

Evaluate Florida's 14 Deepwater Seaports' Economic Performance and the Return on Investment of State Funds

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Cambridge Systematics, Inc.

with

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The opinions, findings, and conclusions expressed in this publication
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16. Abstract This research report completes two new, related areas of economic research regarding seaports in Florida: 1) analytical comparison of Florida to other southeastern states in terms of seaport activity (tonnage, containers, cruise ships) and state-level funding; and 2) economic impact and benefit/cost analysis of seaport investments in the Florida Department of Transportation work program of expenditures over the next five years. Previous studies have focused on the overall economic impact of existing seaport activities rather than the incremental return on new, proposed investments. It was found that Florida is the leading state in the Southeast for cruise passengers, vehicles handled, and containers (TEUs), and third of nine states for tonnage (including bulk cargo). Though Florida has increased the level of state funding available for seaports with the Strategic Intermodal System (SIS) and Growth Management initiatives, other Southeast states are funding seaports at similar or higher levels, especially when compared to port size (tonnage and TEUs) or number of deepwater ports. State-level seaport investments are estimated to yield \$6.90 worth of economic and transportation benefits to Florida for every \$1.00 in expenditures, resulting in a net present value (NPV) of \$3.6 billion. Florida DOT seaport investments over the next five years are estimated to generate an additional \$1.6 billion in business output and 15,650 permanent jobs in the Florida economy, and \$491 million in personal income for Florida residents by the year 2020. * with Reynolds, Smith, and Hills, Inc.			
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Preface

This research report completes two new, related areas of economic research regarding seaports in Florida: 1) analytical comparison of Florida to other southeastern states in terms of seaport activity (tonnage, containers, cruise ships) and state-level funding; and 2) economic impact and benefit/cost analysis of seaport investments in the Florida Department of Transportation work program of expenditures over the next five years. Previous studies have focused on the overall economic impact of existing seaport activities rather than the incremental return on new, proposed investments.

Executive Summary

Florida's 14 deepwater seaports play an essential role in creating and sustaining a vibrant economy and play a central role in international trade. Fairly recent initiatives by the Florida Department of Transportation (FDOT) to create and fund the Strategic Intermodal System (SIS) explicitly recognize the importance of an integrated, multimodal transportation system to move goods and people to, from, and within Florida. Given the additional funding opportunities now available through state-level funds to support the expansion and efficiency of Florida's seaports, FDOT has completed an evaluation of the competitive performance of Florida's seaports and the economic return on investment. The main objectives of this study were:

- A comparison of state-level seaport activity (tonnage, containers, vehicles, cruise passengers) between Florida and its Atlantic (Georgia, South Carolina, North Carolina, Virginia) and Gulf competitors (Alabama, Mississippi, Louisiana, Texas).
- A comparison of state-level funding and investment directed towards seaports in Florida and its competitor states. The analysis compares how funding levels vary relative to the size and number of ports in each state (which is typically well-below the 14 deepwater ports in Florida).
- A historical comparison of the Chapter 311 funding allocations to the Florida Seaport Transportation and Economic Development (FSTED) Council by seaport within Florida. The analysis depicts the share of funding over time and how that compares with the relative size of each port.
- An economic impact and benefit-cost analysis of Florida's five-year work program of seaport investments (2006/2007 to 2010/2011). This analysis focuses on the capacity and efficiency benefits of scheduled seaport investments on the Florida economy.

Key findings from each of the four objectives include:

- Florida is the leading state in the Southeast for cruise passengers, vehicles handled, and containers (TEUs), and third of nine states for tonnage (including bulk cargo). However, other states (e.g., Georgia, South Carolina, Virginia) are growing their port activity rapidly and Florida has actually lost market share over the past five years.
- Though Florida has increased the level of state funding available for seaports with the SIS and Growth Management initiatives, other Southeast states are funding seaports at similar or higher levels, especially when compared to port size (tonnage and TEUs) or number of deepwater ports.

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- Historical FSTED funding allocations to Florida’s seaports approximate the relative size of seaports in Florida, though data suggest that smaller ports receive a slightly higher share of FSTED funding than would be predicted by port size. This is likely due to the lower self-funding and revenue capabilities of the smaller ports in the State.
 - State-level seaport investments are estimated to yield \$6.90 worth of economic and transportation benefits to Florida for every \$1.00 in expenditures, resulting in a net present value (NPV) of \$3.6 billion.
 - Florida DOT seaport investments over the next five years are estimated to generate an additional \$1.6 billion in business output and 15,650 permanent jobs in the Florida economy, and \$491 million in personal income for Florida residents by the year 2020.

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1.0 Atlantic and Gulf State Seaport Comparisons

Competition between seaports on the Atlantic and Gulf seaboards is intensifying. Florida's ports play an important role in the state and national economies, serving as gateways for international trade, handling crucial supplies for agriculture and industry, and greeting millions of cruise ship passengers annually, a key area of expansion for the State's tourism industry. While Florida's major ports are showing growth, other ports on the Atlantic and Gulf Coasts are becoming more formidable competitors and are gaining higher shares of international trade, freight traffic, and cruise passengers. As Florida develops plans for the future of its ports, it is important to assess the State's relative position today within this competitive environment. This section assesses the competitiveness of Florida's seaports based on seaport-related activity (trade, freight, and passengers) and goes into additional detail describing state-level funding and programs to strengthen seaport facilities and operations. Specifically, the section includes:

- A comparison of state-level seaport activity (tonnage, TEUs, vehicles, cruise passengers) between Florida and its Atlantic (Georgia, South Carolina, North Carolina, Virginia) and Gulf competitors (Alabama, Mississippi, Louisiana, Texas).
- A comparison between Florida and its competitor states in state-level funding and investment directed towards seaports. The analysis also compares how funding levels vary relative to the size and number of ports in each state. Most comparison states have far fewer than Florida's 14 deepwater ports.
- A historical comparison of the Chapter 311 funding allocations by seaport within Florida from the Florida Seaport Transportation and Economic Development (FSTED) Council. The analysis depicts the share of funding over time and how that compares with the relative size of each port.

■ 1.1 Seaport Activity by State

The Southeast coastal region has many deepwater seaports that are leading U.S. gateways for domestic and international freight. The region is composed of nine states: Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas, and Virginia. As shown in Table 1.1, the seaports located in the Southeast move over 1.3 billion short tons (2004), including 10 million TEUs (20 foot equivalent units), and 771 thousand vehicles (2004), and handled 5.9 million departing cruise passengers (2005).

Table 1.1 Seaport Activity for Atlantic and Gulf States

	2004			2005
State	Short Tons	TEUs	Vehicles	Cruise Passengers
Alabama	58,089,739	37,375	26,432	87,628
Florida	121,351,048	2,668,736	486,167	4,749,154
Georgia	30,432,147	1,662,083	315,430	
Louisiana	468,528,396	276,053		308,394
Mississippi	46,112,886	213,108		
North Carolina	11,295,432	104,122		
South Carolina	25,706,837	1,863,917	160,000	41,337
Texas	530,950,921	1,516,444	72,127	629,249
Virginia	50,881,527	1,852,494	26,364	45,414
Total	1,343,348,933	10,194,332	771,090	5,861,176
Percent of U.S.	50%	40%	19%	64%

Sources: Maritime Administration, U.S. Army Corps of Engineers, and American Association of Port Authorities.

Tonnage. The tonnage number presented here includes the weight of containerized cargo, vehicles, and other bulk movements. As shown in Figure 1.1 below, in 2004 nearly 75 percent of all freight by volume in the Southeast was handled through ports in Texas and Louisiana, with Louisiana processing approximately 470 million tons and Texas surpassing the 500 million mark. Florida ranked third among the Southeast states with more than 120 million tons handled in 2004, representing nine percent of the regional trade. The remaining states combined for nearly 17 percent of the tonnage transported (223 million tons). Florida's share of total tonnage has remained fairly constant since 1999 at about 10 percent and has rebounded from a mini-slump during the 2001-2002 national economic recession.

TEUs. Florida is the leading state in the Southeast in terms of total TEUs handled – the most relevant metric for international trade shipments. In 2004, the State's 14 deepwater seaports imported and exported a combined 2.7 million TEUs, comprising 26 percent of the region's total container trade. Virginia and South Carolina tied for second with 1.9 million TEUs, each accounting for 18 percent, while Georgia and Texas ranked fourth and fifth respectively. Combined, the remaining four states, Alabama, Louisiana, Mississippi, and North Carolina, moved over 600 thousand TEUs in 2004, nearly seven percent of the Southeast region total. Although Florida's handling of containers grew by over six percent over the past five years, Florida's share of TEUs in the Southeast has decreased from almost 32 percent in 1999 to its current 26 percent share – trends that reflect the strong gains made by Ports such as Savannah and Charleston. For example, Georgia's share of TEUs over the same period increased from 10.1 percent to 16.3 percent.

Vehicles. According to the American Association of Port Authorities (AAPA), the Port of Jacksonville handled 486,000 automobiles in 2004, giving Florida 45 percent of the Southeast's waterborne trade in motor vehicles. The Port of Tampa has also handled automobile trade in recent years. Vehicles handled at Florida ports grew by 31 percent from 1999 to 2004, though slower than the 74 percent growth in the Southeast overall. Georgia ranked second, with over 315,000 vehicles (29 percent of the regional total). The majority of the vehicles processed in Georgia, (94 percent) were handled at the Port of Brunswick, with Savannah handling the remainder. South Carolina's Port of Charleston 160,000 vehicles, equally split between imports and exports, in 2004, accounting for 15 percent of the Southeast region total. Texas, Alabama, and Virginia were also active in the vehicle trade market. The Port of Mobile is becoming a major hub for U.S.-Canadian auto trade with more than 26,000 vehicles handled in 2004. This represents a significant increase over 2003, when the port moved just 6,300 vehicles.

