

# **2011 Executive Management Conference**

**Broadening Industry Awareness - Part One**

*Saddlebrook Resort, Tampa , FL*

*May 2, 2011*



## ***Planning for Future Transportation Realities***

*John Vickerman*

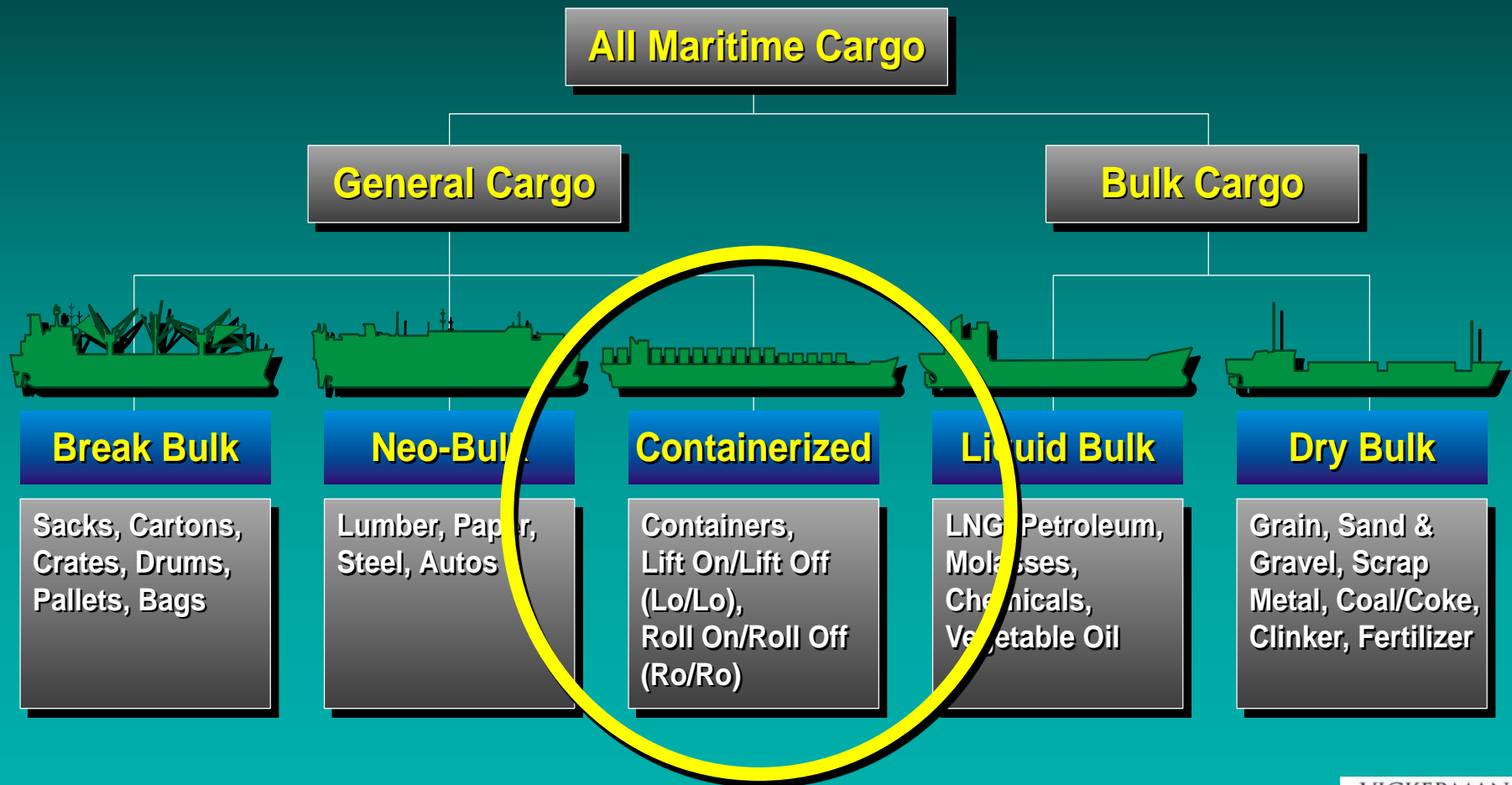


*Williamsburg, Virginia*

**BACK**  
**TO**  
**THE FUTURE**



# Functional Classification of Global Maritime Cargoes



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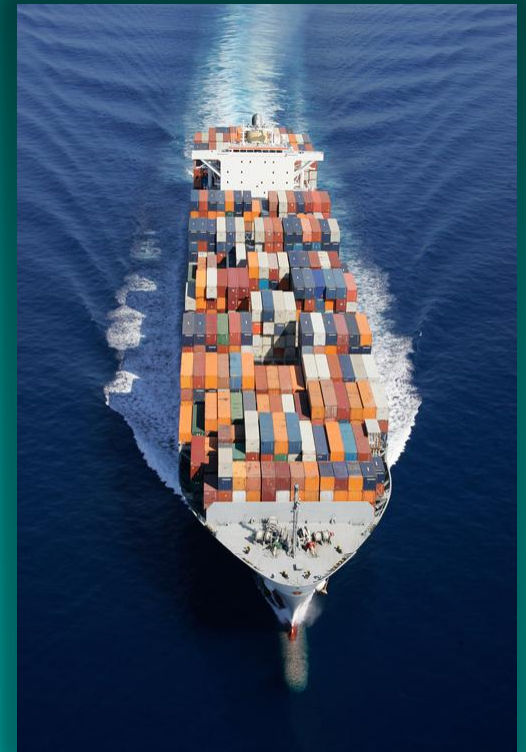


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# **International Port External Industry Pressures Driving Today's Logistics**



**More than 98% of everything we consume, wear, eat, drive and construct is brought to us via ships through the North American port system.**



# ***Our Quality of Life is Directly Related to Our Participation in Global Trade & Transportation***





# Relationship Between US Trade and US Prosperity – 1930 to 2005

(US Trade & Gross Domestic Product - \$ Billions)



