Port Complex
Market and Feasibility Analysis

December 22, 2009

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The objective of this analysis was to analyze the competitiveness of a major container port in Louisiana

Louisiana Economic Development (LED) and the Department of Transportation and Development (DOTD) asked two fundamental questions:

1. How attractive is Louisiana as a center for container shipping, given forecasted trade flows?

2. If the analysis shows Louisiana can be a competitive major container port, how can the State best support that goal?

We received input and cooperation from key stakeholders and subject matter experts

Representative Interviews[1]

- **Port of New Orleans**
  - Gary LaGrange, Pres. & CEO
  - Patrick Gallwey, COO
  - Robert Landry, Dir. of Marketing
  - Ted Knight, Exec. Asst. for Ops.
  - Matt Gresham, Leg. Liaison
  - Andree Fant, Mngr. Terminal Ops.
  - Terry Laughlin, N.O. Terminal
- **Port of South Louisiana**
  - Joel Chaisson, Executive Director
- **SeaPoint**
  - W. J. Amoss
  - Jonathan Red
- **Port of Baton Rouge**
  - Jay Hardman, Executive Director
- **LIGTT**
  - John Vickerman
- **Ports Association of Louisiana**
  - Joe Accardo
- **State Legislators**
  - Sen. Joel Chaisson
  - Sen. A.G. Crowe
  - Sen. David Heitmeier
  - Sen. Joe McPherson
  - Rep. Jim Tucker
  - Rep. Nita Hutter
- **New Orleans Belt Railroad**
  - Jim Bridger, GM
  - Robert Kollmar
- **JPMorgan Chase**
  - John Kallenborn
- **Non-Louisiana Ports**
  - Baltimore
  - Charleston
  - Gulfport
  - Houston
  - Jacksonville
  - LA/Long Beach
  - NY/NJ
  - Oakland
  - Port Everglades
  - Portland
  - Seattle
  - Tacoma
- **Plaquemines Parish**
  - President Billy Nungesser
  - Parish Council
- **Shipping Lines**
  - A.P. Moller-Maersk
  - CMA – CGM
  - American President Lines
  - Hanjin
  - NYK
- **Railroads:**
  - BNSF
  - CN
  - KCS
- **Marine Industry Experts**
  - Dr. Robert McCalla – Saint Mary's University, Halifax, Nova Scotia
  - Dr. Brian Slack – Concordia University, Montreal, Quebec

(1) Not a comprehensive list

We evaluated Louisiana's competitiveness based on economics, stakeholder input and the Port Attractiveness Framework

1 **Cost & Time Economics Model**

(At Sea Costs + Inland Transit Costs + Carrying Costs)

2 **Louisiana Stakeholders and Subject Matter Experts Interviews**

3 **Shipping Line and Railroad Interviews**

4 **Port Attractiveness Framework**

Source: A.T. Kearney Analysis

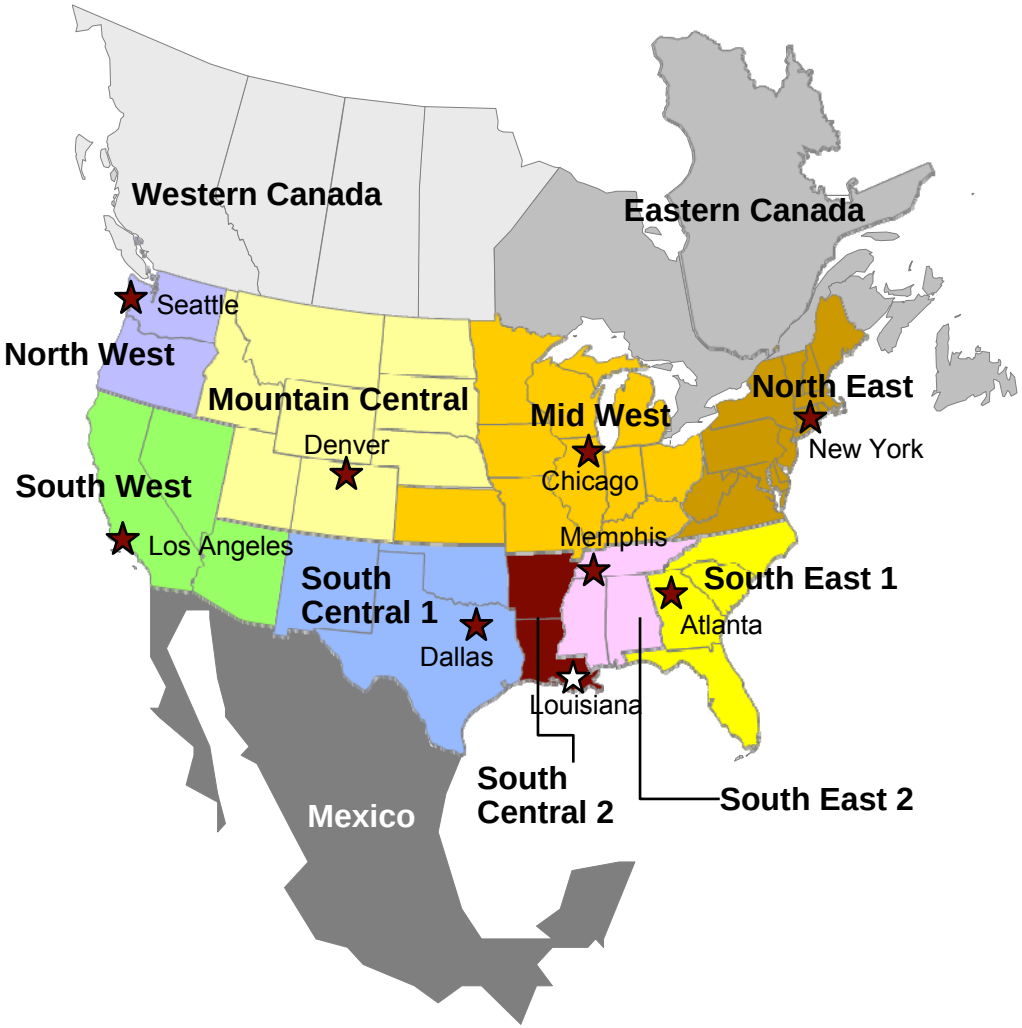
First we developed an understanding of the ocean timing and costs for five major trade lanes

