

Map Series

Methodology

Broward County I-95 Corridor Mobility Planning Project
Technical Memorandum #3

3/26/2014
FDOT District 4
Office of Modal Development

I-95

corridor mobility plan



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Appendix: 11" x 17" Map Series

Map Series Methodology

Introduction

I-95 is the backbone of South Florida's transportation system. It is a critical resource for the region's economic vitality. Citizens, residents, and businesses depend on this key interstate for daily transportation needs. But congestion, crashes, and unexpected delays are common, disrupting daily routines and resulting in lost productivity and economic impacts. I-95 is already operating at a failing level of service, and as the region continues to grow, conditions will worsen, despite attempts to maximize capacity through technological advancements.

To improve travel conditions on I-95, only a few options remain for optimizing and increasing capacity on the interstate. The rest must be done by influencing the demand on I-95, by **making it easier for people to access jobs, housing, education, goods, and services without driving on I-95 by using different roads, different modes, and making shorter and fewer trips.**

While this overarching goal may seem simple, achieving it is not. Travel patterns are complex. Many different factors influence a person's decisions on where, when, and how to travel. Many factors are outside of an individual's control. The decisions of local governments, transit agencies, Metropolitan Planning Organizations (MPOs), planning councils, and the Florida Department of Transportation (FDOT) all affect travel patterns in a complex interconnected system of transportation and land use.

All of these various planning partners play a specific role that affects South Florida's transportation system. FDOT constructs and maintains the state highway system. Local governments manage the local road system and approve developments which increase demand on the transportation system. Transit agencies provide public transportation services for residents and commuters who cannot or choose not to drive a car. MPOs decide which transportation improvements will be funded with federal transportation dollars. Counties determine future right-of-way needs in the Trafficways Plan, and are usually responsible for traffic operations on non-freeway state and local roads. Planning councils coordinate between cities and maintain future land use plans, which regulate the densities at which land can be developed.

These various planning partners all produce plans that articulate visions for the future, and these planning documents all involve I-95 in some way. Many of these planning partners have also conducted studies about the I-95 corridor.

One major task of the Broward County phase of the I-95 Corridor Mobility Planning Project was to synthesize the previous studies and existing planning documents to understand a broader vision of the transportation system and the existing and future land uses that rely on the transportation system. Land use decisions affect the transportation system, and the transportation system affects land use. To better understand the overall system, the I-95 project

team synthesized the planning documents and studies into a planning framework for the I-95 corridor that can serve as a common language for all of the various planning partners. This framework is the first step to achieve more coordinated planning processes amongst the planning partners.

While this phase of the I-95 Corridor Mobility Planning Project began in 2012, FDOT had completed several previously connected efforts, including a 2008 I-95 origin-destination study, identification of High Asset Use Locations (HAULs) in 2009, 2009 Strategic Intermodal System (SIS) Connector reports, and others. Technical Memorandum #2: History and Background provides more detailed information on the previous phases of the I-95 Corridor Mobility Planning Project.

The Broward County phase represents one chapter of an ongoing coordination and planning effort. FDOT defined the study area for this phase to include the portion of eastern Broward County and southeastern Palm Beach County from the Florida Turnpike and State Road 7 to the ocean, and from the northern municipal limits of the City of Boca Raton to the Broward/Miami-Dade county line. These study area limits are consistent with the 2008 origin-destination study. The extents of the maps within this memo include the northern portion of Miami-Dade County to the Golden Glades Tri-Rail station and I-95 interchange with the Florida Turnpike. Although the land uses in Miami-Dade County were not included in the analysis, the map extents include this area to show the transportation connections that exist to the south.

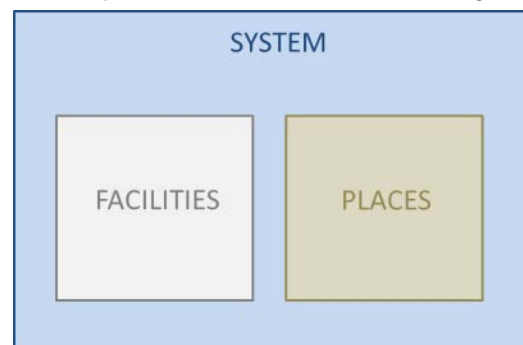
FDOT is considering a second phase of the project that would conduct a similar analysis for the area north of Boca Raton in Palm Beach County.

This memorandum documents the methodology and analytical processes that the I-95 project team conducted to synthesize the existing planning documents and studies into a succinct planning framework. This framework consists of a typology of facility types and place types, and is illustrated through a series of maps. The figures within the document include the various maps. A full 11" x 17" set of maps is included in the appendix.

Framework Structure

The framework is based on three organizing elements: (1) a vision of generalized future land use for the entire study area; (2) facility types that define functions for transportation facilities; and (3) place types that define functions of areas with similar types of land uses. The end goal of the I-95 Corridor Mobility Planning Project is to identify strategies and performance measures for the facility types and place types that work towards achieving the overall system goals and can help decision-makers make more informed investment decisions.

For reference throughout this document, transportation **facilities** can be defined as roads, rail lines, and trails that move people and goods



throughout the study area. **Places** are areas with similar types of land use and urban form characteristics. These terms will be explained in more detail in the following sections.

The framework characterizes facilities and places into facility types and place types and follows a sequence of questions:

1. What does a generalized future land use map look like?
2. How can the transportation network function to best serve these uses?
3. Where are the centers of activity (people and goods)?
4. How do each of these function?
5. How should these function together?

Generalized Future Land Use Vision

Land use decisions affect transportation, and transportation decisions affect land use. To work together effectively, local governments, state agencies, planning councils, and other decision-makers must understand and plan for transportation and land use together. This is a foundational concept for the I-95 Corridor Mobility Planning Project.

The first step in developing the framework was to examine the future land use of the entire study area. By developing an understanding of an overall vision for future land use, we can ensure that the recommendations for transportation facilities accommodate this vision and help the land use and transportation networks work together.

The adopted future land use maps in the Broward County Land Use Plan, Palm Beach County Future Land Use Atlas, and cities' comprehensive plans show future land use at the parcel level, and the project team used these maps as a starting point. The project team grouped the land use categories into four generalized categories: commercial, mixed use, industrial, and residential, see **Figure 1**.

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Generalized Future Land Use

Future Land Use

- Residential
- Commercial
- Industrial
- Mixed
- Miami-Dade

Tri-Rail station

- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

SOURCE: FDOT, PALM BEACH METROPOLITAN PLANNING ORGANIZATION & BROWARD COUNTY

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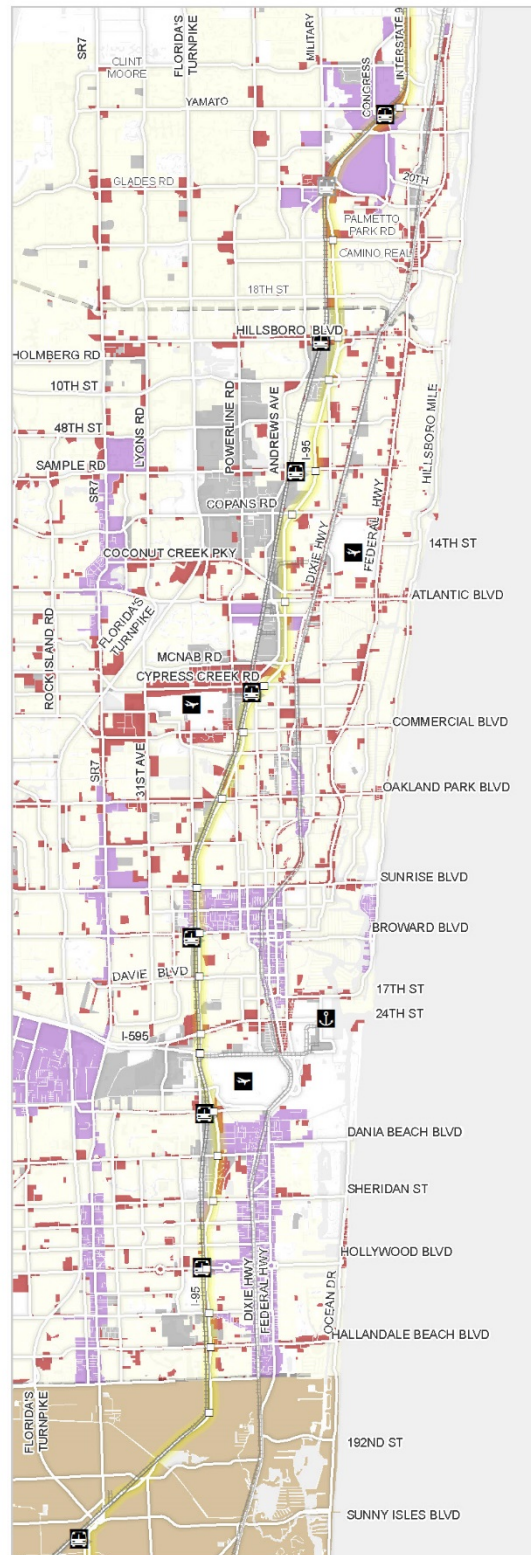


Figure 1: Generalized Future Land Use Map

These four generalized future land use categories are intended to reflect the trip-making characteristics of the land uses therein. The mixed use designation reflects a mix of residential, commercial, institutional, office, retail, and recreation uses to bring trip origins and destinations within close proximity such that walking and bicycling become viable forms of transportation.

The residential, commercial, and industrial generalized uses reflect generally single-use development, where other types of destinations are not close enough to walk or bike to. In general, areas that have only residential uses within walking distance will typically have similar same trip-making characteristics, regardless of the density of those residential units. Residents typically leave for work in the morning, come back in the evening, and make various trips during the weekends and weeknight evenings to some degree. The complete theory on trip generation is more complex and recognizes the variations that can occur, but we can make these generalizations to explain at least a majority of the type of activity that is occurring.

Similarly, areas with only commercial-type uses have similar trip-making characteristics. They may draw trips throughout the day (during peak hours if office, and mid-day if retail), and most of the trips will be made in autos, with transit share possible. Industrial areas have their own trip-making characteristics, and typically involve large trucks moving throughout the day.

The project team further generalized the future land use map by 'painting with broad brush strokes' to attempt to understand how the land uses in Broward County and southeastern Palm Beach County function from a high-level perspective, see **Figure 2**. This map represents a broad vision for future area-wide land use and helps to understand how the transportation network should function to best serve these uses.

This vision map incorporates the regional activity centers (RACs), local activity centers (LACs), and other mixed use future land use categories as mixed use areas. University campuses were also designated as mixed use.

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**Generalized Future
Land Use Vision**

Generalized Future Land Use

- Residential
- Commercial
- Industrial
- Mixed
- Other
- Miami-Dade

Tri-Rail station



Existing



Future

Airport (SIS Hub)

Seaport (SIS Hub)

SOURCE: FDOT, PALM BEACH
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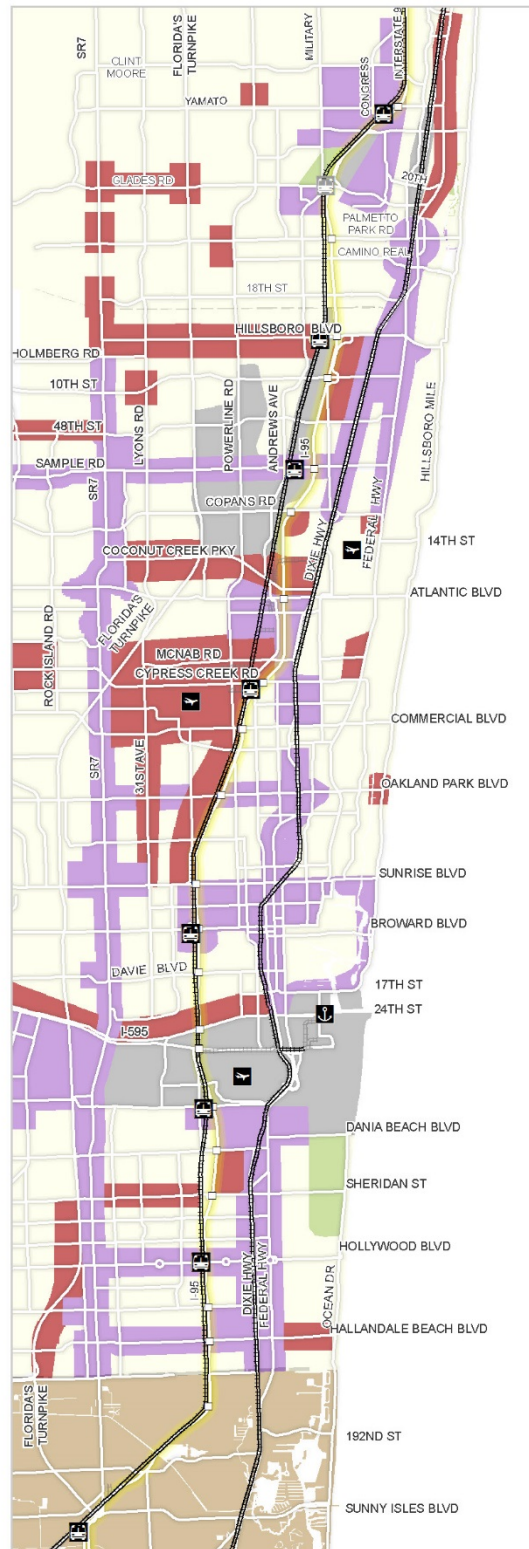


Figure 2: Generalized Future Land Use Vision Map

Facilities and Facility Types

Given the generalized future land use vision described in the previous section, the project team devised a way to characterize and categorize transportation facilities based on their functions and abilities to best serve the future land use. The section on Places and Place Types further examines how the land uses can best serve the transportation system. This integrated approach ensures that decisions from multiple agencies and localities can work together.

By designating facilities into categories based on their function, we can recommend strategies to ensure that these facilities will continue to serve their intended function and that the surrounding land uses will remain compatible to these functions.