Source: USDOT Based on USDOC Data



# Vessel Cargo Handling Circa 1955








## Cargo Handling Circa 2010

# US Navy Fast Frigate Circa 2045








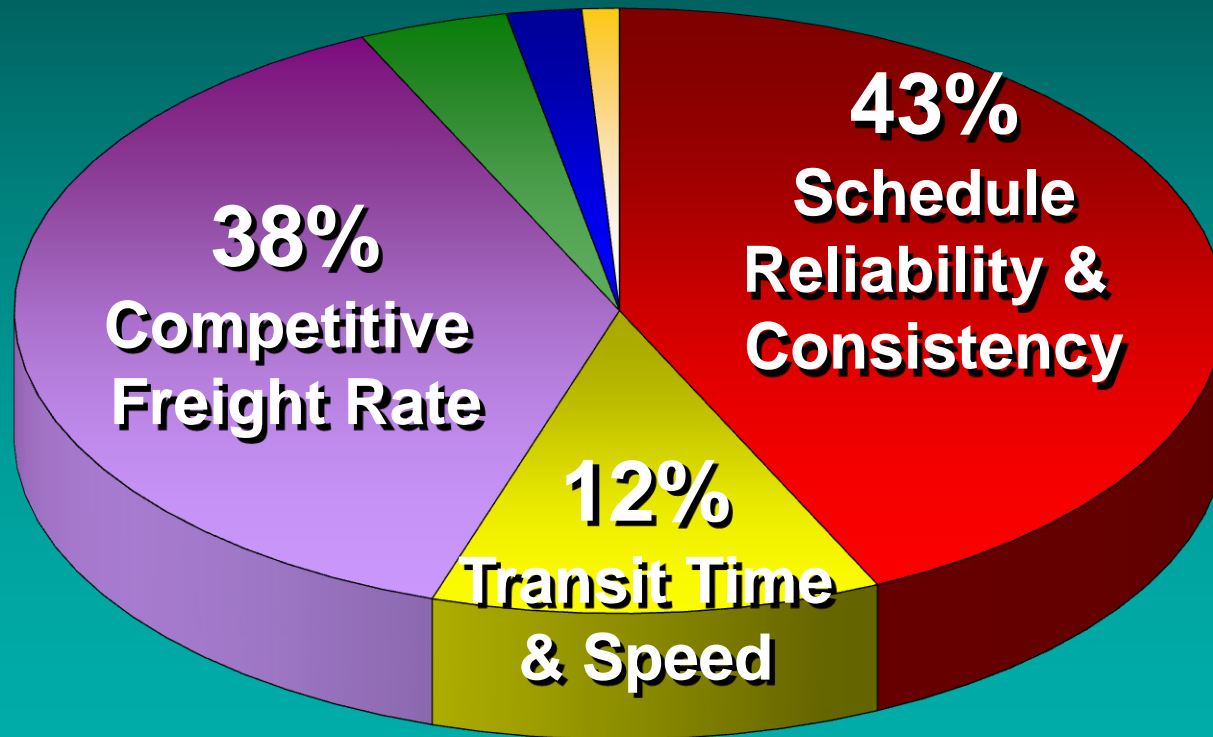
**What We Know  
Today... Will Surely  
Be Different  
Tomorrow!**





**To Be Competitive Today...**  
**Marine/Intermodal**  
**Terminals Must Reduce**  
**Throughput Cost &**  
**Increase Cargo Velocity**  
**Securely and as Stewards of**  
**the Environment**

# Poll of the Top 1000 “Blue Chip” Multinational Shipper Priorities





# Today's Logistics Truth:

***“The customer  
wants **more** and  
is willing to pay  
**less** for it.”***

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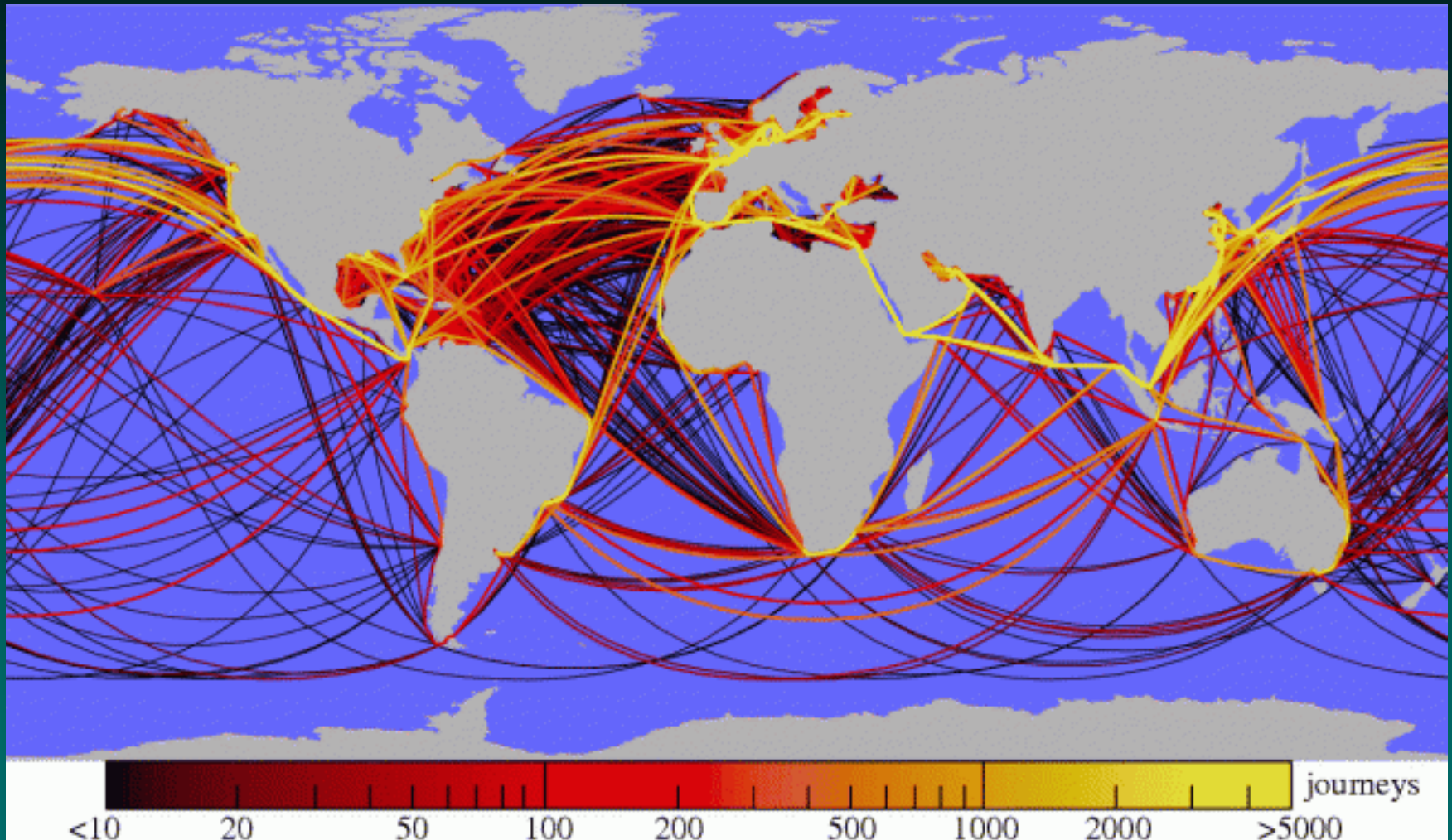
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# ***Today's Trade Logistics Driving World Change***

