PORT EVERGLADES
2014 MASTER/VISION PLAN

APPENDIX E:
CONTAINERIZED CARGO ANALYSES

PRESENTED BY

AECOM




Appendix E:
Containerized Cargo Analyses

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E.1 Market Segmentation

Phase II work will identify strategies and improvements. To support that work, it will be useful to disaggregate the overall market forecasts into smaller components. Each component represents a distinct improvement opportunity or submarket. An initial formulation for the Phase II disaggregation is presented in Table E.1.

Table E.1
MARKET SEGMENTATION FRAMEWORK FOR PHASE II

		Containership			Geared Vessel	Mobile Crane	Ro/ Ro	Dry Bulk
		48-foot Channel and Berth, No Crane Restrictions	**48-foot Channel and Berth, With Crane Restrictions**	**42-foot Berth, Crane Restrictions**				
North-South and Panama Canal Trades -- Caribbean -- Central America -- ECSA -- WCSA -- Asia via Panama	via Truck							
	via Rail (by inland region)							
	via Rail (by inland region) with Transload							
Other Trades -- N. Europe/ Med -- Asia via Suez -- Transship	via Truck							

E.2 Port Everglades Container Volumes by Operator, Season, and Direction

Port Everglades container volumes by operator, season, and direction are summarized in the tables and figures below. Five operators – Crowley, King Ocean, Florida International Terminal (FIT), and MSC – account for 73 percent of Port Everglades' container TEUs. By TEUs, the leaders are Crowley, King Ocean, and FIT; by containerized tonnage, the leaders are Crowley, MSC, and FIT (with King Ocean dropping from the top three due to a higher percentage of empties).

Port volumes tend to be seasonal, with highs in March-April-May and lows in July-August-September. Peak months and deviation from mean volumes vary significantly, depending on the particular carrier and operator. Portus, Dole, and Chiquita tend to be the most seasonal.

Asia trade through South Atlantic US ports tends to peak in months that are lower-volume for Port Everglades – May through October, with highs in July and August – making it a natural complement for capacity available at Port Everglades in off-peak periods.

Looking at directionality, Port Everglades is a net exporter of container tonnage (59 percent export). Crowley, King Ocean, SeaFreight, Portus, and Hyde are net exporters; MSC, FIT, Chiquita, and Dole are net importers. Based on total TEUs, which includes empties, trade is nearly balanced with 52 percent of TEUs being exports.

Figure E.1
CONTAINER TRAFFIC (Total TEUS) BY OPERATOR
FY 2012
Source: Analysis of Port Everglades data

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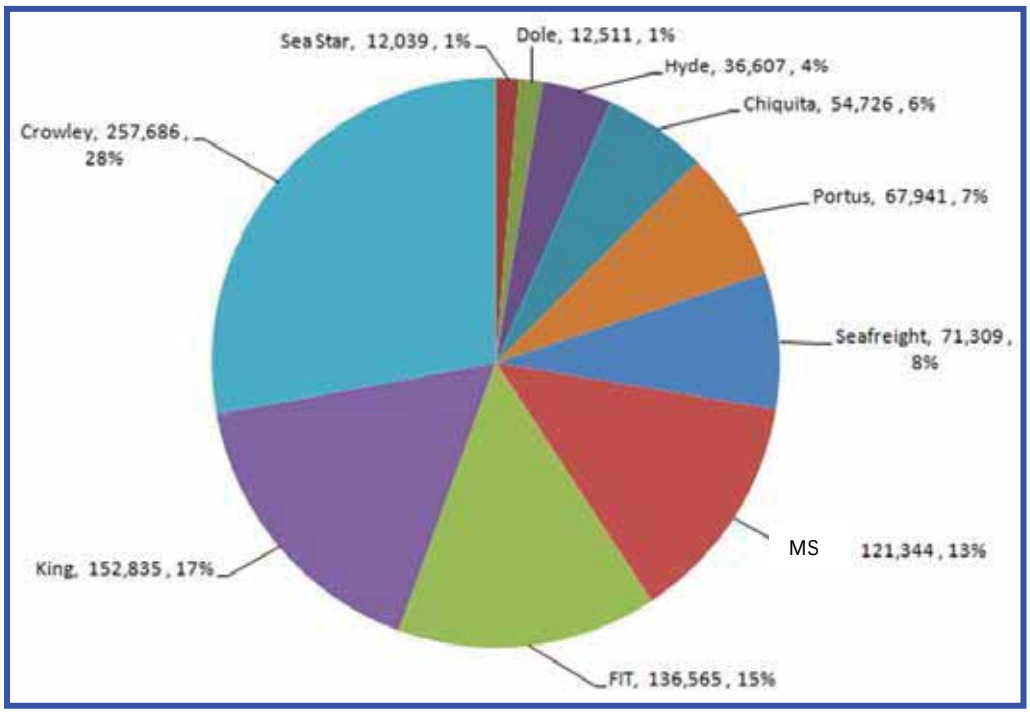

Table E.2
CONTAINER TRAFFIC TOTAL TEUS AND TONNAGE BY OPERATOR BY MONTH
FY 2012
Source: *Port Everglades Revenue Report Book*, September 2012.

TOTAL TEUS

OPERATOR	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TEUs FYTD
Chiquita Brands Company	3,924	4,002	4,954	3,980	4,086	6,564	4,786	4,536	4,412	3,760	5,458	4,264	54,726
Crowley Liner Services	20,572	19,881	23,402	24,077	22,577	24,888	22,913	19,951	20,751	18,851	19,564	20,259	257,686
Discovery	-	-	-	-	-	-	-	-	-	-	-	-	-
Dole Fresh Fruits	916	796	1,094	1,060	1,079	1,348	890	996	1,158	862	1,300	1,012	12,511
Florida International Terminal	14,125	11,067	11,137	12,045	9,914	10,793	10,793	10,989	9,969	11,935	11,484	12,314	136,565
Florida Transportation Services	-	-	2	-	2	-	-	-	-	-	-	-	4
Hyde Shipping	2,314	3,116	3,359	2,762	2,872	3,438	2,808	3,150	2,434	3,314	3,485	3,555	36,607
King Ocean Services, LTD (Cayman Islands) Inc.	14,191	12,707	13,361	9,655	10,566	15,399	13,271	13,092	13,469	13,150	11,526	12,448	152,835
Port Everglades Terminal	9,591	10,959	10,382	10,268	11,317	13,198	9,396	11,042	9,974	9,287	7,449	8,481	121,344
Sea Star Line	1,367	991	863	955	1,111	1,068	1,129	587	1,016	1,157	1,031	764	12,039
Seafreight Line	5,318	5,181	5,242	5,288	4,682	5,969	5,356	6,733	6,655	6,896	6,633	7,356	71,309
St. Johns Shipping / Portus	3,467	3,955	7,253	8,422	9,073	8,822	10,334	5,022	2,932	2,787	2,677	3,197	67,941
Unassigned	-	-	-	-	-	-	-	-	2	11	20	-	33
Grand Total	75,785	72,655	81,049	78,512	77,279	91,487	81,676	76,098	72,772	72,010	70,627	73,650	923,600

TONNAGE

OPERATOR	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Tons FYTD
Chiquita Brands Company	25,012	26,413	34,710	26,126	28,186	44,935	29,710	31,980	29,063	26,200	38,603	28,820	369,758
Crowley Liner Services	114,322	118,924	125,972	131,129	134,131	152,104	137,893	120,363	126,748	119,095	123,079	120,299	1,524,059
Discovery	-	-	-	-	-	-	-	-	-	-	-	-	-
Dole Fresh Fruits	5,583	4,885	6,069	5,362	6,388	8,158	5,620	6,112	6,480	5,237	7,743	4,583	72,220
Florida International Terminal	84,442	83,213	77,726	79,395	69,715	77,305	76,103	85,860	69,441	81,776	86,523	84,084	955,583
Florida Transportation Services	-	-	54	-	155	-	-	-	-	-	-	-	209
Hyde Shipping	11,686	12,301	14,832	13,135	15,355	16,563	13,103	12,714	11,685	14,276	16,703	16,061	168,414
King Ocean Services, LTD (Cayman Islands) Inc.	73,514	63,749	61,360	48,523	58,969	79,502	63,291	58,300	57,055	61,433	56,092	60,201	741,989
Port Everglades Terminal	89,328	103,575	109,895	101,947	107,283	112,659	105,556	124,751	102,203	100,046	80,471	95,956	1,233,670
Sea Star Line	8,747	6,176	5,295	7,228	7,865	7,135	7,338	4,192	6,893	7,832	6,542	5,148	80,391
Seafreight Line	26,231	24,407	25,643	20,334	21,353	28,683	23,149	28,472	32,686	31,018	34,199	34,626	330,801
St. Johns Shipping / Portus	26,519	28,714	43,107	55,781	56,098	60,991	66,818	37,953	22,391	24,401	20,000	24,482	467,255
Unassigned	-	-	-	-	-	-	-	-	7	72	85	-	164
Grand Total	465,384	472,357	504,663	488,960	505,498	588,035	528,581	510,697	464,652	471,386	470,040	474,260	5,944,513

Figure E.2
MONTHLY CONTAINER TRAFFIC (Total TEUS) – CROWLEY, MSC, AND FIT
FY 2012
Source: Analysis of Port Everglades data

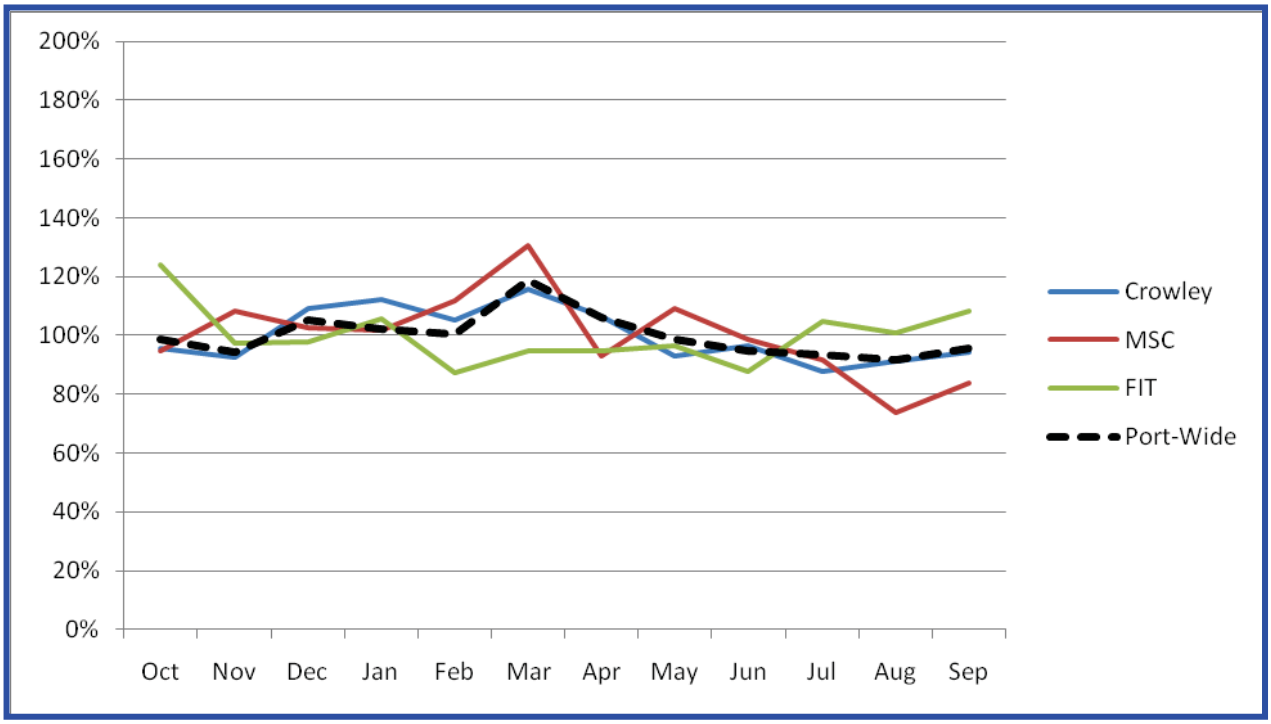

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Figure E.3
MONTHLY CONTAINER TRAFFIC (Total TEUS) – DOLE AND CHIQUITA
FY 2012
Source: Analysis of Port Everglades data

