

# THE DECISION TO PURSUE A 47 FT. CHANNEL DEPTH

*September 10, 2013*

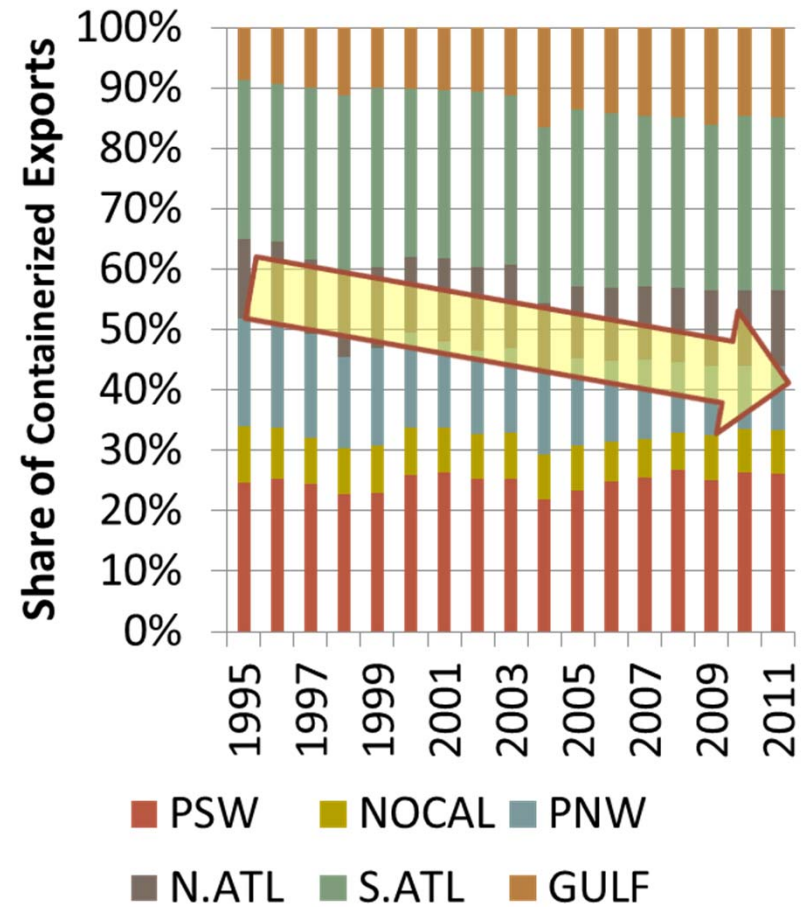
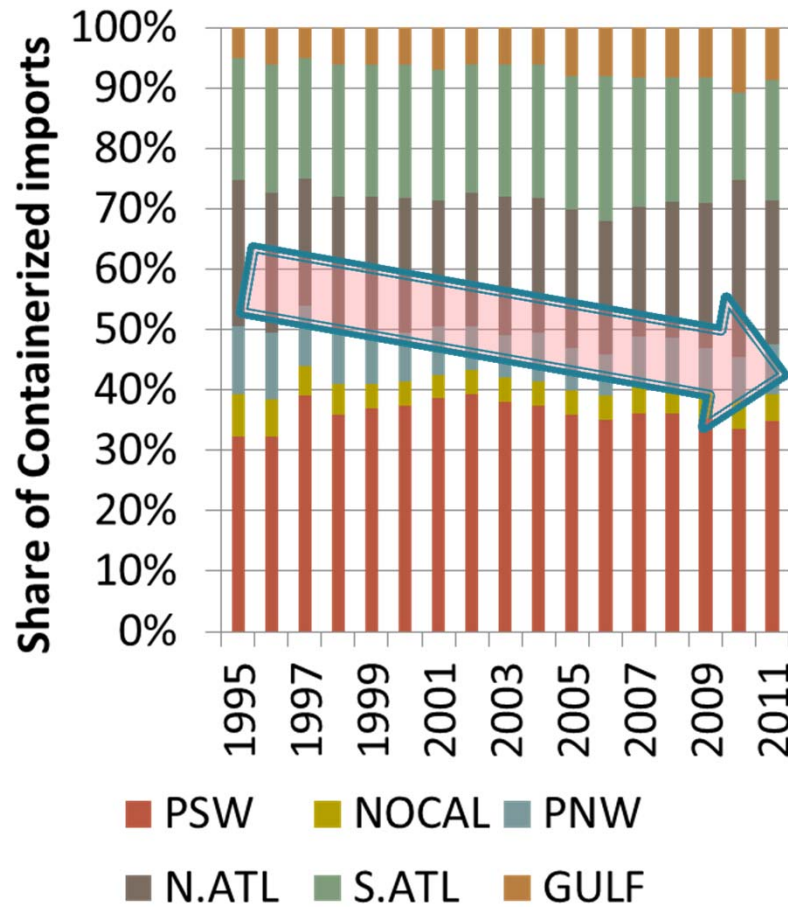
Prepared by:  
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[www.martinassoc.net](http://www.martinassoc.net)

Prepared for:



# DYNAMICS OF US CONTAINER MARKET

# West Coast Share of Containers Has Been Declining, while East and Gulf Coast Shares Have Been Increasing



## Shocks Have Occurred in the Existing Logistics Patterns of Importers/BCOs and These Changes Primarily Occurred Between 2002 and 2007



- **Consolidation of imports via San Pedro Bay (Los Angeles and Long Beach) Ports - mid 1990's:**
  - Distribution Center (DC) growth
  - Cross-dock operations
  - Rail investments in LA/LB to Midwest routings
- **But then...**
  - 9/11
  - West Coast Shutdown (2002)
  - Capacity issues – land and labor shortages
  - Rail and truck shortages
  - High intermodal rates
  - Search for alternatives
- **And more recently...**
  - Shifting production centers
  - Economic crisis
- ***Leads to growth in all-water services...***