# Global Shipping Routes Plotted by AIS GPS

*2010 Busiest Routes:*

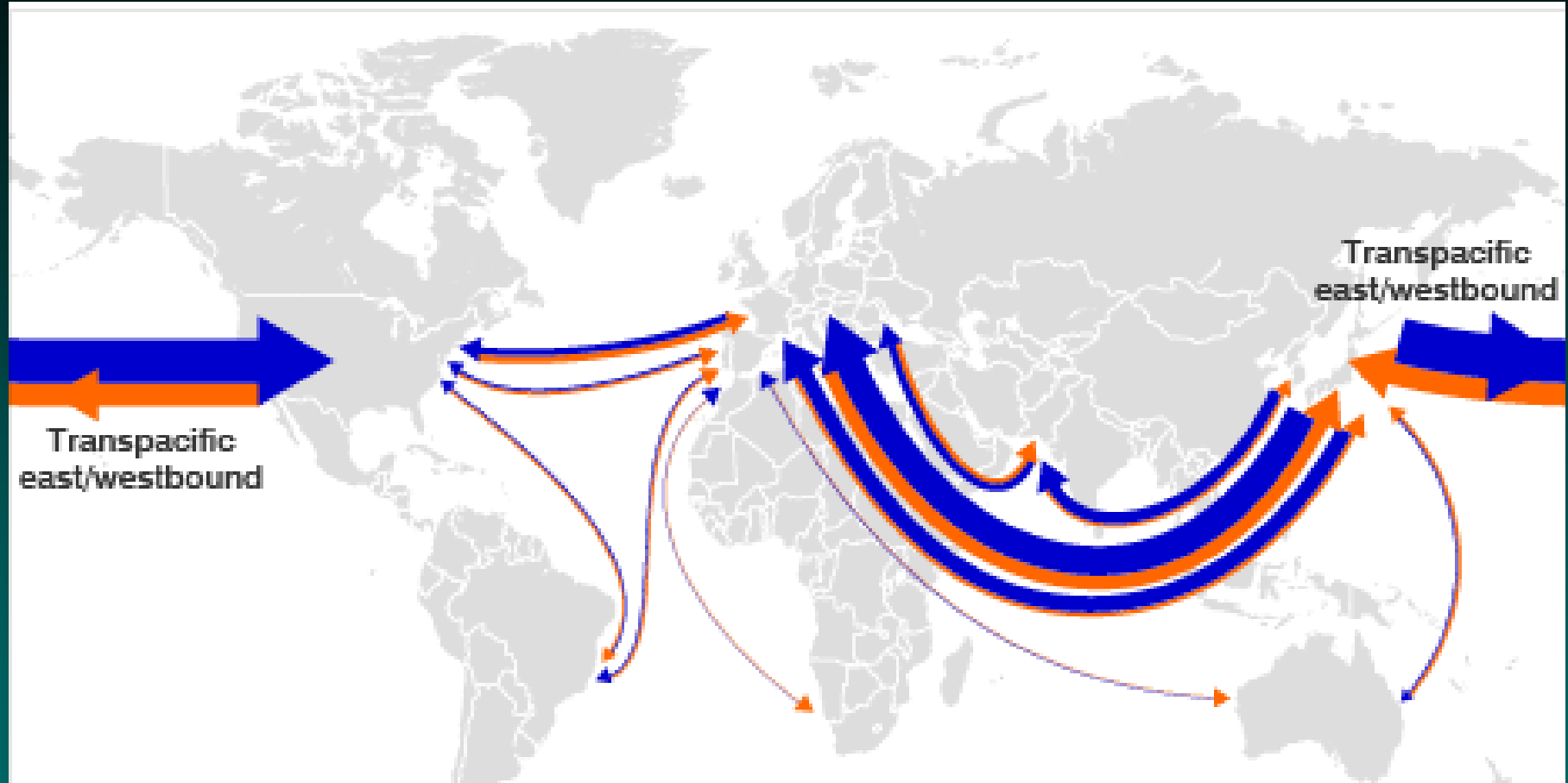
*(1) Panama Canal, (2) Suez Canal, (3) Shanghai Port*



Source: Wired Science January 2010 Journal of the Royal Society: Interface



# Today's Main Container Shipping Routes



5,000,000 TEUs (units based on volume of 20ft container)

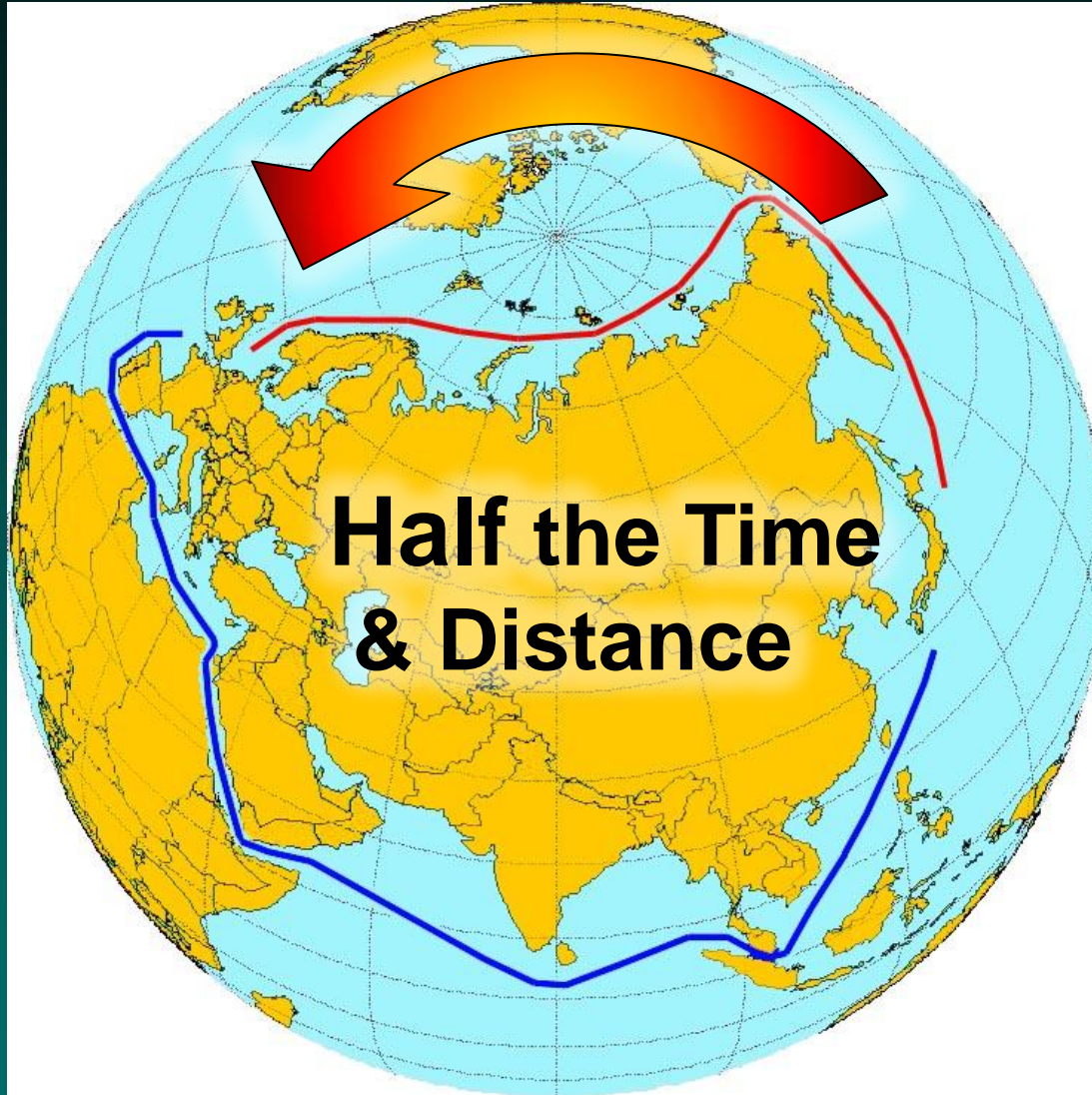
Source: Containerization International and MDS Transmodal

