FDOT SEAPORT

FLORIDA SEAPORT AND WATERWAYS SYSTEM PLAN

AUGUST 2022

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION TO THE SEAPORT AND WATERWAYS SYSTEM PLAN

1

1.1 Introduction

Florida is home to a well-established seaport and waterways system. This system is a critical component of the state's multimodal transportation system, with seaports serving as key gateways for domestic and international trade. This system also supports the largest cruise operations in the world. The Florida Department of Transportation (FDOT) partners with the seaports on infrastructure projects and planning efforts to ensure the state has the necessary cargo and cruise capacity to serve Florida's residents, visitors, and businesses.

FDOT developed the first *Florida Seaport System Plan* in 2010 as part of its comprehensive seaport program to support the state's role in the maritime industry. This is the second update to that plan—the *2020 Florida Seaport and Waterways System Plan.* This introduction briefly describes the purpose of the Plan and its organization, and provides a brief overview of Florida's current seaport system including its facilities, connections, history, governance, operations, taxing authority, and services provided.

1.1.1 Statement of Purpose

The *2020 Florida Seaport and Waterways System Plan* was prepared in accordance with the statutory requirements of Section 311.14(1), Florida Statutes (F.S.). This plan, along with other modal plans developed under FDOT's Modal Development Office, provides the Department with a comprehensive strategic planning process for all of the State of Florida's modal programs.[1] FDOT's seaport program leverages the strength of the seaports through a systems approach to maximize investments and optimize supply chains and respective positive economic impacts across the state. This plan directly complements the individual seaport plans and detailed capital improvement plans (CIPs), but does not duplicate those efforts to document specific projects identified by each port. That is, Ports are on different planning and CIP schedules, and outreach conducted for this plan generated a snapshot in time of needs to identify major themes FDOT will focus on rather than a list of projects.

The plan documents Florida's seaport and waterway system needs for a 5-, 10-, and 20-year period. It outlines strategies the Department will implement to ensure seaport facilities are strategically and efficiently integrated with other transportation facilities. Focus areas are identified to guide investments in Florida's seaports that support sustainable growth and development, promote positive economic benefits from seaport activities throughout the state, and ensure the safety and security of freight and passengers moving through the state's seaports.

[1] Modal Development Office formally known as Freight, Logistics and Passenger Operations (FLP) Office.

1.1.2 Concise and Forward Looking

The 2020 Plan is concise and forward looking—predominately focused on the future of Florida's Seaport System over a 20-year planning horizon. The 2015 Plan provided an history and overview of Florida's seaport system. Readers are referred to the 2015 Plan for this information.

1.1.3 Plan Overview and Approach

The body of this document contains information on the relevant trends and needs of Florida's seaport and waterways system. Supporting and background information is organized into appendices that correspond with chapters (e.g., Appendix A corresponds to Chapter 1). The plan is organized into four chapters:

1. Introduction to the Seaport System Plan—this chapter provides a brief overview of Florida's seaport system including governance and operational structure.

2. Trends in Cargo and Passengers—this chapter provides a summary of current and future cargo and passenger volumes.

3. Seaport and Freight Needs, Priorities, and Advantages—this chapter summarizes 5- 10- and 20-year needs and key advantages of the seaport system.

4. Focus Areas and Strategies to Support Florida Seaports—this chapter presents key focus areas and strategies that guide the state's seaport program.

Appendix A provides an overview of key documents informing the 2020 Plan, a summary of the enabling legislation for each port, and an updated timeline of key port-related events. Other detailed information describing methodologies and other background information are summarized in additional appendices referenced throughout the Plan. In addition to these technical appendices, additional information about the state's seaport and waterways system can be found on the FDOT Seaport Office website.

1.2 Introduction to Florida's Seaport System

1.2.1 Florida's Seaports

Florida is home to more than 21 million residents and 100 million annual visitors,[2] creating significant demand for the efficient and reliable movement and delivery of goods and services. This demand continues to increase as Florida is one of the fastest growing states in the country. This growth creates tremendous opportunities and challenges for state leaders, businesses, and communities. Florida's seaports, which are geographically dispersed throughout the state along the

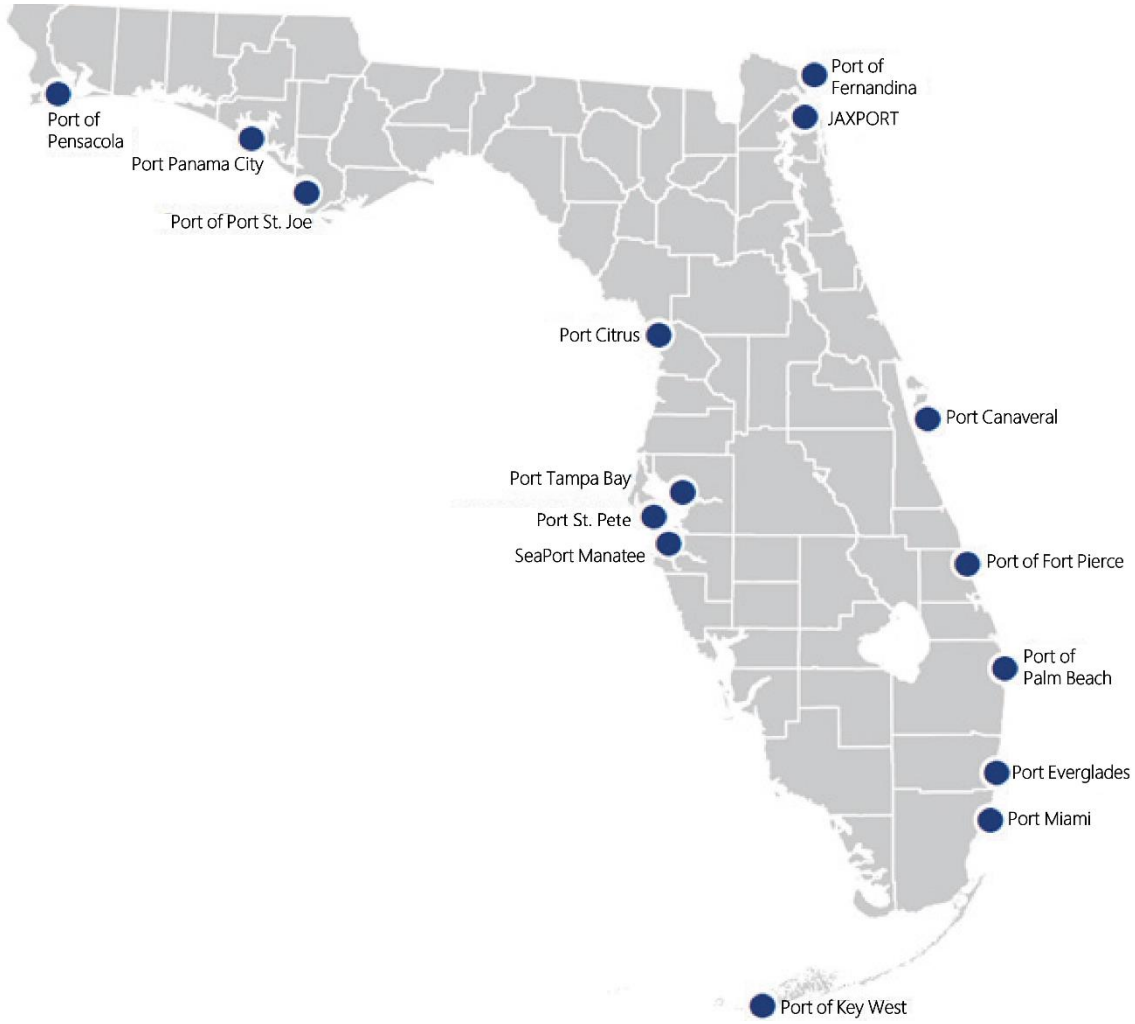
[2] Visit Florida, Estimated Visitors. https://www.visitflorida.org/resources/research/. Note that Florida's annual visitors have exceeded 100 million since 2014 with the exception of 2020 due to implications of a global pandemic.

Atlantic and Gulf Coasts, are critical components of the state's multimodal transportation system, serving as both domestic and global trade gateways. These ports are among the largest economic engines within their host region.

Beginning with the establishment of the Port of Key West in 1828, seaports in Florida have played a vital role in the development of Florida's population and the movement of commerce. Throughout the 1900s, Florida saw the establishment of more public seaports, each with their own enabling language, governance, and operating structure. In 1989, twelve seaports partnered to request the State of Florida acknowledge the economic impact of seaports on the state and provide a dedicated revenue source for seaports to ensure continued economic competitiveness in global markets. This effort resulted in creation of the Florida Seaport Transportation and Economic Development (FSTED) Program in Chapter 311, F.S., along with the FSTED Council which is responsible for allocation of the funds. The FDOT Seaport Office was then established in 1995 to administer the program. The joint efforts of FDOT and Florida's seaports have led to their operational successes today, which benefit residents and visitors alike.

Florida's 15 public seaports, as listed in Section 311.09, F.S., are shown in Figure 1.1.

FIGURE 1.1 FLORIDA'S DEEPWATER PUBLIC SEAPORTS



Source: Florida Department of Transportation.

1.2.2 Seaport Governance Structure

Across the globe, seaport governance and operational structure take on many different forms reflecting a variety of political, historic, and geographical considerations. In Florida, the governance of the 14 active seaports falls into the following categories:

- An **independent special district** with an elected or appointed board;[3]
- A **dependent special district of a city or county** with an elected board;[4]
- A **department of city** Government under the mayor or administrator of the city; and
- A **department of county** Government under the mayor or administrator of the county.

The existing seaport governing boards reflect the following membership:

- Three ports have specifically elected Port Commission board members;
- One port has county commissioners serving as Port Commission board members;
- Six ports are divisions of county or city Government; and
- Four ports have a board appointed by the Governor and/or local officials.

The Florida seaport governance and governing board breakdowns are illustrated in Table 1.1.

[3] Section 189.012, F.S. (2015).

[4] Section 189.012, F.S. (2015).

TABLE 1.1 FLORIDA SEAPORT GOVERNANCE STRUCTURE AND RELATED MEMBERSHIP

Governance Structure	Seaport	Governance	Members
Independent Special District	Port Canaveral	Canaveral Port Authority (The Canaveral Harbor Port District)	Five Commissioners elected from districts in central and northern Brevard County.
	Port of Fernandina	The Ocean Highway and Port Authority, Nassau County	Five Commissioners elected from separate districts.
	Port of Palm Beach	Port of Palm Beach District Port Commission	Five elected Commissioners elected at large by voters within the district.
	Port of Port St. Joe	Port of Port St. Joe Port Authority	Five Commissioners appointed by the Governor to four-year staggered terms.
	Port Tampa Bay	Tampa Port Authority (Hillsborough County Port Authority)	Seven Port Commissioners, five appointed by the Governor, two ex officio including the city of Tampa Mayor and one Hillsborough County Commissioner.
Dependent Special District of a County	SeaPort Manatee	Manatee County Port Authority	Seven County Commissioners elected from county districts serving four-year staggered terms.
Dependent Special District of a City	Port Panama City	Port Panama City USA	Five appointed board members by the City Commission serving four-year terms.
	JAXPORT	Jacksonville Port Authority	Seven member appointed Board of Directors, four members are appointed by the Mayor of Jacksonville and three by the Governor to four years terms.
Department of County Government	Port Everglades	Port Everglades Department—Broward County	Nine elected County Commissioners appoint County Administrator to administer county Government and the Port Director reports to County Administrator.
	Port of Fort Pierce	St. Lucie County Board of County Commissioners	Five elected County Commissioners appoint a County Administrator to manage county departments.
	PortMiami	Seaport Department—Miami-Dade County	Elected Mayor is appointed Administrative Officer and all county departments including 13 Commissioners report to Strong Mayor.
Department of City Government	Port of Key West	City of Key West, Port Operations Department	City Manager administers city departments and reports to the Mayor and six elected City Commissioners.
	Port of Pensacola	Port of Pensacola is a department of city Government	Nine City Commissioners, seven district elections and two at large. The city is administered by a Strong Mayor who manages all city departments.
	Port St. Pete	Port St. Pete is a department of city Government	Department of City of St. Petersburg and Port Director reports to Strong Mayor.

Source: 2015 Seaport System Plan, 2021 Individual Seaport Interviews.

1.2.3 Seaport Operating Structure

A port also may be a landlord port (i.e., leasing its facilities to maritime users), an operating port (i.e., providing maritime services to its users), or a combination of the two. Of the 14 active seaports, twelve (12) utilize the landlord/tenant model, one (1) uses the operational model, and one (1) has limited seaport related activities. These operational structures are summarized in Table 1.2.

TABLE 1.2 FLORIDA SEAPORT OPERATIONAL STRUCTURES

SEAPORT	Port Canaveral	Port Everglades	Port of Fernandina[1]	Port of Fort Pierce	JAXPORT	Port of Key West[2]	SeaPort Manatee	PortMiami	Port of Palm Beach	Port Panama City	Port of Pensacola	Port of Port St. Joe[3]	Port St. Pete	Port Tampa Bay
Landlord/Tenant	▲	▲	▲	▲	▲	▲	▲	▲	▲		▲	NA	▲	▲
Operating Port										▲		NA		

[1] *Landlord/Tenant—management agreement with Terminal Operator to manage port*

[2] *Note that the Port of Key West is primarily a port of call for cruise ships and a ferry terminal*

[3] ***NA—No / Limited Activity*

Source: 2015 Seaport System Plan, 2021 Individual Seaport Interviews.

1.2.4 Taxing Authority

A seaport's enabling legislation defines its taxing authority. A port may be specifically granted ad valorem taxing authority; the beneficiary of another Government who is authorized to levy an ad valorem tax for the benefit of the port; or prohibited from levying ad valorem taxes for operating expenses and capital investments.

Based upon the authority and powers granted to the 14 active seaports, only two (2) ports, Port Canaveral and the Port of Palm Beach, have direct ad valorem taxing authority ("direct taxing authority"),[5] although neither port currently uses this authority. Eleven (11) ports have boards which have taxing authority by virtue of being a city or a county ("host taxing authority"). Nine (9) of these cities or counties provide funding for seaport operations and/or capital costs. Hillsborough County levies a 0.5 millage ad valorem tax for Port Tampa Bay throughout Hillsborough County to defray port expenses.[6] The City of Port St. Joe and/or Gulf County may elect to provide funding to the Port of Port St. Joe. JAXPORT, through an

[5] The direct ad valorem taxing authority allows for a port to levy ad valorem taxes on all taxable property within the port district. For example, in the case of the Port of Palm Beach, the District includes a land area representing approximately 50% of Palm Beach County's land area. The Port of Palm Beach may levy up to $200,000 annually in ad valorem taxes although has not done so since fiscal year 1974-1975.

[6] Port Tampa Bay's ad valorem tax has been included in the Port Authority's Enabling Act. While the Port may levy up to 0.5 mils, in fiscal year 2020 Port Tampa Bay levied 0.1050 mils. This continues a long-term trend of reducing the levied millage rate each year.

interlocal agreement with the City of Jacksonville, receives appropriations annually from several different sources. The taxing authority for each Florida seaport is summarized in Table 1.3.

TABLE 1.3 FLORIDA SEAPORT TAXING AUTHORITY

SEAPORT	Port Canaveral	Port Everglades	Port of Fernandina	Port of Fort Pierce	JAXPORT	Port of Key West	SeaPort Manatee	PortMiami	Port of Palm Beach	Port Panama City	Port of Pensacola	Port of Port St. Joe	Port St. Pete	Port Tampa Bay
Direct Taxing Authority	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	No
Taxing Authority Exercised	Not since 1986	No	No	No	No	No	No	No	Not since 1975	No	No	No	No	No
Host Taxing Authority	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Host Tax/Support Received	No	No	No	Yes	Yes	Yes	No	Yes	No	No	Yes	No	Yes	Yes

Source: 2015 Seaport System Plan, 2021 Individual Seaport Interviews.

Although the governing structures and taxing authorities vary by port, generally speaking Florida's seaports rely on operating revenues and bonding authority for much of their operating and capital improvement costs. The state, through FDOT, also provides significant annual investments exceeding $60 million dollars on an annual basis.

1.3 Cargo and Passenger Activities at Florida's Seaports

FDOT has a central role in improving the capacity and efficiency of Florida's maritime and intermodal facilities through providing coordinated and strategic investments that support increased waterborne commerce and greater economic impacts throughout the state. The diversity of Florida's seaports creates a wealth of opportunities for Florida businesses and citizens. Because Florida's seaports are geographically dispersed every region of the state has at least one seaport that links to the global economy. Seaport operations, development, and trade activity can be a principal economic development tool for regional host communities.

1.3.1 Operating Characteristics of Florida's Seaports

Each seaport has a unique set of geographic and facility attributes. Over time, Florida's seaports have established specialties and niches as a result of these attributes. Many of the seaports have developed multiple areas of specialization. This diversity of functions, equipment, facilities, customers, cargos, and cruise contribute to the long-term sustainability and resiliency of each seaport and promote robust economies regionally and across the state as a whole. Table 1.4 illustrates this diversity, both individually and as a system. Detailed volume information for each seaport and commodity type is included in Chapter 2.

TABLE 1.4 FLORIDA SEAPORT DIVERSITY OF CARGO AND FACILITIES

	Florida Seaports														Totals			
	Port Canaveral	Port Everglades	Port of Fernandina	Port of Fort Pierce	JAXPORT	Port of Key West	SeaPort Manatee	PortMiami	Port of Palm Beach	Port Panama City	Port of Pensacola	Port of Port St. Joe	Port St. Pete	Port Tampa Bay	Primary	Secondary	Overall Total	Total by Category
Cargo																		12
Container	○	●	●	○	●		●	●	●	●	○			●	8	3	11	
Break Bulk	○	○	●	○	●		●	○	○	●	●			●	6	5	11	
Liquid Bulk	●	●		○	●		●		●	○				●	6	2	8	
Dry Bulk	●	○	○	○	●		●		●	●	●	●		●	8	3	11	
Automobiles	○	○		○	●		○	○	○					●	2	6	8	
Specialty[1]	○			○	○		●		○		●			●	3	4	7	
Cruise																		7
Homeport	●	●			●			●	●					●	6	0	6	
Port-of-Call	○	○		○	○	●		○						○	1	6	7	
Maritime Industry																		10
Manufacturing				●	○		○			●	○			●	3	3	6	
Other	○			●		○	○		○	○	●		●	●	4	5	9	
Recreational-Hospitality																		7
Marina	○			○							○		●		1	3	4	
Parks	○							○							0	2	2	
Hotels/ Restaurants	○					○					○			○	0	4	4	
Current Activity																		14
Active	●	●	●		●	●	●	●	●	●	●		●	●	12	0	12	
Inactive				●								●			2	0	2	

Notes: ● *Primary Activity* ○ *Secondary Activity*

[1] *Specialty cargo includes large power generators, large storage tanks, wind power turbines, oversized loads, solid space industry rocket boosters, and other similar types of large cargoes.*

Source: 2021 Individual Seaport Interviews.

Florida's seaports operate as a system and FDOT is responsible for the planning of the system as a whole. The resulting mix of port activities drives the revenue streams for each port. Table 1.5 documents the revenue share for each of Florida's seaports in Fiscal Year 2020 by activity type. Revenue by activity type for each seaport is included in Table A.1 in Appendix A. Diversity between cargo and cruise and by type of cargo increases the resiliency of a ports' revenue

generation when one market softens. Similarly, diversity among the ports themselves allows for the resiliency of Florida's waterway cargo and cruise activity. Geographically distributed ports result in a positive economic impact across the state, increases the state's overall resiliency (e.g., if one coast is closed, the other coast may still be open) and distributes volumes across the state to reduce congestion at individual ports.

TABLE 1.5 SHARE OF SEAPORT REVENUE BY ACTIVITY TYPE, FY2020

	Cargo									
	Container	Break bulk	Liquid Bulk	Dry Bulk	Auto	Specialty	Cruise	Maritime Industry	Recreational-Hospitality	Total
Port Canaveral	0.2%	2.5%	5.3%	4.9%	0.4%	3.5%	76.8%	2.9%	3.5%	100%
Port Everglades	27.6%	3.5%	28.8%	3.5%	0.5%		36.1%			100%
Port of Fernandina										
Port of Fort Pierce								100.0%		100%
JAXPORT	55.6%	6.8%	2.7%	3.4%	26.0%	2.4%	3.2%			100%
Port of Key West							100.0%			100%
SeaPort Manatee	20.6%	17.7%	31.5%	30.1%		0.1%				100%
Port Miami	35.3%						64.7%			100%
Port of Palm Beach										
Port Panama City	18.0%	37.0%	0.3%	24.7%				20.0%		100%
Port of Pensacola		27.8%		25.1%				47.1%		100%
Port of Port St. Joe				100.0%						100%
Port St. Pete								100.0%		100%
Port Tampa Bay	3.1%	4.5%	26.3%	18.0%		0.0%	11.4%	33.2%	3.4%	100%

Source: Individual Seaports. Note that revenue breakdowns were not provided by the Port of Fernandina or the Port of Palm Beach.

1.4 Florida's Waterway System and Intermodal Network

Florida's seaport system relies on the waterways that connect them to domestic and global shipping lanes. These consist of harbors, inlets, rivers, and intracoastal waterways. The maintenance of waterways is critical to port operations and market competitiveness. Without proper maintenance of the waterways, such as dredging, the water would no longer be deep enough for large ships to enter the seaports.

Florida has a few key rivers that support maritime cargo operations. The St. Johns River is the primary waterway serving JAXPORT. The Miami River in Miami Dade County serves a network of private cargo terminals. The rivers and channels are primarily navigated by members of the Florida Harbor Pilots Association. Since 1868, the harbor pilot stations have served

Florida's deepwater seaports to ensure the safe passage of vessels coming into and out of the ports to protect the ships, the ports, and Florida's natural environment.[7]

Florida is also home to two (2) of the nation's 29 marine highways: M-10 and M-95. M-10 includes the Gulf of Mexico, Gulf Intracoastal Waterway, and connecting commercial navigation channels, ports, and harbors. The extent is from Brownsville, Texas to SeaPort Manatee, Florida encompassing portions of Texas, Louisiana, Mississippi, Alabama, and Florida. M-95 includes the Atlantic Ocean coastal waters, Atlantic Intracoastal Waterway, and connecting commercial navigation channels, ports, and harbors. This marine highway stretches from Miami, Florida to Portland, Maine including 15 states total. M-95 also connects to the M-87 and M-90 routes near New York City and M-64 route near Norfolk, Virginia. As part of the America's Marine Highway Program (AMHP), Marine Highway Routes and Marine Highway Projects may be designated. For Florida, this has included a barge service from the Port of Fernandina to Charleston, South Carolina along M-95. More information on America's Marine Highways is available on the U.S. Department of Transportation's Maritime Administration website.

1.4.1 Florida's Waterway System

The current operating depth of the channels and associated berths is a key factor in the type and volume of cargo handled at a port. Several of Florida's ports have pursued deepening projects to improve competitiveness and expand market penetration. In September 2015, deepening of Miami Harbor to 50 feet was completed. JAXPORT's deepening project is scheduled for completion in 2022. Port Everglades' deepening project is scheduled for completion in 2029. Port Tampa Bay is collaborating with the United States Army Corps of Engineers on potential navigational improvement project(s). Table 1.6 details the current and authorized depth at each of the seaports. Depths range from 23 feet at Port St. Pete to a planned 57 feet in Port Everglades' outer entrance channel. Deepening a channel is a multi-year, multi-agency process designed to ensure that a navigational improvement is warranted and will not adversely impact Florida's natural resources.

[7] Florida Harbor Pilots Association. https://floridapilots.com/about/what-we-do/

TABLE 1.6 CURRENT AND AUTHORIZED DEPTHS AT FLORIDA'S SEAPORTS

Seaport	Current Depth (ft)	Authorized Depth (ft)
Port Canaveral	43	43
Port Everglades	Outer Entrance Channel: 45 Inner Channel: 42	Outer Entrance Channel: 57 Inner Channel: 50 (by 2029)
Port of Fernandina	36	36
Port of Fort Pierce	28	28
JAXPORT	47	47
Port of Key West	34	34
SeaPort Manatee	40	40
PortMiami	Outer Channel: 52 Inner Channel (Fisherman's): 50 Inner Channel (Main): 36	Outer Channel: 52 Inner Channel (Fisherman's): 50 Inner Channel (Main): 36
Port of Palm Beach	33	33
Port Panama City	36	36
Port of Pensacola	33	33
Port of Port St. Joe	23	35
Port St. Pete	23	23
Port Tampa Bay	43	43

Source: 2021 Individual Seaport Interviews.

1.4.2 Florida's Intermodal Network

In addition to waterside connections, Florida's seaports rely on landside, roadway, and rail connections. These links connect the ports to local, state, and national markets and directly impact their market competitiveness. The number and type of connections is driven by the layout of a port. Some of Florida's ports rely on one primary gateway while others have multiple terminals and access points.

Florida's Strategic Intermodal System (SIS) significantly impacts the seaport and waterways system. The goal of the SIS is to enhance the state's economic competitiveness by focusing financial and planning resources towards critical landside and waterway transportation infrastructure to meet the needs for citizens, industries, and businesses to travel safely and efficiently within and through the state. SIS designated transportation facilities meet specific criteria related to transportation or economic activity and screening factors related to potential community and environmental impacts. The SIS consists of the state's largest and most significant commercial service and general aviation airports, spaceports, public seaports, intermodal freight terminals, interregional passenger terminals, urban fixed guideway transit corridors, rail corridors, waterways, and highways. These are categorized into hubs, corridors, and connectors. Table 1.7 categorizes the SIS by mode and type of facility (i.e., SIS, strategic, planned). SIS facilities are the workhorses of Florida's transportation system and are integral to the movement of people and goods to, from, and within Florida. Additional SIS resources are available on the FDOT Systems Implementation Office website.

The majority of Florida's seaports are part of the SIS with eight (8) SIS ports and four (4) strategic growth ports. SIS seaports are served by roadway, rail, and waterway connectors. This supporting network allows for the landside transportation of goods and services before and after they are moved through one of Florida's seaports. Figure 1.2

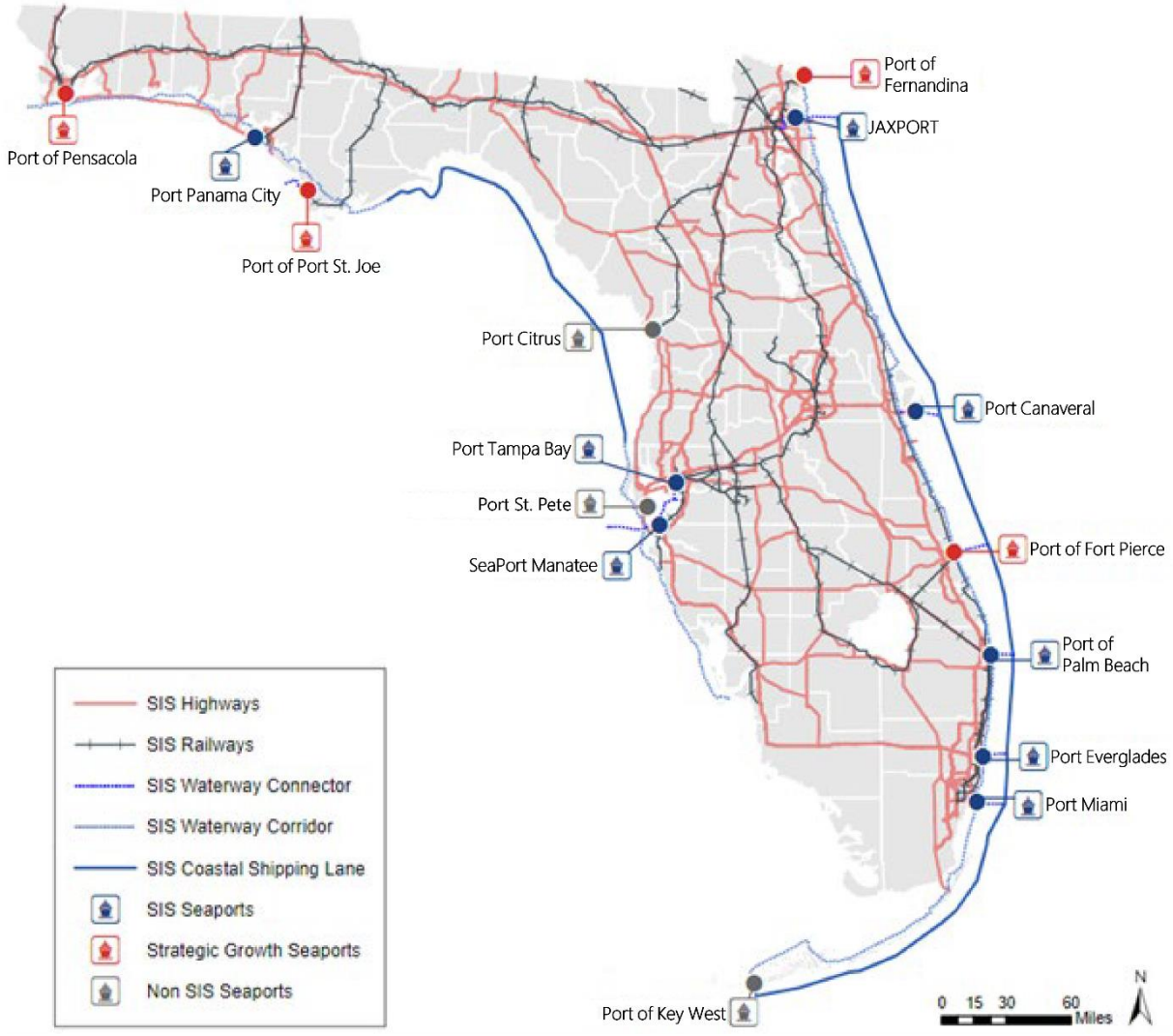
illustrates this network of hubs (e.g., seaports), corridors, and connectors (i.e., rail, highways, and waterways). The FDOT Systems Planning Office provides an annual atlas, which is a more comprehensive version of the SIS map shown below. The most recent *SIS Atlas* can be found on the FDOT Systems Implementation Office website.

TABLE 1.7 DESIGNATED SIS AND EMERGING SIS FACILITIES

Facility Type	SIS	Strategic Growth	Connector	Strategic Growth Connector	Planned Add
Seaports	8	4	-	-	-
Rail (Miles)	1,785	399	115	126	6
Highway (Centerline Miles)	4,334	-	95	97	95
Waterway (Miles)	893	6	196	-	-

Source: Florida Department of Transportation.

FIGURE 1.2 SIS SEAPORTS, RAILROADS AND HIGHWAYS AND WATERWAYS



Source: Florida Department of Transportation.

TRENDS IN CARGO AND PASSENGERS

2

2.1 Introduction to the Chapter

Florida's seaports are important intermodal links in the state's global freight supply chain, functioning as domestic and international trade gateways. Florida's largest seaports have consistently ranked among the Nation's top cargo ports and Florida is home to the world's busiest cruise ports. As Florida continues to invest in and strengthen its position as a global trade hub, it is vital to continuously track national, state, and seaport-specific trade-related data trends to provide insight into the state's performance over time and the magnitude of the impacts that waterborne commerce has on our communities.

This Chapter provides an overview of U.S. and Florida trade patterns and passenger activities. During any given year, ten (10) of Florida's seaports handle cargo, collectively moving a variety of imports, exports, and domestic products. Total tonnage volumes in Florida approached 112 million tons in 2019. This cargo is diverse, consisting of dry bulk, liquid bulk, break bulk, and container tonnage. In addition, seven (7) seaports regularly serve cruise passengers, including the top three (3) cruise ports in the world. Sections in this Chapter provide insight into the trends that cause fluctuations in international trade at Florida seaports and how these trends affect cargo and cruise business. Understanding demand trends and capacity needs is vital to planning for and investing in related critical infrastructure.

2.2 Overview of Florida's Seaport Cargo and Cruise Volumes

Table 2.1 provides a summary for Florida's annual seaport cargo throughput and cruise passengers from 2015 to 2020. Florida's container movements, shown in twenty-foot equivalent units (TEUs), have steadily increased over the past several decades, growing by almost 350,000 TEUs during the period of 2015 to 2020. In 2019, cruise revenue passenger numbers surpassed 18 million for a total growth exceeding 20% since 2015. Florida cruise passenger operations remained strong from October 2019 through February 2020. In mid-March 2020, in response to a global pandemic, cruise passenger operations at most ports were halted until operations slowly started to resume in June 2021.

