Tampa Bay Regional Strategic Freight Plan

FDOT DISTRICT 7

AN INVESTMENT STRATEGY FOR FREIGHT MOBILITY & ECONOMIC PROSPERITY IN TAMPA BAY

PLAN UPDATE

February 2025

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INTRODUCTION





Introduction

PURPOSE & INTENT

The primary purpose of this regional Strategic Freight Plan (SFP) is to provide FDOT District Seven and its transportation planning partners with the information needed to define, prioritize, and strategically implement future investments in freight transportation infrastructure and related planning policies that maintain the efficient movement of goods and facilitate the economic productivity of the Tampa Bay area. This requires a multifaceted approach which includes the integration of national and statewide freight-related plans, policies, goals, and best practices, as well as the necessary data for understanding conditions and trends affecting the multimodal freight network within the five-county District. Beyond transportation facilities, effective freight planning also requires working with county and municipal agencies to make land use decisions in high-activity freight and warehouse areas, as well as coordination with private-sector partners to understand the needs of the freight and logistics industries.

This plan is intended to be used as both a guiding document that provides a framework for the regional freight planning process and as a practical resource that informs funding decisions by establishing where improvement projects are most needed. As projects are advanced and new needs emerge, the processes and sources for identifying freight needs can also be used in conjunction with other regularly updated FDOT programs and database resources, as well as on-going partner agency coordination efforts, to maintain a list of top-priority investments for the region. Examples of these include:

- FDOT's Comprehensive Freight Improvement Database (CFID)
- FDOT's 5-Year Work Program & MPO Long Range Transportation Plans (LRTP)
- Corridor Plans, Freight Activity Center (FAC) Subarea Assessments, and other Freight-Related Planning Efforts
- Intersection and At-Grade Rail Crossing Safety Assessments

A newly constructed 1.4 million-square-foot fulfillment center in Pasco County will help facilitate the movement of retail products throughout the Tampa Bay region, but also requires planning, coordination, and strategic programming considerations to ensure the surrounding roadway network is appropriately sized and configured for the traffic volumes during shift changes and the access needs of larger vehicles. *(Photo Credit: Benesch 2024).*

A single-lane roundabout completed in 2023 in Hernando County improves freight operations and safety conditions for all roadway users by reducing turning constraints for large vehicles and eliminating sight distance concerns. *(Photo Credit: Benesch 2024)*

[1] US Census Bureau American Community Survey, 2023 1-Year Estimates

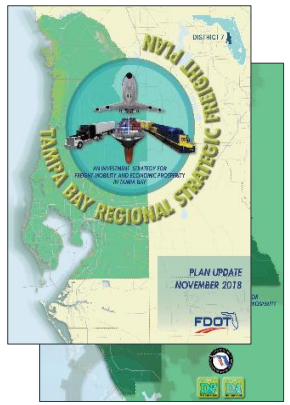
BACKGROUND & CONTEXT

The five counties comprising FDOT District Seven cover more than 3,000 square miles of land area with approximately 3.5 million residents[1]. Hillsborough, Pinellas, Pasco, Hernando, and Citrus counties contain a combined 19,671 centerline miles of roadways that support more than 118 million total daily vehicle miles traveled (VMT) and 75% of the District's freight movement. Additionally, there are 254 miles of rail mainline, two commercial airports, and two deepwater seaports with cargo facilities that play a critical role in the freight activity contributing to the economic vitality of the region[2].

FDOT DISTRICT 7

The first Strategic Freight Plan for District Seven was published in 2012, with an update occurring in 2018 most recently. The 2012 plan included a thorough examination of freight travel markets, corridors, and operational hot spots to develop a detailed listing of operational, safety, and mobility needs. The 2018 update revised the list of priority projects to account for implemented improvements and emerging needs.

The Tampa Bay Region has seen great success in moving freight-related projects from needs identification to implementation. This update of the Strategic Freight Plan continues to build upon this implementation-driven approach by evaluating the current and emerging trends associated with the movement of freight and concluding with a series of recommendations for the Department to advance as future funding decisions are made.



[2] FDOT Public Road Mileage & Travel (DVMT) Report, 2023

PROCESS & ORGANIZATION

This plan is organized into a series of chapters that, when combined with the coordination efforts between FDOT, its transportation partner agencies, and private-sector stakeholders within the freight industry, outline the various steps and analysis areas used during the plan development process. Content is grouped into major tasks, with each chapter providing descriptions of the purpose, processes, data, and outcomes or key insights resulting from that component of the larger SFP update. Although not the subject of a separate chapter, the feedback gathered from **stakeholder coordination** efforts and resources is reflected throughout the final plan and supporting documents.

Chapter 1 – Plans & Studies Review summarizes the major freight planning efforts and data sources used to gain insight into recent trends, ensure planning consistency, or inform later analyses.

Chapter 2 – The Freight Transportation Network overviews the facilities comprising FDOT District Seven's existing multimodal freight network. It provides summary-level descriptions, along with contextual information related to federal, state, and regional designations and importance.

Chapter 3 – Freight Activity Centers re-examines the District's previously identified FACs to confirm their current role in goods movement activity, as well as inventory and update key characteristics, evaluate the need for boundary modifications, and identify potential growth areas for newly emerging and future FACs.

Chapter 4 – Goals & Objectives describes the overarching goals and more specific objectives that define the direction and expected outcomes of the SFP update. The seven goals and associated objectives were influenced by those for the currently adopted Florida Transportation Plan (FTP) and the 2024 Freight Mobility and Trade Plan (FMTP24) to ensure consistency and synergies between districtwide and statewide freight planning efforts. They are also supportive of FDOT's agencywide focus areas, as illustrated by the compass graphic on this page.

FDOT's Compass graphic above illustrates the strategic focus areas and guiding principles of the agency, with safety representing true north as the top priority and local communities being at the center of all efforts throughout the state.

The Tampa Bay Regional Strategic Freight Plan helps FDOT District Seven advance these focus areas by further defining the planning framework for identifying, developing, and implementing future improvement projects. Over time, the consistent delivery of these strategic, freight-related infrastructure investments ensures the safe, efficient, and resilient network of multimodal transportation facilities needed for supporting and maintaining continued economic productivity, mobility, and quality of life throughout the region.

Chapter 5 – Freight Trends & Conditions addresses the recent trends and current conditions for freight facilities and movements in District Seven across truck, rail, air-borne, and water-borne modes. It addresses commodity characteristics, freight volumes, flows, imbalances, and safety issues which inform the needs identification process, and also explores freight grants and application criteria.

Chapter 6 – Traded Clusters Analysis shows the importance of freight movement to the overall regional economy and assesses future growth potential in individual industry clusters by examining factors such as employment concentration and relationships to the freight industry.

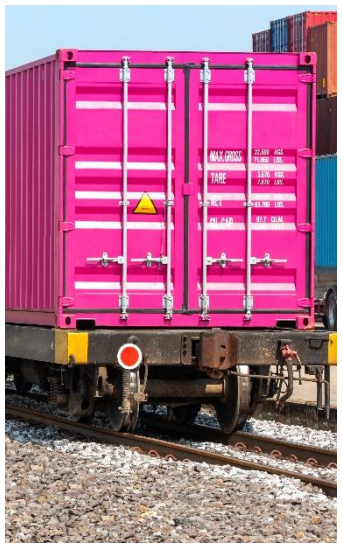
Chapter 7 – Freight Needs Assessment provides the highest-ranking freight improvement needs in District Seven, along with additional information about how these needs were assembled, how they relate to the larger freight network, and the prioritization processes used to rank them.

Chapter 8 – Freight & Land Use Compatibility Analysis compares land use and freight activity patterns within the region to identify potential conflicts between community livability plans and high truck volumes associated with FACs by using a composite classification and scoring system.

STRATEGIES FOR CONTINUED INVESTMENT IN DISTRICT FREIGHT FACILITIES

The recommendations described below represent the key takeaways, insights, or lessons learned from the SFP update process condensed into actionable strategies that FDOT District Seven can use to regularly identify freight-related needs and maintain a backlog of program-ready improvement projects that continue to support efficient and safe freight movement and regional economic productivity for the Tampa Bay Area. Several of these strategies incorporate existing FDOT processes or leverage steps already being taken by the Department.

1. Continue using the **CFID Program** to identify and evaluate needs at a roadway intersection level on a regular basis.
2. Screen the **FDOT 5-Year Work Program** and MPO Transportation Improvement Programs during each update cycle for freight improvements and freight design elements that can be added to corridors being enhanced or resurfaced. This is where projects that require large capital investments such as grade separations, major interchanges, and truck parking facilities will be identified.
3. Assess existing **Freight Activity Centers** for subarea needs on a regular basis to identify projects near truck generators and attractors. Track new freight-related development, such as industrial parks or major distribution centers, and work closely with local planning and development departments to identify appropriate infrastructure to support these emerging activity areas.
4. Assess safety conditions at **railroad crossings** regularly as new data becomes available. In addition to those at grade crossings, crashes involving trucks should be located, mapped, and assessed for potential needs and safety enhancements.
5. Although **truck parking** continues to be an area of need in District Seven, recent improvements to rest areas and a new programmed I-4 truck parking facility are adding hundreds of spaces. Once these projects are completed, the District should assess their impact on truck parking needs and look for future opportunities to partner with the private sector to expand parking facilities where needed.
6. Continue to review and evaluate **technology** and **emerging trends** to identify new methods for advancing freight infrastructure and responding to industry changes.



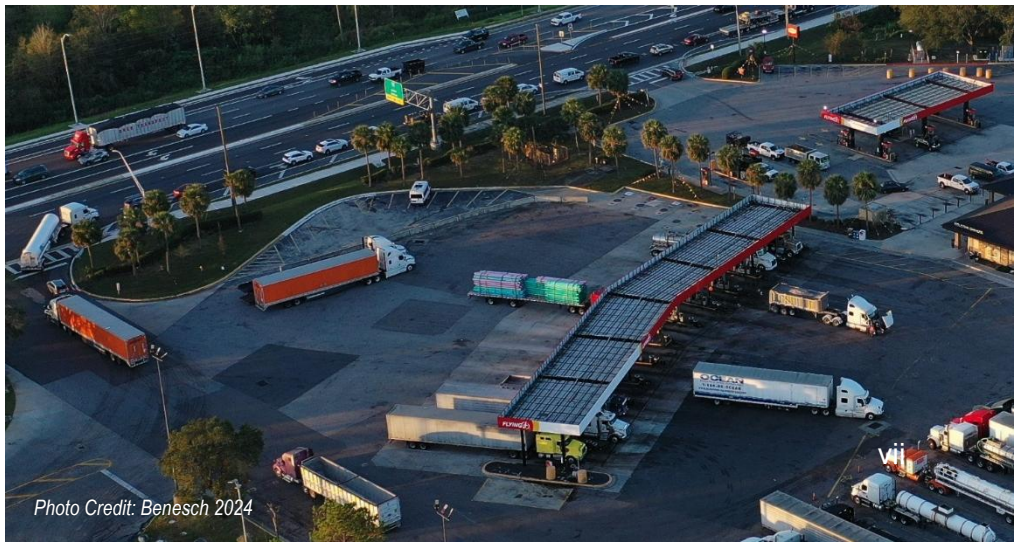


Photo Credit: Benesch 2024

CHAPTER 1





Plans & Studies Review

INTRODUCTION

This chapter summarizes the relevant plans, studies, and other data sources reviewed as part of the Florida Department of Transportation (FDOT) District Seven Regional Strategic Freight Plan update process. Understanding recent and ongoing planning efforts within the study area and region will help to ensure planning consistency, streamline coordination efforts with stakeholders, and inform subsequent technical analysis related to regional freight needs and recommendations. In addition to the data and documentation from the most recent (2018) Freight Plan update, the following resources were also identified for review as part of this effort:

- FDOT Freight Moves Florida Website
- FDOT Freight and Logistics Overview
- FDOT Florida Transportation Plan (FTP)
- FDOT Strategic Intermodal System (SIS) Plan
- FDOT Strategic Intermodal System Bottleneck Study
- FDOT Freight Mobility and Trade Plan (FMTP)
- FDOT Freight Roadway Design Considerations
- FDOT Statewide Truck Parking Study
- FDOT Statewide Truck GPS Data Analysis - Parking Supply & Utilization
- FDOT Florida Truck Empty Backhaul Study
- FDOT Commercial Motor Vehicle Systems Plan
- FDOT District Seven Freight Bottleneck Study
- FDOT District Seven Parking Inventory and Findings
- FDOT District Seven GIS and Data Sources
- City of Tampa 2040 Comprehensive Plan
- City of Tampa Citywide Truck Route Study and Ordinance
- Hillsborough Transportation Planning Organization (TPO) Freight Supply Chain Resiliency Study
- It's TIME Hillsborough: 2045 Hillsborough County Long Range Transportation Plan (LRTP)
- Advantage Pinellas: 2045 Pinellas County LRTP
- Hernando/Citrus Metropolitan Planning Organization (MPO) 2045 LRTP
- Mobility 2045: Pasco County LRTP
- Tampa Bay Regional Planning Council Study on Zephyrhills
- Brooksville-Tampa Bay Regional Airport (BKV) Master Plan
- St. Petersburg-Clearwater International Airport (PIE) Master Plan
- Tampa International Airport (TPA) Master Plan
- Vision 2030: Port Tampa Bay Master Plan

KEY THEMES & TAKEAWAYS

Several key takeaways from this review of plans and studies, which offer valuable insight into the state of freight transportation and goods movements in the five-county region, are highlighted below. The sections that follow provide a summary of each document, along with a brief description of information identified as being applicable to the Strategic Freight Plan update.

- **The Critical Role of Commercial Trucks:** The trucking industry and movement of goods using commercial trucks are vital components of the transportation network in District Seven, with nearly 75% of freight activity relying on these vehicles.
- **Freight-Related Land Use Planning:** Rapidly changing distribution and delivery models using smaller vehicles and more numerous hub locations further emphasizes the importance of the land use connection within the freight transportation network. This underscores the need for more consideration of where facilities such as warehousing, truck staging areas, and distribution centers should be located to strike a balance between mobility and economic vitality.
- **Long-Term Funding Investments:** Continued long-term investment in FDOT SIS facilities and supporting infrastructure is imperative to meet the growing demand for goods movement and provide the necessary infrastructure to accommodate future transportation needs.
- **Context-Specific Design Solutions**: Mitigating traffic congestion in key freight areas, corridors, and intersections is crucial. Effective congestion management and tailored, context-specific design solutions that are unique to the specific conditions in a given area will benefit all roadway users, not just freight vehicles.
- **A Focus on Safety and Resiliency:** Multiple state and local initiatives place a strong emphasis on safety and resiliency considerations, which should be seamlessly integrated into freight planning and project development efforts as well, which will help to improve overall long-term reliability of the transportation network.
- **The Rising Importance of Technology:** An emphasis on Intelligent Transportation Systems (ITS), automated or connected vehicle or infrastructure components, and data analysis tools highlight the increasing importance of technology to the transportation industry. Considerations for integrating technology are especially important for providing a freight network that will help industry partners optimize supply chain efficiency and reduce unpredictability from congestion.

Freight shipped on trucks rely on the local roadway network connections for reaching their final destination.

STATEWIDE DOCUMENTS

FDOT Freight Moves Florida Website

Geographic Applicability: State
Most Recent Update: N/A
Responsible Agency: FDOT

Plan / Program Overview

The *Freight Moves Florida* website provides data and insight into the state's freight transportation system, including infrastructure and policy initiatives.

Key Considerations

The resources available on the Freight Moves Florida website offer a pathway to actively contribute to economic development and improve the overall quality of life within the state. The state's transportation needs can be identified through the provided data on freight volumes transportation routes, and emerging trends. The following resources can be found on the website:

- FDOT General Map
- Mobility performance measures
- Interactive project map
- Real-time traffic information
- FDOT Open Data Hub- Freight Mobility and Trade Plan data warehouse

FDOT Freight & Logistics Overview

Geographic Applicability: State
Most Recent Update: 2021
Responsible Agency: FDOT

Plan / Program Overview

This document provides data about the FDOT District Seven freight infrastructure, commodities, transportation statistics and freight movement.

Key Considerations

Warehousing and distribution make up almost 60% of the freight land use, with light manufacturing, utilities, minerals processing, and construction material plants, and heavy industrial activities. In District Seven, 71% of freight movement relies on that of commercial trucks.

Looking at Florida's infrastructure, the state boasts an extensive network, with 123,099 miles of public roadway and an additional 12,130 miles designated as part of the State Highway System (SHS). To support this system, the state has established 98 truck parking facilities. The State Highway System has approximately 30.7 million miles of traveled routes every day. Additional details regarding freight-related infrastructure and facilities in FDOT District Seven are provided in the report.

2020 Florida Transportation Plan (FTP)

Geographic Applicability: State
Most Recent Update: 2023
Responsible Agency: FDOT

Plan / Program Overview

This plan places an emphasis on enhancing public transit options and prioritizes creating a transportation system that is safe, secure, agile, resilient, connected, efficient, and reliable. The plan aims to offer affordable and convenient transportation choices while contributing to economic growth and environmental sustainability. The plan is structured around four elements: Vision, Policy, Performance, and Implementation.

Key Considerations

The plan requires making improvements to help alleviate bottlenecks; manage responses to crashes, special events, other disruptions; get real-time information out to customers so they can adapt travel to avoid delays; and make regulatory processes as efficient as possible. Enhancing mobility for people and freight reflects greater focus on customer needs and the growing range of mobility options enabled by technology, data, and changing business practices. Several priority implementation actions are recommended across the five key areas:

1. **Collaboration:** To conduct research on evolving roles and structures of FDOT, MPOS, and other transportation agencies.
2. **Customers:** Identify and implement innovative approaches to mobility on demand and intermodal connectivity. This includes the co-location of public and private services and integrating schedules, payment systems, security systems, and other customer support where feasible. Additionally, to expand efforts in market research and customer outreach to understand future mobility needs and measure customer satisfaction. Support continuous collaboration with private sector shippers and carriers to understand logistic patterns and help resolve physical and operational bottlenecks within supply chains.
3. **Performance & Data:** Reinvent performance metrics and design standards to focus on mobility for people and freight. This should include measures evaluating the quality of service, accessibility to jobs and services, and other concepts that exceed the required measures. These measures and standards should be used to support planning and design decisions.
4. **Policy, Planning, & Decision Making:** Update the existing policies, standards, and funding guidelines to underscore the significance of mobility and accessibility to be incorporated when creating mobility solutions. Emphasize the integration of technology and operational improvements to optimize available capacity and meet mobility needs.
5. **Regional & Local Flexibility:** Revise local regulations, procedures, and management processes related to parking, zoning, streets, curbs, and other urban elements to accommodate emerging mobility solutions effectively.

Strategic Intermodal System (SIS) Plan

Geographic Applicability: State
Most Recent Update: 2018 - 2022
Responsible Agency: FDOT

Plan / Program Overview

The SIS Funding Strategy includes three inter-related sequential documents that identify potential Strategic Intermodal System (SIS) Capacity Improvement projects in various stages of development. The first document in the set is the five-year Work Program, which currently includes projects proposed for funding from FY2022 to FY2026. The second five-year plan covers years six through 10 and captures programs proposed for funding from FY2027 to FY2032. The Cost Feasible Plan, which spans from years 11 through 25 considers financially feasible projects based on projected state revenues from FY 2029 to FY2045.

Key Considerations

The *First Five-Year Plan* illustrates projects on the SIS that are funded by the Legislature in the first year of the Work Program along with projects with anticipated funding in years two through five. The Adopted Work Program provides guidance for system improvement projects, when and where to build them, and how the projects will be funded. **Table 1** provides details about the identified projects, including information on how funding is allocated, and the project phases scheduled within the upcoming five-year period. The Map ID numbers in the leftmost column correspond to the associated map shown in **Figure 2.**

The *Second Five Year Plan* illustrates projects that are planned to be funded in the five years beyond the Adopted Work Program, excluding the Turnpike. As funds become available, projects could be moved into the *First Five Year Plan.* **Table 2** provides details about the identified projects, including information on how funding is allocated, and the project phases scheduled within the upcoming five-year period. The Map ID numbers in the leftmost column correspond to the associated map shown in **Figure 3.**

The *Cost Feasible Plan* assesses the needs and available revenues of the SIS to effectively plan for and fund capacity improvements. Projects are considered if they align with the statewide SIS goals, contribute to the development of major roadway trade and tourism corridors, and enhance the overall connectivity of the SIS network. Some of these projects may also progress to the *Second Five Year Plan* as funds become available, while others could be deferred to the Needs Plan if revenues fall short of projections. **Table 3** provides details about the identified projects, including information on how funding is allocated, and the project phases scheduled within the upcoming five-year period. The Map ID numbers in the leftmost column correspond to the associated map shown in **Figure 4.**

SIS ADOPTED 1ST FIVE YEAR PROGRAM

District 7 Interstate Plan

MAP ID	FACILITY	DESCRIPTION	2023	2024	2025	2026	2027	TOTAL STATE MANAGED	TOTAL DISTRICT MANAGED	TOTAL LOCAL FUNDS	PD&E	PE	ENV	ROW	CON
4245015	I-275 (SR 93) FROM 54TH AVE S TO N OF 4TH ST. N	A2-6: Add 2 To Build 6 Lanes	$1,344	$0	$0	$0	$0	$1,332	$12	$0		●		●	
4491091	I-275 (SR 93) FROM N OF 38TH AVE N TO N OF 4TH ST N	A2-6: Add 2 To Build 6 Lanes	$14	$0	$0	$0	$0	$12	$2	$0		●			
4491092	I-275 (SR 93) FROM N OF I-375 TO N OF 38TH AVE N	A2-6: Add 2 To Build 6 Lanes	$51	$0	$0	$0	$0	$0	$51	$0		●			●
4340452	I-275 (SR 93) FROM N OF LOIS AVE TO N OF HOWARD AVE	MGLANE: Managed Lanes	$4	$0	$0	$0	$100	$100	$4	$0		●			
4125312	I-275 (SR 93)/SR 60 INTERCHANGE	M-INCH: Modify Interchange	$75,007	$45,342	$0	$0	$0	$106,660	$13,689	$0				●	
4125311	I275/SR 93 FM S OF SR60 TO N OF HILLS. RVR, SR60 FM S OF I275 TO SR589	M-INCH: Modify Interchange	$436	$0	$0	$0	$0	$434	$2	$0		●	●		
4338212	I-275/SR 93 FM S OF WILLOW TO N OF MLK;I-4 FM I-275 TO W OF CONNECTOR	M-INCH: Modify Interchange	$100	$0	$0	$0	$0	$100	$0	$0		●			
4450571	I-275/SR 93 SB OFF RAMP TO I-4 FR N OF FLORIBRASKA TO W OF 21ST	M-INCH: Modify Interchange	$1,605	$0	$0	$0	$0	$1,490	$115	$0		●	●	●	●
4450562	I-275/SR 93 SB/I-4/SR 400 WB FROM N OF MORGAN ST TO W OF N 12TH ST	M-INCH: Modify Interchange	$193	$0	$0	$0	$0	$1	$193	$0		●	●		●
4471072	I275/SR93 FM N OF HFB TO N OF LOIS,SR60 FM KENNEDY TO N OF SPRUCE/TI	M-INCH: Modify Interchange	$12,639	$474,877	$0	$0	$0	$487,452	$64	$0		●	●		●
4471073	I275/SR93 FM N OF HFB TO N OF LOIS,SR60 FM KENNEDY TO N OF SPRUCE/TI	A1-4: Add 1 To Build 4 Lanes	$0	$0	$0	$209,037	$0	$209,037	$0	$0					●
4357261	I-4 (SR 400) FM W OF I-75 NB OFF RAMP TO E OF MANGO RD	M-INCH: Modify Interchange	$0	$0	$0	$1,629	$15,309	$16,938	$0	$0		●		●	
4461351	I-4 EB AUXILARY LANE FROM E OF BETHLEHEM RD TO W OF BRANCH FORBES	A1-AUX: Add 1 Auxiliary Lane	$387	$0	$0	$0	$0	$0	$387	$0		●			
4461321	I-4 EB EXIT RAMP TO I-75 FROM E OF TAMPA BYPASS CANAL TO W OF I-75	A1-AUX: Add 1 Auxiliary Lane	$763	$0	$0	$4,955	$0	$0	$5,718	$0		●			●
4303381	I-4 EB FM EAST OF ORIENT ROAD TO W OF I-75 (SR 93A)	NR: New Road	$20	$0	$0	$0	$0	$0	$20	$0			●		
4461341	I-4 WB AUXILARY LANE FROM E OF FRITZKE RD TO W OF BRANCH FORBES RD	A1-AUX: Add 1 Auxiliary Lane	$0	$0	$0	$0	$514	$514	$0	$0		●			
4461331	I-4 WB AUXILARY LANE FROM E OF WEIGH STATION TO W OF MCINTOSH RD	A1-AUX: Add 1 Auxiliary Lane	$625	$0	$0	$0	$0	$0	$625	$0		●			
4461311	I-4 WB AUXILIARY LANE FROM E OF 50TH ST T W OF MLK JR BLVD	A1-AUX: Add 1 Auxiliary Lane	$0	$0	$4,827	$0	$0	$0	$4,827	$0					●
4433201	I-4/SR 400 FROM EAST OF MANGO RD TO W OF WB WEIGH STATION ON-RAMP	A1-AUX: Add 1 Auxiliary Lane	$262	$0	$0	$0	$0	$0	$262	$0		●			●
4317463	I-4/SR 400 FROM I-4/SELMON CONNECTOR TO E OF BRANCH FORBES RD	MGLANE: Managed Lanes	$33	$0	$0	$0	$0	$33	$0	$0				●	
4444341	I-4/SR 400 FROM W OF COUNTY LINE ROAD TO COUNTY LINE ROAD	TURN: Add Turn Lane	$0	$0	$1,058	$0	$0	$0	$1,058	$0		●			
4450561	I-4/SR 400 WB TO I-275/SR 93 NB FR W OF 14TH TO FLORIBRASKA AVE	M-INCH: Modify Interchange	$4,401	$0	$0	$0	$0	$4,200	$201	$0		●	●	●	●
4192353	I-75 (SR 93A) FROM S OF US 301 TO N OF BRUCE B DOWNS BLVD	PDE: Project Dev. & Env.	$151	$0	$0	$0	$0	$150	$1	$0	●				
4305733	I75/I275 CD ROAD FM S OF COUNTY LINE RD TO COUNTY LINE RD (PHASE II)	NR: New Road	$3,645	$0	$0	$30,351	$0	$33,606	$390	$0		●			●
4305732	I75/I275 FROM COUNTY LINE ROAD TO SR 56 (PHASE II)	NR: New Road	$5,665	$0	$2,189	$49,778	$0	$54,787	$2,845	$0		●		●	●
4376502	I-75/SR 93A AT GIBSONTON DRIVE	M-INCH: Modify Interchange	$0	$0	$5,293	$0	$0	$0	$5,293	$0		●			
4453172	I-75/SR 93A NB FROM S OF TAMPA BYPASS CANAL TO S OF FOWLER AVE	A1-AUX: Add 1 Auxiliary Lane	$26,036	$0	$0	$0	$0	$26,011	$25	$0		●		●	●
4453171	I-75/SR 93A SB FROM S OF TAMPA BYPASS CANAL TO S OF FOWLER AVE	A1-AUX: Add 1 Auxiliary Lane	$25,134	$0	$0	$0	$0	$25,134	$0	$0		●		●	●
		ANNUAL TOTALS	$158,515	$520,219	$13,367	$295,750	$15,923	$967,991	$35,784	$0					

All Values in Thousands of "As Programmed" Dollars

Project highlighted with dark gray background is no longer designated as SIS.

PD&E - Project Development & Environmental;
PE - Preliminary Engineering;
ENV - Environmental Mitigation;
ROW - Right-Of-Way;
CON - Construction & Support (may Include Grants);
TOTAL LOCAL FUNDS include all funds that start with LF fund code.

Table 1 *Adopted Multimodal Capacity Improvement Projects FY2022/2023 to FY2026/2027*

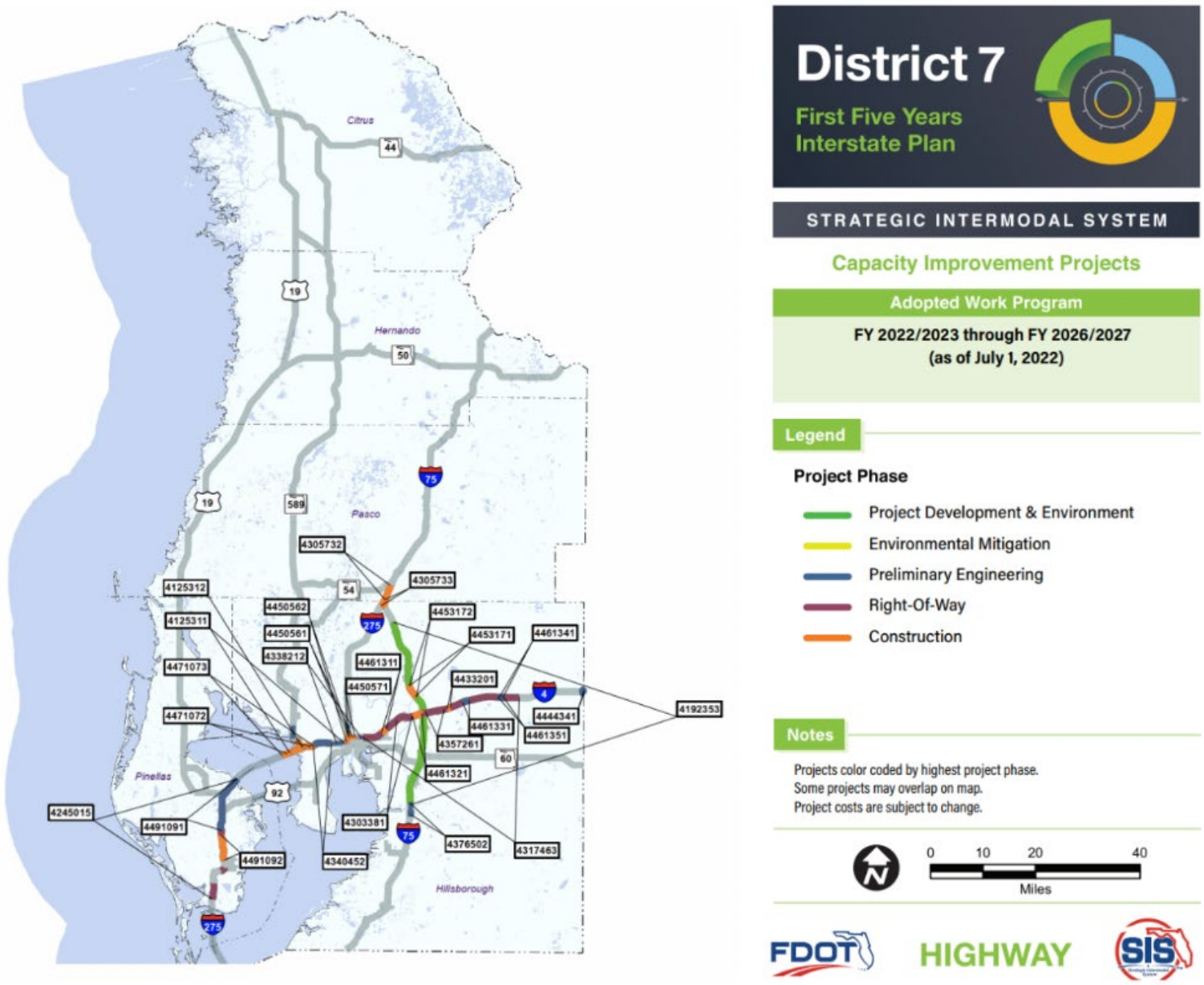


Figure 1 *Project Phase of the Adopted Multimodal Capacity Improvements Projects for FY2022/2023 through FY2026/2027*

SIS ADOPTED 2ND FIVE YEAR PROGRAM

District 7 Highway Plan

MAP ID	FACILITY	DESCRIPTION	2028	2029	2030	2031	2032	TOTAL STATE MANAGED	TOTAL DISTRICT MANAGED	TOTAL LOCAL FUNDS	PD&E	PE	ENV	ROW	CON
4471074	I275/SR93 FM N OF HFB TO N OF LOIS;SR60 FM KENNEDY TO N OF SPRUCE/TI	A2-6: Add 2 To Build 6 Lanes	$393,493	$4,200	$5,700	$0	$0	**$403,393**	**$0**	**$0**		●			●
4357261	I-4 (SR 400) FM W OF I-75 NB OFF RAMP TO E OF MANGO RD	M-INCH: Modify Interchange	$0	$0	$0	$49,670	$0	**$49,670**	**$0**	**$0**					●
4461351	I-4 EB AUXILARY LANE FROM E OF BETHLEHEM RD TO W OF BRANCH FORBES	A1-AUX: Add 1 Auxiliary Lane	$2,408	$0	$0	$0	$0	**$2,408**	**$0**	**$0**					●
4461341	I-4 WB AUXILARY LANE FROM E OF FRITZKE RD TO W OF BRANCH FORBES RD	A1-AUX: Add 1 Auxiliary Lane	$1,242	$0	$0	$0	$0	**$1,242**	**$0**	**$0**					●
4461331	I-4 WB AUXILARY LANE FROM E OF WEIGH STATION TO W OF MCINTOSH RD	A1-AUX: Add 1 Auxiliary Lane	$2,663	$0	$0	$0	$0	**$2,663**	**$0**	**$0**					●
4303371	I-4/SR 400 WB FM W OF ORIENT RD TO WEST OF I-75 (SR 93A)	SERVE: Add Svc /front/cd Sytem	$2,602	$0	$0	$127,547	$0	**$130,149**	**$0**	**$0**				●	●
4357501	SR 60 FROM VALRICO RD TO E OF DOVER RD	A2-6: Add 2 To Build 6 Lanes	$0	$47,449	$0	$0	$0	**$46,825**	**$624**	**$0**					●
4337971	US 19 (SR 55) FROM N OF NEBRASKA AVE TO S OF TIMBERLANE RD	N-INCH: New Interchange	$0	$0	$0	$185,849	$0	**$183,404**	**$2,445**	**$0**					●
4191822	US 41(SR45) AT SR54 FROM W OF WILSON RD TO E OF OSPREY LN	M-INCH: Modify Interchange	$0	$0	$0	$209,880	$0	**$209,880**	**$0**	**$0**					●
4407491	US 41/SR 45 AT CSX GRADE SEPARATION FR S OF SR 676 TO N OF SR 676	GRASEP: Grade Separation	$0	$0	$0	$0	$142,358	**$142,358**	**$0**	**$0**					●
		ANNUAL TOTALS	$402,408	$51,649	$5,700	$572,946	$142,358	$1,171,992	$3,069	$0					

Table 2 *Adopted Multimodal Capacity Improvement Projects FY2027/2028 to FY 2031/2032*

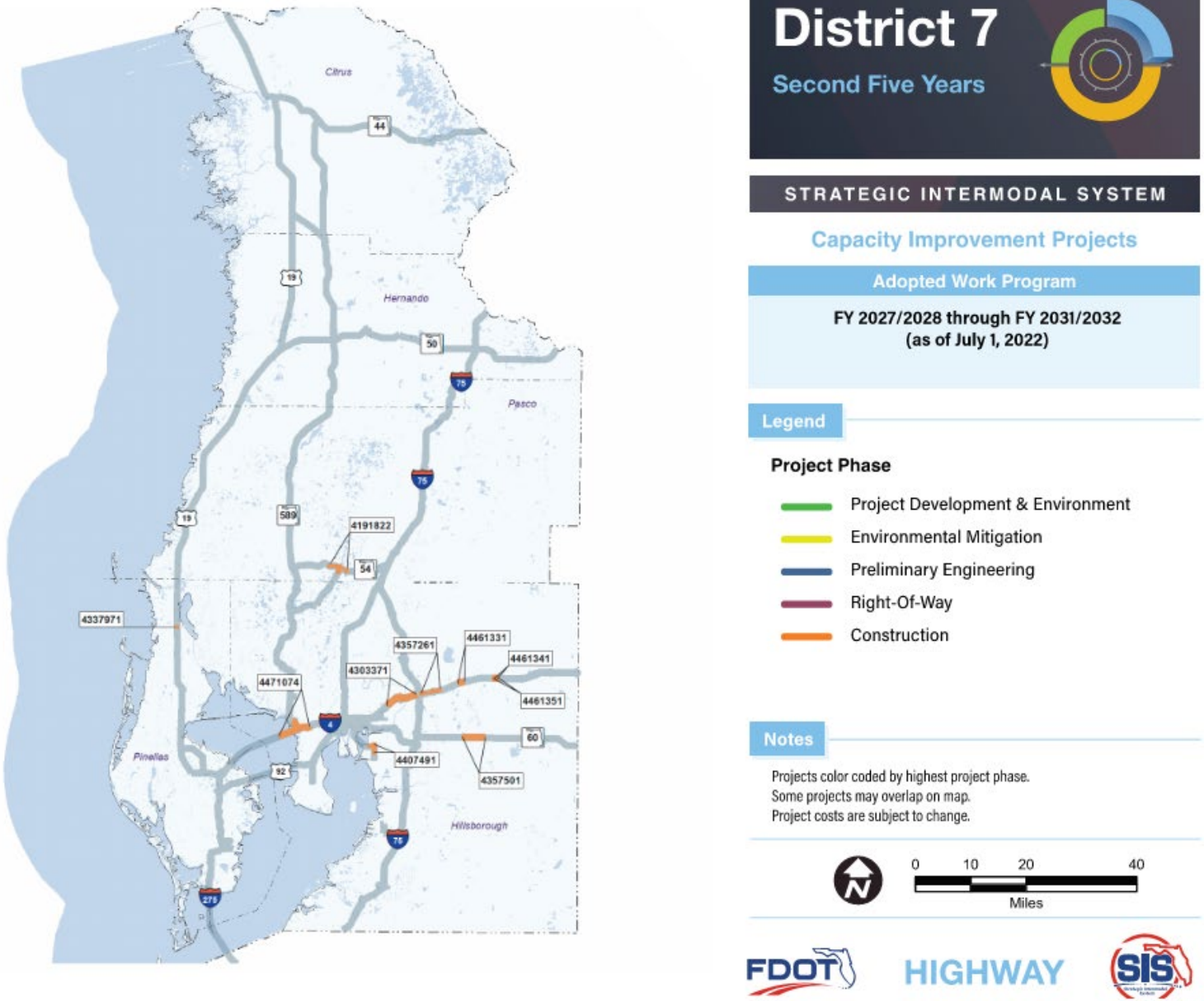


Figure 2 *Project Phase of the Adopted Multimodal Capacity Improvement Projects FY2027/2028 to FY 2031/2032*

ID	FACILITY	FROM	TO	Design			Right of Way / Construction			P3 Funds			Other Funds	IMPRV TYPE
				PDE	PE	TOTAL	ROW	CON	TOTAL	COST	Begin Yr	#Yrs	TOTAL	
3506	I-275	S of SR 60 to Lois Ave	SR 60 From S of I-275 to SR 589					1,474,000	**1,474,000**					M-INCH
3507	I-275	Innovation Corridor (Section 7/Part 2)						147,400	**147,400**					HWYCAP
3263	I-275	at I-4 Flyover			7,000	**7,000**	129,465	103,180	**232,645**					M-INCH
3269	I-275	at Fletcher Avenue			163	**163**		2,914	**2,914**					M-INCH
3268	I-275	at Fowler Avenue			101	**101**		1,816	**1,816**					M-INCH
3270	I-275	at Bearss Avenue			186	**186**	7,500	89,550	**97,050**					M-INCH
3266	I-275	at Sligh Avenue			87	**87**		518	**518**					M-INCH
3267	I-275	at Busch Boulevard			168	**168**		3,005	**3,005**					M-INCH
3265	I-275	at Hillsborough Avenue			246	**246**		4,399	**4,399**					M-INCH
3264	I-275	at MLK Blvd			194	**194**		1,157	**1,157**					M-INCH
3508	I-4	Selmon Connector	Branch Forbes Road				150,000	2,428,022	**2,578,022**					MGLANE
3276	I-4	at Park Road			132	**132**		2,364	**2,364**					M-INCH
3274	I-4	at Branch Forbes			124	**124**		2,221	**2,221**					M-INCH
3275	I-4	at Thonotosassa Road			119	**119**		709	**709**					M-INCH
3273	I-4	at McIntosh Road			252	**252**		1,504	**1,504**					M-INCH
3271	I-4	Branch Forbes Road	Polk Parkway		58,500	**58,500**	21,622	803,264	**824,886**					MGLANE
3277	I-4	at Mango Road			102	**102**		1,821	**1,821**					M-INCH
1497	I-4 (EB)	W of Orient Rd	NB/SB I-75				50,000	57,005	**107,005**					M-INCH
1635	I-75	SR 56	CR 54		12,019	**12,019**								MGLANE
3287	I-75	North of SR 52	Hernando/Sumter County Line	750		**750**								PDE
1634	I-75	N of Fletcher	N of I-75/I-275 Apex		26,748	**26,748**								MGLANE
3280	I-75	at Big Bend Road					6,000	67,354	**73,354**					M-INCH
1506	I-75	S of SR 50	Hernando/Sumter C/L		4,207	**4,207**								MGLANE
1508	I-75	Hernando/Sumter C/L	CR 476-B		2,319	**2,319**								MGLANE
1632	I-75	S of US 301	N of Fletcher Avenue		296,656	**296,656**	160,090		**160,090**					MGLANE
1505	I-75	Pasco/Hernando C/L	S of SR 50		3,939	**3,939**								MGLANE
3286	I-75	North of Bruce B. Downs	North of SR 52	2,000		**2,000**								PDE
3281	I-75	at Gibsonton			663	**663**		11,873	**11,873**					M-INCH
3278	I-75	Moccasin Wallow	South of US 301		43,560	**43,560**	8,000	703,654	**711,654**					MGLANE
1501	I-75	N of CR 54	N of SR 52		23,754	**23,754**	10,437	250,246	**260,683**					MGLANE
1502	I-75	N of SR 52	Pasco/Hernando C/L		4,848	**4,848**	15,002		**15,002**					MGLANE
1512	SR 50	Brooksville ByPass	Lockhart Road		8,200	**8,200**	10,289		**10,289**					A2-6
1511	SR 50 (Cortez Blvd)	Suncoast Pkwy	Cobb Road		4,600	**4,600**	19,500	29,220	**48,720**					A2-6
3288	SR 54	at Collier Parkway			15,000	**15,000**	30,000	179,100	**209,100**					M-INT
3290	SR 60	SR 39	Polk County Line		5,648	**5,648**	28,507	51,056	**79,563**					A2-6
3289	SR 60	Dover Road	SR 39				7,100	137,902	**145,002**					A2-6
3293	SR 686 / Roosevelt Boulevard	I-275/SR 93	W of 9th St N/MLK St N					199,497	**199,497**					M-INCH
3298	US 19	Pinellas/Pasco County Line	Pasco/Hernando County Line	1,000		**1,000**								STUDY
1517	US 19	S of Lake St	Pinellas Trail (Tarpon Interchange)		8,860	**8,860**								M-INT
3296	US 19 (SR 55)	N of Nebraska Avenue	S of Timberlane Road					229,604	**229,604**					M-INT
1728	US 41	Pendola Point Rd	South of Causeway Blvd				1,526	10,464	**11,990**					A2-6
3300	US 92 (Gandy Bridge)	west end of Gandy Bridge	east end of Gandy Bridge		34,881	**34,881**								A2-6
Funded CFP Totals						**567.026**		**7.649.857**					**Total CFP Funds= 8.216.883**	

LEGEND

FY 2028/2029 - 2034/2035
FY 2035/2036 - 2039/2040
FY 2040/2041 - 2044/2045
Mega Projects Phased Over Time

INFLATION FACTORS

FY 2031/32 - 1.474
FY 2037/38 - 1.791
FY 2042/43 - 2.107

NOTES

(1) Values in thousands of dollars in the year of expenditure, inflated to the middle year of each band.
(2) All phase costs shown as supplied by each District.
(3) CON includes both Construction (CON52) and Construction Support (CEI).
(4) ROW includes both Right-of-Way Acquisition/Mitigation (ROW43/45) and Right-of-Way Support.
(5) "P3 Funds" - Used to fund Public-Private Partnership projects over a specified number of years.
(6) Revenue forecast provides separate values for PDE and PE than for ROW and CON.
(7) Other Funds - assumed to be toll revenue or partner funded.

IMPROVEMENT TYPES

A1-3: Add 1 Lane to Build 3
A2-4: Add 2 Lanes to Build 4
A2-6: Add 2 Lanes to Build 6
A2-8: Add 2 Lanes to Build 8
A4-12: Add 4 Lanes to Build 12
A1-AUX: Add 1 Auxilliary Lane
A4-SUL: Add 4 Special Use Lanes

ACCESS: Access
BRIDGE: Bridge
FRTCAP: Freight Capacity
GRASEP: Grade Separation
HWYCAP: Highway Capacity
PTERM: Passenger Terminal
ITS: Intelligent Transp. Sys
MGLANE: Managed Lanes

M-INCH: Modify Interchange
N-INCH: New Interchange
NR: New Road
PDE: Project Dev. Env.
SERVE: Add Svc/Front/CD System
STUDY: Study
UP: Ultimate Plan

Table 3 *Adopted Multimodal Capacity Improvement Projects FY2029 to FY 2045*

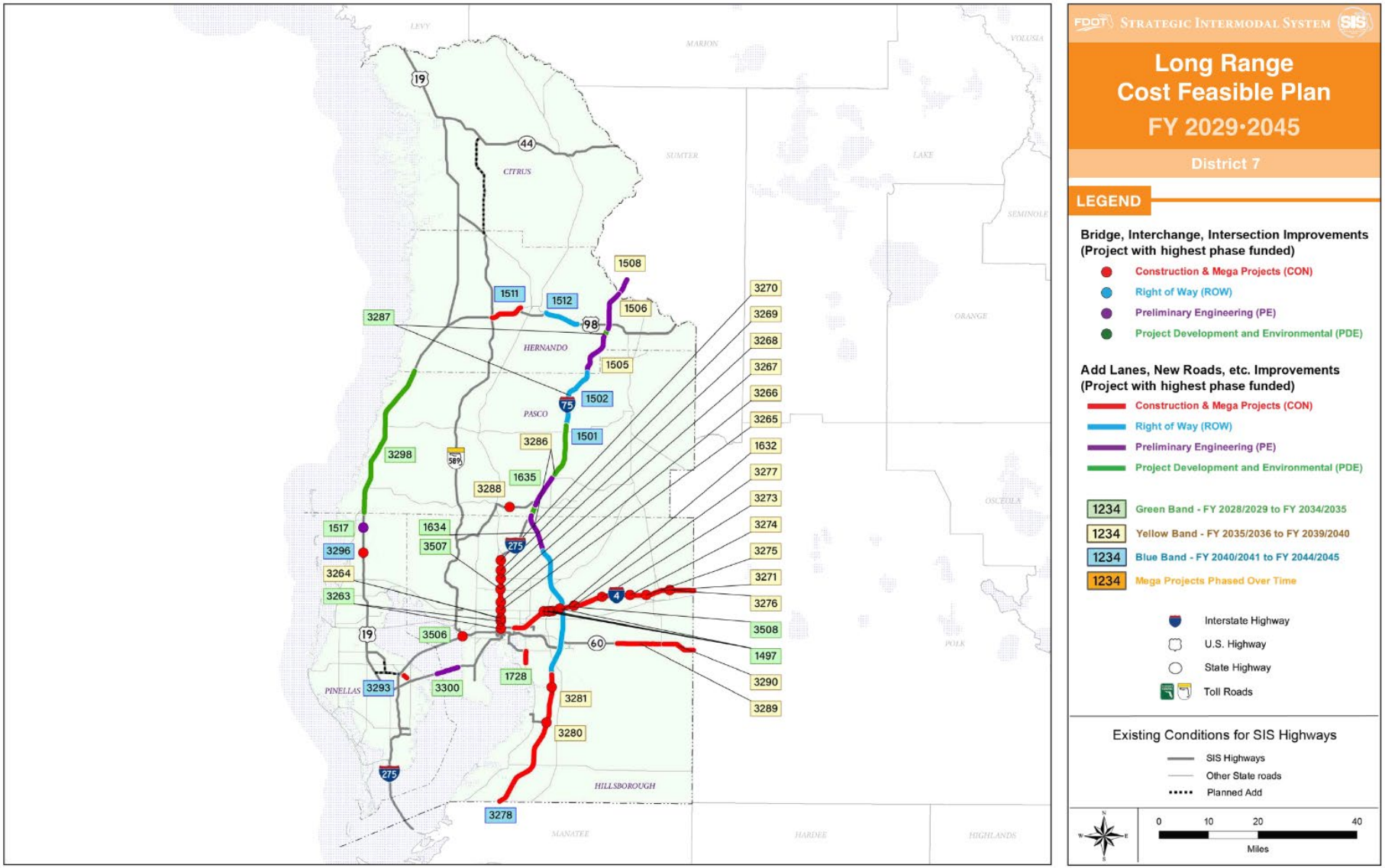


Figure 3 *Project Phase of the Adopted Multimodal Capacity Improvement Projects FY2029 to FY 2045*

Strategic Intermodal System Bottleneck Study

Geographic Applicability: State
Most Recent Update: 2018
Responsible Agency: FDOT

Plan / Program Overview
This study summarizes the available data, research efforts on traffic congestion and bottlenecks, and identifies the performance measures used by various agencies, DOTs, and MPOs to quantify congestion.

Key Considerations
Bottlenecks are specific points of localized traffic constriction, distinct from general congestion that can affect the entire roadway. These bottlenecks represent areas within a larger transportation network in which traffic flow experiences significant constraints.

In 2011, District Seven faced four of the top twenty statewide SIS (Strategic Intermodal System) bottlenecks. These bottlenecks were among the key areas where traffic flow constraints posed significant transportation challenges, and were identified as followed:

1. I-275 northbound Floribraska Avenue to 26th Avenue (0.23 miles)
2. I-4 westbound 15th Street to I-275 (0.86 miles)
3. I-275 northbound Howard Frankland Bridge to West Shore Boulevard (2.63 miles)
4. I-275 southbound I-4 to North Tampa Street (0.55 miles)

Freight Roadway Design Considerations

Geographic Applicability: State
Most Recent Update: 2015
Responsible Agency: FDOT

Plan / Program Overview
This plan provides guidance about best practices in roadway design for different context areas. The guidance shall be used to help roadway designers and planners balance movement and livability.

Key Considerations
Context areas of the freight roadway design include:

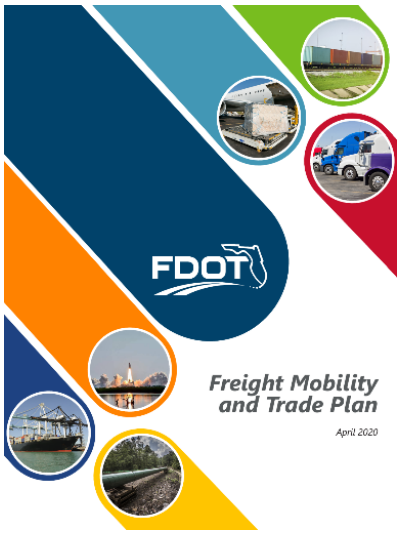
- **Low Activity Areas** are characterized by land uses that generate low amounts of trip generation by any mode and have relatively low levels of through truck traffic.
- **Community Oriented Areas** include state highways serving relatively densely populated residential, commercial, or mixed-use districts where the level of bicycling and pedestrian activity can be expected to be high, and the extent of truck traffic is relatively low.
- **Freight Oriented Areas** have high levels of truck traffic and land uses that are supported by goods movement, such as industrial and commercial designations.
- **Diverse Activity Areas** have both high levels of localized activity generating a wide variety of person trips as well as a high amount of truck traffic.

Freight Mobility and Trade Plan (FMTP)

Geographic Applicability: State
Most Recent Update: 2020
Responsible Agency: FDOT

Plan / Program Overview

The Freight Mobility and Trade Plan (FMTP) is a cohesive and comprehensive document specifically designed to prioritize objectives and develop strategies aimed at enhancing the efficient transportation of goods, commodities, and services. Aligned with the overarching 2060 Florida Transportation Plan, the FMTP plays a crucial role in supporting the plan's strategic objectives, serving as a guiding framework for making informed and forward-looking transportation choices.



Key Considerations

Tampa is a major cargo gateway port, facilitating the transport of various commodities from outside of Florida and within the state. These commodities include containers, petroleum, coal, and aggregates. The City of Tampa's significance is extended through its robust transportation networks through its truck, rail, and barge connectivity.

The strategic plan uses goals from the Florida Transportation Plan (FTP) and establishes ten key objectives that align with Florida's collective vision for freight transportation. These objectives lay the foundation for the implementation of recommendations of the FMTP. The plan includes objectives focused on improving safety and security by leveraging data and technology to build a resilient multimodal freight system. The plan emphasizes the importance of maintaining Florida's freight infrastructure and driving innovation to reduce congestion and improve operational efficiency. Last-mile connectivity and the promotion of public-private partnerships are key components in improving the freight network. The plan's target is to capitalize on emerging freight trends to promote economic development, increasing regional and local coordination, and promoting the shift to alternatively fueled freight vehicles.

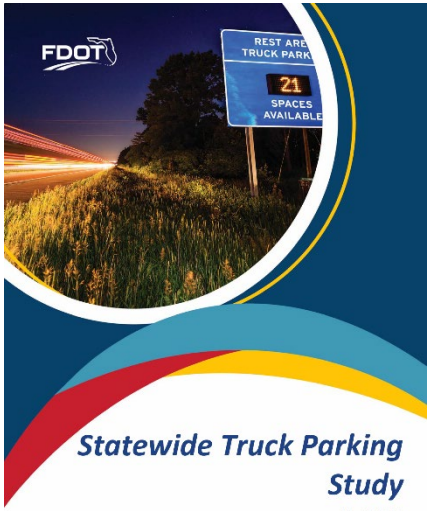
FMTP highlights major statistics that underscore the importance of an improved freight network. The cost of congestion in Florida's freight industry surpassed $5.6 billion in 2016. In 2017, there were 29.6 million daily truck miles traveled on the State Highway System (SHS). **Operating costs can be reduced by 45%, estimated cost savings of $85 billion, by synchronizing multiple truck operations through truck platooning**. FDOT is currently in the process of developing a pilot project to demonstrate the Driver Assisted Truck Platooning (DATP) technologies and operations.

To accommodate future freight implication, cities must consider factors including, dedicated facilities for trucks, more frequent last-mile delivery vehicles, Connected and Autonomous Vehicles (CAV) ready infrastructure, the reduced demand for truck parking locations, proximity of smaller production facilities to urban areas, urban warehouses that support on-demand delivery services, and the integrating drone delivery services. Grant funding has been awarded to specific initiatives that are aimed at enhancing network improvements to freight connectivity. **The Truck Parking Availability System (TPAS) was awarded $10.78 million,** and the Tampa Downtown Multimodal Improvements was awarded $10.94 million. In Hillsborough County, the Selmon Expressway Connector from I-4 westbound near the Selmon Expressway and I-4 westbound approaching I-75, are two of the top ten recurring and non-recurring congestion segments in the state.

In January 2024, FDOT was awarded a $180 million Federal grant to build new truck parking spots at multiple sites along Interstate-4 in Central Florida. This funding will also be used to provide electric vehicle hookups at the four locations along I-4.

FDOT Statewide Truck Parking Study

Geographic Applicability: State
Most Recent Update: 2020
Responsible Agency: FDOT



Plan / Program Overview

This study uses data to identify, prioritize, and propose solutions to address the areas in Florida with the greatest truck parking needs. The study provides an implementation plan, supporting documents, and tools to consolidate potential solutions into actionable projects, policies, and partnerships that address parking problems in Florida.

Key Considerations

Truck parking demand is influenced by several key factors, including adherence to hours of service regulations, the electronic logging device mandate, and the level of freight activity in specific areas.

District Seven plays a crucial role in Florida's truck parking landscape, representing 6% of the state's total truck parking capacity. Notably, it ranks second among areas facing a substantial increase in demand for truck parking facilities. A usability analysis has indicated that rest areas along I-75 within District Seven are operating at full capacity, underscoring the urgent requirement for additional parking spaces to cater to growing demand. To address this demand, two ongoing projects in the design-build process aim to add a total of 115 new truck parking spaces at the northbound and southbound Hillsborough County Rest Areas along I-75. These initiatives are essential steps in mitigating the pressing truck parking challenges faced within District Seven.

FDOT Statewide Truck GPS Data Analysis- Parking Supply and Utilization

Geographic Applicability: State
Most Recent Update: 2019
Responsible Agency: FDOT

Plan / Program Overview

This study uses the American Transportation Research Institutes (ATRI) truck GPS information to evaluate the utilization of existing truck parking supply at public and private facilities and the amount of truck parking that occurs at unauthorized locations.

Key Considerations

Peak parking demand varies statewide, most facilities experience peak parking hours between 7 pm and 9 pm. District Seven experiences peak parking hours from 4 pm to 7 pm, which is when 12 out of 27 facilities are at full capacity. Furthermore, from 12 pm to 9 am, 13 facilities show increased demand by exceeding the parking capacity. The average hourly parking utilization rate ranges between 80% to 100% daily capacity across all parking facilities in District Seven.

Statewide, there are 334 truck parking facilities including rest areas, weigh stations, and welcome centers. In District Seven, there are 27 facilities in Hillsborough, Pasco, and Hernando Counties, totaling 631 spaces. The following five locations were identified as particularly significant, offering more than 30 truck parking spaces.

1. Flying J Travel Plaza #624, off I-75 in Pasco County
2. TA Travel Center #158, off I-4 in Hillsborough County
3. Tampa Bay Truck Center, off I-75 in Hillsborough County
4. Pasco County Northbound Rest Area #70241, off I-75 in Pasco County
5. Pasco County Northbound Rest Area #70242, off I-75 in Pasco County

Florida Truck Empty Backhaul Study

Geographic Applicability: State
Most Recent Update: 2017
Responsible Agency: FDOT

Plan / Program Overview
This study quantifies the practice of truck empty backhaul, which involves transporting goods on a truck's return journey when it lacks primary cargo, using data from weight in motion (WIM) systems.

Key Considerations
Florida faces a significant challenge with empty backhaul in its commercial motor vehicle industry, with approximately 70% of northbound and 20% of southbound trucks on I-75 through Hillsborough County, as well as 40% to 50% of eastbound and 50% of westbound trucks on I-4 in Polk County, returning either partially loaded or completely empty. The plan suggests several recommended actions to address the truck empty backhaul.

It is advised to expand the analysis scope for future efforts to include all freight modes. A comprehensive multimodal evaluation will provide better understanding of the trade imbalance and the forces influencing empty backhaul. Obtaining industry data is crucial to gain insights from the private sector's perspective, as private parties may offer unique business perspectives that influence empty backhaul.

The plan recommends improving the quality and robustness in the Weigh-In-Motion (WIM) data through regular calibration of the WIM sites and coordination with the FDOT Motor Carrier Size and Weight Office.

Collaboration with other departments, such as the Florida Department of Agriculture and Consumer Services and Florida Department of Revenue, to identify cargo inside trailers and gather commodity-related data may reveal which industries result in the greatest percentage of empty truck movements. Investigating Bill of Lading data acquired by FDOT Traffic Operations can provide valuable information Leveraging synergies between various datasets and considering a Florida Freight Commodity Survey could offer comprehensive insights into addressing the issue of empty backhaul in Florida's transportation industry.

Commercial Motor Vehicle Systems Plan

Geographic Applicability: State
Most Recent Update: 2018
Responsible Agency: FDOT

Plan / Program Overview
The Motor Carrier Systems Plan was specifically coordinated with other modal plans developed under the Freight, Logistics, and Passenger Operations (FLP) Office at FDOT.

Key Considerations
Identifies the extent of the parking shortage in Florida's four primary interstate corridors: I-4, I-10, I-75, and I-95. At the time of the update FDOT completed two projects in Pasco Couty on I-75 to rebuild two rest areas with additional truck parking spaces. The project added 59 parking spaces.

Tampa Bay Regional Strategic Freight Plan- Freight Moves Florida

Geographic Applicability: District Seven
Most Recent Update: 2018
Responsible Agency: FDOT

Plan / Program Overview

The Freight Moves Florida Plan is the previous version of the Regional Strategic Freight Plan. It defines an integrated and connected regional freight transportation network and identifies regional freight investment priorities needed to sustain economic growth. The plan identifies strategic transportation investments, improvements, and provides guidance to define and develop freight improvement strategies.

Key Considerations

The plan recommendations are based on five key objectives to guide the development of the transportation strategies in the Tampa Bay Region:

1. Identify strategic freight transportation investments that promote and foster economic development in the region.
2. Respond to goods movement and community livability needs.
3. Position the Tampa Bay region to take advantage of the rapid growth in the global economy.
4. Position the region for new funding opportunities to implement infrastructure improvements.
5. Integrate freight considerations into the planning, project development, and roadway design processes.

In addition to these objectives, roadways supporting the most freight tonnage moved through the Tampa Bay region were categorized into a series of hierarchal levels.

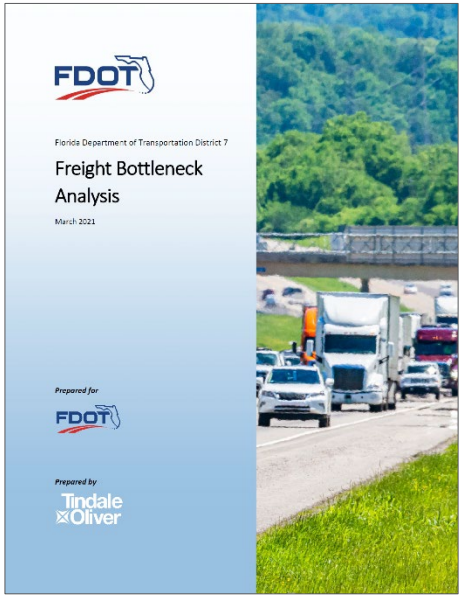
- The Limited Access Facilities in District Seven are I-4, I-75, I-275, Lee Roy Selmon Expressway, Veterans Expressway, Suncoast Parkway, and Polk Parkway.
- Regional Freight Mobility Corridors provide high-capacity connection between freight activity centers and limited access facilities. All regional freight mobility corridors in the Tampa Bay region serve as corridors for commuter travel.
- The Freight Distribution Routes are roadways and other truck routes designated in local ordinances at the county and municipal levels. Freight distribution routes minimize truck traffic on other local roads.
- Freight Activity Center Streets are the local and collector streets that provide direct access to freight activity centers and other streets located within boundaries of a freight activity center. They provide truck circulation within industrial areas and are the "last link" to a freight destination.

FDOT District Seven Bottleneck Study

Geographic Applicability: District Seven
Most Recent Update: 2021
Responsible Agency: FDOT

Plan / Program Overview

The purpose of this study is to identify locations where truck delays are the most problematic on District roadways, assess the severity of these bottleneck conditions, and develop solutions for mitigating their impact on freight movements. It used a combination of probe speed data, FDOT traffic counts, and freight facility location data to locate, quantity, and visualize the conditions of the worst recurring bottlenecks along the freight network.



Key Considerations

The study identifies the ten worst freight bottleneck locations for both arterial facilities and limited-access facilities, which are shown in **Figure 5.** For arterial bottleneck locations, it additionally identifies the factors contributing to the congestion, quantifies the impact, and makes recommendations for improving conditions at each location, as well as for general congestion reduction strategies. Improvement project concepts were also developed as part of a subsequent effort at the following locations:

- 49th Street and Ulmerton Road
- Hillsborough Ave and Veterans Expressway

Rank	Location
A1	SR-60 W @ I-75
A2	SR-580 W @ SR-589/Veterans Expy SR-580 E @ SR-589/Veterans Expy SR-589 Frontage/Veterans Expy S @ SR-580/ Hillsborough Ave
A3	US-92 W @ US-92/Dale Mabry Hwy
A4	SR-580 E @ Anderson Rd
A5	SR-60 E @ W John F Kennedy Blvd
A6	SR-60 E @ Dover Rd
A7	CR-611 N @ SR-688/Ulmerton Rd CR-611 S @ SR-688/Ulmerton Rd
A8	US-19 N @ CR-77/ Regency Park Blvd/Cinema Dr
A9	CR-296 W @ CR-611/49th St N
A10	SR-50 W @ CR-587/Mariner Blvd

Rank	Location
F1	I-75 S @ SR-574/Exit 260
F2	I-4 E @ McIntosh Rd/ Exit 14 I-4 E @ Branch Forbes Rd/Exit 17
F3	I-4 E @ CR-579/Exit 10 I-4 E @ I-75/Exit 9
F4	I-4 E @ US-41/50th St/ Exit 3 I-4 W @ US-41/50th St/ Exit 3
F5	I-4 E @ SR-553/Park Rd/ Exit 22 I-4 E @ SR-39/Buchman Hwy/ Exit 21 I-4 E @ County Line Rd/ Exit 25
F6	I-75 N @ SR-60/Exit 257 I-75 N @ SR-574/Exit 260
F7	I-75 N @ SR-582/Fowler Ave/ Exit 265
F8	I-275 N @ SR-694/Exit 28
F9	I-75 N @ Gibsonton Dr/ Exit 250
F10	I-75 N @ I-4/Exit 261

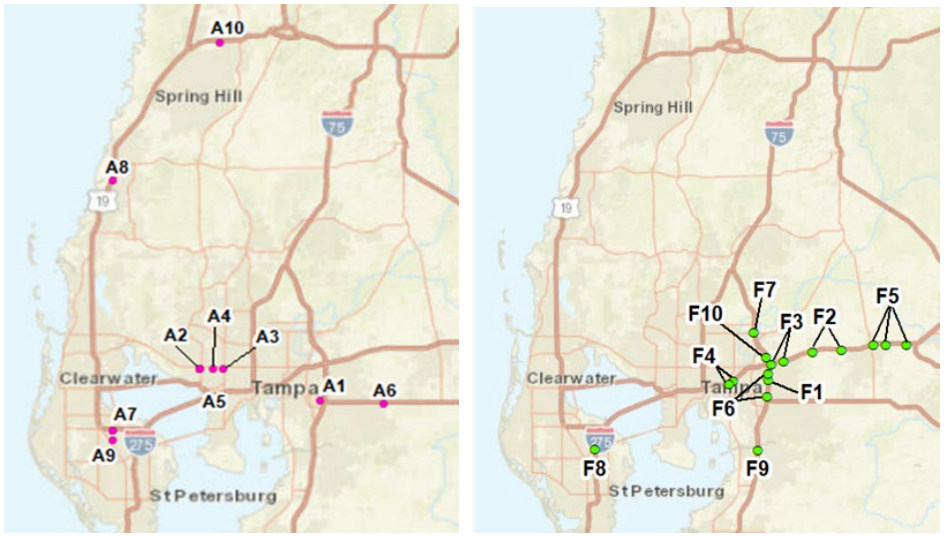


Figure 4 *Worst Arterial (left) and Freeway, Interstate, or Expressway (right) Freight Bottleneck Locations in District Seven as Identified by 2021 Study*

FDOT District Seven Parking Inventory & Findings

Geographic Applicability: District Seven
Most Recent Update: 2017
Responsible Agency: FDOT

Plan / Program Overview
This chapter regards the study of truck parking within District Seven in order to determine if and when overcapacity truck parking has occurred.

Key Considerations
The study concluded that rest areas do not have internal circulation, therefore if vehicles reach the end of the parking area and all spaces are filled, vehicles do not have the opportunity to go around. Final considerations for FDOT, where feasible, were to provide a "go-around" for trucks that pass through truck only parking areas to access additional large vehicle parking spaces, create designated "Commercial Trucks Only" parking spaces at rest areas, add hard shoulders within rest areas for legal overflow parking, and to adopt a method to notify drivers in advance of available parking as they approach the rest area either by variable messaging signs or other technology.

FDOT District Seven GIS & Data Sources

Geographic Applicability: District Seven
Most Recent Update: N/A
Responsible Agency: FDOT

Plan / Program Overview
This includes geospatial data and agency resources for FDOT.

Key Considerations

GIS data resources are important to understanding the policies, procedures, and guidelines used by FDOT. Resources include aerial surveying, location surveying, right of way, and geographic mapping. The following resources are relevant to Florida's freight network planning and can be found at the following locations.

1. *FDOT District Seven Surveying & Mapping Data* (https://www.fdot.gov/geospatial/surmapd7list.shtm):

   Surveying and mapping data provide a graphic means to display aerial surveying, location surveying, right of way, and other geographic data. This data provides policies, procedures, guidelines, and training that support statewide surveying and mapping activities.

2. *FDOT Transportation Data Portal* (https://www.fdot.gov/agencyresources/mapsanddata.shtm):

   The Transportation Data Portal is a platform designed for locating data that supports the planning and development of a safe, viable, and balanced state transportation system to assure the compatibility of all components, including multimodal facilities. The Data Portal can be used to explore and download geospatial data, analyze, and combine open datasets using maps, and develop new web or mobile applications.

3. *Freight Mobility and Trade Plan (FMTP) Data Warehouse* (https://fdot.maps.arcgis.com/apps/MinimalGallery/index.html?appid=32e085c9c8dd45f6aeb4793536d73f61):

   The FMTP Data Warehouse offers current data about various freight and commercial vehicle conditions within the state. It contains a range of data and maps, such as highway data related to pavement conditions, truck bottlenecks, truck crashes, truck empty backhaul, truck parking supply, and truck volume. The Warehouse also contains comprehensive multimodal data pertaining to freight-intensive regions, as well as details about systems and assets.

Hillsborough Transportation Planning Organization (TPO) Freight Supply Chain Resiliency Study

Geographic Applicability: Hillsborough County
Most Recent Update: 2022
Responsible Agency: Hillsborough TPO

Plan / Program Overview

The purpose of this study is to learn more about supply chains that are critical to bringing necessary products and services to Hillsborough County and how these flows could be slowed or stopped in different situations. It analyzed elements of the freight supply chain to identify those that are critical for goods or services, the potential effects on these supply chains from different combinations of disaster scenarios, and their levels of resiliency.

Key Considerations

Supply chain commodity maps were created for each of the following commodities:

- Food and groceries,
- Water and wastewater utilities,
- Housing materials,
- Urgent healthcare services and medicine, and
- Fuel distribution systems

These supply chains were then evaluated against multiple disaster scenarios, with level of severity and geographic scale factors included, to determine how they would likely be impacted. The results are summarized in matrices for each supply chain. Key findings include:

- Many of the critical supply chain facilities are susceptible to inundation during storm events; climate change makes maintaining access to these facilities even more critical.
- Redundant infrastructure/facilities and resources, including having available and redundant resource substitutions, are critical in mitigating effects of a disaster. Hillsborough County has redundant transportation infrastructure overall; however, there are network gaps at critical facilities and backup facilities are not equipped to handle the demand of primary facilities.
- There are clusters of critical freight facilities located throughout the county; these areas should be prioritized for resiliency solutions (e.g., redundant infrastructure, raised profiles, etc.). Improved access and redundant access to those facilities that currently have circuitous and/or limited access are essential, especially during an emergency.

The report provides recommendations to address vulnerabilities and build resiliency. The areas shown in **Figure 6** were called out specifically for further evaluation because of their critical locations for providing freight access.

Figure 5 *Areas Recommended for Additional Evaluation by Freight Supply Chain Study*

It's TIME Hillsborough 2045 Long Range Transportation Plan & Resilient Tampa Bay

Geographic Applicability: Hillsborough County
Most Recent Update: 2019
Responsible Agency: Hillsborough TPO

Plan / Program Overview

This plan outlines the comprehensive strategy over the next 25 years for Hillsborough County, Florida. The plan emphasizes maintaining and improving the transportation infrastructure, enhancing safety, reducing congestion, promoting multimodal options, and stimulating economic development. Specific projects, such as the Westshore Interchange and Downtown Interchange, are proposed to alleviate congestion and improve connectivity.

Key Considerations

The Hillsborough 2045 LRTP features two projects designed to enhance connectivity and reduce congestion: Westshore Interchange and Downtown Interchange.

The Westshore Interchange plays a vital role in facilitating commuter, freight, and tourism traffic in Hillsborough, Pasco, and Pinellas counties along I-275, SR 60, and the Veterans Expressway. It serves critical areas like the Westshore Business District, Tampa International Airport, and major sports venues. The recommendations shall improve safety and boost economic vitality. The System Expansion Map, **Figure 7**, shows major roadway projects and candidate projects that are planned from 2020 to 2045.

The Downtown Interchange at I-4/ I-275 experiences severe congestion and crashes. Modifications are recommended to address these concerns, which will benefit business districts, neighborhoods, and vulnerable populations. The modifications include fixing and adding ramps on I-275 to/from I-4, to achieve improvements related to good repair, resilience, reliability, resilience, safety, and economic growth.

Previously, the 2040 Hillsborough County MPO Vulnerability Assessment and Adaption Pilot Project evaluated key evacuation routes. One of those being the Gandy Bridge between Pinellas and Hillsborough counties. The findings recommend spending approximately $1.9 million on adaptation strategies to allow for continued operation of the key regional facilities.