Time (days) and Distance (miles) for Select Global Trade Routes

Sample Trade Lanes

Source: AXSMarine; A.T. Kearney Analysis

We segmented North America into thirteen different markets, including nine in the U.S.

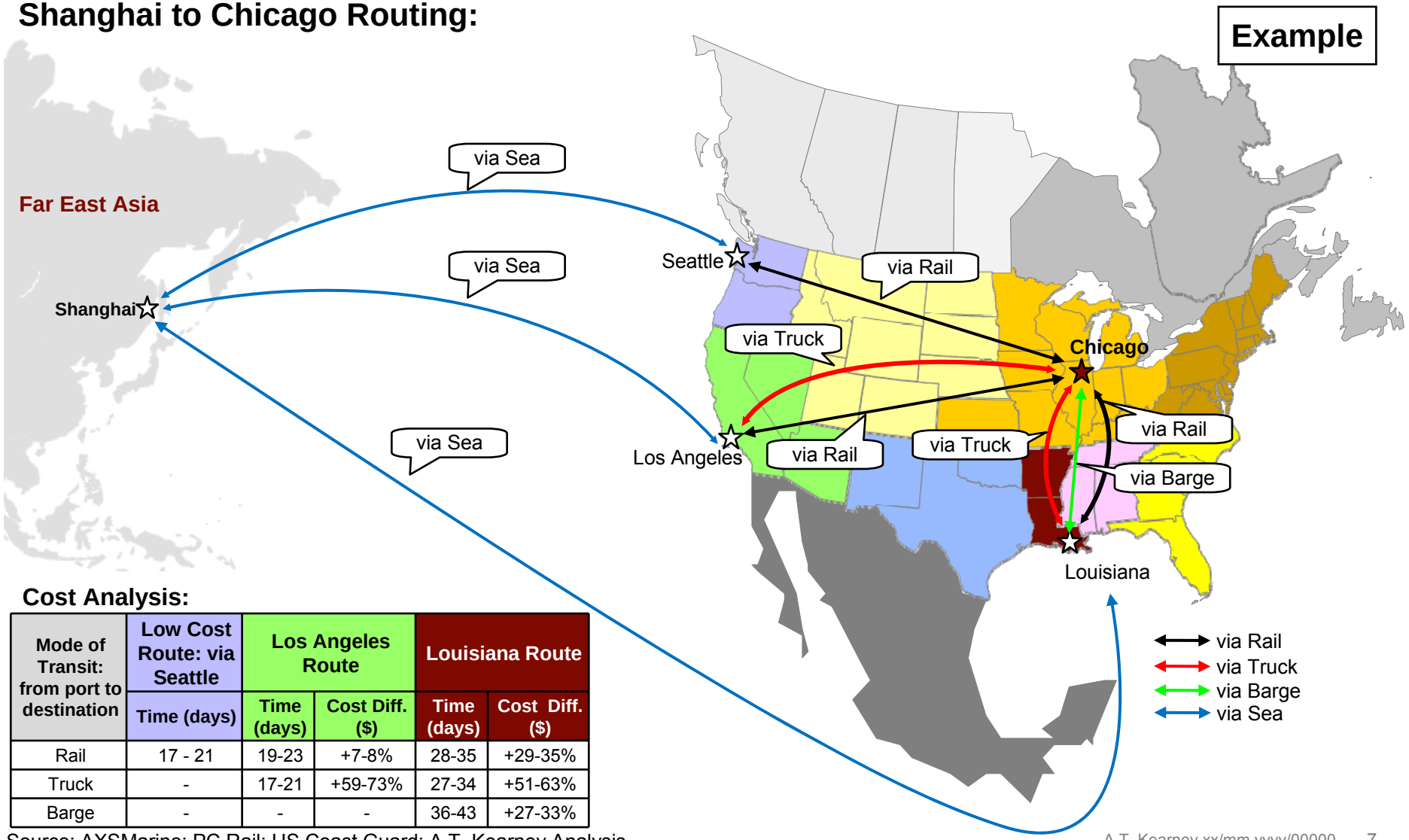


North American Markets	
	North West Market (Seattle)
	South West Market (Los Angeles)
	Mountain Central Market (Denver)
	South Central 1 Market (Dallas)
	South Central 2 Market (Louisiana)
	Mid West Market (Chicago)
	South East 1 Market (Memphis)
	South East 2 Market (Atlanta)
	North East Market (New York)
	Eastern Canada Market
	Western Canada Market
	Mexico Market
	Other Market (1)