TABLE 2.1 SUMMARY OF FLORIDA SEAPORT CONTAINERS (TEUS), TONNAGE, TRADE DIRECTION, AND CRUISE PASSENGERS

TEUs	2015	2016	2017	2018	2019	2020
Total TEUs	3,541,526	3,574,179	3,717,186	4,098,226	4,029,824	3,885,645
Tonnage	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Total Tons	103,012,061	107,369,926	110,826,846	110,268,130	111,744,277	102,681,550
Trade Direction Tonnage	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Imports	40,458,288	40,503,439	35,407,319	38,729,636	40,478,112	35,571,237
Exports	18,989,078	16,287,415	17,637,575	17,891,659	17,298,821	16,204,105
Domestic	43,564,694	50,579,072	57,781,952	53,646,835	53,937,345	50,856,210
Total	103,012,060	107,369,926	110,826,846	110,268,130	111,744,277	102,631,552
Cruise Passengers	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Multi-Day	14,745,913	14,989,578	15,683,800	16,384,862	17,887,113	9,402,713
Single-Day	500,406	471,139	439,316	451,124	468,219	183,190
Total	15,246,319	15,460,717	16,123,116	16,835,986	18,355,332	9,585,903

Note: Cruise counts are each revenue passenger movement including both embarkations and disembarkations.

Source: Individual Florida Seaports, FSTED Council Five-Year Mission Plans, and U.S. Census Bureau, Foreign Trade Division, 2020.

The remainder of this Chapter discusses the performance of the seaport system in further detail for both the cargo and cruise industries.

2.3 Florida's Seaport Tonnage

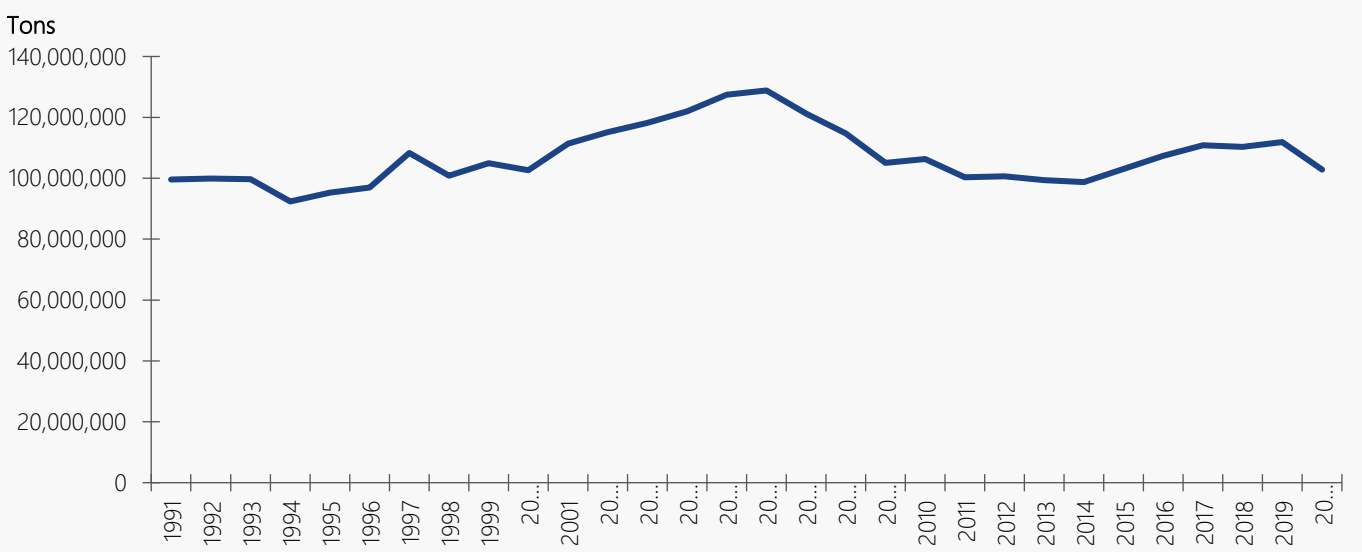
Cargo moving through Florida's seaports can be transported in a variety of ways which typically depends on the type of goods being moved. Volumes of cargo are typically measured in tons which allows for consistent tracking of performance over time across all types of movements; these statistics also show how Florida's seaports compare with other ports across the Nation. Understanding the volume of goods moving through Florida by type of cargo and by seaport informs infrastructure investment needs (e.g., types of cargo handling equipment, storage or lay down areas, berth and waterway dimensions, and intermodal connections), and the types of markets being served. With each of Florida's seaports serving distinct markets and customers, a breakdown of throughput by cargo type is useful to understand market service requirements and cargo trends over time. The types of cargo typically passing through seaports include:

- Dry Bulk (e.g., cement, aggregate, and fertilizers);
- Liquid Bulk (e.g., petroleum, fuels, and oils);
- Breakbulk (e.g., lumber, bagged cargo, formed metals);

- General Cargo (e.g., motor vehicles and project cargo); and
- Container Cargo (TEUs).

These types of cargo are measured in tons and/or other unit measures. Figure 2.1 shows reported tonnage for Florida ports dating back to 1991. Several factors have contributed to this trend line. The major hurricanes that hit Florida in 2004 and 2005 increased the demand for construction materials which were shipped in bulk, such as lumber, steel, and cement to repair the significant damage. This resulted in a record 128.8 million tons of cargo in 2006. The "great recession" followed, depressing the housing market, especially new construction, leading to a decline in volumes beginning in 2007 that leveled out at about 98.7 million tons in 2014. Despite these market shifts, Florida's seaports have consistently handled over 100 million tons of cargo per year and resumed a growth trend before a global pandemic was declared in early 2020.

FIGURE 2.1 TOTAL TONNAGE FOR ALL FLORIDA SEAPORTS, FISCAL YEARS 1990–2020



Source: Data compiled from the FSTED Council's Florida Seaport Mission Plans, 1990-2020.

2.3.1 Florida Cargo Tonnage—Volumes by Seaport

Florida seaports tonnage is reported by individual seaports for the annual updates of the Florida Seaport Transportation and Economic Development (FSTED) Council's Five-Year Seaport Mission Plan (Mission Plan) and the five-year updates of The Florida Seaport and Waterways System Plan (System Plan). The Mission Plan defines the goals and objectives of the FSTED Council for seaport infrastructure projects and must be consistent with the Florida Transportation Plan. The System Plan is developed every five years to identify needs and focus state funding to support development of transportation facilities that support state economic development goals. These plans complement one another – the Mission Plan guides the FSTED Council, while the System Plan guides the administration of all state funding for seaports.

Table 2.2 provides a breakdown of tonnage totals for imports, exports, and domestic trade by Florida seaport, as well as state tonnage totals for each movement type dating back to 2015. The table ranks Florida's seaports from most to least tons shipped based on 2020 tonnage totals. Port Tampa Bay handled the largest volume (32.9 million tons), followed by Port Everglades (21.5 million tons), and JAXPORT (20.1 million tons). Ports for which domestic movements represented at least 40 percent of total tonnage include Port Tampa Bay, Port Everglades, JAXPORT, and SeaPort Manatee.

TABLE 2.2 IMPORTS, EXPORTS, AND DOMESTIC WATERBORNE TONNAGE AT FLORIDA'S SEAPORTS (2020)—RANKED BY VOLUME

Port	Imports	Exports	Domestic	Total
Port Tampa Bay	7,894,242	3,967,901	20,988,896	32,851,039
Port Everglades	6,100,375	2,859,037	12,517,687	21,477,099
JAXPORT	8,345,191	2,412,223	9,316,782	20,074,196
PortMiami	5,792,134	3,933,140	0	9,725,274
SeaPort Manatee	2,819,142	328,042	5,864,549	9,011,733
Port Canaveral	3,376,073	64,615	1,337,682	4,778,370
Port of Palm Beach	592,136	1,179,969	705,748	2,477,853
Port Panama City	511,944	1,139,178	100,864	1,751,986
Port of Fernandina	140,000	320,000	2	460,002
Port of Pensacola	116,715	566	70,939	188,220
Total	35,687,952	16,204,671	50,903,149	102,845,770

Note: Years represent the last year of the Seaport Mission Plan's Fiscal Year. No cargo reported for Port Citrus, Port of Fort Pierce, Port of Key West, Port of Port St. Joe, or Port of St. Petersburg.

Source: Individual Florida Seaports and the FSTED Council's Five-Year Mission Plans

Table 2.3 shows Florida's waterborne tonnage by seaport from 2015 to 2020.[8] Although overall tonnage was down in 2020 compared to 2015 due to impacts of a global pandemic, several cargo ports grew between 2015 and 2020, namely Port of Fernandina, JAXPORT, PortMiami, SeaPort Manatee, Port Canaveral, and the Port of Palm Beach.

TABLE 2.3 FLORIDA SEAPORTS WATERBORNE TONNAGE TOTALS (2015 TO 2020)—RANKED BY VOLUME

Port	2015	2016	2017	2018	2019	2020
Port Tampa Bay	37,374,291	37,525,453	38,101,623	34,060,821	34,462,971	32,851,039
Port Everglades	24,001,663	24,681,331	25,233,820	25,734,854	25,574,776	21,477,099
JAXPORT	17,704,738	19,017,794	19,743,799	20,739,400	20,716,795	20,074,196
PortMiami	8,613,739	8,777,974	9,162,340	9,611,960	10,121,570	9,725,274
SeaPort Manatee	6,517,733	6,888,757	7,797,889	8,968,898	9,776,076	9,011,733
Port Canaveral	4,151,726	5,524,478	5,990,735	6,417,125	6,329,095	4,778,370
Port of Palm Beach	2,094,069	2,519,255	2,449,039	2,567,393	2,565,936	2,477,853
Port Panama City	2,032,426	1,880,401	1,748,387	1,706,595	1,754,000	1,751,986
Port of Fernandina	303,981	296,874	285,279	277,000	422,500	510,000
Port of Pensacola	217,695	201,009	231,935	114,714	211,272	188,220
Port of Fort Pierce	0	56,600	82,000	69,370	558	0
Total	103,012,061	107,369,926	110,826,846	110,268,130	111,935,549	102,845,770

Note: No waterborne cargo reported for Port Citrus, Port of Key West, Port of Port St. Joe, or Port of St. Petersburg.

Source: Individual Florida Seaports and the FSTED Council's Five-Year Mission Plan Data.

[8] This data dates back to 2015 to provide continuity from the 2015 Seaport System Plan.

2.3.2 Florida Cargo Tonnage—Volumes by Cargo Type

Table 2.4 provides a breakdown of tonnage by port by cargo type for 2020, including container tons, and shows statewide annual totals from 2015 to 2020. Container tonnage grew by nearly 2.1 million tons and break-bulk cargo grew by more than 1.3 million tons from 2015 to 2020, with even more significant growth between 2015 and 2019. Liquid bulk and dry bulk both grew between 2015 and 2019 but fell below 2015 values in 2020, likely due to impacts of a global pandemic (e.g., demand for petroleum products fell significantly with business closures, telework trends, and greatly reduced air travel).

TABLE 2.4 WATERBORNE TONNAGE AT FLORIDA SEAPORTS BY CARGO TYPE (2015 TO 2020)—RANKED BY VOLUME

Seaport	Dry Bulk	Liquid Bulk	Break-bulk	Container	Total
Port Tampa Bay	12,417,686	18,979,310	845,029	609,014	32,851,039
Port Everglades	1,193,256	14,356,297	220,018	5,707,528	21,477,099
JAXPORT	4,290,127	5,527,108	4,937,504	5,319,457	20,074,196
PortMiami	0	0	3,172	9,722,102	9,725,274
SeaPort Manatee	1,866,383	5,957,157	519,521	668,672	9,011,733
Port Canaveral	1,776,000	2,572,887	422,428	7,055	4,778,370
Port of Palm Beach	705,748	327,264	126,845	1,317,996	2,477,853
Port Panama City	938,144	22,057	657,373	134,412	1,751,986
Port of Fernandina	0	0	410,000	100,000	510,000
Port of Pensacola	88,305	0	99,579	336	188,220
2020 Total	23,275,649	47,742,080	8,241,469	23,586,572	102,845,770
2019 Total	25,907,808	53,747,037	77,165,820	25,114,884	111,935,549
2018 Total	24,272,345	53,874,255	7,128,571	24,992,959	110,268,130
2017 Total	26,550,528	53,232,234	7,090,591	23,953,493	110,826,846
2016 Total	24,687,075	53,282,490	7,043,176	22,357,185	107,369,926
2015 Total	24,254,635	50,376,613	6,889,987	21,490,826	103,012,061

Note: No cargo reported for Port Citrus, Port of Fort Pierce, Port of Key West, Port of Port St. Joe or Port of St. Petersburg.

Source: Individual Florida Seaports and the FSTED Council's Five-Year Mission Plan Data.

2.4 Florida's Containerized Cargo

Florida's seaports have invested significantly over the last two decades in infrastructure and equipment to compete for and handle containerized cargo (e.g., deeper waterways, terminal lay down areas, cranes, intermodal rail yards, and connection). These investments have been critical as the global shipping industry has increasingly used containerized cargos, resulting in investments by seaports worldwide to handle these shipments. Containerization was introduced in the mid-1900s by Malcolm Mclean as a way to reduce labor efforts and standardize shipping industry practices.[9] Over the last decade, containerized cargo has continued to grow across the country and the world. Steamship lines have continued to

[9] The History of Containerization in the Shipping Industry. Marine Insight. September 30, 2021. https://www.marineinsight.com/maritime-history/the-history-of-containerization-in-the-shipping-industry/

increase vessel size and container capacity, and seaports and their marine terminal operator partners have prioritized investments to compete for and serve these markets.

Containers come in different sizes, typically in 20- and 40-foot lengths for international containers and a 53-foot length for domestic containers. The twenty-foot equivalent unit (TEU) is the standard measure of container volumes, with 40-foot containers counted as 2 TEUs. Containers of 45, 48, and 53 feet in length correspond to 2.25 (or 2), 2.4, and 2.65 TEUs respectively.

There are three principal ways to describe or categorize port container volumes:

- Foreign and domestic;
- Inbound and outbound; and
- Loaded or empty.

Utilizing data from various sources (detailed in Appendix B), a profile of container volumes in the United States and Florida is discussed below.

2.4.1 Containerized Cargo Volumes in the United States

Container volumes in the continental United States have grown 34% from 38.3 million TEUs in 2010 to 51.5 million TEUs in 2020.[10] Going back further, since 2000 volumes have nearly doubled in this time period, highlighting both the investments made and needed in the Nation's seaports to keep up with increasing demand.

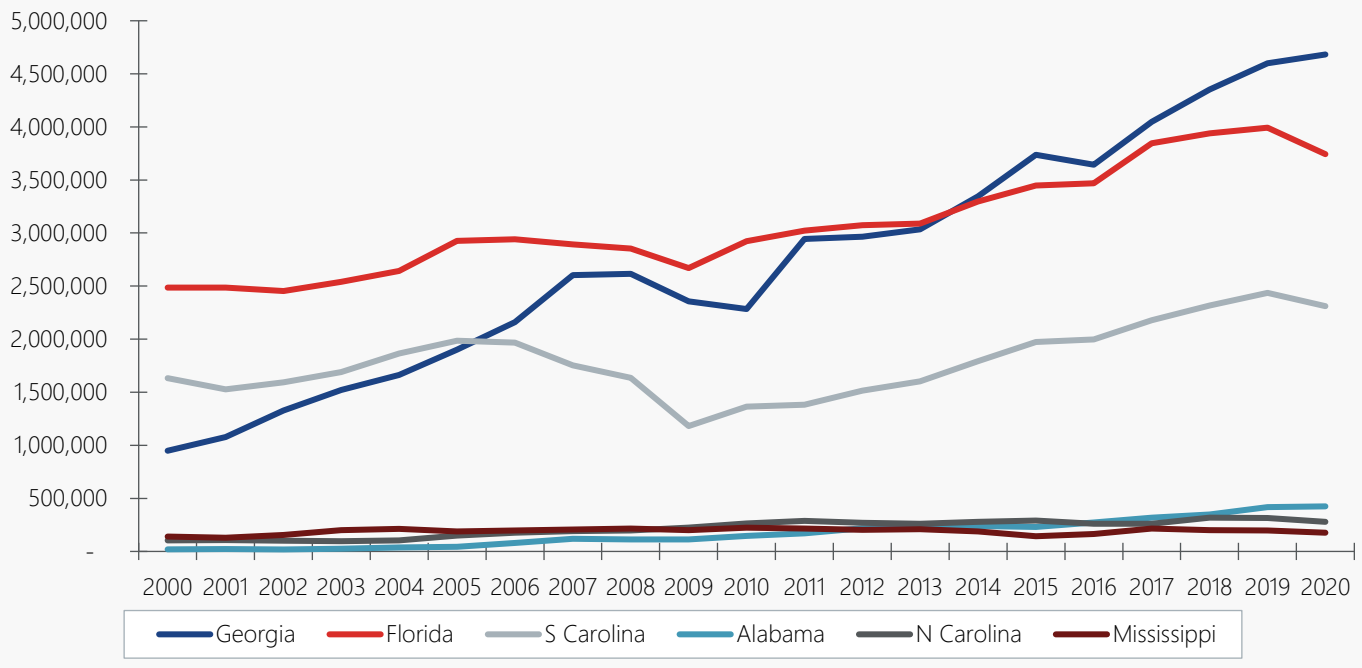
2.4.2 Containerized Cargo Volumes in the Southeastern United States

As shown in Figure 2.2, container volumes in the Southeastern U.S. grew from 7.2 million TEUs in 2010 to 11.6 million in 2020, increasing by 61% over that period. This increase accounts for 37% of the container volume growth in the United States since 2010. Since 2014, Georgia (Port of Savannah) has emerged as the leader in the Southeast based on total TEUs handled, more than doubling volumes from 2010 to 2020. Georgia has moved from the fourth highest southeastern state by TEUs in 2000 to first by 2020, moving Florida down from the top spot in this timeframe. South Carolina (Port of Charleston) has had the second highest net increase with nearly 1 million TEUs, or 69%, followed by Florida with nearly 820,000 TEUs, or a growth of 28%. While a lower volume state, Alabama (Port of Mobile) also had a tremendous growth rate of 189%.

Florida's container totals include three high-volume ports (JAXPORT, PortMiami, and Port Everglades) and four lower volume ports (Port of Palm Beach, Port Tampa Bay, SeaPort Manatee, and Port Panama City). In the Southeastern U.S., Florida is unique in that a system of geographically dispersed seaports contribute to statewide container totals whereas other states typically have only one major container port.

[10] Due to data limitations, the breakdown of this total container traffic into imports, exports, and domestic movements on a consistent basis across U.S. ports is not available.

FIGURE 2.2 CONTAINER VOLUMES AT THE SOUTHEASTERN U.S. SEAPORTS, FISCAL YEARS 2000–2020



Source: American Association of Port Authorities (AAPA) and individual port reports for the top 28 ports in the continental United States.

2.4.3 Containerized Cargo Volumes in Florida

As shown in Table 2.5, Florida has maintained a relatively stable share of total U.S. container volumes at around 7.7% over the past decade. However, the state's share of Southeastern container volumes has declined. This is due primarily to the doubling of containers in Georgia over the last decade and faster growth in South Carolina than in Florida. Growth in these states can partially be attributed to the ability to serve Atlanta's population which has seen significant growth coupled with ready access to warehousing and distribution center space and investments at the ports.

TABLE 2.5 CONTAINER VOLUMES IN FLORIDA AND MARKET SHARE, 2010–2020

Year	Florida TEUs	Florida Share of U.S.	Florida Share of Southeast
2010	2,923,474	7.6%	40.6%
2011	3,021,926	7.7%	37.7%
2012	3,073,902	7.7%	37.3%
2013	3,087,702	7.5%	36.7%
2014	3,296,783	7.7%	36.1%
2015	3,447,850	7.7%	35.1%
2016	3,469,447	7.7%	35.4%
2017	3,845,406	7.9%	35.4%
2018	3,938,528	7.7%	34.3%
2019	3,992,595	7.7%	33.4%
2020	3,742,638	7.3%	32.2%

Note: These volumes may differ from those presented in the previous section due to different data sources.

Source: American Association of Port Authorities (AAPA) and individual port reports for the top 28 ports in the continental United States.

Import Container Volumes at Florida's Seaports

Data provided by Florida's seaports allows for a further breakdown of these containerized cargo trends into import, export, and domestic flows. Table 2.6 shows the five-year trend of imported containerized volumes at each Florida seaport. Between 2016 and 2020, volumes have been relatively consistent statewide at around 1.5 million TEUs. Three seaports represented 82% of Florida's imported containers in 2020, including PortMiami (36%), Port Everglades (30%) and JAXPORT (15%). Longer term trends of import container volumes are included in Appendix B.

TABLE 2.6 IMPORT CONTAINER VOLUMES AT FLORIDA'S SEAPORTS, 2016–2020—RANKED BY 2020 VOLUME

	2016	2017	2018	2019	2020
PortMiami	524,277	519,206	549,151	580,132	558,651
Port Everglades	516,646	531,985	543,115	511,058	457,619
JAXPORT	217,766	255,061	247,900	281,070	235,596
Port of Palm Beach	131,522	140,782	29,231	139,202	134,088
Port Tampa Bay	26,268	29,460	43,961	52,642	70,262
SeaPort Manatee	15,865	24,950	25,376	34,456	47,867
Port of Panama City	15,016	14,436	18,420	17,428	25,634
Port of Fernandina	0	10,006	4,000	4,500	5,000
Port Canaveral	2,034	6,472	3,573	586	1,074
Port of Pensacola	0	0	1,708	0	0
Total	1,449,394	1,532,358	1,466,435	1,621,074	1,535,791

Source: Individual Florida Seaports.

Export Container Volumes at Florida's Seaports

Exported containerized cargo movements show a similar trend with volumes near the 1.5 million TEU mark between 2016 and 2020, as shown in Table 2.7. The same three container ports accounted for the majority of movements (82%) including PortMiami (33%), Port Everglades (32%), and JAXPORT (16%). Longer term trends for exports are included in Appendix B.

TABLE 2.7 EXPORT CONTAINER VOLUMES AT FLORIDA'S SEAPORTS, 2016–2020—RANKED BY 2020 VOLUME

	2016	2017	2018	2019	2020
PortMiami	503,879	505,129	534,435	540,782	508,089
Port Everglades	520,580	544,908	565,351	542,021	487,893
JAXPORT	253,240	274,835	285,422	302,768	249,235
Port of Palm Beach	135,758	141,508	263,073	143,698	138,877
Port Tampa Bay	23,448	26,714	43,272	51,407	68,614
SeaPort Manatee	10,345	14,776	12,823	22,799	40,599
Port of Panama City	14,938	15,020	19,672	18,322	25,362
Port of Fernandina	8,133	0	4,000	4,500	5,000
Port Canaveral	711	4,922	2,593	728	377
Port of Pensacola	0	0	1,740	0	0
Total	1,471,032	1,527,812	1,732,381	1,627,025	1,524,046

Source: Individual Florida Seaports.

Domestic Container Volumes at Florida's Seaports

Domestic container volumes, shown in Table 2.8, show a much different pattern. Nearly all (99% in 2020) of domestic container traffic passing through Florida's seaports is handled at JAXPORT, with some small amounts observed at the Port of Fernandina, Port Tampa Bay, and Port Canaveral. The dominance of JAXPORT for domestic volumes reflects the movement of cargo to/from Puerto Rico on U.S.-flagged vessels. This cargo represents all types of commodities that the territory is dependent upon as 85% of goods shipped to and from the mainland United States and Puerto Rico come through JAXPORT.[11] Longer term data for domestic movements is included in Appendix B.

TABLE 2.8 DOMESTIC CONTAINER VOLUMES AT FLORIDA'S SEAPORTS, 2016–2020—RANKED BY 2020 VOLUME

	2016	2017	2018	2019	2020
JAXPORT	653,736	659,635	898,069	774,918	813,502
Port of Fernandina	0	0	0	5,000	10,000
Port Tampa Bay	0	381	293	1,614	2,154
Port Canaveral	0	0	960	176	152
Port of Pensacola	17	0	0	0	0
Port Everglades	0	0	0	0	0
SeaPort Manatee	0	0	0	0	0
PortMiami	0	0	0	0	0
Port of Palm Beach	0	0	0	0	0
Port of Panama City	0	0	0	0	0
Total	653,753	660,016	899,322	781,708	825,808

Source: Individual Florida Seaports.

Although individual import, export, and domestic volumes presented above do not show significant growth over the last five years, container volumes have increased 37% since 2010 for a total of 1 million additional TEUs statewide, as shown in Table 2.9. Global supply chain challenges resulting from a global pandemic and other international trends, resulted in a decline in Florida's total TEUs between 2018 and 2020. The three largest Florida container ports continue to handle the largest portion of the overall container traffic (85%) including JAXPORT (33%), PortMiami (27%), and Port Everglades (24%). JAXPORT's significant domestic volumes places it at the top position in the state.

[11] Opportunity on the Horizon for Puerto Rico. JAXPORT. July 9, 2021. https://www.jaxport.com/opportunity-on-the-horizon-for-puerto-rico/

TABLE 2.9 TOTAL CONTAINER VOLUMES AT FLORIDA'S SEAPORTS, 2010–2020—RANKED BY 2020 VOLUME

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
JAXPORT	826,580	900,433	923,660	1,028,541	1,081,528	1,076,252	1,124,742	1,189,531	1,431,391	1,358,756	1,298,333
PortMiami	847,249	906,607	909,197	901,454	876,708	1,007,782	1,028,156	1,024,335	1,083,586	1,120,914	1,066,740
Port Everglades	793,227	880,999	923,600	927,572	1,013,344	1,060,507	1,037,226	1,076,893	1,108,466	1,053,079	945,512
Port of Palm Beach	213,286	206,537	223,463	254,664	262,805	271,277	267,280	279,290	292,304	282,900	272,965
Port Tampa Bay	44,827	39,632	39,882	42,198	47,265	56,742	49,716	56,555	87,526	105,663	141,030
SeaPort Manatee	30,431	14,576	12,610	9,621	14,078	25,778	26,210	39,726	38,199	57,255	88,466
Port of Panama City	40,000	41,900	41,456	39,716	37,310	34,304	29,954	29,456	38,092	35,750	50,996
Port of Fernandina	32,885	22,005	14,092	11,239	9,652	8,059	8,133	10,006	8,000	14,000	20,000
Port Canaveral	659	646	253	580	388	751	2,745	11,394	7,126	1,490	1,603
Port of Pensacola	0	168	76	116	116	74	17	0	3,448	0	0
Total	2,829,144	3,013,503	3,088,289	3,215,701	3,343,194	3,541,526	3,574,179	3,717,186	4,098,138	4,029,807	3,885,645

Source: Individual Florida Seaports.

2.4.4 Containerized Cargo Movements

Florida's seaports are capable of handling additional volumes of containerized cargo; however, containerized cargo ultimately destined for Florida is served by both Florida and non-Florida ports. Similarly, containerized export cargo originating in Florida may be exported via a Florida or non-Florida port. How well Florida's ports capture and serve the Florida market is a key competitive indicator for the state. Shipping Florida goods through non-Florida seaports requires increased use of other modes such as trucking or rail, which increases congestion on Florida's roads and adds time and cost to landside transportation. The ability to move more of these goods through Florida's seaports will strengthen the state's economic position and provide benefits to all Floridians (e.g., cheaper goods and services and reduced roadway congestion). This section analyzes historical trends of three distinct markets or movements:

- Florida origin/destination TEUs moving through non-Florida ports—An example would be grapes imported from South America through the Port of Philadelphia that are then trucked down to be consumed in Florida. *An increase in this type of movement is a negative indicator for Florida's seaports as it would be a loss of business for Florida.*
- Florida origin/destination TEUs moving through Florida ports—An example would be fertilizer mined in Florida that is exported through the Port of Tampa. *An increase in this type of movement would be a positive indicator for Florida's seaports as they would be serving local customers.*
- Non-Florida origin/destination TEUs moving through Florida ports—An example would be vehicles manufactured in Tennessee that are exported through JAXPORT. *An increase in this type of movement would be a positive indicator for Florida's seaports as they would be capturing additional cargo from other states*

In order to assess trends in these markets, IHS Markit PIERS data was used to determine the port-origin/destination pairings for containerized imports and exports for the 2010-2020 time period. As with many data sets, PIERS data has limitations. The most significant limitation is the completeness of the data records. The ultimate origin/destination data field is only available for 34.7% of the total records for the six state Southeastern U.S. region for 2010—2020. Further information describing the methodology is provided in Appendix B.

Florida and its neighboring states of Mississippi, Alabama, Georgia, South Carolina, and North Carolina (six-state region) handled nearly 8.69 million import/export TEUs in 2020. Florida's volume of 2.59 million TEUs ranks second accounting for 29.8% of the six-state region. Georgia maintained the greatest share (42% or 3.65 million TEUs) and South Carolina followed in third (20.4% or nearly 1.77 million TEUs), as shown in Table 2.10. Florida's share of the six-state total has declined from 2010, where it accounted for 37.4% of TEUs. Despite a 17.7% increase in Florida's TEUs over the 10-year period, Georgia and South Carolina experienced a 69% and 66% growth, respectively.

TABLE 2.10 PIERS TEU DATA FOR FLORIDA, GEORGIA, AND SOUTH CAROLINA, 2010–2020

TEUs	Florida Seaports	Florida Percent	Georgia	Georgia Percent	South Carolina	South Carolina Percent
2010	2,201,166	37.4%	2,160,403	36.7%	1,065,207	18.1%
2011	2,339,697	37.3%	2,285,574	36.4%	1,147,167	18.3%
2012	2,367,130	37.1%	2,289,394	35.8%	1,216,500	19.0%
2013	2,406,170	36.4%	2,367,159	35.8%	1,291,795	19.6%
2014	2,474,961	35.2%	2,601,676	37.0%	1,429,853	20.3%
2015	2,536,122	34.1%	2,824,926	38.0%	1,558,964	21.0%
2016	2,568,826	33.8%	2,890,033	38.0%	1,613,407	21.2%
2017	2,685,888	32.9%	3,171,863	38.9%	1,731,381	21.2%
2018	2,813,945	32.4%	3,440,049	39.6%	1,789,838	20.6%
2019	2,746,643	30.7%	3,621,341	40.5%	1,859,218	20.8%
2020	2,592,329	29.8%	3,650,752	42.0%	1,768,394	20.4%

Source: IHS Markit PIERS.

Over the last decade, the average annual growth rate of containerized imports/exports has been 4% for the six-state region. Over the same period, three trade lanes have demonstrated an annual growth rate greater than 5%: NE Asia (6%), SE Asia (13.9%) and the Indian Subcontinent (5.5%). These three combined trade lanes now comprise 68.1% of Georgia's (Port of Savannah's) total TEUs, up from 61.7% in 2010. South Carolina (Port of Charleston) has seen an increase from 36.2% to 52.7%, while Alabama (Port of Mobile) has grown its share from 22.5% to 77.4%. By contrast, in 2020, Florida's container ports of JAXPORT, PortMiami, Port Everglades, and Port Tampa Bay collectively maintained a 21.4% share of those trade lanes up from 14.7% in 2010.

Florida Origin/Destination TEUs Moving Through Non-Florida Ports

With respect to non-Florida ports serving the Florida import/export market, PIERS data was used to identify import and export volumes in the Southeastern United States and filter based on the final destination of those goods.[12] The volume of cargo handled by ports within this region in 2020 is 2.01 million TEUs based on complete data records. Figure 2.3 presents the historical trend of imports and exports that are moving via non-

Understanding how well Florida's ports compete for cargo generated and consumed by Florida's residents, businesses, and visitors is a critical benchmark to success. Data available to accurately measure this is limited. IHS Markit PIERS data provides information on the ultimate origin/destination of containerized shipments moving through a given seaport. This helps determine which markets a seaport is serving.

While the completeness of shipment records limits the sample size, the use of this data does provide a transparent and repeatable methodology that can be used to inform Florida's seaport program over time.