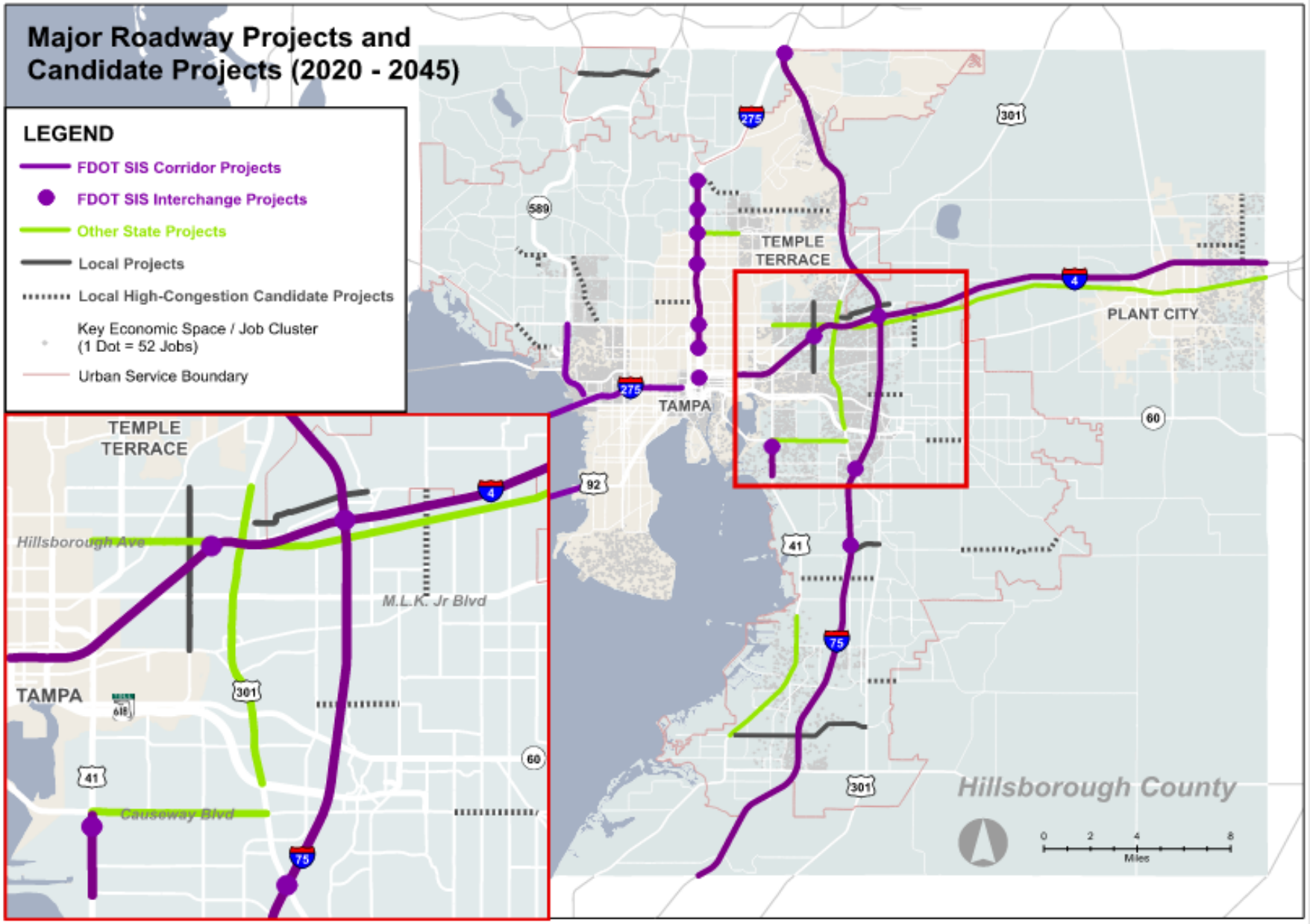


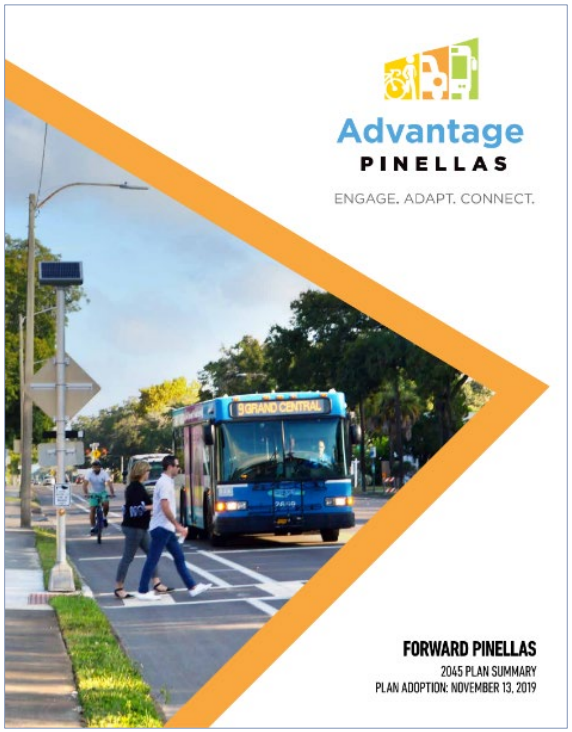
Figure 6 *Major Roadway Projects and Candidate Projects (2020-2045)*

Advantage Pinellas: 2045 Pinellas County Long Range Transportation Plan

Geographic Applicability: Pinellas County
Most Recent Update: 2019
Responsible Agency: Forward Pinellas

Plan / Program Overview

This plan is the Pinellas County Long Range Transportation Plan. It considers travel choices for all generations and economic backgrounds, and it recognizes the diversity of our distinct communities, numerous industries and jobs and the natural lands and waterways. The plan follows community priorities for safety, planning for walkable communities, and access to premium transit corridors.



Key Considerations

Forward Pinellas reviews all projects that receive state and federal funding against the recommendation of the Freight and Mobility Trade Plan (FMTP). In Pinellas County, congestion impacts to freight traffic is projected to increase by 15% by 2045. Pasco and Hillsborough County are projected to see a 200% increase in congestion that will impact freight. Regional congestion can influence freight vehicles' schedule and negatively affect business and economic development.

State Road 60 is a gateway in facilitating travel for both residents and tourists commuting between Pinellas and Hillsborough counties. The corridor stands out as one for the region's most vital transportation links. Currently, there are studies being conducted to determine improvements for multimodal connectivity with a focus to introduce an express bus route to connect Clearwater Beach, Downtown Clearwater, and Tampa International Airport.

Forward Pinellas, City of Clearwater, Pinellas Suncoast Transit Authority (PSTA), Pinellas County, and FDOT are working in partnership to explore a range of transit options that could enhance access to primary destinations. These options include aerial transit and a busway, which would allow people to travel to the beach without increasing congestion on the Clearwater Bridge span of SR60. Two corridors recommended for improvement are the West Bay Drive Corridor and the Curlew Rad Corridor. The plan recommends providing enhanced beach transit and trolly routes, as well as the SunRunner (formerly Central Avenue Bus Rapid Transit) route.

Mobility 2045: Pasco MPO 2045 LRTP

Geographic Applicability: Pasco County
Most Recent Update: 2020
Responsible Agency: Pasco County MPO

Plan / Program Overview

This plan for Pasco County outlines an $8 billion program covering 2025 to 2045. It emphasizes highway expansion, multimodal transit, and intelligent transportation systems. Funding comes from diverse sources including federal and state contributions, local funding, and private investments. It aligns with federal and state requirements, addressing population growth, enhancing transportation efficiency, and promoting multimodal transportation options.

Key Considerations

Mobility 2045 Long Range Transportation Plan (LRTP) addresses traffic congestion, enhancing commercial vehicle access, and promoting efficient traffic management. To address congestion and improve traffic control, resources are allocated for significant highway expansion, with a focus on roadways, such as Collier Parkway, Little Road, SR52. ITS improvements, including Advanced Traffic Management Systems and Variable Message Signs, enhance traffic control and safety throughout the county. The ongoing assessment of SR 54/56 aims to reduce congestion, while safety improvements target high-crash-rate areas.

A substantial $273 million in funding is dedicated to ITS and Congestion Management Process (CMP) projects through 2045 to ensure effective traffic control measures are implemented. Examples of the projects and strategies listed in MOBILITY 2045 are listed below.

- Continued implementation of Advanced Traffic Management Systems (ATMS) and Variable Message Signs on SR 54/56 from US 19 to US 301.
- Continued implementation of Advanced Traffic Management Systems (ATMS) on US 19 from the Pinellas County line to CR 1-Little Road.
- Implementation of ITS improvements on the corridors along with providing opportunities to further explore connected vehicle technologies.
- Safety improvements on corridors and road segments identified with high crash rates and strategies included in the Pasco Countywide Pedestrian and Bicycle Safety Action Plan.
- Identification of future technology projects that provide safety and mobility benefits for the users of the transportation system.

Hernando/ Citrus MPO 2045 Long Range Transportation Plan

Geographic Applicability: Hernando and Citrus Counties
Most Recent Update: 2020
Responsible Agency: Hernando/Citrus MPO

Plan / Program Overview

This plan provides revisions and additions to the 2040 Long Range Transportation Plan that better accommodates and reflects the future conditions of the community. The plan is guided by federal, state, and local regulations with goals, objectives, and performance measures that are developed based on local needs. The plan includes implementation for the six goals to improve safety, economy, mobility, intermodal transportation, livability, and preservation.

Key Considerations

The Hernando/Citrus MPO supports the FDOT freight planning process and adopts by reference the FDOT Florida Freight Mobility and Trade Plan Investment Element FAST Act Addendum. The MPO will continue to monitor the development of the Florida Freight Mobility and Trade Plan and will work with FDOT to set appropriate performance targets for the measurement of Truck Travel Time Reliability. The FDOT District Seven Regional Travel Demand Model indicates that the Cost Feasible Network is effective in managing congestion and travel delays throughout much of Hernando County and Citrus County. An overall analysis of volume/ capacity (V/C) ratios for both county's road networks evaluated the overall performance of the road network in Hernando and Citrus Counties. The overall performance was satisfactory but there are some individual corridors and areas in the county that exhibit deficient roadway segments.

The Vehicle/ Capacity ratio for the 2045 Model analysis in Hernando and Citrus Counties identified the following corridor segments that exhibit potential deficiencies with a V/C greater than 1.2.

Hernando County

- Lake Lindsey Road from US-98 to Simmons Lake Road
- US-41 from Old Crystal River Road to Snow Memorial Highway
- Intersection at Cortez Boulevard (SR 50) and Sunrise Road

Citrus County

- Carl Rose Highway (SR 200) at Lecanto Highway (CR 491)

Imagine 2040: Tampa Comprehensive Plan

Geographic Applicability: City of Tampa
Most Recent Update: 2016 (Amended 2023)
Responsible Agency: City of Tampa

Plan / Program Overview

This plan is an update of the four jurisdictions of Hillsborough County, City of Tampa, City of Temple Terrace, City of Plant City, and Unincorporated Hillsborough County, in coordination with the update of the Metropolitan Planning Organization's (MPO) Long Range Transportation Plan (LRTP). The collaborative effort developed a countywide vision map that illustrates the anticipated growth of Hillsborough County and its representative jurisdictions.

Key Considerations

Policies included in the City of Tampa 2040 Comprehensive Plan:

LU Policy 8.9.4: Require industrial uses proposed near existing residential areas to have an internal circulation system and other design amenities to limit the impacts of truck traffic on these residential areas.

BY Policy 4.1.4: Continue to review the truck route ordinance and associated map to ensure neighborhood traffic concerns associated with truck traffic are addressed.

GOV Policy 4.3.3: The City of Tampa will coordinate with the Hillsborough MPO to update the inventory, including map(s), of the major commercial truck and railroad terminals within the City of Tampa, as practicable.

City of Tampa Citywide Truck Route Study & Ordinances

Geographic Applicability: City of Tampa
Most Recent Update: 2020
Responsible Agency: City of Tampa

Plan / Program Overview

This study considers land use and transportation system changes that have occurred in the city since the truck route system was enacted in 1989. The purpose of the truck route system is to provide rules that balance the needs of commerce and truckers with the desire to minimize the impacts of trucks on sensitive land uses.

Key Considerations

City form defines how a city is physically developed and shaped by historical development patterns. The City of Tampa has designed a city form that encompasses many components such as employment centers, urban villages, mixed-use corridors, mixed-use centers, transit stations, and neighborhoods. The City's Land Use Policy includes guiding principles that are aligned with short- and long-term growth and development goals.

- **LU Policy 1.1.6**: Encourage transit oriented, pedestrian-friendly mixed-use development with attractive and multi-functional corridors through Community Planning efforts in the Westshore, Central Tampa, and University planning districts.
- **LU Policy 1.1.7**: Continue to consider the development of strategically located mixed-use areas in all districts that accommodate local serving commercial, employment, and entertainment uses.
- City of Tampa designated truck routes are in *Sec 25-182, 183*, and enforced per *Section 23.5-5*:

- Designated truck routes are illustrated on the official truck route map, on file at the city clerk's office and on the City of Tampa website, and include the following:
    - Unless otherwise prohibited, all streets under the jurisdiction of the state department of transportation (state roads)
    - All other streets of this city within the city as designated herein. For a comprehensive list of streets, please refer to the full municipal code.

- Per the City of Tampa Comprehensive Plan, truck routes are specifically addressed in two policies:
    - **Policy 44.1.8**: The City shall continue to review the truck route ordinance and associated map to ensure neighborhood traffic concerns associated with truck traffic are addressed.
    - **Policy 48.3.4:** The City shall continue to enforce and update, if necessary, the current Truck Route Ordinance and maintain appropriate signage for the truck route to ensure compliance.

A map of the regulated truck routes in the City of Tampa is shown in **Figure 8**.

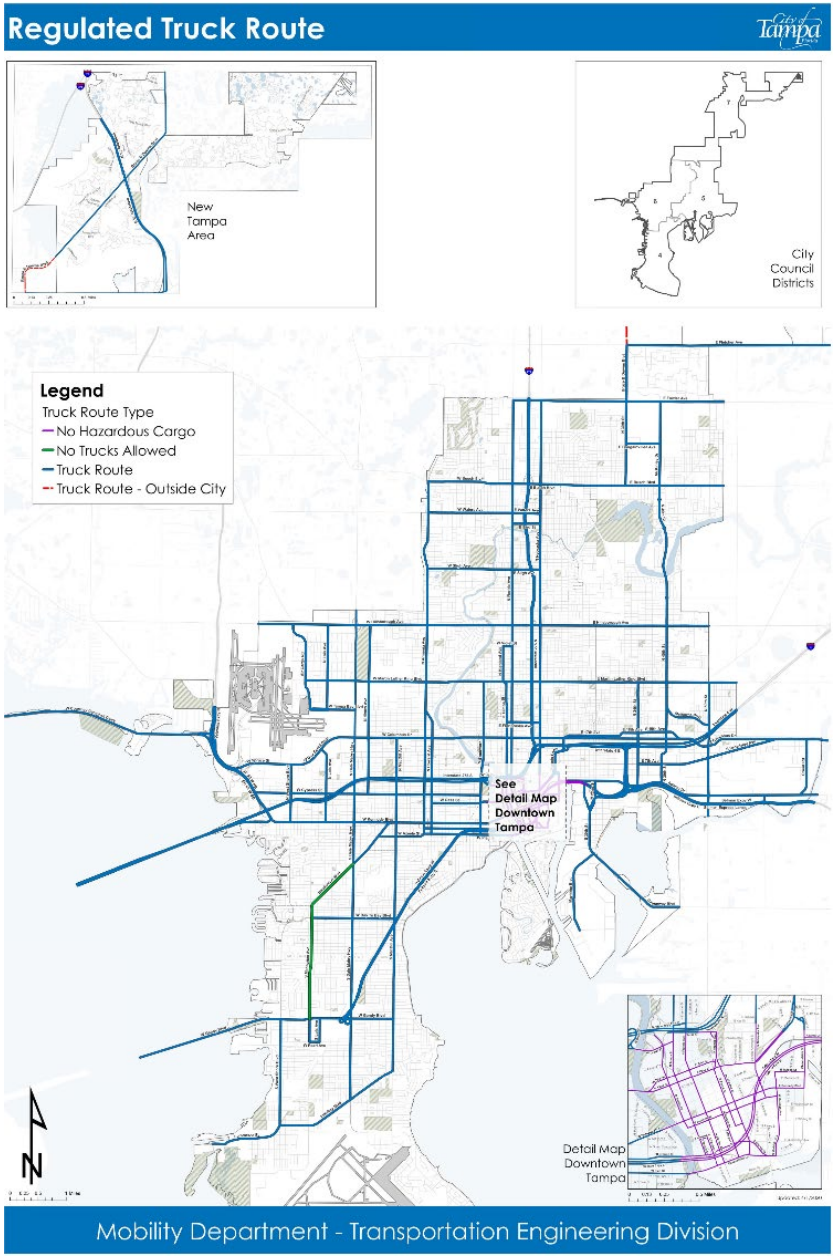


Figure 7 *City of Tampa Regulated Truck Routes by Type*

Tampa Bay Regional Planning Council Study on Zephyrhills

Geographic Applicability: Zephyrhills Municipal Airport and Surrounding Lands
Most Recent Update: 2021
Responsible Agency: Tampa Bay Regional Planning Council

Plan / Program Overview

The report suggests that creating an aviation cluster around the airport, as shown in **Figure 9**, could lead to substantial job growth and higher average wages. The airport, along with the Zephyrhills Airport Industrial Park and adjacent lands, offer over 7 million square feet of potential building space, with the potential to create and support up to 10,000 jobs. The study emphasizes the benefits of establishing a dedicated industry cluster, with opportunities for various types of aviation-related companies, supported by rail and road access for cargo and freight services. The study was funded through the 2020 CARES Act grant.

Key Considerations

The Zephyrhills Municipal Airport has two runways, plus the Zephyrhills Airport Industrial Park and adjacent lands. The proposed aviation cluster envisions a comprehensive network of cargo and freight services, accommodating a variety of businesses engaged in the movement of goods. The network would include parcel and package services from major companies such as FedEx, UPS, and DHL, while cargo services such as FedEx Express and UPS Airlines would offer cargo transportation. Logistics and supply chain firms such as C.H. Robinson and XPO Logistics are anticipated to optimize the flow of goods. Freight forwarders, air cargo handling and ground services, customs brokers, e-commerce fulfillment centers, trucking companies, and potential rail freight services may contribute to the comprehensive cargo and freight infrastructure. The services highlight the economic growth prospects and services for a strong business ecosystem within the aviation cluster.

Since this study was completed in 2021, the City of Zephyrhills was successful in attracting a food prodcution facilitiy to locate within the Airport Industrial Park. Baducco Foods purchased the southern 72 acres of available land between the Zephyrhills Airport and Chancey Road with a committement to construct a 400,000 square foot facility and bring 600 jobs to the area.

Figure 8 *Proposed Zephyrhills Airport Industrial Park*

Brooksville-Tampa Bay Regional Airport

Geographic Applicability: Brooksville-Tampa Bay Regional Airport
Most Recent Update: 2016
Responsible Agency: Brooksville-Tampa Bay Regional Airport

Plan / Program Overview

This plan provides a 20-year program for developing and maintaining a safe, economical, and environmentally acceptable aviation facility for Hernando County. This document provides detailed justifications, methodologies, and reasoning for how the airport will evolve and remain a driving economic force and multi-modal transportation hub in Tampa Bay and Central Florida.

Key Considerations

The BKV will remain a general aviation airport throughout the 20-year planning period, although some non-passenger commercial activity may occur at some point in the future. Hernando County plans to improve access to developable portions of the airport property by constructing new roads and infrastructure. The airport is considering pursuits that may generate additional activity at BKV including a Maintenance, Repair, and Overhaul (MRO) facility that could accommodate narrow-body commercial jets and a potential U.S. Customs and Border Protection (CBP) facility. It was determined that the northwest portion of the midfield area would provide an ideal location to accommodate cargo facilities. As an economic asset in Hernando County, there continues to be strong investment in the facility with ample growth opportunities.

St. Petersburg-Clearwater International Airport Master Plan

Geographic Applicability: St. Petersburg-Clearwater International Airport
Most Recent Update: 2020
Responsible Agency: PIE International Airport

Plan / Program Overview

The overall goal of this plan is to prepare a comprehensive planning document meeting the needs of airport management as well as requirements of FAA and FDOT. The St. Pete-Clearwater International Airport (PIE) is primarily a passenger airport with major focus on commercial flights.

Key Considerations

St. Pete-Clearwater International Airport, situated on the eastern side of the county with Old Tampa Bay as its northern boundary, encompasses approximately 2,000 acres of relatively flat land, boasting an airfield elevation of 11 feet above sea level. The airport is strategically positioned, just over ten miles from St. Petersburg and nearly nine miles southeast of Clearwater. The main objective of the airport master plan is to conduct a thorough evaluation of existing airport conditions, project aviation activities, identify future requirements, develop cost-effective options, and establish a realistic development program.

The airport does not have regularly scheduled cargo operations. However, some factors could generate more activity in the future including the redevelopment of the Airco Parcel and the potential expansion of operations by Amazon Prime Air.

Tampa International Airport Master Plan

Geographic Applicability: Tampa International Airport
Most Recent Update: 2013
Responsible Agency: FDOT

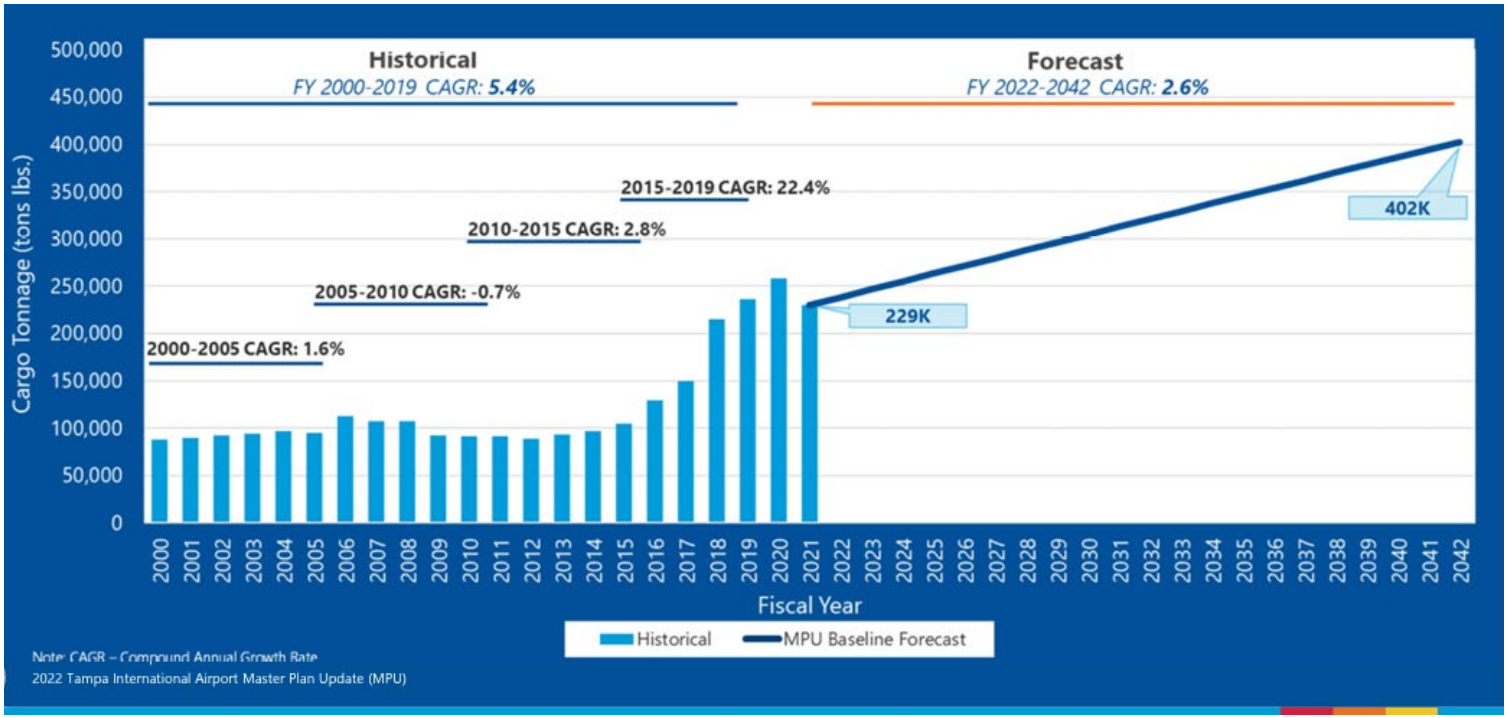
Plan / Program Overview

The Hillsborough County Aviation Authority (HCAA) initiated the Airport Master Plan to provide an updated blueprint for a short-term (5-year), intermediate-term (10-year), and long-term (20-year) development, considering changes since the 2005 Master Plan. The 2012 Master Plan Update is aimed to focus on maximizing capacity and longevity of existing terminal facilities while maintaining a high-level of service. The Tampa International Airport (TPA) is currently working on a 2023 update for the Airport Master Plan.

Key Considerations

The Tampa International Airport (TPA) Master Plan puts forward several key recommendations concerning cargo infrastructure and roadway improvements. In terms of cargo facilities, it proposes the addition of 185,000 square feet of space to accommodate five more 747-000 positions, enhancing the capacity for cargo operations. Additionally, there's a plan to expand the existing FedEx cargo facility by 22,000 square feet and a 9,000 square foot expansion of the Global Aviation Facility warehouse. These developments are aimed at bolstering the airport's cargo-handling capabilities.

To support the increased demands on transportation due to the expansion, the Master Plan focuses on roadway improvements. It suggests modifications to several key roadways to not only accommodate expanded truck uses but also align with the City of Tampa's standards. These recommended roadway enhancements are intended for North Westshore Blvd, West Ohio Street, West Dr. Martin Luther King Jr. Blvd, and West Cayuga Street. These improvements are crucial in ensuring the efficient flow of cargo within the airport's vicinity.



Total Cargo Forecast (in Tons) carried by aircraft at Tampa International Airport based on a 2.6% Compounded Annual Growth Rate.

Vision 2030: Port Tampa Bay Master Plan

Geographic Applicability: Port Tampa Bay
Most Recent Update: 2016
Responsible Agency: Port Tampa Bay

Plan / Program Overview

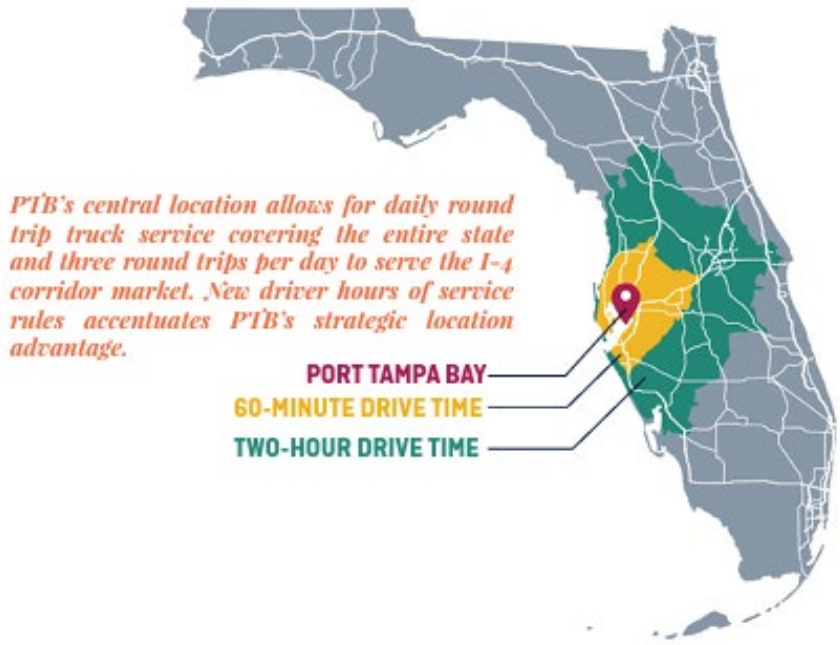
Vision 2030 is crafted to steer growth and allocate investments in alignment with the demands of both industry and the local community. It safeguards Port Tampa Bay's (PTB) $500 million asset base, ensuring adherence to regulations while remaining dedicated to fulfilling PTB's mission of promoting regional and economic expansion and effectively addressing the international business transport needs.

Key Considerations

Port Tampa Bay (PTB), leads as Florida's primary port, leading in tonnage and land area. It caters to a diverse array of cargo types, cruise passengers, and maritime operations. Notably, PTB presents significant opportunities for sustained growth, particularly in cargo and container shipping lines.

To align with the PTB Master Plan objectives, the fifth anchor is dedicated to the implementation of the Channelside Masterplan. This strategic endeavor is proposed to optimize the cruise experience while safeguarding the substantial economic benefits derived from the cruise industry for the local community. The Channelside Masterplan provides an opportunity for PTB to become a central focal point on the waterfront and to facilitate the development of commercial real estate capable of accommodating larger cruise vessels. Close collaboration between the City and County is needed to maximize regional growth and development, establishing a coherent long-term strategy for commercial real estate and a harmonious community environment intertwined with residential commercial and retail components.

The emphasis on the Channelside Masterplan is geared toward harnessing PTB's competitive advantages including its robust inland connectivity and direct access to Central Florida. PTB boasts the capability for daily round trip truck services that span the entire state, alongside three daily round trips aimed at servicing the I-4 corridor market. This positions PTB as a pivotal hub in the economic landscape, fostering economic growth, transportation efficiency, and community development in the region.



CHAPTER 2





The Freight Transportation Network

INTRODUCTION

The freight network in District Seven is comprised of various modal facilities used for the transport of goods and commodities throughout the Tampa Bay Region and beyond. This includes roadways, rail lines, waterways, and pipelines that support the major port and airport terminal facilities.

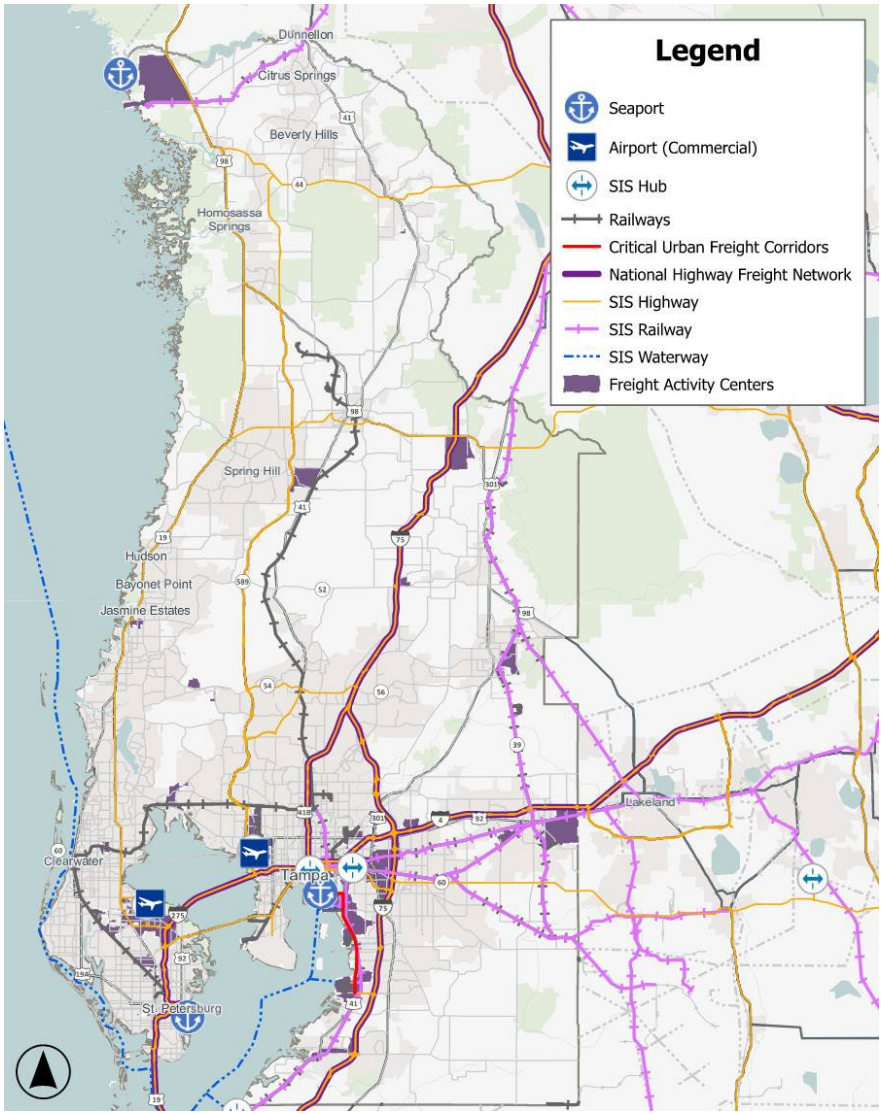
FEDERAL & STATE NETWORKS

Supporting the vision established in the National Freight Strategic Plan (NFSP), is a network of roadways identified as the National Highway Freight Network (NHFN). Within the State of Florida the Strategic Intermodal System (SIS) has designated a network of facilities that are important to the state's economy and mobility. Map 1 shows the regional connections and overlapping designations of the NHFN and SIS.

Comprised of multiple corridor types and designations, the NHFN is the most limited network or roadways for addressing regional and nation-wide transport of freight. In addition to the Interstate Highways in the region being part of the NHFN Primary Highway Freight System, Causeway Blvd and US 41 connecting Hookers Point and Port Redwing are designated as Critical Urban Freight Corridors. This corridor designation is for roads in urbanized areas that provide a connection to the Primary Highway Freight System and major port and transportation facilities. A request to add US 41 north of SR 60 to Interstate 4 and SR 60 from US 41 to Interstate 75 as Critical Urban Freight Corridors was submitted to FHWA and their incorporation into the NHFN is still pending.

The SIS is Florida's high priority network of transportation facilities important to the state's economy and mobility. The Governor and Legislature established the SIS in 2003 to focus the state's limited transportation resources on the facilities most significant for interregional, interstate, and international travel. The SIS is the state's highest priority for transportation capacity investments and a primary focus for implementing the Florida Transportation Plan, the state's long-range transportation vision and policy plan.[i]

Map 1: *SIS and NHFN Roadways in Tampa Bay Region*



REGIONAL ROADWAY NETWORK

The Tampa Bay Regional Freight Network is categorized to better reflect the purpose and nature of freight use locally. This local categorization can help to balance the needs of freight shippers and local travelers as each interacts with adjacent land-uses for determining mobility and livability priorities. Table 1 provides a general overview of the roadway network and is supported by additional details below. Map 2 depicts the freight roadway network along with the rail, pipelines, and waterway facilities in the Tampa Bay Region.

Table 1: Freight Network Characteristics

Freight Network Designation	Number of Miles
Limited Access Roadways	256
Regional Freight Mobility Corridors	472
Freight Distribution Routes	1,068
Freight Activity Streets	134
Total	1,930

Limited Access Facilities provide uninterrupted flows for high volumes of traffic and serve as primary trade corridors connecting the Tampa Bay region to the rest of the state and country. These limited access facilities are part of the Strategic Intermodal System and include all Interstate highways and tolled roadways within the Tampa Bay region. These facilities include the interstate and expressway facilities in the region. A recent addition to the Limited Access Facility network is the I-4/Selmon Expressway Connector which provides direct access between I-4 and major freight terminals at the Port of Tampa with dedicated truck lanes.

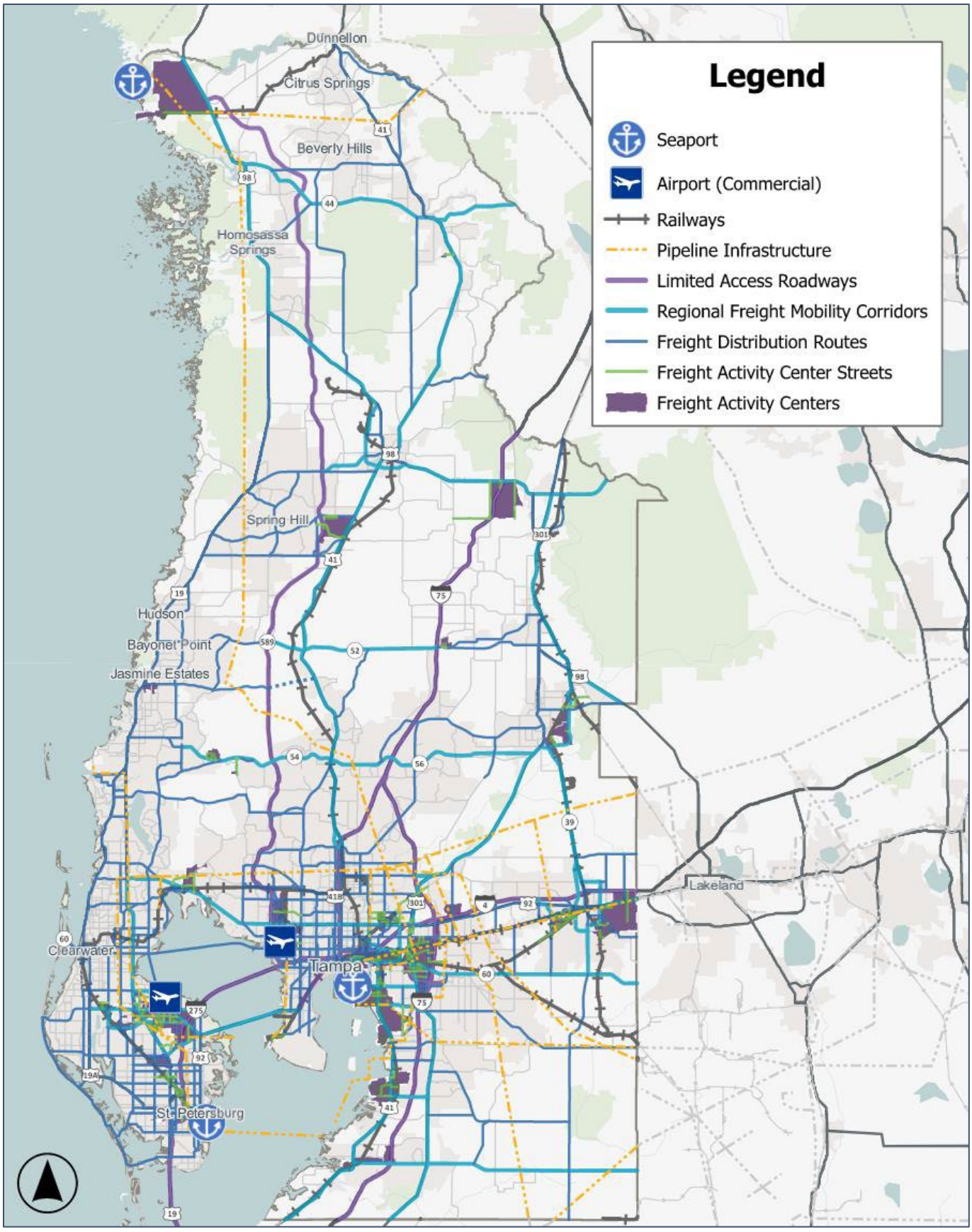
Regional Freight Mobility Corridors provide high-capacity connections between freight activity centers and limited access facilities. These facilities carry long-haul truck trips and host high volumes of truck traffic. Regional freight mobility corridors serve as a vital part of the freight roadway network and are a subset of the freight distribution routes. All of the regional freight mobility corridors in the Tampa Bay region also serve as important corridors for commuters traveling to major employment centers.

Freight Distribution Routes include state roadways and other truck routes designated in local ordinances at the county and municipal levels. Freight distribution routes distribute truck traffic from regional freight mobility corridors to local delivery areas. By law, trucks must remain on freight distribution routes until they reach the closest point to their final destination before turning on to local streets for delivery. The freight distribution routes provide an adequate network for trucks to deliver goods, while also minimizing truck traffic on other local roads within populated areas.

Freight Activity Center Streets are local and collector streets that provide direct access to freight activity centers and other streets located within the boundaries of a freight activity center. Their primary purpose is to provide truck circulation within industrial areas and provide direct access to destinations within freight activity centers. These streets often are the “last link” to a freight destination and thus are an important part of the freight roadway network.

Truck travelling on I-75, a Limited Access Facility.

Map 2: *Regional Freight Transportation Network*

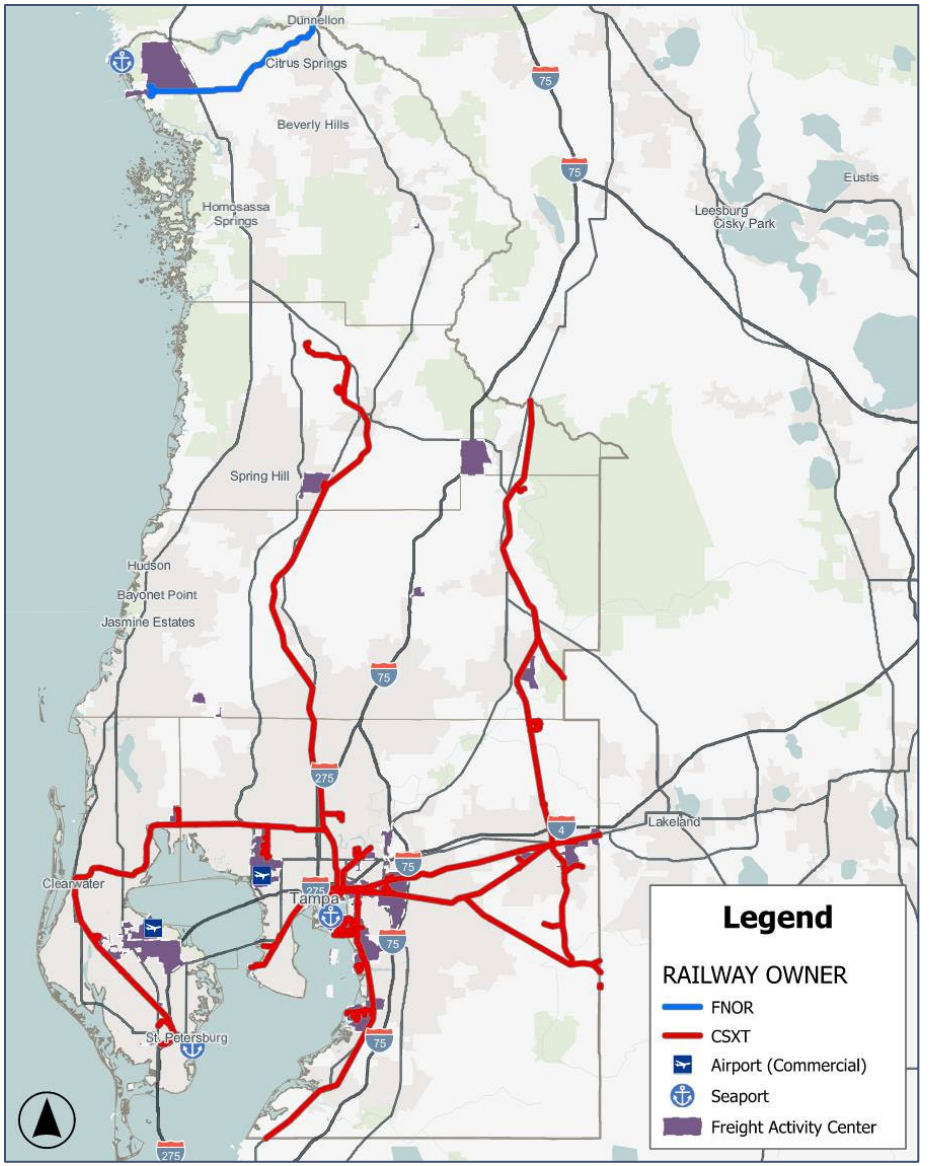


RAIL NETWORK

The freight railroad network in the Tampa Bay region consists primarily of CSXT mainline tracks serving FACs and other industrial activity areas. CSXT owns and operates nearly 2,900 rail miles across Florida, with more than 350 of those miles serving the Tampa Bay region[ii]. Imported and domestic automobiles and Tropicana Orange Juice constitute the commodities transported by CSXT in the study area. In addition to the CSXT lines, there are several short line freight rail operations in Tampa Bay and the surrounding region. The Florida Northern Railroad (FNOR) operates a short line track in Citrus County, serving the Crystal River energy complex in the northern portion of the region. The Tampa Bay regional rail network is shown on Map 3. Highlights of the primary CSXT corridors are listed below.

- The A-Line enters Hillsborough County from Polk County paralleling US 92. This line provides access to the Uceta Yard before passing through Downtown Tampa and continuing through to Port Tampa. The A-Line is also utilized by the Amtrak Silver Star which serves Tampa Union Station. In Plant City, the A-Line connects to the Bone Valley Subdivision, providing connectivity with industrial and mining facilities in southern Hillsborough and Polk counties.
- The S-Line enters the Tampa Bay Region, parallel to US 301 by travelling through eastern Hernando and Pasco counties before crossing the A-Line in Plant City. Turning west and heading through Hillsborough County, the S-Line provides access to Port Facilities on Hookers Point as well as connecting with the Clearwater and Brooksville Subdivisions to serve Pinellas County, Central Pasco, and Central Hernando counties.
- The AZA-Line runs south from the A and S lines near US 41 heading south through Hillsborough County with access to Port Redwing and Port Sutton before leaving the region and entering Manatee County.

***Map 3**: Tampa Bay Region Rail Network*



Adjacent to District Seven, several additional short line railroads are in operation, providing connection to major shipping, distribution, and freight-related sites which include the following.

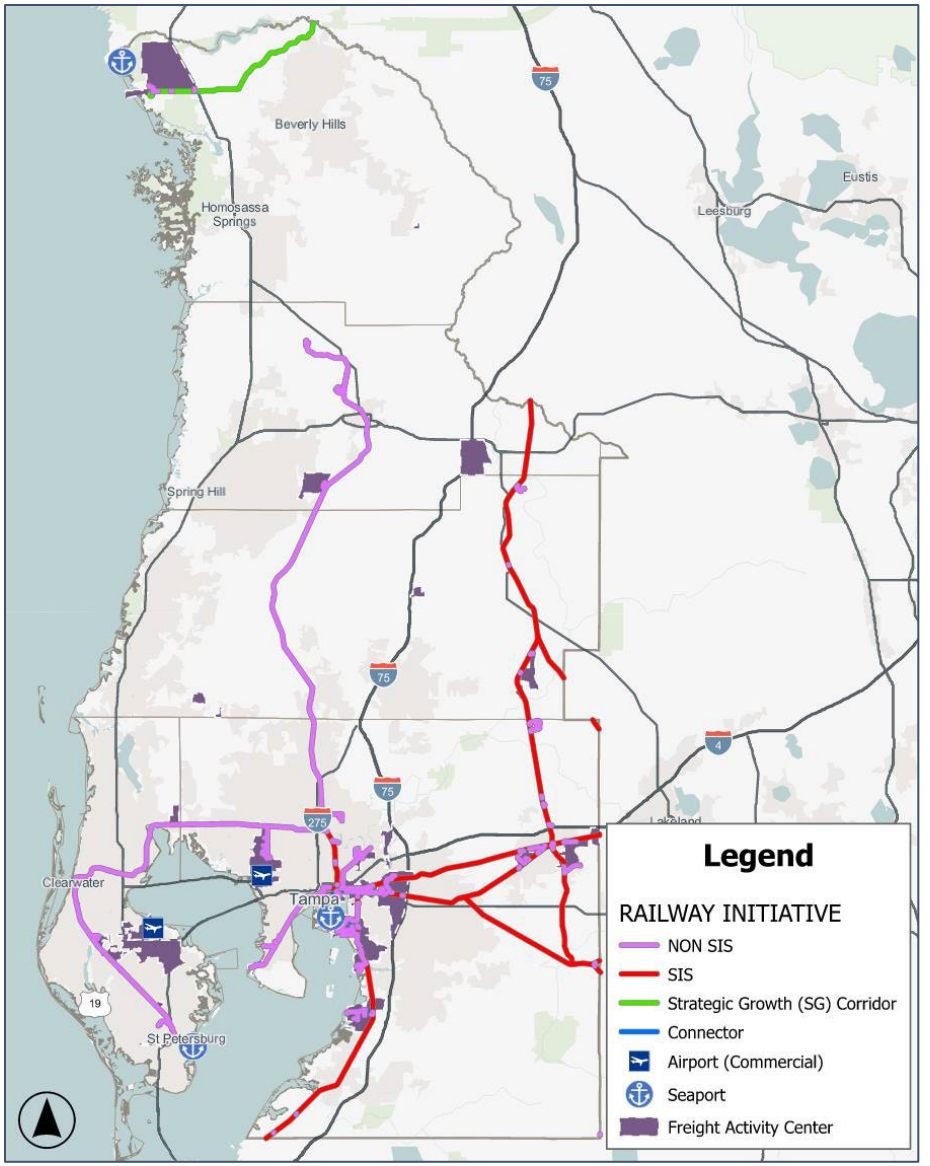
- The Seminole Gulf Railway is located along the Western edges of Sarasota and Manatee counties.
- The Florida Midland Railroad in eastern Polk County consists of two lines that comprise over 28 route miles connecting Gordonville to Winter Haven and Frostproof to Lake Wales.
- The Florida Power and Light Railroad in northwestern Manatee County is a 17-mile rail line that stretches from Parrish to Palmetto is used by Florida Power and Light.

Designation of the SIS in 2003 included not only the roadways discussed previously, but also intermodal and rail facilities. Shown in Map 4 are the rail lines designated as part of the SIS. SIS rail corridors must meet the criteria of being a mainline corridor operated by a Class I or Class II railroad with two or more average daily trains.[iii] Additional designations for the SIS include connectors and strategic growth facilities. Connectors are rail lines that connect SIS hubs, ports and terminals with SIS Corridors. In 2016, the FNOR line serving the Crystal River energy complex was designated as a strategic growth corridor following the completion of the SIS Policy Plan update Table 2 provides a summary of the rail miles and designations in the Tampa Bay Region.

Table 2: *Tampa Bay Region Rail Designation and Mileage*

Designation / Owner	Mileage
Total	391.0
By Owner	
CSXT Owned	372.2
FNOR Owned	18.8
SIS Designation	
SIS Corridor	146.9
SIS Connector	7.2
Strategic Growth Corridor	17.9

Map 4: *Tampa Bay Region SIS Rail Designations*



AIRPORTS

Airports serve as crucial connectors between distant origins and destinations for cargo, offering swift transportation options. However, air freight comes with the highest cost per` ton of all the modal choices. Despite its relatively low volume, businesses opt for this essential link in the supply chain when transporting high-value and time sensitive cargo. According to the Freight Analysis Framework (FAF), in 2023, air cargo accounted for $684 billion (3.4%) and 6.8 million tons (0.03%) of the total freight moved in the U.S. The USDOT Bureau of Transportation Statistics (BTS) anticipates the rate of high-value, low-weight commodities - the type most likely to be shipped by air - is expected to grow at a faster rate than low-value, high-weight commodities between 2023 and 2050.[iv]

As shown in Map 2, St. Petersburg-Clearwater International Airport (PIE) and Tampa International Airport (TPA) are the only airports with runways of sufficient length for loaded cargo planes in District Seven. PIE began focusing solely on passenger flights after United Parcel Service (UPS) moved to TPA in 2017. PIE continues to be listed as a Strategic Growth hub in the SIS Plan.

WATERWAYS & SEAPORTS

Port Tampa Bay (PTB) is one of the most significant economic generators in the Tampa Bay region. As the region's principal gateway for goods bound for and arriving from foreign and domestic producers and markets, PTB has favorable geography as the closest U.S deepwater seaport to the Panama Canal. With a population of more than 8 million people, and over 60 million visitors a year, the Tampa/Orlando region is a huge consumer market and projected to be the fastest growing region of Florida for the next 20 years.[v]

Port Tampa Bay has emerged as Florida's new supply chain solution for container cargo. Port Tampa Bay has recently added capacity, with more expansion underway, and stands ready to welcome new business, offering significant savings in inland delivery costs versus other gateways. The addition of direct Asia container services in the last few years and more recently new and expanded services with Mexico and Central America have provided a giant leap forward in serving Florida's largest and fastest-growing market. The I-4 Corridor is home to the largest concentration of distribution centers in the State, which allows for multiple round trip deliveries per day from Port Tampa Bay, compared to the traditional routes via congested out-of-state ports.

PTB is Florida's largest deepwater port is the largest Florida port by tonnage and land. The port has more than 1,000 acres of industrially zoned land with deepwater access, and room to grow, located southeast of downtown Tampa in Hillsborough County. The Port consists of five terminals, including Hooker's Point which handles most of its cargo throughput, as well as Pendola Point, Port Redwing, and the new East Port and South Bay facilities. PTB is connected to intermodal facilities in Hillsborough County, including I-4, I-275, and CSX Transportation-owned railroads, facilitating highway, rail, and air domestic freight trips throughout Florida and the United States. The Port serves as a major gateway to West and Central Florida, a region that is continuing to grow at a faster rate than most others in the State. PTB has $17.2 billion annual economic impact on the region resulting primarily from the 85,000 direct and indirect jobs associated with its cargo, ship repair, and passenger cruise lines of business.[vi]

In the northern part of the region, the Crystal River Energy Complex includes a port facility that is used for bringing coal and other aggregate materials associated with energy production. As part of the Duke Energy transition from nuclear power at the Crystal River Complex, cleaner-burning power generation began in 2018 with the opening of Citrus Combined Cycle Station that uses natural gas for energy generation.

PIPELINES

Pipelines provide efficient, cost-effective transportation of imported fuels to major users. Additionally, pipelines from Port Tampa Bay provide efficient, cost-effective transportation of fuels to major users including MacDill Air Force Base, Tampa International Airport, and Orlando International Airport, keeping thousands of tanker trucks off the regional roadway every day. (from the 2018 Freight Plan update)

[i] https://www.fdot.gov/planning/systems/sis
[ii] https://www.csx.com/index.cfm/library/files/about-us/state-information/florida/
[iii]https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/sis/designation/sis_designation_criteria.pdf?sfvrsn=1f0aef1e_2
[iv]USDOT Moving Goods in the United States, https://data.bts.gov/stories/s/Moving-Goods-in-the-United-States/bcyt-rqmu
[v] https://www.porttb.com/logistics
[vi] Port Tampa Bay & Martin Associates "The Local and Regional Economic impacts of Port Tampa Bay" (November 17, 2016), pg. 7

CHAPTER 3





Freight Activity Centers

INTRODUCTION

The freight activity centers (FACs) in FDOT District Seven are the "economic engines" that contribute to the area's base employment and typically generate intense freight activity, including long-haul shipments to areas outside of the region. While all of the regional freight activity centers generate high levels of truck traffic, many of the centers also have significant transshipment operations supporting multiple freight modes including trucks, rail, air cargo, and sea vessels. Freight activity centers have been identified to provide context for where industrial and freight logistics activity is heaviest and to assist in determining where investment strategies are needed for preserving and improving mobility on the transportation corridors that service them.

The majority of the region's FACs are proximate to the Interstate-4 and Interstate-75 corridors that provide high grade transportation facilities for the transport and distribution of goods. Freight terminals at Port Tampa Bay and the air cargo operations at Tampa International and St. Petersburg/Clearwater International Airports anchor the western part of the region. Major CSXT rail facilities are located north of Tampa International Airport in the Anderson Road Industrial Park, northeast of Port Tampa Bay in the South East Tampa Industrial area (between Broadway Avenue and Adamo Drive), and in the distribution hub of Plant City.

The FACs were initially defined in District Seven's first Strategic Freight Plan, completed in 2012. Recent changes in land uses, economic development and growth management, and goods movement practices have prompted a re-examination of the FACs to confirm their current role in regional goods movement activity, modify boundaries, update key attributes etc. In this effort to review and update the FACs, four key topics were assessed for each FAC:

- **Distribution activity**: Distribution centers are major drivers of modern goods movement. They employ a large number of people and generate numerous truck trips. The total amount of distribution / warehousing floor area in each FAC was analyzed using parcel data from the Florida Department of Revenue (FDOR). Parcel records were also used to identify where new distribution / warehousing floor area has been developed outside of the existing FACs, prompting the designation of new FACs.
- **Truck trip generation:** The FACs are major generators of truck trips that use the regional highway system. Daily truck trip generation (origination) was estimated at the census block group level using vendor data approximating conditions in Fall of 2022.[1] These estimates offer a sense of which FACs generate significant truck traffic and whether there are any areas of significant truck trip generation outside of FACs that would prompt the designation of new FACs.
- **Goods movement-related employment**: FACs are major drivers of the regional economy and employ a large portion of the workforce. There are several key economic sectors in District Seven's economy that are associated with goods movement, including Distribution and E-Commerce, Transportation and Logistics, and Local Logistical Services. Concentrations of these job types are expected within FACs. Employment data were obtained from ArcGIS Business Analyst Online and reflect 2022 conditions to understand where these jobs are densest and to identify any employment clusters outside of FACs that may prompt the designation of new FACs.
- **Economic development opportunity**: As the Tampa Bay region continues to grow and goods movement evolves, FACs will play a critical part in strategic economic development.

[1] Replica. The data provided by Replica are the outputs of a multi-state activity-based model that synthesizes typical trip-making for all modes and purposes on a given weekday. Model outputs are calibrated to state and local traffic counts. Truck trips are labeled as "commercial" trips, and no distinction is made between heavy and light trucks.

Development opportunity areas were identified through a review of local economic development councils' and planning agencies' published plans, FDOR parcel records, and generalized future land use categories. Many FACs are in areas designated for strategic economic development or offer vacant land for development on sites designated for industrial or mixed development.

In this chapter, data for each of these topic areas is mapped and discussed for each county in District Seven. Within each county, an inventory of FACs is provided with key information describing the status of the FAC and recommendations for updating FAC boundaries and/or attributes for inclusion in the update to the Strategic Freight Plan. In some cases, FACs that were not included in the first Strategic Freight Plan have been identified. These are "new" FACs, but they may have a status of "established" if they are already substantially built out with freight generating land uses. The inventory also highlights key streets providing access from each FAC to major highways. Finally, this chapter concludes with a brief discussion of new trends in freight planning that have emerged since the first Strategic Freight Plan was created.

FREIGHT ACTIVITY CENTER INVENTORY

HILLSBOROUGH COUNTY

Hillsborough County is District Seven's most populous county and the center of the region's goods movement activity. It is home to the region's most significant intermodal facilities and largest concentrations of distribution and warehousing activity. As the region grows, activity at Port Tampa Bay, Tampa International Airport, CSX rail terminals, and the county's clusters of industrial / distribution / warehousing space is expected to increase. Residential growth will lead to some legacy FACs transitioning to other uses with limited freight generation, while evolving trends in goods movement and logistics are likely to lead to growth in large distribution centers along I-4 east of I-75.

Figure 1 shows the density of warehousing and transportation uses in Hillsborough County. Most high-density areas are in or around FACs. There are two clusters with no or limited FACs – around Gandy Boulevard at the southern end of the Interbay Peninsula and between Fletcher Avenue and Fowler Avenue near I-275 (University area). In the case of Gandy Boulevard, the Port Tampa FAC is nearby, though this is a relatively small FAC with limited opportunity for growth. In both cases, the clusters of warehousing activity are interspersed with retail and residential uses.

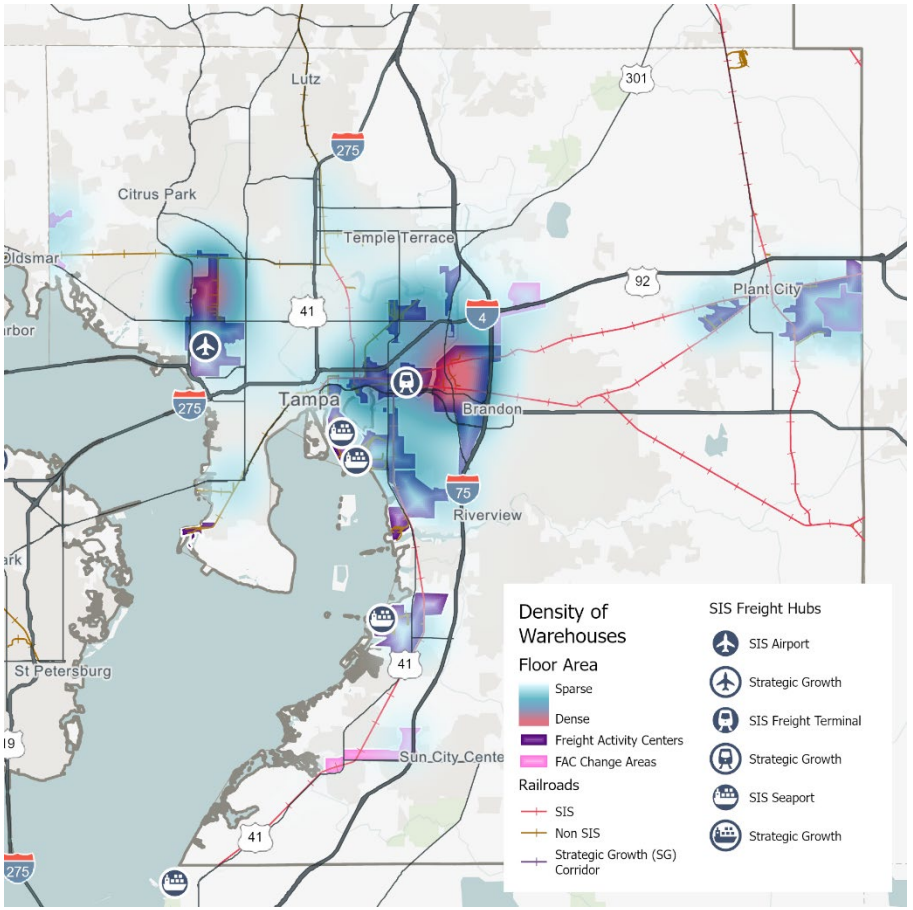


Figure 1 Hillsborough County Distribution / Warehousing Density and FACs

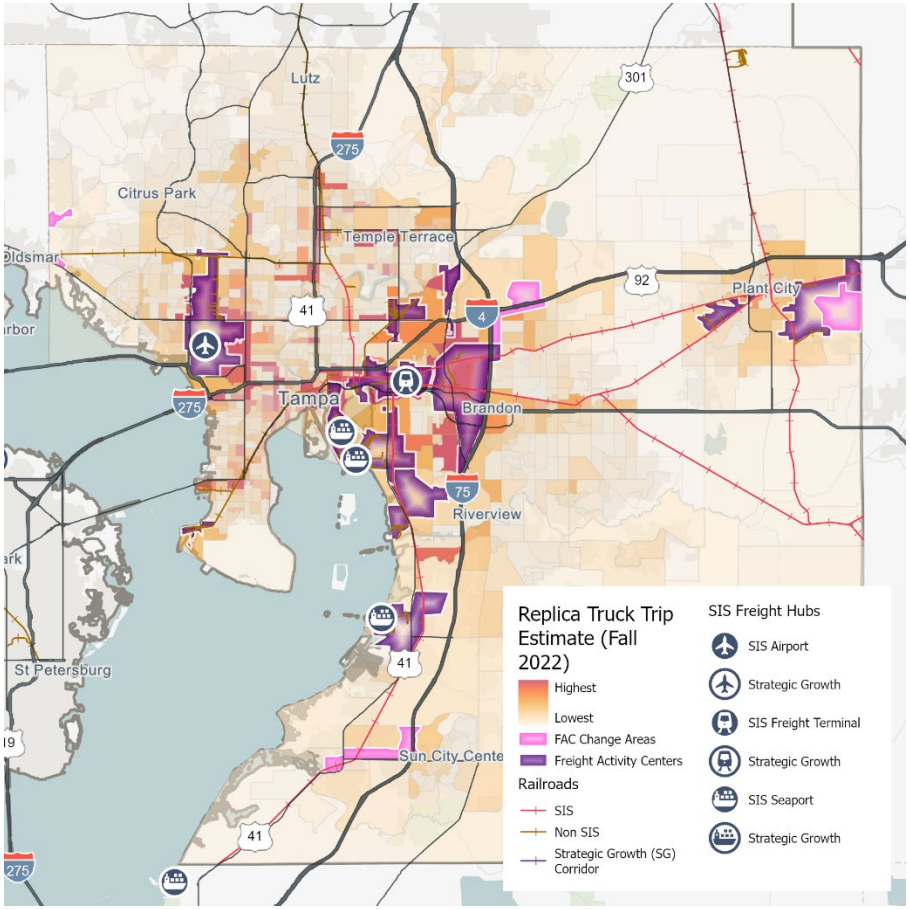


Figure 2 Hillsborough County Truck Trip Density and FACs

Figure 2 shows the density of truck trips (trips produced per square mile of land area) in Hillsborough County. Most clusters of high-density truck trip generation are in FACs. As with distribution activity, there are clusters of truck trip generation around Gandy Boulevard and in the University area. Truck trips to and from these areas serve both the warehousing uses and retail establishments in the area.

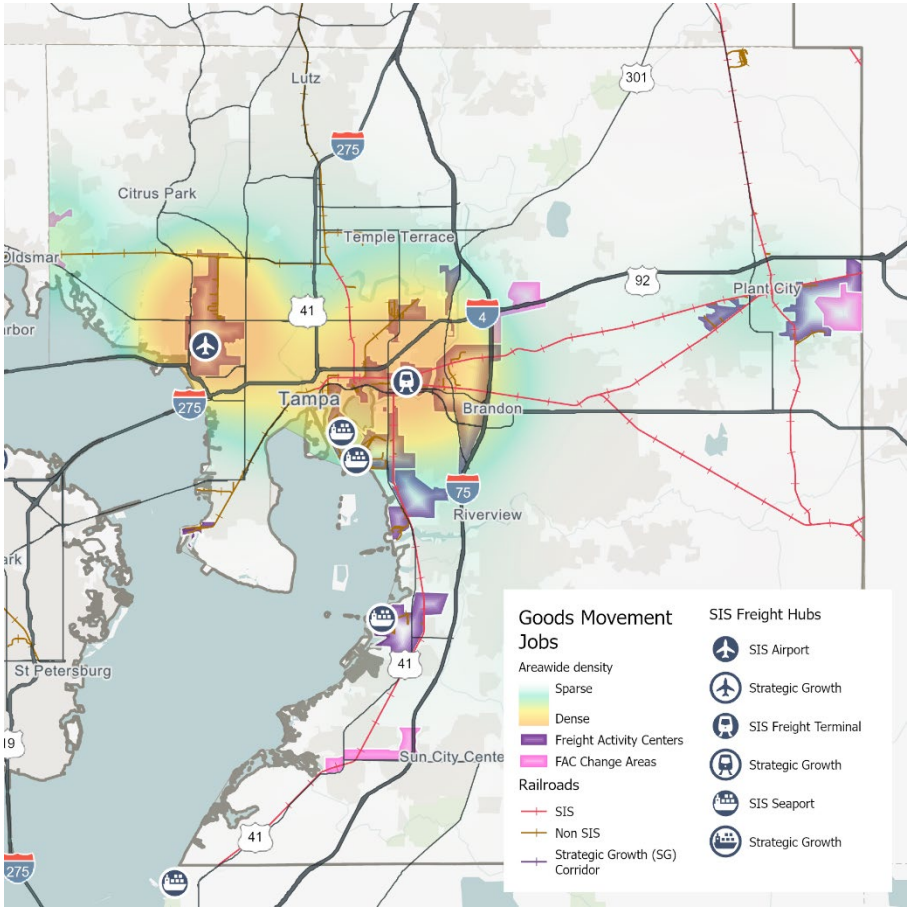


Figure 3 Hillsborough County Goods Movement-Related Jobs Density and FACs

Figure 3 shows the density of goods movement-related jobs in Hillsborough County. The largest clusters are centered around key intermodal centers at Tampa International Airport and around the CSX rail terminals and Port Tampa Bay facilities in east Tampa. There is a small cluster in Plant City as well. Notably, there are few goods movement-related jobs in the distribution clusters around Gandy Boulevard and in the University area. Jobs around two large, new distribution centers in the South County are not yet reflected in the employment data.

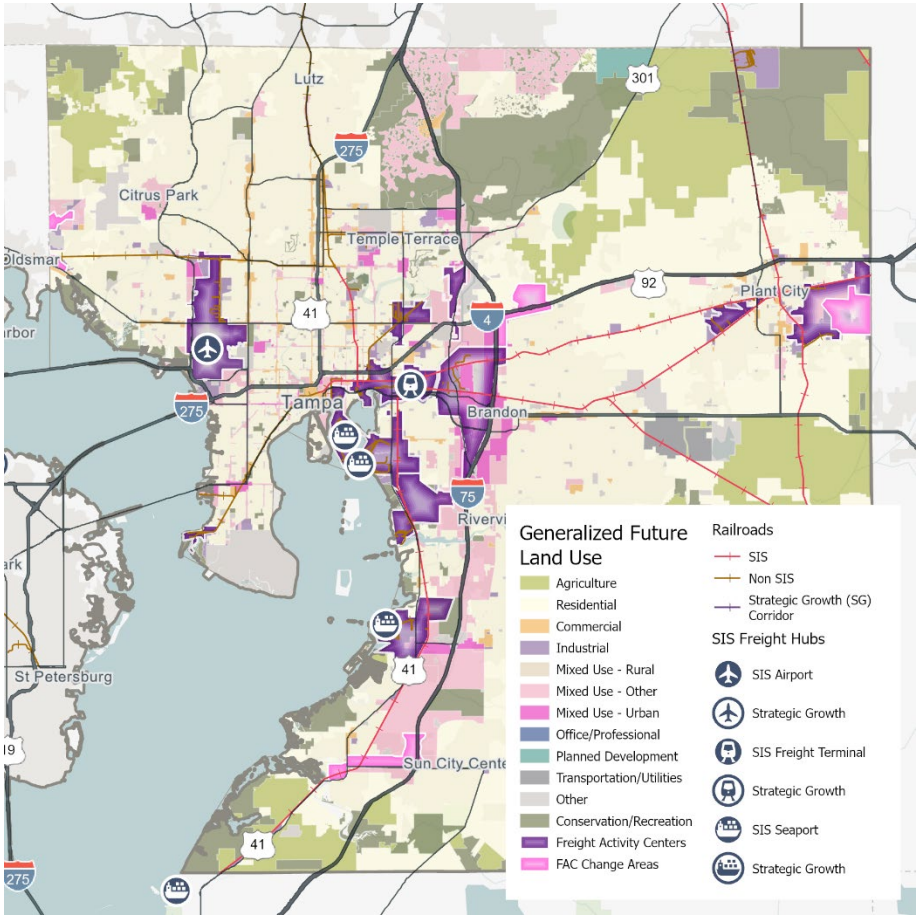


Figure 4 Hillsborough County Generalized Future Land Use and FACs

Figure 4 shows generalized future land use categories in Hillsborough County. Most FACs are defined by industrial and/or mixed-use categories, indicating that local land use policy envisions continued investment in freight-related development in these areas. Notably, in the distribution clusters around Gandy Boulevard and in the University area, the future land uses are predominantly residential.

Alafia

The Alafia FAC is located on the north bank of the Alafia River along US 41. The FAC includes a Mosaic processing facility at the mouth of the river, several large gypsum stacks, and an inland cluster of distribution centers at Progress Village focused on household goods, food and beverage, pharmaceuticals, and building supplies.

No changes to the Alafia FAC are proposed.

Status: Established

Intensity Level: High

Intermodal Connections

- CSX Palmetto Subdivision
- Private deepwater berth at Mosaic site

3M sq ft
Distribution / Warehousing

387K sq ft
Other Industrial

3.9K
Daily Truck Trips

Jobs

261	7	11
Distribution and E-Commerce	Transportation and Logistics	Local Products and Services

Dominant Future Land Uses

Industrial (82%)
Mixed Use (12%)

Strategic Economic Development areas

1 site (under construction)

98
Vacant Acres

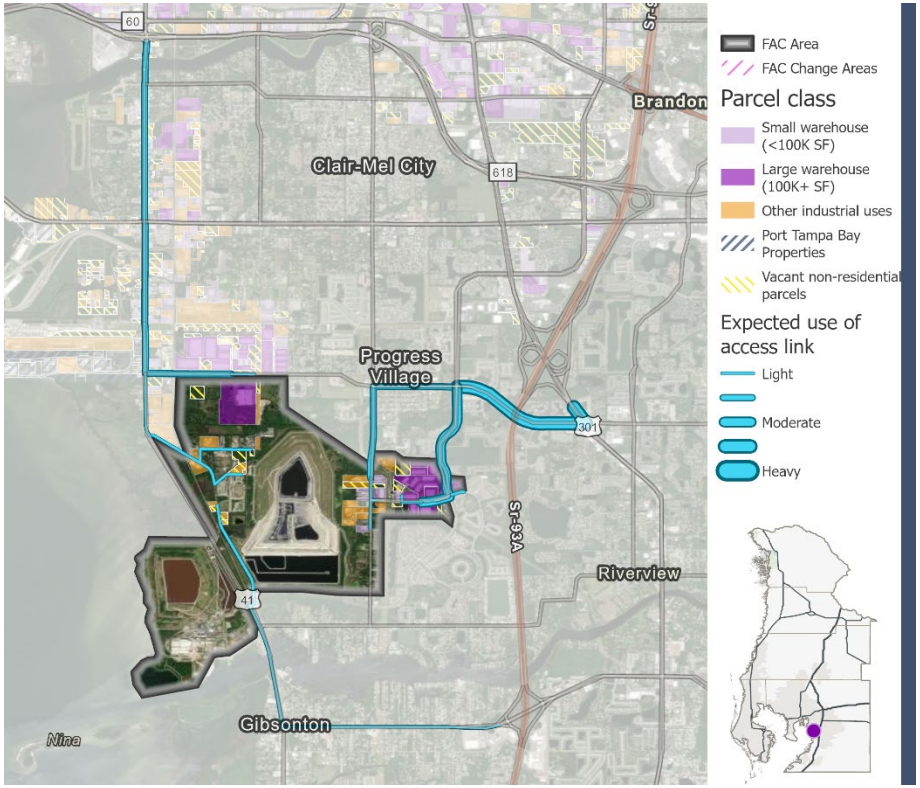


Figure 5 Alafia FAC

Table 1 Alafia FAC Access Needs

Facility	Role
Progress Blvd	East-west connection to I-75 via US 301
Falkenburg Rd	Access to eastern cluster of distribution centers
78th Street	
Eagle Palm Dr	
US 41	North-south axis to and through the FAC. Connects to Selmon Expressway

Anderson Road-TIA

The Anderson Road-TIA FAC is at Tampa International Airport (TIA) and the industrial district north of it. The FAC contains air cargo operations at TIA, the CSX auto terminal, and a variety of large and small warehouses and light industrial uses, including several large FedEx facilities and distributors focusing on building supplies, electronics, mechanical parts, and more.

No changes to the Anderson Road-TIA FAC are proposed.

Status: Established | **Intensity Level:** High

Intermodal Connections: CSX Drew Spur; Tampa Int'l Airport

14.8M sq ft
Distribution / Warehousing

2.9M sq ft
Other Industrial

11.6K
Daily Truck Trips

Jobs: 4.1K Distribution and E-Commerce; 1.1K Transportation and Logistics; 457 Local Products and Services

Dominant Future Land Uses: Other/TIA (48%), Industrial (43%)

Strategic Economic Development areas: Multiple sites

208 Vacant Acres

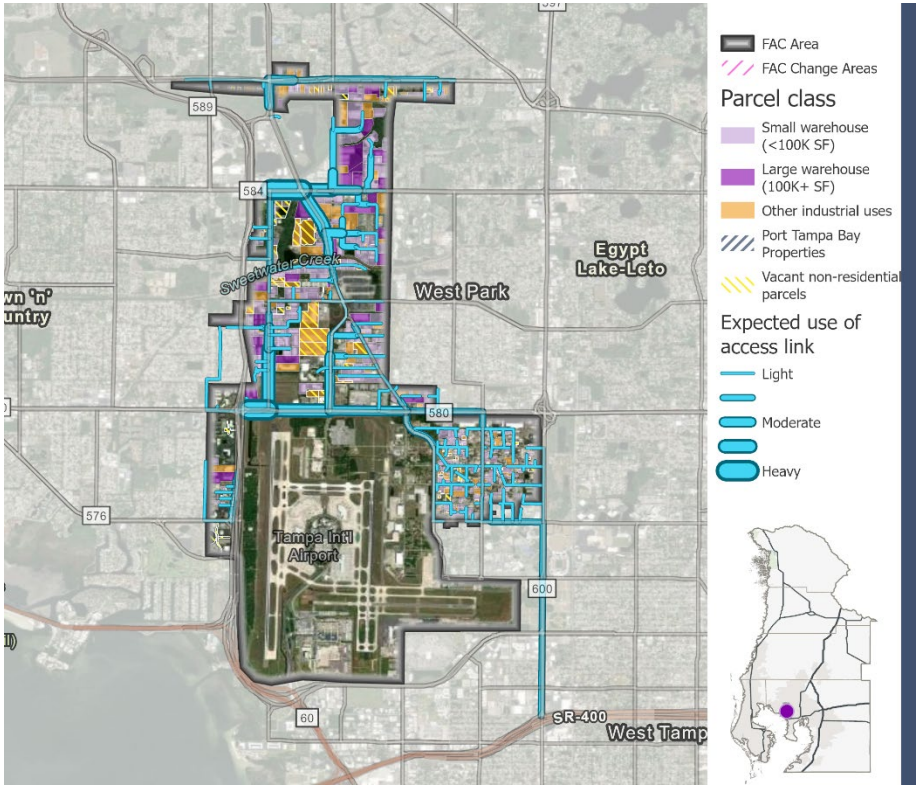


Figure 6 Anderson Road - TIA FAC

Table 2 Anderson Road-TIA FAC Access Needs

Facility	Role
Hillsborough Ave	East-west connectivity through the FAC and access to SR-589
Waters Ave	
Anderson Rd	North-south connectivity through the FAC
Benjamin Rd	
Hoover Blvd	
MLK Blvd	Connects Drew Park area to I-75
Dale Mabry Hwy	
Air Cargo Blvd	Access to TIA

Big Bend

The Big Bend FAC is located at Port Tampa Bay's Redwing facility at the intersection of US 41 and SR 672 (Big Bend Road) and incorporates the supporting areas around the port. The FAC includes the TECO Big Bend power plant, deepwater berths for bulk cargo, and a cluster of distribution centers at US 41 and SR 672.

