Panama Canal Expansion: Impacts on the US Marketplace

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The Maritime Silk Road Replaced the Overland Silk Road as the Primary Trading Route Across Eurasia After the Tang Dynasties (618 to 907)
The Marine Silk Road was a Precursor to:

Today’s modern supply chain logistics, distribution and shipping transportation networks
The World’s Primary Shipping Route: The Marine Silk Road
90% of Global Trade is Carried Out by Shipping

The Majority of Today’s Ocean Trade is Conducted on the Marine Silk Road
Indian Ocean Electric Blue Shipping Lane Trails
From the Marine Silk Road
The World’s Largest Ports Are Connected Via The Marine Silk Road

Where are the Biggest Ports?

KEY

WORLD’S LARGEST PORTS (BY CARGO VOLUME PER YEAR)

- 10 MILLION TONS
  - 100
  - 500
On Earth, There Are More People Living Inside This Circle Than Outside the Circle
Global Shipping Routes Plotted by AIS GPS

Today’s Busiest Shipping Routes:
(1) Panama Canal, (2) Suez Canal, (3) Offshore China

International Port External Industry Pressures Driving Today’s Logistics
More than 98% of everything we consume, wear, eat, drive and construct is brought to us via ships through the North American port system.
Growth in GDP and World Trade

World trade will grow by 73% in the next 15 years. With merchandise trade volumes in 2025 hitting $43.6 trillion compared to today’s $27.2 trillion.
Continuing Economic Global Growth

International trade is set to significantly grow despite current economic uncertainty in the U.S. and elsewhere around the world.

Source: TD Economics Forecast as of March 2013
Key Success Factor:
Cargo Will Flow "Downhill" to the “Lowest Cost - Best Service Levels”
(Total Logistics Costs From Origin to Destination)

More Competitive Regions will End up with the Cargo
Poll of the Top 1000 “Blue Chip” Multinational Shipper Priorities

- Competitive Freight Rate: 38%
- Schedule Reliability & Consistency: 43%
- Transit Time & Speed: 12%
Today’s Logistics Truth:

“The customer wants more and is always willing to pay less for it.”
International Maritime Cargo Demand Trends
Historical Global Container Market Demand
(Millions of TEUs)

North American Growth Lags Other Global Regions

2009 Recession

Source: Drewry Shipping Consultants
2015 Predicted Increases in World Seaborne Trade & Global Population

Source: IHS Global Insight – World Seaborne Trade, OECD Statistics, UN Population
2025 World Container Port Market Demand
(Millions of TEUs)

10% CAGR from 1990 - 2008
(9.1% ) global volume loss for 2009
Recovery in 2010 with 14.8% growth
50% projected rise 2009-2015

Source: Drewry Shipping Consultants October 2011
A Turning Point in Global Economic History

The Advanced Economies Will Decline From 2/3 share of the Global Economy to a 1/3 Global Share. The Global Economy Will See Higher Average Pace of Growth in the Future...

Source: IMF - Forecast by TD Economics, December 2009
Total U.S. Freight Tonnage Will Grow 23.5% by 2025.

Source: ATA US Freight Transportation 2025 Forecast
Southeast Asian Manufacturing Centroid Shift

Current Inbound U.S. Cargo Flow

Expanded Asian Panama Canal 2014 Flows

Eastbound: All Water Flow

Eastbound: US Intermodal Rail Flow

U.S. Intermodal Rail Flow
With Manufacturing Centroid Shifts Into Vietnam and/or India, The North American East Coast will See Dramatically More Westbound Suez Traffic.
Suez Canal’s $8.5 Billion Expansion Plan
(A New $4 Billion 45-mile-long parallel channel and Global Logistics Park)

3 Daily Convoys:
2 Northern Convoys
1 Southern Convoy
August 5, 2014

The Suez Canal Announces a $4 Billion Expansion of the Canal

New 45-mile-long parallel channel cutting waiting times to transit by 3 hrs. from 11 hrs.

Half of a $8.5 billion project that includes a free trade zone, an industrial park and a regional logistics hub for the Middle East, North Africa and the Mediterranean.
The Growing Asian Import Trade Challenge
Of the 10 busiest ports in the world, Nine are in Asia; of the top 10, Six are on the Chinese mainland.