The I-95 Corridor Mobility framework focuses on the network of facilities shown in **Figure 3**. Although local roads, as defined by the FDOT functional classification system, are an inherently important part of the transportation system, the transportation network for this framework excludes most local roads. A primary concern of the I-95 Corridor Mobility Planning Project is those trips that may use I-95. Almost all trips begin or end on local roads, but the majority of a trip's length occurs on collectors, arterials, and other non-local roads. It is this middle portion of a trip that is most critical for route choice and mode choice that could improve mobility on I-95 and overall.

A primary concern of the I-95 Corridor Mobility Planning Project is those trips that may use I-95. Almost all trips begin or end on local roads, but the majority of a trip's length occurs on collectors, arterials, and other non-local roads. It is this middle portion of a trip that is most critical for route choice and mode choice that could improve mobility on I-95 and overall.

Facilities included in the study network are those in the 2035 Southeast Florida Transportation Council (SEFTC) Regional Transportation Network (this includes Strategic Intermodal System (SIS) corridors, hubs, and connectors); other state roads; extensions of SIS corridors, regional roads, and state roads; roads that have interchanges with I-95; roads longer than five miles; roads with significant overall AADTs, high truck volumes or are critical truck network connections; roads that are critical transit connections with existing service; and other key network connections.

Facility Type Criteria

A well-functioning transportation network consists of several different types of facilities that serve different roles. This is the concept behind functional classification, and it also applies to transit and multimodal planning, and surrounding context.

By dividing the transportation network into facility types, we can provide complete networks for different types of trips that make it easier to travel in the study area without getting on I-95. Complete networks of facility types allow for easier travel to and from origins and destinations through a choice of modes.

Facilities can be categorized into five facility types based on two main criteria: (1) generalized capacity, which is similar but not identical to FDOT functional class; and (2) surrounding context

based on generalized future land use. Future transit service was also a factor in designating facilities into facility types.

Generalized Capacity

Facilities fall into three categories of generalized capacity:

1. **SIS Corridors** – These are truly limited access expressways including interstates, the Florida Turnpike, and rail lines.
2. **Primary Facilities** – These are the Regionally Significant Corridors as identified by SEFTC, excluding the SIS Corridors.
3. **Other Facilities** – All other roads in the study network.

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**Facilities Categorized
by Generalized Capacity**

- SIS Road Corridor
- SIS Rail Corridor
- Primary Facility
- Other Facilities in Study Network

□ Interchange

Tri-Rail station

Existing

Future

Airport (SIS Hub)

Seaport (SIS Hub)

SOURCE: FDOT, PALM BEACH
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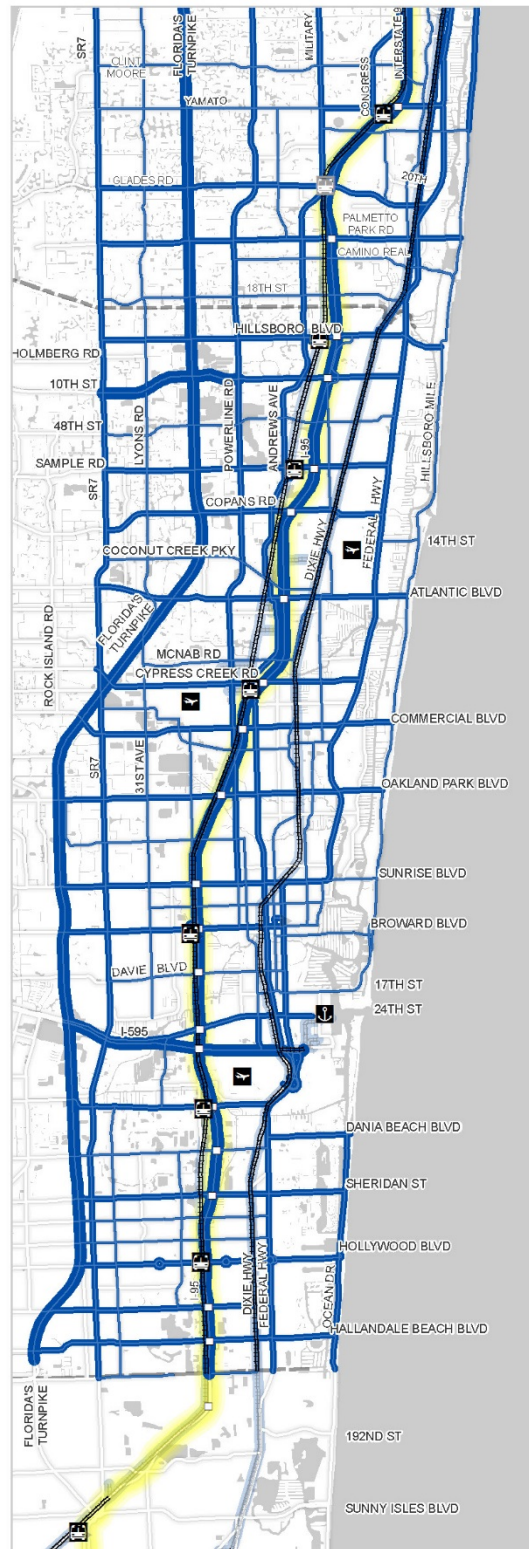


Figure 3: Facilities Included in I-95 Corridor Mobility Plan by Generalized Capacity

Surrounding Context

The surrounding context determines a facility's function, particularly for the transportation mode(s) of emphasis. Facilities that serve mixed use areas function differently from those that serve primarily single use areas such as those that are only commercial or only residential. Generally, the facilities that serve and connect mixed use areas are **multimodal** facilities, and the facilities that serve and connect single-use business, commercial, or office areas are **commerce** facilities. **Hybrid** facilities can exist in any land use context, and are generally defined by lower traffic volumes and speeds that make the pedestrian and bicycling environment feel safe and comfortable.

Table 1: Multimodal Facilities, Commerce Facilities, and Hybrid Facilities

Multimodal Facilities	Commerce Facilities	Hybrid Facilities
<ul style="list-style-type: none"> • Non-auto travel modes are a focus • Emphasize walking, biking and transit • Characterized by slower traffic speeds and a richness of activities • Premium transit service is frequent, convenient, and faster or just as fast as driving a car 	<ul style="list-style-type: none"> • Focus on auto and freight movement • Pedestrian and bicycle facilities are provided, but with less focus (e.g. 5' sidewalks instead of 12') • Transit service is less frequent 	<ul style="list-style-type: none"> • Generally lower traffic volumes. Surrounding density is lower than primary facilities • Balances all road users including bicycle and pedestrian, auto, and freight • Characterized by slow traffic speeds and narrow shared right-of-way • Essentially multimodal facilities without the premium transit element

Premium Transit Service

The Broward and Palm Beach MPOs are planning for premium transit service in many of the corridors with mixed uses in the future. These corridors will provide critical links in the multimodal transportation network. Future premium transit service was a factor in designating facilities as primary multimodal facilities.

Figure 4 shows the future premium bus transit services from the Broward MPO 2035 Long Range Transportation Plan. The roads shown in blue indicate future premium rapid bus service. The roads in red indicate future premium high capacity transit service.

Figure 5 is an excerpt from the Palm Beach MPO 2035 Long Range Transportation Plan. Future premium bus transit service, as shown in the pink lines, is planned along SR 7 and Glades Road, continuing to downtown Boca Raton.

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

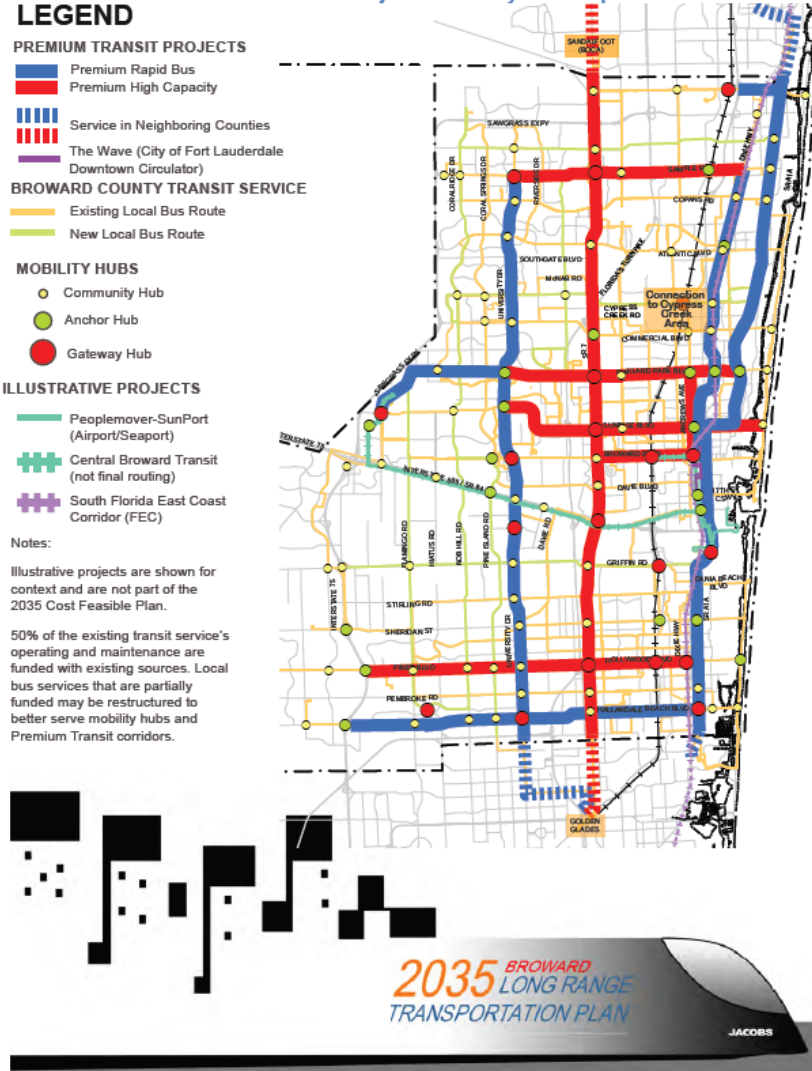


Figure 4: Broward MPO 2035 Long Range Transportation Plan Cost Feasible Transit Projects



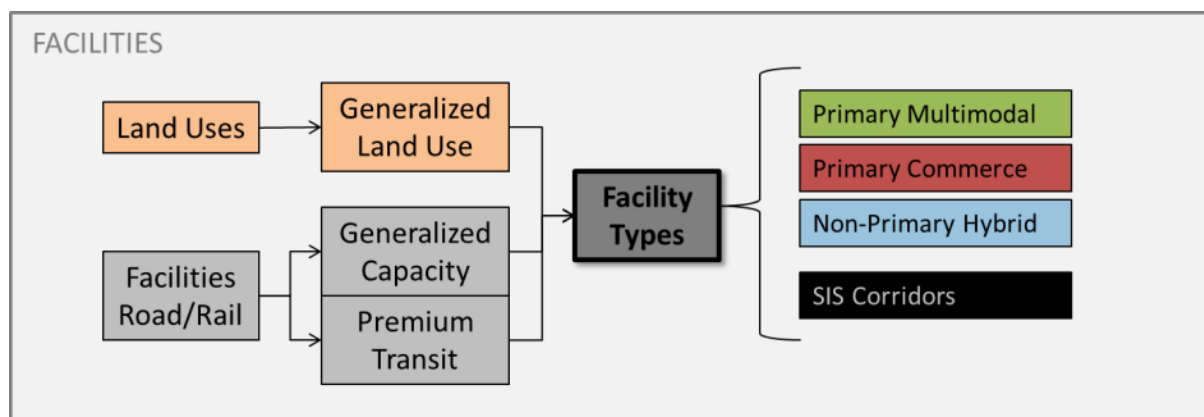
Figure 5: Palm Beach MPO 2035 Long Range Transportation Plan – Cost Feasible Premium Transit Projects within I-95 Study Area

Facility Types & Functions

Based on generalized capacity, surrounding context, and premium transit service, the facilities in the study network can be categorized into four facility types. The list below generally describes each facility type. The functions of each facility type are presented in **Table 2** on the next page.

- 1. Primary Multimodal** – These facilities emphasize walking, biking and transit, and are primary corridors with concentrations of destinations. Premium transit service such as express bus, bus rapid transit, or streetcar may already exist or may be a possibility in the future.
- 2. Primary Commerce** – These are regionally significant facilities that go through areas of industry or auto-oriented commerce. These corridors emphasize business access, and auto and freight movement. Transit service may be provided to serve employment areas, primarily for captive riders (persons who depend on transit for transportation, compared to choice riders who have the option of driving a personal vehicle), but it is not emphasized. Pedestrians and bicyclists are accommodated with infrastructure that at a minimum meets minimum ADA and safety requirements (such as a five foot wide sidewalk) or off-road or parallel walking/biking routes.
- 3. Non-Primary Hybrid** – These facilities are typically lower volume collectors that serve all different types of land uses. These lower volume roads serve multiple functions, and are considered hybrid facilities because they can provide adequate facilities for walking, biking, and lower speed vehicle travel. Pedestrian and bicycle connections are prioritized over vehicle speed. These facilities typically have slower vehicle speeds compared to the other three facility types.
- 4. SIS Corridors¹** – These are limited access facilities including interstates, toll roads, and freight, commuter, or intercity passenger rail lines. Streetcar rail lines would fall under the Primary Multimodal facility type.

¹ SIS connectors are an additional element shown in the map series. SIS connectors are intermodal facilities that link other elements of the Strategic Intermodal System together, (e.g. ramps and local roads that link I-95 to Tri-Rail stations). While SIS connectors are not identified as a separate facility type, they are identified in the map series to demonstrate their importance in connecting the various intermodal elements of the transportation system.



It is important to note that all modes of travel are accommodated on all facility types. The difference between the facility types is more of *emphasis* of modes and functions. For example, pedestrians would likely be accommodated on a commerce facility with a five foot wide sidewalk, the minimum width according to ADA regulations. A primary multimodal facility would likely have a wider sidewalk (eight to 12 feet wide) to provide a more comfortable walking experience for more pedestrians with room for bus stop shelters, café tables, and other streetside amenities.

