenue
- NE 7th Street/NE 3rd Avenue
- NE 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
- NE 4th Street/NE 3rd Avenue
- NW 4th Street/ NW 7th Avenue
- NW 4th Street/NE 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
- SE 6th Street/NE 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 are detailed in the Methodology Memo.

Results

The bicycle comfort scores for the intersections analyzed are provided in **Figure 39**. 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.

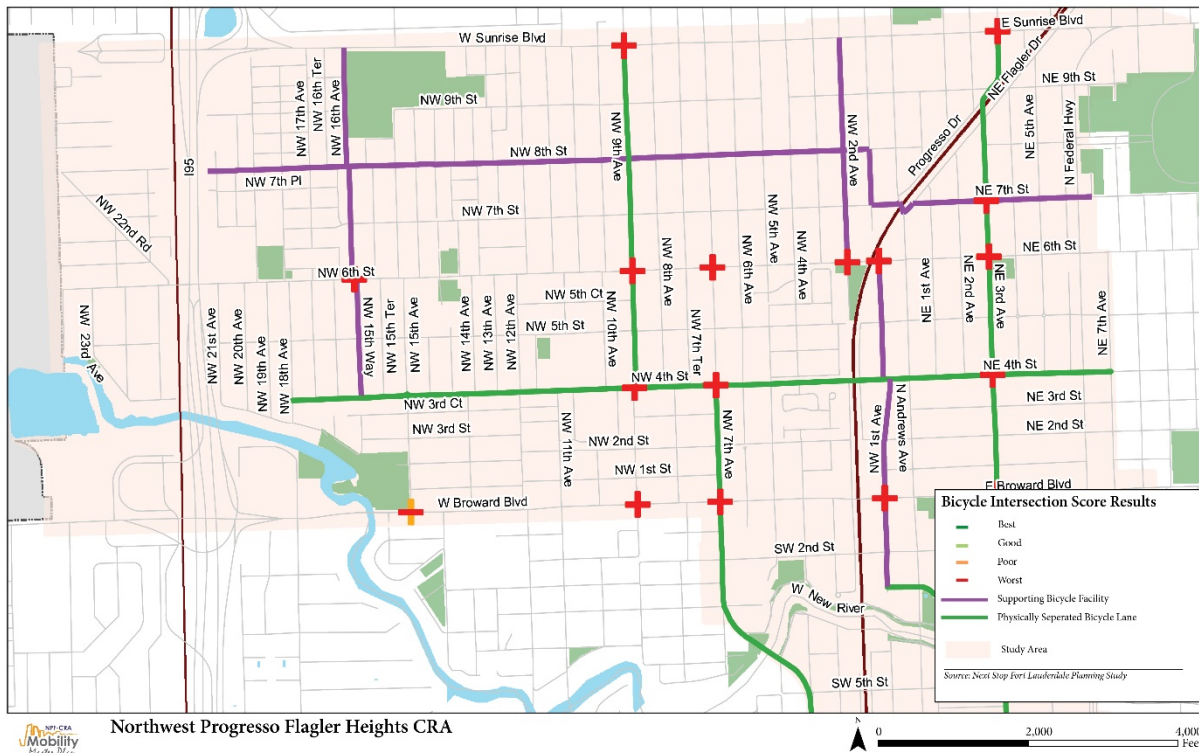


Figure 39: Bicycle Intersection Score Results

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. **Figure 40**, 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 41**.













TRIP TYPE	QUANTITATIVE MEASURES					QUALITATIVE MEASURES	
	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 <ul style="list-style-type: none"> On-street parking: YES Total number of travel lanes: 1-2 Median presence: NO Curb and Gutter: Maybe Bike Parking: NO Street Side <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> On-street parking: YES Total number of travel lanes: 2 Median presence: MAYBE Curb and Gutter: YES Bike Parking: YES Street Side <ul style="list-style-type: none"> Sidewalk presence: On Both Sides Sidewalk width: 5'-12' Driveway Use: Medium Street Trees: YES Street Furnishings (pedestrian scale lighting, furnishings etc.): MAYBE 	<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> On-street parking: MAYBE Total number of travel lanes: 3-4 Median presence: MAYBE Curb and Gutter: YES Bike Parking: YES Street Side <ul style="list-style-type: none"> Sidewalk presence: On Both Sides Sidewalk width: 5'-12' Driveway Use: MEDIUM Street Trees: YES Street Furnishings (pedestrian scale lighting, furnishings etc.): YES 	<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> On-street parking: YES Total number of travel lanes: 2-4 Median presence: MAYBE Curb and Gutter: YES Bike Parking: YES Street Side <ul style="list-style-type: none"> Sidewalk presence: ON BOTH SIDES Sidewalk width: >12' Driveway Use: HIGH Street Trees: YES Street Furnishings (pedestrian scale lighting, furnishings etc.): YES 	<ul style="list-style-type: none"> 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
 Utility Street Transit connection for commuter/regional trips		Commuters	4	Single land use/ stand-alone commercial	>60 feet	Travelway <ul style="list-style-type: none"> On-street parking: NO Total number of travel lanes: 4-7 Median presence: MAYBE Curb and Gutter: YES Bike Parking: NO Street Side <ul style="list-style-type: none"> Sidewalk presence: On Both Sides Sidewalk width: 5' Driveway Use: High Street Trees: MAYBE Street Furnishings (pedestrian scale lighting, furnishings etc.): MAYBE 	<ul style="list-style-type: none"> Minimum standard sidewalks Bus stops/Shelters Safe pedestrian crossing opportunities Lighting
 Industrial Street Industrial work trips		Limited Use	4	Industrial	>60 feet	Travelway <ul style="list-style-type: none"> On-street parking: MAYBE Total number of travel lanes: 2-4 Median presence: NO Curb and Gutter: MAYBE Bike Parking: NO Street Side <ul style="list-style-type: none"> Sidewalk presence: At least on one side Sidewalk width: 5' Driveway Use: Medium Street Trees: MAYBE Street Furnishings (pedestrian scale lighting, furnishings etc.): NO 	<ul style="list-style-type: none"> Minimum Standard Sidewalk

