metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

2050 Metropolitan Transportation Plan

Chapter 7 | Freight and Goods Movement

Adopted: December 10, 2025

WHAT IS IN THIS DOCUMENT?

The purpose of this chapter in the 2050 Metropolitan Transportation Plan (MTP) is to identify the critical role of freight planning in shaping the Central Florida region's transportation future. This component aligns with MetroPlan Orlando's vision of a regional system that efficiently moves people and goods, supporting the region's economic vitality. Incorporating freight planning, in accordance with federal and state guidelines, ensures the region remains competitive in a growing global economy. This chapter highlights critical freight infrastructure, key needs, challenges, and strategies to ensure freight efficiency, connectivity, and long-term economic competitiveness.

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7.1 Introduction

Freight planning is a critical component of MetroPlan Orlando's 2050 Metropolitan Transportation Plan (MTP) to help shape the region's multimodal transportation future. It aligns with MetroPlan Orlando's vision of *"A regional transportation system that safely and efficiently moves people and goods through a variety of options that support the region's vitality."*

The Federal Highway Administration (FHWA) has outlined clear expectations for the inclusion of freight in long range transportation plans and emphasized the importance of incorporating freight stakeholders and addressing projected freight demands within the planning process (23 U.S.C. § 134). Incorporating freight considerations into the 2050 MTP helps ensure that the region maintains a competitive edge in a growing global economy, by supporting efficient and reliable connections for the movement of goods across the state and nation. By aligning freight strategies with state and federal guidelines, the MetroPlan Orlando planning region will be positioned to meet future demand for goods and services and continue to support economic growth and prosperity.

This regional freight component aligns with and complements efforts by the Florida Department of Transportation (FDOT) to meet and exceed the federal requirements for a state freight plan. The importance of freight movement continues to grow at the national, state, and regional levels. The Moving Ahead for Progress in the 21st Century Act (MAP-21) of 2012 established a national freight policy aimed at improving the condition and performance of the national freight network. This effort was further reinforced by the Fixing America's Surface Transportation (FAST) Act of 2015, which introduced key requirements for the development of state freight plans. To meet requirements and secure funding under the National Highway Freight Program (NHFP) (23 U.S.C. 167), the Florida Department of Transportation (FDOT) first developed its Freight Mobility and Trade Plan (FMTP) in 2013. The most recent update was completed in 2024. The 2024 update adopted approaches and strategies to address immediate freight challenges while positioning Florida to meet future freight demands. The 2024 FMTP highlights strategies such as leveraging data and technology to improve safety, creating a resilient multimodal freight system, and reducing environmental impacts through innovative solutions. These efforts include enhancing truck parking facilities, supporting alternative fuel adoption, and integrating advanced technologies to optimize freight corridors. These approaches ensure that Florida remains competitive in global trade while supporting local economic growth and environmental goals.

This chapter defines MetroPlan Orlando's multimodal freight system and identifies key intermodal needs and challenges. A holistic approach was used to leverage data-driven insights, stakeholder input, and expert analysis. Strategies to improve the freight system and enhance freight and good movements efficiency are also identified.

7.2 Multimodal Freight System Inventory

The MetroPlan Orlando planning area features a robust multimodal freight network and various transportation modes including roads, rail, and air. This chapter provides an overview of the multimodal freight system in the region. For the full analysis of the region's multimodal freight system, refer to the freight needs assessment technical report.

7.2.1 FREIGHT NETWORK

7.2.1.1 NATIONAL HIGHWAY FREIGHT NETWORK

The National Highway Freight Network (NHFN) is a critical system of highway corridors designed to support the efficient movement of freight across the U.S. It prioritizes resources to improve freight performance on highways, enhancing efficiency, reliability, and safety. Established under the FAST Act and Bipartisan Infrastructure Law, the NHFN includes the following categories:

- Primary Highway Freight Systems (PHFS);
- Non-PHFS Interstate; and
- Critical Rural and Urban Freight Corridors (CRFCs and CUFCs).

While the FHWA designates the PHFS, state Departments of Transportation (DOTs), and in certain cases, Metropolitan Planning Organizations (MPOs), manage and update the CRFCs and CUFCs based on evolving freight needs and project funding eligibility considerations. States and MPOs are allowed to designate CUFC and CRFC on a rolling basis and must certify to the FHWA that the designated corridors meet the requirements of the applicable provisions (CUFCs and CRFCs). Within the MetroPlan Orlando planning region, key NHFN routes like I-4 and Florida's Turnpike, along with SR 408, SR 528, and SR 417, connect industrial hubs, distribution centers, and important intermodal facilities with key markets (shown in Figure 7-1). Table 7-1 below provides a list of the roads in the region that are included in the NHFN.

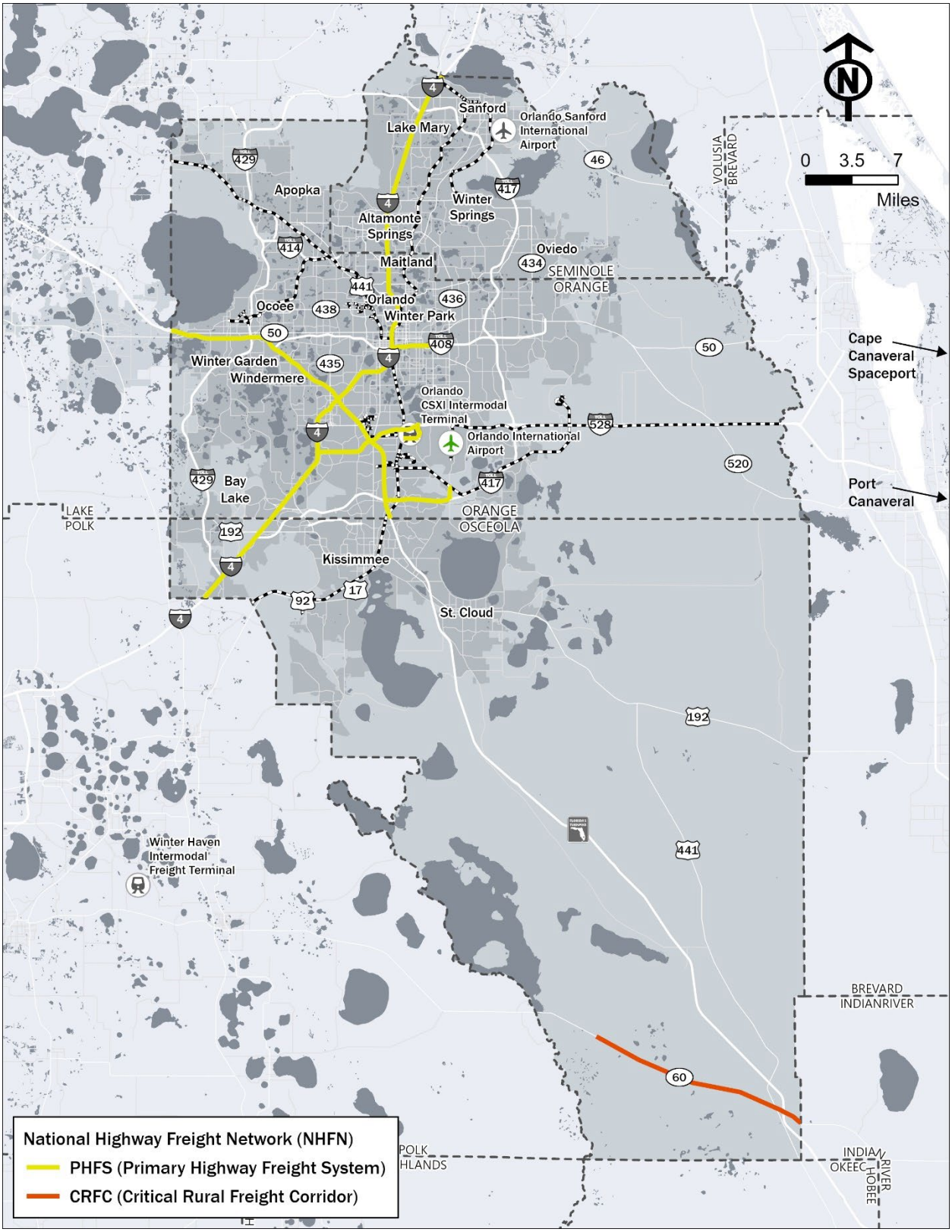
Table 7-1 | NHFN within the MetroPlan Orlando Planning Region

Roadways	From	To	Designation	Length *
I-4	Seminole/Volusia County Line	Osceola/Polk County Line	PHFS	46.9
FL Turnpike (SR 91)	Orange/Lake County Line	Orange/Osceola County Line	PHFS	24.9
SR 408	I-4	SR 436	PHFS	4.5
SR 528	I-4	8.40 Miles East of I-4	PHFS	8.4
Boggy Creek Road	SR 528	Landstreet Road	PHFS	1.1
Landstreet Road	Boggy Creek Road	S. Orange Avenue	PHFS	1.1
SR 417	FL Turnpike (SR 91)	Boggy Creek Road	PHFS	4.9
Boggy Creek Rd	SR 417	Near the Lake Nona Amazon Distribution Center	PHFS	1.0
SR 60	FL Natural Scenic Trail	Osceola/Indian River County Line	CRFC	17.0

Source: FHWA & FDOT, 2024;

**miles within MetroPlan Orlando planning region*

Figure 7-1 | National Highway Freight Network (NHFN) in Central Florida



Source: FDOT & FHWA, 2023

7.2.1.2 STRATEGIC INTERMODAL SYSTEM

The Strategic Intermodal System (SIS), established in 2003, is a statewide network of high-priority transportation facilities, including highways, railroads, airports, seaports, and freight terminals that supports the movement of goods and passengers across Florida. These facilities form the backbone of Florida's transportation system and ensure the system remains prepared for future demand. A key goal of the SIS is to provide seamless intermodal and multimodal connectivity between different modes of transportation. The 2022 SIS Policy Plan identified several freight-related goals that are supported by strategies and actions: [1]

- **Goals:** Freight-related goals aim to improve freight mobility, enhance Florida's global competitiveness, and ensure intermodal and interregional connectivity while building a resilient and adaptable transportation network.
- **Strategies:** Strategies focus on redefining capacity to emphasize freight throughout, increasing flexibility to fund smaller-scale or off-SIS projects, expanding truck parking infrastructure and intermodal facilities, and/or balancing statewide priorities with regional needs to enhance first- and last-mile connections.
- **Actions:** Key actions include investing in technology (e.g., smart infrastructure), strengthening rural and urban freight corridors, hardening infrastructure to improve resilience, and collaborating with partners to optimize freight systems and support economic growth.

In the MetroPlan Orlando planning region, SIS highways include I-4, SR 429, SR 408, SR 528, SR 417, and Florida's Turnpike (SR 91). Table 7-2 highlights the SIS mileage within the region, with Orange County ranking number five and four in terms of SIS centerline mileage and lane mileage among all counties in Florida, respectively. Osceola County ranks 12th in centerline mileage and 17th in lane mileage, respectively. Seminole County ranks lowest among all three counties. Other SIS facilities include Orlando International Airport, Orlando-Sanford International Airport, and Orlando CSX Intermodal Terminal.

Figure 7-2 highlights the locations of the SIS facilities.

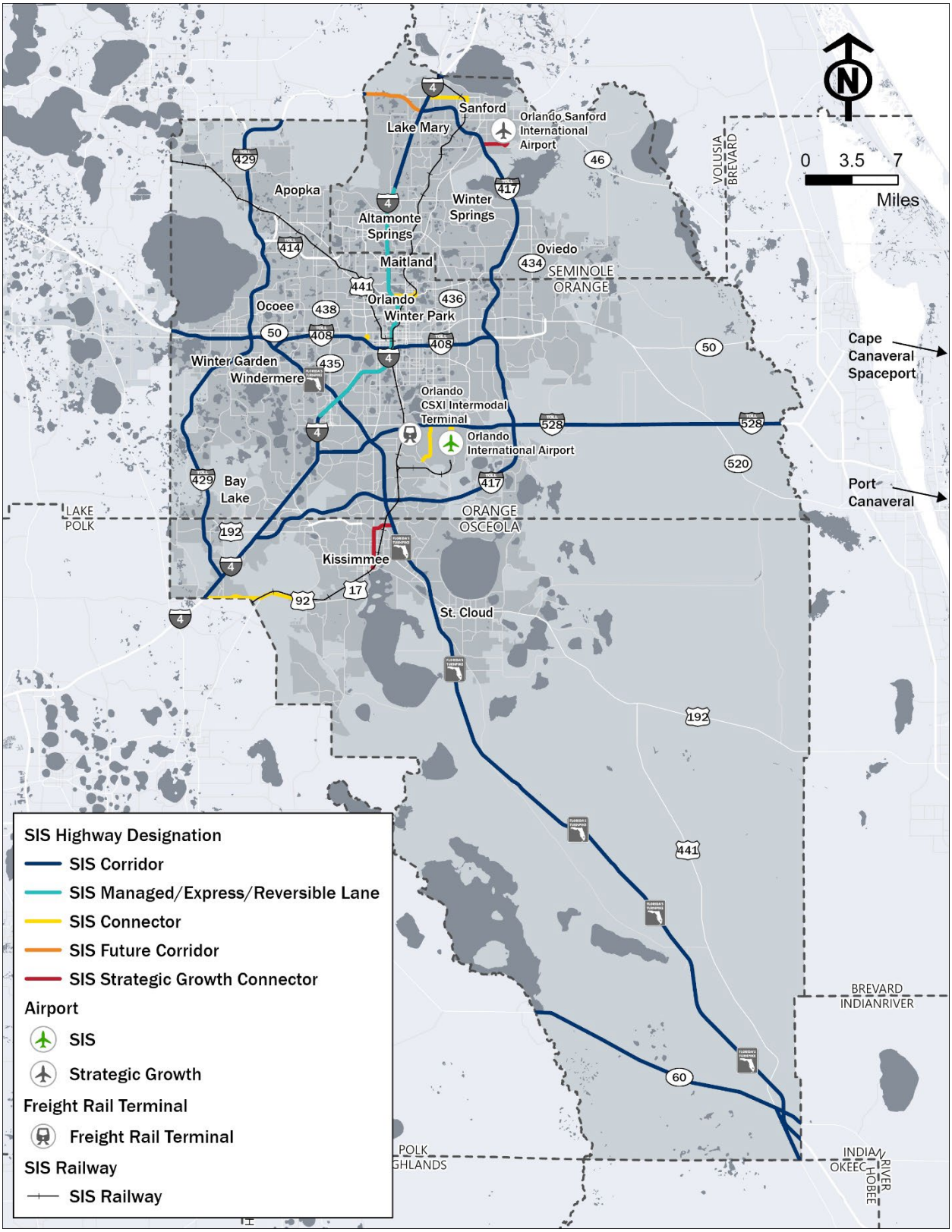
Table 7-2 | SIS Mileage Breakdown for Orange, Osceola, and Seminole Counties

County	Centerline (Miles)	County Ranking (Centerline Miles)	Lane (Miles)	County Ranking (Lane Miles)
Orange	172.6	5	1,062.0	4
Osceola	100.1	12	370.4	17
Seminole	32.1	53	188.3	41

Source: FDOT SHS Report: SIS Only, 2023

[1] Florida SIS Plan. FDOT. (2022), http://www.floridatransportationplan.camsysstaging.com/pdf/sis-policy-plan-final.pdf

Figure 7-2 | FDOT Strategic Intermodal System (SIS) Facilities



Source: FDOT, 2023

7.2.1.3 DESIGNATED REGIONAL FREIGHT NETWORK

As part of the 2050 Freight Needs Assessment, a regional freight network was developed to highlight the most important roadways for freight movement within the region. While all roads play a role in freight movement, this network ensures critical freight corridors receive focused attention and resources. The network consists of four tiers of facilities: Tier 1 (Principal Freight Network) for roadways of strategic importance that support national and regional freight movement, Tier 2 (Other Principal Freight Network) for roadways that support both national and regional freight movement, Tier 3 (Regional Freight Corridors) for roadways that link freight routes and support local needs, and Tier 4 (Freight Connectors) for roadways that serve as first/last mile movements connecting freight generators to higher-tiered roads. Table 7-3 describes the freight network tiers.

Figure 7-3 shows the designated freight network within the region. For detailed documentation of the designation process, refer to the freight needs assessment technical report.