# All-water Services Are Growing...

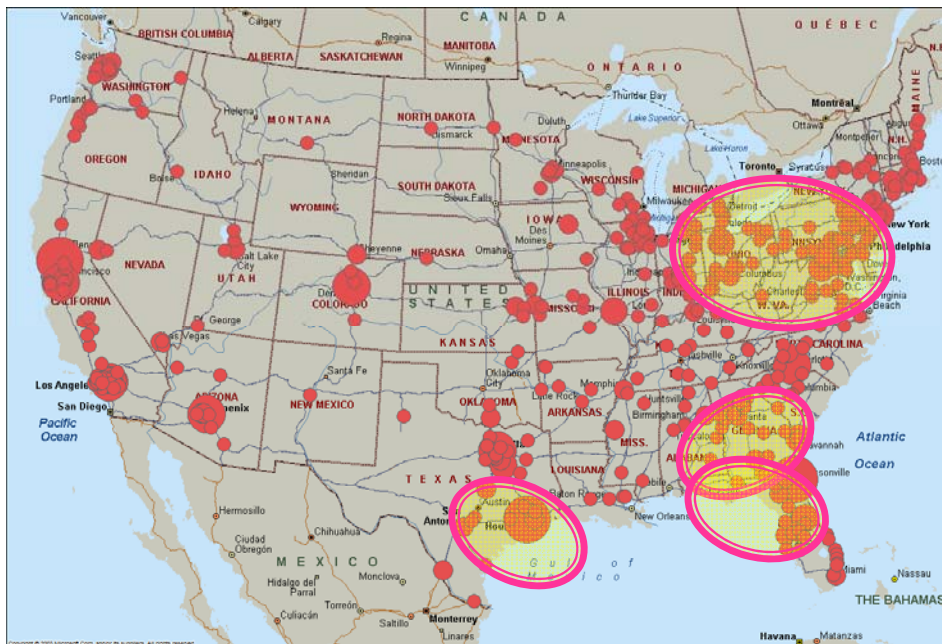
- Significant growth in distribution centers in Gulf and Atlantic port ranges
- Proximity to Southern Asia/India is a positive for Suez Canal routings
- With direct services to East and Gulf Coast, transit time differentials are narrowing
- Port infrastructure investment on East and Gulf Coasts has responded:
  - Terminal development
  - Rail infrastructure



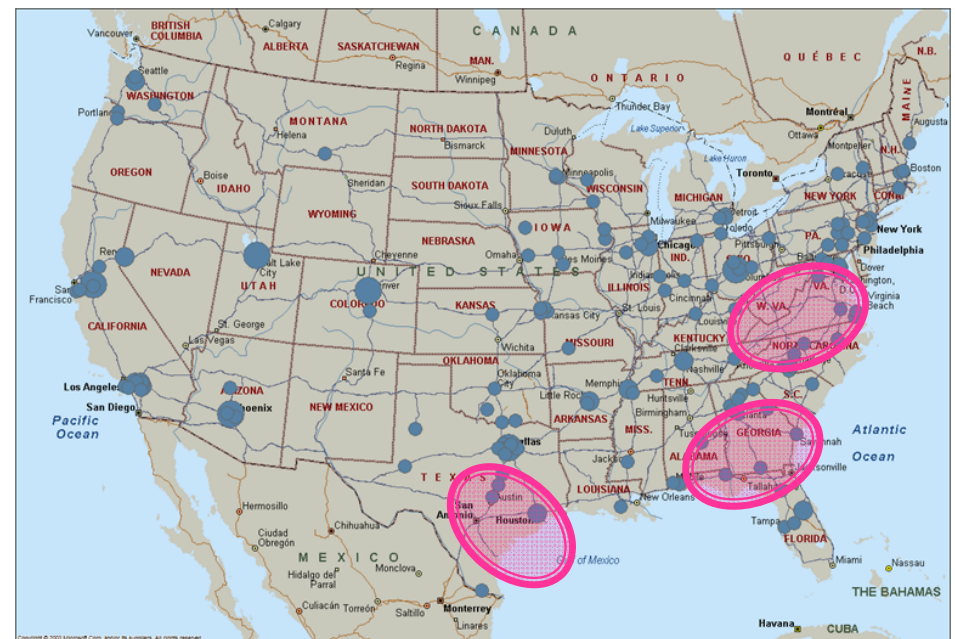
# Significant Growth in Distribution Centers in Gulf and Atlantic Port Ranges Has Driven Growth in All-Water Services.



## Top 25 Retailers



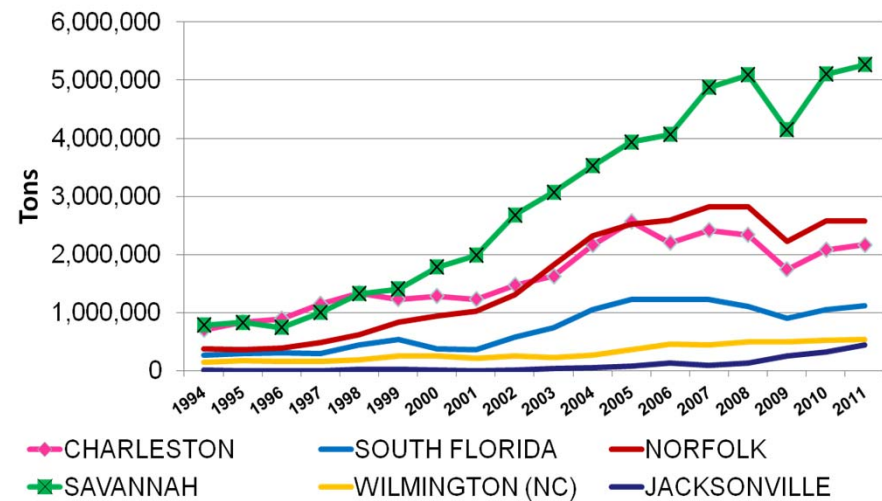
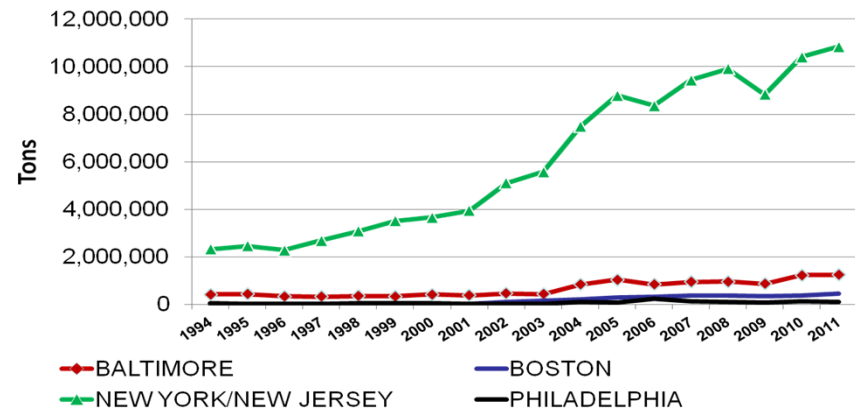
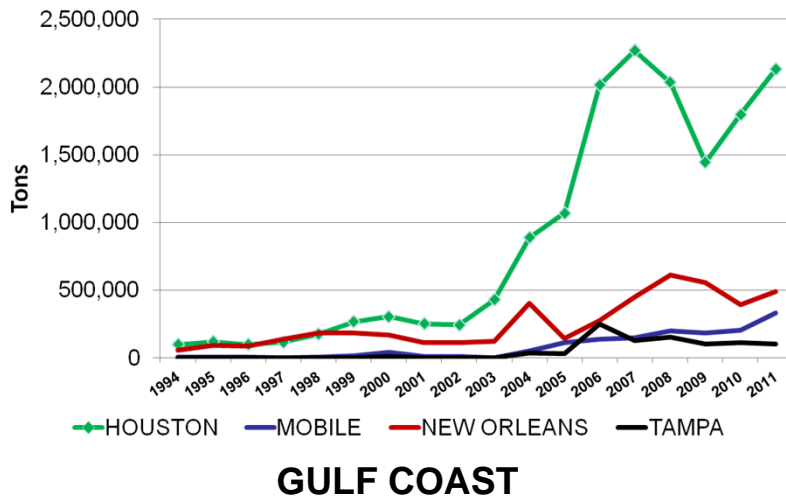
## 26-50 Retailers