No changes to the Big Bend FAC are proposed.

Status: Established	**Intensity Level:** Medium
Intermodal Connections	CSX Palmetto Subdivision; Port Redwing
2.0M sq ft Distribution / Warehousing	2.8K Daily Truck Trips
993K sq ft Other Industrial	
Jobs: 133 Distribution and E-Commerce; 6 Transportation and Logistics; 2 Local Products and Services	
Dominant Future Land Uses	Industrial (65%) Conservation (22%)
Strategic Economic Development areas	Multiple sites
118 Vacant Acres	

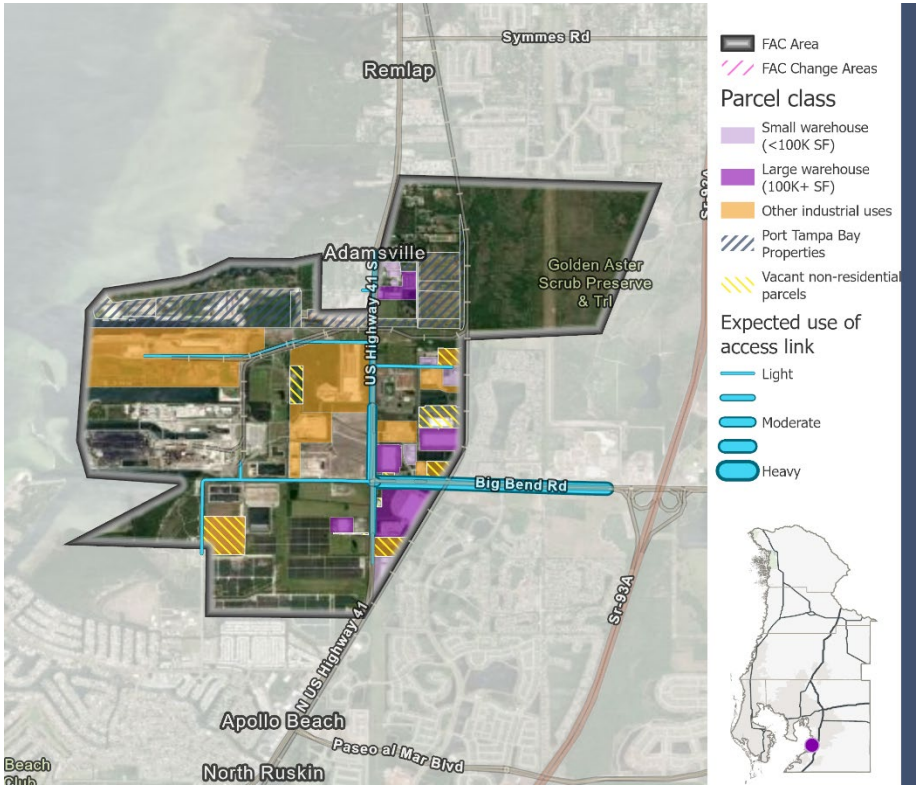


Figure 7 Big Bend FAC

Table 3 Big Bend FAC Access Needs

Facility	Role
Big Bend Rd	East-west connectivity through the FAC and access to I-75
US 41	North-south axis through the FAC

East Central Tampa

The East Central Tampa FAC is located near the Florida State Fairgrounds south of Temple Terrace along SR 583 (56th Street) near US 92 (Hillsborough Avenue). It is home to building supply facilities clustered around the railroad, including a large precast concrete manufacturer. There are also numerous distribution centers, including a recently completed Amazon facility at Harney Road.

No changes to the East Central Tampa FAC are proposed.

Status: Established	**Intensity Level:** High		
Intermodal Connections	CSX Neve Spur		
6.7M sq ft Distribution / Warehousing		4.3K Daily Truck Trips	
1.6M sq ft Other Industrial			
Jobs	808 Distribution and E-Commerce	600 Transportation and Logistics	102 Local Products and Services
Dominant Future Land Uses	Industrial (87%) Commercial (6%)	76 Vacant Acres	
Strategic Economic Development areas	None		

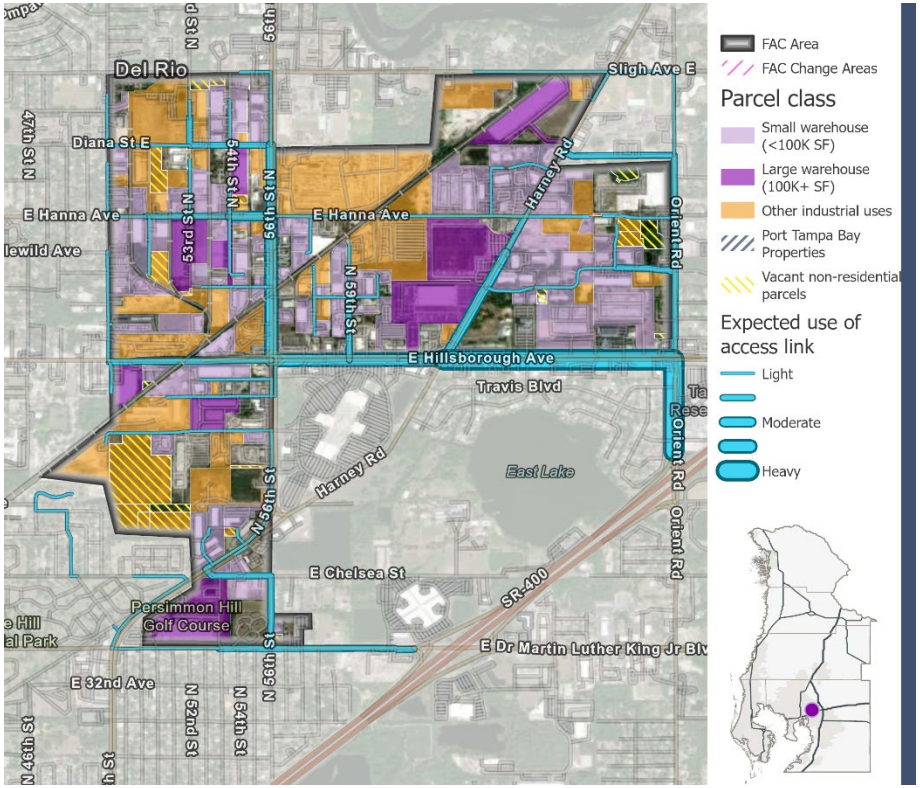


Figure 8 East Central Tampa FAC

Table 4 East Central Tampa FAC Access Needs

Facility	Role
Hillsborough Ave	East-west connectivity through the FAC and access to I-4 East
Harney Rd	Internal connectivity/circulation within the FAC
Hanna Ave	
56th Street	Access to I-4 (all directions) via MLK Blvd
Orient Rd	Access to I-4 West

East Plant City

The East Plant City FAC is located at the border of Hillsborough and Polk Counties near the I-4 interchanges with County Line Road and Park Road. It contains several large and growing clusters of distribution centers focused on food, household goods, auto parts, and more. This includes a large, recently built City Furniture warehouse and showroom that is not yet reflected in the data summarized for the FAC. The roads that serve the FAC also serve similar uses in Polk County and the Lakeland Linder Regional Airport (KLAL), which is an Amazon Air Gateway.

The East Plant City FAC has been expanded to the southeast to include a recently developed cluster of distribution centers along County Line Road and several parcels with industrial and mixed-use future land use designations. It has also been expanded to the north to include large new warehouses along I-4.

Status: Established | **Intensity Level:** High

Intermodal Connections

- CSX Plant City Subdivision
- KLAL (adjacent)

- 7.4M sq ft Distribution / Warehousing
- 2.2M sq ft Other Industrial
- 4.7K Daily Truck Trips

Jobs

- 444 Distribution and E-Commerce
- 11 Transportation and Logistics
- 352 Local Products and Services

Dominant Future Land Uses: Industrial (49%), Mixed Use (24%)

Strategic Economic Development areas: None

456 Vacant Acres

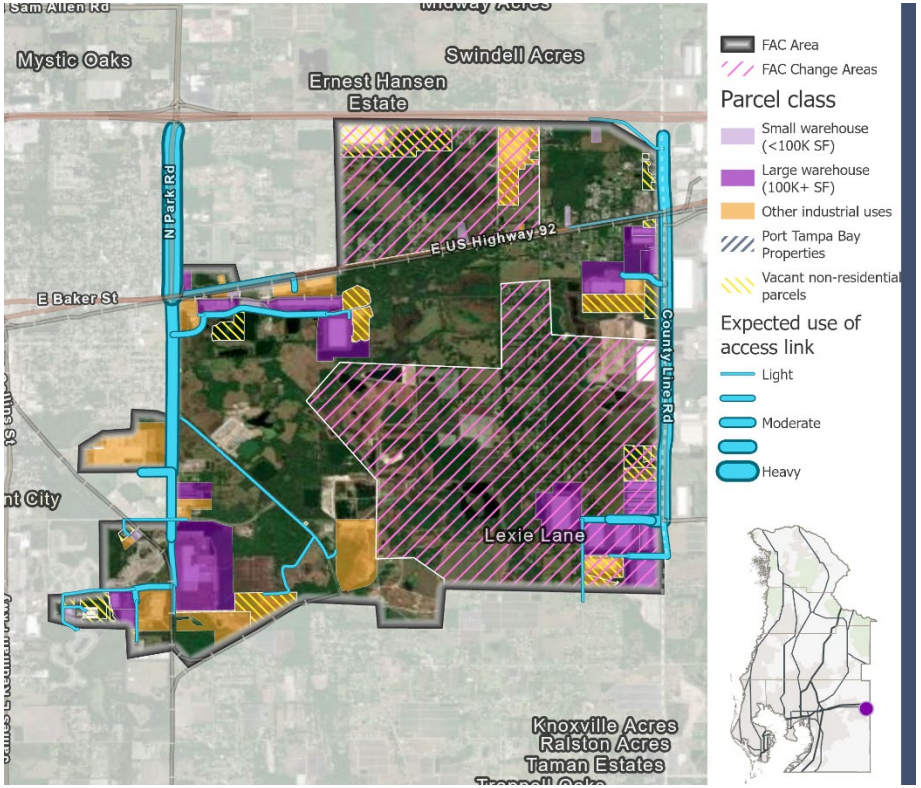


Figure 9 East Plant City FAC

Table 5 East Plant City FAC Access Needs

Facility	Role
County Line Rd	Access to I-4 from eastern FAC businesses; access to KLAL via Drane Field Rd (Polk County)
Park Rd	Access to I-4 from western FAC businesses
MLK Blvd	Access to northwestern cluster of distribution centers
Henderson Way	
Rice Rd	Access to southeastern cluster of distribution centers
Fancy Farms Rd	

Hookers Point (Port Tampa Bay)

The Hookers Point FAC encompasses the peninsula that separates Hillsborough Bay from McKay Bay. The FAC is the heart of Port Tampa Bay and contains dry docks for ship repair, deepwater berths for bulk cargo, scrap metal, oil and gas, refrigerated cargo, and shipping containers. It also includes the 22nd Street bridge and causeway, where Port Tampa Bay is adding berths adjacent to the existing shrimp docks. It is served by a CSX SIS Connector rail line and several spurs.

No changes to the Hookers Point FAC are proposed.

Status: Established

Intensity Level: High

Intermodal Connections

CSX Hookers Point Lead

Port Tampa Bay

654K sq ft
Distribution / Warehousing

293K sq ft
Other Industrial

12.2K
Daily Truck Trips

Jobs

454
Distribution and E-Commerce

52
Transportation and Logistics

28
Local Products and Services

Dominant Future Land Uses

Industrial (89%)
Mixed Use (6%)

Strategic Economic Development areas

None

15
Vacant Acres

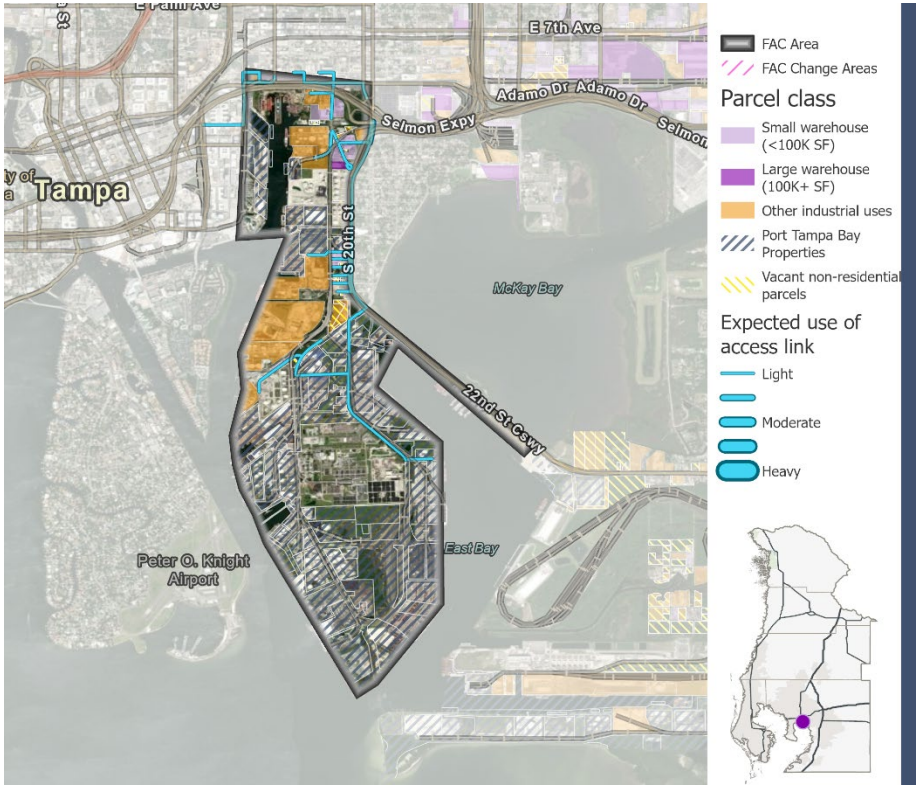


Figure 10 Hookers Point FAC

Table 6 Hookers Point FAC Access Needs

Facility	Role
Maritime Blvd	Primary entrance to Port Tampa Bay
20th Street/22nd Street	Access to Selmon Expressway and Crosstown Connector
Adamo Drive	Access to northern berths and dry docks

Mango

The Mango FAC is located at the I-4 / I-75 interchange and includes the CR 579 (Mango Road) interchange with I-4 and the SR 574 (Dr. Martin Luther King Jr. Boulevard) interchange with I-75. Several large distribution centers have been developed in recent years, including two Amazon facilities and several others focused on building supplies. A precast concrete manufacturer is also located along CR 579.

The Mango FAC is a new FAC that has been added to acknowledge the recently developed distribution centers in the area. Although it is adjacent to the South I-75 FAC, it has been designated a stand-alone FAC due to its distinctive patterns of access from the east side of I-75.

Status: Established	**Intensity Level: Medium**	
Intermodal Connections	Truck Only	
2.3M sq ft Distribution / Warehousing		3.7K Daily Truck Trips
99K sq ft Other Industrial		
Jobs	4 Distribution and E-Commerce	5 Transportation and Logistics	0 Local Products and Services
Dominant Future Land Uses	Mixed Use (47%) Other (25%)	28 Vacant Acres
Strategic Economic Development areas	Multiple sites	

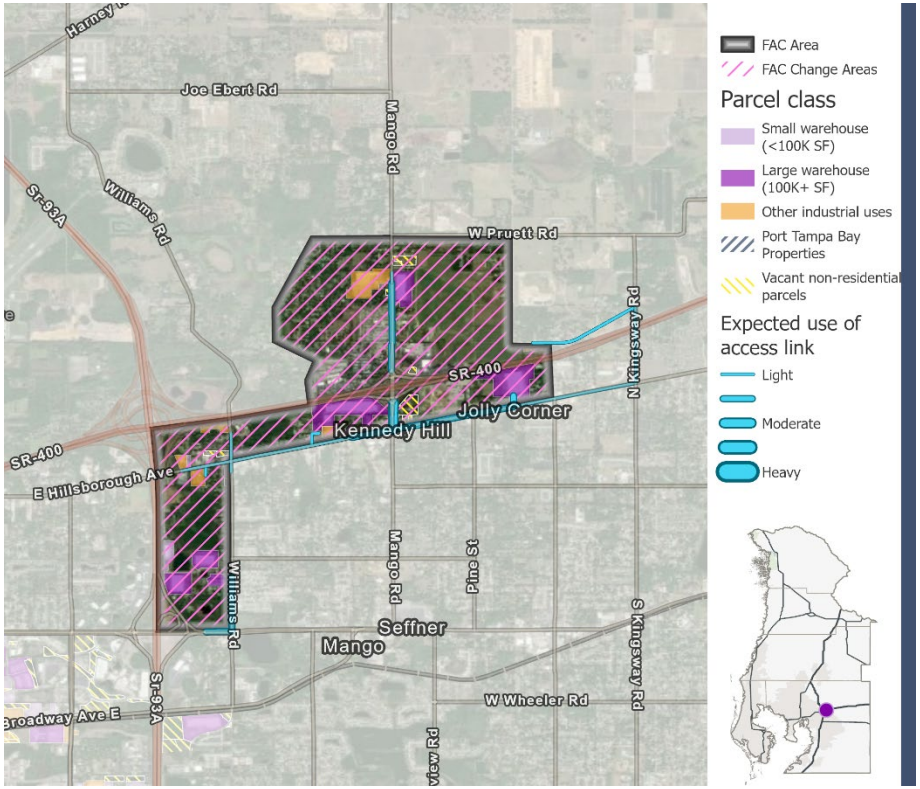


Figure 11 Mango FAC

Table 7 Mango FAC Access Needs

Facility	Role
Mango Rd	Access to I-4
Hillsborough Ave	East-west connectivity through the FAC
Williams Road	North-south connectivity to western portion of the FAC and access to I-75 via MLK Blvd

North US-301 Industrial

The North US-301 Industrial FAC is located near the Florida State Fairgrounds around the US 301 interchange with I-4 and along the Tampa Bypass Canal. It includes small and large warehouses and distribution centers, including several large facilities built in recent years. An Amazon facility was recently constructed on Harney Road at the northern end of the FAC.

The intensity level rating for the North US-301 Industrial FAC has been updated from Medium to High due to the growing number of large distribution centers located in the area. The FAC's boundary has been expanded slightly to incorporate recently built warehouses adjacent to the Tampa Bypass Canal.

Status: Established	**Intensity Level:** High
Intermodal Connections	Truck Only
4.4M sq ft Distribution / Warehousing	7.4K Daily Truck Trips
303K sq ft Other Industrial	
Jobs: 315 Distribution and E-Commerce; 280 Transportation and Logistics; 4 Local Products and Services	
Dominant Future Land Uses: Mixed Use (90%), Industrial (9%)	134

Strategic Economic Development areas	1 site (under construction)	Vacant Acres

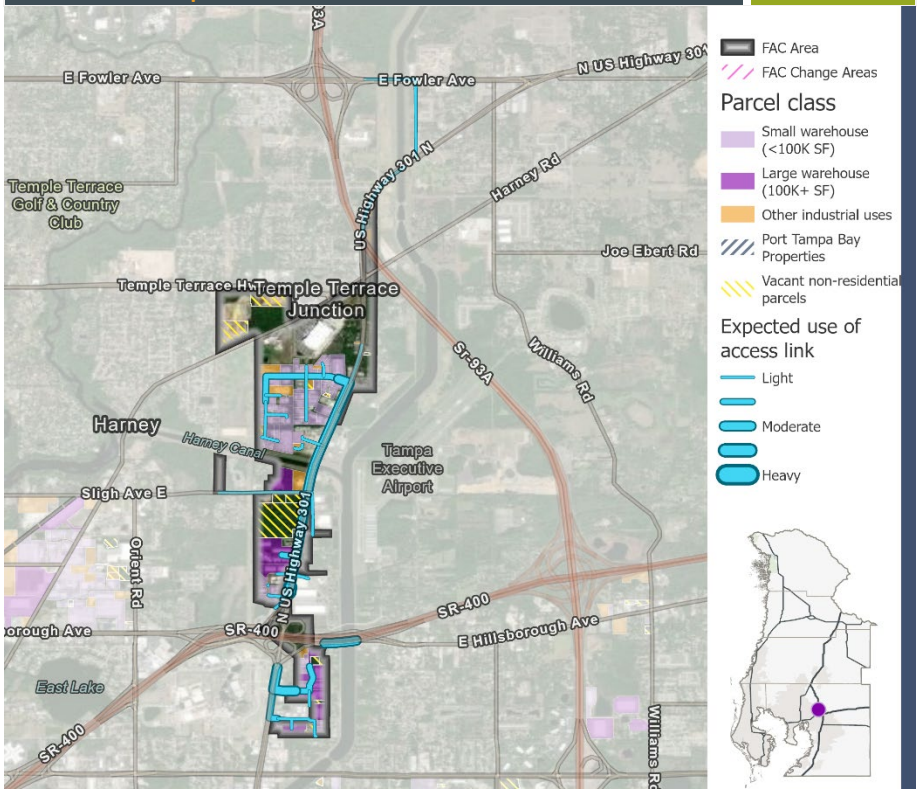


Figure 12 North US-301 Industrial FAC

Table 8 North US-301 Industrial FAC Access Needs

Facility	Role
US 301	North-south axis of the FAC and access to I-4; access to I-75 via Fowler Ave
Harney Road	Access to US 301 from Amazon warehouse
Maislin Drive	Access to northern cluster of small warehouses
Sligh Ave	Access to central cluster of large warehouses
Elm Fair Blvd	Access to southern cluster of large warehouses

Oak Fair Blvd	North-south connectivity within southern cluster of warehouses

Plant City

The Plant City FAC is located at the Plant City Municipal Airport just west of downtown Plant City. The FAC includes mostly small warehouses and light industrial uses with a few large distribution centers as well. Businesses in the FAC largely focus on building supplies and agricultural products.

No changes to the Plant City FAC are proposed.

Status: Established		**Intensity Level:** Medium	
Intermodal Connections	CSX Lakeland and Yeoman Subdivisions		
3.0M sq ft Distribution / Warehousing		1.8K Daily Truck Trips	
1.4M sq ft Other Industrial			
Jobs	594 Distribution and E-Commerce	116 Transportation and Logistics	0 Local Products and Services
Dominant Future Land Uses	Industrial (96%) Commercial (3%)	51 Vacant Acres	
Strategic Economic Development areas	No sites		

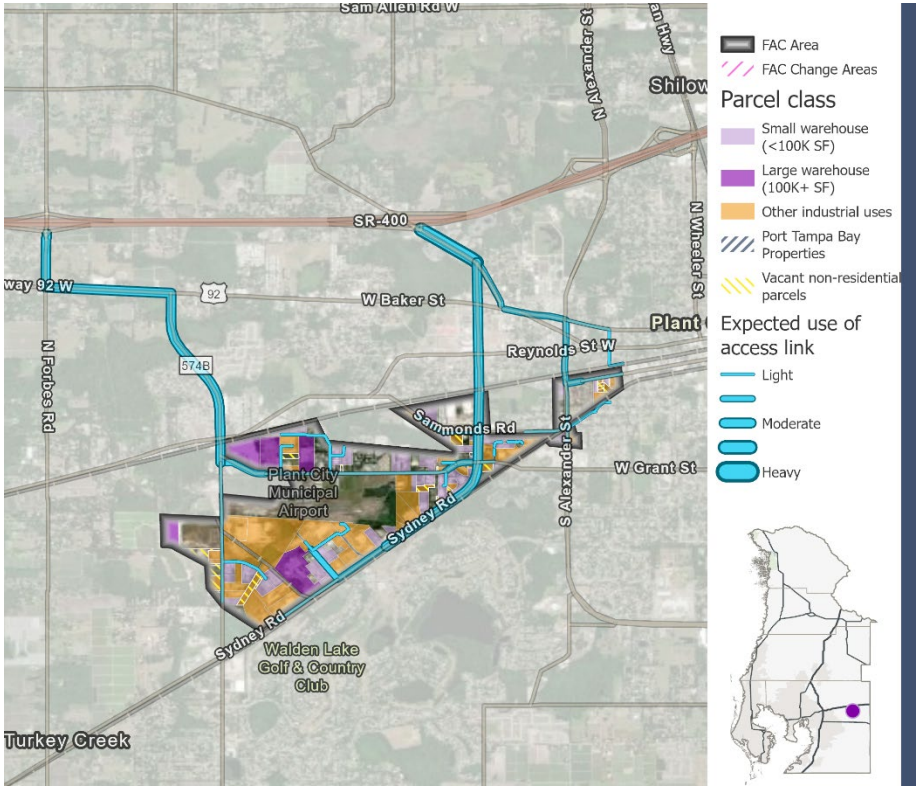


Figure 13 Plant City FAC

Table 9 Plant City FAC Access Needs

Facility	Role
Sydney Rd	Connects sites south of the airport to I-4
Woodrow Wilson St	
Thonotosassa Rd	
Airport Rd	East-west connectivity through the FAC
Turkey Creek Rd	Connects uses north of the airport to I-4
Hillsborough Ave	
Branch Forbes Rd	

Port Tampa

The Port Tampa FAC is located at the southwestern end of the Interbay Peninsula near MacDill Air Force Base. The FAC includes maritime berths and storage for oil and gas as well as bulk and project cargo. While these uses are well established, there is little opportunity for expansion and residential development is intensifying around the FAC.

No changes to the Port Tampa FAC are proposed.

Status: Established	**Intensity Level:** Medium
Intermodal Connections	CSX Port Tampa Spur; Port Tampa
0 sq ft Distribution / Warehousing	
461K sq ft Other Industrial	1.1K Daily Truck Trips
Jobs: 7 Distribution and E-Commerce; 0 Transportation and Logistics; 0 Local Products and Services	
Dominant Future Land Uses	Industrial (65%) Conservation (22%)
Strategic Economic Development areas	None
71 Vacant Acres	

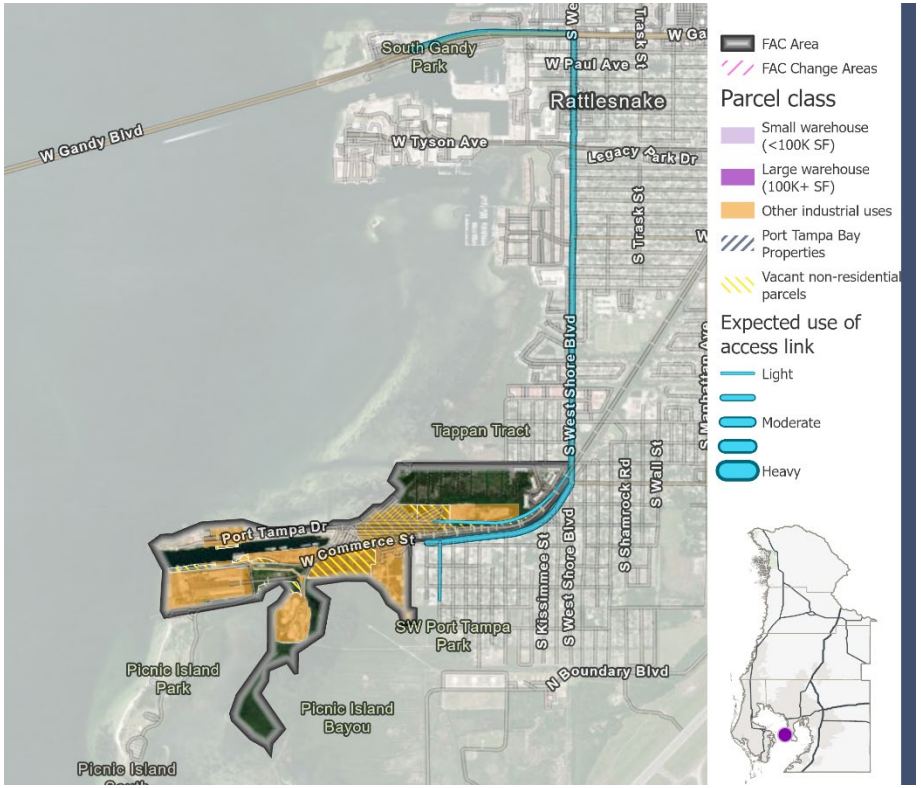


Figure 14 Port Tampa FAC

Table 10 Port Tampa FAC Access Needs

Facility	Role
Westshore Blvd	Access to the Gandy Bridge and Selmon Expressway
A Rd	Access to northern berths (bulk/project cargo)
Commerce St	Access to southern berths (oil and gas)

Rockport/Port Sutton/Pendola Point

The Rockport/Port Sutton/Pendola Point FAC is located on the northeastern shore of Hillsborough Bay, opposite Hookers Point. The FAC includes a large area of facilities owned by Port Tampa Bay and port-dependent uses west of US 41 and clusters of industrial and warehousing activity east of US 41. The waterside berths accommodate bulk cargo (phosphate, concrete/aggregates), oil and gas, and TECO's Bay Side Power Plant.

No changes to the Port Tampa Bay FAC are proposed.

Status: Established | **Intensity Level:** High

Intermodal Connections

CSX Palmetto Subdivision

Port Tampa Bay

6.1M sq ft
Distribution / Warehousing

1.8M sq ft
Other Industrial

7.2K
Daily Truck Trips

Jobs

482
Distribution and E-Commerce

208
Transportation and Logistics

30
Local Products and Services

Dominant Future Land Uses: Industrial (88%), Mixed Use (6%)

Strategic Economic Development areas: Multiple sites

376
Vacant Acres

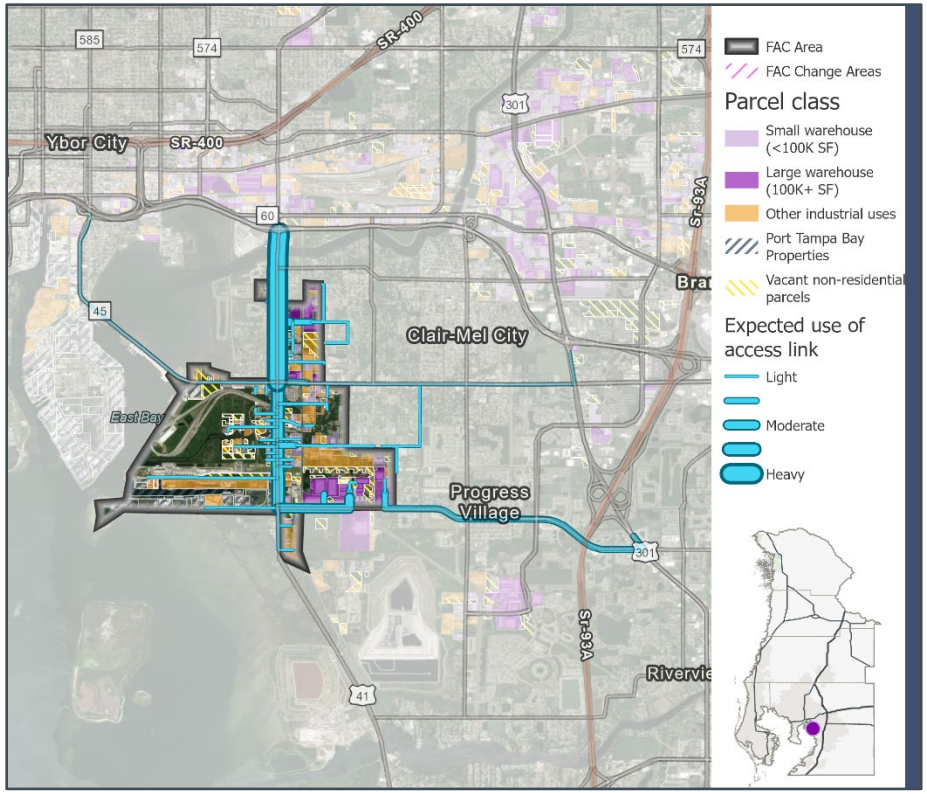


Figure 15 Rockport / Port Sutton / Pendola Point FAC

Table 11 Rockport / Port Sutton / Pendola Point FAC Access Needs

Facility	Role
US 41	North-south axis through the FAC and access to Selmon Expressway
Madison Ave	
Progress Blvd	Access to I-75 via US 301 from Pendola Point and southern cluster of warehouses
22nd Street	East-west connectivity to Selmon Expressway
Causeway Blvd	

South County

The South County FAC is located in southern Hillsborough County in the vicinity of Ruskin and Sun City Center. It includes a small cluster of warehousing and distribution facilities southwest of the intersection of US 41 and SR 674 (College Avenue) as well as an Amazon fulfillment center near I-75 north of SR 674. There is room for expansion and Hillsborough County has identified competitive sites in the area for planned development, which may include further freight-related uses.

The South County FAC is a new FAC that has been added to acknowledge the recently developed distribution centers in the area.

Status: Emerging | **Intensity Level:** Medium

Intermodal Connections: CSX Palmetto Subdivision

1.7M sq ft
Distribution / Warehousing

7K sq ft
Other Industrial

5K
Daily Truck Trips

Jobs

15	0	0
Distribution and E-Commerce	Transportation and Logistics	Local Products and Services

Dominant Future Land Uses: Mixed Use (69%), Residential (23%)

Strategic Economic Development areas: Multiple sites

68 Vacant Acres

Figure 16 South County FAC

Table 12 South County FAC Access Needs

Facility	Role
College Ave	East-west connectivity through the FAC
30th Street NE	Access to Amazon facility
US 41	Access to warehouses and light industrial south of the rail road
4th Street SW	Access to warehouses and light industrial west of US 41. The street does not cross the railroad.

South I-75

The South I-75 FAC is an expansive area of warehousing and distribution centers accompanied by industrial uses. It is located along US 301 between the Tampa Bypass Canal and the Selmon Expressway. Distribution from the area focuses on building supplies, auto parts, food and beverage, medical supplies, and more.

No changes to the South I-75 FAC are proposed.

Status: Established | **Intensity Level:** High

Intermodal Connections	CSX Lakeland and Yeoman Subdivisions
18.2M sq ft Distribution / Warehousing	15.3K Daily Truck Trips
1.8M sq ft Other Industrial	

Jobs	1.8k Distribution and E-Commerce	555 Transportation and Logistics	236 Local Products and Services

Dominant Future Land Uses	Mixed Use (73%) Industrial (19%)	536 Vacant Acres
Strategic Economic Development areas	Multiple sites	

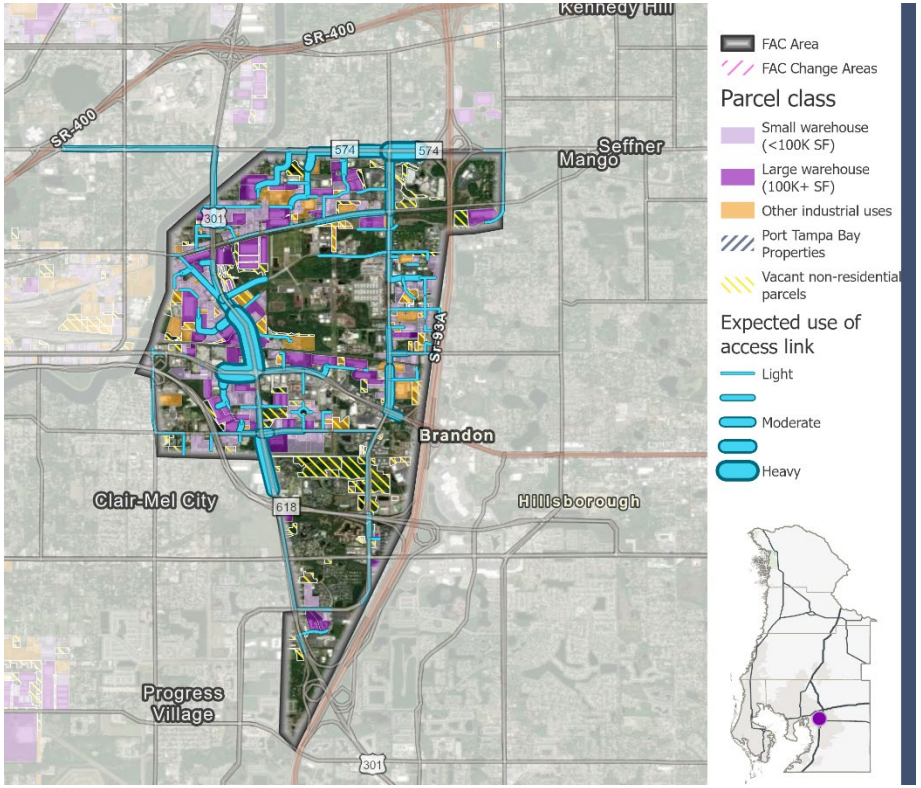


Figure 17 South I-75 FAC

Table 13 South I-75 FAC Access Needs

Facility	Role
US 301	Primary north-south axis through the FAC; access to Selmon Expressway
Adamo Dr	East-west connectivity within the FAC; access to I-75
Broadway Ave	East-west connectivity within the FAC
Palm River Rd	
MLK Blvd	Access from norther sites to I-4 and I-75

Southeast Tampa CSX

The Southeast Tampa FAC is east of Ybor City and between I-4 and the Selmon Expressway. Its focal point is the CSX Intermodal Yard off 62nd Street and the Uceta and Yeoman Yards, CSX's largest classification yards in the region. Warehousing and industrial uses in the vicinity include rail-supportive uses, building supplies, food and beverage, waste management and recycling.

No changes to the Southeast Tampa CSX FAC are proposed.

Status: Established | **Intensity Level:** High

Intermodal Connections: CSX Tampa Terminal Subdivision

8.8M sq ft
Distribution / Warehousing

2.1M sq ft
Other Industrial

19.1K
Daily Truck Trips

Jobs: 1.1k Distribution and E-Commerce; 524 Transportation and Logistics; 373 Local Products and Services

Dominant Future Land Uses: Industrial (75%), Mixed Use (12%)

Strategic Economic Development areas: None

143 Vacant Acres

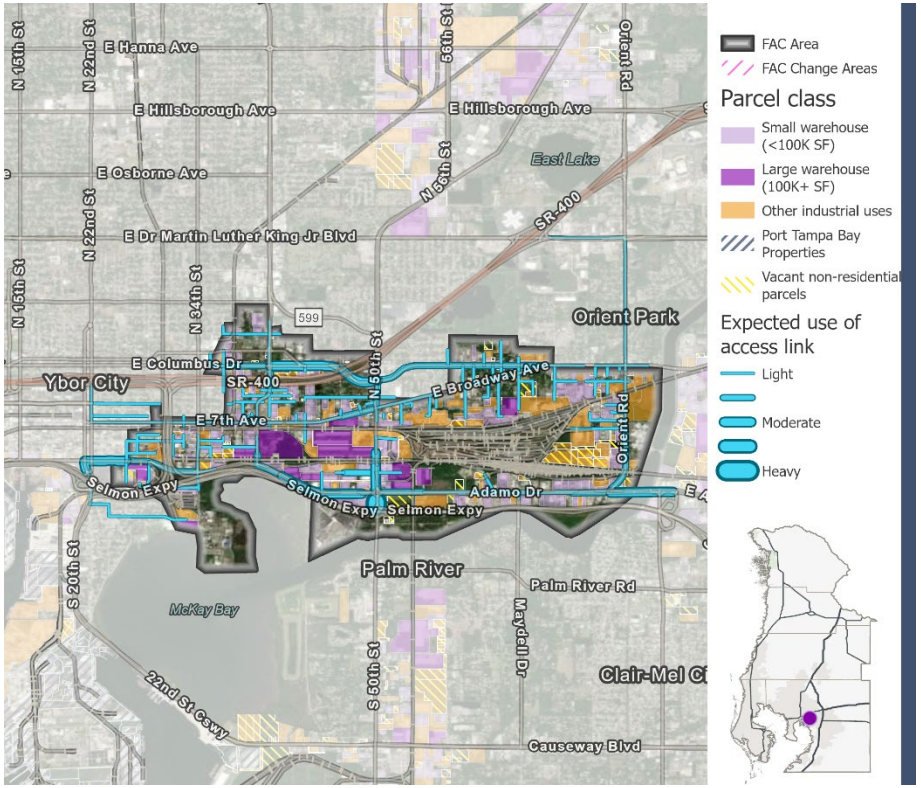


Figure 18 Southeast Tampa CSX FAC

Table 14 Southeast Tampa CSX FAC Access Needs

Facility	Role
50th Street	North-south axis through the FAC; access to I-4 and Selmon Expressway
Adamo Dr	East-west connectivity through the FAC; access to Selmon Expressway
Columbus Dr	East-west connectivity through the FAC; access to I-4
Broadway Ave	Access to CSX Intermodal Yard
62nd Street	
Orient Rd	Access to eastern industrial uses and I-4
39th/40th Street	North-south connectivity through the FAC

PINELLAS COUNTY

As District Seven's second largest county by population, Pinellas County has several major FACs and substantial levels of goods movement-related employment. However, Pinellas County also faces challenges for significant expansion of freight activity including: a limited number of large, developable sites; suboptimal access to major highway facilities; limited intermodal options; and a peripheral location in the State of Florida. For these reasons, growth in goods movement to and from Pinellas County is likely to be associated with advanced manufacturing and / or delivery to local businesses and residents. Additionally, some legacy FACs in Pinellas County appear to be transitioning away from their industrial past toward a mixed-use paradigm providing residential and employment opportunities with limited freight generation.

Figure 19 shows the density of warehousing and transportation uses in Pinellas County. Most high-density areas are in or around FACs. The largest cluster is focused in the Gateway area and near the St. Petersburg-Clearwater International Airport. There is a lower density cluster in northern Pinellas County near Tarpon Springs that is not designated as a FAC due to its relatively small size and limited opportunity for intensification.

Clusters of legacy warehousing and industrial uses are located along the CSX main line that connects St. Petersburg and Clearwater, but these are the areas where much of the transition away from freight-related activity is occurring most rapidly. Therefore, several small FACs have been identified for removal from the district inventory for consideration in the Strategic Freight Plan. Some consolidation of freight-related activity is expected in the remaining FACs along the rail line in accordance with Pinellas County's Target Employment and Industrial Land Study (TEILS) and associated policies.[2]

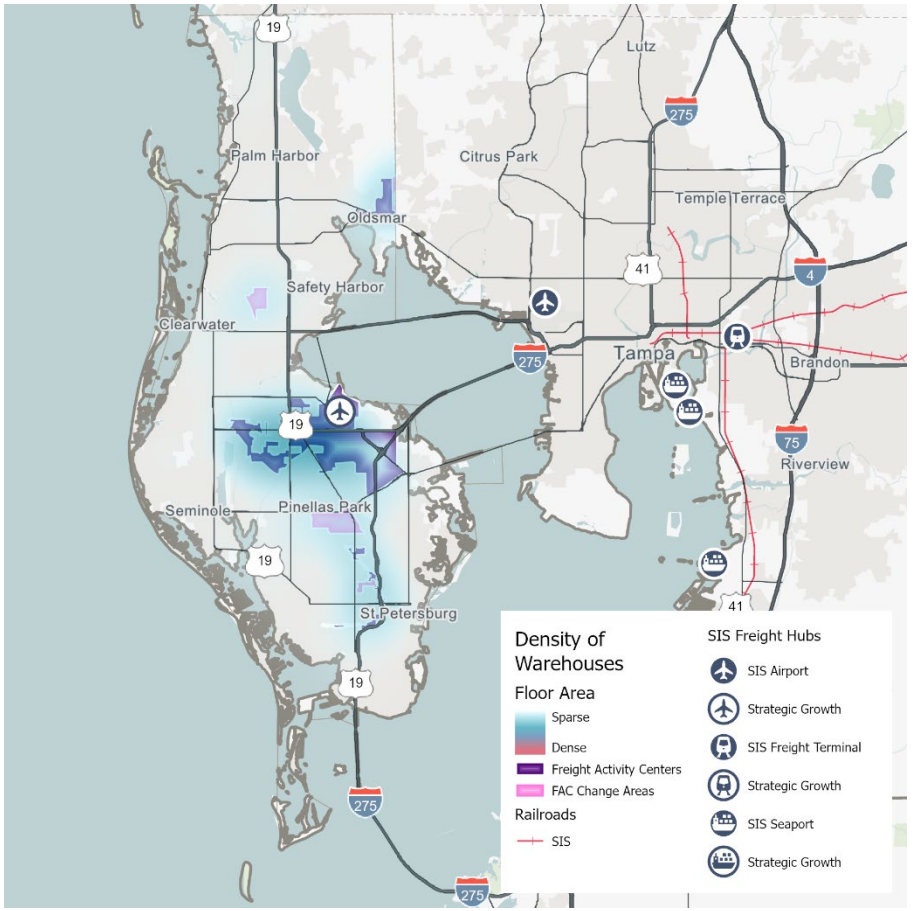


Figure 19 Pinellas County Distribution / Warehousing Density and FACs

[2] https://forwardpinellas.org/projects/teils-update/

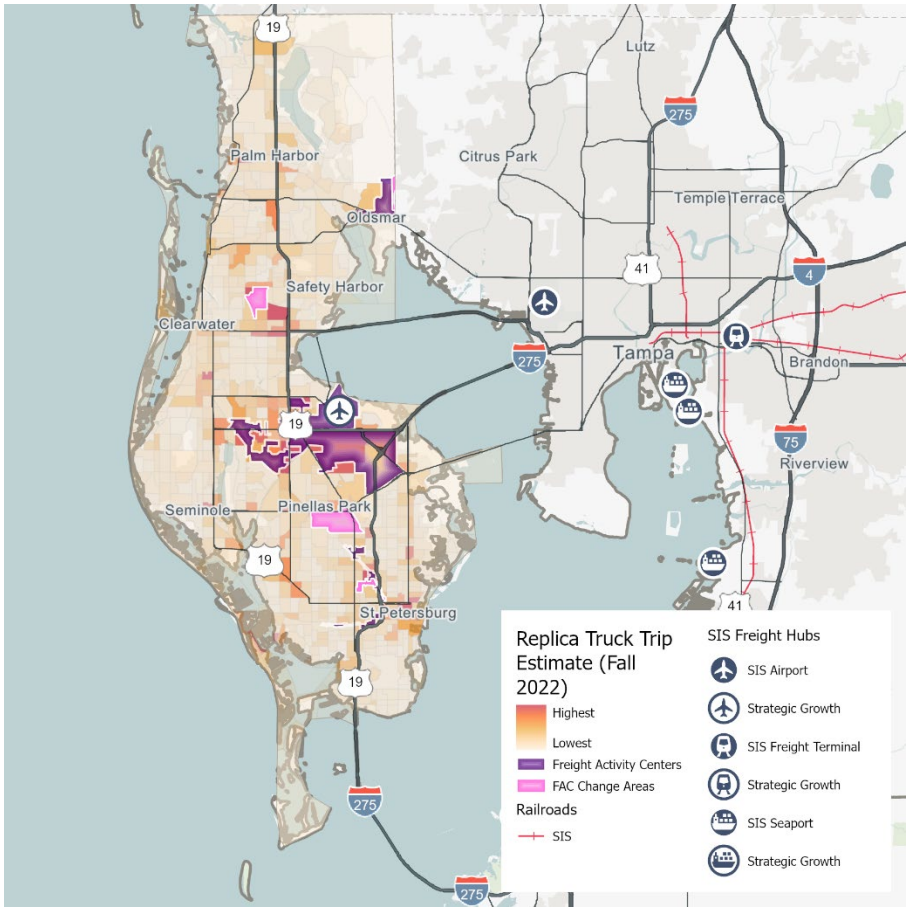


Figure 20 Pinellas County Truck Trip Density and FACs

Figure 20 shows the density of truck trips (trips produced per square mile of land area) in Pinellas County. Most clusters of high-density truck trip generation are in FACs. Modest clusters outside of FACs are associated with retail activity in densely developed districts (e.g., downtown St. Petersburg, Tyrone Square) or along major corridors (e.g., US 19, SR-60).

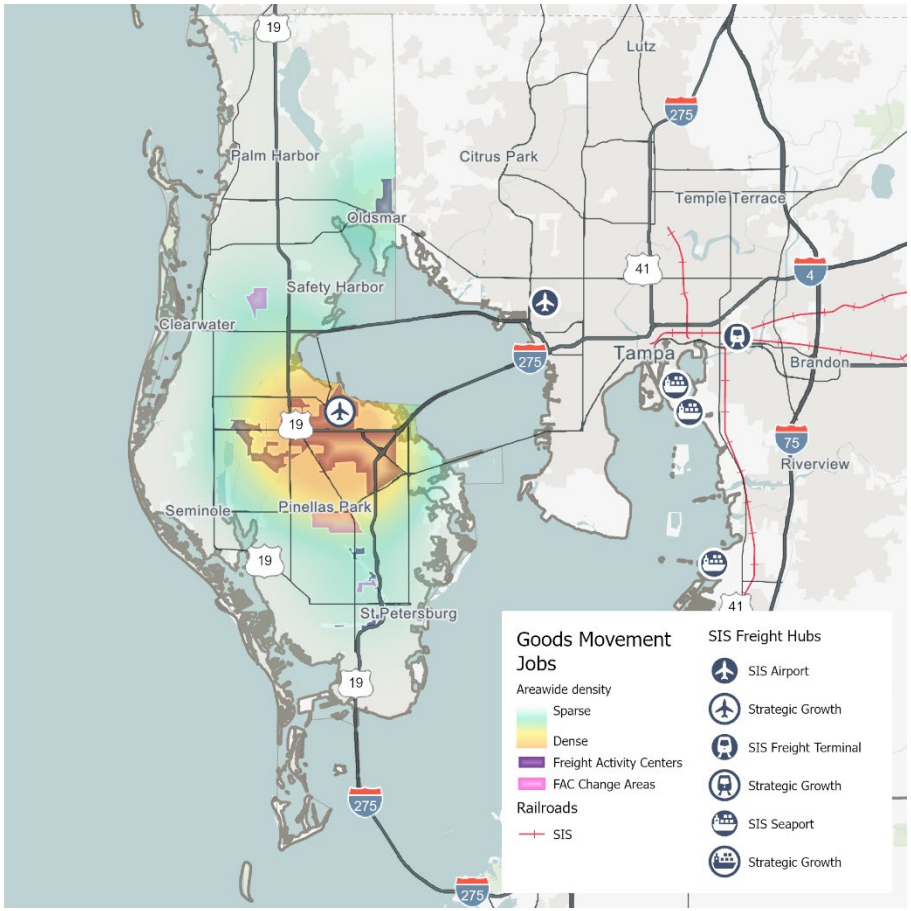


Figure 21 Pinellas County Goods Movement-Related Jobs Density and FACs

Figure 21 shows the density of goods movement-related jobs in Pinellas County. The largest cluster is centered around the Gateway Triangle FAC and the St. Petersburg-Clearwater International Airport. There is also a modest cluster around the Tampa Road Industrial FAC in Oldsmar. Notably, there are relatively few goods movement-related jobs in southern portions of the county around the FACs that are transitioning away from freight-related activity.

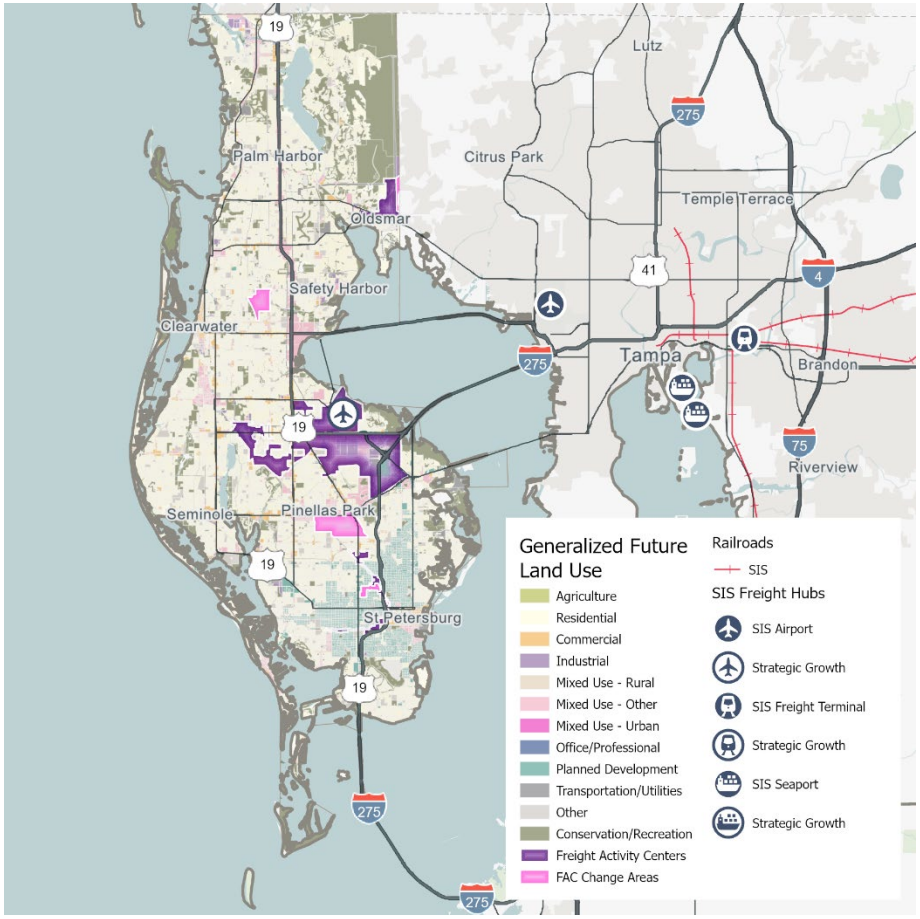


Figure 22 Pinellas County Generalized Future Land Use and FACs

Figure 22 shows generalized future land use categories in Pinellas County. In general, future land uses in the FACs are designated for industrial and mixed-use categories, indicating that local land use policy envisions continued investment in freight-related development in the FACs. The FACs also align generally with Pinellas County's TEILS Target Employment Centers (not shown on the map), indicating that Pinellas County is aiming to recruit employment growth in advanced manufacturing and industrial activity to these areas.

Central CSX

The Central CSX FAC is located along US 19 (34th Street N) in the Lealman area of Pinellas County. It consists of a localized cluster of small warehouses and light industrial uses, focused on wholesale businesses, auto parts and salvage, building supplies, millwork, and more. It is designated as a Target Employment Center – Local by Pinellas County, indicating that it is expected to transition away from freight-related activity over time.

The Central CSX FAC has been identified as a "Transitioning FAC" to acknowledge that economic and policy trends indicate a shift away from freight-related uses in the future.

Status: Transitioning

Intensity Level: Medium

Intermodal Connections

CSX Clearwater Subdivision

645K sq ft
Distribution / Warehousing

1.2M sq ft
Other Industrial

770
Daily Truck Trips

Jobs

182
Distribution and E-Commerce

125
Transportation and Logistics

41
Local Products and Services

Dominant Future Land Uses

Mixed Use (78%)
Industrial (9%)

Strategic Economic Development areas

Local TEC

14
Vacant Acres

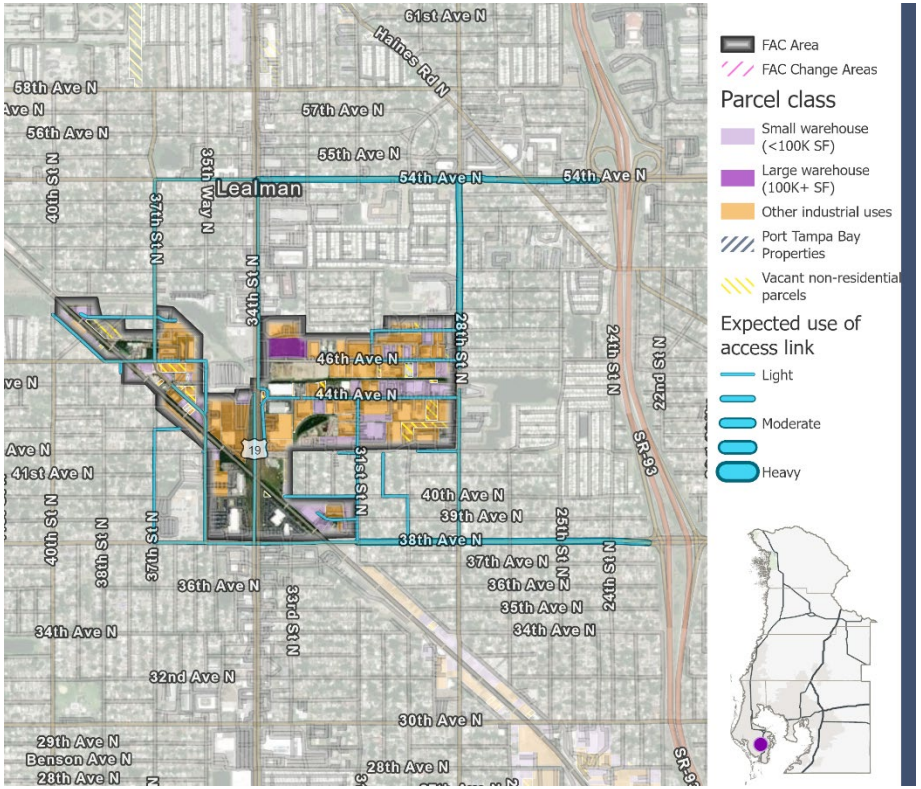


Figure 23 Central CSX FAC

Table 15 Central CSX FAC Access Needs

Facility	Role
54th Ave	Access to I-275
38th Ave	
28th Street	North-south access into/out of the FAC
34th Street	
44th Street	East-west connectivity within the FAC
46th Street	

Clearwater Airpark

The Clearwater Airpark FAC is centered on the CSX Mainline crossing of Hercules Avenue in central Pinellas County. The Clearwater Airpark within the FAC offers aviation and repair services for small planes and helicopters. The areas north and east of the Airpark consist of a mix of manufacturing, small warehousing, and light industrial uses, including a cluster of electronic instruments manufacturing centered on a GE facility, auto parts and repair, boat storage, recycling facilities, and more.

The Clearwater Airpark FAC is a new FAC that contains a concentration of diverse, well-established freight-related land uses. The area was not designated as an FAC in the first Strategic Freight Plan. However, it has been defined by Pinellas County as a Target Employment Center with an industrial focus, indicating freight generating uses are expected to persist and grow in the FAC.

Status: Established	**Intensity Level:** Medium
Intermodal Connections	CSX Clearwater Subdivision
1.3 M sq ft Distribution / Warehousing	1.5K Daily Truck Trips
2.7M sq ft Other Industrial	

Jobs	257 Distribution and E-Commerce	61 Transportation and Logistics	25 Local Products and Services

Dominant Future Land Uses	Industrial (70%) Transportation (13%)	39

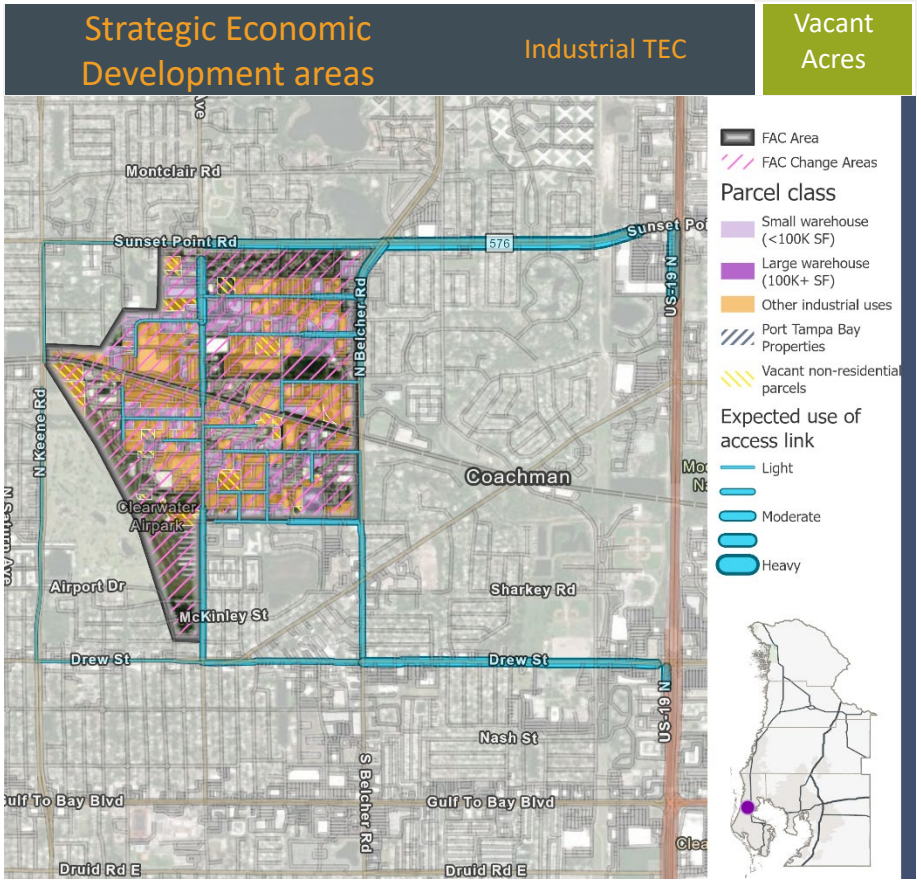


Figure 24 Clearwater FAC

Table 16 Clearwater FAC Access Needs

Facility	Role
Sunset Point Rd	Access to US-19
Drew Street	
Hercules Ave	North-south axes through the FAC
Belcher Road	

Gateway Triangle

The Gateway Triangle FAC is Pinellas County's largest FAC and a major employment center within the county. It is located between US 19 and the Howard Frankland and Gandy Bridges. It is designated as an Industrial Target Employment Center by Pinellas County and has many of the county's most suitable sites for large scale freight-related development. The southern and central portions of the FAC include large warehouse/distribution facilities and manufacturing sites, including several FedEx and Amazon facilities, HSN, Valpak, Lockheed Martin, and Jabil. The western portion of the FAC contains smaller sites focused on auto parts and repair, building supplies and home services, etc. West of US 19 is a large Honeywell complex and DHL warehouses.

No changes to the Gateway Triangle FAC are proposed.

Status: Established	**Intensity Level:** High
Intermodal Connections	Truck Only
7.4M sq ft Distribution / Warehousing	10.3K Daily Truck Trips
14.5M sq ft Other Industrial	
Jobs: 3.5K Distribution and E-Commerce	1.3K Transportation and Logistics; 211 Local Products and Services
Dominant Future Land Uses: Mixed Use (40%), Industrial (28%)	953

Strategic Economic Development areas	Industrial and Local TEC's	Vacant Acres

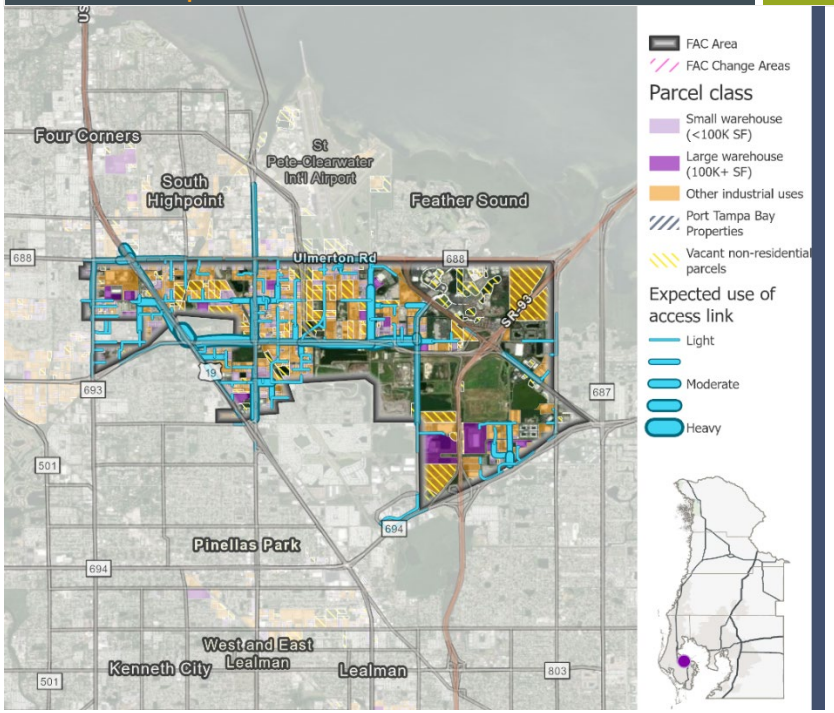


Figure 25 Gateway Triangle FAC

Table 17 Gateway Triangle FAC Access Needs

Facility	Role
118th Ave	East-west connectivity through the FAC and access to future Gateway Expressway
Ulmerton Road	
28th Street	North-south connectivity through the FAC and access to future Gateway Expressway
34th Street	
49th Street	
126th Ave	East-west connectivity through the FAC

Pinellas Park TEC

The Pinellas Park TEC FAC focuses on the Target Employment Center (TEC) established around the intersection of 62nd Ave N and 49th Street N. The "Industrial TEC" designation highlights the area as a strategic development location for targeted employers in the industrial and distribution sectors. There is a recently built Amazon warehouse in the FAC, alongside legacy uses focusing on building supplies, construction, auto repair, and more.

The boundary of the Pinellas Park TEC FAC is a new FAC that reflects the boundary of the Target Employment Center.

Status: Emerging

Intensity Level: Low

Intermodal Connections

CSX Clearwater Subdivision

1.5M sq ft
Distribution / Warehousing

2.1M sq ft
Other Industrial

2.7K
Daily Truck Trips

Jobs

191
Distribution and E-Commerce

60
Transportation and Logistics

38
Local Products and Services

Dominant Future Land Uses

Mixed Use (56%)
Residential (28%)

Strategic Economic Development areas

Industrial TEC

93
Vacant Acres

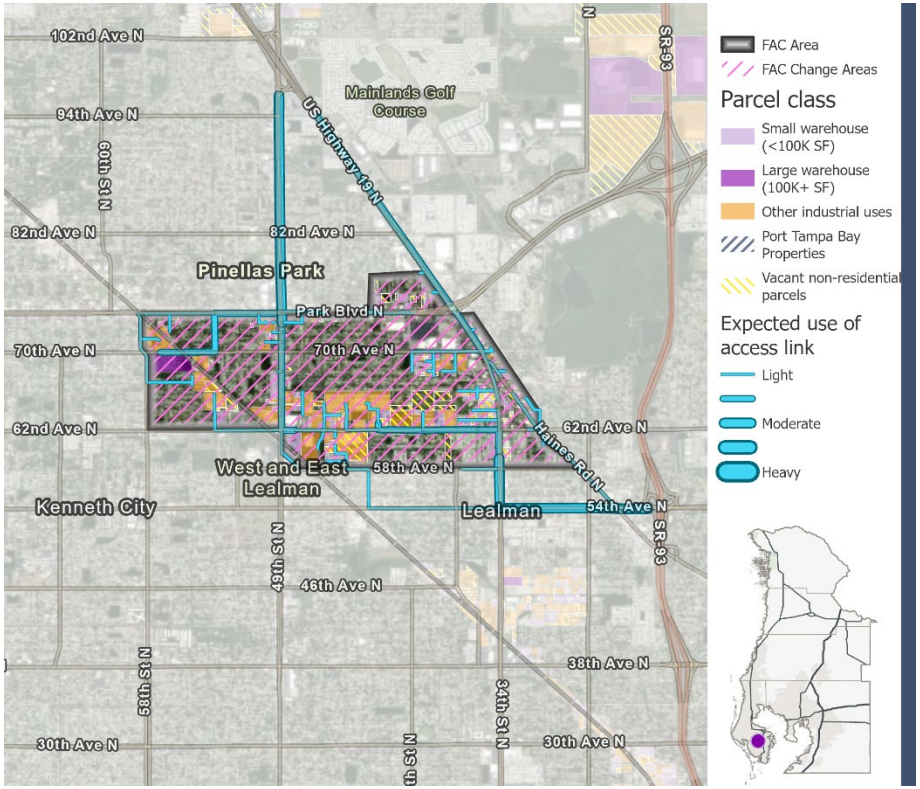


Figure 26 Pinellas Park TEC FAC

Table 18 Pinellas Park TEC FAC Access Needs

Facility	Role
49th Street	North-south axis through FAC; access to US 19
54th Ave	Access to I-275
62nd Street	East-west connectivity within the FAC
Park Blvd	

South Central CSX

The South Central CSX FAC is located along the CSX Mainline on either side of I-275 in St. Petersburg. It consists of small warehouse and light industrial uses along the railroad. Most of these are consumer focused, including wholesale clubs, home improvement warehouses, self storage, and similar businesses. The area is designated as an Industrial Target Employment Center by Pinellas County.

The boundary of the South Central CSX FAC has been updated to reflect the boundary of the Target Employment Center. Its intensity level has been changed from Medium to Low due to the modest truck trip generation in the area.

Status: Established	**Intensity Level:** Low
Intermodal Connections	CSX Clearwater Subdivision
1.5M sq ft Distribution / Warehousing	1.7K Daily Truck Trips
1.2M sq ft Other Industrial	
Jobs	105 Distribution and E-Commerce; 22 Transportation and Logistics; 26 Local Products and Services
Dominant Future Land Uses	Industrial (56%) Planned Dev (25%)

Strategic Economic Development areas	Industrial TEC	Vacant Acres

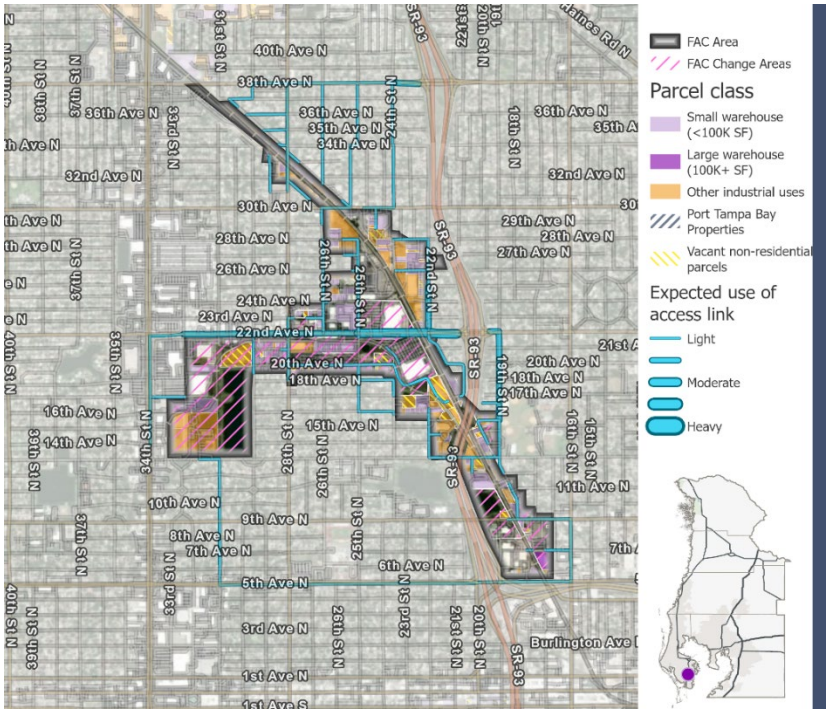


Figure 27 South Central CSX FAC

Table 19 South Central CSX FAC Access Needs

Facility	Role
22nd Ave	East-west axis through FAC; access to I-275
38th Ave	Access to I-275 from northern sites
22nd Street	
25th Street	
26th Street	North-south connectivity within the FAC

South St. Pete - Dome

The South St. Pete – Dome FAC is a collection of legacy industrial uses along the abandoned rail line southwest of Downtown St. Petersburg. The area overlaps with the Warehouse Arts District, where many industrial spaces have given way to arts studios. The railroad right of way has been repurposed to construct part of the Pinellas Trail. The area has been designated as a Local Targeted Employment Center, indicating that it will transition away from freight related activity.

The South St. Pete - Dome FAC has been identified as a "Transitioning FAC" to acknowledge that economic and policy trends indicate a shift away from freight-related uses in the future.

Status: Transitioning	**Intensity Level:** Low
Intermodal Connections	Truck Only
1.2M sq ft Distribution / Warehousing	1.3K Daily Truck Trips
1.3M sq ft Other Industrial	

Jobs	233 Distribution and E-Commerce	13 Transportation and Logistics	117 Local Products and Services

Dominant Future Land Uses	Industrial (83%) Mixed Use (9%)	47

Strategic Economic Development areas	Local TEC	Vacant Acres

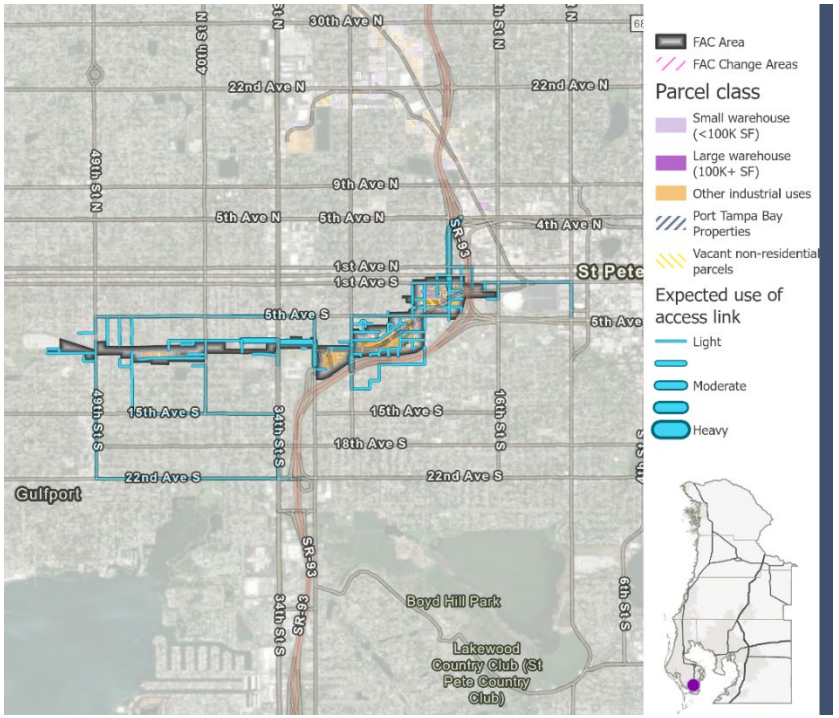


Figure 28 South St. Pete - Dome FAC

Table 20 South St. Pete - Dome FAC Access Needs

Facility	Role
20th Street	Access to I-275
28th Street	
31st Street	
5th Ave	East-west connectivity within the FAC
22nd Street	North-south connectivity within the FAC

St. Petersburg-Clearwater Airport

The St. Petersburg-Clearwater Airport FAC is anchored by the St. Petersburg-Clearwater International Airport (PIE) and the US Coast Guard Air Station that shares its runways. The airport property includes supportive uses, while the portions of the FAC west of the airport are predominantly industrial with some warehousing uses mixed in. Distribution activity focuses on home goods and building supplies.

No changes to the St. Petersburg-Clearwater Airport FAC are proposed.