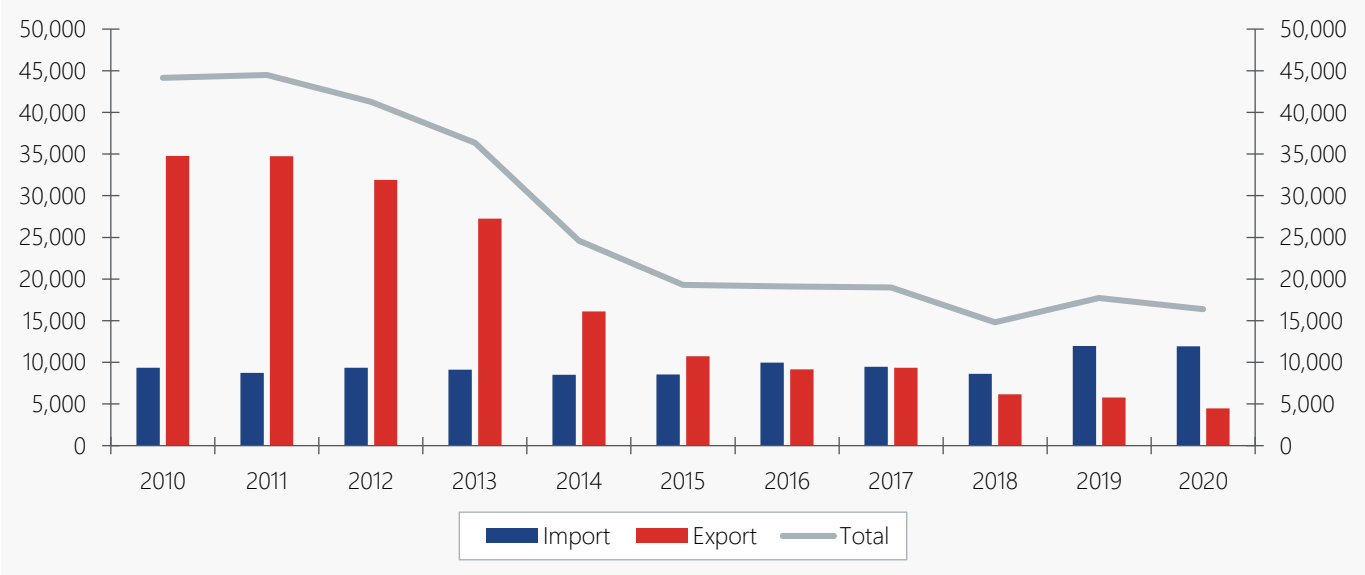
[12] In some cases, the reported final destination of cargos may be a corporate address, rather than the specific warehouse or distribution center that it is headed for. This may skew the final results.

Florida ports and ultimately originating in/destined for the state of Florida. Appendix B includes Table B.4 with this information.

Florida imports moving through non-Florida ports held relatively steady through 2018, with an uptick in volume in 2019 and 2020. Exports originating in Florida moving via non-Florida ports saw a dramatic decline over the 2013-2014 period. Since 2014, Florida-sourced exports moving via non-Florida ports have continued to have a positive decline. Overall, non-Florida ports' share of the total decreased from 5.4% in 2010 to 2.6% in 2020. .

This continued and stable decline is a **positive indicator** of Florida's industries exporting goods through their seaports, relying less and less on out of state seaports.

FIGURE 2.3 CONTAINERIZED CARGO MOVING THROUGH NON-FLORIDA PORTS WITH AN ORIGIN/DESTINATION IN FLORIDA, 2010–2020 (IN NUMBER OF TEUS)



Note: *Figures presented based on sample of 34.7% of records with ultimate Origin/Destination filter, not total TEU volume.*

Source: *IHS Markit PIERS.*

Florida Origin/Destination TEUs Moving Through Florida Ports

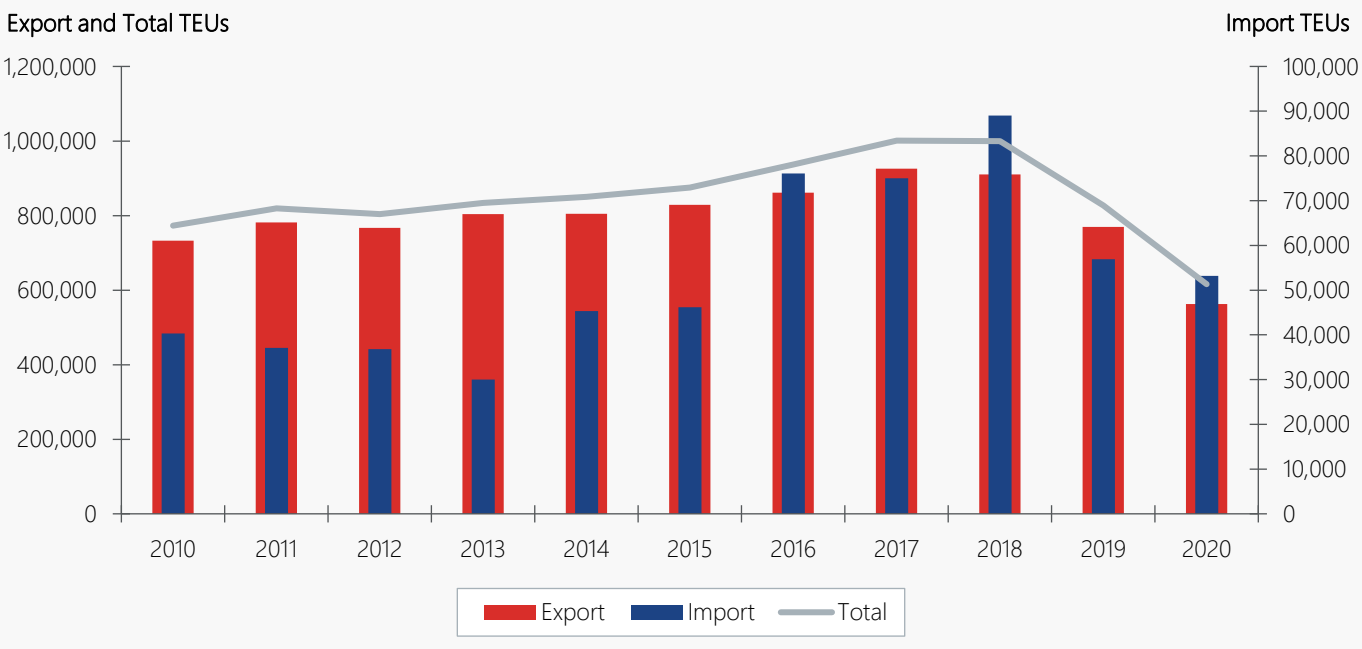
Overall, Florida ports grew their share of Florida cargo moving through Florida ports (versus through non-Florida ports) from 94.6% in 2010 to 97.4% in 2020 in spite of lower reported volumes due to the impacts of COVID-19.[13] Import volumes moving through Florida ports and remaining in Florida more than doubled from 2010 through 2018, from 40,000 TEUs to

This increase in volumes is a **positive indicator** that Florida's seaports are increasingly competitive with out of state seaports, handling more and more Florida generated traffic.

[13] Note that the use of only 34.7% of the data can have a significant impact on this statistic. The balance of trade and cargo shipping rates for Florida's inbound and outbound cargo still varies significantly. Based on data from the Bureau of Transportation Statistics, the value of outbound freight shipments from Florida is only 60% of the value of inbound freight shipments to the state. https://www.bts.gov/topics/freight-transportation/freight-shipments-value

89,000 TEUs as shown in Figure 2.4 below and in Table B.5 in Appendix B. Higher volumes of Florida exports versus imports are primarily attributed to the fact that much of the consolidation of containers destined for Latin American markets is completed in Florida. This results in shipments being reported as exports originating within the state, despite the fact that export products originate in other states and are trucked/railed to Florida for consolidation, then export.

FIGURE 2.4 CONTAINERIZED CARGO MOVING THROUGH FLORIDA PORTS WITH AN ORIGIN/DESTINATION IN FLORIDA, 2010–2020 (IN NUMBER OF TEUS)



Note: *Figures presented based on sample of 34.7% of records with ultimate Origin/Destination filter, not total TEU volume.*

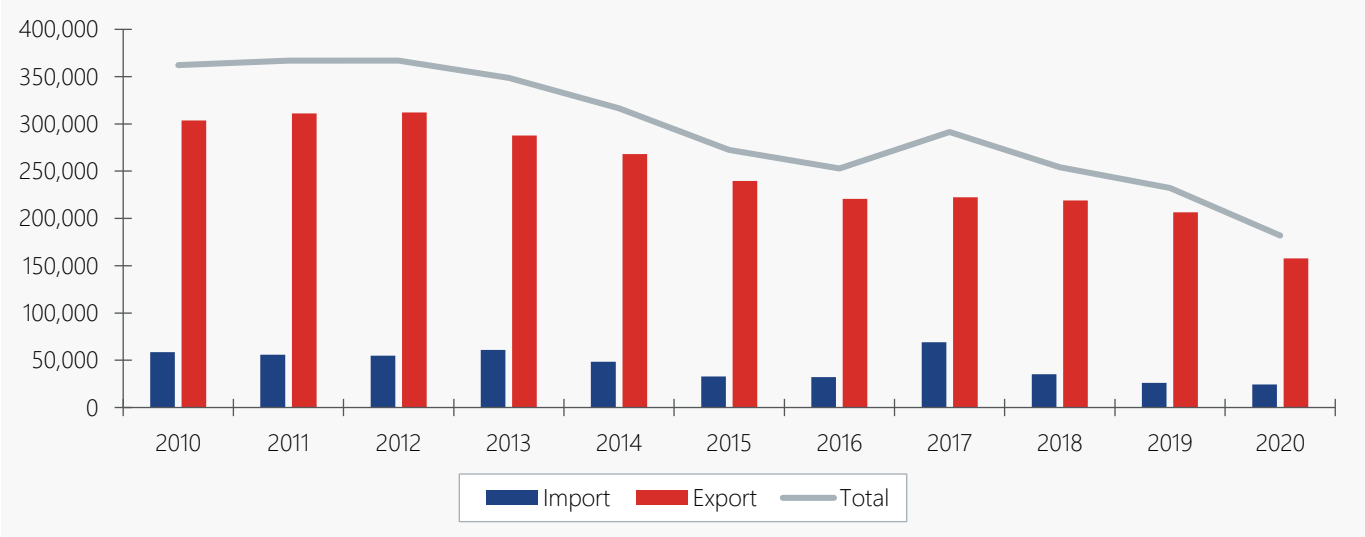
Source: *IHS Markit PIERS.*

Non-Florida Origin/Destination TEUs Moving Through Florida Ports

Cargo originating in/destined for non-Florida states handled at Florida's ports has decreased from 22.4% to 13.2% of the six-state total. This loss is attributed to a sharp decline in imports in Jacksonville over the 2013-2015 period and the resulting declining trend through 2020 as shown in Figure 2.5 and included in Table B.6 in Appendix B. Exports exhibited a decline because of a loss of traffic at JAXPORT and PortMiami. A variety of reasons can explain this decline including investments undertaken at the Port of Savannah and the Port of Charleston, struggling economic conditions in Puerto Rico, and changes in transportation and commodity prices.

The decline in non-Florida origin/destination TEUs moving through Florida ports is a **negative indicator** as it suggests Florida's ports are not handling as much out-of-state cargo.

FIGURE 2.5 CONTAINERIZED CARGO MOVING THROUGH FLORIDA PORTS WITH A NON-FLORIDA ORIGIN/DESTINATION, 2010–2020 (IN NUMBER OF TEUS)

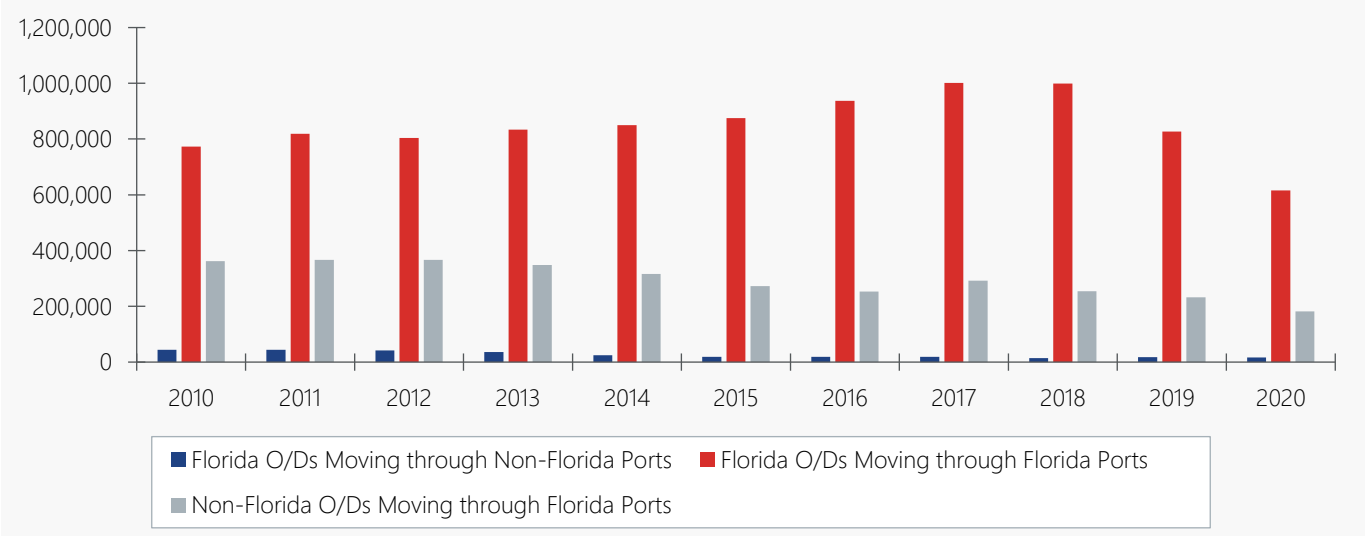


Note: *Values based on sample of 34.7% of records with ultimate Origin/Destination filter, not total TEU volume.*

Source: *IHS Markit PIERS.*

Figure 2.6 summarizes the containerized cargo movements moving through a Florida port or with an origin/destination within Florida. This information is also provided in Table B.7in Appendix B. While volumes have fluctuated, Florida's seaports have increased their share of Florida origin/destination movements from 95% in 2010 to 97% in 2020. This is down slightly from a peak of 99% in 2018. While Florida's seaports have handled more of the state's own containerized cargo, Florida is handling less traffic proportionately for other states. Non-Florida origin/destination cargo has decreased from 32% of identified cargo in 2010 to 23% in 2020.

FIGURE 2.6 SUMMARY OF CONTAINERIZED CARGO MOVING THROUGH FLORIDA PORTS OR WITH A FLORIDA ORIGIN/DESTINATION, 2010–2020 (IN NUMBER OF TEUS)



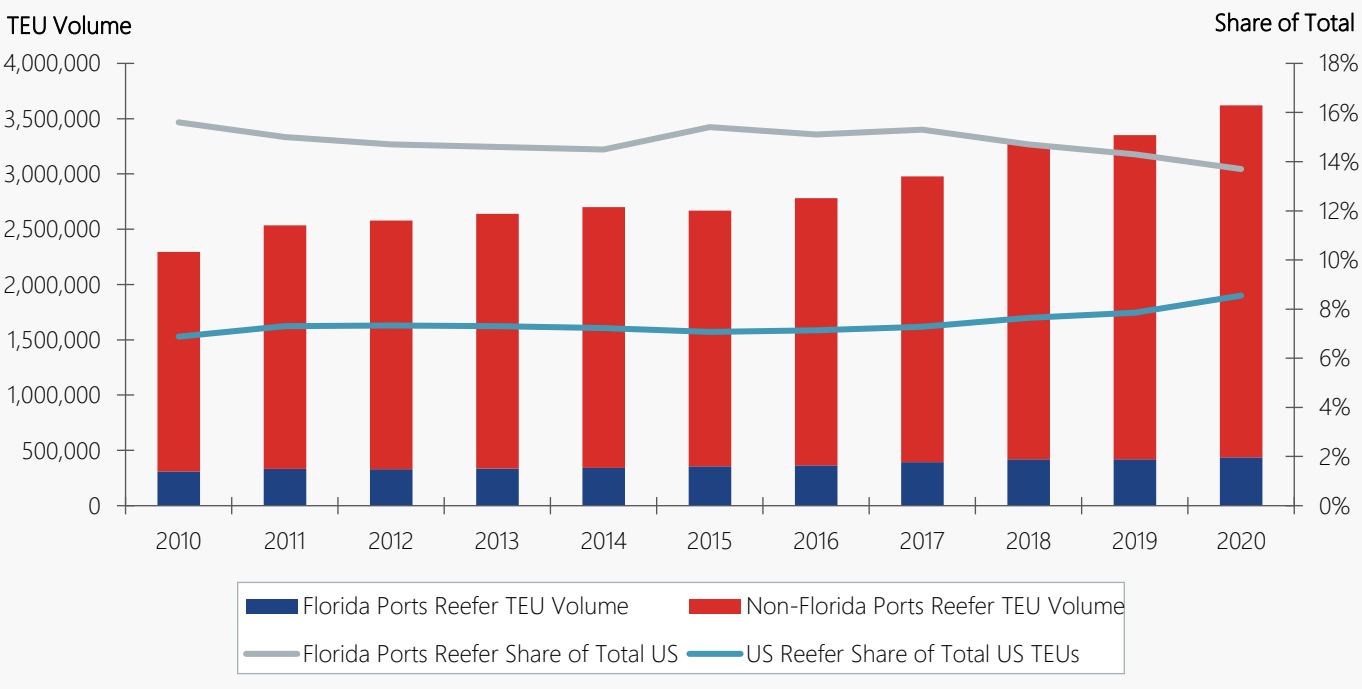
Note: *Values based on sample of 34.7% of records with ultimate Origin/Destination filter, not total TEU volume.*

Source: *IHS Markit PIERS.*

2.4.5 Refrigerated Cargo Trends

A specialized subset of container traffic is refrigerated (reefer) cargo. Based on this same PIERS dataset and as illustrated in Figure 2.7, from 2010 through 2017, Florida's refrigerated TEUs have remained at about 7% of all U.S. TEUs handled. However, that share has increased to 8.5% from 2018 to 2020s. The six-state total volume of reefer containers has grown 57.7% from 2.29 million TEUs in 2010 to 3.62 million TEUs in 2020, while Florida ports' volumes grew from 309,000 TEUs to 437,000 TEUs. Despite this raw growth, Florida ports' share of the six-state region has decreased slightly from 15.6% to 13.7% over the period.

FIGURE 2.7 REEFER VOLUMES AND PROPORTION OF TOTAL CONTAINER TRAFFIC



Note: The data represented in Figure 2.7 is subject to the same limitations as described for the overall cargo trends.

Source: IHS Markit PIERS, U.S. Bureau of Census TradeOnline.

2.4.6 Forecasted Container Volumes

Florida has maintained a relatively stable share of total U.S. container volumes at around 7.7% over the past decade. However, the state's share of Southeastern U.S. container volumes has declined, due primarily to above average growth in Georgia. Looking forward, forecasts of Florida's container volume growth over the next two decades and how this compares to growth in the U.S. as a whole will help to inform future infrastructure and capacity needs.

The forecast of Florida's container trade forecast is derived from the Freight Analysis Framework (FAF)[14] forecast of United States freight flows prepared by the Federal Highway Administration (FHWA) and the Bureau of Transportation Statistics (BTS) released in October 2021.

[14] In addition to a baseline forecast, high and low scenarios are also provided. FAF documentation can be found at: Freight Analysis Framework Documentation.

The development of U.S. and Florida container volume forecasts depends on several estimation methods. First, commodity flow data in FAF is reported for waterborne volumes in tons and value and supplemented with data from the U.S. Census Bureau to determine what portion of the commodity tonnage is containerized. The second estimation method concerns computing total containerized trade based on the imbalance between imports over much smaller export volumes and the lack of data on empty container volumes. Further information on the FAF and the methodologies used to derive container forecasts is included in Appendix B.

Estimated U.S. container import volumes are projected to increase from 198,451 ktons in 2017 to 326,097 ktons in 2040, or growth of 64% over this time period. This is four times the growth of total imported waterborne tons (which includes other cargo classifications such as breakbulk and liquid bulk) due in large part to projected declines in crude oil imports. Florida containerized tons are projected to increase by 62% from 2017 to 2040, just under the projected 64% growth in U.S. containerized imports. Significant commodities contributing to this growth include other agricultural products, textiles/leather, and other foodstuffs. As a result of these nearly identical long term growth rates, the state's share of total U.S. container imports is projected to remain relative steady at 6.3% in 2030 and 2040, a slight decline from the baseline share of 6.4% in 2017. Table 2.11 displays projected Florida port containers volumes in TEUs based on the 62% growth rate in container ton imports between 2017 and 2040 derived from FAF forecasts. Total annual Florida container volumes are estimated to grow from 3.8 million TEUs in 2017 to 6.2 million TEUs in 2040.

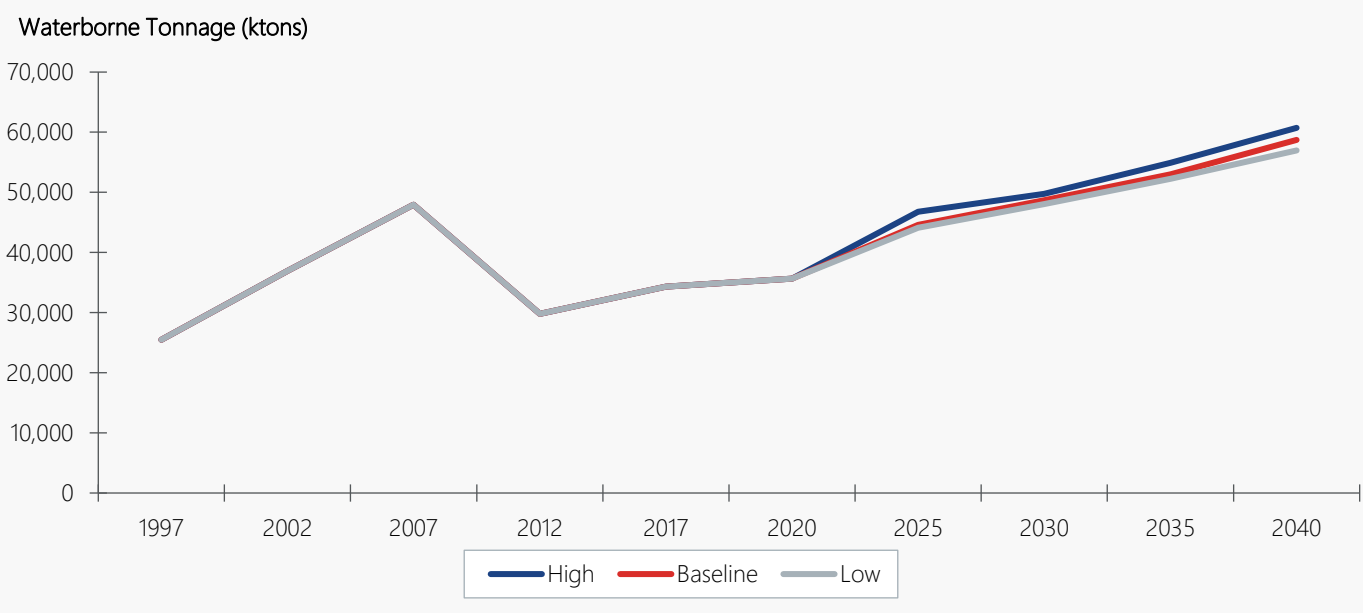
TABLE 2.11 PROJECTED GROWTH IN FLORIDA CONTAINER VOLUMES IN TEUS

Year	2017	2020	2030	2040	Growth 2017–2040
Container Volume	3,845,406	3,742,638	5,207,024	6,229,918	62%

Source: Freight Analysis Framework Version 5.2 and FDOT analysis.

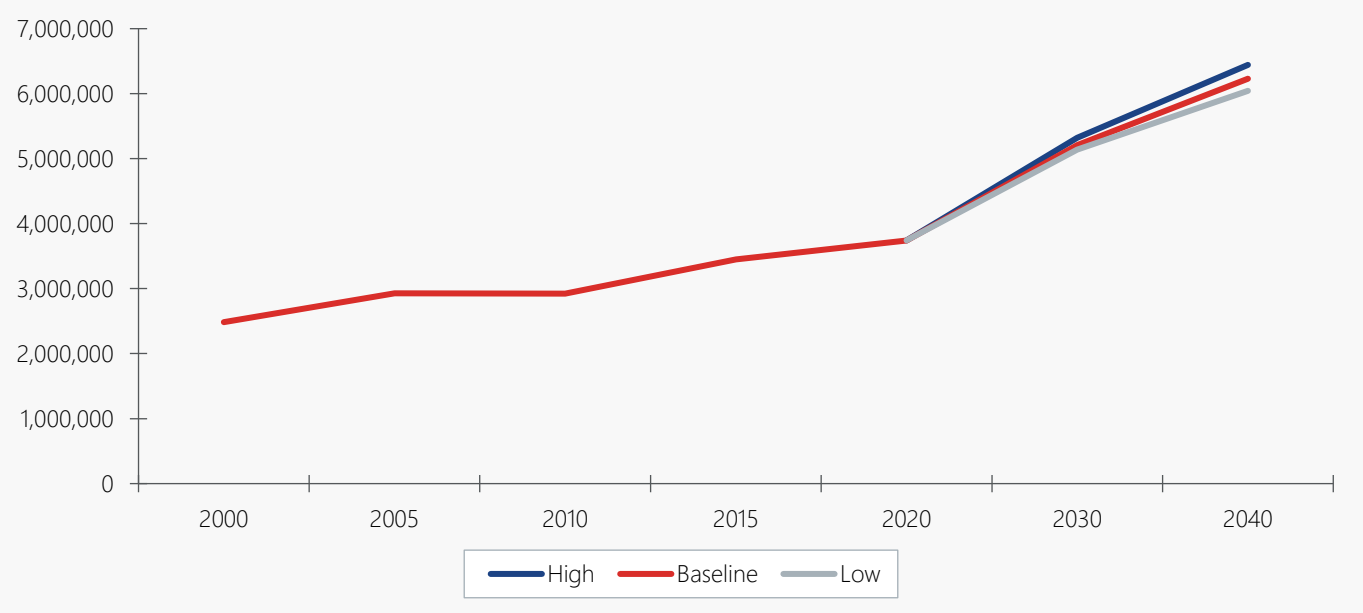
In addition to the baseline projections, FAF forecasts also include high and low scenarios. Figure 2.8 displays three scenarios for waterborne tonnage imports into Florida: Low, Baseline, and High. The differences between FAF scenarios are small, with volumes for the High scenario 3.4% above the baseline scenario in 2040, and the Low scenario 3.1% below the baseline projection in 2040. This tonnage, approximately 60,000 ktons in 2040, was then converted into container volumes based on the weight of individual commodities per container. Figure 2.9 shows the projections for Florida container volumes by scenario with a high of 6.4 million TEUs in 2040 and a low of 6.0 million TEUs in 2040. Compared with other states in the Southeast, detailed in Appendix B, Florida's growth is relatively high. The other Southeast states and their seaports (Charleston, South Carolina; Wilmington, North Carolina; Savannah, Georgia; Mobile, Alabama; and Gulfport, Mississippi) are expected to increase an average of 2.9% through 2040 in the baseline scenario. Gulfport is anticipated to have the lowest growth rate at 0.9% while Mobile is anticipated to have the highest at 3.6%.

FIGURE 2.8 VOLUME PROJECTIONS FOR WATERBORNE TONNAGE INTO FLORIDA BY SCENARIO



Source: Freight Analysis Framework Version 5.2.

FIGURE 2.9 VOLUME PROJECTIONS FOR FLORIDA CONTAINER VOLUME BY SCENARIO, TEUS



Source: Freight Analysis Framework Version 5.2 and FDOT analysis.

Container volume projections for Florida derived from aggregate Freight Analysis Framework forecasts and detailed U.S. Census trade data indicate that Florida's container trade will grow more quickly than the state's total waterborne trade tonnage. This data also suggests that Florida's share of total U.S. container trade will remain relatively steady at about 6.3% through 2040, and that projected growth scenarios do not vary significantly from a baseline forecast. This suggests that without an unforeseen shift in key supply chains and trade lanes, the low, medium, and high forecasts presented based on the FAF dataset, showing a continuation of current market shares, are reasonable.

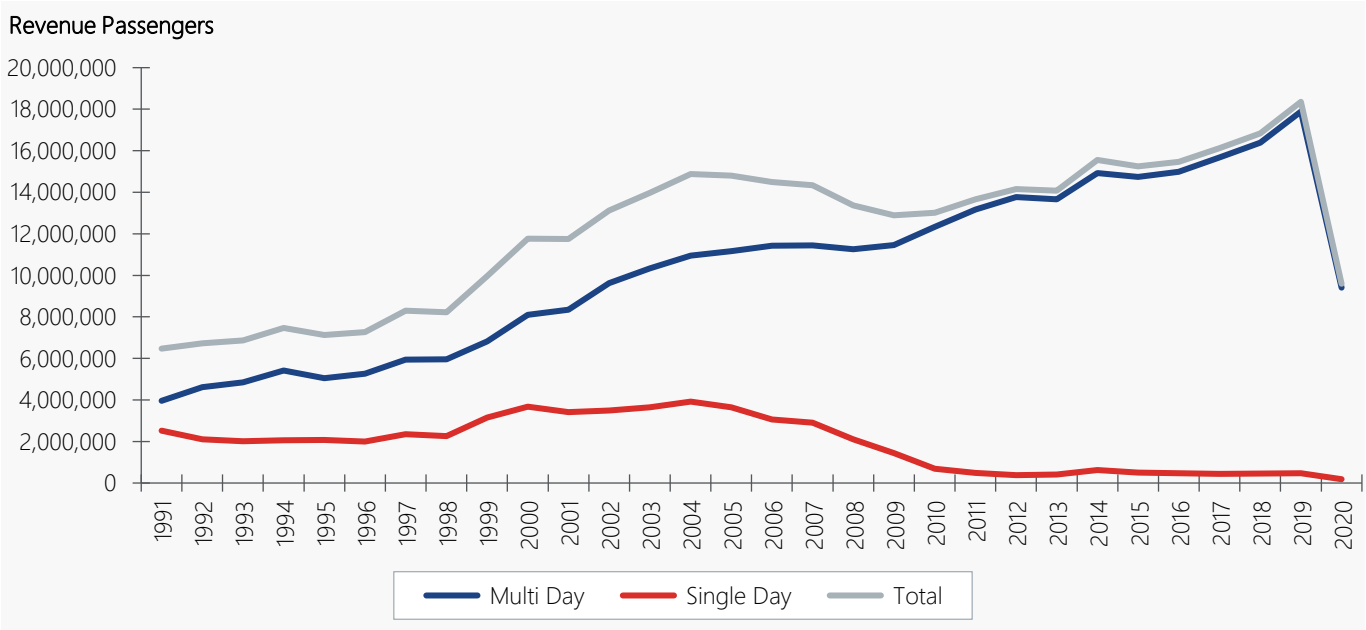
2.5 Florida's Cruise Passengers

Florida is a global leader in annual cruise passenger embarkations and disembarkations. In December of 2013, FDOT published *Florida's Cruise Industry: A -Statewide Perspective* which provides a detailed analysis of the seven Florida ports that have cruise-related activity. The study also provides a detailed description of the cruise lines that homeport in Florida.[15] This section provides a brief description of current industry trends and conditions related to the primary cruise lines serving Florida. Current trends include the number of new cruise vessels on order, the number of vessels homeporting at Florida ports, and how provisioning for cruise vessels relates to the movement and sourcing of goods in Florida.

2.5.1 Florida Cruise Industry Trends

Figure 2.10 and Table 2.12 show the annual multi-day, single-day, and total revenue cruise passengers at Florida's cruise ports from 1991 to 2020 and 2015 to 2020, respectively. Multi-day cruise passenger volumes have grown steadily since the early 1990s with temporary blips during economic recessions, such as in 2008. Single-day cruises have fallen from a peak of nearly 4 million to less than half a million each year. This has been the result of a shift from single-day casino cruises to more ferry-like operations to nearby islands. In mid-March 2020, the cruise industry was impacted by a global pandemic, resulting in an immediate drop off in business as cruise lines were forced to cancel sailings and ports halted their cruise passenger operations. The record high of 18.4 million revenue passengers in 2019 dropped by almost half to 9.6 million in 2020. Operations remained largely shut down through most of 2021, with limited sailings under strict regulation beginning from Florida ports in June 2021.

FIGURE 2.10 TOTAL REVENUE CRUISE PASSENGERS FOR ALL FLORIDA SEAPORTS, FISCAL YEARS 1991–2020, BY MULTI-DAY, SINGLE-DAY, AND TOTAL REVENUE PASSENGERS



Source: Data compiled from the FSTED Council's Florida Seaport Mission Plans, 1990-2020.

[15] Florida's Cruise Industry: A Statewide Perspective, 2013.

