FDOT

Freight Mobility and Trade Plan

April 2020

U.S. Department of Transportation
Federal Highway Administration

Florida Division

3500 Financial Plaza, Suite 400
Tallahassee, Florida 32312
Phone: (850) 553-2200
Fax: (850) 942-9691 / 942-8308
www.fhwa.dot.gov/fldiv

May 22, 2020

In Reply Refer To:
HDA-FL

Mr. Kevin J. Thibault
Secretary of Transportation
Florida Department of Transportation
605 Suwannee Street
Tallahassee, Florida 32399

Subject: Florida State Freight Plan Revisions

Dear Secretary Thibault:

The Federal Highway Administration (FHWA) Florida Division Office ("Division Office") has reviewed the April 2020 Revision of the Florida Department of Transportation's (FDOT) Freight Mobility Trade Plan ("Plan") which was received by the Division Office on April 22, 2020.

The Division Office finds that the Plan contains all elements required by 49 U.S.C. § 70202. The prerequisite in 23 U.S.C. § 167(i)(4) that the state develops a State Freight Plan in accordance with 49 U.S.C. § 70202 before it may obligate funds apportioned to the State under 23 U.S.C. § 104(b)(5) has been satisfied. The State may continue to obligate such funds for projects that meet all National Highway Freight Program (NHFP) eligibility requirements described in 23 U.S.C. § 167, and all other applicable Federal requirements, as identified in the plan.

Please be advised that the Division Office's finding that the Plan satisfies the requirements of 49 U.S.C. § 70202 and 23 U.S.C. § 167(i)(4) is not a determination that the projects listed in the freight investment plan component of the Plan required by 49 U.S.C. § 70202(b) meet all other NHFP eligibility requirements set forth in 23 U.S.C. § 167, or any other applicable Federal requirement.

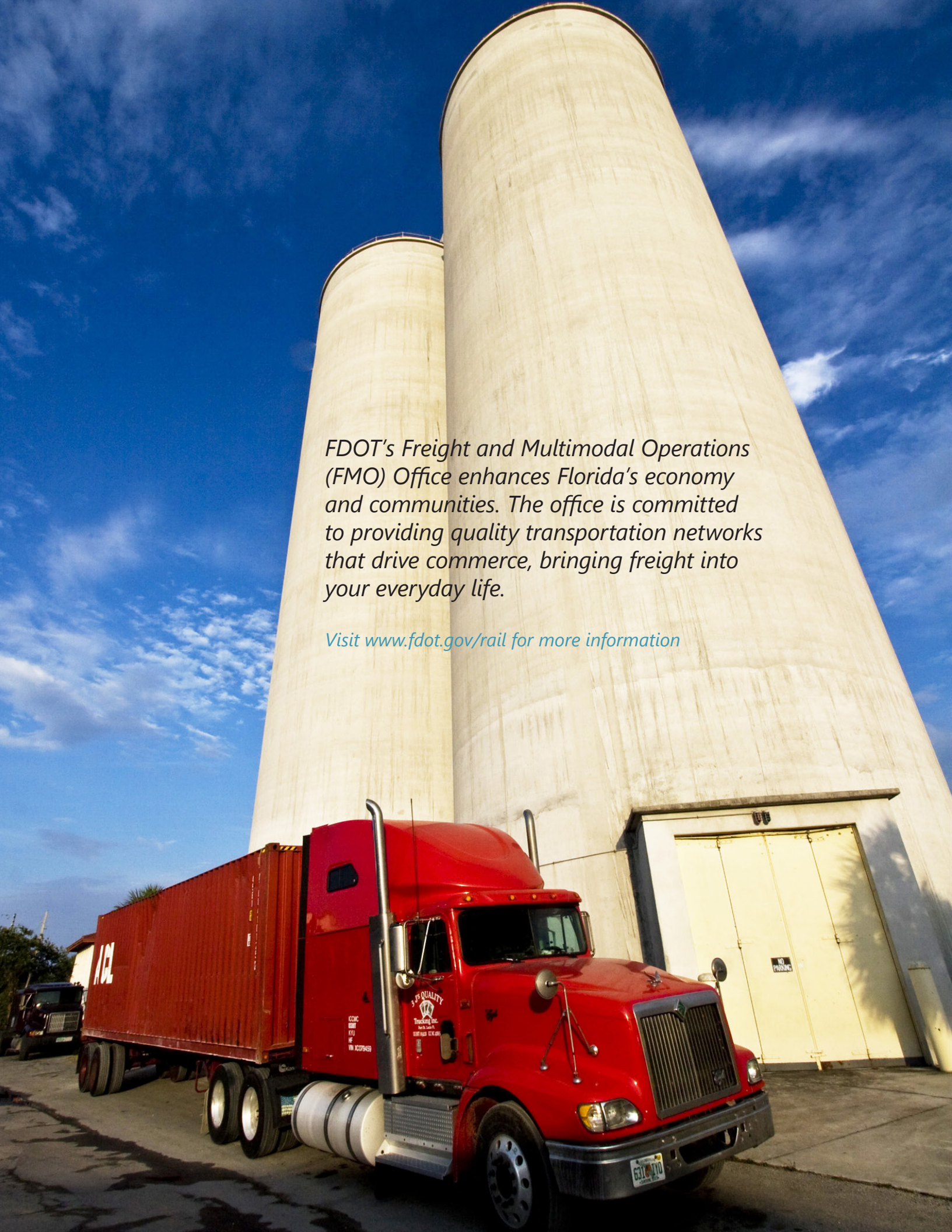
If you have any questions regarding NHFP eligibility requirements, please contact Mr. Greg Hall, FHWA Florida Division District 2 Transportation Engineer at (850) 553-2232.

Sincerely,

Jamie Christian

Jamie Christian, P.E.
Division Administrator

cc: Caitlin Hughes, FHWA



FDOT's Freight and Multimodal Operations (FMO) Office enhances Florida's economy and communities. The office is committed to providing quality transportation networks that drive commerce, bringing freight into your everyday life.

Visit www.fdot.gov/rail for more information

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Chapter 1
Approach

What's Inside

- A Brief History
- FDOT and Partner Agency Plans
- Vision to Implementation
- FMTP Objectives

This chapter provides an overview of The Freight Mobility and Trade Plan (FMTP). The FMTP is a comprehensive plan that identifies freight transportation facilities critical to the state's economic growth and guides multimodal freight investments in the state. To receive funding under the National Highway Freight Program (23 U.S.C. 167), the FAST Act requires the development of a state freight plan which must address the state's freight planning activities and investments, both immediate and long-range. More information on this chapter can be found in FMTP Technical Memorandum 1.

A BRIEF HISTORY

2012

Florida's House Bill 599 directed the state to create a statewide freight plan. The Moving Ahead for Progress in the 21st Century Act (MAP-21) established national freight policy and goals as well as a formal national freight network.

2013/14

Florida moved to create its first statewide freight plan. The FMTP was created in two parts; a Policy Element in 2013, and an Investment Element in 2014. The 2013/2014 FMTP set the stage for freight planning in Florida, raised awareness, and energized the freight community.

2015

The Fixing America's Surface Transportation (FAST) Act built upon the MAP-21 national freight policy and goals, and took steps to implement those goals by creating a National Multimodal Freight Network (NMFN) and by dedicating freight funding through the National Highway Freight Program (NHFP). The law required states to complete a state freight plan to receive designated freight funding.

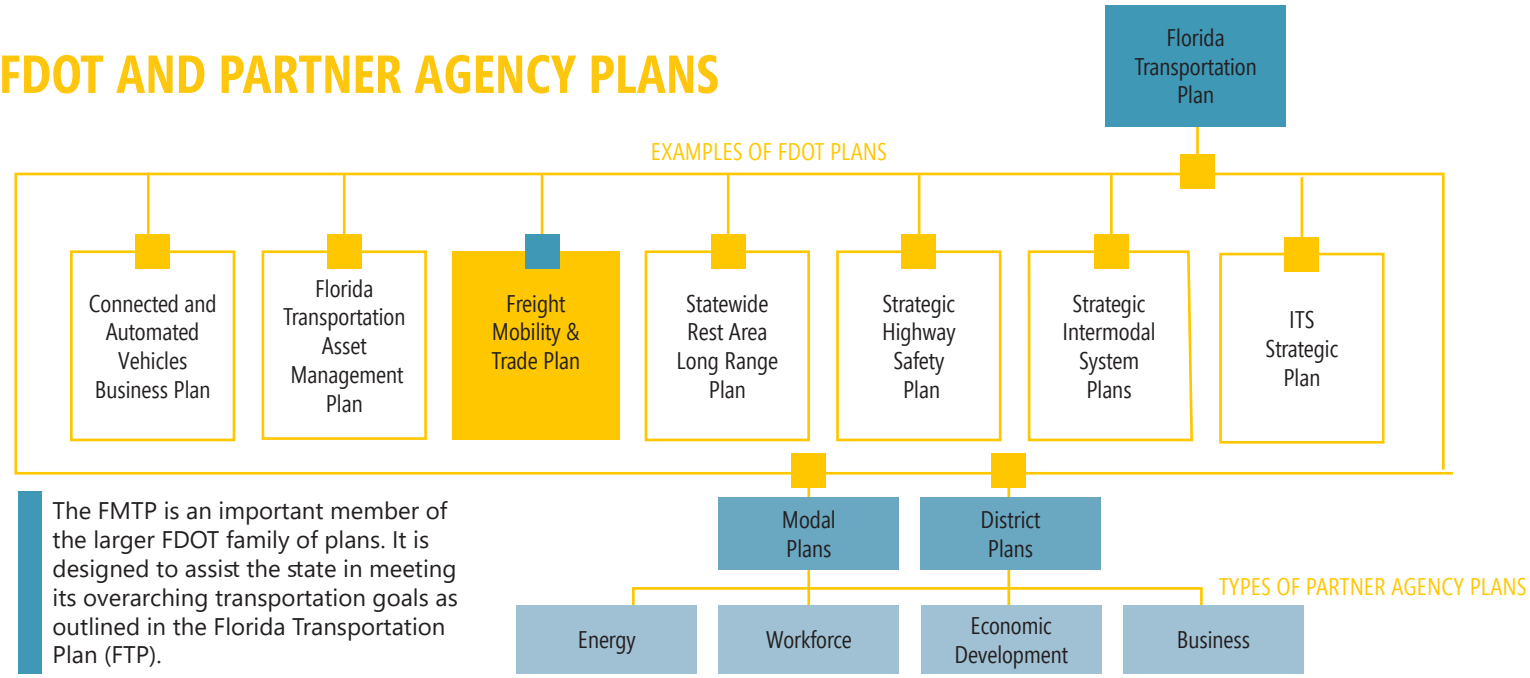
2017

The Freight and Multimodal Operations (FMO) Office was established within FDOT. The FMO Office was created to institutionalize freight planning in the Department. It combined the multimodal freight functional area with the rail and motor carrier functional areas to form a team ready to address freight mobility needs statewide along with the other modal offices.

2019

This 2019 FMTP is intended to build upon the foundation set by the previous plan using both tactical and strategic approaches to implement immediate opportunities while positioning Florida for future possibilities.

FDOT AND PARTNER AGENCY PLANS



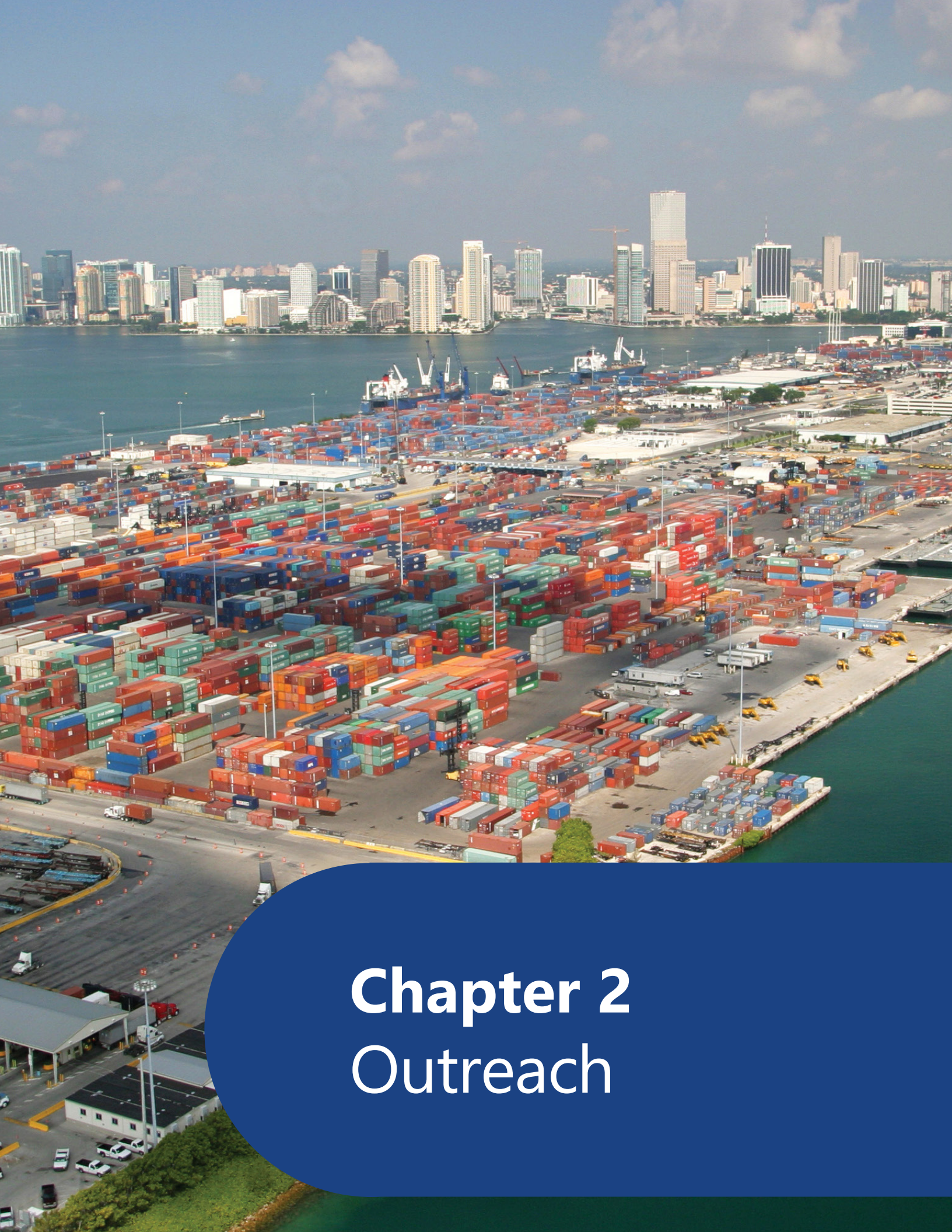
The FMTP is an important member of the larger FDOT family of plans. It is designed to assist the state in meeting its overarching transportation goals as outlined in the Florida Transportation Plan (FTP).

VISION TO IMPLEMENTATION

FMTP OBJECTIVES

The 2019 FMTP uses the goals from the broader Florida Transportation Plan (FTP). The FMTP objectives were developed by examining goals and objectives from the FTP, FDOT Modal Plans, partner agency plans, as well as by incorporating feedback provided by the Florida Freight Advisory Committee (FLFAC). This crosswalk ensured that the FMTP objectives reflect Florida's collective freight vision and set the stage for collaborative implementation of the FMTP recommendations.

FTP GOALS		FMTP OBJECTIVES
Safety and security for residents, visitors and businesses	1	Leverage multisource data and technology to improve freight system safety and security
Agile, resilient, and quality transportation infrastructure	2	Create a more resilient multimodal freight system
	3	Ensure the Florida freight system is in a state of good repair
Connected, efficient, and reliable mobility for people and freight	4	Drive innovation to reduce congestion, bottlenecks and improve travel time reliability
Transportation choices that improve accessibility and equity	5	Remove institutional, policy and funding bottlenecks to improve operational efficiencies and reduce costs in supply chains
	6	Improve last mile connectivity for all freight modes
Transportation solutions that strengthen Florida's economy	7	Continue to forge partnerships between the public and private sectors to improve trade and logistics
	8	Capitalize on emerging freight trends to promote economic development
Transportation systems that enhance Florida's communities	9	Increase freight-related regional and local transportation planning and land use coordination
Transportation solutions that protect Florida's environment	10	Promote and support the shift to alternatively fueled freight vehicles



Chapter 2
Outreach

What's Inside

- Project Advisory Committee Meetings
- Florida Freight Advisory Committee Meetings
- Regional Freight Forums

This chapter presents the outreach process used to identify key freight issues and opportunities. An inclusive engagement process was utilized involving everyone in the freight community - from private sector stakeholders in the shipping and manufacturing industries to business executives and public sector leaders to the general public. More information on outreach can be found in Technical Memorandum 1.

PROJECT ADVISORY COMMITTEE MEETINGS

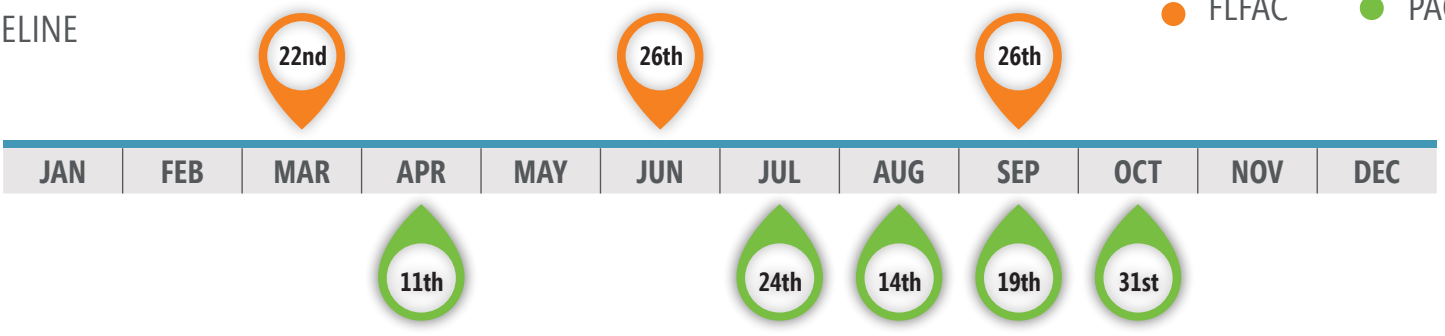
The Project Advisory Committee (PAC) is an internal body consisting of representatives from FDOT offices that relate to freight. Five PAC meetings were held during the development of this plan. The PAC provided guidance on the development of the plan and helped validate the results along the way. Below are the FDOT offices represented on the PAC.