Notes: (1) Other region (not shown) includes Alaska, Hawaii, Puerto Rico and US Virgin Islands
Source: AAPA; US Trade Online; A.T. Kearney Analysis

We modeled end-to-end shipping costs and time for different modes of transportation along each trade lane

Shanghai to Chicago Routing:

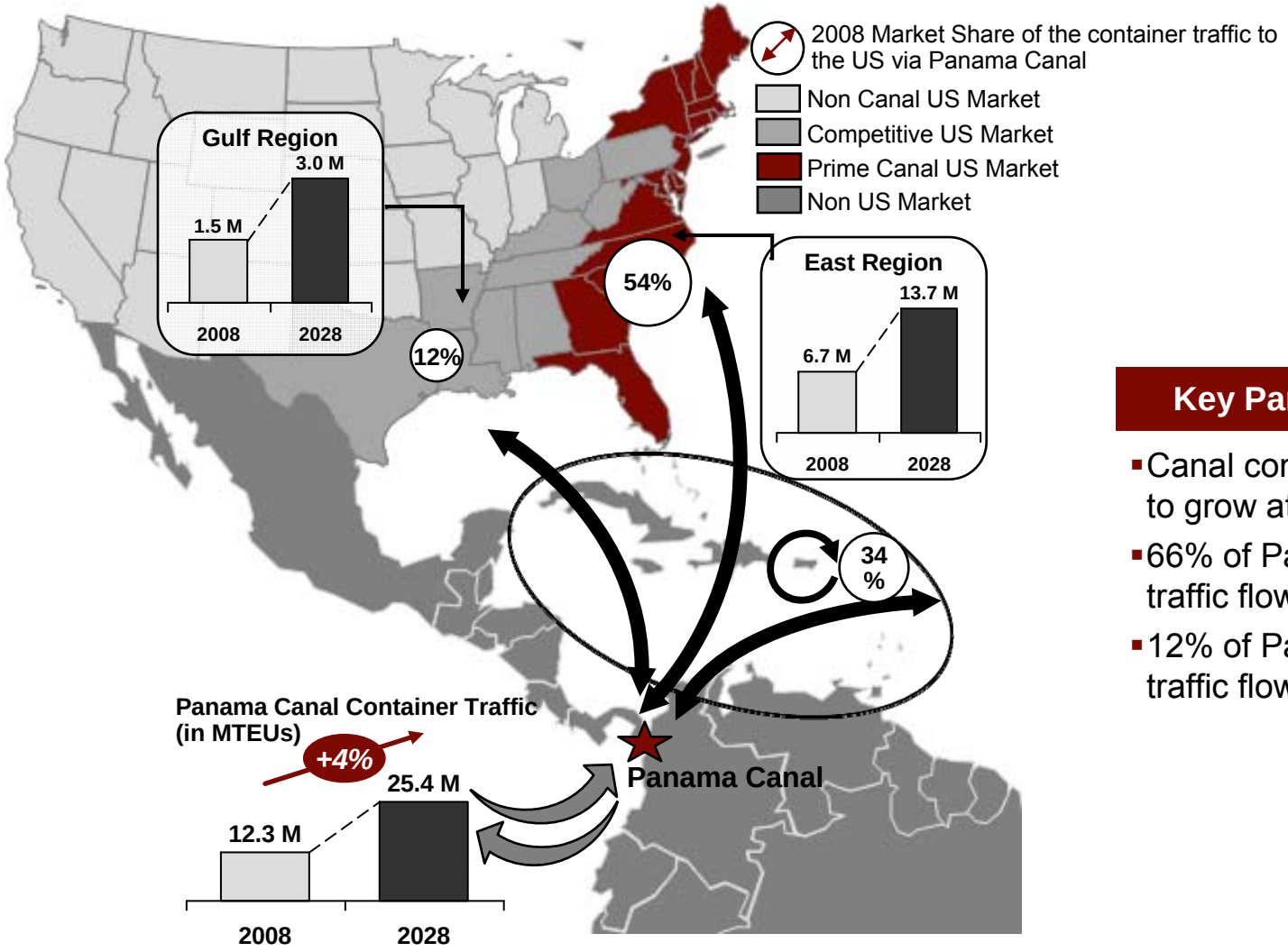


Cost Analysis:

Mode of Transit: from port to destination	Low Cost Route: via Seattle	Los Angeles Route		Louisiana Route	
	Time (days)	Time (days)	Cost Diff. ($)	Time (days)	Cost Diff. ($)
Rail	17 - 21	19-23	+7-8%	28-35	+29-35%
Truck	-	17-21	+59-73%	27-34	+51-63%
Barge	-	-	-	36-43	+27-33%

Source: AXSMarine; PC Rail; US Coast Guard; A.T. Kearney Analysis

While the Panama Canal will generate 3 MTEU for Gulf ports in 2028, East Coast ports will be the main beneficiaries