TABLE 2.12 ANNUAL MULTI-DAY, ONE-DAY, AND TOTAL REVENUE CRUISE PASSENGERS AT FLORIDA SEAPORTS (2015 TO 2020)

		PortMiami	Port Canaveral	Port Everglades	Port Tampa Bay	Port of Key West	JAXPORT	Port of Palm Beach	Total all Cruise Ports
2015	Multi-Day	4,875,313	3,860,225	3,622,229	867,114	804,624	366,021	350,387	14,745,913
	One-Day	40,263	308,441	151,157	0	0	0	545	500,406
	Total	**4,915,576**	**4,168,666**	**3,773,386**	**867,114**	**804,624**	**366,021**	**350,932**	**15,246,319**
2016	Multi-Day	4,952,180	3,951,127	3,680,549	813,800	696,224	392,822	502,876	14,989,578
	One-Day	28,104	297,169	145,866	0	0	0	0	471,139
	Total	**4,980,284**	**4,248,296**	**3,826,415**	**813,800**	**696,224**	**392,822**	**502,876**	**15,460,717**
2017	Multi-Day	5,314,837	4,240,942	3,738,252	960,901	818,866	177,417	432,585	15,683,800
	One-Day	25,722	285,684	125,410	0	0	0	0	439,316
	Total	**5,340,559**	**4,526,626**	**3,863,662**	**960,901**	**818,866**	**177,417**	**432,585**	**16,123,116**
2018	Multi-Day	5,503,212	4,568,431	3,741,408	1,043,329	865,909	199,899	462,674	16,384,862
	One-Day	48,863	272,572	128,934	0	0	0	0	451,124
	Total	**5,552,075**	**4,841,003**	**3,870,342**	**1,043,329**	**865,909**	**199,899**	**462,674**	**16,835,986**
2019	Multi-Day	6,773,163	4,634,154	3,773,062	1,149,289	913,323	194,665	449,457	17,887,113
	One-Day	96,738	251,160	119,153	0	0	0	0	468,219
	Total	**6,869,901**	**4,885,314**	**3,892,215**	**1,149,289**	**913,323**	**194,665**	**449,457**	**18,355,332**
2020	Multi-Day	3,433,679	2,261,431	2,482,447	507,920	501,320	74,865	141,051	9,402,713
	One-Day	0	126,095	57,095	0	0	0	0	183,190
	Total	**3,433,679**	**2,387,526**	**2,539,542**	**507,920**	**501,320**	**74,865**	**141,051**	**9,585,903**

Note: Florida current has seven seaports that provide cruise line services with either homeported vessels or port-of-call vessel service.

Source: Individual Florida Seaports and the FSTED Council's Five-Year Seaport Mission Plan Data.

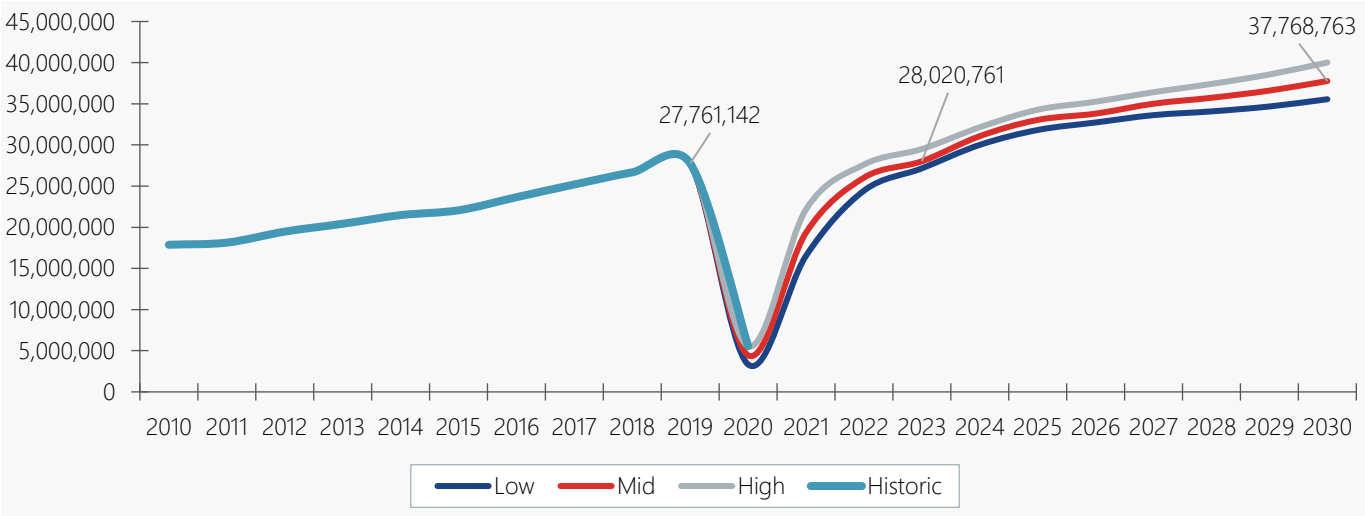
Starting in mid-March 2020, cruise lines and their port partners worked to put in place biological incident response protocols, practices, and terminal designs. These 'new' protocols have implications for terminal operations. Most cruise lines have developed and adopted protocols as part of the boarding process for homeport operations. As observed, new operating models have created longer processing times, higher staffing costs, and increased technical investments. Similar to security provisions adopted after September 11, 2001, it is reasonable to expect that biological incident response protocols will be incrementally updated and standardized across the industry.

Figure 2.11 illustrates the sharp decline of worldwide cruise passenger operations in 2020 and the forecasted recovery of the cruise industry during a 12-to-24-month period, recovering to 2019 levels between 2023 and 2024, and then

On December 31, 2019, the World Health Organization (WHO) was notified about a cluster of cases of pneumonia in Wuhan City. This was the first notice of a novel coronavirus, now known as COVID-19, which continued to spread globally. Governments and ports around the world responded by preventing many cruise ships from docking and advising people to avoid travelling on cruise ships. On March 14, 2020, the Center for Disease Control (CDC) issued a no-sail order in U.S. waters, one day after the industry had already agreed to stop embarking new cruises. The no-sail order was intended to control the spread of the virus on cruise ships that remain in U.S. jurisdiction, while protecting against further introduction and the spread of the virus into U.S. communities. Cruise ships began sailing again from Florida in June 2021 but continued to operate under the CDC's Conditional Sail Order until January 2022.

growing to some 37.7-million passengers by 2030.[16] For further information on the methodology used to develop these projections, refer to Appendix B.

FIGURE 2.11 WORLDWIDE CRUISE PASSENGER GROWTH PROJECTIONS, 2010–2030

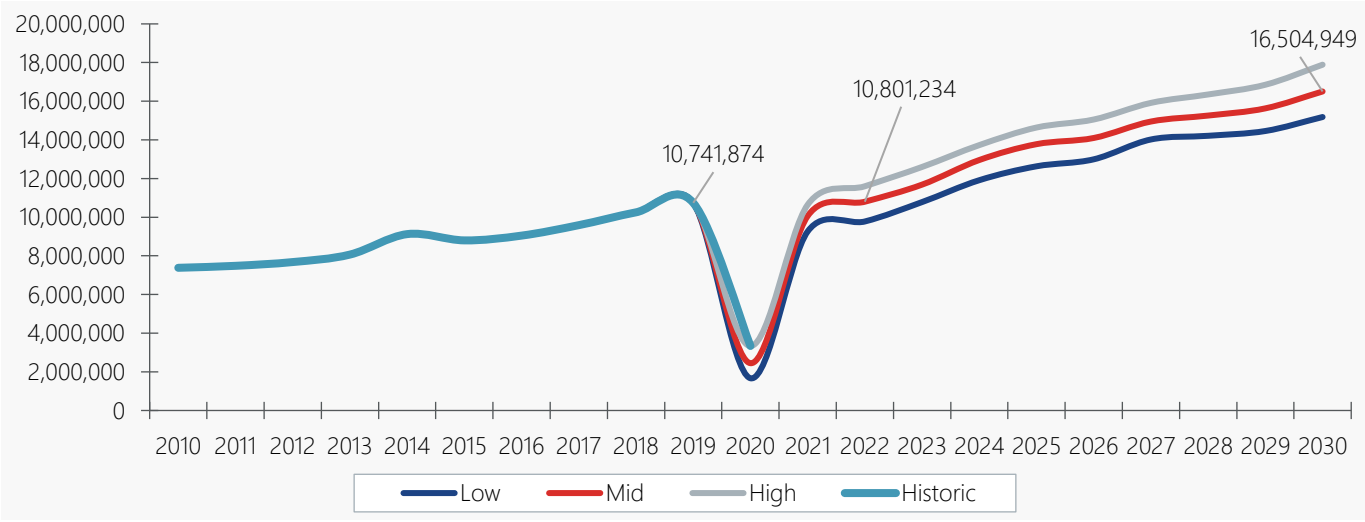


Note: Figure 2.11 illustrates cruise passengers, not revenue cruise passenger movements.

Source: Produced for FDOT (2022).

The Caribbean region will be a powerful tool for the regeneration of the North American cruise industry. Florida's seaports will play a significant role in the gradual return to the worldwide cruise industry business. Figure 2.12 illustrates the projected recovery/growth directly impacting Florida seaports.

FIGURE 2.12 FLORIDA CRUISE PASSENGER GROWTH PROJECTIONS, 2010–2030



Note: Figure 2.12 illustrates cruise passengers, not revenue cruise passengers.

Source: Produced for FDOT (2022).

[16] Note that the reference to "passengers" here is different from "revenue cruise passengers" which are counted in that manner for Florida's seaports' statistics and revenue collection. Revenue cruise passenger movements count both the embarkation and debarkation of passengers.

The cruise industry has shown tremendous resilience over its lifetime and has continued to prosper. Overall, there appears to be a positive opportunity once the recovery period is over. To some degree, this recovery will reshape the industry, including Florida seaports, through the implementation of new operating and health protocols, which are likely to continue into the foreseeable future allowing for cruise vessels to continue to be a safe and vibrant travel experience.

2.6 Summary

The cargo and cruise trends and forecasts presented and discussed above reflect the historical performance of Florida's seaports and set the stage for future growth and expansion. The types of cargo and cruise passengers handled, and how these markets have changed over time, have direct relationships to the on and off port infrastructure investments that have been and will be made to compete for business. These trends also provide insight into the performance of Florida's seaport and waterways system—how successful have the seaports and the state been in growing cargo and cruise volumes based on the types and value of investments made over the last decade? The trends and forecasts discussed above also inform the discussion on advantages, constraints, and needs presented in Chapter 3.

SEAPORT AND FREIGHT NEEDS, CONSTRAINTS, AND ADVANTAGES

3

3.1 Introduction to the Chapter

Documenting the advantages, constraints, and needs of Florida's seaport system is a critical element to the Seaport and Waterways System Plan. To accomplish this, the Department engaged key stakeholders and analyzed seaport and statewide multimodal planning documents. Seaports, harbor pilot stations, and tenants were interviewed and surveyed to gather input on the advantages and constraints to growth and the issues and needs affecting the Florida seaport system. This input was combined with master/strategic plans and capital improvement programs (CIPs) previously developed by the seaports, as well as the Florida Freight Mobility and Trade Plan (FMTP).

3.2 Stakeholder Outreach

FDOT's Seaport Office developed a list of key stakeholders and contacts from each public seaport and harbor pilot station across the state. Each public seaport was provided a questionnaire to fill out before participating in an interview to allow for advanced insight and quality feedback on key discussion topics. A one-page, multiple choice tenant questionnaire was also provided to the public seaports for distribution to their tenants. Lastly, an interview guide was developed to support interviews with the pilot associations. The seaport questionnaire, seaport tenant survey, and harbor pilot interview guide are provided in Appendix C. The results from this stakeholder engagement have been aggregated and used to inform this analysis.

3.3 Stakeholder Outreach Summary Matrix

The overall response to the stakeholder outreach effort was excellent, with 100% of Florida's active public seaports (14) and harbor pilot stations (9) being interviewed, along with 21 completed port tenant surveys. The seaport CIPs (14), master/strategic plans (14), and the FMTP were also reviewed. All of the questionnaire responses, interview notes, surveys, CIPs, master/strategic plans, and FMTP—representing 73 separate data sources—contributed to the Table 3.3 Stakeholder Outreach Summary Matrix presented and discussed in the following pages. The summary matrix was designed to identify all of the advantages, constraints, and needs. Input was communicated by stakeholders as either an advantage of the state's seaport system, a constraint to growth, or as an issue or need. The following definitions were utilized in order to ensure a consistent approach in developing this matrix:

- An **Advantage to Growth** is defined as an issue that provides an opportunity to compete for additional business. For example, a response saying "The shipping channel is deep enough to handle bigger ships" would be an advantage to growth.

- A **Constraint to Growth** is defined as an issue without a currently identified solution, whether due to planning or funding constraints. For example, a response saying "The shipping channel is not deep enough" would be a constraint if there is no identified dredging project.
- A **Need** is defined as a prioritized issue that has a project or funding attached. For example, a response saying "The shipping channel is not deep enough, but we have a dredging project in our CIP" would be considered a need.

The identified issues were aligned with both established CIP categories and type of issue to help identify common themes. Table 3.1 and Table 3.2 list the CIP categories and type of issues, respectively, including color schemes and abbreviations used in the detailed discussions in the subsequent sections.

TABLE 3.1 PORT CIP CATEGORY LIST

D	Channel and Harbor Dredging and Deepening (Including Spoil Projects)
C	Cargo Terminals (Including New Berths and Equipment)
B	Berth Rehabilitation and Repairs
CT	Cruise Terminals
M	Miscellaneous Projects (Ex: Computer, Recreation, Environmental)
O	Other Structures
I	Intermodal, Road, and Rail
S	Site Improvements
L	Land Acquisition
SS	Security and Safety

TABLE 3.2 ISSUES CATEGORY

A	Access
CA	Capacity
EF	Efficiency
E	Environmental
F	Funding
N	Navigation
R	Regulatory and Governmental
T	Trade (Global Shifts, National Trends, Industry Changes)

Table 3.3 presents the Stakeholder Outreach Summary Matrix, which groups and subtotals responses by issue category. The subsequent sections provide a structured breakdown and discussion of advantages to growth, constraints to growth, and 5-, 10-, and 20-year needs.

The Total Responses column shows the total count of all responses for each item. The table is organized in descending order of total responses for each issue category with responses for specific issues also listed in descending order from most to least for each category. Sub-totals are shown for each issue category. Out of eight issue categories, the top four identified were Access (163), Capacity (139), Efficiency (108), and Navigation (93). The most mentioned specific issues were Deep Dredge, Harbor and/or Channel Capacity (41); Bulkhead and Berthing Infrastructure (41); and Highway Access or Bottleneck (31).[17]

[17] Note that in some cases the total number of responses is not equal to the sum of needs, advantages, and constraints. This is due to some responses identifying needs in multiple years. A need identified as both a 5-year need and a 10-year need from the same source would count under each of those columns but only counts as a single response.

TABLE 3.3 STAKEHOLDER OUTREACH SUMMARY MATRIX

Port CIP Category	Issues Category	Identified Advantages, Constraints, and Needs	Total Responses	Advantages to Growth	Constraints to Growth	5 Year Needs	10 Year Needs	20 Year Needs
D	A	Deep dredge, harbor and/or channel capacity	41	14	18	8	1	1
I	A	Highway Access or Bottleneck	31	4	19	7	1	0
I	A	Rail Service (Terminal or On-dock Rail Access)	23	6	5	8	3	1
CT	A	Cruise Parking - Passenger Access	13	2	0	11	3	2
M	A	Recreational Enhancements (Boating, Fishing, Green Space,Marina)	9	0	0	9	0	0
SS	A	Security Access	8	0	1	7	0	0
B	A	Expansion of Mooring Areas	7	0	2	4	1	0
CT	A	Vessel Size Increase	6	1	4	1	0	0
M	A	Public Access to Waters Edge (Commercial, Prommonade, Rentals)	6	1	0	5	0	0
M	A	Commercial Space	6	0	0	6	0	0
C	A	Access to Markets	5	2	0	2	2	0
M	A	Shipyard Facilities & Associated Infrastructure	5	3	0	2	0	0
M	A	Workforce Development Training Programs / Building	3	0	1	1	0	1
		Access Total	163	33	50	71	11	5
S	CA	Site Expansion Development Needs	28	6	19	3	1	0
B	CA	Increased Bulkhead and Berthing Infrastructure	22	0	3	17	2	1
C	CA	Container Expansion	18	3	5	8	2	0
C	CA	Cargo Handling Equipment Needs	13	1	0	11	3	0
C	CA	On-port Warehousing Improvements Needs	12	0	0	11	1	0
C	CA	Reefer Cargo Needs (Warehousing or Reefer Plugs)	8	0	0	7	1	0
C	CA	Auto Cargo Expansion Needs RO/RO	8	0	1	6	2	0
C	CA	Bulk Cargo Expansion Needs	8	0	0	5	2	1
I	CA	Rail Capacity (storage yards, sidings, passing tracks)	8	0	5	3	0	0
O	CA	Off-port Distribution, ILC or Storage	6	1	1	4	0	0
I	CA	Trucking Services Providers and Driver Shortages	5	0	5	0	0	0
O	CA	Yacht Storage	2	1	0	0	1	0
O	CA	New Breakwater	1	0	0	1	0	0
		Capacity Total	139	12	39	76	15	2
SS	EF	Gate Operations	20	1	9	8	3	0
C	EF	Post Panamax Container Cranes	14	5	3	5	3	0
M	EF	Changing Technology	13	11	1	1	0	0
I	EF	Rail Service	13	5	6	2	0	0
C	EF	Utility / Laydown Updates	12	0	0	10	2	0
D	EF	Tidal Restrictions on Vessel Movement	9	0	9	0	0	0
S	EF	Intermodal connections (i.e., Transloading)	8	1	0	7	1	0
I	EF	Highway (Cruise and cargo traffic interaction)	5	0	3	2	0	0
S	EF	Container Yard Densification	5	3	1	1	0	0
SS	EF	Bridge or Air Gap Clearance	5	1	3	1	0	0
I	EF	Truck Parking (full service rest stops near ports)	4	0	4	0	0	0
		Efficiency Total	108	27	39	37	9	0
B	N	Bulkhead and Berthing Infrastructure	41	6	18	16	2	1
D	N	Maintenance Dredging	23	6	10	5	2	0
SS	N	Navigation Issues (Vessel Traffic Delays)	12	2	10	0	0	0
D	N	Turning Basin	7	0	3	3	1	0
SS	N	Bridge Issues (congestion, vessel air draft clearance)	6	0	6	0	0	0
SS	N	Conflicts with Recreational Traffic	4	0	4	0	0	0
		Navigation Total	93	14	51	24	5	1
CT	F	Cruise Terminal Development	16	2	2	12	3	2
L	F	Land Acquisition and Purchasing	11	2	3	6	0	0
SS	F	Security Funding	6	1	1	4	0	0
D	F	Federal Funding	5	2	3	0	0	0
M	F	Private Sector Investments (P3)	4	1	1	2	1	0
D	F	Local Funding (Matching Requirements)	3	0	3	0	0	0
		Funding Total	45	8	13	24	4	2
M	E	Water Quality, Drainage, Sustaining Waterfront Environment	16	0	8	7	1	0
C	E	Alternative Fuels - LNG/CNG, Ethanol, Wind Energy	9	2	2	3	3	0
M	E	Tug Boat Availability	8	0	8	0	0	0
M	E	Resilience and Climate Adaption	6	0	4	2	0	0
D	E	Sand Transfer & Material Management	4	0	1	3	0	0
S	E	Off-site Compensatory Stormwater Treatment	1	1	0	0	0	0
		Environmental Total	44	3	23	15	4	0
M	T	Studies, Plans, Economic Analysis	10	2	1	7	0	0
M	T	Proximity to Caribbean, Central and South America	8	7	1	0	0	0
D	T	Panama Canal Expansion Project	5	5	0	0	0	0
M	T	Nearshoring of Manufacturing (international shift)	3	2	1	0	0	0
M	T	Jones Act Issues	3	1	2	0	0	0
M	T	Foreign Trade Zones (Manufacturing or Distribution)	2	1	0	0	1	0
M	T	West Coast to East Coast Cargo Shift	2	1	1	0	0	0
M	T	Open Trade with Cuba (Helms-Burton Act)	2	2	0	0	0	0
M	T	Data Acquisition and Technology	1	1	0	0	0	0
M	T	Container Line Alliance Issue	1	0	1	0	0	0
		Trade (Global Shifts, National Trends, Industry Changes)	37	22	7	7	1	0
C	R	Customs and Border Protection - Cargo	3	0	1	2	0	0
CT	R	Customs and Border Protection - Cruise	2	0	1	1	0	0
I	R	Truck Regulations (HOS, weight limits, gate appt...)	2	0	2	0	0	0
M	R	Educate Federal and State Lawmakers and Public	1	1	0	0	0	0
		Regulatory and Governmental Total	8	1	4	3	0	0
		Total	637	120	226	257	49	10

3.4 Advantages of Florida's Seaport System

Table 3.4 shows the top identified advantages that Florida's seaport system has available to leverage future growth opportunities. **Deep Dredge, Harbor, and/or Channel Capacity** was perceived as the top advantage to growth. In recent years, FDOT and Florida seaports have made ongoing investments to deepen and widen channels allowing for larger ships to arrive safely. **Changing Technology** was also considered an advantage and can be used to increase cargo capacities, expedite Custom's processes, and alleviate congestion at port gates. Such technologies might include expedited gate entry processes (such as Transportation Worker Identification Credentials, or TWIC), facial recognition, or software to develop higher density container yards. **Proximity to the Caribbean, Central, and South America** is the third most mentioned advantage, highlighting Florida's dominant role in North/South trade lanes and the geographical benefits of our state.

TOP ADVANTAGES OF FLORIDA'S SEAPORT SYSTEM

1. Deep Dredge, Harbor and/or Channel Capacity
2. Changing Technology
3. Proximity to Caribbean, Central and South America

TABLE 3.4 IDENTIFIED ADVANTAGES OF FLORIDA'S SEAPORT SYSTEM

CIP Category	Issues Category	Identified Constraints, Needs, and Advantages	Advantages to Growth	Percentage of Total Respondents
D	A	Deep Dredge, Harbor and/or Channel Capacity	14	19%
M	EF	Changing Technology	11	15%
M	T	Proximity to Caribbean, Central and South America	7	10%
B	N	Bulkhead and Berthing Infrastructure	6	8%
S	CA	Site Expansion Development Needs	6	8%
D	N	Maintenance Dredging	6	8%
I	A	Rail Service (Terminal or On-dock Rail Access)	6	8%
C	EF	Post Panamax Container Cranes	5	7%
I	EF	Rail Service	5	7%
D	T	Panama Canal Expansion Project	5	7%

Source: FDOT Seaport and Waterways Office, Florida Public Seaports, and Industry Stakeholders.

3.5 Constraints to Growth

Table 3.5 summarizes identified constraints, which will directly hinder a seaports ability to expand or grow. **Site Expansion Development Needs** and **Highway Access or Bottleneck** are the two most common constraints mentioned. Several seaports and tenants identified site expansion as a critical issue given the lack of available port-owned land for development and existing facilities already operating at maximum capacity. Without available land for future development, additional growth is limited to advances in technology that can

TOP CONSTRAINTS TO GROWTH

1. Site Expansion Development Needs
2. Highway Access or Bottleneck
3. Deep Dredge, Harbor and/or Channel Capacity
4. Bulkhead and Berthing Infrastructure

better utilize existing capacities, such as container yard densification and/or automation. Highway Access or Bottleneck was also identified by more than a quarter of respondents. In some cases, this is due to ongoing construction which is currently increasing travel times, but in others it is due to ongoing congestion that has yet to be addressed. Harbor pilots in particular noted instances of congestion which increase their duty response time, potentially resulting in delays in vessel movements if they cannot readily access the seaport.

Deep Dredge, Harbor and/or Channel Capacity and Bulkhead and Berthing Infrastructure were the next two most mentioned constraints. Although Deep Dredge, Harbor and/or Channel Capacity was also identified as a top advantage to growth, some of Florida's seaports continue to align resources and seek permitting approvals to advance deepening and widening projects. As these projects are completed, seaports are able to handle larger vessels safely, which results in increased throughput at Florida ports.

In regards to Bulkhead and Berthing Infrastructure, the number, length, and condition of berths/bulkheads are critical to seaport operations. Many bulkheads across the state are approaching the end of their design life and are in need of rehabilitation. Several ports reported being berth constrained, especially while berthing structures, including bulkheads, are undergoing repairs and reconstruction. Additionally, vessels are larger today and take up more berth space requiring, at times, multiple berths. Larger seaports have more capacity to shift cargo and accommodate repairs and reconstruction, but small and medium size seaports with a limited number of berths can feel the impact to a greater degree.

TABLE 3.5 IDENTIFIED CONSTRAINTS OF FLORIDA'S SEAPORT SYSTEM

CIP Category	Issues Category	Identified Constraints, Needs, and Advantages	Constraints to Growth	Percentage of Total Respondents
S	CA	Site Expansion Development Needs	19	26%
I	A	Highway Access or Bottleneck	19	26%
D	A	Deep Dredge, Harbor and/or Channel Capacity	18	25%
B	N	Bulkhead and Berthing Infrastructure	18	25%
D	N	Maintenance Dredging	10	14%
SS	N	Navigation Issues (Vessel Traffic Delays)	10	14%
SS	EF	Gate Operations	9	12%
D	EF	Tidal Restrictions on Vessel Movement	9	12%
M	E	Water Quality, Drainage, Sustaining Waterfront Environment	8	11%
M	E	Tug Boat Availability	8	11%

Source: FDOT Seaport and Waterways Office, Florida Public Seaports, and Industry Stakeholders.

3.6 Identified Needs of Florida's Seaport System

Florida's seaports have identified and developed capital investment needs/projects to capitalize on advantages and mitigate ongoing constraints.

TOP 5-YEAR NEEDS

1. Increased Bulkhead and Berthing Infrastructure (Capacity)
2. Bulkhead and Berthing Infrastructure (Navigation)
3. Cruise Terminal Development

Table 3.6 details the most common types of five-year needs, as primarily documented in master/strategic plans and CIPs. The top two types of needs – **Increased Bulkhead and Berthing Infrastructure** (Capacity) and **Bulkhead and Berthing Infrastructure** (Navigation) – were identified by 23% and 22% of respondents, respectively. While berths and bulkheads have been mentioned as one of the seaports' greatest constraints, several projects are planned for the next five years to alleviate some of these problems. With a typical design life of 40 years, these timely investments will help to ensure continued operations at the seaports and provide the ability to accommodate larger ships.

Bulkhead and berthing needs are two-fold. From a capacity perspective, increased bulkhead and berthing infrastructure is needed to accommodate the larger ships that are now calling at Florida's seaports as well as an additional number of vessels. The larger ships may occupy multiple, small berths that were originally designed when ships were smaller. From a navigational perspective, key considerations include access to the berths (e.g., access to turning basins, geometric design) as well as the impact on navigable channels that larger ships with a wider beam at berth can have on passing ships moving to and/or from berth. Development of this infrastructure needs to balance both the capacity and operational needs of the port users.

Cruise Terminal Development (16%) and **Cruise Parking – Passenger Access (15%)** are not surprising short term priorities. Seaports are working to not only increase the number of terminals and berths available for cruise ships, but also the ability to enhance existing terminals to better accommodate the new or different needs of cruise ships and their evolving operations, such as changes to Customs processes, ability to accommodate more passengers/ship, or changes in provisioning. Other top needs supplement cargo development and expansion. **Cargo Handling Equipment Needs (15%)** and **On-port Warehousing Improvement Needs (15%)** illustrate the challenges faced by Florida's seaports related to handling the cargo being off-loaded and processed within existing terminals. Given the level of investment over the last five years by multiple seaports to expand waterside capacity, it should be expected that future investment needs will focus on the ability to process anticipated increases in cargo throughputs.

TABLE 3.6 IDENTIFIED NEEDS OF FLORIDA'S SEAPORT SYSTEM—5 YEAR

CIP Category	Issues Category	Identified Constraints, Needs, and Advantages	5 Year Needs	Percentage of Total Respondents
B	CA	Increased Bulkhead and Berthing Infrastructure	17	23%
B	N	Bulkhead and Berthing Infrastructure	16	22%
CT	F	Cruise Terminal Development	12	16%
C	CA	Cargo Handling Equipment Needs	11	15%
C	CA	On-port Warehousing Improvements Needs	11	15%
CT	A	Cruise Parking - Passenger Access	11	15%
C	EF	Utility / Laydown Updates	10	14%
M	A	Recreational Enhancements (Boating, Fishing, Green Space,Marina)	9	12%
D	A	Deep dredge, harbor and/or channel capacity	8	11%
C	CA	Container Expansion	8	11%
I	A	Rail Service (Terminal or On-dock Rail Access)	8	11%
SS	EF	Gate Operations	8	11%

Source: FDOT Seaport and Waterways Office, Florida Public Seaports, and Industry Stakeholders.

3.7 Conclusion

Florida's seaports have a wide variety of constraints, needs, and advantages to address in the coming years in order to both maintain and expand their business. The most frequent categories of issues focus on channel and harbor dredging and deepening and intermodal access which impact capacity, access, and efficiency concerns.[18] These concerns largely stem from the worldwide trend of building larger ships which must fit into existing channels and port infrastructure. In addition, shippers and shipping companies are looking for more reliable and resilient supply chains, which has led to diversification of vessel rotations, providing additional opportunities for Gulf and Atlantic seaports. The ability of Florida's seaports to adapt to this changing business environment will be critical to preserve and strengthen the competitiveness of these gateways.

As illustrated above, Florida's seaports must address a variety of needs to be successful. Much emphasis has been placed in recent years on channel deepening projects to accommodate larger vessels. Many of these projects have been completed or are funded and underway. However, these waterway capacity projects have a downstream affect on terminal and landside operations. Larger vessels lead to the need for larger cranes, longer berths, additional terminal laydown areas, and efficient road and rail access. Workforce availability is critical as is the ability to incorporate technology solutions that help with terminal efficiency. A diverse investment strategy is necessary to ensure the success of Florida's

[18] Appendix C provides a more lengthy discussion of common CIP and Issue Categories identified through this process.

seaports and to prevent any one of these items from becoming an inhibitor to growth. Figure 3.1 illustrates the relationship among the different types of projects that will guide seaport investment priorities over the coming years.

FIGURE 3.1 TYPES OF INVESTMENTS NECESSARY TO SUPPORT SEAPORT GROWTH

FDOT FOCUS AREAS AND STRATEGIES

4

4.1 Introduction

The Florida Department of Transportation is an active partner working with Florida seaports to identify needs and invest in seaport infrastructure that increases capacity, provides landside and waterside access, and promotes operational efficiency. This Chapter defines the strategic context for these investments and describes implementation strategies and focus areas to guide FDOT's seaport program. These strategies and focus areas incorporate the industry trends and forecasts discussed in Chapter 2; the constraints, advantages, and needs identified in Chapter 3; and relate to the unique characteristics of Florida's seaport and waterways system and the industries it serves.

The strategies and focus areas align with Florida's overall planning efforts and policies expressed in the Florida Transportation Plan (FTP), Strategic Intermodal System (SIS) Plan, and Freight Mobility and Trade Plan (FMTP). The entirety of these goals, objectives, strategies, and focus areas provides a framework and context for implementation of Florida's seaport program, consisting of initiatives that leverage advantages to growth, mitigate constraints to growth, and meet the needs of Florida's seaport system.

4.2 Themes of the 2020 Florida Seaport and Waterways System Plan

Throughout the development of this 2020 Seaport and Waterways System Plan, several key themes were identified through discussions with the state's seaports and their partners. These themes capture the essence of the constraints, needs and advantages documented in Chapter 3. The diversity of stakeholders—driven by the differences in the seaports themselves, input from the pilots, and input from the port tenants—resulted in a thoughtful and comprehensive list of themes. The following details the key themes identified:

- Access. Access to Florida's seaports is critical to ensure the safe and efficient movement of freight and passengers and the workers commuting to the facilities daily. Both highway and rail access were frequently mentioned by seaports, harbor pilots, and tenants. Access concerns are not limited to port property; they include congestion on local roadways, at-grade rail crossings conflicts, delays at port access gates, direct on-dock/on-port rail service, and channel and berth capacity. Berths, and their supporting bulkheads, control waterside access to a seaport. The number, length, and load capacity of berths, along with the navigable waters serving the berths represent key waterside access considerations.