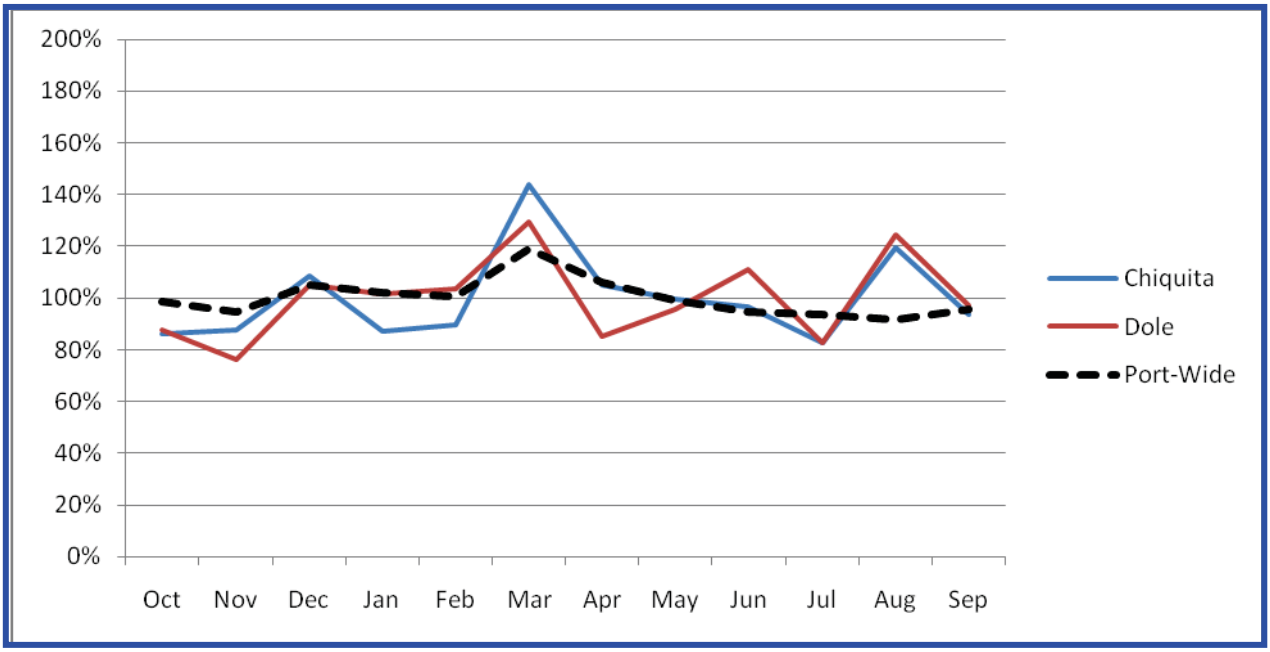
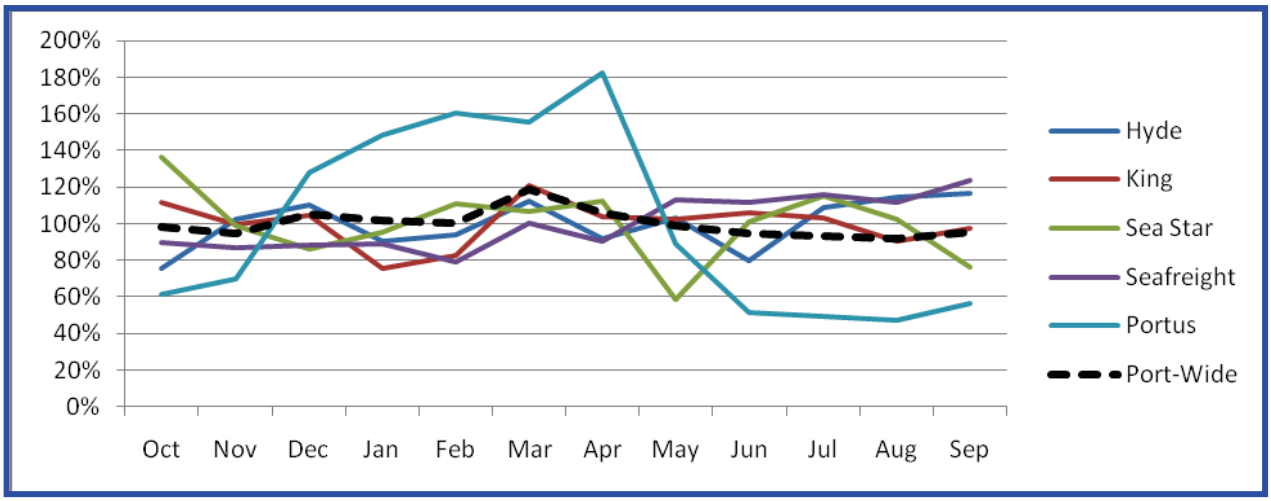


Figure E.4
MONTHLY CONTAINER TRAFFIC (Total TEUS) –
HYDE, KING OCEAN, SEA STAR, SEAFREIGHT, AND PORTUS
FY 2012
Source: Analysis of Port Everglades data



Portus seasonality was due to SOL melon service, which generally operates between November and April. In FY 2013, SOL began operating from its own leasehold.

Figure E.5
SEASONALITY OF NORTHEAST ASIA – SOUTH ATLANTIC PORT TRADES
(Thousands of Metric Tons)
Source: Analysis of PIERS data.

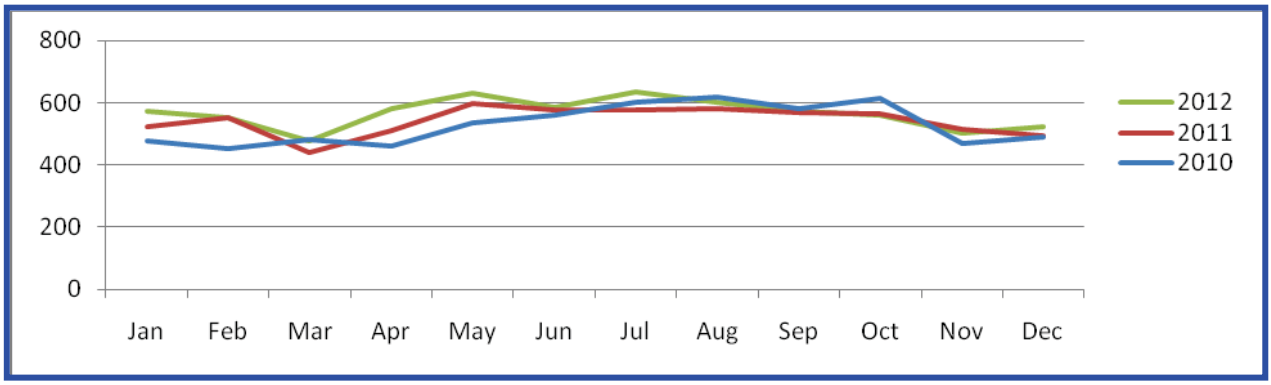
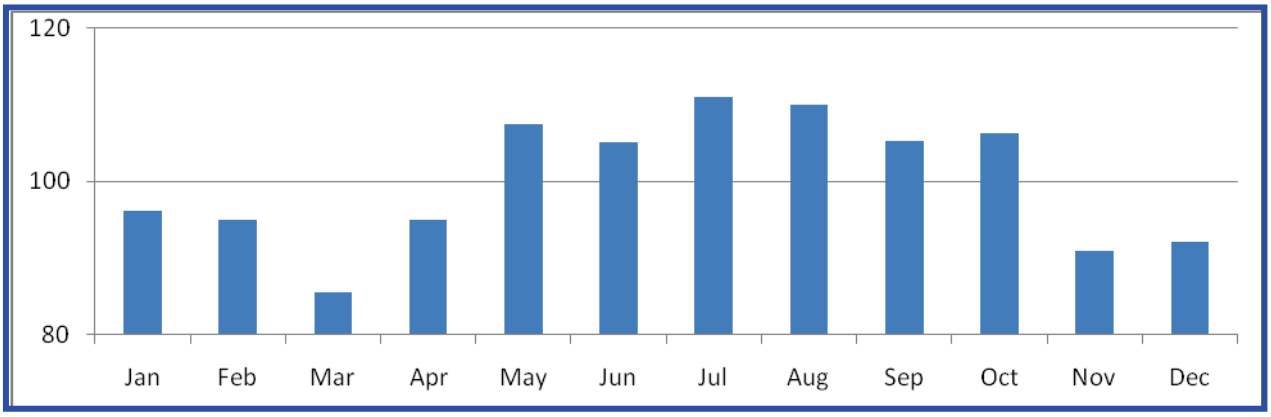


Figure E.6
SEASONALITY OF NORTHEAST ASIA – SOUTH ATLANTIC PORT TRADES
(INDEXED)
Source: Analysis of US Census trade data. Index Value 100 = Annual Average Month



The seasonality of Northeast Asia (peaking in May through October) is the opposite of current Port Everglades trade (peaking in February through April). Developing a higher percentage of Northeast Asia business would provide a more balanced utilization of Port Everglades facilities and assets throughout the calendar year. In the figures below, and in other figures and tables throughout this Appendix, "South Atlantic" container ports include: Charleston, Savannah, Jacksonville, West Palm Beach, Everglades, and Miami.

Figure E.7
TEU TRADE (52 PERCENT OUTBOUND, 48 PERCENT INBOUND)
FY 2012
Source: Analysis of Port Everglades data

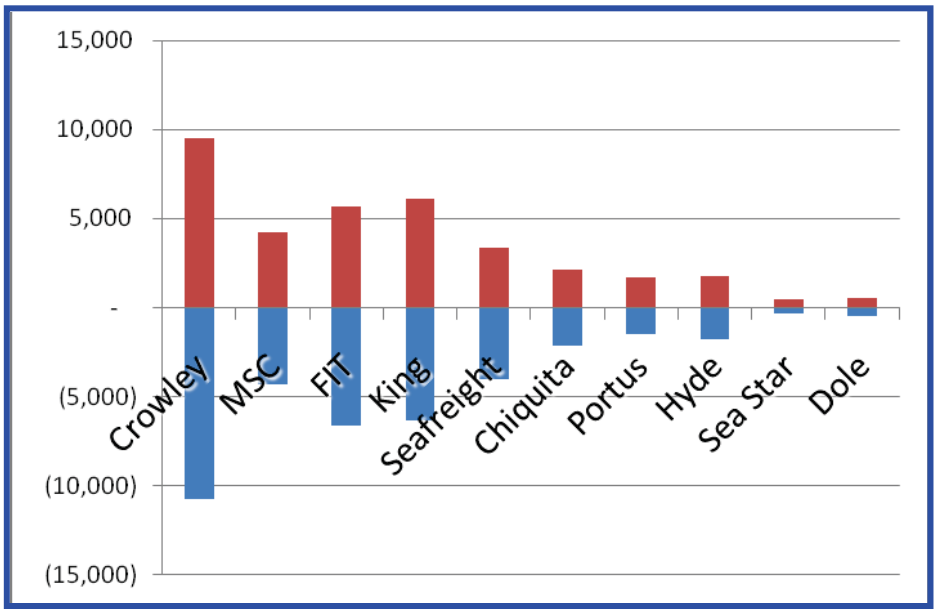
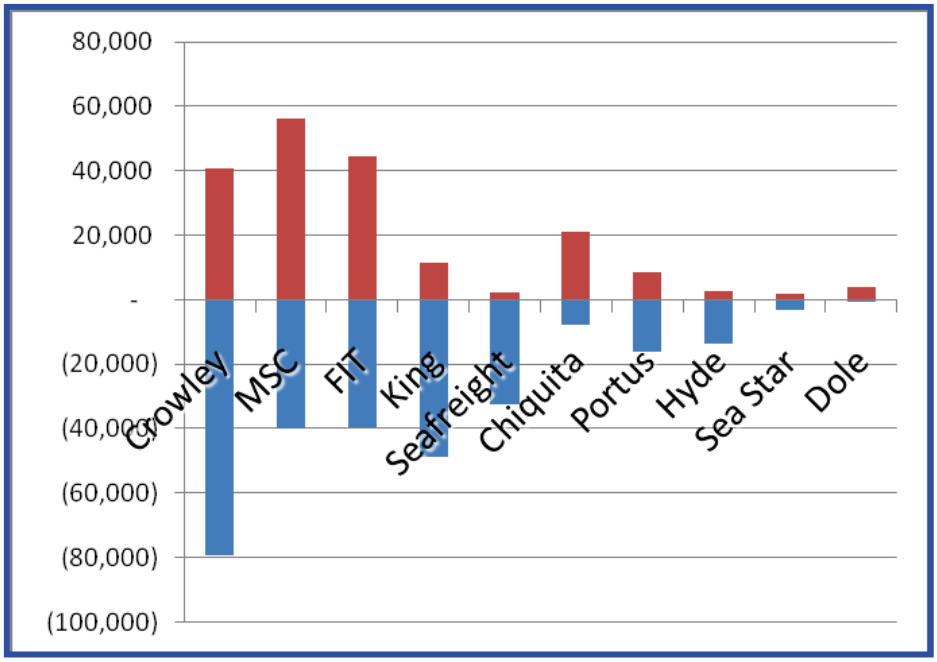


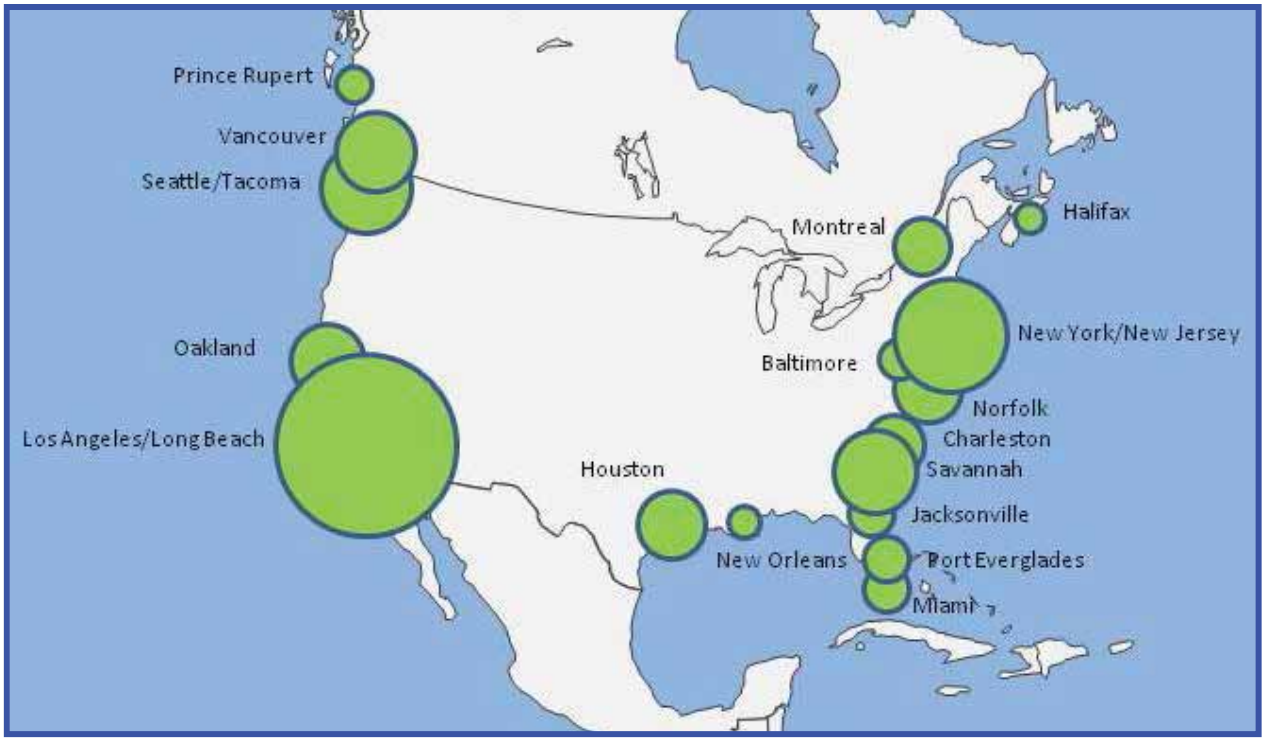
Figure E.8
CONTAINERIZED TONNAGE TRADE (59 PERCENT OUTBOUND, 41 PERCENT INBOUND)
FY 2012
Source: Analysis of Port Everglades data.



E.3 Market Shares in Key Commodity Trades

Port Everglades' market shares in key commodity trades are summarized below.