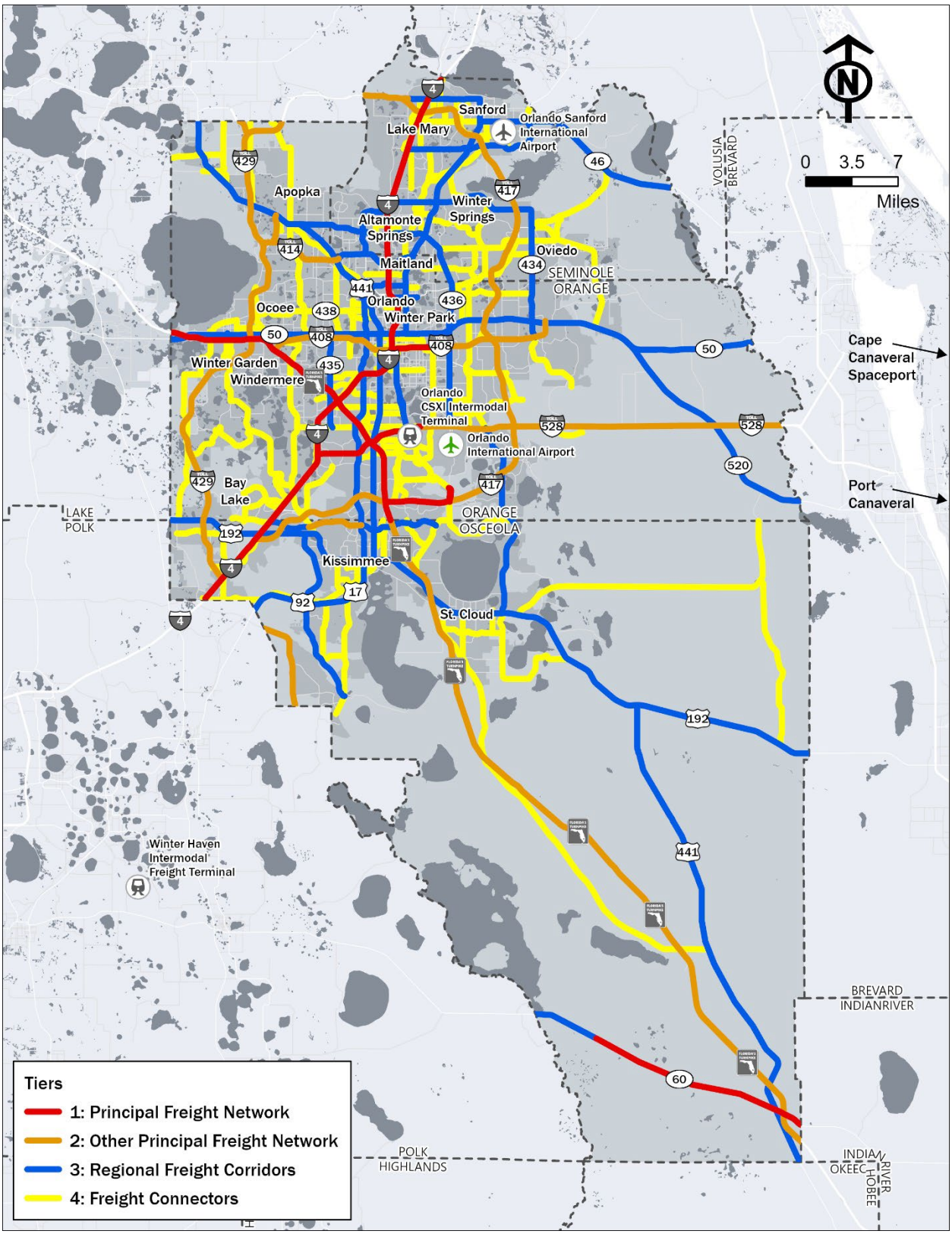
The freight network could be used for various planning purposes. Use cases include applying the network for project prioritization, identifying roadway candidates for CUFC/CRFC designation, and streamlining federal funding eligibility. It also supports broader planning efforts such as corridor, safety, and truck parking studies, and informs strategic resource allocation across the region.

Table 7-3 | Freight Tier Designation

Freight Network Designation	Definition	Funding Mechanism (Level of Priority)	Functional Classification
Principal Freight Network (Tier 1)	Facilitates efficient movement of freight across the nation and region with strategic importance. Roadways designated as **NHFN as identified by the Federal Highway Administration (FHWA) are all designated as Tier 1.**	Federal/State	All roadways that are on the PHFS, CUFC, and CRFC
Other Principal Freight Network (Tier 2)	Facilities that support both national and regional freight movement including limited access facilities, which were not identified within the NHFN. **Limited Access Roadways in the Region are all designated as Tier 2.**	Federal/State	All Principal Arterials (Interstate, Expressway)
Regional Freight Corridors (Tier 3)	Connect principal freight network and channel freight traffic to support local freight needs. In addition, regional freight mobility corridors support interregional freight movement.	State/Local	Principal Arterial - Other
Freight Connectors (Tier 4)	Support first/last mile freight movements or connect major freight generators/intermodal facilities to higher freight network classes.	State/Local	Minor Arterial, Major/ Minor Collectors, and Local

Source: Developed by Cambridge Systematics, 2024

Figure 7-3 | Designated MetroPlan Orlando Freight Network



Source: Developed by Cambridge Systematics, 2024.

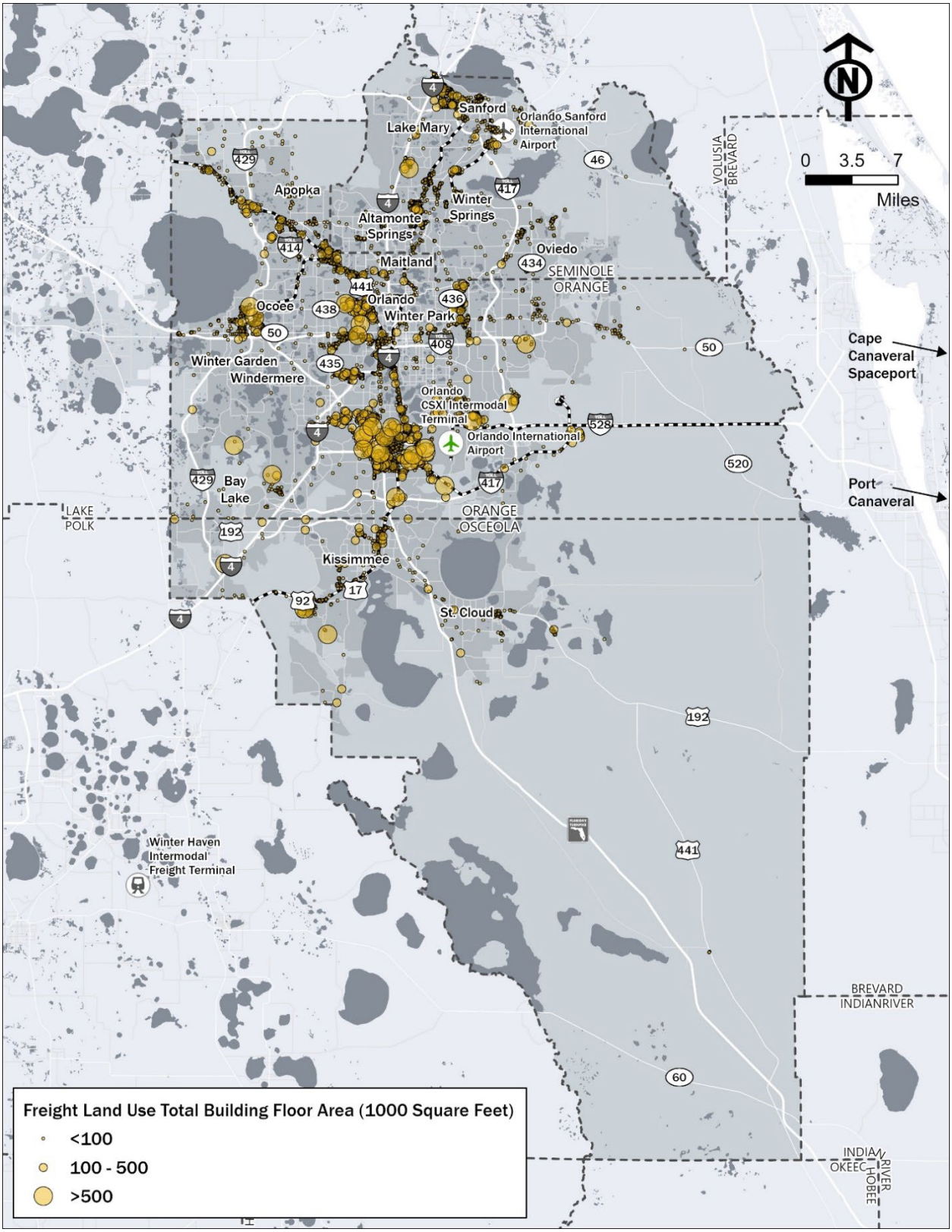
7.2.2 FREIGHT LAND USE

Freight land use analysis is essential for understanding where goods originate and are delivered within the MetroPlan Orlando planning region. The analysis helps assess local freight demand and identifies areas where freight activities are concentrated, such as industrial and commercial zones. Figure 7-4 shows the total floor area for industrial land use. These areas are home to major freight-generating industries like manufacturing and warehousing and serve as key distribution centers, attracting a significant share of freight activities. The spatial distribution of freight activities shows the concentration of freight land use in several key areas, including:

- Taft area west of Orlando International Airport (MCO) and the CSX intermodal facility on Landstreet Road (see Figure 7 - 2);
- Silver Star subarea;
- Sanford subarea which houses several critical freight generators including Monroe Commerce Park, Vantage Point, and Rand Yard Commercial Center; and
- Other clusters near transload facilities such as Florida Central Railroad (FCEN) transload facilities.

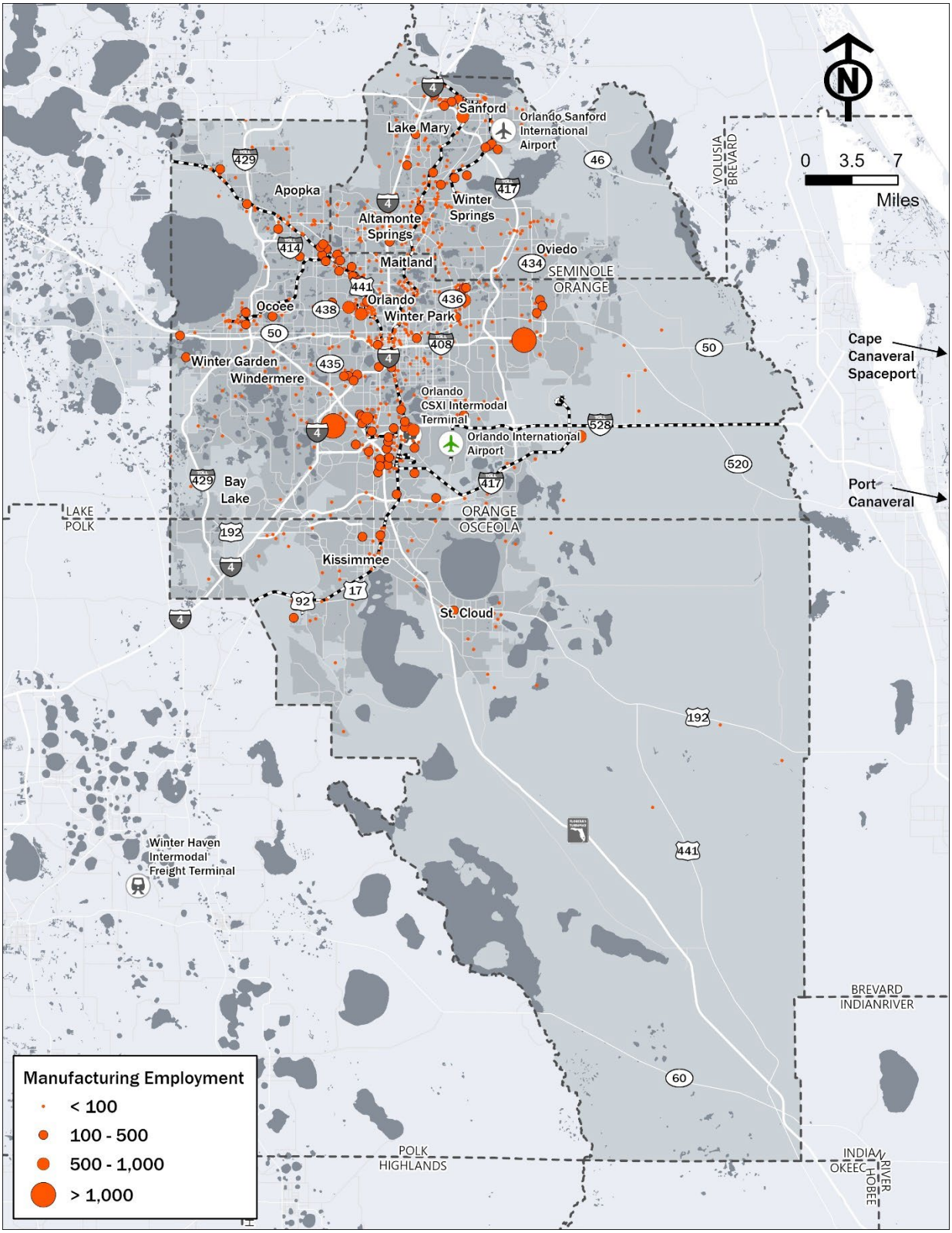
Employment in manufacturing and transportation/warehousing sectors further highlights the correlation between workforce distribution and freight traffic generating areas (Figure 7-5 and Figure 7-6). High employment densities in these sectors are concentrated near key freight corridors that travel through cities like Apopka, Sanford, Altamonte Springs, and Orlando. These locations, which align with the locations of major freight clusters, illustrate the symbiotic relationship between freight land use and the workforce that sustains it.

Figure 7-4 | 2023 Industrial Land Use by Total Building Area



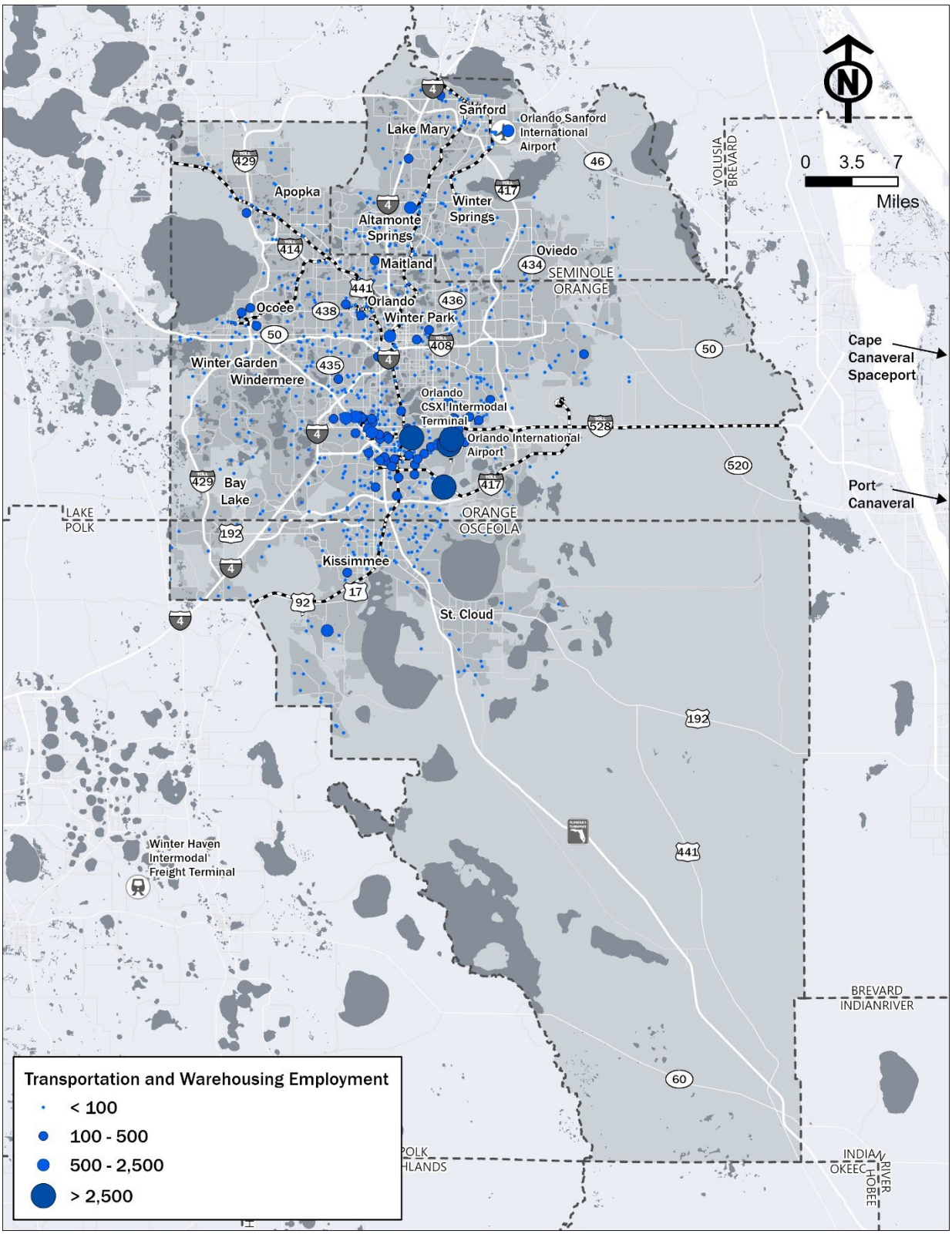
Source: Florida Department of Revenue, 2023

Figure 7-5 | Manufacturing Employment Locations



Source: Longitudinal Employer-Household Dynamics, US Census Bureau, 2021. North American Industry Classification System (NAICS) sector 31-33 (Manufacturing). Employment locations with 1 employee were not shown on the map.