Cruise Passengers. Florida's seaports accommodate the vast majority of cruise passengers in the Southeast. Data from the U.S. Maritime Administration indicate that Florida handled 81 percent of all the passengers departing from Southeast ports – over 4.7 million passengers in 2005. The Port of Miami had the largest share of passengers departing for cruises with 1.8 million passengers (37 percent), followed by Port Canaveral and Fort Lauderdale (each with approximately 1.2 million passengers). Texas and Louisiana hosted a combined 938,000 departing passengers, representing 16 percent of the Southeast's cruise passengers. The remaining three states – Alabama, Virginia, and South Carolina – combined for almost 175,000 passengers, representing just three percent of the Southeast total.

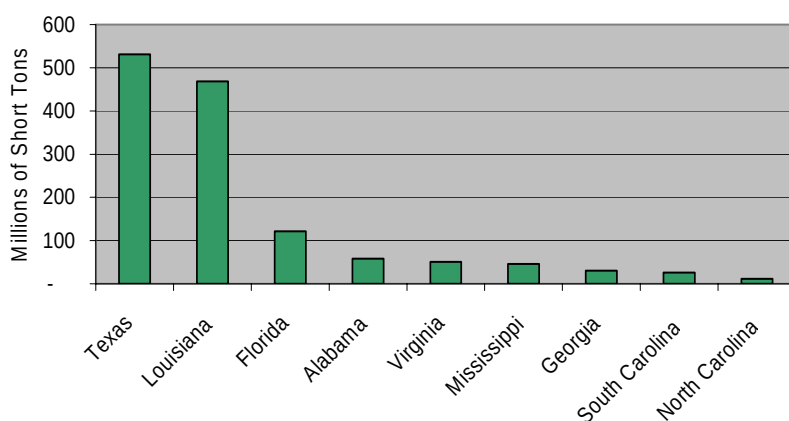


Figure 1.1 Tonnage Handled at Atlantic and Gulf States

■ 1.2 Seaport Funding by State

Funding for port improvements comes from a variety of sources, including local, state, and Federal government, terminal fees, and private contributions. Considered a strategic

economic asset, some states invest directly into their ports while others offer incentives to encourage improvements. This section compares state-level funding for seaports in the nine states of the Southeast region (see Table 2). The state funding data comes from a number of sources and highlights the differences in how seaports receive support throughout the region. For example, many of the Atlantic and Gulf states have state-level port authorities which typically oversee only a handful of ports. In many cases, funding from state government sources comes directly from legislative appropriations rather than through a dedicated funding source through the state's department of transportation. Of the states surveyed, only Florida and Louisiana have provided funding to their seaports through long-standing DOT programs.¹ Although some states are making strategic investments in their ports, the majority of seaport funding is generated through a combination of local and private sources and through port user fees. For example, Texas provides no state-level seaport funding but has given counties/municipalities the ability to generate public revenue to support seaports. Consequently, this tabulation should be viewed as a summary of available data, representing state funding for seaports coming from a variety of sources. More specific details regarding each state's seaport funding mechanisms are provided in Section 1.3.

As shown in Table 1.2, Alabama and Virginia have appropriated the largest amount of state funds for seaports in recent years. The Georgia and South Carolina funding values may be underestimated as the linkage between legislative appropriations and the state port authorities is not officially documented. Florida's state-level funding of seaports over the next five years will be remarkably different than what it had been in the past. Until recently, seaport funding in Florida has relied on the Florida Seaport Transportation and Economic Development (FSTED) Council (\$10 to \$15 million in annual funding). Today, a new infusion of seaport funding became available with the inception of the Strategic Intermodal System (SIS). SIS funding, including its SIS Growth Management component, increases annual state funding for seaport improvements to just over \$50 million annually. However, because Florida has more deepwater seaports than any of the competitor states, these funds must be dispersed among a large number of ports.

¹ Florida's seaport funding has increased recently due to the Strategic Intermodal System (SIS) and Growth Management initiatives.

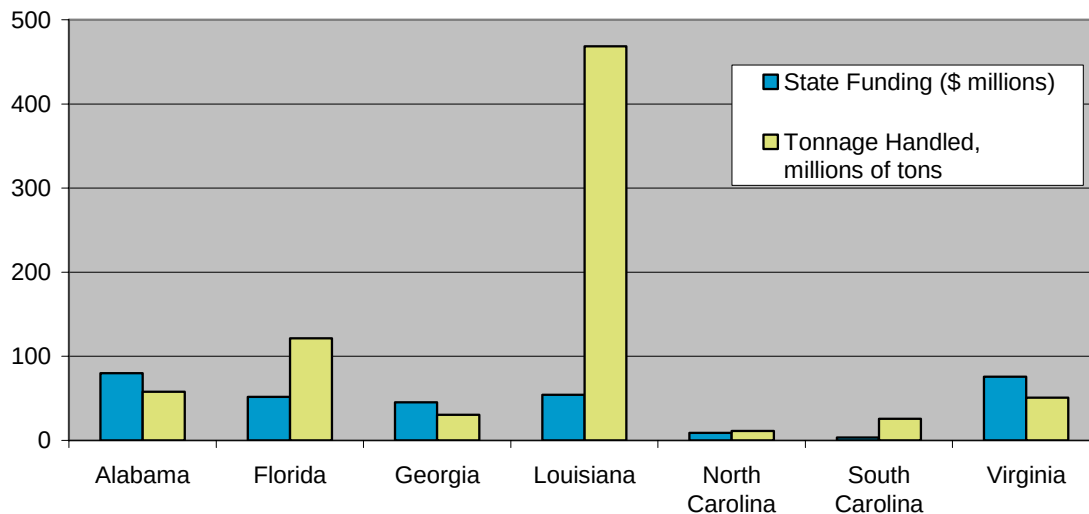
**Table 1.2 State-Level Seaport Funding in Atlantic and Gulf States
2004**

State	State Funding (in millions)
Alabama	\$80.0
Florida	\$51.9 ^A
Georgia	\$45.3
Louisiana	\$54.3
North Carolina	\$9.0
South Carolina	\$3.4
Virginia	75.9

Note: Texas and Mississippi are not included in this table since neither state provides direct state-level funding to seaports as of fall 2005.

^A The annual State funding allocation was computed by dividing the total dollar amount available through the FDOT Work Program by the number of years covered by the Work Program (i.e. five).

Figures 1.2 and 1.3 (below) compare the cargo handled at each state's seaports with state-level seaport transportation funding levels. Figure 1.2 shows total cargo at each state, while Figure 2b shows the number of TEUs. Texas and Mississippi, as in Table 1.2, are not included because it is not possible to develop a state-level seaport funding value for either state. The data is shown in millions of tons (which contain bulk, containers, and vehicle movements) and millions of dollars of state funding.



**Figure 1.2 Total Cargo Handled and State-Related Transportation
Investments at Seaports in Select Atlantic and Gulf States
2004**

Even accounting for the differences in the types of funding data available from the Southeast states, it is clear that Florida and Louisiana are states with low state funding

relative to total port traffic, which includes bulk, container, and vehicle movements. If it were possible to include cruise passengers (one of Florida's strengths) along with the provided tonnage into a single metric, the difference between Florida's total seaport activity and state funding levels would look that much more apparent. Using these same metrics, state seaport funding in Alabama, Georgia, and Virginia are all high relative to cargo handled (more than \$1 in state funding per ton). These findings also demonstrate that even with the higher levels of state seaport funding that have become available from the Strategic Intermodal System, the large volumes of bulk cargo, TEUs, cruise passengers, and vehicles handled by Florida's seaports could justify higher levels of state investment without exceeding the relative investment levels made by some of the comparison states on the Atlantic and Gulf Coasts. Similar to Florida, the extremely high volume of tonnage handled at Louisiana's ports suggest an even greater imbalance between state funding and port traffic. However, Louisiana did lead the region in seaport funding in the 1980s as the State engaged in an effort expand capacity and modernize facilities at its ports, traditionally some of the busiest in the country.

Doing the same analysis but just considering the number of TEUs handled still suggests that Florida's ports are underfunded when compared to some of its competitors. This comparison may be somewhat deceiving since some of the states (i.e., Alabama, North Carolina, and Louisiana) handle a very low amount of containers, hence the graphic may suggest that they are well funded compared to the rest. Nonetheless, the analysis still shows that Florida ports receive the second lowest amount in funding per TEU out of this group, getting \$19 per container (South Carolina is the lowest at \$2). The average amount of funds per TEU for all seven states is twice the rate obtained by Florida ports, \$38.

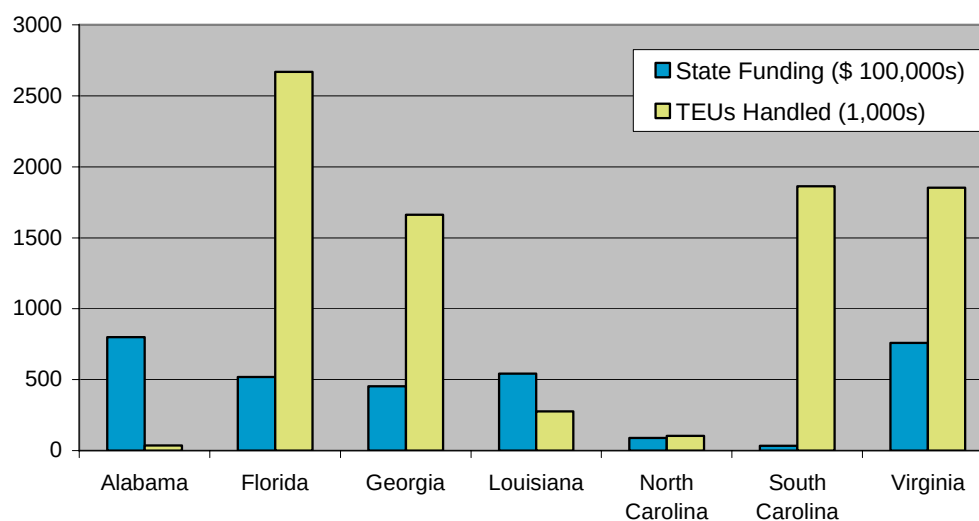


Figure 1.3 TEUs Handled and State-Related Transportation Investments at Seaports in Select Atlantic and Gulf States 2004

Appendix A provides more detail on each state's funding strategies and organizational structure, including state port authorities and port-specific information.