The Port of Shanghai is No. 1, and The Port of Singapore is No. 2.

These Two Ports are Larger Than All North American Ports Combined.
China-US: Twin Engines of the World

Population:
US: 314 million
China: 1,344 million
(1/5 World)

The number of Chinese children in elementary school is equivalent to the total US population.
Shanghai International Shipping Center
Yangshan Deep Port & Logistics Park

New Port City

New Logistics Park

20 Mile New Port Access Bridge Constructed in 3 yrs

54 New Berths
Shanghai International Shipping Center
Yangshan Deep Port - 20 Mile Bridge Access

“Second Longest Ocean Bridge in the World”
Shanghai Yangshan Deep-Water Harbour
Yangshan Deep Port – 54 Berths East China Sea
Shanghai Port Set a 2011 Record by Handling over 30 million TEUs
Maritime Vessel Technology Trends
Functional Classification of Global Maritime Cargoes

- All Maritime Cargo
  - General Cargo
    - Break Bulk: Sacks, Cartons, Crates, Drums, Pallets, Bags
    - Neo-Bulk: Lumber, Paper, Steel, Autos
  - Containerized
    - Containers, Lift On/Lift Off (Lo/Lo), Roll On/Roll Off (Ro/Ro)
  - Bulk Cargo
    - Dry Bulk: Grain, Sand & Gravel, Scrap Metal, Coal/Coke, Clinker, Fertilizer
    - Liquid Bulk: LNG, Petroleum, Molasses, Chemicals, Vegetable Oil
    - neo-Bulk: Containers, Lift On/Lift Off (Lo/Lo), Roll On/Roll Off (Ro/Ro)
The TEU (Twenty Foot Equivalent Unit)

“The Container Shipping Unit of Measure”

1 TEU = One 20 ft. ISO Container
1 FEU = 2 TEUs = One 40 ft. ISO Container
<table>
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<th>Item Description</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Total Value</th>
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<td>20” TVs</td>
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In 1955 Malcolm McLean, sold McLean Trucking, and secured a bank loan of US$42 million to build the world's first container ship.
World Container Ship Evolution

1st Generation (Pre-1960 - 1970)

Full Cellular

Panamax
3rd Generation (1985)

Post Panamax

Super Post Panamax
5th Generation (2000 - 2006)

Ultra Post Panamax
6th Generation (2006 - 2012)

101 TEU – (58 - 35 ft Containers)
2,305 TEU
3,220 TEU
4,848 TEU
8,600 TEU
15,000+ TEU

TEU Capacity
24% increase in the average container ship size from 2008 to 2012

The Stage is set to Jump again to 22,000 to 24,000 TEU Mega Container Vessels
Maersk’s New 30 Vessels (ordered) are 4 Times the Current Size of the Panama Canal & 1.5 times the Size of the Expanded Panama Canal

23 Containers Wide – 9 Tiers Above the Hatch
2018: Ultra-Large 20,000 TEUs Container Ships

2015: Maersk Planning Orders up to 10 New 20,000 TEU Ships ($1.5 Billion Order), Evergreen, Seaspan and United Arab Shipping Company (UASC) are also looking at 20,000 TEUs
21,000 TEU Ultra Large Twin Engine Container Ship

Source: Alphaliner Newsletter Volume 2011 Issue 4
Containership Orders – Country of Build
(Orders Since January 2010)

Source: Alphaliner Newsletter Volume 2011 Issue 21
Panama Canal Expansion: New Capacity (Circa 2015)
Panama Canal Historical Tonnage Traffic

Source: ACP Data
Panama Canal Third Lane Expansion
Circa 2016

The Autoridad Del Canal de Panama

ACP
The Panama Canal
Third Set of Locks Project
Panama Canal Third Lane Expansion

- New Lane
- Existing Lanes
Panama Canal Third Lane Expansion Capabilities

Source: ACP Expansion Project
Today Only The Port of Virginia Can Handle The New 2015 Panamax Vessels Fully Loaded…

Source: Virginia Port Authority (VPA) October 2011
Port Authority of New York & New Jersey
Entrance Channel & Harbor Dredging Program
($1.6 Billion Program, Completion December 2014)
Raising of the Bayonne Bridge
(Estimated at $1 billion +/-)