Figure 7-6 | Transportation and Warehousing



Source: Longitudinal Employer-Household Dynamics, US Census Bureau, 2021. North American Industry Classification System (NAICS) sector 48-49 (Transportation and Warehousing). Employment locations with 1 employee were not shown on the map.

7.2.3 TRUCK PARKING INFRASTRUCTURE

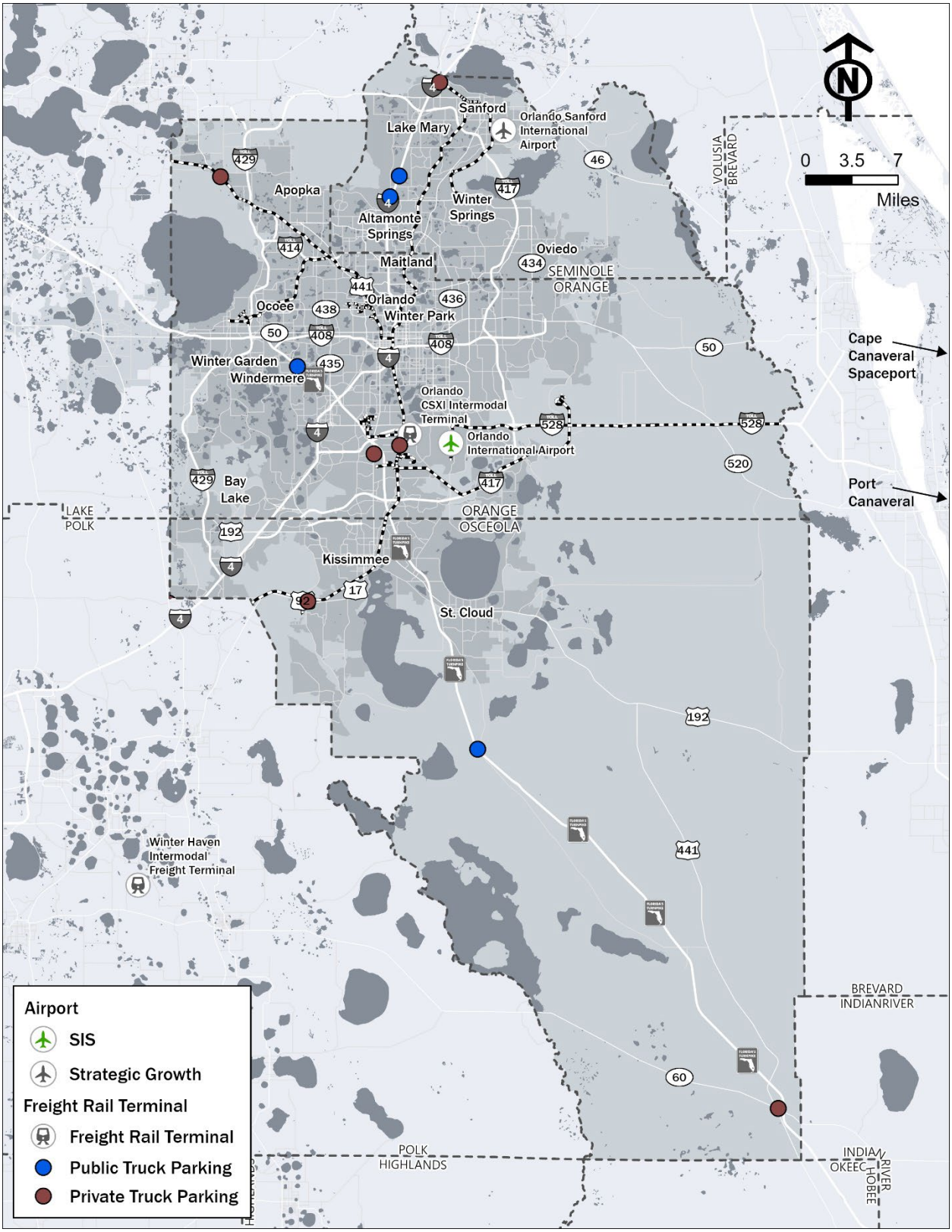
The MAP-21 legislation emphasized the need to address the nationwide truck parking shortage to improve safety for truck drivers. Jason's Law, a key provision of MAP-21, mandated that states assess truck parking needs; however, shortages continue to be a significant issue. Figure 7-7 shows the locations of truck parking facilities in the region, and Table 7-4 provides details on these locations.

Table 7-4 | Truck Parking and Location Information

Location Name	Type	Hours of Operation	Overnight Parking	Amenities	Route	Truck Space	County
Acme Truck Stop #1	Private	6am-11pm	No	Restrooms, CAT/Certified/Weigh Scales, Convenience/Travel/Trucker Store, Laundry, Lighting, Paved Parking, Lounge Area, Fuel Pumps, Showers, Restaurants, Nighttime Security, Overnight Parking	US 441	120	Orange
Zellwood Truck Stop	Private	6am-8pm	No	Restrooms, CAT/Certified/Weigh Scales, Convenience/Travel/Trucker Store, Paved Parking, Fuel Pumps, Showers, Overnight Parking	US 441	24	Orange
Pilot Travel Center #96	Private	24 hours per day	Yes	Restrooms, CAT/Certified/Weigh Scales, Convenience/Travel/Trucker Store, Paved Parking, Fuel Pumps, Showers, Restaurants, Overnight Parking	FL 60	15	Osceola
Acme Truck Stop #2	Private	5am-10pm	No	Restrooms, Convenience Store, Laundry, Paved Parking, Fuel Pumps, Restaurants, Overnight Parking	SR 527	10	Orange
Circle K Gas Station #2722406	Private	24 hours per day	Yes	Restrooms, Convenience Store, Paved Parking, Fuel Pumps	Monroe Road	3	Seminole
Wawa Gas Station #5124	Private	24 hours per day	Yes	Restrooms, Convenience Store, Paved Parking, Fuel Pumps	US 17	2	Osceola
Turkey Lake Service Plaza	Public	24 hours per day	Yes	Restrooms, Convenience Store, Paved Parking, Fuel Pumps, Restaurants, Nighttime Security, Overnight Parking	Florida's Turnpike (SR 91)	24	Orange
Canoe Creek Service Plaza	Public	24 hours per day	Yes	Restrooms, Convenience Store, Paved Parking, Fuel Pumps, Restaurants, Nighttime Security, Overnight Parking	Florida's Turnpike (SR 91)	35	Osceola
I-4 Westbound Rest Area	Public	24 hours per day	Yes	Restrooms, Handicap Facilities, Nighttime Security, Pet Walk Area, Picnic Tables, Vending Machines, Overnight Parking	I-4 WB	16	Seminole
I-4 Eastbound Rest Area	Public	24 hours per day	Yes	Restrooms, Handicap Facilities, Nighttime Security, Pet Walk Area, Picnic Tables, Vending Machines, Overnight Parking	I-4 EB	17	Seminole

Source: FDOT, 2020

Figure 7-7 | Truck Parking Locations



Source: FDOT, 2024

7.2.4 RAIL INFRASTRUCTURE

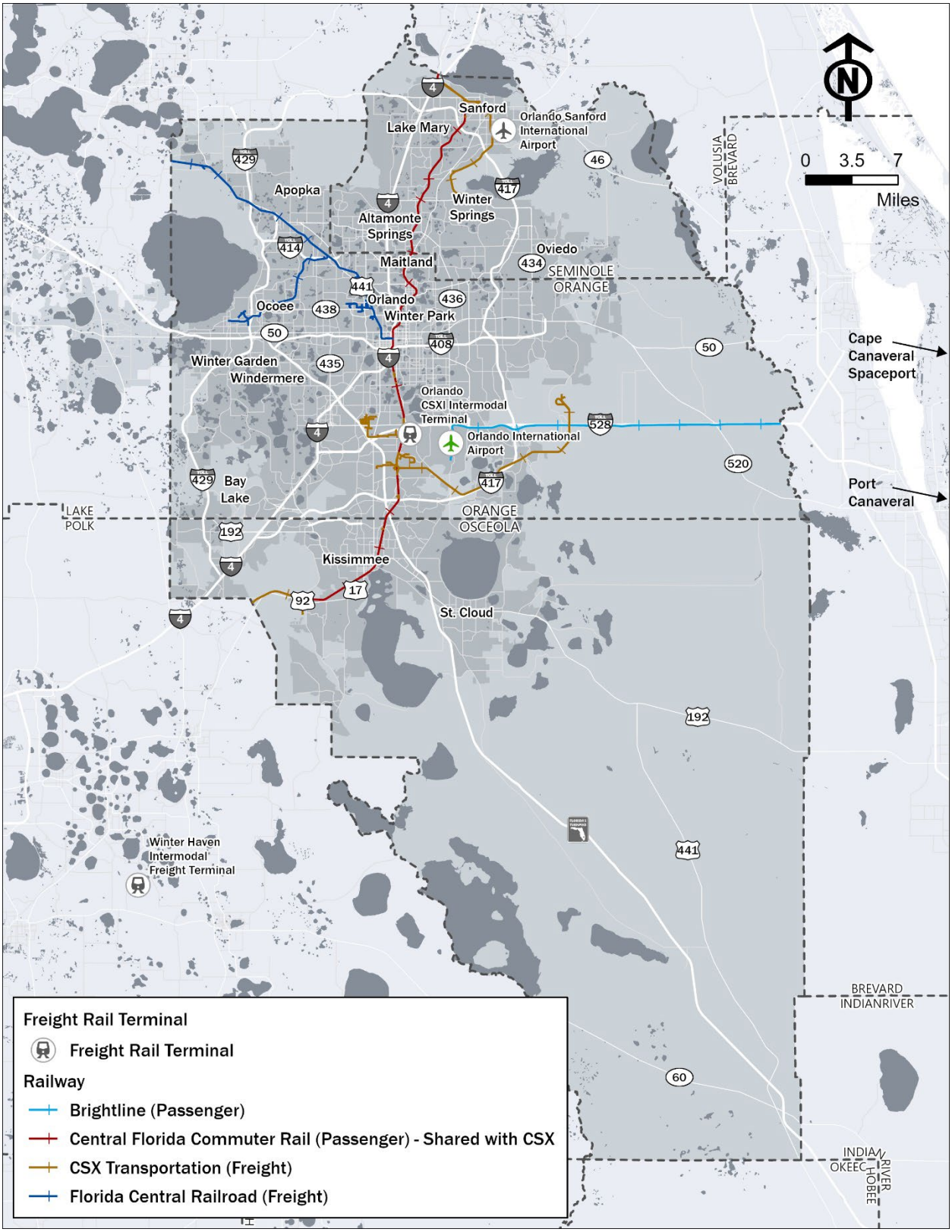
Freight rail plays a crucial role in moving goods efficiently, handling large and heavy loads, typically moving freight over longer distances, helping to reduce the number of trucks on the road. Freight rail is the most fuel-efficient land transportation mode, with one train moving nearly 500 tons of freight on a gallon of fuel. According to the U.S. Environmental Protection Agency (EPA), freight rail contributes only 1.8% of the U.S. transportation-related emissions, compared to 58.5% from cars and 23.4% from trucks.[2] Figure 7-8 illustrates the types of railroads and freight terminals that serve the MetroPlan Orlando planning region.

Specifically, the region is served by two freight railroads:

- CSX Transportation (CSXT) - CSXT, which is a leading Class I railroad in North America, operates a 20,000-route-mile network, shipping 3.4 million carloads in 2023. In the MetroPlan Orlando planning area, CSXT shares right-of-way along the main north/south corridor with SunRail, a commuter rail serving the Greater Orlando area, connecting Volusia and Osceola counties via Downtown Orlando. CSXT also operates multiple industrial spurs and manages intermodal facilities for goods transfer across transportation modes:
- CSXT Taft Intermodal Terminal – This intermodal facility is a designated SIS Strategic Growth Freight Rail Terminal.
- CSXT TRANSFLO Terminal in Sanford – It is a subsidiary of CSXT Corporation located on 5th Street in Sanford, Florida. It is adjacent to several major freight highways including I-4 and US 17-92.
- Florida Central Railroad (FCEN) - FCEN operates a 68-mile short-line network serving several cities including downtown Orlando, Apopka, Zellwood, Mt. Dora, Tavares, Eustis, Umatilla, Ocoee, and Winter Garden. FCEN serves as a viable alternative to trucking and offers businesses in Central Florida with easy access to broader markets throughout the state. Its two transload facilities, on Amelia Street and Orange Blossom Trail, enhance regional freight and goods movement for Central Florida businesses.

[2] Association of American Railroads, "Freight Railroads Embrace Sustainability & Environmental Preservation," 2024.

Figure 7-8 | Railroads and SIS Freight Rail Terminals



Source: Federal Railroad Administration (FRA), 2024

7.2.5 AIRPORT INFRASTRUCTURE

Air freight is essential to Florida's economy, enabling fast and efficient transportation of high-value, time-sensitive goods from and to both domestic and international markets. Within the MetroPlan Orlando planning region, Orlando International Airport (MCO) and Orlando Sanford International Airport (SFB) are two key hubs for air cargo operations. Figure 7-2 shows the airport's locations.

Orlando International Airport (MCO)

MCO is a designated SIS airport and the 4th largest in the U.S. by land area. Additionally, the airport serves as a major passenger and cargo hub for the Central Florida region. As shown in Table 7-5, MCO is one of Florida's busiest airports and ranks 29th nationally for landed cargo weight (second in Florida).

Table 7-5 | Florida Top Airports by Cargo Volume by Landed Weight (lbs.)

National Ranking	Airport	City	2023 Landed Weight (lbs.)	2022 Landed Weight (lbs.)	% Change
4	Miami International	Miami	11,466,632,402	10,667,545,448	7.49%
29	**Orlando International**	**Orlando**	**1,030,557,430**	**1,243,274,590**	**-17.11%**
32	Lakeland Linder International	Lakeland	903,293,000	856,905,000	5.41%

Source: U.S. Bureau of Transportation Statistics - T100 Market (all Carriers), 2024

MCO hosts over 20 on-airport cargo companies, including FedEx, and offers extensive U.S. flight connections.[3] It features a 1,400-acre Cargo Center and 132 acres of ramp space, which efficiently handle large freighters. MCO's 167-acre Foreign Trade Zone provides duty deferral, tax benefits, and logistical advantages, facilitating global trade. The airport also has a U.S. Department of Agriculture (USDA) Plant Inspection Station, which plays a critical role in inspecting imported agricultural goods. Additionally, the Central Florida Pipeline (CFPL), operated by Kinder Morgan, is vital for transporting fuel from Port Tampa Bay to MCO. This 85-mile system includes a 10-inch pipeline supplying jet fuel exclusively to MCO and another line for gasoline and diesel distribution. The CFPL serves as the backbone of MCO's fuel supply and supports Central Florida's aviation and transportation demands.

Figure 7-9 illustrates the trend in total cargo weight handled at MCO, including freight and mail, between 2018 and 2023. This data encompasses both inbound and outbound shipments. In 2023, MCO handled 209,000 tons of cargo, reflecting a 20% decline compared to 2018. Air cargo volumes have decreased since 2021, and unlike passenger traffic, MCO's cargo levels have not recovered to pre-pandemic levels. This decline aligns with a nationwide trend in the air freight industry, potentially driven by slower economic growth, geopolitical conflicts, and inventory overhang. Table 7-6 breaks down cargo volumes by direction, showing that 55% of the total is inbound, with the remaining 45% outbound. While the distribution is relatively balanced, the region leans more toward consuming air freight than generating it.