- Diversity of Operations. Florida's seaports have continued to expand the types of cargos and services they provide. This diversity helps to strengthen their ability to weather extreme changes or disruptions in a single industry. The range of service offerings also affords the opportunity to compete in a variety of markets. Less diversified seaports are more susceptible to market changes or other extreme events.
- Environmental Stewardship and System Resilience. The sensitivity of Florida's natural environment was frequently mentioned by stakeholders, in particular the need to protect and maintain Florida's pristine waterways as harbor pilots navigate ships into and out of port facilities. In addition, the resilience of Florida's seaports to overcome and mitigate disruptors is critical to their economic strength. Business partners are looking for seaport operations to return to normal as quickly as possible post-event. The impacts of sea level rise and more extreme weather events were noted by the seaports, several of whom are beginning to develop infrastructure hardening projects or are incorporating stricter design criteria into new construction to prevent or limit the impacts of events. Emergency preparedness planning and training is also being used by seaports and their partners as part of resiliency efforts to minimize the impacts. Seaports in Northwest Florida have most recently been impacted by major hurricanes which destroyed port and pilot facilities and compromised vessel navigation, which incurred a need for emergency dredging.
- Funding. Projects undertaken by Florida's seaports are often multiyear, multimillion-dollar efforts, and require years of industry analysis, careful planning, and permitting. Many of these projects are limited by funding availability despite efforts to find additional sources such as competitive discretionary Federal grant programs. Florida's seaports have access to a variety of funding mechanisms to implement their CIPs that include self-generated revenues, taxing authority, bonding capacity, public private partnerships, Federal funding (e.g., Harbor Maintenance Tax), State Infrastructure Bank (SIB) loans, and competitive discretionary grant programs including Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program, and the Port Infrastructure Development Program (PIDP). The Florida Department of Transportation also administers more than $60 million annually to Florida's seaports.
- Navigation. Navigation is a critical component for any seaport in order to ensure the safe passage of ships. Concerns raised by harbor pilots in particular noted the difficulty in operations as both cargo and cruise ships get larger and channel depth and width remain fixed. The availability of tug boats was a common theme mentioned. The proportionately smaller channels for these larger ships allows for smaller margins of error. In these situations, additional tugs are necessary to maneuver ships into channels. This becomes more complicated with the presence of winds, currents, and tidal shifts. Many of Florida's seaports have strong, unpredictable currents, such as the Gulf Stream along the Atlantic coast. Introduction of additional aids to navigation (AtoNs) such as range towers and beacons would be beneficial. A seaport's berth infrastructure can also impact navigation. The geometric layout, proximity to turning basins, and possible encroachment of larger vessels into the designated channel when at berth all impact vessel operations and pilot decisions, in some cases creating first in/last out sailing restrictions.
- Land Availability. Seaports are increasingly becoming land constrained. The ability to grow and expand throughput and markets is, in part, determined by land available for development. Most seaports mentioned the need for more land as a critical constraint to their long-term growth. In many instances, existing facilities are redeveloped to accommodate new tenants. In addition to the need to find and protect port-adjacent lands, intermodal logistics centers, off site empty container storage strategies, and improvements in operational efficiency were also identified as possible strategies.

- **Technology.** Evolving technologies is another common theme as seaports and users try to find innovative ways to increase throughput through existing infrastructure. Ports also are investing in new cranes, and retrofitting older cranes to increase operational capacity by increasing the number of lifts per hour, and allowing higher container stacking to increase terminal density. Terminal automation and automated trucks are being studied throughout the industry. Reservation or appointment systems are being used to reduce or better manage queues associated with truck pick ups and drop offs. These technology applications are critical for ports handling increased volumes with limited land for development. Technology innovations, such as facial recognition systems, are also being implemented to streamline passenger processing at cruise terminals to expedite the embarkation of passengers.
- **Trade Shifts and Supply Chain Disruptions.** Florida's seaports have focused for more than a decade to ensure Florida ports capture and serve Florida markets. As one of the fastest growing states in the Nation, and the third largest by population, Florida markets are growing—and so have Florida's seaports. During this time, there have been significant global supply chain disruptions that have compromised the movement of goods throughout the world (e.g., Suez Canal blockage in 2021, frequent strikes at West Coast seaports, global coronavirus pandemic). In response, Florida seaports have deepened and widened their channels, added terminal capacity, improved road and rail first/last mile access, and continued to diversify their markets. The ports have remained open for business and this theme will remain a critical strategy for the state in the coming years.

4.3 Strategic Characteristics of Florida's Seaport and Waterways System

Florida's seaport and waterways system has several strategic characteristics that contribute to the competitiveness and diversity of the state's maritime industries. As a peninsula with 14 active public seaports spanning the Atlantic and Gulf coastlines, **every region of the state has access to one or more deep water seaports serving as gateways to global markets**. These 14 seaports offer **a mix of services that cover all types of cargo** (e.g., liquid bulk, dry bulk, break bulk, project cargo, containers, refrigerated containers/reefers), as well as cruise passengers, providing multiple opportunities for market development and expansion.

Increases in container capacity at multiple ports over the last five years has helped **ensure Florida's seaports are positioned to serve Florida markets.** The container capacity is supported by investments to deepen and widen port channels, which **positions the state for larger vessels.** Florida's seaports are also geographically positioned and **serve as primary gateways for trade throughout the Caribbean, Central and South America**. Florida's seaport system also has **redundancy for key strategic commodities that makes the state more resilient.** For example, Port Everglades, Port Tampa Bay, and Port Canaveral each have an established petroleum industry. Under normal conditions, they each have a defined market. However, during a port closure due to a supply chain disruption (e.g., hurricane), each of these ports can expand their market area to keep the economy moving. This diversity of functions, equipment and facilities, customers, and cargos provides long-term sustainability of the seaport system and creates a more robust economy in local communities and the state as a whole.

Florida also is home to the world's three busiest cruise ports—PortMiami, Port Canaveral, and Port Everglades. The **dominance in the cruise industry ensures Florida is always on the cutting edge of new cruise industry offerings**, including the newest, largest, and most advanced vessels and cruise terminals. The variety of cruise options available makes Florida

an attractive market for residents and visitors alike. This strong awareness of the industry and proximity of Florida to the Caribbean and the Bahamas supports cruise operations at other Florida seaports such as JAXPORT, Port Tampa Bay, and the Port of Palm Beach, while also serving as a feeder for port of call operations at the Port of Key West.

Florida's seaports **represent one of the top economic engines in each of their host communities.** The **established seaport funding programs** implemented annually by FDOT in partnership with their 14 seaport partners is also one of the state's key strategic differentiators. FDOT's focus on passenger and freight operations further supports the efforts of Florida's seaports by advancing on and off port improvements that support overall freight and passenger mobility. By strengthening the viability and economic impact of Florida seaports through partnered and coordinated investments in seaport and intermodal infrastructure, the Department plays a major role in improving the capacity and efficiency of Florida's waterborne commerce and maritime facilities.

4.4 Florida Seaport and Waterways Development: Strategic Considerations

The investments that have been made and are ongoing at Florida's seaports over the last decade have focused on positioning the state for future growth opportunities. There are several strategic considerations impacting these investment decisions at both the seaport and state levels.

- **Shifts in global trade patterns** (e.g., global manufacturing center shifts, domestic sourcing, near shoring/sourcing). Shifting trade patterns impact where goods are manufactured, carrier routing decisions, and the ability of ports to compete for the traffic. Key changes in manufacturing centers in Asia over the last decade have resulted in increased use of the Suez Canal and the expansion of the Panama Canal, which have made East Coast ports more competitive. Florida's seaports have made significant investments in terminal and waterway capacity to compete for this cargo.
- **Changes in industry equipment** (e.g., larger vessels). Vessels have continued to get larger. The largest container vessels serve the largest markets; carrier alliances have further reduced the number of ports the largest vessels serve. These vessels require ports to deepen their channels and berths, and to invest in new terminal equipment—especially cranes with the reach to unload vessels of this size. PortMiami was the first Florida port to deepen to 50 feet. JAXPORT will be deepened to 47 feet in 2022, and Port Everglades will be deepened to 50 feet by 2029. The cruise industry is also impacted by increased vessels sizes as existing terminals must be able to handle a higher throughput of passengers, crew, luggage, and provisioning.
- **Global supply chain disruptions** (e.g., West Coast labor strikes, global coronavirus pandemic, Suez Canal blockage). Over the last decade there have been significant disruptions to key global supply chains. These disruptions cause significant delays to deliveries, and in some instances loss of perishable cargo. Labor strikes have closed West Coast ports for weeks if not months. The global coronavirus pandemic resulted in significant delays as manufacturers shut down, vessels were anchored off shore of U.S. ports due to limited port capacities, and once ashore a truck driver shortage further compromised delivery. The Suez Canal blockage in 2021 further illustrated the dependence of the world economy on select infrastructure. Florida's seaports have remained open and ready for business during these disruptions.

- Market growth (e.g., population and tourism, e-commerce). Florida has been one of the fastest growing states in the U.S. for more than a decade with over 21 million residents in 2020. Florida is now the 3rd largest state by population. Tourism numbers have continued to increase exceeding 130 million in 2019. These increases result in a growing demand for goods and services. As the demand for consumer products increases, Florida's seaports are well positioned to play a critical role.
- Supply chain diversification and resiliency (e.g., use of West and East Coast ports, infrastructure hardening projects). In recent years, shippers and carriers have diversified their operations to mitigate potential disruptions. In some cases, this has led to the use of both East and West coast ports. This has created opportunities for East and Gulf coast ports to compete for new business. The widening of the Panama Canal further contributed to these opportunities. In addition, efforts are underway at many ports to harden infrastructure in preparation for sea level rise and a greater frequency of extreme weather events. Florida's ports are actively engaging in enhanced designs to prepare for future environmental conditions, while also investing in new terminal capacity and deeper/wider waterways to compete for additional cargo.
- Development of supporting freight infrastructure. Port infrastructure and capacity is only part of a port's success. Landside connectivity and market access is critical. This includes on-dock or on-port rail access, roadway connections to the Interstate System, and intermodal logistics centers (ILCs) that provide off site capacity for warehouse and distribution center activities, as well as empty container storage space. Florida's ports have partnered with railroads to improve rail service and ongoing discussions between FDOT and Florida's seaports have advanced the topic of a statewide ILC strategy.

Each of these strategic considerations helps Florida and its ports position the state for growth by ensuring the seaport system and its supporting intermodal infrastructure is competitive and provides the necessary capacity and connectivity.

4.5 FDOT Seaport and Waterways Focus Areas, Strategies, and Initiatives

In order to support the ongoing evolution and expansion of the Florida seaport and waterways system, the FDOT Seaport Office has identified focus areas to guide the seaport program, strategies to advance the seaport program, and initiatives to implement key projects. This approach ensures Seaport Office priorities align with FDOT's seven goals defined in the FTP, as well as address key needs identified by Florida's seaports for landside, waterside, and terminal improvement and expansion projects.

Conceptually, the focus areas define the "purpose" of the strategies and initiatives, which describe the "how" and "what" or "where," respectively. The remainder of this chapter presents the Seaport Program's Focus Areas, Strategies and Initiatives with Appendix D providing a cross-walk table that outlines how the FDOT 2020 Florida Seaport and Waterways System Plan Focus Areas and Strategies relate to the FTP goals and SIS and FMTP objectives.

4.5.1 FDOT Seaport Office Focus Areas

The four Focus Areas, consistent with the 2015 Plan, represent the key functional areas all seaports must address to compete for and retain business. These focus areas address how ports are accessed, how much volume of cargo and

passengers ports can handle, how efficiently the capacity and access are utilized, and how well the port-centric supply chains function. These focus areas help guide state investments in the seaport and waterways system. The focus areas are defined as follows:

Seaport Access is defined as near-port waterway and landside infrastructure that provides safe and efficient access to and from seaports for vehicles, railcars, and vessels to move cargo and passengers. For seaports designated as part of the SIS, the SIS connectors (e.g., road, rail, water) illustrate FDOT's focus on access and have guided significant state investments over the last 20 years.

Seaport Capacity Expansion is defined as on-port infrastructure, equipment, and systems that increase the ability of seaports to handle growing or new volumes of passengers, cargos, or other niche maritime activities. Facilities may include wharfs/bulkheads, terminals, cargo handling equipment (e.g., cranes), warehouses and cargo laydown areas, and rail yards and transfer facilities.

Seaport Efficiency Improvement is defined as on-port infrastructure, equipment, technology, and systems that improve the efficiency and safety of vehicle, cargo, and passenger movements within port operational areas. For cargo, improvements could include gate structures and systems, cranes, container yard densification, and automation. For cruise, improvements could include facial recognition technologies, shore power infrastructure, people movers, and streamlined management of provisioning deliveries.

Supply Chain Optimization is defined as the integrated and efficient movement of cargo through a port to its final destination in a way that maximizes reliability and minimizes cost. This includes the timely unloading of a vessel, transfer of the cargo to truck or rail, and movement of the cargo through inland intermodal systems to its destination. Key components of the off-port intermodal systems include rail lines, inland transfer yards, intermodal logistics centers (ILCs), truck staging locations, truck parking and service facilities, warehousing and distribution facilities, and Foreign-Trade Zone (FTZ) facilities.

4.5.2 FDOT Seaport Office Strategies

The strategies available to the FDOT Seaport Office represent activities and approaches to address and advance the focus areas. The below strategies are largely consistent with the 2015 Plan and represent key responsibilities and day to day actions of the FDOT Seaport Office.

1. Use state resources to leverage local, private, and Federal investments in Florida's seaports.
2. Collaborate with seaports and industry stakeholders to identify and fund areas of greatest need and opportunity.
3. Monitor local, regional, statewide, national, and global industry events, issues, and trends to ensure Florida's seaport investments and initiatives best position the state for success.
4. Monitor seaport system performance to track the effectiveness of state investments over time to guide future investment decisions and priorities.

5. Partner with seaports to pursue new opportunities, address specific problem areas, and explore new technologies and systems to enhance seaport efficiencies, capabilities, resilience, and capacities.

6. Coordinate with seaports and their intermodal industry partners to promote efficient multimodal connectivity to seaport terminals and markets throughout Florida and beyond.

7. Facilitate local, state, and Federal agency responsiveness to Florida seaport constraints and advantages through outreach, education, coordination, and support of port-led competitive grant applications.

8. Work with seaport and maritime stakeholders to support and create educational and workforce training programs for seaport, supply chain, and maritime related businesses.

4.5.3 FDOT Seaport Office Initiatives

The seaport initiatives discussed below represent categories or types of projects that align with the focus areas and strategies discussed above, and reflect key priorities for Florida's seaport and waterways system. The FDOT Seaport Office has partnered with seaports to fund and advance projects that advance each of these initiatives.

These initiatives integrate and address multiple focus areas and are supported by several strategies. These initiatives reflect the constraints, needs, and advantages discussed in Chapter 3 and follow the themes included earlier in this chapter.

1. Bulkhead/Dock Expansion and Rehabilitation to ensure safe and efficient handling of vessels:

Across the state, many bulkheads have reached the end of their design life and are in need of major rehabilitation or replacement. In addition, some seaports are serving larger vessels by using the linear length of multiple older and shorter berths, which can create a berth shortage and limit the number of vessels that can be in port simultaneously. Bulkheads and docks provide the berthing area for vessels as well as support operations on the landside such as container cranes, container rail networks, and other equipment necessary to load and unload a vessel. Bulkheads and docks are critical for maintaining operations and many seaports have recently completed upgrades or are working to secure funding for them.

2. Investment in Competitive and Reliable Supply Chains

The competitiveness of supply chains drives business decisions. Supply chain considerations include available carrier options (e.g., truck, rail, air, water), transportation costs/economics, carrier performance, system reliability, warehouse and industrial capacity and cost, available workforce, and more. Florida's seaports represent key domestic and international gateways within these larger supply chains. Supply chains are as strong as their weakest link and the weakest link can change based on the impact of unplanned disruptors. The blockage of the Suez Canal by the Ever Given in 2021 resulted in a backlog of 300 vessels and set back all global trade movement as alternate routes were not viable or cost-effective. Repeated West Coast labor issues at the Ports of Los Angeles and Long Beach have resulted in new and expanded opportunities at Atlantic and Gulf Coast seaports for Asian trade. The ability of Florida's seaports to compete for business and continue to grow in the coming years is predicated on their ability to provide state of the practice services and capacities (e.g., water depth, terminal capacity and equipment, roadway and rail connections) and the ability of their host communities and the state of Florida to ensure efficient access to markets.

3. Equipment Acquisitions to improve capacity, efficiency, and energy usage:

Florida's seaports have purchased and are continuing to purchase new container cranes (e.g., post-Panamax gantry cranes) to service the larger ships that accompany deeper channels. In addition to being able to accommodate these larger ships, newer cranes are faster and more sophisticated, enhancing both capacity and efficiency. Additional equipment purchases, including rubber-tired gantry cranes (RTGs) enhance the operations at Florida's seaports, supporting densification (e.g., stacking higher) and facilitating the loading of trucks and trains. In particular, the need for additional tug boats has been identified in order to more safely maneuver the larger ships calling at Florida's seaports. New LNG bunkering infrastructure has also emerged as a priority as cargo and cruise vessels have begun to convert their fleets. Cruise terminals also have expanded their use of technology to support passenger processing, including facial recognition software.

4. On- and Off-Port Road and Rail Improvements to increase intermodal choices and efficiency:

Over the last decade, Florida's seaports have expanded on-port and on-dock rail access. This is a key growth strategy for ports, as well as a way to mitigate roadway congestion at port access points and throughout the first/last mile network. Investments in intermodal container transfer facilities (ICTFs) at PortMiami, Port Everglades, and the Port of Palm Beach are key examples of how Florida's container ports are working to expand their market reach while mitigating roadway congestion. Roadway projects have also advanced with completed projects and planning studies to further expand and improve access. Reliable landside access to the seaports increases their competitive position by reducing uncertainties in the supply chain.

5. Waterway deepening and widening to improve vessel access, safety, and capacity:

Major widening and/or deepening projects have been completed (PortMiami and JAXPORT), are planned (Port Everglades), or proposed for study (Port Tampa Bay) throughout the state. As cargo and cruise vessels continue to grow in size, collaboration between FDOT and the seaports to leverage Federal authorizations and funding will continue to be necessary in order to improve the ability of Florida's seaports to safely and efficiently handle these vessels. FDOT has accelerated several deepening projects by advancing funds and waiting for Federal reimbursement. These efforts serve to maintain and improve Florida's competitiveness and capabilities in global container trade, bulk commodities, and the cruise industry while operating at the highest safety standards.

6. Terminal Improvements, Expansions and Adoption of Technology to increase capacity, safety, and efficiency:

Most of Florida's ports have limited land available for new development. In this environment, they work to maximize the use of their available space and often redevelop parcels in order to accommodate new tenants, maintain existing tenants, or increase throughput. The implementation of new technologies is a critical component to maximize existing operations and to enhance new development or redevelopment, whether it be for the densification of a container yard or for expediting passengers through Customs and Border Patrol when debarking a cruise ship.

7. Land Acquisition and Preservation for future seaport related expansion needs:

Florida's seaports work to optimize the use of land and facilities within their boundaries. Most ports identified the lack of additional developable land as a key constraint to future growth. In many cases, additional land is difficult to come by due to cost, community opposition, or simply no adjacent land exists. Preservation of existing seaport acreage and identification of off-port locations that can be utilized to support seaport activities (e.g., empty container storage, foreign trade zones, warehouses and distribution centers, truck staging areas) is critical to support future expansion at Florida's seaports.

4.6 Conclusion and Outlook

Florida's seaport and waterways system has continued to grow and expand over the last five years. Investments, completed and underway, align with the focus areas and initiatives, and FDOT's Seaport Office has engaged in the advancement of projects through the defined list of strategies. All of Florida's ports have advanced their priorities. Key examples include:

- Port Tampa Bay and SeaPort Manatee have dramatically increased container capacity and are pursuing additional vessel calls;
- The 15,000 TEU CMA CGM Argentina called PortMiami in April 2021 making it the largest container vessel to call on a Florida port;
- Port Everglades' Southport Turning Notch is nearing completion, bringing five new berths online;
- Port Canaveral has seen significant growth in spent booster rockets serving SpaceX and is preparing for the arrival of Blue Origin as Florida's commercial space industry continues to expand;
- JAXPORT's harbor deepening was completed in Spring 2022;
- Port of Panama City's East Terminal development is underway; and
- The Port of Palm Beach currently is expanding and redeveloping its on-port rail system to provide on-dock rail.

These strategic investments have already made great economic impacts to the ports, industry, and businesses. As the ports have brought new capacity online, cargo and cruise throughputs have continued to grow. While the pandemic resulted in a temporary pause in growth in some markets, the ports remain bullish about future market opportunities and have not experienced the same supply chain disruptions—at least locally—that other competitor ports have in the Southeast U.S. and on the West Coast. Container forecasts suggest Florida ports will handle over 6 million TEUs by 2040. Other cargo types also are growing as the construction industry remains strong in Florida. The cruise industry has returned, with new terminals under development, new ships on order, and a surging demand in cruisers ready to return to sea.

FDOT's Seaport Office has actively partnered with the seaports as they continue to maneuver a dynamic market place with real-time changes to investment priorities as new opportunities develop. In November 2021, the FDOT Seaport Office facilitated a two-day workshop with eight of Florida's ports designed to discuss supply chain constraints and opportunities. The purpose of the discussion was to identity opportunities to enhance and promote the competitiveness and capacity of

Florida's global supply chains—looking at both on- and off-port facilities. The Seaport Office also facilitated a blocked channel exercise at Port Everglades later that month to help develop guidelines to ensure the port community is prepared for a possible waterway access closure. These represent just a few examples of the ongoing efforts the Seaport Office undertakes, in addition to annual project funding, to support the growth and success of Florida's seaport and waterways system.

This Seaport and Waterways System Plan provides an updated roadmap for the state's seaport program, providing readers with a concise and forward-looking perspective on the future of Florida's seaport and waterways system and the role FDOT plays in supporting future success. The outlook is strong. Florida's seaports have aggressive capital improvement plans under development and the state is committed to partner with them.

CHAPTER 1 APPENDIX

A.1 Related Plans and Resources

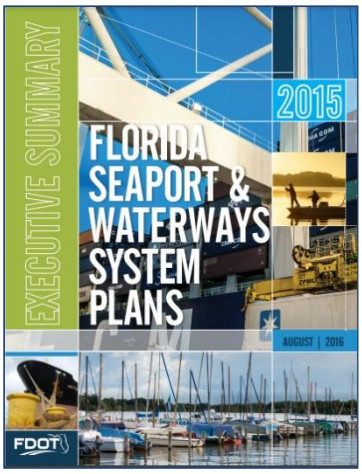
The seaport system plan has been extensively studied both at the system level and at the individual seaport level. A series of plans and studies have contributed to the body of literature supporting the 2020 plan update, including:

- Florida Transportation Plan (FTP)—FDOT
  - Policy Element (2020)
  - Vision Element (2020)
  - Performance Element (2020)
- Strategic Intermodal System (SIS)—FDOT
  - Policy Plan (2016)
  - Florida's Strategic Intermodal System Strategic Plan (2010)
- Seaport Master Plans—Individual seaports
- Seaport Strategic Plans—Individual seaports
- Seaport Capital Improvement Programs and Plans—Individual seaports
- Analysis of Global Opportunities and Challenges for Florida Seaports (2015)—Florida Seaport Transportation and Economic Development (FSTED) Council
- Seaport Mission Plans (1990/1991 through 2019/2020)—FSTED Council
- Florida Freight Mobility and Trade Plan (FMTP)—FDOT
  - FMTP 2020 Revision (2020)
- Trade and Logistics Study—Florida Chamber Foundation and FDOT
  - Trade and Logistics Study 2.0 (2013)
- Florida Seaport System Plan—FDOT
  - Florida Seaport System Plan (2015)
  - Florida Seaport System Plan (2010)
- Florida Waterways System Plan—FDOT
  - Florida Waterways System Plan (2015)
  - Florida Waterways System Plan (2008)
  - Florida Waterways System Plan (2003)

As highlighted by this list of resources, this plan is drafted to be consistent with Florida's latest planning efforts, which include the *Florida Transportation Plan (FTP)*, FDOT's highest level policy plan, providing the long–term vision and policy direction for FDOT; the *Strategic Intermodal System (SIS) Policy Plan*, which provides policy objectives for the SIS on a statewide basis; and the *2020 Freight Mobility and Trade Plan (FMTP)*, which provides policy and implementation direction to FDOT on matters related to the land-side movement of freight.

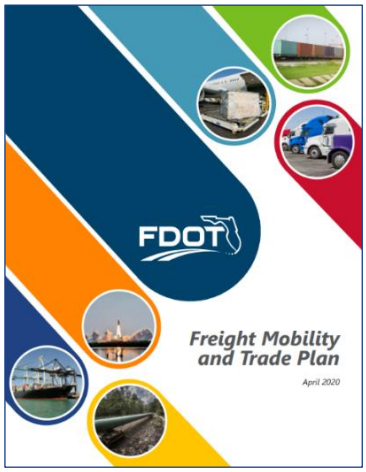
This current plan also continues to build upon the efforts of the *2015 Seaport System Plan*. A summary of these plans as they pertain to Florida's seaport system is provided in this section.

A.1.1 2015 Florida Seaport System Plan



The *2015 Florida Seaport System Plan* was the first update to the *2010 Florida Seaport System Plan* which was the first comprehensive analysis of the state's seaport system performed by the FDOT Seaport Office. The 2015 *Plan* provided historic and background information; shared current trends and conditions; provided a performance outlook and identified needs, strategies, and funding; and provided implementation guidance to address the identified needs. Many of the needs and issues identified in the 2015 system plan are still applicable today.

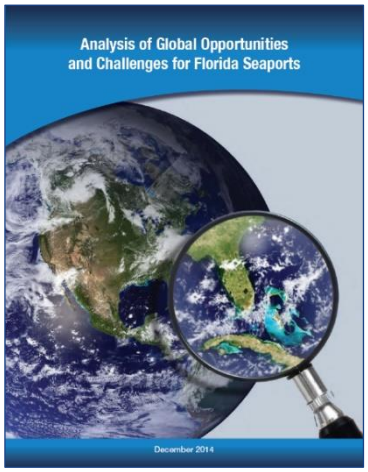
A.1.2 Florida Freight Mobility and Trade Plan (FMTP)



Signed into law in 2012, Florida House Bill 599 directed FDOT to create a *state Freight Mobility and Trade Plan (FMTP)*.[19] The *FMTP* was originally developed and completed in two phases: the Policy Element (June 2013) and the Investment Element (September 2014), each addressing specific needs, with their own purposes. These documents were updated in April 2020 in order to meet statutory requirements of the Federal Fixing America's Surface Transportation (FAST) Act which requires the development of a state freight plan addressing the state's freight planning activities and investments, both immediate and long term. This Plan is required in order for Florida to receive funding under the National Highway Freight Program (23 U.S.C. 167).

[19] 2012-174, Laws of Florida.

A.1.3 Analysis of Global Opportunities and Challenges for Florida's Seaports



Building on the conclusions set forth in the Florida Chamber Foundation's *Florida Trade and Logistics Study and Update*, (1.0 and 2.0), Florida seaports collectively embarked upon a detailed analysis of trade data to thoroughly understand the flow of commodities along domestic and international trade routes. In 2014, the FSTED Council completed an analysis of potential avenues to pursue to capture additional market share. In this publication, *Analysis of Global Opportunities and Challenges for Florida Seaports*, the opportunities, challenges, and strategies discussed below outline a path for growing jobs, tax revenues, and Florida's economy.[20]

A.1.4 Florida's Transportation Plan Update

In 2020, FDOT updated the 2015 *FTP* which defines Florida's future transportation vision and identifies goals, objectives, and strategies to accomplish that vision. The *FTP* is the statewide long-range transportation plan for all of Florida. The 2020 update is comprised of four main elements: a Vision Element, a Policy Element, a Performance Element, and an Implementation Element.

The updated Vision Element (May 2020) provides a longer-term view of the major trends, uncertainties, opportunities, and desired outcomes shaping the future of Florida's transportation system.

A key purpose of the visioning effort is to guide the *FTP* update with consideration of the future Florida may face. To this end, FDOT focused on seven key trends that will impact Florida's transportation future: Population Growth, Diversity, Rural/Urban Development, Innovation, Global Integration, and Risks & Disruptions.

The updated Policy Element (December 2020) describes the objectives and strategies to guide transportation partners statewide in accomplishing the vision and goals. It includes the goals and objectives necessary to guide FDOT towards this vision over the next 25 years.

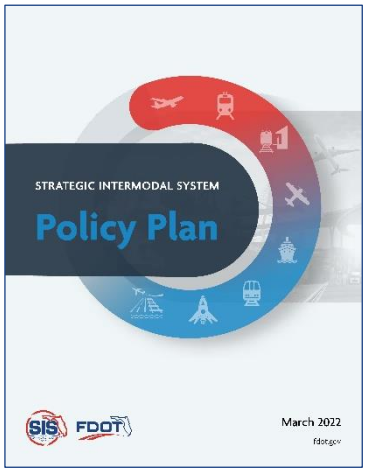
The Performance Element (December 2020) is a new element and reports how Florida's system performs on key measures of safety, asset condition, and mobility. This Element focuses on the list of measures and targets required by Federal rule.

The final Element of the *FTP* is the Implementation Element. The Implementation Element is important as it provides specific direction and action items to be taken in order for FDOT and the state to meet the goals and objectives provided in the Policy Element. The FDOT Seaport Office will remain engaged in the *FTP* process to identify responsibilities resulting from completion of the Implementation Element.

[20] Analysis of Global Opportunities and Challenges for Florida's Seaports, December 2014, Executive Summary.

A.1.5 SIS Policy Plan Update

In 2022, the *SIS Policy Plan* was updated to be consistent with the guidance provided by the FTP. The *SIS Policy Plan* provides direction specific to the SIS, in order to address changing trends and take advantage of future opportunities. The SIS policy objectives also serve as guidance for investment decisions over the five-year implementation period of the plan.



A.2 Florida's Seaports and Waterways Historic Timeline

The following table, Table A.2, is a summary of the establishment dates and original enabling language for Florida's 14 active seaports and a compilation of historic programmatic milestones in Florida's seaport development from the early years through most recent activities.[21] A more detailed timeline of this information and other important dates for Florida's seaport system was initially developed as part of the *2015 Seaport Plan Update* and is included as Figure A.1 below with relevant updates.

A.3 Operating Characteristics of Florida's Seaports

Florida's seaports operate as a system and FDOT is responsible for the planning of the system as a whole. The resulting mix of port activities drives the revenue streams for each port. Table A.1Error! Reference source not found. documents the revenues for each of Florida's seaports in Fiscal Year 2020 by activity type. Diversity between cargo and cruise and by type of cargo increases the resiliency of a ports' revenue generation when one market softens. Similarly, diversity among the ports themselves allows for the resiliency of Florida's waterway cargo and cruise activity. Geographically distributed ports result in a positive economic impact across the state, increases the state's overall resiliency (e.g., if one coast is closed, the other coast can be opened) and distributes volumes across the state to reduce congestion at individual ports.

[21] At the time of this plan, Port Citrus was not an active seaport.

TABLE A.1 SEAPORT REVENUE BY ACTIVITY TYPE, FY2020 ($THOUSANDS)

Seaport	Cargo						Cruise	Maritime Industry	Recreational-Hospitality	Total
	Container	Break bulk	Liquid Bulk	Dry Bulk	Auto	Specialty				
Port Canaveral	$112	$1,436	$3,017	$2,821	$256	$1,988	$44,098	$1,644	$2,033	$57,405
Port Everglades	$31,686	$3,981	$33,018	$4,042	$555		$41,317			$114,599
Port of Fernandina										
Port of Fort Pierce								$624		$624
JAXPORT	$32,843	$4,009	$1,570	$1,998	$15,367	$1,413	$1,897			$59,097
Port of Key West							$3,507			$3,507
SeaPort Manatee	$2,050	$1,766	$3,139	$3,000		$14				$9,969
Port Miami	$40,800						$74,800			$115,600
Port of Palm Beach										
Port Panama City	$2,700	$5,550	$50	$3,700				$3,000		$15,000
Port of Pensacola										
Port of Port St. Joe				$3						$3
Port St. Pete								$250		$250
Port Tampa Bay	$1,725	$2,560	$14,829	$10,147		$24	$6,445	$18,689	$1,912	$56,331

Source: 2021 Individual Seaport Interviews. Note that revenue breakdowns were not provided by the Port of Fernandina, the Port of Palm Beach, or the Port of Pensacola.