**Three areas experiencing declining vacancies: LA, Chicago and Central PA - Lehigh Valley and I-78 Corridor**

Source: Chain Store Guide, National Retail Federation

# Growth in Imported Asian Container Tonnage in the North Atlantic, South Atlantic and Gulf Port Ranges



Source: US Bureau of Census, USA Trade Online

# Implications of Panama Canal Expansion and Growth in Suez Traffic on Atlantic and Gulf Coast Ports:

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- **After 2015, the composition of the fleet will likely change, as 6,500-8,000 TEU vessels will be deployed through Canal**
- **Actual volume increases through the Panama Canal into the US Atlantic and Gulf Coast may be less than anticipated:**
  - Shifts to all-water services have been occurring since 2002
  - Significant growth in all-water service depends on total logistics costs
  - Growth in trade with areas more efficiently served via Suez Canal
  - Caribbean transshipment centers will likely compete with mainland for import DCs
  - Growth in near-market sourcing may reduce trade with China in longer run

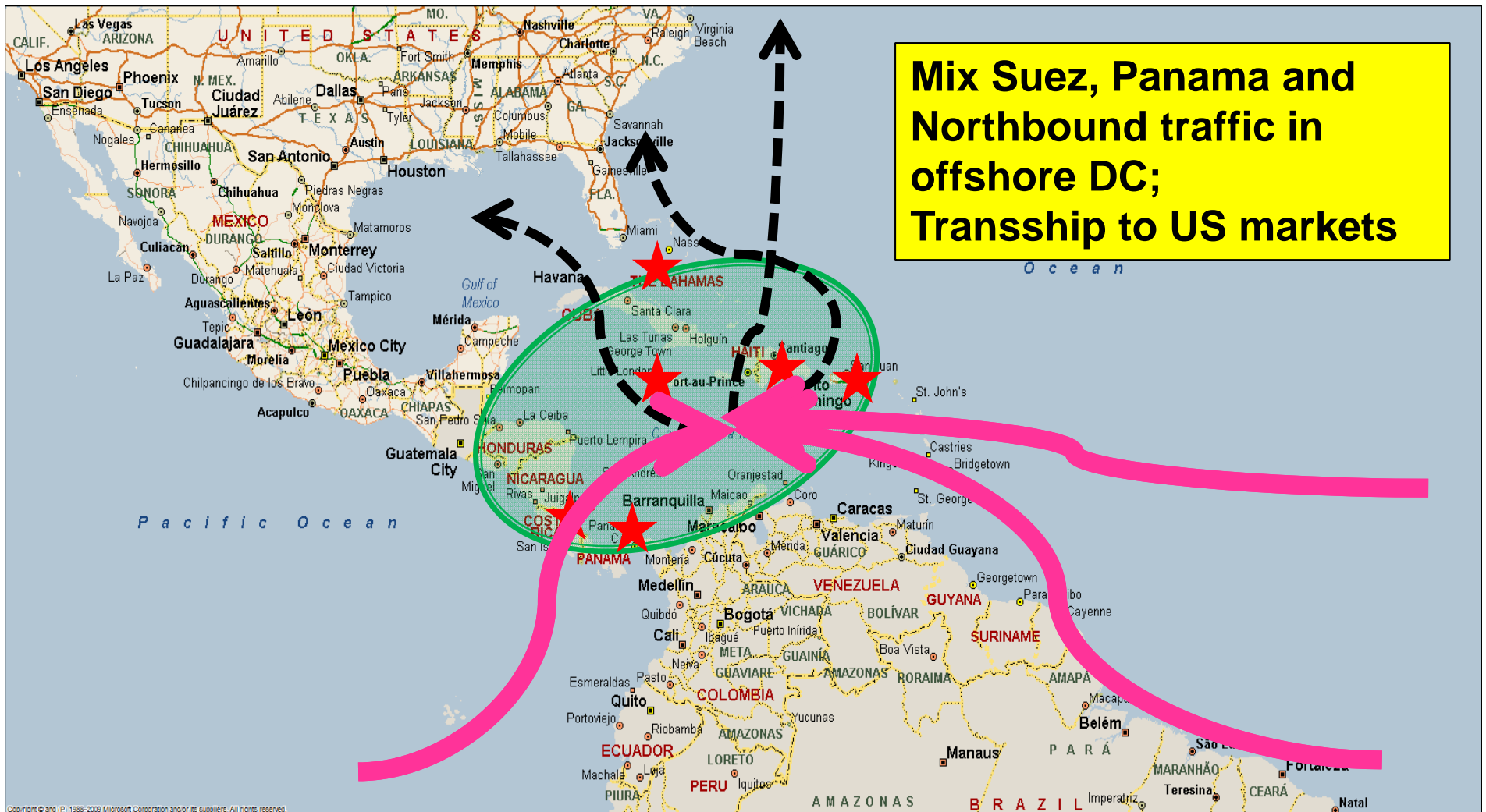