Future Clearance: 214 ft

Current Clearance: 155.3 ft

Maximum Vessel: 7,000 TEUs

Existing Level: 64 feet
Emerging New Caribbean Transhipment Center
Panama Ports Annual Transhipment Growth

Proposed New Port Projects Would More Than Double the Total in 5 Years
Panama Ports Container *Transhipment Growth*

6.8 Million TEUs – 18.5 % Growth Rate
Non-Transit Panama Canal “Feeder Services” May Be the Real Boom from the Canal Expansion

Weekly Through Transits
Feeder Services – No Transit

Source: ACP and Compare, 2008 Data
The Panama Canal Expansion Will Move the Caribbean Transhipment Center Point to Panama
New Panama Canal Pacific Entrance Ports

More Capacity than all of the Port of Los Angeles

The Autoridad Del Canal de Panama
New Panama Canal Atlantic Entrance Port

More Capacity than all of the Port of Houston

The Autoridad Del Canal de Panama
Panama Canal Expansion Impacts:
Panama Canal Vessel Deployments Will Determine New US Logistics Patterns

The Distance to New Orleans and Savannah Via the Panama Canal

A Competitive & Robust Landside Access to the Gateway Port’s Inland Market will be a Key Success Factor!
The Primary North American Competitor to the Panama Canal is the Class I Rail Intermodal System

(Potential Increased Service Offerings and System Capacity)

Source: USDOT Maritime Administration (MARAD) 2009
Today’s US Market Penetration

Panama Canal Economies of Scale with permit
deep market penetration into the US

Reachable Market:
46% of US Population

4,000 TEU ship, all-water.

Source: PB Consultants - CSX Transportation May 12, 2011 - Director of Strategic Analysis
Dramatic US Market Penetration after 2016

Panama Canal Economies of Scale with permit
deeper market penetration into the US

Reachable Market: 63% of US Population

8,000 TEU ship, all-water.

Source: PB Consultants - CSX Transportation May 12, 2011 - Director of Strategic Analysis
Dramatic US Market Penetration after 2015

Panama Canal *Economies of Scale* with permit
deeper market penetration into the US

The State of Texas & Texas Ports Could be the Real Beneficiaries!

Source: ACP Expansion Project – Rodolfo Sabonge AAPA January 24, 2013
Panama Canal’s Designation of “Prime” and “Competitive” Canal Markets Destinations
A Growing Demand for “Inland Ports” Serving Gateway Ports
Emerging Major Inland Port Logistics Centers

Throughput Capacities in Millions of TEUs

- Inland Empire: 7.5 mm TEUs
- Kansas City: 1 mm TEUs
- Chicago: 4 mm TEUs
- Columbus: 3 mm TEUs
- Memphis: 3 mm TEUs
- Harrisburg: 1.5 mm TEUs
- Front Royal: 7.5 mm TEUs
- Dallas: 2 mm TEUs
- Atlanta: 2 mm TEUs
BNSF Logistics Park, Joliet, IL

A New Model For Freight Logistics Centers

Wal-Mart’s New 3.4 million SF (78 acres under roof) Import Distribution Center

The Cost of This Import Distribution Center was Paid for by the Savings in Truck Drayage Between the Warehouse & the Intermodal Rail Terminal
The Inland Port:
With Integrated JIT Delivery: The Inland Port Can Significantly Increase a Region’s Freight System Capacity at the same time Improving the Gateway Port Productivity
What Does All This Mean For The Northeast?
Key Factors Impacting the Northeast as a Result of the Panama Canal’s Expansion

✓ New Inland Port Development Plans
✓ Higher Volumes on Truck Corridors
✓ Increased Development of Port Distribution & Warehouse Centers & Inland Port Logistics
✓ More Distribution Centers Focusing on Asian Trade
✓ New Competitive Pressures on Ports to Increase Productivity & Channel Depths
✓ More Inquiries from Midwest Shippers into Northeast Ports and Distribution Centers
✓ Air Quality and Other Environmental Concerns
Current US Capital Spending On Critical Infrastructure
ASCE 2013 Report Card for America’s Infrastructure

Ports: C
Railroads: C+
2011 International Gross Fixed Capital Formation as a Percent of GDP

(US is 32nd in the World - Below OECD Nations)