2.0 Florida Seaport Trade and Funding

This section presents trade and funding data for Florida's deep water seaports. First, activity levels using a variety of measures, including the dollar value of imports and exports, are analyzed and then historical FSTED funding by seaport is examined. The objective is to show the unique characteristics of Florida's seaports in terms of activity and assess the distribution of state-level funding to ports.

■ 2.1 Trade and Activity at Florida's Seaports

Table 2.1 presents seaport activity for all of Florida's seaports in 2004. Most of the data in this section is sourced from FSTED's current five-year plan (2005/2006 to 2009/2010).

Table 2.1 Florida Seaport Activity in Calendar Year 2004

Port	Tons	TEUs	Cruise Passengers
Canaveral	4,371,198	1,768	4,438,196
Everglades	26,249,919	761,349	3,869,950
Fernandina	510,312	27,912	219
Fort Pierce	235,038	8,920	
Jacksonville	20,481,665	764,904	227,681
Key West			1,012,931
Manatee	9,164,924	6,809	
Miami	9,411,710	1,043,222	3,578,797
Palm Beach	4,234,410	242,655	550,355
Panama City	1,074,676	13,779	
Pensacola	497,483	590	
St. Joe			
St. Petersburg			96,414
Tampa	49,820,487	23,985	776,363
Total	126,051,822	2,895,890	14,550,905

Source: Florida Ports Council.

Note: Cruise passengers in this table measures embarkations and disembarkations, (a different concept from the state-level MARAD data shown earlier in the report which only includes one count of passengers based on departing port).

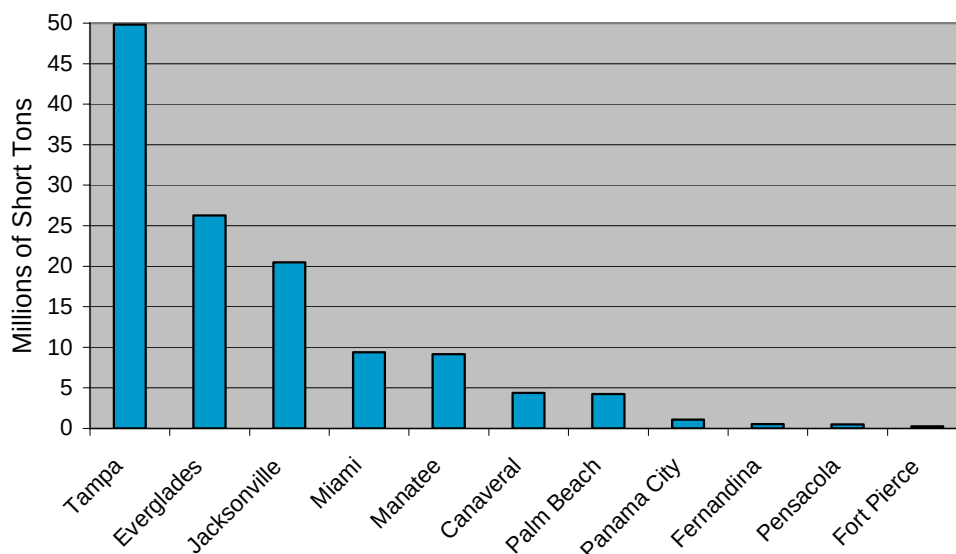
Tampa is the State's clear leader in bulk tonnage handled but trails other ports (e.g., Miami, Jacksonville, Everglades) in TEUs. Meanwhile, Canaveral had the largest number of cruise passengers (which includes day cruises as well as multiday trips) and Jacksonville is the major port for auto imports (the number of vehicles processed by port is not included above because few Florida ports handle vehicles; it is, however, included in the state-level Table 1.1). In this way, Florida's many ports tend to play a variety of roles in facilitating domestic and international trade, and tourism. Note: the date in Table 2.2 provides calendar year data while the analysis that follows uses fiscal year data.

Seaport Tonnage. Florida's waterborne trade in FY 2004/2005, including the international and domestic cargo handled at both public and private terminals in port areas, increased to 127.4 million short tons, a 4.5 percent increase from FY 2003/2004's 122.0 million. Five seaports (Tampa, Everglades, Jacksonville, Miami, and Manatee) combined to handle nearly 91 percent of the State's total tonnage. Tampa ranked first with 50.2 million short tons (39%), followed by Everglades with 26.5 (21%), Jacksonville's 20.7 (16%), Miami's 9.5 (7%), and Manatee's 9.4 million tons (7%). The remaining six ports combined to handle 11.1 million tons, representing the balance of nine percent. St. Joe, St. Petersburg, and Key West had no tonnage activity.

The majority of ports experienced small changes (+/- 5%) in the volume of tons handled, compared to the previous year. However, four ports experienced significant variations: Fort Pierce handled 42 thousand tons more, a 21 percent increase from FY 2003/2004; Port Manatee increased by 1.1 million tons (13%); Canaveral experienced a rise in volume by 384 thousand tons (9%); and Panama City underwent a 28 percent increase, representing 251 thousand tons.

Figure 2.1 provides a ranking of Florida's seaports based on total tonnage (not cruise passengers). As this measure tends to be dominated by tonnage (rather than TEUs), it is not surprising to see Tampa ranked first and Miami fourth, even though Miami handled over one million TEUs (largest in the state) and Tampa just over 20,000.

Container Movements. In FY 2004/2005, Florida's ports imported and exported approximately three million TEUs across their docks, an 11 percent increase over FY 2003/2004, and the highest level ever for the state. For the third year in a row, the Port of Miami moved more than one million TEUs, increasing volume by four percent. Port Everglades recorded a 22 percent increase and the Port of Jacksonville a seven percent increase in the number of TEUs handled. These three ports ranked 11th, 12th, and 13th among U.S. container ports in 2004. Also moving more TEUs in FY 04/05 than in FY 03/04 were Port Canaveral (157%), the Port of Fernandina (16%), the Port of Fort Pierce (166%), the Port of Palm Beach (10%), and the Port of Tampa (67%). The Port of Manatee (-27%) and Port of Pensacola (-31%) experienced declines from the previous year in this category of activity.



Source: Florida Ports Council.

Figure 2.1 Tonnage for Florida's Seaports
2004

Cruise Passengers. In FY 2004/2005, 14.5 million cruise passengers embarked and disembarked from Florida's ports, a 1.2 percent decline over FY 2003/2004, the result of hurricane interruptions to scheduled cruise operations, particularly one-day operations. The number of multiday cruise passengers increased by a slight 0.25 percent, but the number of one-day cruise passengers, which represent 25 percent of the total, declined by 7.0 percent. The Port of Miami, which has only multiday cruises, saw a 3.0 percent increase in the number of its passengers; but Port Canaveral and Port Everglades, which have both one-day and multiday cruise operations, saw total declines of 4.3 and 6.7 percent, respectively. The Port of Jacksonville, which entered the cruise market in late 2003, experienced the strong growth anticipated for its new operations, which increased by 61 percent.

The multiday cruise passenger count at Florida's seaports also reflects the port-of-call operations at several ports, including the Port of Key West, which is welcoming ferry passengers from other Florida ports as well as cruise passengers. Key West handles almost 10 percent of the cruise passengers sailing from Florida's home ports and continues to benefit from calls by the larger-capacity cruise ships sailing from the many ports whose itineraries include a stop at this popular and strategically located destination.

Mix of Commodities Handled. Florida's ports handled a wide mix of commodities in 2004. The Port of Tampa processes nearly 40 percent of the State's total tonnage, comprised mostly of low-value bulk goods such as petroleum (37 percent of all commodities by tonnage) and phosphate (26 percent), while accounting for seven percent of the State's total foreign trade by value. The Port of Miami, on the other hand, is considered a "clean" port meaning that most of the cargo activity revolves around containers. At times, they receive break-bulk, lumber ships from South America but their

frequency has diminished and their impact on trade volume is not significant. Aside from general cargo, top commodities include textiles, paper, and food products. The Port of Miami handles over 30 percent of the State's total foreign trade by value.

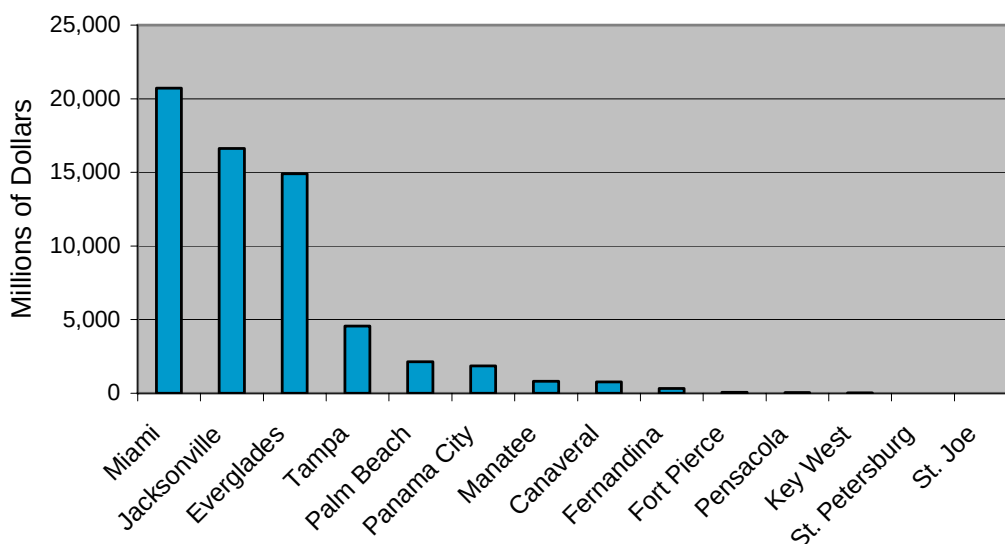
The other two largest ports in Florida, Everglades and Jacksonville, had a similar split of bulk and container activity. The dominant commodity at the Port of Everglades is petroleum, accounting for over 80 percent of noncontainerized cargo (by weight), and nearly 30 percent of the port's revenues. Other commodities include cement/clinkers, steel/coils/rebar, and roll-on/roll-off cargo such as vehicles and yachts. At the Port of Jacksonville, coal and coke, gasoline and aviation fuel, and petroleum/crude commodities account for approximately 40 percent of the Port's foreign trade (a figure exceeding six million tons). Other major commodities include automobiles, limestone, granite, and gypsum. In 2003, Jacksonville handled the third most vehicles of all ports in the U.S. These two ports combined to handle 50 percent of the State's total foreign trade by value in 2005 (Jacksonville 26 percent, Everglades, 24 percent).