Status: Established | **Intensity Level:** High

Intermodal Connections

St. Pete-Clearwater Int'l Airport

1.5M sq ft
Distribution / Warehousing

3.4M sq ft
Other Industrial

3.9K
Daily Truck Trips

Jobs

517
Distribution and E-Commerce

197
Transportation and Logistics

206
Local Products and Services

Dominant Future Land Uses

Other/PIE (35%)
Mixed Use (22%)

Strategic Economic Development areas

Industrial TEC

206
Vacant Acres

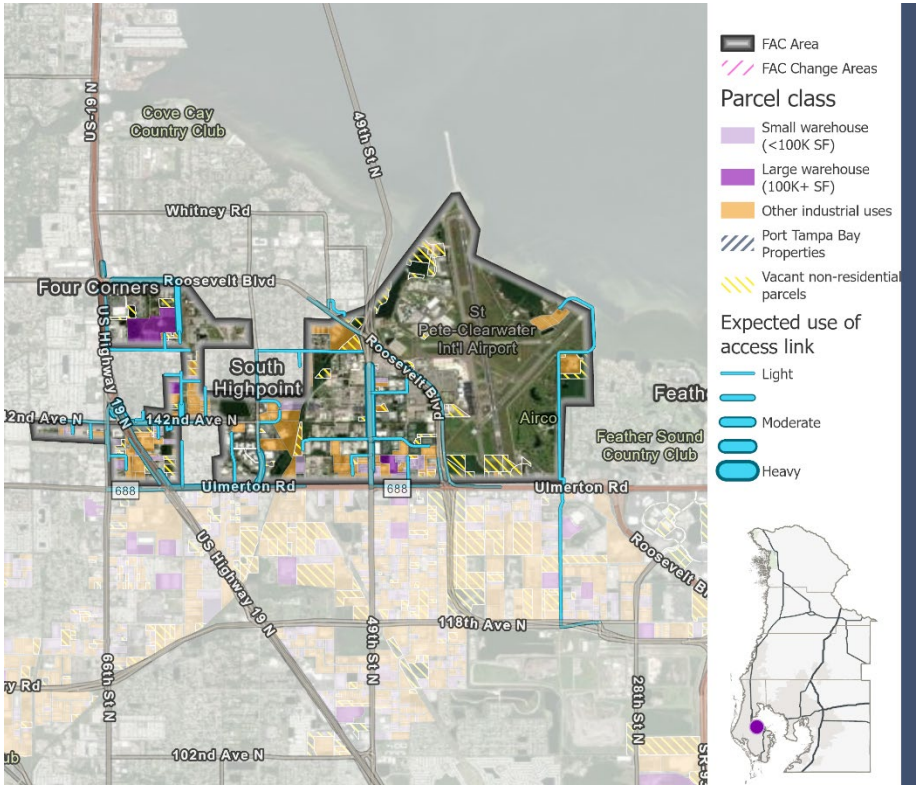


Figure 29 St. Petersburg-Clearwater Airport FAC

Table 21 St. Petersburg-Clearwater Airport FAC Access Needs

Facility	Role
Roosevelt Blvd	Access to future Gateway Expressway
Ulmerton Rd	
49th Street	North-south connectivity within FAC
58th Street	
62nd Street	
142nd Ave	East-west connectivity within the FAC
150th Ave	

Tampa Road Industrial

The Tampa Road Industrial FAC is located in Oldsmar at the northern shore of Old Tampa Bay at the Pinellas – Hillsborough County line. Most of the FAC is located in Pinellas County, but freight generating uses also extend into Hillsborough County along SR 580 (Tampa Road / Hillsborough Ave) and Race Track Road. The FAC is predominantly industrial with advanced manufacturing along Race Track Road and Forest Lake Boulevard. There are small warehousing uses in the complex centered on Douglas Road.

The Tampa Road Industrial FAC has been modified to extend its boundary into Hillsborough County, acknowledging that the clusters of warehousing and light industrial uses east of the county line reflect the locational and agglomeration factors that create competitive opportunities for freight-related land development in the area.

Status: Established	**Intensity Level:** High

Intermodal Connections	CSX Clearwater Subdivision
3.5M sq ft Distribution / Warehousing	2.8K Daily Truck Trips
3.8M sq ft Other Industrial	

Jobs	1.6K Distribution and E-Commerce	29 Transportation and Logistics	154 Local Products and Services

Dominant Future Land Uses	Industrial (55%) Mixed Use (16%)	280

Strategic Economic Development areas	Industrial TEC	Vacant Acres

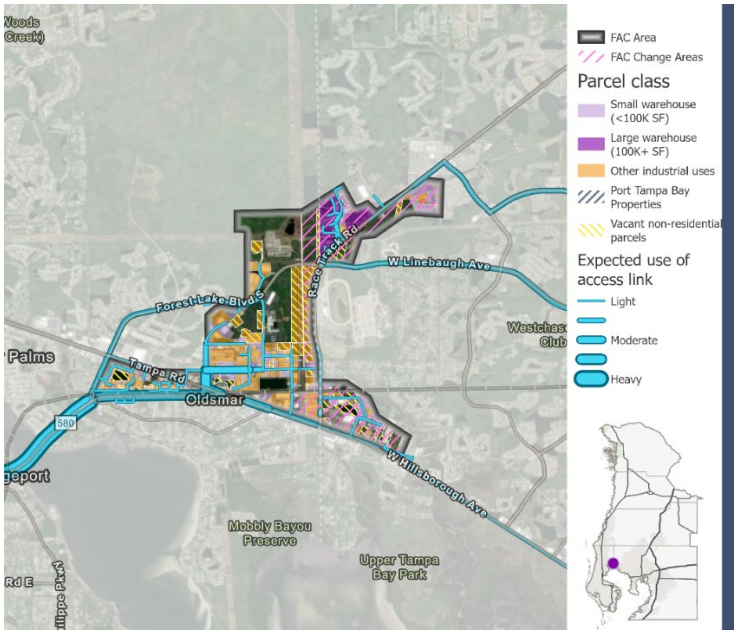


Figure 30 Tampa Road Industrial FAC

Table 22 Tampa Road Industrial FAC Access Needs

Facility	Role
Tampa Road	Access to US 19
Linebaugh Ave	Access to SR-589
Race Track Rd	North-south connectivity through the FAC
Commerce Blvd	
Forest Lake Blvd	Access to US 19 via Tampa Rd
Douglas Road	Internal Circulation
Brooker Creek Blvd	

West Pinellas Industrial

The West Pinellas Industrial FAC is centered on the intersection of Bryan Dairy Road and Belcher Road. It consists primarily of industrial uses, including advanced manufacturing facilities and food, beverage, and nutritional development. Warehousing sites are generally small and occupied by building supply and related businesses.

No changes to the West Pinellas Industrial FAC are proposed.

Status: Established

Intensity Level: High

Intermodal Connections

CSX Clearwater Subdivision

4.6M sq ft
Distribution / Warehousing

9.7M sq ft
Other Industrial

4.4
Daily Truck Trips

Jobs

1.8K
Distribution and E-Commerce

31
Transportation and Logistics

24
Local Products and Services

Dominant Future Land Uses

Mixed Use (66%)
Industrial (22%)

Strategic Economic Development areas

Industrial TEC

187
Vacant Acres

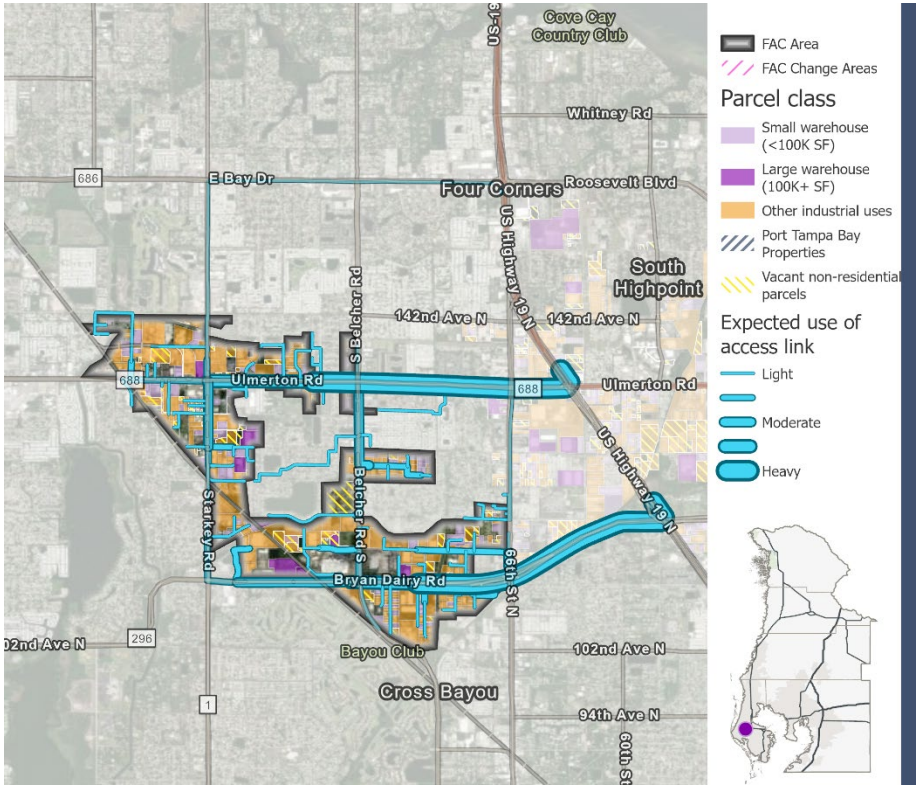


Figure 31 West Pinellas Industrial FAC

Table 23 West Pinellas Industrial FAC Access Needs

Facility	Role
Ulmerton Rd	Access to US 19
Bryan Dairy Rd	
Belcher Rd	North-South connectivity within the FAC
Starkey Rd	

NORTHERN COUNTIES

District Seven's northern counties include Pasco, Hernando, and Citrus Counties. While these counties have lower levels of freight activity than Hillsborough and Pinellas Counties, they have ties to the broader economy of Tampa Bay and Central Florida. They are all connected to Hillsborough County via I-75 and/or SR-589 (Veterans Expressway) and to Pinellas County via US 19. Meanwhile, US 98 offers connections to the distribution hub of Polk County, SR-50 links the northern counties to the Orlando metropolitan area, and SR-200 and SR-44 link them with population centers between Ocala and Orlando.

This strong access to the broader Central Florida region has driven population growth across the northern counties. Much recent development is suburban residential with supporting commercial and service activities. The northern counties contain multiple low- and medium-intensity FACs that could offer opportunities for expanding distribution and warehousing activities with access to a large and growing regional population base in District Seven and beyond.

Figure 32 shows the density of warehousing and transportation uses in the northern counties. Note that the density scale differs from that shown in similar maps for Hillsborough and Pinellas Counties. The northern counties have much lower levels of distribution / warehousing floor area, and the change in scale highlights where these activities are densest relative to the three counties. There are high-density clusters at several FACs, including Port Richey, West Pasco Industrial, Kettering Road, and the Tampa Bay Regional Airport. Smaller nodes of distribution / warehousing activity are also found at other FACs in Dade City, Zephyrhills, and One Pasco Center. Citrus County's only FACs is the Florida Barge Canal, a specialized location serving the Crystal River Energy Complex. The majority of warehousing space in Citrus County is personal storage and light industrial uses scattered along major highway corridors. Similar strings of warehousing density are found along US 19 and along US 98 in Pasco and Hernando Counties and along SR 54 in Pasco County. In these corridors, the clusters of warehousing activity are interspersed with retail and residential uses.

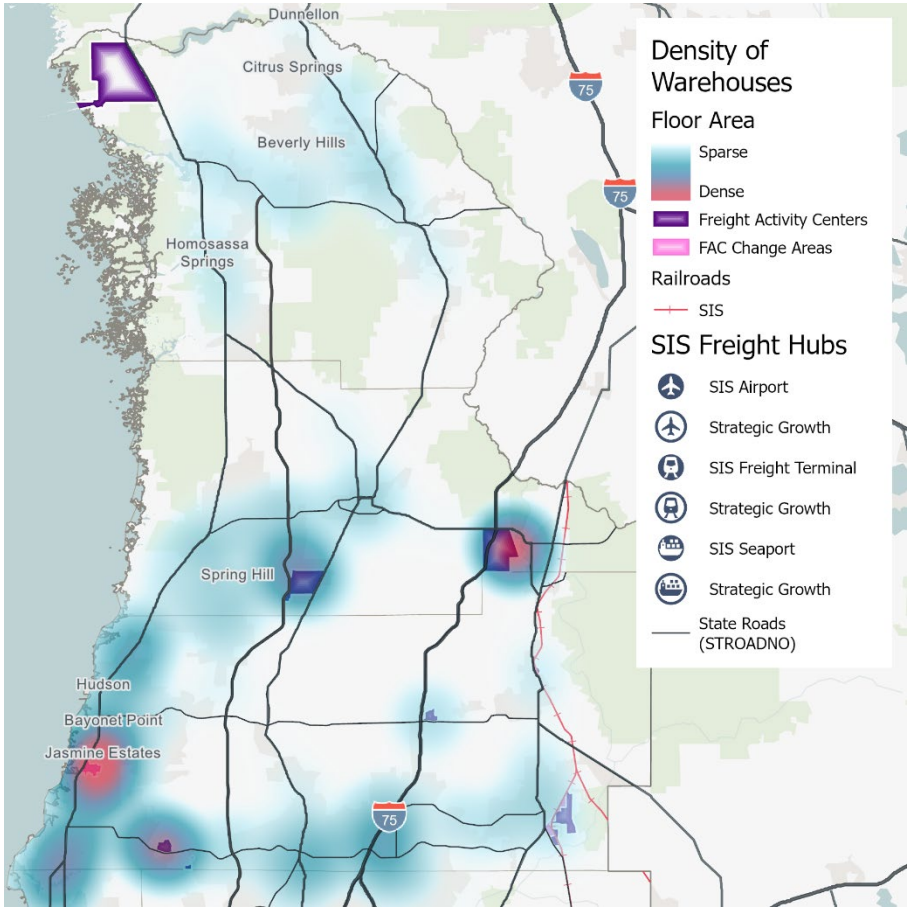


Figure 32 Distribution / Warehousing Density and FACs in Northern Counties

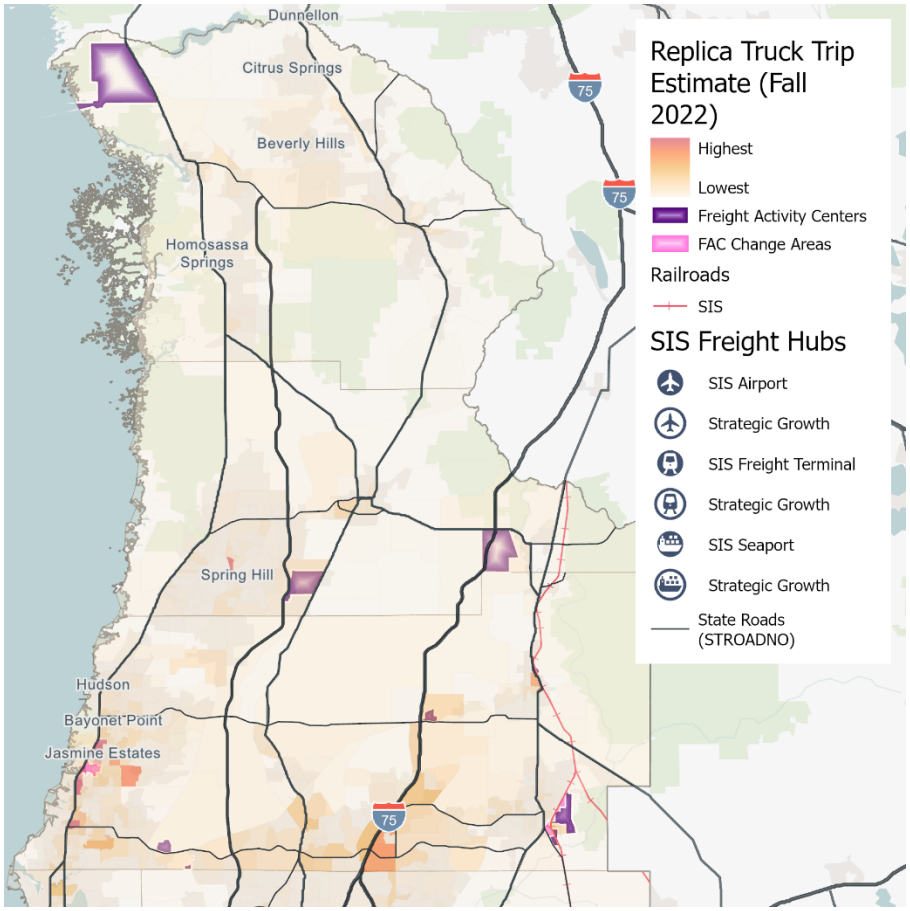


Figure 33 Truck Trip Density and FACs in Northern Counties

Figure 33 shows the density of truck trips (trips produced per square mile of land area) in District Seven's northern counties. Most zones of high-density truck trip generation are not associated with FACs but with clusters of retail uses along major highways, including along US 19 and around the I-75 interchanges with SR 56 and SR 54. The northern counties' FACs are generally relatively small in land area and lighter in truck trip generation than those in Hillsborough and Pinellas Counties. There is also a large mining area northwest of Brooksville that generates a moderate (but low-density) number of truck trips.

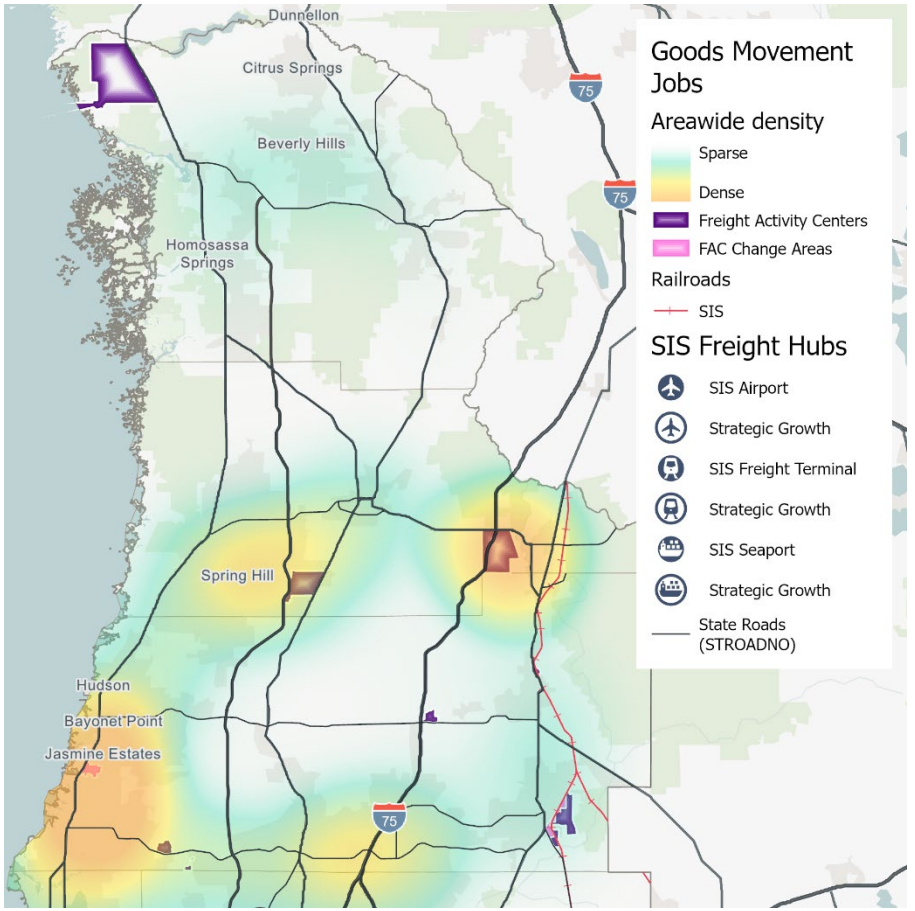


Figure 34 Goods Movement-Related Jobs Density and FACs in Northern Counties

Figure 34 shows the density of goods movement-related jobs in District Seven's northern counties. Relative to Hillsborough and Pinellas Counties, there are very few jobs related to goods movement in northern counties, so the scale of this map has been adjusted to show hot spots within the three counties. The largest cluster is centered around the Port Richey FAC in Pasco County, which also has a sizeable cluster near the I-75 interchanges with SR 56 and SR 54. There are smaller clusters in Pasco County around Zephyrhills. The other large cluster is in the Spring Hill area in Hernando County, which is served by the Tampa Bay Regional Airport FAC.

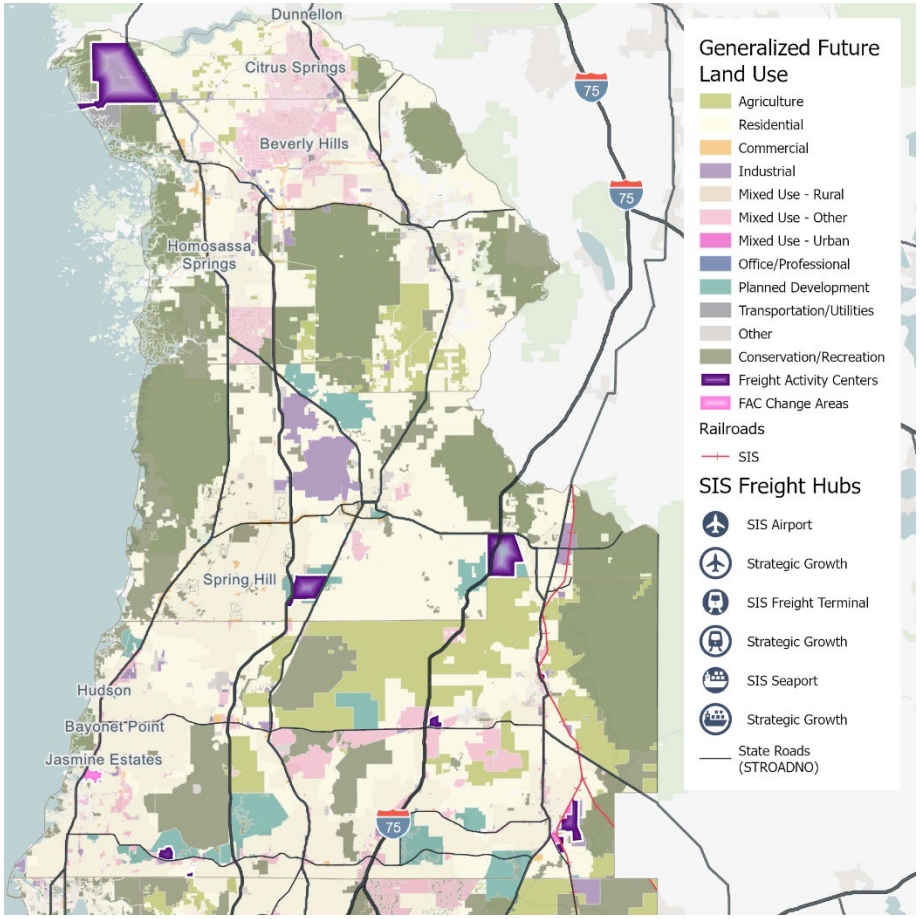


Figure 35 Generalized Future Land Use and FACs in Northern Counties

Figure 35 shows generalized future land use categories in District Seven's northern counties. Most FACs in Pasco County are defined by industrial and/or mixed-use categories, indicating that local land use policy envisions continued investment in freight-related development in these areas.

Hernando County's two FACs are designated as "planned development," which acknowledges a strategic development vision has been established for these areas. The Kettering and Tampa Bay Regional Airport FACs have visions to develop as industrial, distribution, and technology hubs as Hernando County and the broader regional continues to grow. The only substantial area designated as industrial future land use that is outside an FAC is the mining area northwest of Brooksville.

In Citrus County, the Florida Barge Canal offers limited opportunity for growth and development. Its focus is solely on goods movement needs supporting the Crystal River Energy Complex.

As the region continues to grow, the FACs in the northern counties will offer diverse opportunities for investment in distribution / warehousing, light industrial, and advanced manufacturing uses.

Dade City

The Dade City FAC is a small cluster of industrial uses along the CSX Mainline north of downtown Dade City. It consists primarily of the Dade City Business Center, a collection of industrial, distribution and office uses. Current tenants include recycling facilities, food and beverage distributers, fuel production, and heavy equipment repair. Many of the jobs in these industries fall outside of the typical "freight related" industries, but the FAC is a significant jobs center in Dade City when all employment categories are considered.

No changes to the Dade City FAC are proposed.

Status: Established

Intensity Level: Low

Intermodal Connections

CSX Wildwood Subdivision

76K sq ft
Distribution / Warehousing

498K sq ft
Other Industrial

721
Daily Truck Trips

Jobs

0
Distribution and E-Commerce

19
Transportation and Logistics

4
Local Products and Services

Dominant Future Land Uses

Industrial (82%)
Mixed Use (14%)

Strategic Economic Development areas

None

9
Vacant Acres

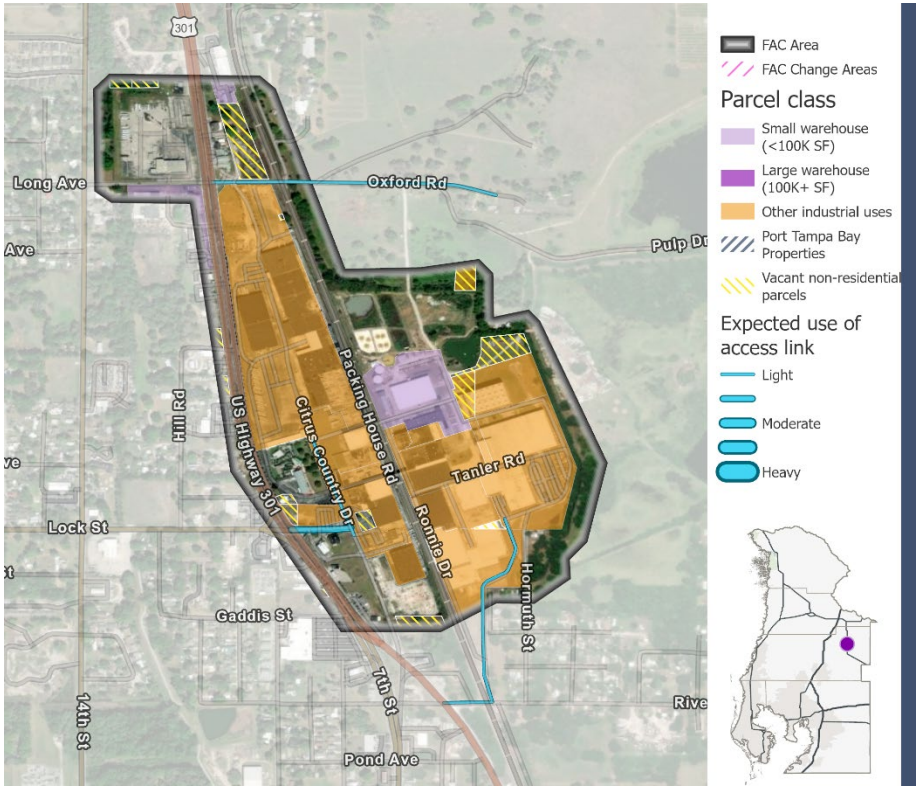


Figure 36 Dade City FAC

Table 24 Dade City FAC Access Needs

Facility	Role
Oxford Rd	Access to US 301 (Dade City Business Center main gate)
Pioneer Museum Rd	
Lock Street	Access to US 301 (Dade City Office Plaza)
River Rd	Access to US 301 (Dade City Business Center south gate)

Florida Barge Canal

The Florida Barge Canal FAC is unusual in that it is not an area of distribution or industrial activity. Rather the FAC is home to the Duke Energy Crystal River Energy Complex, which consists of multiple coal and gas power plants and a decommissioned nuclear power plant. Freight activity in and out of the FAC is focused on delivering coal to the complex. Maritime access is provided by the Florida Barge Canal, which opens to the Gulf of Mexico and via the Florida Northern Railroad. The area has been studied to gauge the feasibility of locating a commercial cargo port in the area (Port Citrus), and the Citrus County Port Authority was created in 1984 with future port development in mind.

No changes to the Florida Barge Canal FAC are proposed.

Status: Established	**Intensity Level: Low**
Intermodal Connections	Florida Northern RR; Florida Barge Canal
0 sq ft Distribution / Warehousing	
6K sq ft Other Industrial	909 Daily Truck Trips
Jobs	0 Distribution and E-Commerce; 0 Transportation and Logistics; 0 Local Products and Services
Dominant Future Land Uses	Industrial (57%) Utilities (19%)
769	

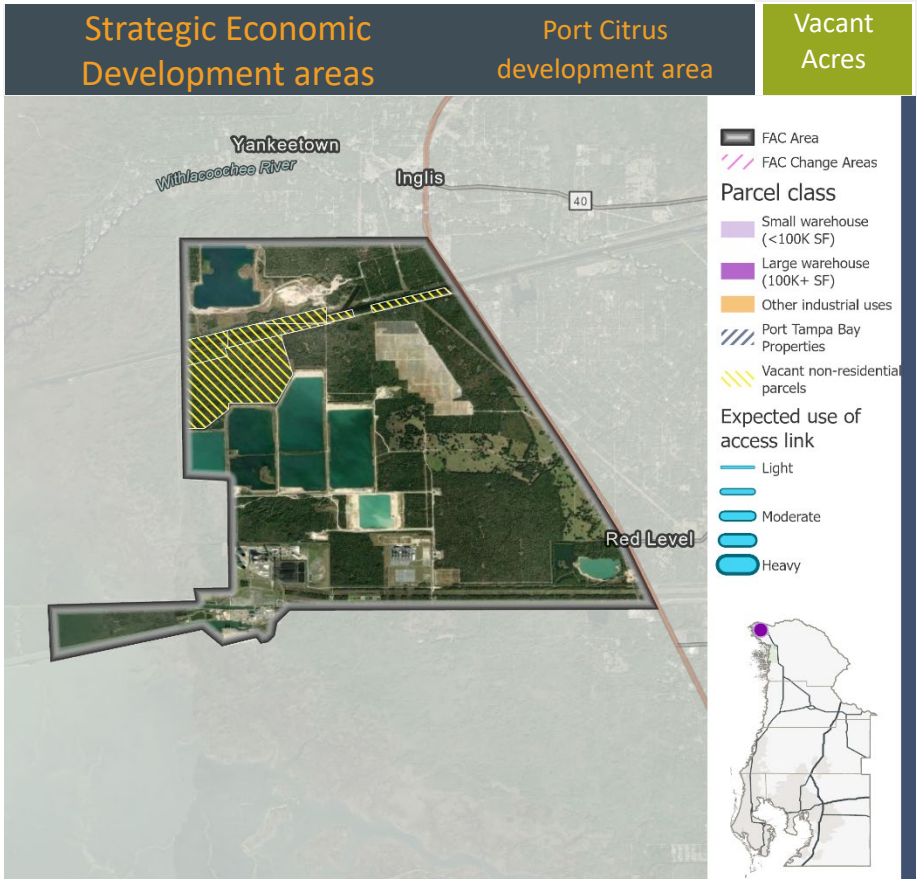


Figure 37 Florida Barge Canal FAC

Table 25 Florida Barge Canal FAC Access Needs

Facility	Role
Powerline Street	Access to US 19 / US 98

Gunn Highway Industrial

The Gunn Highway Industrial FAC is located in Odessa where Gunn Highway crosses the Pasco-Hillsborough County line. It consists primarily of light industrial uses with some small warehouses. Businesses are focused primarily on construction and building supplies with small manufacturers and engineering services also located in the FAC.

No changes to the Gunn Highway Industrial FAC are proposed.

Status: Emerging	**Intensity Level:** Low
Intermodal Connections	Truck Only
84K sq ft Distribution / Warehousing	747 Daily Truck Trips
884K sq ft Other Industrial	

Jobs	96 Distribution and E-Commerce	0 Transportation and Logistics	0 Local Products and Services

Dominant Future Land Uses	Industrial (96%) Residential (4%)	5 Vacant Acres
Strategic Economic Development areas	None	

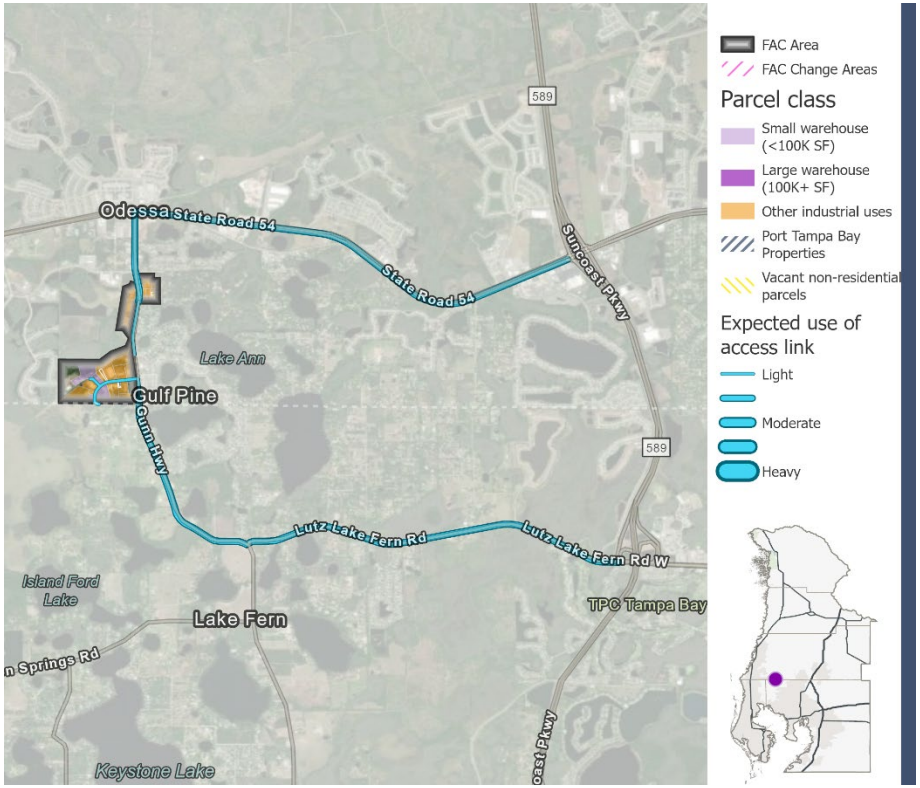


Figure 38 Gunn Highway Industrial FAC

Table 26 Gunn Highway Industrial FAC Access Needs

Facility	Role
S4 54	Access to SR-589
Lutz Lake Fern Rd	
Gunn Highway	North-south access to the FAC

Kettering

The Kettering FAC is located in Hernando County at the intersection of I-75 and SR-50/US 98. The primary freight generator in the FAC currently is the Walmart distribution Center on Kettering Road. There are also several small manufacturing facilities in the FAC, and it is a planned development area where additional distribution and industrial activities are expected alongside residential and supporting uses.

The Kettering FAC was previously listed as an Emerging FAC, but it is now an Existing FAC due to the established presence of distribution and industrial users.

Status: Established	**Intensity Level:** Low
Intermodal Connections	Truck Only
1.5M sq ft Distribution / Warehousing	1.8K Daily Truck Trips
211K sq ft Other Industrial	

Jobs	0 Distribution and E-Commerce	0 Transportation and Logistics	800 Local Products and Services

Dominant Future Land Uses	Planned Development (99%)	35 Vacant Acres
Strategic Economic Development areas	Multiple sites	

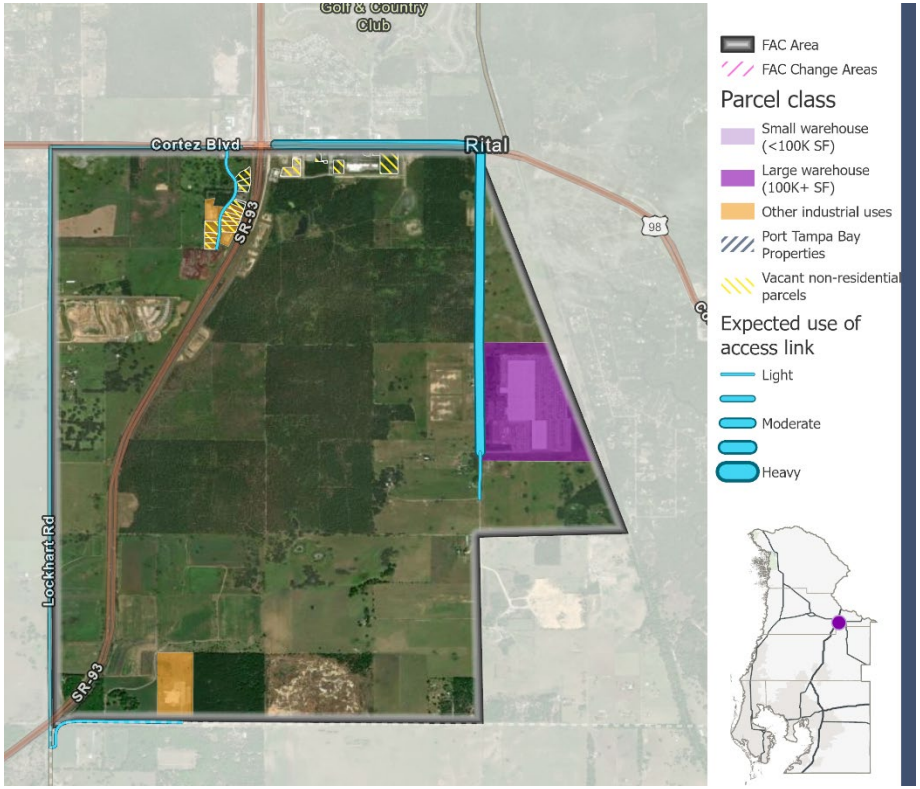


Figure 39 Kettering FAC

Table 27 Kettering FAC Access Needs

Facility	Role
US 98	Access to US 19
Kettering Rd	North-south connectivity within the FAC
Lockhart Rd	

One Pasco Center

The One Pasco Center FAC is located on SR-52 at the interchange with I-75. It consists of small warehouses of building and medical supplies, contractors, landscapers, and diverse other uses. The FAC includes ample vacant space for expansion over time.

No changes to the One Pasco Center FAC are proposed.

Status: Established	**Intensity Level:** Low
Intermodal Connections	Truck Only
287K sq ft Distribution / Warehousing	1.5K Daily Truck Trips
18K sq ft Other Industrial	
Jobs	0 Distribution and E-Commerce / 0 Transportation and Logistics / 0 Local Products and Services
Dominant Future Land Uses	Mixed Use (74%) Industrial (24%)
Strategic Economic Development areas	None
151 Vacant Acres	

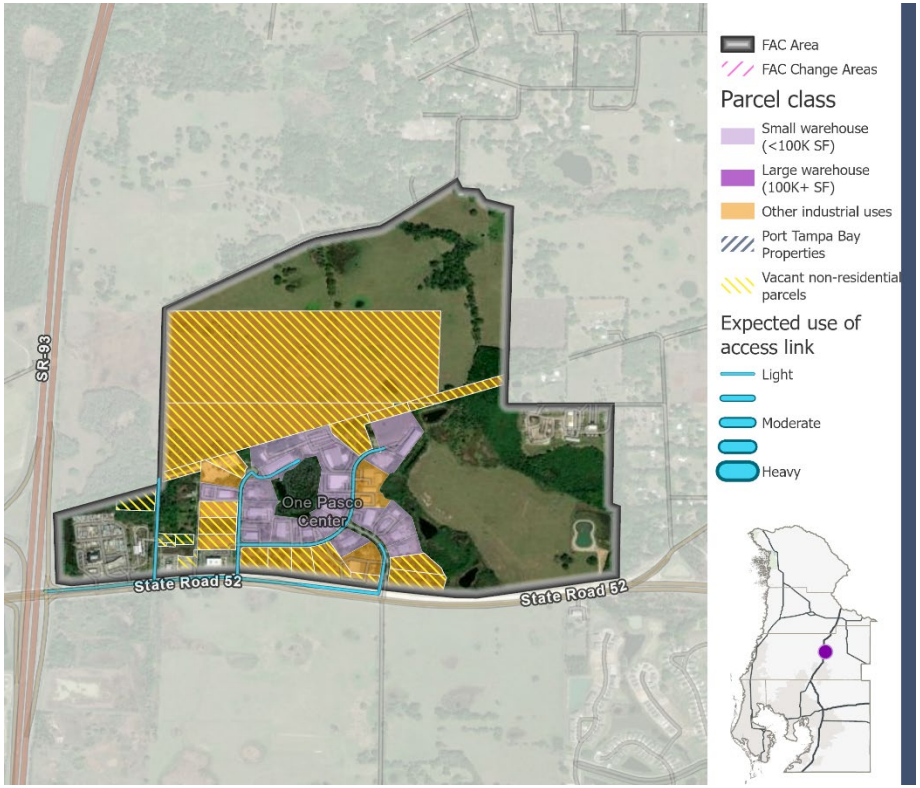


Figure 40 One Pasco Center FAC

Table 28 One Pasco Center FAC Access Needs

Facility	Role
SR 52	Access to I-75

Port Richey

The Port Richey FAC is a collection of small warehouses near the intersection of US 19 and Ridge Road in western Pasco County. The FAC contains businesses focused on auto repair, building supplies and home repair, heating and cooling equipment, and more. Although most uses are relatively small and well-established, there are sizeable vacant sites for future expansion in the FAC.

The Port Richey FAC is a new FAC that contains a concentration of diverse, well-established freight-related land uses. The area was not designated as an FAC in the first Strategic Freight Plan. However, it has been added due to its relatively high truck generation rate within Pasco County.

Status: Established	**Intensity Level:** Low
Intermodal Connections	Truck Only
1.1M sq ft Distribution / Warehousing	1.7K Daily Truck Trips
241K sq ft Other Industrial	
Jobs: 521 Distribution and E-Commerce; 35 Transportation and Logistics; 6 Local Products and Services	
Dominant Future Land Uses	Mixed Use (39%) Industrial (29%)
Strategic Economic Development areas	None

56 Vacant Acres

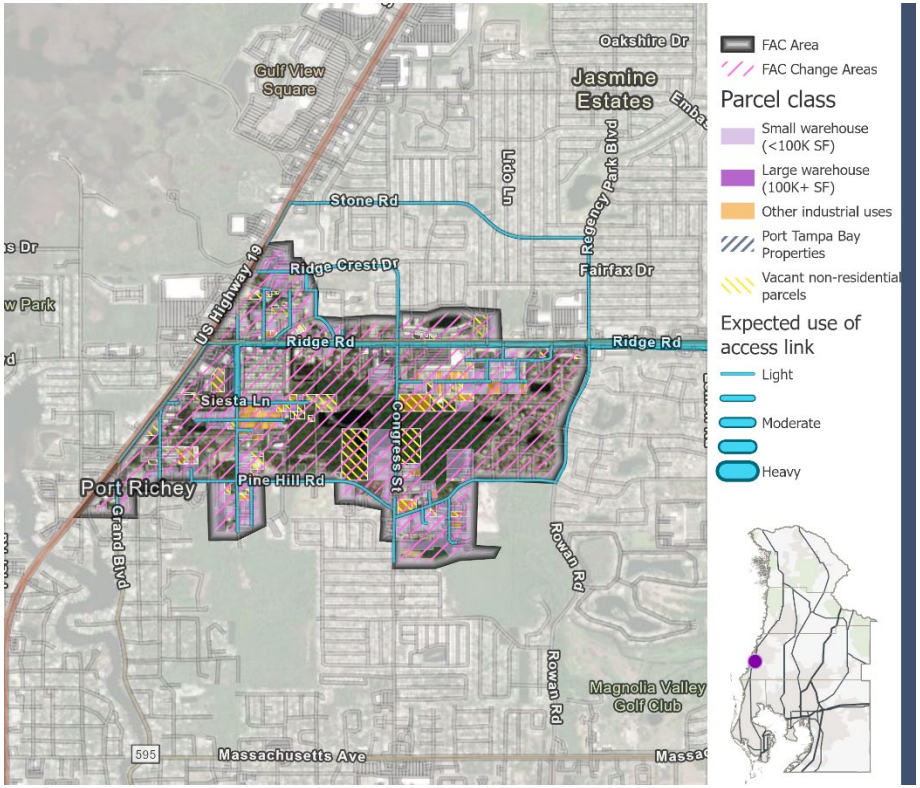


Figure 41 Port Richey FAC

Table 29 Port Richey FAC Access Needs

Facility	Role
Ridge Rd	Access to SR-589
Congress St	North-South connectivity within the FAC
Leo Kidd Ave	

Tampa Bay Regional Airport

The Tampa Bay Regional Airport FAC is located southeast of Brooksville at the Tampa Bay Regional Airport and Technology Center. There is a cluster of small warehouses on the north side of the airport, some of which offer direct airfield access. To the west of the airport is a collection of large, developable sites which are planned for development. Existing businesses range from manufacturing and machining to building supplies to electronics, medical equipment, and more.

This FAC was previously designated the “Hernando Airport FAC,” but has been renamed to reflect the economic development focus of the Tampa Bay Regional Airport and Technology Center.

Status: Established	**Intensity Level:** Medium
Intermodal Connections	CSX Lykes Spur; Tampa Bay Regional Airport
984k sq ft Distribution / Warehousing	1.8K Daily Truck Trips
558K sq ft Other Industrial	
Jobs	146 Distribution and E-Commerce; 40 Transportation and Logistics; 10 Local Products and Services
Dominant Future Land Uses	Planned Development (94%)

Strategic Economic Development areas	Multiple sites	Vacant Acres
		462

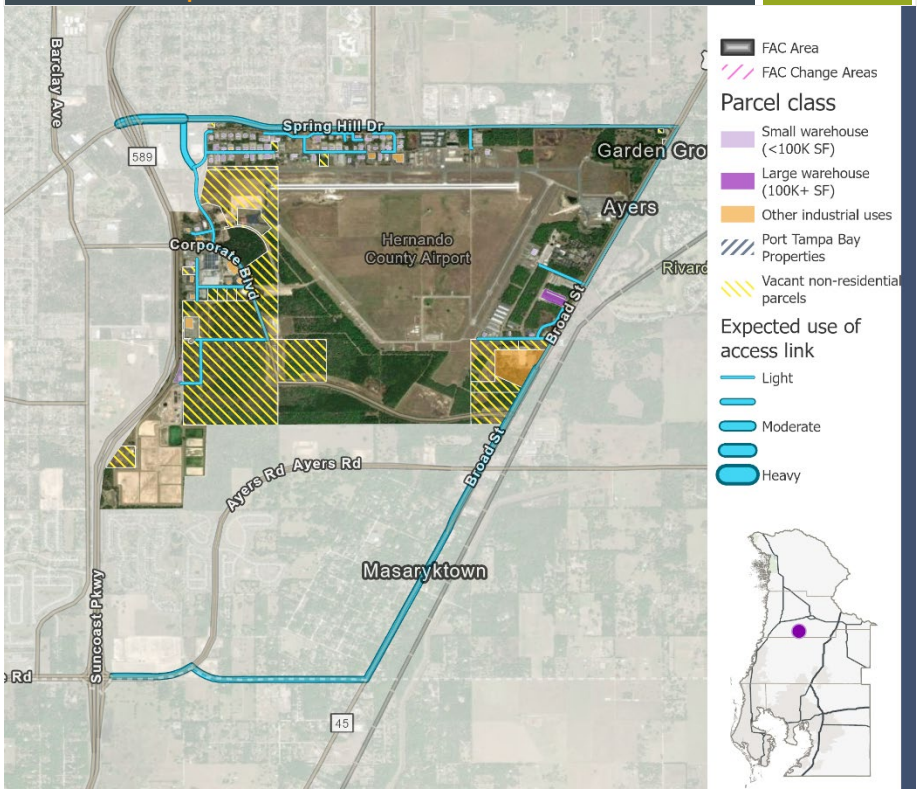


Figure 42 Tampa Bay Regional Airport FAC

Table 30 Tampa Bay Regional Airport FAC Access Needs

Facility	Role
Spring Hill Rd	Access to SR-589
Broad Street	Access to eastern sites of the FAC
Corporate Blvd	Access to wester sites of the FAC

West Pasco Industrial

The West Pasco Industrial FAC consists primarily of the West Pasco Industrial Park, a collection of small warehouses and light industrial uses in the Odessa area. The tenant mix is very diverse and includes food and beverage warehouses, auto repair, construction firms, telecommunications companies, laboratories, a concrete plant, and more.

No changes to the West Pasco Industrial FAC are proposed.

Status: Established | **Intensity Level:** Medium

Intermodal Connections	Truck Only
1.1M sq ft Distribution / Warehousing	1.1K Daily Truck Trips
414K sq ft Other Industrial	

Jobs	188 Distribution and E-Commerce	34 Transportation and Logistics	0 Local Products and Services

Dominant Future Land Uses	Industrial (67%) Planned Dev (25%)	31 Vacant Acres
Strategic Economic Development areas	None	

Figure 43 West Pacos Industrial FAC

Table 31 West Pasco Industrial FAC Access Needs

Facility	Role
SR-54	Access to SR-589
Success Dr	Primary entrance to the FAC

Zephyrhills Airport

The Zephyrhills Airport FAC is located southeast of Zephyrhills near the intersection of SR-39 with US 301. It consists primarily of the airport itself and surrounding industrial uses. The largest of these include a cluster of cement plants south of the airport and the Zephyrhills bottled water distribution facilities at the western edge of the airport. Other small construction, manufacturing, and distribution companies are located along Chancey Road.

Changes to the boundaries of the Zephyrhills Airport FAC are proposed to acknowledge that most undeveloped lands adjacent to the railroad are designated for industrial future land uses.

Status: Established	**Intensity Level:** Low
Intermodal Connections	CSX Yeoman Subdivision
148K sq ft Distribution / Warehousing	1.4K Daily Truck Trips
256K sq ft Other Industrial	

Jobs	26 Distribution and E-Commerce	23 Transportation and Logistics	4 Local Products and Services

Dominant Future Land Uses	Industrial (48%) Other/Airport (30%)	128

Strategic Economic Development areas	Pasco Ready Sites Program	Vacant Acres

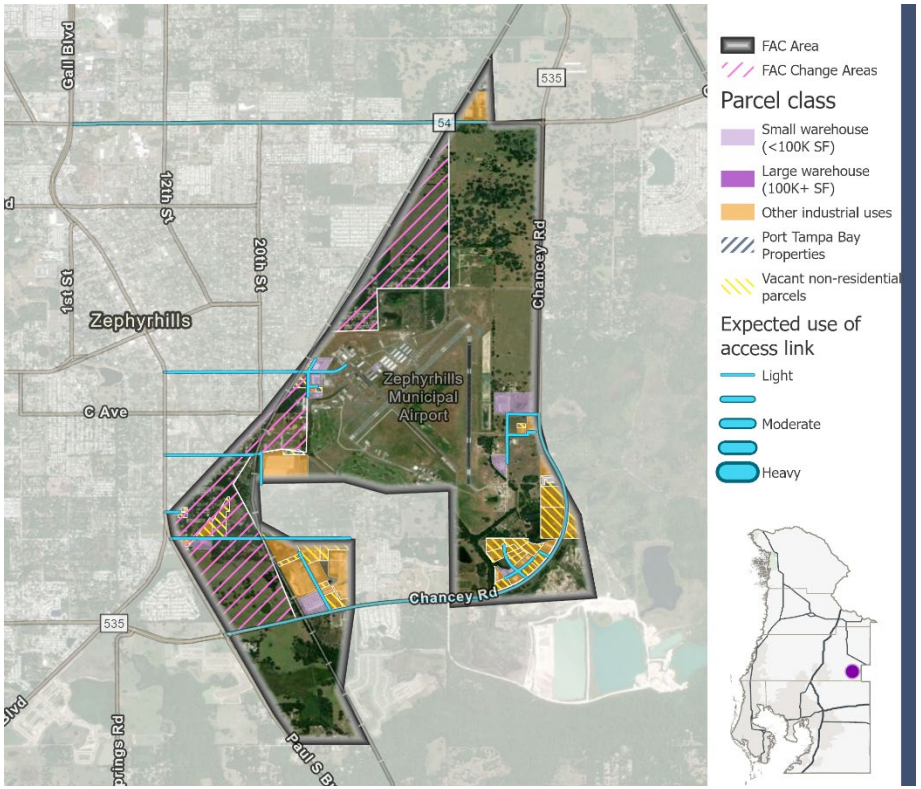


Figure 44 Zephyrhills Airport FAC

Table 32 Zephyrhills Airport FAC Access Needs

Facility	Role
South Ave	Access from airport to US 301
Chancey Road	Access to most industrial parcels in the FAC

EMERGING TRENDS IN FREIGHT ACTIVITY

The Tampa Bay region is a goods movement hub located in a rapidly growing urban megaregion along the I-4 and I-75 corridors. While the region is home to major airports, Florida's largest seaport by gross tonnage, and significant freight rail terminals, distribution centers that generate a high volume of truck trips represent the largest influence reshaping patterns of goods movement in the region. These facilities are likely to continue being added in the region as enterprises adapt to emerging distribution models, cater to a growing number of customers demanding same-day or next-day delivery, and/or promote supply chain resiliency. Strategic recruitment of advanced manufacturing businesses is also likely to affect future truck trip-making as well.

The FACs described in this document are the current and emerging powerhouses of freight activity and truck trip generation in District Seven. While much future development of distribution centers and manufacturing facilities is likely to occur within the current FACs, new centers may emerge over time. There are several key factors that influence where freight-related developments are likely to take place, including:

- Access to customers
- Access to workforce
- Access to transportation infrastructure
- Site size
- Real estate and development costs

With these considerations in mind, growth in freight-related land uses and associated truck trip generation is most likely to be drawn to the I-4 corridor, as has been the case historically. The demand for large sites with easy Interstate highway access implies the potential for strong growth in the Mango and East Plant City FACs, but additional distribution centers could be built outside of current FACs. The I-4 interchanges at McIntosh Road and Branch Forbes Road offer opportunities for highway access from large nearby parcels.

Other potential growth areas outside the I-4 corridor are in locations with strong access to both the Tampa Bay region as well as neighboring metropolitan areas. Locations in eastern Pasco and Hernando Counties can offer access to the Orlando metropolitan area as well as smaller population centers to the north (The Villages and Ocala). Meanwhile, as Southwest Florida continues to grow, sites in southern Hillsborough County will offer strategic locations with strong access to Sarasota, Fort Myers, and points south.

CHAPTER 4





Goals, Objectives, & Performance Measures

INTRODUCTION

The goals, objectives, and performance measures identified here for the District Seven Strategic Freight Plan inform how current conditions and the potential impact of future freight improvements are measured. They are necessary to support the policy framework for state and federal investments in Florida's freight transportation system, covering the allocation of resources to various program areas (e.g., safety, preservation, and capacity) through the identification and prioritization of freight needs and freight projects.

To ensure planning consistency, the goals identified for the District Seven Strategic Freight Plan were heavily informed by the statewide goals and measures in the currently adopted Florida Transportation Plan (FTP), the 2024 Freight Mobility and Trade Plan (FMTP24), as well as the federal goals established by the National Multimodal Freight Policy (NMFP) in 49 U.S Code § 70101 and the National Highway Freight Program (NHFP) in 23 U.S Code § 167. They were also influenced by stakeholder input gathered during the stakeholder project kick-off meeting which took place on November 1st, 2023.

At the highest level of statewide transportation policy, the FTP establishes seven interrelated goals that cover the broad scope of needs not only for freight, but transportation broadly across the state. These goals form the foundation for the freight goals identified for this plan, which subsequently inform the objectives and measures:

Table 1 - *Goals for the District Seven Strategic Freight Plan were built upon statewide goals from the 2020 Florida Transportation Plan.*

#	Florida Transportation Plan Goals (2020)	District Seven Strategic Freight Plan Goals (2024)
1	Safety and security for residents, visitors, and businesses	Ensure the safety and security of road users operating in the freight network.
2	Agile, resilient, and quality transportation infrastructure	Maintain and preserve agile, resilient, & quality freight infrastructure
3	Connected, efficient, and reliable mobility for people and freight	Ensure efficient & reliable mobility within the freight network
4	Transportation choices that improve accessibility and equity	Increase transportation choices by enhancing freight connectivity and accessibility
5	Transportation solutions that strengthen Florida's economy	Strengthen freight contributions to the economic development of District Seven
6	Transportation systems that enhance Florida's communities	Provide quality places by minimizing conflicts between freight and non-freight road users and land uses
7	Transportation solutions that enhance Florida's environment	Minimize freight sector externalities on environmental health & sustainability

Further inspiration is taken from the FMTP in developing freight-specific objectives and measures corresponding with the broad, statewide FTP goals, as described in Section 1. Planning consistency is demonstrated in further detail in Section 2. The table series in the section that follows shows the alignment between the FTP goals supported by this plan and the federal goals and objectives outlined in National Multimodal Freight Policy and the National Highway Freight Program.

STRATEGIC FREIGHT PLAN GOALS, OBJECTIVES, & MEASURES

This section puts forward the proposed goals, objectives, and quantitative prioritization metrics for the District Seven Strategic Freight Plan. These objectives and measures take a broad perspective on intermodal freight, including metrics relating to road, rail, sea, and air freight. While these intermodal freight metrics are valuable for a complete and wholistic understanding of goods movements and trends in the district, they are not all immediately relevant to FDOT's responsibility to prioritize and implement surface transportation improvement projects.

***Table 2** - Proposed goals, objectives, and measures for the District Seven Strategic Freight Plan*

Objective	Measure	Type	Data Source
GOAL 1: ENSURE THE SAFETY & SECURITY OF ROAD USERS OPERATING IN THE FREIGHT NETWORK			
Reduce the number of truck crashes and other safety incidents on the rail transportation system	Number of Rail Crashes by Type	Key FDOT Freight Metric – Needs Assessment	Federal Railway Administration *Train Accidents Database*
	Number of Rail Trespassing Events	Contextual Freight Metric	Federal Railway Administration *Casualties and Other Incidents Database*
Eliminate freight transportation-related fatalities and serious injuries	Truck Fatalities Rate	Key FDOT Freight Metric – Prioritization	Signal Four Analytics
	Truck Serious Injuries Rate	Key FDOT Freight Metric – Prioritization	Signal Four Analytics
GOAL 2: MAINTAIN AND PRESERVE AGILE, RESILIENT & QUALITY FREIGHT INFRASTRUCTURE			
Maintain Florida's transportation assets in a state of good repair	Presence of Poor Pavement Condition Segments	Contextual Freight Metric	State Materials Office *Pavement Condition Survey*
	Presence of Structurally Deficient Bridges	Key FDOT Freight Metric – Needs Assessment	Office of Maintenance *Florida Bridge Information Quarterly Reports*
Strengthen infrastructure resilience to weather events	Roads/Railways within Resilience Action Plan Vulnerability Areas	Key FDOT Freight Metric - Prioritization	FDOT Resilience Action Plan
	Hours of Transportation Facility Closure Due to Extreme Weather Events	Contextual Freight Metric	

Objective	Measure	Type	Data Source
	Frequency of Repairs Due to Damage from Extreme Weather	Contextual Freight Metric	
GOAL 3: ENSURE EFFICEINT & RELIABLE MOBILITY WITHIN THE FREIGHT NETWORK			
Improve congestion, bottlenecks, and travel speeds	Truck Average Annual Daily Traffic (AADT)	Key FDOT Freight Metric – Prioritization	FDOT *Traffic Characteristics Inventory*
	Truck Average Travel Time	Key FDOT Freight Metric – Prioritization	HERE Technologies *Travel Time Data*
	Truck Planning Time Index	Key FDOT Freight Metric – Prioritization	HERE Technologies *Travel Time Data*
Increase the reliability and operational efficiency of goods movement	Truck Travel Time Reliability Index	Key FDOT Freight Metric – Prioritization	HERE Technologies *Travel Time Data*
	Truck Hours/Cost of Delay	Key FDOT Freight Metric – Prioritization	HERE Technologies *Travel Time Data*
	Truck Bottlenecks	Key FDOT Freight Metric – Prioritization	FDOT *Traffic Characteristics Inventory*
	Truck Empty Backhauls	Contextual Freight Metric	FDOT *Traffic Characteristics Inventory* (Weight-in-Motion Sites)
	Truck Parking Utilization	Key FDOT Freight Metric – Needs Assessment	Transportation Data and Analytics *Truck Parking Supply Study*
GOAL 4: INCREASE TRANSPORTATION CHOICES BY ENHANCING FREIGHT CONNECTIVITY AND ACCESSIBILITY			
Improve transportation system connectivity for all freight modes	Connectivity to Freight Activity Centers (FAC)	Key FDOT Freight Metric – Needs Assessment and Prioritization	FAC determined by District Seven Strategic Freight Plan
	Workforce Accessibility to FAC	Key FDOT Freight Metric - Prioritization	FAC determined by District Seven Strategic Freight Plan
GOAL 5: STRENGTHEN FREIGHT CONTRIBUTIONS TO THE ECONOMIC DEVELOPMENT OF DISTRICT SEVEN			
Capitalize on emerging freight trends to support job creation and economic development	Commodity Flows by Destination, Quantity, and Mode	Contextual Freight Metric	Freight Analysis Framework 5
	Labor Force Ratio	Key FDOT Freight Metric	Bureau of Labor Statistics *Labor Force Characteristics*

Objective	Measure	Type	Data Source
	Transportation and Warehousing Floor Area	Key FDOT Freight Metric – Prioritization	Florida Department of Revenue (FDOR) *Parcels and Property Tax Assessment Rolls*
	Population Density	Key FDOT Freight Metric	Census Bureau
Align public and private efforts for trade and logistics	Percent of New Warehousing and Transportation Floor Area in FAC	Key FDOT Freight Metric – Prioritization	Florida Department of Revenue (FDOR) *Parcels and Property Tax Assessment Rolls*
	Percent of Industrial Future Land Use in FAC	Key FDOT Freight Metric – Prioritization	Florida Department of Revenue (FDOR) *Parcels and Property Tax Assessment Rolls*
GOAL 6: PROVIDE QUALITY PLACES BY MINIMIZING CONFLICTS BETWEEN FREIGHT AND NON-FREIGHT ROAD USERS AND LAND USES			
Align freight investments with community vision	Truck AADT by Freight Roadway Design Consideration (FRDC) Context Area and FDOT Context Classification	Key FDOT Freight Metric – Prioritization	• FDRC determined by District Seven Strategic Freight Plan • Roadway Characteristics Inventory (feature 126) • FDOT *Traffic Characteristics Inventory*
Reduce conflicts between trucks and other roadway users to provide safe mobility for all road users	Truck Crash Rate by FDRC Context Area and FDOT Context Classification	Key FDOT Freight Metric – Prioritization	• FDRC determined by District Seven Strategic Freight Plan • Roadway Characteristics Inventory (feature 126) • Signal Four Analytics
GOAL 7: MINIMIZE FREIGHT SECTOR EXTERNALITIES ON ENVIRONMENTAL HEALTH & SUSTAINABILITY			
Reduce freight transportation's impact on water, critical lands, and habits	Flooding Events Related to Stormwater Runoff	Key FDOT Freight Metric – Needs Assessment	Federal Emergency Management Administration *National Flood Hazard Layer*
	Percent of Critical Environmental Lands in Freight Activity Centers	Contextual Freight Metric	

Objective	Measure	Type	Data Source
Decrease freight-transportation related air quality pollutants and greenhouse gas emissions	Air Pollutant and Greenhouse Gas Emissions	Key FDOT Freight Metric	Tampa Bay Regional Planning Model
Increase the energy efficiency of transportation	Percentage of Freight Traffic on Designated Alternative Fuels Corridors	Key FDOT Freight Metric	Federal Highway Administrative *Alternative Fuels Corridors*
	Number of Alternative Fueling Stations Within One Mile of Roadway	Key FDOT Freight Metric	United States Department of Energy *Alternative Fuels Data Center*
	GHG Emissions per Ton Mile	Key FDOT Freight Metric	Tampa Bay Regional Planning Model
	Share of Freight Vehicle Fleet Using Alternative Fuels	Key FDOT Freight Metric	United States Department of Energy *Alternative Fuels Data Center*

PLANNING CONSISTENCY WITH STATE AND FEDERAL PLANS

This section demonstrates planning consistency between the proposed goals for the District Seven Strategic Freight Plan and other important regional, state, and federal plans. This review is undertaken to ensure there are no blind spots that other plans have covered which are not being addressed by this revision to the District Seven plan. This is a high-level review intended to show general alignment. Although specific objectives and measures from these other plans may have informed the proposed objectives and measures for this plan, detailed metrics from those plans are not presented here.

The plans and federal statutes of the United States Code (U.S.C.) included in this consistency review include:

- Florida Transportation Plan (2020)
- FDOT Freight Mobility and Trade Plan (2024)
- National Multimodal Freight Policy (49 U.S.C. § 70101)
- National Highway Freight Program (23 U.S.C. § 167)

	FDOT District Seven Strategic Freight Plan Goals						
	Safety and Security	Agile, Resilient, & Quality Infrastructure	Efficient & Reliable Mobility	Transportation Choices	Economic Development	Quality Places	Environmental Health & Sustainability
FLORIDA FREIGHT MOBILITY AND TRADE PLAN 2024 OBJECTIVES							
Leverage data and technology to improve freight system safety and security	✓						
Create a more resilient multimodal freight system to prepare for, respond to, and recover from disruption		✓					
Ensure the Florida freight system is in a state of good repair		✓					
Reduce congestion, improve reliability, and prepare for shifts in cargo flows with proactive and innovative planning			✓				
Remove institutional, policy, and funding bottlenecks to improve operational efficiencies in supply chains			✓				
Improve first and last mile connectivity for all freight modes				✓			
Continue to forge/strengthen partnerships with public and private sectors to improve trade, logistics, and workforce development					✓		
Increase freight-related regional and local transportation planning and land use coordination						✓	
Reduce freight impacts on Florida's environment by considering local air pollution and wildlife habitats							✓

	FDOT District Seven Strategic Freight Plan Goals						
	Safety and Security	Agile, Resilient, & Quality Infrastructure	Efficient & Reliable Mobility	Transportation Choices	Economic Development	Quality Places	Environmental Health & Sustainability
DISTRICT SEVEN REGIONAL STRATEGIC FREIGHT PLAN OBJECTIVES							
Reduce the number of truck crashes and other safety incidents on the transportation system	✓						
Eliminate freight transportation-related fatalities and serious injuries	✓						
Maintain Florida's transportation assets in a state of good repair		✓					
Strengthen infrastructure resilience to weather events		✓					
Improve congestion, bottlenecks, and travel speeds			✓				
Increase the reliability and operational efficiency of goods movement			✓				
Improve transportation system connectivity for all freight modes				✓			
Capitalize on emerging freight trends to support job creation and economic development					✓		
Align public and private efforts for trade and logistics					✓		
Align freight investments with community vision						✓	
Reduce conflicts between trucks and other roadway users to provide safe mobility for all road users						✓	
Reduce freight transportation's impact on water, critical lands, and habits							✓
Decrease freight-transportation related air quality pollutants and greenhouse gas emissions							✓
Increase the energy efficiency of transportation							✓

	FDOT District Seven Strategic Freight Plan Goals						
	Safety and Security	Agile, Resilient, & Quality Infrastructure	Efficient & Reliable Mobility	Transportation Choices	Economic Development	Quality Places	Environmental Health & Sustainability
NATIONAL MULTIMODAL FREIGHT POLICY GOALS (49 U.S.C. § 70101)							
To identify infrastructure improvements, policies, and operational innovations that: • Strengthen the contribution of the National Multimodal Freight Network (NMFN) to the economic competitiveness of the United States • Reduce congestion and eliminate bottlenecks on the NMFN • Increase productivity, particularly for domestic industries and businesses that create high-value jobs		✓	✓		✓	✓	
To improve the safety, security, efficiency, and resiliency of multimodal freight transportation	✓	✓	✓	✓			
To achieve and maintain a state of good repair on the NMFN		✓					
To use innovation and advanced technology to improve the safety, efficiency, and reliability of the NMFN	✓	✓			✓		✓
To improve the economic efficiency and productivity of the NMFN			✓	✓	✓		
To improve the reliability of freight transportation		✓	✓	✓			
To improve the short- and long-distance movement of goods that: • Travel across rural areas between population centers • Travel between rural areas and population centers • Travel from the Nation's ports, airports, and gateways to the NMFN	✓	✓	✓	✓	✓	✓	
To improve the flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to increase the ability of States to address multimodal freight connectivity				✓	✓	✓	
To reduce the adverse environmental impacts of freight movement on the NMFN		✓	✓				✓
To pursue the goals described in this subsection in a manner that is not burdensome to State and local governments	✓	✓	✓	✓	✓	✓	✓

	FDOT District Seven Strategic Freight Plan Goals						
	Safety and Security	Agile, Resilient, & Quality Infrastructure	Efficient & Reliable Mobility	Transportation Choices	Economic Development	Quality Places	Environmental Health & Sustainability
NATIONAL HIGHWAY FREIGHT PROGRAM GOALS (23 U.S.C. § 167)							
To invest in infrastructure improvements and operational improvements that strengthen economic competitiveness, reduce congestion, reduce the cost of freight transportation, improve reliability, and increase productivity	✓	✓	✓	✓	✓		
To improve the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas	✓	✓	✓	✓			
To improve the state of good repair of the National Highway Freight Network		✓					
To use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Highway Freight Network	✓	✓	✓	✓			
To improve the efficiency and productivity of the National Highway Freight Network			✓	✓	✓		
To improve the flexibility of states to support multistate corridor planning and the creation of multistate organizations to increase the ability of states to address highway freight connectivity				✓	✓	✓	
To reduce the environmental impacts of freight movement on the National Highway Freight Network		✓	✓				✓

CHAPTER 5





Freight Trends & Conditions

INTRODUCTION

The freight network in District Seven is comprised of various modal facilities used for the transport of goods and commodities throughout the Tampa Bay Region and beyond. This includes roadways, rail lines, waterways, and pipelines that support the major port and airport terminal facilities.

This chapter addresses the recent trends and current conditions for freight facilities and movements in District Seven across truck, rail, air-borne, and water-borne modes. It addresses commodity characteristics, freight volumes, flows, imbalances, and safety issues which will help inform the needs identification process. This chapter concludes with an exploration of freight grants and application criteria which this Strategic Freight Plan update may help support.

TRUCK TRANSPORTATION CHARACTERISTICS

Trucks serve as the primary mode of transporting goods, offering unparalleled flexibility and accessibility compared to other freight modes, such as rail, sea, and air. They can carry a wide array of goods, ranging from high-value commodities like electronics to bulk commodities, such as gravel, grains, and gasoline. Particularly suited for short to medium-distance haulage and last-mile delivery, trucks have proven indispensable in meeting the evolving demands of modern supply chains. According to data from the Bureau of Transportation Statistics (BTS), trucks moved a greater proportion of high-value, time-sensitive commodities than any other mode in 2023. Trucks accounted for the largest share of freight transportation in the country, both in terms of tonnage (12.1 billion tons or 68%) and value ($12.2 trillion or 75%) in 2023. Moreover, projections indicate significant growth in truck tonnage and value, expected to increase by 45% and 73%, respectively, from 2023 to 2050, underscoring the enduring importance of truck transportation in the future of logistics and commerce.[1]

In 2015, with passage of the Fixing America's Surface Transportation (FAST) Act, Congress recognized the national importance of truck freight movement by directing the Federal Highway Administration (FHWA) to designate the National Highway Freight Network (NHFN). Its importance was affirmed with the passage of the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law (BIL), in 2021. The NHFN is comprised of the most critical highway portions of the U.S. freight transportation network as well as those connecting to intermodal freight transportation facilities and freight generators. Federal resources and policies are directed to improving the performance of this system to strengthen the economic competitiveness with safe and reliable supply chains connecting producers, shippers, and consumers in domestic foreign markets.[2]

Florida plays a pivotal role in the national freight strategy as a crucial gateway for goods entering and exiting the United States, connecting the southeastern region with other domestic and international markets. Supporting the vision established in the National Freight Strategic Plan (NFSP), is a network of roadways identified as the NHFN. Within the State of Florida, the Strategic Intermodal System (SIS)[3] designates the network of intermodal facilities that are of critical importance to the state's economy and mobility. District Seven encompasses key transportation corridors vital to the NHFN, including I-75 and I-4. Moreover, the SIS comprises additional, high-priority transportation facilities, such as I-175, I-275, I-375, and more, depicted in **Figure 1**.

Comprised of multiple corridor types and designations, the NHFN includes 153 miles of roadways in the Tampa Bay Region. In addition

[1] https://data.bts.gov/stories/s/Moving-Goods-in-the-United-States/bcyt-rqmu/

[2] USDOT Freight Strategic Plan Vision. (https://www.transportation.gov/sites/dot.gov/files /2020-09/NFSP_execsum_508.pdf)

[3] The SIS is Florida's high priority network of transportation facilities important to the state's economy and mobility, established by the Governor and Legislature in 2003 to focus the state's resources. The SIS is the state's highest priority for transportation capacity investments and a primary focus for implementing the state's long range transportation vision and policy plan. (https://www.fdot.gov/planning/systems/sis)

to the interstate highways in District Seven designated as part of the NHFN Primary Highway Freight System, Causeway Blvd and US 41, connecting Hookers Point and Port Redwing, are designated as Critical Urban Freight Corridors. This corridor designation is for roads in urbanized areas that provide a connection to the Primary Highway Freight System and major port and transportation facilities. A request to add US 41 north of SR 60 to Interstate 4 and SR 60 from US 41 to Interstate 75 as Critical Urban Freight Corridors was submitted to FHWA and their incorporation into the NHFN is still pending.

Regional Roadway Network

The Tampa Bay Regional Freight Network is categorized to better reflect the purpose and nature of freight use locally. This local categorization can help to balance the needs of freight shippers and local travelers as each interacts with adjacent land-uses for determining mobility and livability priorities. **Table 1** provides a general overview of the roadway network and is supported by additional details below. **Figure 2** depicts the freight roadway network along with the rail, waterway and pipeline facilities, and airport and seaport terminals in the Tampa Bay Region.