Figure 40: Pedestrian Use Criteria Table

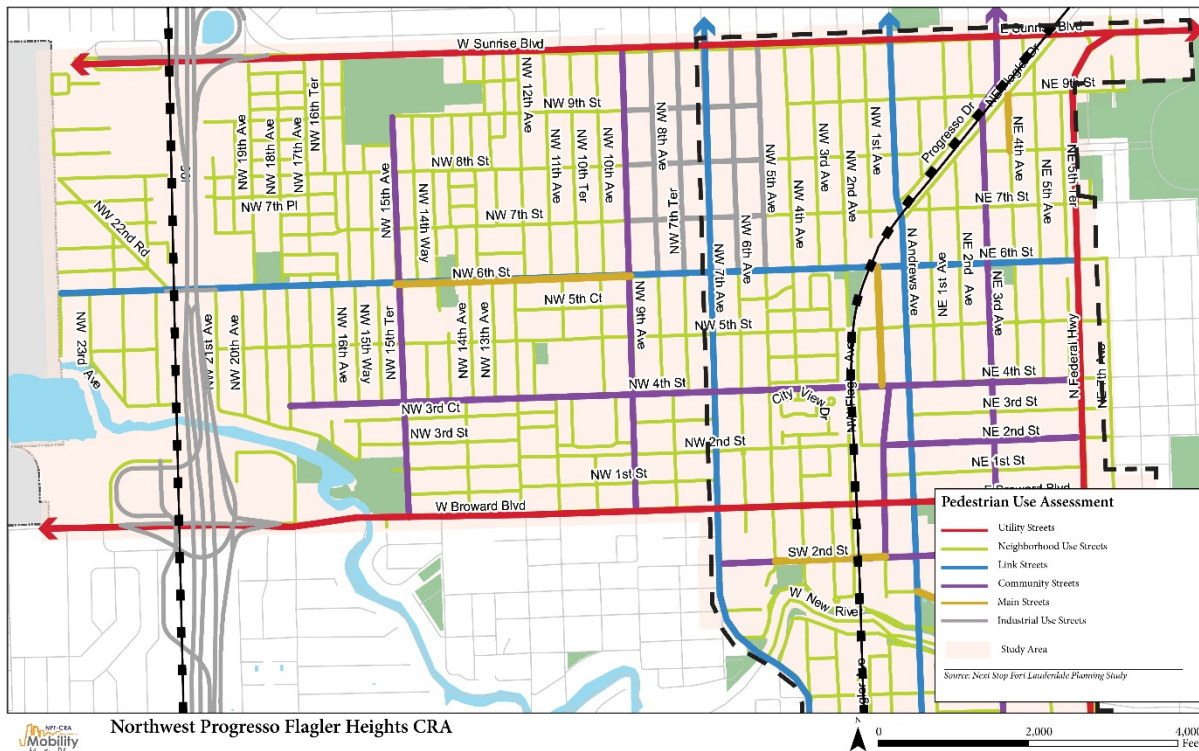


Figure 41: Pedestrian Use Assignments

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

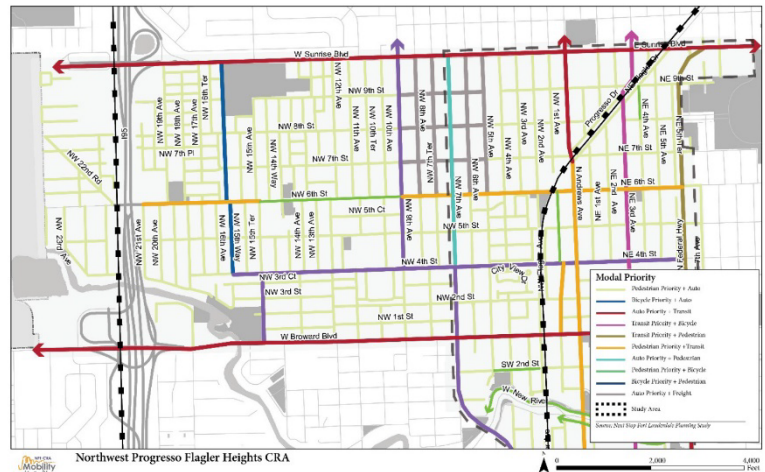
assignments, existing and future transit routes and stop location data, AADT data, land use, and long-range master plans (Uptown and Tri-Rail Coastal Link).

Using the decision making framework detailed in **Figure 42** 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 43**. Each street is assigned a primary mode priority and a secondary mode priority.