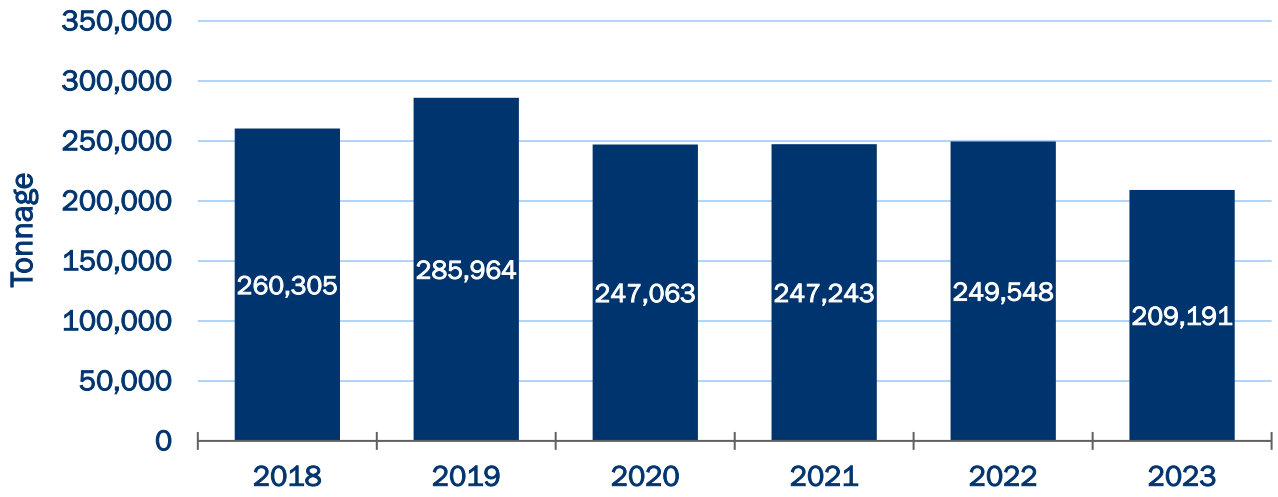
Table 7-6 | Air Cargo Tons by Direction for Freight and Mail, 2023

Airport	Outbound (Tonnage)	Inbound (Tonnage)	Total (Tonnage)
MCO	94,506	114,685	209,191

Source: U.S. Bureau of Transportation Statistics - T100 Market (all Carriers), 2024

[3] https://flymco.com/airport-business/investor-relations/statements-and-reports/

Figure 7-9 | MCO Total Handled Cargo (Freight and Mail) by Tonnage (2018 - 2023)

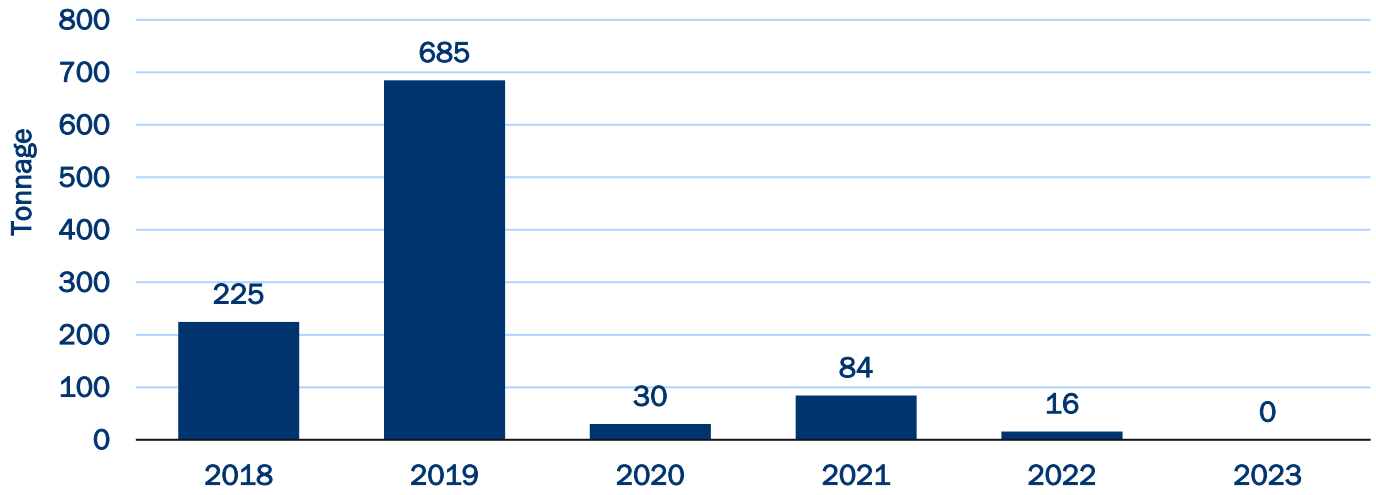


Source: U.S. Bureau of Transportation Statistics - T100 Market (all Carriers), 2024.

Orlando-Sanford International Airport (SFB)

SFB is designated as a SIS Strategic Growth Commercial Service Airport. While SFB is primarily known for its passenger traffic, it also plays a role in air cargo operations, supporting logistics and freight movement throughout Central Florida. The air cargo facility at SFB is designed to handle a wide range of cargo, including time-sensitive goods, perishables, electronics, and other items that need quick and efficient transportation. The airport is located close to key freight routes such as I-4 and SR 417, making SFB another strategic location for moving goods efficiently. Figure 7-10 shows the cargo volume trend between 2018 and 2023.[4]

Figure 7-10 | SFB Total Handled Cargo (Freight and Mail) by Tonnage (2018 - 2023)



Source: U.S. Bureau of Transportation Statistics - T100 Market (all Carriers), 2024

[4] Note a review of multiple sources including U.S. BTS and SFB official website has shown no freight activity in 2023. https://flysfb.com/saa/statistics/

7.3 Freight Conditions, Performance, and Demand

In order for MetroPlan Orlando's multimodal freight system to effectively serve the region's residents, visitors, and businesses, it must operate efficiently. Understanding the current conditions, performance metrics, and demand trends for the multimodal freight system is critical. For the full system conditions and performance analysis, refer to the freight needs assessment technical report.

7.3.1 TRUCK VOLUMES AND PERCENTAGES

The MetroPlan Orlando planning region is a key hub for freight movement, relying on air, rail, and highways for the movement of freight into, out of and within the region. Highways, particularly I-4, are essential for transporting goods within the region and to other areas. Other important corridors include Florida's Turnpike (SR 91), SR 408, SR 528, SR 50, US 17-92, and US 192.

Truck volume measures the total number of trucks passing a specific roadway over a set period, typically daily or hourly, reflecting truck traffic intensity and freight activity.

Figure 7-11 illustrates average annual daily truck trips (AADTT) across the region. The busiest roadways, carrying more than 15,000 trucks per day, include I-4, Florida's Turnpike (SR 91), and a portion of SR 528 located near the Taft area freight clusters. These major corridors are also part of the NHFN and essential for supporting national and regional freight movements. Other important routes based on truck volumes include SR 417 and heavily traveled roadways like SR 50 and John Young Parkway (particularly where it intersects with I-4 and Sand Lake Road, an area known for intensive freight clusters). Local roads also play an important role in freight movement. Michigan Avenue between Orange Blossom Trail and Orange Avenue carries significant truck volumes (over 5,000 AADTT). These local connections are critical for linking freight activity zones to major highways and regional corridors.

Truck percentages provide a deeper understanding of freight activity in the region. While AADTT shows where the largest number of trucks travel, truck percentages identify roads that are heavily used by trucks, even if they do not carry the highest traffic volumes. These routes are critical connectors to freight industries and activity centers and support first/last mile freight movements. Figure 7-12 illustrates the truck percentages throughout the MetroPlan Orlando planning region. Roadways like Florida's Turnpike and John Young Parkway between I-4 and Sand Lake Road have higher truck percentages. Additionally, truck percentages are higher in rural areas and less densely populated urban areas where freight industries are often located.

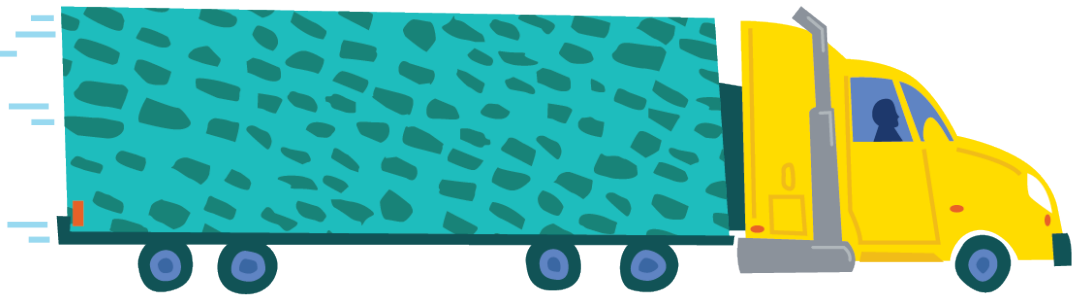
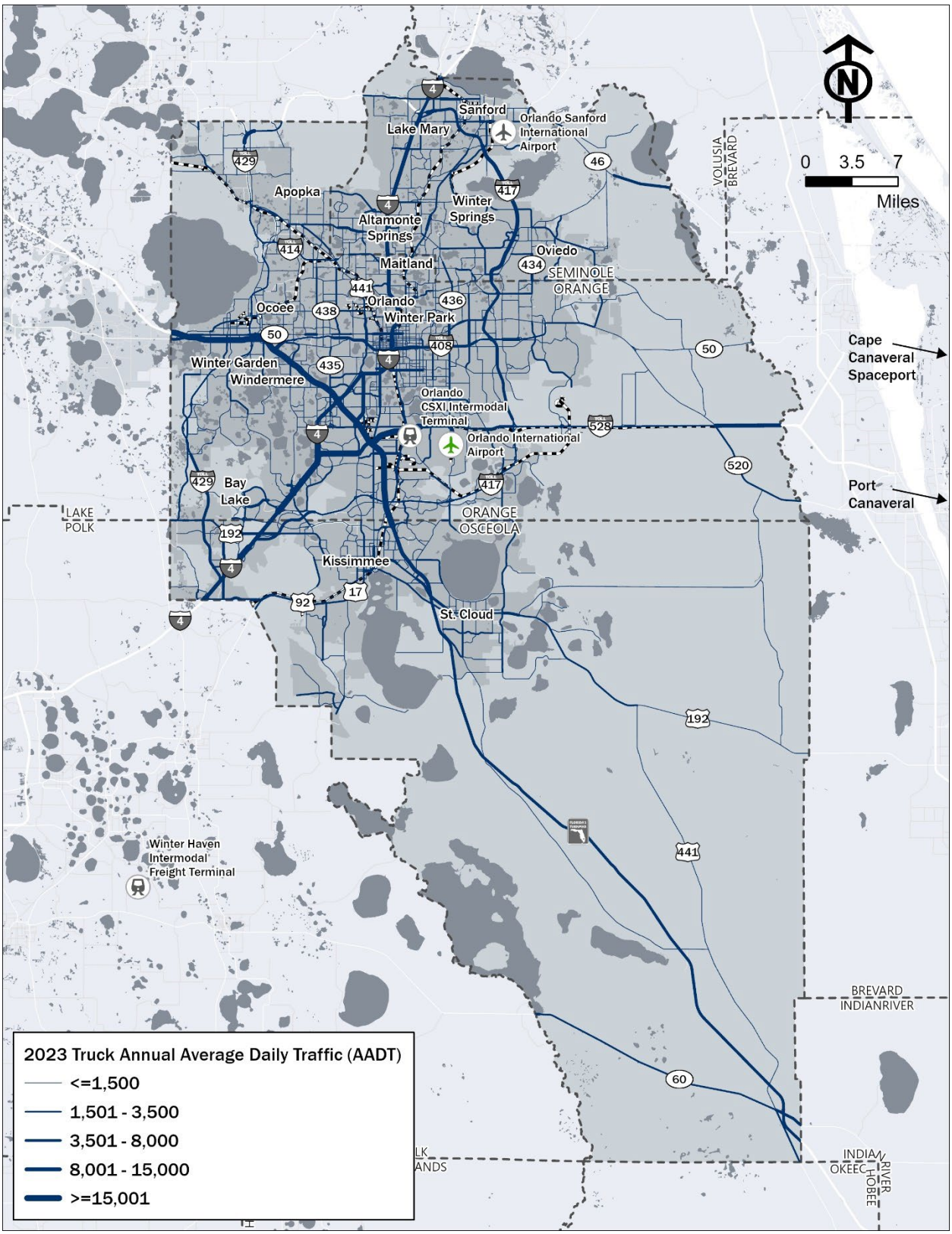
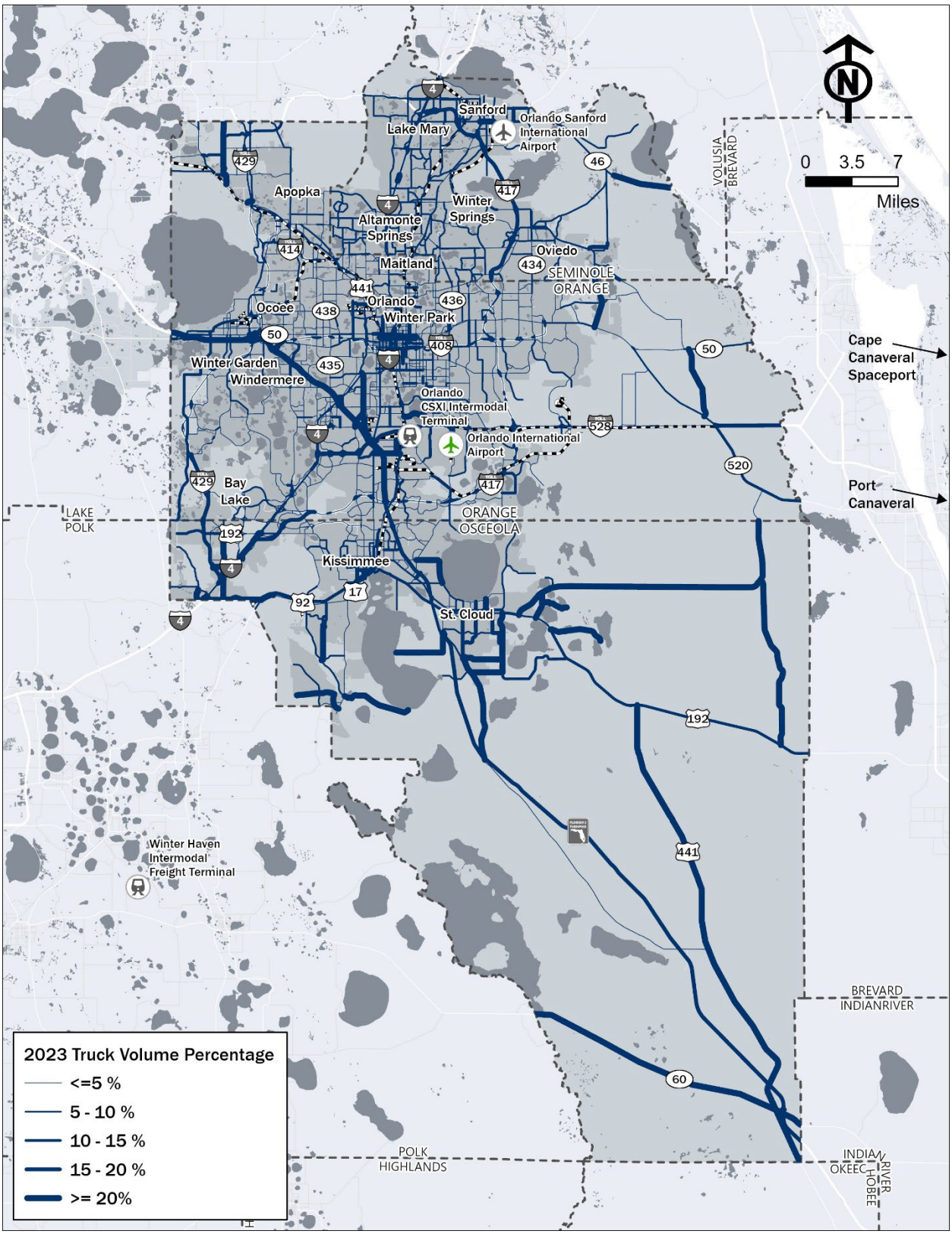


Figure 7-11 | 2023 Truck Annual Average Daily Traffic (AADT)



Source: FDOT, 2023

Figure 7-12 | 2023 Truck Percentage

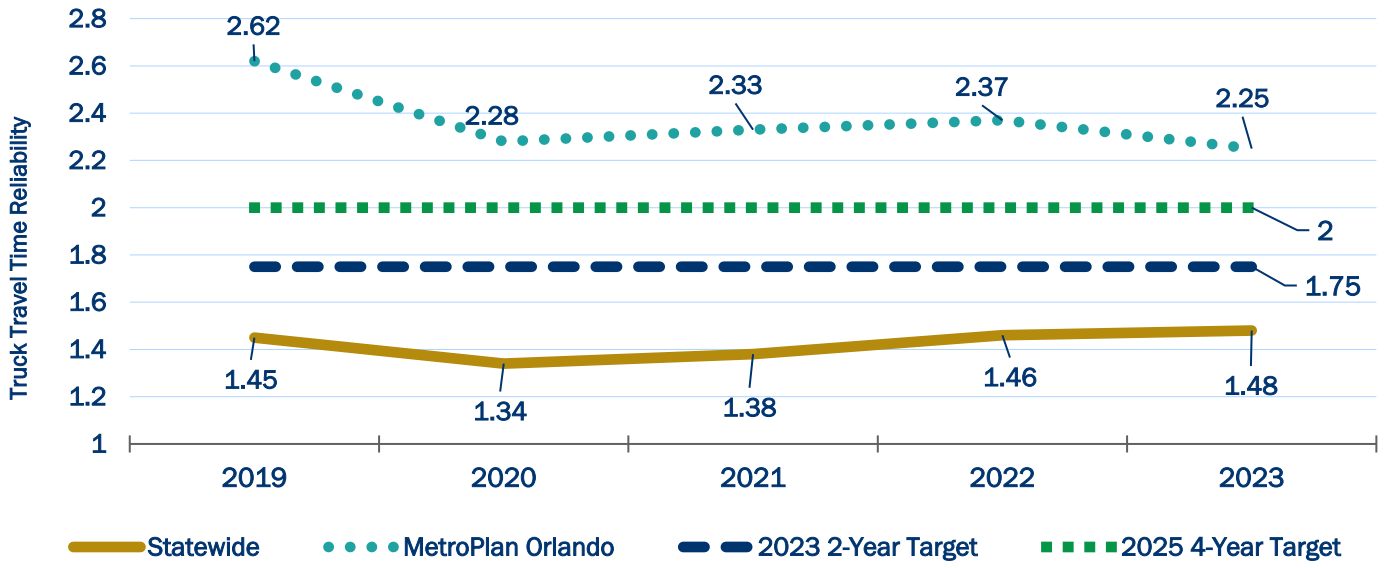


Source: FDOT, 2023

7.3.2 TRUCK TRAVEL TIME RELIABILITY AND TRUCK BOTTLENECKS

FHWA established a series of performance metrics under the MAP-21 and FAST Act to address key transportation challenges and monitor system performance. State DOTs and MPOs are tasked with setting targets, implementing strategies, and reporting progress through updated plans. One freight-related metric is the Level of Truck Travel Time Reliability (LOTTTR), which measures the consistency of travel times at different percentiles, with a higher value indicating more variability and less reliability. Figure 7-13 shows the LOTTR in the MetroPlan Orlando planning region from 2019 to 2023. Compared to the statewide performance, the region exhibits a higher LOTTR. This is expected because the statewide measure accounts for both urban and rural averages. Between 2019 and 2023, statewide LOTTR remained relatively stable. In contrast, the region experienced a notable improvement, with the LOTTR decreasing from 2.69 to 2.25 — a 16% reduction. This reflects an overall improvement in truck travel time reliability across the region's roadways.