Table 1 *- Freight Network Characteristics*

Freight Network Designation	Number of Miles
Limited Access Roadways	256
Regional Freight Mobility Corridors	472
Freight Distribution Routes	1,068
Freight Activity Streets	134
Total	1,930

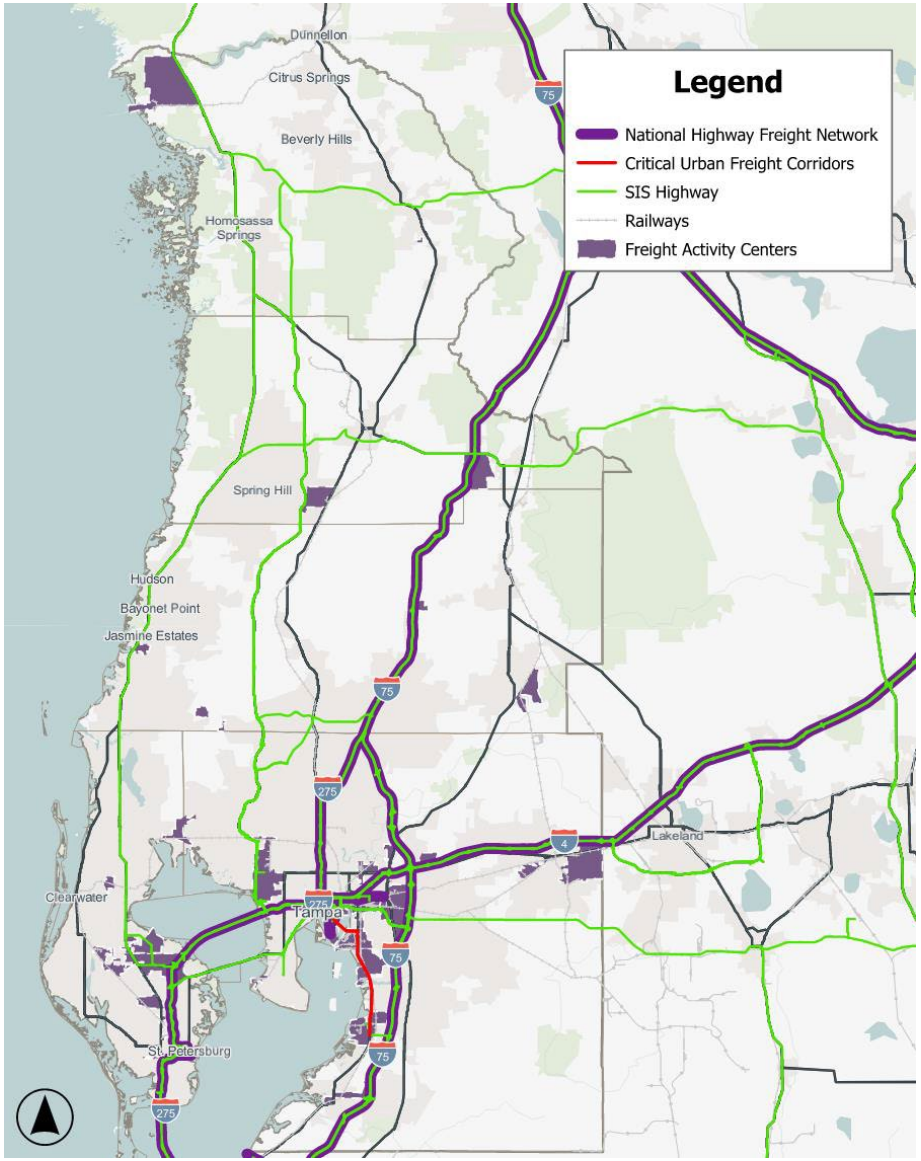


Figure 1 – *National Highway Freight Network and Strategic Intermodal System Network in FDOT District Seven*

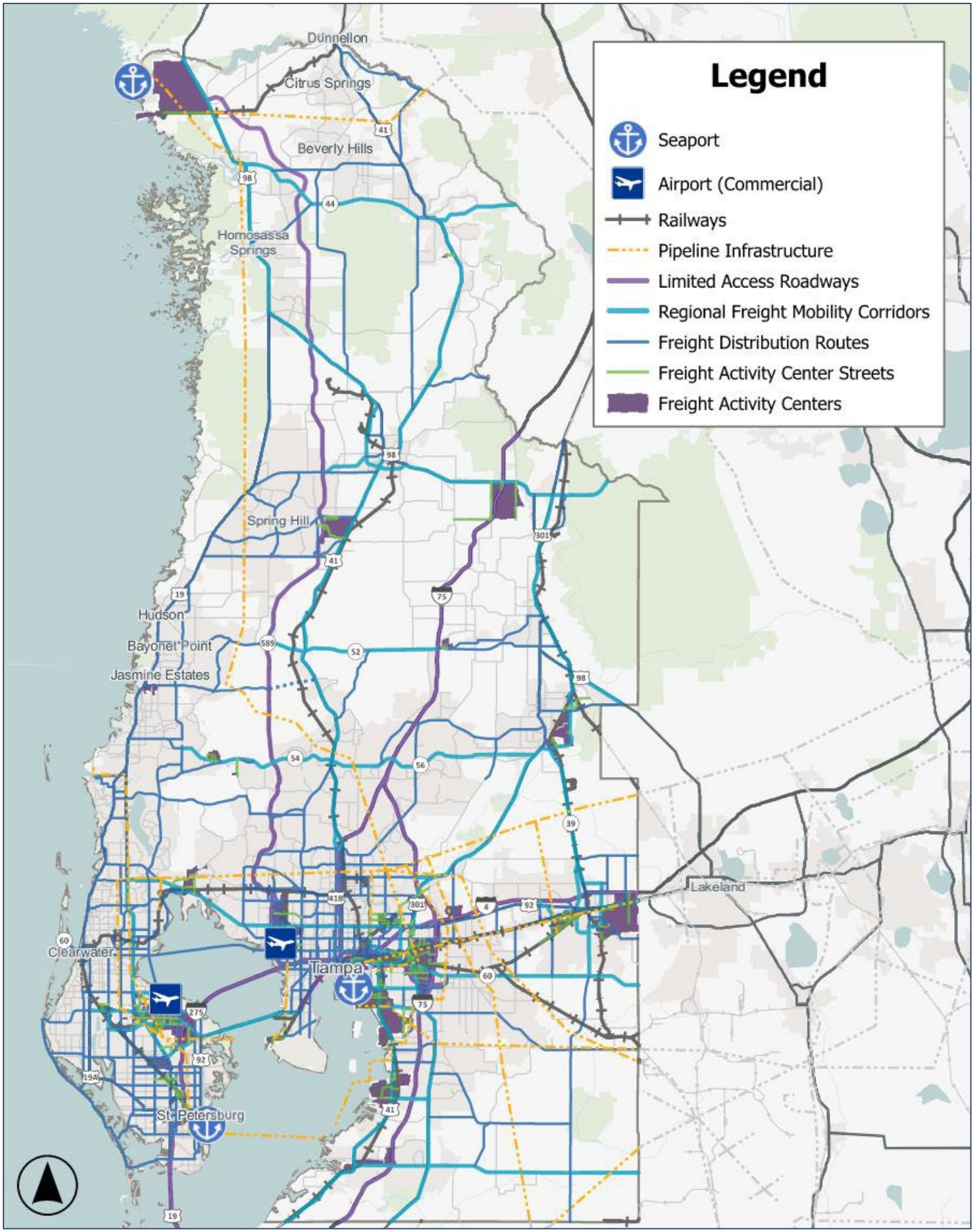


Figure 2 *– Regional Freight Transportation Network*

Limited Access Facilities provide uninterrupted flows for high volumes of traffic and serve as primary trade corridors connecting the Tampa Bay region to the rest of the state and country. These limited access facilities are part of the SIS and include all interstate highways and tolled roadways within the Tampa Bay region. These facilities include the interstate and expressway facilities in the region. A recent addition to the Limited Access Facility network is the I-4/Selmon Expressway Connector, which provides direct access between I-4 and major freight terminals at the Port of Tampa with dedicated truck lanes.

Regional Freight Mobility Corridors provide high-capacity connections between freight activity centers and limited access facilities. These facilities carry long-haul truck trips and high volumes of truck traffic. Regional freight mobility corridors serve as a vital part of the freight roadway network and are a subset of the freight distribution routes. All of the regional freight mobility corridors in the Tampa Bay region also serve as important corridors for commuters traveling to major employment centers.

Freight Distribution Routes include state roadways and other truck routes designated in local ordinances at the county and municipal levels. Freight distribution routes distribute truck traffic from regional freight mobility corridors to local delivery areas. By law, trucks must remain on freight distribution routes until they reach the closest point to their final destination before turning on to local streets for delivery. The freight distribution routes provide an adequate network for trucks to deliver goods, while also minimizing truck traffic on other local roads within populated areas.

Freight Activity Center Streets are local and collector streets that provide direct access to freight activity centers and other streets located within the boundaries of a freight activity center. Their primary purpose is to provide truck circulation within industrial areas and provide direct access to destinations within freight activity centers. These streets often are the "last link" to a freight destination and thus are an important part of the freight roadway network.

Collectively, the Regional Freight Network roadways serve as critical facilities for freight movement, with significant Average Annual Daily Traffic (AADT) and Average Annual Daily Truck Traffic (AADTT) volumes, facilitating the efficient transportation of goods throughout the state and beyond. Detailed traffic patterns and infrastructure utilization is presented in **Figure 3**.

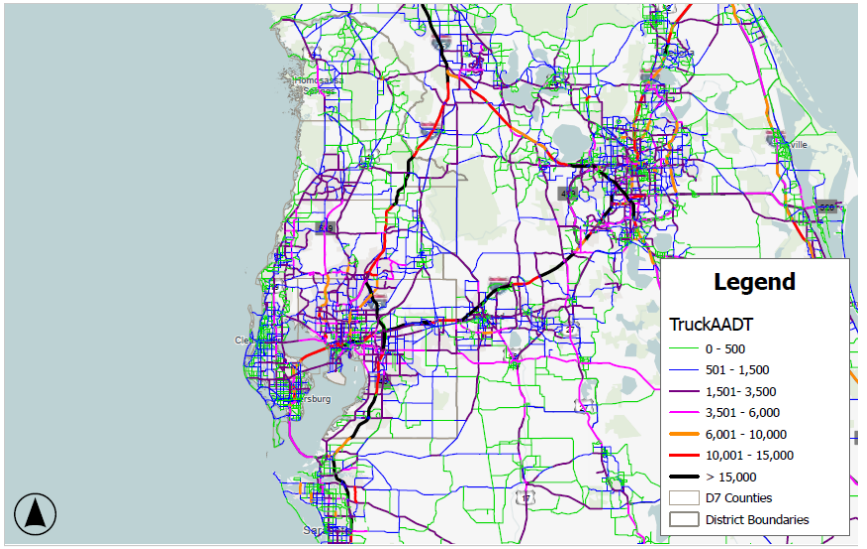


Figure 3 – *AADT and AADTT of truck traffic on FDOT District Seven roads*

Freight Trends and Conditions

Understanding how goods are moved around the state and within District Seven is crucial for planning freight infrastructure investments. Based on analysis using Replica[4], 94% of freight trips originating in District Seven and 93% of the freight trips ending in District Seven stayed within the district for the entire trip (**Table 2**). Hillsborough County is the most frequent origin destination for intra-district freight truck trips (**Table 3**).

[4] Replica is a one-stop platform for recent, multimodal, and network-link level trip data, with custom-zonal analysis and traveler demographics. It includes more than a dozen recent datasets (including big data) and validates outputs against public and 3rd party observations. https://www.replicahq.com/

Table 2 – *Freight truck trips by origin district and destination district*[5]

Origin District	Destination District (Number of Truck Trips)						
	1	**2**	**3**	**4**	**5**	**6**	**7**
1	448,087	567	40	6,702	12,291	1,477	17,932
2	569	265,074	2,552	351	9,318	64	1,719
3	44	2,733	245,038	34	476	6	101
4	6,321	479	15	514,095	5,100	27,265	311
5	14,166	13,192	456	6,760	620,277	504	9,121
6	1,494	85	1	23,866	460	331,549	71
7	15,449	1,755	95	283	10,165	91	405,186

Table 3 – *Freight truck trips by origin county and destination county*[6]

Origin County	Destination County (Number of Truck Trips)					
	Citrus	**Hernando**	**Hillsborough**	**Pasco**	**Pinellas**	**D7 Total**
Hillsborough	154	871	167,157	8,260	7,908	184,350
Pinellas	68	292	7,439	2,642	92,681	103,122
Pasco	198	2,346	9,351	63,978	3,816	79,689
Hernando	795	15,697	1,204	2,887	424	21,007
Citrus	19,301	780	178	266	114	20,639

[5] Replica Spring 2023 Thursday Data (Average weekday in Spring 2023)

[6] Replica Spring 2023 Thursday Data (Average weekday in Spring 2023)

As shown in **Figure 4** and **Figure 5**, freight truck origins and destinations outside of District Seven are primarily in adjacent regions. For trips originating in District Seven and terminating outside of it, District 1 is the most common destination at 3.6%, followed by District 5 at 2.3%. For trips ending in District Seven and originating outside it, District 1 is the most common origin at 4.1%, followed by District 5 at 2.1%.

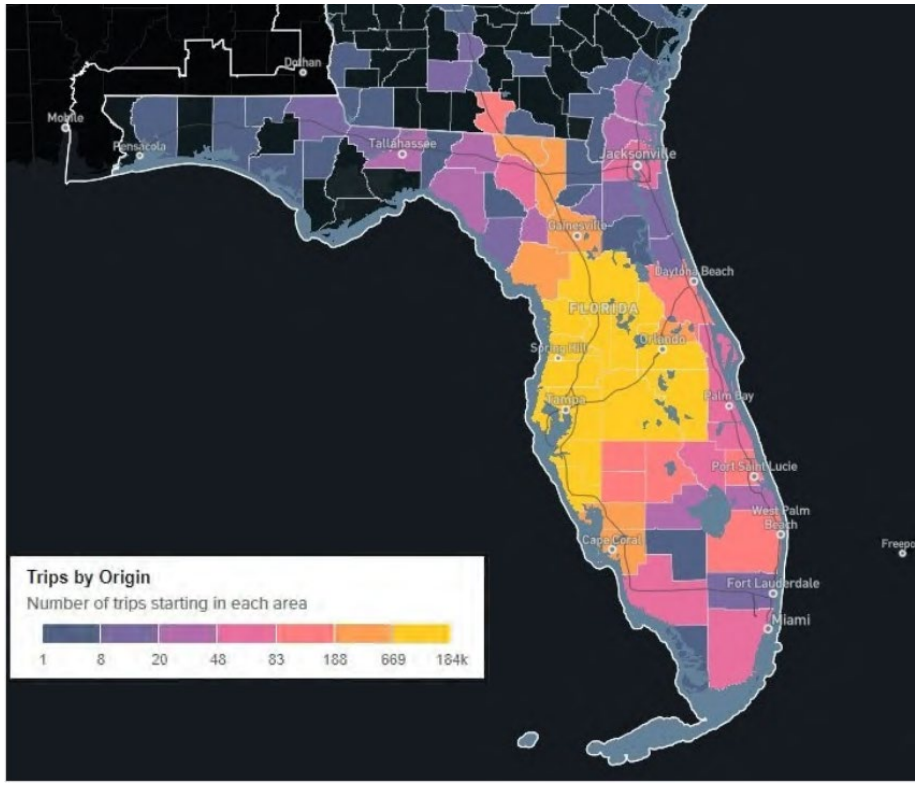


Figure 4 *– Freight truck trips with District Seven destination*[7]

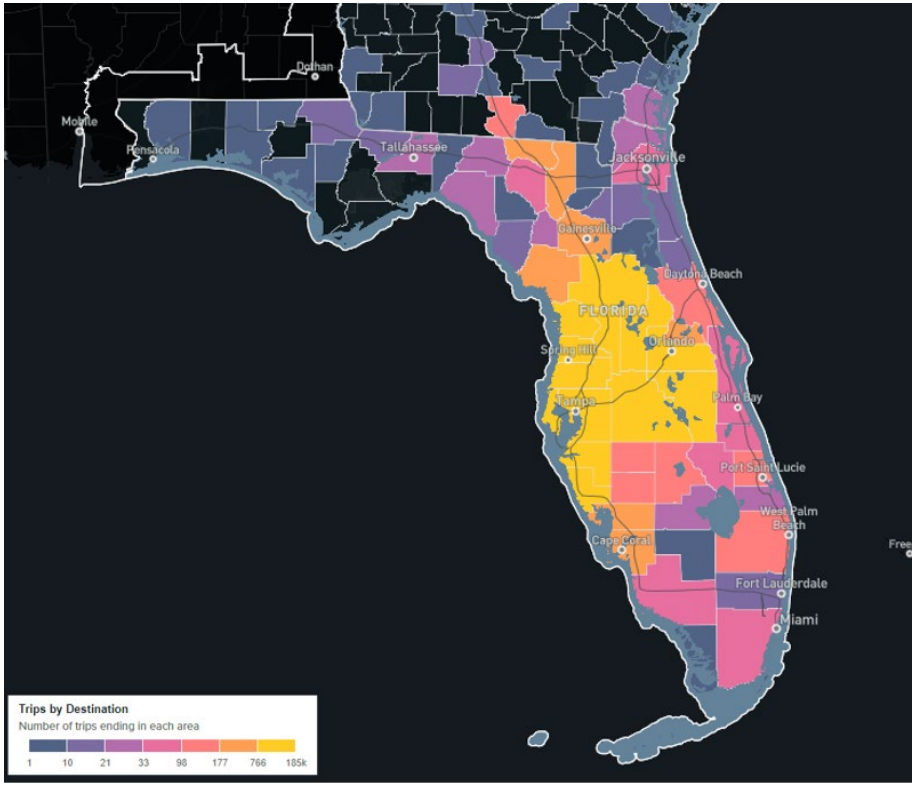


Figure 5 – *Freight truck trips with District Seven origin*[8]

As shown in **Figure 6**, Interstates 4, 75, and 275 are the primary freight routes. Polk County is the most frequent destination outside the district (2.0%) and the most frequent origin outside the district (2.0%).

[7] Replica Spring 2023 Thursday Data (Average weekday in Spring 2023)

[8] Replica Spring 2023 Thursday Data (Average weekday in Spring 2023

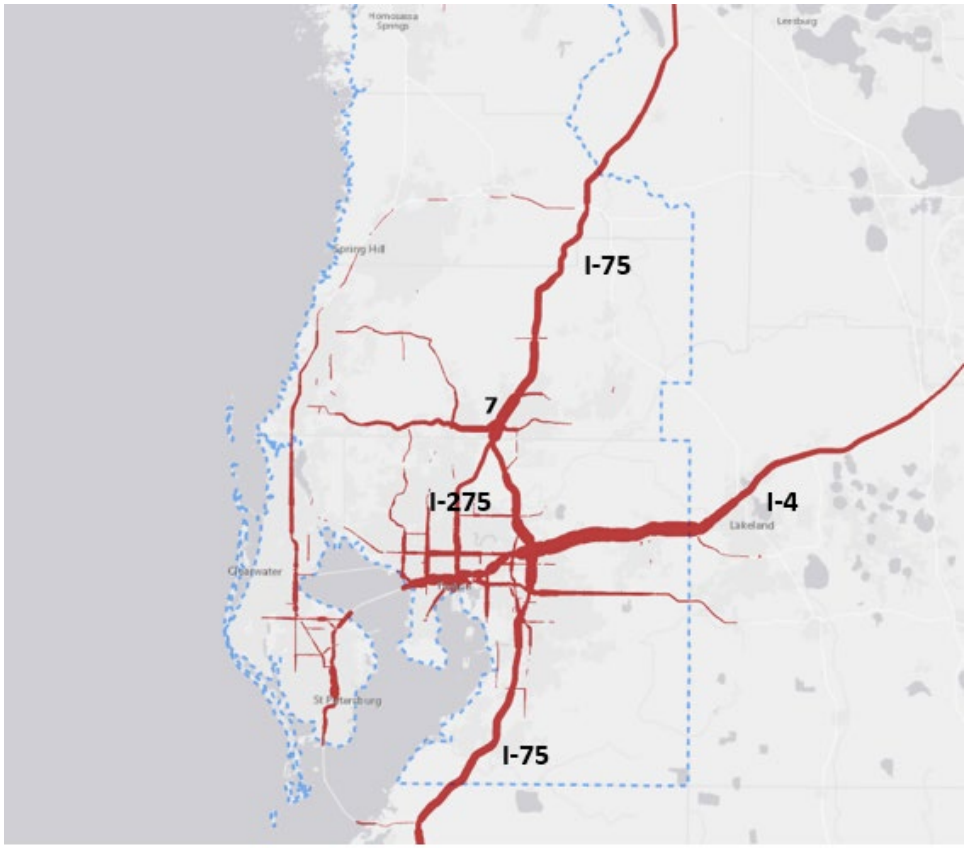


Figure 6 – *Highway distribution of freight truck trips with District Seven destination*[9]

Freight backhaul imbalance is shown in **Table 4** and refers to an inequitable distribution of freight demand and capacity between outbound and inbound routes, leading to operational inefficiencies and heightened costs for carriers and logistics firms. According to data from the Freight Analysis Framework (FAF), the imbalance is generally minimal in trucking, with outbound truck tonnage trailing by only 3% compared to inbound tonnage, albeit with a 19% discrepancy in value. Comparatively, significant imbalances are evident in rail transport, where outbound tonnage lags by 73% (with a 134% discrepancy in value). A detailed analysis of truck empty backhauls, based on the data from 2015 to 2017, as per the Freight Mobility and Trade Plan, reveals a disparity between inbound and outbound freight within the state, with fewer empty trucks entering compared to those leaving.[10] This underscores a domestic trade imbalance concerning freight flow within the state in terms of weight.

Table 4 *– Truck and rail cargo imbalance*

	Truck Cargo (1k tons)	Rail Cargo (1k tons)	Truck Cargo ($M)	Rail Cargo ($M)
Within	40,061	1,312	34,038	327
Outbound	34,476	3,807	50,077	1,036
Inbound	35,473	6,590	59,648	2,428
Imbalance	3%	73%	19%	134%

As shown in **Table 5** and **Table 6**, the relative truck cargo tonnage from Tampa area is lower than Florida overall, while the value of cargo is consistent.

Table 5 – *Comparison of cargo weight in Florida and Tampa area*

	All Modal Cargo (1,000 tons)	Total Truck Cargo (1,000 tons)	% Truck Cargo
Florida Origin	715,736	619,673	87%
Florida Destination	809,308	641,589	79%
Total Florida	**1,525,044**	**1,261,262**	**83%**
Tampa Origin	103,949	74,538	72%
Tampa Destination	112,593	75,535	67%
Total Tampa	**216,542**	**150,072**	**69%**

[9] Replica Spring 2023 Thursday Data (Average weekday in Spring 2023)

[10] FDOT Freight Mobility and Trade Plan Technical Memorandum 3: Performance and Conditions, dated April 2020

Table 6 – *Comparison of cargo value in Florida and Tampa area*

	All Modal Cargo ($M)	Total Truck Cargo ($M)	% Truck Cargo
Florida Origin	749,578	567,693	76%
Florida Destination	933,569	683,816	73%
Total Florida	**1,683,146**	**1,251,509**	**74%**
Tampa Origin	105,977	84,115	79%
Tampa Destination	133,260	93,686	70%
Total Tampa	**239,237**	**177,802**	**74%**

Of all the truck cargo arriving in Tampa, approximately 89% originates from within the state of Florida. Top origins of the remaining 11% include Georgia (2.3 million tons), Texas (830 thousand tons), and Alabama (760 thousand tons). For cargos originating from Tampa by truck, the top export states are Georgia (2.4 million tons), Pennsylvania (770 thousand tons), and Texas (620 thousand tons).

Freight moves most efficiently and economically when the incoming and outgoing freight truck weights are similar. This allows the cost of the trip to be distributed to more cargo, decreasing the price per pound. Comparing tonnage of cargo originating in the Tampa area to cargo tonnage destined for the Tampa area by state identifies opportunities for decreasing trade deficits and lowering the cost per ton of freight moved by truck. This analysis is shown in **Table 7**.

Table 7 – *Truck cargo trade deficit opportunities*

State	Originating at Tampa (1,000 tons)	Destined for Tampa (1,000 tons)	Trade Deficit (1,000 tons)
Alabama	756.23	428.51	(327.72)
Indiana	316.34	100.16	(216.18)
California	433.83	222.92	(210.91)
Texas	829.94	622.94	(207.00)
North Carolina	498.32	298.86	(199.46)
New Jersey	188.72	53.91	(134.81)
Michigan	152.10	55.20	(96.89)
Virginia	276.42	181.33	(95.09)
Arkansas	99.90	14.02	(85.88)
Tennessee	231.97	155.96	(76.01)

The top five commodities originating from and destined for the Tampa area by truck are shown in **Figure 7, Figure 8, Figure 9, and Figure 10**. Nonmetallic mineral products and gasoline are the top two commodities transported by truck that originated in Tampa, while nonmetallic mineral products and gravel are the top two commodities destined for Tampa. In terms of value, mixed freight and electronics are the top two commodities originating in and destined for Tampa.

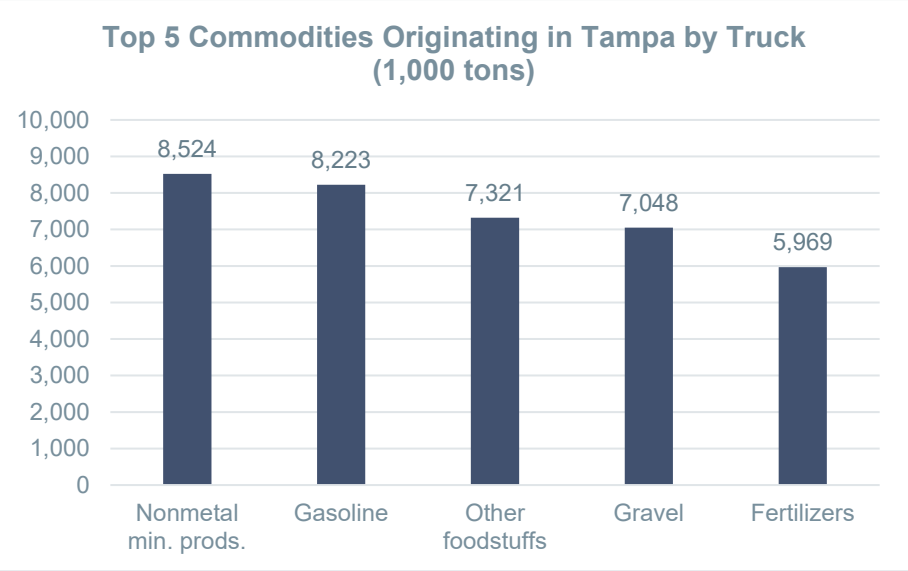


Figure 7 – *Top commodities originating in Tampa by truck (tonnage)*

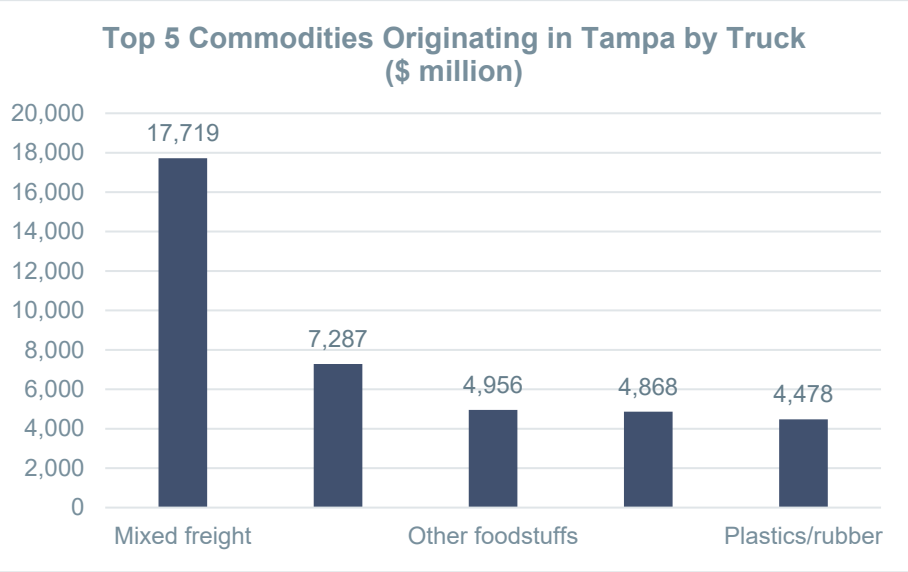


Figure 8 – *Top commodities originating in Tampa by truck (value)*

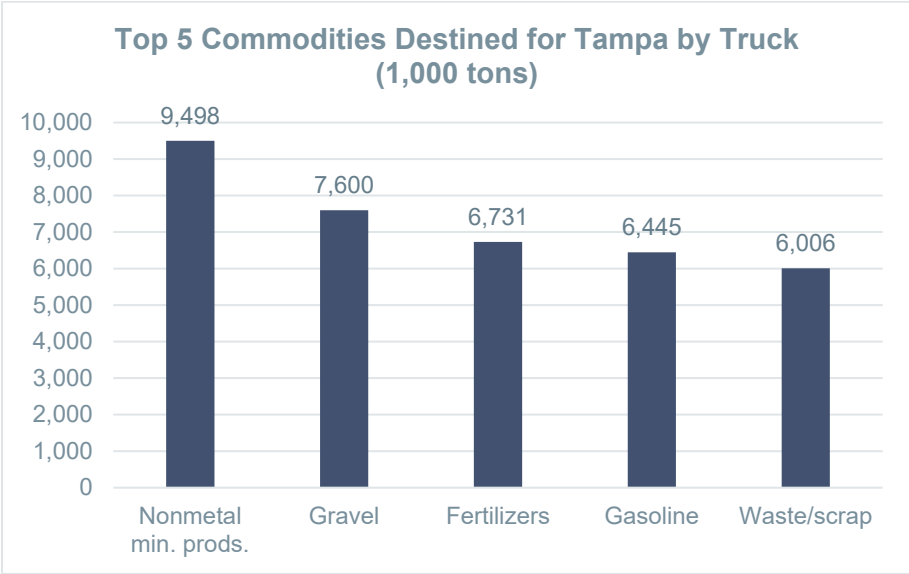


Figure 9 – *Top commodities destined for Tampa by truck (tonnage)*

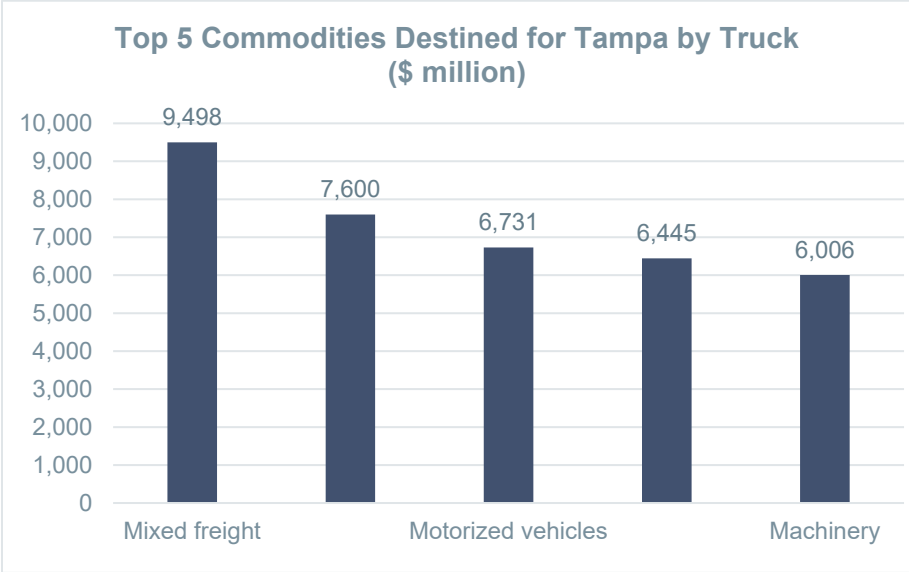


Figure 10 – *Top commodities destined for Tampa by truck (value)*

Supply chain efficiency determines the cost and availability of goods for consumers as well as influencing the location decisions of freight-dependent businesses, which in turn creates job opportunities and economic benefits. Factors influencing those decisions include reliability, cost and travel time. Truck travel time is contingent upon the efficiency of the transportation network, which includes considerations such as delays at bottlenecks, congestion, and crashes. Reliability is measured by the consistency in travel time on each segment. For instance, is the travel time consistently 30 minutes each day (reliable), or does it fluctuate between 30 minutes, 50 minutes, and an hour at different times (unreliable)? The less reliable the travel time, the more trucking firms are compelled to incorporate buffers into their delivery schedules; thereby, diminishing the efficiency of the supply chain and escalating the cost of goods.

The Truck Reliability Index (TRI), which represents the ratio of the 95th percentile travel time to the 50th percentile travel time for trucks, serves as a valuable metric for this evaluation. Similarly, the Planning Time Index 95th Percentile (PTI), which measures the ratio of travel time on the worst day of the month to the free-flow travel time, can be used to assess the efficiency of the segment. For example, a value of 2.5 means that for a one-hour trip in light traffic, 2.5 hours should be planned to assure on-time delivery. Indexes close to 1.00 are desired for both measures. Florida's top 100 bottlenecks on the National Highway System (NHS) based on TRI includes 20 located in District Seven.[11] The 20 segments shown in **Table 8** necessitate additional planning time in the supply chain, ranging from 1.76 to 4.8 times the free-flow travel time, resulting in a freight cost increase of $44.4 million.

The American Transportation Research Institute (ATRI) prepares an annual report of the top truck bottlenecks in the nation.[12] It uses truck position and speed data derived from wireless onboard communications systems used by the trucking industry to analyze more than 300 freight-significant highway locations. In the 2023 report, ATRI ranked the intersection of I-4 and I-275 as the 73rd worst bottleneck in the nation, marking it as the sole Florida location within the top 100.

At-grade crossings on active rail lines can impact reliability for truck freight (**Figure 22** in the Freight Rail Characteristics section). Trains have increased up to three miles in length resulting in longer truck waiting times at these crossings. District Seven has a total of 758 rail crossings. District Seven has 108 rail crossings included as part of the SIS. Fifty-four of these SIS facility crossings being at-grade. At-grade rail-highway crossings are often truck bottlenecks. These locations have a heightened impact on truck reliability and an increased potential for truck-rail collisions.

Due to the size and weight of freight trucks, any crash involving a freight truck and a passenger car has an increased risk for injury or fatality. According to the 2019 Traffic Crash Facts Annual Report, published by the Florida Highway Safety and Motor Vehicle Department, the number of truck-involved crashes decreased by 1.24% and the number of injuries decreased 2.53% for the region (2018-2019), while the number of fatalities increased by 13.3% (**Table 9**).

[11] FHWA Freight Bottleneck Tool using NPRMDS data. https://explore.dot.gov/#/views/FHWAFMMNational/NationalStatsDash?:iid=4

[12] https://truckingresearch.org/2023/02/top-100-truck-bottlenecks-2023/

Table 8 – *District Seven roadway segments ranked by truck reliability index*

Rank (by TRI)	Route	Location	Length (miles)	PTI	TRI	Congestion Cost ($M)[13]
8	I-275 (WB)	US 92 to CR 587	1.1	2.9	2.24	0.3
12	US 19 Alt	Route 693 to Route 184	1.6	3.42	1.95	0.3
20	I-275 (EB)	N Lois Ave to N Himes Ave	1.1	4.80	1.86	1.6
27	US 98	SR 50 to US 301	15.2	2.88	1.80	3.6
32	SR 52 (WB)	I-75 to CR 577	3.2	3.6	1.76	0.7
38	SR 52 (EB)	I-75 to CR 577	3.2	3.72	1.73	0.8
39	SR 52	US 41 to CR 581	9.0	3.13	1.73	1.7
43	I-275 (EB)	US 92 to CR 582	10	2.47	1.72	7.5
46	I-4 (EB)	I-275 to CR 579	9.9	2.09	1.71	6.2
53	US 98 (SB)	W Homosassa Trail to Cypress Blvd	4.9	2.81	1.68	1.1
63	SR 39	I-4 to US 92	1.4	2.25	1.63	0.3
75	I-4 (WB)	Branch Forbes Rd to County Line Rd	8.6	1.97	1.61	6.4
80	US 41	CR 574 to CR 583	9.5	3.44	1.6	0.4
81	US 92	N Parsons Ave to N Wheeler St	10.0	2.92	1.60	1.3
82	US 92	Tampa Bypass Canal to N Branch Forbes Rd	9.9	3.04	1.60	1.5
86	I-75 (SB)	Gibsonton Dr to SR 60	6.8	1.76	1.58	2.4
87	US 301	Rhodine Road to SR 62	18.1	3.07	1.58	2.7
90	SR 52	SR 52 to US 41	3.0	4.16	1.57	1.9
96	US 41	Big Bend Rd to Pendola Point Rd	7.8	2.61	1.57	1.7
99	US 98	W Venable St to Cypress Blvd	8.9	2.64	1.56	2.0

Table 9 – *Freight truck crashes in District Seven*

Year		Citrus	Hernando	Hillsborough	Pasco	Pinellas	Total
2018	Total Crashes	126	196	3,117	582	1,445	5,466
	Fatalities	1	1	15	4	9	30
	Injuries	45	116	935	196	407	1,699
2019	Total Crashes	145	181	3,069	590	1,413	5,398
	Fatalities	4	1	22	5	2	34
	Injuries	44	86	940	221	365	1,656

[13] Congestion Cost is the cost associated with travel time delay plus excess fuel cost.

According to the Federal Motor Carrier Safety Administration (FMCSA) 2021 data, 37% of all fatal crashes, 24% of all injury crashes, and 21% of all property damage only crashes involving large trucks occurred at night (6 pm to 6 am). Driver fatigue and parking on the shoulder of the road or exit ramps are common contributors to these crashes. Truck parking shortages are a national safety concern. With the projected growth in e-commerce and truck traffic, the demand for truck parking will continue to outpace the supply of public and private parking facilities, exacerbating this situation.

Long-term truck parking is necessary for drivers to be able to take mandated hours of service breaks. Unauthorized parking is often found near freight origins, destinations, or truck parking locations that have high rates of utilization, which can be referred to as the spillover effect. An inadequate supply can result in negative consequences, such as fatigued drivers or parking in unsafe locations creating a safety hazard for both truckers and other motorists due to the increased potential for collisions with the parked trucks.

Truck parking locations across the entire state are mapped in **Figure 11**. District Seven has eight public facilities (184 spaces) located at rest areas and weigh stations and 19 private parking facilities (431 spaces), (**Figure 12)**. The 2020 FDOT Statewide Truck Parking Study identified areas of concern by analyzing clusters of unauthorized parking and over-utilized truck parking (**Figure 13**).

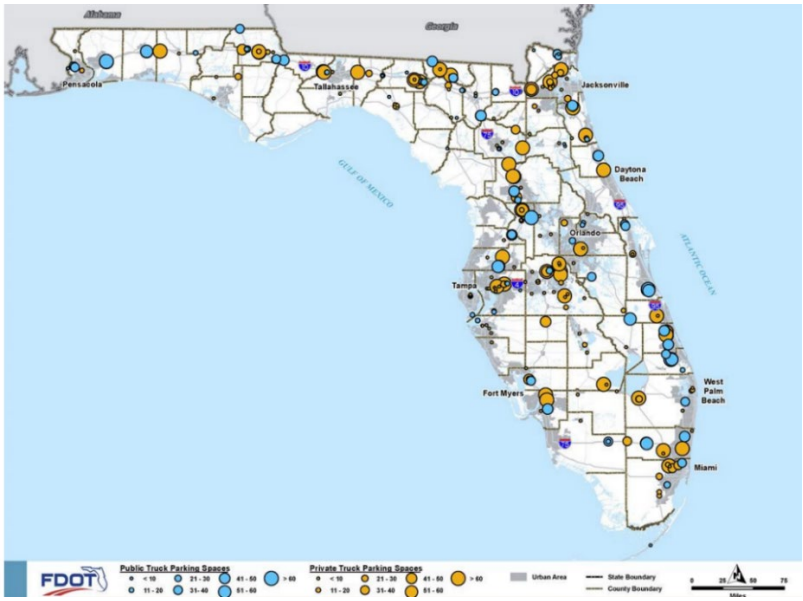


Figure 11 – *Existing truck parking locations across Florida*[14]

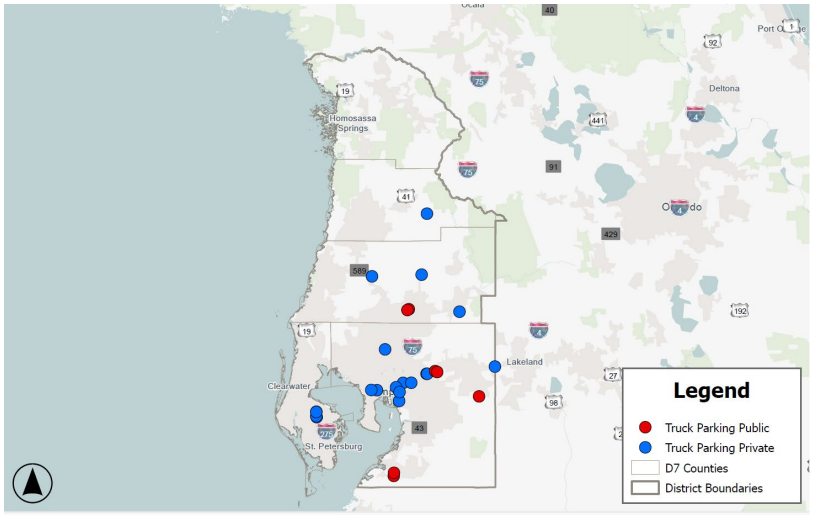


Figure 12 – *Existing truck parking locations in FDOT District Seven*

[14] Screenshot of Figure 5. Supply of Public and Private Truck Parking, 2020 Florida DOT Statewide Truck Parking Study

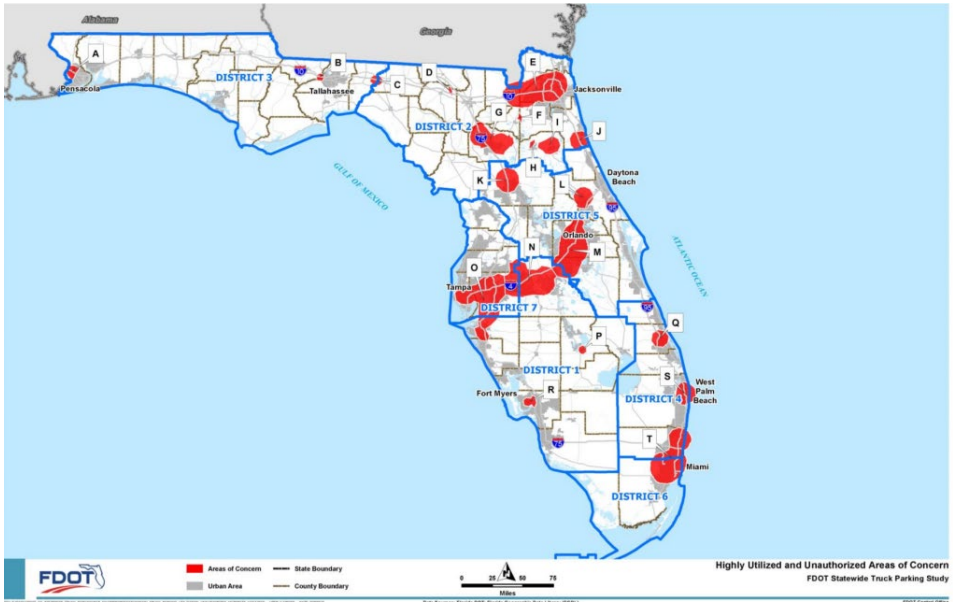


***Figure 13** – Highly utilized and unauthorized truck parking areas across Florida*[15]

Area of Concern "O" and part of Area of Concern "N" are located within District Seven. Area of Concern "N" is centered along I-4 and adjoins Area of Concern "O" that is centered on the I-4, I-75, and I-275 corridors in Tampa. Annually, Area of Concern "O" had 20,793 unauthorized parked trucks and 35,040 over-utilized truck parking spaces, resulting in a shortage of 55,833 spaces. When tiered in the 2020 FDOT Statewide Truck Parking Study, the area ranked second with a volume (55,833 needed) to capacity (342 available) ratio of 163, only 2 below the top-ranking Orlando area. Truck drivers reported the shortage in Tampa resulted in their stopping early up to 45 minutes outside Tampa, creating inefficiencies in the freight supply chain and impacting surrounding communities.

Detailed assessment within Area of Concern "O" identified hotspots as shown in **Figure 14**.[16] Analyzing the area of concern with the unauthorized parking data shown on **Figure 15** resulted in a focus on hotspot O-2 because it is a state-owned facility and because of the potential negative safety impacts caused by trucks using the on and off-ramps of the rest area for truck parking.[17] O-2 is the rest area for Hillsborough County where 981 trucks parked along the northbound rest areas on and off-ramps for 10 hours to meet their hours of service mandated break. In 2021, replacement of the northbound I-75 rest area at mile marker 238 was completed. This construction activities for this project included adding new parking spaces in an effort to address the identified truck parking shortage.

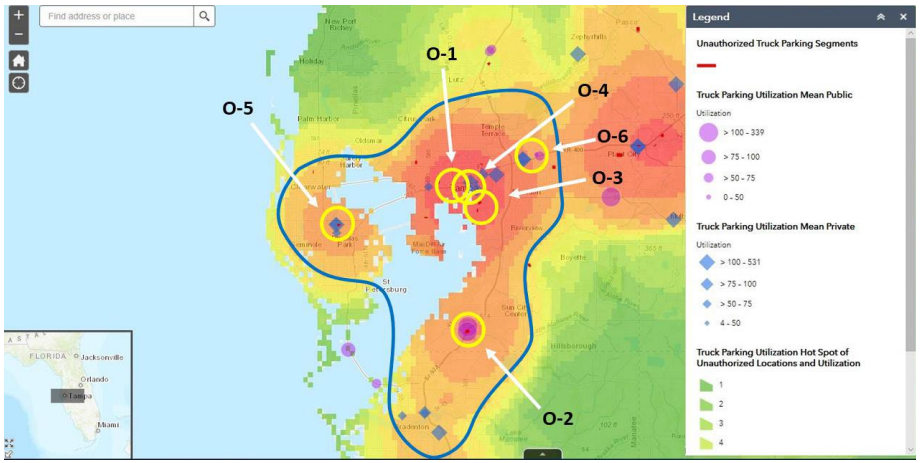


***Figure 14** – Truck parking area of concern O with hotspots16F*

[15] 2020 FDOT Statewide Truck Parking Study, Screenshot of Figure 11
[16] Statewide Truck Parking Study, Figure 43.
[17] Statewide Truck Parking Study, Figure 39

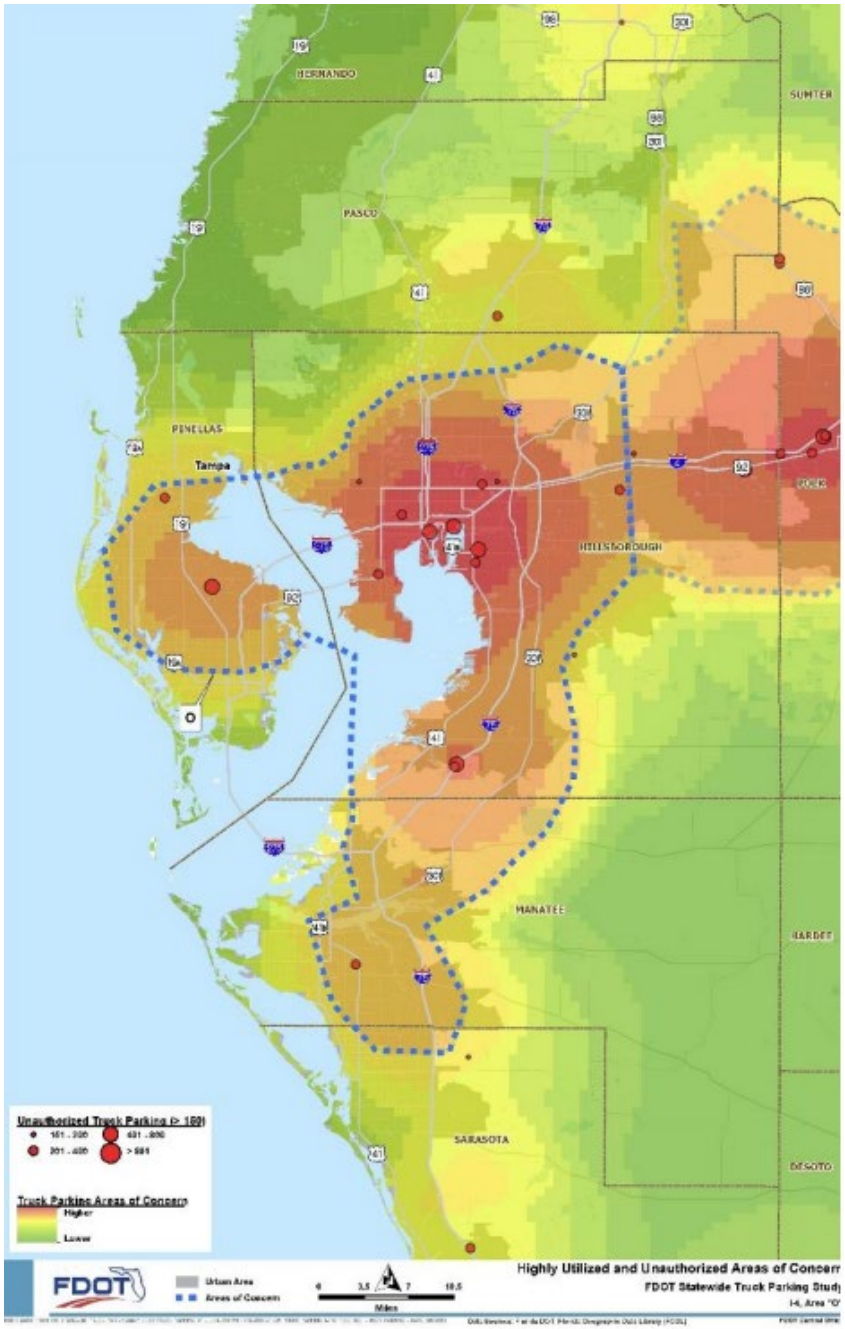


Figure 15 – *Heatmap of unauthorized truck parking in District Seven*

FREIGHT RAIL CHARACTERISTICS

Railroads are an efficient mode for transporting containerized, bulk, and break-bulk cargoes between the region's Freight Activity Centers (FACs), statewide, and national destinations.

Rail Network

The freight railroad network in the Tampa Bay region consists primarily of CSXT mainline tracks serving FACs and other industrial activity areas. CSXT owns and operates nearly 2,900 rail miles across Florida, with more than 350 of those miles serving the Tampa Bay region[18]. Imported and domestic automobiles and Tropicana Orange Juice constitute the commodities transported by CSXT in the study area. In addition to the CSXT lines, there are several short line freight rail operations in Tampa Bay and the surrounding region. The Florida Northern Railroad (FNOR) operates a short line track in Citrus County, serving the Crystal River energy complex in the northern portion of the region. The Tampa Bay regional rail network is shown in **Figure 16**. Highlights of the primary CSXT corridors are listed below.

- The A-Line enters Hillsborough County from Polk County paralleling US 92. This line provides access to the Uceta Yard before passing through Downtown Tampa and continuing through to Port Tampa. The A-Line is also utilized by the Amtrak Silver Star which serves Tampa Union Station. In Plant City, the A-Line connects to the Bone Valley Subdivision, providing connectivity with industrial and mining facilities in southern Hillsborough and Polk counties.
- The S-Line enters the Tampa Bay Region, parallel to US 301 by travelling through eastern Hernando and Pasco counties before crossing the A-Line in Plant City. Turning west and heading through Hillsborough County, the S-Line provides access to Port Facilities on Hookers Point as well as connecting with the Clearwater and Brooksville Subdivisions to serve Pinellas County, Central Pasco, and Central Hernando counties.

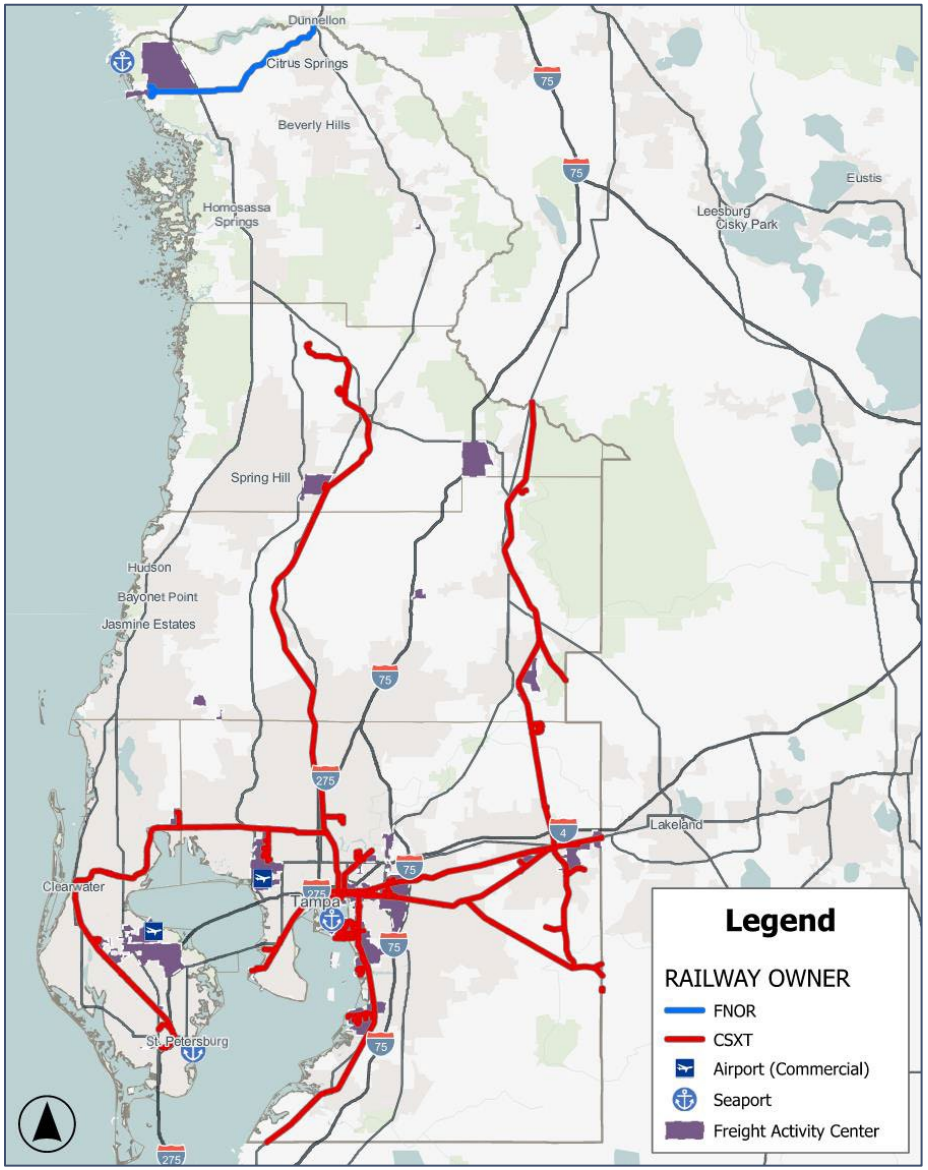


Figure 16 – *Tampa Bay Region Rail Network*

[18] https://www.csx.com/index.cfm/library/files/about-us/state-information/florida/

- The AZA-Line runs south from the A and S lines near US 41 heading south through Hillsborough County with access to Port Redwing and Port Sutton before leaving the region and entering Manatee County.

Designation of the SIS in 2003 included not only the roadways discussed previously, but also intermodal and rail facilities. Shown in Error! Reference source not found. are the rail lines designated as part of the SIS. SIS rail corridors must meet the criteria of being a mainline corridor operated by a Class I or Class II railroad with two or more average daily trains.[19] Additional designations for the SIS include connectors and strategic growth facilities. Connectors are rail lines that connect SIS hubs, ports and terminals with SIS Corridors. In 2016, the FNOR line serving the Crystal River energy complex was designated as a strategic growth corridor following the completion of the SIS Policy Plan update. **Table 10** provides a summary of the rail miles and designations in the Tampa Bay Region.

Table 10 *- Tampa Bay Region Rail Designation and Mileage*

Designation / Owner	Mileage
Total	391.0
By Owner	
CSXT Owned	372.2
FNOR Owned	18.8
SIS Designation	
SIS Corridor	146.9
SIS Connector	7.2
Strategic Growth Corridor	17.9

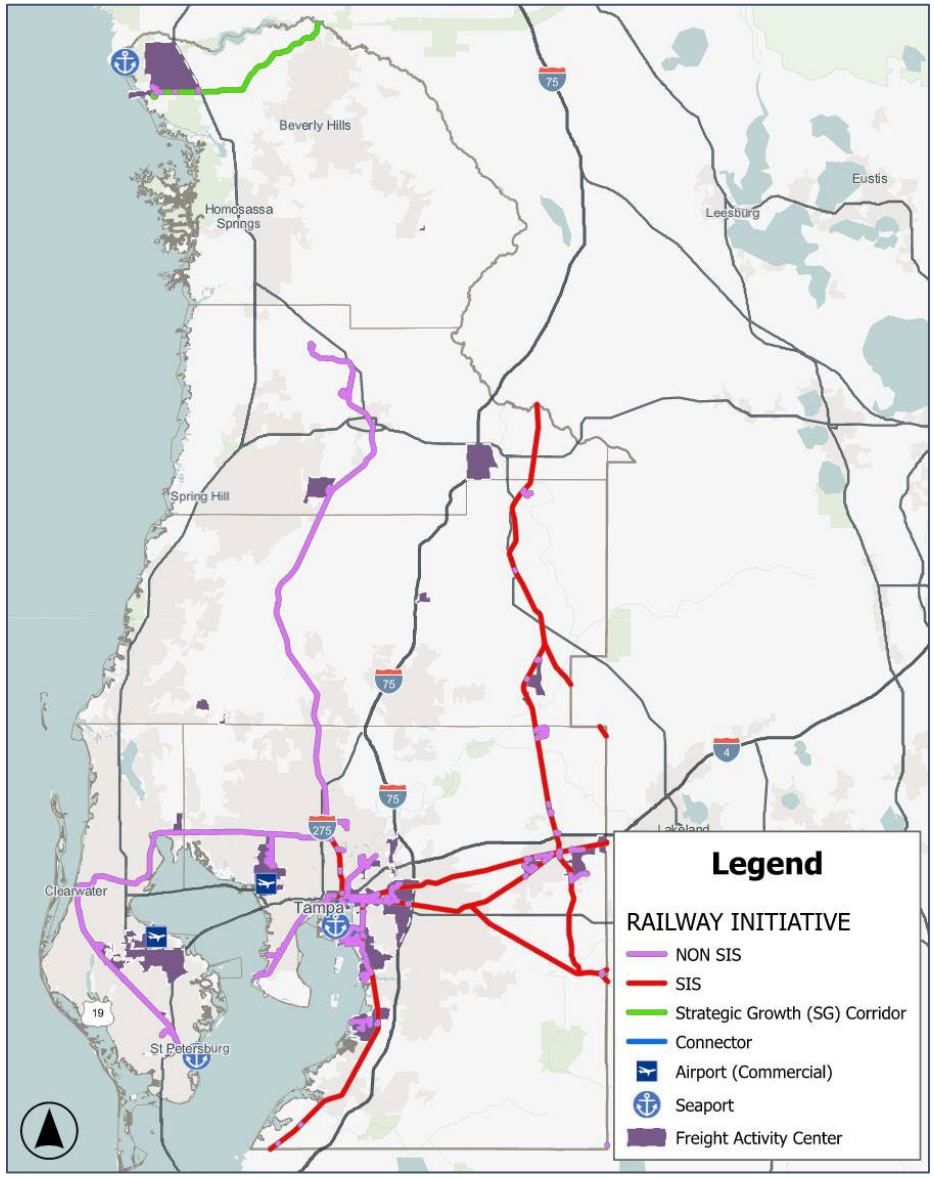


Figure 17 – *Tampa Bay Region SIS Rail Designations*

[19] https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/sis/designation/sis_designation_criteria.pdf?sfvrsn=1f0aef1e_2

Rail Trends and Conditions

According to the Freight Analysis Framework, 11.39 million tons of freight with a total value of $4.18 billion were transported by rail within the Tampa Bay Region in 2022. **Figure 18** and **Figure 19** show the cumulative tonnage and cumulative value, respectively, of cargo transported to, from, and within the Tampa Bay Region from 2017 through 2050, with the future projections estimated by the FAF.

Currently, about 10% of the cargo tonnage (or 7% by value) shipped by rail stays within the Tampa Bay Region. By 2050, projected tonnage being shipped by rail is expected to exceed 20 million tons with 12% remaining within the Tampa Bay Region. Transporting more than one million tons of cargo on rail within the region reduces the demand on the region's highways for shipping goods and materials on trucks. In terms of economic value, projected cargo volumes in 2050 are estimated to be worth nearly $6.8 billion.

The top five rail commodities with an origin and the top five with a destination in the Tampa Bay Region in 2022 are shown in **Table 11** and **Table 12**, respectively. This includes those commodities having both an origin and a destination within the Tampa Bay Region, as well as the percentage of each that remains within the region. Coal, fertilizers, and non-metal mineral products are amongst the top commodities shipped via rail in terms of total tonnage, with a substantial amount of the latter two products making trips that begin and end at a District Seven rail terminal. Fertilizer and coal are also two of the top rail commodities in terms of value. When comparing the value of commodities shipped by rail, especially those destined for the Tampa Bay Region, items at the top of the list include more refined or processed consumer products such as motorized vehicles, gasoline, and paper products.

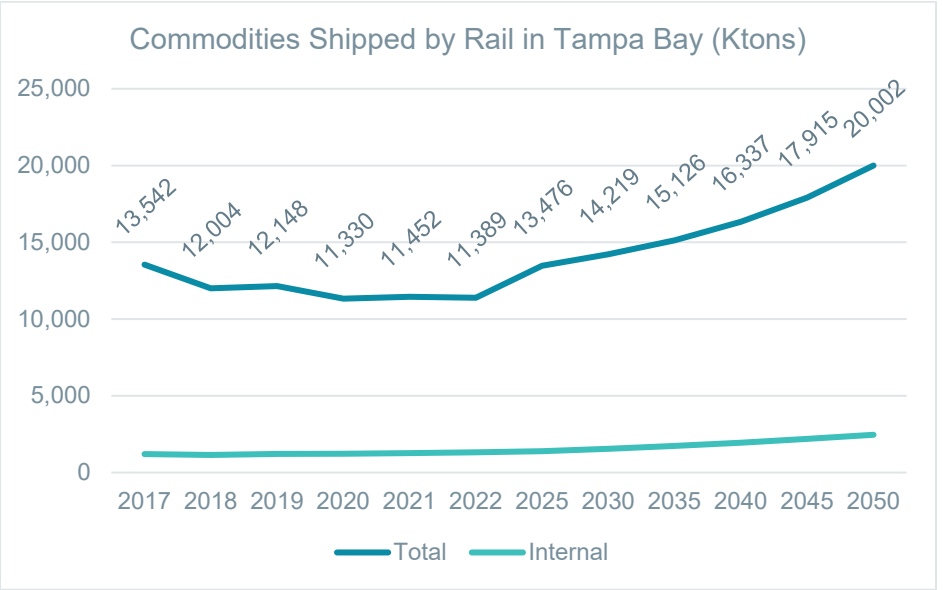


Figure 18 – *Historic and Projected Cargo Shipped by Rail (Tonnage)*

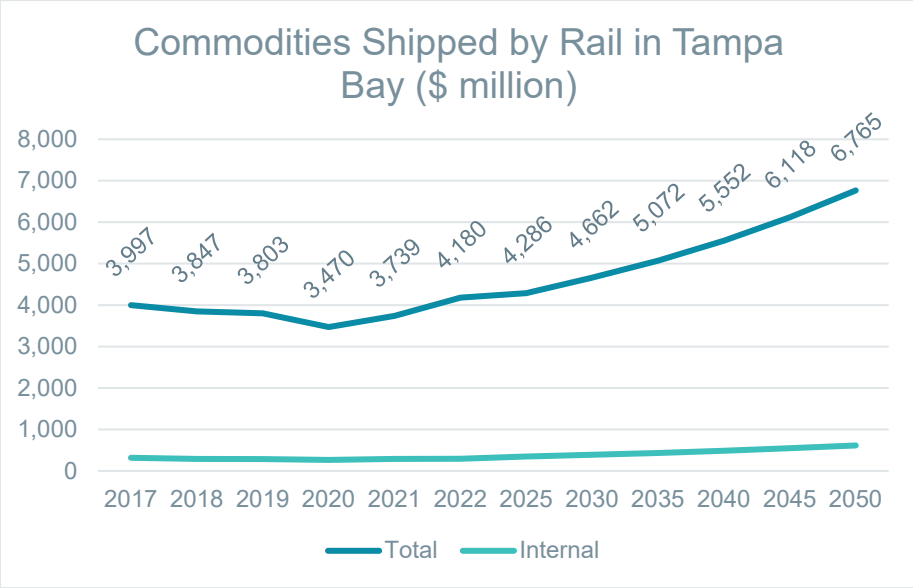


Figure 19 – *Historic and Projected Cargo Shipped by Rail (Value)*

Utilizing rail for shipping cargo provides relief to the highway system. While much of the previously mentioned product is shipped on trains overnight, activity at rail crossings still affects travel on major corridors for motorists as well as freight transported by truck. Throughout the Tampa Bay Region, there are 743 public roadway crossings. Because traffic volumes are highest during the day, train activity at this time has the highest potential to disrupt traffic patterns, exacerbate delay costs, and create safety conflicts. Using the most recent crossing inventory data from the US DOT Bureau of Transportation Statistics (BTS), **Figure 20** provides average daytime train activity by segment and **Figure 21** shows the distribution of rail crossings throughout the District Seven rail network, as well as the locations that are currently grade-separated.

Table 11 – *Top 5 commodities transported by rail in Tampa Bay*[20]

Commodity	Tons (x 1,000)	Percent Internal
Commodities destined for Tampa Bay		
Coal	2,810	0%
Fertilizers	1,879	43%
Nonmetal min. prods.	665	67%
Gasoline	600	<1%
Natural sands	313	0%
Commodities originating in Tampa Bay		
Nonmetal min. prods.	1,402	32%
Fertilizers	1,185	69%
Nonmetallic minerals	360	5%
Gravel	231	7%
Plastics/rubber	143	0%

Table 12 – *Top 5 Commodities Transported by Rail in Tampa Bay (Value)*[21]

Commodity	Value ($ million)	Percent Internal
Commodities Destined for Tampa Bay		
Fertilizers	566.4	41%
Motorized vehicles	446.3	1%
Gasoline	258.7	<1%
Newsprint/paper	170.4	<1%
Coal	153.6	0%
Commodities Originating in Tampa Bay		
Motorized vehicles	385.9	1%
Fertilizers	335.0	69%
Articles-base metal	99.5	0%
Base metals	94.7	0%
Other foodstuffs	85.1	5%

[20] US DOT Bureau of Transportation Statistics - Freight Analysis Framework 5.5.1

[21] US DOT Bureau of Transportation Statistics - Freight Analysis Framework 5.5.1

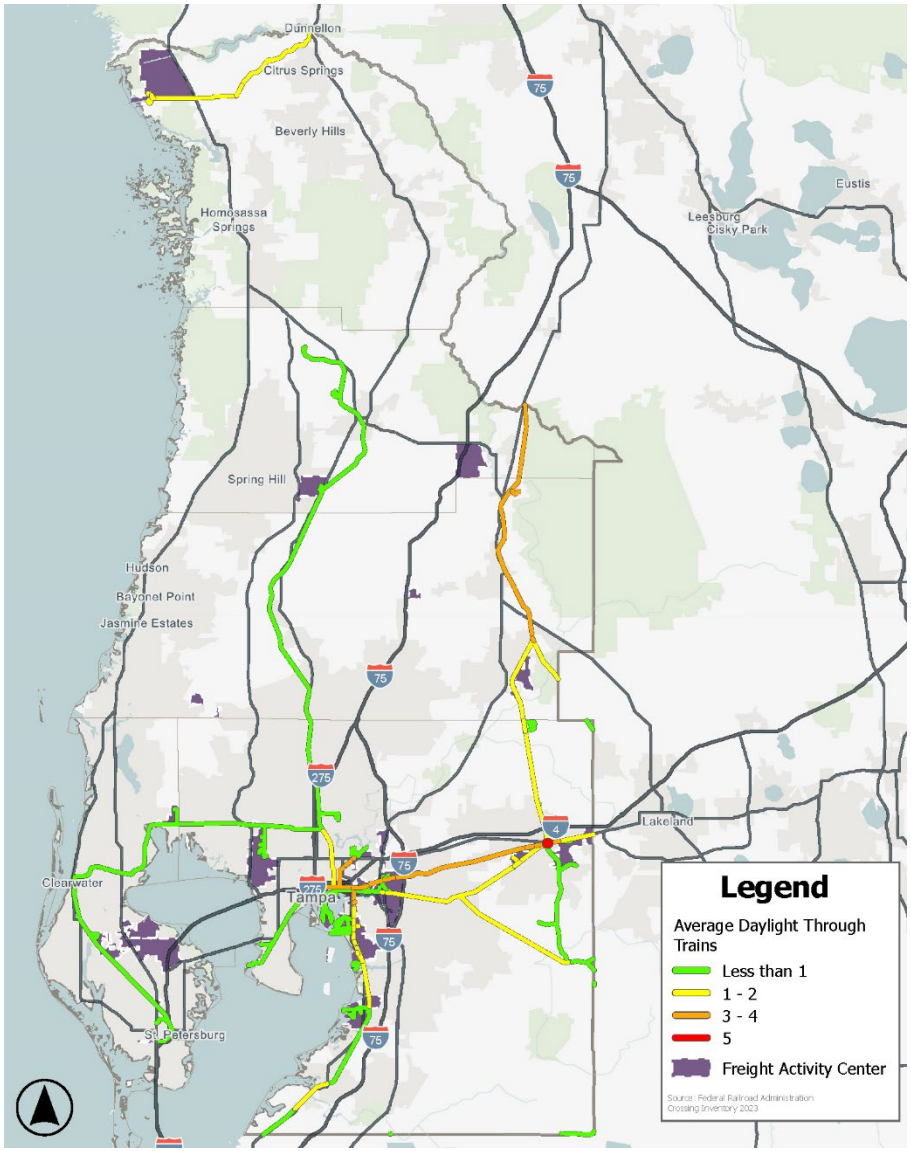


Figure 20 – *Daytime Train Activitiy on the District Seven Rail Network*

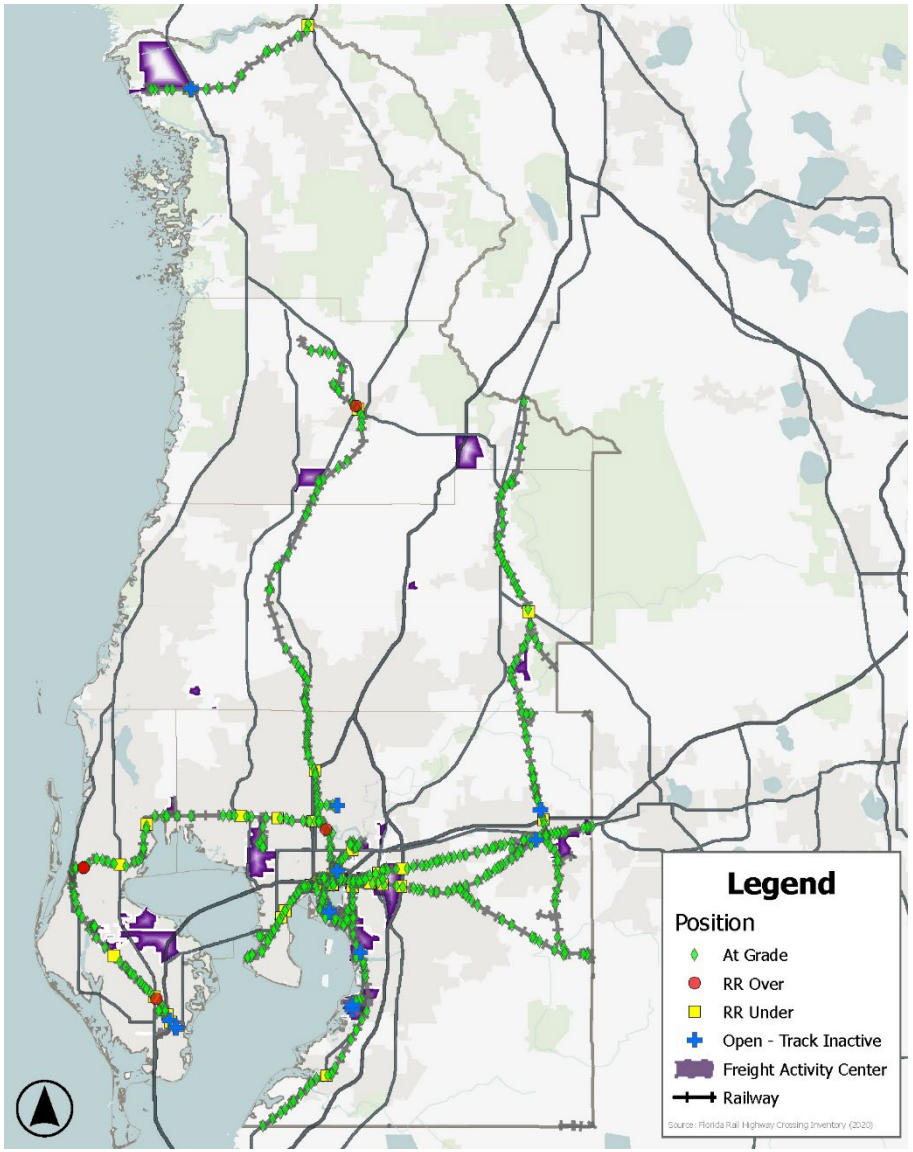


Figure 21 – *Rail and roadway crossing types in District Seven*

Associated with the interaction of modes and crossings is a concern for safety and resulting crash trends. Trends for statewide and districtwide crashes occurring at or influenced by railway-highway crossings during the previous decade are compared in **Table 13**. According to crash report data from the Florida Department of Highway Safety and Motor Vehicles (FLHSMV), there were 2,126 total crossing-related crashes in Florida and 238 in District Seven during the five-year period from 2018 until 2022. While District Seven counties tend to have a slightly lower rate of crashes at rail crossings as a percentage of total crashes when compared to statewide numbers, the percentage of those crashes resulting in a fatality are considerably lower and those resulting in serious injury are slightly higher on average than statewide trends over this period. Despite having only one fatality during the previous five years, 2023 numbers show an unusually high amount of fatal and serious injury crashes at rail crossings districtwide. It should be noted, however, that crash counts from 2023 are still preliminary as of April 2024.

Crashes occurring on the region's roadways are also categorized using location-based information. Using this information for the most recent five-year period with fully validated counts (2018-2022), crashes associated with rail crossings can be visualized in **Figure 22** based on the frequency of occurrences. Areas experiencing the highest number of crashes are in the core of the City of Tampa where a high density of both roadway and railway facilities are located. Similarly, other hotspot locations correlate with many of the region's Freight Activity Centers in eastern Hillsborough County, near Tampa International Airport and Port Tampa Bay, and to a lesser degree, along the US 19 corridor in Pinellas County and US 41 corridor in southern Hillsborough and Hernando counties.