Decision-Making Framework

Pedestrian Priority Streets

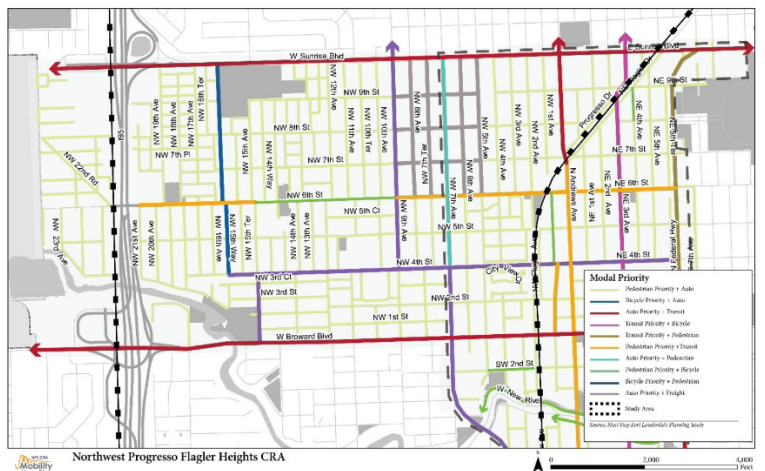
- For **Main Streets**, the primary user is always the pedestrian
- For **Neighborhood-Use Streets**, the primary user is always the pedestrian (except when on a special condition, bicycle users can be considered the primary user)
- Link Streets** have the potential of having segments where pedestrians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