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ASSOCIATES, LLC

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# Shorter – Faster Arctic Ocean Route

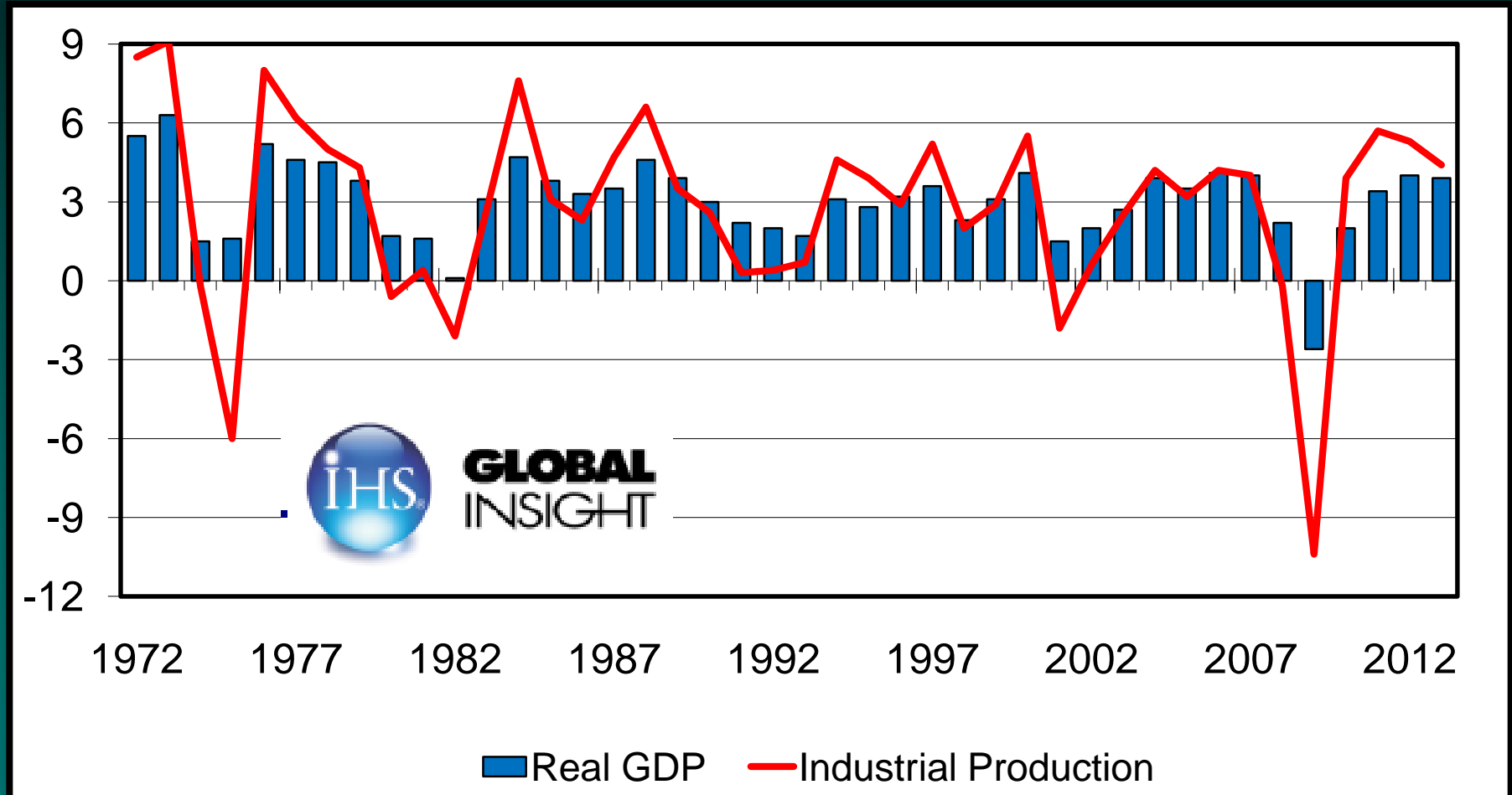
*2+ Months A Year Using Convoys*





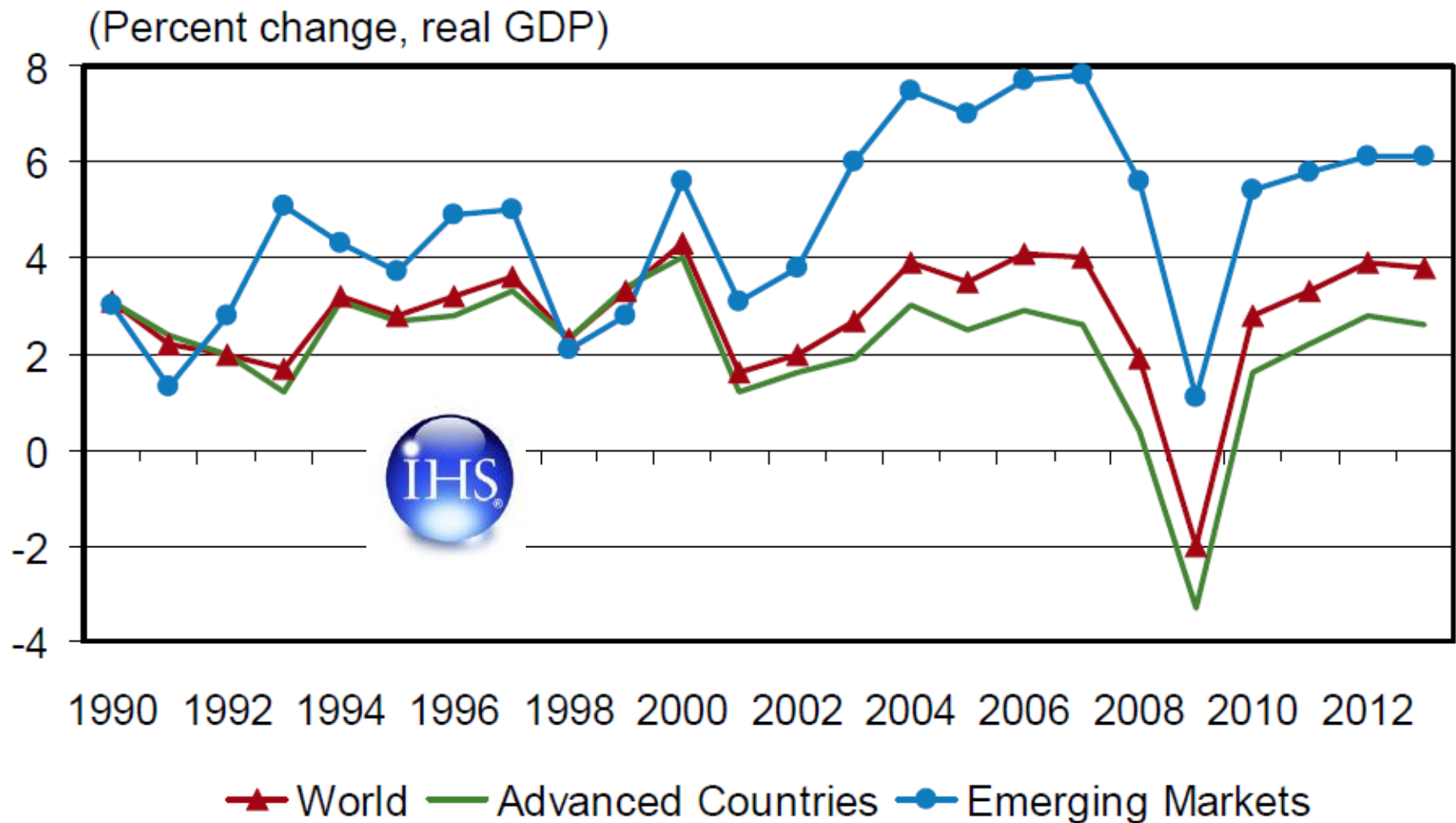
# The World Economy Has Suffered the Worst Recession of the Postwar Era