Data associated with districtwide rail crossing crashes from this 5-year period also contains non-spatial trends, which can help to better understand the nature of these incidents and inform the development of safety enhancements. This information is summarized in **Table 14.**

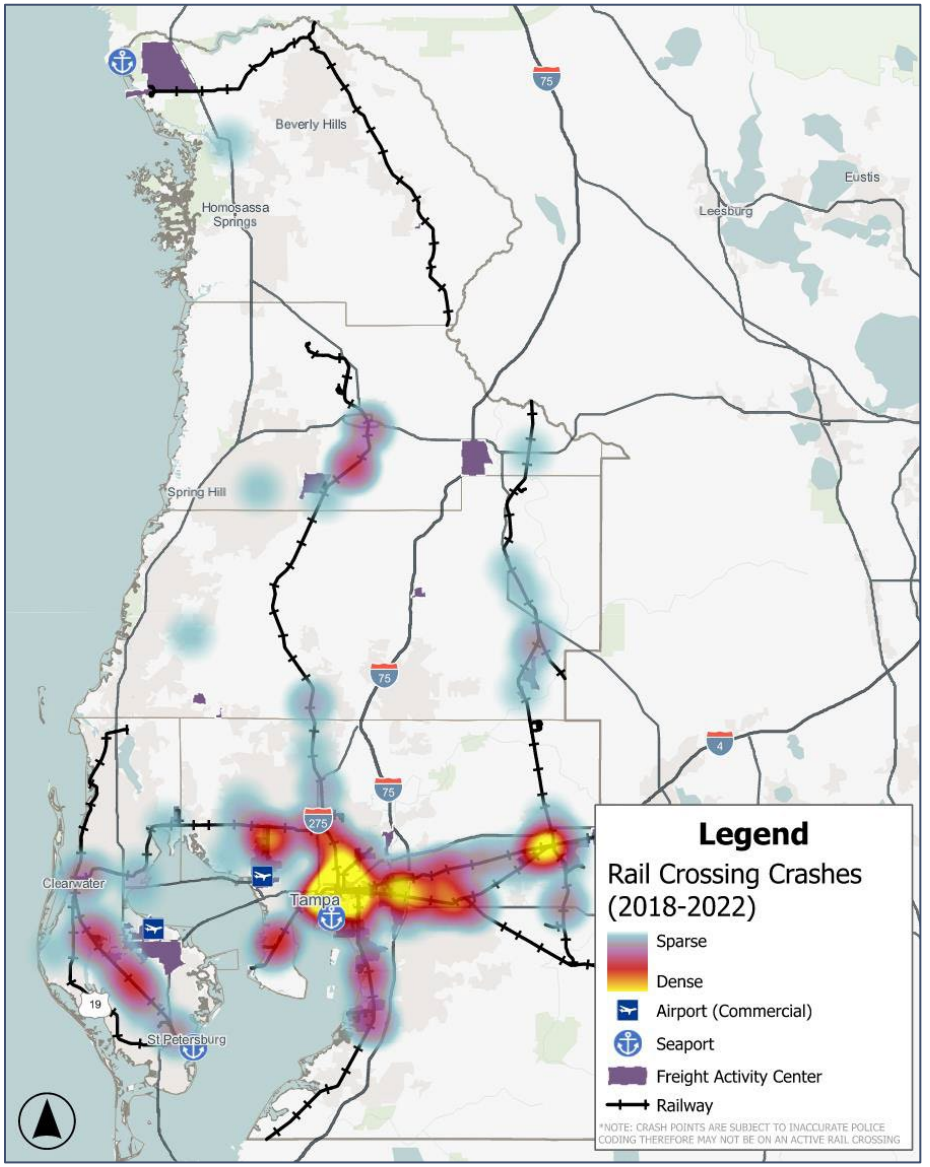


***Figure 22** – Rail Crossing Crashes*

Table 13 – *Comparison of Rail Crossing Crashes in Florida and District Seven*[22]

Crash Classification	2018	2019	2020	2021	2022	5-Yr Avg (2018-2022)	2023[23]
Statewide							
Total Crashes (All Emphasis Areas)	741,298	746,242	589,897	703,443	709,828	698,142	711,208
Total Rail Crossing Crashes	470	436	363	399	458	425	398
% Rail Crossing	*0.063%*	*0.058%*	*0.062%*	*0.057%*	*0.065%*	*0.061%*	*0.056%*
Fatalities	6	5	7	13	9	8	14
% Fatal (of Rail Crossing Crashes)	*1.28%*	*1.15%*	*1.93%*	*3.26%*	*1.97%*	*1.88%*	*3.52%*
Serious Injuries	21	16	5	13	12	13	13
% Serious Injury (of Rail Crossing Crashes)	*4.47%*	*3.67%*	*1.38%*	*3.26%*	*2.62%*	*3.15%*	*3.27%*
Districtwide							
Total Crashes (All Emphasis Areas)	96,778	97,189	76,862	89,926	89,862	90,123	86,862
Total Rail Crossing Crashes	58	41	43	42	54	48	35
% Rail Crossing	*0.060%*	*0.042%*	*0.056%*	*0.047%*	*0.060%*	*0.053%*	*0.040%*
Fatalities	0	0	0	1	0	0.2	6
% Fatal (of Rail Crossing Crashes)	-	-	-	*2.38%*	-	*0.42%*	*17.14%*
Serious Injuries	4	3	0	0	2	1.8	4
% Serious Injury (of Rail Crossing Crashes)	*6.90%*	*7.32%*	-	-	*3.70%*	*3.78%*	*11.43%*

[22] Florida Department of Highway Safety and Motor Vehicles (FLHSMV), 2024
[23] As of April 2024, counts for crashes occurring in 2023 are still preliminary and subject to change as a part of the regular data validation process.

Table 14 – *Summary of rail crossing crash characteristics*[24]

Crash Type or Characteristic	Count	Percentage
Total Rail Crossing Crashes (2018-2022)	227	100%
Involving a Railway Vehicle (Train, Engine)	18	7.9%
Involving a Bicyclist, Pedestrian, Worker, or Other Non-Motorized Vehicle	13	5.7%
Involving a Bus	25	11.0%
Involving a Non-Rail Freight Vehicle (Heavy/Medium/Light Duty Truck or Cargo Van)	56	24.7%
Collision with a Fixed Object (Traffic Barrier, Tree, Signal/Utility Pole, Wall, etc.)	41	18.1%
Occurring at Dawn, Dusk, or Night	69	30.4%
Occurring at Locations Without Lighting	24	10.6%
Occurring During Inclement Weather or Wet Roadway Conditions	26	11.5%
Occurring On-System	57	25.1%
Occurring Off-System	165	72.7%
County Roadways	70	30.8%
Local Roadways	95	41.9%
Occurring on a Roadway with a Posted Speed Limit of 45mph or Greater	122	53.7%
Occurring at Locations with Railway Crossing Devices or Traffic Control Signals	106	46.7%
Occurring in Hillsborough County	173	76.2%
Occurring in Pinellas County	31	13.7%
Occurring in Pasco, Hernando, or Citrus County	23	10.1%

Note: Crash types are not exclusive and not intended to be added.

[24] Florida Department of Highway Safety and Motor Vehicles (FLHSMV), 2024

AIR CARGO CHARACTERISTICS

Airports serve as crucial connectors between distant origin and destination points for cargo, offering swift transportation options. However, air freight comes with the highest cost per ton among all modal choices. Despite its relatively low volume, businesses opt for this essential link in the supply chain when transporting high-value and time-sensitive cargo. According to the Freight Analysis Framework (FAF), in 2023, air cargo accounted for $684 billion (3.4%) and 6.8 million tons (0.03%) of the total freight moved in the U.S. The USDOT Bureau of Transportation Statistics (BTS) anticipates the rate of high-value, low-weight commodities - the type most likely to be shipped by air - is expected to grow at a faster rate than low-value, high-weight commodities between 2023 and 2050.[25]

As shown in **Figure 23**, St. Petersburg-Clearwater International Airport (PIE) and Tampa International Airport (TPA) are the only airports in District Seven with runways of sufficient length for loaded cargo planes. PIE began focusing solely on passenger flights after United Parcel Service (UPS) moved to TPA in 2017. PIE continues to be listed as a Strategic Growth Airport in the SIS Plan. District Seven airports compete with neighboring districts for freight business. Amazon recently moved its freight operations from TPA to Lakeland Linder International Airport (LAL) in Polk County (District 1).

TPA is included in the National Multimodal Freight Network (NMFN) as one of the top 56 air freight hubs in the U.S. Florida includes TPA as a SIS hub for the movement of people and goods. It has a growing passenger business as well as a growing cargo operation with UPS, Federal Express (FedEx), the US Postal Service (USPS), and Atlas Air, each having up to seven flights a day.[26] Although Amazon did recently move operations from TPA to LAL, TPA is expanding the airport's freight infrastructure for their remaining carriers. Small package cargo businesses are anticipated to continue rapid growth as e-commerce expands with consumer expectations of next- day delivery packages at their door.

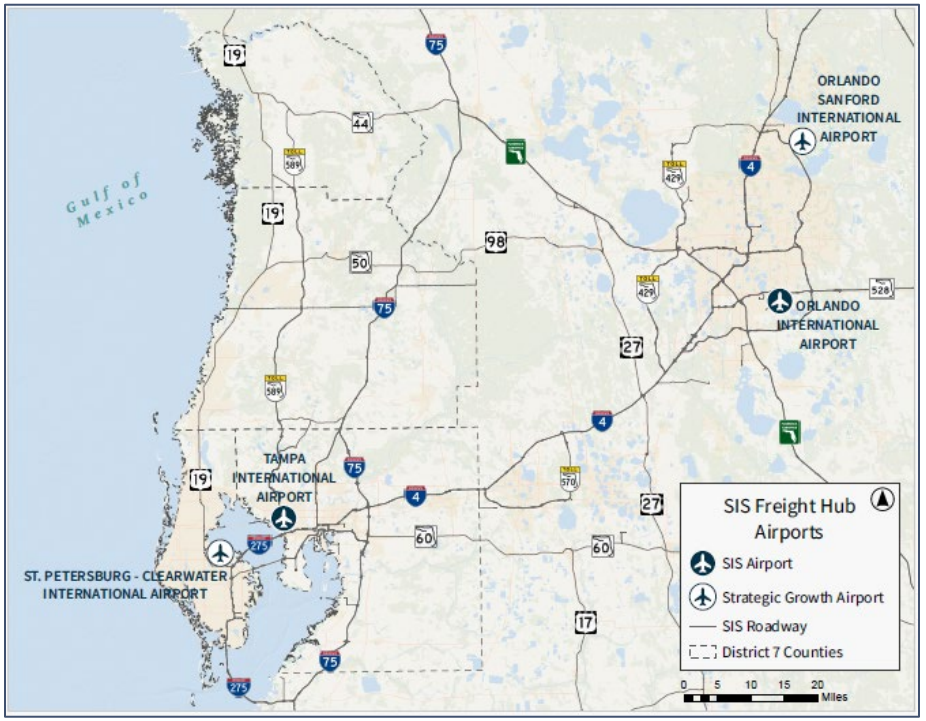


Figure 23 – *Location of SIS freight hubs airports in FDOT District Seven*

This expectation places a heavy emphasis on supply chain reliability for these small package companies. Cargo-only plane on-time performance (OTP) is not tracked; however, the OTP at each airport for all flights is tracked by BTS. The national OTP for 2023 was 77.19% of all flights at major airports, while at TPA it was 73.47%. The flight delays were caused by, in order, air carrier delay, aircraft arriving late, and national aviation system delay indicating the issue is systemic in the air industry.

[25] USDOT Moving Goods in the United States, https://data.bts.gov/stories/s/Moving-Goods-in-the-United-States/bcyt-rqmu

[26] Tampa Bay Times, May 23, 2019, Tampa International Airport Unfazed by Amazon's Move to Lakeland

Air cargo has significantly higher value per ton than other modes of transportation. As shown in **Table 15**, TPA air cargo tonnage is consistent with national and Florida statistics, while the value of cargo is slightly lower(**Table 16)**.[27]

Table 15 – *Comparison of cargo weight in Florida and TPA*

	All Modal Cargo (1,000 tons)	Total Air Cargo (1,000 tons)	% Air Cargo
Florida Origin	715,736	274	0.04%
Florida Destination	809,308	412	0.05%
Total Florida	**1,525,044**	**685**	**0.04%**
TPA Origin	103,949	38	0.04%
TPA Destination	112,593	24	0.02%
Total TPA	**216,542**	**62**	**0.03%**

Table 16 – *Comparison of cargo value in Florida and TPA*

	All Modal Cargo ($ million)	Total Air Cargo ($ million)	% Air Cargo
Florida Origin	749,578	23,766	3.2%
Florida Destination	933,569	35476	3.8%
Total Florida	**1,683,146**	**59,242**	**3.5%**
TPA Origin	105,977	3,016	2.8%
TPA Destination	133,260	3,103	2.3%
Total TPA	**239,237**	**6,118**	**2.6%**

Over 93% of TPA's air cargo is shipped to other states with the remaining 200 tons sent to Miami. The largest volume is destined for Virginia (6,000 tons) with Missouri (3,500 tons) and New York (3,000 tons) a distant second and third respectively. Similarly, when viewing the TPA export by value, Georgia ($535 million) is the favored destination with New York ($382 million) and Tennessee ($335 million) second and third respectively.

Freight moves most efficiently and economically when the incoming and outgoing cargos are similar in weight, utilizing all available space on the plane. This allows the cost of the trip to be distributed to more cargo, in-turn decreasing the price per pound. Comparing the amount of cargo originating in TPA to that destined for TPA by state identifies opportunities for decreasing trade deficits and lowering the cost per ton of freight moved by air cargo. This analysis is shown in **Table 17**.

Table 17 – *Air Cargo Trade Deficit Opportunities*

State	Originating at TPA (1,000 tons)	Destined for TPA (1,000 tons)	Trade Deficit (1,000 tons)
California	1.72	4.43	(2.71)
Tennessee	1.94	3.28	(1.34)
Illinois	0.60	1.51	(0.92)
Georgia	2.83	3.69	(0.86)
Texas	0.82	1.32	(0.49)
Pennsylvania	1.62	0.21	1.41
New Jersey	2.75	0.43	2.32
Alaska	2.71	0.22	2.50
Missouri	3.59	0.02	3.57
Virginia	6.01	0.43	5.57

The top five commodities originating from and destined for TPA are shown in **Figure 24**, **Figure 25**, **Figure 26**, and **Figure 27**. Electronics and precision instruments are the top two commodities regardless of which criteria is used.

[27] TPA receives belly cargo activity that is not captured on the FAA ACAIS database and not included in the data for Tables 3 and 4.

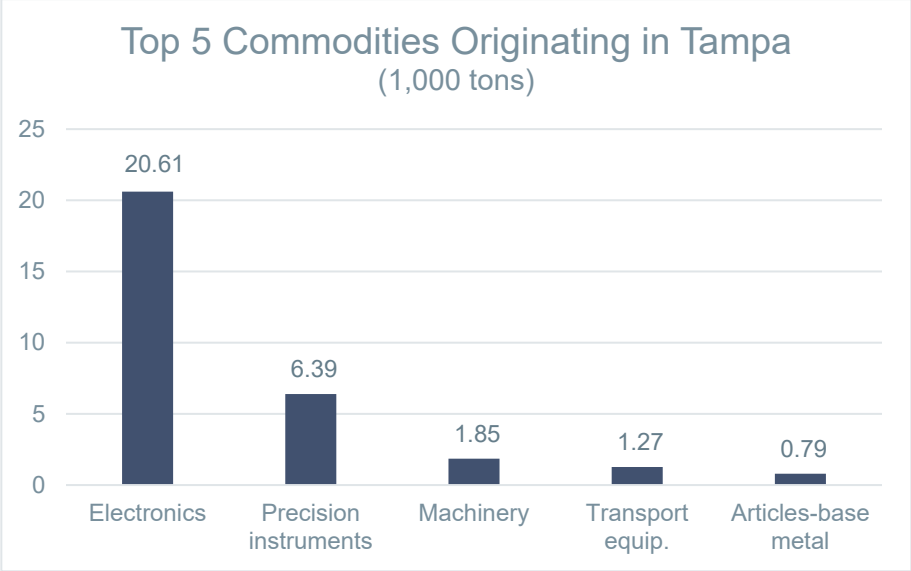


Figure 24 – *Top Commodities Originating from TPA (Tonnage)*

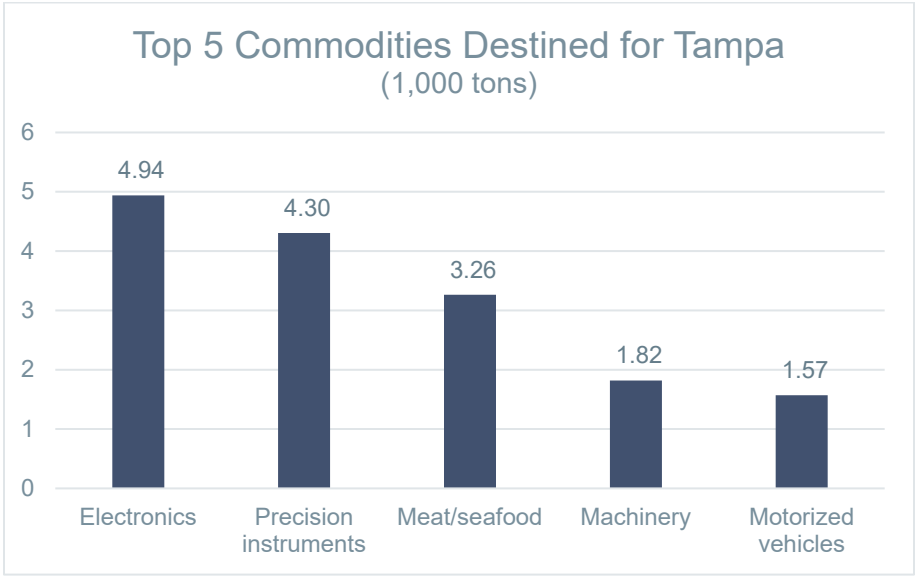


Figure 25 – *Top Commodities Destined for TPA (Tonnage)*

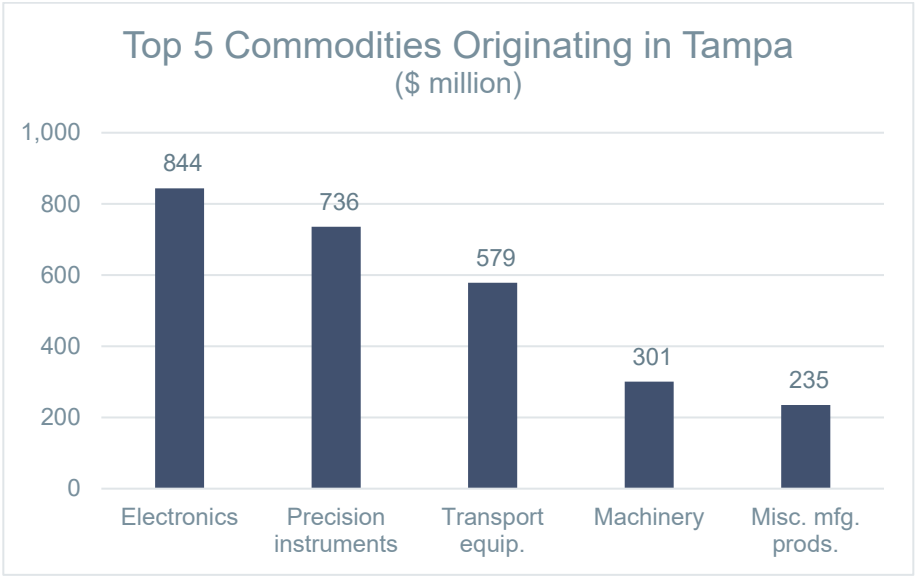


Figure 26 – *Top Commodities Originating from TPA (Value)*

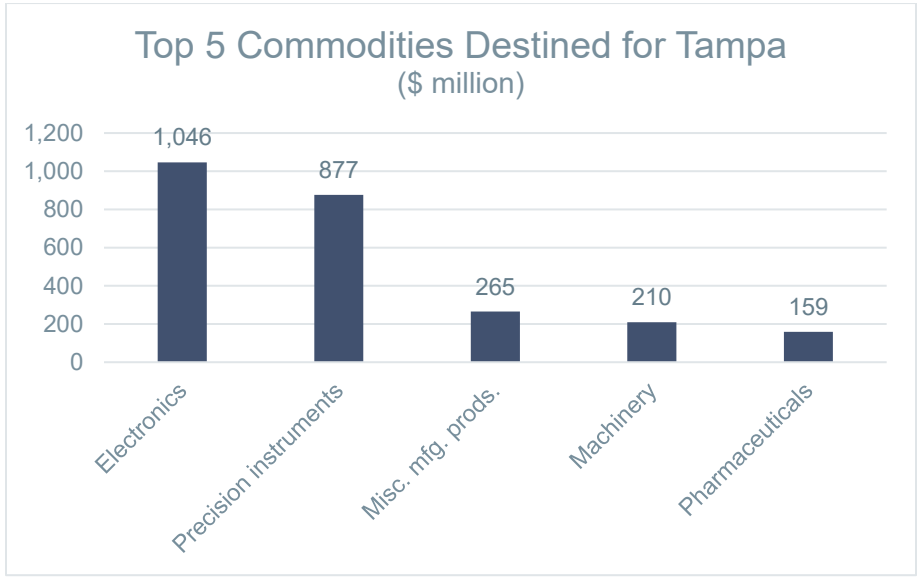


Figure 27 – *Top Commodities Destined for TPA (Value)*

WATERBORNE CARGO CHARACTERISTICS

Seaports

Port Tampa Bay (PTB) is one of the most significant economic generators in the Tampa Bay region. As the region's principal gateway for goods bound for and arriving from foreign and domestic producers and markets, PTB has favorable geography as the closest U.S deepwater seaport to the Panama Canal. With a population of more than 8 million people, and over 60 million visitors a year, the Tampa/Orlando region is a huge consumer market and projected to be the fastest growing region of Florida for the next 20 years.[28]

Port Tampa Bay has emerged as Florida's new supply chain solution for container cargo. Port Tampa Bay has recently added capacity, with more expansion underway, and stands ready to welcome new business, offering significant savings in inland delivery costs versus other gateways. The addition of direct Asia container services in the last few years and more recently new and expanded services with Mexico and Central America have provided a giant leap forward in serving Florida's largest and fastest-growing market. The I-4 Corridor is home to the largest concentration of distribution centers in the State, which allows for multiple round trip deliveries per day from Port Tampa Bay, compared to the traditional routes via congested out-of-state ports.

Port Tampa Bay (PTB), located southeast of downtown Tampa in Hillsborough County, is the largest Florida port by tonnage and land area. The port has more than 1,000 acres of industrially zoned land with deepwater access, and room to grow. The Port consists of five terminals, including Hooker's Point which handles most of its cargo throughput, as well as Pendola Point, Port Redwing, and the new East Port and South Bay facilities. PTB is connected to intermodal facilities in Hillsborough County, including I-4, I-275, and CSX Transportation-owned railroads, facilitating inter-modal freight transfer to highway, rail, and air conveyance to reach destinations throughout Florida and the United States. The Port serves as a major gateway to West and Central Florida, a region that is continuing to grow at a faster rate than most others in the State. PTB has a $17.2 billion annual economic impact on the region resulting primarily from the 85,000 direct and indirect jobs associated with its cargo, ship repair, and passenger cruise industries.[29]

The projected increase in cargo volume and the expected post-pandemic recovery in cruise passenger volumes present challenges in maintaining land-side freight access to the Port. Additionally, continued population growth in the Tampa Bay area will bring more traffic to roadways already operating at or near congested conditions and will spur demand for more cargo throughput at PTB and new distribution centers to deliver goods to market. Therefore, investments in roadway and rail infrastructure are critical to improve mobility and maintain the Port's operational efficiency, quality of service, and competitiveness.

In the northern part of the region, the Crystal River Energy Complex includes a port facility that is used for bringing coal and other aggregate materials associated with energy production. As part of the Duke Energy transition from nuclear power at the Crystal River Complex, cleaner-burning power generation began in 2018 with the opening of Citrus Combined Cycle Station that uses natural gas for energy generation.

This section provides metrics for port capacity and cargo throughput metrics from PTB's latest Annual Cargo Tonnage Report, along with data extracted from the most recent Port Performance Report and Freight Analysis Framework (FAF5) from the Bureau of Transportation Statistics (BTS) and the Federal Highway Administration (FHWA). The Port Throughput and Port Capacity sections of the 2024 Port Performance Report were updated in January 2024 with 2021 data.

Capacity measures as provided by the 2024 Port Performance Report include berth size, the number of and type of cranes, and the presence of on-dock rail transfer facilities. Throughput metrics include annual total tonnage, general cargo tonnage, and dry and liquid bulk tonnage. Another metric discussed in this section is containerized cargo throughput, which is quantified in twenty-foot equivalent units (TEU)

[28] https://www.porttb.com/logistics

[29] Port Tampa Bay & Martin Associates "The Local and Regional Economic impacts of Port Tampa Bay" (November 17, 2016), pg. 7

and denotes the annual number of standard twenty-foot shipping containers that are handled by a port or terminal. Additionally, FAF5 provides top commodities by tonnage and value for freight movements by water to and from the Tampa FAF zone[30].

Port Capacity

Berth depth, berth length, the number and type of container cranes, and the availability of intermodal transfer facilities are among the various factors that affect the size and type of container ships that can dock at a port. According to the 2024 Port Performance Report, the Hooker's Point terminal at PTB has a berth depth of 43 feet, a berth length of 2,900 feet, and on-dock rail transfer facilities. Furthermore, the Port is equipped with three Panamax cranes and two Post-Panamax (PPX) cranes, but no Super PPX cranes. The installation of the two PPX cranes at PTB in 2016 has allowed the Port to service vessels with a capacity of up to 9,000 TEU.[31] Super PPX cranes are the largest modern ship to shore container cranes. They offer the highest lifting capacities, longest reaches, fastest speeds, and are optimized for handling the largest container ships, making them suitable for ports that need to accommodate the highest volumes of container traffic. Their larger size and higher lifting capacity give them a slight advantage in terms of efficiency, allowing them to unload and load larger ships more quickly. This capability helps reduce dwell times for vessels in port, enhancing the operational efficiency of the port facility.

In 2023, the number of Super PPX cranes within the Top 25 Container Ports in the nation increased to 322 from 294 the previous year. The additional Super PPX cranes were exclusively deployed at the Ports of Long Beach (#2 by TEU in 2023), Jacksonville (#11 by TEU in 2023), New York-New Jersey (#3 by TEU in 2023), and Houston (#6 by TEU in 2023).

The Sunshine Skyway Bridge spanning Tampa Bay, connecting Pinellas County to Manatee County, has clearance just above 180 feet in height, which limits ship movements to and from PTB. As outlined in the PTB Master Plan (Vision 2030), newer, larger cruise ships carrying 2,000 to 2,500 passengers have an air-draft at or exceeding 180 feet. Consequently, as older, smaller cruise ships age, are retired, and are replaced with these larger ships, the proportion of cruise demand serviceable by cruise terminals at PTB is expected to decline. There are three existing cruise ship terminals (Terminal #2, Terminal #3, and Terminal #6) serving passengers in Tampa's Channel District. Since the existing terminals are near capacity, PTB has plans to construct a fourth cruise terminal without interrupting current operations. The project entered the design phase in June 2024 when the contract for engineering design services was awarded by the PTB Board. Design services for the Metro Port Development are included in PTB's FY24 Capital Improvement Program.

Given PTB's capacity limitations outlined in this section, there are numerous opportunities for collaboration to promote regional advancement through enhancing port infrastructure in alignment with the National Freight Policy Strategic Infrastructure Goal: *"*Modernize freight infrastructure and operations to grow the economy, increase competitiveness, and improve quality of life*"*. These opportunities may entail partnerships involving PTB, the City of Tampa, Hillsborough County, Florida Department of Transportation District Seven, and the US Department of Transportation. Within this collaborative effort, PTB will engage with public and private sector stakeholders to maximize growth opportunities at the port, thereby contributing to economic growth, enhancing regional competitiveness, and improving the overall quality of life for residents.

Port Cargo Throughput

PTB's Annual Cargo Tonnage Report provides cargo throughput in terms of bulk cargo (dry bulk and liquid bulk) and general cargo for the ten-year period spanning from 2013 through 2022. As shown in **Figure 28**, which includes both domestic and foreign cargo, tonnage increased by about 20%, from 13.4 million in 2013 to 16.2 million in 2022.

Moreover, according to the 2024 Port Performance Report, PTB's total cargo throughput totaled 152.7 million short tons, between 2017 to 2021, averaging 30.5 million tons annually. A short ton, also known as a US ton, is equal to 2,000 pounds. In this report it is abbreviated to ton

[30] Port Tampa Bay Transportation Analysis, October 2021

[31] Port Tampa Bay, "Post Panamax Cranes," https://www.porttb.com/new-cranes

but is distinct from the long ton or metric ton which is equal to 1,000 kilograms (about 2204.62 pounds).

Total tonnage statistics in the Port Performance Report account for the five major types of waterborne cargo: containerized, dry bulk, liquid bulk, break-bulk, and roll-on/roll-off.

- Containerized cargo refers to goods packed in standardized shipping containers for efficient handling across vessels, terminals, and transport modes. These containers come in 20, 40, and 45-foot lengths, with typical dimensions of 8 feet wide and 8.5 feet high. They're used for most consumer products imported into the US and are measured in twenty-foot equivalent units (TEU), with larger vessels capable of carrying over 20,000 TEU.
- Bulk cargo refers to two main types: dry bulk and liquid bulk. Dry bulk cargo consists of unpacked, homogeneous commodities such as grain, iron ore, and coal. The size of a dry bulk terminal is determined by cargo volume, the number of commodity types, and vessel call frequency. These terminals usually handle either imports or exports exclusively and are designed accordingly. Liquid bulk cargo, on the other hand, is shipped in fluid form in tanker holds without packaging or containerization. It's typically transferred using pumps, piping, or hoses. Major liquid bulk commodities include petroleum products, liquid natural gas, and liquid chemicals.
- Breakbulk Cargo refers to non-containerized goods that required specialized handling equipment for loading and unloading. Examples included bundled lumber or steel products moved by cranes. Breakbulk cargoes are sometimes referred to as general cargo, and roll-on/roll-off cargoes are occasionally classified within this category.
- Roll-on/Roll-off (Ro/Ro) refers to cargo that can be loaded onto a vessel with ramps under its own power or by another vehicle. This may also refer to any specialized vessel designed to carry Ro/Ro cargo or a terminal that serves such vessels.

According to the Port Performance Report, 92.57 million tons (approximately 61% of total tonnage) were derived from domestic trade and 60.13 million tons (39%) was derived from foreign trade, of which 35% were exports and 65% were imports. Despite a decrease of about 9% in cargo throughput by total tonnage during this five-year-period, PTB ranked twenty-first nationally by total tonnage in the 2024 Port Performance Report based on 2021 data provided by provided by U.S. Army Corps of Engineers (USACE), Waterborne Commerce Statistics Center.

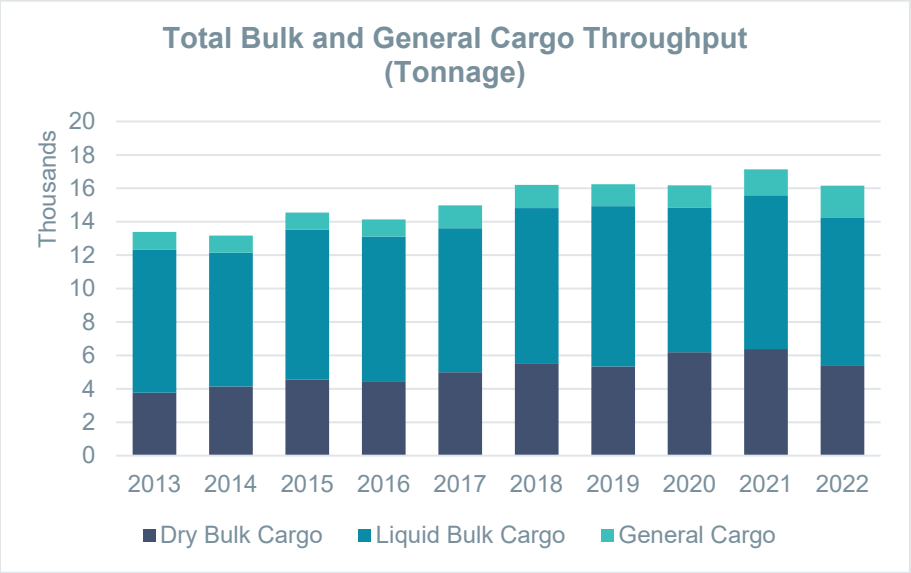


***Figure 28** – Port Tampa Bay total bulk and general cargo throughput (Tonnage)*

According to the Freight Analysis Framework, Version 5 (FAF5), the total amount of freight shipped by water through the Tampa-St Petersburg-Clearwater, FL FAF5 domestic zone under the projected 2023 baseline scenario was approximately 8.9 million tons for domestic freight movements and 9.3 million tons for international freight movements. **Table 18** displays the top commodities and their corresponding FAF5 codes for domestic freight to and from Tampa, as well as the leading import and export commodities with Tampa as the US entry and exit region.

Table 18 – *Top commodities by tonnage transported by water in Tampa Region*

Commodity	2023 Tons (x 1,000)
Domestic Commodities Destined for Tampa	
17-Gasoline	6,301.9
18-Fuel Oils	1,311.7
13-Nonmetallic Minerals	919.7
15-Coal	165.9
22-Fertilizers	85.6
Domestic Commodities Originating in Tampa	
19-Natural gas and Other Fossil Products	80.4
12-Gravel	<1
31-Nonmetallic Mineral Products	<1
Import Commodities with Tampa as US Entry Region	
12-Gravel	3,508.8
14-Metallic Ores	1,703.1
22-Fertilizers	1,316.7
13-Nonmetallic Minerals	905.2
31-Nonmetallic Mineral Products	543.4
Export Commodities with Tampa as US Exit Region	
22-Fertilizers	3,873.1
41-Waste and Scrap	355.9
20-Basic chemicals	162.1
19-Natural Gas and Other Fossil Products	48.3
05-Meat and Seafood	25.5

Based on FAF5 data for the 2023 baseline scenario, ***Table 19*** *and*

Table 20 show that the proportion of water cargo originating from the Tampa area is less than water cargo from Florida overall in terms of tonnage and value. However, the share of water cargo destined for Tampa in terms of tonnage and value is higher compared to the water cargo for Florida overall. This suggests a backhaul imbalance for freight transport by water and a notable presence of water cargo transportation activity originating from Tampa despite its smaller absolute contribution to water cargo compared to the rest of Florida. The larger share of cargo throughput in terms of tonnage and value destined for Florida, could be a result of PTB's connections to large Gulf Coast ports in Texas and Louisiana.

Table 19 – *Comparison of cargo weight in Florida and Port Tampa Bay*

	All Cargo (1,000 Tons)	Water Cargo 1,000 Tons)	% Water Cargo
Florida Origin	715,736	1,912	0.27%
Florida Destination	809,308	21,014	2.60%
Total Florida	**1,525,044**	**22,926**	**1.50%**
PTB Origin	103,949	80	0.077%
PTB Destination	112,593	8,807	7.82%
Total PTB	**216,542**	**8,887**	**4.10%**

Table 20 – *Comparison of cargo value in Florida and Port Tampa Bay*

	All Cargo ($ million)	Water Cargo ($ million)	% Water Cargo
Florida Origin	749,578	2,681	0.36%
Florida Destination	933,569	12,699	1.36%
Total Florida	**1,683,146**	**15,380**	**0.91%**
PTB Origin	105,977	24	0.02%
PTB Destination	133,260	4,208	3.16%
Total PTB	**239,237**	**4,232**	**1.77%**

FAF5 baseline projections for 2040 indicate that Florida and Louisiana will rank as the eighth-highest state origin-destination (O-D) pair for freight movement by water in terms of tonnage, and the sixth-highest pair in terms of value. Gasoline and fuel oils will constitute 95% of commodity value in this exchange. Moreover, Florida and Texas will be the twenty-eighth-highest by tonnage and tenth-highest by value. Freight movements by water from New Orleans to Tampa will rank twenty-fourth among all zonal O-D pairs by water in terms of value in 2040**. Figure 29** shows the projected domestic tonnage for freight movements by water originating from and destinated for PTB in 2040.

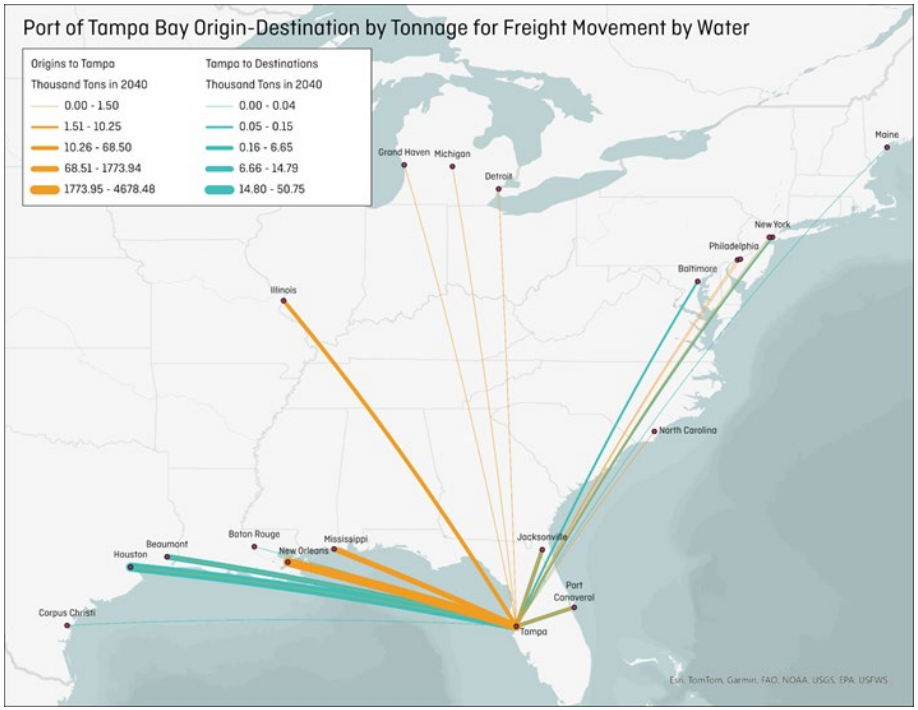


Figure 29 – *Port Tampa Bay origin-destination flows by tonnage in 2040*

General Cargo

According to data from the latest PTB Annual Cargo Tonnage Report, which covers the ten-year period spanning from 2013 through 2022, general cargo accounted for 1.89 million tons moving through PTB terminals in 2022. Overall, general cargo, which includes containerized cargo, scrap metal, steel products, vehicles, and other general cargo amounted to just 9% of all cargo throughput at PTB during the ten-year period.

In a transportation analysis that was prepared for PTB in October 2021, general cargo accounted for 1.4 million tons in 2019 and is forecasted to reach 2.8 million tons by 2035 and 4.9 million tons by 2045. According to that analysis, iron and steel products and scrap metal account for most of the general cargo that moves through PTB. Furthermore, steel products are expected to more than double from 213,500 tons in 2019 to 500,000 tons by 2035. Lumber products, which are a relatively new commodity at PTB, is expected to reach 250 thousand tons by 2035.

Liquid Bulk Cargo

In 2022, liquid bulk cargo accounted for 8.9 million tons across all Port terminals. During the ten-year span covered in the PTB Annual Cargo Tonnage Report, petroleum products accounted for the vast majority of liquid cargo tonnage passing through PTB, amounting to 83%. Overall, liquid bulk cargo accounted for 88.4 million tons over the ten-year period, or about 58% of total cargo. As shown in **Figure 30**, petroleum products was the leading commodity, accounting for 7.67 million tons or 87% of total liquid bulk cargo in 2022. Other liquid bulk cargo commodities, such as ammonia, citrus concentrate, liquid sulfur, and sulfuric acid, amounted to 1.1 million tons in 2022. As outlined in the transportation analysis that was prepared for PTB in October 2021, petroleum is expected to remain the primary commodity driving PTB's liquid bulk cargo sector. This report indicates that shipments of liquid bulk cargo via truck, rail, and pipeline through Port terminals accounted for 26.1 million tons in 2019. Projections indicate an increase to 27.8 million tons by 2035 and 28.9 million tons by 2045.

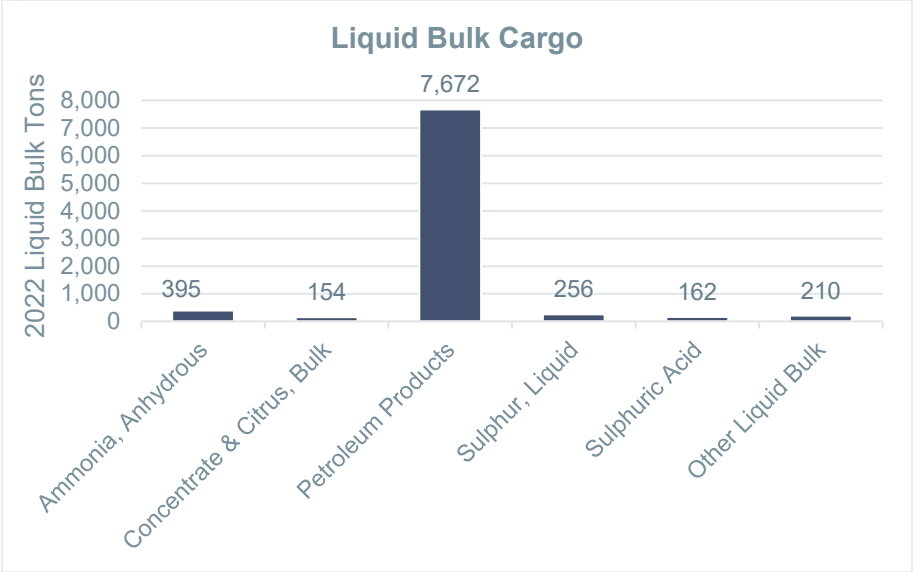


Figure 30 – *Port Tampa Bay liquid bulk cargo tonnage by commodity, 2022*

Dry Bulk Cargo

According to the 2024 Port Performance Report, dry bulk cargo throughput from 2017 to 2021 measured 55.6 million tons, averaging 11.1 million tons annually. Dry bulk cargo includes unpacked and homogenous commodities such as bulk cement, phosphate, coal, and grain. Overall, imports were the greatest contributor during this period, with approximately 28.2 million tons or about 51% of total dry bulk throughput. Domestic trade and exports contributed around 11.6 million and 15.8 million tons, respectively. Although dry bulk tonnage decreased by about 15% during this period, PTB ranked twenty-fourth nationally by dry bulk tonnage in the 2024 Port Performance Report based on 2021 data provided by USACE, Waterborne Commerce Statistics Center.

According to the most recent PTB Annual Cargo Tonnage Report dry bulk cargo throughput increased by about 44% from 2013 to 2022. As shown in **Figure 31**, limestone is the leading commodity shipped through PTB, followed by bulk cement, granite, and phosphatic chemicals. During this period, other dry bulk cargo comprised about 20% of all dry bulk cargo. Overall, dry bulk cargo accounted for 50.7 million tons over the ten-year period, or about 33% of total cargo. In 2022, dry bulk cargo accounted for 5.4 million tons, down from 6.4 million tons in 2021. Nevertheless, dry bulk cargo is expected to increase to 9.7 million tons by 2035 and 13.4 million tons by 2045 according to the 2021 PTB Transportation Analysis.

Historically, the shipment of limestone, fertilizer and related products has been a cornerstone of activity at PTB. With the growing demand for dry bulk products like limestone, granite, and cement within the construction and highway building industries, this need is expected to continue to grow. From 2013 to 2022, limestone was the leading dry bulk commodity, accounting for approximately 42% of all dry bulk cargo over the ten-year period. However, as indicated in **Figure 31**, the proportion of limestone among dry bulk commodities in 2022 declined to 36% as a result of increasing tonnage shares of other commodities including bulk cement, granite, and phosphatic chemicals in recent years.

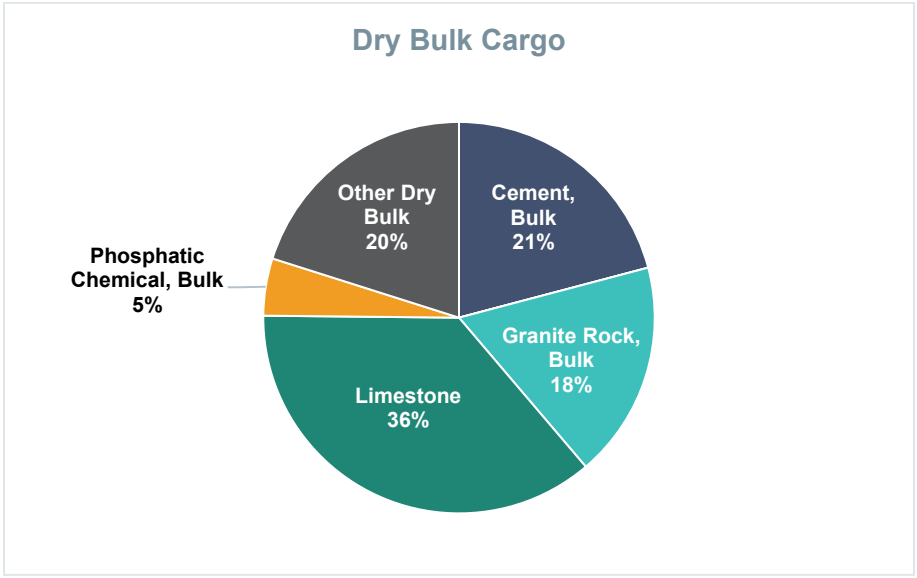


Figure 31 – *Port Tampa Bay dry bulk cargo tonnage by commodity, 2022*

Containerized Cargo

According to the 2024 Port Performance Report by BTS, PTB experienced a 133% increase in container throughput by Twenty-Foot Equivalent Units (TEU) from 2017 to 2021. However, despite this growth in container shipping in Tampa, PTB did not rank within the top 25 container ports in the United States by TEU in the 2024 Port Performance Report which was based on 2021 data provided by USACE, Waterborne Commerce Statistics Center. As depicted in **Figure 32** and documented in PTB's most recent Annual Cargo Tonnage Report , there was a 322% increase from 42,198 TEU in 2013 to 178,451 TEU in 2022, including empties.

This expansion in containerized cargo at PTB is a result of population growth in Central Florida during the same period. According to the PTB Transportation Analysis from 2021, the population in the 25-county PTB market area has more than doubled since 1990, surpassing 10.4 million people in 2018, with the majority of this growth concentrated along the I-4 corridor connecting the Tampa and Orlando metropolitan areas. Projections from this report suggest that the population in PTB's market area will reach 12.8 million people by 2035 and 13.8 million by 2045,

leading to an increased demand for consumer goods, commercial and residential construction, and transportation infrastructure to ensure the timely distribution of goods. Due to population growth, building materials such as lumber and steel are expected to continue to increase throughput of containers and general cargo at PTB terminals. Finally, according to the 2021 PTB Transportation Analysis, the 66 thousand TEU it reported for 2021 (excluding empty containers) is expected to grow to 900,000 TEUs by 2035.

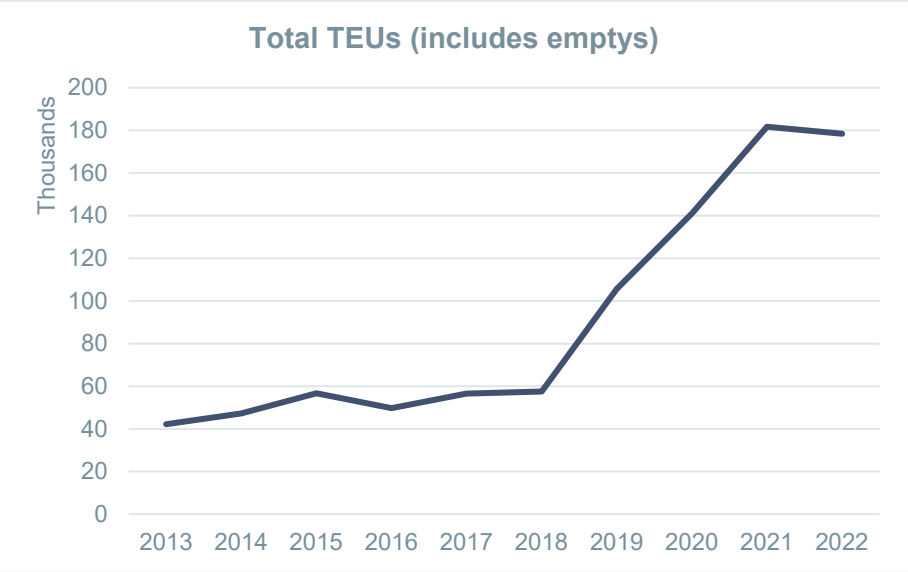


Figure 32 – *Container twenty-foot equivalent units passing through Port Tampa Bay, 2013 to 2022*

Top Commodities

Figure 33 and **Figure 34** depict the top five domestic commodities transported by water to the Tampa FAF5 zone in 2022. In this dataset, gasoline is by far the top commodity in terms of tonnage and value. Additionally, gasoline and fuel oils are the only commodities to exceed one million, while gasoline is the only commodity to surpass one billion dollars, totaling $3.67 billion in value. In contrast, natural Gas and other fossil products is the only commodity to exceed one thousand tons and one million dollars in value among commodities transported by water from Tampa in 2022, with 6 thousand tons and $1.3 million in value.

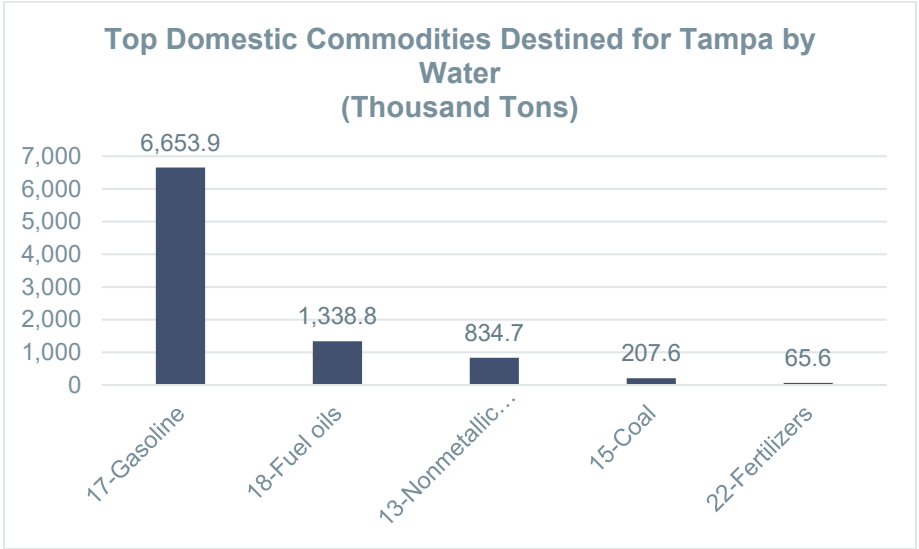


Figure 33 – *Top commodities destined for Tampa by water (tonnage)*

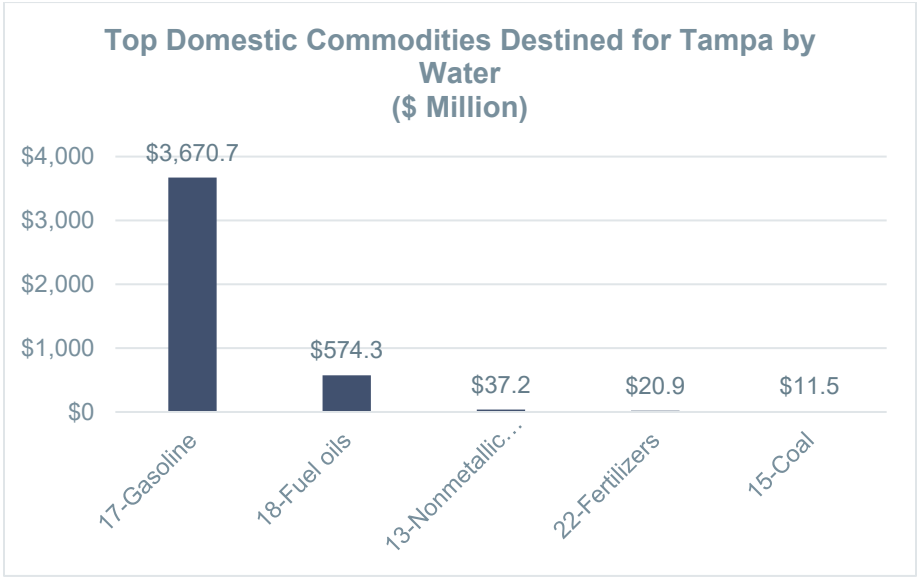


Figure 34 – *Top commodities destined for Tampa by water (value)*

The 2024 Port Performance Report provides top commodities based on 2021 data (most readily available) from the United States Army

Corps of Engineers (USACE) Waterborne Commerce Statistics Center which includes both domestic and foreign goods. In contrast FAF5 estimates are based on domestic origins and destinations between FAF zones. While the datasets provide slightly different estimates, they provide similar findings. As shown by **Figure 35**, the leading commodities (domestic and foreign) by tonnage shipped through PTB in 2021 were gasoline with 10,215,361 tons (34%), distillate fuel oil with 3,292,238 tons (11%), fertilizer with 3,014,461 tons (10%), limestone with 2,377,620 tons (8%), and Kerosene with 1,795,123 tons (6%). The remaining commodities combined account for 9,339,474 tons, or approximately 31% of total tonnage in 2021.

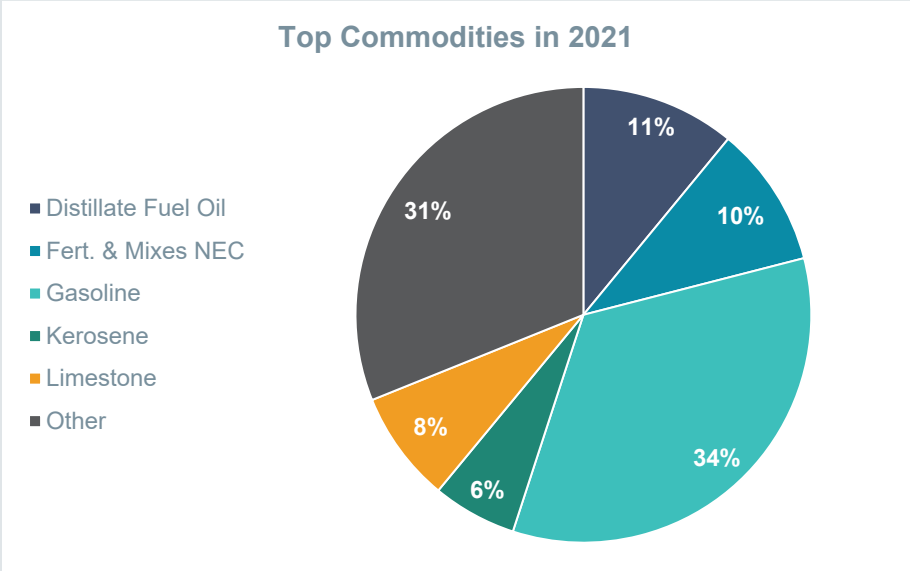


Figure 35 – *Port Tampa Bay top commodities in 2021*

Moreover, as shown in **Figure 36**, the leading agricultural commodities by tonnage shipped through PTB in 2021 were fruit juices with 152,563 tons (34%), wheat with 115,878 tons (26%), bananas and plantains with 58,148 tons (13%), fruits and nuts with 28,319 tons (6%), and hay & fodder with 24,251 tons (5%). The remaining farm and agricultural commodities combined for 66,189 tons, or approximately 15% of the total farm commodities tonnage in 2021.

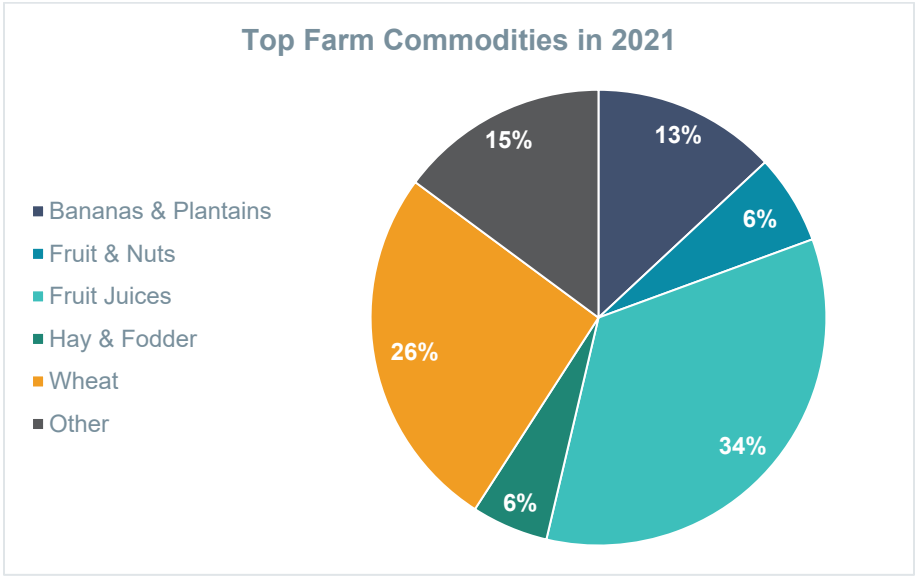


Figure 36 – *Port Tampa Bay top farm commodities in 2021*

Funding and Priority Investment Strategies

Continued surface transportation investment is necessary to sustain a high quality of service and freight access to PTB. This section identifies on-going, funded projects that will improve the movement of goods and accessibility for trucks and rail transport serving the Port. Off-port projects have committed funding through construction and are included in the FDOT 2024-2029 Five-Year Work Program. On-port projects include planned roadway and rail improvements to improve freight transport within PTB. Both categories include surface transportation improvements that are needed for preserving truck and rail access to PTB and facilitating the Port's ability to expand and diversify its business operations.

Funded off-port projects:

- Widen I-275 from 6 to 8 lanes north of MLK Jr. Boulevard to North of Hillsborough Avenue. Add noise barrier and intelligent transportation system components. *Estimated Completion: 2026*
- Widen I-275 from 6 to 8 lanes at the Howard Frankland Bridge. *Estimated Completion: Late 2025*

- Add westbound auxiliary lane along I-4 from east of 50th Street to west of MLK Jr. Boulevard. *Anticipated Construction Start: 2025*
- Construct weigh-in-motion systems along westbound I-4 from east of Mango Road to west of Seffner Weigh Station on-ramp. *Date Completed: May 22, 2023*
- Reconfigure I-75 interchange at the Selmon Expressway including extended length of the SR 60 entrance ramps onto northbound I-75 and modified the southbound I-75 exit ramp to the Selmon Expressway. *Date Completed: February 8, 2022*
- Reconfigure I-75 interchange at MLK Jr Boulevard to a diverging diamond interchange. *Estimated Completion: Summer 2025*
- Widen US 301 from 2 to 6 lanes, add medians, and paved shoulders at Sun City Center Boulevard to Balm Road. Construct new northbound and southbound off-ramps. *Date of Completion: Late 2021*

Funded on-port projects:

- Widen Maritime Boulevard from GATX Drive to Container Yard Entrance
- Double track rail extension at Port Redwing
- Road and utilities improvement at South Bay Terminal
- New Berth 214/Crane Rail (Phase 2)
- Hooker's Point – Fuel Terminal Electric Distribution Resilience (Phase 2)
- Hooker's Point Warehouse at Berth 206
- Berth 301 Construction

GROWTH, DEVELOPMENT, & FREIGHT TRENDS

POPULATION

Regional growth and business trends influence freight flows to, from, and within District Seven. The District's freight market area can be understood as the same market area for the Port Tampa Bay, which is defined as a twenty-five County area including most of Central Florida.[32] The market area has been growing rapidly; since 1990, residential development in these counties has almost doubled, reaching more than 10.4 million people in 2018. Most of this growth occurred along the I-4 corridor between Tampa and Orlando and in the communities along Florida's east and west coast. Population in these the market area is expected to reach 12.8 million people by 2035, and 13.8 million people by 2045.

LAND USE

As Central Florida's population continues to grow, new distribution centers have located proximate to the population base to lower transportation costs gained from shortened trip distances to market. The I-4 and I-75 corridors have good rail and road infrastructure, workforce availability, and local policies that incentivize industrial development. In 1990, the market area consisted of approximately 69 million square feet of distribution space, only considering those with a minimum 100K gross square feet. This doubled by 2010, and by 2018 there was 184 million square feet of large distribution centers, with more on the horizon.

Warehouse size is expected to grow, but the key metric may shift to cubic *volume* rather than *square footage*. Shifts in warehousing in D7 suggest that freight industries and distributors are demanding taller warehousing and industrial sites to better accommodate pallet stacking, taller machinery and equipment, and easier truck maneuverability.[33]

RESILIENCY

The recent Bipartisan Infrastructure Bill (BIL) included requirements that State Freight Plans develop strategies to improve the resiliency of the freight transportation system and made available new funding

[32] Port Tampa Bay Transportation Analysis, Port Tampa Bay. October 2021. Chapter 1 defines the 25-county market areas as: Brevard, Charlotte, Citrus, Desoto, Glades, Hardy, Hendry, Hernando, Highlands, Hillsborough, Indian River, Lake, Lee, Manatee, Marion, Okeechobee, Orange, Osceola, Pasco, Pinellas, Polk, Sarasota, Seminole, Sumter, and Volusia.

[33] Subject matter expert interview (Ruthven, Matt). 1/23/2024.

opportunities for freight resiliency projects.[34] FDOT's statewide Freight Mobility and Trade Plan includes scenario analysis for freight resiliency investments and maps statewide facilities impacted by storm surge, many of which are clustered in District Seven.[35]

Resilient freight planning considerations include:

- Develop a diverse approach to freight resiliency planning that includes both performance-based measures to guide investment, as well as development of more robust emergency management and operations plans.
- Ensure critical freight movements are supported in times of emergency. These investments can include technologies that convey weather impacts, road closures, and other information to freight operators in real time, as well as putting in place "push-button" contracts to critical goods providers to expedite freight movements to areas in need.
- Assess the resilience and vulnerabilities of critical network segments and consider splitting and renumbering highways when different segments operate differently during emergency conditions (for example, if half of the length of a highway is more prone to flooding). This helps avoid ambiguity when offering directions in an emergency.
- Assess freight infrastructure and investment priorities (including both roadways and freight storage) using a framework that includes:
    - Criticality – Prioritize infrastructure responsible for key goods and services.
    - Vulnerability – Prioritize infrastructure that is more likely to fail under stress.
    - Location – Prioritize infrastructure that will face more likely or frequent threat due to its location.

FREIGHT BUSINESS TRENDS

Changing Business Models

There has been a steady rising trend in e-commerce over the last two decades which accelerated dramatically in March of 2020 (aligning with the COVID-19 pandemic). In 2023, the ecommerce represented 15 percent of all retail sales, representing a 50 percent jump since 2019.[36] Shifts to e-commerce and an explosion in real-time data available for logistical planning are accelerating evolutions to commercial business models, especially in the distribution industry. The "Amazon model," emphasizing rapid delivery regionally with an extensive inventory, has exemplified this shift in logistics. E-commerce delivery models emphasize speed of delivery of goods to consumers where items taking days now only take a few hours. This has increased the pressure for more distribution and fulfillment centers as well as an increased need for curb space for freight to make deliveries.

Nearshoring

Nearshoring refers to businesses moving or growing foreign operations and manufacturing in places closer to the US. This trend satisfies needs for reducing shipping costs, exposure to geopolitical issues, and diversifying against vulnerabilities exposed by global supply chain disruptions. Manufacturing activities in countries geographically proximate to the United States, particularly Mexico, have been recipients of this trend.[37,38] Given this material shift in tonnage from places where the only freight conveyances are sea and air, imports from Mexico, and to a lesser extent Canada, can be moved via truck.[39]

[34] "State of Practice Scan: Planning for Freight Resiliency to Climate Change," U.S. Department of Transportation. June 2nd, 2022. https://www.planning.dot.gov/documents/Freight_Resiliency_State_of_Practice_Scan_FINAL.pdf

[35] "Freight Mobility and Trade Plan," Florida Department of Transportation. April, 2020. https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/rail/plans/fmtp/2020/fmtp-tm5_needs-issues-and-scenario-planning.pdf?sfvrsn=2ff6d7c8_1

[36] "Quarterly Retail E-Commerce Sales," US Census Bureau, Q4 2023 publication. https://www.census.gov/retail/ecommerce.html.

[37] "US Nearshoring Wave Grows as Mexico Exports Jump Close to Record," Bloomberg (Leda Alvin, Maya Averbuch." June 2023. https://www.bloomberg.com/news/newsletters/2023-06-28/supply-chain-latest-us-nearshoring-proof-grows-as-mexico-exports-jump.

[38] "Nearshoring in Mexico," Deloitte Insights (Daniel Zaga, Alessandra Ortiz). July 2023. https://www2.deloitte.com/us/en/insights/economy/issues-by-the-numbers/advantages-of-nearshoring-mexico.html.

[39] "Modal Profiles: U.S. Freight Transportation with Canada, Mexico, and China," Bureau of Labor Statistics. October 2023. https://www.bts.gov/data-spotlight/modal-profiles-us-freight-transportation-canada-mexico-and-china/.

Workforce Shortages

The COVID-19 pandemic prompted increases in operating prices across all economic sectors, with labor shortages being one major contributor. Transportation, trade, and utilities represent the single-largest economic sector in Florida.[40] Related, durable goods and manufacturing are among the top sectors facing above 20% unfilled job openings (January 2024), but the quit rate for this sector has declined since January 2021. Recent business coverage of the logistics industry has pointed to a lack of workers willing to work under stressful conditions and a lack of workers with the skills to modernize the logistics industry.[41] Florida has seen greater workforce participation recently, helping to stabilize the cost of labor and the supply chain.[42] While the suppliers and operators face elevated insurance and contractual costs, the cost of labor may have peaked following the COVID-19 reshuffle and lockdown period.[43]

Panama Canal

The Panama Canal plays a pivotal role in global maritime freight by providing a shortcut for ships traveling between the Pacific and Atlantic Oceans –and 46 percent of container traffic between the East Coast and Northeast Asia. The Panama Canal is a contentious passage subject to environmental pressures that limit its throughput.[44] Simultaneously, the Panama Canal Authority has worked to expand capacity where possible.[45] This development holds significant implications for freight planning as ports may need to adapt to accommodate more regular shocks to volumes and tonnage pinched through the canal. *Nearshoring* would mitigate some of this pressure.

FREIGHT TECHNOLOGY

New technologies in the freight sector hold promise for lowering costs and speeding up transport. The sections below outline emerging and growing technologies that could shape freight movements in District Seven, including artificial intelligence systems, automated vehicles and discussion of their viability, the gradual emergence of alternative vehicles and fuels for freight, and the potential of drones and airships for expediting last-mile deliveries.

Artificial intelligence

Artificial intelligence (AI) systems use new methods of information processing to accept queries and provide useful answers.

AI is playing a role in demand forecasting and inventory management. Such tools can read-in invoicing and billing to realize and suggest changes on even minor signals from the supply chain that might otherwise be missed.[46] Route optimization is another primary area AI could play a big role. AI-powered tools can make more predictive judgments about freight routes and timing based on weather conditions, freight and vehicle traffic conditions, closures and construction, and labor and fuel costs.[47] The availability of fast, lower-cost analysis can assist both suppliers in finding the best carrier and conveyance method, and for carriers, the tools can assist with optimizing the particulars of how to move their bulk.[48]

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[40] "Understanding Florida's Labor Market," US Chamber of Commerce. November 2023. https://www.uschamber.com/workforce/understanding-floridas-labor-market.

[41] "How to Address the Supply-Chain Staffing Crisis," Harvard Business Review (Joe McKendrick). September 2023. https://hbr.org/2023/09/how-to-address-the-supply-chain-staffing-crisis.

[42] "Understanding America's Labor Shortage," US Chamber of Commerce. February 2024. https://www.uschamber.com/workforce/understanding-americas-labor-shortage.

[43] "The Big Squeeze in Freight Transportation," BCG (Scharr, Mattson, others). August 2023. https://www.bcg.com/publications/2023/the-big-squeeze-in-freight-transportation.

[44] "Panama Canal Drought Slows Cargo Traffic," New York Times (Mira Rojansakul). January 2024. https://www.nytimes.com/interactive/2024/01/26/climate/panama-canal-drought-shipping.html.

[45] "Panama Canal expansion: Impact on shipping and insurance," Allianz. June 2016. https://commercial.allianz.com/news-and-insights/reports/panama-canal-expansion.html.

[46] "The Role of AI in Developing Resilient Supply Chains," Georgetown Journal of International Affairs. February 2024. https://gjia.georgetown.edu/2024/02/05/the-role-of-ai-in-developing-resilient-supply-chains/.

[47] "The Role of AI in Logistics and Supply Chain Management," DDC FPO solutions. N.d., https://www.ddcfpo.com/freight-process-insights/the-role-of-ai-in-logistics-and-supply-chain-management.

[48] "Uber Freight founder and CEO Lior Ron on how AI will transform logistics ," Uber Freight, January 2024. https://www.uberfreight.com/blog/how-ai-will-transform-logistics/.

Because AI tools are nascent, a robust understanding of their weakness is not well understood for logistics and freight. Some have raised that AI-powered tools have very high startup costs that may exclude smaller firms, may be more susceptible to cybersecurity risks, and can make definitive-appearing decisions based on data that may not be solid.[49] Further, others have raised that new technology alone cannot be expected to rectify all issues in the logistics industry.[50]

Automated Vehicles

Automated driving is one sector of particular interest.[51] Florida has piloted programs and regulatory frameworks to support the deployment of autonomous trucks, where there are claims to reduce human error-associated accidents and optimize logistics operations.[52] However, recent business reporting casts doubt that fully autonomous solutions are ready for immediate rollout.[53] As these technologies mature and gain greater adoption, the logistics and infrastructure supporting trucking operations are expected to undergo significant transformation to accommodate the shift towards automation.

Alternative Vehicles

Through interviews with Amazon staff, they spoke about the transition from traditional, large box trucks for deliveries to new, smaller modes of transport, including light trucks and vans.

Alternative Fuels

Alternative fuel vehicles, including battery electric solutions, aim to reduce greenhouse gas emissions and lower long-term operating prices. Biodiesel and ethanol have been heavily explored, with concerns about using agricultural products as fuel, along with high conversion costs. Liquid hydrogen has a significant cost advantage among fuel types but concerns over energy density and safety are concerns, along with questions about the interaction between methane and hydrogen emissions presenting a drawback to superior greenhouse emissions claims. Battery-electric and hybrid powertrain technologies are gaining, with such vehicles likely to play a significant role in inter-city and last-mile deliveries, especially in areas where emissions and smog are substantial concerns. However, battery electric does not yet appear appropriate for long-haul routes. As these technologies mature, a nationwide network for refueling presents a roadblock for adoption.[54, 55]

Airships, Drones, and other Future Air

Drones, or uncrewed aerial vehicles (UAVs), are another area with transformative promise for freight delivery, particularly for last-mile delivery. This conveyance might reduce delivery times and operational costs for small parcels, especially in a potential future of increasing residential dispersion. Drone deliveries are growing more common; companies such as Walmart and Amazon have piloted drone deliveries in the US, simultaneous with regulatory standards for these deliveries being developed.[56]

While companies like Amazon and UPS have already integrated unmanned air vehicles (UAVs) into their last-mile package delivery services, significant research and development funds are now being

[49] "How Will Artificial Intelligence Impact the Logistics Industry?," Keller Logistics, N.d., https://kellerlogistics.com/blog/ai-in-the-logistics-industry/.
[50] "The True Role Of AI In Logistics," Forbes Technology Council, Bart De Muynck, August 2023, https://www.forbes.com/sites/forbestechcouncil/2023/08/17/the-true-role-of-ai-in-logistics/?sh=122f0afa51d3.
[51] "Autonomous driving's future…" McKinsey & Company: Automotive & Assembly. January 2023. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/autonomous-drivings-future-convenient-and-connected.
[52] "Florida's Connected and Automated Vehicle (CAV) Initiative," FDOT. https://www.fdot.gov/traffic/teo-divisions.shtm/cmt/connected-vehicles
[53] "Even After $100 Billion, Self-Driving Cars Are Going Nowhere," Bloomberg (Max Chafkin). October 2022. https://www.bloomberg.com/news/features/2022-10-06/even-after-100-billion-self-driving-cars-are-going-nowhere.
[54] "Alternative Fuels and Advanced Vehicles," US Department of Energy. https://afdc.energy.gov/fuels/.
[55] "Decarbonizing Freight: Opportunities and Obstacles for Clean Fuels," World Resources Institute (Kevin Kennedy, John Feldmann). September 2023. https://www.wri.org/insights/decarbonizing-freight-clean-fuels.
[56] "Commercial drone deliveries are demonstrating continued momentum in 2023", McKinsey & Company: Aerospace & Defense. October 2023. https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/future-air-mobility-blog/commercial-drone-deliveries-are-demonstrating-continued-momentum-in-2023.

allocated towards electric vertical take-off and landing (eVTOL) aircraft, as well as heavy-lift unmanned air vehicles. In 2022, Sabrewing Aircraft introduced the Rhaegal RG-1, featuring high-efficiency, all-weather operation VTOL capabilities capable of carrying a payload of 5,400 pounds over a distance of 1,150 miles.[57]

New infrastructure needs will arise as low-altitude air traffic space grows more crowded. The Wing company is in the process of developing an unmanned traffic management (UTM) platform that will facilitate the navigation of unmanned aircraft around other drones, manned aircraft, and various obstacles such as trees, buildings, and power lines. With the increasing adoption of these new freight delivery systems, other supporting infrastructure is likely to undergo significant changes as well.[58]

Future possibilities of air freight go beyond delivery systems and could become a part of the larger transport system. The use of Airships for addressing transport of cargo to remote locations or for aiding in off-loading of cargo vessels without need for navigating vessels through channels and docking at port facilities. As research continues in this field of exploration, multiple manufacturing companies are identifying opportunities for implementing this as an environmentally sustainable solution to support the global supply chain.

FREIGHT GRANT OPPORTUNITIES

The U.S. Department of Transportation (USDOT) and U.S. Environmental Protection Agency (USEPA) periodically release Notices of Funding Opportunities (NOFO) soliciting applications for federal discretionary grant programs. These various grant programs provide opportunities to fund plans that support all modes of freight as well as construction ready projects that align with grant goals and eligibility requirements. Each grant program has its own goals, eligibility requirements, and award amounts for different types of projects that align with various merit criteria as stated in the NOFOs. Examples of federal discretionary grant programs include:

- Infrastructure for Rebuilding America (INFRA)
- Rebuilding American Infrastructure with Sustainability and Equity (RAISE)
- Port Infrastructure Development Program (PIDP)
- Consolidated Rail Infrastructure and Safety (CRISI)
- U.S. Marine Highway Program (USMHP)
- Reduction of Truck Emissions at Port Facilities grant program
- Promoting Resilient Operations for Transformative, Efficient, and Cost-Savings Transportation (PROTECT)
- Clean Ports Program: Climate and Air Quality Planning and Zero Emission Technologies Competitions (New in 2024)

FDOT's Office of Policy and Planning monitors grant opportunities and coordinates with District Federal Grant Coordinators for state projects. District staff, including District Freight Coordinators, coordinate with local governments and other partners, such as seaports and airports, on grant applications, as needed.

Each grant narrative and application needs to demonstrate high levels of detail to remain competitive. There is no single format for applications. Each grant application is unique, and the application must follow the guidelines set forth in the NOFO.

Competitive grant applications will demonstrate a local project is consistent with appropriate plans, will demonstrate the benefits outweigh the costs, will include ongoing and continuous public involvement, and will include a competitive local match share compared to the total project cost.

Plan Consistency: Projects submitted for grants should be consistent with local plans such as the adopted Work Program, Florida Transportation Plan, applicable freight plans, and any other transportation-related plans. This ensures costs, limits, scope, and designs are well documented.

[57] "Sabrewing Rhaegal RG-1", Electric VTOL News. N.d., https://evtol.news/sabrewing-rhaegal-uas/.

[58] "What is Unmanned Traffic Management (UTM)?", The Wing Company. February 2021, https://wing.com/resource-hub/articles/what-is-utm/.

Benefit-Cost Analysis (BCA): USDOT provides BCA guidance for discretionary grant programs. Benefits to consider highlighting in an application, and some of which can be found in this document, include safety benefits, travel time savings, operating costs, emissions reduction benefits, facility and vehicle amenity benefits, health benefits, and other benefits such as workforce development or economic benefits.

Public Involvement: It is important to incorporate voices from the community in transportation decision-making, particularly those from disadvantaged communities to meet Justice40 goals and initiatives.[59] Grant applicants should, to the best of their ability, involve the public in various stages including before a grant is awarded, during the grant application process, and afterwards during grant compliance. USDOT recently developed their, "Promising Practices for Meaningful Public Involvement in Transportation Decision-Making,"[60] that can be used as guidance to support public involvement throughout a project's lifecycle. Additionally, while optional, it is beneficial to collaborate with key project stakeholders to obtain letters of support for the project.