- Freight & Multimodal Operations
- Aviation & Spaceports
- Seaports
- Transit
- System Implementation
- Policy Planning
- Forecasting & Trends
- Transportation Data & Analytics
- Motor Carrier Size and Weight
- Maintenance
- Roadway Design
- Transportation System Management & Operation
- Commercial Vehicle Operations
- Florida Metropolitan Planning Organization Advisory Council
- District Offices / District Freight Coordinators

FLORIDA FREIGHT ADVISORY COMMITTEE MEETINGS

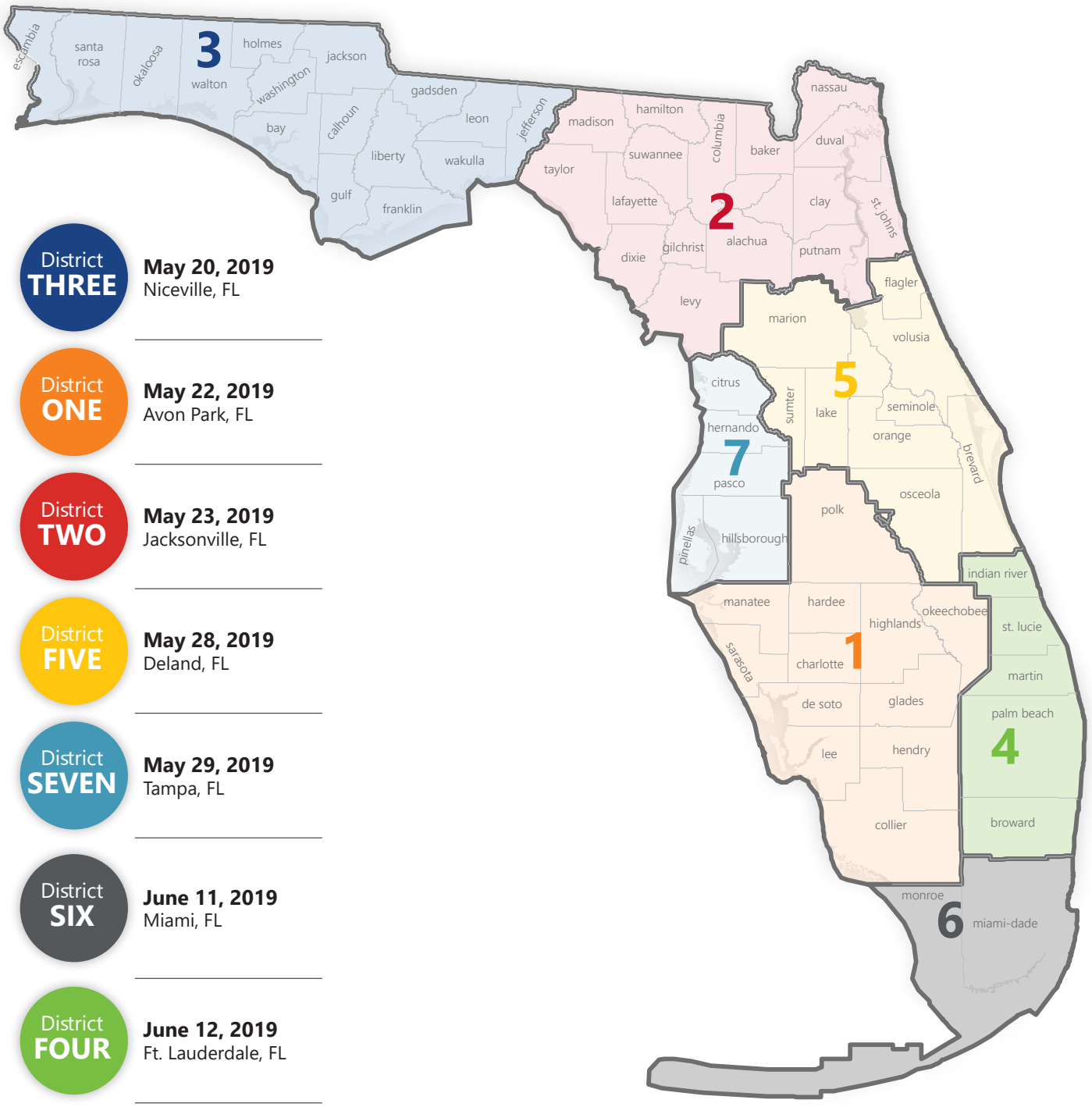
The Florida Freight Advisory Committee (FLFAC) consists of representatives from a cross-section of public and private sector freight stakeholders. The committee is designed to advise FDOT on freight-related priorities, issues, projects, and funding needs, with a particular look into sharing of information between the public/private sectors. Three FLFAC meetings were held with the FMTP update as the focus and the meetings were open to the public as usual. The purpose of these meetings was to ensure that the objectives and issues identified in the plan effectively address Florida's freight needs. Below are organizations represented on the current FLFAC.

2019 MEETING TIMELINE



REGIONAL FREIGHT FORUMS

In addition to the FLFAC and PAC meetings, regional freight forums were held in each FDOT District and were open to the public. The forums were designed to give the public and stakeholders a venue to share knowledge, explore freight issues and offer potential solutions.



District THREE
May 20, 2019
Niceville, FL

District ONE
May 22, 2019
Avon Park, FL

District TWO
May 23, 2019
Jacksonville, FL

District FIVE
May 28, 2019
Deland, FL

District SEVEN
May 29, 2019
Tampa, FL

District SIX
June 11, 2019
Miami, FL

District FOUR
June 12, 2019
Ft. Lauderdale, FL

REGIONAL FREIGHT FORUM FEEDBACK

The regional freight forums collected input on the issues facing Florida and potential solutions. This collaborative process provided venues and opportunities for interaction with those who utilize, provide, and plan for the freight transportation system. Incorporating an industry participation approach allowed the state to better understand the needs of freight stakeholders and proactively streamline freight investments.

At each forum, a live polling session captured the District's collective thoughts on what they considered the most important goals and objectives, and how they rated their freight system. The answers to the question ***"On scale of 1 to 10 (10 being the best possible), how well is the regional freight transportation system operating today?"*** are below:

During the forums, participants were engaged in breakout sessions to examine key regional issues related to freight. Participants were asked:

- What are the most critical freight challenges/issues you encounter?
- What are the most important needs in your region?
- What opportunities do you see with freight?
- What new and developing technologies should Florida support to enhance freight mobility?
- How can we leverage collaboration to improve freight mobility?

TOPIC COUNTS

The answers gathered from these questions helped to identify the most pressing freight issues and opportunities in the state. After the forums, the responses were placed into categories and weighted by how many Districts discussed the topics. For example, all seven Districts brought up bottlenecks/ congestion in the forums; therefore, that topic is shown in the "6 or 7 mentions" box.

6 or 7 mentions	4 or 5 mentions	2 or 3 mentions
• Automation • Bottlenecks/Congestion • Collaboration/Coordination • Land Use • Regulations • Truck Only Lanes • Truck Parking • Labor Force • First Mile/Last Mile Connectivity • Public/Private Partnerships	• Education/Awareness • Data Sharing • Empty Backhaul • Inland Ports • Funding • Economic Competitiveness	• Alternative Fuel • Rural/Urban Context • E-Commerce • Law Enforcement • Limited Access/ Signalization • Grade Separation • Blockchain • Marketing/Outreach • Intermodal Connectivity

Chapter 3
Assets and Conditions

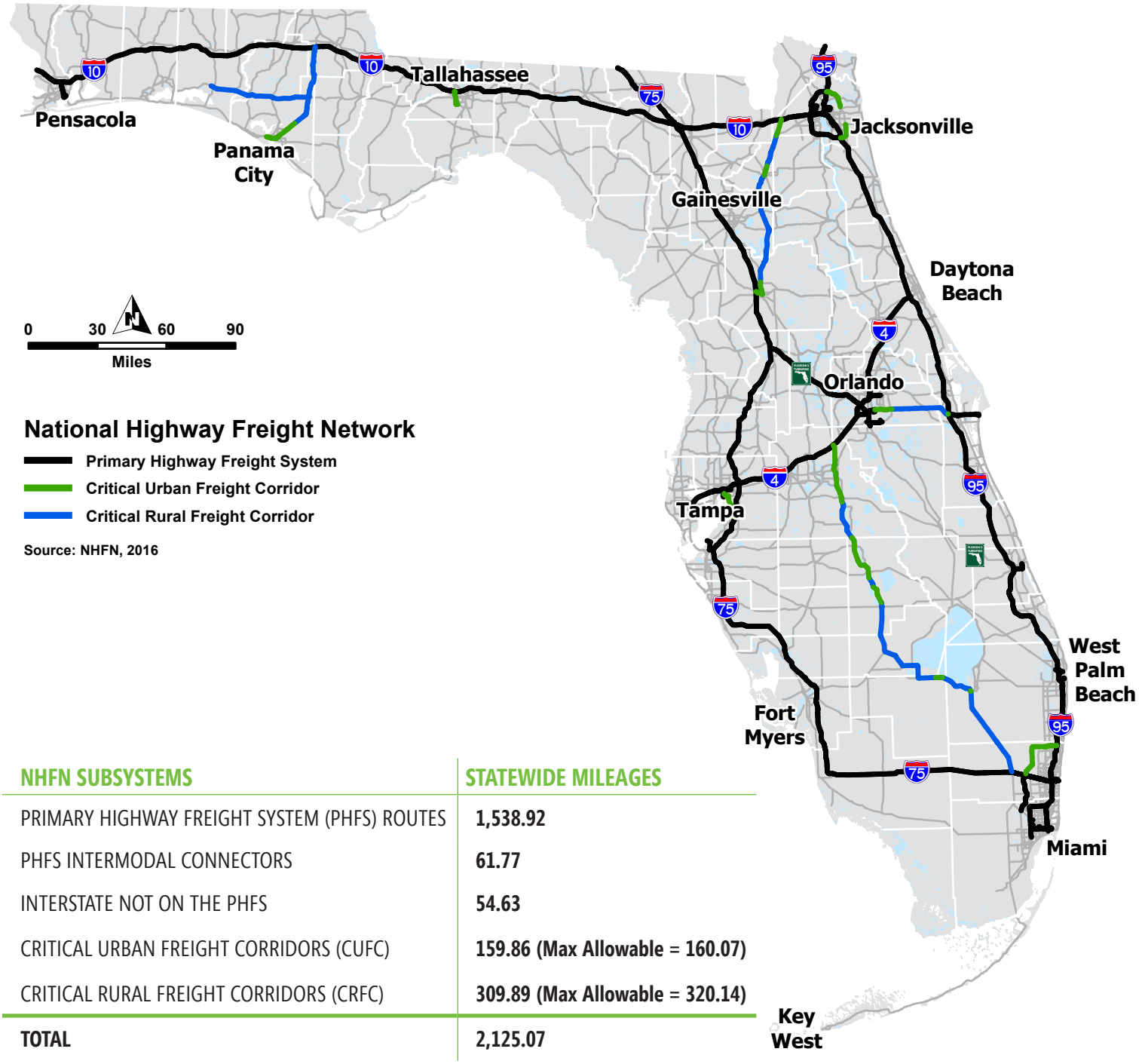
What's Inside

- National Highway Freight Network
- Strategic Intermodal System
- Multimodal Freight Facilities
- Freight Intensive Areas
- Performance & Conditions

Florida's freight systems and assets are essential to the efficient movement of goods and commodities across all modes within the state. Florida's transportation system serves a diverse range of needs when it comes to freight by providing for the movement of goods across local, regional, interstate, and international integrated multimodal networks. Technical Memorandum 2 includes more detailed discussions on freight transportation assets, related industries, and commodity flows.

NATIONAL HIGHWAY FREIGHT NETWORK

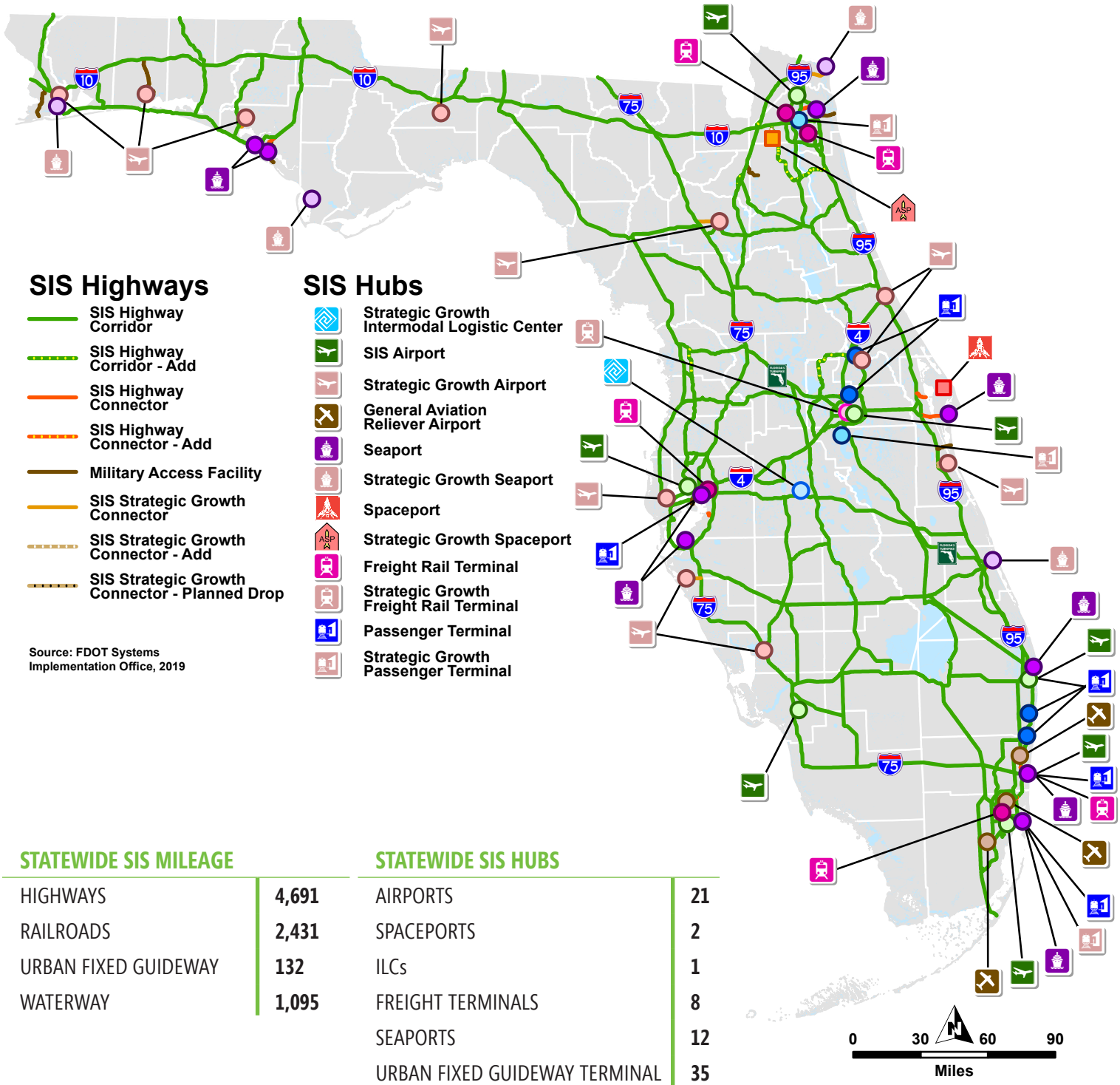
The National Highway Freight Network (NHFN), established by the FAST Act, helps strategically direct resources toward improved system performance for efficient movement of freight on highways. It is comprised of a subsystem of roadways that are listed in the table below. More information on the NHFN can be found online at *https://ops.fhwa.dot.gov/freight/infrastructure/nfn/index.htm*.



NHFN SUBSYSTEMS	STATEWIDE MILEAGES
PRIMARY HIGHWAY FREIGHT SYSTEM (PHFS) ROUTES	1,538.92
PHFS INTERMODAL CONNECTORS	61.77
INTERSTATE NOT ON THE PHFS	54.63
CRITICAL URBAN FREIGHT CORRIDORS (CUFC)	159.86 (Max Allowable = 160.07)
CRITICAL RURAL FREIGHT CORRIDORS (CRFC)	309.89 (Max Allowable = 320.14)
TOTAL	2,125.07

STRATEGIC INTERMODAL SYSTEM

The Strategic Intermodal System (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 (FTP). More information on SIS is available online at *www.fdot.gov/planning/sis/*.



STATEWIDE SIS MILEAGE

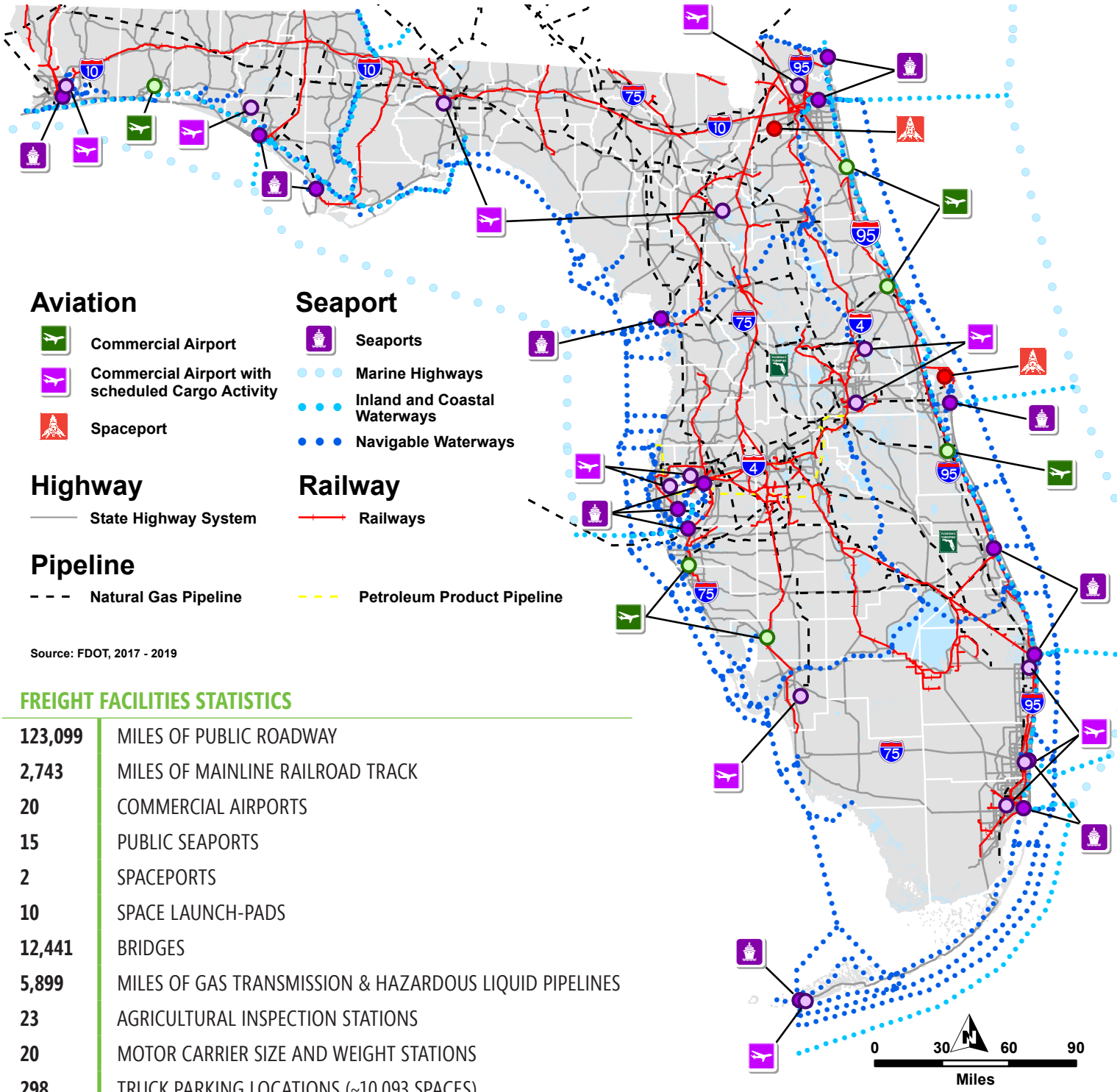
HIGHWAYS	4,691
RAILROADS	2,431
URBAN FIXED GUIDEWAY	132
WATERWAY	1,095

STATEWIDE SIS HUBS

AIRPORTS	21
SPACEPORTS	2
ILCs	1
FREIGHT TERMINALS	8
SEAPORTS	12
URBAN FIXED GUIDEWAY TERMINAL	35
PASSENGER TERMINAL	14

MULTIMODAL FREIGHT FACILITIES

Florida's multimodal freight and logistics infrastructure supports over 21 million residents and 126 million annual visitors while providing connectivity between freight modes and transportation choices that support the state's economy. From road to rail, to airports, seaports, and spaceports, Florida moves people, products and ideas to and from the rest of the world – fast. This map includes a combination of freight facilities in the state (not the National Multimodal Freight Network) to help take stock of Florida's freight assets. Additional assets and facilities are listed below the map.