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



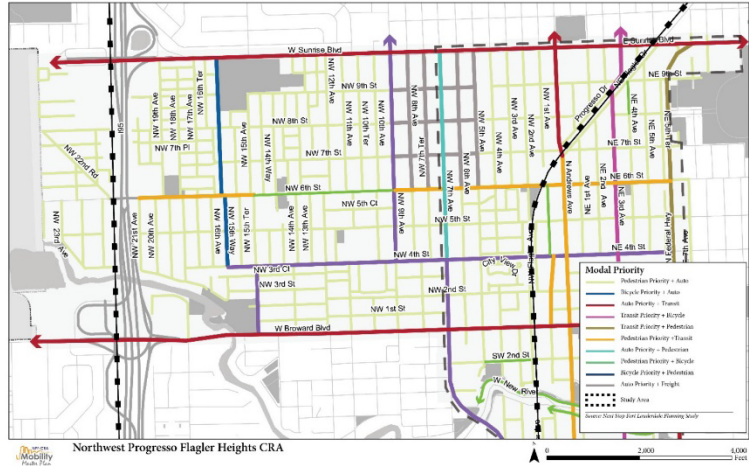
Decision-Making Framework

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



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

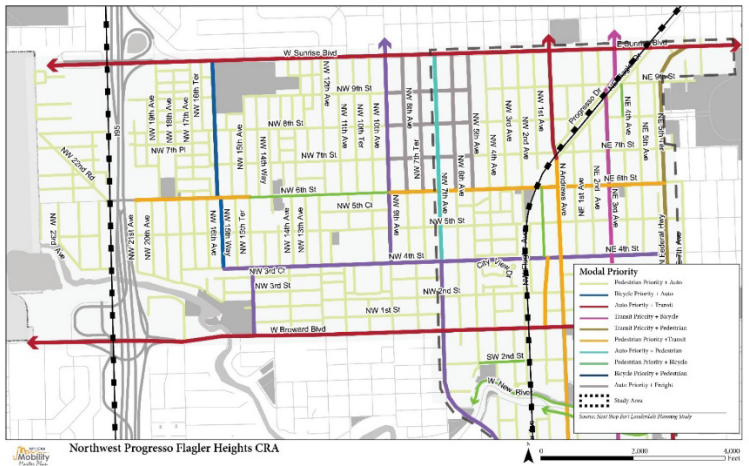


Figure 42: Modal Priority Decision Making Framework

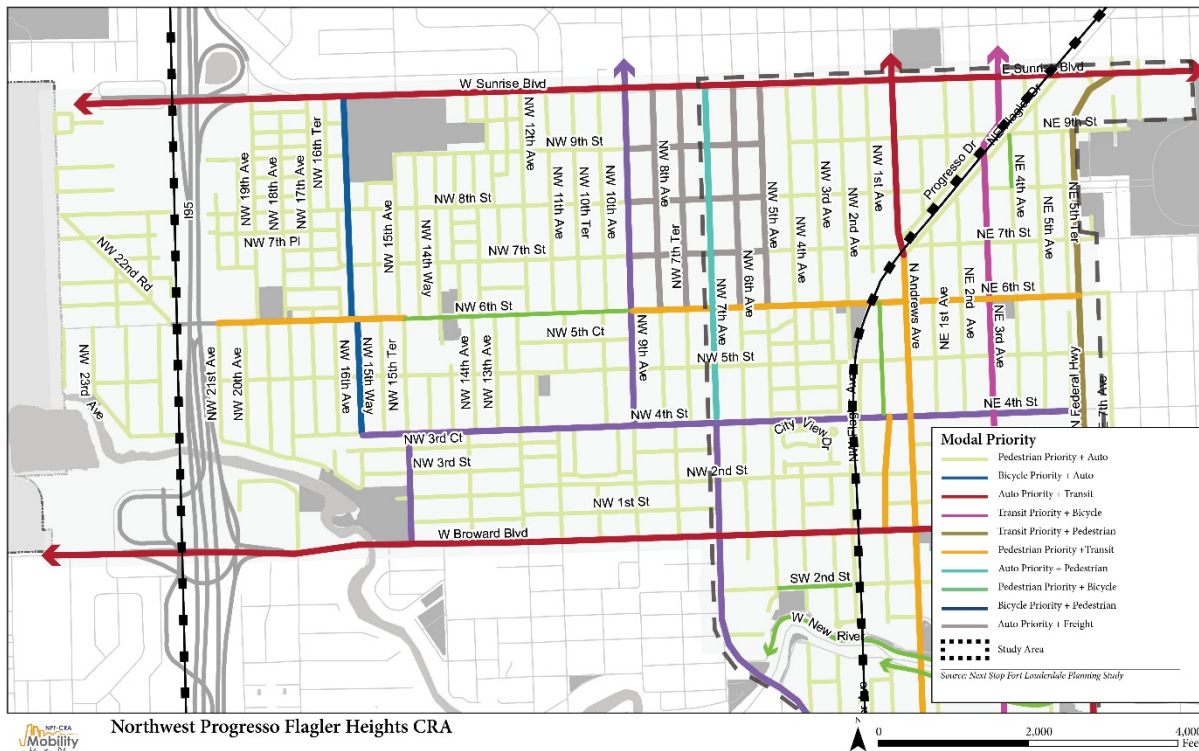


Figure 43: Modal Priority Map

FINDINGS

The master modal priority map demonstrates some key themes and findings throughout the study 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.

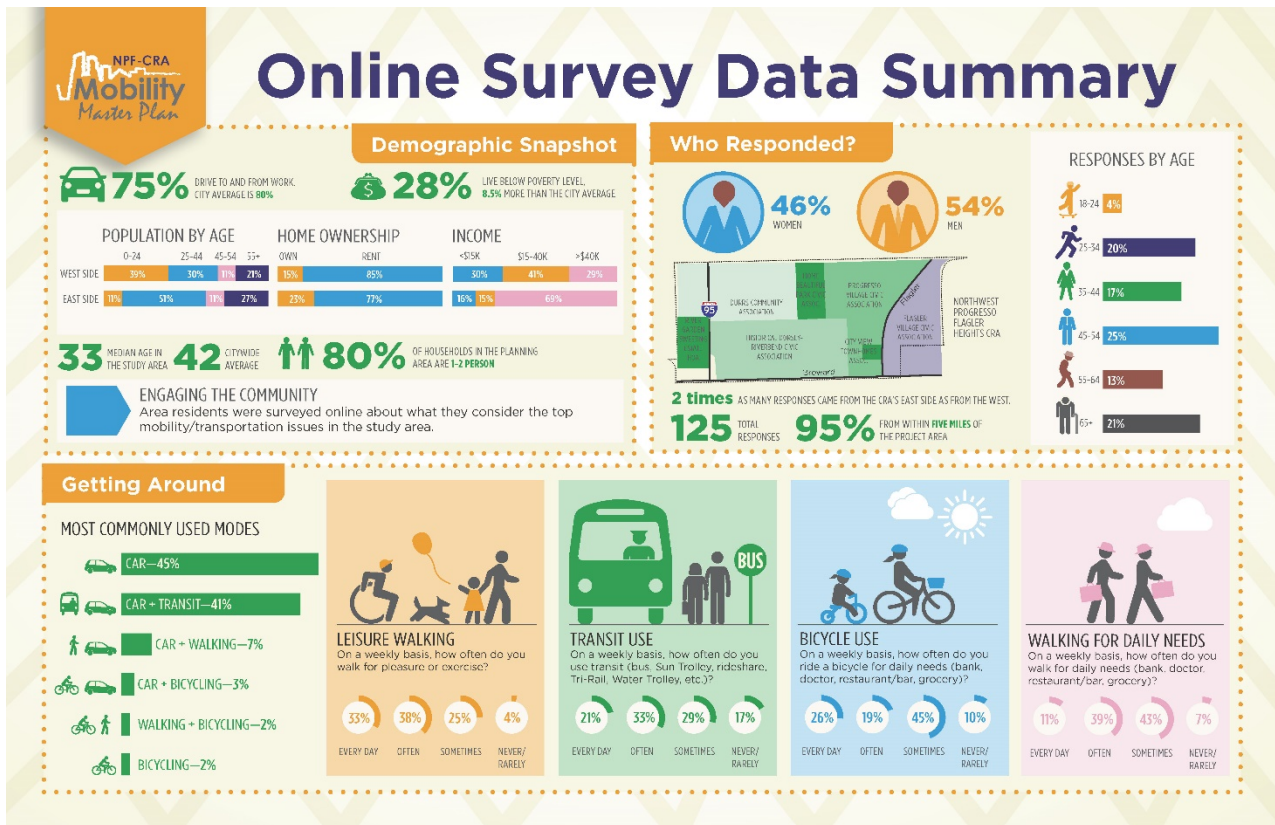
WHAT WE HEARD

COMMUNITY ENGAGEMENT

The planning process during the mobility master plan included multiple contact points with the community and stakeholders, in order to identify the issues and opportunities within the study area. Three community workshops, three community meetings, an interactive online survey, informational flyers, and participation in youth/community outreach events were utilized in order to get the community to participate and provide input through the process.

ONLINE SURVEY

As part of the engagement efforts through this planning process, a survey was distributed during the spring (February through June 2019) to a diverse audience in and around the community to gauge real and perceived mobility needs and opportunities, and to find out what aspects people care the most as we think about the future of this area. The survey addressed topics related to multimodal infrastructure, safety, mobility options and safety. Results of the survey can be seen below and accessed online by clicking [HERE](#).