(Percent Change)



Source: IHS Global Insight

# Emerging Markets Lead the Global Recovery

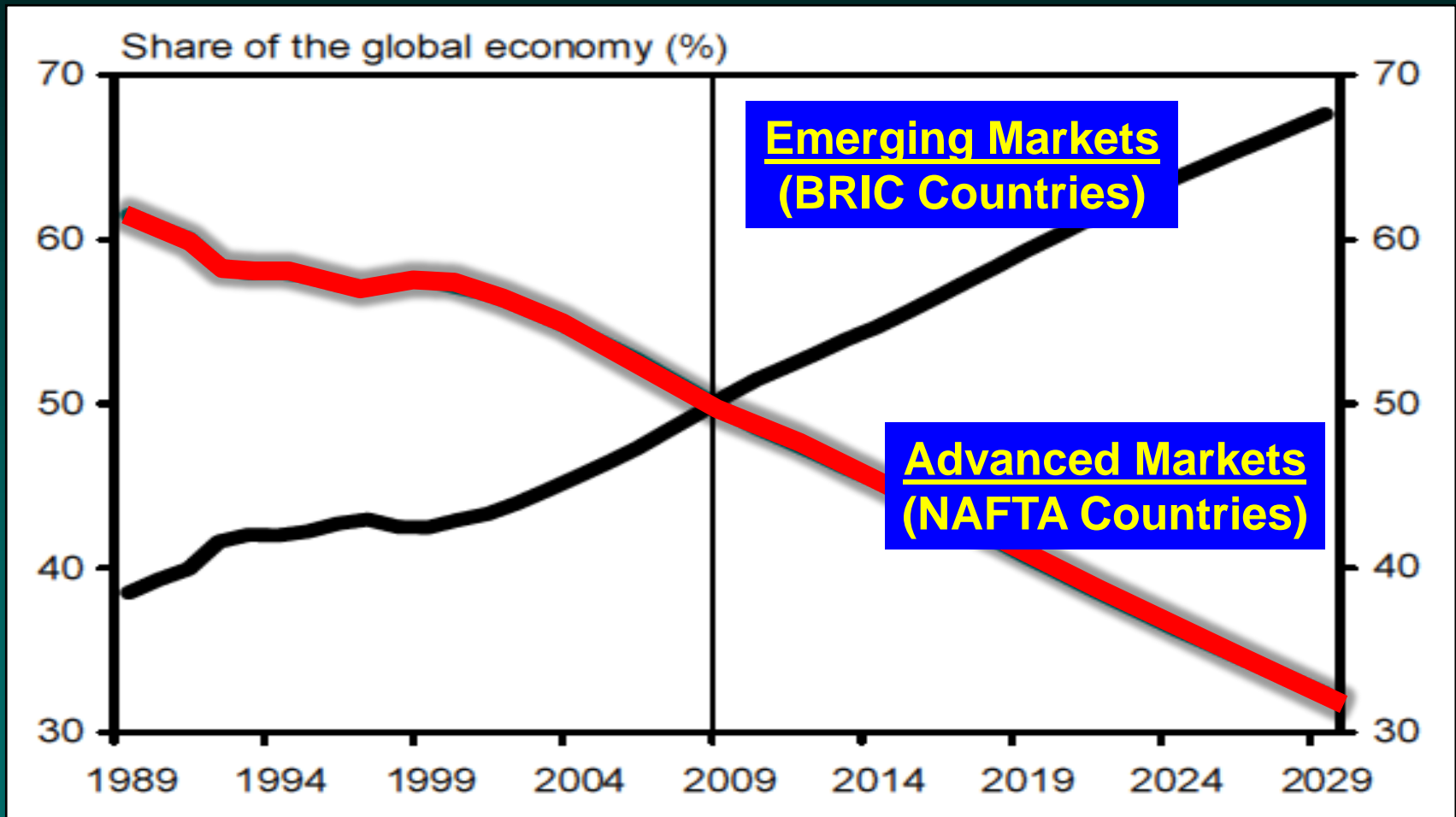


Source: HIS Global Insight – World Trade Service



# A Turning Point in Global Economic History

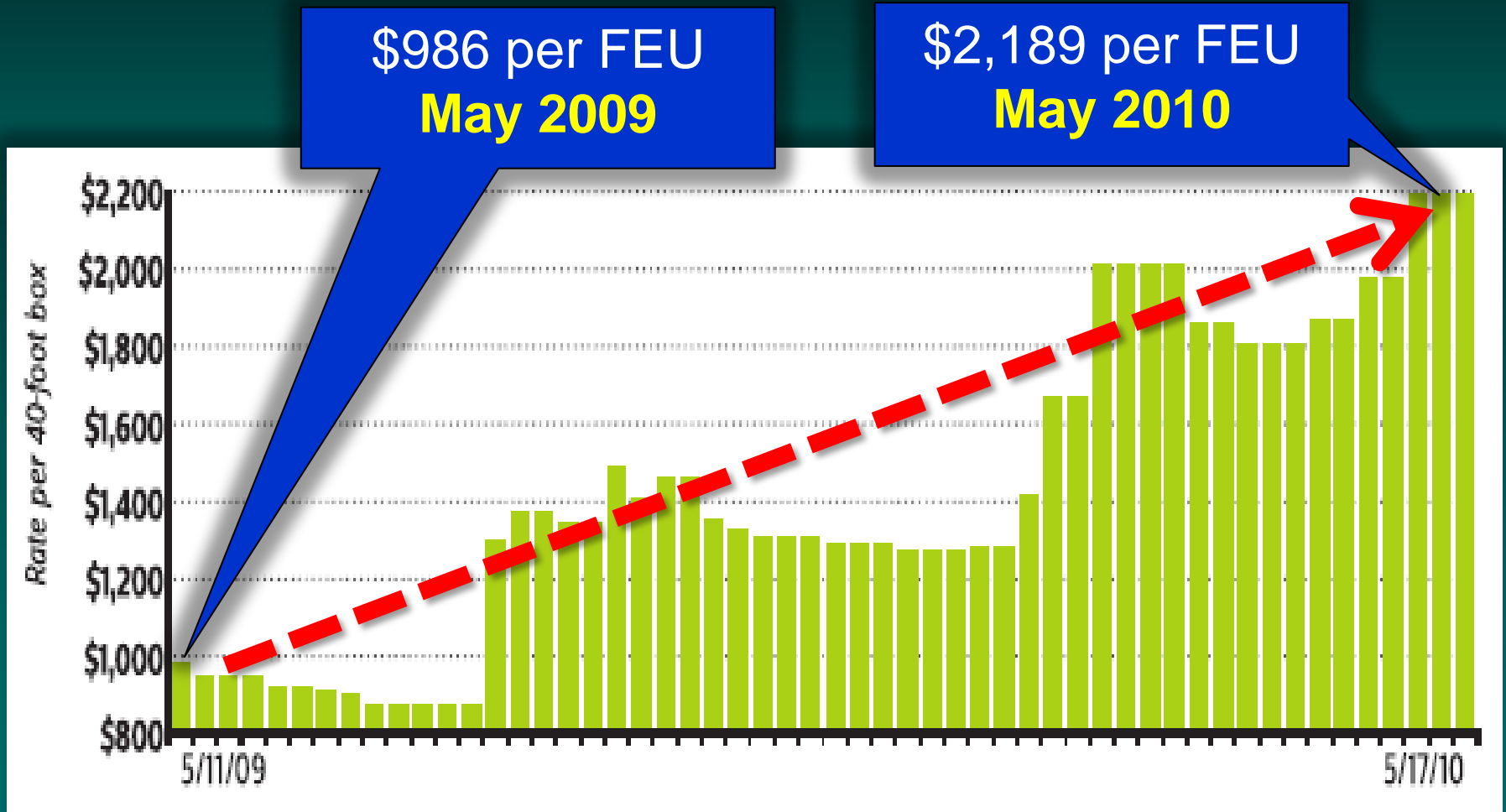
The Advanced Economies Will Decline From 2/3 share of the Global Economy to