# Implications of Panama Canal Expansion and Growth in Suez Traffic on Atlantic and Gulf Coast Ports:



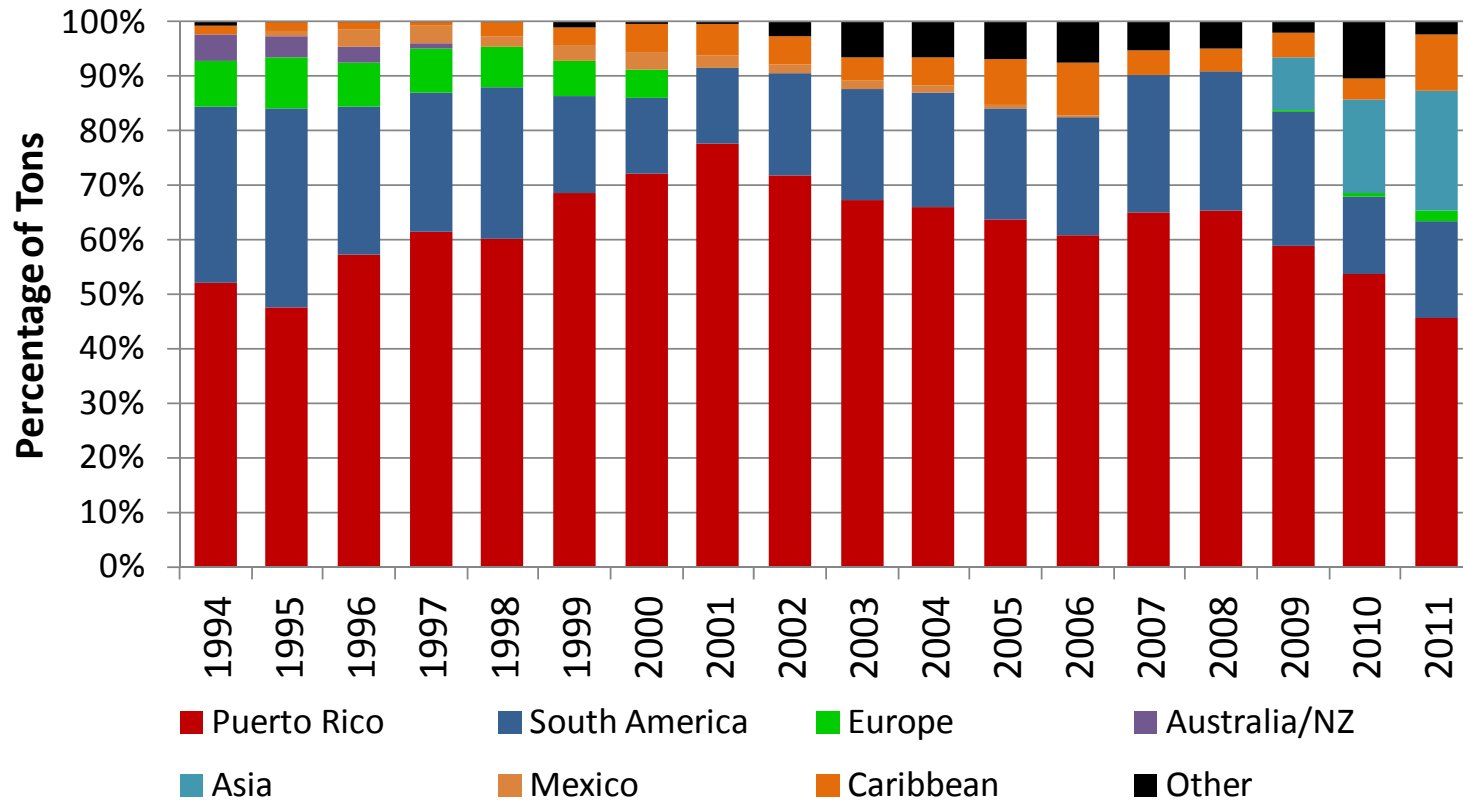
- **East and Gulf Coasts will have to compete to handle the larger sized vessels that will be deployed:**
  - Channel depth
  - Berth capacity
  - Crane outreach capability
  - Air draft and environmental
  - *All require capital investment*
- **East and Gulf Coast ports will need to compete for:**
  - Local market
  - Access to discretionary cargo for both truck and rail
- **Investment in port infrastructure becomes critical to compete with Caribbean transshipment hubs for development of logistics centers and off-shore distribution**

# Investment in Port Infrastructure Is Critical to Compete with Caribbean Transshipment Hubs for Development of Logistics Centers



# THE SITUATION AT JAXPORT

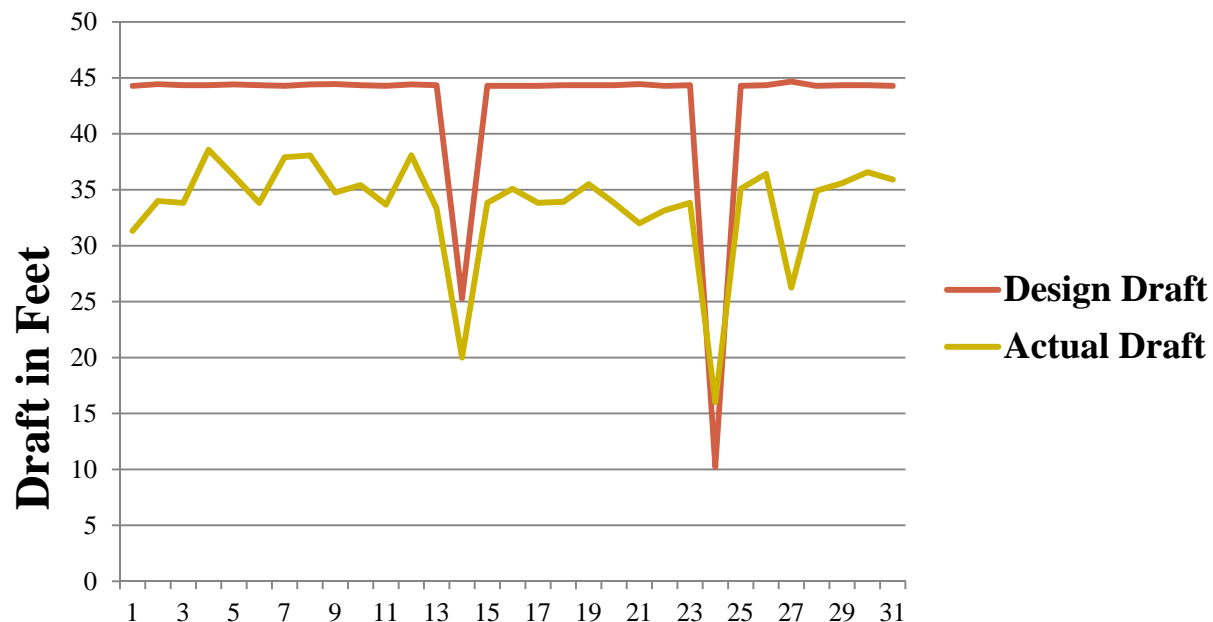
# JAXPORT Container Trade by Partner, Asia is the Growing Market



# Implications of Channel Restrictions of St. Johns River



- The current Asian services fleet calling MOL/TraPac terminal has a design draft of about 45 ft.