Similarly, multimodal facilities should accommodate passenger cars with a reasonable level of service to avoid spillback through intersections and other safety problems. The difference between a commerce facility and a multimodal facility from the perspective of the auto may be speed, lane width, and signal timing.

Table 2. Facility Types and Functions

	SIS Corridors	Primary Multimodal	Primary Commerce	Non-Primary Hybrid
Primary Function	Higher-speed mobility for longer distance regional, commute and freight trips	Primary circulation within and between multimodal districts	Mobility primarily for freight and regional trips	Lower speed alternative routes with access to local neighborhoods and local land uses. Provides connectivity for non-motorized modes.
General Land Use Context	Independent of land use context. Special considerations at interchanges.	Mixed use – higher intensity, downtowns, and destination corridors	Industrial, Commercial and Office; Residential if a through function	Serves all land uses. Most common in lower intensity land use types.
Transit	Commuter express service	Premium service	Fixed route service	Community bus service as needed
Freight	Designed for high-speed regional freight movement	Placemaking focus, but design for transit vehicles makes freight movement convenient	Designed for freight & business mobility	Placemaking focus. Balances freight accommodations with bicycle & pedestrian infrastructure.
Walking & Biking	Typically prohibited	Emphasized with generous facilities for walking & biking	Accommodated; parallel facilities provided	Emphasized with slow auto speeds. Potential for traffic calming.

The project team categorized all facilities in the study network into the four facility types based on the generalized capacity guidance, generalized future land use map, and whether premium transit is a possibility in the future. Those facilities that a LRTP shows as having premium transit in the future are considered primary multimodal facilities. Other primary facilities, such as Atlantic Boulevard, were not designated as having premium transit, but were designated as primary multimodal to ensure connected networks of each facility type over the entire system. **Figure 6** shows the transportation network designated into the four facility types with the generalized future land use map behind it.

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Facility Types and Generalized Future Land Use Vision

Facility Types

- SIS Road Corridor
- SIS Rail Corridor
- Primary Commerce
- Primary Multimodal
- Hybrid
- SIS Connectors / Other [Palm/Miami-Dade]

Tri-Rail station



- Airport (SIS Hub)
- Seaport (SIS Hub)

Generalized Future Land Use

- Residential
- Commercial
- Industrial
- Mixed
- Other
- Miami-Dade

SOURCE: FDOT, PALM BEACH METROPOLITAN PLANNING ORGANIZATION & BROWARD COUNTY

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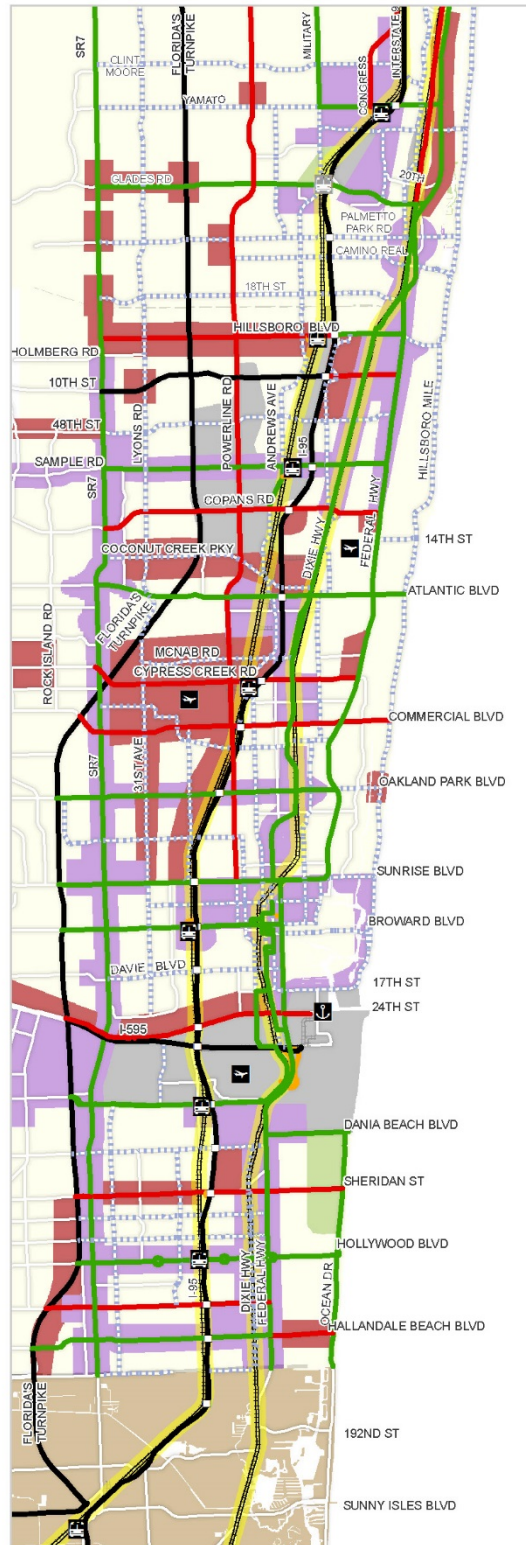


Figure 6: Facility Types and Generalized Future Land Use Vision Map

Connectivity and Systems Perspective

The project team examined the facilities from multiple systems perspectives, and designated the facilities into facility types to ensure that both the multimodal system and the commerce system were well-connected and served the future land uses. The north-south primary facilities can be considered to serve as complementary parallel facilities to I-95. Primary commerce facilities function as optional alternatives for north-south vehicular travel, especially for incident management and emergency situations. Primary multimodal facilities can offer an alternative to I-95 for transit travel.

Figures 7 and 8 show the multimodal and commerce systems, respectively.

These two maps illustrate that both multimodal and commerce systems provide a well-connected network of facilities that serve compatible land uses throughout the study area.

The next section examines land use and activity in more detail. The purpose of these systems is not only to serve the areas of generalized future land use, but also the centers of activity. Transportation investments will likely be needed most in growing areas.

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Multimodal Facilities

Facility Types

- SIS Road Corridor
- SIS Rail Corridor
- Primary Multimodal
- Hybrid

Tri-Rail station

- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

Generalized Future Land Use

- Residential
- Commercial
- Industrial
- Mixed
- Other
- Miami-Dade

SOURCE: FDOT, PALM BEACH METROPOLITAN PLANNING ORGANIZATION & BROWARD COUNTY

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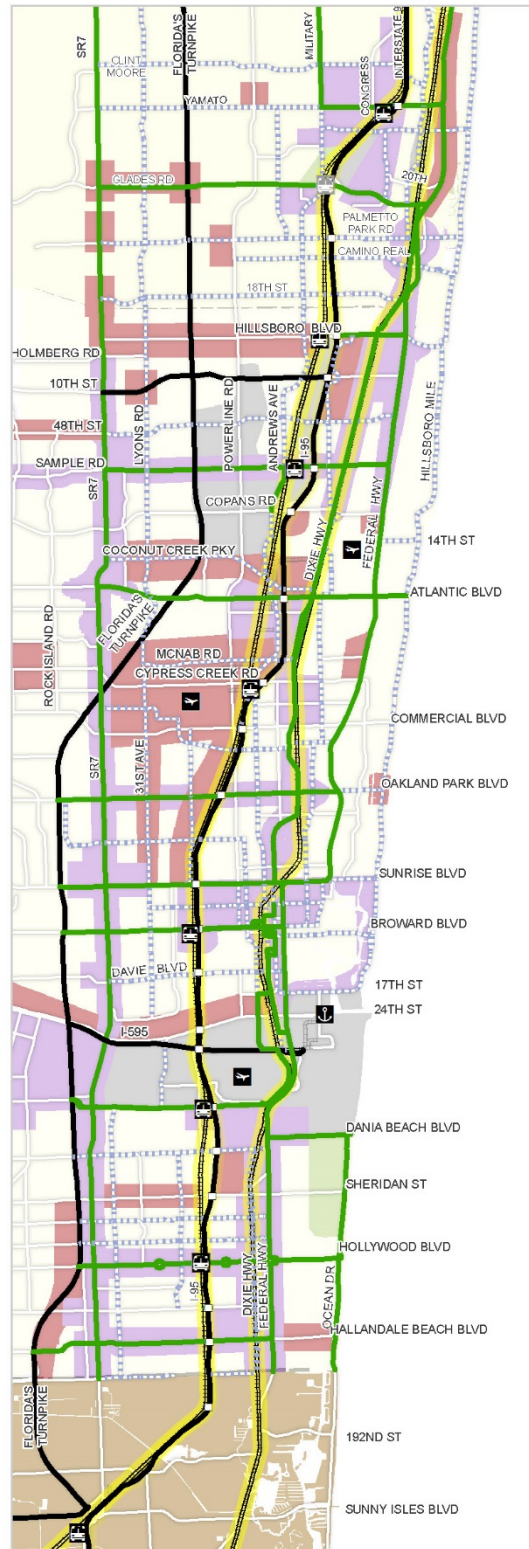


Figure 7: Multimodal Facilities

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Commerce Facilities

Facility Types

- SIS Road Corridor
- SIS Rail Corridor
- Primary Commerce
- Hybrid

Tri-Rail station

- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

Generalized Future Land Use

- Residential
- Commercial
- Industrial
- Mixed
- Other
- Miami-Dade

SOURCE: FDOT, PALM BEACH METROPOLITAN PLANNING ORGANIZATION & BROWARD COUNTY

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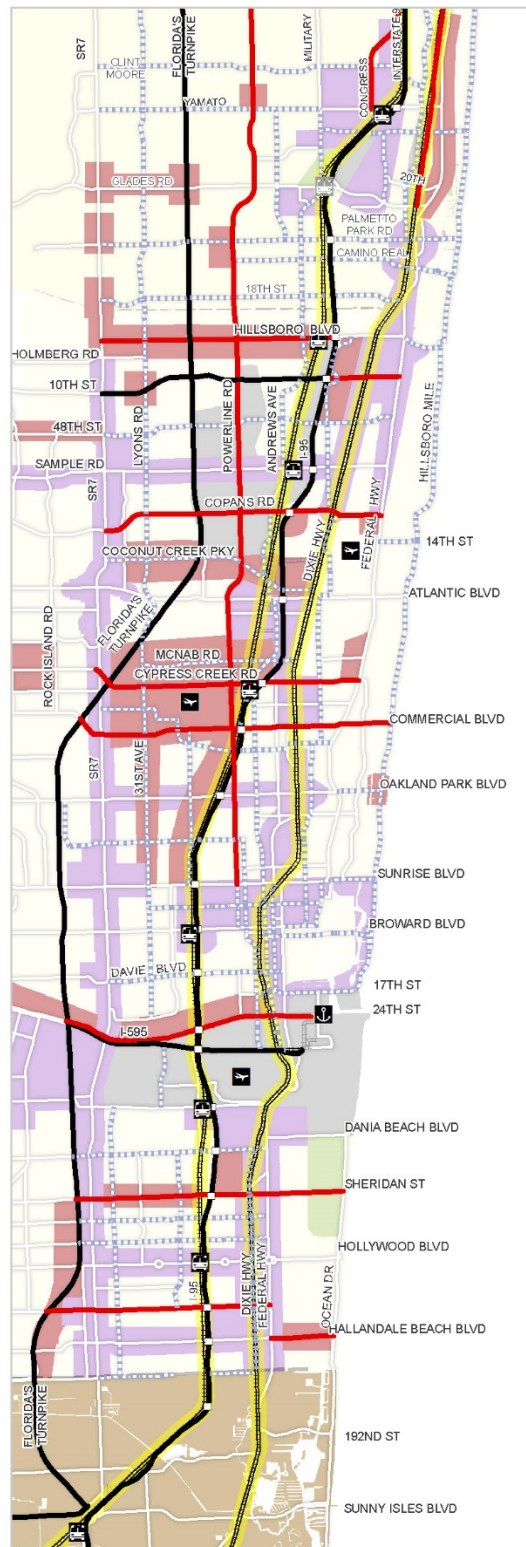


Figure 8: Commerce Facilities

Places and Place Types

The study area includes a broad spectrum of places. There are quiet low density residential neighborhoods, bustling downtowns, office parks, big-box shopping areas, exurban retail and service corridors, ports, distribution centers, and airports, among many other types of places. All of these areas function differently and depend on the transportation systems for different things.

Not all areas with the same generalized future land use look or function the same. Some areas have more jobs or population than others. For example, commercial areas could range from low density office buildings to high density employment centers, shopping malls, and casinos. To properly plan an efficient transportation system, we need to understand where areas of activity are concentrated – these are typically areas with a mix of destinations close enough to make walking a viable mode of transportation, and have densities high enough to support some type of transit service. If we can make investments that make transit, walking or biking more convenient in these areas, we can potentially shift trips from driving to other modes, and reduce demand on principal arterials including I-95.

Similarly, we need to understand where the areas of freight and goods activity are to ensure the transportation networks for freight and goods movement can provide adequate access to these areas.

By looking at population and job density, we can understand where future growth will occur, how the transportation system could best serve existing users and future growth, and whether future growth will occur in a way that makes the best use of transportation investments.

By categorizing the areas within the study area into place types, we can recommend strategies for each of these types of areas that are specific to how they influence the transportation network. These strategies will help ensure that decisions about the built environment will be compatible to the function of the transportation network, and that the transportation network can best serve the built environment.

Some strategies, such as promoting education and outreach for Transportation Demand Management techniques, may apply throughout the study area. Other strategies, such as employing innovative parking management techniques or assessing compatibility between freight and non-freight land uses might work best if only applied in the most populous areas or the areas along the edge of areas with high intensity freight activity.

Activity Density

Using data from the 2010 Census and future projections from the South Florida regional travel demand model, the project team mapped existing and future density of jobs and population and combined job density and population density to show overall activity density, where one activity unit is either one job or one person (resident). The project team converted future activity density into a thermal map to identify the relative intensity of activity within the study area.² This analysis and thermal map are the foundation for the logic of characterizing and designating place types. **Figure 9** shows the thermal intensity map.

² The project team created the thermal future activity density map through a GIS spatial analysis that compared the activity density of the surrounding half-mile.