Key Panama Canal Insights

- Canal container traffic is expected to grow at 4% CAGR
- 66% of Panama Canal cargo traffic flows to/from the U.S.
- 12% of Panama Canal cargo traffic flows to/from the Gulf

Source: ACP Panama Canal Expansion ; USA Trade Online; The Economist; A.T. Kearney Analysis

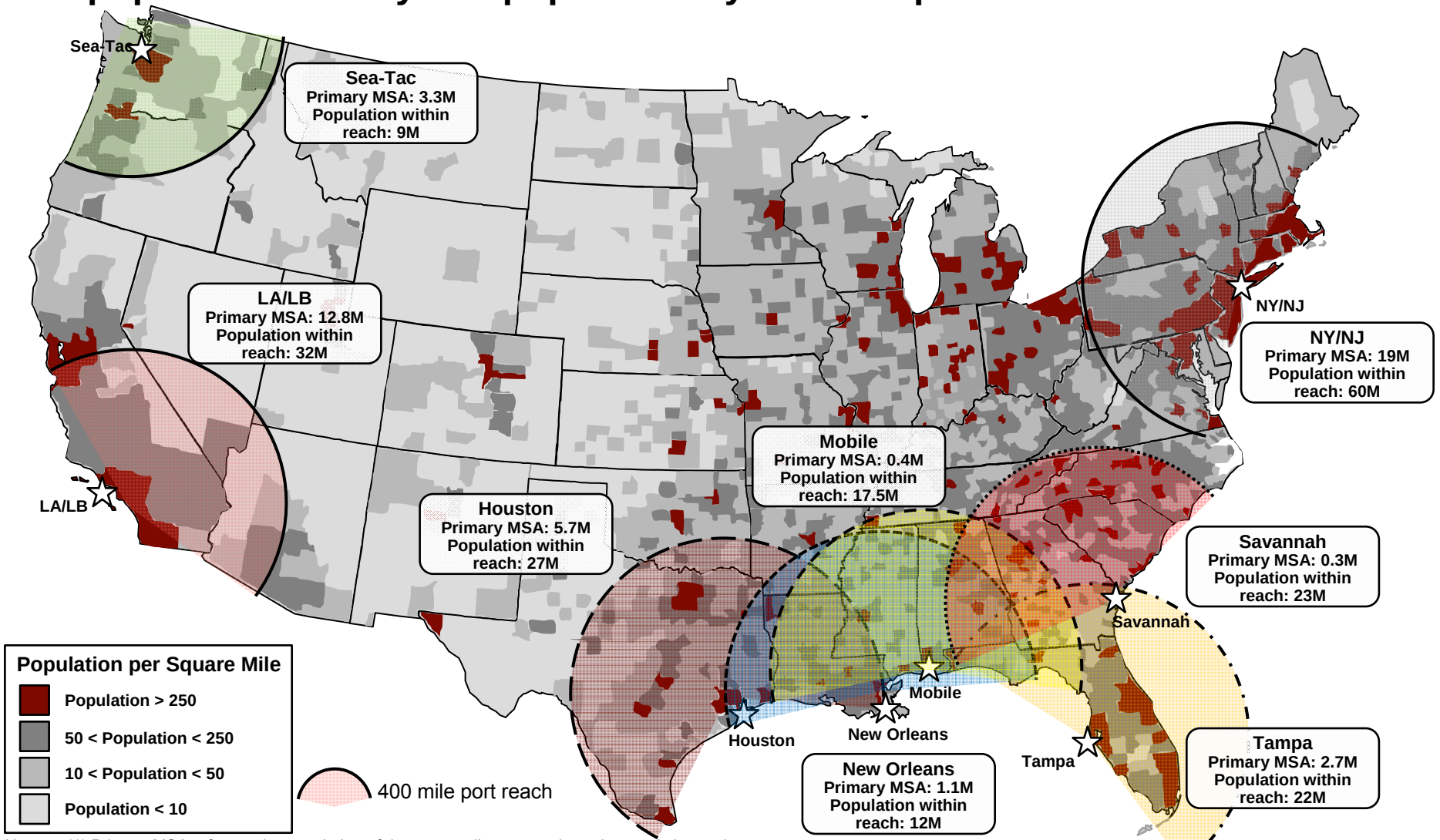
Caribbean ports have a timing advantage of two to three days due to the out-of-route location of Gulf ports

Shipping Region	Shipping time (days)		Percent out-of-route
	Best Option (port)	Louisiana	
Europe (Hamburg)	12 - 13 (Freeport)	14 – 15	+15 - 17%
South America East (Santos)	12 - 13 (Kingston)	15 – 16	+19 - 21%
South America West (Valparaiso)	9 - 10 (Kingston)	11 – 12	+22 - 24%
Africa (Algeria)	11 - 12 (San Juan)	14 – 15	+25 - 27%
Asia (Shanghai)	27 - 28 (Kingston)	29 – 30	+7 - 9%
South Asia (Mumbai)	26 - 27 (Freeport)	27 - 28	+6 - 8%

Note: Assumes Louisiana port is at the mouth of the Mississippi
Source: ACP Panama Canal Expansion ; USA Trade Online; The Economist; A.T. Kearney Analysis