Figure 7-13 | Truck Travel Time Reliability



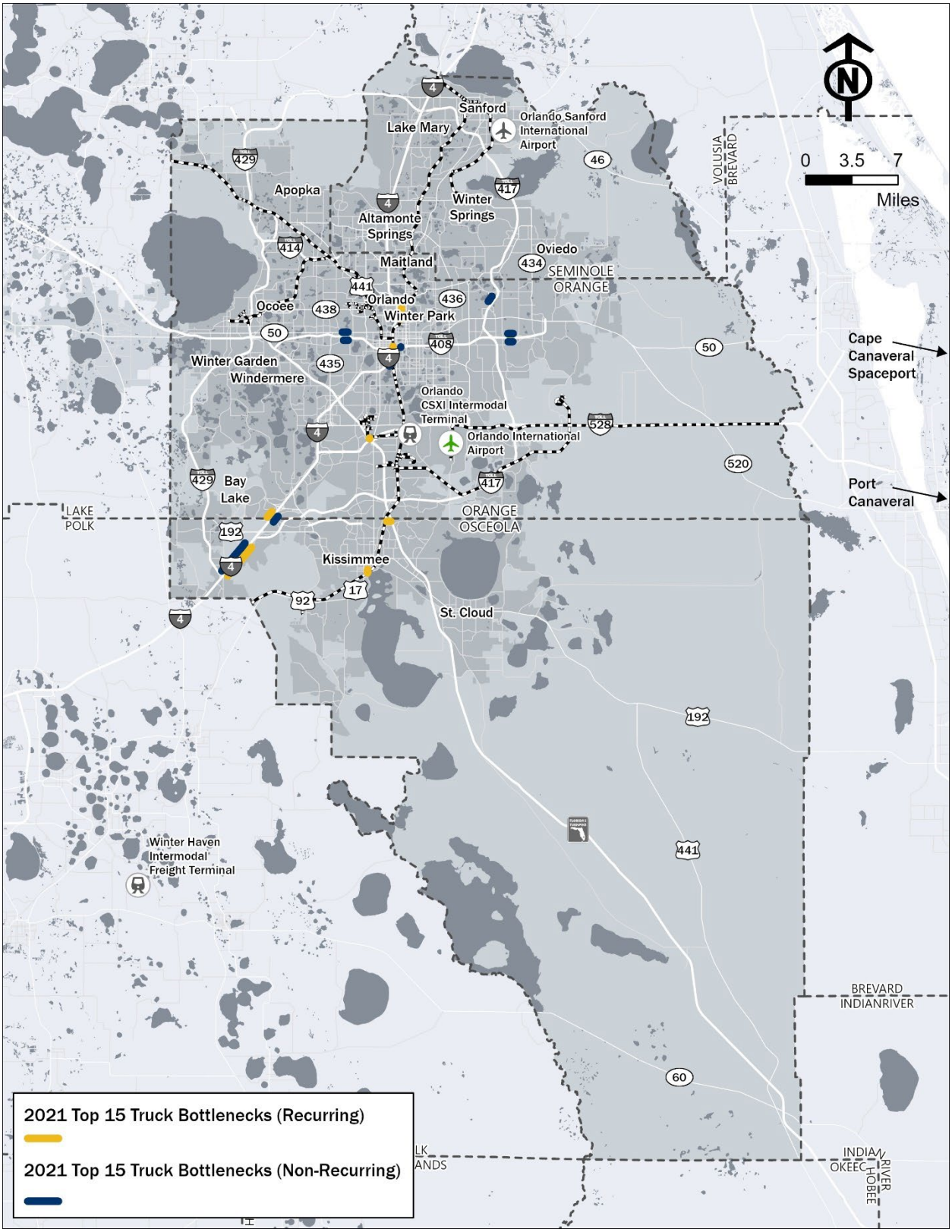
Data Source: FDOT, 2023

Truck freight bottlenecks are road segments where congestion significantly impacts freight movement. In 23 U.S.C. 150(e), Congress mandates that state performance reports must explain how they are addressing congestion at freight bottlenecks. In Florida, these bottlenecks are identified based on recurring and non-recurring congestion. While recurring congestion is easier for freight carriers to plan for when scheduling trips, non-recurring congestion is more concerning because it shows unpredictability for regular freight movements and supply chain operation.

Figure 7-14 shows the Top 15 recurring and non-recurring truck bottleneck locations within the MetroPlan Orlando planning area. Major bottlenecks occur on I-4 in the downtown area and near the theme parks. These areas usually have the highest travel activities and visitor volumes. Other bottlenecks are found on local roadways such as John Young Parkway and Pleasant Hill Road. Additionally, the region has several top-ranked bottlenecks in the state, including:

- I-4 Southbound near World Drive: this location ranks 9th among the Top 10 non-recurring locations in Florida.
- John Young Parkway at Pleasant Hill Road: this location ranks 10th among the Top 10 non-recurring locations in Florida.
- I-4 Southbound near World Drive: this location ranks 2nd among the Top 10 recurring locations in Florida.

Figure 7-14 | Freight Bottlenecks



Source: FDOT, 2024

7.3.3 TRUCK PARKING DEMAND

FDOT's District Five Truck Parking Study identifies the I-4 corridor as having Florida's highest unmet truck parking demand. The projected need is 750 and 883 truck parking spaces by 2025 and 2040, respectively.[5] Florida's Turnpike has a need for 571 and 583 truck parking spaces by 2025 and 2040, respectively. Currently, within the MetroPlan Orlando planning region, there are 33 and 59 public-owned truck parking spaces at several locations on I-4 and Florida's Turnpike, respectively (as shown in Table 7-4).

FDOT's 2023 Truck Parking Implementation Study suggested that for state-owned facilities, rest areas in District Five experiences significant truck parking overcapacity every day.[6] Table 7-7 shows the peak utilization of state-owned truck parking facilities within the MetroPlan Orlando planning region (i.e., I-4 corridor truck parking locations). Within the region, there are currently two locations on I-4 in Seminole County, and both are significantly overutilized during peak period. Additionally, local stakeholders have expressed concerns about the lack of truck parking infrastructure in both Orange and Osceola Counties.

Table 7-7 | District 5 Rest Area Peak Utilization (Seminole County only)

Corridor	Facility	Truck Parking Spaces	Trucks Parked	Peak Utilization
I-4 Seminole	50222 WB	16	53	331%
I-4 Seminole	50221 EB	17	50	294%

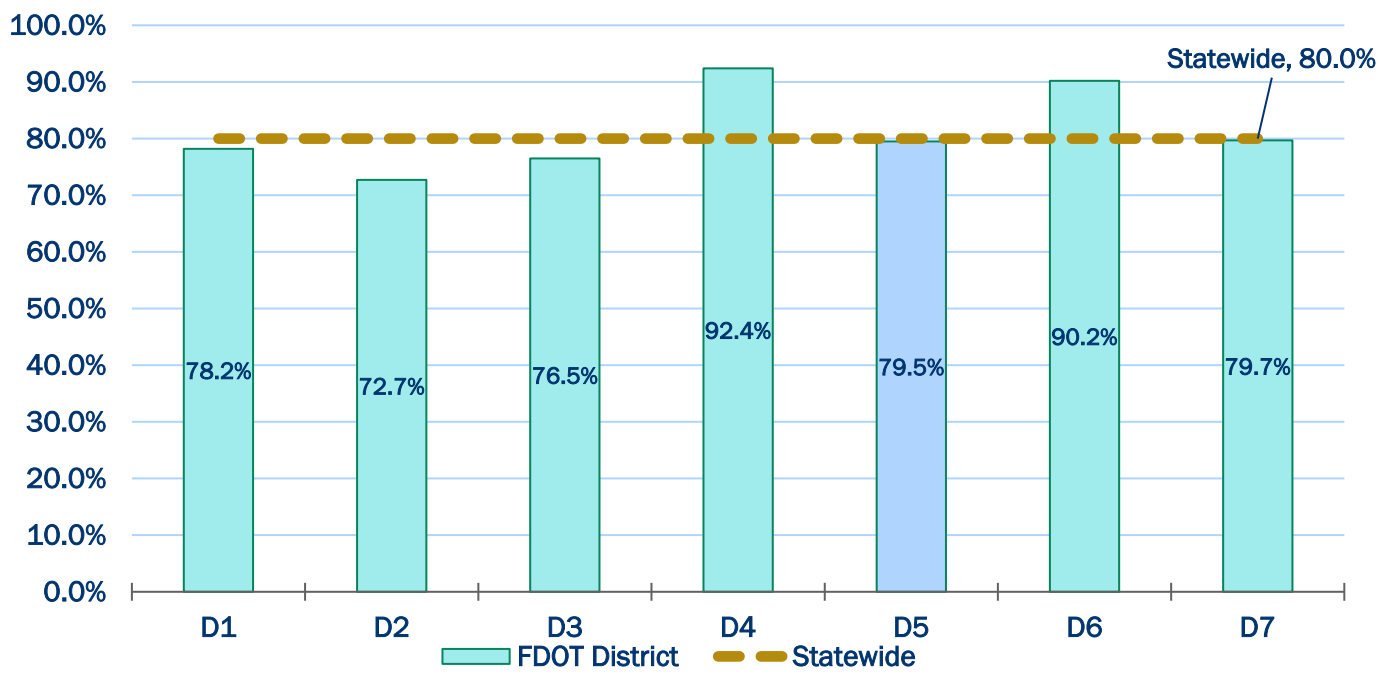
Source: FDOT Truck Parking Implementation Study, 2023

7.3.4 BRIDGE AND PAVEMENT CONDITIONS

Pavement conditions play a critical role in truck movements. The 2024 FMTP advises MPOs and local government agencies to continue monitoring structurally deficient bridges and pavement conditions to preserve and maintain the State Highway System (SHS). Florida Statute 334.046(4) mandates that FDOT maintains at least 80% of SHS pavement at acceptable standards. Resurfacing needs are determined through FDOT's annual pavement condition survey, which evaluates ride quality, crack severity, and wheel-path rut depth. Figure 7-15 shows the pavement condition by each FDOT District in 2023. District Five has a rating of 79.5% — slightly below the statewide average of 80%. This highlights the need for ongoing monitoring and investment to meet or exceed the statewide benchmark.

[5] D5 Truck Parking Study. FDOT District 5. (2020). https://d5freighthub.com/
[6] 2023 Truck Parking Implementation Study, FDOT, https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/traffic/cvotim/cvo/website-materials/truck-parking-implementation-study_final_3-8-24.pdf?sfvrsn=91e60d37_1

Figure 7-15 | Pavement Condition in Fiscal Year 2023 by FDOT Districts (% of SHS Pavement Meeting FDOT Standards)



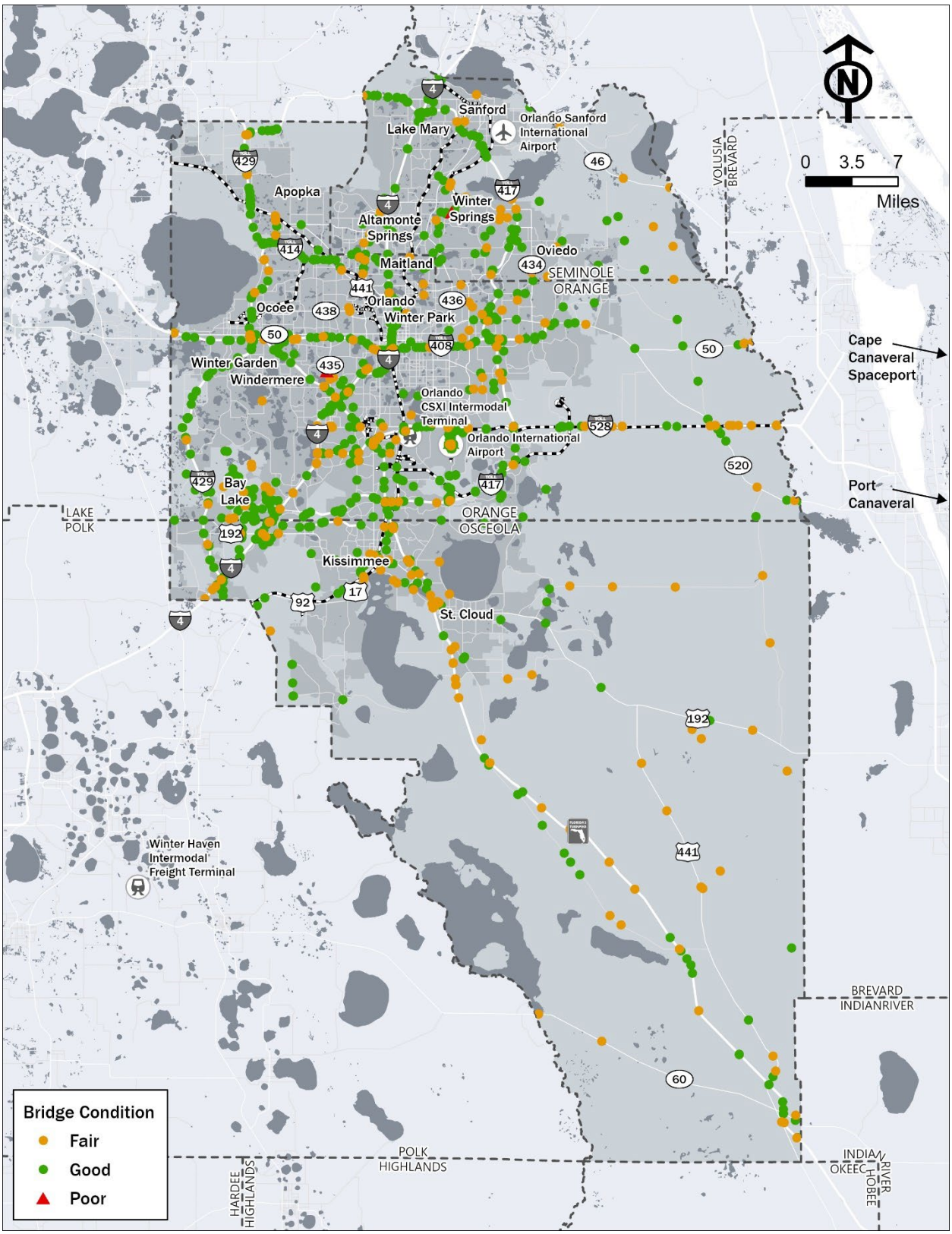
Source: FDOT State Materials Office - Pavement Condition Survey program, 2023

Bridge conditions can impact freight mobility by limiting truck loads and route options. Figure 7-16 highlights bridge conditions in the region from the 2024 FHWA National Bridge Inventory (NBI). Based on FHWA's criteria, bridges are classified as Good, Fair, or Poor.[7] In the region, most bridges are rated Fair or Good, with only two being rated as Poor. Additionally, Florida has 364 Poor-rated bridges in total,[8] with the study region accounting for less than 1%. These statistics indicate that bridges are well-maintained and do not generally affect freight movement in the region. The two locations that have Poor rating by FHWA are:

- Conroy Road over I-4 with TAADT of over 1,823 and a truck percentage of 4.5%.
- Murphy Road (0.25 mi S of S. Edgemon Ave.) – this roadway does not carry truck traffic.