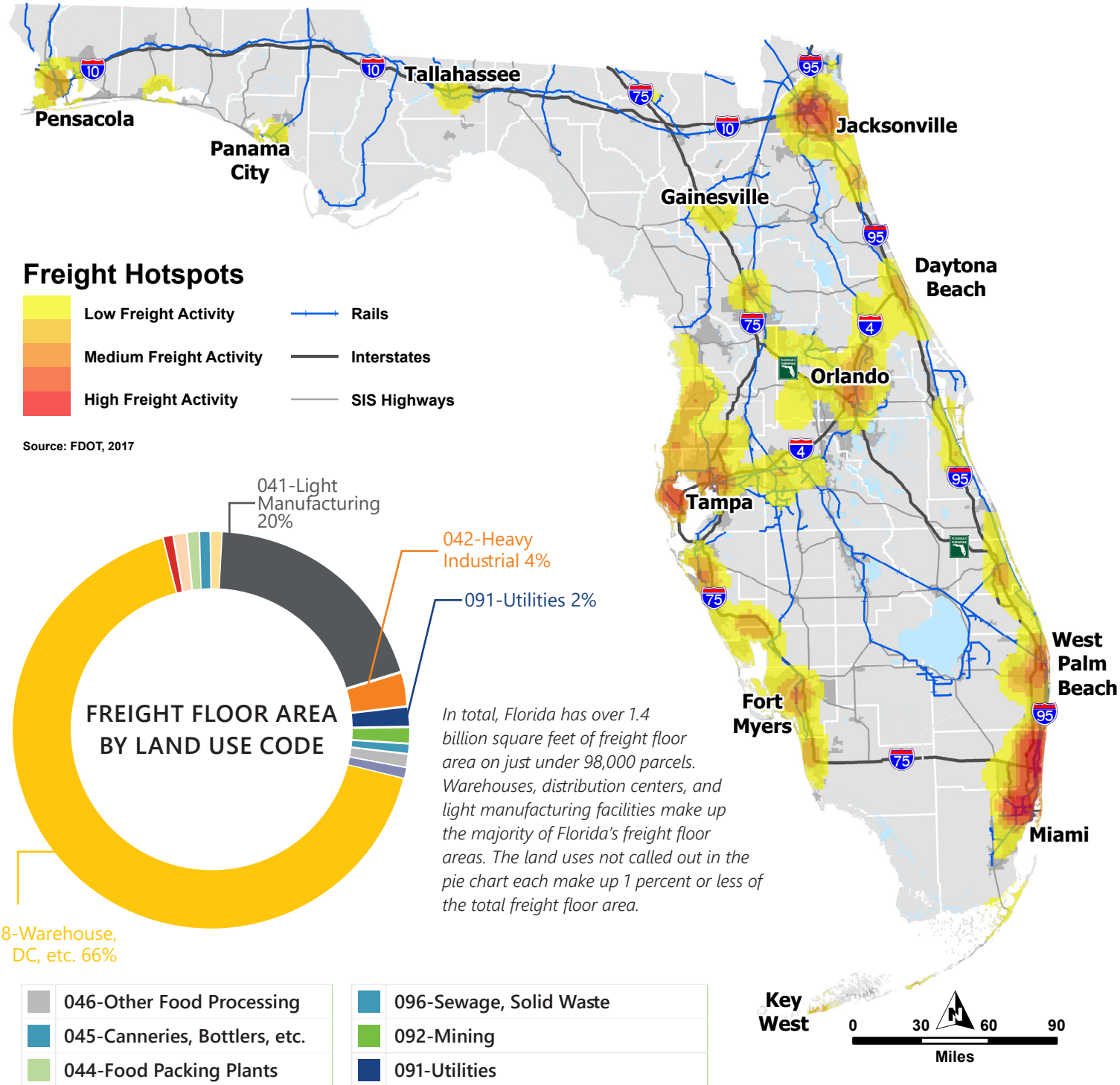


FREIGHT FACILITIES STATISTICS

123,099	MILES OF PUBLIC ROADWAY
2,743	MILES OF MAINLINE RAILROAD TRACK
20	COMMERCIAL AIRPORTS
15	PUBLIC SEAPORTS
2	SPACEPORTS
10	SPACE LAUNCH-PADS
12,441	BRIDGES
5,899	MILES OF GAS TRANSMISSION & HAZARDOUS LIQUID PIPELINES
23	AGRICULTURAL INSPECTION STATIONS
20	MOTOR CARRIER SIZE AND WEIGHT STATIONS
298	TRUCK PARKING LOCATIONS (~10,093 SPACES)
21	FOREIGN TRADE ZONES

FREIGHT INTENSIVE AREAS

A Freight Intensive Area is a cluster or group of freight facilities that generates, distributes or attracts large amounts of freight activities and has a significant impact on Florida's transportation system and economy. An analysis conducted by the FDOT Systems Implementation Office in coordination with the FDOT Transportation Data and Analytics Office used Florida Department of Revenue (DOR) parcel data and Florida Department of Economic Opportunity (DEO) establishment employment data to locate freight activity areas. The freight hotspots and floor area statistics are shown below.

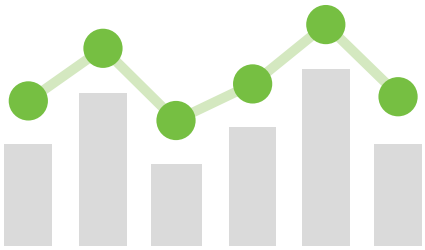


In total, Florida has over 1.4 billion square feet of freight floor area on just under 98,000 parcels. Warehouses, distribution centers, and light manufacturing facilities make up the majority of Florida's freight floor areas. The land uses not called out in the pie chart each make up 1 percent or less of the total freight floor area.

046-Other Food Processing	096-Sewage, Solid Waste
045-Canneries, Bottlers, etc.	092-Mining
044-Food Packing Plants	091-Utilities
043-Lumber/Sawmill	068-Dairies, Feed Lots
042-Heavy Industrial	049-Open Storage
041-Light Manufacturing	048-Warehouse, DC, etc.
029-Wholesale	047-Mineral Processing, Gravel, etc.

PERFORMANCE AND CONDITIONS

Performance measures are indicators of progress toward attaining a goal, objective or target (a desired level of future performance). A set of freight performance measures was developed consistent with the FDOT performance measures program, which informed the FMTP project prioritization process. A live dashboard was created to monitor freight system performance on a continual basis.



SYSTEM PERFORMANCE MEASURES

- Truck Miles Traveled
- Combination Truck Miles Traveled
- Combination Truck Ton Miles
- Combination Truck Planning Time Index*
- Combination Truck Hours of Delay*
- Truck Travel Time Reliability*
- Percent of Travel Meeting LOS
- Highway Pavement Conditions
- Bridge Conditions
- Highway Safety
- Truck Empty Backhaul
- Truck Parking Utilization
- Rail Tonnage
- Rail Crashes
- Seaport Tonnage
- Aviation Tonnage
- Aviation Departure Reliability

* Federal Measure

Link to Dashboard

The live dashboard is for internal FDOT use at this time.

MEASURES/CRITERIA USED IN PROJECT PRIORITIZATION

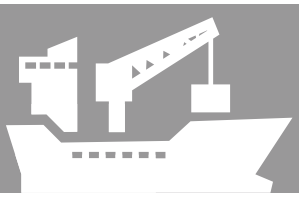
QUANTITATIVE	QUALITATIVE
(Truck Injuries/Truck VMT) *1000	Does this project implement safety or security enhancements?
(Truck Fatalities/Truck VMT) *1000	
Crime Index	Does this project improve the state's data gathering efforts?
Roadways within 100 Year Flood Zones	
Presence of Structurally Deficient Bridges	Does this project address the environmental or economic resiliency of the freight system?
Presence of Poor Pavement Condition Segments	
Roadways with Top Bottlenecks	Does this project optimize the functionality and efficiency of existing roadways?
Truck AADT	
Vicinity to Hubs	Does this project preserve the existing State Highway System?
Roadways within Freight Intensive Areas	Does this project address truck parking?
Labor Force Size (Ratio of labor force by county population relative to average statewide ratio)	Does this project address grade separation?
County GRP Level (Relative to the average county GRP level in FL)	Is this a technology driven or TSM&O project?
Transportation and Warehousing Industry Share of Total Employment	Does this project improve multimodal freight connectivity?
County Population Density (Relative to the average county-level population density in FL)	Does this project use public/private partnerships (P3)?
On Designated Alternative Fuels Corridors	Does this project capitalize on emerging freight trends?
Number of Alternative Fueling Stations within 1 Mile of Roadway	Is this project on the MPOAC freight project list?
	Does this project promote the use of LNG/CNG/electric vehicles?

SYSTEM PERFORMANCE STATISTICS

MEASURE	PERFORMANCE	YEAR
Truck Miles Traveled	29.6 million daily truck miles traveled on State Highway System	2017
Combination Truck Miles Traveled	16 million daily combination truck miles traveled	2017
Combination Truck Ton Miles	63 billion ton miles	2017
Combination Truck Planning Time Index*	1.39 planning time index; for a trip that would take 10 minutes in free-flow conditions, the 95th percentile travel time is 14 minutes	2017
Combination Truck Hours of Delay*	19,100 daily hours of delay	2017
Truck Travel Time Reliability*	90.2 percent truck travel time reliability	2017
Percent of Travel Meeting LOS Standard	77.4 percent (on the State Highway System during peak hour)	2017
Highway Pavement Conditions	91.3 percent of the SHS pavements met Department standards	2018
Bridge Conditions	66 percent of the total NHS deck area is in good condition; less than 2 percent is in poor condition	2019
Highway Safety	4,068 traffic crashes involving a truck	2016
Truck Empty Backhaul	>50 percent of trucks coming into the state were full, compared to 38 percent of trucks leaving the state	2015-17
Truck Parking Utilization	during peak periods truck parking demand can exceed 150 percent in some areas	2018

MEASURE	PERFORMANCE	YEAR
Rail Tonnage	44.1 million originated rail tons, 72.3 million rail terminated tons	2017
Rail Crashes	108 highway railroad incidents including 21 fatalities	2017

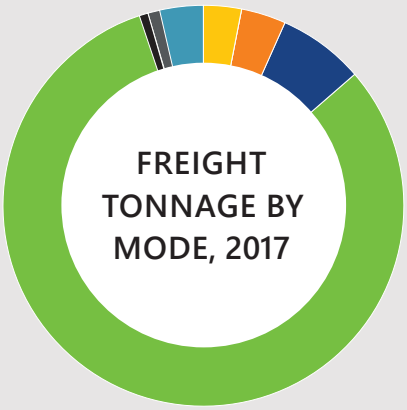
MEASURE	PERFORMANCE	YEAR
Seaport Tonnage	4.1 million twenty-foot equivalent units (TEUs)	2018



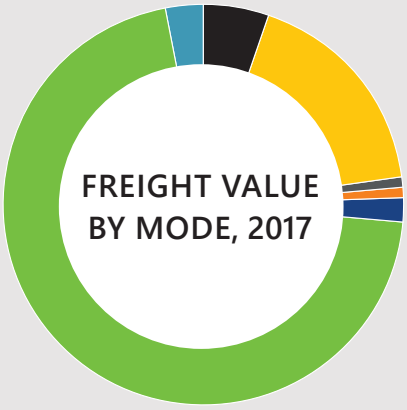
MEASURE	PERFORMANCE	YEAR
Aviation Tonnage	2.5 million tons	2017
Aviation Departure Reliability	81.5% departure reliability	2017

* Federal Measure

2017
COMMODITIES, TONNAGE & VALUES



- Water, 27,705 KTons
- Truck, 651,334 KTons
- Rail, 53,981 KTons
- Pipeline, 27,930 KTons
- Other/Unknown, 187 KTons
- Multiple Modes and Mail, 24,596 KTons
- Air, 584 KTons



- Water, $25,951 M
- Truck, $623,707 M
- Rail, $15,121 M
- Pipeline, $7,974 M
- Other/Unknown, $7,368 M
- Multiple Modes and Mail, $156,082 M
- Air, $46,779 M

Source: Freight Analysis Framework 4.5, 2017

1 KTon = 1,000 Tons

In 2017, Florida ranked 11th in the country with 44.1 million originated rail tons and 4th with 72.3 million rail terminated tons.

Source: Association of American Railroads

In Florida, nearly 80% of freight by tonnage is moved by truck.

Source: Freight Analysis Framework 4.5, 2017

Brazil and China are the top export and import partners for Florida ports, respectively.

Source: Florida Ports Council

In 2018, Miami International Airport ranked 4th in the nation for landed cargo weight with 8.4 million lbs.

Source: U.S. Bureau of Transportation Statistics and Federal Aviation Administration

TOP 3 IMPORT

COMMODITIES BY TONNAGE:

Coal N.E.C.	Gravel	Gasoline
27,628 KTons	14,467 KTons	14,032 KTons

COMMODITIES BY VALUE:

Motorized Vehicles	$26,593 M
Electronics	$41,195 M
Miscellaneous Manufacturing	$24,337 M

TOP 3 EXPORT

COMMODITIES BY TONNAGE:

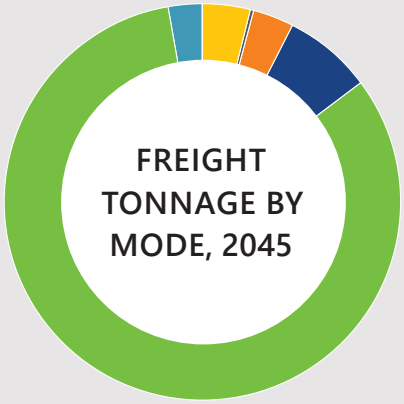
Foodstuffs	Fertilizers	Agricultural Products
6,644 KTons	5,910 KTons	5,635 KTons

COMMODITIES BY VALUE:

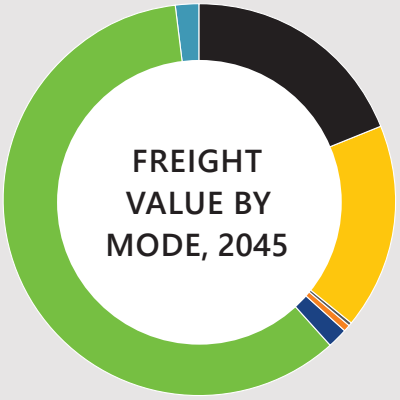
Motorized Vehicles	$18,790 M
Electronics	$18,383 M
Pharmaceuticals	$17,547 M

Source: Freight Analysis Framework 4.5, 2017

2045 PROJECTED COMMODITIES, TONNAGE & VALUES



- Water, 27,582 KTons
- Truck, 870,136 KTons
- Rail, 77,074 KTons
- Pipeline, 35,609 KTons
- Other/Unknown, 407 KTons
- Multiple Modes and Mail, 40,514 KTons
- Air, 2,376 KTons



- Water, $38,358 M
- Truck, $1,279,243 M
- Rail, $36,272 M
- Pipeline, $8,694 M
- Other/Unknown, $11,470 M
- Multiple Modes and Mail, $362,096 M
- Air, $405,725 M

Source: Freight Analysis Framework 4.5, 2045

1 KTon = 1,000 Tons

All major routes are forecasted to have a significant growth in truck tonnage movement.

Air has the highest estimated growth rate, primarily driven by forecasted growth in high value goods.

TOP 3 IMPORT

COMMODITIES BY TONNAGE:

Coal N.E.C.	Gravel	Other Foodstuffs
37,372 KTons	17,635 KTons	13,957 KTons

COMMODITIES BY VALUE:

Electronics	$132,349 M
Machinery	$77,799 M
Precision Instruments	$61,868 M

TOP 3 EXPORT

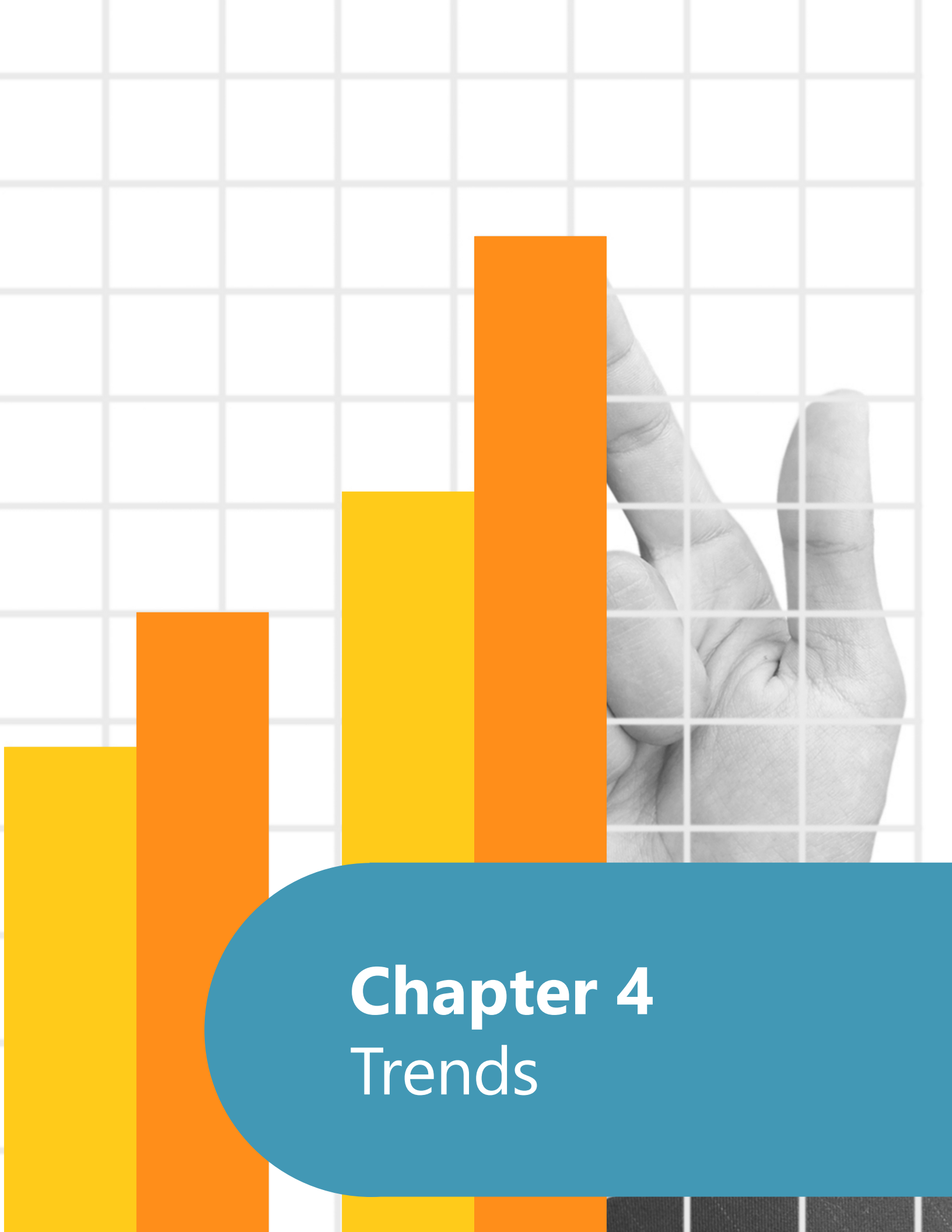
COMMODITIES BY TONNAGE:

Fertilizers	Other Agricultural Products	Other Foodstuffs
11,697 KTons	11,682 KTons	11,603 KTons

COMMODITIES BY VALUE:

Basic chemicals	$145,692 M
Electronics	$79,435 M
Pharmaceuticals	$67,002 M

Source: Freight Analysis Framework 4.5, 2045



Chapter 4
Trends

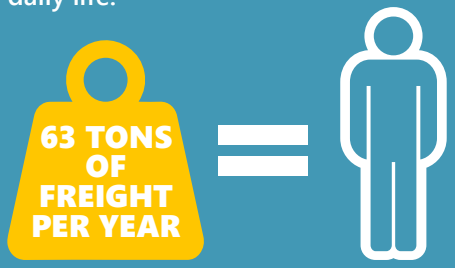
What's Inside

- Population Trends
- Economic Trends
- Modal Trends
- Technology Trends

The evolution of freight transportation is largely shaped by demographics, consumer behavior, the economy, regulations, and technological advances. The dynamic nature of freight mobility and trends affecting freight movement must be considered when developing policies, programs and projects to address freight needs and issues. A deeper dive into trends can be found in Technical Memorandum 4.

POPULATION TRENDS

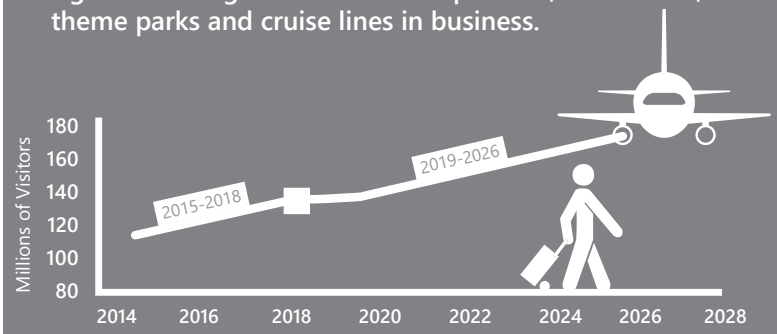
Florida currently has a population of 20.8 million, ranking third among the states. According to BEBR's forecasting model, Florida's population is expected to reach 27.4 million by 2040. As Florida's population continues to grow so does the freight required to sustain daily life.



The U.S. freight system moves approximately 63 tons of goods per person per year.

Source: Beyond Traffic 2045, 2016

Over 2.4 million people visit Florida each day – effectively increasing the state's population by 11 percent. The tourism industry supports 1.3 million jobs and creates significant freight demand to keep hotels, restaurants, theme parks and cruise lines in business.