- If two feet under keel is required by the pilots, a channel of 47 ft. would be required to accommodate the current fleet prior to the Panama Canal expansion

## **Cost Implications to the Vessel Operator of Less than Optimal Utilization of the Vessel Under Existing Channel Depth**

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- **Average arrival/departure draft of vessels calling MOL/TraPac terminal is about 34.65 ft. compared to a 45 ft. average design draft for a first inbound/last outbound port call currently**
- **This current draft restriction has a significant impact on the cost of a first inbound port call, or a last outbound port call, resulting in an 80% increase in voyage costs per container over a full utilization of the vessel at its 45 ft. design draft**

## Even with a 45 ft. Channel Depth, the Current Vessel Fleet Economies Cannot be Optimized

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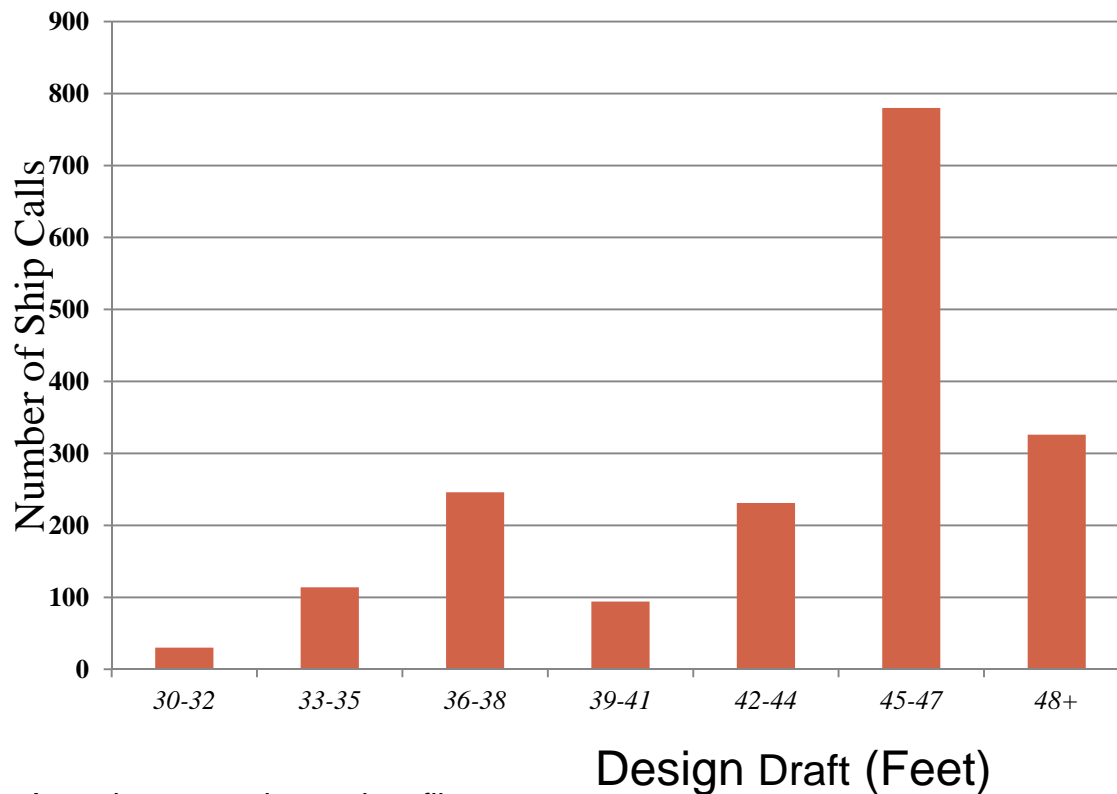


- With 2 ft. under keel clearance, the vessel draft would be limited to 43 ft.
- Under *the current fleet*, and a 43 ft. maximum draft, the cost penalty to the vessel operator would be about 6% per container for a first inbound/last outbound call

# Composition of Current Trans-Pacific Container Fleet at West Coast Port will Dictate New All Water Vessel Size



Current Distribution of Container Vessel Calls at West Coast Port, by Design Draft



Source: Martin Associates proprietary data file



# 43% of the Current Container Order Book Consists of Vessels In Excess of 8,000 TEUs



TEU Size Class	Current Fleet	Order Book
<999	1,099	32
1000 < 1999	1,286	87
2000 < 3999	1,046	89
4000 < 5999	921	110
6000 < 7999	250	42
8000 < 9999	280	106
>= 10,000	<u>111</u>	<u>165</u>
Total	<b>4,993</b>	<b>631</b>

# Implications

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- With the Expansion of the Panama Canal and the increased use of the Suez Canal, the Asian all water fleet will increase in design draft, as the larger ships on the trans-Pacific routes will be deployed on the all water services
- Vessels with design drafts in excess of 45 ft. will become the standard deployed on the all water routings
- *This will require a channel depth of 47 ft. at the minimum with a 2 ft. under keel clearance to accommodate a first in-bound, last outbound port call*

# Impact of 45 Ft. Channel on Future All-Water Container Fleet after Canal Expansion

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- Martin Associates' voyage costing model was developed for a 7,000 TEU vessel with a 47 ft. design draft for a direct, first inbound call at JAXPORT or a last outbound port call on an Asian all water routing
  
- With a 45 ft. channel, and a 2 ft. under keel clearance (43 ft. maximum draft), the vessel operator would experience a 20-25% increase in voyage costs per container for a first inbound/last outbound call