Overall, local market density and reach will continue to be the primary driver for port selection

U.S. population density and population by 400-mile port reach



Notes: (1) Primary MSA refers to the population of the metropolitan area where the port is located
(2) Port reach that overlaps a represented competitor port excludes the overlapped port's MSA from the population reach
Source: U.S. Census Bureau; A.T. Kearney analysis

For traffic on the East Coast of South America (Santos) trade lane, Louisiana is competitive in most markets

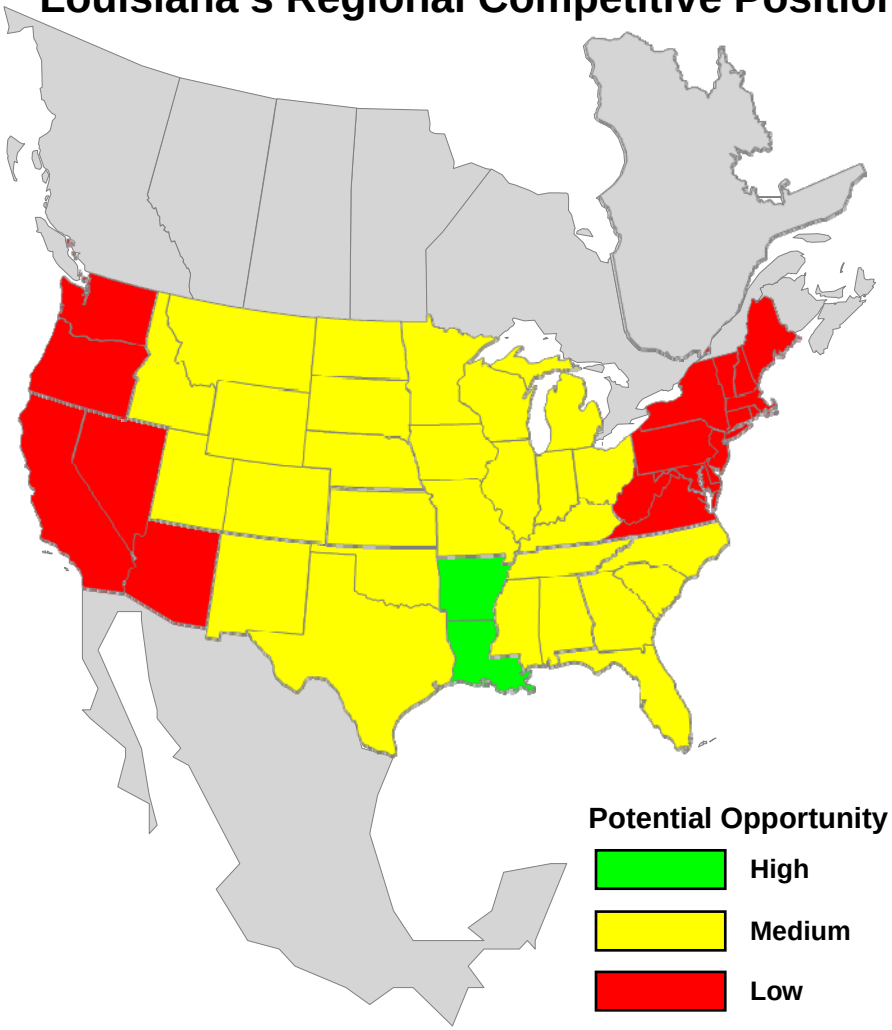
Louisiana's Regional Competitive Position – East Coast of South America

Destination Market	Low Cost Route		Louisiana Route	
	Port of Entry	Time (days)	Time (days)	Cost (% diff)
North West (Seattle)	Newark	19-23	20-24	+5-6%
South West (Los Angeles)	Houston	18-22	18-22	+2-3%
Mountain Central (Denver)	Gulfport	17-21	17-21	+4-5%
South Central 1 (Dallas)	Houston	15-19	15-18	+1-2%
South Central 2 (Louisiana)	Louisiana	14-17	14-17	+0%
Mid West (Chicago)	Newark	15-18	23-28	+5-6%
South East 1 (Memphis)	Gulfport	15-18	18-22	+1-2%
South East 2 (Atlanta)	Savannah	14-17	15-18	+9-11%
North East (New York)	Newark	14-17	17-21	+33-41%

Source: AXSMarine; PC Rail; US Coast Guard; A.T. Kearney Analysis

For traffic on the West Coast of South America (Valparaiso) trade lane, Louisiana is competitive in many markets