TABLE A.2 FLORIDA SEAPORT ESTABLISHMENT DATES AND ORIGINAL ENABLING LANGUAGE

Florida Seaports	Original Enabling Language
Port of Key West (1828)	With establishment of the City of Key West.
Port Tampa Bay (1913)	Special Act. Special Act, 1945; HCPA; later renamed Tampa Port Authority. Chapter 95-488, LOF, June 17, 1995 REPEALED 84-447, 87-426, 91-380, 92-233, 93-312, and 94-409. Every ten years Legislative Delegation is to review act for any potential modifications. 2005-332, LOF—HCPD is the district name with the TPA as its board. Hillsborough County is district.
Port of Palm Beach (1915)	Special Act, 1915, Chapter 7081.
Port of Fort Pierce (1918)	Special Act 1918
Port St. Pete (1925)	Not Applicable.
Port Everglades (1927)	Special Act established the Broward County Port Authority. Chapter 59-1157, LOF, revised the Charter. Chapter 89-427, LOF, codified and revised the various acts passed since 1959. Chapter 89-538, LOF, required PEA to prepare a LGCP by March 1, 1990. Chapter 91-346, LOF, transferred the assets and liabilities of the Port District and Port Everglades Authority to Broward County and dissolved the PEA as of November 22, 1994. This final Act took effect after approval by majority vote of the electors of Broward County in March 1992. Chapter 94-429, LOF, clarified the orderly transfer of power and stated the operational powers, duties, and obligations of Broward County.
Port Canaveral (1939)	Original Charter—1939; Revised in 1953; The Canaveral Harbor Port District—Chapter No. 2003-335, LOF; amended various years until Chapter 2014-241.
Port of Fernandina (1941)	Special Act, Ch. 21418, S12, Sp. Acts 1941. Chapter 2005-293 codified, reenacted, amended and repealed the various previous acts including 91-347.
Port of Pensacola (1943)	Special Acts 1943.
Port Panama City (1945)	Special Act, 1945; Chapter 23466, Laws of Florida; 6/1/45.
Port of Port St. Joe (1955)	Special Act, Chapter 30787, LOF, 1955; in 2000, Chapter was repealed and Chapter 2000-488, LOF, was the recodification and re-creation of port authority.
PortMiami (1960)	On April 5, 1960, the Dade County Board of Commissioners approved Resolution No. 4830, "Joint Resolution Providing for Construction of Modern Seaport Facilities at Dodge Island Site" which on April 6, 1960, the City of Miami approved the same as City Resolution No. 31837 to construct the new Port of Miami.
JAXPORT (1963)	Special Act, 1963; repealed in 2001; enacted Chapter 2001-319, LOF; created Jacksonville Seaport Authority dba Jacksonville Port Authority or JAXPORT (split aviation and marine into two authorities) Chapter 2004-465 repealed Chapter 2001-319 and recreated the Jacksonville Port Authority.
SeaPort Manatee (1967)	Special Act, 1967—Chapter 67-1681; Chapter 2003-351 codified, reenacted, amended and repealed previous various special acts.

Source: 2015 Seaport System Plan, 2021 Individual Seaport Interviews.

FIGURE A.1 HISTORY OF FLORIDA'S SEAPORT SYSTEM

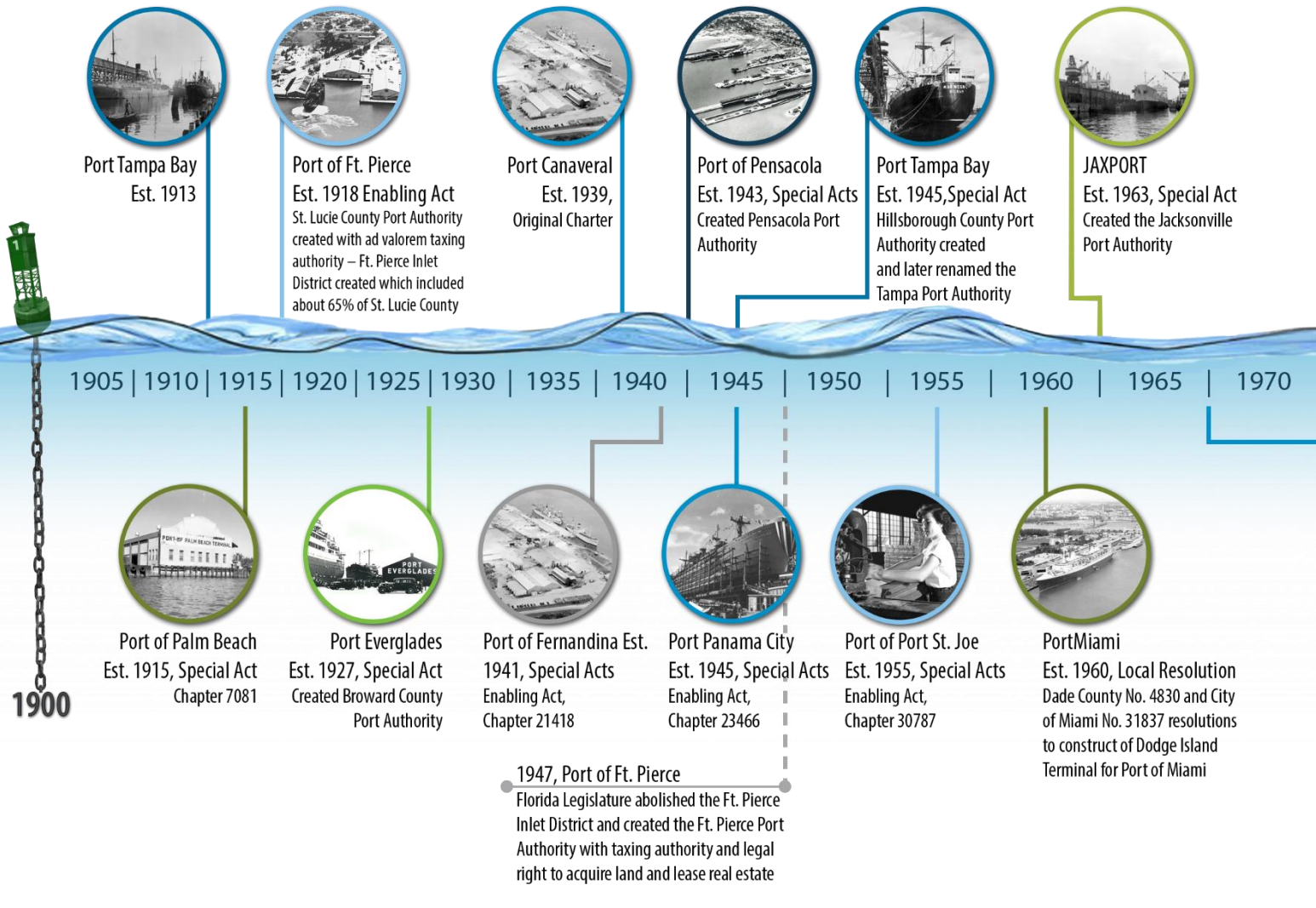
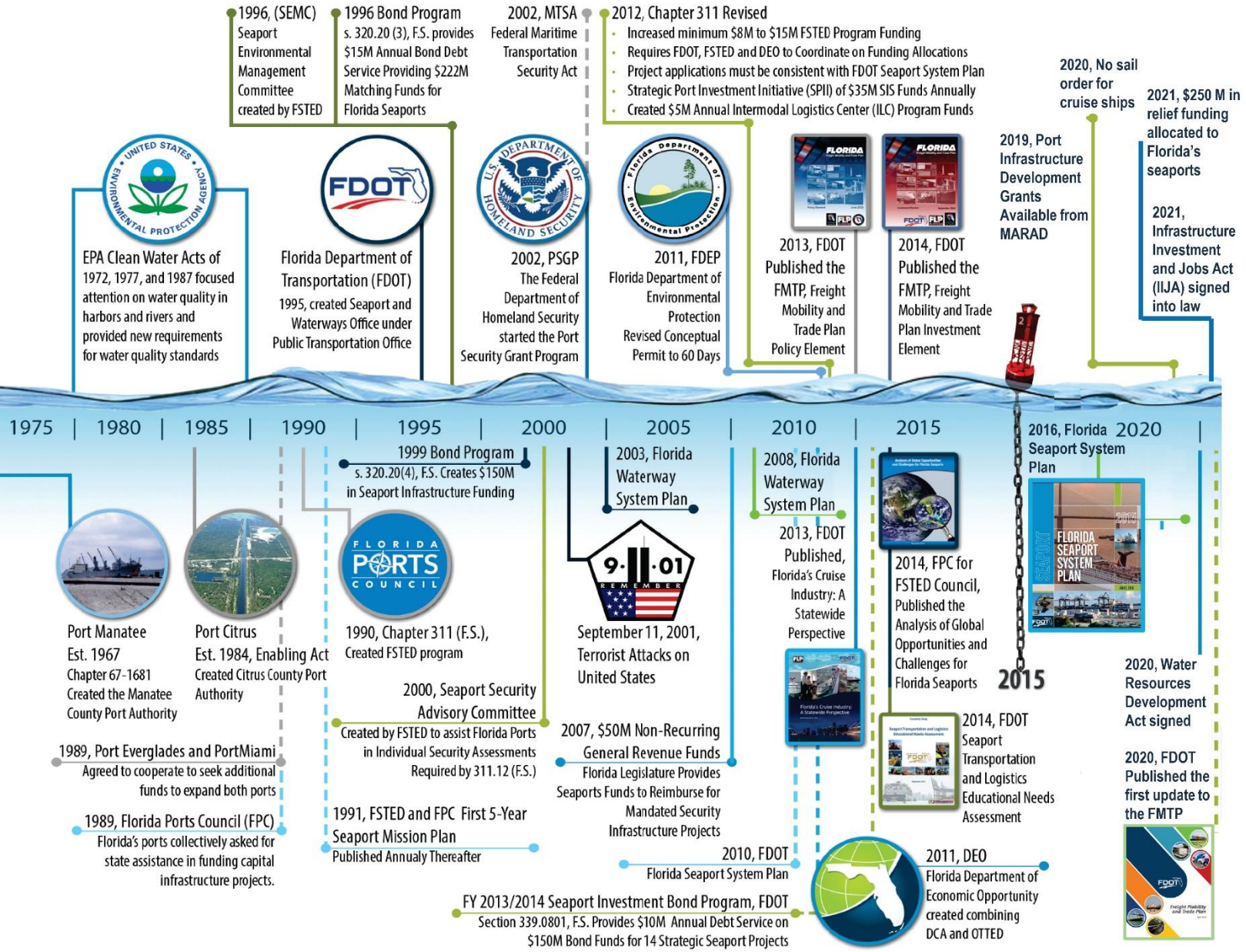


FIGURE A.1 HISTORY OF FLORIDA'S SEAPORT SYSTEM (CONTINUED)



CHAPTER 2 APPENDIX

B.1 Florida's Containerized Cargo Methodology

When discussing international trade, national sources like the U.S. Census Bureau are essential in tracking the value of goods and services, so that figures remain constant and comparable annually. Values of commodities can fluctuate from economic factors unrelated to trade or transportation. These types of value changes skew data, shifting overall trade indicators. This skewing is another reason to use a constant national source when reviewing data, and to look at long term trends, not single-year outputs alone. With that said, there are four primary sources of data available for examining port container volumes. The first is data directly reported by ports. Ports generally report total TEUs, including foreign and domestic; inbound and outbound; and loaded or empty. The American Association of Port Authorities (AAPA) for many years collected and reported annual container volume statistics including totals across all three dimensions. Many large ports also report their volumes at varying levels of detail on their websites and in annual reports.

The second set of container volume data is collected and reported by the U.S. Army Corps of Engineers (USACE). This data is reported annually and includes the number of loaded and empty domestic inbound and outbound TEUs, but is limited to the number of loaded foreign TEUs (excluding empties). The data on foreign trade is sourced from one of the companies that reports international shipment data collected by Federal Government agencies. The USACE data is used to produce the reports for the Port Performance Statistics Program for Annual Reports to Congress. This data has been reported in December of each year for the previous calendar year.

The third set of data is international trade data by port with commodity detail reported by the U.S. Census Bureau. While this data does not include the number of loaded TEUs, it does include the weight of containerized cargo transported by vessel for individual ports.

The fourth set of data is the Port Import Export Reporting Service (PIERS) which is discussed more thoroughly in section B.1.2. as it cannot be used to summarize total container movements since it does not include domestic cargos.

Data reported by the AAPA forms the basis for the analysis of Florida's share of container volumes. Volume data included in the analysis are for the top 28 ports that together represent almost all of total continental U.S. container volumes. It should be noted that a number of factors affect differences in reported volume data. Some of the reported data, especially for Florida ports, is for fiscal year rather than calendar year. Also, the definition of ports can vary between data sources. For example, the Census Bureau reports data for New York and New Jersey separately while the AAPA uses totals for the combined Port Authority of New York and New Jersey. Similarly, Census port districts include both Seattle and Tacoma, while totals for these individual ports are reported by the Northwest Seaport Alliance. In addition, there are cases where container volumes may enter ports but be counted in different Census port districts. A significant example of this is

container volumes that move through the Canadian ports of Prince Rupert and Vancouver and are then transported by rail into the United States across the Canada/U.S. land border. Finally, domestic container volumes, by definition, have a U.S. origin and destination and are therefore double counted in U.S. container data. Excluding Alaska, Hawaii and Puerto Rico, trade may minimize this accounting issue, but other domestic trade remains double counted. In some cases, where port data is not reported through 2020, volume data may be estimated by using USACE or Census Bureau data.

B.1.1 Containerized Cargo Volumes in the United States

As shown in Table B.1, container volumes in the continental United States have grown 34% from 38.3 million TEUs in 2010 to 51.5 million TEUs in 2020.[22] Figure B.1 further expands this trend to show total TEUs through U.S. seaports beginning in 2000. Volumes have nearly doubled in this time period, highlighting both the investments made and needed in the Nation's seaports to keep up with increasing demand.

TABLE B.1 CONTAINER VOLUMES OF THE TOP 28 SEAPORTS IN THE UNITED STATES, 2010–2020[23]

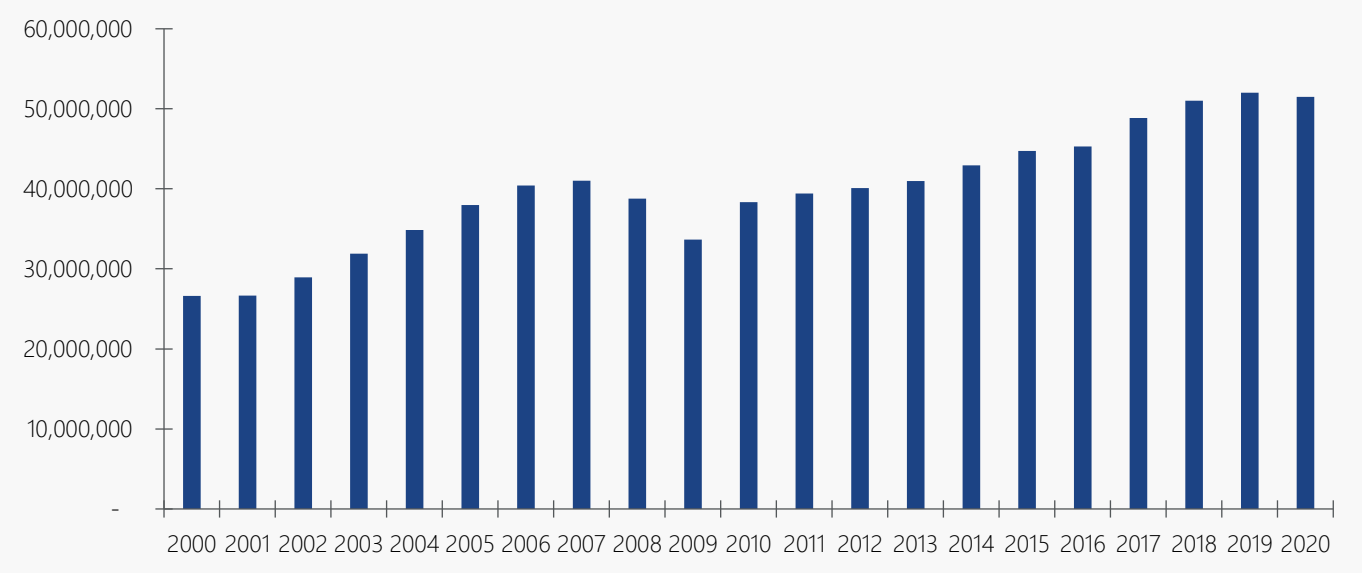
Year	United States Total TEUs
2020	51,473,944
2019	51,997,365
2018	51,032,001
2017	48,872,609
2016	45,297,923
2015	44,738,514
2014	42,926,818
2013	40,992,655
2012	40,100,261
2011	39,404,843
2010	38,333,681

Source: American Association of Port Authorities (AAPA) and individual port reports for the top 28 ports in the continental United States.

[22] Due to data limitations, the breakdown of this total container traffic into imports, exports, and domestic movements on a consistent basis across U.S. ports is not available.

[23] Note that the top 28 ports include the following in Florida: JAXPORT, PortMiami, Port of Palm Beach, Port Everglades, and Port Panama City. The top 28 ports in 2010 were held constant through 2020 for this analysis.

FIGURE B.1 CONTAINER VOLUMES AT THE TOP 28 SEAPORTS IN THE UNITED STATES, FISCAL YEARS 2000–2020



Source: American Association of Port Authorities (AAPA) and individual port reports for the top 28 ports in the continental United States.

B.1.2 Containerized Cargo Volumes in the Southeastern United States

As shown in Table B.2, container volumes in the Southeastern U.S. grew from 7.2 million TEUs in 2010 to 11.6 million in 2020, increasing by 61% over that period. This increase accounts for 37% of the container volume growth in the United States since 2010. Since 2014, Georgia (Port of Savannah) has emerged as the leader in the Southeast based on total TEUs handled, more than doubling volumes from 2010 to 2020. Georgia has moved from the fourth highest southeastern state by TEUs in 2000 to first by 2020, moving Florida down from the top spot in this timeframe. South Carolina (Port of Charleston) has had the second highest net increase with nearly 1 million TEUs, or 69%, followed by Florida with nearly 820,000 TEUs, or a growth of 28%. While a lower volume states, Alabama (Port of Mobile) also had a tremendous growth rate of 189%.

Florida's container totals here include three high-volume ports (JAXPORT, PortMiami, and Port Everglades) and four lower volume ports (Port of Palm Beach, Port Tampa Bay, SeaPort Manatee, and Port Panama City). In the Southeastern U.S., Florida is unique in that a system of geographically dispersed seaports contribute to statewide container totals whereas other states typically have only one major container port.

TABLE B.2 CONTAINER VOLUMES IN THE SOUTHEASTERN UNITED STATES, 2010–2020

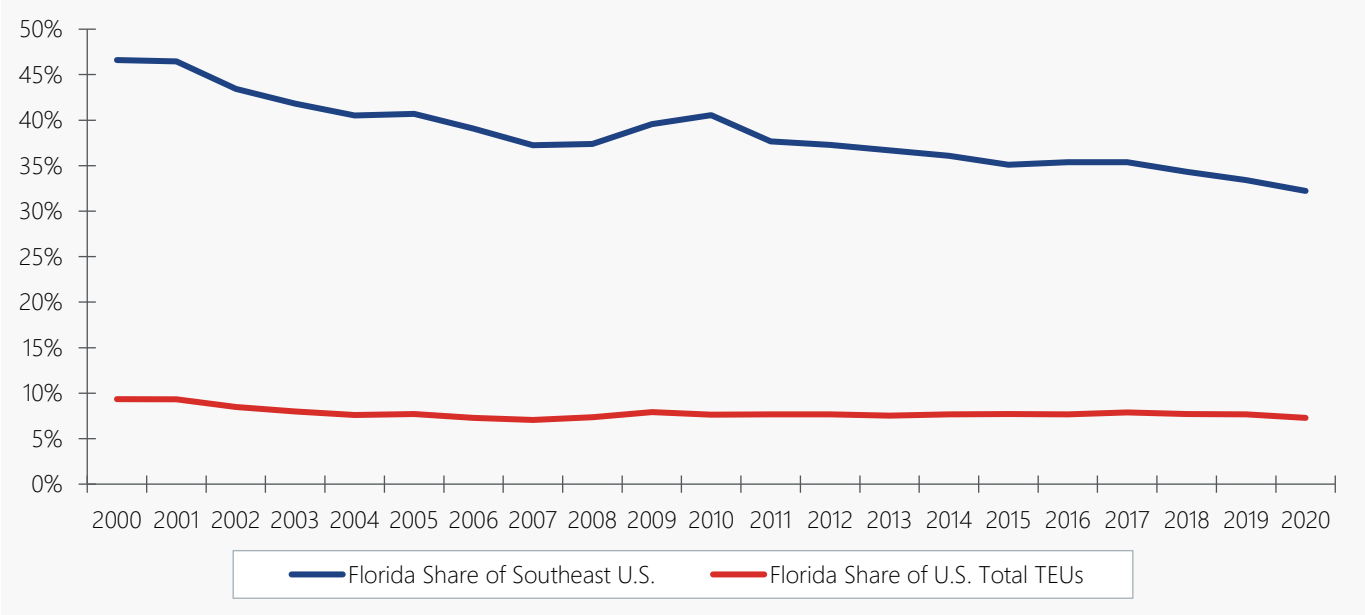
Year	Florida	South Carolina	North Carolina	Georgia	Alabama	Mississippi	Total	SE Percent Share of U.S.
2010	2,923,474	1,364,504	265,074	2,285,179	146,761	223,740	7,208,732	19%
2011	3,021,926	1,381,349	287,469	2,944,678	169,282	216,156	8,020,860	20%
2012	3,073,902	1,514,585	270,792	2,966,213	218,844	202,315	8,246,651	21%
2013	3,087,702	1,601,366	260,363	3,034,010	224,614	209,665	8,417,720	21%
2014	3,296,783	1,791,977	278,962	3,346,048	238,443	188,130	9,140,343	21%
2015	3,447,850	1,973,202	291,591	3,737,383	229,117	141,734	9,820,877	22%
2016	3,469,447	1,996,275	260,195	3,644,518	272,734	165,095	9,808,264	22%
2017	3,845,406	2,177,550	259,819	4,046,212	318,889	216,683	10,864,559	22%
2018	3,938,528	2,316,255	318,206	4,351,976	346,732	200,393	11,472,090	22%
2019	3,992,595	2,436,185	313,863	4,599,172	416,960	196,651	11,955,426	23%
2020	3,742,638	2,309,995	280,000	4,682,249	424,473	175,000	11,614,355	23%

Source: American Association of Port Authorities (AAPA) and individual port reports for the top 28 ports in the continental United States.

B.1.3 Containerized Cargo Volumes in Florida

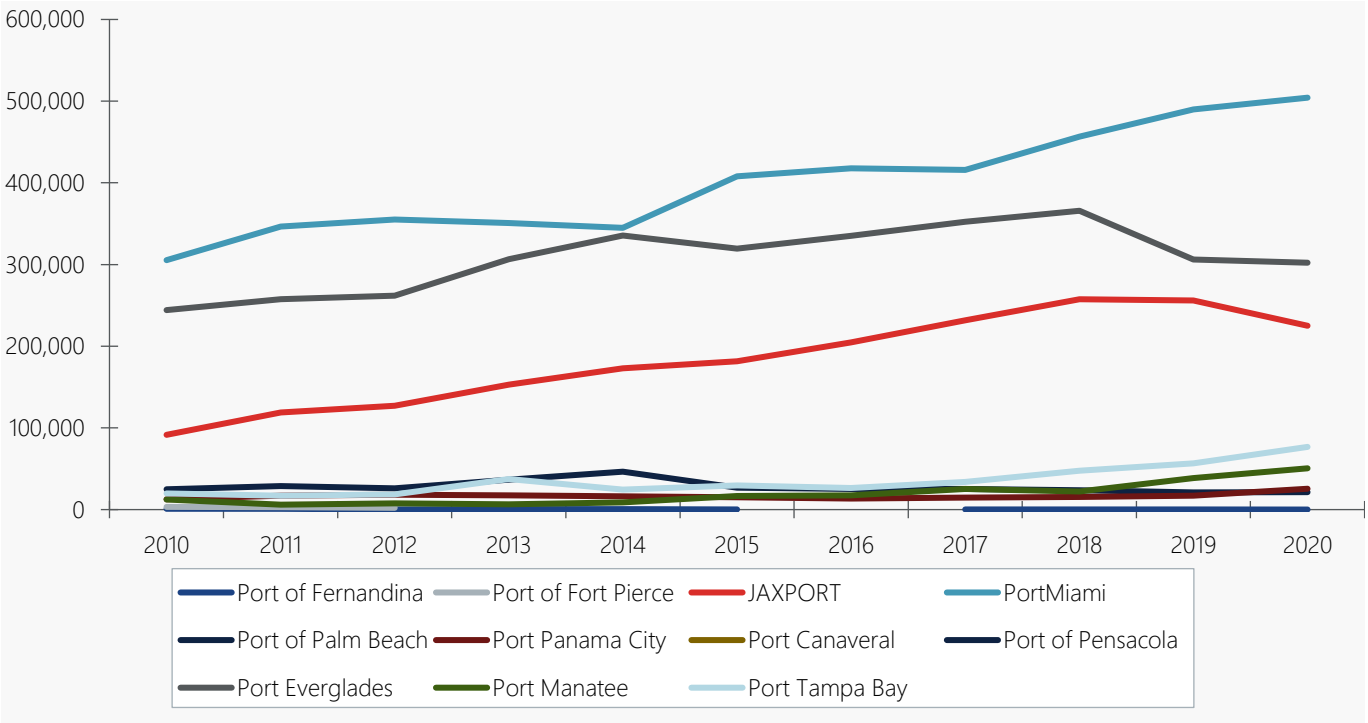
This section includes additional detail on import, export, and domestic container movements at Florida's seaports. Florida's share of total U.S. container volumes has held relatively steady near 7.7% although the share of container volumes in the Southeast has declined over time as shown in Figure B.2 based on data from AAPA. Longer term trends of import container volumes are available through the USACE, as shown in Figure B.3. While these values do not match those reported by the individual seaports, they show consistent trends over time. This decade-long view of import container growth at Florida's seaports showcases how rapidly volumes may increase with calculated investments and appropriate consumer demand.

FIGURE B.2 FLORIDA SHARE OF CONTAINER VOLUMES, FISCAL YEARS 2000–2020



Source: American Association of Port Authorities (AAPA) and individual port reports for the top 28 ports in the continental United States.

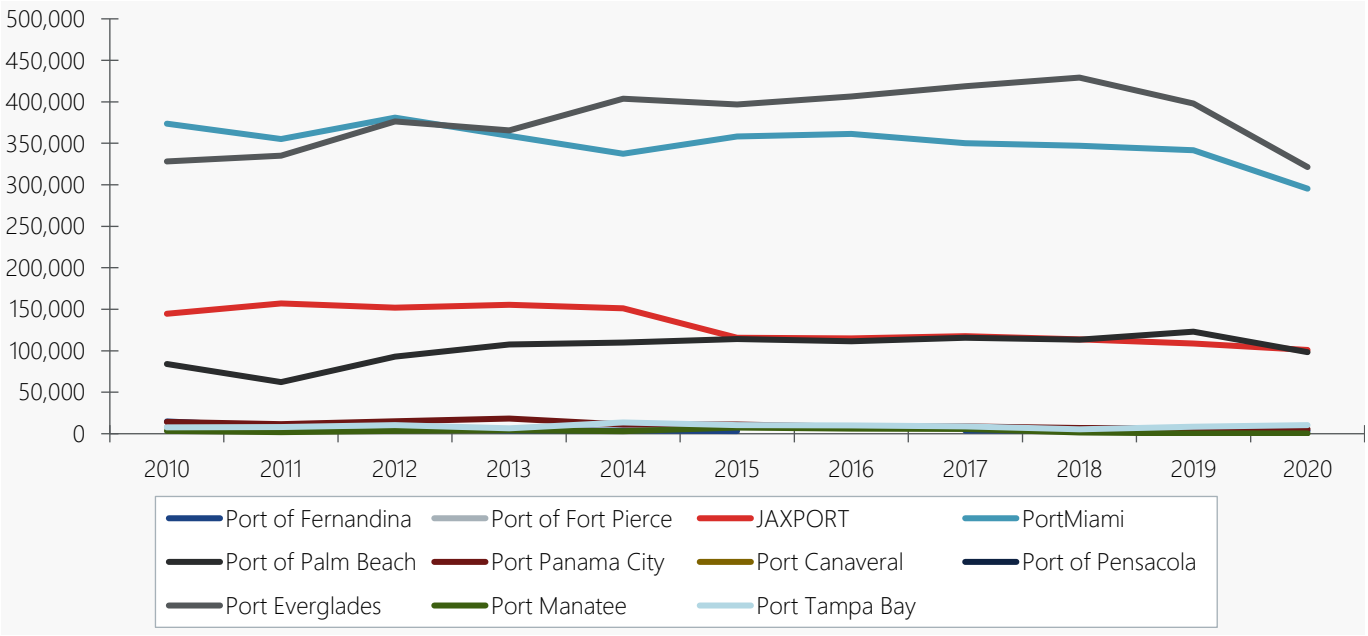
FIGURE B.3 IMPORT CONTAINER VOLUMES AT FLORIDA'S SEAPORTS, 2010–2020



Source: U.S. Army Corps of Engineers Waterborne Commerce Data.

Longer term export trends, shown in Figure B.4 illustrate how these PortMiami, Port Everglades and JAXPORT, along with the Port of Palm Beach, have consistently accounted for the majority of exports from Florida's seaports.

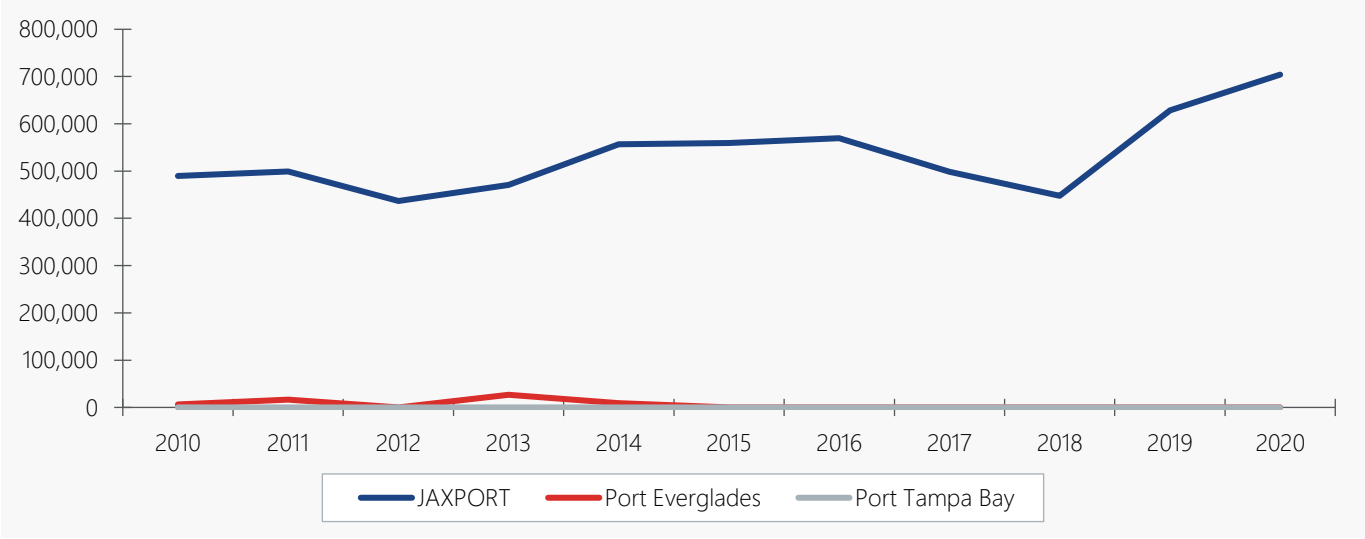
FIGURE B.4 EXPORT CONTAINER VOLUMES AT FLORIDA'S SEAPORTS, 2010–2020



Source: U.S. Army Corps of Engineers Waterborne Commerce Data.