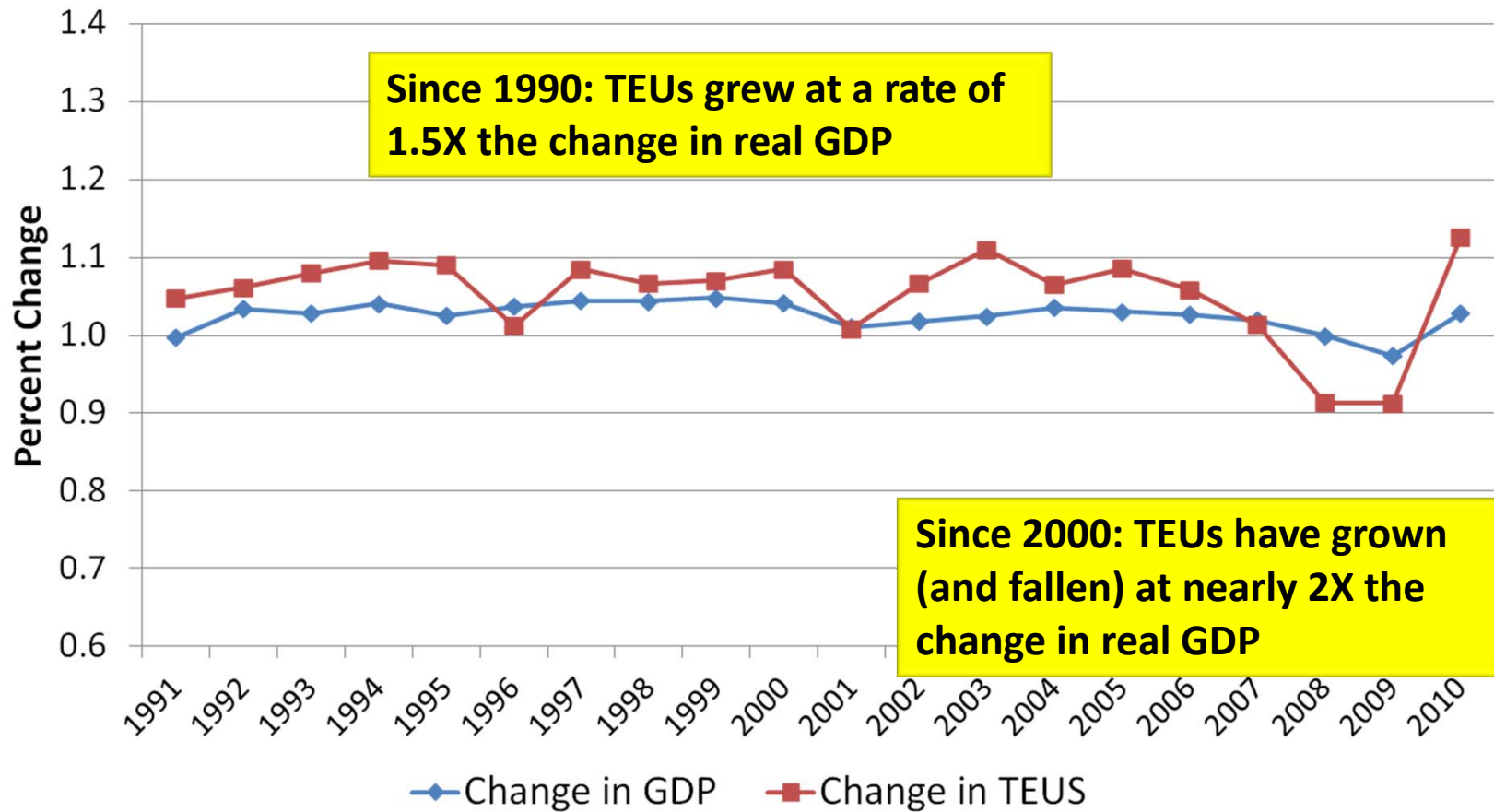
# Container Forecasts for JAXPORT

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- **Baseline- relationships with GDP and Container throughput:**
  - Puerto Rico: Low and High growth – Flat
  - Latin America/Caribbean: Low growth - 2% CAGR; High growth - 4% CAGR
  - Asian: Low growth - 3%; High growth - 6% through 2020, 4.5% 2021-2025, 3% 2025 and thereafter

# Historically, There Is a Strong Relationship Between the Changes in Containerized Cargo & GDP



# Container Projections for JAXPORT



- **Capture of Florida containers moving via non-Florida ports – 3.1 million TEUs of potential:**
  - 1 million TEUs of warehoused cargo now trucked into Florida from Atlanta, Savannah, and West Coast DC's (transloaded cargo)
  - 160,000 TEUs of Asian imports directly from West Coast and South Atlantic ports now consumed in Florida
  - 107,300 TEUs of non-Asian Cargo now moving via other Florida ports and consumed in Florida
  - Plus 1.8 million empty and loaded TEUs from Florida using other ports
- **25% of the potential captured by Florida ports and 1/3 of that moves via JAXPORT – with 47 ft. and moderate marketing**
- **50% of potential captured by Florida ports and 1/3 moves via JAXPORT – with 47 ft. and aggressive marketing**

# JAXPORT Can Cost Effectively Compete for Florida Import Market, Under Current Conditions, Assuming Milepoint is Fixed and With Deepening at JAXPORT to Compete with Other Ports



DC SITE - ORLANDO/I-4 CORRIDOR				Los Angeles 6000	Los Angeles 6000	
Port of Entry, Vessel Size	South FLA 4800	NE FLA 4800	Gulf FLA 4800	Savannah 4800	ATL intermodal	ORL intermodal
DC Square Footage	250,000	250,000	250,000	250,000	250,000	250,000
Subtotal Vessel	\$2,249	\$2,287	\$2,234	\$2,291	\$1,047	\$1,047
Subtotal Intermodal to Ramp	\$0	\$0	\$0	\$0	\$1,150	\$1,400
Subtotal Truck/Drayage to DC	\$516	\$336	\$200	\$670	\$1,047	\$150
Subtotal Average DC Lease Cost	\$229	\$229	\$229	\$229	\$229	\$229
Subtotal Truck/Drayage DC to Retail	\$330	\$330	\$330	\$330	\$330	\$330
<b>Total Cost via Truck</b>	<b>\$3,324</b>	<b>\$3,183</b>	<b>\$2,994</b>	<b>\$3,521</b>		
<b>Total Cost via Intermodal Rail</b>					<b>\$3,803</b>	<b>\$3,156</b>
DC SITE - JACKSONVILLE/DUVAL COUNTY				Los Angeles 6000	Los Angeles 6000	
Port of Entry, Vessel Size	South FLA 4800	NE FLA 4800	Gulf FLA 4800	Savannah 4800	ATL intermodal	JAX intermodal
DC Square Footage	250,000	250,000	250,000	250,000	250,000	250,000
Subtotal Vessel	\$2,249	\$2,287	\$2,234	\$2,291	\$1,047	\$1,047
Subtotal Intermodal to Ramp	\$553	\$0	\$0	\$0	\$1,150	\$1,250
Subtotal Truck/Drayage to DC	\$812	\$80	\$537	\$332	\$823	\$150
Subtotal Average DC Lease Cost	\$172	\$172	\$172	\$172	\$172	\$172
Subtotal Truck/Drayage DC to Retail	\$551	\$551	\$551	\$551	\$551	\$551
<b>Total Cost via Truck</b>	<b>\$3,784</b>	<b>\$3,090</b>	<b>\$3,494</b>	<b>\$3,345</b>		
<b>Total Cost via Intermodal Rail</b>	<b>\$3,525</b>				<b>\$3,743</b>	<b>\$3,170</b>
DC SITE - HIALEAH				Los Angeles 6000	Los Angeles 6000	
Port of Entry, Vessel Size	South FLA 4800	NE FLA 4800	Gulf FLA 4800	Savannah 4800	ATL intermodal	ORL intermodal
DC Square Footage	250,000	250,000	250,000	250,000	250,000	250,000
Subtotal Vessel	\$2,249	\$2,287	\$2,234	\$2,291	\$1,047	\$1,047
Subtotal Intermodal to Ramp	\$0	\$513	\$0	\$681	\$1,150	\$1,400
Subtotal Truck/Drayage to DC	\$110	\$845	\$670	\$1,169	\$1,591	\$516
Subtotal Average DC Lease Cost	\$203	\$203	\$203	\$203	\$203	\$203
Subtotal Truck/Drayage DC to Retail	\$413	\$413	\$413	\$413	\$413	\$413
<b>Total Cost via Truck</b>	<b>\$2,974</b>	<b>\$3,747</b>	<b>\$3,520</b>	<b>\$4,076</b>		
<b>Total Cost via Intermodal Rail</b>		<b>\$3,416</b>		<b>\$3,588</b>	<b>\$4,404</b>	<b>\$3,579</b>
DC SITE - MEDLEY				Los Angeles 6000	Los Angeles 6000	
Port of Entry, Vessel Size	South FLA 4800	NE FLA 4800	Gulf FLA 4800	Savannah 4800	ATL intermodal	ORL intermodal
DC Square Footage	250,000	250,000	250,000	250,000	250,000	250,000
Subtotal Vessel	\$2,249	\$2,287	\$2,234	\$2,291	\$1,047	\$1,047
Subtotal Intermodal to Ramp	\$0	\$513	\$0	\$663	\$1,150	\$1,400
Subtotal Truck/Drayage to DC	\$110	\$845	\$670	\$1,169	\$1,582	\$516
Subtotal Average DC Lease Cost	\$265	\$265	\$265	\$265	\$265	\$265
Subtotal Truck/Drayage DC to Retail	\$413	\$413	\$413	\$413	\$413	\$413
<b>Total Cost via Truck</b>	<b>\$3,037</b>	<b>\$3,810</b>	<b>\$3,583</b>	<b>\$4,138</b>		
<b>Total Cost via Intermodal Rail</b>		<b>\$3,475</b>		<b>\$3,633</b>	<b>\$4,457</b>	<b>\$3,641</b>