The remaining Florida ports handled a balanced mix of containerized and noncontainerized goods, processing 20 million tons (16 percent of state total), and 302 thousand TEUs (10 percent). They also accounted for 9.7 percent of the State's total foreign trade, by value (\$6.1 billion). Major commodities at these ports include petroleum, cement, sugar, molasses, salt, and lumber.

Dollar Value of Waterborne Cargo. Florida's seaports moved \$62.9 billion worth of goods from countries the world over in 2005. This 22.4 percent increase over 2004 includes \$25.2 billion in imports and \$37.7 billion in exports. Imports represented 60.0 percent of the waterborne international trade value while exports represented 40.0 percent.

Florida's four largest ports (Miami, Jacksonville, Everglades, and Tampa) handled the vast majority of the State's seaborne foreign trade (Figure 2.2). The four ports combined to move goods valued at \$56.8 billion dollars in 2005, representing 90 percent of the State's total. Miami leads in this measure due to the high values of the containers (TEUs) handled at the port. Jacksonville follows, combining high value vehicles with a significant volume of containers.

With the exception of St. Petersburg, all of Florida's seaports saw increases in the value of the goods moving across their docks. The Port of Pensacola experienced the largest increase in cargo value (in terms of percentage), going from \$5.8 to \$56.0 million, nearly a 10-fold increase. The Port of Panama City experienced a \$1.3 billion increase in value transported representing an 261 percent difference from the previous year. In terms of change in total value, all four major ports saw significant increases in dollars traded. Everglades ranked first with a \$3.6 billion increase (32 percent), followed by Jacksonville's \$2.9 billion, Miami ranked third with \$1.6 billion, and finally Tampa with a \$1.2 billion improvement (34 percent).



Source: Florida Ports Council.

Figure 2.2 2005 Dollars of Trade (Imports and Exports) by Seaport

Table 2.2 presents statewide trends in tonnage, TEUs, and trade value from 2002 to 2009. The values from 2002 to 2004 represent actual historical values, while the values for 2005 to 2009 represent updated forecasts. Recent work by the Washington Economics Group for the Florida Ports Council projected maritime trade values through 2008 but did not have the more recent historical data available when produced. The revised forecast numbers use the same forecast trend in terms of percentage growth estimated in earlier work, while benefiting from more recent data (which exceeded projections). Of note, growth in TEUs and international trade are out-pacing growth in tonnage.

Table 2.2 Florida Statewide Trends

Year\Metric	Tons	Percent Change	TEUs	Percent Change	Trade Value	Percent Change
2002	117,467,462		2,546,125		\$45,008,236,851	
2003	121,024,728	3%	2,645,189	4%	\$46,387,337,907	3%
2004	126,051,822	4%	2,895,890	9%	\$51,396,738,337	11%
2005	130,397,231	3%	3,081,192	6%	\$62,899,263,643	22%
2006	134,538,998	3%	3,239,279	5%	\$67,171,974,905	7%
2007	138,921,595	3%	3,413,738	5%	\$71,818,703,211	7%
2008	143,568,667	3%	3,608,622	6%	\$76,731,701,928	7%
2009	149,931,836	4%	3,829,936	6%	\$81,980,790,763	7%

Source: Florida Ports Council and Cambridge Systematics, Inc.

■ 2.2 Historic Florida Seaport Funding Trends

Historic Seaport Funding Levels. Between FY 2000/2001 and 2004/2005, Florida's seaports received \$50.5 million from the Transportation and Economic Development Program (Chapter 311), resulting in a yearly average of just over \$10 million (see Table 5). Funding from this program has stayed more or less constant for years. Florida's ports received about \$9.2 million annually during the 1990/91 to 1999/2000 period.

The largest recipient of Chapter 311 funds over the past five years is the Port of Tampa, which has received 10 million dollars from FYs 2000 to 2005, accounting for nearly 20 percent of all funds disbursed from the program. The ports of Miami and Everglades each received approximately eight million dollars during that same period (16 percent each), and Jacksonville collected five million dollars (10 percent). The largest recipients of this funding are also the busiest ports in the state by most measures. However, the four ports, combined, accounted for a smaller share of funding in recent years than they had in the 1990s. During the 1990-2000 period, the four major ports received 74 percent of all the funds, a figure that has since decreased to 61 percent for 2000-2005.

Now that state-level seaport funding is also available through the SIS and Growth Management programs, it will be interesting to track how future investments compare to these historic FSTED funding allocations.

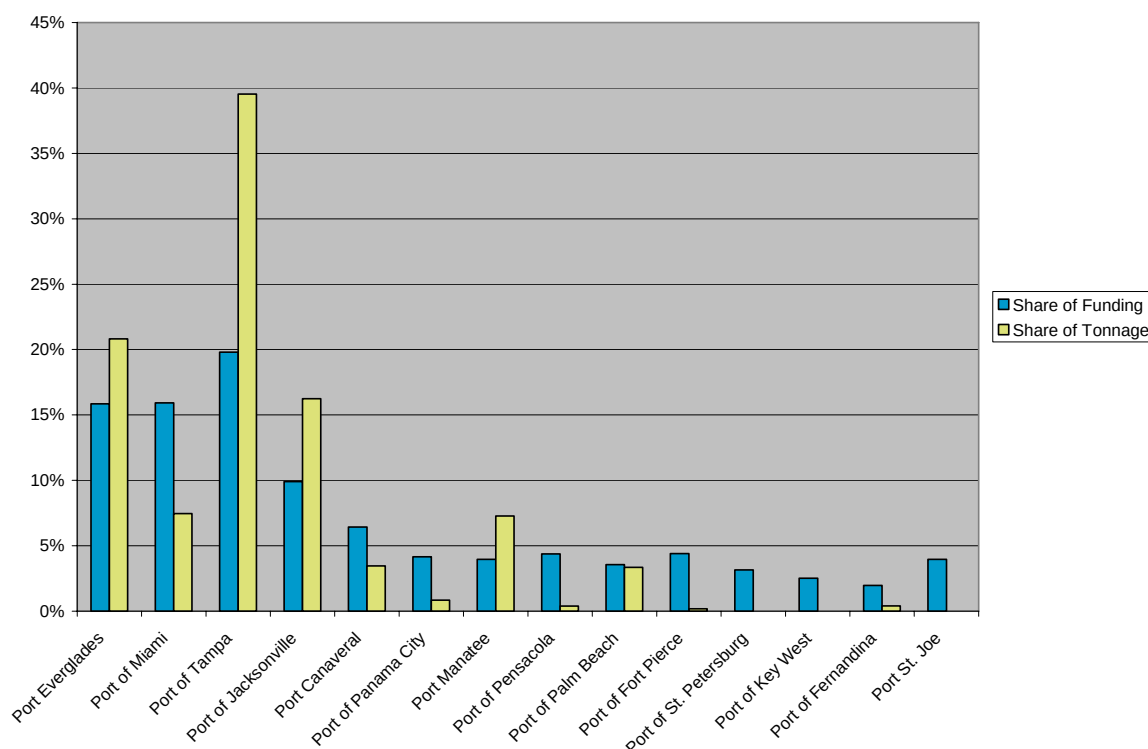
Table 2.3 Florida Seaport Transportation and Economic Development Program. Chapter 311 Funding Allocations
(in thousands)

Port Facility	FY 90/91 -FY 99/00	% Share	FY 00/01 -FY 04/05	% Share
Port Everglades	\$20,550	22%	\$8,005	16%
Port of Miami	\$19,850	22%	\$8,043	16%
Port of Tampa	\$14,325	16%	\$10,000	20%
Port of Jacksonville	\$13,380	15%	\$5,000	10%
Port Canaveral	\$5,150	6%	\$3,250	6%
Port of Panama City	\$4,260	5%	\$2,100	4%
Port Manatee	\$3,620	4%	\$2,000	4%
Port of Pensacola	\$3,440	4%	\$2,210	4%
Port of Palm Beach	\$2,560	3%	\$1,800	4%
Port of Fort Pierce	\$1,150	1%	\$2,222	4%
Port of St. Petersburg	\$910	1%	\$1,590	3%
Port of Key West	\$1,220	1%	\$1,278	3%
Port of Fernandina	\$1,035	1%	\$999	2%
Port St. Joe		0%	\$2,000	4%
Total Port Allocation	\$91,450	100%	\$50,497	100%

Source: Florida Ports Council.

Figure 2.3 compares FSTED funding over the past five years to the combined tonnage concept for each seaport in Florida. This concept does tend to emphasize tonnage over TEUs, cruise passengers or vehicles, but a few trends are clear:

- The four largest ports receive the largest share of funding and dominate the seaport activity rankings.
- Of the four largest ports, only Miami has a larger share of FSTED funding than its share of tonnage. However, as noted, Miami's cruise activity and TEUs (which lead the state) are undervalued in this analysis. Everglades, Jacksonville, and Tampa have a larger share of the state's tonnage than FSTED funding.
- The Ports of Manatee and Palm Beach had a slightly higher share of tonnage than FSTED funding over the past five years.
- The remaining ports in Florida tend to receive a larger share of FSTED funding than their share of the state's tonnage. Since most ports rely on many local and private sources for funding beyond state contributions, this finding is not surprising as FSTED funding appears to provide funding assistance to help smaller ports that may have more difficulty raising their own funds. This data, therefore, recognizes the funding challenges of smaller ports.