Louisiana's Regional Competitive Position – West Coast of South America

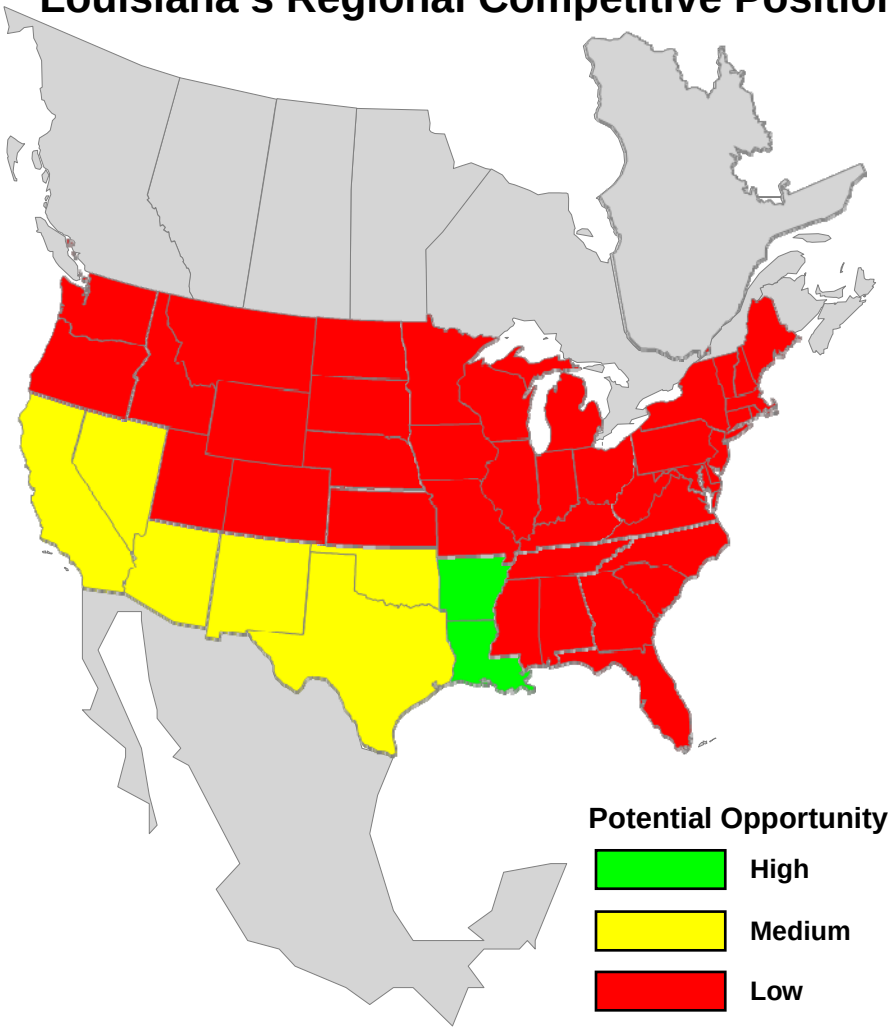


Destination Market	Low Cost Route		Louisiana Route	
	Port of Entry	Time (days)	Time (days)	Cost (% diff)
North West (Seattle)	Seattle	16-19	16-20	+14-17%
South West (Los Angeles)	Los Angeles	13-16	14-17	+18-22%
Mountain Central (Denver)	Gulfport	14-17	14-17	+4-5%
South Central 1 (Dallas)	Houston	12-14	12-14	+2-3%
South Central 2 (Louisiana)	Louisiana	11-13	11-13	+0%
Mid West (Chicago)	Louisiana	20-24	20-24	+0%
South East 1 (Memphis)	Gulfport	11-14	15-18	+0%
South East 2 (Atlanta)	Mobile	11-14	12-14	+3-4%
North East (New York)	Newark	13-16	14-17	+14-18%

Source: AXSMarine; PC Rail; US Coast Guard; A.T. Kearney Analysis

For traffic on the Europe (Hamburg) trade lane, Louisiana is competitive in South West and South Central markets