# Container Projections for JAXPORT

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- **With 47 ft. of water and development of ICTF, JAXPORT can capture 25% share of TEUs moving intermodally via other South Atlantic ports - about 126,000 TEUs**
- **Without 47 ft. of water, JAXPORT will be handicapped to compete for this intermodal market**

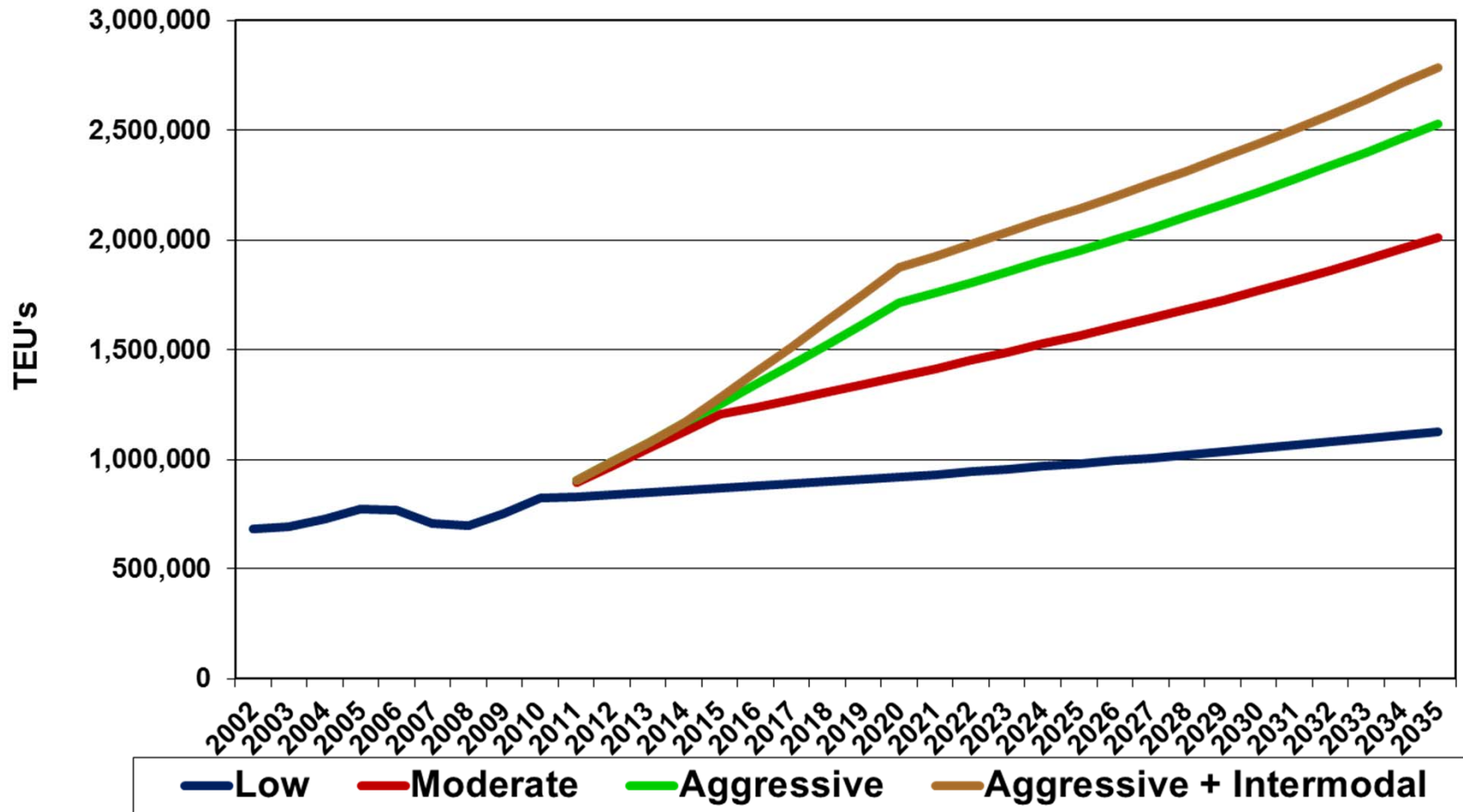


# With a 47 ft. Channel, JAXPORT Can Compete for Intermodal Service into Atlanta



PRE	Hong Kong Routing	Atlanta
4800	New York	\$3,648
4800	Norfolk	\$4,056
4800	Savannah	\$3,161
4800	Jacksonville	\$3,046
4800	Port Everglades	\$3,115
4800	Miami	\$3,198
4800	Houston	\$3,597
6000	Los Angeles	\$3,256
6000	Oakland	\$3,450
6000	Seattle/Tacoma	\$4,866
<b>PRE</b>	<b>Least Cost (JAXPORT) to Savannah Differential</b>	<b>(\$115)</b>
POST	Hong Kong Routing	Atlanta
7000	New York	\$2,888
7000	Norfolk	\$3,307
7000	Savannah	\$2,424
7000	Jacksonville	\$2,312
7000	Port Everglades	\$2,400
7000	Miami	\$2,402
7000	Houston	\$2,878
8500	Los Angeles	\$2,797
8500	Oakland	\$3,015
8500	Seattle/Tacoma	\$4,451
<b>POST</b>	<b>Least Cost (JAXPORT) to Savannah Differential</b>	<b>(\$112)</b>

# Summary of JAXPORT Container Forecasts Assuming the 47 ft. Depth



# Opportunity Cost Under Status Quo (40 ft.)

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- **Asian market will likely disappear at JAXPORT by 2015**
- **No additional all-water Asian service will come to JAXPORT**
- **JAXPORT will not capture the non-Florida ports' share of Florida containers**
- **JAXPORT will not capture share of South Atlantic intermodal market**

# Opportunity Cost Under 45 ft. Channel

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- **Asian market will be served via a feeder operation, not a first inbound/last outbound port of call**
- **No additional all-water Asian service will likely come to JAXPORT**
- **JAXPORT will not capture the non-Florida ports' share of Florida containers**
- **JAXPORT will not capture share of other South Atlantic intermodal business**