Figure E.9
MAJOR US CONTAINER PORT CLUSTER VOLUMES
(Total TEUS)
2012



Source: Analysis of American Association of Port Authorities data

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Figure E.10
MAJOR US CONTAINER PORT CLUSTER VOLUMES
(Total TEUS)
1990-2012
Source: Analysis of American Association of Port Authorities data

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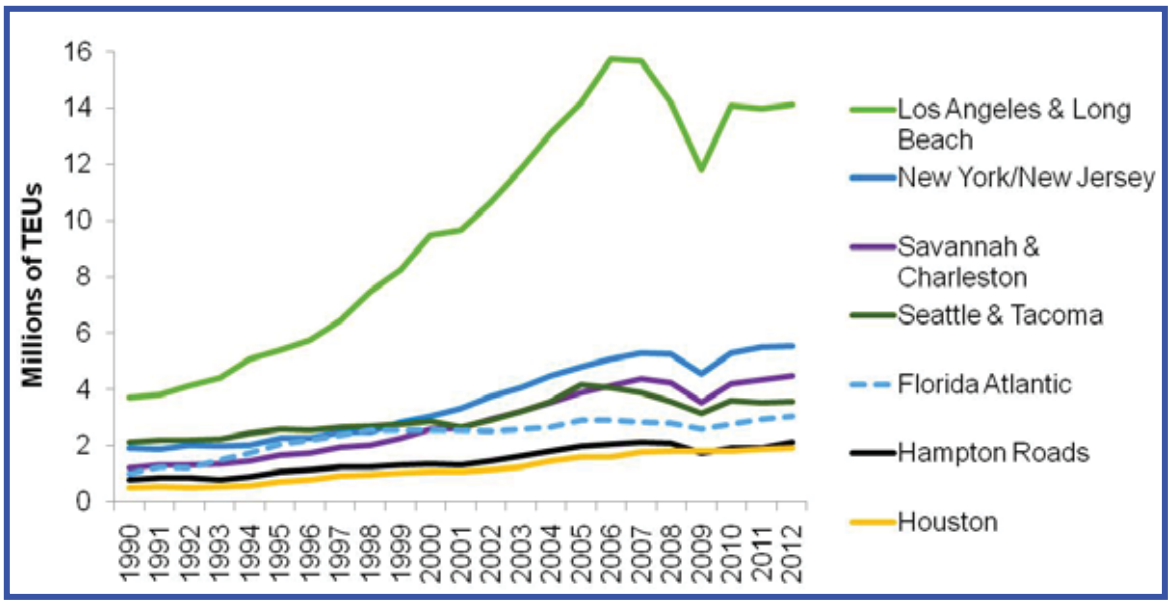

Figure E.11
COMPETITIVE CONTAINER PORT VOLUMES
(Total TEUS)
1990-2012
Source: Analysis of American Association of Port Authorities data

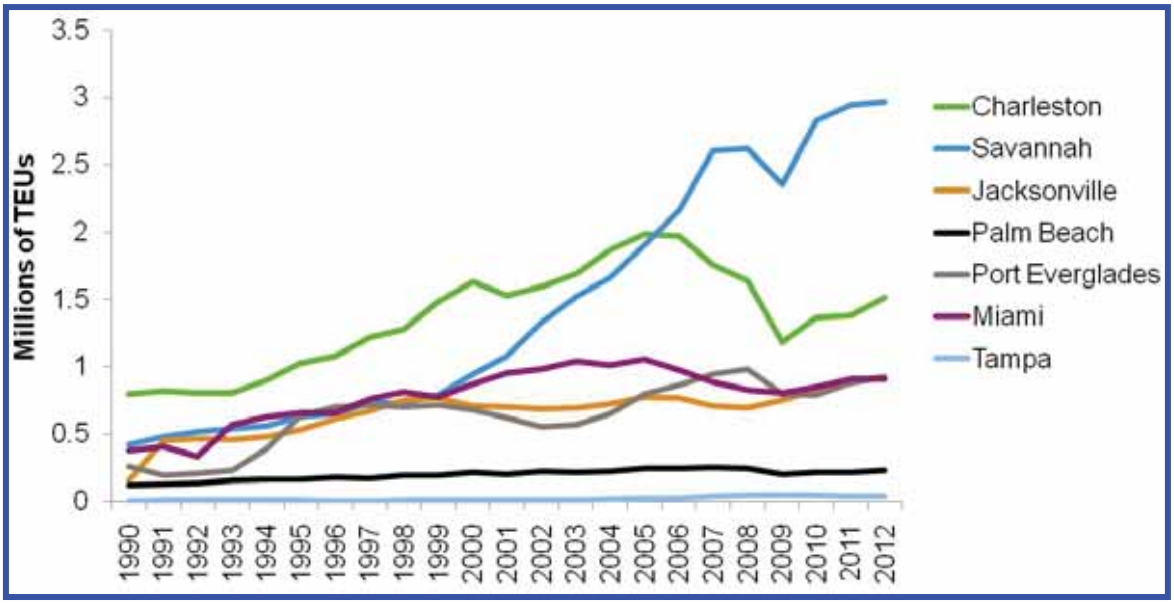

Figure E.12
SOUTH FLORIDA CONTAINER IMPORTS – SHARE OF US TOTALS
2003-2012

Source: Analysis of US Census trade data. South Florida in this figure is the sum of Miami and Everglades.

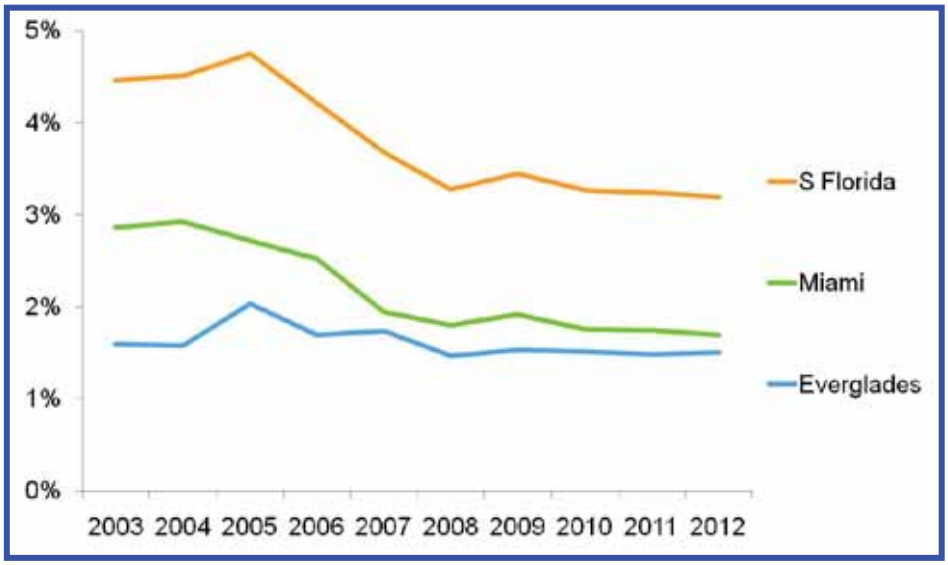

Figure E.13
SOUTH FLORIDA CONTAINER IMPORT SHARES BY COMMODITY GROUP
2003-2012

Source: Analysis of US Census trade data. South Florida in this figure is the sum of Miami and Everglades.

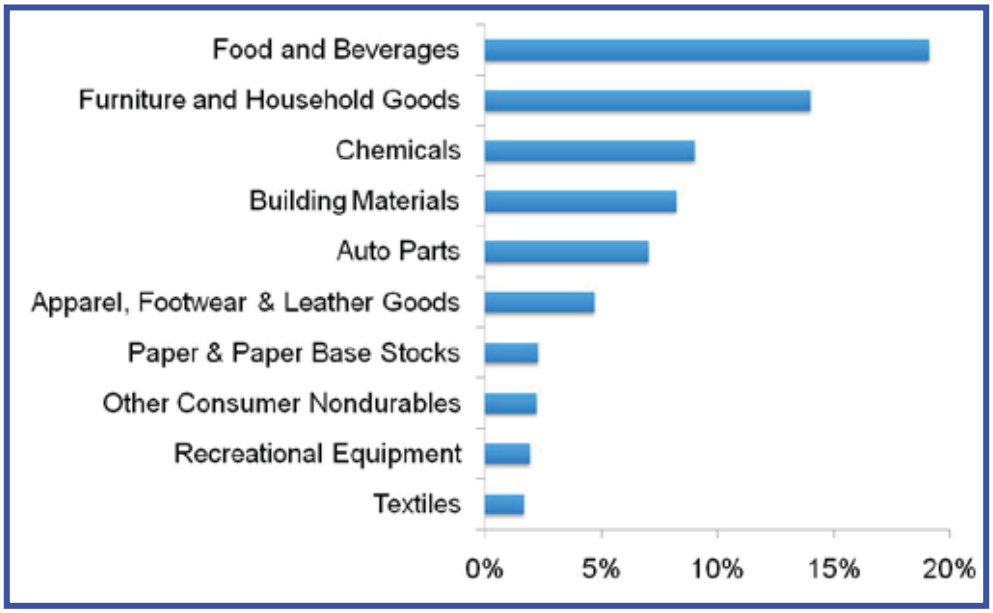

Figure E.14
FOOD AND BEVERAGE IMPORT VOLUMES
(Millions of Metric Tons)
US Scale on Left; Florida Scale on Right

Source: Analysis of US Census trade data. South Florida in this figure is the sum of Miami and Everglades.

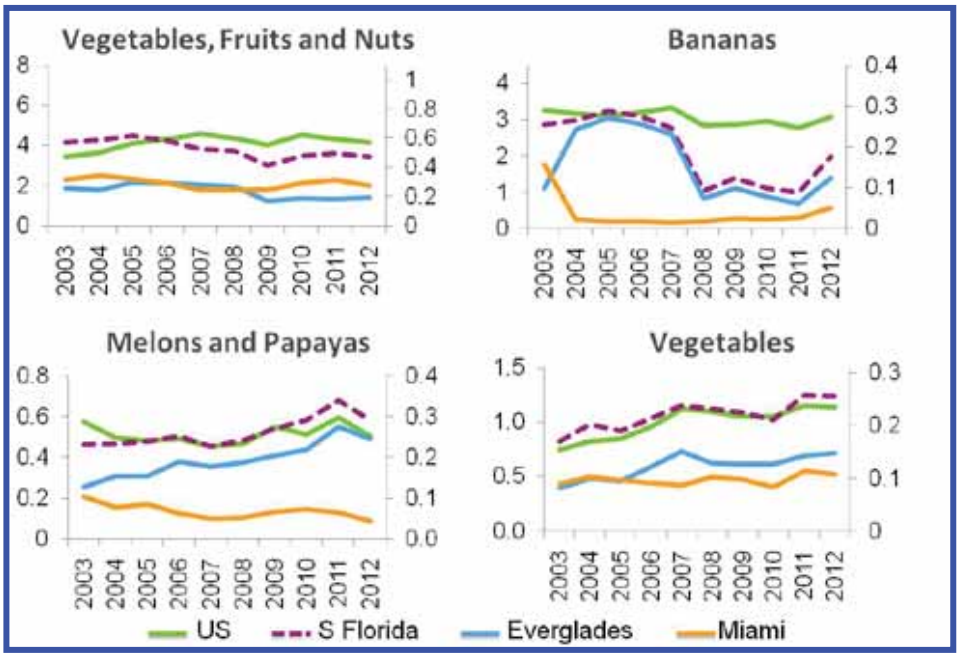

Figure E.15
FOOD AND BEVERAGE IMPORT VOLUMES, CONTINUED
(Millions of Metric Tons)
US Scale on Left; Florida Scale on Right

Source: Analysis of US Census trade data. South Florida in this figure is the sum of Miami and Everglades.

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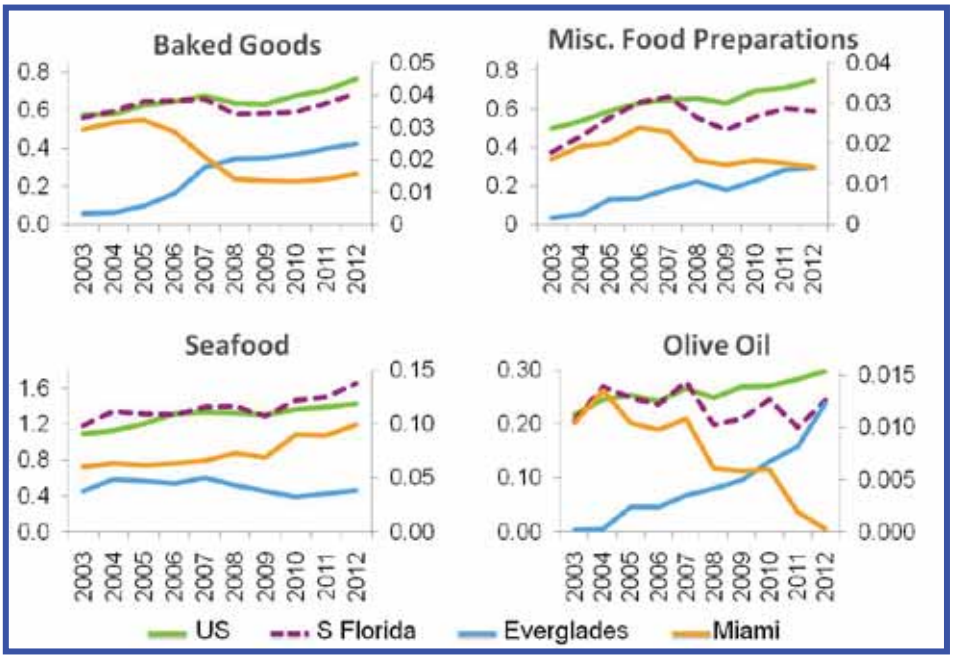


Figure E.16
FOOD AND BEVERAGE IMPORT VOLUMES, CONTINUED
(Millions of Metric Tons)
US Scale on Left; Florida Scale on Right

Source: Analysis of US Census trade data. South Florida in this figure is the sum of Miami and Everglades.