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2035 Future Activity Density Jobs & Population Combined



Tri-Rail station



Airport (SIS Hub)

Seaport (SIS Hub)

SOURCE: FDOT, PALM BEACH
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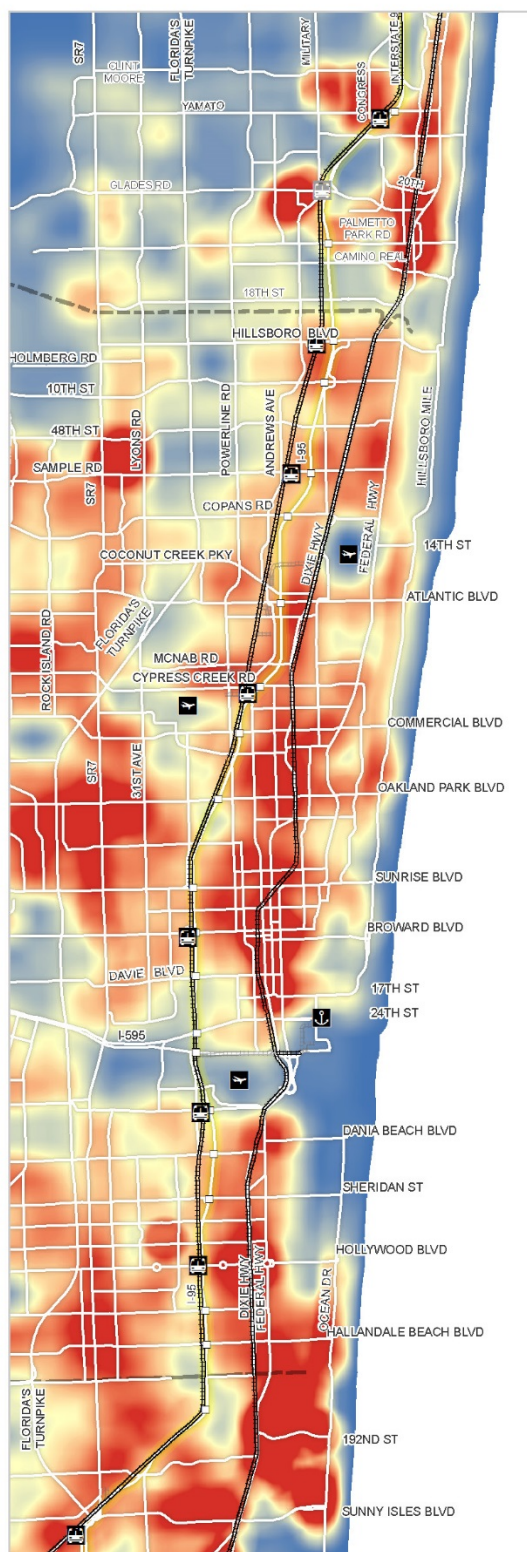


Figure 9: 2035 Future Activity Density Thermal Map

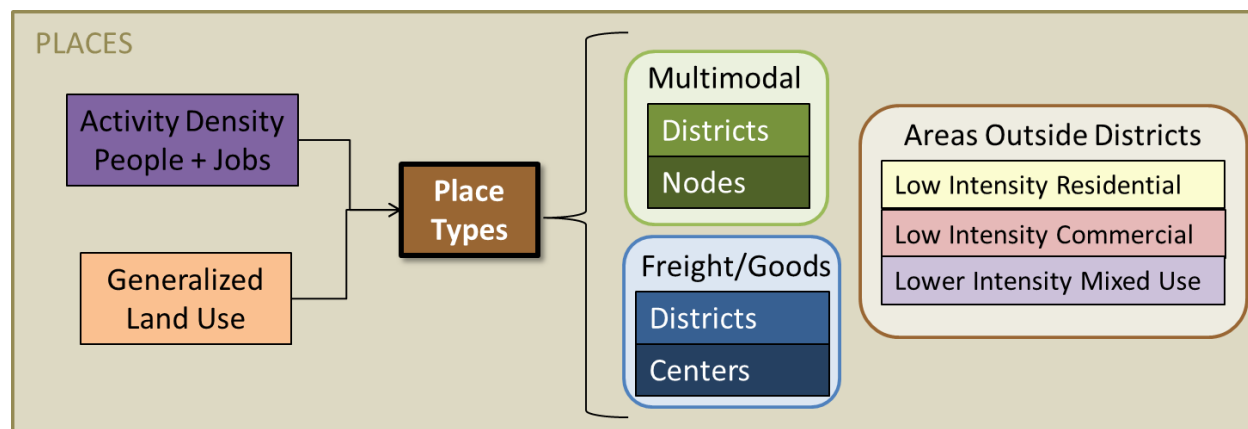
Place Types & Functions

This thermal future activity density map (**Figure 9**) shows large areas of dark red intensity. These are areas that have a high concentration of jobs and/or residences. These densities suggest that some trip origins and destinations are close enough together that walking and biking would be viable modes of transportation. Similarly, there are areas that have low density of jobs and population, but are areas of heavy freight and goods movement and storage, such as the seaport, airport, and industrial areas just south of I-595.

These areas with a heavy concentration of jobs and/or population and freight and goods can be categorized as districts, where the activity within these areas functions differently from the areas outside.

Based on this logic, we can see several different types of places within the study area.

Districts are the areas with a heavy concentration of activity (either jobs/population or freight/goods). Within these districts, some smaller areas have an even higher concentration of activity, such as high-density transit-oriented development around a rail station or a central area of goods movement such as a seaport. These smaller areas can be considered **nodes or centers** within districts. All **areas outside of districts** have a distinct function too. Together, the construct of **districts, nodes/centers, and areas outside of districts** is the framework for understanding place types. The following sections describe each of these place types.



Districts

There are two types of districts: **multimodal districts** and **freight/goods districts**.³ These are priority areas for transportation investments and land use policy strategies because investments and policy decisions here will benefit more people and jobs, and have a greater impact on the local and regional economy.

The project team selected the areas with dark red intensity of activity as an initial attempt to identify potential **multimodal districts**, shown with green boundaries in **Figure 10**. Multimodal districts are intended to be larger areas with a concentration of jobs and population where people can walk or bike to a variety of destinations. The multimodal districts have a finer grain network of local streets which are not all included in the I-95 Corridor Mobility Planning Project's facilities network. These local streets are critical connections for walking and biking, and this local street network should be strengthened wherever possible. Strategies for multimodal districts would focus on making connections for walking, biking and transit, connecting the street grid, urban form enhancements for walkability, and providing a variety of destinations within walking distance. **Figure 10** shows a preliminary attempt at designating multimodal districts, based on the socio-economic projections from the regional travel demand model and the initial study area boundaries.⁴

Freight/goods districts are large areas with an intensity of freight and goods activity, such as industrial, warehousing and logistics areas, or areas where mode transfers occur, such as airports and the seaport. The I-95 project team identified preliminary freight/goods districts which are shown with blue boundaries in **Figure 10**. Often times these uses are located close to each other, as in the area near I-595. Note that the airport, seaport, and distribution centers here are all grouped as one larger district. Strategies for freight/goods districts would focus on preserving and strengthening connections to SIS facilities.

³ Freight/goods districts were later expanded to freight/ goods/ special use districts to recognize additional activities, particularly passenger activity at the airport and the seaport.

⁴ The initial study area boundary for the analysis of activity density was from the Miami-Dade County boundary to Glades Road. The initial districts and nodes in Figures 10 and 11 were presented to the Working Group in December 2012. After discussion with the Working Group and a round of listening sessions with partner agencies and local governments, the area for analysis was extended north to the northern Boca Raton city boundary. The map extents were also extended south to Golden Glades Road to show the connections of the transportation network, although districts and nodes were not identified for this new southern portion in Miami-Dade County.

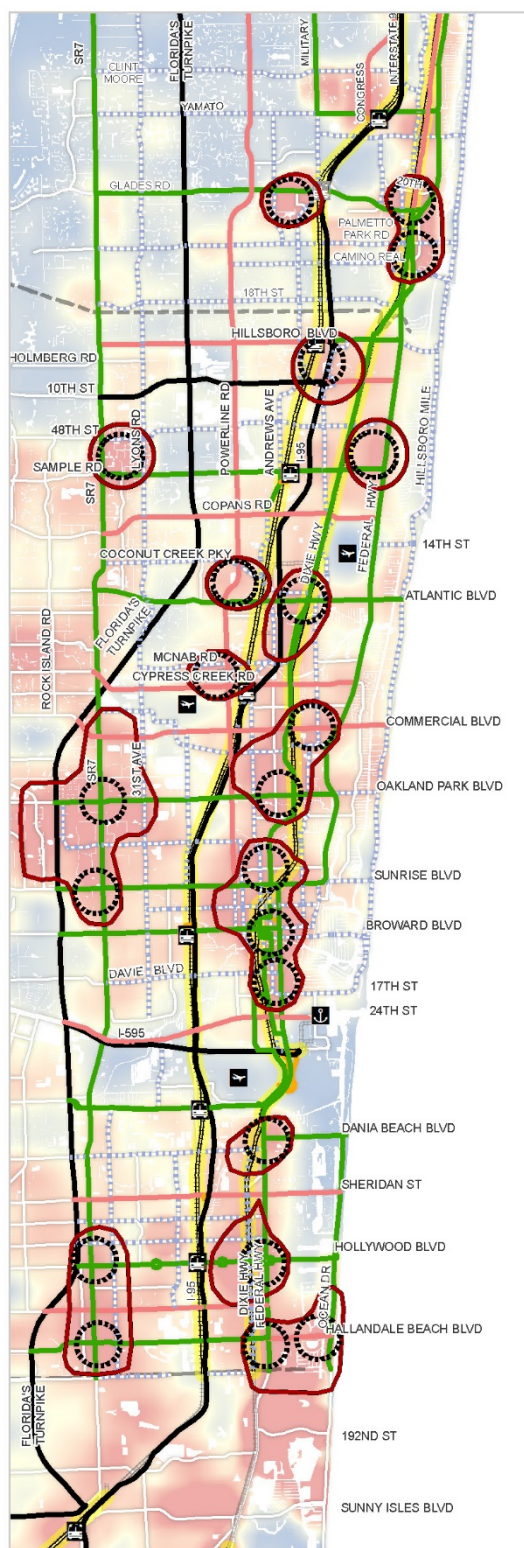
Nodes and Centers

Nodes and centers are smaller areas with more intense activity than the surrounding district. There are two types of nodes/centers: **multimodal nodes** and **freight/goods centers**.⁵

Multimodal nodes contain a higher density of jobs and population within a watershed of a premium transit station or other important center of activity, shown with dashed black boundaries in **Figure 11**. These multimodal nodes function like station areas. The strategies for multimodal districts still apply to multimodal nodes. Within the multimodal nodes, additional strategies would apply, such as encouraging transit-ready densities and innovative approaches to parking management. FDOT's Framework for Transit Oriented Development in Florida provides strategies for multimodal nodes depending on job and population density and would be applied here.

Freight/goods centers are smaller individual areas where one kind of freight movement occurs, shown in black dashed boundaries in **Figure 12**. The airport would be a freight/goods center that is separate from the seaport and other distribution centers. Strategies for these centers would focus on internal movement and access.

⁵ Freight/goods centers were later expanded to freight/ goods/ special use centers to recognize additional activities, particularly passenger activity at the airport and the seaport.



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Freight/Goods Centers and Districts with 2035 Future Activity Density *

- Airport (SIS Hub)
- Seaport (SIS Hub)
- Freight/Goods Center
- Freight/Goods District

Facility Type

- SIS Road Corridor
- SIS Rail Corridor
- Primary Commerce
- Primary Multimodal
- Hybrid

* Future Activity Density (density of population and jobs) was calculated from the socioeconomic forecasts in the regional travel demand model, which are calibrated to reflect local comprehensive plans. Red indicates high activity density. Blue indicates low density.

SOURCE: FDOT, PALM BEACH METROPOLITAN PLANNING ORGANIZATION & BROWARD COUNTY

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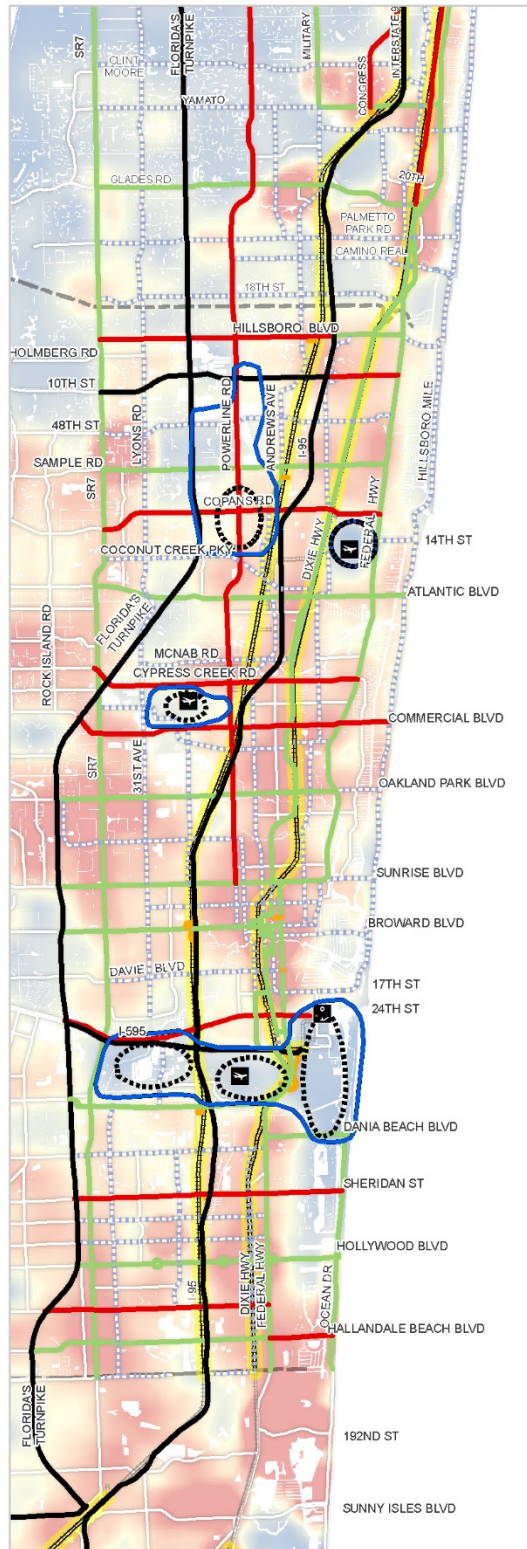


Figure 12: Freight/Goods Districts and Centers

Revisions to Districts and Nodes

These preliminary maps are based on population and employment projections from the regional travel demand model. The Working Group proposed several revisions to these maps to better reflect the local planning initiatives and visions for future areas of activity, and requested that the study area be extended to the north to include all of the City of Boca Raton. **Figure 13** shows the “aspirational scenario” which better aligns with the future Florida East Coast (FEC) passenger rail service around which the local governments are basing many of their planning efforts. **Figure 14** shows this aspirational future scenario with the existing transit routes, which serve as a foundation upon which the multimodal transportation networks can build and around which the multimodal districts and nodes can develop that is consistent with the future vision.