Non-Federal Local Match Requirements: Most grants involve sharing project costs meaning a portion of the project's cost is not paid by Federal funds. The required local match percentage, sources of match, and other requirements will vary from program to program so the NOFO should be consulted when applying.

It is never too early to start preparing grant application materials. However, the first recommended step is to maintain a list of projects that could be submitted for grants and collect necessary materials that could potentially support a grant application so that when an opportunity arises, FDOT is ready.

[59] https://www.whitehouse.gov/environmentaljustice/justice40/

[60] https://www.transportation.gov/public-involvement

CHAPTER 6

TRADED CLUSTERS ANALYSIS

INTRODUCTION

THE ECONOMIC IMPORTANCE OF FREIGHT IN FDOT DISTRICT SEVEN

The Florida counties of Citrus, Hernando, Hillsborough, Pasco, and Pinellas, of Florida Department of Transportation District Seven (FDOT District Seven), form a regional economy with industries ranging from healthcare services to tourism and a growing real estate market. This analysis's cluster approach reveals over half of District Seven's largest economic clusters are intimately connected to freight, competitive with their peers in the State, and are expected to grow between now and 2030. Adequate infrastructure is required to support growth for these sectors in District Seven.

VALUE OF THE CLUSTER APPROACH

Modern economies with complex logistical chains depend on freight. However, no given entity (supplier, shipper, government, or consumer) has a complete picture of how the freight system supports an economy.[1] Employment is one variable that shows where people are in the system and what they do; evaluating how and where different employment agglomerates is the most direct way to estimate how an area's land use and transportation network supports its local economy and quality of life.

Economic clusters are geographic areas with related, complementary industries in operation. Clusters arise because they heighten the productivity of firms through geographic proximity with other businesses. Evaluating economies using the cluster lens helps us see the big picture of a region's economy, find what types of industries are thriving and determine where growth opportunities might exist. The nature of these clusters may also inform which investments are evaluated further. The cluster lens has proven effective for policymakers looking to spur economic development.[2, 3]

This analysis grouped employment in District 7 using four classifications as described below:

Freight clusters are concentrated industries producing or accepting large amounts of goods that must be conveyed in bulk. The National Cooperative Highway Research Program (NCHRP)[4] has referenced examples of freight clusters as

[1] "Using Commodity Flow Survey Microdata and Other Establishment Data to Estimate the Generation of Freight, Freight Trips, and Service Trips: Guidebook (2016)," National Cooperative Freight Research Program Research Report #37. 2017.

[2] "Clusters, Convergence, and Economic Performance" Delgado, M., Porter, M.E., Stern, S.: National Bureau of Economic Research Working Paper No. 18250. July 2012.

[3] Clusters defined using definitions provided on https://clustermapping.us/.

[5] "Planning Freight-Efficient Land Uses: Methodology, Strategies, and Tools (2022)," National Cooperative Freight Research Program Research Report #998. 2017. *See:* "manufacturing sites, distribution centers, warehouses, and large retailers … [the] location of the gateways (NAICS 48), and the employment data for large establishments in Manufacturing (NAICS 31-33), Wholesale Trade (NAICS 42), and Retail Trade (NAICS 44-45)/Accommodation and Food Services (NAICS 72) as proxies…"

"manufacturing sites, distribution centers, warehouses, and large retailers … [the] location of the gateways (NAICS 48), and the employment data for large establishments in Manufacturing (NAICS 31-33), Wholesale Trade (NAICS 42), and Retail Trade (NAICS 44-45)/Accommodation and Food Services (NAICS 72) as proxies…"@

Of the freight clusters, **freight-intensive clusters** help enable freight by moving, consolidating, and storing bulk. These are the industries where "freight is our business," such as logistics firms and warehousing.

- **Freight clusters** are areas with high concentrations of industries where "freight is our business," such as logistics firms and warehousing. The National Cooperative Highway Research Program (NCHRP)[5] provides guidance on types of businesses that fit in this classification.
- **Freight-intensive clusters** are areas with high concentrations of industries producing or accepting large amounts of goods conveyed in bulk. These include retail trade, construction, and agricultural sectors.
- **Non-freight clusters** are areas with concentrations of related industries that do not depend on freight for day-to-day operations, such as government, financial, and other professional services hubs do notnot depend on freight for day-to-day operations.
- **Non-clustered employment** are job sectors that do not benefit from agglomeration and therefore tend to be geographically dispersed rather than clustered. Non-cluster employment makes up a small fraction of total employment in District Seven. Public Administration is a significant sector for this group.

The US Cluster Mapping tool[3] is a powerful source of economic cluster data produced by the U.S. Economic Development Administration and Harvard Business School. It is the main source of cluster data for this analysis. The Freight Intensive Sectors definitions from NCRHP #37 also inform this breakdown.

COMPETITIVENESS

While economic clusters are (by definition) geographically clustered, to understand the competitiveness of clusters in a region we must compare job sectors across geography. Location quotients (LQs) compare the concentration of an economic **sector**[6] to its presence in a large geography, such as a region, state, or country. LQs are commonly calculated for wages, employment, or investment. When an area has a sector with a high employment LQ against its region (above 1.0), the

[5] "Planning Freight-Efficient Land Uses: Methodology, Strategies, and Tools (2022)," National Cooperative Freight Research Program Research Report #998. 2017. *See:* "manufacturing sites, distribution centers, warehouses, and large retailers … [the] location of the gateways (NAICS 48), and the employment data for large establishments in Manufacturing (NAICS 31-33), Wholesale Trade (NAICS 42), and Retail Trade (NAICS 44-45)/Accommodation and Food Services (NAICS 72) as proxies…"

[6] A sector or subsector is defined by NAICS North American Industry Classification System, sectors representing "general categories of economic activities." North American Industry Classification System, Manual, US Office of the Executive, and subsectors providing one additional level of detail: https://www.census.gov/naics/reference_files_tools/2022_NAICS_Manual.pdf.

industry has a competitive edge in the respective area and is concentrated. That sector is termed export-oriented and **traded**. Traded sectors drive economic growth by tapping into broader markets and bringing revenues into the area. High firm mobility in traded sector firms allows them to spur economic growth, with the reverse also being true.

On the flip side, not all sectors are export-oriented. Sectors scoring below LQ 1.0 are not regionally competitive or export-oriented, but they are still vital for sustaining quality of life and providing local necessities —these are termed **local** sectors. Local sectors provide stability and support day-to-day quality of life.

An efficient freight network supports both sector types by providing an effective and cost-efficient supply chain.

District Seven combined cluster data with LQ sector concentration data to determine **local** and **traded cluster employment**. Traded cluster employment represents agglomerated sectors with concentrated employment figures (LQ above 1.0). Local cluster employment jobs represent agglomerated industries that serve local functions.

DISTRICT SEVEN'S CLUSTERS

The majority of the District's employment is concentrated in the following economic clusters:

- **Local Health Services:** the District's largest cluster type, employing more people than any other cluster. Local health services provide a spectrum of jobs and contribute to a high overall quality of life, making it a foundational part of the District Seven economy.
- **Local Hospitality Establishments:** These establishments serve residents and tourists and include businesses such as hotels and restaurants.
- **Local Commercial Services:** this cluster has a diverse range of businesses, including professional services, marketing firms, and IT support, which are crucial for sustaining a functional economy and ensuring local productivity.
- **Business Services:** Like the above, sectors in this cluster support businesses at various stages of growth, fostering a climate of innovation and economic diversification.
- **Local Real Estate, Construction, and Development:** this cluster has shown significant recent growth propelled by the region's expanding population and economy. This cluster reflects the demand for residential and commercial spaces.
- **Distribution and Electronic Commerce:** this cluster is a critical enabler of the region's economic engine, ensuring that goods move efficiently through the supply chain.
- **Local Financial Services:** This cluster provides banking and investment services oriented toward the region.

Figure 1 maps District Seven's local and traded clusters. Local cluster jobs, shown in green, are widely and evenly distributed throughout the region. Traded cluster jobs, depicted in orange, are heavily concentrated in the Tampa and St. Petersburg areas, with a dense accumulation along the coast and the I-75 corridor.

Figure 2 charts cluster employment in District 7 based on 2022 Bureau of Labor Statistics data.

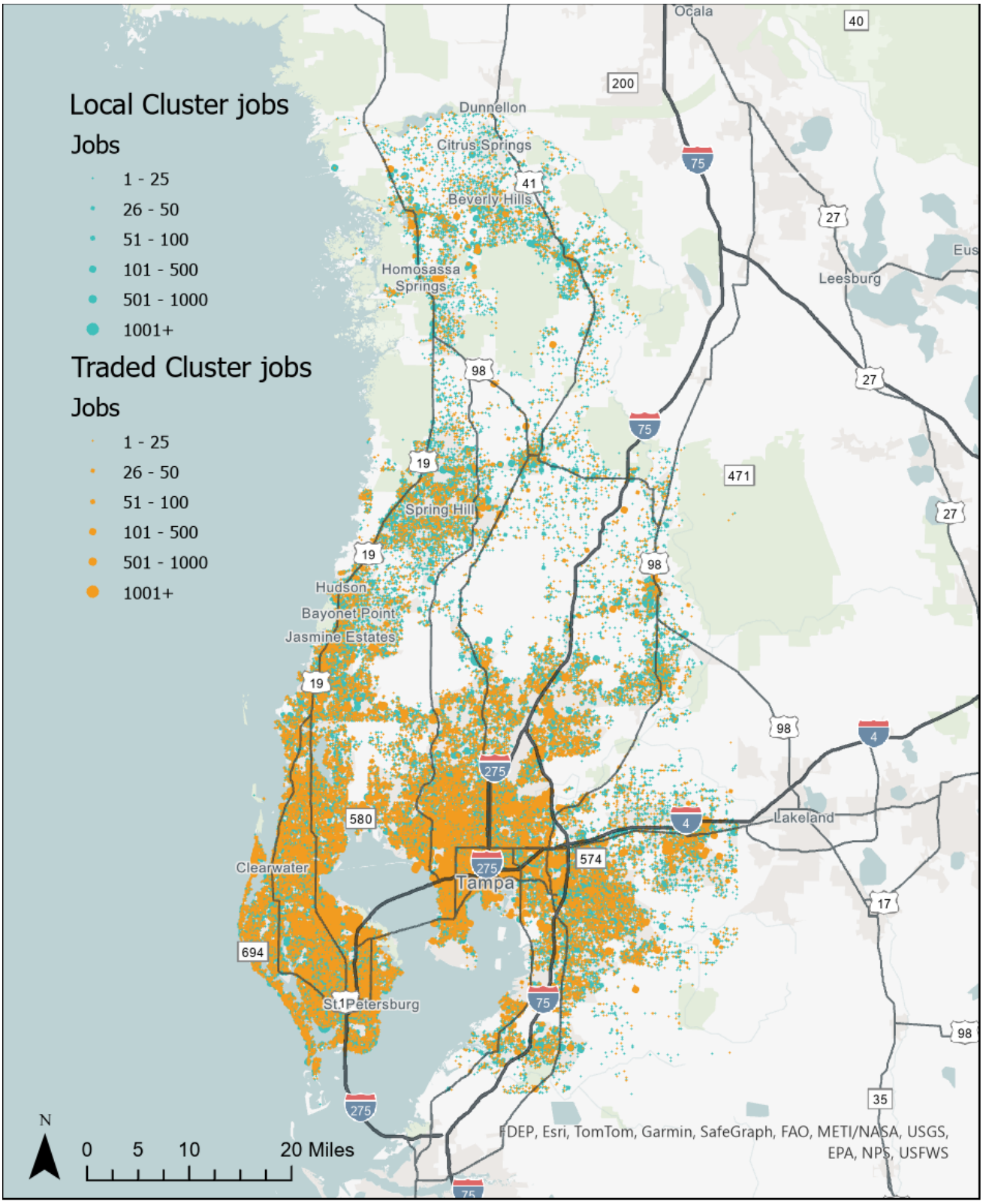
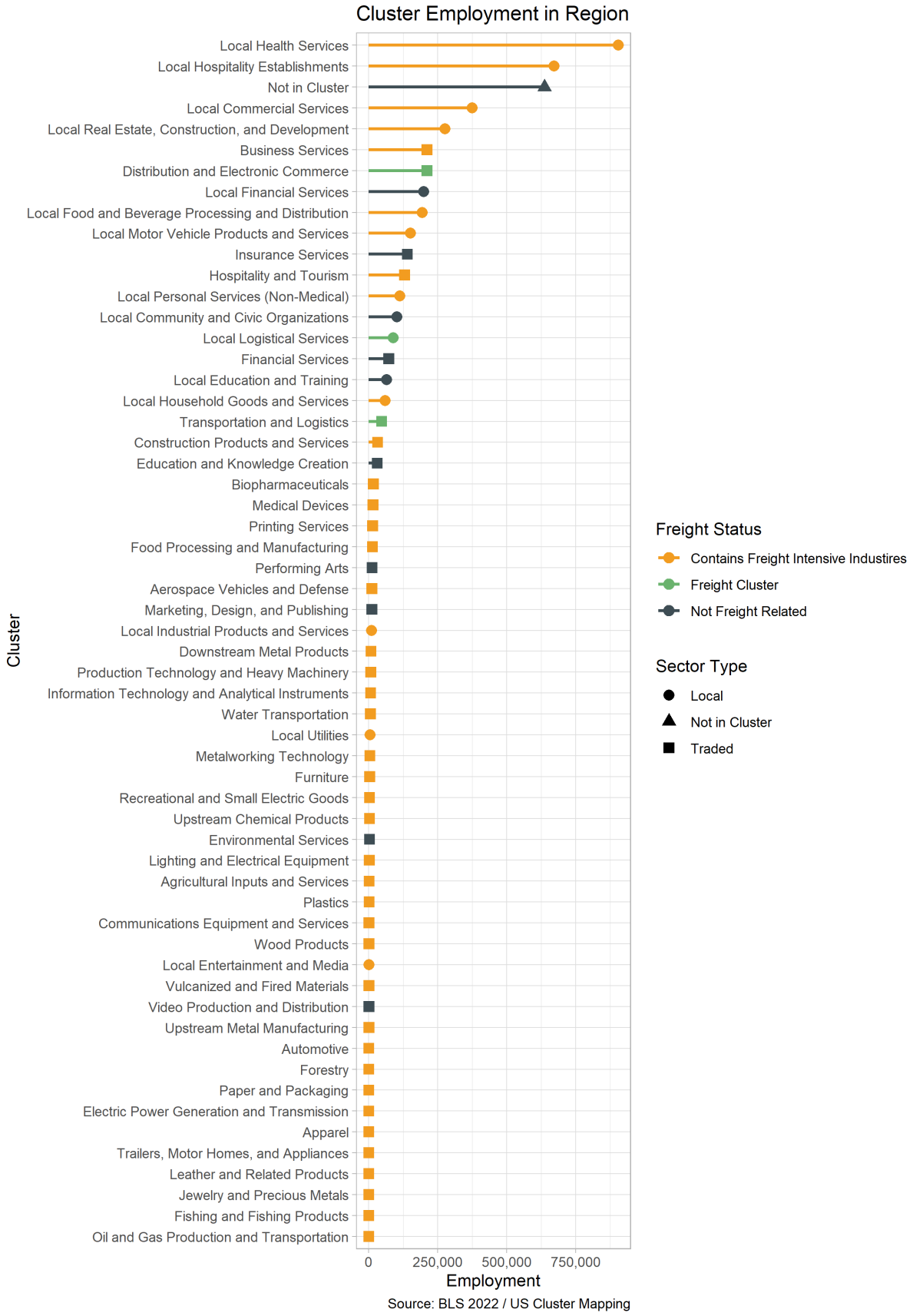


Figure 1 *Map of District Seven's local and traded clusters*

Figure 2: *Cluster employment in DISTRICT SEVEN*

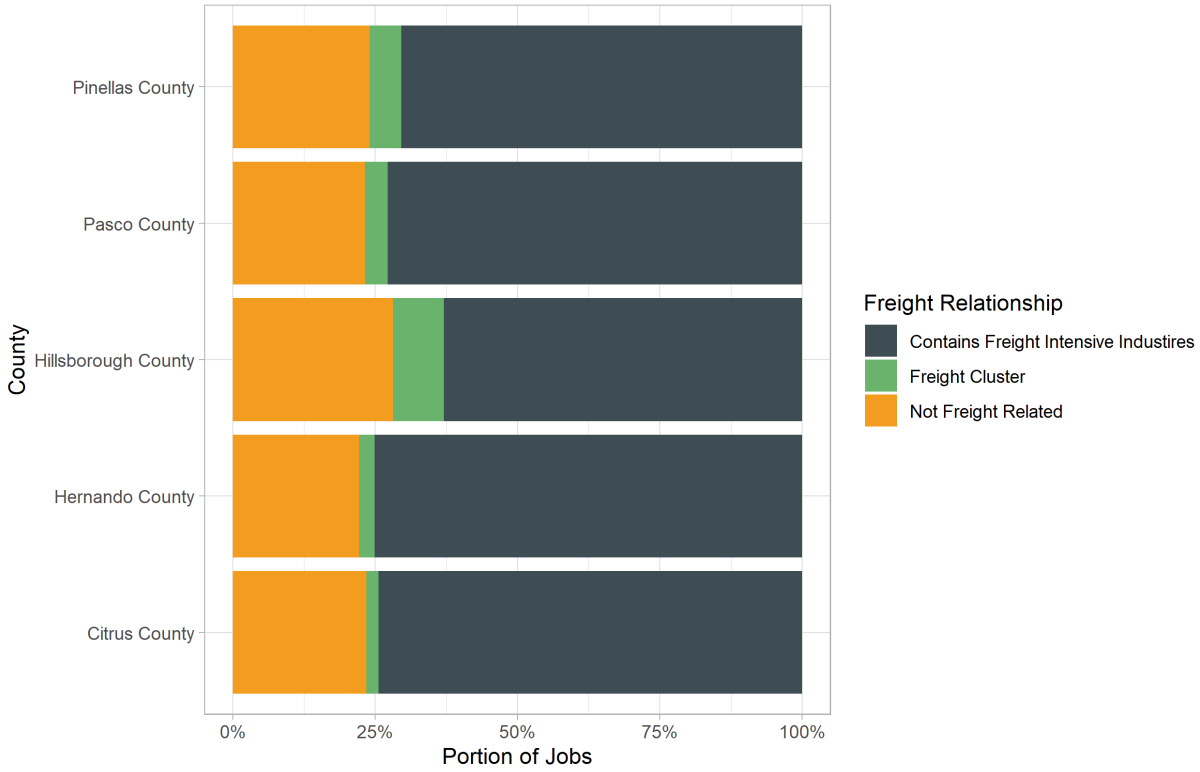


COMPARISON OF DISTRICT SEVEN COUNTIES BY JOB TYPE

Across each county within District Seven, most cluster employment is within a freight-cluster industry or freight-intensive industry cluster. Each county is similar in freight employment portions (Figure 3). Owing to high services employment, Hillsborough County shows slightly less freight-intensive employment, although it has the highest percentage of freight cluster employment.

Figure 4 maps the locations of freight clusters, freight-intensive clusters, and non-freight-related clusters in District Seven. Freight cluster jobs, represented by purple dots, are most densely concentrated around the Tampa and St. Petersburg areas, with significant clusters extending along the I-75 and I-4 corridors. Freight-intensive jobs are shown in shades of orange and are also primarily found in the Tampa area, with additional concentrations spreading northward along the coast and the highways. Not freight-related jobs, depicted in shades of blue, are more evenly dispersed across the map.

***Figure 3**: Portion of jobs by freight relationship in DISTRICT*



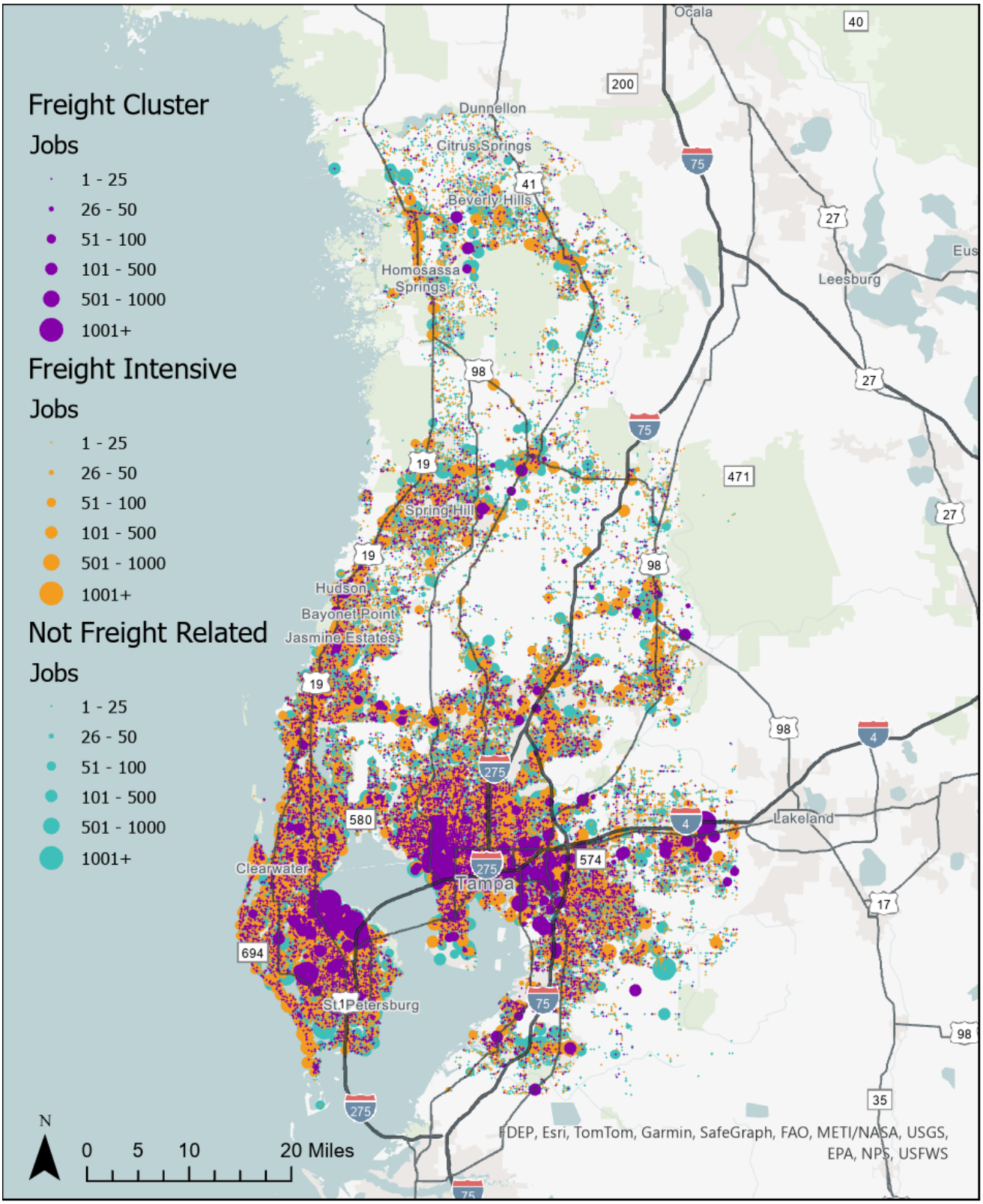


Figure 4 *Map of District Seven's freight cluster*

ANTICIPATED GROWTH IN DISTRICT SEVEN CLUSTERS

To understand the future of cluster employment, the researchers conducted an analysis that connected the official 10-year employment forecasts to its economic clusters.[7] Figure 5 (page 11) charts anticipated percent change in employment growth from 2022-2030 for each cluster in District Seven.

The analysis reveals:

- The top clusters with the highest estimated percent growth vary widely in their contexts, from chemical synthesis and production to health care and environmental services. While these clusters differ widely in terms of their sector, most are **traded**, and most are **freight-intensive**. This underscores freight's role in the growing District Seven economy.
- **Distribution and Electronic Commerce** and **Local Logistical Services** are anticipated to add 5% to their employment. This expectation aligns with upscaling of storage capacity in response to growing sales.
- Regarding net job decline, there are no freight clusters with anticipated percent drops in employment. However, there are several freight-intensive industries with expected decline, owing to shifts in consumer preferences and increased computerization—**leather products, paper and packaging, apparel,** and **printing** face some percentage decline. Business services, not a freight-related cluster, is also anticipated to decline.

"FREIGHT IS OUR BUSINESS:" FREIGHT CLUSTER GROWTH

Local Logistical Services serves the regional economy, providing essential support for the vast array of businesses within the region. These services ensure that the supply chain remains seamless for all local clusters, whether sourcing ingredients for restaurants in the hospitality sector or delivering construction materials for real estate developments. The efficiency and reliability of these services directly influence local competitiveness and operational success.

The **Distribution and Electronic Commerce** cluster reflects the region's adaptability and logistics efficiency. As consumers increasingly shift to online shopping, this cluster ensures that goods are swiftly moved from suppliers to consumers, contributing to economic vitality by supporting retail businesses and generating employment opportunities. Its role has been further magnified by the COVID-19 pandemic, which has accelerated the shift toward e-commerce and necessitated robust distribution networks to meet the growing demand. Appendix A: Districtwide retail sales by channel, 2019 to 2023 contains a figure showing sales by retail channel and supports the notion that the sustained increase in online retail sales necessitates more significant provision of freight via shipping and delivery services.

[7] Florida Commerce is the State of Florida's economic development agency, publishing regional forecasts for employment growth. Florida Commerce's County forecasts use its Workforce Regions as geographies, which differ from FDOT Districts. Consequently, the localized growth rates are inclusive of Levy and Marion Counties.

Figure 5 *Anticipated employment growth in District Seven clusters*

CLUSTER PERFORMANCE IN DISTRICT SEVEN

Combining current employment concentration, relationship to freight, and anticipated growth, Figure 6 (page 14) presents a scatter plot comparing District Seven's largest economic clusters against expected change in the region-to-state LQ. The key takeaways are:

- Both “freight is our business” freight clusters and freight-related clusters will drive economic growth in District Seven through 2020.
- Of the largest twenty clusters in District Seven, most are freight-oriented and are expected to grow employment through 2030, with an LQ above 1.0 indicating their export orientation.
- Local health services, containing freight-intensive industries,[8] show the highest relative mix of percent employment growth and concentration in the District. Local hospitality and local commercial services show similar markers.
- Non-freight-related sectors comprise several traded clusters within the top twenty in District Seven. These sectors show substantial variability across LQ and anticipated percent employment change.

Planning with a cluster lens allows us to develop strategies that support long-term economic growth. Adequate infrastructure is required to support growth. This is particularly relevant for traded sectors, where firms are more mobile and subject to intense national competetion.

[8] The health services sector is freight intensive due to its reliance on a steady supply of medical supplies, including those needing cold chain logistics, and the transportation of heavy, delicate medical equipment.

Figure 6: *Cluster performance*

CHAPTER 7





Freight Needs Assessment

INTRODUCTION

One of the aims of the Strategic Freight Plan (SFP) is to provide FDOT and its transportation planning partners in the region with an understanding of needed projects and studies to ensure freight concerns are appropriately addressed in transportation decision-making, enabling these agencies to collectively support the goals of the District Seven Strategic Freight Plan, Freight Mobility and Trade Plan (FMTP), and the Florida Transportation Plan (FTP) related to goods movement. This chapter identifies transportation improvement projects from relevant studies throughout District Seven and subjects them to a prioritization process to identify the most significant freight projects.

Needs are grouped into the following categories based on their source of identification or the type of deficiency each addresses:

- Needs identified in the previous Strategic Freight Plan
- Needs from the FDOT Comprehensive Freight Improvement Database (CFID)
- Needs Identified by FDOT 5-Year Work Programs & MPO Long Range Transportation Plans (LRTP)
- Freight Activity Center (FAC) Subarea Needs
- At-Grade Rail Crossing Needs
- Truck Parking Needs
- Emerging Trends & Technology

The needs collected from these resources include freight capacity, safety, and operational needs, as well as policy strategies and potential coordination activities to better support the current approach used by the Department for matching potential funding opportunities with prioritized projects for advancing through the Work Program.

Needs within each category are prioritized separately based on the overarching goals and objectives of the SFP. For each group, the prioritization process highlights locations where freight mobility, safety, and access to the region's Freight Activity Centers (FACs) warrant focused study and/or investment. Specifically, roads with high truck volumes, high percent truck traffic, and high delays associated with congestion are prioritized; roads with significant numbers of crashes and high rates of crashes involving trucks are prioritized; and roads serving high intensity FACs are prioritized.

Beyond prioritization, other contextual information can be attributed to each identified need to support the transportation decision-making process. Specifically, information regarding the land use contexts and the freight function of the roadway can inform appropriate freight strategies and roadway design, while the attributes of the FACs served by a need can clarify opportunities for projects to support the supply chain and bolster the regional and state economies.

This chapter begins with a summary of the highest-ranking freight improvement needs across District Seven. These are broken down by county, by source / type, and by FAC. Then, details of how needs were assembled from prior studies and plans are provided. Finally, the document concludes with a detailed description of the prioritization process and the data and metrics used to rank freight needs.

IDENTIFICATION & PRIORITIZATION OF FREIGHT NEEDS

STRATEGIC FREIGHT PLAN 2018

The first Strategic Freight Plan for District Seven was published in 2012, with an update occurring in 2018. The 2012 plan included a thorough examination of freight travel markets, corridors, and operational hot spots to develop a detailed listing of operational, safety, and mobility needs. The 2018 update revised the list of priority projects to account for implemented improvements and emerging needs. The Tampa Bay Region has seen great success in moving freight-related projects from needs identification to implementation.

Where applicable, needs identified from previous Strategic Freight Plan efforts are retained for prioritization alongside needs identified through other planning efforts. Top-priority regional freight needs from the 2018 update are summarized in **Table 1**, along with the status of associated improvement projects for addressing them. These needs were identified using a variety of data sources to compare existing and projected future activity levels along reginal freight facilities and near Freight Activity Centers throughout District Seven. The assessment process to determine which should be top priorities was guided by a series of objectives related to freight mobility and freight compatibility. All needs were evaluated with performance measures to determine how well potential improvements achieved these 2018 plan objectives. The implementation status shown for each of the previously identified priority locations is as of Fall 2024. It is based on a combination of the FDOT Adopted Five Year Work Program (2025-2029), various FDOT databases, reports, and online applications for tracking construction activities, and individual project or study websites in some cases.

***Table 1** - Top-Priority Needs Identified by the 2018 Strategic Freight Plan*

County	Location	Need	Status
Hernando	SR 50 / Cortez Blvd from I-75 to Sumter County Line	Capacity & Grade Separation	*Capacity improvements partially complete – final segment under construction*
Pasco	SR 54 at US 41 / CSX Railway	Operational	*ROW funding for new interchange in FY 28*
Pinellas	SR 686 / Roosevelt Blvd from Gandy Blvd to SR 688 / Ulmerton Rd	Operational	*Multiple projects implemented through CFID and 118th Avenue Expressway.*
Hillsborough & Pinellas	I-4 from Selmon Connector to County Line Rd I-75 from Fowler Ave to US 301 I-275 / Howard Frankland Bridge	Interstate Modernization	*Improvements being advanced through the Work Program as various stages of planning, design, or construction funded in the next five years.*
Hillsborough	SR 580 / Hillsborough Ave from SR 589 / Veterans Expressway to I-4	Capacity & Operational	*Operational improvements implemented at Anderson Road, Lois Avenue, Armenia Avenue and 22nd Street*
Hillsborough	US 41 from Madison Ave to I-4	Capacity, Operational, & Grade Separation	*Capacity improvements in design with ROW funding in FY 27* *Design change re-evaluation study currently underway for grade separation*
Hillsborough	SR 60 / Adamo Dr at US 41 / CSX Railway	Grade Separation	*Funded for design in FY 28*
Hillsborough	US 301 from Selmon Expressway to I-4	Capacity	*Unfunded*

COMPREHENSIVE FREIGHT IMPROVEMENT DATABASE (CFID) PROGRAM

CFID is a collection of freight-specific issues that have been identified throughout District Seven. The CFID consists of a multifunctional

database and online map interface that identifies specific hot spot locations where geometric, traffic operations, or roadway surface conditions present barriers to mobility and accessibility for freight shippers. Designed as an application to be used during project scoping and development to identify additional freight considerations, CFID is routinely used by District Seven to select locations where operational improvements can be implemented on an annual basis. It assists FDOT with prioritizing freight-related funding and provides transportation planners and engineers with an opportunity to highlight infrastructure conditions at targeted locations that may be negatively impacting the regional movement of goods.

CFID is routinely maintained with updated conditions of identified issues throughout the Tampa Bay Region. It currently includes 180 hot spot locations (see **Figure 1**) where intersections or roadway corridors may pose operational challenges related to freight mobility or safety needs. Summary-level information about these locations is provided in **Table 2.** Four primary attributes have been summarized to show the following characteristics: status, ease of implementation, roadway system, and issue type. Nearly two-thirds (64%) of the issues listed in CFID are located in Hillsborough County and nearly half (42%) are listed as having a turning-radius issue.

Freight-related issues can be added to the CFID based on observations from a variety of stakeholders. With more than half of the identified issues field verified, District Seven can quickly advance implementation activities for these once funding is identified. A recently completed FDOT District Seven report highlights 19 locations (see **Figure 2**) where CFID issues have been addressed by improvement projects completed between 2019 and 2023. These projects are summarized in **Table 3**, with additional detail provided in **Appendix A**. **Figure 3** through **Figure 5** show examples of recent freight-related improvements that have been implemented partially as a result of issues from the CFID database.

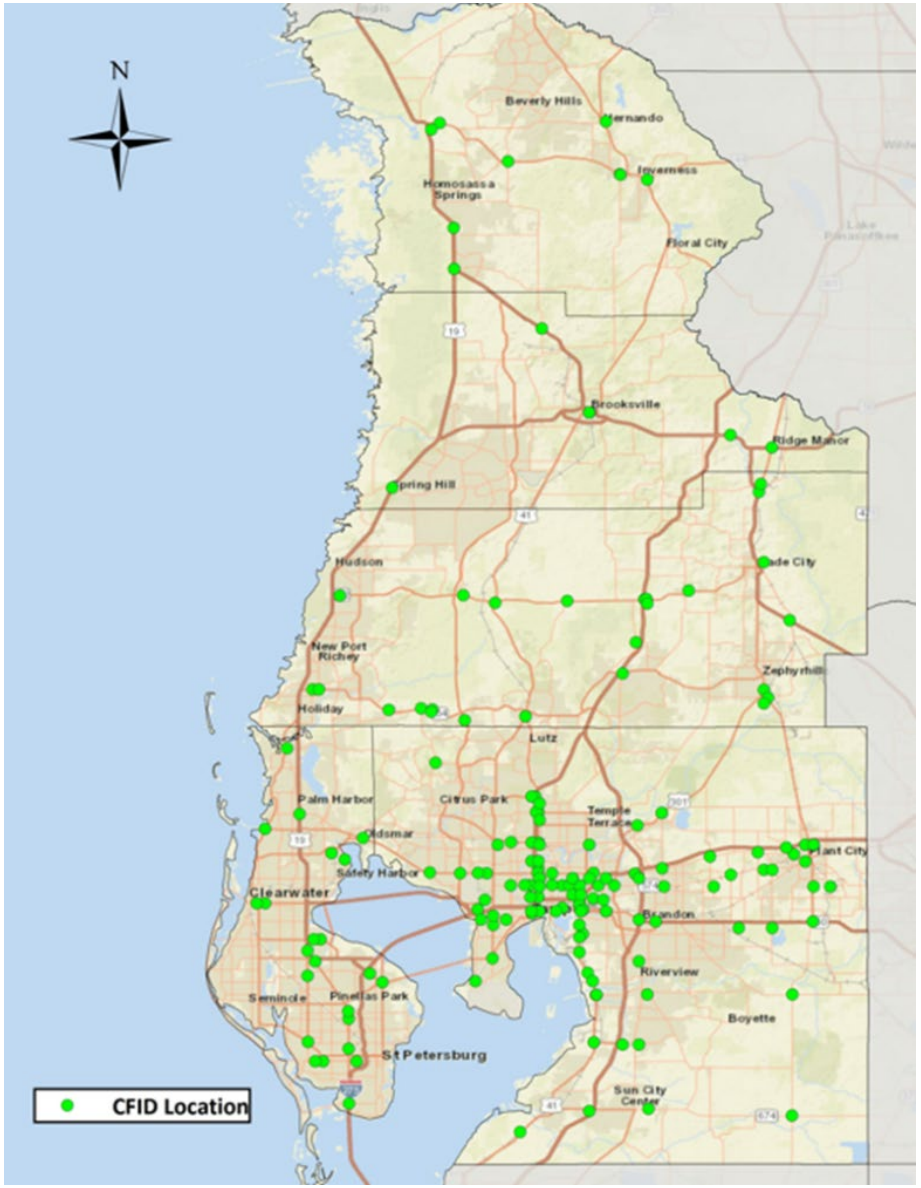


Figure 1 – *CFID Hot Spot Locations*

***Table 2** – Summary of CFID Issues*[1]

Category		County					Total	Percentage
		Citrus	Hernando	Hillsborough	Pasco	Pinellas		
Status	Archived	2	1	13	2	1	19	11%
	Completed	1	2	8	2	3	16	9%
	Field Verified	6	5	65	17	11	104	58%
	Identified	0	0	28	2	8	38	21%
	In Progress	0	0	1	2	0	3	2%
Ease of Implementation	Easy	7	5	71	15	17	115	64%
	Moderate	2	2	26	6	4	40	22%
	Difficult	0	1	18	4	2	25	14%
Roadway System	NHS	1	0	12	4	3	20	11%
	Off System - Local	1	0	8	0	0	9	5%
	On System - State Road	1	7	73	15	15	111	62%
	Regional Freight Mobility Corridor	0	0	1	0	0	1	1%
	SIS Connector	0	0	3	0	0	3	2%
	SIS Corridor	6	1	18	6	5	36	20%
Issue Type	Add New Signal	0	0	3	1	0	4	2%
	Left Turn Lane Length	2	0	13	3	3	21	12%
	Number of Lanes	0	0	1	1	1	3	2%
	Operational Safety	0	0	1	2	0	3	2%
	Other Capacity Issues	0	1	4	2	1	8	4%
	Other Maintenance Issues	0	0	2	0	1	3	2%
	Other Operational Issues	0	1	11	6	1	19	11%
	Other Safety/Security Issues	0	0	1	0	0	1	1%
	Queue Length	0	0	1	0	0	1	1%
	Railroad Crossing Delay	0	0	3	0	0	3	2%
	Right Turn Lane Length	1	0	2	0	0	3	2%
	Signage for navigational/directional	0	1	0	0	1	2	1%
	Signal Timing / Design	0	0	6	1	0	7	4%
	Stop Bar Modification	1	1	4	2	0	8	4%
	Substandard Pavement	0	1	13	0	5	19	11%
	Turn Radii	5	3	50	7	10	75	42%
	Total Locations:	**9**	**8**	**115**	**25**	**23**	**180**	**100%**
	Percentage:	**5%**	**4%**	**64%**	**14%**	**13%**	**100%**	

[1] As of August 2024. Source: https://energy.exp.com/cfid/

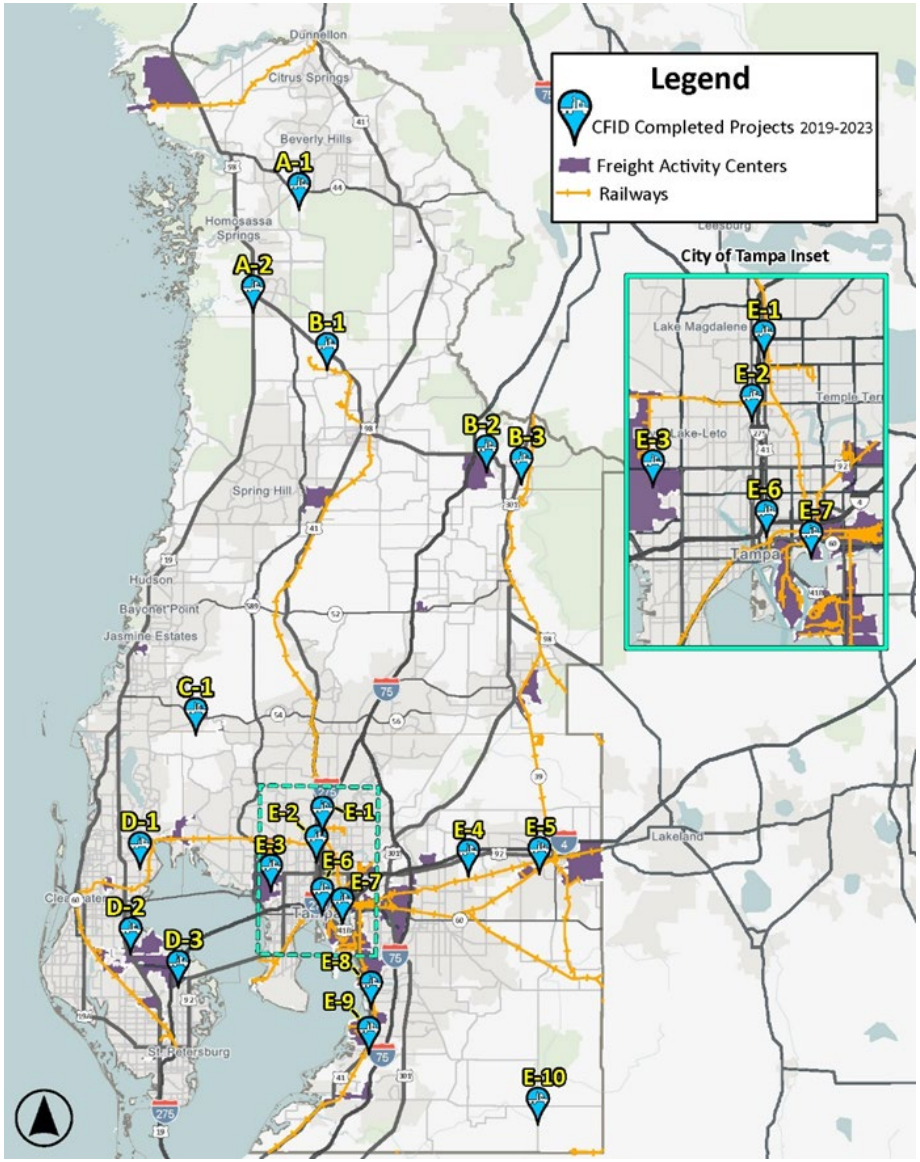


***Figure 2** – Completed CFID Projects (2019-2023)*

***Table 3** – Completed CFID Projects (2019-2023)*

ID	County	Location	Improvement Type
A-1	Citrus	SR 44 at CR 491 / Lecanto Hwy	Turn Radii Modifications
A-2	Citrus	US 19 & US 98	Turn Radii Modifications
B-1	Hernando	SR 700 / US 98 at CR 491	Turn Radii Modifications
B-2	Hernando	Cortez Blvd / US 98 / SR 50 at Kettering Rd	Turn Radii Modifications
B-3	Hernando	SR 50 at SR 35 / US 301	Pavement Upgrades
C-1	Pasco	SR 54 at Merchant Ave	Operational Improvements
D-1	Pinellas	SR 580 at McMullen Booth Rd	Pavement Upgrades
D-2	Pinellas	SR 686 and 62nd St. N	Turn Radii Modifications
D-3	Pinellas	SR 686 / Roosevelt Blvd at 16th St	Left Turn Lane Extension
E-1	Hillsborough	SR 45 / Nebraska Ave at SR 579 / Fletcher Ave	Left Turn Lane Extension
E-2	Hillsborough	Busch Blvd at Florida Ave	Turn Radii Modifications
E-3	Hillsborough	SR 580 / Hillsborough Ave at Anderson Rd	Turn Radii Modifications
E-4	Hillsborough	US 92 / SR 600 and McIntosh Rd	Stop Bar Modifications
E-5	Hillsborough	US 92 / SR 600 at SR 566 / Thonotosassa Rd	Turn Radii Modifications
E-6	Hillsborough	Nebraska Ave and Columbus Dr	Turn Radii Modifications
E-7	Hillsborough	SR 60 and 34th St	Turn Radii Modifications
E-8	Hillsborough	SR 45 / US 41 at Gibsonton Dr / Alice Ave	Operational Improvements
E-9	Hillsborough	US 41 at Big Bend Rd	Pavement Upgrades
E-10	Hillsborough	SR 674 at CR 39	Turn Radii Modifications

Figure 3 *– Intersection Improvements at SR 52 and Pasco Road to Accommodate a Growing Freight Activity Center Near I-75 in Pasco County*

Figure 4 *– Improvements to Add Capacity and Correct Truck Turning Issues at US 98 / SR 50 / Cortez Boulevard and Kettering Road in Hernando County*

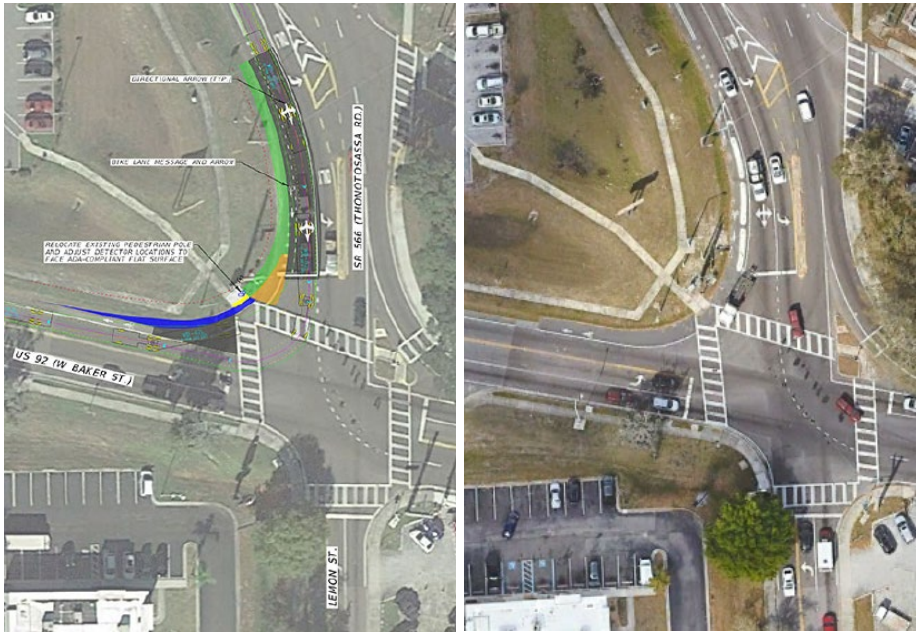


Figure 5 *– Intersection Improvements to Facilitate Trucks Turning Movements at US 92 / SR 600 and SR 566 / Thonotosassa Road in Plant City*

NEEDS IDENTIFIED IN 5-YEAR WORK PROGRAM & LONG-RANGE TRANSPORTATION PLANS

Project-level freight needs were identified by reviewing key documents, including the Cost Feasible Plan (CFP) in Metropolitan Planning Organizations' (MPOs) 2045 or 2050 Long-Range Transportation Plans (LRTPs), and their 2024 List of Priority Projects. The MPOs in FDOT District Seven include Forward Pinellas, Hernando/Citrus MPO, Hillsborough MPO, and Pasco County MPO. At the time this report was written, 2050 updates to the LRTPs was ongoing but not yet complete. Forward Pinellas was able to provide their draft 2050 CFP, allowing for its inclusion in the assessment of freight needs, but the other counties were assessed based on their 2045 plans.

Additionally, FDOT's State Transportation Improvement Program (STIP) and the Work Program (WP) for FY 2025 to FY 2029 were reviewed. The WP supports the STIP and aligns with MPO Transportation Improvement Programs (TIPs), ensuring coordinated planning across all levels for freight, mobility, and infrastructure needs.

Freight needs in the current Work Program and in MPO Cost Feasible Plans were identified by assigning Work Mix descriptions and project improvement descriptions that align with the Regional Freight Plans' prioritization methodology, including factors like truck volume, crash frequency, and last-mile connectivity. However, these criteria are not uniformly applied to project descriptions categorized as maintenance or non-freight needs. Furthermore, project types such as Intelligent Transportation Systems (ITS) and technology initiatives, electric vehicle charging, weigh-in-motion stations, parking facilities, and right-of-way acquisition are not exclusively freight focused and were excluded from the prioritization process. The table in **Appendix B** provides a crosswalk between the freight need categories identified in **Table 4** and the FDOT Work Program Instructions Appendix D Codes.

Figure 6 shows the needs and their assigned prioritization scores based on the following prioritization process, which focuses on truck mobility (speed, volume, facility function), safety, and connectivity to the region's Freight Activity Centers (FACs). The top-ranking needs are in "Tier 1" and primarily include the region's Interstate highways in areas experiencing rapid growth in residential and commercial development. Tier 2 needs have slightly lower priority scores, but they also typically consist of Interstates or other limited access highways in the urban heart of the District. These highways are noteworthy for the direct connections they provide to intermodal facilities in FACs, including Port Tampa Bay terminals, Tampa International Airport, and CSX rail yards. Tier 3 needs have lower prioritization score than Tier 1 and Tier 2 needs. They include some limited access highways as well as major arterials that often serve intra-regional truck and passenger vehicle flows. All other needs were also scored through the prioritization process, but they received relatively low scores. The full set of identified needs and their prioritization scores is presented in **Appendix C**.

Table 5 through **Table 7** provide a detailed breakdown of the highest priorities, by County, Project Type and Facility Type.

***Table 4** – Percentage of FDOT Work Program and MPO Cost Feasible Plan Freight Needs by Freight Need Category*

Need Categories	Count of Projects	% of Projects
FDOT Work Program for District Seven, FY 25 to FY 29		
Capacity Expansion	44	15.60%
Freight-Related Projects (Not Scored)	7	2.48%
Maintenance	107	37.94%
Non-Freight Need	70	24.82%
Operational Improvements	28	9.93%
Safety	18	6.38%
Technology & Systems	8	2.84%
MPO 2045 and 2050 (Forward Pinellas) Cost Feasible Plans		
Capacity Expansion	409	88.0%
Operational Improvements	30	6.5%
Safety & Maintenance	23	4.9%
Other / Non-Freight Needs	3	0.6%
Grand Total	465	100%

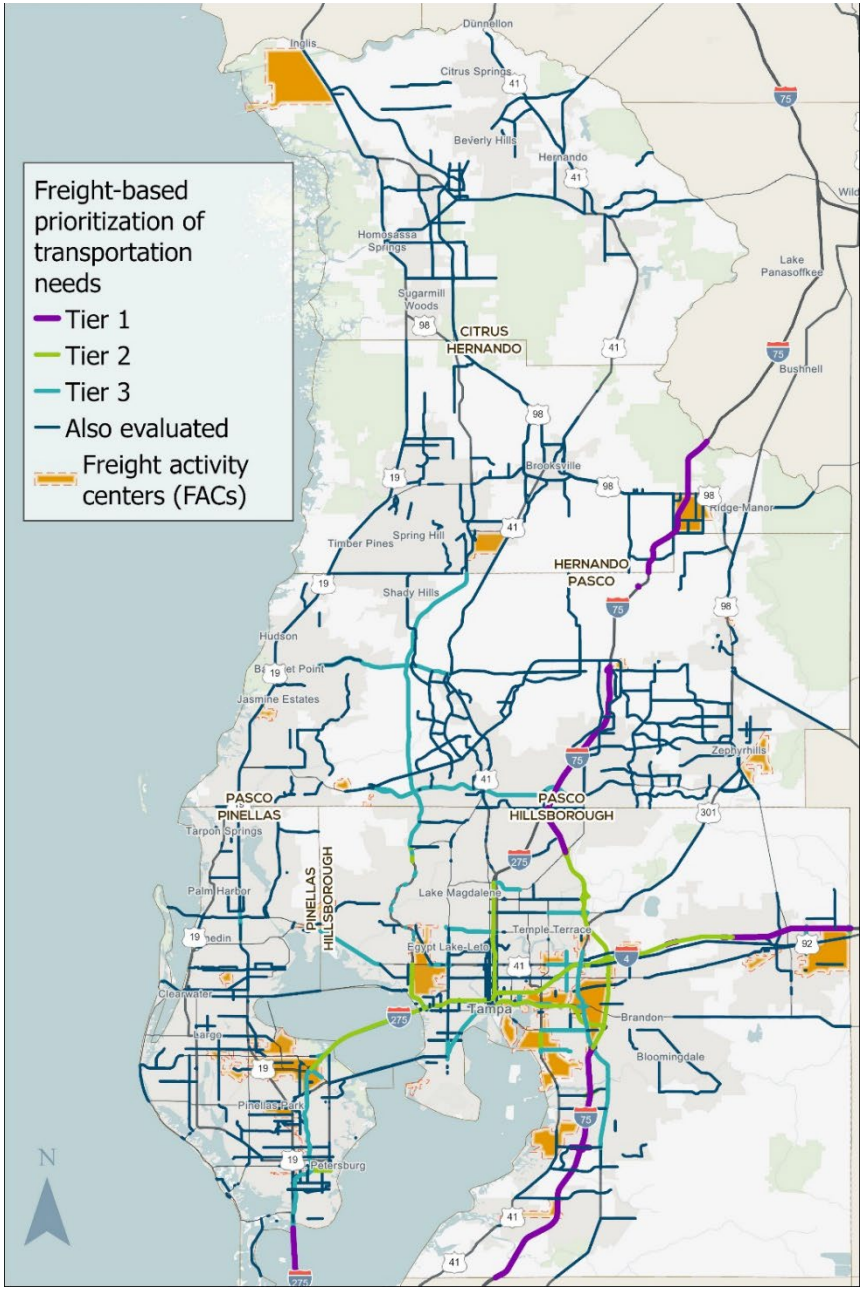


Figure 6 *– Freight-Based Transportation Needs Priority Tiers*

Table 5 *- Top Five Priorities by County*

Rank	County	ID	Description
26	Citrus	CFP: 62	ANTHONY AVE FROM OVERDRIVE CIR TO CR 491
372	Citrus	CFP: 170	CR 491 FROM TRAM RD, N TO SR 200, N
376	Citrus	CFP: 170	CR 491 FROM TRAM RD, N TO SR 200, N
416	Citrus	CFP: 62	ANTHONY AVE FROM OVERDRIVE CIR TO CR 491
421	Citrus	CFP: 45	SUNCOAST PARKWAY 2 FROM CARDINAL ST TO SR 44
15	Hernando	CFP: 64	I-75 FROM CORTEZ BLVD TO 1 MILE NORTH OF CORTEZ BLVD
22	Hernando	CFP: 65	I-75 FROM 1 MILE NORTH OF CORTEZ BLVD TO SUMTER COUNTY LINE
26	Hernando	CFP: 62	I-75 FROM PASCO COUNTY LINE TO POWERLINE RD
32	Hernando	CFP: 360	I-75 FROM POWERLINE RD TO CORTEZ BLVD
416	Hernando	CFP: 62	I-75 FROM PASCO COUNTY LINE TO POWERLINE RD
6	Hillsborough	CFP: 438	I-4 FROM BRANCH FORBES RD TO POLK COUNTY
7	Hillsborough	TIP: 122	I-4 WB AUXILIARY LANE FROM E OF WEIGH STATION TO W OF MCINTOSH RD
14	Hillsborough	CFP: 441	I-75 FROM BRUCE B DOWNS BLVD TO I-275
21	Hillsborough	CFP: 439	I-75 MANATEE COUNTY TO US HWY 301
23	Hillsborough	TIP: 123	I-4 WB AUXILARY LANE FROM E OF BETHLEHEM RD TO W OF BRANCH FORBES RD
1	Pasco	CFP: 210	I-75 FROM WESLEY CHAPEL BLVD TO SR 52
12	Pasco	TIP: 106	INTERSTATE WWVDS ATVARIOUS RAMPS-PHASE III DEPLOYMENT IN PASCO
17	Pasco	TIP: 187	I-275/I-75 FROM HILLSBOROUGH COUNTY LINE TO CR 54
36	Pasco	LOP: 28	I75/I275 FROM COUNTY LINE ROAD TO SR 56
59	Pasco	TIP: 278	I-75/SR 93 FROM SR 54 TO S END OF OVERPASS ROAD SB ON RAMP
16	Pinellas	TIP: 114	I-275/SR 55 SKYWAY CORRIDOR REHABILITATION
24	Pinellas	TIP: 256	I-275/US 19 FR N OFSKYWAY FISHING PIER TO SOF PINELLAS POINT DR
91	Pinellas	LOP: 25	I-275 FROM S OF GANDY BLVD TO N OF 4TH ST N
160	Pinellas	CFP: 463	I-275 FROM PINELLAS CO TO KENNEDY BLVD

Rank	County	ID	Description
167	Pinellas	TIP: 277	I-175 FROM I-275 TO4TH ST S

Table 6 – *Top Ten Priorities by Project Type*

Rank	ID	Description
1	CFP: 210	I-75 FROM WESLEY CHAPEL BLVD TO SR 52
6	CFP: 438	I-4 FROM BRANCH FORBES RD TO POLK COUNTY
14	CFP: 441	I-75 FROM BRUCE B DOWNS BLVD TO I-275
15	CFP: 64	I-75 (SR93) FROM CORTEZ BLVD (SR50) TO 1 MILE NORTH OF CORTEZ BLVD
21	CFP: 439	I-75 MANATEE COUNTY TO US HWY 301
22	CFP: 65	I-75 (SR93) FROM 1 MILE NORTH OF CORTEZ BLVD TO SUMTER COUNTY LINE
26	CFP: 62	ANTHONY AVE FROM OVERDRIVE CIR TO CR 491; I-75 (SR93) FROM PASCO COUNTY LINE TO POWERLINE RD
32	CFP: 360	I-75 (SR93) FROM POWERLINE RD TO CORTEZ BLVD (SR50)
44	CFP: 443	US HWY 41 FROM MADISON AVE TO CAUSEWAY BLVD
56	CFP: 437	I-4 FROM 22ND ST TO BRANCH FORBES RD
31	LOP: 27	BIG BEND ROAD/CR 672 @ I-75/SR93A FROM W OF COVINGTON TO E OF SIMMONS
36	LOP: 28	I75/I275 FROM COUNTY LINE ROAD TO SR 56 (PHASE II)
91	LOP: 25	I-275 (SR 93) FROM S OF GANDY BLVD TO N OF 4TH ST N
124	LOP: 75	I-275/SR 93 SB OFF RAMP TO I-4 FR N OF FLORIBRASKA TO W OF 21ST
138	LOP: 83	SR 60 WB FROM N OF SPRUCE ST/TIA INTERCHANGETO N OF MEMORIAL HWY
145	LOP: 19	I-275 (SR 93)/SR 60INTERCHANGE
148	LOP: 73	I-4/SR 400 WB TO I-275/SR 93 NB FR W OF 14THTO FLORIBRASKA AVE
159	LOP: 74	I-275/SR 93 SB/I-4/SR 400 WB FROM N OF MORGAN ST TO W OF N 12TH ST
186	LOP: 18	I275/SR 93 FM S OF SR60 TO N OF HILLS. RVR, SR60 FM S OF I275 TO SR589
191	LOP: 24	I-275 (HOWARD FRANKLAND)FROM N OF SR687(4TH ST N) TO N OF HOWARD FRANKLAND

Rank	ID	Description
31	LOP: 27	BIG BEND ROAD/CR 672 @ I-75/SR93A FROM W OF COVINGTON TO E OF SIMMONS
7	TIP: 122	I-4 WB AUXILIARY LANE FROM E OF WEIGH STATION TO W OF MCINTOSH RD
12	TIP: 106	INTERSTATE WWVDS ATVARIOUS RAMPS-PHASE III DEPLOYMENT IN PASCO
16	TIP: 114	I-275/SR 55 SKYWAY CORRIDOR REHABILITATION
17	TIP: 187	I-275/I-75 FROM HILLSBOROUGH COUNTY LINE TO CR 54
23	TIP: 123	I-4 WB AUXILARY LANE FROM E OF BETHLEHEM RD TO W OF BRANCH FORBES RD
24	TIP: 256	I 275/US 19 FR N OFSKYWAY FISHING PIER TO SOF PINELLAS POINT DR
33	TIP: 121	I-4 EB EXIT RAMP TOI-75 FROM E OF TAMPA BYPASS CANAL TO W OF I-75
34	TIP: 211	I-75/SR 93A FROM MILE MARKER #243 TO N END OF CR 672 NB ON RAMP
42	TIP: 42	I-75/SR 93A AT GIBSONTON DRIVE

Table 7 – *Top Ten Priorities by Freight Facility Type*

Rank	Facility Type	ID	Description
385	FACST	CFP: 384	ORIENT RD FROM BROADWAY AVE TO SLIGH AVE
532	FACST	CFP: 370	WOODBERRY RD FROM FALKENBURG RD TO LAKEWOOD DR
573	FACST	CFP: 187	126TH AVE N FROM US 19 (SR 55) TO W OF 49TH ST
574	FACST	CFP: 9	126TH AVE N FROM W OF 49TH ST TO 34TH ST
575	FACST	CFP: 348	142ND AVE CORRIDOR
584	FACST	LOP: 107	118TH AVE N FROM BELCHER ROAD TO 62ND ST N
584	FACST	TIP: 178	118TH AVE N FROM BELCHER ROAD TO 62ND ST N
624	FACST	CFP: 353	9TH AVE N FROM PARK ST TO 1ST ST N
746	FACST	LOP: 91	22ND ST N FROM 5TH AVE S TO 1ST AVE N
796	FACST	CFP: 326	KETTERING RD FROM DASHBACH RD TO CORTEZ BLVD (SR50)
1	FW	CFP: 210	I-75 FROM WESLEY CHAPEL BLVD TO SR 52
6	FW	CFP: 438	I-4 FROM BRANCH FORBES RD TO POLK COUNTY
7	FW	TIP: 122	I-4 WB AUXILIARY LANE FROM E OF WEIGH STATION TO W OF MCINTOSH RD
12	FW	TIP: 106	INTERSTATE WWVDS ATVARIOUS RAMPS-PHASE III DEPLOYMENT IN PASCO
14	FW	CFP: 441	I-75 FROM BRUCE B DOWNS BLVD TO I-275
15	FW	CFP: 64	I-75 (SR93) FROM CORTEZ BLVD (SR50) TO 1 MILE NORTH OF CORTEZ BLVD
16	FW	TIP: 114	I-275/SR 55 SKYWAY CORRIDOR REHABILITATION
17	FW	TIP: 187	I-275/I-75 FROM HILLSBOROUGH COUNTY LINE TO CR 54
21	FW	CFP: 439	I-75 MANATEE COUNTY TO US HWY 301
22	FW	CFP: 65	I-75 (SR93) FROM 1 MILE NORTH OF CORTEZ BLVD TO SUMTER COUNTY LINE
465	RFMC	LOP: 48	OLA AVE BIKEWAY FROM W 7TH AVE TO USB 41 B/NFLORIDA AVE
647	RFMC	LOP: 126	PASCO COUNTY SIDEWALK GAPS - VARIOUS LOCATIONS
674	RFMC	LOP: 114	SR 56 FROM BRUCE B DOWNS BLVD TO MEADOW POINTE BLVD
698	RFMC	LOP: 22	SR 50/CORTEZ BLVD FROM W OF BUCK HOPE RD TO W OF JEFFERSON STREET
247	RFMC	LOP: 58	SR 56/54 FROM GUNN HWY TO CR 581
714	RFMC	LOP: 10	US 92/SR 600/SR687/SR694/GANDY BLVD FROM 4THST TO W OF GANDY BRIDGE
297	RFMC	LOP: 23	SR 45(US41) AT SR54FROM W OF WILSON RD TO EOF OSPREY LN
36	RFMC	LOP: 28	I75/I275 FROM COUNTY LINE ROAD TO SR 56 (PHASE II)
672	RFMC	LOP: 3	US 41 (SR 45) FROM N OF CONNERTON BLVD TO S OF SR 52
671	RFMC	LOP: 2	SR 52 (SCHRADER HWY) FROM W OF SUNCOAST PKWYTO E OF US 41 (SR 45)
210	TR	LOP: 84	I275/SR93 FM N OF HFB TO N OF LOIS,SR60 FM KENNEDY TO N OF SPRUCE/TIA
273	TR	LOP: 118	SR 582/FOWLER AVE FROM 56TH ST TO E OF I-75
280	TR	TIP: 128	I275/SR93 FM N OF HFB TO N OF LOIS;SR60 FM KENNEDY TO N OF SPRUCE/TIA
310	TR	TIP: 33	I-4 (SR 400) FM W OF I-75 NB OFF RAMP TO E OF MANGO RD
348	TR	CFP: 386	BEARSS AVE FROM I-275 N RAMP TO SKIPPER RD; BEARSS AVE FROM 17TH ST TO BRUCE B DOWNS BLVD
350	TR	TIP: 74	SR 52 FROM HICKS RD/INDIAN DR TO US 41
398	TR	TIP: 155	SR 39 FROM N OF CENTRAL AVE TO US 301/GALL BLVD
406	TR	TIP: 17	US 301/SR 41/GALL FROM S OF SR 56 TO S OF SR39/PAUL BUCHMAN
408	TR	TIP: 194	SR 581/BRUCE B DOWNS BLVD FROM SR 56 TO SR 54
420	TR	TIP: 167	TWIGGS ST FROM ASHLEY DRIVE TO NEBRASKA AVE

FACST: Freight Activity Street, FW: Freeway, RFMC: Regional Freight Mobility Corridor, TR: Truck Route

Prioritization Methodology

The Work Plan and LRTP prioritization considered roads with high truck volumes, high percent truck traffic, and high delays associated with congestion; roads with significant numbers of crashes and high rates of crashes involving trucks; and roads serving high intensity FACs. Each component of the prioritization evaluation is described below.

Truck Volumes and Freight Mobility Evaluation:

The Truck Volumes and Freight Mobility evaluation focuses on three key criteria to improve mobility and efficiency: 1) the ratio of future congested speed to free flow speed, 2) future average annual daily truck traffic (AADTT), and 3) the facility's classification within the regional freight network. “Future” conditions are forecasted using the Tampa Bay Regional Planning Model (TBRPM), which has a horizon year of 2045.

Some needs affect segments that are not included in the model network. These are generally minor roads where congestion is unlikely to be an issue in the horizon year and truck traffic is assumed to be light. In these cases, the need received a minimum value for each component of the analysis.

The following steps outline how these criteria are applied to evaluate projects and elevate needs where mobility issues are most acute.

1. **Future Congested Speed to Free Flow Speed Ratio:** The first criterion compares the expected future congested speed on a roadway segment with the free flow speed, which represents the speed trucks could travel without congestion.
    - A lower speed ratio indicates greater congestion, highlighting areas with a higher need for improvement.
    - The inverse of the raw speed ratio is used as the score, meaning that projects addressing severe congestion receive higher scores.
    - Values are normalized to a 0 to 2 scale to allow for easer combination with other metrics
    - The minimum value is 0.
2. **Future Average Annual Daily Truck Traffic (AADTT):** The second criterion evaluates the number of trucks forecasted to use the facility on daily basis in the horizon year.
    - This measure focuses on identifying facilities that will experience high volumes of truck traffic.
    - The raw AADTT number serves as the score, so higher truck volumes result in higher scores, emphasizing the importance of serving major freight routes.
    - Values are normalized to a 0 to 2 scale to allow for easer combination with other metrics
    - The minimum value is 0.
3. **Facility Class:** The final criterion for corridor-based projects prioritizes those located on limited access highways and Regional Freight Mobility Corridors (RFMC), which account for the majority of truck vehicle miles of travel and are essential for regional and interregional freight movement.
    - Projects on limited access highways and RFMCs receive one point.
    - Projects on any other highway facility receive no points.
4. **Combined Scores**
    - The Final Truck Volumes and Freight Mobility metric was created by combining the normalized values for Facility Class, Future Truck AADT, and Future Speed Ratios through simple addition.
    - Scores range from 0 to 5 with 5 representing higher mobility.

Freight Safety Evaluation:

The Freight Safety evaluation criterion assesses the safety benefits of candidate projects through the ratio of the percentage of truck-involved crashes to the percentage truck traffic. This measure identifies whether trucks are involved in more crashes than expected based on their share of traffic. If trucks are overrepresented in crashes, high-risk areas can be identified, and safety improvements can be focused there. Crash data from Signal 4 Analytics, covering the five-year period from 2018 to 2023, were linked to project needs segments by summarizing total and heavy vehicle crashes within a 200’ buffer and matching roadway IDs. Projects creating new roadways have no existing crashes and receive a minimum value for the safety evaluation of 0.

1. **Calculate Percentage of Truck-Involved Crashes**: Determine the ratio of truck-related crashes to the total number of crashes

occurring within a 200-foot buffer of segment corresponding to the freight need.

2. **Calculate Percentage of Truck Traffic:** Determine the proportion of annual average daily truck traffic (AADTT) relative to the overall average annual daily traffic (AADT) on a specific roadway segment. Traffic statistics are obtained from FDOT's traffic counts.
3. **Compare the Two Percentages**: The percentage of truck crashes can reasonably be expected to align with the percentage of truck traffic. For example, if truck traffic represents 10% of the total, it would be expected that trucks account for approximately 10% of crashes, assuming all vehicle types contribute equally to crashes.
    - Overrepresentation: If the percentage of truck-involved crashes on a segment exceeds the percentage of truck traffic (e.g., 15% crashes vs. 10% traffic), this indicates that trucks are overrepresented in crashes, contributing more crashes than expected based on their traffic volume.
    - Underrepresentation: If the percentage of truck-involved crashes on a segment is lower than the percentage of truck traffic (e.g., 8% crashes vs. 10% traffic), trucks are underrepresented in the crash data, meaning they contribute fewer crashes than expected based on their traffic volume.
    - These values were normalized to a 0 to 2 scale to allow for easier combination with other metrics.

5. **Filter to remove segments with very few crashes**: The ratio of truck crash share to truck traffic share can be skewed for segments where very few crashes occur. For example, if a segment only has one observed crash, and it involved a truck, the track crash share would be 100%. Since segments with very few crashes may have too small a sample size to be representative, segments with fewer than 100 total crashes are removed and given zero points for the safety evaluation. The low volume of crashes suggests that safety is a lesser factor on these segments.

Freight Accessibility and Connectivity Evaluation:

The Freight Accessibility and Connectivity evaluation focuses on three criteria: 1) the intensity of Freight Activity Centers (FACs) served by projects, 2) the tenure of those FACs (existing or emerging), and 3) whether the project improves connections to limited access or other major nearby highways. The following step-by-step methodology outlines how these criteria are applied to evaluate freight mobility projects, ensuring a consistent and data-driven approach to prioritization.

6. **Examine Connectivity to Major Highways:** The freight accessibility and connectivity evaluation considers whether the project provides a new or improved connection between a FAC and a limited access highway. In cases where access to other regions would be more efficiently provided by a non-limited access highway, the connectivity analysis focuses on major US highways (such as US 19, US 98, or US 301) instead of limited access facilities. For needs that would construct new roads, access/connectivity is based on the spatial intersection of the new road with the FAC boundaries.
7. **Determine FAC Intensity:** Having determined which projects provide connectivity to which FACs, the next step is to evaluate the intensity of the FAC(s) served by the candidate project. This criterion measures the magnitude of freight activity the project will impact by providing improved access and/or connectivity to the freight network.
    - Projects that serve a high-intensity FAC or multiple FACs are given a score of "high" (2 points)
    - Projects serving a single medium-intensity FAC are scored "medium" (1 point), and projects serving a single low-intensity FAC receive a "low" score (0 points).
    - Projects that do not serve any FACs receive no points for this criterion.
8. **Evaluate FAC Tenure (Existing or Emerging):** Next, the tenure of the FAC(s) served by the project is evaluated. Existing FACs, which are already significant hubs of freight activity, are prioritized over emerging FACs, where planned industrial growth has not yet occurred, and over transitioning FACs,

where future development is expected to diversify uses and soften truck trip generation over time.

- Projects serving existing FACs receive a score of 1.00.
- Projects serving emerging FACs are assigned zero points, as these facilities are not yet fully operational, and their freight-related needs are still evolving.
- Projects serving transitioning FACs are assigned a score of 0.5, as these areas have freight-generating activities but are evolving in ways that are expected to reduce their truck trip generation over time.

9. **Combine scores**
    - To generate a final Freight Accessibility and Connectivity score, the FAC Intensity and FAC Tenure scores were combined simply by summing the values for each component. This reflects a heavier emphasis on intensity (maximum 2 points) relative to tenure (maximum 1 point), with the highest scoring projects receiving a total 3 points for accessibility and connectivity considerations.

Next Steps

The prioritized lists of needs by project type allows the District Seven Freight Coordinator to collaborate across offices and with MPO partners to ensure that freight mobility considerations are incorporated into programmed planning and roadway design efforts on high-priority segments. The mapping and data resources allow projects to be identified based on location. Scoring data and associated attributes provide insight into the role the facility plays in regional goods movement and what key issues impact truck mobility within the project limits.

Since plans and projects are continuously being developed, altered, and/or implemented, the results of this prioritization analysis need to be updated regularly. This should occur in regular cycles of approximately five years, similar to other long range transportation planning efforts.

FREIGHT ACTIVITY CENTER SUBAREA NEEDS

The freight activity centers (FACs) in District Seven are the "economic engines" that contribute to the area's base employment and typically generate intense freight activity, including long-haul shipments to areas outside of the region. FACs generate high levels of truck traffic, and many also have significant transshipment operations supporting multiple freight modes including trucks, rail, air cargo, and sea vessels. Last-mile connections to the region's major highways are important to facilitate access for trucks in and out of FACs.

A network-based approach was used to determine the roads responsible for linking FACs with major inter-regional highways. First, inter-regional highways were defined subjectively as the major highways likely to serve as freight routes. Limited access connectors were defined for the entire region, including Interstates 4, 75, and 275; SR 589; and US-19 in central and southern Pinellas County. Others were defined locally, because they were identified as major freight carriers in areas where limited access roads were not present. These included US-301 in Pasco County, US-19 in Citrus County, and US-41 in Citrus County.

After identifying the inter-regional highways, the shortest path from each industrial or distribution/warehousing parcel within an FAC to any inter-regional highway was calculated. This was done by routing from each parcel to all inter-regional highway nodes (i.e., ramps and intersections) and selecting the path with the shortest travel time. The results of this routing analysis are shown in **Figure 7**, with details for Hillsborough and Pinellas Counties shown in **Figure 8**.

Needs identified in the 5-year work program and long-range transportation plans were overlaid on segments that provide connectivity between FACs and highways. From this overlay, the needs that specifically affect last-mile connectivity were winnowed down.

The top 25 FAC last-mile connectivity needs are presented in **Table 8** below. The "Project" column allows needs to be cross-referenced to the list in Appendix C, while the "Rank" column reflects regionwide rankings across all projects. A complete rundown of FAC connectivity needs by FAC is provided in Appendix D.