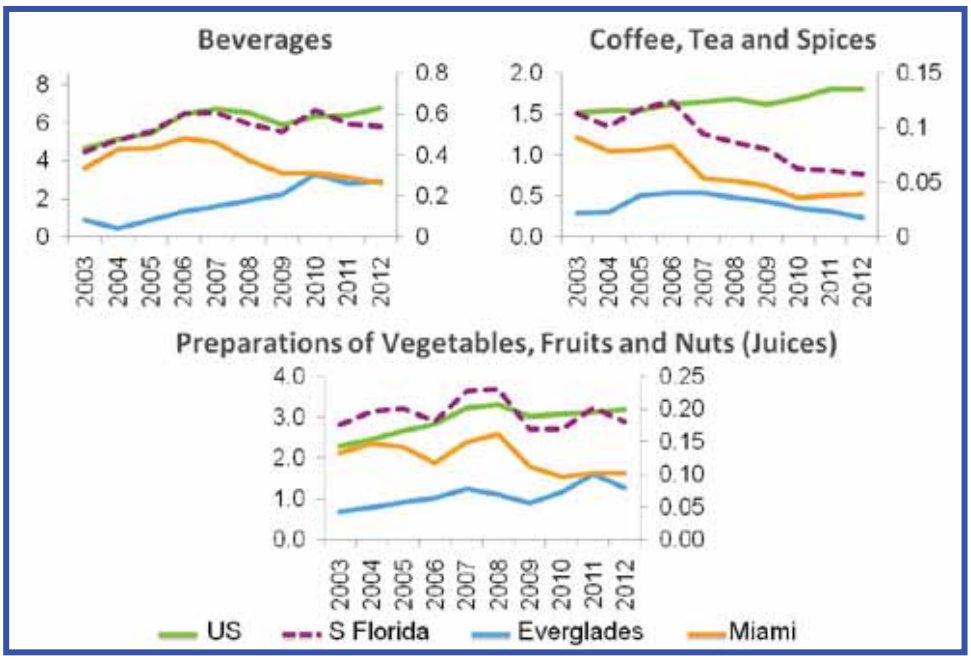
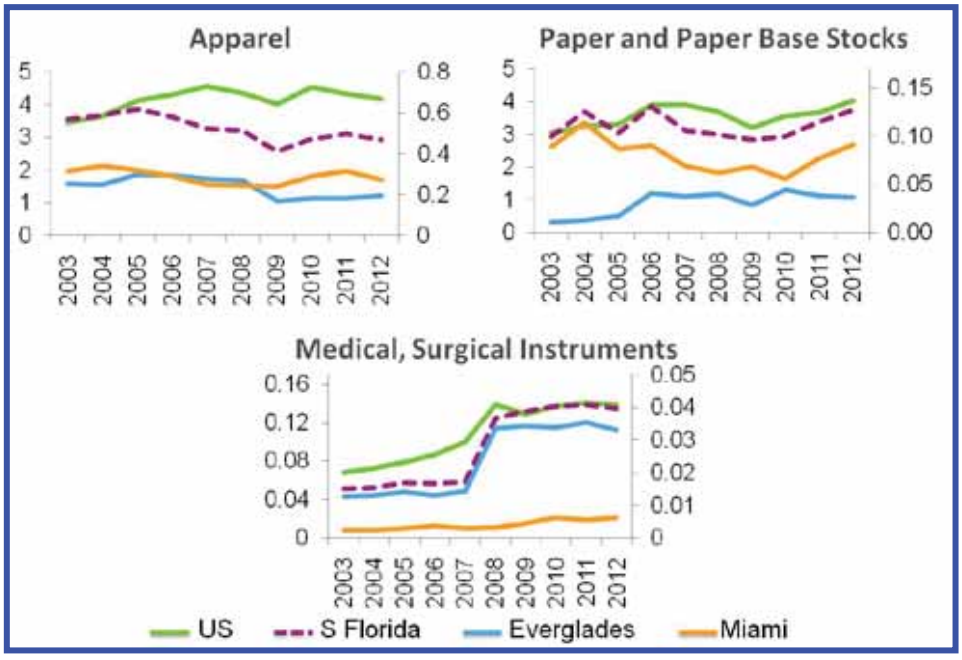


Figure E.17
APPAREL AND OTHER PRODUCT IMPORT VOLUMES
(Millions of Metric Tons)
US Scale on Left; Florida Scale on Right

Source: Analysis of US Census trade data. South Florida in this figure is the sum of Miami and Everglades.



E.4 Overview of Selected Competing Ports

Characteristics of, and planned improvements at, selected competing ports (Charleston, Savannah, Jacksonville, Miami, and Tampa) are summarized below. Information is based on a review of available plans, documents, and current website information for the respective ports.

Table E.3
SUMMARY OF COMPETING PORT CHARACTERISTICS

South Atlantic Port	Terminal	# of Berths	Berth Length (ft.)	Depth (ft.)	# of Quay Cranes
Charleston	1) Wando Welch Terminal 2) North Charleston Terminal	9	7,940	45	20
Savannah	Garden City Terminal	9	9,693	42-48	25 total; 16 SPP
Jacksonville	1) Blount Island Marine Terminal 2) Dames Point (TraPac) Marine Terminal 3) Talleyrand Marine Terminal	7 2 6	6,594 2,400 4,780	38-40	8 6 4
Miami	1) Port of Miami Terminal Operating Company (POMTOC) 2) South Florida Container Terminal 3) Seaboard Marine	6 5	6,101 Shared 7,169 Ro-Ro/MHC	42	9 total; 2 SPP
Tampa	Hookers Point Container (Ports America) Terminal	3	2,800	43	3
Port Everglades	Southport Container Terminals 1) Crowley 2) FIT 3) King Ocean 4) Seafreight 5) MSC	5 (Southport) 32 (portwide)	4,500 (Southport) 25,222 (total)	42	7 (Southport) 9 (portwide)

Table E.4
PLANNED IMPROVEMENTS -- CHARLESTON

Improvement	Project	Status
Navigation	Deepening the main channel to -50 feet	Under study Study scheduled completion in 2015
Terminal	Developing a new container terminal at the former Charleston Navy Base	Planning stage First phase scheduled completion in 2018
Landside Access	Widening of I-26 from Charleston to Columbia – Various projects	Either in planning stages or under construction

Table E.5
PLANNED IMPROVEMENTS – SAVANNAH

Improvement	Project	Status
Navigation	Deepening the Savannah Harbor to 47 feet	Awaiting Congressional action on WRDA Scheduled completion in 2016
Terminal	Providing empty container storage yard, additional gate, bulkhead upgrades and wharf deepening, terminal parking improvements and upgrading terminal pavement areas	Scheduled completion 2014
Landside Access	Extending Jimmy DeLoach Parkway	Under construction Scheduled completion in 2015
	Building a connector road between Brampton Road and I-516	Planning stage
	Widening of Grange Road	Planning stage

Table E.6
PLANNED IMPROVEMENTS – JACKSONVILLE

Improvement	Project	Status
Navigation	Increasing the federal channel depth along the St. Johns River to 47 feet	Under study – comment period Sept. 2013
	Alleviating the Mile Point navigation hazards for vessels calling at the port	Awaiting Congressional authorization
Terminal	Upgrading wharves, on-dock rail and terminal pavement areas at Blount Island and Talleyrand terminals	Under construction On-going
Landside Access	Developing an ICTF at Dames Point Terminal	Under construction Scheduled completion in 2015

Table E.7
PLANNED IMPROVEMENTS – MIAMI

Improvement	Project	Status
Navigation	Deepening Miami Harbor to between -50 and -52 feet and widening turning basins	Under construction. Scheduled completion in 2014 /2015
Terminal	Adding four Super Post-Panamax cranes and upgrading associated crane rail infrastructure	Scheduled completion in September 2013
Landside Access	Restoring rail service to the port including on-port rail yard	Scheduled completion in late 2013
	Building a tunnel connecting the port to the interstate highway system	Under construction. Scheduled completion in 2014

Table E.8
PLANNED IMPROVEMENTS – TAMPA

Improvement	Project	Status
Navigation	Widening two sections of the main channel	Planning stage
Terminal	Expanding 40-acre container terminal to 160+ acres including additional berths, cranes and storage area Aggregate terminal improvements at Hookers Point and Port Redwing	On-going; multi-phase development
Landside Access	Building Interstate 4 – Selmon Expressway Connector	Under construction. Scheduled completion in late 2013

E.5 Inland Distribution Time and Cost

To evaluate the potential capture of inland market trade by Port Everglades, analyses of inland distribution time and cost from Port Everglades and competing ports were performed.

The key takeaway, in summary, is that while Port Everglades can be the fastest route to hinterland markets via first-in vessel calls, the end-to-end pricing of such services will not be as attractive as that of competitors, due to the simple facts of geographic locations and inland distances. For discretionary cargo, Port Everglades is likely to see limited penetration of hinterland markets, given its cost disadvantage.

Nevertheless, the Port can still generate a reasonable inland market share and particularly an inland market rail share from non-discretionary commodities that are closely tied to Port Everglades' vessel services (such as growth in the "Thread Express" to Charlotte), from time-sensitive business (for which price is a secondary consideration), and in cases where offloading boxes to rail at Port Everglades allows a carrier to drop a port call and a vessel from its rotation (in which case the vessel cost savings offset the additional inland costs). For Port Everglades, rail is more cost-effective than trucking for markets such as Memphis, Birmingham, Atlanta, Nashville, and Charlotte, although it is not competitive with trucking at shorter distances (e.g., Orlando and local markets). The Baseline-Plus and High forecasts assumed a 12.4 percent rail share, based on the FEC SIB loan application. That figure is considered a realistic and appropriate target based on the inland market analysis findings.

Table E.9
PROXIMITY TO INLAND MARKETS VIA HIGHWAY – NO ADVANTAGE FOR PORT EVERGLADES
Source: Analysis using web-based map applications

From Port of ...	Highway Miles to ...					
	Orlando	Memphis	Nashville	Birmingham	Atlanta	Charlotte
New Orleans	646	398	535	347	473	717
Mobile	500	480	449	260	330	575
Tampa	83	841	705	604	458	581
Miami	234	1045	909	808	662	729
Everglades	217	1028	892	790	645	712
Jacksonville	148	712	603	716	356	381
Savannah	282	632	497	395	249	251
Charleston	392	704	552	467	321	210
Norfolk	768	913	702	726	579	340

Table E.10
SERVICE TIMES TO INLAND MARKETS VIA FIRST-IN VESSEL AND HIGHWAY – ADVANTAGE FOR PORT EVERGLADES

Source: Parsons Brinckerhoff inland transportation model.

		Orlando	Memphis	Nashville	Birmingham	Atlanta	Charlotte
Everglades	**Highway time**	**3:02**	**14:35**	**12:33**	**11:06**	**8:58**	**10:01**
Jacksonville	Vessel time past PEV @ 20 knots	14:00	14:00	14:00	14:00	14:00	14:00
	Minimum port time	12:00	12:00	12:00	12:00	12:00	12:00
	Highway time	2:09	10:45	8:42	5:02	5:09	5:24
	Total delivered time	**28:09**	**36:45**	**34:42**	**31:02**	**31:09**	**31:24**
Savannah	Vessel time past PEV @ 20 knots	19:00	19:00	19:00	19:00	19:00	19:00
	Minimum port time	12:00	12:00	12:00	12:00	12:00	12:00
	Highway time	4:01	9:12	7:12	5:43	3:36	3:39
	Total delivered time	**35:01**	**40:12**	**38:12**	**36:43**	**34:36**	**34:39**
Charleston	Vessel time past PEV @ 20 knots	20:30	20:30	20:30	20:30	20:30	20:30
	Minimum port time	12:00	12:00	12:00	12:00	12:00	12:00
	Highway time	5:50	10:16	8:06	6:47	4:38	3:06
	Total delivered time	**38:20**	**42:46**	**40:36**	**39:17**	**37:08**	**35:36**
Norfolk	Vessel time past PEV @ 20 knots	36:45	36:45	36:45	36:45	36:45	36:45
	Minimum port time	12:00	12:00	12:00	12:00	12:00	12:00
	Highway time	10:55	13:10	10:12	10:55	8:48	5:18
	Total delivered time	**59:40**	**61:55**	**58:57**	**59:40**	**57:33**	**54:03**

Table E.11
SERVICE COSTS TO INLAND MARKETS VIA FIRST-IN VESSEL AND HIGHWAY OR RAIL – NO ADVANTAGE FOR PORT EVERGLADES
Source: Parsons Brinckerhoff inland transportation model.

		Orlando	Memphis	Nashville	Birmingham	Atlanta	Charlotte
Everglades	**Truck cost per box**	**$ 494**	**$ 2,116**	**$ 1,844**	**$ 1,640**	**$ 1,350**	**$ 1,484**
	Rail cost per box	**$ 582**	**$ 1,736**	**$ 1,560**	**$ 1,427**	**$ 1,239**	**$ 1,326**
Jacksonville	Truck cost per box	$ 356	$ 1,484	$ 1,266	$ 1,492	$ 772	$ 822
	Rail cost per box	$ 492	$ 1,226	$ 1,084	$ 1,231	$ 763	$ 95
	Additional vessel cost	$ 21	$ 21	$ 21	$ 21	$ 21	$ 21
	Truck plus vessel cost	**$ 377**	**$ 1,505**	**$ 1,287**	**$ 1,513**	**$ 793**	**$ 843**
	Rail plus vessel cost	**$ 513**	**$ 1,247**	**$ 1,105**	**$ 1,252**	**$ 784**	**$ 816**
Savannah	Truck cost per box	$ 624	$ 1,324	$ 1,054	$ 850	$ 558	$ 562
	Rail cost per box	$ 667	$ 1,122	$ 946	$ 814	$ 624	$ 626
	Additional vessel cost	$ 29	$ 29	$ 29	$ 29	$ 29	$ 29
	Truck plus vessel cost	**$ 653**	**$ 1,353**	**$ 1,083**	**$ 879**	**$ 587**	**$ 591**
	Rail plus vessel cost	**$ 695**	**$ 1,150**	**$ 975**	**$ 842**	**$ 652**	**$ 655**
Charleston	Truck cost per box	$ 844	$ 1,468	$ 1,164	$ 994	$ 702	$ 480
	Rail cost per box	$ 810	$ 1,215	$ 1,018	$ 907	$ 717	$ 573
	Additional vessel cost	$ 31	$ 31	$ 31	$ 31	$ 31	$ 31
	Truck plus vessel cost	**$ 875**	**$ 1,499**	**$ 1,195**	**$ 1,025**	**$ 733**	**$ 511**
	Rail plus vessel cost	**$ 840**	**$ 1,246**	**$ 1,048**	**$ 938**	**$ 748**	**$ 604**
Norfolk	Truck cost per box	$ 1,596	$ 1,886	$ 1,464	$ 1,512	$ 1,218	$ 740
	Rail cost per box	$ 1,298	$ 1,487	$ 1,213	$ 1,244	$ 1,053	$ 742
	Additional vessel cost	$ 55	$ 55	$ 55	$ 55	$ 55	$ 55
	Truck plus vessel cost	**$ 1,651**	**$ 1,941**	**$ 1,519**	**$ 1,567**	**$ 1,273**	**$ 795**
	Rail plus vessel cost	**$ 1,354**	**$ 1,542**	**$ 1,268**	**$ 1,299**	**$ 1,108**	**$ 797**

When looking at these types of time and distance and cost comparisons, it is absolutely essential to remember that cargo does not always follow "least path" rules, whether based on time or distance or cost. Cargo routing decisions are based on a much broader decision perspective, involving global vessel rotations, port and terminal relationships, business community relationships, and other factors. Florida ports do in fact serve many other states that have excellent ports of their own; and, in turn, Florida is served to some extent by ports in other states, rather than ports in Florida. This is true for imports and for exports, and for both tonnage and value-based measures.