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Aspirational Future Scenario

Tri-Rail station

- Existing
- Future

FEC Rail

- Recommended
- Further Evaluation
- Future Infill

- Multimodal Node
- Multimodal District
- Local Activity Center
- Regional Activity Center
- Transit Oriented Development
- Transit Oriented Corridor

Facility Types

- Primary Multimodal
- Hybrid
- SIS Rail Corridor
- SIS Road Corridor
- Primary Commerce

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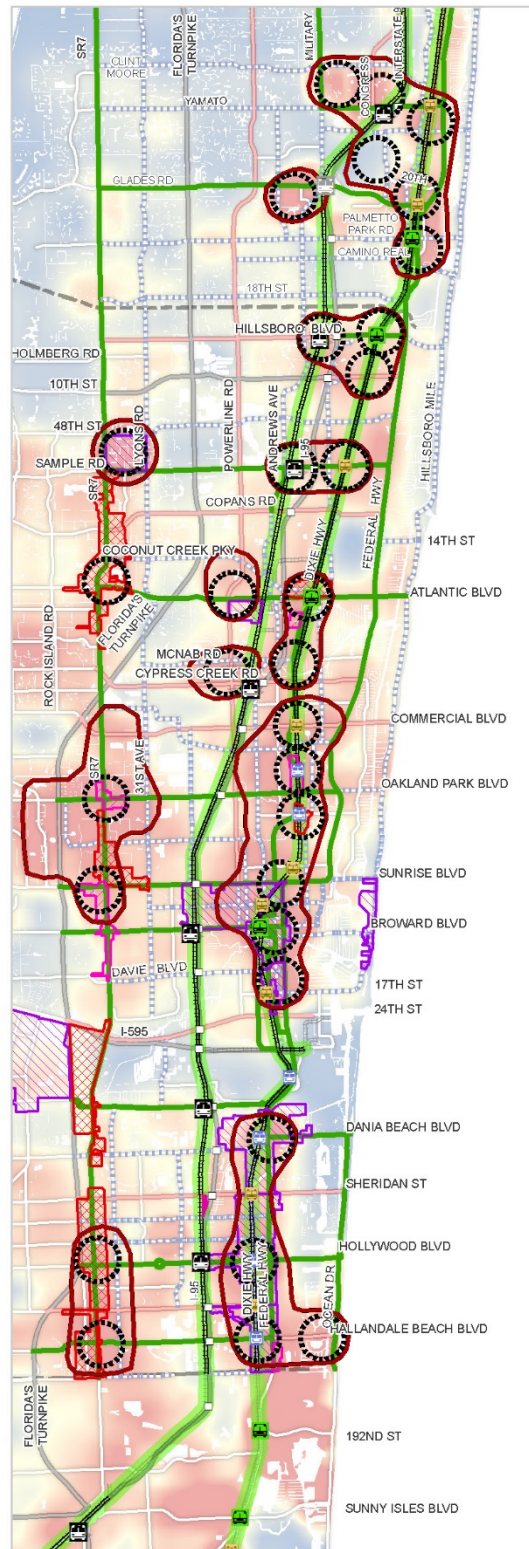


Figure 13: Aspirational Future Scenario with Facility Types

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Aspirational Future Scenario With Transit

Tri-Rail station



Existing



Future

FEC Rail



Recommended



Further Evaluation



Future Infill



Multimodal Node



Multimodal District



Local Activity Center



Regional Activity Center



Transit Oriented Development



Transit Oriented Corridor



Limited Stop Express Routes



Regular Fixed Routes*



SIS Rail Corridor

* Community bus routes are not shown.

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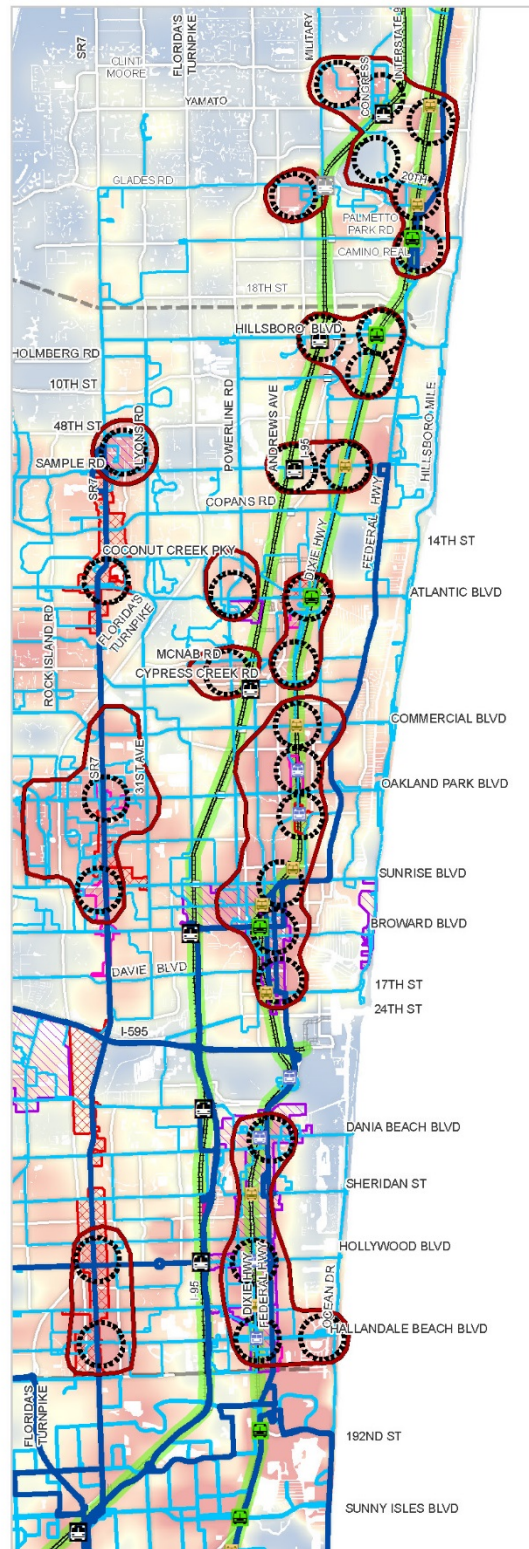


Figure 14: Aspirational Future Scenario with Existing Transit Service

Areas Outside of Districts

Areas outside of districts can be characterized by their generalized future land use into three place types: **lower intensity residential, lower intensity commercial, and lower intensity mixed use.**

These areas have lower priority for transportation investments, as little growth is expected. However, land use policy and development decisions in these areas still affect the transportation system.

Table 3 describes the functions of each place type.

Table 3. Place Types and Functions

	Districts		Nodes & Centers		Areas Outside of Districts		
	Multimodal Districts	Freight/Goods Districts	Multimodal Nodes	Freight/Goods Centers	Lower Intensity Residential	Lower Intensity Commercial	Lower Intensity Mixed Use
Primary Function	Concentration of activities in transit-oriented setting. Focus area for job and population growth	Large area of freight activity and movement	Small area of intense activity within walking distance of a major transit station. High concentration of destinations	Concentration of individual freight activity. Distribution centers or hubs to transition freight from one mode to another	Lower-density neighborhood. Not a focus area for major growth or redevelopment	Serve existing non-mixed use business, office or commercial destinations	Smaller scale mix of uses along a multimodal corridor. May be in a transitional area
General Land Use Context	Generally a mix of uses with more than 10 persons + jobs per acre	Low jobs & population density, but lots of freight goods or transfer activity	Generally a mix of uses with more than 20 persons + jobs per acre	Low jobs & population density, but lots of freight goods or transfer activity	Mainly residential with some neighborhood retail/service uses	Mainly commercial & office along commerce corridors. Residential uses may be present	Lower density mix of retail, office and residential
Transit	Areas served by premium or frequent fixed route service	Areas served by infrequent fixed route, if warranted	Served by premium or frequent fixed route service	On periphery, if warranted	Local circulator service	Local circulator service or fixed route service	Premium, fixed route or circulator service depending on location
Freight	"Last mile" for freight trips	Freight priority; design for truck movement/access	"Last mile" for freight trips	Freight priority	Very little freight movement	Business access a priority	"Last mile" for freight trips
Walking & Biking	Right-of-way has balance for walk/bike facilities and auto. Focus on connectivity to transit stations	Auto/freight emphasis. Bike/pedestrian supported.	Walk/bike priority with generous facilities for bikes & pedestrians everywhere within walkshed.	Auto/freight emphasis	Low speed neighborhood streets provide connections to multimodal facilities	Vehicular business access is emphasized. Facilities accommodate bikes and peds too	Walk/bike priority with generous facilities for bikes & peds; focus on connectivity to transit stations

Connectivity and Systems Perspective

The purpose for organizing the study area into place types is to recognize that different types of places have different characteristics, and these characteristics interact with the transportation system in different ways. Mixed use areas with an intensity of recreational and residential activities have different transportation needs than areas with a high intensity of freight and goods-logistics activities or areas with lower intensities and single types of uses such as non-mixed-use residential neighborhoods, office parks, or strip malls.

The place types, shown in **Figure 15**, are a reflection of local governments' adopted future land use plans and the future population and employment projections within the regional travel demand model. The green multimodal districts are areas where future investments may be targeted to encourage people to travel to, from, and within these areas by modes other than driving. The blue freight/goods districts are those areas where freight activity is essential and a driving force for the local and regional economy. These freight/goods districts need to depend on the transportation system to be convenient and reliable for their livelihood. By showing these green multimodal districts and blue freight/goods districts together on the same map, we can see that the transportation networks that serve these areas need to fulfill various needs simultaneously.

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Place Types

- Multimodal**
- District (Green solid rectangle)
 - Nodes (Green dashed circle)
- Freight/Goods**
- District (Blue solid rectangle)
 - Center (Blue dashed circle)
- Areas Outside of Districts**
- Lower Intensity Residential (Yellow)
 - Lower Intensity Commercial (Red)
 - Other Industrial (Grey)
 - Lower Intensity Mixed Use (Purple)
 - Other (Light Green)
 - Miami-Dade (Brown)
- Tri-Rail station**
- Existing (Black square with white 'X')
 - Future (Black square with white 'F')
- FEC Rail**
- Recommended (Green dashed line)
 - Further Evaluation (Blue dashed line)
 - Future Infill (Yellow dashed line)
- Airport (SIS Hub)** (Black square with white 'A')
- Seaport (SIS Hub)** (Black square with white 'S')

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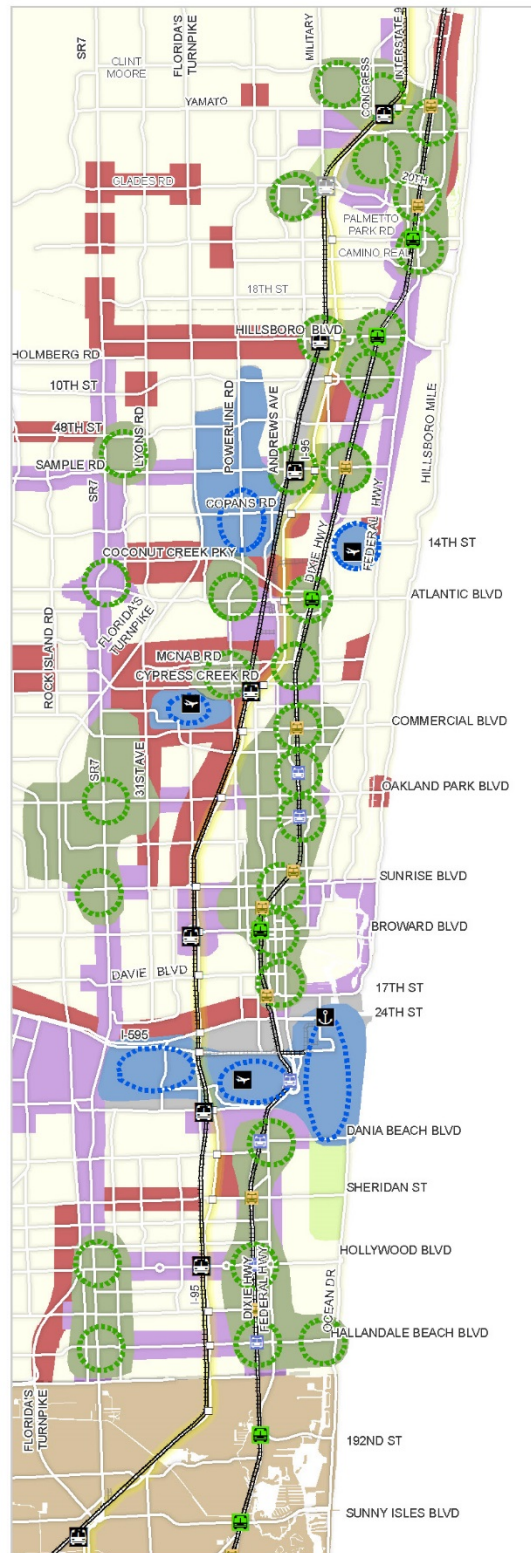


Figure 15: Place Types Map

Summary

The purpose of designating the study network into facility types and the study area into place types is to better understand how the transportation facilities work together with the land uses and built environment. By understanding how the transportation and land use function together as a complex system, we can develop strategies to ensure that these facilities and places continue to function for the betterment of the entire system.