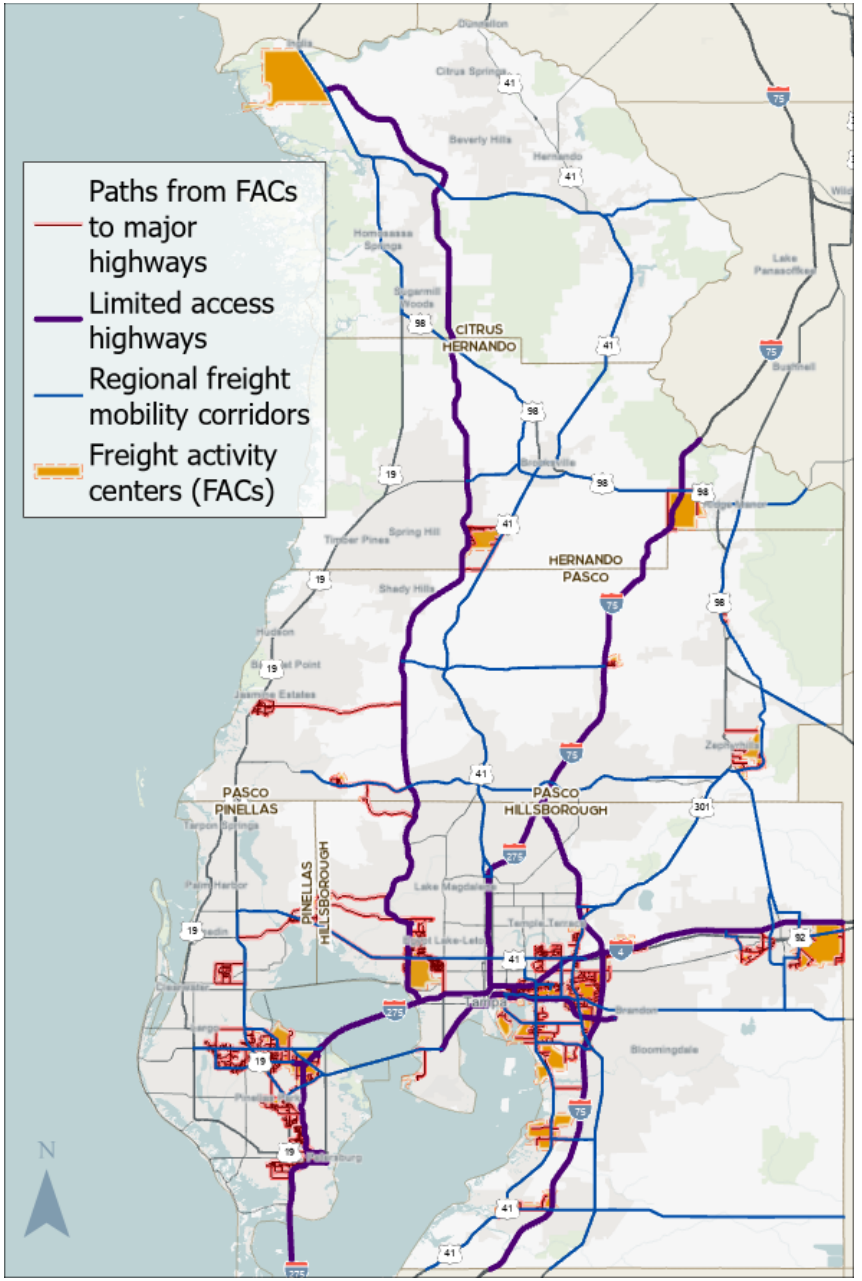


Figure 7 – *Paths from FAC parcels to major highways*

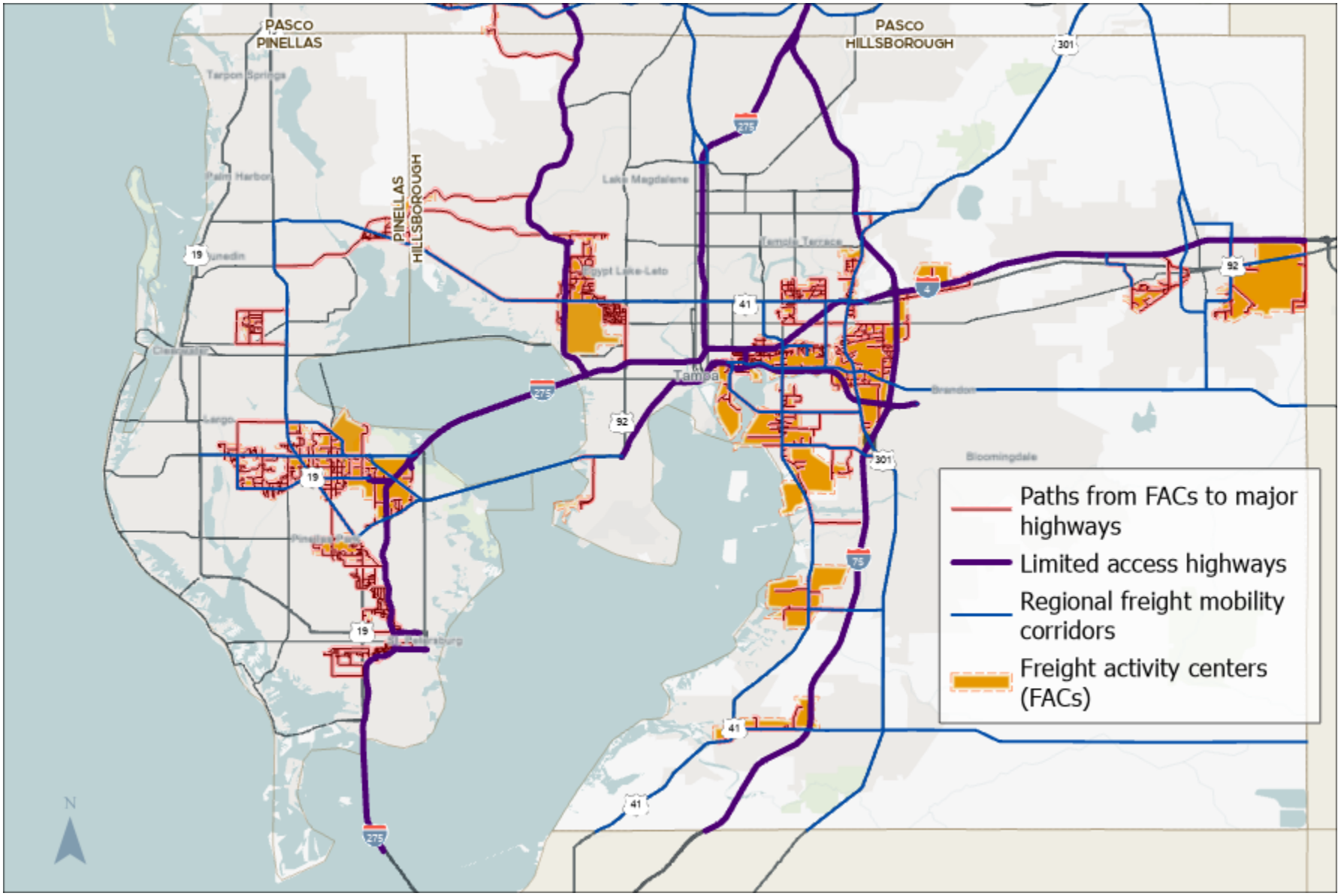


Figure 8 - Paths from FAC parcels to major highways (detail of Hillsborough and Pinellas Counties)

Table 8 – Highest Ranking Needs for FAC Last-Mile Connectivity

Rank	County	Project	Priority Score
31	Hillsborough	LOP: 27 - Big Bend Road @ I-75 From W of Covington to E of Simmons	6.34
42	Hillsborough	TIP: 42 - I-75/ at Gibsonton Drive	6.21
44	Hillsborough	CFP: 443 - USX Hwy 41 From Madison Ave to Port Sutton Rd	6.19
62	Hillsborough	TIP: 96 - I-4 From W of County Line Road to County Line Road	6.01
168	Hillsborough	TIP: 259 - US 41 at SR 60 - Electric Vehicle Charger Deployment – NEVI	5.46
181	Hillsborough	CFP: 433 - Hillsborough Ave from Harney Rd to Suncoast Schools Credit Union	5.44
190	Hillsborough	TIP: 118 - US 301 from N of Bloomingdale Ave to S of MLK Blvd	5.43
202	Hillsborough	CFP: 465 - Madison Ave from E Of US 41 to E of 78th St	5.37
211	Hillsborough	TIP: 22 - Henry Canal from Anderson Rd to Hesperides St	5.37
240	Hillsborough	TIP: 23 - Henry Canal from Hesperides St to Lois Ave	5.36
247	Pasco	LOP: 58 - SR 56/54 from Gunn Hwy to CR 581	5.34
256	Hillsborough	CFP: 451 - US Hwy 301 from Gornto Lake Rd to Progress Blvd	5.32
260	Hillsborough	TIP: 227 - SR 60/Adamo Dr from W Of 45th St To W of Yeoman St	5.32
267	Pasco	TIP: 157 - SR 54 From E of Gunn Hwy to E of Crossing Blvd; SR 54A Black Lake Rd	5.31
271	Pasco	LOP: 115 - SR 54 at SR 589 (Suncoast Parkway)	5.29
275	Hillsborough	TIP: 228 - Sr 60/Adamo Dr from W of Kelsey Ln to W of Wayne Pl	5.28
276	Hillsborough	TIP: 71 - SR 553/N Park Rd from US 92/E Baker St to N of I-4	5.28
292	Hillsborough	CFP: 431 - US Hwy 301 From Broadway Ave to Sabal Industrial Blvd	5.27
298	Pasco	TIP: 200 - SR 54 At SR 589 (Suncoast Parkway	5.26
310	Hillsborough	TIP: 33 - I-4 from W of I-75 NB Off Ramp to E of Mango Rd	5.25
311	Hillsborough	CFP: 392 - Hillsborough Ave from Longboat Blvd to Memorial Hwy	5.24
326	Hillsborough	TIP: 27 - US 41 From S of Pendola Point/Madison Ave to Denver St	5.23
337	Hillsborough	CFP: 407 - US Hwy 301 from Symmes Rd to Gibsonton Dr	5.22
338	Hillsborough	CFP: 394 - Hillsborough Ave from Double Branch Rd to Countryway Blvd	5.22
339	Hillsborough	TIP: 66 - US 92/Hillsborough Ave at 56th St and Harney Rd	5.19

Prioritization Methodology

Since FAC subarea needs are derived from the 5-year work program and LRTP needs, the prioritization process applied to those needs is the same for the FAC needs. This means the needs are ranked based on truck mobility and safety criteria as well as on the characteristics of the FACs served. The filtering of needs to those that impact last-mile connectivity for FACs allows the Department to understand the priority of needs that specifically affect access to the region's critical generators of freight activity and intermodal facilities.

Since the connectivity analysis described above focuses on tracing paths connecting FACs to limited access highways, it only identifies segments on surface streets. For prioritization purposes, all projects on limited access highways were awarded maximum accessibility / connectivity points, reflecting the fact that these high-speed, high-volume facilities are essential for connectivity throughout the supply chain.

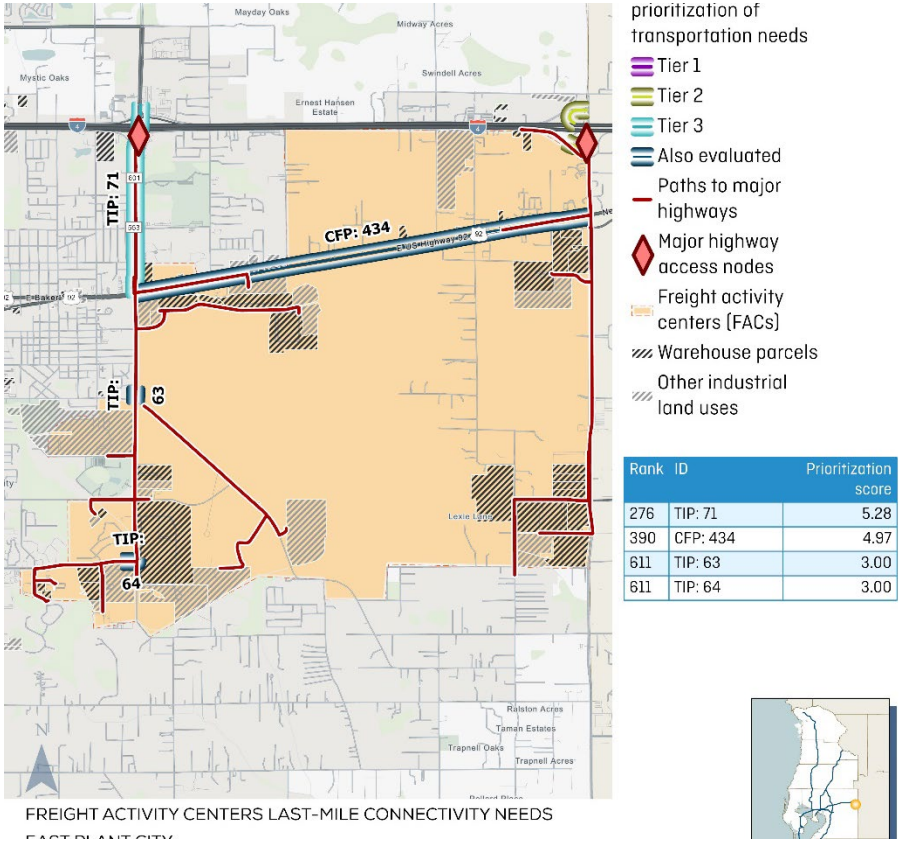
Next Steps

Not all projects evaluated for last-mile connectivity to FACs are clearly "freight related" but all currently planned needs are analyzed and mapped relative to FACs to recognize the importance of truck movements along these facilities. Their role in connecting FACs to major highways should be considered alongside contextual information, traffic characteristics, and other factors to inform planning studies and design efforts. This list of FAC connectivity needs equips

the Department with a resource to effectively coordinate with MPOs and local government to integrate truck operations considerations to develop and implement context-sensitive solutions that emphasize or accommodate trucks as needed.

Since plans and projects are continuously being developed, altered, and / or implemented, the results of this prioritization analysis need to be updated regularly. This should occur in regular cycles of approximately five years, similar to other long range transportation planning efforts.

When new projects are considered, a cursory examination of nearby FACs can help inform whether the project might have FAC access impacts. **Figure 8** shows the FAC for East Plant City in Hillsborough County as an example. The red and white access roads highlighted in the map illustrate the first-last mile connections between major highway access (diamonds) and freight land uses in the FAC (shaded regions). This example illustrates six projects from current work programs and how they overlap with these key facilities. Planners should reference the maps in Appendix D when considering new projects to test for similar interactions with freight land uses, freight-supporting highways, and first-last mile connections on FAC access roads.



Rank	ID	Prioritization score
276	TIP: 71	5.28
390	CFP: 434	4.97
611	TIP: 63	3.00
611	TIP: 64	3.00

Figure 9 – *FAC map of East Plant City in Hillsborough County, demonstrating how projects can be tested for impacts on FACs*

FREIGHT RAIL NEEDS

The identification of freight related needs associated with railroad corridors as part of the District Seven Strategic Freight Plan is intended to provide information to the District Rail Coordinator for partnering with CSXT and other rail operators in the District. While federal funds are designated as part of the Highway Safety Improvement Program to address Railway-Highway Grade Crossings (23 U.S.C. 130(e)), implementation of projects impacting railroad facilities require a strong partnership with the railroad owner. As such, the needs identified in this section have been compiled with the understanding that additional stakeholder coordination and project development would need additional input from CSXT.

At-Grade Rail Crossing Needs

Due to the number of locations where roadways intersect active rail lines in District Seven, identifying safety and operational needs are important considerations at these grade-crossing locations. Incidents at rail crossings without grade separation have a high potential to result in serious injuries or fatalities, and as result, these locations should be considered for adding or enhancing safety features such as advance warning signage/signals, train detection technology, gates, dynamic envelope markings, and other facilities as appropriate. Beyond safety concerns, at-grade rail crossings can also create delays and congestion within the surrounding roadway network that affects all roadway users. Even with no crash occurrences, high traffic volumes on roadways in areas that coincide with increased daytime train activity can lead to regularly occurring congestion well beyond the crossing location.

Defining needs related to rail crossings is a first step in identifying roadway-railway conflict points for further evaluation. This screening process used for this identification included all active, at-grade crossings within District Seven, and used the following criteria to assess locations that could be the focus of future study:

- Average Annual Daily Traffic (AADT) volumes for all vehicles and specifically for trucks on the intersecting roadway
- Average number of daytime trains on the rail corridor
- Number of total crashes at the crossing during a five-year period (2018-2022).

Any of the 67 crossing locations with one or more crash occurrences is considered a need from a safety perspective. This methodology was selected to be consistent with the statewide Highway-Rail Grade Crossing Safety Action Plan[2]. These locations are summarized in **Table 9** in order of priority based on the number of crashes, followed by train activity, and then by roadway activity and shown in **Figure 9**. Additional detail on each location is provided in **Appendix E**. The 29 locations with more than one crash were considered to be the highest priority grade crossing needs within the District.

Railroad Property Trespassing

Across the state and across the nation, trespassing on rail corridors has resulted in unsafe conditions. To combat this trend, FDOT's Freight and Multi-modal Operations Manager developed a Pilot Program to identify strategies for reducing railroad trespassing. Completed in 2020, an evaluation of the Central Florida Rail Corridor/SunRail Commuter Rail System was chosen to evaluate methods to mitigation trespassing[3]. Following completion of this evaluation, a second study was conducted in Southeast Florida for the Florida East Coast Railway Corridor – Cocoa to Miami[4].

Both of these studies were undertaken consistent with the National Strategy to Prevent Trespassing on Railroad Property released in 2018 by the Federal Railroad Administration (FRA)[5].

[2] https://www.fdot.gov/rail/plandevel/highway-rail-grade-crossing-safety-action-plan
[3]https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/rail/publications/studies/safety/fdot-cfrc-final-trespass-report-01202020.pdf?sfvrsn=4572dc83_2

[4]https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/rail/publications/studies/safety/srrt-fec-trespass-report-final.pdf?sfvrsn=4e1cc61f_2
[5]https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/18320/ROA%206310005_Congress_TrespasserPreventionStrategy_2018.pdf

Table 9 – *Highest Priority At-Grade Rail Crossing Needs*[6]

Ref #	Crossing ID	Roadway	Roadway Type	County	CSX Subdivision	Total Crashes (2018-2022)	Average Thru-Trains (Daytime Only)	AADT (All Vehicles)	AADT (Trucks Only)	Amtrak Service
1	624326R	CR-39A / Alexander St	City	Hillsborough	Lakeland	6	3	8,200	828	Y
2	624908V	CR-572 / Powell Rd	County	Hernando	Brooksville	6	<1	4,900	265	N
3	624350S	Kingsway Rd	County	Hillsborough	Lakeland	5	3	8,900	694	Y
4[7]	624802A	US-41 / SR-45	State	Hillsborough	Rockport Terminals	4	<1	40,527	3,161	N
5	624365G	Tampa East Blvd	County	Hillsborough	Tampa Terminal Mango to Tampa	3	4	7,200	562	Y
6	624820X	Adamo Dr	State	Hillsborough	Tampa Terminal Yn to East Tampa	3	3	30,984	2,355	N
7	624359D	Falkenburg Rd	County	Hillsborough	Tampa Terminal Mango to Tampa	3	3	28,000	1,764	Y
8	624456M	Parsons Ave	County	Hillsborough	Yeoman	3	2	18,500	777	N
9	626658S	SR-688 / Ulmerton Rd	State	Pinellas	Clearwater	3	<1	66,500	3,325	N
10	624313P	CR-574A / Park Rd	County	Hillsborough	Lakeland	2	4	27,000	2,106	Y
11	624368C	US-41 / SR-599 / 50th St	State	Hillsborough	Tampa Terminal Mango to Tampa	2	3	34,000	4,454	Y
12	624839P	US-41 / SR-599 / 40th St	State	Hillsborough	Neve Spur	2	3	29,000	1,073	N
13	624551H	SR-60	State	Hillsborough	Valrico	2	2	36,000	3,132	N
14	624462R	Falkenburg Rd	County	Hillsborough	Yeoman	2	2	28,000	1,764	N
15	624791P	Gibsonton Dr	County	Hillsborough	Palmetto	2	2	15,200	1,186	N
16	624427C	CR-39A / Alexander St	City	Hillsborough	Yeoman	2	2	8,200	828	N
17	624453S	Valrico Rd	County	Hillsborough	Yeoman	2	2	7,900	616	N
18	621530E	Airport Rd	City	Hillsborough	Yeoman	2	2	0	0	N
19	626897S	Sligh Ave	City	Hillsborough	Clearwater	2	1	25,500	1,989	N
20	626913Y	Columbus Dr	County	Hillsborough	Clearwater	2	1	3,500	273	N
21	626907V	Lake Ave	City	Hillsborough	Clearwater	2	1	2,800	218	N
22	624933D	SR-54	State	Pasco	Brooksville	2	<1	57,000	3,762	N
23	626676P	Park Blvd / 74th Ave N	State	Pinellas	Clearwater	2	<1	51,000	2,295	N
24	626925T	US-41B / SR-45	State	Hillsborough	Hookers Point Lead	2	<1	41,000	4,592	N
25	624572B	SR-60	State	Hillsborough	Plant City	2	<1	24,500	3,038	N
26	626891B	US-41B / SR-685	State	Hillsborough	Clearwater	2	<1	24,500	1,127	N
27	626889A	Armenia Ave	County	Hillsborough	Clearwater	2	<1	15,500	1,209	N
28	626826V	Highland Ave	City	Pinellas	Clearwater	2	<1	14,000	602	N
29	626716K	9th Ave N	City	Pinellas	Clearwater	2	<1	2,700	235	N

[6] Sources: Federal Railroad Administration (FRA) Office of Safety Analysis – Highway-Rail Grade Crossing Database, 2024; FDOT Transportation Data & Analytics Office, 2024; and the Florida Department of Highway Safety & Motor Vehicles – Traffic Crash Reports, 2018-2022

[7] Crossing was identified as a freight priority location in the 2018 Strategic Freight Plan. It is currently part of a design change re-evaluation to study grade separation improvements.

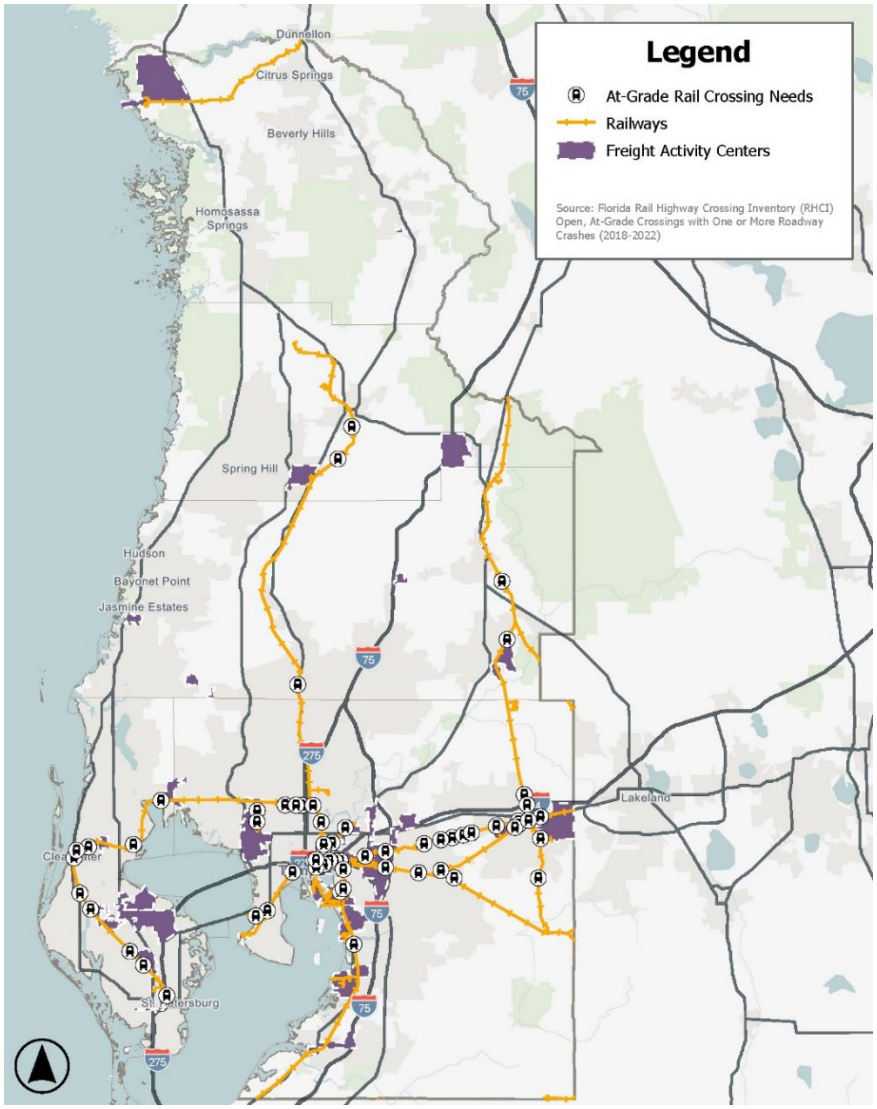


Figure 10 – *At-Grade Rail Crossing Needs*

The ability of FDOT to conduct an evaluation of trespassing and identification of potential mitigating strategies is dependent on coordination and participation by the rail owner. Since railroads are privately owned and operated, the authority of the FRA and FDOT are limited.

According the FRA National Strategy, trespassing on railroad property has resulted in three casualties (fatalities and injuries) per day. A specific assessment of trespassing related casualties in the Tampa Bay Region has not been conducted to determine the severity and extent of this problem. Data collected by the FRA provide statewide and county level summaries of casualties by year. **Table 10** shows the historic casualties in the Tampa Bay Region resulting from trespassers not at a highway location. With 59 casualties in 2023, Florida ranks as the fourth highest state, Only California, Texas and New York had a higher number of trespassing related casualties in 2023. Data from 2024 is currently reported through August where one casualty has occurred in. A second casualty occurred in November 2024 in Hillsborough County.

As freight is increasingly transported by rail within the Tampa Bay Region and an important component of the region's transportation system, trespassing related casualties should be continually monitored to identify changes or intensification of casualties in the region. In support of statewide efforts to eliminate traffic-related fatalities and serious injuries and to address rail-related casualties, District Seven is able to partner with CSXT to identify specific areas where trespassing is of concern. Through effective coordination and partnering, assessment and evaluation of conditions can lead to identification of strategies with shared responsibility between District Seven and CSXT.

Table 10 – Rail Trespassing Casualties (2019-2023)

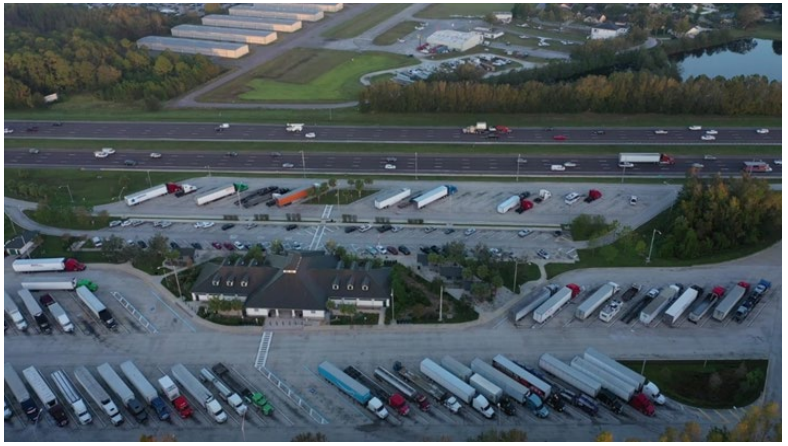
County	2019	2020	2021	2022	2023	5-Year Total
Citrus	0	0	0	0	0	0
Hernando	0	0	0	0	0	0
Hillsborough	7	1	5	3	3	19
Pasco	0	1	0	0	2	3
Pinellas	0	0	2	1	0	3
Tampa Bay Region	7	2	7	4	5	25
Florida	62	38	55	62	59	276

TRUCK PARKING NEEDS

Adequate and strategically located parking, as well as other facilities used by trucks moving goods throughout the region, continues to be an area of need in District Seven. However, recent rest area improvements and a newly programmed truck parking facility immediately adjacent to I-4 are adding hundreds of spaces to help accommodate the anticipated growth in truck activity on the freight network. As shown in **Figure 10**, the conceptual site plan for the I-4 truck parking facility at the Hillsborough-Polk County line will provide new parking spaces, amenities, adequate circulation for large vehicles, and convenient site access from one of the state's busiest freight corridors.

Figure 11 – *Site Concept for Truck Parking Facility Along I-4 Near Polk County*

Once this facility and other similar freight-supportive projects are completed, the District should assess their impact on truck parking needs. Other considerations may include partnering with private entities to expand parking facilities if additional capacity is needed beyond what is programmed in the next five years.



The recently completed rest area on I-75 north of SR 56 has increased truck parking capacity in the Tampa Bay Region

Identification of Future Parking Needs

One such way District Seven is continuing to address the need for truck parking by contracting with the University of South Florida's Center for Urban Transportation Research to conduct research on the Geospatial Identification of Truck Staging Needs in the Tampa Bay Region. The goal of this research project was to identify potential sites for truck parking and staging areas within the Tampa Bay region.

Leveraging previous research conducted by FDOT Central Office, the study utilized geospatial analysis tools (ArcGIS) to identify eight potential zones for truck parking and staging within FDOT District Seven. For each zone, the research team pinpointed at least three potential parcels that could serve as truck staging areas, providing FDOT with valuable options for development. The team also offered recommendations on the number of trucks that each site could accommodate, guided by the USDOT Truck Parking Development Handbook, which outlines best practices for the design and capacity of truck staging facilities. This Phase 1 project was completed in the Summer/Fall of 2024.

To ensure the continuity of this effort and to explore the use of surplus lands, District Seven has launched a Phase 2 study titled Surplus Lands Truck Parking Design and Feasibility Analysis in the Tampa Bay Region. This Phase 2 project aims to build upon the findings of Phase 1 by assessing the feasibility of the proposed truck parking locations, considering factors such as access to major roadways, availability of surplus lands, and land use compatibility. Additionally, if any Phase 1 locations are found to have more feasible alternatives during this analysis, the study will identify and evaluate one-to-one replacement sites. Furthermore, this phase will determine the number of truck parking spaces that can be designed at each site using FHWA guidelines, and will generate detailed design tables for various parking configurations.

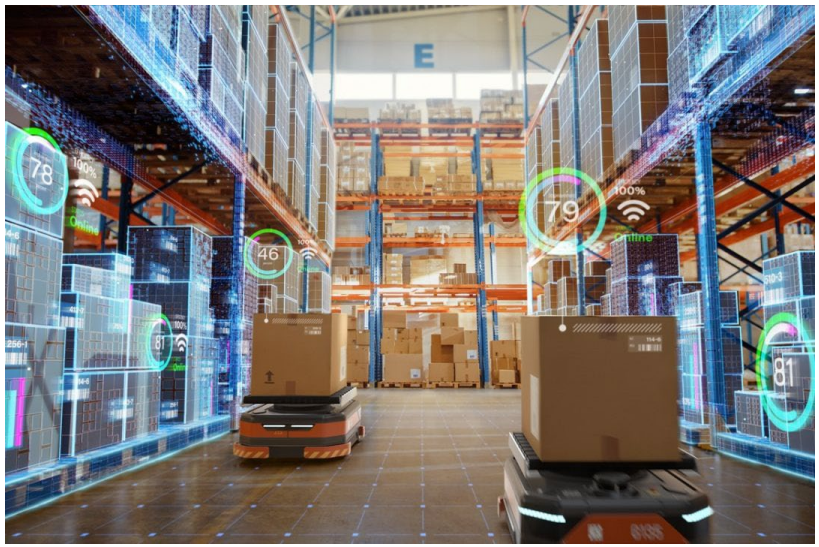
This comprehensive approach ensures that the growing demands on Florida's freight transportation infrastructure are met, providing critical support for the state's economic development and the efficiency of its supply chains.

FREIGHT TRENDS & TECHNOLOGY NEEDS

The Tampa Bay region's freight landscape is evolving rapidly, influenced by emerging technologies and shifts in logistics trends. To stay competitive and support economic growth, Tampa Bay's infrastructure and policies must adapt to these changes. While state and regional agencies drive large-scale infrastructure improvements, private companies are investing in cutting-edge technologies such as logistics automation, connected and autonomous vehicles, and drone delivery. Here's a closer look at the critical trends and technology needs shaping the region's freight sector:

1. Logistics Automation

- **Trend Overview**: Logistics automation refers to the use of autonomous machinery like robotics, and software that includes artificial intelligence (AI), internet of things (IoT), and machine learning to streamline logistical processes, reduce costs, and increase productivity. By automating repetitive and data-intensive tasks, logistics automation can improve the accuracy and speed of operations. Key areas impacted include procurement, production, inventory management, distribution, customer service, and returns.
- **Regional Needs**: Tampa Bay's distribution centers, particularly near the Port of Tampa and high-traffic e-commerce facilities, face rising demand and labor challenges that can be mitigated with automation. Automated systems will enable the region to handle higher cargo volumes, optimize space in distribution centers, and improve processing speed. Integrating these technologies will further establish the region as a critical logistics and distribution hub in Florida and the Southeast, attracting businesses seeking efficient supply chain solutions.
- **Technology Investments**: The region needs investments in machinery technologies, such as autonomous guided vehicles, robotic arms, automated cranes, and automatic storage & retrieval conveyor systems, especially for high-traffic facilities supporting retail and e-commerce. Key investments in logistics automation software include systems that handle warehouse management, fleet management, and inventory control. These investments are generally expected to be made by private enterprises.



2. Connected and Autonomous Vehicles

- **Trend Overview**: Connected and Autonomous Vehicles (CAV) can provide many benefits for the trucking industry such as improving safety, lowering emissions, reducing congestion, improving delivery times, reducing costs, and helping mitigate driver shortages. Technologies in development range from semi-autonomous platooning systems that enable multiple trucks to travel closely together using connected technology, to fully autonomous trucks that operate without driver intervention.
- **Regional Needs**: While there have already been many CAV deployments throughout the Tampa Bay region, major freight corridors, like I-4 and I-75, require continued investments in infrastructure improvements to support autonomous vehicles safely. This includes laying fiber optic networks, Advanced Traffic Management Systems (ATMS), and implementing Vehicle-to-Everything (V2X) communications systems which enable vehicles to communicate with each other (V2V), with pedestrians and cyclists (V2P), and with roadside infrastructure (V2I).
- **Technology Investments**: Collaboration with technology providers and partner transportation agencies to implement smart road infrastructure, establish charging stations, and prepare highways for autonomous platoons could position the region as an early adopter of autonomous freight transportation. Additionally, the Tampa Bay area could benefit from creating dedicated lanes for autonomous vehicles, implementing sensor-equipped roadways for real-time traffic data, and setting up the City of Tampa's Traffic Management Center to monitor and coordinate autonomous freight movement. Collaborating with universities and research institutions on pilot CAV projects could strengthen the region's role as a leader in autonomous freight innovation. FDOT will play a key role in advancing CAV technologies.

3. Drone Freight Delivery

- **Trend Overview**: Drone freight delivery is the use of unmanned aerial vehicles (UAVs) to move retail goods to customers and companies. These systems offer last-mile solutions and offer several advantages over traditional delivery methods including faster delivery times, reduced emissions, access to remote areas, contactless delivery, and lower operational costs. In urban centers, near-term adoption of drone delivery is limited due to the safety risks associated with flying over densely populated areas and the scarcity of suitable landing zones and drop-off locations. In contrast, drones are more suitable for deliveries to suburban, rural, and remote locations due to favorable operating conditions and the higher costs and logistical challenges associated with traditional delivery methods, particularly in rural areas. Commercial goods that are most suitable for business-to-consumer (B2C) drone deliveries include lightweight packages, including food, e-commerce parcels, and prescription medication.

- **Regional Needs**: The Tampa Bay region's diverse urban, suburban, and rural landscape makes it suitable for drone delivery trials, especially in medical and emergency supply chains. Drones could alleviate last-mile delivery congestion and serve hard-to-reach areas more efficiently.

- **Technology Investments**: The Tampa Bay region needs to invest in drone support infrastructure, such as designated landing zones, air traffic management systems, and secure data networks to manage autonomous drone fleets. In addition, the Tampa Bay region should consider developing policies and regulations for safe drone operations, establishing partnerships with logistics providers, and investing in noise reduction technology to minimize impact on residential areas. In the private sector, technology investments are needed to obtain aircraft and payload release mechanisms that are suitable for the operating environment. FDOT can be a key partner in developing supportive policies and regulations and implementing improvements in partnership with local governments.

Summary of Technology Needs for Tampa's Freight Sector

Tampa Bay's role as a key logistics hub relies on a collaborative effort between the public and private sectors, each playing a crucial part in advancing the region's freight infrastructure. While state and regional agencies drive large-scale infrastructure improvements, private companies are investing in cutting-edge technologies to optimize their operations and enhance efficiency.

These private initiatives complement public projects like expanding EV charging hubs along freight routes and creating zones for drone and autonomous freight technologies. This synergy creates a freight network that's resilient, adaptive, and primed for future growth. Together, public and private efforts are transforming Tampa Bay into a logistics powerhouse, supporting regional economic vitality and positioning the area as a forward-thinking leader in the Southeast's freight landscape.

Key needs include:

- **Smart Logistics Facilities**: Automated warehousing systems in high-traffic zones.
- **Autonomous Vehicle Infrastructure**: Advanced Traffic Management Systems, V2X communication systems, designated lanes and smart traffic signals for autonomous trucks.
- **Drone Delivery Infrastructure**: Dedicated zones and regulatory frameworks for drone freight.

These technology investments will enable Tampa Bay's freight and logistics sector to harness emerging trends, enhance operational efficiency and minimize environmental impact, strengthening its role as a sustainable and advanced freight hub.

CHAPTER 8





Freight & Land Use Compatibility Analysis

INTRODUCTION

The Tampa Bay Regional Strategic Freight Plan study area covers a sizeable region that includes five counties and more than 30 municipalities. Each jurisdiction has its own plans for growth and development documented in comprehensive plans and detailed in other documents like neighborhood or special area plans. These plans express the long-term livability visions for these communities. The number and diversity of local planning initiatives makes it difficult to understand what plans are defined within particular boundaries and how those plans relate to regional systems, like the regional freight transportation network.

To understand the geography of freight and livability planning initiatives throughout the study area, a freight and land use compatibility analysis was performed that compares local land use and special planning area data with truck traffic statistics. The data were collected from the regional MPOs, local jurisdictions, FDOT, and other entities. Using GIS, the datasets were generalized to a regionwide grid covering District Seven. Each cell in the grid was scored according to the land uses and freight activity in the area to identify portions of the county where livability issues are the primary concern, areas where freight activity is emphasized, and areas where both emphases are present, indicating the potential for conflicts between trucks and other users and the need for holistic approaches to planning for and designing transportation improvements.

This chapter presents the methods and datasets employed for performing the compatibility analysis. It covers the datasets and sources that were overlaid, how these datasets were scored to establish ordinal levels of freight activity and livability, and the mapping of the analysis results.

LAND USE & FREIGHT ACTIVITY DATA SETS

For each county in the Strategic Freight Plan study area, a unique bundle of datasets was used to evaluate the emphasis placed on livability in different areas. For most jurisdictions, future land use or zoning maps provide information about the expected future types and intensities of development. These are used to highlight locations where the intensity and/or diversity of development could be expected to generate multimodal trips. They are also used to identify locations where industrial activity is expected to continue and/or expand, generating truck trips. Additionally, some agencies have identified designated activity centers as focal points for development activity and supportive multimodal transportation investments. For freight activity, the Strategic Freight Plan has identified Freight Activity Centers (FACs) and a regional freight network hierarchy that highlights locations where truck traffic is expected to be relatively high.

The details of the various datasets utilized in assessing the level of local priority given to livability concerns versus freight are described below.

Livability

The livability assessment in District Seven was based on the following general area types, defined by local, countywide and regionwide datasets:

- Livable future land uses
- Industrial future land uses
- Community redevelopment areas (CRA)
- Designated activity centers
- Regional freight activity centers (FAC)

Each of these datasets and their sources are described below.

Livable Future Land Uses

Future land use (FLU) maps present local intent for how an area will be used in the future to guide community growth and development. Usually, FLU categories define expected use types, such as residential, industrial, commercial, or mixed use. In many cases, FLU categories also indicate expected intensities of development, such as appropriate numbers of dwelling units per acre or the allowable floor area ratio (FAR) for developments in the area.

Zoning defines specific development standards for each zone, and is a means of implementing the FLU vision. Zoning applies to individual sites (parcels) and the assigned zoning categories dictate what land uses are permitted at what intensities. Additional standards, such as appropriate building heights, setback requirements, etc. are also included by a sites' zoning designation.

Each jurisdiction uses its own distinct categories for FLU and /or zoning. This means that each jurisdiction's categories need to be individually reviewed and classified to support the compatibility analysis. This review is necessarily cursory for a district-wide analysis and does not entail a thorough review of each jurisdiction's policy language accompanying the individual categories. Moreover, these categories are subject to change. Project development and design decisions should follow the Department's established processes for coordinating with local jurisdictions to develop and implement context-sensitive solutions.

Generally, categories that imply development characteristics that engender non-auto trip-making are classified as "livable" future land uses. This includes medium- and high-density residential categories as well as categories that imply intensive and diverse development such as "central business district," "activity center," or "mixed use" categories. Low density-residential categories are generally left out since these areas are not typically developed to intensities that would promote transit or non-automobile trips.

Some FLU and zoning categories are awarded a single point if they imply moderate emphasis on density of residents and diversity of non-residential activity. Others are awarded two points if they imply high density and/or diversity of land uses. The specific scoring of FLU and zoning categories by jurisdiction is presented in the Appendix.

Industrial Future Land Uses

Similar to livable future land uses, the FLU and zoning categories for each jurisdiction were reviewed to assign categories as "industrial." These are areas where the jurisdiction identifies continued or new industrial activities, including manufacturing, mining, logistics, or other freight-intensive activities. In these cases, the jurisdiction's allocation of space for these activities implies the need for freight-supportive urban design and roadway design. Therefore, these locations are characterized as "freight-emphasis areas" where livability would be considered a low priority. The specific scoring of FLU and zoning categories by jurisdiction is presented in the Appendix.

Community Redevelopment Agency Areas

CRA areas are established by local governments to revitalize downtowns, preserve historic structures or districts, and generally enhance the designated district. The local government must adopt a resolution finding that the area is blighted or lacks affordable housing, and that rehabilitation is necessary to the public interest. A list of CRAs was pulled from the Florida Department of Commerce's Official List of Special Districts using the custom list functionality to pull every CRA within the District. This list provided links to the CRA's website which provided either a shapefile compatible with GIS or a map that could be digitized into a shapefile.

Activity Centers

The local comprehensive plans from Plan Hillsborough identify activity centers that are targeted to accommodate future growth in those jurisdictions. Activity centers are areas with high existing and future population and employment densities. They are focal points for the surrounding community. For this analysis, the Hillsborough County City-County Planning Commission provided shapefiles for primary and secondary activity centers in unincorporated Hillsborough County.

Forward Pinellas, in its capacity as the Pinellas Planning Council, identified a variety of activity centers in its county wide plan developed in 2019. These activity centers were developed to maximize the concentrations of population and jobs along roadways with future transit investments as noted in the MPO LRTP and the Pinellas Suncoast Transit Authority Community Bus Plans. Forward Pinellas grouped these activity centers into four categories, Major, Urban, Community, and Neighborhood centers. For this analysis, Major and Urban were ground together as primary centers while Neighborhood and Community were grouped together as secondary centers.

Pasco County does not have any directly identified activity areas; however, mobility fee assessment districts were used a reasonable proxy. For this analysis the Urban Transit Oriented Development (TOD)

and Vacant Parcels were used as the activity center proxy. Citrus and Hernando counties did not have any publicly available data, so data from a previous version of this analysis was used as conditions have not changed enough to justify a different data source.

Regional Freight Activity Centers

The Strategic Freight Plan identifies regional FACs for the District Seven region. These are areas with significant concentrations of freight activity and employment (existing and planned). Like industrial future land uses, the dataset was used to identify areas where livability would be considered a low priority.

Freight Emphasis

Freight emphasis ratings are developed based on the presence of industrial land uses, inclusion within a FAC, and the truck share of total traffic on roads with available traffic count data.

FAC locations are defined for clusters of freight-generating activities across District Seven. These locations were used to identify areas where freight activity would be a priority. The FAC dataset was also used in the livability assessment to identify areas where livability would be low, but its application in the freight activity assessment is more nuanced, where the varying intensities of the FACs (Low, Medium, or High) represents a varying level of priority given to freight movements.

Additionally, each county's future land use layer was used to identify industrial future land uses (details about which land uses were categorized as industrial are provided in the Appendix). Like the FAC dataset, these were used to identify areas where livability is a low priority but were used also in the separate freight activity assessment to identify areas where freight activity would receive relatively high priority. More information is provided about these two tracks of analysis and how they relate to each other later in the document in the section on scoring the overlay data.

Finally, the 2045 cost feasible loaded highway network from the Tampa Bay Regional Planning Model (TBRPM) was used to assess truck traffic in the District Seven Counties. The two-way percent truck traffic field was used to categorize corridors as carrying high, medium, or low truck traffic.

SCORING OF LAND USE & FREIGHT ACTIVITY OVERLAY DATA

Having assembled all of the datasets for the livability assessment and the freight activity assessment, each dataset was laid over the Districtwide grid. Where grid cells intersected a livability planning area or a freight activity area, a score was assigned for those cells in the corresponding field in the GIS attributes table. For example, cells that intersected the CRA boundaries received a score of 1 in the CRA field. This section addresses how fields were scored, the summation of scores, the classification of different cells as high, medium, or low livability areas or freight activity areas, and the combination of livability and freight activity classifications.

Scoring of Discrete Datasets

The scores applied for each supporting dataset are presented below, along with the rationale behind the weight given to specific datasets or categories within the datasets. Each dataset has a corresponding field in the attribute table for each Districtwide grid shape file. The number of points indicated reflects the value assigned to each cell intersecting the dataset under discussion in the corresponding field in the Districtwide grid attribute table. **Table 1** provides the possible range of scores for each measure based on the following descriptions of data used for developing the livability and freight scores.

***Table 1**: Discrete Data Sets Scoring*

Livability Scores	
Data Set	**Score Range**
Livable future land uses	1-2 pts
Industrial future land uses	-1 pts
Community Redevelopment Agency areas	1 pts
Activity centers	1-2 pts
Regional freight activity centers	-1 pts
Freight Scores	
Data Set	**Score Range**
Industrial future land uses	1 pts
Regional freight activity centers	2-3 pts
Percent truck traffic	0-3 pts

Livable future land uses – 1 to 2pts: Livable future land uses include medium- to high-density residential, office, and mixed-use development types. These areas are expected to host relatively high levels of pedestrian and bicycle traffic and present conflicts with heavy truck movements. Having a livable future land use designation does not necessarily mean that the area will exhibit all the conditions associated with the livability concept, only that these areas have densities and activities that would typically characterize livability principles.

Industrial future land uses – (-1) pt and 1 pt: Industrial future land uses include high and low industrial designations, as well as heavy commercial and industrial mixed-use categories, and were used in both the livability assessment and the freight activity assessment. For the livability assessment, cells intersecting industrial future land uses received a score of minus one for the livable future land use score.[1] For the freight activity assessment, cells intersecting industrial future land uses received a score of one in the industrial future land use score.

Community Redevelopment Agency areas – 1pt: CRAs are areas targeted for redevelopment, often due to blighted conditions. They are predominantly in urban areas, and it was assumed for this analysis that the anticipated improvements to the community will promote livability, although the extent to which the core concepts of livability are emphasized would likely vary from one CRA to the next. Therefore, a single point was allocated to grid cells intersecting CRAs.

Activity centers – 1 to 2 pts: Activity centers were generally treated as two-tiered area types in the livability analysis, even if more than two categories of activity center were under consideration.

The higher tier activity centers – such as primary activity centers in unincorporated Hillsborough County, business centers in the City of Tampa, or the urban core and town center activity centers in Pinellas County – received two points due to the relatively high development density, intensity of activity, mix of uses, and multimodal travel in these areas. Lower tier activity centers received one point.

Regional freight activity centers – (-1) and 2 to 3 pts: Like industrial future land uses, the regional FAC dataset was used in both the livability assessment and the freight activity assessment. In the livability assessment, FACs were scored exactly the same way as the industrial future land uses with the score of minus one. For the freight activity assessment, grid cells intersecting the high intensity freight activity centers received a score of three while those intersecting the medium and low intensity freight activity centers received a score of two. All FACs indicate areas as important nodes of freight activity warranting a higher score than what was given to industrial future land uses.

Percent truck traffic – 0 to 3 pts (freight): The 2045 TBRPM cost feasible loaded highway network was utilized for the freight activity assessment. The corridors on which trucks comprise the highest percentage of total

[1] Unless the grid cells also intersected a livable future land use, in which case the appropriate score for livable future land uses was retained. This overlap is possible because the boundaries of livable and industrial future land uses sometimes abut each other within a single grid cell, meaning that the grid cell intersects simultaneously the livable future land use and the industrial future land use. The livable future land use receives precedence in the livability analysis because the industrial future land use is accounted for in the freight activity analysis.

traffic received the highest scores. If the percentage of truck traffic was less than three percent, then zero points were allocated; at three to five percent, one point was given; at five to ten percent, two points were awarded; and where the percentage of truck traffic was greater than ten percent, three points were given.

Summation of Scores

After points were allocated to each grid cell according to the overlap with corresponding datasets, the overall livability and freight activity scores for each cell were calculated. In the analysis of freight activity, the sum of the individual freight activity scores was used to develop a composite freight activity score for each cell in the grid.

For the livability analysis, the various livability fields were summed to obtain the composite livability score for most grid cells. However, for cells that intersected industrial future land use areas or freight activity center areas (areas assumed to have a negative impact on livability), a slightly different approach was taken. Where those cells did not intersect other livability data layers, a composite livability score of minus one was calculated. If these cells coincided with additional livability emphasis areas, however, the negative scores were ignored and all positive scores were summed to obtain the composite livability score. This approach prevented the negative scores from diminishing the overall emphasis placed on livability concerns in some industrial areas. The negative composite livability scores, however, revealed areas where livability was specifically not of concern and where freight activity could be effectively emphasized.

Cell Classification

Table 2 describes the thresholds used to classify each cell as a high, medium, or low livability area and a high, medium, or low freight activity area. As the table shows, cells with a composite livability score of two points or higher were classified as high livability areas, while a score of one was classified as a medium livability area. Any negative value was considered low (industrial) livability.

As noted in the preceding section describing the datasets, many land use designations were assumed to be “low livability areas,” including areas with low-density residential designations. Even where these areas include residential activity, the automobile was presumed to be the predominant mode of travel, and Euclidian zoning patterns were presumed to prevail. Thus, these areas were assumed to present fewer potential conflicts with freight movements than the higher density, mixed use areas identified in the livability assessment. For this reason, large portions of the study area did not overlap with the livable or industrial future land uses, CRAs, activity centers, or other applied datasets. Grid cells in these areas had composite livability scores of zero. Low livability areas that do intersect with industrial future land uses are distinguished as “Low (Industrial)” livability areas and have scores below zero.

Table 2: *Thresholds for High, Medium, and Low Livability and Freight Activity Areas*

Livability	
High	2+
Medium	1
Low	0
Low (Industrial)	< 0
Freight	
High	4+
Medium	1 to 4
Low	0

For the freight activity assessment, a threshold of four points or higher was used to define high freight activity areas. This means that a cell intersecting both a high intensity freight activity center and industrial future land use, or intersecting medium intensity freight activity center and medium truck traffic levels, or finding itself amidst a similar combination of overlapping factors would be deemed a high freight activity area. This caused the region’s most intense freight activity centers and trucking corridors to emerge as high freight activity areas. All positive composite freight activity scores less than four were considered medium freight activity areas. Areas with virtually no truck traffic and no freight related land uses (those with composite freight activity scores of zero) were classified as low freight activity areas.

Creating a Composite Livability and Freight Classification

With the composite freight activity and livability scores calculated, the two were combined to create a two-term definition of each cell. The first term represents the level of freight activity in the area, and the second represents the livability emphasis of the area. These two-term cell definitions were mapped according to the three-by-three policy matrix shown in **Figure 1**.

Low Freight Activity / High Livability	Medium Freight Activity / High Livability	High Freight Activity / High Livability
Low Freight Activity / Medium Livability	Medium Freight Activity / Medium Livability	High Freight Activity / Medium Livability
Low Freight Activity / Low Livability	Medium Freight Activity / Low Livability	High Freight Activity / Low Livability

Figure 1: *Composite Livability and Freight Activity Classification Matrix*

High and medium livability areas that coincide with low freight activity areas are represented in the green boxes in the upper left of the matrix. High and medium freight activity areas that coincide with "low (industrial)" livability areas are represented by the grey boxes in the bottom row of the matrix. Areas with medium to high livability scores and medium to high freight activity scores are represented by the orange and red boxes that comprise the upper right quadrant of the matrix. These are the areas in which potential or existing conflicts between freight activity and livability emphases are most acute. Finally, in the lower left corner, all "low" livability areas are represented by the pale yellow square. These are areas where there is also generally very little freight activity; any freight activity occurring in these areas are typically serving through movements rather than providing access, and potential conflicts between freight movements and person movements are typically minimal. The results of the analysis for each county in District Seven are displayed in **Figure 2** through **Figure 6** below. A map of districtwide results is shown in **Figure 7**.

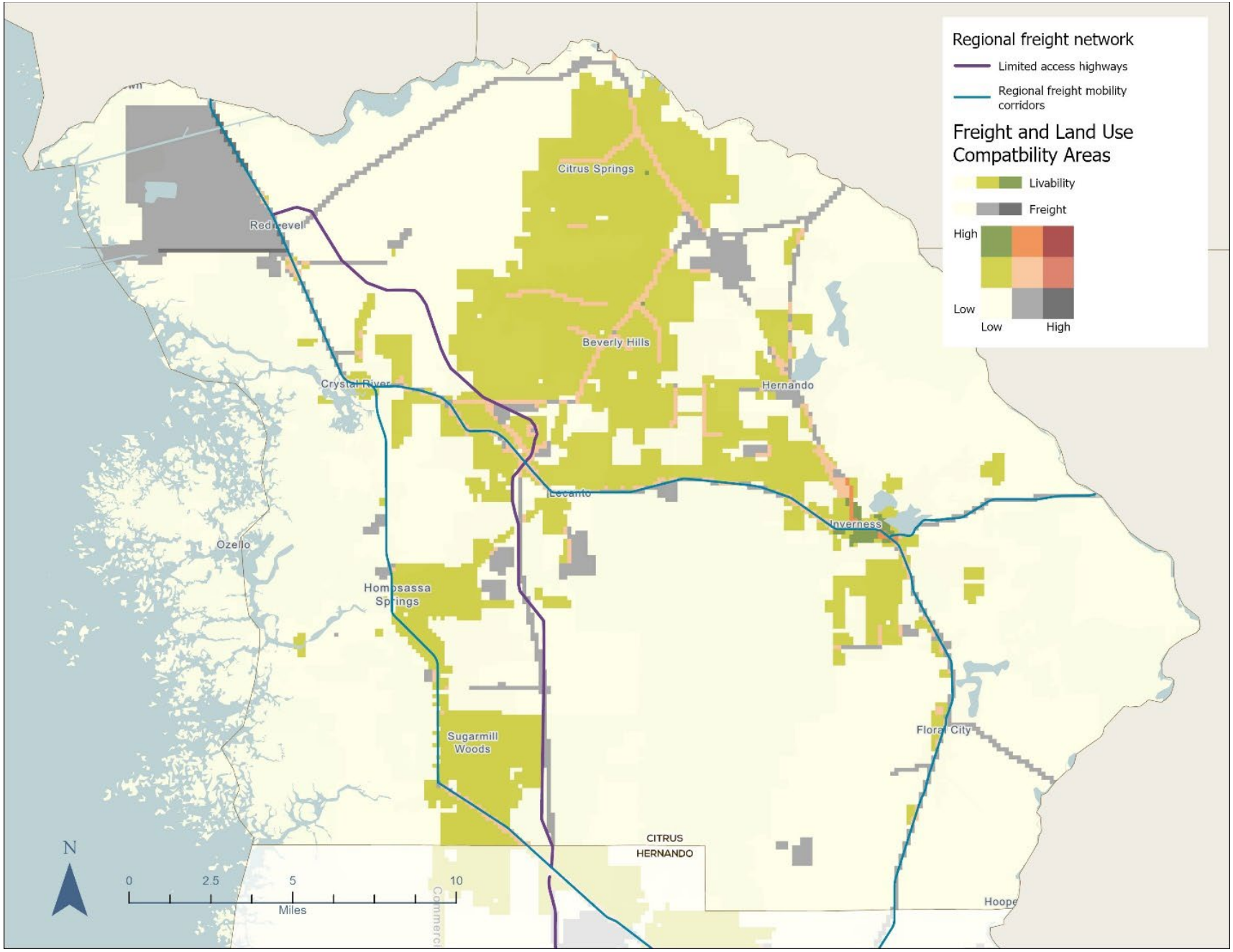


Figure 2: *Livability and Freight Activity Classification Results (Detail of Citrus County)*

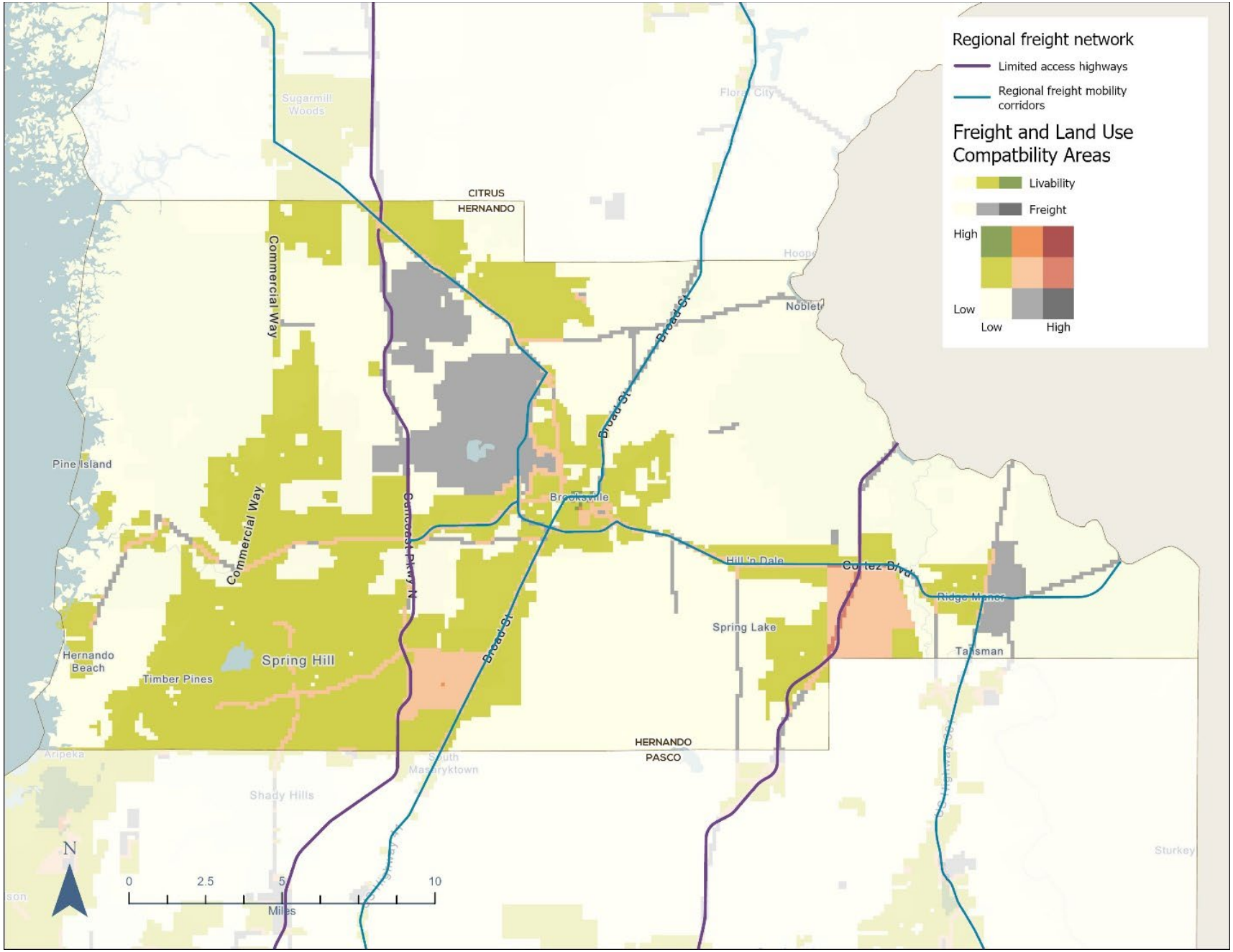


Figure 3: *Livability and Freight Activity Classification Results (Detail of Hernando County)*

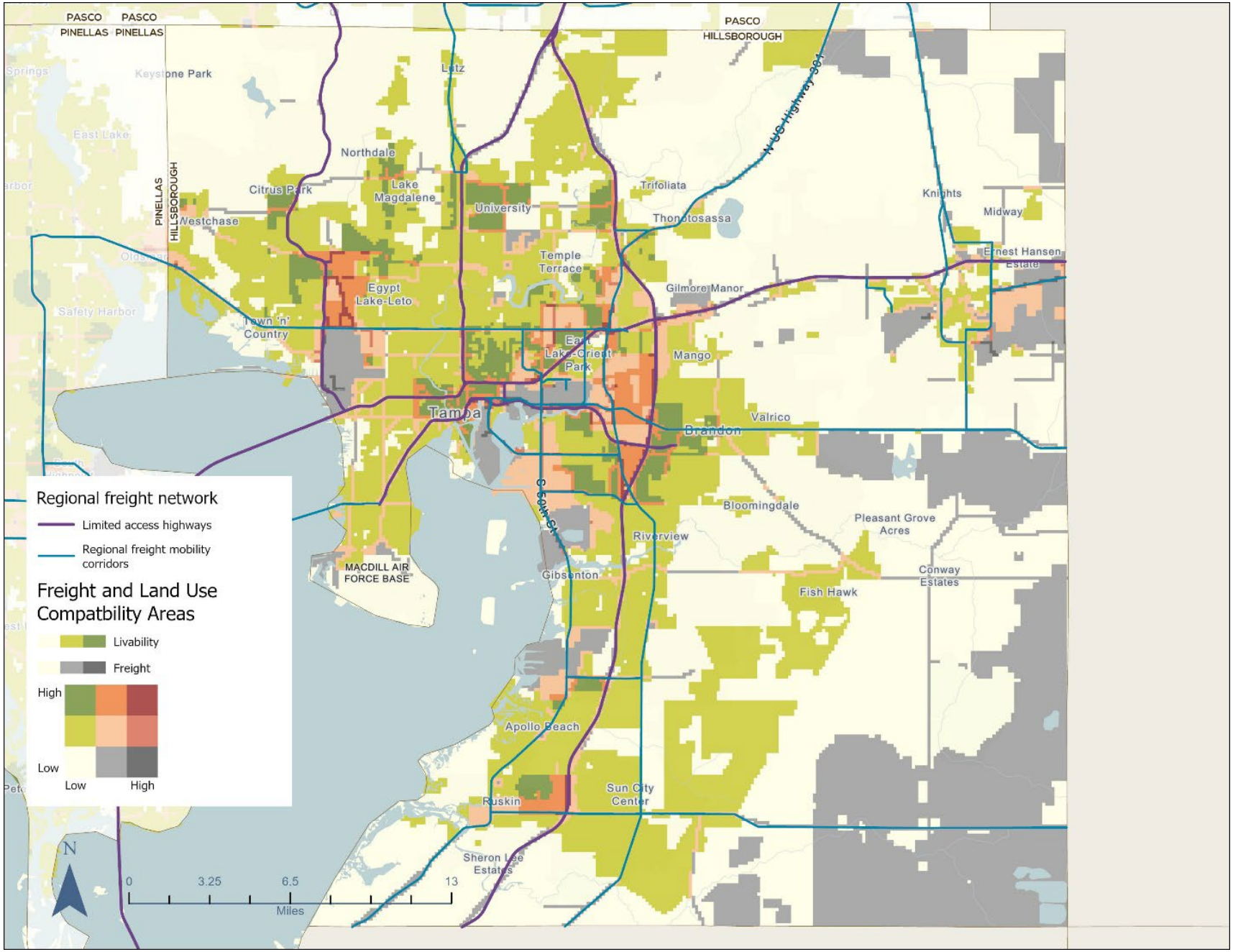


Figure 4: *Livability and Freight Activity Classification Results (Detail of Hillsborough County)*

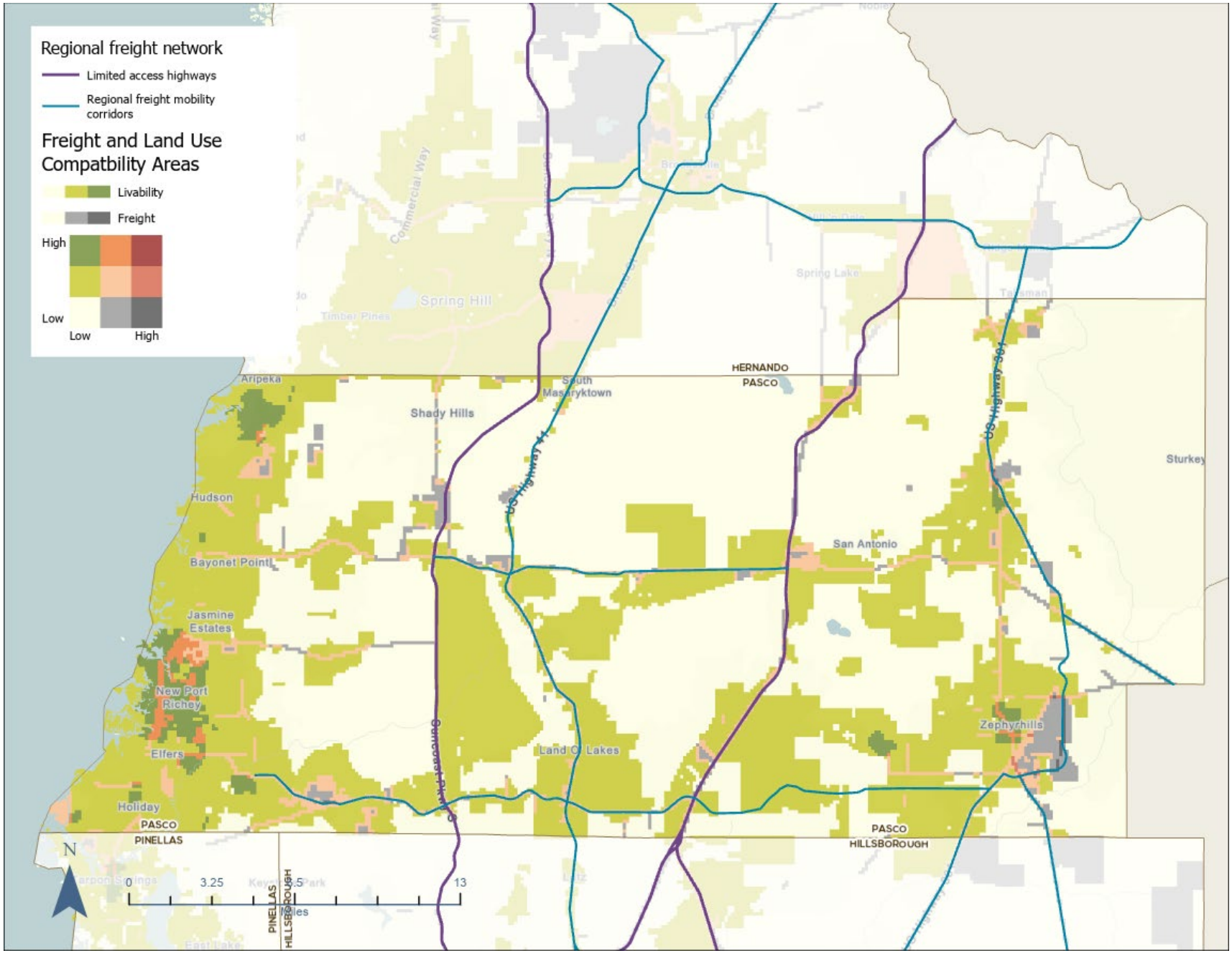


Figure 5: *Livability and Freight Activity Classification Results (Detail of Pasco County)*

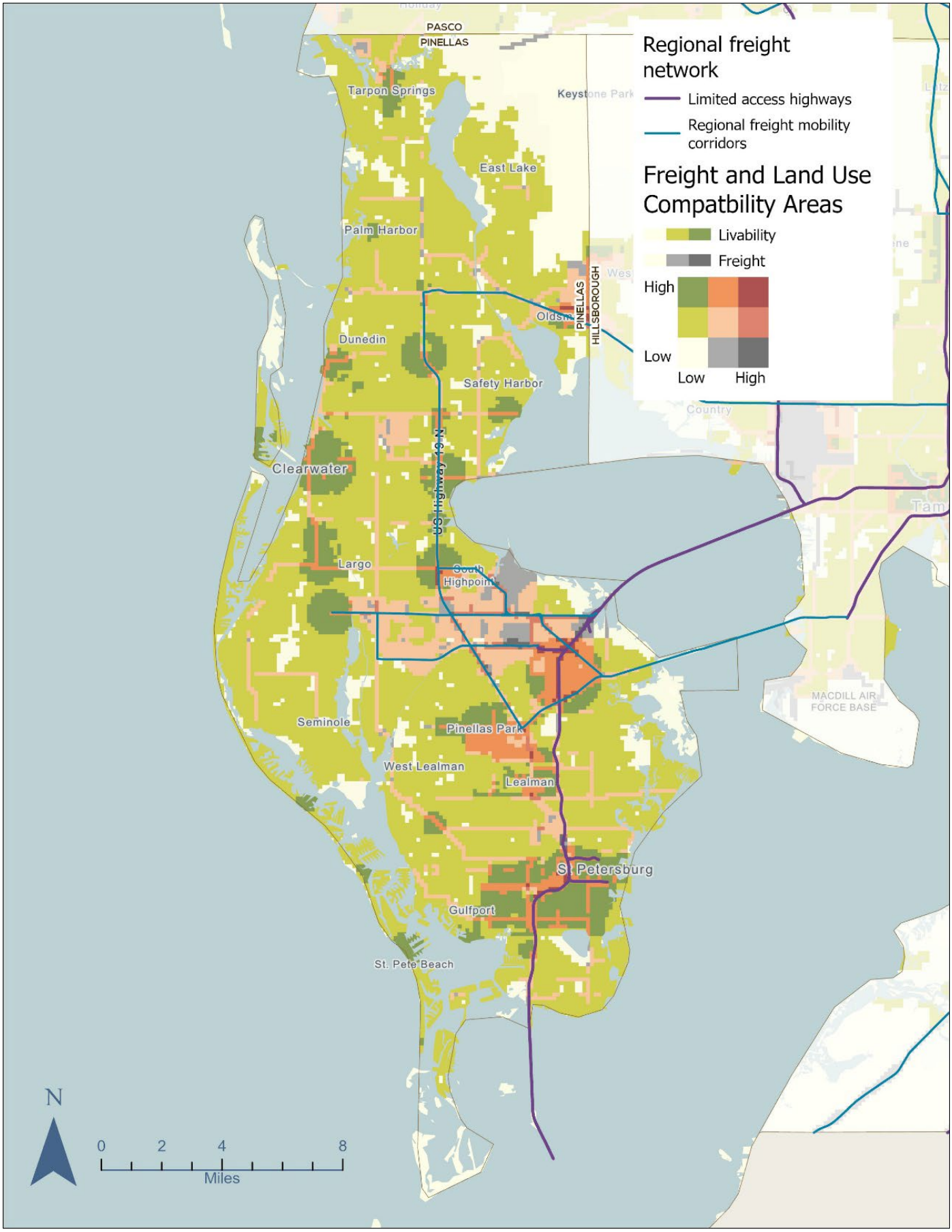


Figure 6: *Livability and Freight Activity Classification Results (Detail of Pinellas County)*

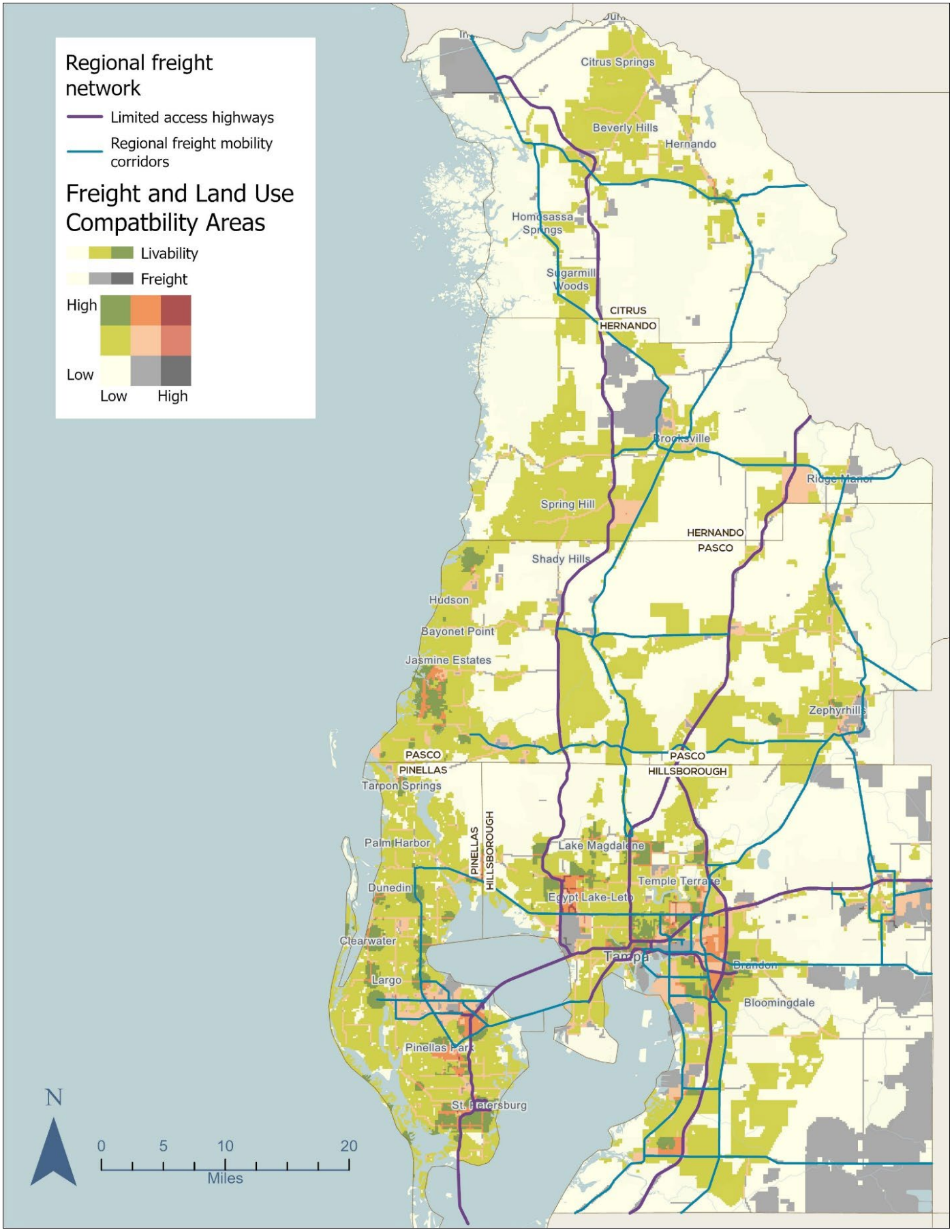


***Figure 7**: Districtwide Livability and Freight Activity Classification Results*

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