The analysis below, based on the USDOT's *Freight Analysis Framework-3* data for 2011, illustrates some of these complex relationships for South Atlantic and Gulf states with major international seaports. Compared to other South Atlantic and Gulf states with major ports, Florida is roughly average when it comes to being self-dependent.

Being average is not necessarily a good aspirational goal, for Port Everglades or for the state of Florida as a whole. The Florida Chamber Foundation's *Florida Trade and Logistics Study* addressed the case of containerized imports from Asia – which tend to be focused more heavily in non-Florida ports than other types of traffic – and highlighted opportunities to capture more of that traffic through Florida ports. This is, in fact, exactly the scenario and goal envisioned in the 2014 Plan's High forecast. (The study is available at http://www.flchamber.com/wp-content/uploads/FloridaTradeandLogisticsStudy_December20102.pdf. Refer to the Executive Summary for a concise statement of the opportunity.) The follow-up this study was just released in mid-October, and, as discussed in Section 1.9 of Element 1, identifies a number of strategies to achieve the state's overarching trade goals.

Tables E-12 through E-15 show the relative shares of waterborne trade moving to and from Florida and nearby states, based on the gateway ports used for that trade. For Florida imports, around 57 percent by value and 64 percent by tonnage arrive via Florida seaports. For Florida exports, around 78 percent by value and 48 percent by tonnage leave via Florida seaports. This suggests that out-of-state ports are more important for Florida high-value imports, and less important for Florida high-value exports. This is consistent with the Florida Chamber Foundation's report finding that, for Asia import trade, Florida is served primarily through other gateways.

Interestingly, we also see in Tables E-12 through E-15 that different states show very different degrees of dependence on their "home state" ports – Louisiana appears to depend on its own ports the most, North Carolina the least, and Georgia's profile is not dissimilar to Florida's.

Table E.12
SHARE OF WATERBORNE IMPORT VALUE
BY DESTINATION STATE AND GATEWAY PORT
2011

	Gateway Port State									
Destination	AL	FL	GA	LA	MS	NC	SC	TX	VA	All Other
Alabama	24%	2%	8%	12%	12%	0%	12%	1%	0%	29%
Florida	0%	57%	9%	2%	0%	1%	4%	6%	1%	18%
Georgia	1%	4%	45%	2%	0%	0%	11%	2%	1%	34%
Louisiana	0%	0%	0%	84%	1%	0%	0%	11%	0%	3%
Mississippi	29%	2%	1%	6%	41%	0%	3%	2%	0%	17%
North Carolina	0%	10%	16%	1%	0%	7%	20%	1%	21%	25%
South Carolina	0%	4%	11%	0%	0%	0%	71%	2%	1%	10%
Texas	0%	1%	8%	5%	1%	0%	0%	56%	0%	29%
Virginia	0%	4%	1%	12%	1%	1%	3%	17%	46%	16%

Table E.13
SHARE OF WATERBORNE IMPORT TONNAGE
BY DESTINATION STATE AND GATEWAY PORT
2011

	Gateway Port State									
Destination	**AL**	**FL**	**GA**	**LA**	**MS**	**NC**	**SC**	**TX**	**VA**	**All Other**
Alabama	50%	7%	2%	16%	15%	0%	4%	3%	0%	4%
Florida	2%	64%	5%	9%	1%	2%	1%	4%	1%	11%
Georgia	1%	3%	55%	16%	0%	2%	4%	4%	1%	13%
Louisiana	0%	0%	0%	89%	0%	0%	0%	10%	0%	1%
Mississippi	5%	0%	0%	2%	89%	0%	0%	0%	0%	2%
North Carolina	0%	5%	14%	4%	0%	26%	13%	1%	14%	21%
South Carolina	0%	3%	7%	3%	0%	2%	71%	1%	3%	8%
Texas	0%	1%	2%	8%	0%	0%	0%	84%	0%	5%
Virginia	0%	2%	1%	6%	0%	1%	1%	12%	56%	21%

Table E.14
SHARE OF WATERBORNE EXPORT VALUE
BY DESTINATION STATE AND GATEWAY PORT
2011

	Gateway Port State									
Origin	**AL**	**FL**	**GA**	**LA**	**MS**	**NC**	**SC**	**TX**	**VA**	**All Other**
Alabama	39%	6%	22%	5%	2%	0%	19%	2%	0%	7%
Florida	1%	78%	4%	3%	0%	0%	2%	2%	0%	9%
Georgia	1%	12%	59%	1%	1%	0%	16%	1%	1%	8%
Louisiana	0%	2%	2%	72%	0%	0%	2%	10%	0%	11%
Mississippi	3%	2%	4%	7%	25%	0%	6%	35%	0%	18%
North Carolina	0%	24%	13%	3%	0%	10%	17%	1%	22%	10%
South Carolina	0%	4%	12%	1%	0%	1%	76%	2%	1%	3%
Texas	0%	1%	1%	7%	0%	0%	1%	74%	0%	17%
Virginia	0%	2%	0%	0%	0%	1%	1%	1%	90%	4%

Table E.15
SHARE OF WATERBORNE EXPORT TONNAGE
BY DESTINATION STATE AND GATEWAY PORT
2011

	Gateway Port State									
Origin	**AL**	**FL**	**GA**	**LA**	**MS**	**NC**	**SC**	**TX**	**VA**	**All Other**
Alabama	92%	1%	2%	1%	0%	0%	1%	1%	0%	2%
Florida	2%	47%	4%	31%	1%	0%	2%	5%	0%	7%
Georgia	2%	7%	71%	3%	2%	0%	7%	3%	0%	6%
Louisiana	0%	0%	0%	95%	0%	0%	0%	1%	0%	2%
Mississippi	2%	1%	2%	8%	72%	0%	1%	10%	0%	4%
North Carolina	1%	17%	14%	6%	0%	20%	14%	2%	14%	12%
South Carolina	1%	5%	13%	2%	0%	3%	63%	6%	1%	6%
Texas	0%	0%	0%	5%	0%	0%	0%	86%	0%	8%
Virginia	0%	0%	0%	0%	0%	0%	0%	0%	96%	2%

E.6 Container Vessel Fleet Evolution

International container carriers provide regularly scheduled services (usually on a weekly basis) between a fixed set of ports and using a set of ships of similar size. The number of containerships and the size of the vessel utilized depend on the overall distance of the service, the volume of cargo, and the number of port calls. Over the past 40 years, container ships have evolved from small feeder vessels with a carrying capacity (as measured in TEUs[1]) of less than 3,000 TEUs to very large containerships with a capacity of more than 10,000 TEUs. The smaller feeder ships, generally called Feedermax and Handymax vessels, tend to be used on shorter haul services and are often outfitted with cargo cranes on board. Vessels with installed cranes, also known as geared containerships, can operate at smaller container ports that do not have sufficient shoreside cranes to handle the cargo.

Longer-haul, deep-sea routes were historically served by "Panamax" containerships with capacities of 3,000 to about 5,099 TEUs, which were limited by the Panama Canal's lock dimensions. Within the past 20 years, however, the average size of container vessel has steadily increased, with a growing number of "Post-Panamax" ships of 5,100 TEUs to 10,000 TEUs being deployed on long distance, high-volume trade routes — that do not require transiting the Panama Canal — in order to benefit from economies of scale.

The combination of the increase in these Post-Panamax ships and the potential economic advantages of even larger containerships with capacities up to 18,500 TEUs, called Ultra Large Container (ULC) ships or Suezmax vessels, have been major factors behind the Panama Canal expansion program. Upon its completion in 2015, the expanded Panama Canal will allow the transit of larger containerships called Neo- or New-Panamax vessels that are able to carry up to about 13,000 TEUs; however, most ULCs or Suezmax container ships would still not be able to transit the expanded Panama Canal.

As can be seen in Figures E.18 and E.19, these developments are changing the composition of the global commercial vessel fleet with an emphasis on very large containerships that are gearless and more fuel-efficient. Figure E.18 shows the current container ship fleet (blue bars) as well as the number of vessels on order in each size category (green bars). In total, there are 5,091 container vessels in service today with an additional 414 ships on order.[2]

Containerships with capacities of more than 10,000 TEUs are the fastest-growing size category, including 192 existing container vessels and an additional 99 ships on order.[3] Upon completion of these vessels in the next few years, the world fleet will include nearly 400 vessels ranging in size from 10,000 to 18,500 TEUs, compared to fewer than 30 vessels in that size range existing five years ago.

While approximately 50 percent of vessels in the 1,000–1,999 and 2,000-2,999 TEU size classes in the existing world fleet have cranes installed on board (red line), the largest increase in geared vessels on order is in the 3,000-3,999 size class, where 23 of the 45 new

[1]TEU is defined as a twenty-foot equivalent unit or 20-foot long container.
[2]IHS Sea-Web, accessed August 2013.
[3]*Ibid*.

containerships (61 percent) are geared (purple line). Currently, all containerships with a capacity of more than 4,000 TEU are gearless.

Figure E.18
GLOBAL CONTAINERSHIP VESSEL FLEET BY SIZE AND HANDLING EQUIPMENT
Source: IHS Sea-Web, accessed August 2013 and Parsons Brinckerhoff analysis

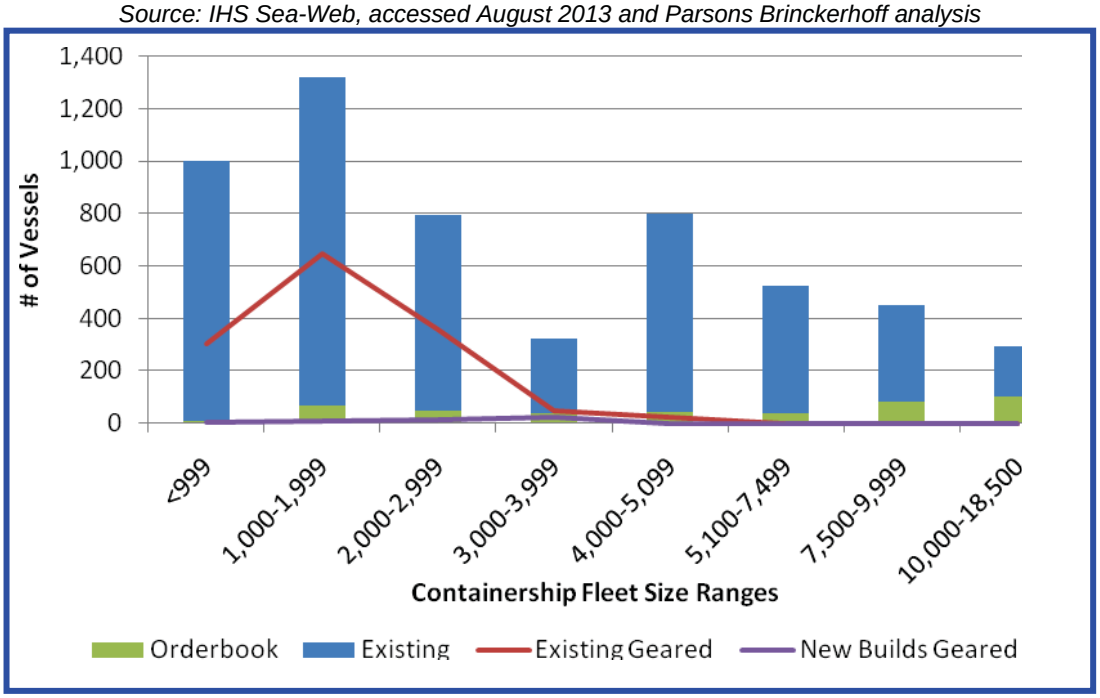


Figure E.19 shows the current global containership fleet capacity (blue bars) and on order (green bars) as measured in total TEU capacity, separated by size category. The worldwide fleet of containerships in service carried an estimated 17.3 million of total TEUs.[4] Based on current orders for new ships, the global fleet is projected to grow in TEU capacity by 16 percent, not counting any scrapping of older ships.

Forty-nine percent of total available TEU capacity in the current world fleet falls within the Post-Panamax size, which in terms of vessel TEU capacity is typically defined by a carrying capacity greater than 5,100 TEUs and drafts of greater than 40 feet. About 83 percent of the existing Post-Panamax fleet (16 percent of the total fleet) falls within size categories from 5,100 TEUs to 9,999 TEUs.