Source: Florida Seaport Council, FSTED, and Cambridge Systematics, Inc.

**Figure 2.3 Seaport Funding versus Tonnage Activity
2004**

3.0 Economic Benefits of Seaport Investments

In February 2003, FDOT published a study entitled “Macroeconomic Impacts of the Florida Department of Transportation Work Program.”² That study examined the economic benefits to the State of Florida of the five-year Work Program of investments across modes (also known as the Program and Resource Plan). The study approach linked transportation investments with system performance (e.g., travel time) and economic competitiveness measured in terms of income, jobs, and gross state product (GSP). Given existing data available, modeling tools, and resources, the study focused on highways and bridges, transit, and rail investments.

This section of the report addresses one of the previous gaps in the analysis by estimating the economic benefits related to FDOT’s next five years of investment in the state’s seaports. While most of the previous economic impact work related to seaports is focused on the economic contribution of existing seaports in their entirety, that type of analysis does not calculate the return on investment (ROI) of new investments. The analytical methodology and results summarized in this section are aimed at answering that exact question – what is the economic benefit of new investments in Florida’s seaports? This type of analysis is conducted to help inform future investment decisions of scarce state resources. Benefits are placed in context of costs to estimate ROI and sensitivity testing provides a sharper understanding of key assumptions. And, results are carefully accounted for to separate benefits from state-level investments compared to local and private funding.

The following subsections present the methodology, economic impacts and return on investment findings of this analysis.

² <http://www.dot.state.fl.us/planning/policy/pdfs/macroimpacts.pdf>.

■ 3.1 Methodology

Florida DOT Seaport Funding and the Work Program

As described in other sections of this report, Florida is one of the only states within the Southeast region that regularly programs state funding for seaports through its department of transportation. Up until recently, the primary source of state funds were allocated to FSTED through Chapter 311 resources. FSTED funding had been \$10 million per year but was increased in recent years up to \$15 million annually. With the development of the SIS and Growth Management (GM) initiatives, additional state funding has been made available to seaports which significantly increases the state's contribution to seaport funding. SIS and GM funding for seaports are most relevant to highway and rail connector projects, and various channel/harbor improvement projects.

Table 3.1 presents the three major components of state-level seaport funding for the current fiscal year and the next five years of the Work Program. While the funding for FSTED provides a stable source of funding for all varieties of seaport investments, SIS and GM funding opportunities are expected to provide higher levels of seaport-related funding over the next five years. The SIS and GM funding varies year-by-year depending on particular projects, with the largest single year funding in FY 2009/2010 led by the I-4 Crosstown Connector highway project in Tampa.

Table 3.1 State-level Seaport Funding Current Year and Five-Year Work Program

Funding Category	05/06	06/07	07/08	08/09	09/10	10/11	5-Year Total
FSTED	\$15.0	\$15.0	\$15.0	\$15.0	\$15.0	\$15.0	\$75.0
Growth Management	\$37.0	\$7.0	\$27.1	\$36.9	\$275.2	\$41.3	\$387.5
Strategic Intermodal System	\$40.7	\$0.0	\$66.7	\$30.0	\$73.8	\$2.0	\$172.5
Total	\$92.7	\$22.0	\$108.8	\$81.9	\$364.0	\$58.3	\$635.0

Source: Florida Department of Transportation.

To assess the economic benefits of state-level seaport investments, a representative sample of projects was chosen for detailed evaluation. Table 3.2 provides the sample of investment projects which range based on: 1) funding category (SIS, GM, FSTED); 2) ports – there are 14 deepwater seaports in Florida (projects from large and small ports); and 3) investment types (dredging/channel widening, terminal/berths, highway/rail

connectors). Results from this sample, which represents about one-third of total seaport investments, were used to extrapolate to total program-level funding. This methodology of using a sample of projects to assess the full economic benefits of seaport investments is similar to the methodology used in the Macroeconomic Study which used transportation modeling tools such as the Highway Economic Requirements System (HERS) to simulate the Work Program.

Table 3.2 Sample of Seaport Investment Projects to Develop Economic Analysis

Port	Project	Total Cost	State Contribution	State Share
Miami	Container Yard Improvements	\$4,200,000	\$2,100,000	50.0%
Manatee	South Access Channel Dredging	\$13,500,000	\$10,125,000	75.0%
Manatee	Intermodal Container Yard	\$10,000,000	\$5,000,000	50.0%
Panama City	Rail Service to New Intermodal Distribution	\$1,410,000	\$1,125,000	79.8%
Panama City	New Internal Roadway/ Access Point	\$1,333,333	\$400,000	30.0%
Panama City	Mobile Harbor Crane	\$2,050,000	\$1,025,000	50.0%
Everglades	Intermodal Container Transfer Facility	\$1,350,000	\$675,000	50.0%
Everglades	Midport Roadway Expansion	\$1,000,000	\$500,000	50.0%
Everglades	Cruise Berth Extension	\$8,000,000	\$1,050,000	13.1%
Canaveral	Widen West Turning Basin	\$44,000,000	\$9,915,000	22.5%
Palm Beach	South Gate Access to SR-710/U.S.-1 Connector	\$14,450,000	\$11,746,000	81.3%
Jacksonville	Toyota Auto Terminal	\$12,000,000	\$3,350,000	27.9%
Jacksonville	Heckscher Drive	\$47,000,000	\$16,300,000	34.7%
Jacksonville	Talleyrand Intermodal Improvements	\$3,000,000	\$1,500,000	50.0%
Tampa	I-4 Crosstown Connector	\$149,452,000	\$149,452,000	100.0%
Total		\$312,745,333	\$214,263,000	68.5%

Source: Florida Department of Transportation and Cambridge Systematics.

While the state does provide an important source of funding, in most cases, additional sources of funding (local, private, Federal) are also used to fund projects. Of the projects in the sample chosen for detailed analysis, the state share of funding is 68.5 percent, however, this share is amplified due to the I-4 Crosstown Connector which is fully funded by the Florida DOT. The state share of funding for the sample when excluding the Tampa project is 40 percent. This information is important to gauge the project benefits directly due to state-level investments because failing to account for the other sources of funding would overstate the state share of benefits.

It's also important to note that some Work Program investments do not directly translate into port capacity or efficiency enhancements but rather support port operations and investments. For example, the funding for an intermodal container transfer facility (ICTF) at Port Everglades is actually for planning, design and engineering work necessary to develop an ICTF integrated to highway, rail and storage facilities. Accordingly, the total costs estimated in the return on investment analysis below reflect an approximate 30 percent support expenditure. This is consistent with the FDOT Macroeconomic Study which measures benefits based on capital investments but also includes support expenditures by the Department (maintenance, engineering, planning, etc.) as costs.

Economic Impact Modeling

The overall economic benefits analysis modeling framework is shown in Figure 3.1. As mentioned above, this analysis focuses on the connection between seaport-related investments, improvements in seaport capacity, costs, and efficiency, and the economy. A range of investments from new marine berths for cruise passengers or cargo, to dredging and channel widening, and highway connections and intermodal rail facilities were evaluated in terms of how projects could increase port capacity for containers (TEUs), bulk tonnage, vehicles, or cruise passengers. In some cases, the direct transportation effect was less related to expanding port business but instead was expected to reduce the travel costs and increase the efficiency of truck, auto, and rail trips. Increasing port capacity and throughput increases not only on-port economic activity but also related warehousing, distribution, and supporting services industries that directly serve ports. Reducing travel costs also reduces the cost of doing business and increases the competitiveness of industries. These direct economic effects have broader, multiplier effects on the state's economy in terms of supporting higher levels of personal income, jobs, and business output.

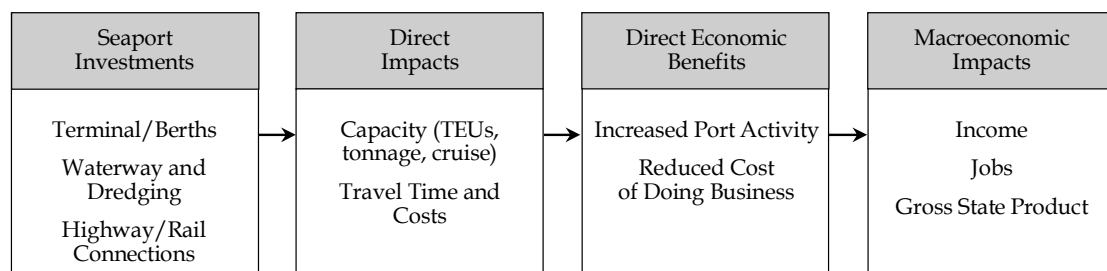


Figure 3.1 Economic Analysis Framework

The specific economic analysis tools and steps are depicted in Figure 3.2 (below). FDOT Work Program investments that directly affect seaports were identified in conjunction with the FDOT Seaport Office, developing the sample of representative projects shown above. The next step was to collect information on each project in the sample based on current funding (state and local/Federal) and quantifiable direct effects on capacity and costs. Working with existing data, reports and interviews, estimates of direct effects were derived for use as input to a Florida-specific version of the Maritime Administration's

(MARAD) Port Economic Impact Kit.³ This model is capable of translating direct effects such as increased TEUs, tonnage, vehicles or cruise passengers into measures of direct and indirect/induced economic activity. Key output variables from this model include personal income, business output, employment by industry and local/state tax revenue.

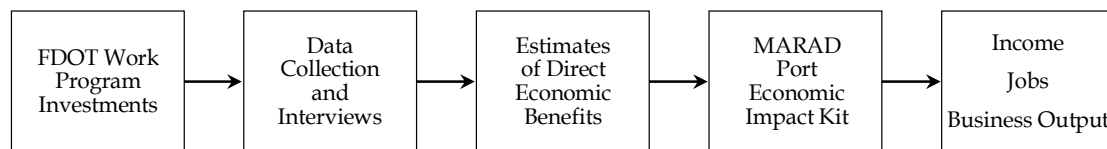


Figure 3.2 Economic Analysis Tools

For each sample investment project, the data collection process always started with an interview of senior Port officials to best understand the project – What are the current sources of funding and total cost? How does the investment fit in with Port plans for expansion? How will the investment impact capacity or travel efficiency/costs to and from the port? In most cases, Port officials were able to provide relevant information regarding port projections of new business connected to investments or existing studies (traffic impact, FSTED funding request applications) that demonstrate expected benefits. In a few cases, such as the Port Manatee improvements, impacts to port capacity could not be identified based on a single line item investment but rather from a combination of investments. For example, the combination of deepening/widening a waterway channel along with intermodal container infrastructure are viewed as the catalyst to expand the Port's future bulk cargo activities.