Source: Visit Florida 2019, Florida Chamber of Commerce 2016

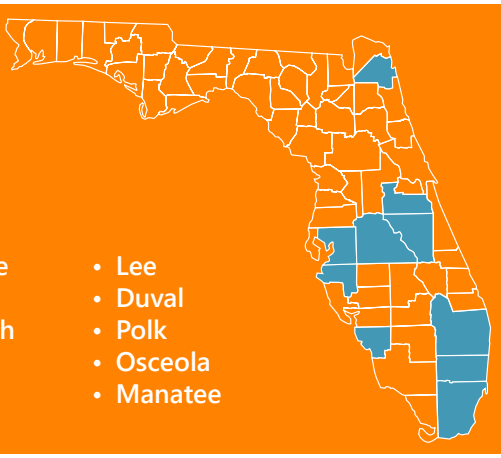
Decades of outward urban expansion have erased the defined boundaries for many of the state's urban areas, as economic ties between the expanding regions have been supported by the development of an intercity roadway network. By 2050, Florida is expected to become one integrated region in which there is little physical or geographic delineation between the metropolitan areas defined as urban centers.

67% OF FLORIDA'S POPULATION GROWTH IS PROJECTED TO BE CONCENTRATED IN

10 COUNTIES

Source: Bureau of Economic and Business Research (BEBR), 2019

- Miami-Dade
- Orange
- Hillsborough
- Broward
- Palm Beach
- Lee
- Duval
- Polk
- Osceola
- Manatee



Florida's population as a whole is also getting older. Within a few decades, residents aged 60 and older are expected to outnumber residents under the age of 18. In 2030, there will be comparatively fewer people in the working age population (age 25-64), bolstering the demand for labor and wages and likely a greater shift toward online shopping coupled with changes in freight distribution. The trucking industry is already seeing a shortage in drivers and mechanics as workers are retiring.

67%
OF ROAD USERS WILL
OUTLIVE THEIR ABILITY TO DRIVE
BY AN AVERAGE OF
7-10 YEARS

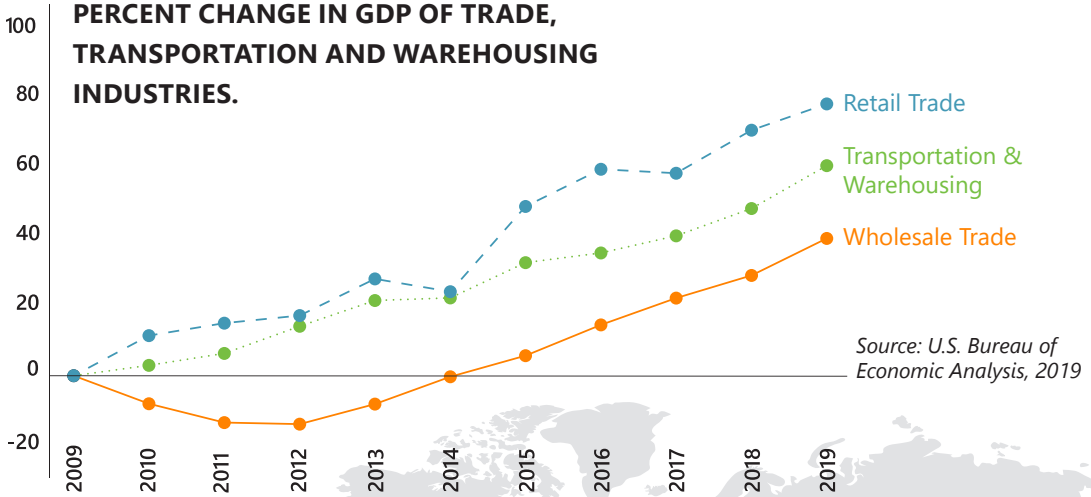
Source: Bureau of Economic and Business Research (BEBR), 2019

The combination of population growth, demographic changes and urbanization trends will have a transformative effect on Florida's supply chains. Increased congestion, higher numbers of urban deliveries and changing distribution networks are expected to have a significant impact on the state's economy.

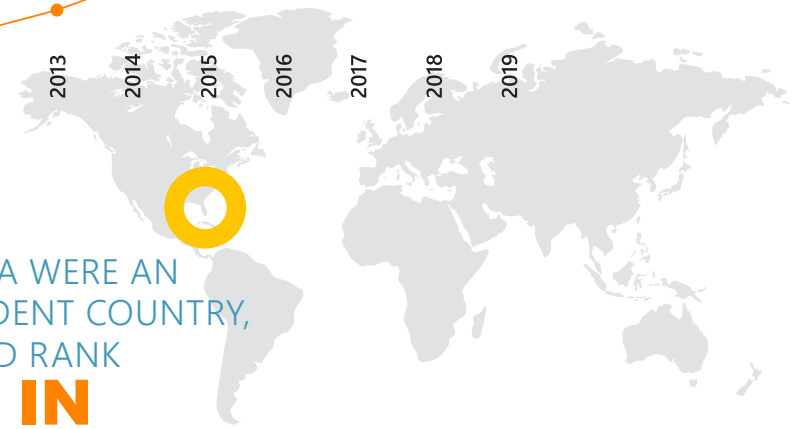
ECONOMIC TRENDS

The Florida economy is the 4th largest in the U.S. and 17th largest globally. Freight related industries - construction, manufacturing, trade, and logistics – support every facet of the state's economy. The trade sector has seen a tremendous growth with 40% increase in wholesale trade and 80% in retail trade industries from 2009 to the first quarter of 2019. Transportation and warehousing industries have seen a 60% growth since 2009. Because of tourism and population growth, Florida is largely a consumer state, consuming more than it produces.

PERCENT CHANGE IN GDP OF TRADE, TRANSPORTATION AND WAREHOUSING INDUSTRIES.



Source: U.S. Bureau of Economic Analysis, 2019

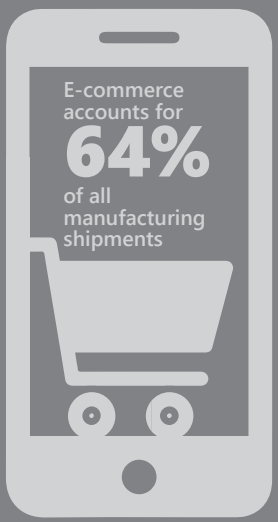


FLORIDA HAS A GROSS DOMESTIC PRODUCT OF **$1 TRILLION, RANKED 4TH** IN THE U.S.

IF FLORIDA WERE AN INDEPENDENT COUNTRY, IT WOULD RANK **17TH IN THE WORLD**

U.S. Bureau of Economic Analysis, 2019

Nationally, e-commerce is responsible for 10% of retail sales. The growth rate for e-commerce spending has ranged from 13% to 16% annually over the past five years, outpacing the 1% to 5% annual growth in traditional retail sales. As e-commerce market share and rapid fulfillment expectations have continued to grow, a shift is taking place from large delivery vehicles to smaller vans and personal vehicles. In some cities, deliveries are even being made by robot. Similarly, large regional distribution centers are being replaced with smaller fulfillment centers spread across a region to facilitate quick deliveries.



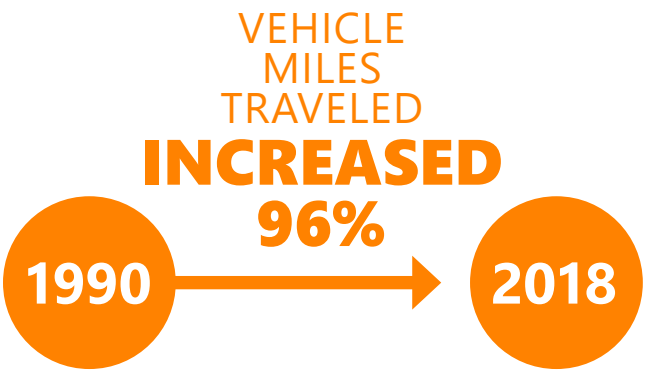
Source: U.S. Census Bureau, 2018

GIG ECONOMY

Amazon recently debuted "Amazon Flex" as a freight mobility service (FMaaS) solution, where just about anyone with a vehicle and a smart phone can pick up parcels at a distribution center, route drop-offs, and make deliveries. Similarly, freight brokerage apps like the on-demand, real-time Uber Freight can match freight truckload shipments with available drivers/equipment.

MODAL TRENDS

The growing population fueled by a growing economy has increased the number of trucks on the road. The number of intra-regional and last-mile truck trips have increased while the average length of haul has declined with more distribution/fulfillment centers being built. Average trip lengths have decreased 37% since 2000, while urban vehicle miles traveled have increased for much of this period. Due to the more frequent but shorter trips, congestion and bottlenecks have increased in dense urban areas. Not only are vehicle miles traveled increasing with more frequent trips, but trucking accidents and fatalities are also on the rise since 2012.

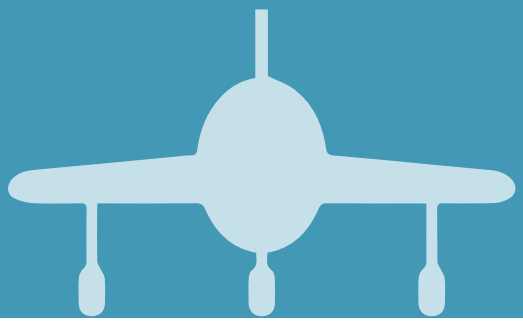


Since 2012, there has been a steady increase in the number of traffic crashes involving a truck on Florida's roadways. In 2016, the number of truck crashes increased by 1.6% or 332 accidents from 2015. Fatalities and injuries involving a truck crash have also increased over time with an increase in truck accident deaths of 1.3% (27 fatalities) from 2015 to 2016, and an increase of 11.2% (660) in truck accident-related injuries from 2015 to 2016.

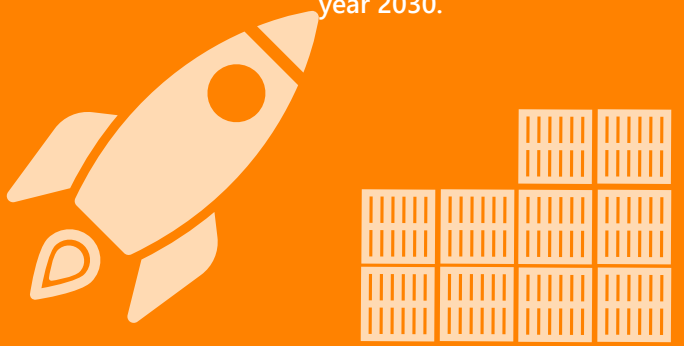
Not only are there more truck crashes occurring, but stakeholders also identified that the cost of insurance is increasing for trucking companies. The trucking industry faces issues when it comes to litigation due to crashes which result in damages, injuries, time-lost, and other associated factors.

Florida is experiencing the effects of a driver shortage in the trucking industry. The shortage is most notable in the long-haul truckload segment of the market, where drivers are unable to return home every night. Truck drivers are not the only workers in shortage; diesel mechanics and other subsidiary professions are in short supply as well.

As per the Florida Aviation System Plan, Florida ranks #1 in air cargo with Latin American countries. Miami International Airport (MIA) is a leading airport in the U.S. for international freight and ranks 10th globally. Tampa International Airport (TPA) has seen a tremendous growth rate in last decade.



Commercialization of the space industry is attracting significant private investment and creating a new paradigm for the space freight market. Kennedy Space Center is gearing up for more than 100 rocket launches a year and thousands of new high-tech jobs by the year 2030.



Panama Canal Impacts

The expanded Panama Canal - coupled with increases in vessel sizes - has changed the flow of goods movement to U.S. ports. The widened and deepened canal has allowed container ship capacity to grow four-fold and this has reduced the unit cost of shipping cargoes by sea. However the larger vessels and additional volumes are also requiring new investment and technology in marine terminals.

International Marine Industry Consolidations

The cost of fuel and a desire to gain greater market share has helped create alliances – most notably, recent consolidations of several Chinese ocean carriers. The result has been a larger share of the market controlled by fewer (larger) carrier services, which has affected rates.

Rail safety has become a focus to address at federal, state, and local levels due to the increasing rate of highway-railroad incidents over the past decade. Florida had 729 highway-rail incidents from 2008 to 2017.

TECHNOLOGY TRENDS

CONNECTED AND AUTOMATED VEHICLES

Connected and automated technologies hold great potential to significantly reduce crashes, improve capacity and enhance mobility for all transportation users. Truck platooning is a visible form of connected freight technology. By synchronizing multiple truck operations, trucks run closely together resulting in fuel savings and increased safety.

REDUCE OPERATING COST BY **45%**

ESTIMATED COST SAVINGS **$85 Billion**

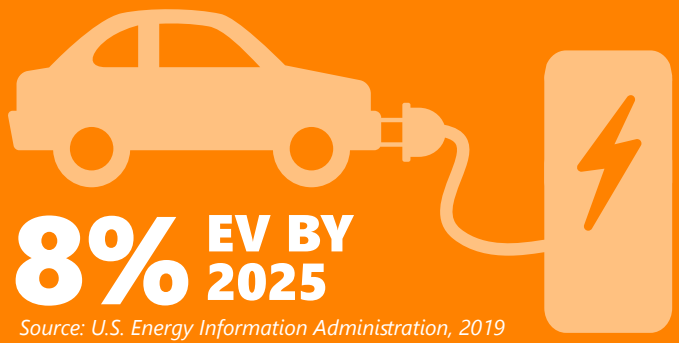
The implementation of full autonomy throughout the motor carrier freight system could reduce total operating costs by up to 45%, an estimated cost savings of at least $85 billion.

Source: McKinsey and Company, 2018

ALTERNATIVE FUELS

Advancements in electric vehicle technology have reached the freight industry. Today, some localized freight fleets have made the shift to electrified vehicles. As battery and quick charging technology improves, trucking companies may explore shifting from diesel to electric.

Nationally, fully electronic vehicles are projected to represent 8% of total automobiles sold by 2025.



8% EV BY 2025

Source: U.S. Energy Information Administration, 2019

BIG DATA

2,500,000,000,000,000

(2.5 QUINTILLION BYTES)
OF DATA ARE CREATED **EACH DAY GLOBALLY.**

While organizations have been using warehouse and distribution system data to conduct transportation and freight analysis for decades, 'big data' allows for the harvesting of the countless enormous datasets in non-traditional ways. Big data is already changing the freight industry with its ability to increase transparency, optimize consumption, improve process quality and performance, and create new revenue streams from new data/products. Blockchain allows for an entire supply chain network to contribute to data validation, helping build trust.

90% OF OUR **DATA IN THE WORLD** WAS GENERATED IN THE LAST **2 YEARS**

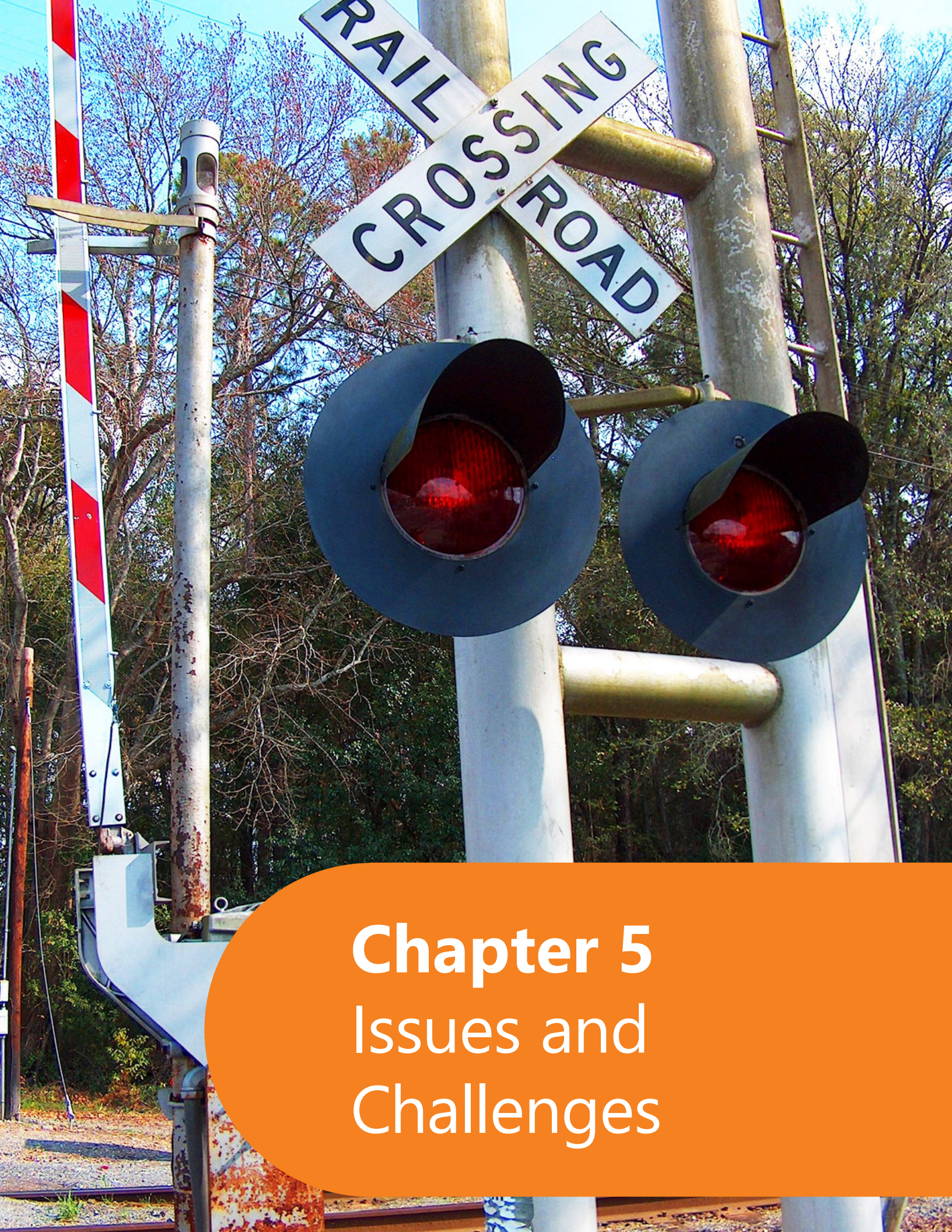
Source: Forbes, 2018

DRONE/ROBOT DELIVERY

The nature of freight deliveries is morphing in both urban and rural settings. Drones, or Unmanned Aerial Vehicles (UAVs), and robots, or Personal Delivery Devices (PDDs), are being tested to fulfil last-mile delivery needs.

AIRSHIPS STOCKED WITH PRODUCTS COULD ACT AS **AIRBORNE WAREHOUSES** TO STREAMLINE DRONE DELIVERY

Source: Amazon, 2019



Chapter 5
Issues and Challenges

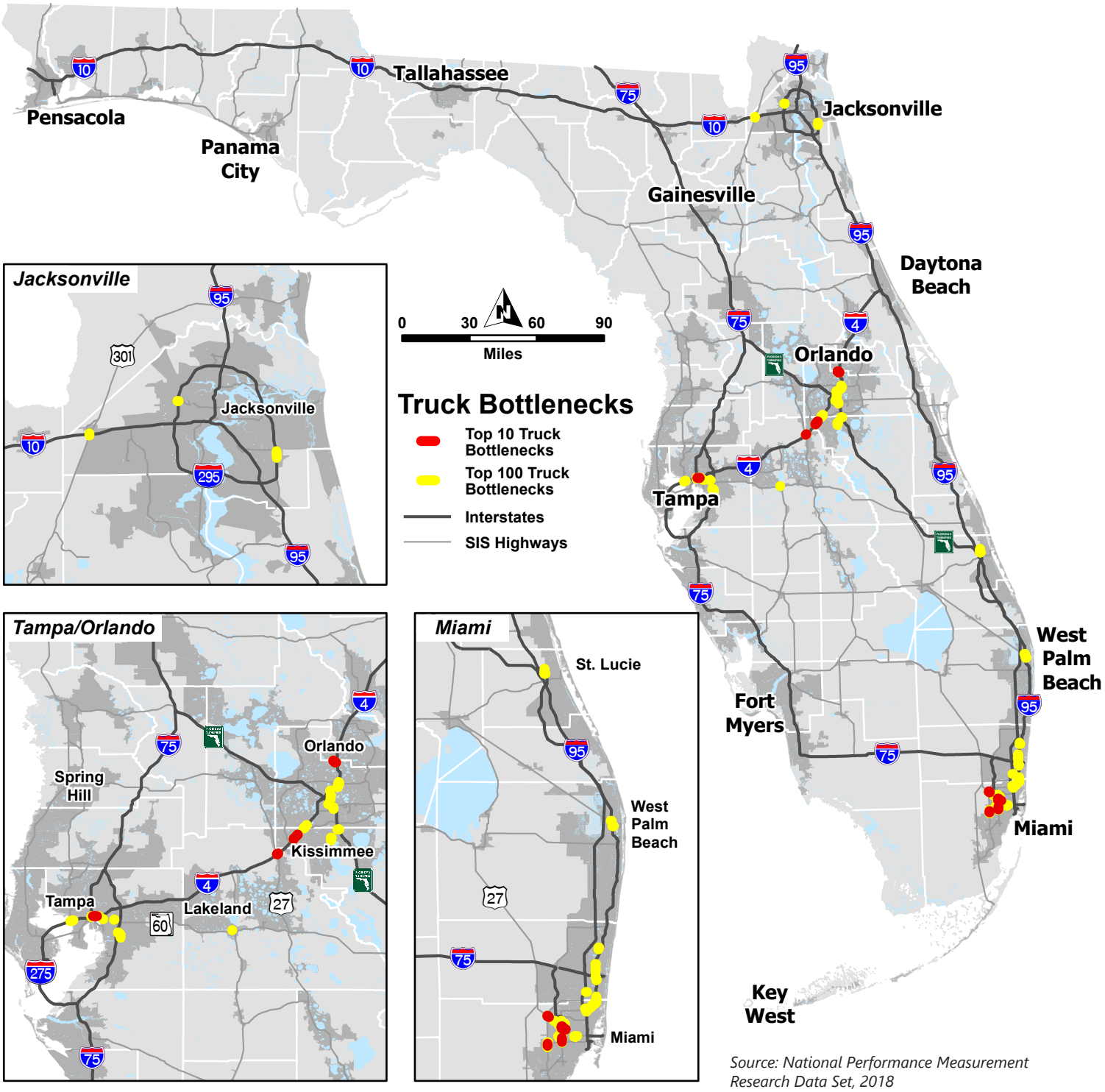
What's Inside

- Congestion/Bottlenecks
- Truck Parking
- Empty Backhaul

The issues/challenges discussed in this chapter were derived from a combination of analysis of Florida's freight performance and input from various stakeholders. The three issues presented were found to be the top issues impacting freight mobility in the state. A more robust discussion of freight issues and challenges impacting Florida can be found in Technical Memorandum 5.