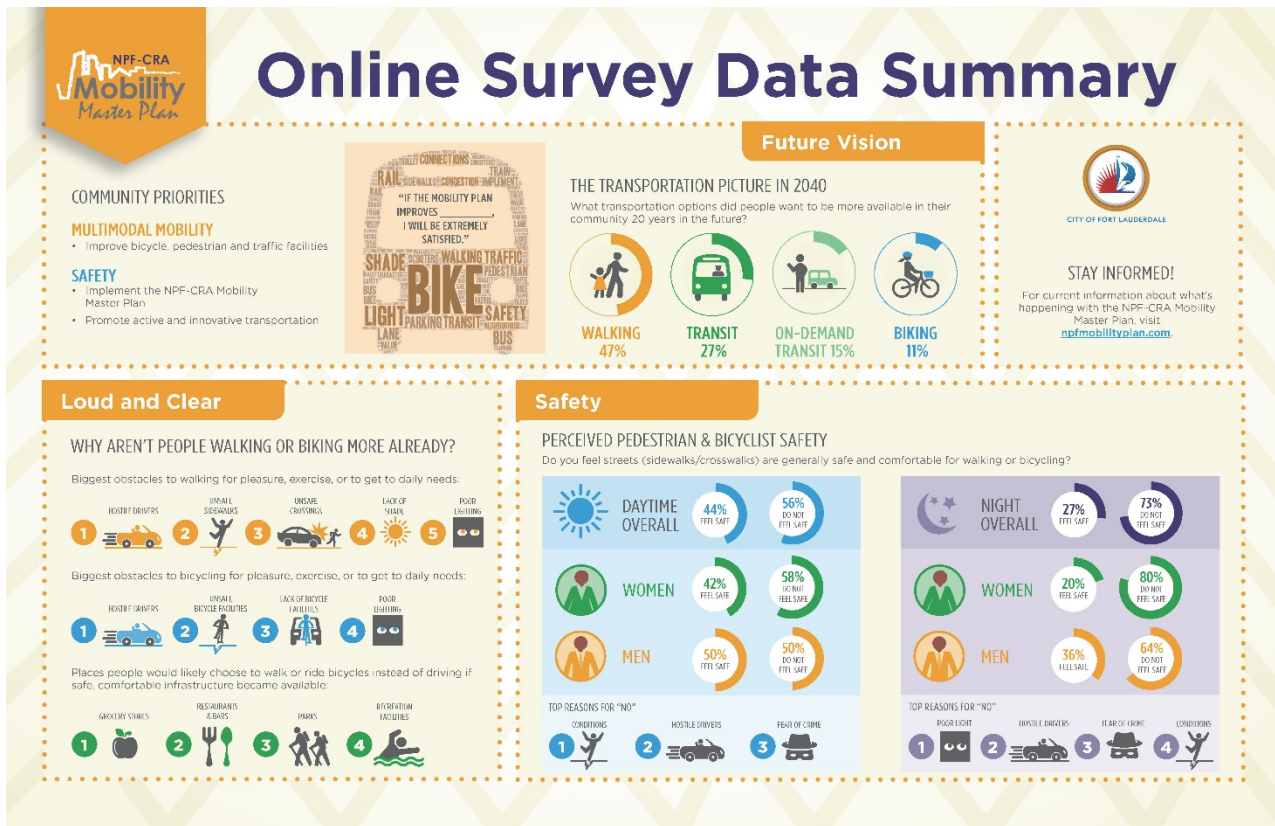


Figure 44: Modal Priority Map

COMMUNITY WORKSHOP #1 - FEBRUARY 6-8, 2019

On Wednesday February 6th through Friday February 8th a public workshop was held with the objective to learn about the opportunities and needs within the study area through discussions with community stakeholders and listen to what people are most concerned about. Members of the community were invited to attend and give provide input and ideas to be considered through the development of this Mobility Master Plan and voice their opinions on specific projects and infrastructure improvements within the CRA. The project team displayed the existing conditions analysis and findings through the data collection process, while also beginning to identify common themes and opportunities in the area. During the public workshop the project team developed guiding principles for the project, which reflect the overall connectivity and mobility challenges in the study area. To close the public workshop, the project team invited the community to attend a public presentation where the project team provided an overview of the planning process that is underway, presented initial findings, and reported back on the most common issues and opportunities captured through

the engagement efforts with stakeholders and the general public. The project team also summarized next steps and future project milestones.



COMMUNITY PRESENTATION – APRIL 17, 2019

In the evening of April 17, 2019, the project team held a follow up community presentation, where the consultant presented initial findings, existing conditions analysis, and starter ideas to the community and local leaders. Participants reaffirmed some of the themes summarized, approved of the approach the team was taking, but also voiced their opinions and concerns with some of the information presented. The input provided that evening confirmed some of the most important needs to address through this process and helped the team move forward with clear vision.