Louisiana's Regional Competitive Position - Europe

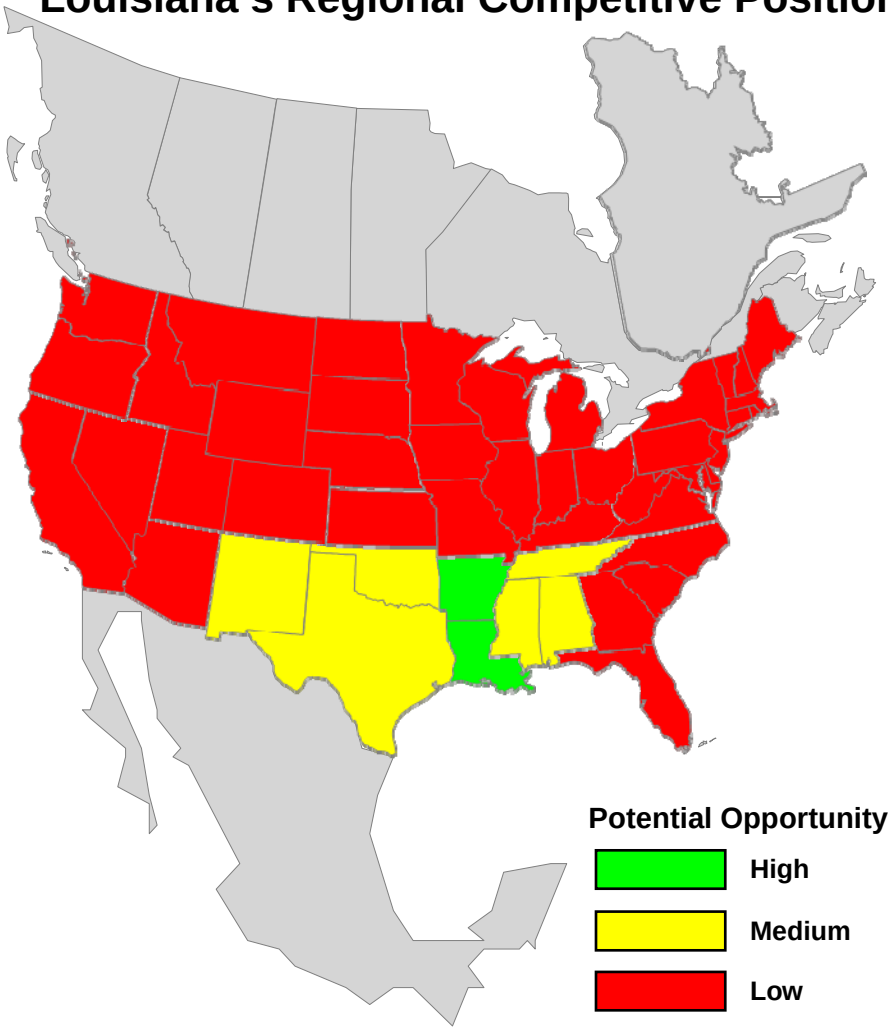


Destination Market	Low Cost Route		Louisiana Route	
	Port of Entry	Time (days)	Time (days)	Cost (% diff)
North West (Seattle)	Newark	14-18	18-22	+18-23%
South West (Los Angeles)	Houston	16-20	16-20	+2-4%
Mountain Central (Denver)	Newark	12-16	16-20	+20-24%
South Central 1 (Dallas)	Houston	14-18	13-17	+1-3%
South Central 2 (Louisiana)	Louisiana	13-17	13-17	0%
Mid West (Chicago)	Newark	10-14	22-26	+27-34%
South East 1 (Memphis)	Norfolk	10-14	18-22	+11-15%
South East 2 (Atlanta)	Norfolk	10-14	13-17	+25-31%
North East (New York)	Newark	9-11	16-20	+82-100%

Source: AXSMarine; PC Rail; US Coast Guard; A.T. Kearney Analysis

For traffic on the South Asia (Mumbai) trade lane, Louisiana is competitive in its own and two adjacent markets

Louisiana's Regional Competitive Position – South Asia



Destination Market	Low Cost Route		Louisiana Route	
	Port of Entry	Time (days)	Time (days)	Cost (% diff)
North West (Seattle)	Seattle	25-30	31-37	+45-55%
South West (Los Angeles)	Los Angeles	27-33	29-35	+22-26%
Mountain Central (Denver)	Newark	25-31	29-35	+8-10%
South Central 1 (Dallas)	Houston	27-33	26-32	+1-3%
South Central 2 (Louisiana)	Louisiana	25-31	25-31	0%
Mid West (Chicago)	Newark	23-29	34-42	+11-15%
South East 1 (Memphis)	Savannah	25-29	29-35	+3-5%
South East 2 (Atlanta)	Savannah	24-29	27-33	+12-16%
North East (New York)	Newark	22-27	29-35	+39-47%

Source: AXSMarine; PC Rail; US Coast Guard; A.T. Kearney Analysis

For traffic on the Far East (Shanghai) trade lane, Louisiana is competitive in only one market

Louisiana's Regional Competitive Position – Far East Asia

Destination Market	Low Cost Route		Louisiana Route	
	Port of Entry	Time (days)	Time (days)	Cost (% diff)
North West (Seattle)	Seattle	13-16	31-38	+180-220%
South West (Los Angeles)	Los Angeles	15-19	30-36	+120-145%
Mountain Central (Denver)	Seattle	16-20	30-36	+63-77%
South Central 1 (Dallas)	Los Angeles	18-22	27-33	+30-36%
South Central 2 (Louisiana)	Los Angeles	19-23	27-33	+9-11%
Mid West (Chicago)	Seattle	18-22	36-43	+27-33%
South East 1 (Memphis)	Los Angeles	19-23	31-37	+16-20%
South East 2 (Atlanta)	Los Angeles	20-24	27-33	+8-10%
North East (New York)	Seattle	20-24	30-36	+24-28%

Source: AXSMarine; PC Rail; US Coast Guard; A.T. Kearney Analysis

Louisiana's opportunity for growth relies on capturing share from select markets

Estimated container traffic in 2028 (millions of TEUs):

U.S. Destination Market	Far East Asia	South Asia	Europe	South America (East)	South America (West)	Other Regions	Total
North West	1.7	0.4	0.4	0.1	0.3	0.3	3.2
South West	7.5	1.8	2.0	0.6	1.2	1.2	14.3
Mountain Central	2.0	0.5	0.6	0.2	0.3	0.3	3.9
South Central 1	4.4	1.1	1.2	0.4	0.7	0.7	8.4
South Central 2	0.9	0.2	0.2	0.1	0.1	0.2	1.7
Midwest	9.6	2.3	2.6	0.8	1.5	1.6	18.3
South East 1	1.7	0.4	0.5	0.1	0.3	0.3	3.2
South East 2	5.6	1.3	1.5	0.5	0.9	0.9	10.7
North East	12.7	3.0	3.4	1.1	2.0	2.1	24.2
Other U.S.	0.3	0.1	0.1	0.0	0.1	0.1	0.6
Western Canada	2.9	0.7	0.8	0.2	0.5	0.5	5.6
Eastern Canada	2.2	0.5	0.6	0.2	0.3	0.4	4.1
Mexico	3.6	0.9	1.0	0.3	0.6	0.6	6.8
Total	54.9	13.2	14.7	4.6	8.5	9.1	**104.9**