[7] https://www.fhwa.dot.gov/bridge/britab.cfm#:~:text=If%20the%20lowest%20rating%20is,6%20are%20classified%20as%20Fair.
[8] FHWA, 2024,https://www.fhwa.dot.gov/bridge/nbi/no10/county24.cfm#fl

Figure 7-16 | Bridge Conditions within MetroPlan Orlando Region



Source: National Bridge Inventory (FHWA), 2024

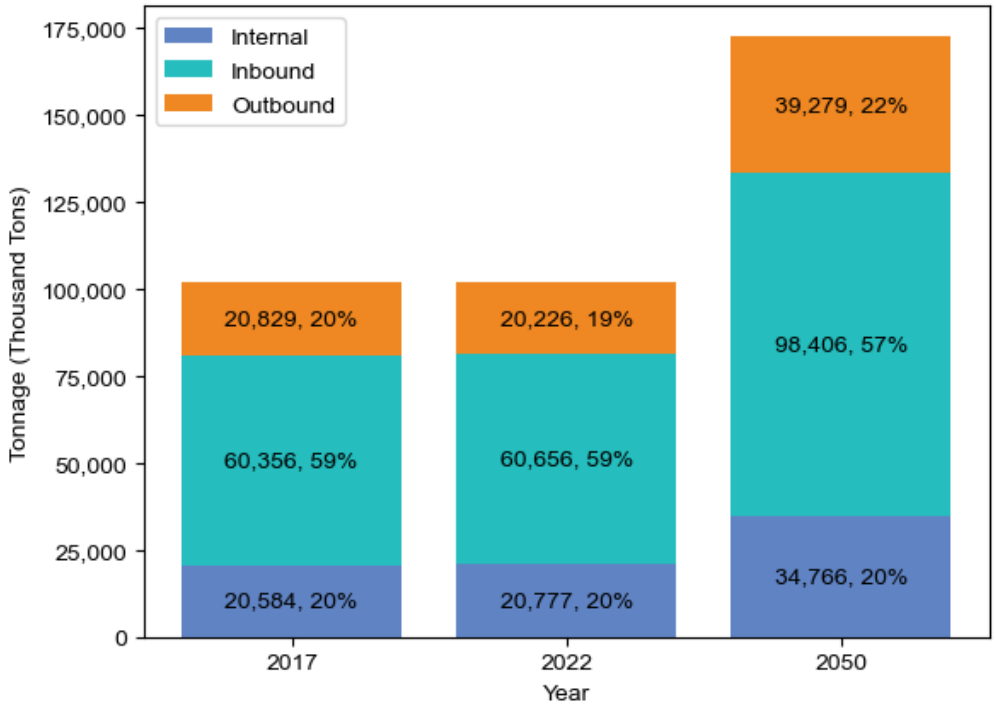
7.3.5 FREIGHT DEMAND

The Freight Analysis Framework (FAF) from FHWA provides commodity flow data that can be analyzed by origin, destination, commodity type, and freight mode. A disaggregated dataset of FAF Version 5 (FAF5) at the county level for 2017, 2022, and 2050 (future year) was obtained from the Eastern Transportation Coalition (TETC) and used to evaluate freight movements for the MetroPlan Orlando planning region. This included highway assignment data to support an evaluation of truck flows on the region's roadways in 2022.[9]

Directional Flows

- Inbound flows dominate by tonnage, accounting for 59% of total tonnage, followed by internal flows (20%) and outbound flows (19%) in 2022 (see Figure 7-17). By 2050, inbound flows are expected to make up 57%, and outbound flows will increase to 22%.
- Inbound flows lead in value (47%), followed by outbound flows (40%) and internal flows (12%) in 2022 (see Figure 7-18). However, by 2050, outbound flows are projected to surpass inbound flows in value, comprising 45%, while inbound flows will account for 42%.
- The high percentages of inbound flows by tonnage and value indicate that the MetroPlan Orlando planning region is a consumer-based economy and relies on imports.

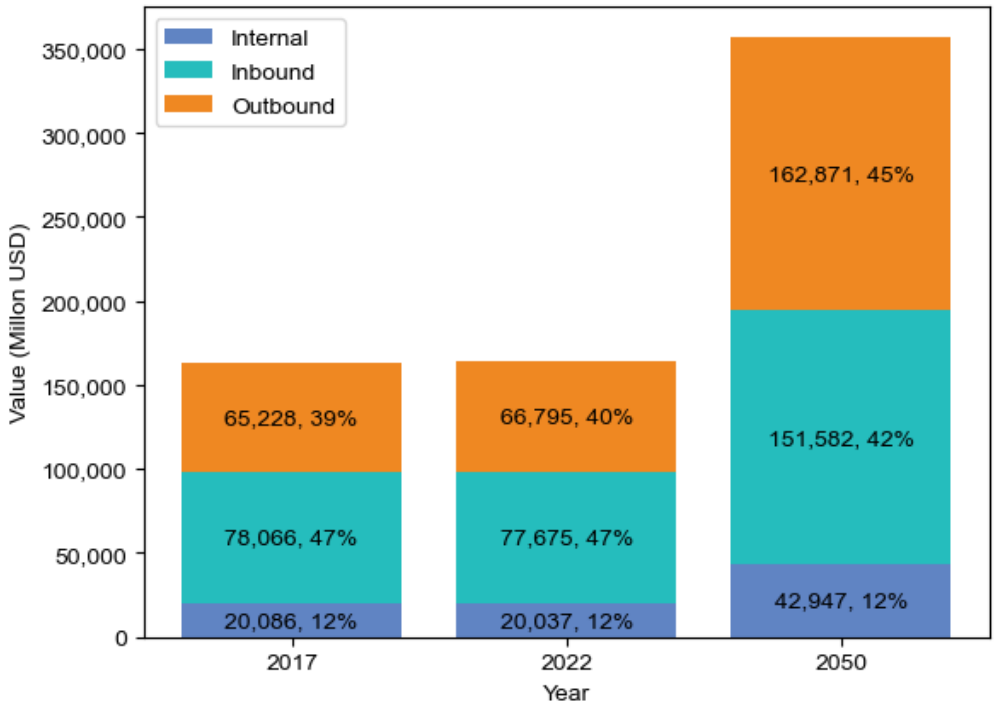
Figure 7-17 | Commodity Flows by Direction and Tonnage (Thousand Tons)



Source: FAF5, TETC, 2023; Analyzed by Cambridge Systematics

[9] For the full freight demand analysis, refer to the freight needs assessment technical report.

Figure 7-18 | Commodity Flows by Direction and Value (Million USD)



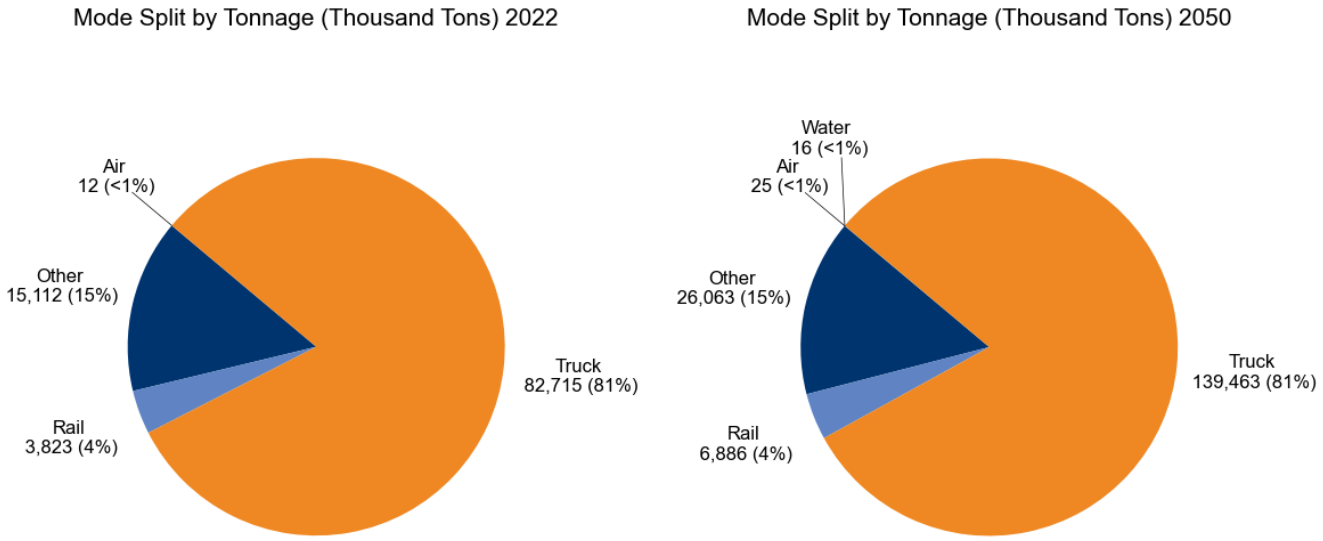
Source: FAF5, TETC, 2023; Analyzed by Cambridge Systematics

Mode Split

The modal split analysis examined the distribution of commodity flows by mode of transportation.[10] Figure 7-19 and Figure 7-20 show freight mode splits in 2022 and 2050 by tonnage and value, respectively. In 2022, by tonnage, truck freight dominated freight movement in the region, accounting for over 81% of total tonnage moved, and this trend is expected to continue through 2050. Rail, which ranks second, moved 4% of total tonnage in 2022, with its share projected to remain unchanged by 2050. Trucks also represent the largest share of total freight value, at 68% in 2022, with a slight decrease to 63% in 2050. Although air accounted for less than 1% of total tonnage in both 2022 and 2050, its share of total value stood at 2% in both years, reflecting its role in moving high-value goods. These trends highlight that truck, rail, and air will continue to be the primary freight modes in the region.

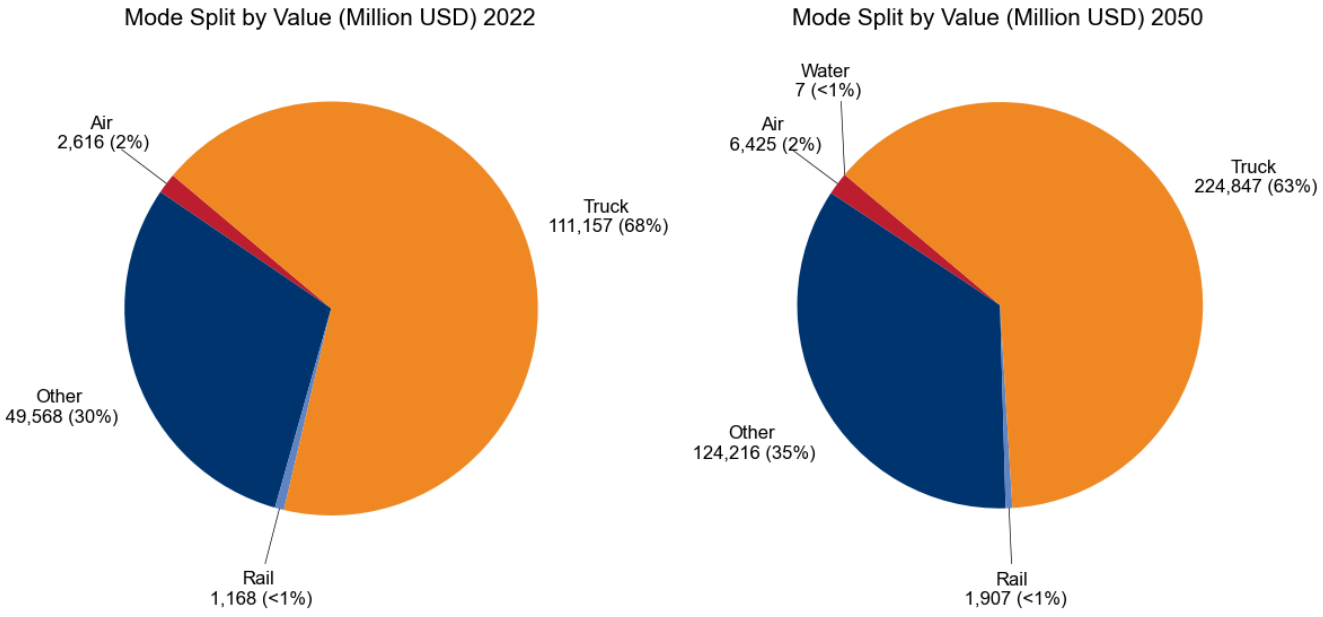
[10] In this analysis, the freight modes were categorized and grouped as Truck, Water, Rail, Air (includes truck-air), and Other (includes Multiple Modes and Mail, Pipeline, Other and Unknown).

Figure 7-19 | Commodity Flows by Tonnage (Thousand Tons) and Mode



Source: FAF5, TETC, 2023; Analyzed by Cambridge Systematics

Figure 7-20 | Commodity Flows by Value (Million USD) and Mode



Source: FAF5, TETC, 2023; Analyzed by Cambridge Systematics

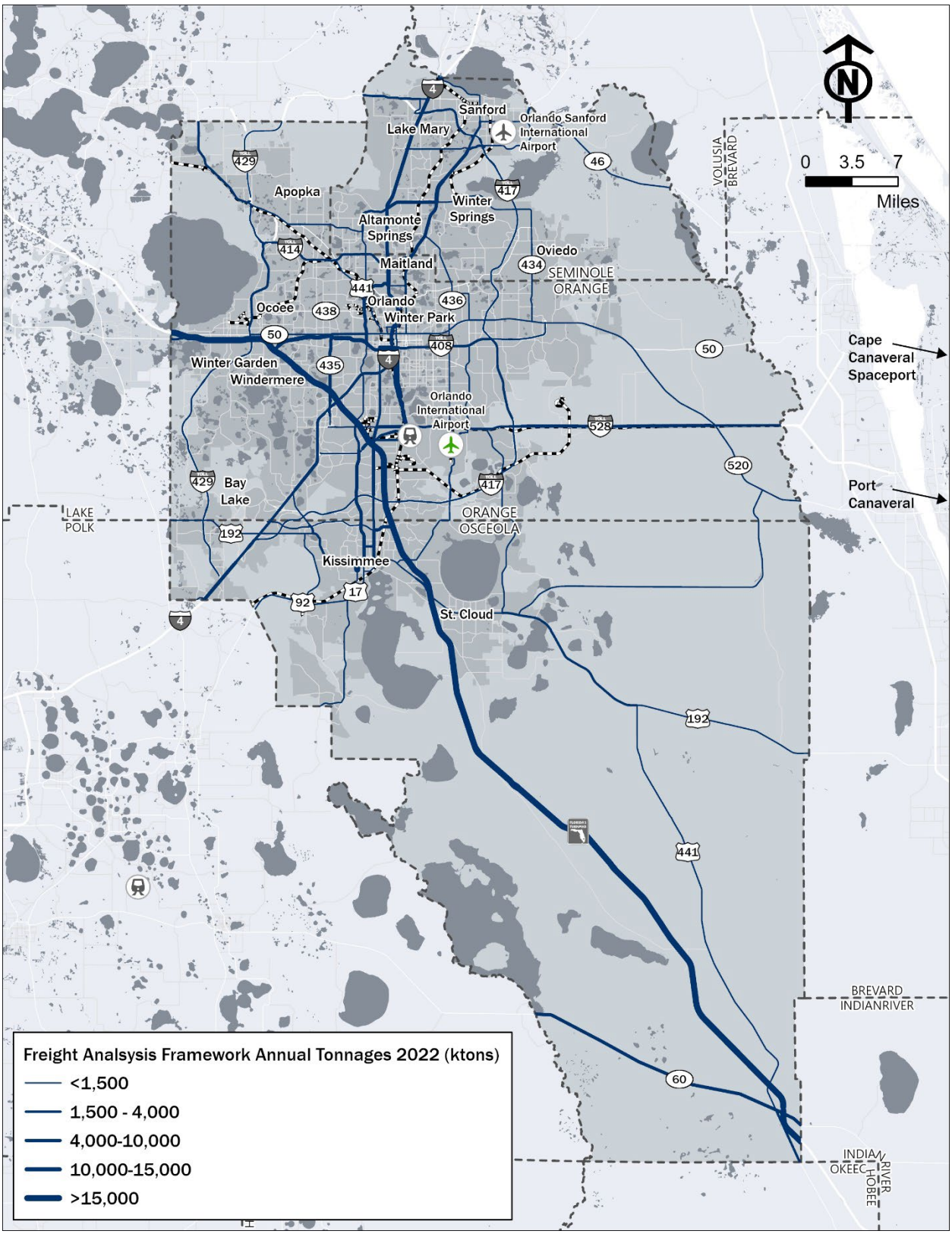
Figure 7-21 shows the roadways that carried the most tons of freight in 2022, which include:

- Florida's Turnpike is the leading freight corridor, handling over 30 million tons of freight annually.
- SR 408 and I-4 carry over 15 million freight tons annually.
- SR 528 carries over 5 million tons of freight annually.