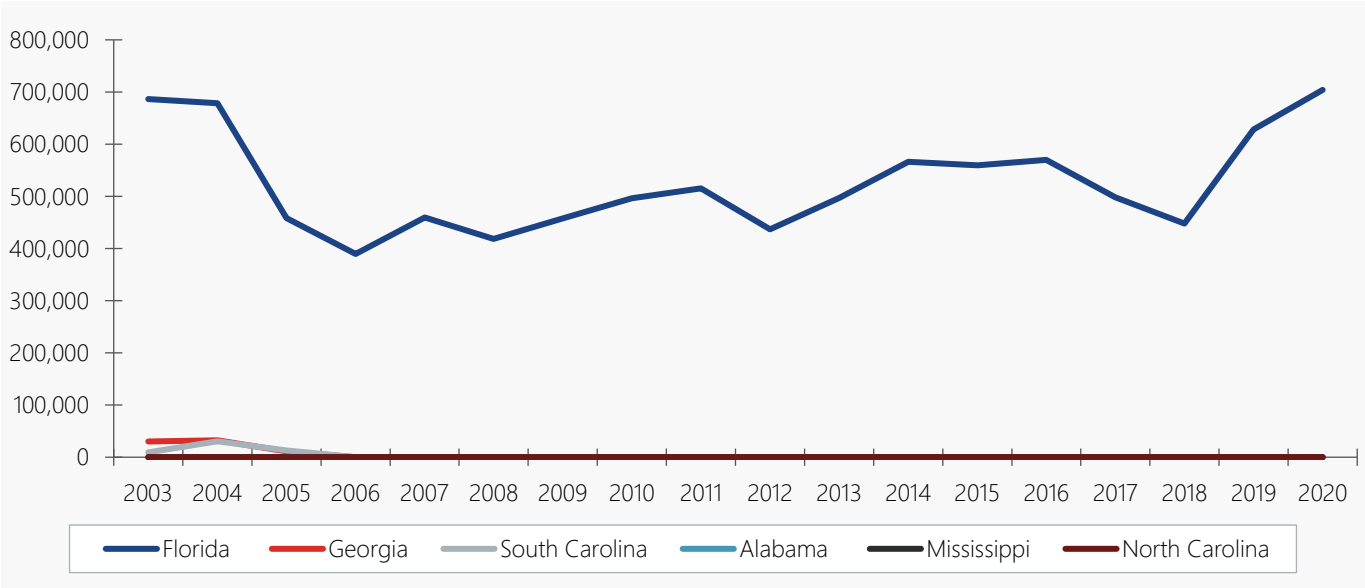
Longer term data for domestic movements shown in Figure B.5 confirms the dominant position of JAXPORT for Florida's domestic container movements. Historically, Port Tampa Bay and Port Everglades also recorded some domestic cargo but nothing on the scale of JAXPORT. This trend is also seen within the Southeastern United States. Other states in the Southeast have minimal domestic volumes as shown in Figure B.6. Historically, some domestic containers passed through South Carolina and Georgia but there have not been significant volumes reported since 2005.

FIGURE B.5 DOMESTIC CONTAINER VOLUMES AT FLORIDA'S SEAPORTS, 2010–2020



Source: U.S. Army Corps of Engineers Waterborne Commerce Data.

FIGURE B.6 DOMESTIC CONTAINER VOLUMES AT SOUTHEASTERN SEAPORTS, 2010–2020



Source: U.S. Army Corps of Engineers Waterborne Commerce Data.

Reviewing container trend data revealed there is currently additional container capacity at Florida's seaports. Based on the highest volume year from each port over the last 10 years, Florida's seaports have handled up to 4.3 million TEUs, or 10%

more than what was handled in 2020. Table B.3 summarizes current container capacity, future planned, and needed capacity expansions as reported by Florida Seaports.[24]

During stakeholder interviews, five (5) seaports documented container capacity expansion projects that are under construction, which would bring capacity for an additional 1.1 million TEUs online. Four (4) seaports identified the need for the capacity for an additional 1.5 million TEUs in the longer term beyond what is currently under construction. Most container ports reported excess capacity today ranging from 15% to 50% based on ongoing construction projects and operational practices.

TABLE B.3 CONTAINER CAPACITY AT FLORIDA'S SEAPORTS AND FUTURE NEEDS

	2020 TEUs	Current Excess Capacity	Capacity Under Construction	Additional Capacity Needed
Port Canaveral	1,603	200,000	–	–
Port Everglades	945,512	15 to 20%	489,437	607,423
Port of Fernandina	20,000	10,000	–	–
JAXPORT	1,298,333	50%	Additional 425,000	–
SeaPort Manatee	88,466	< 50%	1,500	480–800
PortMiami	1,066,740	Capacity is available based on MTO efficiencies and off–port empty storage strategy	–	–
Port of Palm Beach	272,965	Close to capacity	–	500,000
Port Panama City	50,996	1,638	432	–
Port of Pensacola	0	10,000	–	–
Port Tampa Bay	141,030	2 to 3 more years; 60,000	200,000	350,000
Total	3,885,645		1,116,369	1,458,063

Note: Responses were not received from the Port of Port St. Joe, Port of Port St. Pete, the Port of Key West, nor the Port of Fort Pierce as they currently handle limited containerized cargo.

Source: Individual Florida Seaports (interviews and November 2021 workshop).

B.2 Containerized Cargo Moving Through Non-Florida Ports Methodology

In order to assess trends in these markets, IHS Markit PIERS data was used to determine the port-origin/destination pairings for containerized imports and exports for the 2010-2020 time period. While the PIERS database provides consistent, comparable historical macro trends for year-over-year volumes, at the outset, it is imperative to note that limitations exist with using the PIERS database. First, the ultimate origin/destination states reported may not reflect the actual physical location but may denote a bill of lading or company headquarters address of the shipper or consignee. Second, the ultimate origin/destination state field is only available for 34.7% of the total volume or records for 2010-2020

[24] Note that capacities are reportedly differently for different ports as they may consider overall throughput capacity, container laydown area capacity, or current or historic maximum throughput. These values also only represent container capacity and do not represent other capacities of the port for other commodities such as liquid bulk or breakbulk.

period; therefore, the results presented are not based on the total volumes, but rather only represent a sample of the universe of records (e.g., the volumes have not been extrapolated to represent the full population). Furthermore, this data only represents cargo that is loaded/discharged at a U.S. port and moves directly to/from origin/destination. This excludes shipments that may enter through a U.S. port, move to an intermediary warehouse/distribution center, and then move to/from Florida via truck or rail. Data for these movements were not available as part of this analysis.

Table B.4 shows that imports from non-Florida ports held relatively steady through 2018, with an uptick in volume in 2019 and 2020 due to more volume from Alabama ports. Exports originating in Florida moving via non-Florida ports saw a dramatic decline over the 2013-2014 period primarily due to loss of exports out of Georgia ports.

Since 2014, Florida-sourced exports moving via non-Florida port have continued to decline with losses at Georgia, South Carolina and Alabama ports all contributing. Overall, non-Florida ports' share of the total decreased from 5.4% in 2010 to 2.6% in 2020.

TABLE B.4 CONTAINERIZED CARGO MOVING THROUGH NON-FLORIDA PORTS WITH AN ORIGIN/DESTINATION IN FLORIDA, 2010–2020 (IN NUMBER OF TEUS)

Year	Import	Export	Total
2010	9,349	34,792	44,141
2011	8,738	34,756	44,493
2012	9,358	31,899	41,257
2013	9,115	27,236	36,351
2014	8,488	16,112	24,599
2015	8,533	10,733	19,306
2016	9,960	9,139	19,099
2017	9,467	9,338	18,985
2018	8,637	6,170	14,807
2019	11,953	5,758	17,711
2020	11,908	4,484	16,392
Total	106,687	190,457	297,143

Note: Figures presented based on sample of 34.7% of records with six-state region Origin/Destination filter, not total TEU volume.

Source: IHS Markit PIERS.

Table B.5 shows that Import volumes moving through Florida ports and remaining in Florida more than doubled from 2010 through 2018, from 40,000 TEUs to 89,000 TEUs. The years 2019 and 2020 saw significant declines from the observed 10-year high in 2018. Volumes for Florida exports moving through Florida ports climbed through 2017and have since declined. Overall, Florida ports grew their share of Florida cargo moving through Florida seaports (versus non-Florida ports) from 94.6% in 2010 to 97.4% in 2020.

TABLE B.5 CONTAINERIZED CARGO MOVING THROUGH FLORIDA PORTS WITH AN ORIGIN/DESTINATION IN FLORIDA, 2010–2020 (IN NUMBER OF TEUS)

Year	Import	Export	Total
2010	40,328	733,068	773,414
2011	37,094	781,901	818,995
2012	36,796	767,167	803,963
2013	30,017	804,040	834,058
2014	45,313	804,801	850,114
2015	46,202	828,740	874,942
2016	76,065	861,283	937,348
2017	75,014	926,032	1,001,046
2018	88,995	910,206	999,201
2019	56,905	769,839	826,744
2020	53,195	562,708	615,904
Total	585,926	8,749,803	9,335,729

Note: Figures presented based on sample of 34.7% of records with ultimate Origin/Destination filter, not total TEU volume.

Source: IHS Markit PIERS.

Table B.6 shows that cargo originating in/destined for non-Florida states handled at Florida ports has decreased from 22.4% to 13.2% of the six-state total. This loss is attributed to a sharp decline in imports in Jacksonville over the 2013-2015 period and the resulting declining trend through 2020. Exports exhibited a decline because of a loss of traffic at JAXPORT and PortMiami.

TABLE B.6 CONTAINERIZED CARGO MOVING THROUGH FLORIDA PORTS WITH A NON-FLORIDA ORIGIN/DESTINATION, 2010–2020 (IN NUMBER OF TEUS)

Year	Import	Export	Total
2010	58,662	303,680	362,343
2011	55,863	310,968	366,831
2012	54,962	312,011	366,947
2013	60,950	287,639	348,589
2014	48,461	268,171	316,631
2015	32,757	239,663	272,420
2016	32,255	220,752	253,007
2017	68,984	222,503	291,488
2018	35,123	219,069	254,192
2019	25,995	206,340	232,334
2020	24,238	157,687	181,925
Total	498,250	2,748,484	3,246,734

Note: Values based on sample of 34.7% of records with ultimate Origin/Destination filter, not total TEU volume.

Source: IHS Markit PIERS.

Table B.7 summarizes containerized cargo movements moving through a Florida port or with an origin/destination within Florida. While volumes have fluctuated, Florida seaports have increased their share of Florida origin/destination movements from 95% in 2010 to 97% in 2020. This is down slightly from a peak of 99% in 2018. While Florida seaports have handled more of the state's own containerized cargo, Florida is handling less traffic proportionately for other states. Non-Florida origin/destination cargo has decreased from 32% of identified cargo in 2010 to 23% in 2020.

TABLE B.7 SUMMARY OF CONTAINERIZED CARGO MOVING THROUGH FLORIDA PORTS OR WITH A FLORIDA ORIGIN/DESTINATION, 2010–2020 (IN NUMBER OF TEUS)

Year	Import	Export	Total
2010	44,141	773,414	362,343
2011	44,493	818,995	366,831
2012	41,257	803,963	366,947
2013	36,351	834,058	348,589
2014	24,599	850,114	316,631
2015	19,306	874,942	272,420
2016	19,099	937,348	253,007
2017	18,985	1,001,046	291,488
2018	14,807	999,201	254,192
2019	17,711	826,744	232,334
2020	16,392	615,904	181,925
Total	297,143	9,335,729	3,246,734

Note: Values based on sample of 34.7% of records with ultimate Origin/Destination filter, not total TEU volume.

Source: IHS Markit PIERS.

B.3 Forecasted Container Volumes Methodology

The forecast of Florida's container trade forecast is derived from the Freight Analysis Framework (FAF)[25] forecast of United States freight flows prepared by the Federal Highway Administration (FHWA) and the Bureau of Transportation Statistics (BTS) released in October 2021. The FAF forecast covers domestic and foreign freight flows into, out of, and within the United States. Historic data is available for 2017 and 2020, and forecasts years include 2022, 2023 and 5-year intervals from 2025 through 2050.

These freight flow estimates are based on data collected from the 2017 Commodity Flow Survey (CFS) and other sources, including detailed international trade data reported by the U.S. Census Bureau.

The commodities reported in FAF include 42 commodity groups defined by the Standard Classification of Transported Goods (SCTG). Details for these commodity flows are reported for:

- Tons and Value;
- Seven modes of transport, including truck, rail, water, air, multiple modes, pipeline and other;

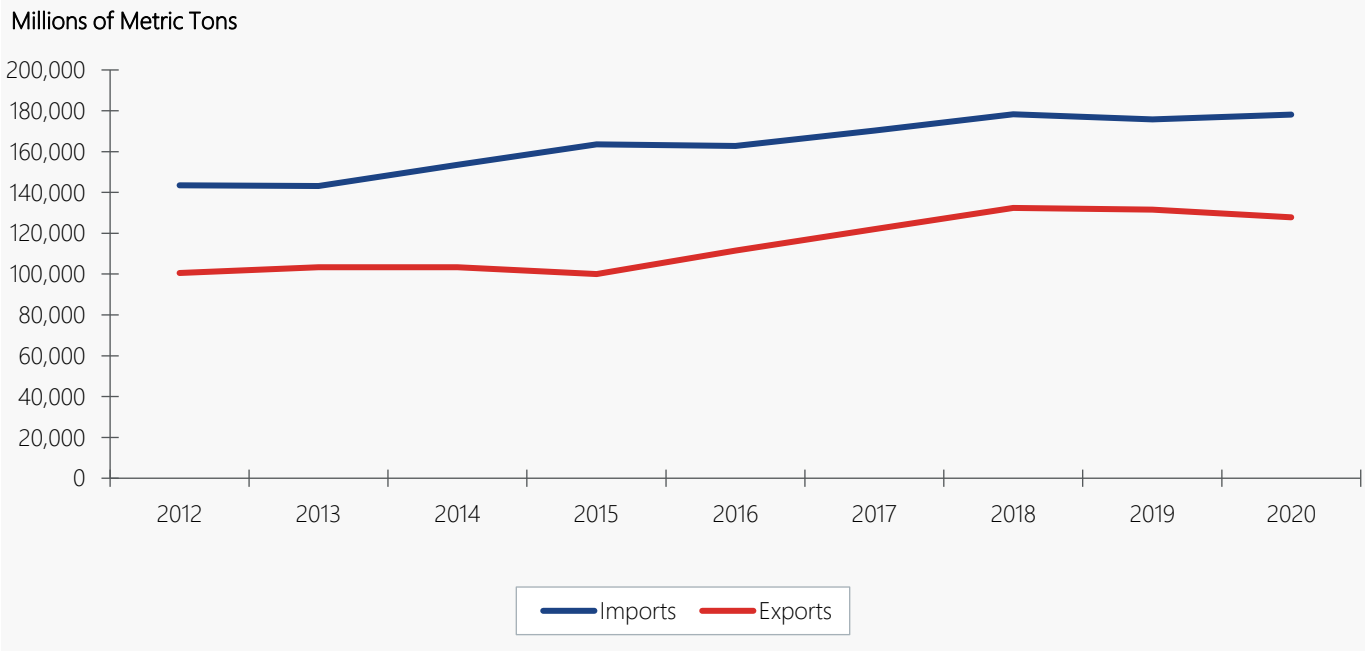
[25] In addition to a baseline forecast, high and low scenarios are also provided. FAF documentation can be found at: Freight Analysis Framework Documentation.

- Origins and destinations including 132 U.S. substate regions and all U.S. states;
- Type of commodity flows including domestic, imports, and exports; and
- Foreign origins and destinations including Canada, Mexico, and six world regions.

The development of U.S., Southeast, and Florida container volume forecasts depends on several estimation methods. First, commodity flow data in FAF is reported for waterborne volumes in tons and value, but this data does not include detail for containerized volumes. To develop estimates of container volumes for international trade, U.S. Census Bureau trade data has been examined at a detailed commodity level for each of the 42 SCTG commodity groups to determine what portion of the commodity tonnage is containerized, and this information is aggregated to the commodity group level to provide a containerization rate for the more aggregate SCTG commodity groups. For example, for the many detailed apparel commodities reported in U.S. Census Bureau data, almost 100% of imports are containerized. In contrast, SCTG 36 Motorized vehicles and parts includes motor vehicles that are primarily transported in large, specialized vehicle carrier ships and therefore non-containerized. However, SCTG 36 also includes automotive parts that are largely imported in containers. The containerization rate for the commodity group as a whole is based on these components. For many consumer products containerization rates are nearly 100%, while for some bulk commodities, such as crude oil or petroleum products, containerization rates are near zero since these commodities are transported in large tanker ships.

The second estimation method concerns computing total containerized trade based on the imbalance between imports over much smaller export volumes and the lack of data on empty container volumes. As noted previously, neither the U.S. Census Bureau nor the Army Corps of Engineers reports data on empty container volumes. U.S. import container volumes are 35 to 60% higher than export volumes as shown in Figure B.7.

FIGURE B.7 U.S. TOTAL VESSEL CONTAINER WEIGHT BY DIRECTION OF TRADE



Source: U.S. Census Bureau International Trade Data and WSP Analysis.

As a general rule, most empty containers are eventually returned to overseas locations, but data on timing, repositioning, or the exit locations of these returned empties is not reported. Given this lack of information on empty container flows, total container flow projections are estimated based on import volumes only, which over time are roughly equal to export volumes plus empty returns.

FAF forecasts of waterborne import tons for the U.S. as a whole are displayed in Table B.8 on the following page, followed by waterborne import tons into Florida shown in Table B.9, and Florida's share of total U.S. waterborne import tons in Table B.10. Total U.S. FAF import tons are projected to increase by 16% from 2017 to 2040. It should be noted that total waterborne import tons declined from 2017 to 2020, the first year of the Covid pandemic, and 2017 is used as the base year for the percentage change (and was also the base year for the FAF analysis based on the Commodity Flow Survey from that year).

FAF waterborne import ton forecasts for the U.S. vary widely in volumes and in growth rates. Crude oil is the largest tonnage commodity group, at 256,973 ktons in 2017 (35% of total tons for all commodities), but volume is projected to decline to 129,425 ktons in 2040, a decline of 50%. In contrast, U.S. waterborne imports of textiles/leather are projected to double in volume, from 15,348 ktons in 2017 to 30,016 ktons in 2040.

Table B.9 displays waterborne import ton forecasts for Florida. Total Florida tonnage is projected to grow from 34,318 ktons in 2017 to 58,719 ktons in 2040, an increase of 71%. As shown in Table B.10, this growth in total tons is expected to increase Florida's share of total tonnage from 4.7% in 2017 to 6.9% in 2040. However, this increase in the state's share is driven by large volume increases in heavy commodities including gravel, non-metallic minerals, and metallic ores. While these commodities contribute to the state's projected total tonnage increases, they have low rates of containerization and therefore do not add to the state's share of U.S. containerized imports.

TABLE B.8 FAF U.S. WATERBORNE IMPORT TONS (1,000S)

SCTG Commodity	2017	2020	2030	2040	Growth 2017–2040
Total	729,952	616,427	779,794	849,328	16%
01-Live animals/fish	30	39	55	67	124%
02-Cereal grains	2,385	1,820	2,278	2,720	14%
03-Other ag prods.	15,288	17,319	21,212	25,369	66%
04-Animal feed	1,718	2,022	2,306	2,899	69%
05-Meat/seafood	4,255	5,815	5,708	6,507	53%
06-Milled grain prods.	2,277	3,460	4,281	5,523	143%
07-Other foodstuffs	19,546	20,878	25,633	32,493	66%
08-Alcoholic beverages	6,682	7,489	9,014	11,125	66%
09-Tobacco prods.	99	141	76	105	6%
10-Building stone	139	124	166	197	42%
11-Natural sands	2,495	2,811	4,434	6,184	148%
12-Gravel	21,095	20,117	35,793	50,505	139%
13-Nonmetallic minerals	29,475	31,302	48,298	65,328	122%
14-Metallic ores	13,678	5,719	21,844	25,144	84%
15-Coal	6,708	3,732	31,079	6,007	-10%
16-Crude petroleum	256,973	167,363	153,804	129,425	-50%
17-Gasoline	39,903	36,750	42,289	37,701	-6%
18-Fuel oils	57,384	49,269	51,891	47,026	-18%
19-Coal-n.e.c.	1,730	1,457	1,830	1,542	-11%
20-Basic chemicals	18,497	16,237	19,553	21,601	17%
21-Pharmaceuticals	3,310	3,663	4,540	5,701	72%
22-Fertilizers	15,834	14,095	22,936	30,248	91%
23-Chemical prods.	4,432	5,636	6,232	7,894	78%
24-Plastics/rubber	17,094	15,715	21,081	26,457	55%
25-Logs	446	412	483	479	7%
26-Wood prods.	7,478	10,296	10,351	11,435	53%
27-Newsprint/paper	6,359	6,986	7,301	7,884	24%
28-Paper articles	1,264	1,205	1,632	2,100	66%
29-Printed prods.	931	933	1,083	1,142	23%
30-Textiles/leather	15,348	14,773	22,334	30,016	96%
31-Nonmetal min. prods.	25,200	23,628	25,953	27,461	9%
32-Base metals	34,033	23,278	35,967	43,635	28%
33-Articles-base metal	17,994	18,306	21,442	25,670	43%
34-Machinery	21,700	21,503	32,234	41,941	93%
35-Electronics	11,054	10,508	14,400	19,467	76%
36-Motorized vehicles	14,432	13,279	19,902	25,993	80%
37-Transport equip.	695	439	929	1,144	65%
38-Precision instruments	1,158	1,364	1,863	2,524	118%
39-Furniture	12,890	11,267	16,916	22,689	76%
40-Misc. mfg. prods.	6,484	8,865	9,826	12,047	86%
41-Waste/scrap	6,315	10,893	13,784	16,970	169%
43-Mixed freight	5,143	5,521	7,057	8,962	74%

Source: Freight Analysis Framework Version 5.2 and WSP analysis.

TABLE B.9 FAF FLORIDA WATERBORNE IMPORT TONS (1,000S)

SCTG Commodity	2017	2020	2030	2040	Growth 2017–2040
Total	34,318	35,661	48,673	58,719	71%
01-Live animals/fish	0	0	0	0	-31%
02-Cereal grains	109	43	87	97	-11%
03-Other ag prods.	2,402	3,940	5,183	6,287	162%
04-Animal feed	36	45	79	96	167%
05-Meat/seafood	507	550	568	675	33%
06-Milled grain prods.	114	167	200	254	122%
07-Other foodstuffs	1,600	1,877	2,246	2,828	77%
08-Alcoholic beverages	465	565	660	810	74%
09-Tobacco prods.	61	100	22	28	-54%
10-Building stone	18	15	18	20	7%
11-Natural sands	8	15	16	24	188%
12-Gravel	5,726	5,759	9,308	13,264	132%
13-Nonmetallic minerals	1,927	2,453	3,532	4,894	154%
14-Metallic ores	154	61	3,609	4,008	2496%
15-Coal	3,063	1,108	630	121	-96%
16-Crude petroleum	0	0	0	0	–
17-Gasoline	3,084	2,940	3,199	2,892	-6%
18-Fuel oils	1,279	1,036	1,032	830	-35%
19-Coal-n.e.c.	0	0	0	0	–
20-Basic chemicals	287	350	367	396	38%
21-Pharmaceuticals	25	25	36	40	58%
22-Fertilizers	1,523	1,296	1,590	1,737	14%
23-Chemical prods.	138	156	183	231	67%
24-Plastics/rubber	488	451	627	790	62%
25-Logs	23	18	24	26	13%
26-Wood prods.	888	1,140	1,106	1,252	41%
27-Newsprint/paper	1,212	1,225	1,250	1,330	10%
28-Paper articles	51	58	70	88	73%
29-Printed prods.	13	17	18	19	40%
30-Textiles/leather	827	824	1,366	1,756	112%
31-Nonmetal min. prods.	2,929	3,965	3,463	3,598	23%
32-Base metals	1,164	921	1,406	1,677	44%
33-Articles-base metal	423	373	465	565	34%
34-Machinery	422	433	645	845	100%
35-Electronics	328	413	581	793	142%
36-Motorized vehicles	1,210	1,219	1,850	2,357	95%
37-Transport equip.	38	29	48	58	52%
38-Precision instruments	58	73	94	128	119%
39-Furniture	473	475	708	952	101%
40-Misc. mfg. prods.	112	142	154	190	70%
41-Waste/scrap	947	1,179	1,978	2,444	158%
43-Mixed freight	183	205	256	320	75%

Source: Freight Analysis Framework Version 5.2 and WSP analysis.

TABLE B.10 FLORIDA SHARE OF U.S. WATERBORNE IMPORT TONS

SCTG Commodity	2017	2020	2030	2040
Total	4.7%	5.8%	6.2%	6.9%
01-Live animals/fish	1.2%	0.2%	0.3%	0.4%
02-Cereal grains	4.6%	2.4%	3.8%	3.6%
03-Other ag prods.	15.7%	22.7%	24.4%	24.8%
04-Animal feed	2.1%	2.2%	3.4%	3.3%
05-Meat/seafood	11.9%	9.5%	10.0%	10.4%
06-Milled grain prods.	5.0%	4.8%	4.7%	4.6%
07-Other foodstuffs	8.2%	9.0%	8.8%	8.7%
08-Alcoholic beverages	7.0%	7.5%	7.3%	7.3%
09-Tobacco prods.	61.2%	70.5%	28.9%	26.6%
10-Building stone	13.2%	12.0%	10.6%	10.0%
11-Natural sands	0.3%	0.5%	0.4%	0.4%
12-Gravel	27.1%	28.6%	26.0%	26.3%
13-Nonmetallic minerals	6.5%	7.8%	7.3%	7.5%
14-Metallic ores	1.1%	1.1%	16.5%	15.9%
15-Coal	45.7%	29.7%	2.0%	2.0%
16-Crude petroleum	0.0%	0.0%	0.0%	0.0%
17-Gasoline	7.7%	8.0%	7.6%	7.7%
18-Fuel oils	2.2%	2.1%	2.0%	1.8%
19-Coal-n.e.c.	0.0%	0.0%	0.0%	0.0%
20-Basic chemicals	1.6%	2.2%	1.9%	1.8%
21-Pharmaceuticals	0.8%	0.7%	0.8%	0.7%
22-Fertilizers	9.6%	9.2%	6.9%	5.7%
23-Chemical prods.	3.1%	2.8%	2.9%	2.9%
24-Plastics/rubber	2.9%	2.9%	3.0%	3.0%
25-Logs	5.2%	4.3%	4.9%	5.5%
26-Wood prods.	11.9%	11.1%	10.7%	10.9%
27-Newsprint/paper	19.1%	17.5%	17.1%	16.9%
28-Paper articles	4.0%	4.8%	4.3%	4.2%
29-Printed prods.	1.4%	1.8%	1.6%	1.6%
30-Textiles/leather	5.4%	5.6%	6.1%	5.9%
31-Nonmetal min. prods.	11.6%	16.8%	13.3%	13.1%
32-Base metals	3.4%	4.0%	3.9%	3.8%
33-Articles-base metal	2.4%	2.0%	2.2%	2.2%
34-Machinery	1.9%	2.0%	2.0%	2.0%
35-Electronics	3.0%	3.9%	4.0%	4.1%
36-Motorized vehicles	8.4%	9.2%	9.3%	9.1%
37-Transport equip.	5.5%	6.6%	5.2%	5.0%
38-Precision instruments	5.0%	5.3%	5.0%	5.1%
39-Furniture	3.7%	4.2%	4.2%	4.2%
40-Misc. mfg. prods.	1.7%	1.6%	1.6%	1.6%
41-Waste/scrap	15.0%	10.8%	14.4%	14.4%
43-Mixed freight	3.6%	3.7%	3.6%	3.6%

Source: Freight Analysis Framework Version 5.2 and WSP analysis.

The second stage of developing container forecasts for U.S., Southeast, and Florida container volumes is estimating containerized tons derived from FAF tonnage data.

Detailed U.S. Census Bureau international trade data includes both weight and value for waterborne imports for the U.S. as a whole and by port. This data includes containerized vessel weight and value, covering many hundreds of commodities defined by Harmonized System (HS) commodity codes. This detailed commodity data has been matched to FAF's aggregate SCTG categories, and containerization rates have been calculated for SCTG categories by dividing Census reported containerized weight by reported total waterborne weight. The result is a set of containerization rates by SCTG and year for imports for recent years through 2020, for the U.S. and for Florida.

For many SCTG commodities these containerization rates based on Census data have been steady in recent years. Also, for many high value and high tonnage SCTG commodities, containerization rates are well above 80% and in some cases near 100%. These commodities include:

- 03-Other agricultural products
- 05-Meat/seafood
- 08-Alcoholic beverages
- 23-Chemical products
- 24-Plastics/rubber
- 26-Wood products
- 30-Textiles/leather
- 34-Machinery
- 35-Electronics
- 39-Furniture

Table B.11 to Table B.14 showcases the projected growth in U.S. and Florida containerized waterborne imports and how Florida contributes to the overall growth of particular commodities through 2040. Table B.11 includes forecasted volumes for other southeastern seaports as a comparison of how Florida is expected to perform versus other states.

TABLE B.11 ESTIMATED FREIGHT ANALYSIS FRAMEWORK (FAF) U.S. WATERBORNE CONTAINER IMPORT TONS (1,000S)

SCTG Commodity	2017	2020	2030	2040	Growth 2017–2040
Total	198,451	201,689	271,621	326,097	64%
01-Live animals/fish	30	39	55	67	124%
02-Cereal grains	310	237	296	354	14%
03-Other ag prods.	12,842	14,548	17,818	21,310	66%
04-Animal feed	1,598	1,880	2,144	2,696	69%
05-Meat/seafood	4,255	5,815	5,708	6,507	53%
06-Milled grain prods.	2,049	3,114	3,853	4,971	143%
07-Other foodstuffs	13,838	14,781	18,148	23,005	66%
08-Alcoholic beverages	5,880	6,590	7,933	9,790	66%
09-Tobacco prods.	99	141	76	105	6%
10-Building stone	139	124	166	197	42%
11-Natural sands	249	281	443	618	148%
12-Gravel	422	402	716	1,010	139%
13-Nonmetallic minerals	3,537	3,756	5,796	7,839	122%
14-Metallic ores	684	286	1,092	1,257	84%
15-Coal	2,683	1,493	12,432	2,403	-10%
16-Crude petroleum	0	0	0	0	–
17-Gasoline	80	73	85	75	-6%
18-Fuel oils	115	99	104	94	-18%
19-Coal-n.e.c.	104	87	110	92	–
20-Basic chemicals	7,214	6,332	7,626	8,424	17%
21-Pharmaceuticals	3,244	3,589	4,449	5,587	72%
22-Fertilizers	792	705	1,147	1,512	91%
23-Chemical prods.	3,723	4,734	5,235	6,631	78%
24-Plastics/rubber	16,581	15,243	20,449	25,664	55%
25-Logs	54	49	58	57	7%
26-Wood prods.	6,730	9,266	9,316	10,291	53%
27-Newsprint/paper	3,179	3,493	3,651	3,942	24%
28-Paper articles	1,251	1,193	1,615	2,079	66%
29-Printed prods.	912	914	1,062	1,119	23%
30-Textiles/leather	15,195	14,625	22,111	29,715	96%
31-Nonmetal min. prods.	12,600	11,814	12,977	13,730	9%
32-Base metals	7,147	4,888	7,553	9,163	28%
33-Articles-base metal	12,776	12,997	15,224	18,226	43%
34-Machinery	19,313	19,138	28,688	37,327	93%
35-Electronics	10,722	10,193	13,968	18,883	76%
36-Motorized vehicles	6,495	5,975	8,956	11,697	80%
37-Transport equip.	598	378	799	984	65%
38-Precision instruments	1,135	1,336	1,826	2,474	118%
39-Furniture	12,826	11,211	16,831	22,575	76%
40-Misc. mfg. prods.	6,419	8,776	9,728	11,926	86%
41-Waste/scrap	631	1,089	1,378	1,697	169%

Source: Freight Analysis Framework Version 5.2 and FDOT analysis.

TABLE B.12 ESTIMATED FREIGHT ANALYSIS FRAMEWORK (FAF) FLORIDA WATERBORNE CONTAINER IMPORT TONS (1,000S)

SCTG Commodity	2017	2020	2030	2040	Growth 2017–2040
Total	12,671	14,326	17,158	20,528	62%
01-Live animals/fish	0	0	0	0	-31%
02-Cereal grains	65	26	52	58	-11%
03-Other ag prods.	2,186	3,585	4,717	5,721	162%
04-Animal feed	36	45	78	95	167%
05-Meat/seafood	504	547	565	671	33%
06-Milled grain prods.	114	166	199	254	122%
07-Other foodstuffs	1,248	1,464	1,752	2,206	77%
08-Alcoholic beverages	460	560	653	802	74%
09-Tobacco prods.	60	99	22	28	-54%
10-Building stone	18	15	17	20	7%
11-Natural sands	4	7	8	12	188%
12-Gravel	6	6	9	13	132%
13-Nonmetallic minerals	77	98	141	196	154%
14-Metallic ores	2	1	36	40	2,496%
15-Coal	1,531	554	315	60	-96%
16-Crude petroleum	0	0	0	0	–
17-Gasoline	3	3	3	3	-6%
18-Fuel oils	1	1	1	1	-35%
19-Coal-n.e.c.	0	0	0	0	–
20-Basic chemicals	129	158	165	178	38%
21-Pharmaceuticals	25	24	35	39	58%
22-Fertilizers	46	39	48	52	14%
23-Chemical prods.	120	136	159	201	67%
24-Plastics/rubber	483	446	621	782	62%
25-Logs	9	7	10	11	13%
26-Wood prods.	631	809	786	889	41%
27-Newsprint/paper	364	367	375	399	10%
28-Paper articles	51	58	69	88	73%
29-Printed prods.	13	17	17	18	40%
30-Textiles/leather	823	819	1,357	1,746	112%
31-Nonmetal min. prods.	1,523	2,062	1,801	1,871	23%
32-Base metals	233	184	281	335	44%
33-Articles-base metal	347	306	381	463	34%
34-Machinery	346	355	529	693	100%
35-Electronics	321	405	569	777	142%
36-Motorized vehicles	145	146	222	283	95%
37-Transport equip.	16	12	20	24	52%
38-Precision instruments	58	72	93	126	119%
39-Furniture	468	470	701	943	101%
40-Misc. mfg. prods.	110	139	151	186	70%
41-Waste/scrap	95	118	198	244	158%

Source: Freight Analysis Framework Version 5.2 and FDOT analysis.