CONGESTION/BOTTLENECKS

There are growing numbers of vehicles on the road creating a mix of truck and passenger (residential and visitor) traffic leading to unpredictability in travel times and an increasing rate of crashes. The congestion cost in 2014 for the seven selected urban areas in Florida was $8.75 billion. There were approximately 388 million hours in travel delay and 175 million excess gallons of fuel consumed. In 2017, there were 19,100 daily truck hours of delay in Florida. Although truck related congestion is a small percentage of overall congestion, it accounts for a greater percentage of congestion cost due to higher value of time for freight compared to passenger vehicles. In 2016, the freight industry's share of the total cost of congestion in Florida was more than $5.6 billion. The map below shows the top 100 truck bottlenecks in Florida.



Source: National Performance Measurement Research Data Set, 2018

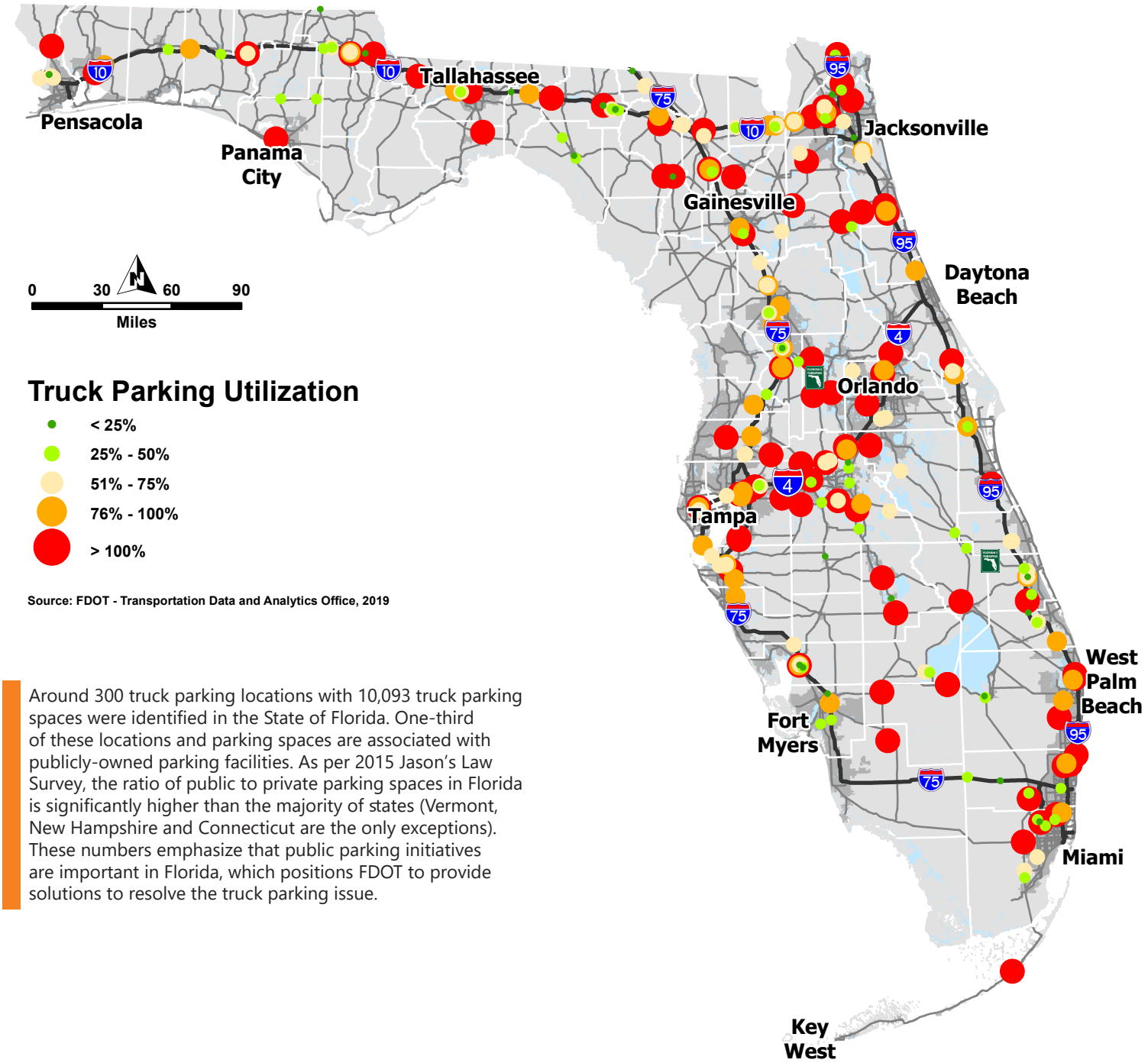
TOP 10 RECURRING & NON-RECURRING TRUCK BOTTLENECKS

Rank	Recurring Congestion		Non-Recurring Congestion	
	Road	County	Road	County
1	FL-414 eastbound between Seminole/ Orange County border and I-4	Orange	FL-414 eastbound between Seminole/ Orange County border and I-4	Orange
2	I-4 westbound close to Lee Roy Selmon Expressway	Hillsborough	I-4 westbound close to Lee Roy Selmon Expressway	Hillsborough
3	I-4 westbound approaching I-275	Hillsborough	I-4 eastbound approaching U.S. 27	Polk
4	Palmetto Expressway northbound corridor between the ramps entering and exiting NW 25th St	Miami-Dade	U.S. 27 northbound approaching FL Turnpike	Miami-Dade
5	I-4 westbound between Daniel Webster Western Beltway and S.R. 417-Toll S	Osceola	U.S. 27 northbound between West 12th Avenue and close to Hialeah Expressway	Miami-Dade
6	Florida Turnpike southbound between Dolphin Expressway and U.S. 41	Miami-Dade	Palmetto Expressway northbound close to Miami Airport approaching Dolphin Expressway	Miami-Dade
7	Palmetto Expressway northbound and south of Okeechobee Rd	Miami-Dade	U.S. 27 northbound between West 12th Avenue and south of Hialeah Expressway	Miami-Dade
8	Palmetto Expressway northbound close to NW 74th St	Miami-Dade	U.S. 27 northbound between the ramps entering and exiting FL Turnpike	Miami-Dade
9	Palmetto Expressway northbound and north of Okeechobee Rd	Miami-Dade	Palmetto Expressway northbound corridor between the ramps entering and exiting NW 25th St	Miami-Dade
10	U.S. 27 northbound approaching FL Turnpike	Miami-Dade	Palmetto Expressway southbound and south of Okeechobee Rd	Miami-Dade

The table shows the top 10 recurring and non-recurring congestion segments during a regular weekday. It is important to distinguish these two measures because research shows that freight users can schedule deliveries to consider recurring congestion, however non-recurring congestion is difficult to predict, which can lead to delays in deliveries.

TRUCK PARKING

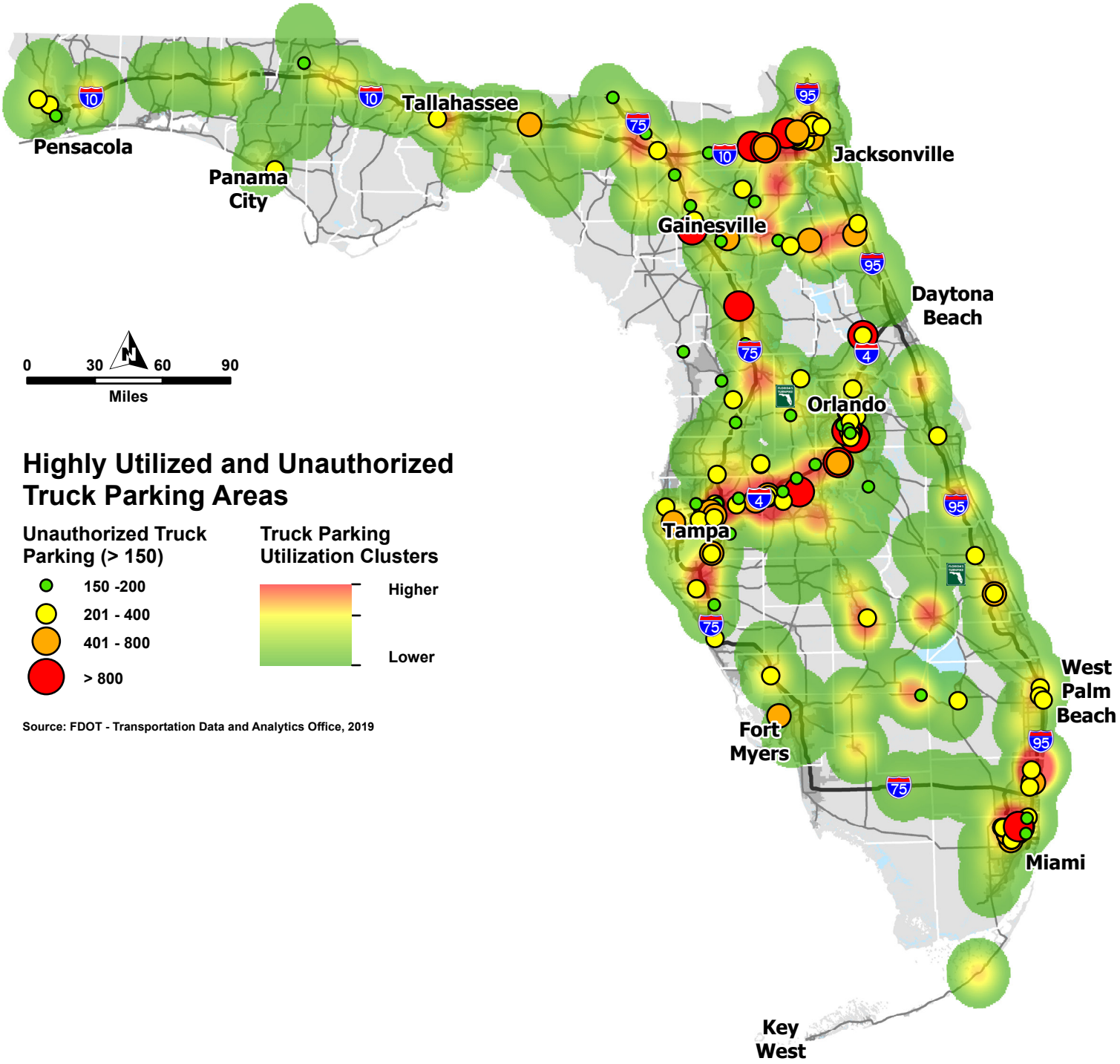
According to the American Transportation Research Institute (ATRI), truck parking is ranked as the second critical issue in the trucking industry by truck drivers in 2018. In Florida, the limited availability of truck parking spaces has caused overcrowding and overflow at existing truck parking locations. When there is limited parking available, drivers often park in unauthorized areas like highway ramps, creating safety hazards. Analysis found that during peak periods truck parking demand can exceed 150 percent in some areas of the state. The map below shows utilization of truck parking facilities in Florida.



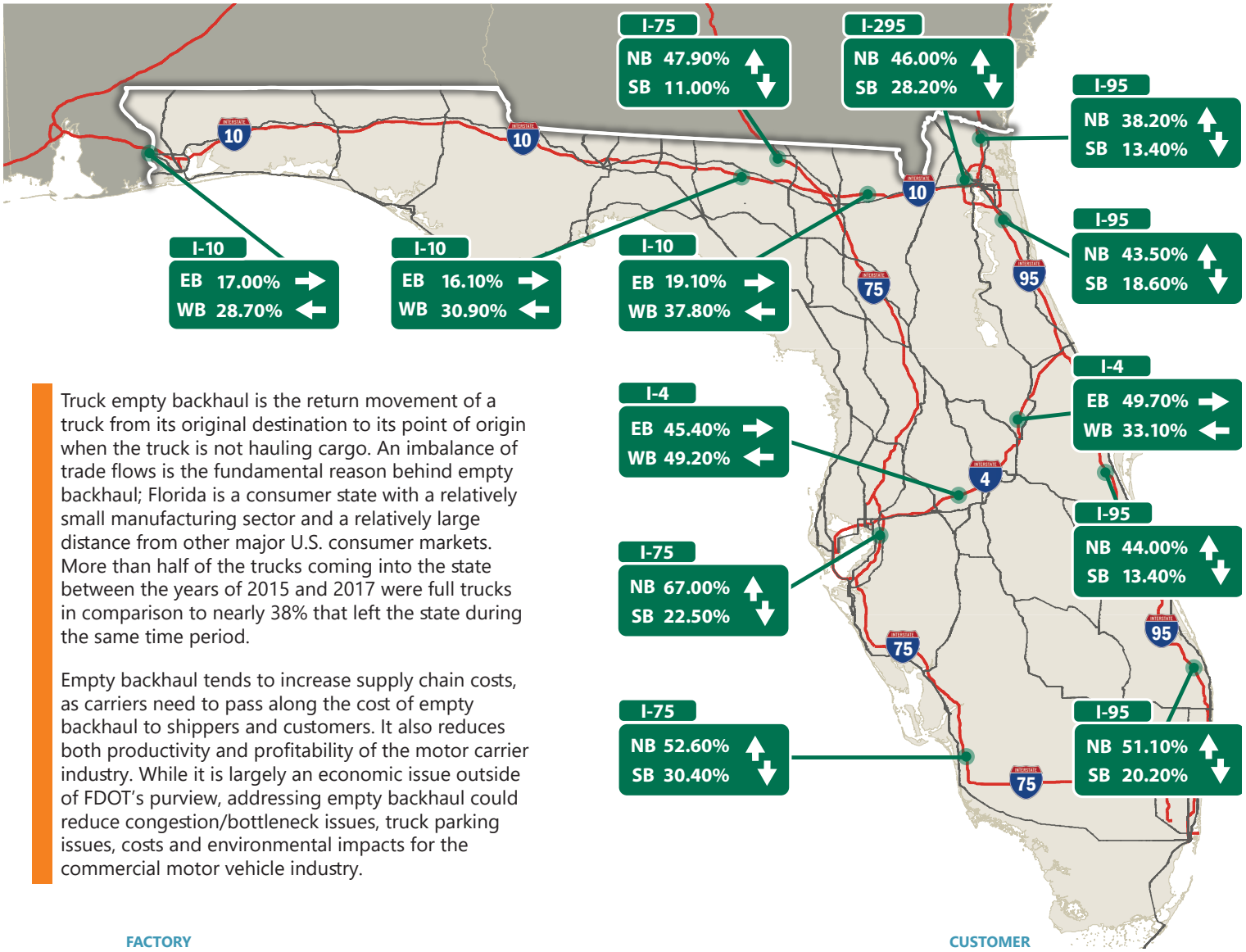
Source: FDOT - Transportation Data and Analytics Office, 2019

Around 300 truck parking locations with 10,093 truck parking spaces were identified in the State of Florida. One-third of these locations and parking spaces are associated with publicly-owned parking facilities. As per 2015 Jason's Law Survey, the ratio of public to private parking spaces in Florida is significantly higher than the majority of states (Vermont, New Hampshire and Connecticut are the only exceptions). These numbers emphasize that public parking initiatives are important in Florida, which positions FDOT to provide solutions to resolve the truck parking issue.

This map depicts highly utilized truck parking locations and locations with a high density of unauthorized/illegal truck parking. An ongoing truck parking study is evaluating the issue in each critical area and developing potential solutions. The results of the study will be available in 2020.

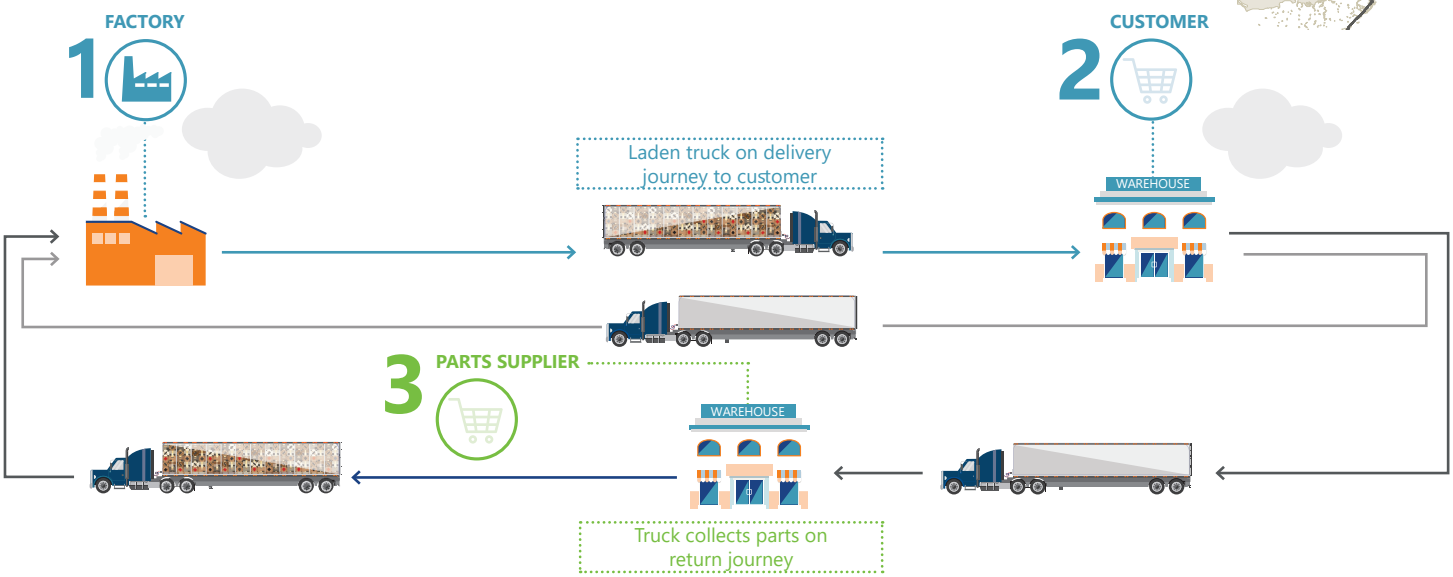


TRUCK EMPTY BACKHAUL



Truck empty backhaul is the return movement of a truck from its original destination to its point of origin when the truck is not hauling cargo. An imbalance of trade flows is the fundamental reason behind empty backhaul; Florida is a consumer state with a relatively small manufacturing sector and a relatively large distance from other major U.S. consumer markets. More than half of the trucks coming into the state between the years of 2015 and 2017 were full trucks in comparison to nearly 38% that left the state during the same time period.

Empty backhaul tends to increase supply chain costs, as carriers need to pass along the cost of empty backhaul to shippers and customers. It also reduces both productivity and profitability of the motor carrier industry. While it is largely an economic issue outside of FDOT's purview, addressing empty backhaul could reduce congestion/bottleneck issues, truck parking issues, costs and environmental impacts for the commercial motor vehicle industry.