While the majority of freight traffic is concentrated on major interstate highways and limited-access roads, several regional and local roadways are crucial for freight movement. These routes serve as key connectors to distribution centers, local industries, and rural areas, forming an essential part of a comprehensive and efficient freight network. This also underscores the need to consider both large-scale and regional transportation infrastructure when planning for freight needs. Some notable roads include:

- Orange Avenue (between Downtown and Taft area) with over 15 million tons of freight.
- Lee Road (connecting I-4 and SR 417) with over 6 million tons of freight.
- US 17-92 (within Seminole County) with over 14 million tons of freight.
- Other important corridors include Kirkman Road, John Young Parkway, and several other corridors that contribute to the network's critical role.

Figure 7-21 | FHWA Freight Analysis Framework (FAF) Tonnage, 2022



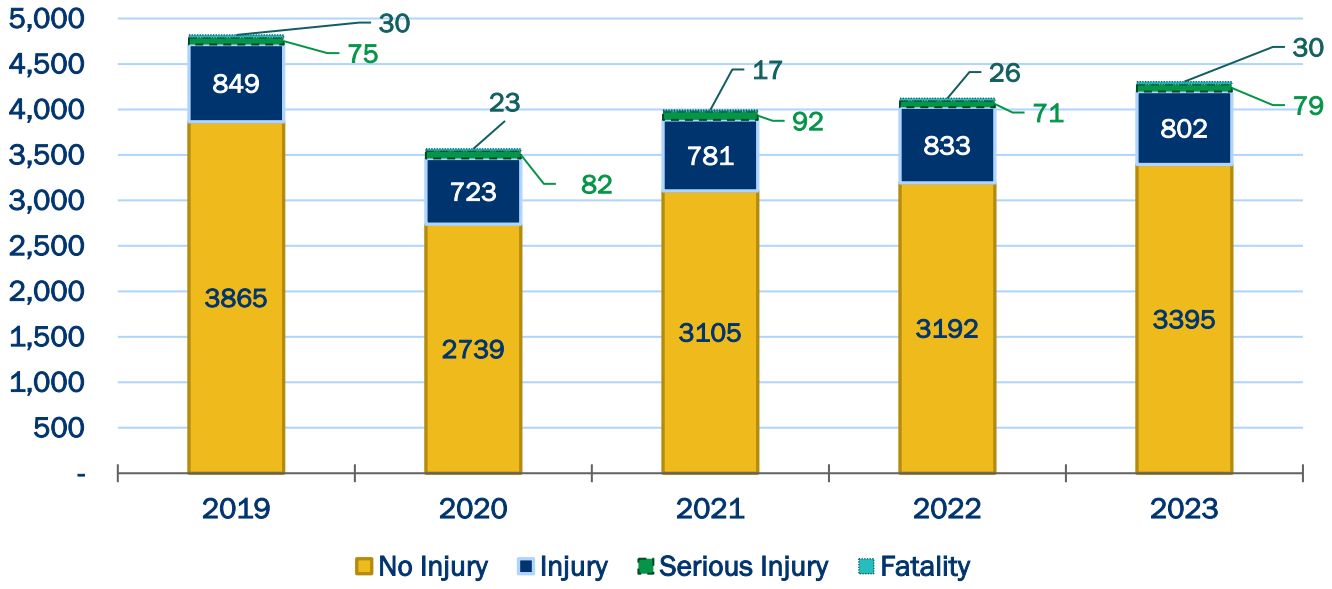
Source: FAF5, analyzed by Cambridge Systematics

7.3.6 FREIGHT SYSTEM SAFETY

7.3.6.1 ROADWAY SAFETY

Ensuring roadway safety is vital for all roadway users. A safe system also helps ensure the smooth operation of freight activities. Figure 7-22 shows truck crash trends within the MetroPlan Orlando planning region from 2019 to 2023. The total number of truck-involved crashes dropped from 4,819 in 2019 to 3,567 in 2020. This decline may have been caused by the COVID-19 pandemic, which reduced overall traffic on the roadways. As restrictions lifted and traffic began to return to pre-pandemic levels, the number of trucks involved crashes increased to 4,306 in 2023. While most crashes involved no injuries, the number of crashes with injuries and serious injuries remained relatively stable over the years. Fatal crashes stayed below 30 annually, except in 2019 and 2023 when they reached 30. These trends highlight the ongoing presence of crashes involving serious injuries and fatalities and underscores the need for continued efforts to improve freight safety.

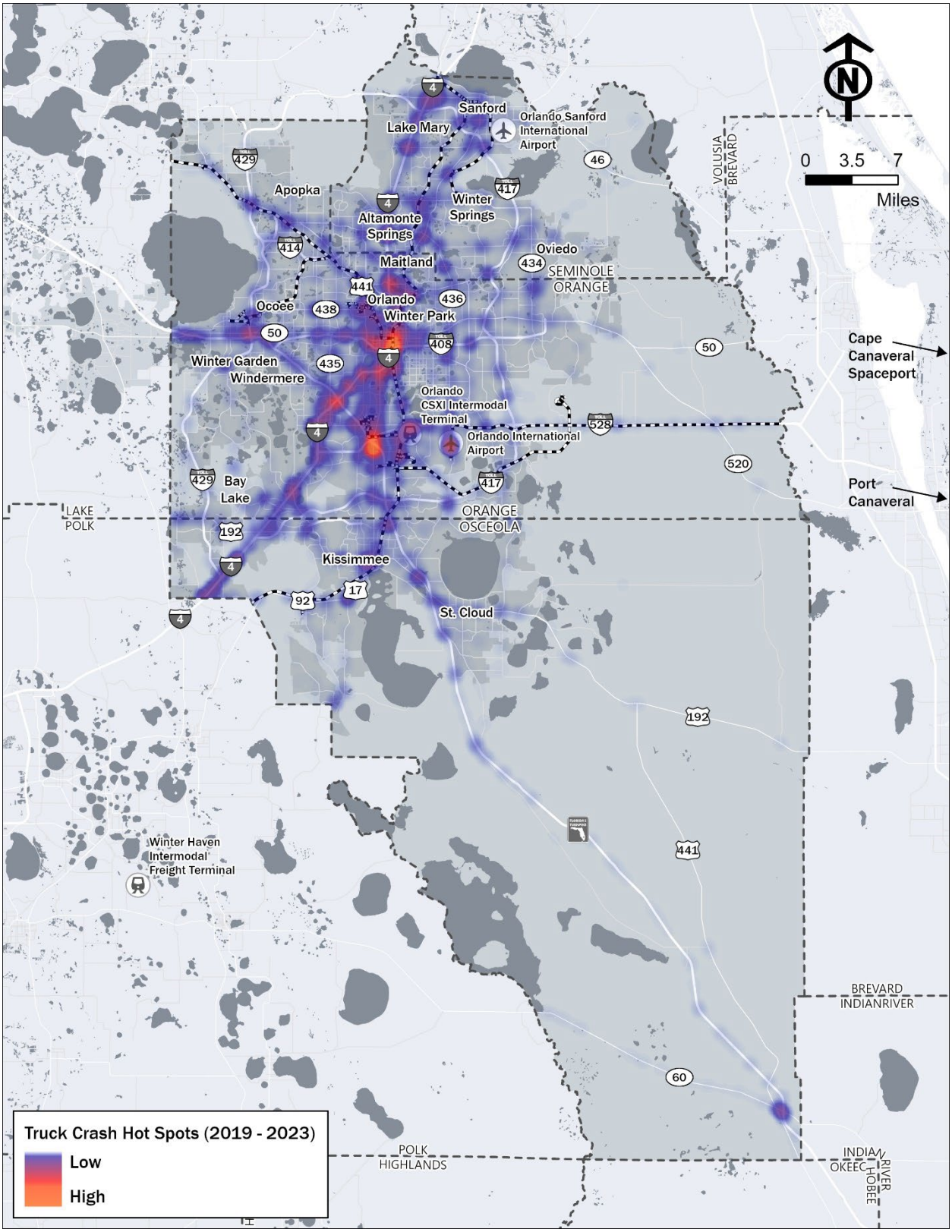
Figure 7-22 | Number of Truck Involved Crashes by Severity (2019 - 2023)



Source: Signal Four Analytics, 2024.

To better understand where truck crashes occur, a density analysis was conducted to identify truck crash hot spots. Key hot spots are shown on Figure 7-23. Truck crashes tend to happen on major highway corridors such as I-4 and Florida's Turnpike (SR 91), and Florida's Turnpike interchange at SR 528. Additionally, subareas near downtown and freight clusters west of MCO experience a higher density of truck crashes due to increased freight activity.

Figure 7-23 | Truck Crash Hot Spots

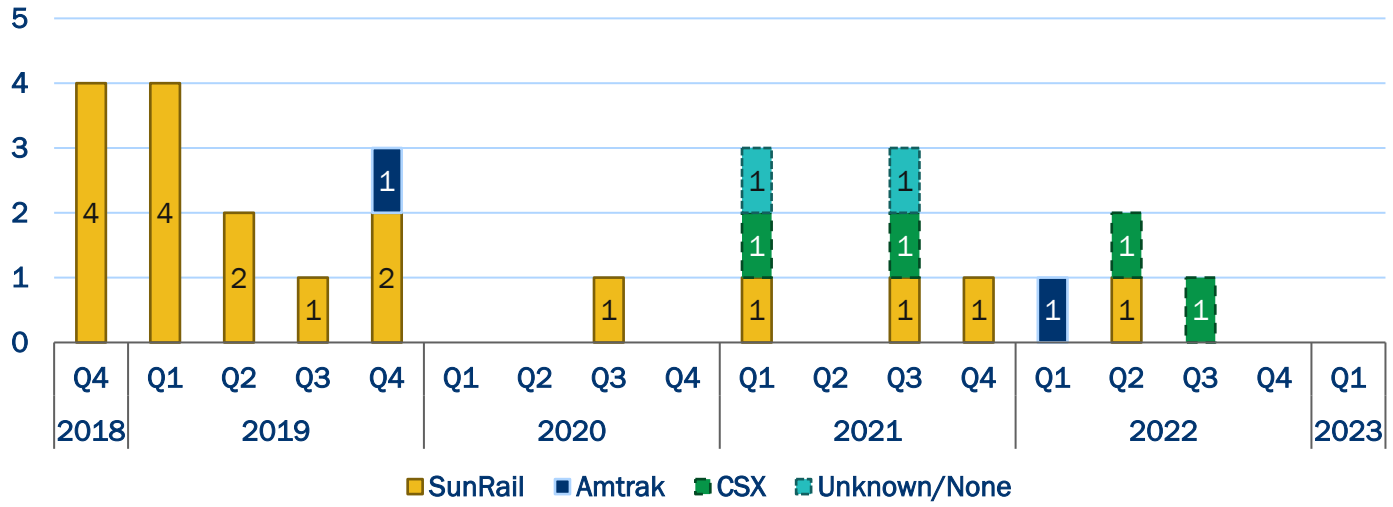


Source: Signal Four Analytics, 2024. Analyzed by Cambridge Systematics

7.3.6.2 RAIL SAFETY

Rail safety is a critical factor when looking at the performance of the regional freight system. Trespasser incidents and at-grade rail crossing incidents are key metrics for railroad safety. Figure 7-24 shows trespasser incidents between 2018 and 2023. The majority of trespasser incidents – more than 70% – occurred on passenger rail corridors. Table 7-8 describes at-grade rail crossing incidents. Freight rail crossing safety incidents in the region peaked in 2021 and 2022. In each year, there were 2 incidents involving CSXT. All of these incidents involved fatalities. There were no incidents during 2020 and 2019.

Figure 7-24 | Trespasser Incident Counts Q4 2018 - Q1 2023 [11]



Source: FDOT, 2024

[11] Note: 2018 data before Q4 does not include train miles over the CFRC south of Sand Lake Road. Therefore, all trespasser incident data included in this graph contains trespasser strike, fatality, and suicide data from Q4 2018 to Q1 2023.

Table 7-8 | At Grade Rail Crossing Incidents, 2018 through 2023

Year	Milepost	Description	Jurisdiction	At crossing	Fatality or Injury/Illness	Trespasser Action	Suicide?	Description
2022	805.90	Near Carroll St.	Osceola County	No	Fatality	Lying	Apparent	CSX train struck pedestrian trespasser lying on the tracks just south of Carrol St. in Osceola County.
2022	807.23	Near Vine St.	Kissimmee	No	Fatality	Sitting	Apparent	CSX train struck pedestrian trespasser sitting on the tracks near the Vine St. grade crossing in Kissimmee.
2021	807.40	Near Magnolia St.	Kissimmee	No	Fatality	Unknown	Unknown	CSX train struck pedestrian trespasser near the Magnolia St. grade crossing in Kissimmee.
2021	786.17	Holt Ave.	Winter Park	Yes	Fatality	Walking Across	No	CSX train struck pedestrian trespasser at the S Pennsylvania Ave and Holt Ave. grade crossing in Winter Park. The trespasser was elderly and assumed to be attempting to cross the tracks.

Source: FDOT, 2024

7.4 Trends

Understanding trends in the freight industry can help improve freight planning by anticipating changes in technology, regulations, economy, and global markets. In Central Florida, these trends shape how the freight landscape adapts to factors like economic growth, supply chain challenges, and technological advancements. This section highlights key trends and provides insights into how they will influence freight needs and planning for a more efficient and resilient future.

7.4.1 MACROECONOMIC CONDITIONS

Central Florida is experiencing a rapid growth in freight demand, driven by population, urbanization, and tourism. The Orlando-Kissimmee-Sanford Metro Area was one of the largest population gaining U.S. metro areas between 2020 and 2023.[12] Florida also leads the nation in housing construction, which indicates that further investment is needed to ensure the necessary capacity for a robust freight system. E-commerce, now accounting for 16% of U.S. retail sales,[13] adds to this demand, as companies like Amazon establish advanced fulfillment centers in the region to keep up with consumer expectations.

Beyond population and e-commerce, Central Florida's strategic location and economic diversification are shaping its opportunities for growth. The region serves as a major trade hub, benefiting from shifts in global trade routes and significant investments in transportation infrastructure. Key initiatives like FDOT's Focus on Florida's Future Budget and Moving Florida Forward Infrastructure Initiative have dedicated nearly $19.6 billion to transportation projects aimed to reduce congestion and accommodate the needs of a growing population.

Other emerging trends, such as domestic sourcing and multi-shoring, are reshaping supply chains and increasing dependence on the region's multimodal freight network. Global disruptions, like the COVID-19 pandemic, geopolitical conflicts, and infrastructure failures, have pushed manufacturers to create more resilient supply chains. The federal government also promotes domestic sourcing to help strengthen the competitiveness of U.S. businesses, as seen in the Build America, Buy America Act (2021), which requires domestic materials for federally funded projects. These trends are reshaping the freight landscape. The shift toward regional manufacturing and Florida's proximity to key trade routes will generate higher freight volumes. Additionally, commercialization of the space industry in the Space Coast region is experiencing significant growth. Cape Canaveral hosted over 70 launches in 2023. The region has become a hub for both established aerospace companies and new startups like SpaceX, Blue Origin, and others. As the industry grows, it increases the demand for freight transportation services, including the movement of materials, equipment, and other space-related cargo – much of which impacts the MetroPlan Orlando planning area.

7.4.2 TECHNOLOGY TRANSFORMATIONS

Truck parking facilities are essential for supporting the trucking industry by providing safe, accessible rest stops for truck drivers. These facilities cater to diverse needs, from basic secure parking spaces for local drivers to comprehensive amenities like showers, dining, and overnight accommodations for long-haul truckers. However, the demand for truck parking has outpaced supply, leading to unsafe parking practices and increased safety risks in the region, the state, and the nation.

Jason's Law was established in MAP-21. It focused on improving truck parking infrastructure by conducting surveys to assess the need for truck parking facilities, identifying areas with shortages, and developing strategies to increase capacity and safety on the National Highway System (NHS). The goal was to enhance the availability of safe and

[12] U.S. Census Bureau, Vintage 2023 Population Estimates
[13] U.S. Census Bureau. (2023). Quarterly retail e-commerce sales. Retrieved from https://www.census.gov/data/tables/timeseries/econ/e-commerce-retail-sales.html

adequate truck parking spaces to mitigate driver fatigue, improve safety, and support the efficient movement of freight across the country. The Jason's Law Commercial Motor Vehicle Parking Survey and Comparative Assessment in 2019 found that the truck parking shortage remains a challenge as previously documented in the 2015 survey, and Florida is one of the states with the highest number of trucks parking in unofficial/unauthorized spaces.[14] Additionally, the Federal Motor Carrier Safety Administration (FMCSA) enforces Hours of Service (HOS) regulations and establishes clear limits on how long truck drivers can be on duty, including driving time and regular rest periods. These rules are designed to enhance safety on the roads by preventing driver fatigue and ensuring drivers receive adequate rest.