TABLE B.13 FLORIDA SHARE OF ESTIMATED U.S. WATERBORNE CONTAINER IMPORT TONS

SCTG Commodity	2017	2020	2030	2040
Total	6.4%	7.1%	6.3%	6.3%
01-Live animals/fish	1.2%	0.2%	0.3%	0.4%
02-Cereal grains	21.1%	10.9%	17.6%	16.4%
03-Other ag prods.	17.0%	24.6%	26.5%	26.8%
04-Animal feed	2.2%	2.4%	3.6%	3.5%
05-Meat/seafood	11.8%	9.4%	9.9%	10.3%
06-Milled grain prods.	5.6%	5.3%	5.2%	5.1%
07-Other foodstuffs	9.0%	9.9%	9.7%	9.6%
08-Alcoholic beverages	7.8%	8.5%	8.2%	8.2%
09-Tobacco prods.	60.6%	69.8%	28.6%	26.4%
10-Building stone	13.1%	11.9%	10.5%	9.9%
11-Natural sands	1.6%	2.6%	1.9%	1.9%
12-Gravel	1.4%	1.4%	1.3%	1.3%
13-Nonmetallic minerals	2.2%	2.6%	2.4%	2.5%
14-Metallic ores	0.2%	0.2%	3.3%	3.2%
15-Coal	57.1%	37.1%	2.5%	2.5%
16-Crude petroleum	–	–	–	–
17-Gasoline	3.9%	4.0%	3.8%	3.8%
18-Fuel oils	1.1%	1.1%	1.0%	0.9%
19-Coal-n.e.c.	0.0%	0.0%	0.0%	0.0%
20-Basic chemicals	1.8%	2.5%	2.2%	2.1%
21-Pharmaceuticals	0.8%	0.7%	0.8%	0.7%
22-Fertilizers	5.8%	5.5%	4.2%	3.4%
23-Chemical prods.	3.2%	2.9%	3.0%	3.0%
24-Plastics/rubber	2.9%	2.9%	3.0%	3.0%
25-Logs	17.4%	14.2%	16.5%	18.3%
26-Wood prods.	9.4%	8.7%	8.4%	8.6%
27-Newsprint/paper	11.4%	10.5%	10.3%	10.1%
28-Paper articles	4.0%	4.8%	4.3%	4.2%
29-Printed prods.	1.4%	1.8%	1.6%	1.6%
30-Textiles/leather	5.4%	5.6%	6.1%	5.9%
31-Nonmetal min. prods.	12.1%	17.5%	13.9%	13.6%
32-Base metals	3.3%	3.8%	3.7%	3.7%
33-Articles-base metal	2.7%	2.4%	2.5%	2.5%
34-Machinery	1.8%	1.9%	1.8%	1.9%
35-Electronics	3.0%	4.0%	4.1%	4.1%
36-Motorized vehicles	2.2%	2.4%	2.5%	2.4%
37-Transport equip.	2.7%	3.2%	2.5%	2.5%
38-Precision instruments	5.1%	5.4%	5.1%	5.1%
39-Furniture	3.6%	4.2%	4.2%	4.2%
40-Misc. mfg. prods.	1.7%	1.6%	1.6%	1.6%
41-Waste/scrap	15.0%	10.8%	14.4%	14.4%

Source: Freight Analysis Framework Version 5.2 and FDOT analysis.

TABLE B.14 SOUTHEASTERN UNITED STATES SEAPORTS FORECASTED CONTAINER GROWTH

Years	South Carolina	North Carolina	Georgia	Alabama	Mississippi	Total
2000	1,632,747	105,110	948,699	18,735	141,464	2,846,755
2001	1,528,034	107,374	1,077,478	21,059	129,020	2,862,965
2002	1,592,834	100,170	1,327,939	18,604	154,486	3,194,033
2003	1,690,847	96,453	1,521,206	26,302	199,897	3,534,705
2004	1,863,917	104,122	1,662,021	37,375	213,108	3,880,543
2005	1,986,586	148,784	1,901,520	42,443	187,384	4,266,717
2006	1,968,474	177,634	2,160,168	80,051	197,428	4,583,755
2007	1,754,376	191,070	2,604,312	118,699	206,622	4,875,079
2008	1,635,534	196,040	2,616,126	114,439	214,074	4,776,213
2009	1,181,353	225,176	2,356,512	112,270	198,900	4,074,211
2010	1,364,504	265,074	2,285,179	146,761	223,740	4,285,258
2011	1,381,349	287,469	2,944,678	169,282	216,156	4,998,934
2012	1,514,585	270,792	2,966,213	218,844	202,315	5,172,749
2013	1,601,366	260,363	3,034,010	224,614	209,665	5,330,018
2014	1,791,977	278,962	3,346,048	238,443	188,130	5,843,560
2015	1,973,202	291,591	3,737,383	229,117	141,734	6,373,027
2016	1,996,275	260,195	3,644,518	272,734	165,095	6,338,817
2017	2,177,550	259,819	4,046,212	318,889	216,683	7,019,153
2018	2,316,255	318,206	4,351,976	346,732	200,393	7,533,562
2019	2,436,185	313,863	4,599,172	416,960	196,651	7,962,831
2020	2,309,995	280,000	4,682,249	424,473	175,000	7,871,717
2025	2,789,572	318,022	5,538,442	514,742	197,915	9,358,694
2030	3,163,089	357,837	6,316,826	570,526	211,505	10,619,784
2035	3,557,037	398,325	7,144,698	639,799	237,126	11,976,985
2040	4,015,697	424,896	8,064,373	719,795	266,712	13,491,47 2
Annual Growth 2017—2040	2.7%	2.2%	3.0%	3.6%	0.9%	2.9%

Source: Freight Analysis Framework Version 5.2 and FDOT analysis.

B.4 Forecasted Cruise Volume Methodology

Worldwide passenger growth was projected based on the current number of worldwide lower berths as reported by individual cruise brands; CLIA (Cruise Line International Association) and Cruise Industry News Annual. The withdrawn cruise capacity (vessels) was then determined on an annual basis via historic trends/aging/financial methodology for key cruise brands. The addition of reported and forecasted (based on trends/aging/financial methodology) newbuild deliveries

for key cruise brands determines a range of capacity per annum. This also includes a forecast on the average berths per vessel to develop a long-term projection that illustrates growth trends in ship size. This is also divided into vessels of less and greater than 500 lower berths to achieve a more accurate vessel capacity overall over a long-term projection period. Lower berth assessment is based upon new build order trends and an assessment of impediments to vessel growth (market, demographic, regional caps, etc.). In the case of the COVID-19 impacts to the cruise industry, the redeployment and vessel passenger capacity percentages for all vessels through the period of restart was utilized as a basis to project out the onboard capacity percentages as the industry moves into 2022—2024. Projections were unconstrained in nature for this forecast.

For Bahamas/Caribbean regional projections, the passenger growth range is determined by historic market capture trends (5 and 10 year) and the COVID-19 recovery of the cruise industry in relation to world and regional deployment trends; passenger demand; and the regional competition (demand) that is also tempered by world events—war, disease, etc. The Bahamas / Caribbean region has the potential to provide for a vastly quicker recovery than other regions due to its proximity to an eager cruise consumer market and the ability to provide for shorter cruise patterns and utilizing private islands, downstream developments in the short- to mid-term while the industry stabilizes.

CHAPTER 3 APPENDIX

C.1 Pilot Stakeholder Outreach Summary

Stakeholder interviews were conducted with each of Florida's harbor pilot stations in order to obtain more detailed information on seaport needs. This included discussions on channel and near-port waterway needs; near or on-port infrastructure needs; observed waterway trends; and landside access needs. The harbor pilot stations and the pilot(s) that participated in these interviews are listed in Table C.1. Note that a representative (Laura DiBella) from the Florida Harbor Pilots Association also participated in each interview, as available. Conversations were guided by an interview guide, included on the page following.

TABLE C.1 FLORIDA HARBOR PILOT STAKEHOLDER SUMMARY

Harbor Pilot Station	Participating Pilots
Biscayne Bay Pilots Association	Captain Geoffrey Pool
Port Everglades Pilots Association	Captain Sam Stephenson
Canaveral Pilots Association	Captain Ben Borgie
Key West Pilots Association	Captain Robert Maguire
Palm Beach Pilots Association	Captain Reid Hansen
Pensacola Pilots Association	Captain Brian McGee
St. Andrew Bay Pilots Association	Captain Zach Condon
St Johns Bar Pilots Association	Captain Nathan Cook William Kavanaugh
Tampa Bay Pilots Association	Captain Jack Timmel Terry Fluke

C.1.1 Harbor Pilot Interview Guide

Harbor Pilot Station: _____

Name of Respondent: _____ Position/Title: _____

Office Phone: _____ Mobile Phone: _____ Email: _____

1. Can you describe your pilot station's roles and responsibilities?
2. How many pilots are assigned to your station? Is this adequate?
3. Do you have contingencies in place if a pilot were to leave suddenly?
4. Is there ever delay due to pilot availability? If yes, can you describe?
5. What volume of cargo/cruise vessels operate through your station? What are the peak times?
6. We understand all non-U.S.-flagged ships must use a harbor pilot; do U.S.-flagged vessels often use them too? If not, are there any issues or concerns associated with them not using a pilot?
7. Can you describe the time required to pilot a vessel? How does this vary by vessel type?
8. Can you describe any significant operational differences between and constraints associated with various vessel types (i.e., cruise vs. container vs. petroleum)? Do they compete for arrival/departure time slots? Are there key differences in protocols by vessel type?
9. What are the unique characteristics of your harbor/waterway?
10. Does your harbor/waterway require any special maintenance?
11. What are the most significant conflict points, if any, at your port?
12. What are the primary causes for delays related to waterway operations (e.g., draft, tidal, navigational, pilotage and/or tug)?
13. What are the primary constraints to growth from a waterside perspective?
14. Is your harbor/waterway currently maintained to its authorized depth? If no, can you describe the current conditions?
15. What are the most critical waterside infrastructure needs in order to maintain and to grow port operations?
16. What near or on-port infrastructure and/or landside access needs are impacting piloting activities?
17. What policies (both domestic and international) most significantly impact your operations?
18. How has COVID-19 impacted harbor pilot operations? Are these likely to be permanent changes?
19. How has your industry changed over the last five years? How do you think it will change in the next five?
20. Are there any key environmentally sensitive areas in your waterway and do they have an impact on piloting ships in?
21. Can you describe your station's role in assessing impacts to waterways and recovering from hurricanes?
22. Thinking about previous ship groundings (e.g., Golden Ray), what are the key risks in your waterway? How are these risks mitigated? What more could be done to mitigate these risks?
23. If a ship were to run aground in your waterway, how would it impact vessel traffic? What would the protocols be for the waterway to be functional again?

C.2 Seaport Stakeholder Outreach Summary

Stakeholder interviews were conducted with each of Florida's seaports to obtain detailed information on seaport needs. This included discussions on channel and near-port waterway needs; near or on-port infrastructure needs; observed waterway trends; and landside access needs. The seaports included in this effort and participating seaport staff are included in Table C.2. Conversations were guided by questionnaires completed by each port in advance of the meeting. These questionnaires were customized for each port with some fields pre-filled for verification by seaports based on prior responses. The questionnaire distributed to seaports is provided on the following pages.

In addition, a tenant survey was prepared and provided to each seaport to distribute. The survey asked tenants to provide company specific characteristics (business, employees, ports served), rank a set of statements describing port operations using a 1 to 5 scale, and to identify any key needs. This survey form follows the example questionnaire.

TABLE C.2 FLORIDA SEAPORT STAKEHOLDER SUMMARY

Seaport	Participating Staff
Port Canaveral	Diane Luensmann Caitlin Lewis Bill Crowe Pat Poston
Port Everglades	Natacha Yacinthe Ellen Kennedy Luis Aguilar Nicholas Vandeneiligenberg Justin Oliver
Port of Fernandina	Christopher Ragucci
Port of Fort Pierce	Kevin Lindgren
JAXPORT	Beth McCague James Bennett
Port of Key West	Doug Bradshaw Carol Sheldon
SeaPort Manatee	Denise Stufflebeam Dave Sanford
PortMiami	Michael Bello Becky Hope Alissa Penaloza
Port of Palm Beach	Carl Baker Ronald Coddington
Port Panama City	Alex King Shelby Husbands John Miller
Port of Pensacola	Amy Miller Clark Merritt
Port of Port St. Joe	Guerry Magidson
Port St. Pete	David Wirth
Port Tampa Bay	Lori Musser Raymond Clark Patrick Blair Angela Cands-Wilfalk Ram Kancharla

The **2020 Florida Seaport and Waterways System Plan Update** will document seaport and waterway system needs, and strategies and focus areas to be used by FDOT to ensure seaports continue to be effectively integrated into the transportation system. Your input is critical for continued resource allocation to support the sustainable growth and positive economic benefits of our seaports! **Thank you for responding on behalf of your port!**

1. Contact Information			
Port:	Click or tap here to enter text.	Office Phone:	Click or tap here to enter text.
Name of Respondent:	Click or tap here to enter text.	Mobile Phone:	Click or tap here to enter text.
Position/Title:	Click or tap here to enter text.	Email:	Click or tap here to enter text.

2. FDOT has the following versions of your port's documents on hand. Please verify that these are the most recent. If they are not, provide an updated version:	
Five-Year Capital Improvement Program (CIP):	Click or tap here to enter text.
Comprehensive Annual Financial Report (CAFR):	Click or tap here to enter text.
Economic Impact Study:	Click or tap here to enter text.
Strategic/Master Plan(s):	Click or tap here to enter text.
What is the status of any related Master Plan update if currently underway?	Click or tap here to enter text.

Questions 3 through 7 reflect information reported in 2015 Seaport System Plan. Please verify and/or update this information:

3. Verify your port's current governance structure:	
Governance Structure	Click or tap here to enter text.
Governance	Click or tap here to enter text.
Members	Click or tap here to enter text.

4. Is the following establishment and enabling legislation information accurate:	Click or tap here to enter text.

5. Verify your port's current operational structure:	
Primary Activity	Click or tap here to enter text.
Secondary Activity	Click or tap here to enter text.

6. Verify your port's current taxing authority:	
Direct Taxing Authority	Click or tap here to enter text.
Taxing Authority Exercised	Click or tap here to enter text.
Host Taxing Authority	Click or tap here to enter text.
Host Tax/Support Received	Click or tap here to enter text.

7. Verify your port's current cargos and facilities as either a Primary Activity, Secondary Activity, or N/A:	
Cargo	
– Container	Click or tap here to enter text.
– Breakbulk	Click or tap here to enter text.
– Liquid Bulk	Click or tap here to enter text.
– Dry Bulk	Click or tap here to enter text.
– Automobiles	Click or tap here to enter text.
– Specialty (i.e., large power generators, wind power turbines)	Click or tap here to enter text.
Cruise	
– Homeport	Click or tap here to enter text.
– Port of Call	Click or tap here to enter text.

Maritime Industry	
– Manufacturing	Click or tap here to enter text.
– Other	Click or tap here to enter text.
Recreational-Hospitality	
– Marina	Click or tap here to enter text.
– Parks	Click or tap here to enter text.
– Hotels/Restaurants	Click or tap here to enter text.

8. What important events have occurred at the Port over the last 5 years? Please also provide respective event dates (MM/DD/YYYY) (e.g., new terminal opening, new service started, new port access improvements).	Click or tap here to enter text.

9. Provide your port's FY20 revenues by revenue type:	
Cargo	
– Container	Click or tap here to enter text.
– Breakbulk	Click or tap here to enter text.
– Liquid Bulk	Click or tap here to enter text.
– Dry Bulk	Click or tap here to enter text.
– Automobiles	Click or tap here to enter text.
– Specialty (i.e., large power generators, wind power turbines)	Click or tap here to enter text.
Cruise	Click or tap here to enter text.
Maritime Industry	Click or tap here to enter text.
Recreational-Hospitality	Click or tap here to enter text.

10. What is the current **authorized depth** of your access channel(s)? If your port will be deepened, provide the anticipated year of completion and the new authorized depth.	Click or tap here to enter text.

11. Are you currently using a specific **asset management** system? If yes, please state which one and describe which assets you are tracking.	Click or tap here to enter text.

12. Describe your port's adoption and **use of technology** (e.g., autonomous equipment, real-time traffic information for terminal and port connector delay, load availability information).	Click or tap here to enter text.

13. What is the containerized cargo capacity of your port?	
Current (at the time of this survey):	Click or tap here to enter text.
Capacity Under Construction or Budgeted (through 2025):	Click or tap here to enter text.
Additional Capacity Needed (10-year and 20-year needs):	Click or tap here to enter text.

Business Operations and Impacts of International Trends

14. Is capturing a **higher market share** of goods destined for Florida communities part of your business strategy? If yes, how are you implementing this strategy?	Click or tap here to enter text.

15. What port(s) would you consider to be your **greatest competitor(s)** for each type of cargo operation? What advantage(s) do they have?	Click or tap here to enter text.

16. What trends are you seeing in **container operations** and how do you anticipate container volumes changing over the next 20 years?	Click or tap here to enter text.

17. What trends are you seeing in **refrigerated containers** (i.e., proportion of overall containers) and how do you anticipate this changing in the next 20 years?	Click or tap here to enter text.
18. What **policies** (both domestic and international) directly impact your port's ability to do or expand business?	Click or tap here to enter text.
19. What major **international developments** are likely to have the greatest impact on your port's future business over the next 5, 10, and 20 years?	Click or tap here to enter text.
20. Has the port seen a significant impact from the opening of the **Panama Canal Expansion** in early 2016? How does this compare with what was expected?	Click or tap here to enter text.
21. How has trade between **North/South America** changed over the last several years? How is this market important to your port?	Click or tap here to enter text.
22. How could shifts in **global manufacturing** locations (shifts among countries) affect your port?	Click or tap here to enter text.
23. Describe how **COVID-19** is currently impacting operations and expected cargo and cruise volumes (e.g., security/sanitation requirements, revenue, future volume projections, expected recovery timeline, shifts in investment priorities):	Click or tap here to enter text.
24. Describe any other shifts or factors that could impact your port:	Click or tap here to enter text.

Advantages and Constraints of Florida's Seaport System

25. What advantages does Florida's seaport system have? How can these advantages best be maximized? (List and discuss as many as appropriate)	
Short Term Advantages (5-10 year)	Click or tap here to enter text.
Long Term Advantages (20 year)	Click or tap here to enter text.

26. What constraints does Florida's seaport system have? How can these constraints best be mitigated? (List and discuss as many as appropriate)	
Short-Term Constraints (5-10 year)	Click or tap here to enter text.
Long-Term Constraints (20 year)	Click or tap here to enter text.

Waterway (Waterside):

27. List and explain primary causes for delays or inefficiencies related to waterway operations (e.g., draft, tidal, navigational, pilotage and/or tug)?	Click or tap here to enter text.

28. What infrastructure needs are critical to maintaining and/or growing waterside operations and capacity? Please indicate your seaport's priorities. (List and discuss as many as appropriate)	
Short Term Waterside Infrastructure Needs (5-10 year)	Click or tap here to enter text.
Long Term Waterside Infrastructure Needs (20 year)	Click or tap here to enter text.

Highway (Landside):

29. How and where do trucks or passenger vehicles experience the longest on-port delays (e.g., queuing at main entrance port gates/security, queuing at terminal gates, on-port roadway congestion, at grade rail crossings, parking garages)?	Click or tap here to enter text.

30. What are the key transportation bottlenecks for trucks or passenger vehicles on off-port connector roads? Please list and describe specific roadways and/or intersections as appropriate.	Click or tap here to enter text.

31. What are the most important state and national trucking issues affecting overall port operations (e.g., security requirements, hours of service, driver shortage, truck parking, emerging technology, traffic congestion)?	Click or tap here to enter text.

32. What infrastructure needs are critical to facilitating the movement of people and goods on the roadway network (on- and near-port)? Please indicate your seaport's priorities. (List and discuss as many as appropriate)	
Short Term Roadway Infrastructure Needs (5-10 year)	Click or tap here to enter text.
Long Term Roadway Infrastructure Needs (20 year)	Click or tap here to enter text.

Rail (Landside):

33. Describe your current rail operations (e.g., type of service, frequency of service, footprint):	Click or tap here to enter text.

34. What are the major rail constraints or delays on-port (e.g., at-grade crossings, terminal access, track length)?	Click or tap here to enter text.

35. What issues do rail operations cause off-port property (e.g., prolonged at-grade crossing closures)?	Click or tap here to enter text.

36. How does your port benefit from a direct rail connection?	Click or tap here to enter text.

37. What infrastructure needs are critical to improving and/or expanding rail operations? (List and discuss as many as appropriate)	
Short Term Rail Operation Needs (5-10 year)	Click or tap here to enter text.
Long Term Rail Operation Needs (20 year)	Click or tap here to enter text.

The **2020 Florida Seaport and Waterways System Plan Update** will document seaport and waterway system needs, and strategies and focus areas to be used by FDOT to ensure seaports continue to be effectively integrated into the transportation system. Your input is critical for continued resource allocation to support the sustainable growth and positive economic benefits of our seaports!

Contact Information			
Company Name:	Click or tap here to enter text.	Office phone:	Click or tap here to enter text.
Name of Respondent:	Click or tap here to enter text.	Email:	Click or tap here to enter text.

Overview of Operations	
What Port do you operate at?	Click or tap here to enter text.
Briefly describe business:	Click or tap here to enter text.
Number of employees?	Click or tap here to enter text.

Please answer the following questions on a scale of 1 to 5 with 1 being strongly disagree and 5 being strongly agree.

- My facility is at capacity. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- Water depth is adequate for my current operation. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- Berth length is adequate for my current cargo operation. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- Berth length is adequate for my current cruise operation. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- My vessels do not experience delays due to port operations. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- On-port truck operations are efficient with no noticeable bottlenecks. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- On-port rail service is important to my operation. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- There is adequate cargo lay down capacity. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- There is adequate covered cargo storage capacity. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- There is adequate cold storage capacity. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- There is adequate cruise facility capacity—terminal, berth, GTA, parking. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- I have plans for future expansion at the port. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
- I anticipate returning to pre-COVID-19 levels of operation within 5 years. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A

What types of investments could the port or state make to enhance operations/facilitate the expansion of your business at this port?	
Access	Click or tap here to enter text.
Capacity	Click or tap here to enter text.
Operational Efficiency	Click or tap here to enter text.
Supply Chain Optimization	Click or tap here to enter text.

C.3 CIP Category and Issue Category Summary

The following provides further detail at a high level of stakeholder responses to identified constraints, needs, and advantages for both CIP categories and issue categories.

For the CIP categories, Miscellaneous Projects were most frequently identified with a relatively even split between advantages, constraints, and 5-year needs as shown in Table C.. Frequent responses centered around sustaining the waterfront environment. In particular, the harbor pilots emphasized a strong need to protect Florida's sensitive and unique environment as they pilot ships into and out of a port. Other responses included in this category focused on the benefits of changing technology in the seaport landscape and the need within the next five years for studies, plans, and economic analysis.

Channel and Harbor Dredging and Deepening (including spoil projects) is the second most frequently mentioned CIP category, with over half of the responses indicating it is a constraint for growth. The depth and capacity of the channel have a significant impact on the ability of a seaport to grow. The importance of maintenance dredging also was frequently mentioned. While some seaports are looking to deepen their channel, others struggle to maintain their authorized depths. This is more of an issue at ports with stronger currents and "non-rocky" bottoms.

Intermodal, Road, and Rail is the third highest ranked CIP category. This is primarily driven by constraints as highlighted by the frequent mention of Highway Access or Bottleneck issues. Rail service also contributes to this. Rail is an advantage at seaports that have efficient rail service that is actively used by the tenants. However, it is a constraint for others that do not have adequate rail capacity or where there is a need for upgraded infrastructure, whether to add capacity or to upgrade to current industry standards.

TABLE C.3 RESPONSE BY PORT CIP CATEGORY RANKED BY NUMBER OF RESPONSES

CIP Category	Total Responses	Advantages to Growth	Constraints to Growth	5 Year Needs	10 Year Needs	20 Year Needs
Miscellaneous Projects (Ex: Computer, Recreation, Environmental) Total	97	34	30	30	3	1
Channel and Harbor Dredging and Deepening (Including Spoil Projects) Total	87	27	47	9	4	1
Intermodal, Road, and Rail Total	76	15	49	7	4	1
Cargo Terminals (Including New Berths and Equipment) Total	68	13	12	28	21	1
Security and Safety Total	49	5	34	8	3	0
Berth Rehabilitation and Repairs Total	48	6	23	15	5	2
Site Improvements Total	42	11	20	11	2	0
Cruise Terminals Total	26	5	7	14	6	4
Land Acquisition Total	6	2	3	1	0	0
Other Structures Total	6	2	1	2	1	0
Total	505	120	226	125	49	10

Source: FDOT Seaport and Waterways Office, Florida Public Seaports, and Industry Stakeholders.

Table C.4 shows the top responses by Issue Category with the three highest categories consisting of Access, Capacity, and Efficiency. As discussed, access to seaports is critical from both a landside and waterside perspective in order to ensure the efficient movement of cargo, passengers, and the workforce. The top issues for Access continue to be Deep Dredge, Harbor and/or Channel Capacity; Rail Service (terminal or on-dock rail access); and Highway Access or Bottleneck. For Capacity, top issues are Site Expansion Development Needs; Increased Bulkhead and Berthing Infrastructure; and Container Expansion. Each of these were previously discussed as part of the various constraints and needs. Lastly, responses for Efficiency focused around Gate Operations, Changing Technology, and Post-Panamax Container Cranes. Gate Operations are similar to issues with Highway Access and Bottleneck. As the entrance and exit to the seaports, efficient access at the gates helps ensure the smooth flow of traffic. With that said, many stakeholders identified constraints at the gate facilities. These constraints may be solved by evolving technologies as well as through infrastructure upgrades. Post-Panamax cranes were acknowledged as an advantage to a seaport, and also as a constraint where additional cranes were needed.

TABLE C.4 RESPONSE BY ISSUE CATEGORY RANKED BY NUMBER OF RESPONSES

Issue Category	Total Responses	Advantages to Growth	Constraints to Growth	5 Year Needs	10 Year Needs	20 Year Needs
Access Total	127	33	50	35	11	5
Capacity Total	94	12	39	31	15	2
Efficiency Total	92	27	39	21	9	0
Navigation Total	79	14	51	10	5	1
Environmental Total	39	3	23	10	4	0
Trade (Global Shifts, National Trends, Industry Changes)	37	22	7	7	1	0
Funding Total	32	8	13	11	4	2
Regulatory and Governmental Total	5	1	4	0	0	0
Total	505	120	226	125	49	10

Source: FDOT Seaport and Waterways Office, Florida Public Seaports, and Industry Stakeholders.

CHAPTER 4 APPENDIX

D

D.1 Plan Integration Crosswalk

Focus: **Seaport Access** is defined as near-port waterway and landside infrastructure that provides safe and efficient access to and from seaports for vehicles, railcars, and vessels to move cargo and passengers. For seaports designated as part of the SIS, the SIS connectors (e.g., road, rail, water) illustrate FDOT's focus on access and have guided significant state investments over the last 20 years.

Seaport Strategy(ies)	Seaport Initiative(s)	FMTP Objective(s)	SIS Objective(s)	FTP Goal(s)
1, 2, 3, 4, 5, 7	1, 3, 4, 5	2.1, 3.1, 4.2, 5.2, 6.1	1, 2, 3	1, 2, 3, 4, 5, 7

Focus: **Seaport Capacity Expansion** is defined as on-port infrastructure, equipment, and systems that increase the ability of seaports to handle growing or new volumes of passengers, cargos, or other niche maritime activities. Facilities may include wharfs/bulkheads, terminals, cargo handling equipment (e.g., cranes), warehouses and cargo laydown areas, and rail yards and transfer facilities.

Seaport Strategy(ies)	Seaport Initiative(s)	FMTP Objective(s)	SIS Objective(s)	FTP Goal(s)
1, 2, 4, 5	2, 3, 4, 5	2.1, 2.2, 3.1, 4.2, 5.2	2, 3	2, 3, 4, 5, 7

Focus: **Seaport Efficiency Improvement** is defined as on-port infrastructure, equipment, technology, and systems that improve the efficiency and safety of vehicle, cargo, and passenger movements within port operational areas. For cargo, improvements could include gate structures and systems, cranes, container yard densification, and automation. For cruise, improvements could include facial recognition technologies, shore power infrastructure, people movers, and streamlined management of provisioning deliveries.

Seaport Strategy(ies)	Seaport Initiative(s)	FMTP Objective(s)	SIS Objective(s)	FTP Goal(s)
2, 3, 4, 5	2, 3, 4, 5	1.1, 2.1, 2.2, 3.1, 4.2, 7.1	1	3, 5, 6

Focus: **Supply Chain Optimization** is defined as the integrated and efficient movement of cargo through a port to its final destination in a way that maximizes reliability and minimizes cost. This includes timely unloading of a vessel, transfer of the cargo to truck or rail, and movement of the cargo through inland intermodal systems to its destination. Key components of the off-port intermodal systems include: rail lines, inland transfer yards, intermodal logistics centers (ILCs), truck staging locations, truck parking and service facilities, warehousing and distribution facilities, and Foreign-Trade Zone (FTZ) facilities.

Seaport Strategy(ies)	Seaport Initiative(s)	FMTP Objective(s)	SIS Objective(s)	FTP Goal(s)
1, 2, 3, 4, 6, 8	2, 3, 6	2.1, 3.1, 4.1, 4.2, 5.2, 5.2, 6.1	1, 2, 3	1, 2, 3, 4, 5, 6, 7

D.2 Florida Transportation Plan Goals (2020)

Goal 1: Safety and security for residents, visitors and businesses.

Goal 2: Agile, resilient, and quality transportation infrastructure.

Goal 3: Connected, efficient, and reliable mobility for people and freight.

Goal 4: Transportation choices that improve accessibility and equity.

Goal 5: Transportation solutions that strengthen Florida's economy.

Goal 6: Transportation systems that enhance Florida's communities.

Goal 7: Transportation solutions that protect Florida's environment.

D.3 Strategic Intermodal System (SIS) Plan Objectives (2016)

Objective 1: Interregional Connectivity. Ensure the efficiency and reliability of multimodal transportation connectivity between Florida's economic regions and between Florida and other states and nations.

Objective 2: Intermodal Connectivity. Expand transportation choices and integrate modes for interregional trips.

Objective 3: Economic Development. Provide transportation systems to support Florida as a global hub for trade, tourism, talent, innovation, business, and investment.

D.4 Freight Mobility and Trade Plan (FMTP) Goals and Objectives (2020)

Goal 1: Safety and security for residents, visitors and businesses.

- Objective 1.1: Leverage multisource data and technology to improve freight system safety and security.

Goal 2: Agile, resilient, and quality transportation infrastructure.

- Objective 2.1: Create a more resilient multimodal freight system.
- Objective 2.2: Ensure the Florida freight system is in a state of good repair.

Goal 3: Connected, efficient, and reliable mobility for people and freight.

- Objective 3.1: Drive innovation to reduce congestion, bottlenecks, and improve travel time reliability.

Goal 4: Transportation choices that improve accessibility and equity.

- Objective 4.1: Remove institutional, policy and funding bottlenecks to improve operational efficiencies and reduce costs in supply chains.
- Objective 4.2: Improve last mile connectivity for all freight modes.

Goal 5: Transportation solutions that strengthen Florida's economy.

- Objective 5.1: Continue to forge partnerships between the public and private sectors to improve trade and logistics.
- Objective 5.2: Capitalize on emerging freight trends to promote economic development.

Goal 6: Transportation systems that enhance Florida's communities.

- Objective 6.1: Increase freight-related regional and local transportation planning and land use coordination.

Goal 7: Transportation solutions that protect Florida's environment.

- Objective 7.1: Promote and support the shift to alternatively fueled freight vehicles.


FDOT
SEAPORT