The map in **Figure 16** is visually complicated, but shows the facility types along with the districts, nodes, and generalized future land uses together. This map can be considered a 'living' map, whereby the designation of facility types and place types may change over time as the various planning partners (FDOT, local governments, MPOs, transit agencies, planning councils, and other stakeholders) revise their planning documents. This map represents a collective vision of how the transportation facilities and the places that surround them will best work together in the future. This vision will morph and change over time, and the map will need to change accordingly. The overriding framework of facility types and place types presents a common language through which all of the various planning partners can communicate about the future vision.

Appendix

11" x 17" Map Series

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Generalized Future Land Use

Future Land Use

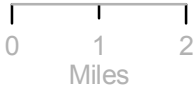
- Residential
- Commercial
- Industrial
- Mixed
- Miami-Dade

Tri-Rail station

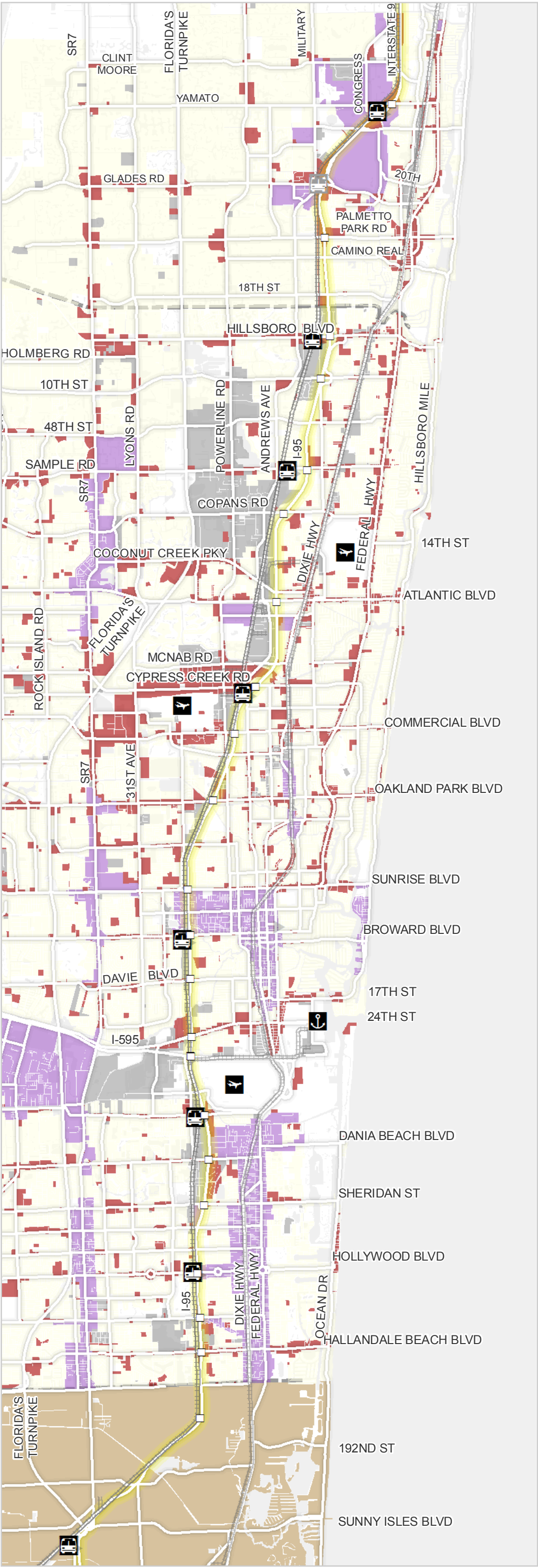
- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

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Generalized Future Land Use Vision

Generalized Future Land Use

- Residential
- Commercial
- Industrial
- Mixed
- Other
- Miami-Dade

Tri-Rail station

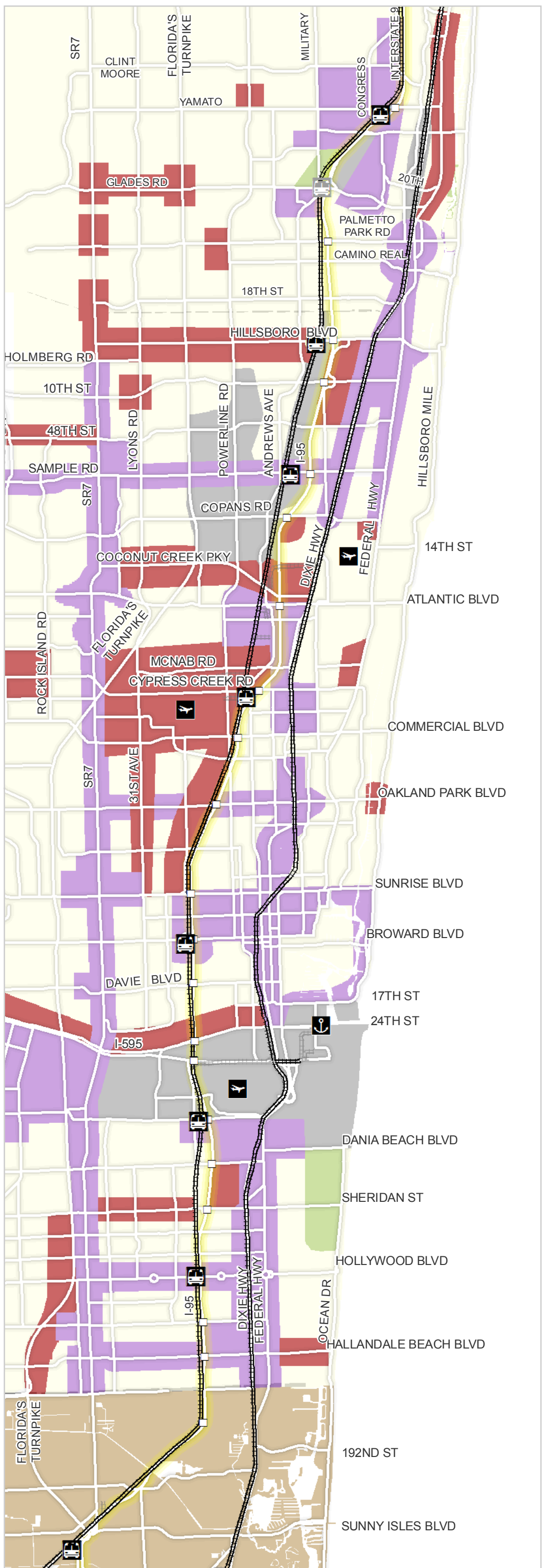
- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

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Facilities Categorized by Generalized Capacity

- SIS Road Corridor
- SIS Rail Corridor
- Primary Facility
- Other Facilities in Study Network

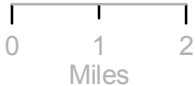
Interchange

Tri-Rail station

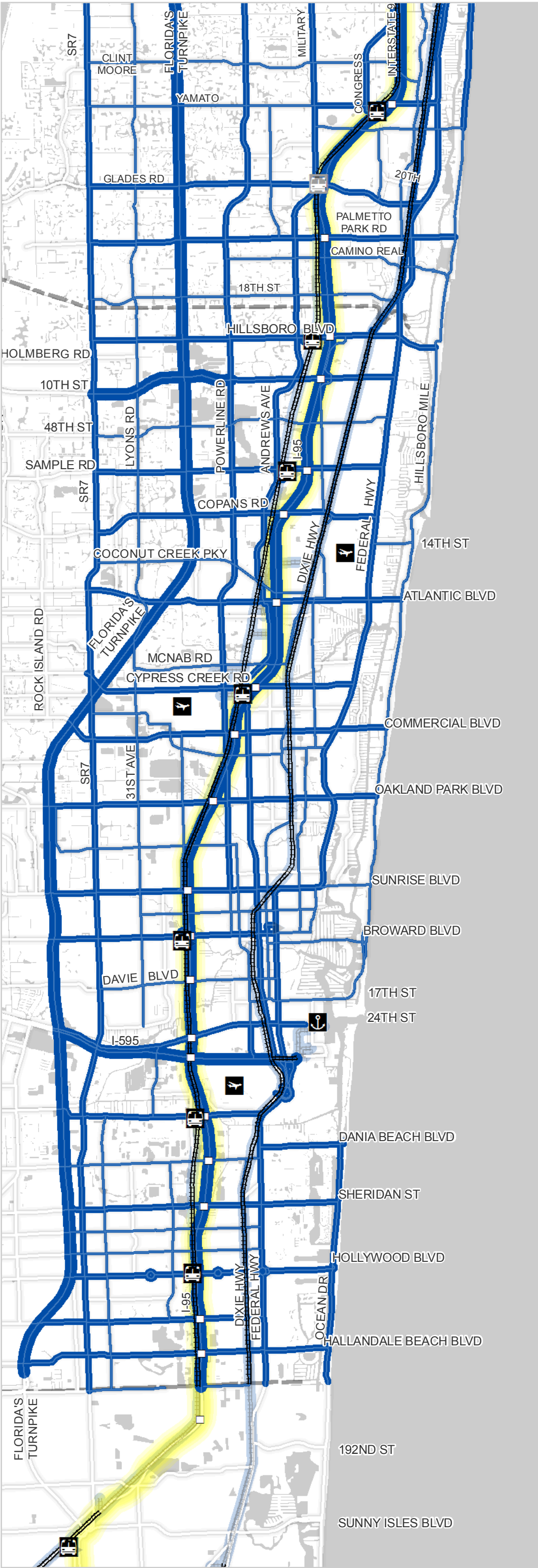
- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

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Facility Types and Generalized Future Land Use Vision

Facility Types

- SIS Road Corridor
- SIS Rail Corridor
- Primary Commerce
- Primary Multimodal
- Hybrid
- SIS Connectors / Other [Palm/Miami-Dade]

Tri-Rail station

- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

Generalized Future Land Use

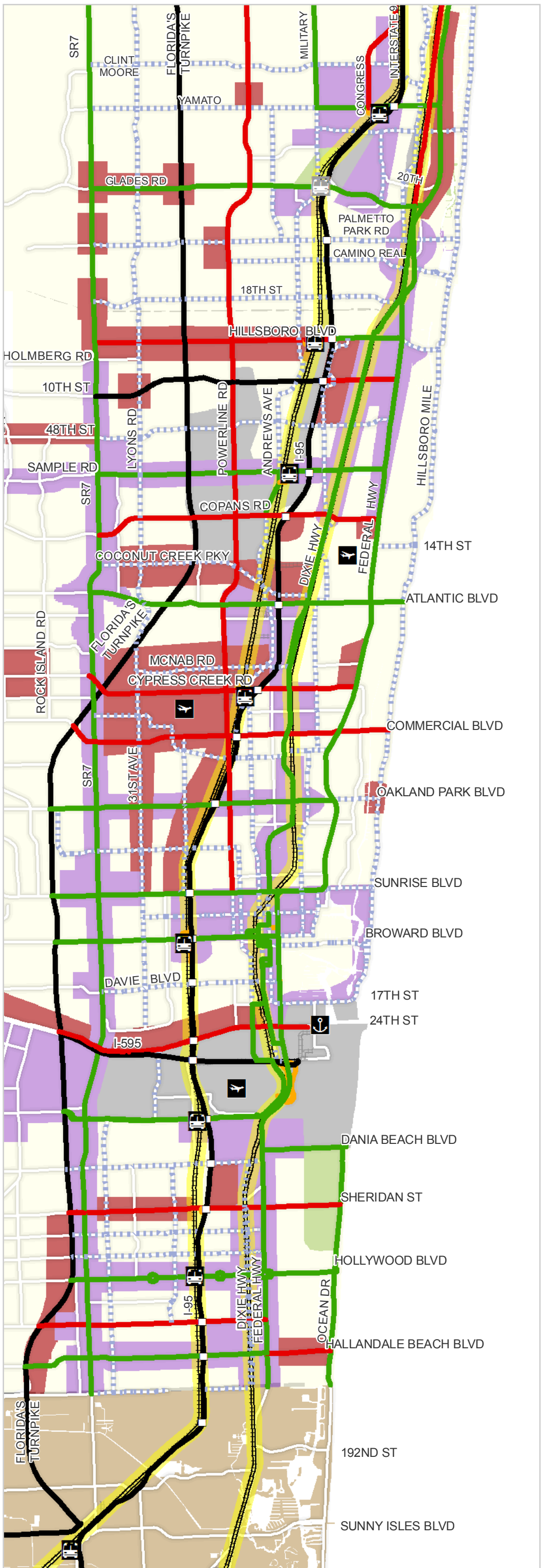
- Residential
- Commercial
- Industrial
- Mixed
- Other
- Miami-Dade