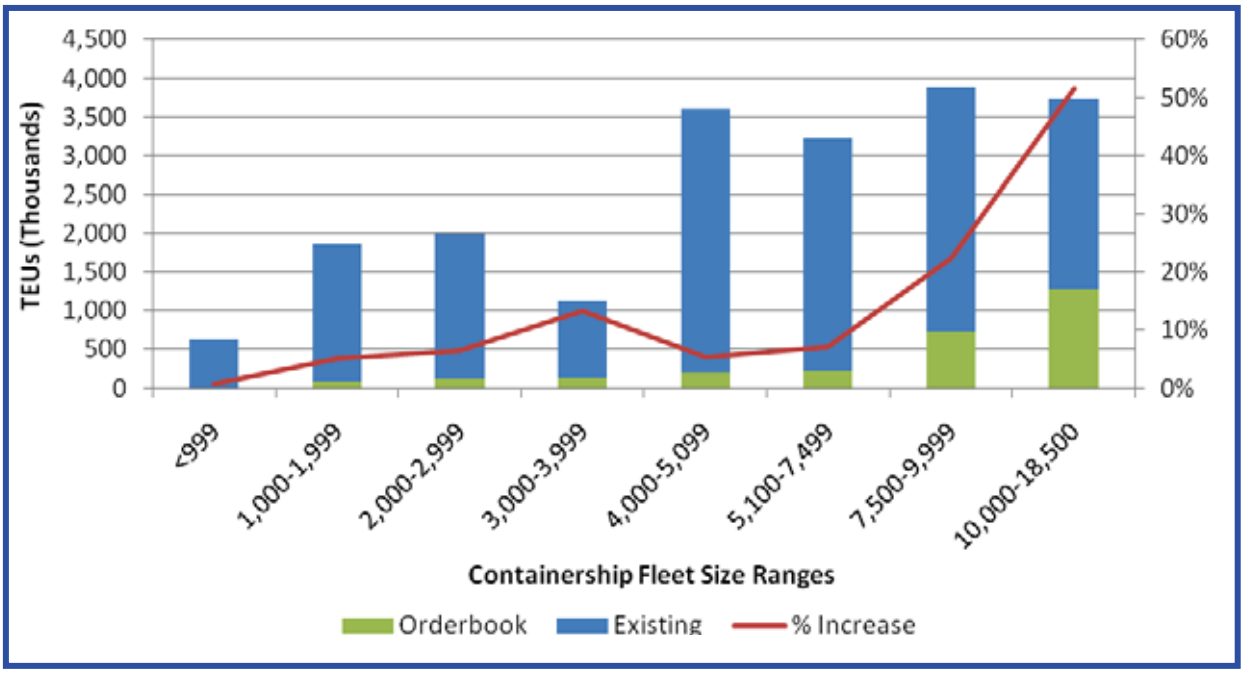
As of August 2013, the containership order book includes 117 Post-Panamax vessels that have a capacity of 5,100 to 7,499 TEUs or 7,500 to 9,999 TEUs, representing 34 percent of the total order book. When delivered, these vessels will increase the Post-Panamax fleet within those size categories by 7 percent and 23 percent, respectively.

The largest growth in the order book can be seen in vessels with a capacity of 10,000 TEUs or greater. Nearly half of the cumulative TEU growth of the fleet is a result of new 10,000-18,000 TEU vessels ordered. As shown in Figure E.19, this represents a 52 percent increase in the

[4] IHS Sea-Web, accessed August 2013.

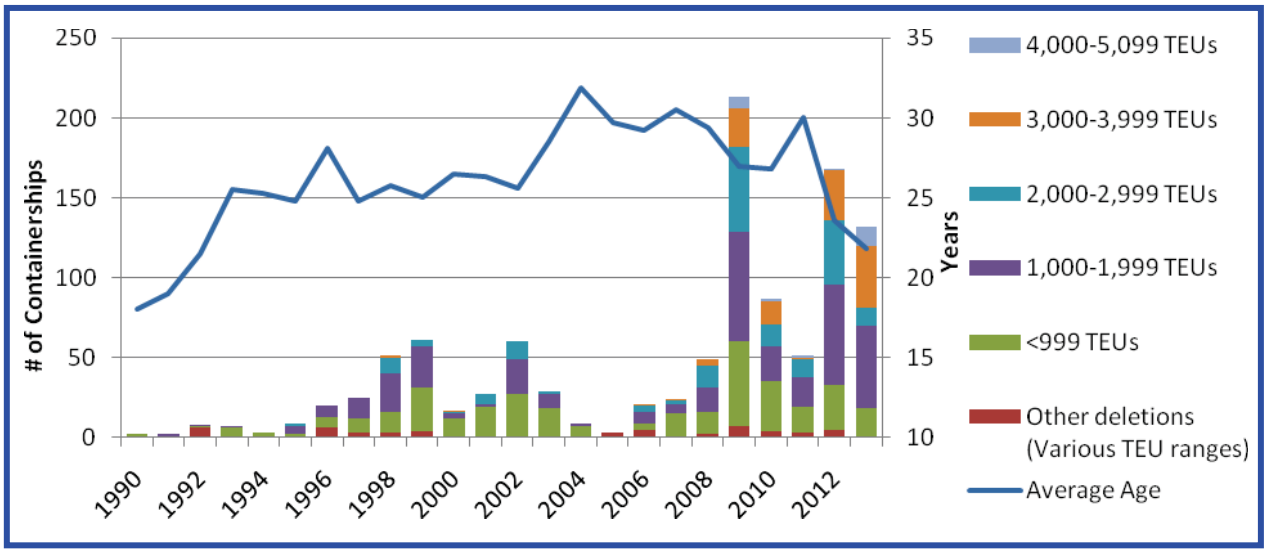
existing Post-Panamax fleet with a capacity between 10,000 and 18,000 TEUs. Of those currently in operation, a majority are deployed in the Far East–Europe trade lane as the market supports the requisite volume scale and the ports have the channel depths to support the use of such vessels.

Figure E.19
GLOBAL CELLULAR CONTAINERSHIP FLEET CAPACITY
Source: IHS Sea-Web, accessed August 2013 and Parsons Brinckerhoff analysis



As a result of increasing containership capacity and growing vessel sizes being deployed on large trade lanes, smaller containerships are either being displaced and cascaded down to smaller routes or being broken up. As shown in Figure E.20, the number of vessels scrapped in the past five years has significantly increased, with the majority of vessels broken up being Panamax size or smaller. No containerships with a capacity of more than 5,099 TEUs have been scrapped. In addition, the average age of these smaller, scrapped vessels has been declining. From 2001-2011, the average age of a scrapped containership was 28.6 years, in 2012, the average age was 23.6 years and as of August 2013, the average age is 21.8 years.

Figure E.20
NUMBER OF SCRAPPED CONTAINERSHIPS IN THE GLOBAL FLEET
BY SIZE AND AVERAGE AGE
Note: 2013 data reflects January to August volumes only.
Source*: IHS Sea-Web, accessed August 2013 and Parsons Brinckerhoff analysis*



The major implication of these fleet developments is that large ship capacity is and will be deployed on US East Coast services, and smaller vessels are being phased out at a more rapid pace than in years past. As a result, vessel deployments are reflecting an ever-evolving fleet mix. Historically, as ship sizes increased, vessels in most trade lanes would call at fewer ports on a given coast or in a given region. This allowed shipping lines to minimize the costs and delays of coming into and out of multiple ports and to avoid excessive delays to the cargos/containers that would be discharged last. As a consequence, the use of larger ships on all trade lanes is expected to concentrate ship calling patterns at ports that have the depth to accommodate the draft of these vessels and demand for cargo to fully utilize the ship's increased capacity.

E.7 Port Everglades Vessel Fleet Composition

The composition of vessels currently calling at Port Everglades and the projected future fleet according to the US Army Corps of Engineers *Harbor Feasibility Study* are summarized in the tables below.

Table E.16
PROFILE OF VESSEL CALLS AT SOUTHPORT BERTHS
2012
Source: Analysis of Port Everglades data

Southport (Berths 30-33)	Maximum Values for Vessels by Line			
	LOA	Beam	TEUs	Draft
MSC	1,096	142	8,401	41.0
Hamburg-Sud	867	106	4,616	39.1
CCNI	857	106	4,250	38.1
Hapag Lloyd	885	106	3,607	39.0
CSAV	758	106	3,534	39.1
New Americas-Chilean-Hamburg-Sud	750	106	3,426	32.0
Agriex	683	98	2,524	29.1
Dole	672	106	2,046	34.1
King Ocean Service	617	98	2,008	32.1
SeaFreight	599	83	1,706	27.0
Delta	558	81	1,550	30.1
Chiquita	666	89	1,296	31.0
Crowley	522	79	1,205	31.0
Sea Star Line	791	92	1,200	29.1
SCM Lines	478	60	673	22.0
Reederei Eckhoff	478	60	663	21.1
Interorient	422	66	626	21.1
Laycan	422	66	626	21.1
Hyde	328	60	515	19.0
Masterline De Venezuela	330	61	502	19.1
Frontier	328	53	374	21.1
Lyra Fisser	328	53	374	31.0
G & G Shipping	233	48	72	12.1
Cementos Argos*	355	60	-	21.1
Nicolakis Shipping*	328	54	-	22.0
SC Line*	658	87	-	24.1

* Not container ships

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Table E.17
PROFILE OF VESSEL CALLS AT MIDPORT BERTHS
2012
Source: Analysis of Port Everglades data

Midport (Berths 16-29)	Maximum Values for Vessel by Line			
	LOA	Beam	TEUs	Draft
Agriex	683	98	2,524	29.1
Dole	672	106	2,046	34.1
Sea Star Line	791	92	1,200	29.1
Crowley	516	77	1,122	29.1
Chiquita	666	89	950	31.0
Interorient Navigation	422	66	626	20.0
King Ocean Services	400	61	584	21.1
Hyde	328	60	515	19.0
Frontier	328	53	374	19.1
G & G Shipping	233	48	72	12.1

Table E.18
PROFILE OF VESSEL CALLS AT NORTHPORT BERTHS
2012
Source: Analysis of Port Everglades data.

Northport (Berths 1-15)	Maximum Values for Vessels by Line			
	LOA	Beam	TEUs	Draft
King Ocean Service	589	91	1,795	26.0
Crowley	516	77	1,122	28.0
Agriex	485	76	1,076	27.0
Chiquita	666	89	950	26.0
SCM Lines	478	60	673	22.0
Reederei Eckhoff	478	60	663	21.1
Interorient Navigation	422	66	626	21.1
Laycan	422	66	626	21.1
Masterline De Venezuela	330	61	502	19.1
Frontier	328	53	374	21.1
Lyra Fisser	328	53	374	31.0
G & G Shipping	233	48	72	12.0
Cementos Argos*	355	60	-	21.1
Nicolakis Shipping*	328	54	-	22.0
SC Line*	658	87	-	21.1

* Not container ships

Table E.19
VESSEL FLEET DEFINITIONS USED BY US ARMY CORPS OF ENGINEERS
Source: US Army Corps of Engineers, *Port Everglades Harbor Feasibility Study*, Socio-Economic Appendix, Draft June 2013

Vessel Type	Vessel Class Name	Classification Category	Classification Criteria	Typical Max Cargo Capacity	Typical LOA (ft)	Typical Beam (ft)	Typical Design Draft (ft)	Typical DWT	Underkeel Clearance (ft)
Sub-Panamax Container	SPX1	DWT	0-12500 DWT	600 TEU	433.0	70.6	25.2	9,500	2
Sub-Panamax Container	SPX2	Capacity	12501-42999 DWT	2200 TEU	669.2	93.5	36.8	31,900	2
Panamax Container	PX1	Draft	< 42 ft	3500 TEU	797.9	106.4	40.4	46,400	2.5
Panamax Container	PX2	Draft	>= 42 ft	4800 TEU	935.3	106.4	43.6	65,000	3
Post-Panamax Container	PPX1	Beam	107-139 ft	6500 TEU	1027.0	131.5	45.7	80,700	3
Post-Panamax Container	PPX2	Beam	140 ft +	8000 TEU	1119.1	143.5	48.1	103,000	3.5
Barge	US Tank Barge	Capacity	20k DWT	18000 DWT	630.0	86.0	33.1	20,000	3
Tanker	Tank 20k DWT	Capacity	<25k DWT	18000 DWT	518.6	80.2	32.3	20,000	3
Tanker	Tank 25-45kDWT	Capacity	25k-44.9k DWT	32200 DWT	575.2	91.3	35.5	35,000	3
Tanker	Tank 45-80kDWT	Capacity	45k-79.9k DWT	55200 DWT	662.9	108.4	40.6	60,000	3.5
Tanker	Tank 90kDWT	Capacity	80k+	82800 DWT	757.5	127	46.2	90,000	4
Bulker	Bulk 15kDWT	Capacity	0-20k	13500 DWT	510.0	78.8	29.6	15,000	2
Bulker	Bulk 25k DWT	Capacity	20-30k	23000 DWT	549.9	84.7	32.3	25,000	2
Bulker	Bulk 40k DWT	Capacity	30-50k	36800 DWT	607.0	93.1	36.2	40,000	2
Bulker	Bulk 60k DWT	Capacity	50-70k	55200 DWT	677.7	103.8	41.0	60,000	2.5
Bulker	Bulk 80k DWT	Capacity	70-100k	73600 DWT	742.2	113.9	45.3	80,000	3
Gen Cargo	GC-15k	Capacity	<15 k DWT	9900 DWT	433.2	65.5	26.4	11,000	2
Gen Cargo	GC 15-25k	Capacity	15k-25k DWT	18000 DWT	520.6	78.8	32.0	20,000	2
Gen Cargo	GC 25-35k	Capacity	25-35k DWT	27000 DWT	587.9	89.2	36.1	30,000	2
Gen Cargo	GC 37.5k	Capacity	35k+	33750 DWT	635.1	96.5	39.0	37,500	2.5
Ferry	Ferry	Capacity	400-500 pass.	500 pass	241.5	85.3	9.5	197	2
Cruise	Cruise-400	Capacity	200-600 pass.	600 pass	650.2	85.3	20.9	5,000	2
Cruise	Cruise-1200	Capacity	600-1400 pass.	1400 pass	719.1	101.1	25.3	7,637	2
Cruise	Cruise-2600	Capacity	1800-3200 pass.	2600 pass	949.9	118.2	27.9	8,418	2
Cruise	Cruise-4000	Capacity	3600-4400 pass.	4400 pass	1111.9	126.6	28.9	10,600	2
Cruise	Cruise-5400	Capacity	5400 pass.	5400 pass	1184.4	154.2	30.5	15,000	2

Table E.20
VESSEL FLEET FORECAST FOR PORT EVERGLADES FROM HARBOR FEASIBILITY STUDY
Source: US Army Corps of Engineers, *Port Everglades Harbor Feasibility Study*,
Socio-Economic Appendix, Draft June 2013

Class	42 ft WOP Calls	46 ft + widening Calls	48 ft + widening Calls	50 ft + widening Calls	
Sub-Panamax Containership 1 (SPX1)	1154	1154	1154	1154	
Sub-Panamax Containership 2 (SPX2)	251	251	251	251	
Panamax Containership 1 (PX1)	174	164	164	164	3500 TEUs
Panamax Containership 2 (PX2)	108	103	103	103	4800 TEUs
Post-Panamax Containership 1 (PPX1)	151	136	136	136	6500 TEUs
Post-Panamax Containership 2 (PPX2)	6	15	15	15	8000 TEUs
Tank Barge	150	150	150	150	
Tanker 20k DWT	30	27	21	21	
Tanker 25k-45k DWT	31	28	22	22	
Tanker 45k-80k DWT	227	226	199	199	
Tanker 90k DWT	0	0	22	22	
Bulker 15k DWT	10	9	9	9	
Bulker 25k DWT	10	9	9	9	
Bulker 40k DWT	24	21	21	21	
Bulker 60k DWT	5	4	4	4	
Bulker 80k DWT	0	2	2	2	
General Cargo Ship-15k DWT	29	29	29	29	
General Cargo Ship-15k-25k DWT	35	35	35	35	
General Cargo Ship-25-35k DWT	16	16	16	16	
General Cargo Ship-35-40k	14	14	14	14	

E.8 Trading Partner Port Capabilities

Much of Port Everglades trade is with ports in the Caribbean, Central America, and South America. Some of these ports are limited as to the types of vessels they can accommodate, based on depth or berth length or crane availability. The characteristics and limitations of trading partner ports in these regions are summarized in the following tables, based on research from multiple sources including port websites, carrier websites, and various publications.