a 1/3 Global Share. The Global Economy Will See Higher Average Pace of Growth in the Future...



Source: IMF - Forecast by TD Economics, December 2009

# 2009 - 2010 Container Rate Benchmark

## (Average FEU Spot Rate in US Dollars)



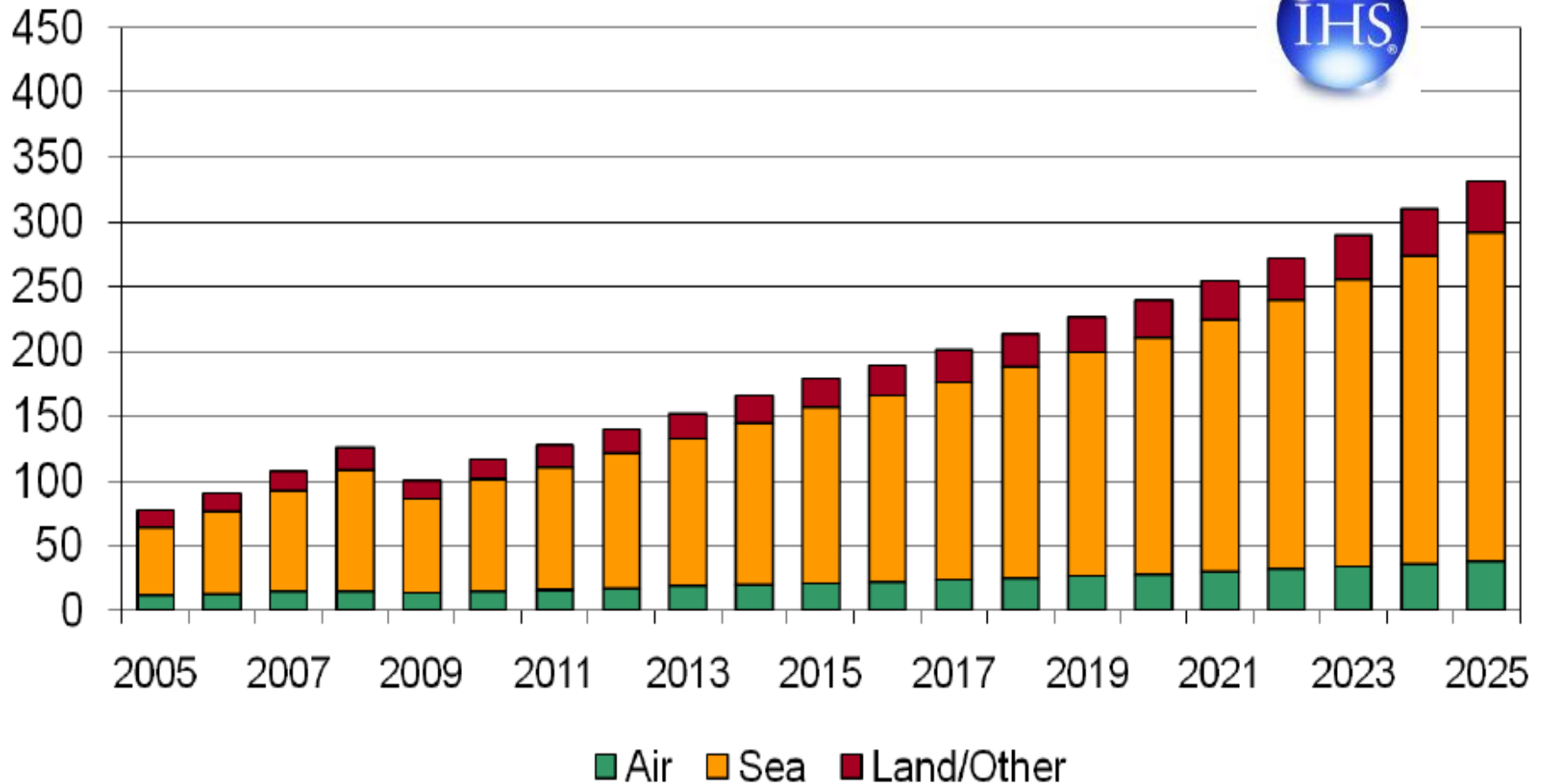
Source: Drewry Shipping Consultants , Journal of Commerce May 24, 2010