# Opportunity Cost of Deepening Scenarios less than 47 Ft.



## Status Quo (40 FT)

TEU Projections Scenarios	2020	2025	2030	2035
Low and No Deepening	732,816	762,889	796,093	832,752
Moderate Penetration with 47ft.	1,379,800	1,566,364	1,769,642	2,010,604
Aggressive Penetration with Deepening to 47ft.	1,713,294	1,952,976	2,217,831	2,530,178
Aggressive with 47ft. + Intermodal Penetration	1,877,695	2,143,562	2,438,772	2,786,309
<b>Maximum Opportunity Cost of no Deepening (TEUS)</b>	<b>1,144,879</b>	<b>1,380,672</b>	<b>1,642,680</b>	<b>1,953,557</b>

## Deepening to 45 Ft.

TEU Projections Scenarios	2020	2025	2030	2035
Low and Deepening to 45 ft.	921,603	981,746	1,049,807	1,126,877
Moderate Penetration with 47ft.	1,379,800	1,566,364	1,769,642	2,010,604
Aggressive Penetration with Deepening to 47ft.	1,713,294	1,952,976	2,217,831	2,530,178
Aggressive with 47ft. + Intermodal Penetration	1,877,695	2,143,562	2,438,772	2,786,309
<b>Maximum Opportunity Cost of 45 ft. Channel (TEUS)</b>	<b>956,092</b>	<b>1,161,816</b>	<b>1,388,965</b>	<b>1,659,432</b>

# Opportunity Cost of Not Deepening to Minimum 47 ft.

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- **Loss of first inbound port call:**
  - Distribution center development
  - Discretionary regional market penetration
  - Compete with off-shore transshipment centers
  - Manufacturing complex development
- **Loss of last outbound port call:**
  - Ability to handle heavy weight exports
  - Attract export manufacturing companies by providing longer cut-off times
- **Loss of development of import distribution centers/logistics center and light manufacturing**

# Projected Economic Impact of JAXPORT by Channel Depth Assumption

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- **Detailed cargo projections developed by Martin Associates as part of Jacksonville Port Authority Strategic Plan, Business and Market Analysis (2012):**
  - Container traffic by trade lane
  - Auto/Ro-Ro
  - Break bulk cargo:
    - Lumber
    - Paper/pulp
    - Steel
    - Aluminum
  - Dry Bulk
  - Liquid bulk
- **Compare Projected Economic Impact at 40 ft., 45 ft. and 47 ft. Channel**

# Economic Impact Model of JAXPORT

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- **Economic impact model developed in 2009**
- **Based on a 100% survey of Tenants and service providers – 410 interviews**
- **Survey data used to develop detailed terminal specific direct impact models**
- **Induced impact model developed for Jacksonville region using:**
  - Consumer Expenditure Survey for Jacksonville region
  - US Bureau Census data for retail and wholesale activities for Jacksonville Region
  - US Bureau of Economic Analysis, RIMS II for Jacksonville Region, for waterborne commerce
- **Indirect model developed from actual survey data combined with US Bureau of Economic Analysis RIMS II**
- **Sensitivity models then developed to evaluate changes in:**
  - Tonnage
  - Modal split
  - Labor productivity
  - New markets, carriers
  - Lost markets, carriers



# Opportunity Cost of Status Quo Compared to 47 Ft. Channel



TEU Projections Scenarios	2020	2025	2030	2035
Low and No Deepening	732,816	762,889	796,093	832,752
Moderate Penetration with 47ft.	1,379,800	1,566,364	1,769,642	2,010,604
Aggressive Penetration with Deepening to 47ft.	1,713,294	1,952,976	2,217,831	2,530,178
Aggressive with 47ft. + Intermodal Penetration	1,877,695	2,143,562	2,438,772	2,786,309
<b>Maximum Opportunity Cost of No Deepening (TEUS)</b>	<b>1,144,879</b>	<b>1,380,672</b>	<b>1,642,680</b>	<b>1,953,557</b>
Opportunity Cost in Terms of Lost Economic Impacts	2020	2025	2030	2035
<b>Jobs</b>				
Direct	3,274	3,949	4,699	5,587
Induced	3,015	3,636	4,326	5,145
Indirect	<u>1,824</u>	<u>2,199</u>	<u>2,617</u>	<u>3,112</u>
<b>Total</b>	<b>8,113</b>	<b>9,784</b>	<b>11,642</b>	<b>13,844</b>
<b>Personal Income (1,000)</b>				
Direct	\$131,660	\$158,776	\$188,907	\$224,657
Re-spending/Local Consumption	\$383,683	\$462,704	\$550,511	\$654,695
Indirect	<u>\$76,337</u>	<u>\$92,060</u>	<u>\$109,530</u>	<u>\$130,259</u>
<b>Total</b>	<b>\$591,680</b>	<b>\$713,540</b>	<b>\$848,948</b>	<b>\$1,009,611</b>
<b>Business Revenue (1,000)</b>	<b>\$492,250</b>	<b>\$593,632</b>	<b>\$706,284</b>	<b>\$839,948</b>
<b>Local Purchases (1,000)</b>	<b>\$150,045</b>	<b>\$180,948</b>	<b>\$215,286</b>	<b>\$256,029</b>
<b>State/Local Taxes (1,000)</b>	<b>\$54,435</b>	<b>\$65,646</b>	<b>\$78,103</b>	<b>\$92,884</b>

**NPV of State/Local Taxes: \$670.7 million at 5% and \$786.9 million at 3.75% discount rate over 22 years**

## **Marine Cargo Economic Impact Studies by Martin Associates - over 500 since 1986**

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- **All Ports in Florida**
- **Houston and all other Ports in Texas**
- **Gulf Coast Ports - New Orleans, Mobile, Gulfport, Lake Charles**
- **Baltimore, Norfolk, Philadelphia, Boston, Wilmington (DE), Providence, RI**
- **Virginia Ports**
- **California Ports - San Diego to Sacramento**
- **North Carolina Ports**
- **All Ports on the Great Lakes, US and Canada**

# Marine Cargo

## Economic Impact Studies

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- **Developed Economic Impact of All US Ports for AAPA**
- **Economic Impact of Hurricanes Katrina and Ike**
- **Developed Economic Impact of Container Operations at all US Ports – World Shipping Council**
- **Economic Impact of West Coast Container Operations – PMA**
- **State of Florida Economic Impacts of Florida Seaports**
- **State of Texas Economic Impacts of Texas seaports**
- **Economic Impact of West Coast Shutdown, 2002**
- **Economic Impact of Section 201 Steel Import Quotas**
- **Economic Impact of Channel Deepening for numerous ports and USACE**
- **Economic impact studies have been reviewed and used by Federal Reserve Board, International Trade Commission, US Council of Economic Advisors**