For highway projects such as Hecksher Drive in Jacksonville or the I-4 Crosstown Connector in Tampa, traffic impact studies were made available to assess the travel time impacts and mix of trucks/autos impacted. Though these studies were very useful at estimating the direct travel user benefits from expanding highway capacity to/from ports, they do not provide further information on how improving highway connections can reduce waiting times for cargo/containers at the ports or expand the capacity to handle goods. In this way, the benefits from the port highway projects are likely to be conservatively estimated. Future research work to quantify the synergy benefits of improving intermodal connections at seaports would better capture the full magnitude of impacts. Finally, business-related travel efficiency benefits (trucks and “on-the-clock” auto) were quantified based on Federal Highway Administration established values of time and used as inputs to a Florida statewide REMI model to generate income, jobs and output results (consistent in concept to the MARAD port economic kit). The REMI model

³ The Port Kit is available for purchase from the Rutgers University Center for Urban Policy Research. Additional information on the economic model can be found at <http://www.marad.dot.gov/programs/port.html> and <http://www.as-w.com/projects.shtml>.

(Regional Economic Models, Inc.) was used as part of the earlier FDOT Macroeconomic Study.⁴

Return on Investment (ROI)

Return on investment analysis essentially tries to answer the question, for every one dollar spent on X, how much do we receive in return? Prior to this study, Florida and the Department had never before conducted a statewide assessment of the ROI on seaport investments. ROI analysis by its nature is actually the same as benefit/cost analysis, though producing slightly different metrics. The two primary measures comparing benefits and costs (over time) include:

- **Net present value (NPV)**, which represents the difference between the discounted stream of future benefits and the discounted stream of future costs; and
- **Benefit/cost ratio (B/C)**, which represents the discounted stream of future benefits divided by the discounted stream of future costs.

To more fully account for the benefits of transportation improvements, benefit/cost analyses are increasingly using an economic impact-based approach in addition to the more traditional benefit/cost analysis that relies simply on direct user benefits. This is essentially important for seaport investments because of two reasons:

1. Traditional transportation user benefits (travel time, costs, safety) are more relevant and models/data are more available to quantify these benefits for highways and transit; and
2. Unlike highway and transit activity, where only a fraction of trips are directly business-related, almost all seaport activity (handling containers, bulk cargo, cruise passengers) is business-related and directly impacts the economic competitiveness of industries and trade.

Assumptions and Sensitivity Testing

All benefit/cost analyses require assumptions and rarely provide information on all possible benefits or costs. However, by estimating the most likely significant impacts, and by providing sensitivity testing about assumptions, reasonable and credible findings regarding the relationship between benefits and costs can be determined. Some of the key assumptions and variables used to test the sensitivity of the results include:

- **Discount Rate** – The present value of costs and benefits that will occur in future years is calculated using a discount rate. Discounting compensates for differences in the timing of costs (which tend to be front-loaded during the construction period), and

⁴ For more information on REMI, see <http://www.remi.com/>.

benefits (which tend to accumulate over time). A cost or benefit is more heavily discounted as it occurs further into the future, with the result that its equivalent present dollar value is reduced. Discounting thus reflects the time value of money – that is, a dollar in hand today has greater value than one received in five years, even after adjusting for inflation, because the dollar in hand now can be invested. Use of the discounted “present value” of future costs and benefits thus provides a consistent basis for comparing costs and benefits accruing at different times in the future. A discount rate of seven percent was used in this analysis, as currently recommended by the U.S. Office of Management and Budget.⁵ For sensitivity testing purposes, we also tested discount rates of five and nine percent.

- **Time Period of Analysis** – While, there are no absolute rules defining the appropriate analytical period, a 25-year period is long enough to capture the majority of benefits from the Work Program. This is approximately the average time period used though it varies by type of investment. For example, marine terminal projects typically used a 20-year time period to reflect the wear and tear on those facilities and changes in technology. Roadway and rail projects, meanwhile, were assessed using a full 25 years. Sensitivity testing examined the effects of increasing or shortening the time period of analysis for benefits to accrue.
- **Benefit Concepts** – The emphasis in this study is on the economic benefits of planned seaport investments and consequently the primary benefit concept is the resulting personal income gains through increased employment and economic activity due to port capacity and efficiency enhancements. Other potential benefits from seaport investments include safety, security and environmental factors. These effects were not explicitly captured in this study. Travel time savings to auto trips from roadway improvements that connect to seaports, however, were estimated as benefits.
- **Additional Costs** – As mentioned above, the economic benefits analysis concentrated on a sample of capital investment projects that are expected to impact port capacity and/or travel efficiency. However, there are additional expenditures funded through FDOT's Work Program that support engineering design, planning and administrative functions. In addition, some investment projects will have more of an impact on security and safety and less of an effect on industry competitiveness or economic activity. Finally, operating and maintenance expenditures, though more commonly funded directly by ports, are required to operate facilities constructed through FDOT investments. Accordingly, total costs were adjusted upwards by 30 percent to reflect these items and sensitivity testing examined how increasing that adjustment to 50 percent would change the findings.

⁵ The seven percent discount rate is consistent with guidelines put forth by the Office of Management and Budget in Circular No. A-94 (www.whitehouse.gov/OMB).

■ 3.2 Economic Impact Results

This section presents the findings of the economic impact analysis of Florida seaport investments. The results are specifically measured in relation to the magnitude and nature of seaport investments funded through FDOT's Work Program. Consequently, the economic benefits of all seaport investments in Florida would be even greater given the additional local, Federal and port revenue-based funding used to develop seaport projects. Again, it is worth reminding that the economic impact benefits estimated in this report are due to current or future Work Program investments and do not attempt to estimate the economic impact of all existing activity at Florida's seaports.⁶ Finally, these economic benefits are solely measuring the port capacity expansion and efficiency gains from new investments and not the economic contribution of spending public sector dollars to construct new infrastructure. In this way, the benefits truly represent gains to the economy and society and are appropriate for a return on investment analysis.

Table 3.3 shows the economic impacts of seaport investments in 2020 across a broad range of indicators. By the year 2020, it is estimated that seaport investments will generate an additional \$1.6 billion in business output and over 15,650 jobs in the Florida economy, and almost \$500 million in personal income for Florida residents. These estimates are based on the economic contribution of new seaport investments over the next five years, which will have lasting, long-term effects on the Florida economy (compared to not making those investments). All dollar-based concepts are presented in millions of 2006 dollars.

Job impacts by industry are spread across all sectors but are dominated by the transportation and warehousing sectors (8,425 jobs in 2020). Expanding the cargo and cruise passengers handled by seaports most directly affects port, warehousing/distribution, and the trucking/rail activity to move goods to/from the port. Some industries such as services (legal, accounting, customs, etc.) directly benefit from expanding port activity. Other industries either supply the transportation sector with goods and services or benefit from the multiplier effects of increased jobs, income and spending in the overall economy (e.g., over 2,700 jobs in retail trade).

⁶ Examples of reports that measure the statewide economic impact of all existing seaport activity (rather than the benefits of new investments) include: *An Analysis of the Economic and Fiscal Impact of Florida's Seaports*, Florida Ports Financing Commission, prepared by MGT of America, Inc., February 1999; and *A Forecast of Florida's International Trade Flows and the Economic Impact of Florida Seaports*, Florida Seaport and Economic Development Council, prepared by The Washington Economics Group, Inc., November 2003.

Table 3.3 Economic Impacts and Jobs by Industry in 2020

	2020
Output (millions)	\$1,598.4
Employment	15,667
Income (millions)	\$491.3
Farming	22
Ag, Forest and Fish Services	29
Mining	132
Construction	214
Manufacturing	565
Transportation and Warehousing	8,425
Wholesale Trade	448
Retail Trade	2,746
Finance, Insurance, Real Estate	697
Services	2,171
Government	210

Source: MARAD Port Economic Impact Kit and Cambridge Systematics.

Table 3.4 shows economic impacts over time for the key metrics of business output, employment, and personal income. Benefits take some time to ramp up fully given that the Work Program represents investments over a five year period. Plus, the benefits of some projects, such as the highway connectors, are likely to be largest in the outer years of the analysis once they are fully constructed and serving the highest number of trucks and autos. For example, job impacts are expected to be as high as 4,700 jobs by the end of 2007 given some of the near-term capital investments planned and will increase in terms of the annual effect to over 15,500 jobs by 2015. The growth trend of economic benefits from 2007 to 2020 is similar for the three economic variables since they are closely linked. Increased economic activity at the ports and related industries will grow business output, which requires additional employees and results in higher levels of wages and income.

Table 3.4 Economic Impacts Over Time

	2007	2010	2015	2020
Output (millions)	\$427.3	\$678.2	\$1,579.0	\$1,598.4
Employment	4,746	7,431	15,530	15,667
Income (millions)	\$137.3	\$221.0	\$484.2	\$491.3

Source: MARAD Port Economic Impact Kit and Cambridge Systematics.

In addition to the benefits to Florida's economy of new investments in seaports, there are also fiscal impacts due to expanded port activity. Increased economic activity and property values will result in increased tax revenue collections at the state and local level (sales and property taxes primarily). The MARAD Port Economic Kit provides estimates of local and state fiscal tax revenue impacts as shown in Table 3.5. Local fiscal impacts are expected to grow from \$22.3 million in 2007 to almost \$62 million by 2020. State tax revenue collections are estimated to increase by \$13.7 million in 2007 and \$39.4 million by 2020 (a significant offset of state-level funding).