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Multimodal Facilities

Facility Types

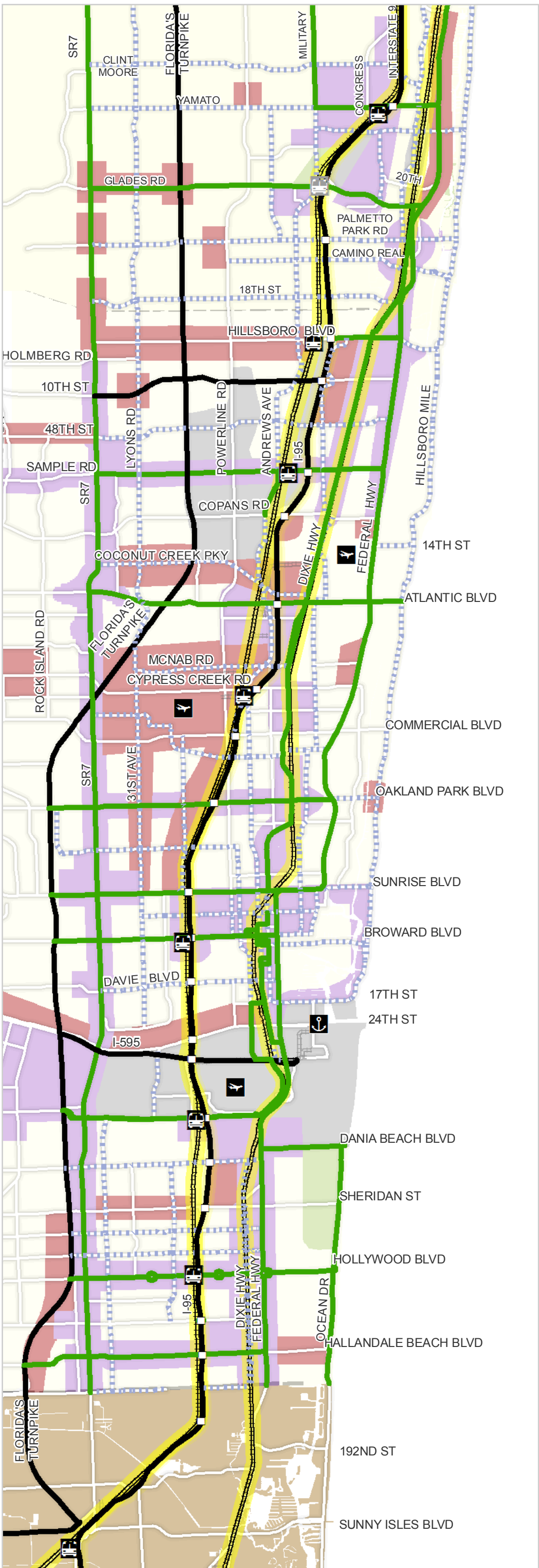
- SIS Road Corridor
- SIS Rail Corridor
- Primary Multimodal
- Hybrid

Tri-Rail station

- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

Generalized Future Land Use

- Residential
- Commercial
- Industrial
- Mixed
- Other
- Miami-Dade



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Commerce Facilities

Facility Types

- SIS Road Corridor
- SIS Rail Corridor
- Primary Commerce
- Hybrid

Tri-Rail station

- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

Generalized Future Land Use

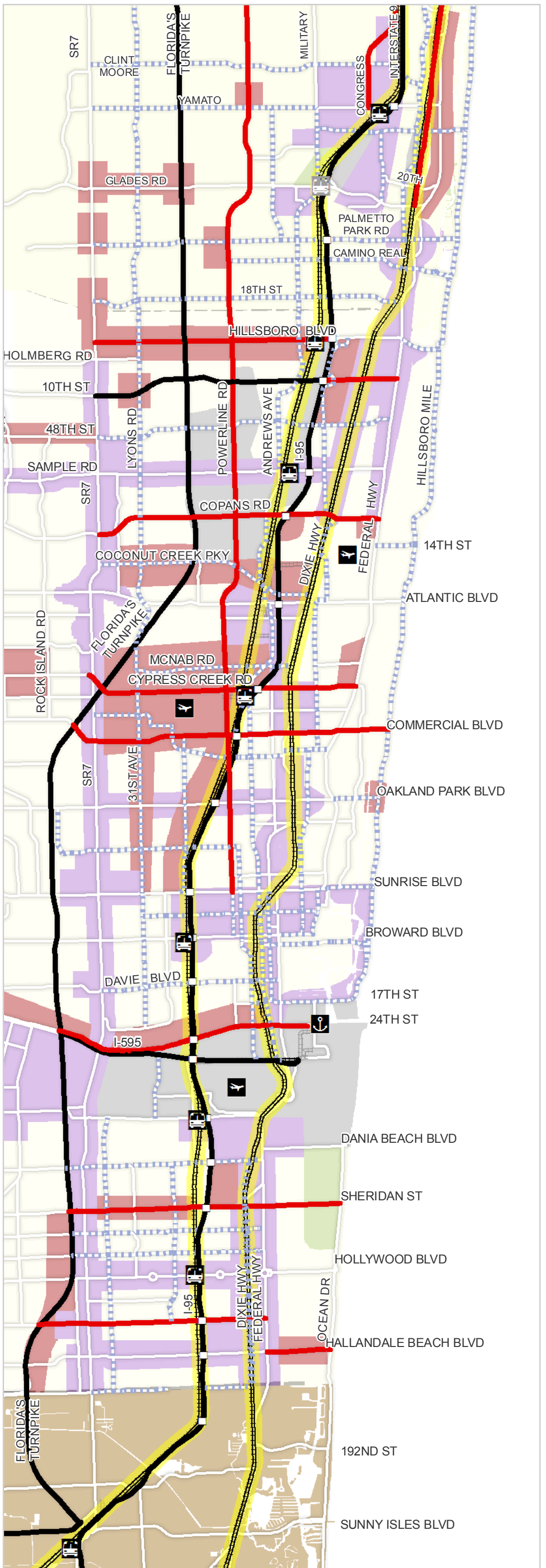
- Residential
- Commercial
- Industrial
- Mixed
- Other
- Miami-Dade

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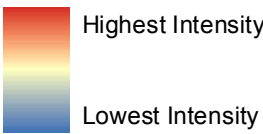


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2035 Future Activity Density Jobs & Population Combined

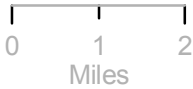


Tri-Rail station

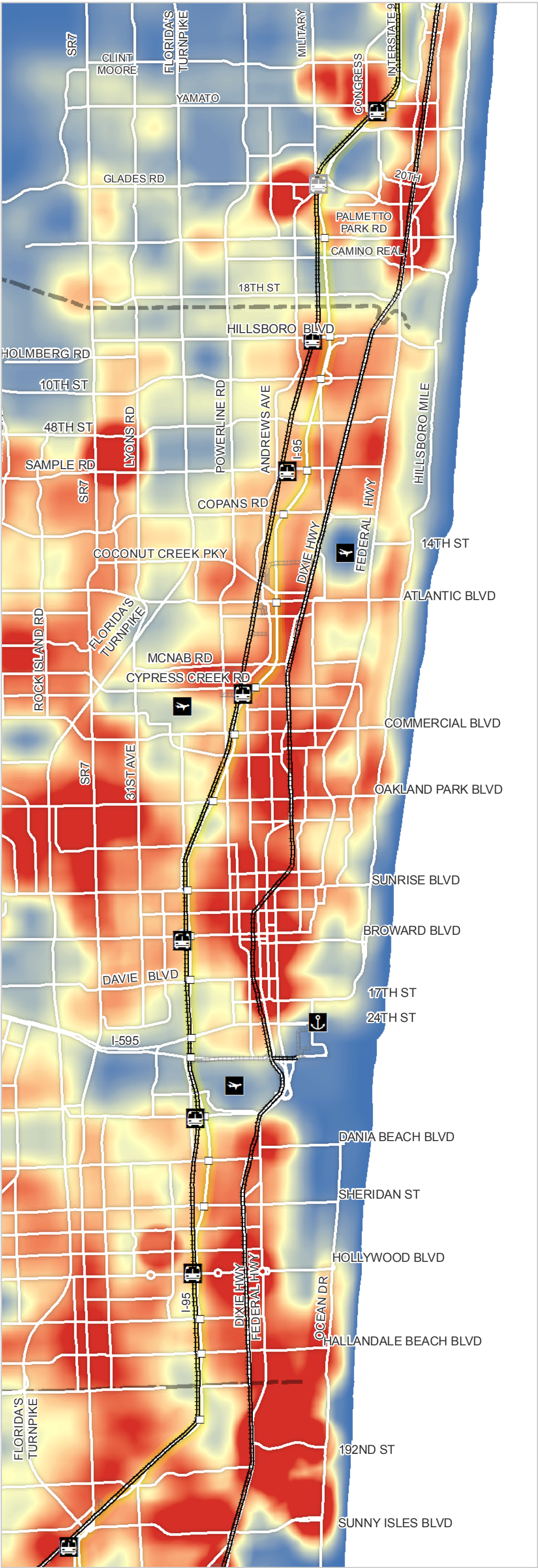
- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

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Preliminary Districts

- Multimodal District
- Freight/Goods District

2035 Future Activity Density Jobs & Population Combined



Tri-Rail station

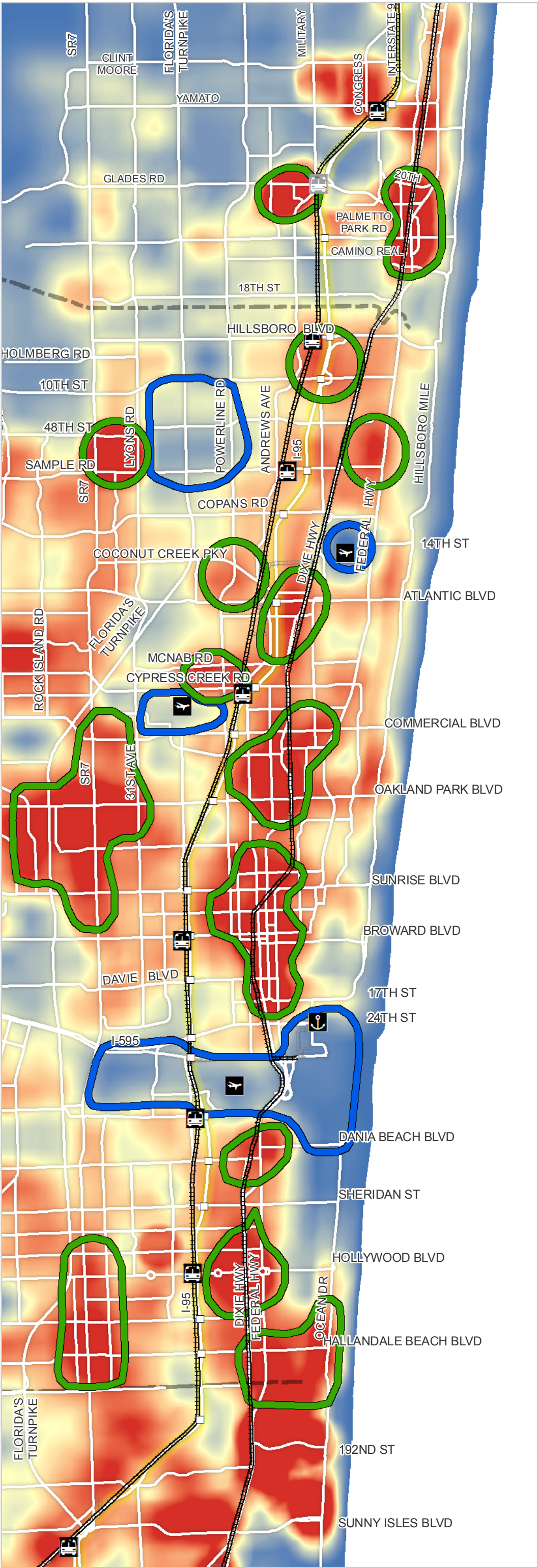
- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

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Data-Supported Multimodal Nodes and Districts with 2035 Future Activity Density *

Preliminary Districts and Nodes

- Multimodal Nodes
- Multimodal District

Facility Types

- SIS Road Corridor
- SIS Rail Corridor
- Primary Commerce
- Primary Multimodal
- Hybrid
- SIS Connectors

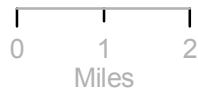
* Future Activity Density (density of population and jobs) was calculated from the socioeconomic forecasts in the regional travel demand model, which are calibrated to reflect local comprehensive plans. Red indicates high activity density. Blue indicates low density

Tri-Rail station

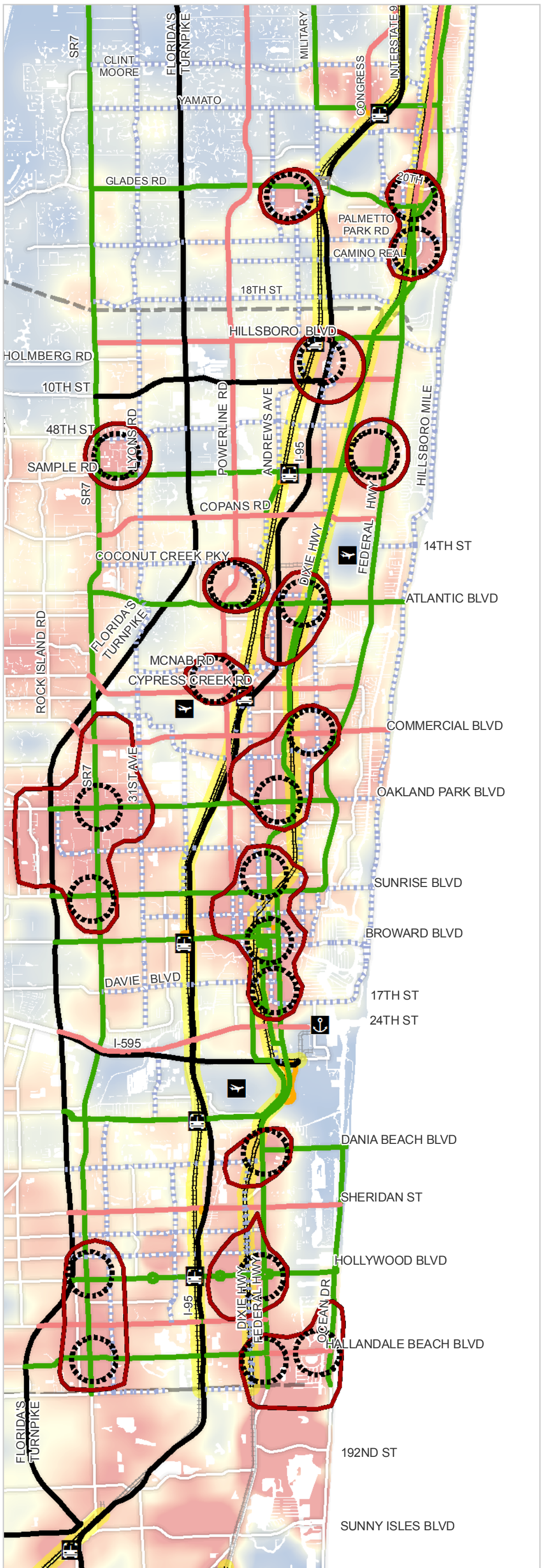
- Existing
- Future
- Airport (SIS Hub)
- Seaport (SIS Hub)