SUMMARY OF ISSUES AND OPPORTUNITIES

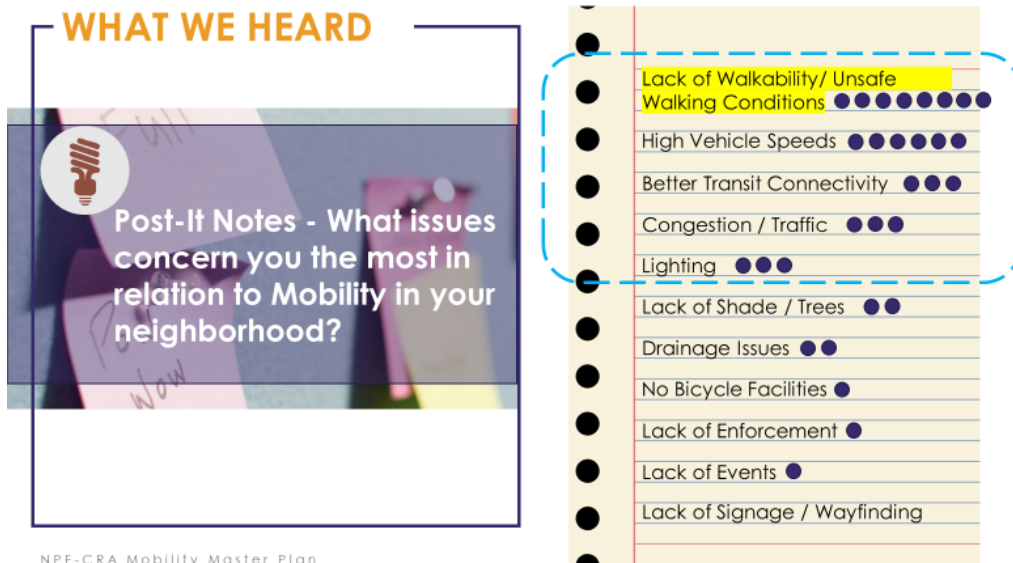


Figure 45 : Prioritized list of issues of most concern

During the engagement process, the project team compiled a list of common issues as brought up by the community, as they were asked to list the top three issues that concerns them the most and then to collectively rank the list of issues. Figure 45 above reflects the issues that ranked highest.

The figure below identifies the areas that capture the key mobility issues and opportunities identified in the study area. The project team arrived to this list through public input, field review observations, and technical analysis.

Traffic Calming

Traffic calming is needed and desired by the community in residential areas.

Network Connectivity

Lack of network connections forces traffic onto Sistrunk Boulevard creating more congestion.

Street Design / Streetscape Elements

Street design can improve safety and comfort for all roadway users.

Safety & Traffic Operations

Speeding and cut-through traffic is a main safety concern in the community.

Access / Inadequate Pedestrian Facilities

Lack of walkability/unsafe walking conditions was the number one issue identified by community members particularly on 4th Street and Sistrunk Boulevard.

Figure 46 : Issues and Opportunities

GUIDING PRINCIPLES

By the end of the first community workshop, the project team had developed guiding principles to provide high-level direction and reflect an understanding of the focus areas to be addressed through the development of this mobility master plan and other planning initiatives within the NPF CRA.