# Growth in Global Merchandise Trade

(Intra Europe Trade Excluded)

(Trillions of U.S. dollars)

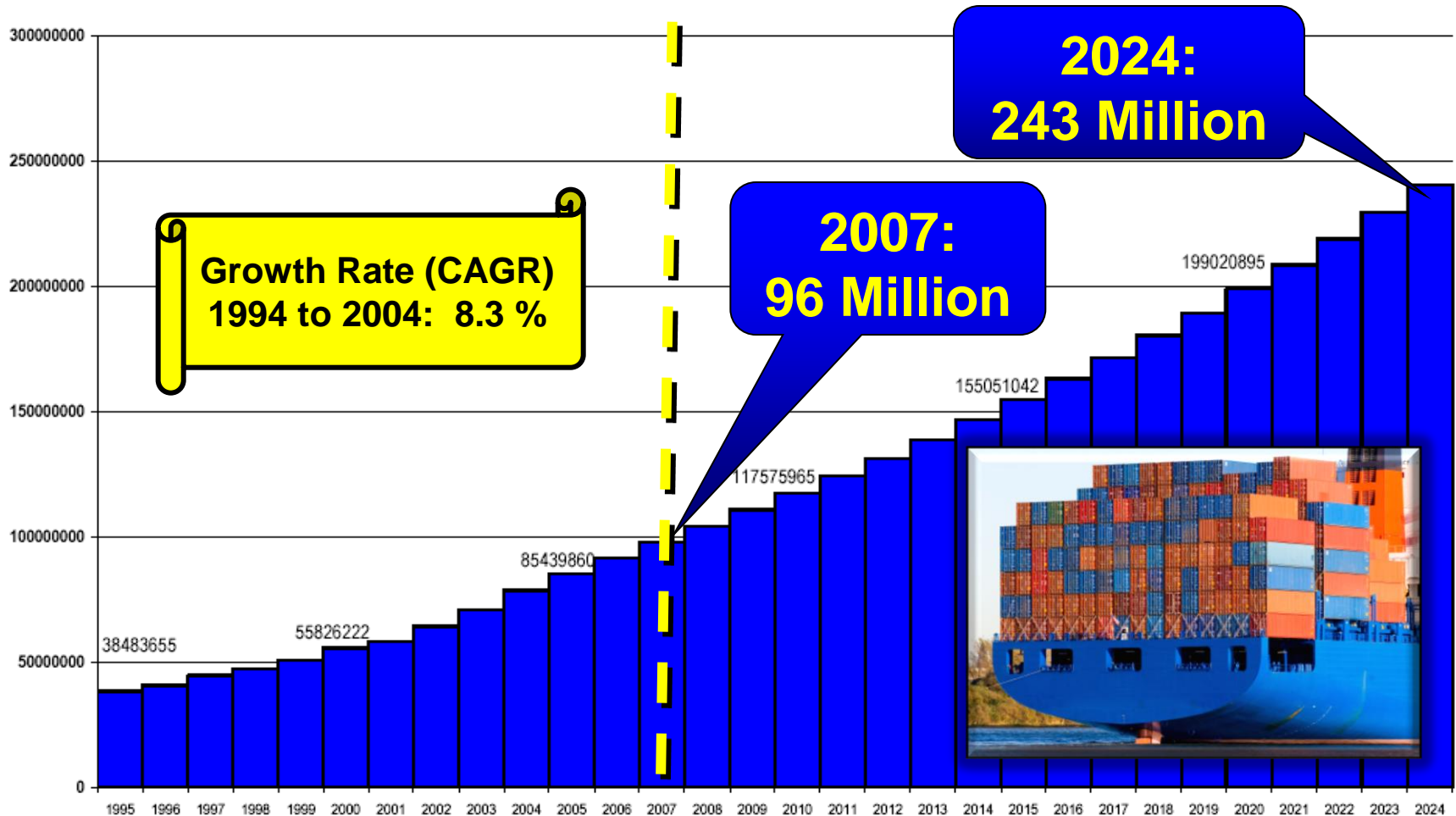


Source: HIS Global Insight – World Trade Service

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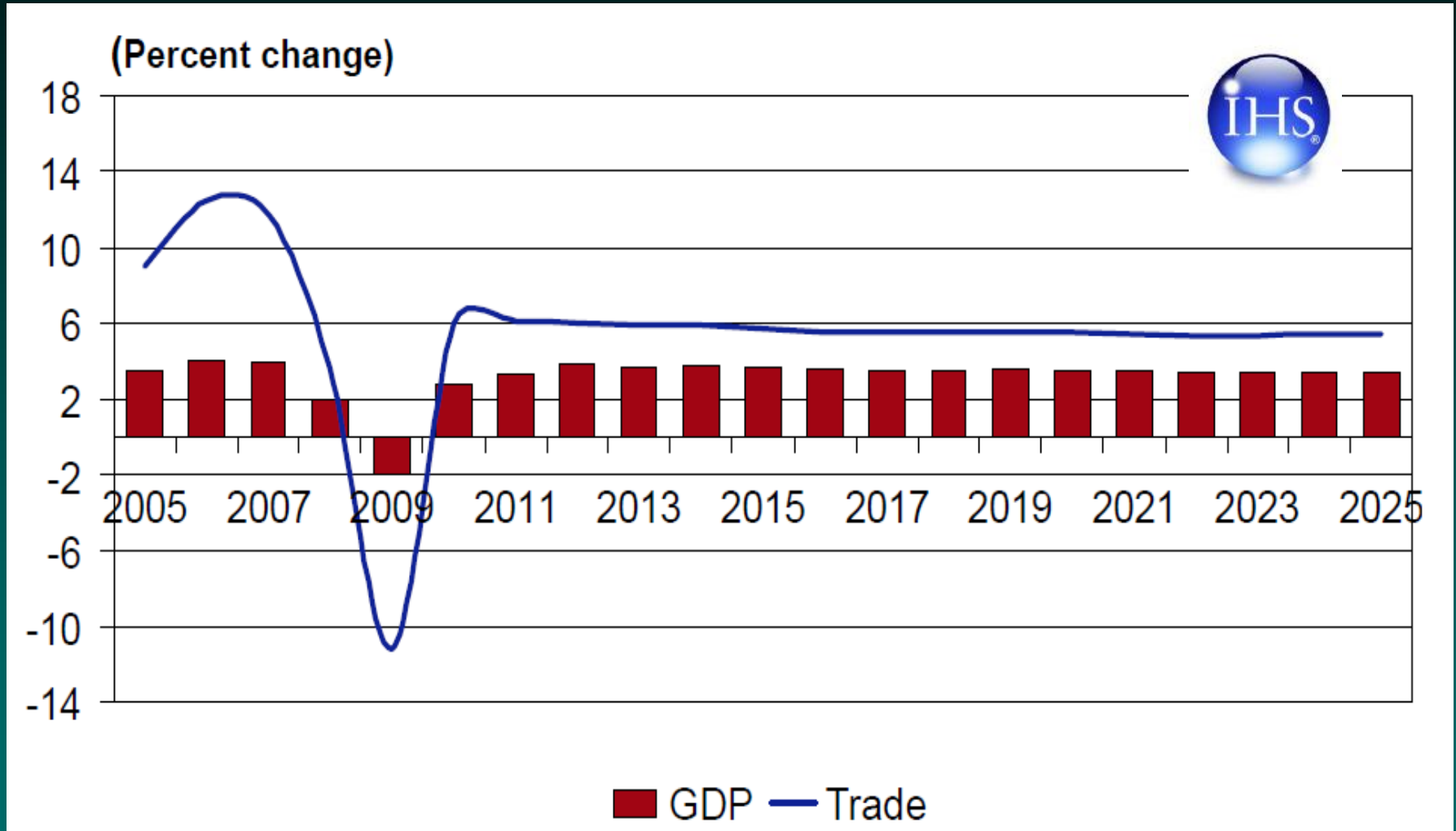
# World Container Forecast to 2024 in TEUs (186% Increase in Next 20 Years)