Potential Opportunity for Louisiana:

- High
- Medium
- Low

Source: A.T. Kearney analysis

Our analysis dispels several myths about container ports (one of two)

Topic	Myth	Reality
Panama Canal Expansion	• The addition of a third lane capable of accommodating Post-Panamax ships will drive a dramatic increase in container volume to the Gulf	• The expansion of the Panama Canal will increase container traffic, consistent with the current split: 12% of volume directed to the Gulf, or 3 MTEU total by 2028 • The shift to Post-Panamax ships favors ports with high local market density and therefore is likely to increase all-water routes to East Coast ports
Louisiana's Advantage in Infrastructure	• The combination of six Class 1 railroads and the Mississippi River give Louisiana a competitive advantage other states cannot match	• Other Gulf Coast ports are also served by multiple Class 1 railroads, in some cases with better routings to the markets they serve • The Mississippi River is a major asset for bulk shipping, but not for containers. The slow transit times associated with container-on-barge offsets some or all of the transportation cost benefits
West Coast Capacity Constraints	• West Coast ports are so capacity constrained that shipping lines will want to use a Gulf Coast port to handle the overflow	• West Coast ports will have capacity to meet all forecasted demands through 2028 • If LA/Long Beach congestion returns, shipping lines will use alternate West Coast ports or all-water routes to the East Coast before overflow reaches the Gulf Coast

Our analysis dispels several myths about container ports (two of two)

Topic	Myth	Reality
Ability to Serve Midwestern Markets	• A Louisiana container port can compete with West Coast and East Coast ports to serve large Midwestern Markets such as Chicago	• A container routing through Louisiana to the upper Midwest is economically uncompetitive compared to current alternatives
State Investment in Infrastructure	• Louisiana should make a significant investment in container port infrastructure to stay competitive with other Gulf Coast states	• State investment in additional container port capacity would address only the supply side of the equation, and the Gulf Coast already has excess port capacity • Analysis of the demand for a Louisiana container port shows competitiveness on two trade lanes, with growth to 660,000 TEUs by 2028—volumes at this level do not require a major state investment

Highlights of Key Throughput Volumes: 2008-2028

Traffic Category	Throughput (1) Volume	Rationale
North America 2008	50 MTEU	• Volume is actual data reported by AAPA
North America 2009	37 MTEU	• Captures the impact of the recession • Full-year volume is estimated using actual drop (26%) in trade from Q308 to Q109
North America 2028	105 MTEU	• 5.6% CAGR from 2009-2028 was developed using historical data • Adjustments were made for forward-looking events and a GDP growth of 2.5%
West Coast 2028	54 MTEU	• West Coast will continue to grow, but slower than past years
Gulf Coast 2028	9 MTEU	• Gulf Coast will have the highest overall growth • Considered impact of Panama Canal expansion
East Coast 2028	42 MTEU	• East Coast will grow at about the same rate as the West Coast • Considered the impact of the Panama Canal expansion and an increase in “all water” routing
Louisiana 2028	660 K TEU	• Louisiana will maintain 7% share of Gulf Traffic

Source: (1) Includes import and export flow of loaded and empty containers

Highlights of Supporting Rationale for Forecast

- The West Coast ports will expand their capacity to meet traffic needs through 2028
  - West Coast ports have a current capacity of 41 MTEU
  - Interviews with port officials and public announcements revealed that West Coast capacity will expand to 70 MTEU by 2028
  - Expansion is being undertaken at several West Coast ports: Prince Rupert, Vancouver, Tacoma, LA/LB, and Manzanillo
- The Panama Canal expansion will increase traffic to the Gulf
  - Panama Canal traffic will increase from 12 MTEU to 25 MTEU by 2028 according to the following split: Gulf Coast - 12%, East Coast - 54%, Transshipment/Other - 34%
  - Increased use of larger Post-Panamax ships is expected
    - Shippers will shift to larger ports with high local market density (e.g. Houston vs. other smaller Gulf ports)
    - Economics will favor an increase in “all-water” routes to East Coast ports
- Caribbean ports are advantaged for transshipment traffic
  - Caribbean ports have an “in-route” advantage (i.e. 800-1,000 miles and 2-3 days transit time versus Gulf ports)
  - All shipping lines interviewed indicated that there would be challenging economics for a Gulf transshipment port
  - Caribbean ports enjoy low labor cost
  - Caribbean ports are planning to almost double their capacity by 2028
- The Mississippi inland waterway container-on-barge traffic is advantaged only for select commodities
  - Mississippi inland waterway is well suited for bulk/barge traffic, particularly for downriver movement
  - Container-on-barge is marginally advantaged for low value commodities to select markets (e.g. Memphis)
  - Container-on-barge for medium and high value commodities are disadvantaged on total landed cost economics
  - A strong competitive response from rail and trucking competitors is likely