Table 3.5 State and Local Fiscal Impacts
(in millions)

	2007	2010	2015	2020
Local Tax Revenue	\$22.3	\$34.7	\$61.2	\$61.9
State Tax Revenue	\$13.7	\$21.4	\$39.0	\$39.4

Source: MARAD Port Economic Impact Kit and Cambridge Systematics.

■ 3.3 Return on Investment (ROI)

The economic benefits estimated in this study indicate a very strong return on investment (ROI) for Florida. Table 3.6 shows the present value of benefits and costs and the benefit/cost analysis. Total discounted benefits are estimated to be almost \$4.2 billion over the life of the state-funded seaport projects in the five year Work Program compared to a present value of \$608 million costs (expenditures). This results in a net present value of almost \$3.6 billion, indicating that state investments in seaports are expected to return \$3.6 billion more in transportation and economic benefits than the costs to fund the investment projects. The resulting benefit/cost ratio is 6.9, meaning that every one dollar of state funds invested in Florida's seaports returns \$6.90 dollars back to the state in the form of personal income and travel efficiency gains.

Table 3.6 Economic Benefits and Costs of FDOT Seaport Investments

Benefits	
PV of MARAD Income Benefits	\$3,908.5
PV of Transportation and Other Benefits	\$280.3
Total Discounted Benefits	\$4,188.7
Costs	
PV of Capital Investments	\$467.8
PV of Engineering, Planning, Maintenance	\$140.3
Total Discounted Costs	\$608.2
Net Present Value	\$3,580.6
Benefit/Cost Ratio	6.9

Source: MARAD Port Economic Impact Kit, Florida DOT and Cambridge Systematics.

This result is slightly higher than the 5.5 benefit/cost ratio estimated in the earlier Macroeconomic Study (focused on highways, rail and transit). This result is not necessarily surprising given a few unique features of seaports in Florida:

- As documented earlier, seaport activity in terms of cruise passengers, TEUs, vehicles, and bulk tonnage is on a growth trend. Volumes of international waterborne trade continue to grow and opportunities for trade with rapidly expanding economies like China are expected to require higher and higher levels of seaport activity.
- Especially since the terrorist attacks of 9/11, Florida's seaports have been required to devote significant resources to enhance port security. Consequently, funding for new capital investments to expand port capacity have been limited over the past five years. Since much of the ramp up of port security investments has been completed, it allows Florida's seaports to resume projects that will grow their cargo and cruise passenger businesses.
- Finally, almost all seaport activity is directly connected to business operations and the movement of goods and people for commercial purposes. Consequently, port projects that expand capacity and improve efficiency have large effects on Florida's industries, and result in multiplier effects on the economy.

It is important to keep in mind that individual projects will likely have wide-ranging benefit/cost results – some lower and some higher than the program-level analysis in this study. It is also worth noting that the benefits for some of the highway/rail connector projects are likely underestimated since data or models to calculate the intermodal benefits of seamless, efficient interactions between modes have not been fully captured.

Sensitivity testing

It is important to understand that there is uncertainty reflected in any benefit/cost analysis. Tests were conducted to evaluate the sensitivity of the benefit/cost analysis and develop confidence in the likely range of results. The purpose of these tests is to evaluate the effect changes in certain key assumptions may have on the benefit/cost analysis of the seaport Work Program investments evaluated in this study. Three tests were performed:

- **Discount Rate** –A discount rate of seven percent was used in this analysis, as currently recommended by the U.S. Office of Management and Budget. With a five percent discount rate (a more aggressive assumption), the benefit/cost ratio increases to 7.9 while a nine percent discount rate results in a B/C ratio of 6.1. In either case, seaport investments would yield substantial benefits.
- **Time Period of Analysis** –As described above, most seaport-related investments assessed in this study were evaluated over a 20 to 25 year time period. If current investments were expected to have a shorter life and require more frequent replacement, the calculation of benefits would be reduced. Reducing the time period of analysis to 15 years per project does lower the benefit/cost ratio, but it is still 5.6, meaning that benefits are 5.6 times greater than costs.
- **Additional Engineering/Planning Costs** –It is difficult to estimate the precise amount of additional engineering, planning, and maintenance costs to ascribe to FDOT's contribution towards seaport investments and therefore, it's important to test the impact of that assumption. Raising the additional costs from 30 to 50 percent of direct capital investments that impact port capacity lowers the B/C ratio from 6.9 to 6.0.

These tests indicate that the use of alternative assumptions does not significantly change the main findings of this analysis. Although sensitivity testing helps to eliminate some of the inherent uncertainty involved in all benefit/cost analyses, economic and international trade conditions could still change over time and affect the results of this analysis. However, this analysis demonstrates that over a wide range of reasonable assumptions, Florida's investments in seaports generates significant benefits to the State.

Appendix A – State-Level Seaport Funding and Organization for Atlantic and Gulf States

This section provides state-by-state information on seaport funding, with special mention of the state government role (Department of Transportation and/or direct appropriations). The distribution of funding sources (state, local, Federal, private) varies greatly not just by state, but also by ports within a state. In general, states are increasingly recognizing the positive contribution of seaports to economic and trade activity. The rapid expansion of cargo, TEUs, and vehicles handled by some ports in the U.S. often corresponds with significant state-level investments (e.g., Georgia, Virginia). The recent increase in Asian waterborne trade (namely from China) handled on the Atlantic Coast highlights the current competitive market among seaports.

■ Seaports in the State of Florida

Port activities and improvements in Florida are funded primarily from a mix of state and local resources. The Florida Ports Council (FPC), a trade organization, encouraged the State to establish the Florida Seaport Transportation and Economic Development Program (FSTED). Currently, FSTED provides \$15 million dollars annually to fund seaport needs across all 14 deepwater seaports in the states. FSTED receives its funding through the Florida Department of Transportation (FDOT).

The FDOT Seaports Office supports seaports in the State in their planning effort. The office allocates funds to seaport facilities for capacity as well as operational improvements through its five-year Work Program. Funding sources include the State Transportation Trust Fund, the Strategic Intermodal System (SIS), which was adopted in January 2005, and the recently signed Growth Management Bill. Between Fiscal Year 2006 and Fiscal Year 2010, Florida's 14 major seaports are anticipated to receive more than \$96 million through the SIS. \$111.4 million is expected through the Growth Management Bill. In addition, funds made available for seaports directly through the State Transportation Trust Funds are estimated to amount to \$29.5 million.

Seaports are also funded through local seaport and metropolitan planning organizations (MPOs) programs. By 2010, seaport facilities are expected to receive more than \$50 million in funding from Florida's MPOs.

Federal grants represent an additional source of funding for Florida's ports. The Port of Jacksonville, Port Manatee, and Port Canaveral are expected to receive more than \$60.2 million in Federal grants over the next five years.

■ Seaports in the State of Alabama

The State of Alabama contains one deepwater port located in Mobile. The Port of Mobile operates under the oversight responsibility of the Alabama State Docks, which functions as the State's Port Authority. The State Docks operates as an enterprise agency associated with the Executive Branch of state government and is self-supporting. It receives no annual appropriation from the State for operations and maintenance and its revenues are not deposited into the state treasury.

Most of the State's waterway systems are operated and funded by the U.S. Army Corps of engineers, which receives funding through Congressional appropriation each year. The Alabama Department of Transportation (ALDOT) provides no funding and has no oversight responsibilities for the State's ports and waterways. ALDOT plays a role in furthering waterborne commerce and activities by providing and maintaining adequate intermodal connections.

Funding for waterborne transportation facilities varies according to the organization responsible for the particular facility. The Alabama State Docks are primarily funded from revenues generated by users. Total annual revenue at the Alabama State Docks increased from \$42.1 million in 1989 to \$55.6 million in 1999, an average annual increase of nearly three percent over that period. Total user fees are estimated to have reached \$64.5 million in 2004.

Capital improvements traditionally have been undertaken through revenue bonds paid back with port revenues, or general obligation bonds supported by state tax revenues. However, the State Docks can receive special allocations from the state legislature for specific capital improvement projects as identified in the Port of Mobile master plan. Most recently, the state legislature passed a bill authorizing the expenditure of \$80 million to help fund the construction cost of a new container and intermodal terminal. The total cost of the project exceeds \$300 million, and remaining funding will be sourced from port authority revenues and private partnership participation.

■ Seaports in the State of Georgia

The Georgia Ports Authority's (GPA) mission is to develop, maintain and operate ocean and inland river ports within Georgia; foster international trade and new industry for state and local communities; promote Georgia's agricultural, industrial and natural resources; and maintain the natural quality of the environment. The GPA operates two

deepwater ports, the Port of Savannah and the Port of Brunswick, and two inland ports, the Port of Bainbridge and the Port of Columbus.

Port activities and improvements in the State of Georgia are funded through a mix of Federal, State, and port-related resources.

In 1999, the Georgia Department of Transportation (GDOT) became the local sponsor for the Savannah and Brunswick Harbors. As a local sponsor, GDOT provides easements and rights-of-way for disposal areas and pays for 35 percent of the costs associated with building and maintaining the dikes and upland disposal areas for both Harbors. In addition, GDOT indicates in its 2025 Statewide Transportation Plan Update that it will start supporting the Georgia Ports Authority (GPA) expansion program. The GPA has a number of port and intermodal improvements scheduled. These improvements include the Savannah harbor deepening project and the Port of Brunswick channel deepening project which will allow both ports to continue with their expansions. Other improvements scheduled for the Port of Brunswick include rail, highway, and transit access enhancements. These improvements will receive \$45.3 million through a combination of State/Federal appropriations pending congressional approval.

The operational, maintenance, and general administration expenses of the GPA's ports are funded through on-port operating earnings generated from container cargo, general cargo, liquid and dry bulk cargo, and railroad fees. The GPA's port-related earnings increased from \$98 million in 2001 to an expected \$120 million in 2004.

■ Seaports in the State of Louisiana

The management of seaport activities and operations is decentralized in the State of Louisiana where seaports are governed by an authority or board appointed by local government. Major state ports include the Port of New Orleans, the Port of South Louisiana, the Port of Lake Charles, and the Port of Baton Rouge.