1. Connect and Enhance Neighborhoods

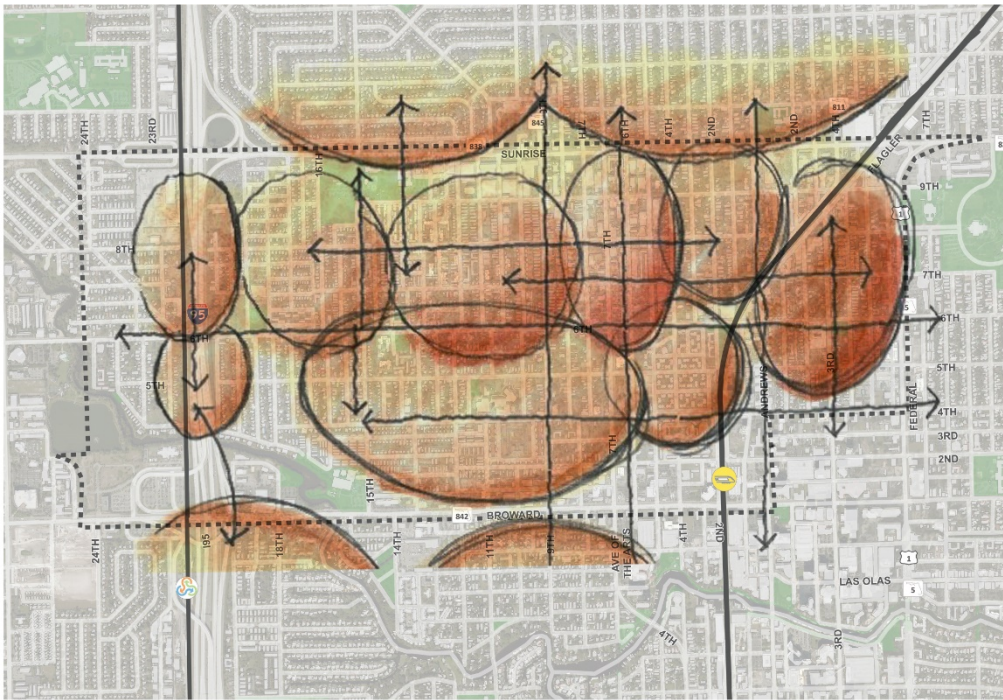


Figure 47: Connect and Enhance Neighborhoods

2. Connect and Enhance Neighborhoods

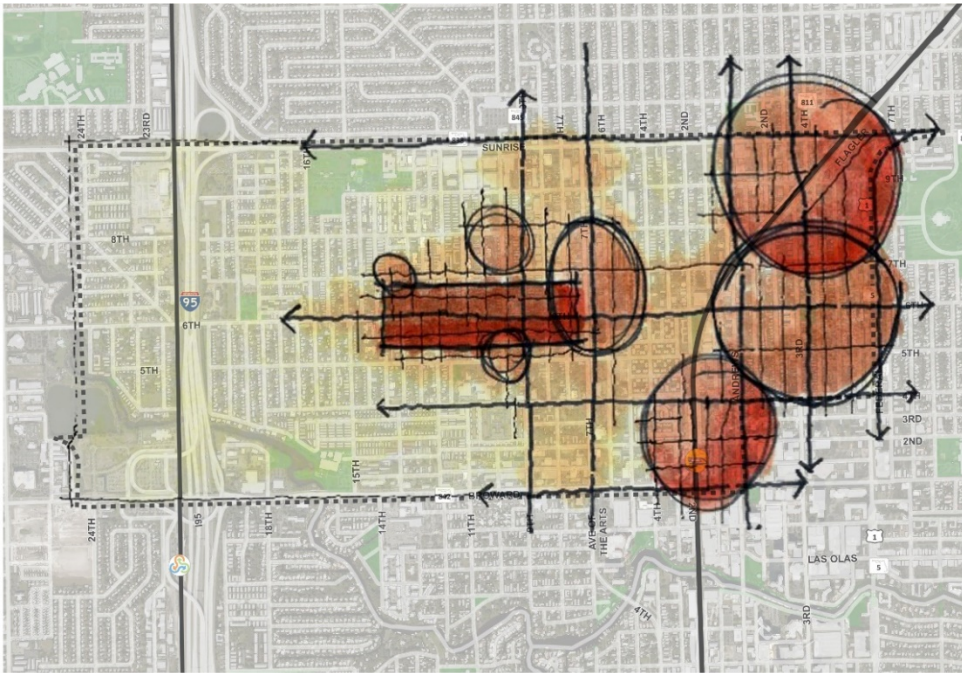


Figure 48: Balance Needs and Developments

3. Overcome Barriers

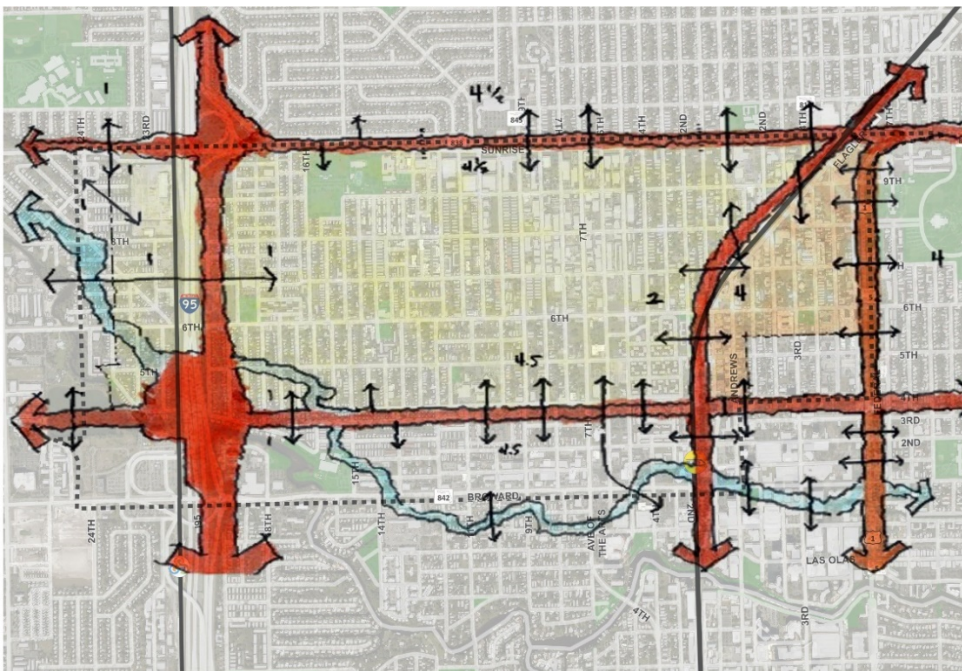


Figure 49: Overcome Barriers