Chapter 6
Scenario Planning

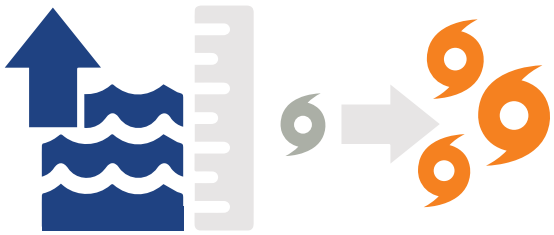
What's Inside

- Resiliency Scenario
- Technology Scenario
- Economy Scenario

As the future becomes increasingly uncertain, scenario planning provides a framework to prepare for a wide-range of possibilities. Scenarios are narratives or sets of assumptions that explore plausible trajectories of change. They provide a means of visioning possible future changes and different policy and investment options. This chapter identifies three scenarios and lists steps the state could undertake to capitalize on opportunities and mitigate future challenges related to them. More detail can be found in Technical Memorandum 5.

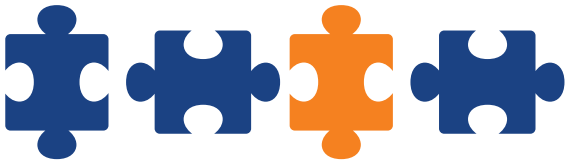
RESILIENCE

2045 SCENARIO DEFINED



- Average temperatures in Florida have increased by 4 degrees Fahrenheit
- Sea levels have risen by more than 12 inches along most of Florida's coastline
- Coastal communities have had to reinforce and expand seawalls and bulkheads
- Hurricanes are stronger and more frequent
- Flooded roadways due to sea level rise and hurricanes have deteriorated roadway base layers and pavement
- Septic tanks have become a top environmental concern
- Extreme rainfall events (>4 inches/ event) have increased

FREIGHT IMPLICATIONS



- Florida's freight system is able to withstand extreme weather events and recover quickly
- Adequate redundancies have been built into supply chains to address disruptions and risks; hardened infrastructure has been built
- An interagency emergency preparedness plan has been developed and implemented to define roles of all stakeholders and operating procedures ensuring adequate social capital and optimum communication
- Freight operations rely more heavily on parallel corridors and freight bypass routes during emergencies

CASE STUDY: HILLSBOROUGH COUNTY MPO VULNERABILITY ASSESSMENT AND ADAPTATION PILOT PROJECT

On the Gulf-shore of Florida, critical transportation assets are particularly vulnerable to impacts from sea level rise and storm surge. Several critical roadway and railway links in the SIS network would be under water during a Category 3 storm surge with 2040 projected sea level rise. The Hillsborough County Metropolitan Planning Organization conducted a climate change vulnerability assessment in partnership with the FHWA in order to identify cost-effective strategies to mitigate and manage risks of coastal and inland inundation for incorporation into their general transportation decision-making processes in addition to informing the county's 2040 Long Range Transportation Plan and its Post Disaster Redevelopment Plan. The project examined several critical infrastructure assets in the region and evaluated the mobility and economic impacts of scenarios that would involve closing these facilities. One of the links evaluated in this project included a key evacuation route from adjacent Pinellas County to access the Gandy Bridge. Currently, a Category 1 (weakest storm in the five-level scale) storm surge would block this link for approximately one week while a Category 3 storm surge would require closure for approximately four weeks. The assessment returned a recommendation to spend approximately $1.9 M on various adaptation strategies to allow the facility to continue operations compared to the $3 M cost of facility replacement.

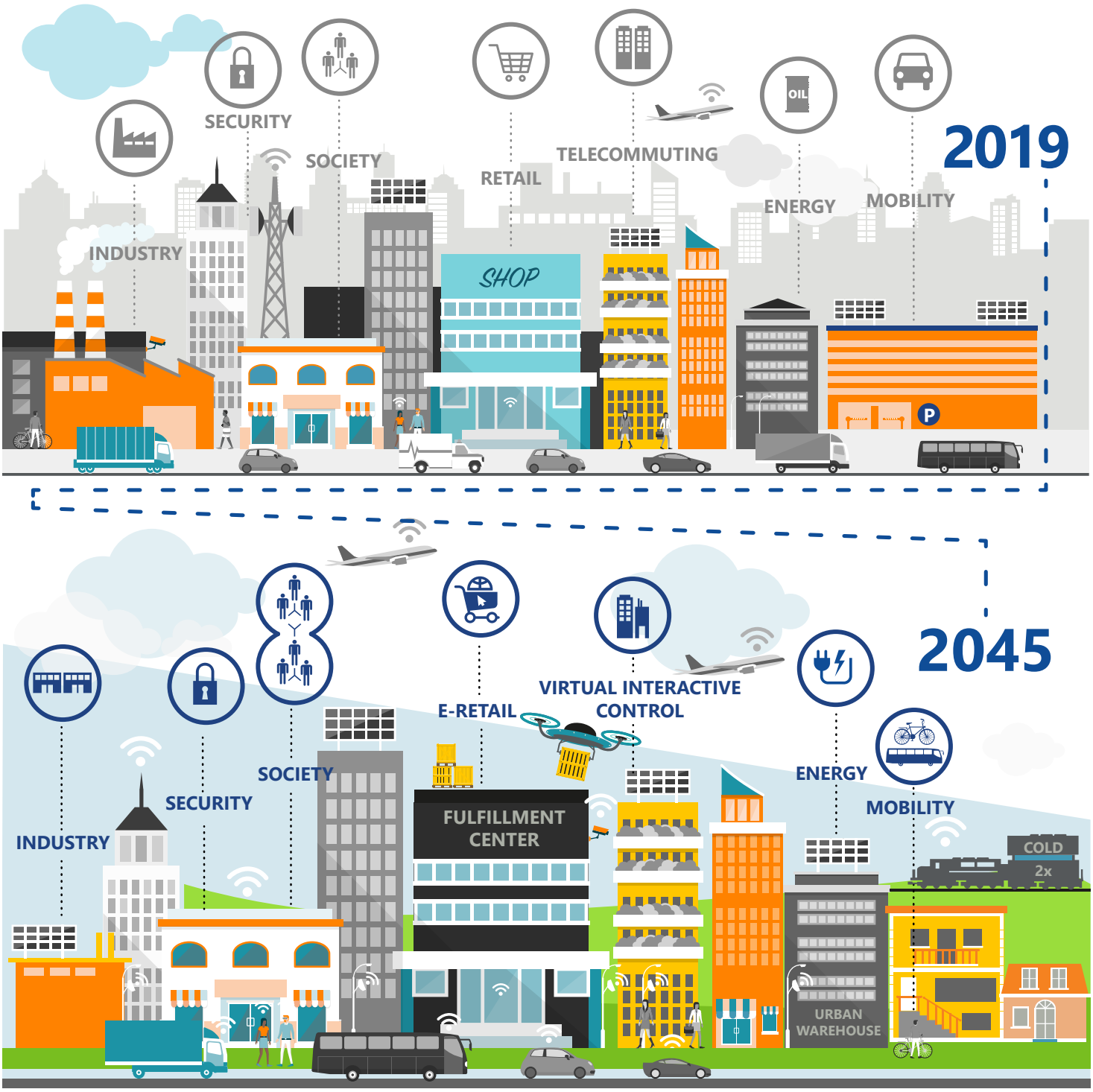
STRATEGIES FOR RESILIENCE

STRATEGY	EXAMPLES
Conduct vulnerability and risk assessments	Conducting quantitative analysis of potential impacts of climate changes and other challenges during asset management process
Utilize mitigation measures in concert with adaptation to reduce climate risks	Coordinating land use and transportation infrastructure; supporting innovative technologies; promoting less carbon-intensive freight modes
Leverage logistics knowledge of transportation companies	Establish public-private cooperative agreements to engage major freight carriers to plan disaster mitigation, adaptation, and response strategies
Evaluate damages caused and costs for repair and compare to other alternatives	Conduct a benefit-cost analysis of repairing or retreating from the infrastructure
Develop post-disaster evaluation framework for infrastructure performance during and after event	Require measurement and evaluation process of infrastructure performance in disaster recovery and incorporate that into planning and development of repairs or expansion of new facilities
Plan and implement multimodal contingency plans for freight transport of emergency materials after disaster events	Using barges to transport emergency materials to areas inaccessible by other modes due to flooding or inundation events

STRATEGY	EXAMPLES
Incorporate climate-related risks into the location of future transportation projects	Consider results of vulnerability and risk assessments in the planning, project development and design processes
Coordinate with utility providers for adaptation of infrastructure to ensure that they function during preparation and recovery efforts	Pipeline and other power transmission infrastructure is important to continued operation of intermodal hubs, bascule bridges, and adaptation infrastructure like pumps installed to improve roadway/railway drainage
Improve supply chain resiliency of critical commodities during weather events	Integrate the needs of supply chains into mitigation, response, recovery, and resilience planning and actions in order to improve supply chain resilience and ensure the availability of key goods and services (like fuel, power, water supply, etc.)
Harden core protected network of critical links and nodes against disaster and flood risk	Flood catchment vaults; raise road/rail profile; salt-resistant drainage pumps; levees; raise causeways and stabilize buffer slopes; water plazas and vegetated flood catchment basins; redesign bridge elevations above highest storm surge forecasts; install seawalls; armor erosion-prone slopes; marsh restoration; wave attenuation devices (WADs); enhance roadway bases

2045 SCENARIO DEFINED

In 2045, the digital infrastructure and societal behavior will have profound impacts for the freight industry across all modes. The Internet of Things (IoT) and mobile connectivity enable purchases and transactions, travel decisions, and work/life balances to be conducted more quickly, and frequently, than at any point in history. These decisions influence how individuals interact with society at a micro-temporal scale. App-based services such as retail purchasing platforms, Transportation Network Companies (TNCs) (i.e. UBER and LYFT), universal mobile fare payment options, on-demand pickup and delivery services, and urbanization contribute to how/when/why/where these transactions occur.



FREIGHT IMPLICATIONS

- Guarantees of one-hour delivery windows
- Locally focused fulfillment centers have resulted in more urban warehousing and value-added packaging facilities to satisfy on-demand consumers with a 95 percent delivery reliability
- Distribution centers are smaller and more automated
- On-demand pickup and delivery services (ODPDS) are the preferred transactional option which has reduced the amount of traditional retail locations
- Just-in-Time inventory management and 3D printing capabilities have enabled micro-local production facilities, which results in the transportation of more raw commodities over the road and through ports
- Many last-mile delivery services rely on Highly Automated Trucks (HATs) which operate nearly non-stop
- Diminishing availability of fossil fuels and cost savings have resulted in mass adoption of electric vehicles

PREPARING FOR AN INNOVATIVE FUTURE

TRANSPORTATION IMPACTS	POTENTIAL ACTIONS NEEDED
Dedicated lanes/facilities for trucks	Signage Striping (for CAVs) Policy
More frequent last-mile delivery vehicles	Enhanced curb-side management strategies
Highly Automated Vehicles create the need for CAV-Ready infrastructure	Pavement markings, signage, traffic signal contrast, etc. for effective machine-vision recognition of roadways in all conditions C-V2X RSUs and adequate signal controllers, and supporting backhaul communications (fiber optic cabling, wireless radios, etc.) to enable the exchange of safety critical Basic Safety Messages (BSMs) for Infrastructure-to-Vehicle (I2V) applications More frequent inventory of roadway characteristics for asset monitoring and maintenance HD mapping to support Highly Automated Vehicles and locational reference markers (to supplement GPS accuracy)
Widespread use of Highly Automated Vehicles results in reduced demand for truck parking locations, as automated trucks do not meet FMCSA HOS requirements	Re-purposing stranded assets in the future should be a consideration in the planning process
More, smaller production facilities located closer to urbanized areas	Increase in SIS Highway Connectors May need to consider lower functionally classified roadways for SIS eligibility
Urban warehouses to support on-demand delivery services	Curbside management strategies
Drone delivery	Service providers may opt to implement use of drones in lieu of paying roadway user fees

ECONOMY

2045 SCENARIO DEFINED

State decision makers have charted an elevated growth trajectory for sustainably enhanced prosperity of Floridians for generations to come.

- *A larger and more productive labor force/ human capital*
- *Greater technological progress/innovation*
- *Increased physical capital stock*
- *More growth-supportive institutional arrangements*

FREIGHT IMPLICATIONS

- Florida has positioned itself to be a major pass-through and value-added logistics hub
- It has increased overall exports globally and to other states
- Freight bottlenecks have been reduced
- On-demand pickup and delivery services (ODPDS) are the preferred transactional option which has reduced the amount of traditional retail locations
- There is an increased stock of physical capital that supports freight movement, with well-integrated multimodal/intermodal connections
- Florida created high-wage jobs by growing manufacturing, exports and trade and logistics

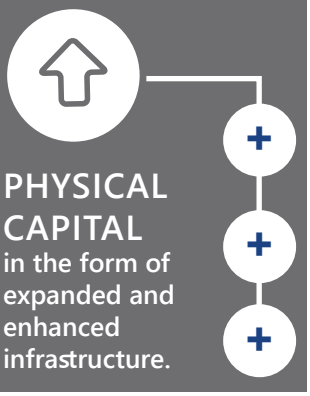
INVESTMENT STRATEGIES FOR ENHANCED PRODUCTIVITY

HUMAN CAPITAL

including education at all levels from K through graduate school, and retraining the labor force for the advanced production processes of the 21st century globalizing knowledge economy.

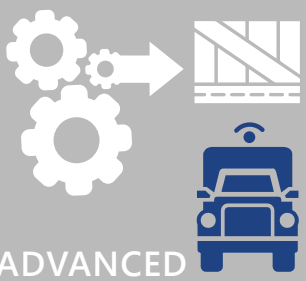
INNOVATIVE TECHNOLOGIES

through fostering research and development, particularly as it pertains to the industry clusters of opportunity (Florida Chamber Foundation, 2017), including: Aerospace and Aviation, Life Sciences, and Tourism where Florida has been in the leadership position, and can further boost its advantages to spill into the larger freight and overall future economic activity.



PHYSICAL CAPITAL

in the form of expanded and enhanced infrastructure.

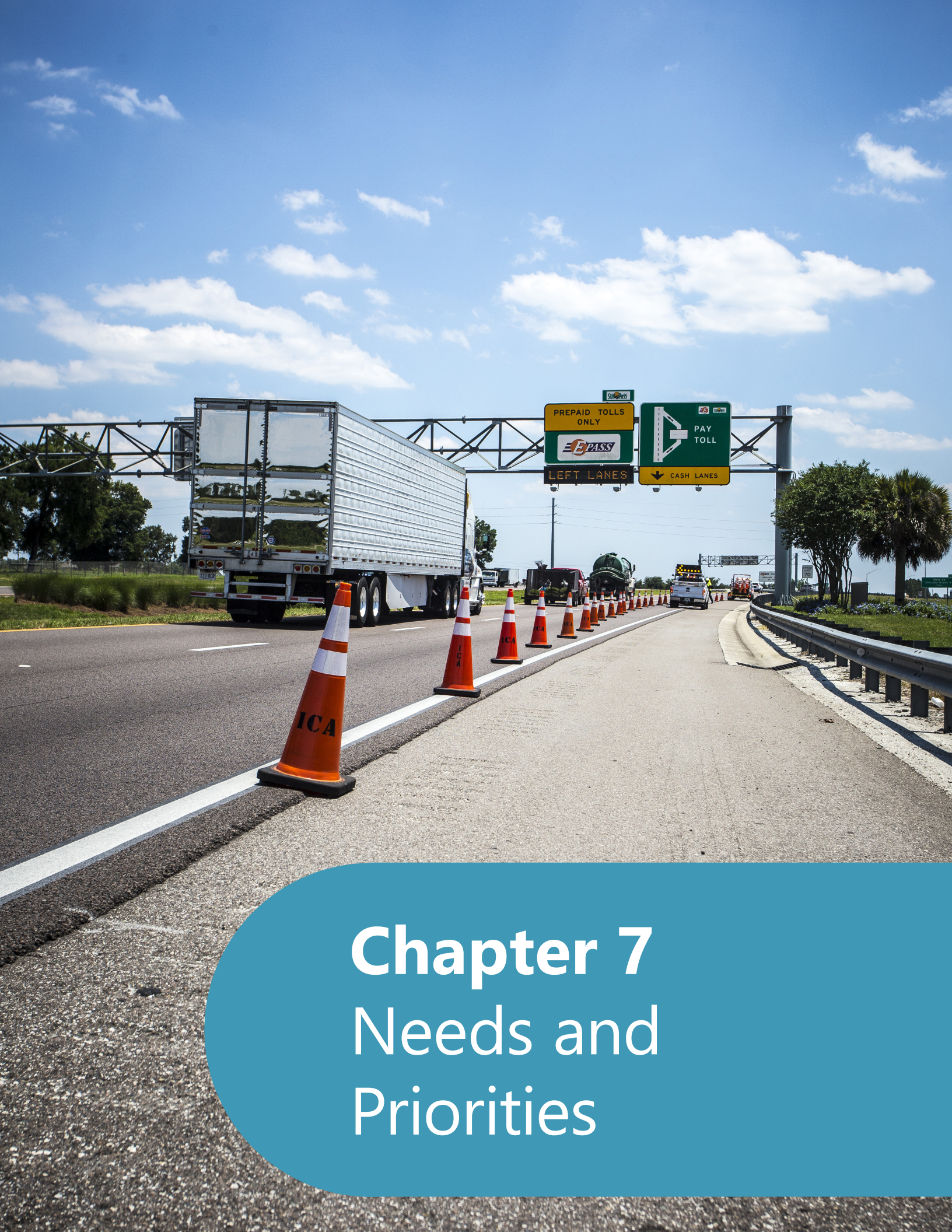


ADVANCED MANUFACTURING AND EXPORT DEVELOPMENT

by leveraging and capitalizing on Florida's strengths as an advanced manufacturing center and global gateway.

INSTITUTIONAL ARRANGEMENTS

to promote dynamic, competitive forces to elevate economic growth.



Chapter 7
Needs and Priorities

What's Inside

- Identification of Needs and Project Prioritization Process
- FMO Project Screening Policy
- Project Evaluation Framework

This chapter identifies the immediate and long-range freight needs of the state and establishes a prioritization process for FMO's decision-making – ensuring the right projects are advanced for the right reasons at the right time for the right purpose. More information on project prioritization and selection can be found in Technical Memorandum 6.

IDENTIFICATION OF NEEDS AND PROJECT PRIORITIZATION PROCESS

The process for identifying, prioritizing, and programming freight projects adheres to two guiding principles: it must be objective, consistent, data-driven, and transparent to all involved in the process; and it needs to have flexibility to align with diverse freight system needs. These guiding principles are the core of the three-step process informing the project identification and prioritization methodology. This allows FMO and other modal offices to retain control and responsibility to determine how and when to program and implement specific freight projects and respective modal projects. As such, the overall process is designed to be repeatable and living, so that the priorities reflect the changing industry needs, both short- and long-term.

STEP 1 — **IDENTIFICATION OF PROJECTS**

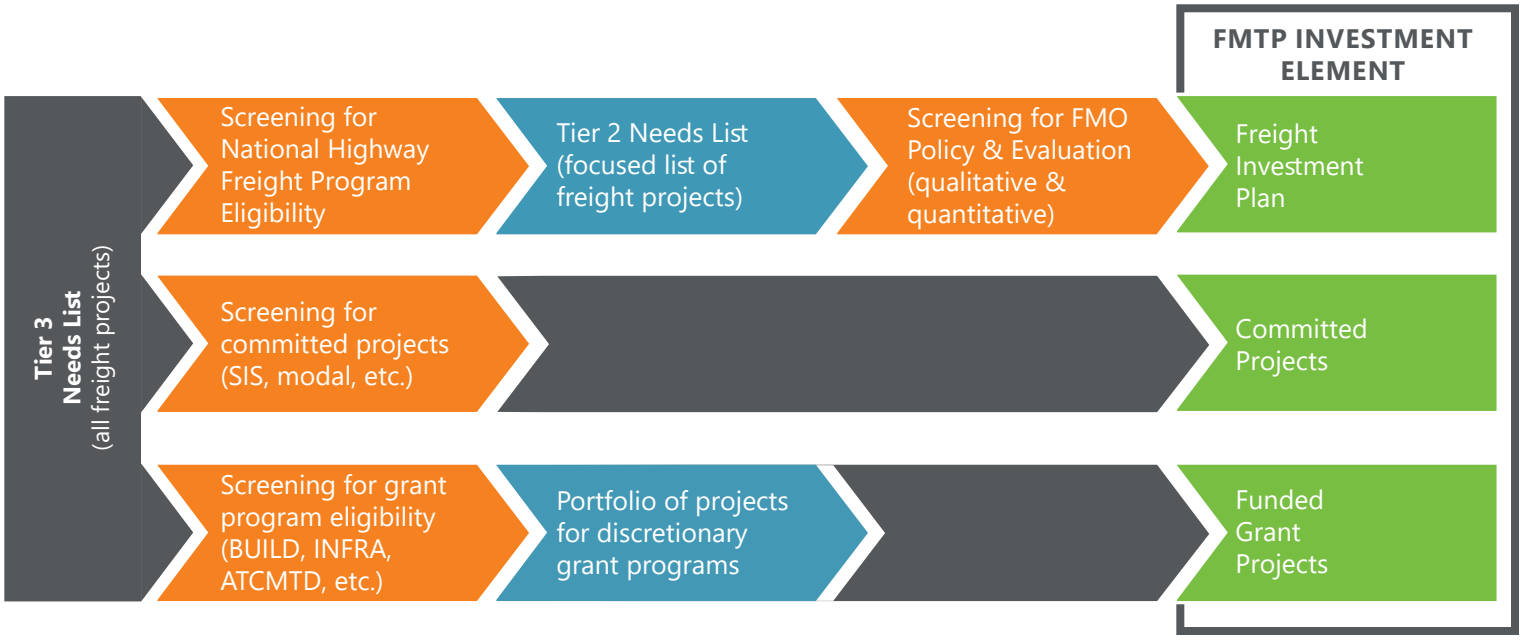
The process begins with a call for freight projects by FMO. This request is disseminated to the FDOT Districts, MPOs, local jurisdictions, the FLFAC, and all freight stakeholders. FMO also conducts statewide data-driven analysis of issues and needs to identify projects. A Tier 3 Needs List is compiled based on statewide analysis and input from all parties involved.