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Freight/Goods Centers and Districts with 2035 Future Activity Density *

- Airport (SIS Hub)
- Seaport (SIS Hub)
- Freight/Goods Center
- Freight/Goods District

Facility Type

- SIS Road Corridor
- SIS Rail Corridor
- Primary Commerce
- Primary Multimodal
- Hybrid

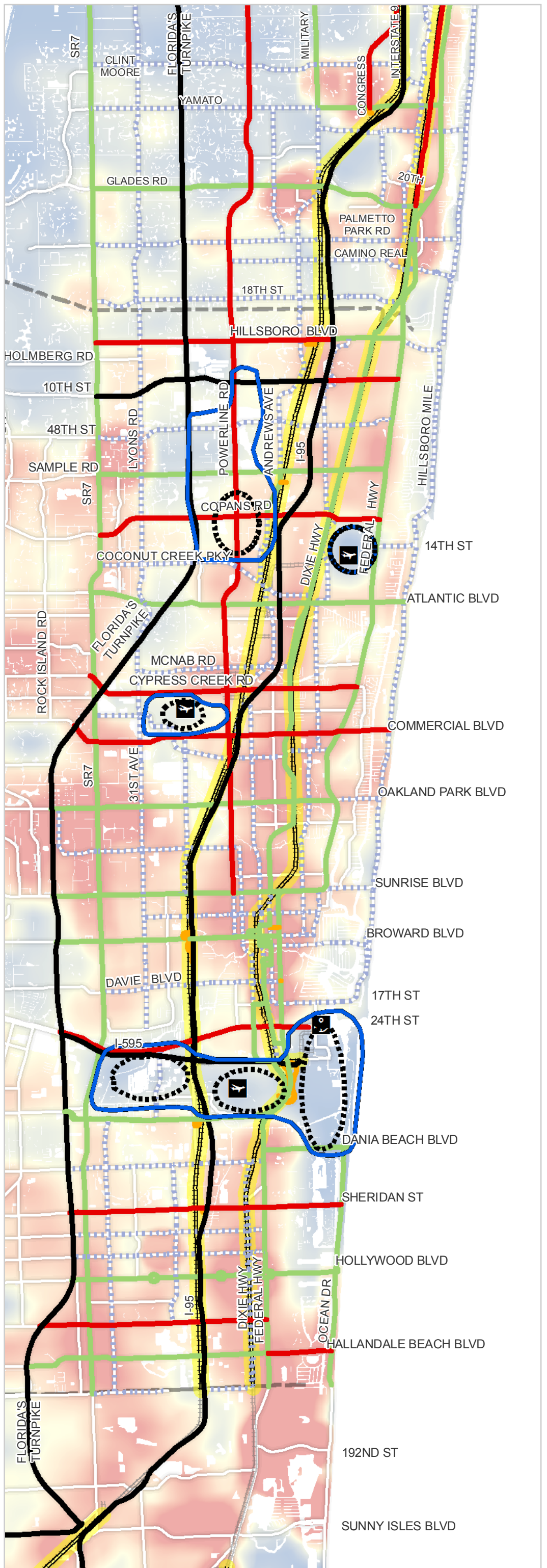
* Future Activity Density (density of population and jobs) was calculated from the socioeconomic forecasts in the regional travel demand model, which are calibrated to reflect local comprehensive plans. Red indicates high activity density. Blue indicates low density

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Aspirational Future Scenario

Tri-Rail station

- Existing
- Future

FEC Rail

- Recommended
- Further Evaluation
- Future Infill

- Multimodal Node
- Multimodal District
- Local Activity Center
- Regional Activity Center
- Transit Oriented Development
- Transit Oriented Corridor

Facility Types

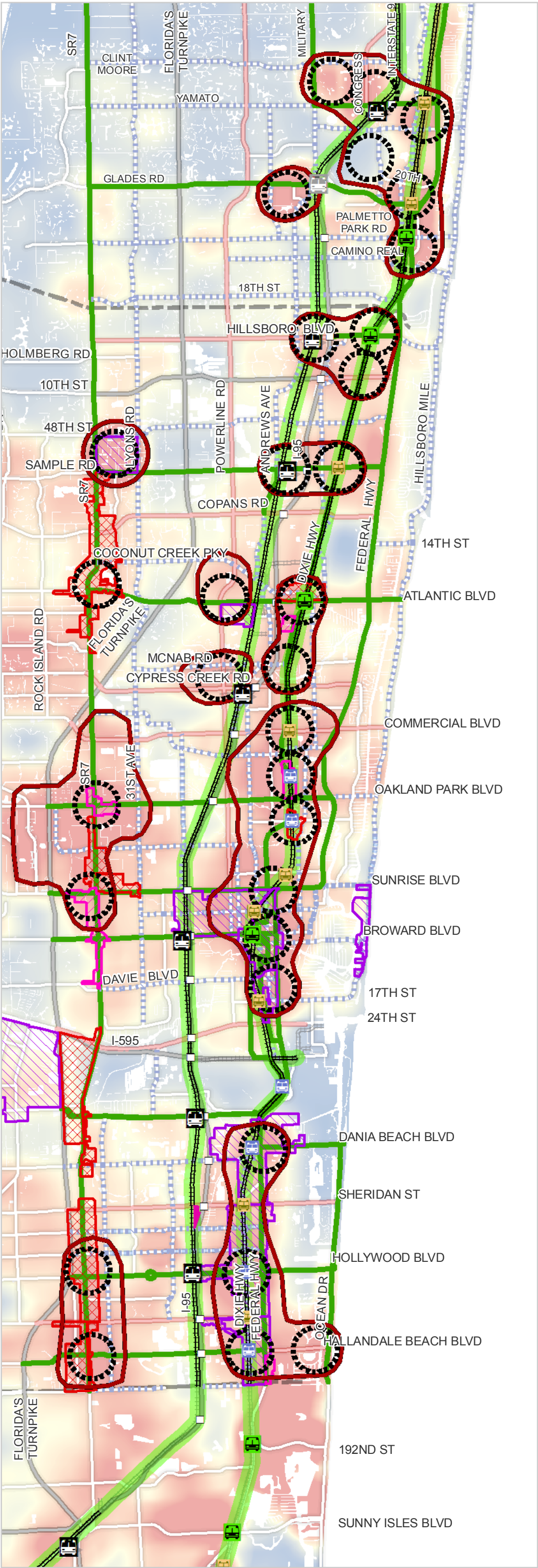
- Primary Multimodal
- Hybrid
- SIS Rail Corridor
- SIS Road Corridor
- Primary Commerce

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Aspirational Future Scenario With Transit

Tri-Rail station

- Existing
- Future

FEC Rail

- Recommended
- Further Evaluation
- Future Infill

- Multimodal Node
- Multimodal District
- Local Activity Center
- Regional Activity Center
- Transit Oriented Development
- Transit Oriented Corridor

- Limited Stop Express Routes
- Regular Fixed Routes*
- SIS Rail Corridor

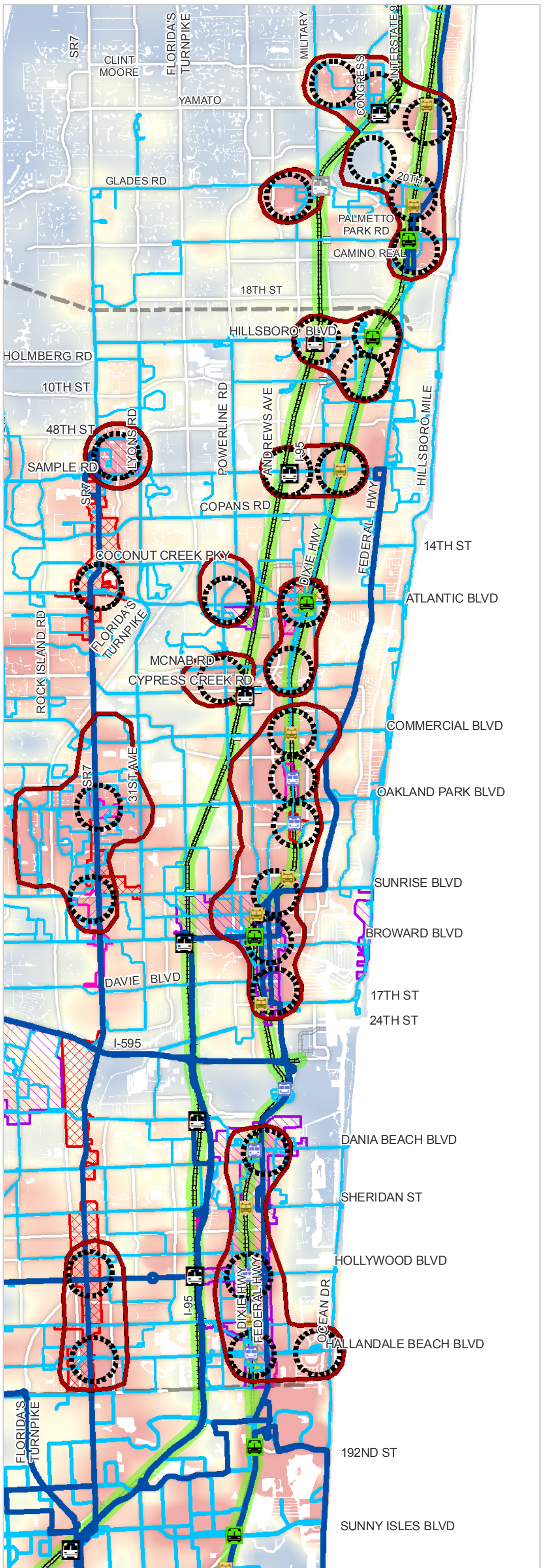
* Community bus routes are not shown.

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Place Types

Multimodal

District Nodes

Freight/Goods

District Center

Areas Outside of Districts

- Lower Intensity Residential
- Lower Intensity Commercial
- Other Industrial
- Lower Intensity Mixed Use
- Other
- Miami-Dade

Tri-Rail station

- Existing
- Future

FEC Rail

- Recommended
- Further Evaluation
- Future Infill

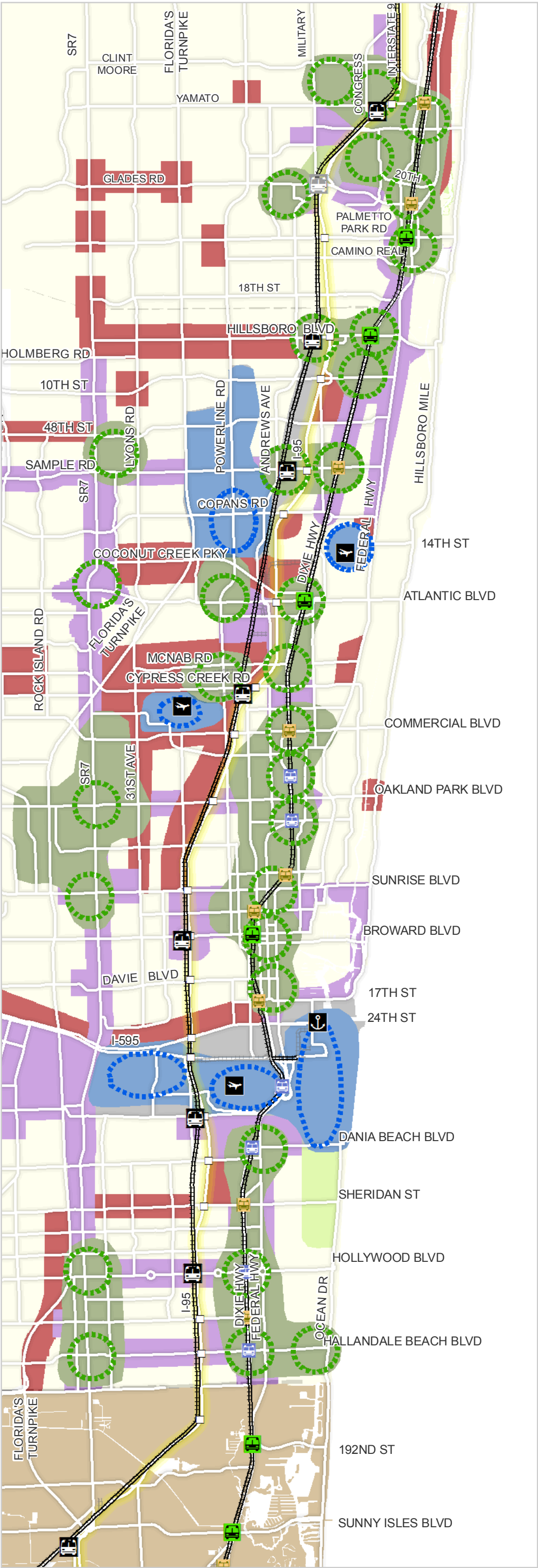
- Airport (SIS Hub)
- Seaport (SIS Hub)

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Facility Types & Place Types

Place Types

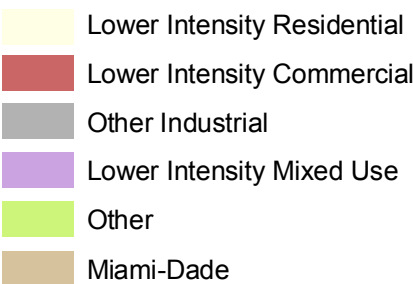
Multimodal



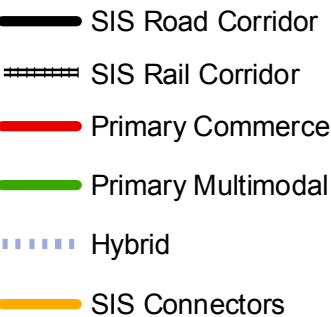
Freight/Goods



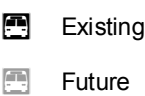
Areas Outside of Districts



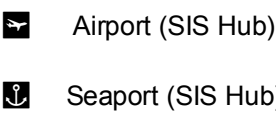
Facility Types



Tri-Rail station

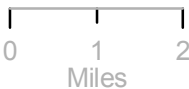


FEC Rail



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