4. Create Multimodal Connections

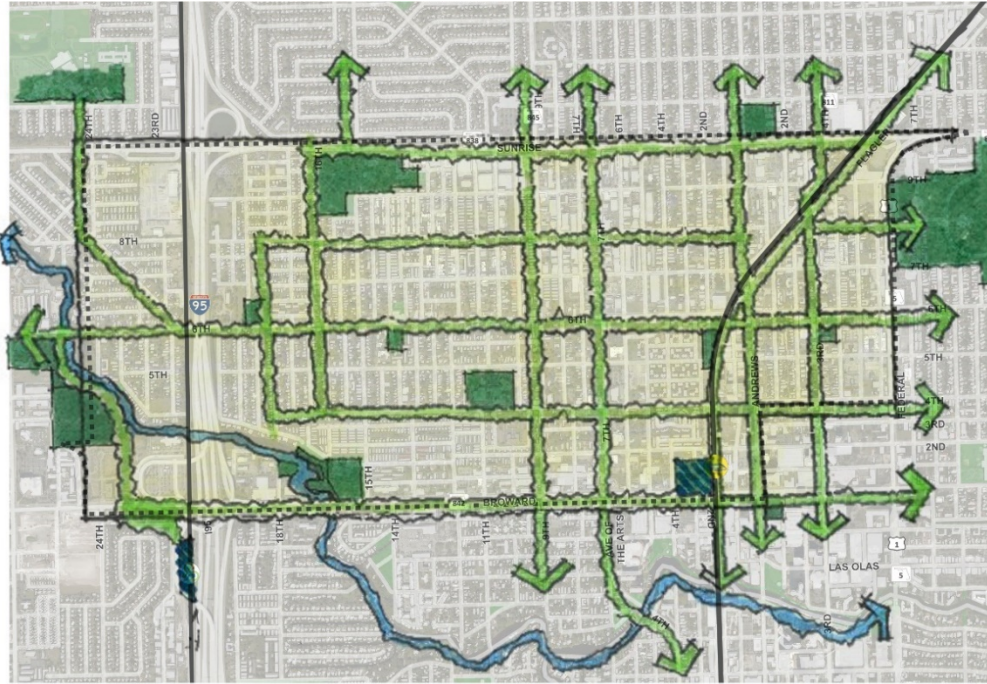


Figure 50: Create Multimodal Connections

5. Celebrate Local Culture

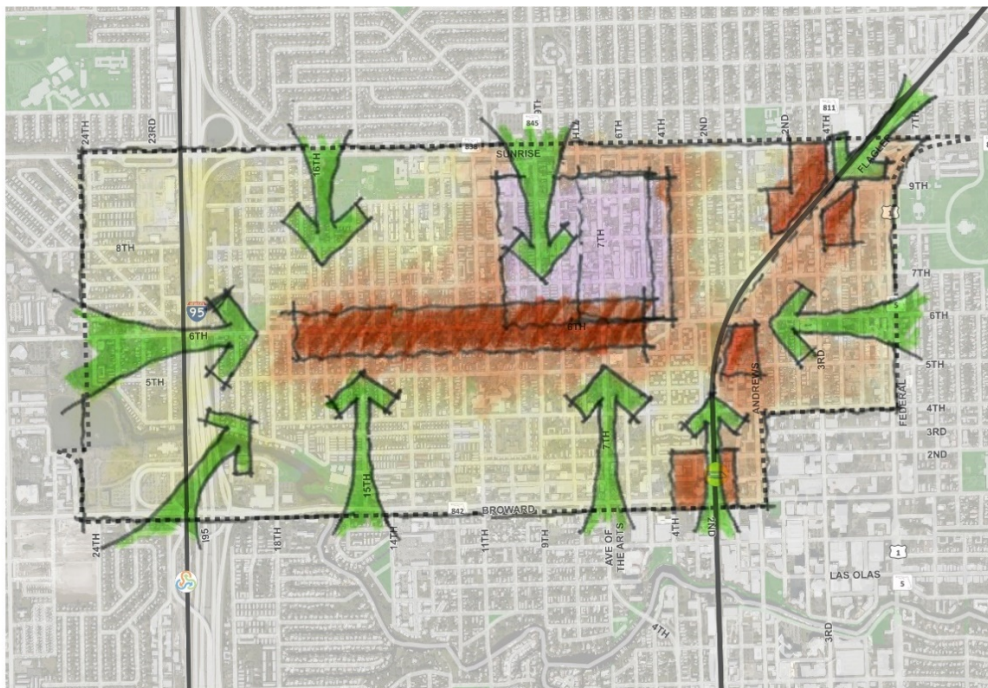


Figure 51: Celebrate Local Culture

6. Facilitate Transitions

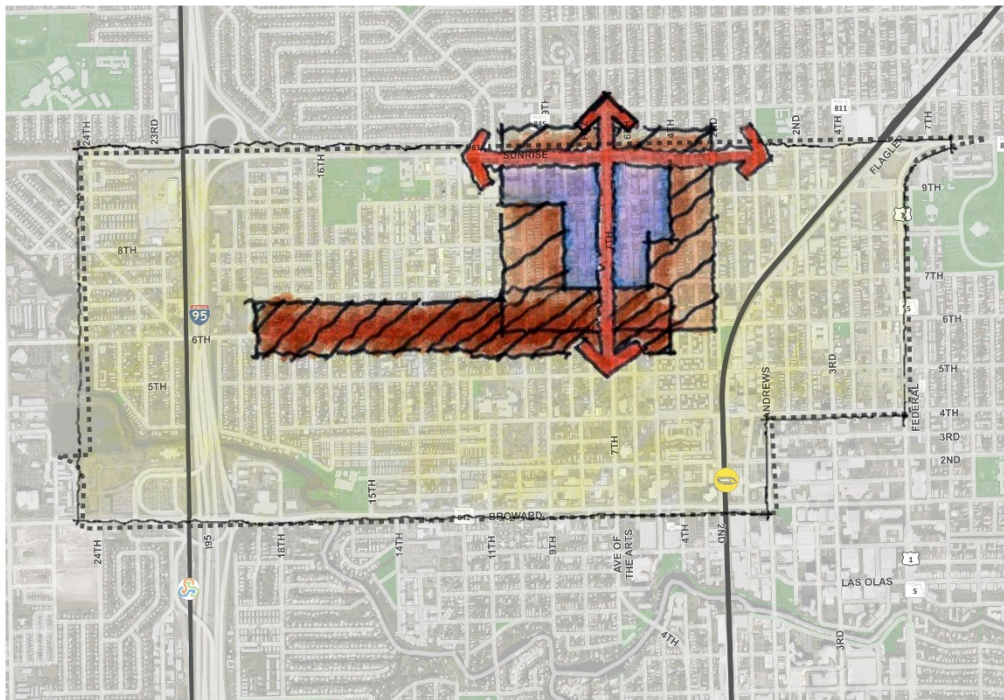


Figure 52: Facilitate Transitions