STEP 2 — **PROJECT CLASSIFICATION AND FUNDING ELIGIBILITY SCREENING**

FMO screens the Tier 3 Needs List and advances committed projects to the Investment Plan. Additionally, projects which show significant potential as a federal discretionary grant contender are grouped in a portfolio and advanced to the Investment Plan as they are funded. Remaining projects are screened for National Highway Freight Program funding eligibility, resulting in a Tier 2 Needs List.

STEP 3 — **QUALITATIVE AND QUANTITATIVE EVALUATION**

The Tier 2 Needs List is further screened using an FMO policy framework and evaluated/scored both quantitatively and qualitatively. The projects are subsequently categorized in high, medium and low priority groups based on total project score. Finally, the priority projects are overlaid with funding matrices for selection and programming.



FMO PROJECT SCREENING POLICY

FMO project screening policy reflects the types of projects the Department would like to consider for NHFP funding. In addition to meeting the NHFP eligibility requirements, a project must meet the FMO policies before it can be considered for NHFP funding.

ELIGIBLE PROJECT TYPES

- Truck parking facilities (as were eligible under MAP-21 section 1401)
- Real-time traffic, truck parking, roadway condition, and multimodal transportation information systems
- Intelligent transportation systems that would increase truck freight efficiencies inside the boundaries of intermodal facilities
- Additional road capacity to address highway freight bottlenecks
- Construction, reconstruction, rehabilitation, acquisition of real property (including land relating to the project and improvements to land), construction contingencies, acquisition of equipment, and operational improvements directly relating to improving system performance
- Development phase activities including planning, feasibility analysis, revenue forecasting, environmental review, preliminary engineering and design work, and other preconstruction activities
- Geometric improvements to interchanges and ramps
- A highway or bridge project to improve the flow of freight on the National Highway Freight Network (beyond those scopes already described)
- Any other surface transportation project to improve the flow of freight into, or out of, one of the following facilities: Public or Private freight rail facilities; Public or Private water facilities (including ports); Intermodal facilities
- Railway-Highway Grade separation
- ITS or other technology to improve the flow of freight
- Truck Only Lane

In addition, the FMO screening policy also includes the following:

- NHFP fund allocation should not exceed more than $20 million per project per year;
- Projects must be ready to implement within 36 months;
- Projects must be completed within 6 years; and
- Clearly identify the need(s) and develop a freight business case to justify project selection.

PROJECT EVALUATION FRAMEWORK

The following project evaluation framework shows how the prioritization process uses the FMTP's performance measures and FLFAC input to arrive at a project score. After each project is given a quantitative score and a qualitative score corresponding to each objective, a weighted average score is computed. The weights are determined by the FLFAC.

FTP GOAL	FMTP OBJECTIVE	QUANTITATIVE EVALUATION		QUALITATIVE EVALUATION		WEIGHT
		CRITERIA	SCORE RANGE	CRITERIA	SCORE RANGE	
Safety and security for residents, visitors, and businesses	Leverage multisource data and technology to improve freight system safety and security	(Truck Injuries/Truck VMT)*1000	0-100	Does this project implement safety or security enhancements?	0-100	25%
		(Truck Fatalities/Truck VMT)*1000		Does this project improve the state's data gathering efforts?		
		Crime Index				
Agile, resilient, and quality transportation infrastructure	Create a more resilient multimodal freight system	Roadways within 100 year flood zones	0-100	Does this project address the environmental or economic resiliency of the freight system?	0-100	15%
	Ensure the Florida freight system is in a state of good repair	Presence of structurally deficient bridges		Does this project optimize the functionality and efficiency of existing roadways?		
		Presence of poor pavement condition segments		Does this project preserve the existing State Highway System?		
Connected, efficient, and reliable mobility for people and freight	Drive innovation to reduce congestion, bottlenecks and improve travel time reliability	Roadways with top bottlenecks	0-100	Does this project address Truck Parking?	0-100	25%
		Truck AADT		Does this project create a grade separation?		
Transportation choices that improve accessibility and equity	Remove institutional, policy and funding bottlenecks to improve operational efficiencies and reduce costs in supply chains	Not Applicable	0-100	Is this a technology driven or TSM&O project?	0-100	20%
	Improve last mile connectivity for all freight modes	Vicinity to Hubs		Does this project improve multimodal freight connectivity?		
		Roadways within freight intensive areas				
Transportation solutions that strengthen Florida's economy	Continue to forge partnerships between the public and private sectors to improve trade and logistics	Not Applicable	0-100	Does this project use Public/Private Partnerships?	0-100	10%
	Capitalize on emerging freight trends to promote economic development	Labor Force Size (ratio of labor force by county population relative to average state-wide ratio)		Does this project capitalize on emerging freight trends?		
		County GRP level (relative to the average county GRP level in FL)				
		Transportation and Warehousing Industry Share of Total Employment				
		County Population Density (relative to the average county-level population density in FL)				
	Increase freight-related regional and local transportation planning and land use coordination**	Not Applicable		Is this project on the MPOAC freight project list?		
Transportation solutions that protect Florida's environment	Promote and support the shift to alternatively fueled freight vehicles	On designated Alternative Fuel Corridors	0-100	Does this project promote the use of LNG/CNG/electric vehicles?	0-100	5%
		Number of alternative fueling stations within 1 mile of roadway				

*The score for each criteria will be revised every year to reflect current priorities

**Objectives 5, 7 and 9 were evaluated qualitatively only

Chapter 8
Investments

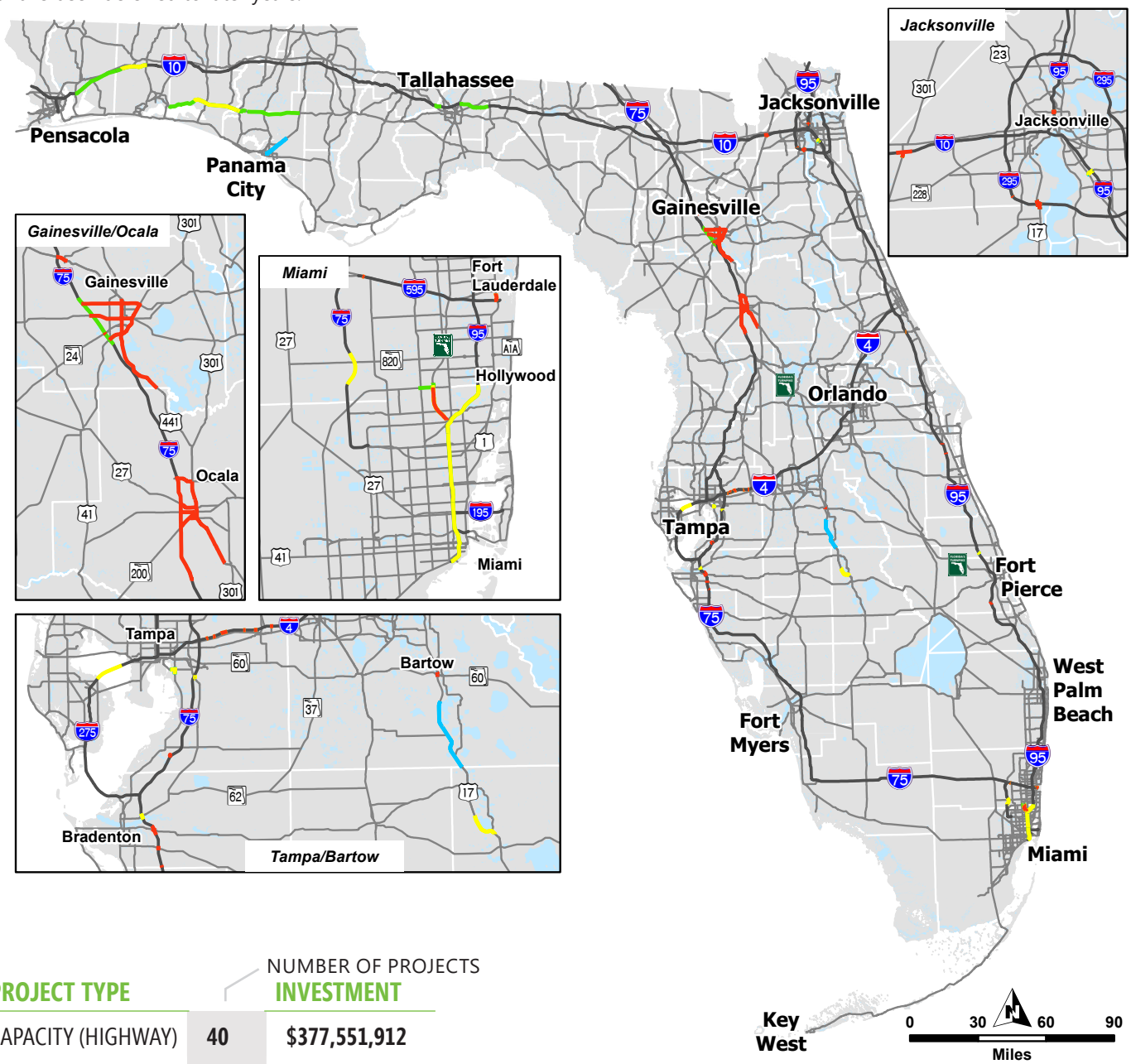
What's Inside

- National Highway Freight Program Funded Projects
- Freight Funding in the Adopted Work Program
- SIS Funded Freight Projects
- Discretionary Grant Funded Freight Projects

The FMTP establishes a 5-year financially constrained Freight Investment Plan inclusive of all funded freight projects with the state. Projects identified as longer term needs will be advanced into this plan as funding is identified and committed. More information can be found in Technical Memorandum 7.

NATIONAL HIGHWAY FREIGHT PROGRAM FUNDED PROJECTS

There are 59 NHFP projects which were selected based on their priority, cost, and ability to improve freight mobility. The total cost of NHFP anticipated projects is $492 million through 2024. Of the 59 projects, most are capacity and maintenance projects. In addition, there are three technology systems related to adaptive monitoring and signaling ITS systems, and one truck parking project. Florida is historically apportioned $50-$60 million per year in NHFP funds. Years that have more than $60M in anticipated funding include projects originally funded in earlier years that have been deferred to later years.



PROJECT TYPE	NUMBER OF PROJECTS	INVESTMENT
CAPACITY (HIGHWAY)	40	$377,551,912
ITS	3	$14,183,578
PRE-PLANNING	15	$85,327,302
TRUCK PARKING	1	$15,420,479

NHFP Funded Projects

- Construction & Mega Projects (CON)
- Right of Way (ROW)
- Preliminary Engineering (PE)
- Project Development and Environmental (PDE)

Source: FDOT, 2016-19

NHFP YEARLY TOTALS

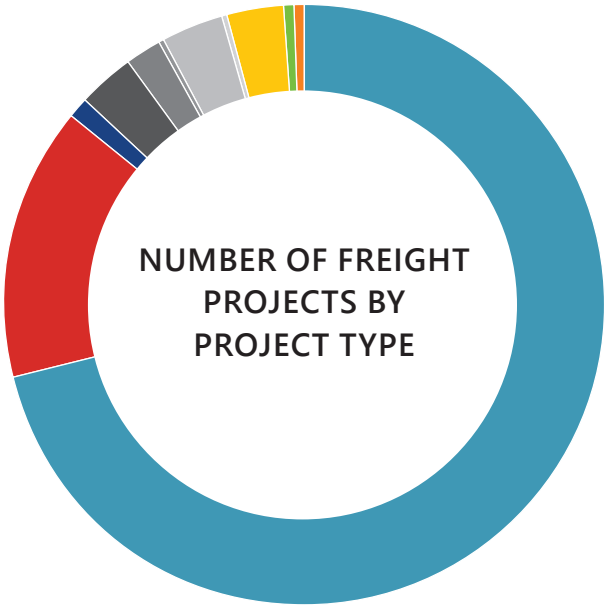
Rounded to the nearest million

2016 - 2019	2020	2021	2022	2023	2024	TOTAL
161M	89M	44M	67M	66M	66M	492M

FREIGHT FUNDING IN THE ADOPTED WORK PROGRAM

FDOT develops a Five-Year Work Program in accordance with Section 339.135 Florida Statutes. This reflects a program of over $62 billion over a 5-year period (2020 – 2024). FDOT Adopted Work Program (AWP) information is available online at: https://fdotewp1.dot.state.fl.us/fmsupportapps/workprogram/WorkProgram.aspx

Within the AWP, there is a set of freight-focused projects that is critical to the FMTP objectives. Totaling just over $3 billion for the next 5 years, these 300 projects are designated with the group identifier FRGT (freight) in the AWP. The FRGT designation marks projects supporting freight objectives as established by FMO. Utilizing multiple funding sources, these projects have wide ranging implications on the Florida freight network.



FREIGHT INVESTMENT BY PROJECT TYPE

	NUMBER OF PROJECTS	
Capacity	214	$2,260,000,000
Airport Expansion	44	$64,000,000
Bridge Maintenance	3	$448,000,000
Grade Separation	9	$70,000,000
ITS	6	$12,500,000
ILC	1	$300,000
Seaport Expansion	10	$57,500,000
Truck Parking	1	$15,300,000
Studies	9	$10,000,000
Resilience & Safety	2	$45,000
Toll	1	$65,000,000

Source: FDOT Office of Work Program and Budget, 2019

AWP FRGT IDENTIFIED PROJECT YEARLY TOTALS

2020	2021	2022	2023	2024	TOTAL
1.2B	697.4M	431.1M	372.6M	281.0M	3.0B

SIS FUNDED FREIGHT PROJECTS

The Strategic Intermodal System (SIS) Funding Strategy includes three components that identify capacity improvement projects in various stages of development (SIS First Five, SIS Second Five, and SIS Cost Feasible Plan). The combined funding set identifies projects that are funded (Year 1), programmed for proposed funding (Years 2 through 5), planned to be funded (Years 6 through 10), and considered financially feasible based on projected state revenues (Years 11 through 25).

SIS FIRST FIVE YEAR PLAN

The First Five Plan illustrates projects on the SIS that are funded by the legislature in the Work Program (Year 1) and projects that are programmed for proposed funding in the next 2 to 5 years. The SIS freight investments through 2024 are broken out in the pie chart below.

SIS SECOND FIVE YEAR PLAN

The Second Five Year Plan illustrates projects that are planned to be funded in the five years (Years 6 through 10) beyond the SIS First Five. Projects in this plan can move forward into the First Five Year plan as funds become available.

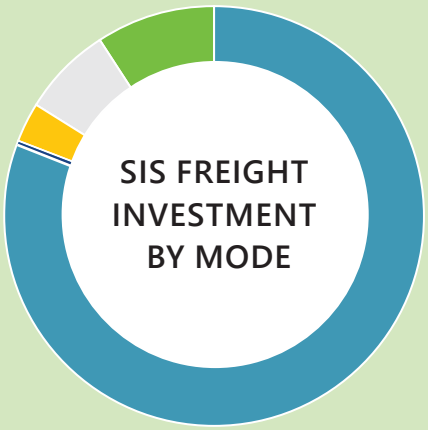
SIS COST FEASIBLE PLAN (CFP)

The 2045 SIS CFP evaluates SIS needs in light of available future revenues and represents a phased plan for capacity improvements utilizing forecasted revenues. The main purpose of the 2045 SIS CFP is to efficiently plan for and fund future capacity improvements and comply with the Section 339.64, Florida Statutes requirement for a long range cost feasible plan.

All of the above SIS plans can be found at the following link:
https://www.fdot.gov/planning/systems/programs/mspi/plans/default.shtm

THE SIS CONNECTION

SIS plans are an important tool for FDOT in meeting immediate and long-term freight needs. The SIS network overlaps with the National Highway Freight Network and the SIS objectives align with FMTP objectives. It is imperative that the FMO Office continues to work with the Systems Implementation Office to identify prudent investments and funding strategies.



NUMBER OF PROJECTS

SIS FREIGHT INVESTMENTS BY MODE

Highway	145	$6,118,136,000
Air & Space	17	$701,929,000
Rail	18	$231,000,000
Sea	14	$545,811,000
Multimodal	1	$511,000

Source: FDOT Systems Implementation Office, 2019

SIS FIRST FIVE YEAR FUNDING TOTALS

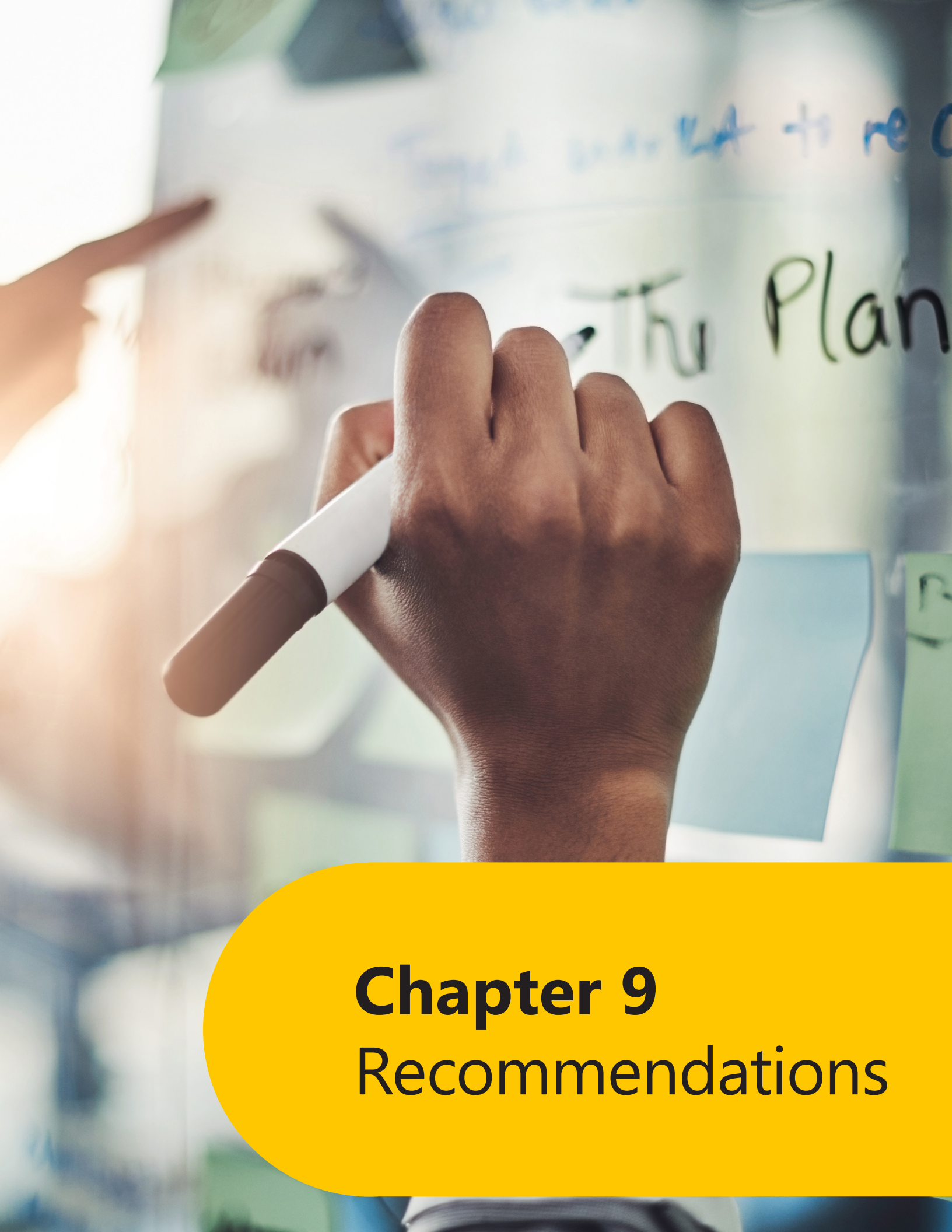
2020	2021	2022	2023	2024	TOTAL
2.4B	1.10BM	984M	1.7B	1.2B	7.5B

DISCRETIONARY GRANT FUNDED FREIGHT PROJECTS

Discretionary grant opportunities are competitive and must be pursued after the notice of funding opportunity (NOFO) is released by the parent agency. The following projects represent efforts to affect FMO's strategic goals through the use of targeted grant funding. These awards were granted between 2015 and 2020. FDOT and partner agencies are utilizing these funds to accomplish mutual goals. These funds may be sought after by any agency or stakeholder pursuant to grant guidelines.