Between 1977 to 1984, the State of Louisiana invested more than \$199 million on seaport improvement projects, more than any other state for that timeframe. These funds were expended through the Capital Outlay Program, administered by the Louisiana Department of Transportation and Development (LaDOTD). The Capital Outlay Program has since been joined by the LaDOTD's Port Construction and Development Priority Program (PCDPP). Funded through the State Transportation Trust Fund, the PCDPP provided Louisiana seaports with an estimated \$37.4 million in 2004. The program requires a 10 percent local match for construction costs. Funds appropriated for Seaports, Parish Transportation Funds, Flood Control, and the State Police cannot exceed 20 percent of the total Parish revenues. While the majority of public funds for ports in Louisiana are now provided through the PCDPP, the Capital Outlay Program continues to make about \$17 million per year available for port enhancements.

In addition to the State Transportation Trust Fund (the funding source for the PCDDP) and the Capital Outlay Program, self-generated funds and private investments are crucial sources for port improvements in Louisiana. Self-generated funds and private investments are anticipated to yield \$109.0 million and \$292.5 million, respectively, in 2004 according to the 2003 Louisiana Statewide Transportation Plan. These resources far outweigh the funds made available by the State.

Seaports can also anticipate receiving additional funding through the Transportation Infrastructure Model for Economic Development (TIMED). To date, funding from this four billion dollar program resulted has been used to complete the Port of New Orleans' new Napoleon Street Container Terminal facility at a cost of \$100 million. The new container terminal at the Port of New Orleans is the only port project included within the investment program thus far.

■ Seaports in the State of Mississippi

The State of Mississippi has 16 ports; two are state-owned and the remaining 14 are locally owned and operated. Each port has a governing board of commissioners or authority to oversee operations. None of the 16 ports fall under the oversight of the Mississippi Department of Transportation (MDOT). The ports are stratified into three groups. These include the Tennessee-Tombigee (Tenn-Tom) Waterway Inland Ports, the Mississippi River Inland Ports, and the Gulf Coast Ports. The Port of Biloxi does not handle cargo – its facilities are designed to serve pleasure craft and commercial fishing vessels. The remaining inland and Gulf Coast ports (Pascagoula and Gulfport) are locally owned and operated by their respective port authorities.

The Mississippi Department of Transportation (MDOT) Ports and Waterways Division supports seaport planning efforts and serves as an advocate of the state's ports. The Ports and Waterway Division also collects port related data and offers each port authority technical assistance. There is however, no formal statewide port planning process or funding mechanism in place. Each port authority is responsible for the planning, programming and funding of prospective projects.

Seaports in the State currently compete for the Intermodal Connector Improvement Program, which is an MDOT administered initiative that utilizes Federal funds. The program is funded modestly at three million dollars annually. In addition, the Mississippi legislature passed a bill creating the Multimodal Capital Improvement Fund. Although dollars have yet to be allocated, the program's goal is to provide a funding stream to non-highway modes as part of an effort to address backlogs of improvement projects and satisfy future needs.

Some ports have been successful in obtaining grants to maintain and improve their facilities, but these grant funds are often irregular. The river ports of Yellow Creek, Itawamba and Lowndes on the Tenn-Tom, and Greenville, Vicksburg and Natchez on the Mississippi have received a combination of grants and local support for projects. The

deep sea Port of Gulfport has supplemented its revenues through tenant income from the gaming industry. This funding source has generated sufficient revenue to help Gulfport maintain, expand, and improve its port facilities (though gaming revenue will need to be reevaluated post-Katrina hurricane damage).

■ Seaports in the State of North Carolina

The State of North Carolina has two deepwater ports, the Port of Wilmington and the Port of Morehead City, as well as two inland port terminals located in Charlotte and in the Piedmont Triad area. In addition to these facilities, a Global TransPark is under development in the Raleigh area.

The ports are owned and operated by the State through the North Carolina Ports Authority, formed in 1945 by legislative mandate. The mission of the agency was the “creation of two deepwater seaports through the sale of revenue bonds to create a better atmosphere conducive to industry.” In 1949, the State appropriated \$7.5 million through the sale of revenue bonds for the improvement and construction of port facilities at Wilmington and Morehead City. The terminals were completed in 1952. The two inland terminals, located in Charlotte and in Greensboro, were developed in the 1980s. These terminals were constructed to facilitate and enhance the growth of container shipments from the Port of Wilmington.

Seaports in North Carolina are owned and operated by the State through the North Carolina Ports Authority. Today, the North Carolina Ports Authority functions as an enterprise agency operating and funding the port facilities with their own revenues and from bonds. The North Carolina Ports Authority receives no dedicated funding on an annual basis from the State DOT but does work with the state legislature for direct appropriations.

The Ports Authority is required to develop a list of prioritized capital improvements that is submitted annually to the state legislature. The Authority is responsible for the development of these plans for both the Port of Wilmington and the Port of Morehead City. Any legislative request for funding for specific improvement comes from the Ports Authority.

From 1987 to 1996, the State appropriated relatively modest funds for improvements to the two deepwater ports. In 2000, the State allocated \$12.5 million as a match to a Federal grant for port development and improvements. In 2004, the legislature appropriated nine million dollars for the purchase of four new cranes for the Port of Wilmington. As these special allocations over recent years show, the State has recognized the importance of ports to North Carolina's economy of North Carolina and the State has made commitments to develop, maintain, and enhance its port operations and facilities.

■ Seaports in the State of South Carolina

The State of South Carolina has three deepwater ports, which include the Port of Charleston, the Port of Georgetown and Port Royal. These three ports are owned and operated by the South Carolina State Ports Authority, which was formed by legislative mandate in 1942, with the defined mission of contributing to the economic development of the State through the development and stimulation of waterborne commerce and freight.

Ports in South Carolina are owned and operated by the South Carolina State Ports Authority. The Ports Authority has a defined mission to contribute to the economic growth of the State through the development and stimulation of waterborne commerce and freight.

The Port Authority receives no dedicated funding allocation for operations or capital expenditures from the State. As an enterprise agency, it operates as a private business and issues its own revenue bonds to fund capital improvement projects. The two-year capital improvement plan includes \$159 million in facility and equipment improvements. In 2004, port-generated revenues reached \$116.5 million, up from \$110.2 million in 2003 and \$99.9 million in 2002.

While the State does not provide any dedicated funding for the Port Authority, it does make special appropriations for specific projects. In 2004, \$2.4 million was targeted for the purchase of six parcels of land, following a similar investment of \$2.9 million in the previous year for four parcels of land. The land from these purchases is owned by the Ports Authority and is now leased to BMW to handle vehicle trade. BMW has a large assembly plant in Greer, located in Upstate South Carolina.

While the State assists the Port Authority, there are also scenarios when the Port Authority helps to fund state projects that benefit port operations. In 2002-2003, the Authority contributed \$20 million for the construction of the new bridge over the Cooper River, and has committed one million dollars annually for 25 years for projects that compliment seaport activity (e.g., improving access to/from the seaport).

■ Seaports in the State of Texas

The management of seaport activities and operations is decentralized in the State of Texas where seaports are their own independent port authority. There are currently 13 major seaport authorities in the State including the Port of Brownsville, the Port of Isabel-San Benito Navigation District, the Port of Mansfield/Willacy County Navigation District, the Port of Corpus Christi Authority, the Port of Aransas, the Port of Freeport, the Port of Galveston, the Port of Texas City, the Port of Houston, the Port of Sabine Pass, the Port of Port Arthur, the Port of Beaumont, and the Port of Orange.

Port authorities in Texas rely primarily on funding generated through seaport cargo earnings and local taxes (a local option Ad Valorem tax to support port improvements). State bonds may also be issued at the request of port authorities to fund capital programs. These bonds are repaid through Ad Valorem taxes levied on all taxable property located within the county where the port is located. Currently, seaport needs are not included in the Texas Department of Transportation (TxDOT) five-year transportation improvement plan.

In 2004, the Port of Brownsville generated \$5.9 million in seaport operating revenues to support maintenance and operations. The Port of Corpus Christi Authority generated \$28.4 million in 2004 to fund maintenance and operation-related activities as well as administrative expenses. In addition, \$15.2 million in state bonds were issued to support capital improvement programs. The Port of Freeport received \$6.7 million primarily through Ad Valorem tax receipts (48 percent) and seaport operating revenues (52 percent) to support port activities as well as capital projects. The port also issued bonds in the amount of \$15.7 million for capital improvements. The Port of Houston's operating revenues were estimated to be \$120 million in 2003. Port-generated revenues were allocated to fund seaport related activities and for debt service. Property tax revenues constituted less than 20 percent of the total revenues and were used solely to repay debt.

■ Seaports in The Commonwealth of Virginia

The Virginia Port Authority (VPA) is an agency of the Commonwealth of Virginia reporting to the State Secretary of Transportation. The VPA owns and operates four general cargo facilities on behalf of the State: Norfolk International Terminals, Portsmouth Marine Terminal, Newport News Marine Terminal, and the Virginia Inland Port in Warren County. The terminals are operated by Virginia International Terminals, Inc (VIT), the non-stock, non-profit operating company of the VPA.

The VPA, through terminal earnings generated user fees at the international terminals (VIT), is operationally self-sufficient. Net revenues reached \$37.7 million in 2004, up from \$21.6 million in 2001. Virginia Ports also received \$33.2 million from the State's Transportation Port Trust Fund in 2004. These revenues have been used for on-port highway maintenance and improvements.

The Port Authority also received \$42.7 million in special state appropriated proceeds and \$5.6 million in Federal grants to support its capital improvement program in 2004. Bond proceeds are also used to fund improvements in port capacity.

Finally, the Rail Enhancement Fund, a new program inaugurated in 2005, is designed to fund on-port rail improvements at Virginia Ports, and is expected to generate \$23 million annually. Revenues come from a tax on rental cars and will be used for rail programs ranging from laying tracks in the Ports of Hampton Roads to boosting public transportation initiatives. The share of revenues that will be dedicated to seaports has yet to be determined.