Innovative solutions, like real-time truck parking technology, are being implemented to help drivers locate available parking spaces quickly and safely. FDOT's Truck Parking Availability System (TPAS) addresses the increasing truck parking demand by providing real-time vacancy information to help drivers find safe, legal parking and comply with FMCSA's HOS rules. The system is being implemented in phases, starting with state-owned facilities, followed by predictive analysis tools, and eventually including private parking locations for statewide coverage. Using in-pavement sensors and CCTV cameras, TPAS shares parking availability information via smartphone apps, enabling efficient resource utilization.

7.4.3 ELECTRIC VEHICLE ADAPTATION

Florida ranked second in the nation for electric vehicle (EV) registrations in 2022, highlighting its leadership in adopting clean transportation technologies. Electric commercial vehicles are an eco-friendly alternative to the traditional fuel-powered fleet and consume less energy and can significantly reduce emissions. Models like the Tesla Semi-Truck and Volvo VNR Electric are already in use by logistics companies.

There are various programs and policy initiatives established to promote the adoption of clean energy technologies for heavy-duty vehicles to promote a zero-emission transportation system. In 2023, Central Florida Expressway (CFX) launched a $14 million pilot to test dynamic wireless charging for trucks on a new toll road connecting Orange and Lake counties, which will test the capability to bring wireless charging to scale with cost effective approaches. Federal programs like the National Electric Vehicle Infrastructure (NEVI) initiative and FHWA's Alternative Fuel Corridor (AFC) program are accelerating EV infrastructure development. In 2024, FHWA identified the NHFN as the preliminary Freight EV Corridors network. These strategic moves will help to accelerate EV infrastructure development for freight and goods movement.

7.4.4 ARTIFICIAL INTELLIGENCE AND AUTOMATION TECHNOLOGIES

Advancements in artificial intelligence (AI) and automation technologies are transforming the freight industry by enhancing freight operational efficiency and streamlining operations. AI can improve demand forecasting by leveraging real-time data and helping manufacturers optimize resources. Research from McKinsey found that manufacturers can optimize their resources effectively by implementing AI, and suggested a 15% drop in logistics costs, a 35% improvement in inventory levels, and a 65% boost in service levels.[15] AI-powered platforms also enhance communication across the supply chain with real-time updates, and allow for better coordination among shippers, carriers, and customers.

[14] U.S. DOT, FHWA. (2020) Jason's Law Commercial Motor Vehicle Parking Survey and Comparative Assessment. Retrieved from https://ops.fhwa.dot.gov/Freight/infrastructure/truck_parking/coalition/2020/mtg/mtg12012020_jasons_law.htm
[15] McKiney & Company. (2021, April 30). Succeeding in the AI supply-chain revolution. Retrieved from https://www.mckinsey.com/industries/metals-and-mining/our-insights/succeeding-in-the-ai-supply-chain-revolution

7.4.5 AUTONOMOUS VEHICLES

Advanced driver-assistance systems (ADAS), such as autonomous driving, lane-keeping assist, adaptive cruise control, and automative emergency braking, are revolutionizing the trucking industry. Equipped with technologies like HD cameras, LiDAR, and Radar, autonomous trucks offer safety, cost, and efficiency benefits. This technology can have the following benefits to the freight industry:

- **Safety improvements**: Autonomous trucks can avoid accidents by reacting faster than a human truck driver based on its algorithm and data processing technology. In addition, they can operate for extended periods without the risk of driver fatigue.
- **Efficiency improvements**: Autonomous trucks can operate constantly without any breaks, which can reduce trip time, advance delivery times, and potentially lower costs.
- **Workforce support**: Based on a 2022 study from the American Trucking Associations, the freight industry faces a shortage of 80,000 truck drivers.[16] Autonomous vehicles have the potential to address the truck labor shortage by reducing dependence on human drivers.
- **Operation impacts**: Autonomous trucks are particularly well-suited for long-haul routes, eliminating the need for breaks or downtime associated with human drivers. These vehicles can potentially operate continuously to improve delivery times and reduce shipping costs.

7.4.6 SUPPLY CHAINS

Supply chain disruptions, driven by factors such as extreme weather, cybersecurity threats, and geopolitical conflicts, pose significant risks to regional and global freight operations. Central Florida has faced challenges including the global pandemic, hurricanes, and material shortages.[17] To address these challenges, freight resilience planning focuses on maintaining operations during disruptions and recovering quickly afterward. Federal initiatives like the Federal Emergency Management Agency's (FEMA) National Response Framework (NRF) and Florida's Resilience Action Plan (RAP) provide strategies to strengthen the resilience of transportation infrastructure and adapt to a broad range of extreme weather-related risks.

Sustainability is also a priority in supply chain operations, as the transportation sector is responsible for 28% of emissions. Trucks, a key component of most supply chains, account for 80% of the transportation sector's emissions.[18] Central Florida is advancing enhanced supply chain practices by investing in EV infrastructure and encouraging emission reductions. The Orlando Utilities Commission (OUC) has launched several programs to reduce emissions, such as investing in electric vehicle (EV) infrastructure.

[16] American Trucking Associations. The Trucking Link. When trucking stops, America stops. Retrieved from https://www.trucking.org/supplychain#:~:text=In%202021%2C%20we%20estimate%20the,for%20the%20truck%20driver%20shortage.
[17] Berman, Dave and Layden, Laura. (2023). Florida Today: Construction Industry Worker, Supply Shortages Impacting Commercial, Residential Projects. Retrieved from https://www.agcfla.com/2023/07/21/florida-today-post-construction-industry-worker-supply-shortages-impacting-commercial-residential-projects/
[18] United States Environmental Protection Agency. (2022). Inventory of U.S. emissions and sinks: 1990-2020 (EPA Publication No. EPA 430-R-22-001). Retrieved from https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P101AKR0.pdf

7.5 Freight Needs and Strategies

7.5.1 STAKEHOLDER FEEDBACK

Freight stakeholder meetings were held to engage public agencies and private industry in discussions on freight needs, strategies, and freight network designation. Two technical workshops provided further collaborative opportunities for engagement with public agencies. These workshops covered the technical aspects of freight needs assessment. Comments were also received on the designated freight network and used to refine the network. For a detailed documentation of the stakeholder outreach, refer to the Regional Freight Needs Assessment Technical Report. Key takeaways from the stakeholder outreach activities include:

- Infrastructure Challenges
- Congestion and reliability issues exist on major corridors like I-4. Truck parking shortages also exist, especially on I-4 and Florida's Turnpike (SR 91), and in Orange and Osceola Counties.
- Limited rail infrastructure, conflicts between freight and passenger rail operations, and bottlenecks at key ports and airports, including Port Canaveral and Orlando International Airport, impact access to competitive rail service.
- Workforce and Technology
- There is a workforce shortage in the logistics and warehousing industry, with a need for better alignment between educational programs and industry demands.
- There is a slow adoption of technology in traditional freight sectors, although some companies are gradually transitioning to advanced logistics solutions to improve the efficiency of operations.
- Coordination and Communication
- Industry tends to avoid proactive engagement with public agencies, and communication barriers among freight stakeholders exist.
- Regulatory and Policy Barriers
- Inconsistent local policies and zoning regulations could negatively affect freight operations and supply chain efficiency.
- Environmental and Land Use Concerns
- Land use compatibility issues, such as industrial areas expanding near residential zones and truck parking in residential areas, could have negative impacts on freight operations.

7.5.2 FREIGHT NEEDS

Key freight needs were identified through stakeholder feedback, technical analyses, review of freight plans and studies, and insights from a review of current industry trends. Two major themes emerged from this process consisting of: institutional and economic needs; and infrastructure needs.

7.5.2.1 INSTITUTIONAL AND ECONOMIC NEEDS

Institutional and economic needs include policy and regulatory enhancements designed to improve coordination among agencies, and workforce development programs designed to address the evolving demands of the industry. While institutional needs emphasize collaboration among agencies and stakeholders, economic needs focus on evaluating costs, benefits, market dynamics, and funding mechanisms for freight infrastructure investments.

The following activities will help the region prepare for a prosperous future:

- Adaptation to Economic Dynamics - Florida's freight landscape is evolving due to population growth, industrial expansion, and technological advancements. With a projected 63% population increase by 2050, the Central Florida region faces rising demands on its freight infrastructure.[19] Growth in high-value sectors, such as advanced manufacturing and aerospace, alongside increasing e-commerce and trade volumes, underscores the need for strategic investments to balance economic expansion and infrastructure capacity.
- Prepare for Uncertainties and Disruptions - Florida's freight operations are vulnerable to natural disasters, including hurricanes and climate-related events, as well as global uncertainties. Strengthening infrastructure resilience and diversifying supply chain routes are essential to mitigate disruptions.
- Facilitate and Engage in Stakeholder Coordination and Conversation - Effective freight planning requires collaboration among state agencies, local governments, private companies, and modal partners. Challenges include aligning priorities across jurisdictions and addressing conflicts between freight and other infrastructure uses. Engaging stakeholders like shippers, carriers, and logistics firms in ongoing discussions helps ensure freight needs are integrated into broader transportation plans.
- Land Use Compatibility - Land use issues include insufficient truck parking and zoning restrictions that hinder efficient freight movement. Solutions include implementing strategic zoning, designated truck parking areas, and policies that balance freight logistics with community needs.

7.5.2.2 INFRASTRUCTURE NEEDS

Established highway and rail projects from the FDOT's 5-Year Work Program, Florida's Metropolitan Planning Organization Advisory Council Freight Priorities Program (FPP), and MetroPlan Orlando's MTP Needs Assessment were screened to identify projects that improve freight mobility and address freight bottlenecks. Criteria such as project type and purposes guided the selection. The regional freight network was used to identify projects that should be prioritized for freight planning. For detailed documentation on the approach and resulting project lists, please refer to the freight needs assessment technical report. General infrastructure-related needs within the region are summarized as follows:

- Freight Congestion and Reliability - Freight congestion and reliability issues are significant concerns in certain areas. Poor reliability is frequently observed along key freight corridors such as I-4, SR 414, and SR 436, where recurring bottlenecks, particularly during peak hours, lead to delays. Congestion becomes worse at locations where high volumes of commercial vehicles mix with regular traffic, creating gridlock and slowing freight movement.
- Truck Parking - Truck parking in the Central Florida region is frequently at capacity on I-4 and Florida's Turnpike (SR 91), as well as throughout Orange and Osceola Counties. This sometimes leads to unauthorized parking in residential areas, industrial parks, and along roadways where proper infrastructure is lacking. This has also resulted in significant safety and infrastructure challenges, including road and curb damage, landscaping deterioration, and an increased risk of accidents in places such as Windemere. Residents have expressed frustration over the noise and health impacts of idling trucks parked near homes. Furthermore, roadways in many of these areas were not designed to accommodate large trucks, leading to navigation difficulties and increased congestion in residential and commercial zones.
- Freight Safety - Freight safety concerns within the region include truck crash hot spots, truck parking, modal conflicts, and truck routing. Truck crash hot spots include locations where there is significant freight traffic. Inappropriate truck routing on local streets and unauthorized truck parking can pose safety hazards and lead to conflicts with other modes including pedestrian, bicycle, and passenger rail.

[19] University of Florida, Bureau of Business & Economic Research (BEBR), https://bebr.ufl.edu/wp-content/uploads/2024/01/projections_2024.pdf

- Truck Operations - Truck operations in the region face numerous challenges from roadway design, traffic flow management, and insufficiently defined truck routes. Many streets, especially in residential and commercial zones, are ill-equipped to handle the size and maneuverability of large trucks. Narrow lanes, sharp turns, and inadequate turning radii often lead to lane encroachment, infrastructure damage, and heightened safety risks for other road users. Ineffective coordination between trucks and general traffic further amplifies bottlenecks and delays. Additionally, the designation and enforcement of truck routes remain problematic. In many cases, signage on restricted routes is unclear, resulting in trucks traveling on non-designated roads in areas such as Lake Mary. This adds strain to the infrastructure and creates safety concerns for pedestrians and local traffic, particularly in areas such as Kissimmee and Maitland.

7.5.3 FREIGHT STRATEGIES AND RECOMMENDATIONS

Key freight strategy themes include improving infrastructure, monitoring performance, increasing collaboration among stakeholders, and adapting to emerging trends and new technologies. Below is a summary of these strategies.

Performance Monitoring - FHWA requires state DOTs and MPOs to establish performance targets for truck travel time reliability with specific benchmarks or targets for 2-year and 4-year intervals as part of the System Performance, Freight, and CMAQ measures (commonly known as PM3). This emphasizes the importance of closely tracking and setting appropriate targets for freight. Additionally, a system for tracking and communicating relevant measures is necessary. Segment-level analysis will help assess performance variations and identify improvement areas at a more granular level. Economic indicators like GDP, population, and jobs are also crucial for forecasting future freight demand.

Infrastructure Development and Funding - MetroPlan Orlando can leverage various funding sources such as NHFP funding, Infrastructure Investment and Jobs Act (IIJA) funding and grant programs, and FDOT's SIS and other modal funding programs, as well as take advantage of the MPOAC's FPP to promote and advance freight infrastructure projects. MetroPlan Orlando should also leverage the regional freight network as a tool to identify and prioritize investments. Further assessment of key freight corridors and critical subareas will help prioritize projects and target investments to address the most urgent freight system needs. This should include specific activities to advance critical truck parking solutions.

Coordination - Coordination with public and private stakeholders is essential. Regional land use policies and infrastructure decisions can complicate freight operations. This underscores the need for active collaboration with local governments and freight partners to develop policies that support efficient freight transportation. Additionally, conflicts between freight trains and SunRail cause congestion and truck bottlenecks. Active participation in land use planning and sharing freight data with local governments can help create freight-friendly policies and reduce conflicts.

Leveraging the regional freight network is another key strategy. MetroPlan Orlando should collaborate with FDOT and other planning agencies to promote the designated freight network for purposes such as freight project identification, corridor studies, and other engineering and planning activities. The network can be used to help prioritize roadways for funding eligibility and joint planning efforts.

Public outreach revealed a lack of awareness among public agencies and private industries regarding the crucial role of freight transportation in economic competitiveness and quality of life. To address this, it is important to communicate freight's significance to the broader industry, policymakers, and the public. MetroPlan Orlando can use educational campaigns and media tools like infographics and social media to raise awareness.

Track the trends - New technologies are transforming freight operations and infrastructure and offer opportunities for innovation. MetroPlan Orlando should monitor freight technology advancements, support pilot programs, and conduct studies to assess emerging technology readiness for implementation. Additionally, tracking trends in resilience, especially in response to supply chain disruptions from extreme weather, geopolitical conflicts, global pandemics, and more have become increasingly important for maintaining a resilient freight transportation system. By participating in resilience efforts and conducting freight-specific studies, MetroPlan Orlando can enhance freight mobility, strengthen supply chain operations, and attract new businesses to the region.

Economic and Industry Support - To strengthen Florida's freight and logistics sector, MetroPlan Orlando should collaborate with state, regional, and local economic development agencies to identify and implement targeted freight strategies that enhance competitiveness and streamline operations. MetroPlan Orlando can also support industry workforce development programs by collaborating with entities like FDOT and the Orlando Economic Partnership (OEP).

7.5.3.1 SUMMARY

Strategies are summarized based on identified roles, priorities, and timelines as shown Table 7-9.

Table 7-9 | Freight Element Strategy Summaries

Strategies	Actions	Priorities	Timeline
Performance monitoring and tracking	• Continue to track freight performance measures • Continue to track economic indicators • Track freight performance measures with more granular details and/or at targeted corridors & subareas • Promote publicly available website, and information to disseminate freight information	Low	Ongoing
Infrastructure development and funding	• Leverage existing funding opportunities to fund freight projects • Continue to participate in national and statewide initiatives such as NHFP and MPOAC FPP to make sure freight needs within the region are represented • Advance identified freight candidate projects and further identify potential candidate projects by leveraging the designated freight network • Conduct targeted project evaluations where freight needs and challenges exist to improve freight capacity, safety, and operations • Improve truck parking within the region and fill the gaps	High	Ongoing
Coordination and collaboration	• Coordinate and collaborate with local governments and agencies • Share designated freight network with agencies to facilitate engineering and planning efforts • Share freight data and findings with other agencies • Participate and support conversations with modal partners such as CSX, MCO, seaports, and Space Florida to enhance collaboration • Promote freight education to stakeholders	Medium	Long-term
Tracking and adaptation	• Track new technologies and industry trends • Conduct and support pilot studies and programs to implement new technologies that benefit freight • Track industry trends, participate in resiliency efforts, and conduct resilience studies with freight planning	Medium	Long-term
Economic and industry support	• Support efforts to increase freight & logistics sector competitiveness • Support workforce development programs with state and local agencies • Promote ongoing and impactful dialogue with freight industry stakeholders through accessible and convenient methods	Medium	Long-term

Source: Developed by Cambridge Systematics, 2024

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