GRANT	PROJECT	GRANT AWARD
INFRA/ FASTLANE	• Cape Canaveral Spaceport Indian River Bridge Replacement • Port Miami Bulkhead Rehabilitation and Capacity Expansion • Truck Parking Availability System (TPAS)	$90,000,000 $8,046,741 $10,778,237
ATCMTD	• Connecting the East Orlando Communities	$11,946,279
CRISI	• South Florida East Coast Rail Corridor Intrusion Prevention Project • Amtrak Sanford Subdivision Infrastructure Renewal Project • Florida Strategies for Reducing Railway Trespassing • Mitigating Jacksonville's Freight Train-Vehicle/Pedestrian Conflicts	$2,373,441 $3,850,000 $157,683 $17,615,500
TIGER/BUILD	• Port Manatee Marine Highway • Port of Miami Rail Access • Dames Point Marine Terminal Intermodal • Tampa Downtown Multimodal improvement • JAXPORT International Cargo Terminal Modernization Project • The Underline Multimodal Mobility Corridor • Immokalee Complete Streets • Broward MPO Regional Complete Streets Initiative	$9,000,000 $22,767,000 $10,000,000 $10,943,100 $20,000,000 $22,360,352 $13,132,691 $11,443,371
FRA PTC Grant	• FDOT I-ETMS PTC System from DeLand to Poinciana	$14,914,238
MARAD	• M-95 Fernandina Beach to Charleston Barge Service • Miami, FL –Glasstech, Corp. for 65-Ton Vessel Transporter	TBA $715,688
AIP	• Significant Airport Improvement Programs across Florida –FAA	$203,472,903
PHMSA TAG	• Pipeline Technical Assistance Grant –East Florida Regional Planning Council Pipeline Safety Training	$78,000
CMVOST	• Commercial Vehicle Operator Safety Training Grant Program – South Florida State College	$16,124
HP-ITD	• High Priority Innovative Technology Deployment –Florida	$475,375
AID	• Accelerated Innovation Deployment–Commercial Vehicle Parking System Project I-95 & I-4	$1,000,000

Note: This table does not reflect ALL active discretionary grant projects, but is a sample of freight-focused projects.



Chapter 9
Recommendations

What's Inside

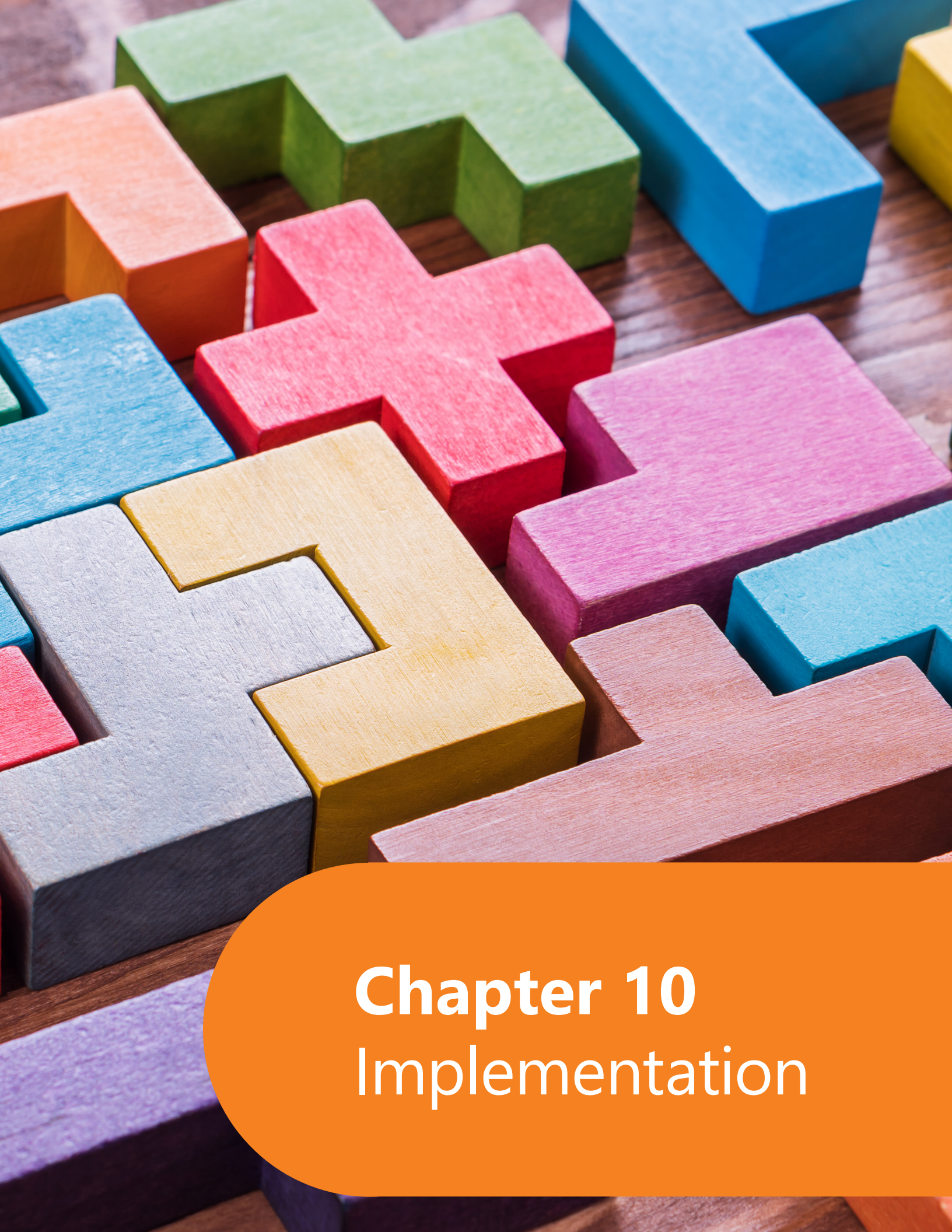
- Recommendations

Recommendations for action are aligned with the FMTP objectives. Five recommendations have been developed for each FMTP objective based on technical analysis results, capturing stakeholder input, and considering emerging market trends and opportunities. More information can be found in Technical Memorandum 8.

From: ● Technical Analysis Results ● Stakeholder Input ● Considering Emerging Market Trends and Opportunities

OBJECTIVE	RECOMMENDATIONS:			
1	• Identify commercial vehicle high crash segments and intersections, analyze causal factors, and develop counter measures	●		●
	• Provide more safe and secure truck parking facilities		●	●
	• Identify and implement freight related automated and connected vehicle projects to improve safety and mobility	●	●	●
	• Prioritize rail-highway grade separation needs and implement select projects depending on funding availability	●		
	• Partner with freight related industries to support development of electronic freight management systems that enhance freight flow visibility throughout the entire supply chain, expedite communication among supply chain partners and government agencies, and enhance system security		●	●
2	• Analyze and assess resiliency of the freight system	●		
	• Conduct vulnerability and risk assessments to identify possible freight system disruptions and establish risk tolerance thresholds	●		
	• Develop a contingency plan to support private sector freight mobility continuance of operations and to support disaster relief logistics operations		●	
	• Ensure supply chain resiliency of critical commodities (like fuel) considering all four phases of emergency management (prepare, respond, recover, and mitigate)	●	●	
	• Include resiliency considerations into project life-cycle and decision making processes		●	
3	• Consider data-driven asset management approach to guide multimodal freight investments	●		●
	• Optimize the functionality, efficiency, and reliability of existing freight systems		●	
	• Preserve and maintain the existing State Highway System		●	
	• Maximize use of existing and unused facilities and properties for truck parking		●	●
	• Apportion dedicated funding for truck parking projects either through legislative request or by leveraging NHFP funds		●	●
4	• Promote and support use of ITS and CAV technologies to increase efficiency and reliability of freight movements		●	●
	• Identify and implement low-cost, operational improvements on the freight system in coordination with the SIS Quick Fix program	●	●	
	• Identify feasibility of truck-only lane projects from a statewide perspective	●	●	●
	• Enhance Truck Parking Availability System (TPAS) commensurate with trucking needs			●
	• Clear legislative and funding pathways for automated systems		●	●
5	• Establish Truck Parking Program similar to Rest Area Program and Park and Ride Program		●	●
	• Advocate for regulatory reform to increase freight funding and to reduce impediments to goods movement		●	
	• Enhance and institutionalize the freight network designation process and the freight project prioritization and selection process	●	●	
	• Develop strategies for maximizing discretionary grant opportunities focusing on identifying "competitive" projects and developing a federal grants portfolio	●	●	
	• Optimize statewide freight network to understand opportunities to reduce freight costs and increase productivity	●	●	●

OBJECTIVE	RECOMMENDATIONS:			
6	• Identify and implement freight movement gap-closing improvements	●		
	• Improve the convenience and efficiency of connecting between multiple freight modes	●	●	
	• Consider emerging last mile logistics trends in planning, project development and design processes	●		●
	• Incorporate innovative curb management strategies into freight design considerations in order to decrease curbside congestion and ensure safety of all road users	●	●	●
	• Improve off-system connections between local freight hot spots and the Strategic Intermodal System in coordination with local government partners		●	
7	• Collaborate with public and private sector partners to address freight transportation and logistics needs and workforce development		●	
	• Communicate and collaborate with other agencies and stakeholders to establish a state freight mobility task force to effectively and successfully implement the FMTP policy and program recommendations		●	
	• Explore public private partnership (P3) opportunities related to truck parking and truck stop electrification		●	●
	• Collaborate with adjacent states to facilitate seamless multistate freight corridors		●	
	• Ensure strategic representation of Florida at the national level to help shape Federal decisions on trade and logistics		●	●
8	• Support the strategic advantages of Florida's transportation hubs for trade and logistics	●	●	
	• Support projects that improve the efficiency of goods movement throughout the state		●	
	• Consider freight needs in the development of multimodal and multi-use corridors	●	●	●
	• Prepare the freight system for smart cities and emerging urban freight delivery patterns	●		●
	• Leverage global economic trends to support the growth of jobs in trade, transportation, logistics, export-oriented manufacturing, and related value-added services	●	●	●
9	• Provide transportation and land use planning guidance to local and regional agencies for economic development and freight efficiencies that support community goals		●	
	• Coordinate freight-related plans and programs of the private sector and local agencies with FDOT's plans for integrated and informed decision-making		●	
	• Utilize truck empty backhaul patterns to identify target areas for attracting and expanding manufacturing, distribution, and other industries that generate and export goods and products out of Florida	●		●
	• Understand unique needs of rural freight transportation and develop/enhance process to designate CRFC	●	●	
	• Understand unique needs of urban freight transportation and develop/enhance process to designate CUFC	●	●	
10	• Support the adoption and transformation of CNG/LNG and electric power use for trucking		●	●
	• Participate in the FHWA Alternative Fuel Corridor Program – develop a statewide application including key freight corridors in coordination with MPOs and local government partners		●	●
	• Support development of natural gas and other alternative fuel infrastructure at seaports and intermodal logistics centers, and along major trade corridors	●		●
	• Collaborate with the Florida Department of Agriculture and Consumer Services Office of Energy (FDACS OOE) on developing Electric Vehicle (EV) Roadmap for freight corridors	●	●	●
	• Evaluate the impacts of alternatively fueled vehicles on funding programs and develop innovative funding strategies	●	●	●



Chapter 10
Implementation

What's Inside

- Policy Implementation
- Program Implementation
- Project Implementation
- Collaboration and Coordination

Recommendations are wishes without a pathway to implementation. FMTP recommendations are an integrated group of policies, programs and projects designed to improve freight mobility, efficiency, reliability and foster economic development. This implementation plan includes a timeline based on short-term (less than 2 years), medium-term (3-5 years), long-term (5+ years) and continuous horizons. It also includes continued collaboration with FDOT offices and partner agencies. More information can be found in Technical Memorandum 9.

POLICY IMPLEMENTATION

The implementation of freight policies sets conditions for improving Florida's freight system. A policy recommendation requires legislative action and/or organizational changes. Short-term implementation actions are meant to be initial steps that will facilitate the implementation of medium- and long-term policy initiatives. To ensure the success of Florida's freight system, continuous policy implementation is required to maintain an efficient regulatory environment. The graphic below highlights the strategic horizons of FMO's policy direction.

SHORT-TERM POLICY IMPLEMENTATION

- Establish a Florida inter-agency freight mobility task force
- Define FDOT's role in advancing freight technology and merging freight data space
- Invest in technological solutions that increase efficiency and throughput
- Develop policy to designate CRFC and CUFC following federal guidelines and accommodating changing needs
- Work with the Systems Implementation Office to designate freight activity areas and freight access facilities for SIS funding eligibility
- Establish policy to define truck parking facility (as opposed to rest areas) and FDOT's role
- Update FDOT SIS and other intermodal capacity improvement programs to include truck parking
- Update rest area formula to adequately account for truck parking needs

MEDIUM-TERM POLICY IMPLEMENTATION

- Provide incentives for private truck stop operators and communities to develop and expand truck stop services and parking capacity
- Establish freight performance targets consistent with the FHWA Transportation Performance Management requirements, in coordination with the MPO partners
- Develop a State Multimodal Freight Policy that is consistent with National Multimodal Freight Policy and meets the unique needs of Florida

LONG-TERM POLICY IMPLEMENTATION

- Consider third party vendor-operations at public rest areas
- Establish a grant program with DEO to provide truck stop owners incentives to increase truck parking in areas of high need
- Develop strategies to mitigate the effects of freight transportation on communities, particularly minority and low-income communities, and the environment

CONTINUOUS POLICY IMPLEMENTATION

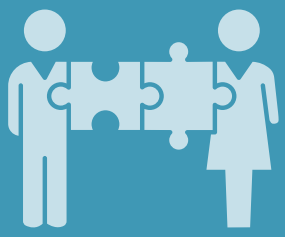
- Establish a continuous and inclusive public engagement policy to elevate FDOT freight awareness
- Provide freight planning guidance and assistance to MPOs and local government partners
- Identify and work to unbind policies that pose undue restrictions on technological improvements
- Improve communication with other Offices and Districts to facilitate understanding of policies

PROGRAM IMPLEMENTATION

The institution of programs creates the structure by which FDOT maintains and enhances the state freight system. Programs are designed to improve internal processes, enhance stakeholder outreach and education, establish and strengthen public-private partnerships, develop network design guidelines and standards, and increase freight planning knowledge and awareness. The graphic below highlights the strategic horizons of FMO's programmatic direction.

SHORT-TERM PROGRAM IMPLEMENTATION

- Enhance freight network designation process and implement freight project prioritization process during next funding cycle
- Develop a statewide truck parking program to address immediate needs and monitor progress over time
- Develop process for identifying and preparing projects for discretionary funding
- Develop a quarterly FMO newsletter to disseminate industry information and highlight program accomplishments



MEDIUM-TERM PROGRAM IMPLEMENTATION

- Collaborate and support an awareness program with other agencies to educate Florida's workforce about careers in the freight transportation and logistics industry
- Develop a Florida freight resilience program
- Develop a truck parking program, in partnership with the private sector and local agencies, to identify locations and solutions to increase truck parking capacity

LONG-TERM PROGRAM IMPLEMENTATION

- Support the development of freight infrastructure design criteria that promotes efficient and safe freight movement in urban areas
- Collaborate with the private sector and freight modal carriers to set conditions that will allow CAV and other technologies to be implemented
- Support private sector operational strategies to improve efficiencies and lower transportation costs, i.e. off-hour delivery, alternative fuels, truck route information, modal transload facilities, etc.

CONTINUOUS PROGRAM IMPLEMENTATION

- Continue to work with FDLE to improve freight safety and security
- Continue to monitor structurally deficient bridges and pavement conditions
- Continue to invest in maintenance of freight facilities

PROJECT IMPLEMENTATION

Projects are planned actions to provide a new transportation facility or to improve or maintain the existing system. Projects are categorized in several ways: purpose, type, size, etc. The table below shows a set of example project types based on the freight issues facing the state.

PROJECT EXAMPLES

Issue / Focus	Solution	Type	Size	Time Frame
Bottleneck	Efficiency and fluidity	Operational, ITS/CAV	Small	Near-term (1-2 yrs)
Truck parking	Capacity, information	Reconfigure & repurpose, IT	Small	Near-term (1-2 yrs)
Unsafe conditions	Safety	Engineering, enforcement, education, and emergency response	Medium	Mid-term (3-5 yrs)
Connectivity	Last-mile connector	Capacity and operations	Small to Medium	Mid-term (3-5 yrs)
Congestion	Reliability	New capacity	Large	Long-term (5+ yrs)
Resilience	Reliability, durability	Rehabilitation	Medium to Large	Mid-term to Long-term
Economic development	Efficiency, productivity	Any	Medium to Large	Mid-term to Long-term
Environmental	Quality of life	Any	Medium to Large	Mid-term to Long-term

COLLABORATION AND COORDINATION

Collaboration and coordination, both internal and external, are necessary to implement policies, programs, and projects. Many of the needed actions are beyond the immediate purview of the FMO and will require partnerships with other FDOT offices, other state and federal agencies, MPOs, local governments, and stakeholders. A strong partnership is necessary to effectively implement the FMTP recommendations. The tables below show example collaboration topic areas with other FDOT offices, partner agencies and stakeholders.

FDOT OFFICE	TOPIC	FDOT OFFICE	TOPIC
Aviation and Spaceports	Program and projects	Systems Implementation	SIS funding
Communications	Outreach	Research Center	Research projects
Design	Multimodal freight design	Safety	Truck traffic safety
Emergency Management	Resiliency	Seaport and Waterways	Programs and projects
Environmental Management	Environmental considerations	Traffic Engineering and Operations	TSM&O, CAV
Finance and Administration	Work program	Transportation Data and Analytics	Data needs
Maintenance	Truck parking and pavement conditions	Transportation Technology	Operational technologies
Forecasting and Trends	Performance measures	Legislative Programs	Legislative actions
Policy Planning	Policy issues	Districts	Implementation

AGENCY	TOPIC	
Executive Office of Governor	• Economic development	• Inter-agency collaboration framework
Florida Dept. of Transportation	• Safety • Freight mobility	• Economic development • Intermodal connectivity
Florida Dept. of Agriculture	• Truck size & weight	• Produce (fruits/vegetables/sugar) and livestock products to market
Florida Dept. of Energy	• Alternative fuels	• Air quality
Florida Dept. of Revenue	• IFTA (state commercial fuel tax)	• Commercial truck registrations
Florida Dept. of Highway Safety and Motor Vehicles	• Truck size and weight • Evacuation	• Safety • Cargo security
Dept. of Homeland Security	• Evacuation	• Cargo security
Florida National Guard	• Disaster recovery/truck routes	
Florida Dept. of Workforce Development	• Available and qualified truck drivers	• Maintaining and creating jobs
Florida Dept. of Economic Opportunity, and Enterprise Florida, Inc.	• Freight mobility - goods to market • Domestic trade imbalance	• Maintaining and creating jobs
Florida Chamber of Commerce	• Freight mobility - goods to market	• Domestic trade imbalance
Florida Trucking Association	• Trucking operating costs • Truck parking	• Qualified and available drivers
Florida MPOs	• Local truck route and last mile connectivity between major freight generators and the multimodal system	

The FMO Office is poised to initiate the FMTP implementation in order to continue enhancing Florida's economy and communities.

Rickey Fitzgerald
Manager, Freight & Multimodal Operations
Florida Department of Transportation

605 Suwannee Street, MS 25
Tallahassee, FL 32399
850.414.4702
rickey.fitzgerald@dot.state.fl.us