Table E.21
PORT EVERGLADES SERVICES TO
CARIBBEAN/CENTRAL AMERICAN/SOUTH AMERICAN PORTS

Line	Rotation	Vessels	Max. Vessel Capacity	Max. LOA	Max. Visit Deepest Draft	Max. Vessel Draft
Agriex*	Port Everglades - Barrios - Cortes	3	2,524 TEU	683	29.1	31.2
CSAV / CCNI / Hamburg Sud -- Alianca / Libra	San Vicente - San Antonio - Callao - Buenaventura - Balboa - Cartegena – P. Everglades - New York- Baltimore - Charleston – P. Everglades - Cartagena - Manzanillo - Guayaquil	6	3,534 TEU	758	39.1	39.9
CCNI / Hamburg Sud	Cagliari - Livorno - Genoa - Barcelona - Valence - Savannah - Port Everglades - New Orleans - Houston - Altamira - Veracruz	6	3,607 TEU	885	38.1	39.4
CCNI	Cartagena - Port Everglades - Charleston - Baltimore - New York	7	3,100 TEU	728	36	37.4
Chiquita	Port Everglades - Barrios - Cortes - Limon - Almirante	3	1,296 TEU	666	31	31.2
CSAV	Baltimore - Jacksonville - Port Everglades - Veracruz - Manta - Callao (Lima) - Iquique - San Antonio	10+	Ro-Ro	656	30.1	32.2
Crowley	Port Everglades - Havana - Santo Tomas - Cortes	3	974 TEU	458	24.1	24.16
Crowley	Port Everglades - Limon - Colon	2	1,205 TEU	522	31	33.5
Crowley	Port Everglades - Rio Haina - Port-au-Prince	2	962 TEU	458	23	24.2
Crowley / Seafreight	Jax - Port Everglades - Charlotte Amalie (St. Thomas) - Christiansted (St. Croix) - Point Lisas - Kingstown (St. Vincent) - Bridgetown	2	1,122 TEU	516	29.1	30.5
Dole	Wilmington -Everglades - Santa Marta - Limon - Castilla	2	2,046 TEU	672	34.1	33.5
Frontier	Jax - Port Everglades - Cartagena - Barranquilla - Santa Marta	2	493 TEUs	330	22.1	20.96

Table E.21 (Continued)
PORT EVERGLADES SERVICES TO
CARIBBEAN/CENTRAL AMERICAN/SOUTH AMERICAN PORTS

Line	Rotation	Vessels	Max. Vessel Capacity	Max. LOA	Max. Visit Deepest Draft	Max. Vessel Draft
Hamburg Sud / CSAV -- Alianca / Libra	New York - Philadelphia - Norfolk - Charleston - Jax - Port Everglades - Suape - Santos - Buenos Aires - Rio Grande - Rio De Janeiro - Salvador - Pecem	7	4,616 TEU	867	38.1	41.3
Hamburg Sud	Jax - Port Everglades - Oranjestad - Willemstad - Bonaire - Cabello - La Guaira	3	2,008 TEU	617	34	37
Hybur/Hyde Shipping / Seafreight	Port Everglades - Georgetown (Grand Cayman) - Belize City - Roatan (Honduras) - Pt. Morelos	2	515 TEU	328	19	21.5
Interocean/ Trinity Line	Port Everglades - Cristobal - Buenaventura - Manta - Guayaguil - Callao	2	511 TEU	330	23.1	23.95
King Ocean Service	Jax - Port Everglades - Oranjestad - Willemstad - Bonaire - Cabello - La Guaira	3	2,008 TEU	617	34	37
King Ocean Service	Port Everglades - Cortes - Santo Tomas - El Salvador	1	584 TEU	400	23.1	23.8
King Ocean Service	Port Everglades - Limon - Manzanillo - Cartagena - Barranquilla - Oranjestad - Willemstad- Maracaibo (Venezuela)	3	1,104 TEU	491	27	28.9
Mailboat Co.	Port Everglades - Nassau - Freeport	1	NA	225	13	15.42
MSC	Charleston - Savannah - Port Everglades - Freeport - Veracruz	7	8,238 TEU	1,096	41	47
MSC	Port Everglades - Nassau - Freeport	1	374 TEU	328	23	26.9
MSC	Barcelona - Valencia - Sines - Port Everglades - Veracruz	7	5,762 TEU	984	41	47.5
SC Line	Jax - Port Everglades - Houston - Cartegena	2	505 TEU	225	24.1	24.6
Sea Freight / Crowley /Frontier	Jacksonville - Port Everglades - Kingston - Oranjestad - Kranlendijk - La Guaira - Pt. Lisas - Isla Margarita - Paramaribo - Puerto Cabello - Kingston	5	1296 TEU	545	29.1	31.2
Sea Star Line	Port Everglades - Jax - San Juan	3	1200 TEU	791	29.1	29.59

Table E.22
CARIBBEAN PORT CHARACTERISTICS

Caribbean Port	Country	# of Berths	Berth Length (ft.)	Depth (ft.)	# of Quay Cranes
Nassau	Bahamas	3	1,170	26	MHC
Freeport, Grand Bahama	Bahamas	3	3,400	52	10
Havana, Cuba	Cuba	1	1,475	32	3
Georgetown	Cayman Islands	3	875	21	0
Port-au-Prince	Haiti	1	1,475	33	1
Rio Haina	Dominican Republic	3	1,700	33	3
Charlotte Amalie	St. Thomas, USVI	3	2,720	30	MHC
Christiansted	St. Croix, USVI	1	1,000	32	1
Kingstown	St. Vinicent	1	965	32	MHC
Bridgetown	Barbados	1	600	36	1
Oranjestad	Aruba	1	820	32	1
Willemstad	Curacao	3	1,640	39	2

Table E.23
EAST COAST CENTRAL AMERICA PORT CHARACTERISTICS

East Coast Central America Port	Country	# of Berths	Berth Length (ft.)	Depth (ft.)	# of Quay Cranes
Veracruz	Mexico	2	1665	42	6
Belize City	Belize	1	220	33	MHC
Puerto Barrios	Guatemala	1	945	31	0
Santo Tomas	Guatemala	6	3000	32	MHC
Puerto Cortes	Honduras	1	1550	34	2
Puerto Castilla	Honduras	1	490	33	0
Puerto Limon	Costa Rica	1	1175	31	1
Almirante	Panama	2	1170	33	0
Colon	Panama	3	3220	49	10
Manzanillo	Panama	5	5380	46	17
Cristobal	Panama	3	3160	48	12

Table E.24
WEST COAST CENTRAL AMERICA PORT CHARACTERISTICS

West Coast Central America Port	Country	# of Berths	Berth Length (ft.)	Depth (ft.)	# of Quay Cranes
Acajutla	El Salvador	2	1050	34	0
		2	1140	31	0
		2	920	49	0
Balboa	Panama	7	7445	56	25

Table E.25
EAST COAST SOUTH AMERICA PORT CHARACTERISTICS

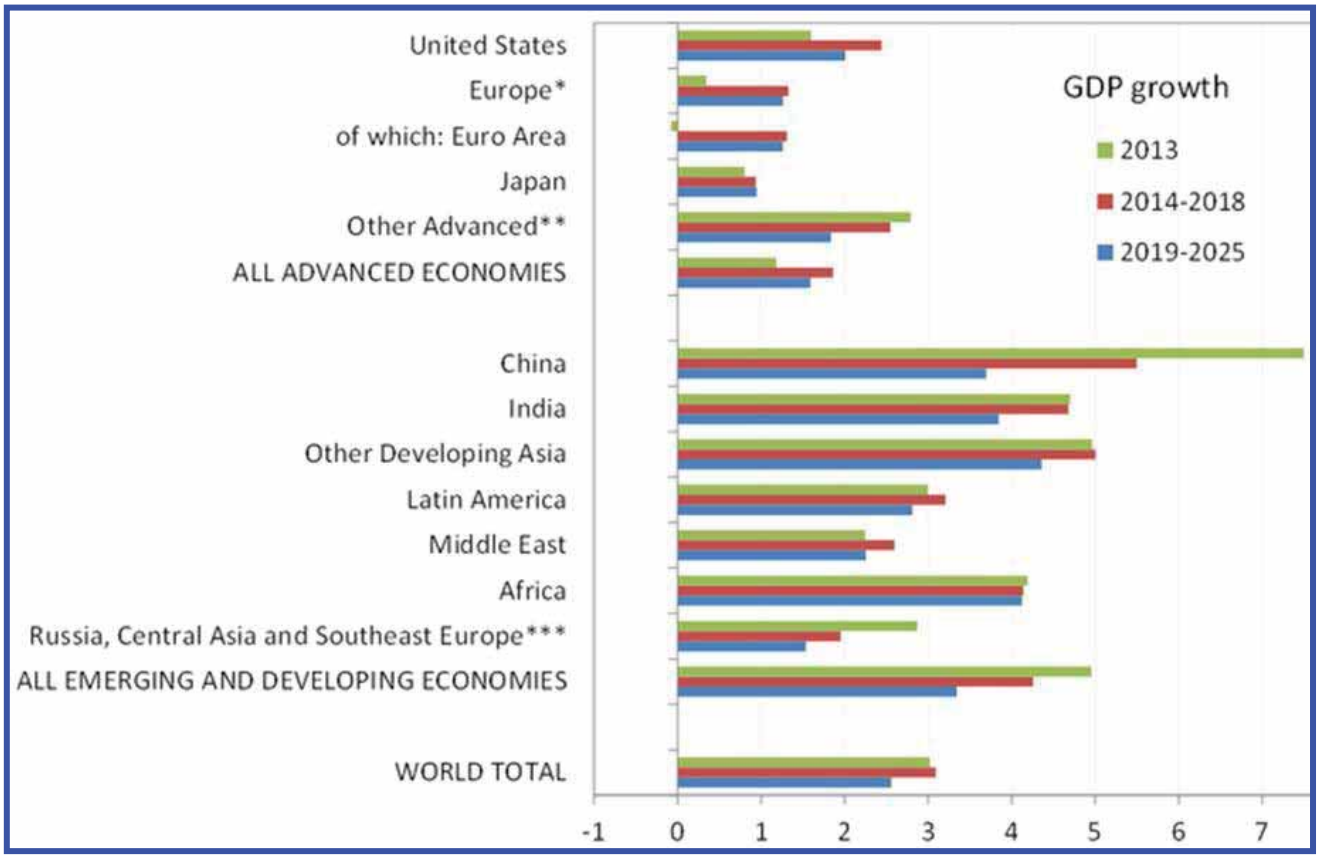
East Coast South America Port	Country	# of Berths	Berth Length (ft.)	Depth (ft.)	# of Quay Cranes
Santa Marta	Colombia	1	1050	39	2
Barranquilla	Colombia	6	3470	33	MHC
Cartagena	Colombia	1	1250	36	2
Maracaibo	Venezuela	1	670	26	0
		2	1180	30	0
		1	395	33	0
Pecem (Ceara)	Brazil	2	2300	49	1
Suape (Pernambuco)	Brazil	3	3070	50	4
Salvador (Bahia)	Brazil	1	780	26	2
Rio De Janeiro	Brazil	2	1790	42	4
		2	1750	40	2
Santos (Sao Paulo)	Brazil	4	3215	42	13
Rio Grande	Brazil	3	2950	48	6
Buenos Aires	Argentina	2	3755	33	10
		1	2610	33	0
		3	2300	33	5

Table E.26
WEST COAST SOUTH AMERICA PORT CHARACTERISTICS

West Coast South America Port	Country	# of Berths	Berth Length (ft.)	Depth (ft.)	# of Quay Cranes
Buenaventura	Colombia	7	3445	36	6
Manta	Ecuador	4	2625	39	0
Guayaquil	Ecuador	3	1820	32	4
Callao	Peru	4	4790	33	8
		1	3150	41	
		1	1720	38	
		1	2130	52	6
Iquique	Chile	2	2015	30	0
San Antonio	Chile	1	1245	44	6
		2	1275	37	
		2	1540	31	0
San Vicente	Chile	1	1970	40	MHC

E.9 GDP Growth and Multi-Port Trade Forecasts

Figure E.21
GLOBAL GDP FORECAST
Source: The Conference Board Global Economic Outlook 2013, May 2013 update.



* Europe includes all 27 current members of the European Union, as well as Iceland, Norway, and Switzerland.
**Other advanced includes Canada, Israel, Korea, Australia, Taiwan, Hong Kong, Singapore, and New Zealand.
***Southeast Europe includes Albania, Bosnia & Herzegovina, Croatia, Macedonia, Serbia & Montenegro, and Turkey.

Table E.27
GLOBAL GDP FORECAST SCENARIOS
Source: The Conference Board Global Economic Outlook 2013, May 2013 update

*	2013 - 2018			2019 - 2025			
	GDP Growth in Optimistic Scenario	**GDP Growth in Base Scenario**	**GDP Growth in Pessimistic Scenario**	**GDP Growth in Optimistic Scenario**	**GDP Growth in Base Scenario**	**GDP Growth in Pessimistic Scenario**	**Distribution of World Output 2025**
United States	2.5	2.3	2.1	2.4	2.0	1.6	18.3%
Europe*	1.5	1.2	0.8	1.6	1.3	0.9	17.4%
Japan	1.3	0.9	0.5	1.2	0.9	0.7	4.8%
Other advanced**	3.5	2.6	1.7	2.5	1.8	1.2	7.3%
Advanced Economies	**2.1**	**1.8**	**1.4**	**2.0**	**1.6**	**1.2**	**47.8%**
China	8.0	5.8	3.7	4.9	3.7	2.5	22.7%
India	5.7	4.7	3.6	4.5	3.8	3.2	8.2%
Other developing Asia	6.4	5.0	3.6	5.5	4.4	3.2	4.9%
Latin America	3.9	3.2	2.5	3.4	2.8	2.2	7.1%
Middle East	2.7	2.5	2.3	2.5	2.3	2.0	2.5%
Africa	5.1	4.1	3.2	5.0	4.1	3.2	2.6%
Russia, Central Asia and Southeast Europe***	3.1	2.1	1.2	2.1	1.5	1.0	4.1%
Emerging and Developing Economies	**5.7**	**4.4**	**3.0**	**4.2**	**3.3**	**2.5**	**52.2%**
World Total	**4.0**	**3.1**	**2.2**	**3.3**	**2.6**	**1.9**	**100.0%**

See notes under Figure E.21.

Figure E.22
STATE GDP GROWTH
2012
Source: Bureau of Economic Analysis.

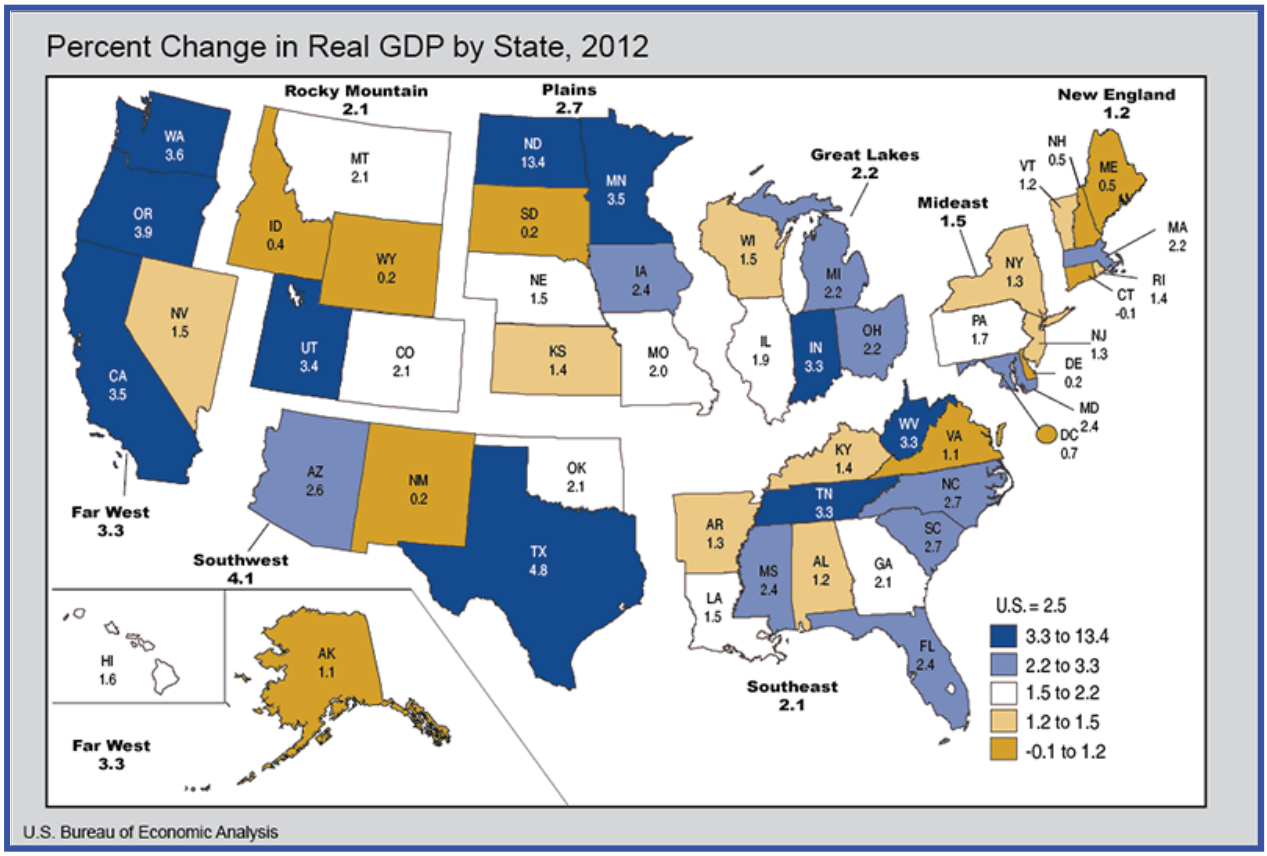


Figure E.23
HISTORIC RELATIONSHIP BETWEEN US GDP AND US CONTAINER TRADE
Source: Analysis of Bureau of Economic Analysis and AAPA data.

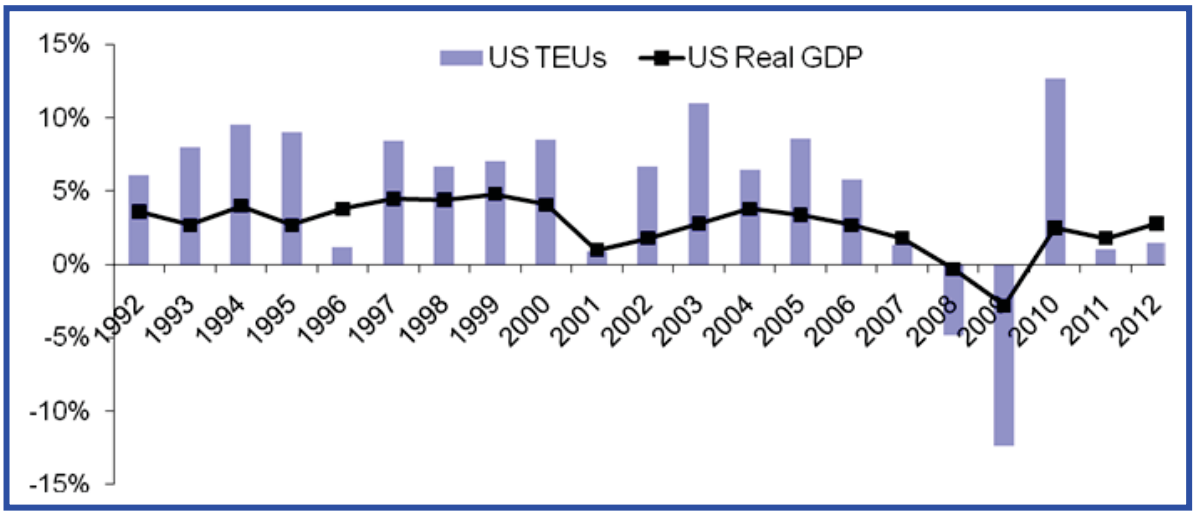


Figure E.24
HISTORIC RELATIONSHIP BETWEEN US CONSUMER SPENDING AND US CONTAINER TRADE
Source: Analysis of US Bureau of Economic Analysis data.

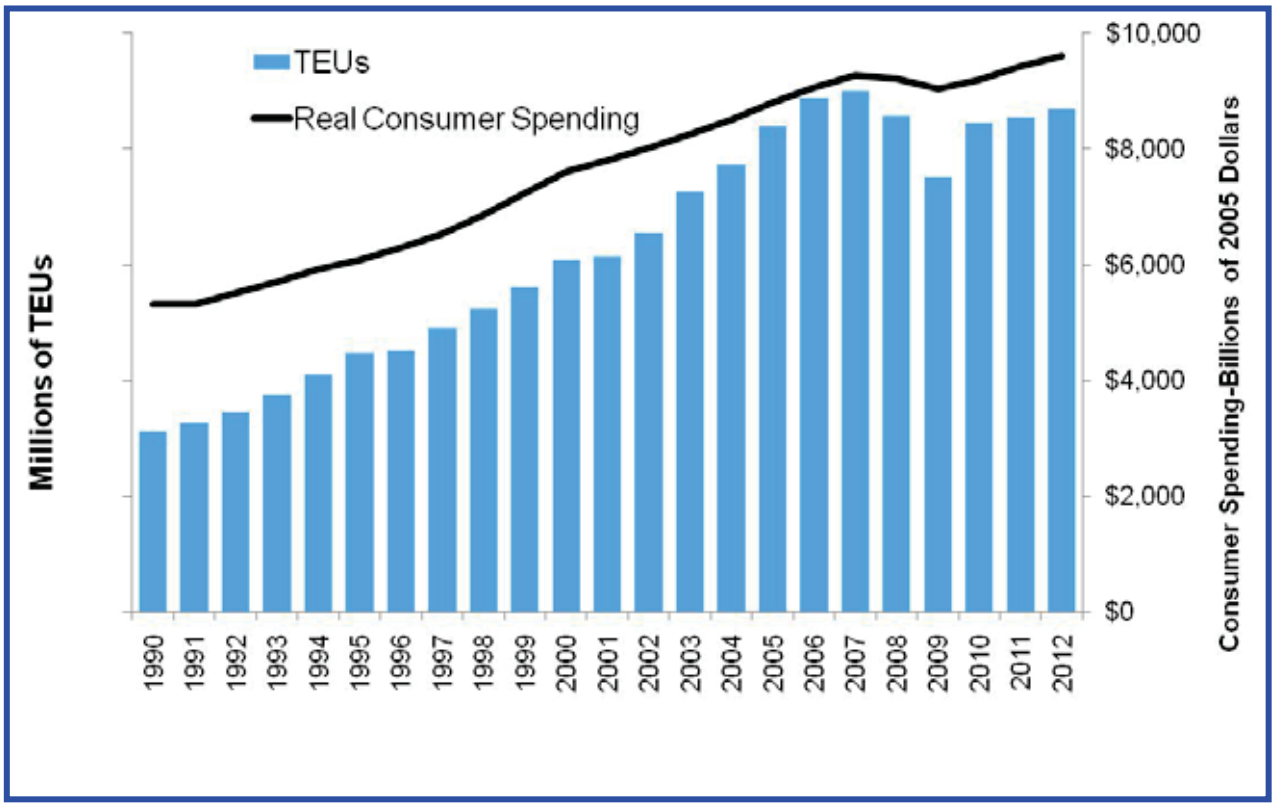


Table E.28
SOUTH ATLANTIC PORTS WATERBORNE TRADE BY WORLD REGION
2011
Source: Analysis of USDOT Freight Analysis Framework-3 data.

World Region	SC		GA		FL	
	Tons (000s)	$ (Billions)	Tons (000s)	$ (Billions)	Tons (000s)	$ (Billions)
IMPORTS						
Africa	153	854	131	307	51	155
Canada	1	4	25	4	111	163
Eastern Asia	1,393	6,624	4,421	20,275	1,889	6,333
Europe	2,883	17,698	1,702	7,575	2,369	4,809
Mexico	18	26	91	325	269	1,046
Rest of Americas	1,117	3,404	1,322	2,150	5,031	16,372
SE Asia and Oceania	318	782	1,140	2,692	523	1,051
SW and Central Asia	809	3,939	1,085	4,008	195	458
EXPORTS						
Africa	515	2,171	376	533	163	999
Canada	-	-	-	-	0.1	2
Eastern Asia	756	1,862	3,631	5,475	218	309
Europe	2,502	10,675	3,219	7,255	652	1,794
Mexico	91	189	4	4	249	642
Rest of Americas	1,455	3,967	1,042	1,705	8,075	37,855
SE Asia and Oceania	175	248	1,317	4,300	132	117
SW and Central Asia	805	2,686	1,730	2,942	316	1,594

Table E.29
SOUTH ATLANTIC PORTS WATERBORNE TRADE BY WORLD REGION
2035 FORECAST
Source: Analysis of USDOT Freight Analysis Framework-3 data

World Region	SC		GA		FL	
	Tons (000s)	$ (Billions)	Tons (000s)	$ (Billions)	Tons (000s)	$ (Billions)
IMPORTS						
Africa	359	2,262	328	757	135	458
Canada	2	11	57	10	196	426
Eastern Asia	4,061	19,790	13,090	59,516	4,560	16,719
Europe	7,840	52,043	4,352	21,288	5,069	11,711
Mexico	44	0	161	56	616	2,373
Rest of Americas	2,762	9,434	2,400	5,259	10,625	46,994
SE Asia and Oceania	858	2,148	2,734	7,346	1,079	2,379
SW and Central Asia	2,076	10,273	2,355	10,588	405	1,182
EXPORTS						
Africa	1,660	7,375	1,068	1,694	529	3,332
Canada	-	-	-	-	1	8
Eastern Asia	2,201	5,767	9,154	15,753	628	925
Europe	6,448	32,659	9,160	24,206	1,384	5,525
Mexico	207	413	12	15	931	2,142
Rest of Americas	4,677	13,011	3,010	5,361	23,983	121,509
SE Asia and Oceania	423	720	3,573	13,001	300	339
SW and Central Asia	2,522	9,297	4,588	8,955	936	4,847

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Table E.30
SOUTH ATLANTIC PORTS WATERBORNE TRADE BY WORLD REGION
2011-2035 GROWTH
Source: Analysis of USDOT Freight Analysis Framework-3 data

Region	AF	CA	EA	EU	MEX	ROA	SE A &O	SW&C A
CAGR Import Tons	2.2%	2.1%	4.1%	3.4%	3.6%	3.3%	2.8%	• 2.8%
CAGR Export Tons	5.1%	6.7%	5.5%	4.3%	4.9%	4.7%	4.0%	• 4.5%

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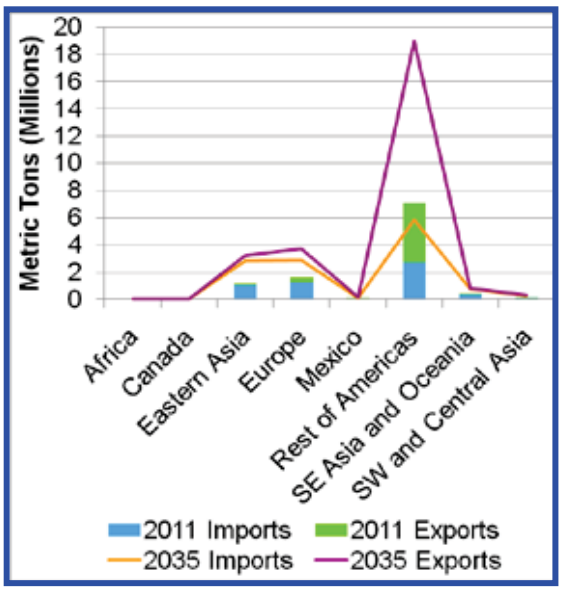
Figure E.25
SOUTH ATLANTIC PORTS WATERBORNE TRADE BY WORLD REGION
2011 AND 2035
(Metric Tons and Value)
Source: Analysis of USDOT *Freight Analysis Framework-3* data



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