Source: Global Insight



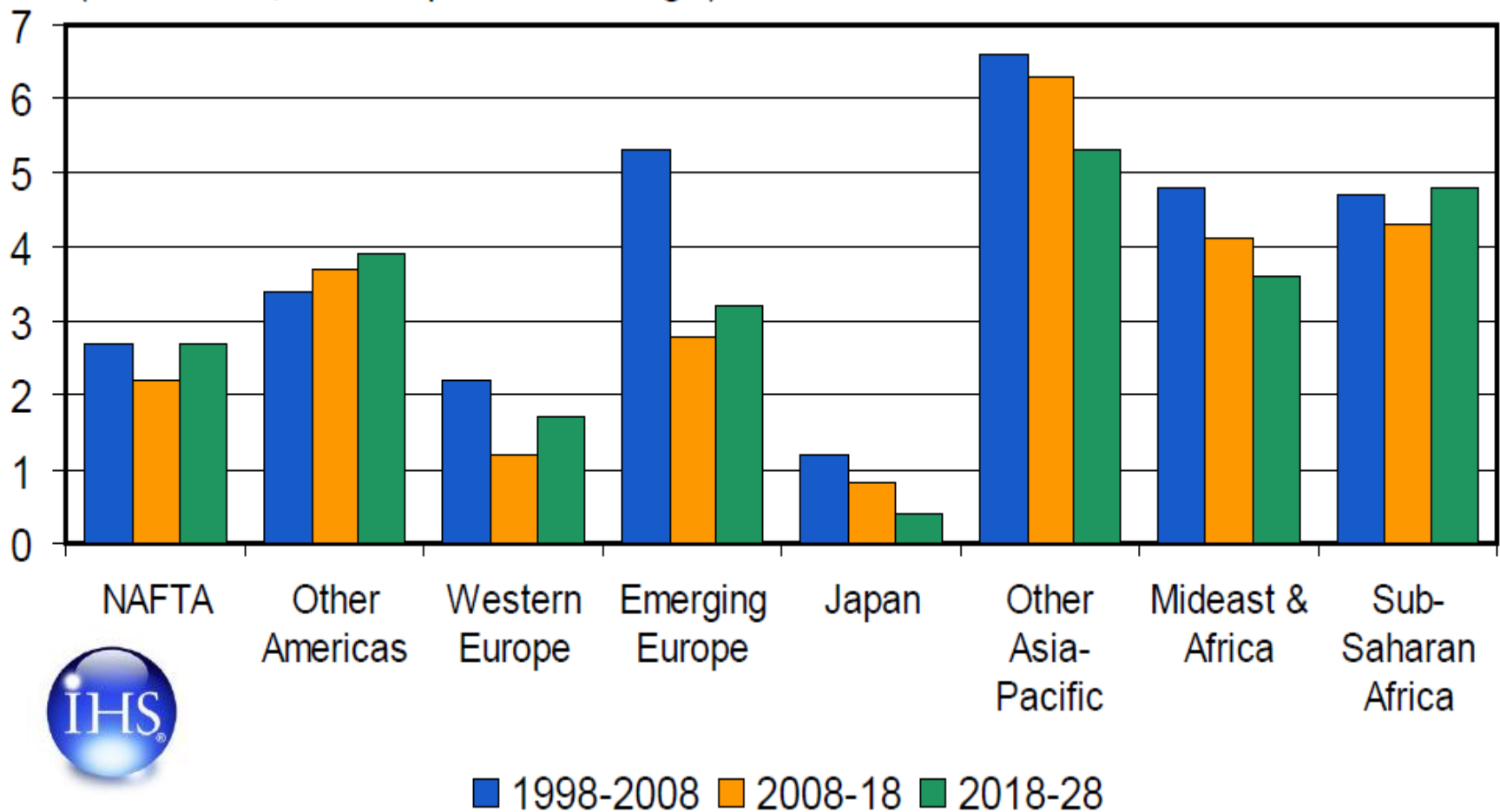
# World Trade Typically Grows Faster Than Real GDP



Source: HIS Global Insight

# Long Term World Economic Growth by Region

(Real GDP, annual percent change)



Source: HIS Global Insight – World Trade Service

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# The World's Top 20 Ports Posted a 15.1% Volume Growth in 2010 (2009 Rank in Brackets)

Rank	Port	Mteu(Change)
1 (2)	Shanghai	29.07 16%
2 (1)	Singapore	28.43 10%
3 (3)	Hong Kong	23.53 12%
4 (4)	Shenzhen	22.51 23%
5 (5)	Busan	14.21 19%
6 (6)	LA/LB	14.10 19%
7 (9)	Ningbo	13.14 25%
8 (7)	Guangzhou	12.55 12%
9 (10)	Qingdao	12.01 17%
10 (8)	Dubai	11.60 4%
11 (11)	Rotterdam	11.14 14%
12 (12)	Tianjin	10.08 16%
13 (13)	Kaohsiung	9.18 7%
14 (14)	Port Klang	8.87 21%
15 (15)	Antwerp	8.47 16%
16 (16)	Hamburg	7.94 13%
17 (17)	Tg Pelepas	6.53 8%
18 (18)	Xiamen	5.82 24%
19 (20)	Dalian	5.24 15%
20 (19)	Laem Chabang	5.19 12%

**2010: 260 Million TEUs**

2009: 226 Million TEUs

*This Recovery Reflects the Rebound in Global Container Trade Due Primarily to **Intra-Asia Volumes** and Supply Chain Inventory Restocking.*



US Ports



Chinese Ports



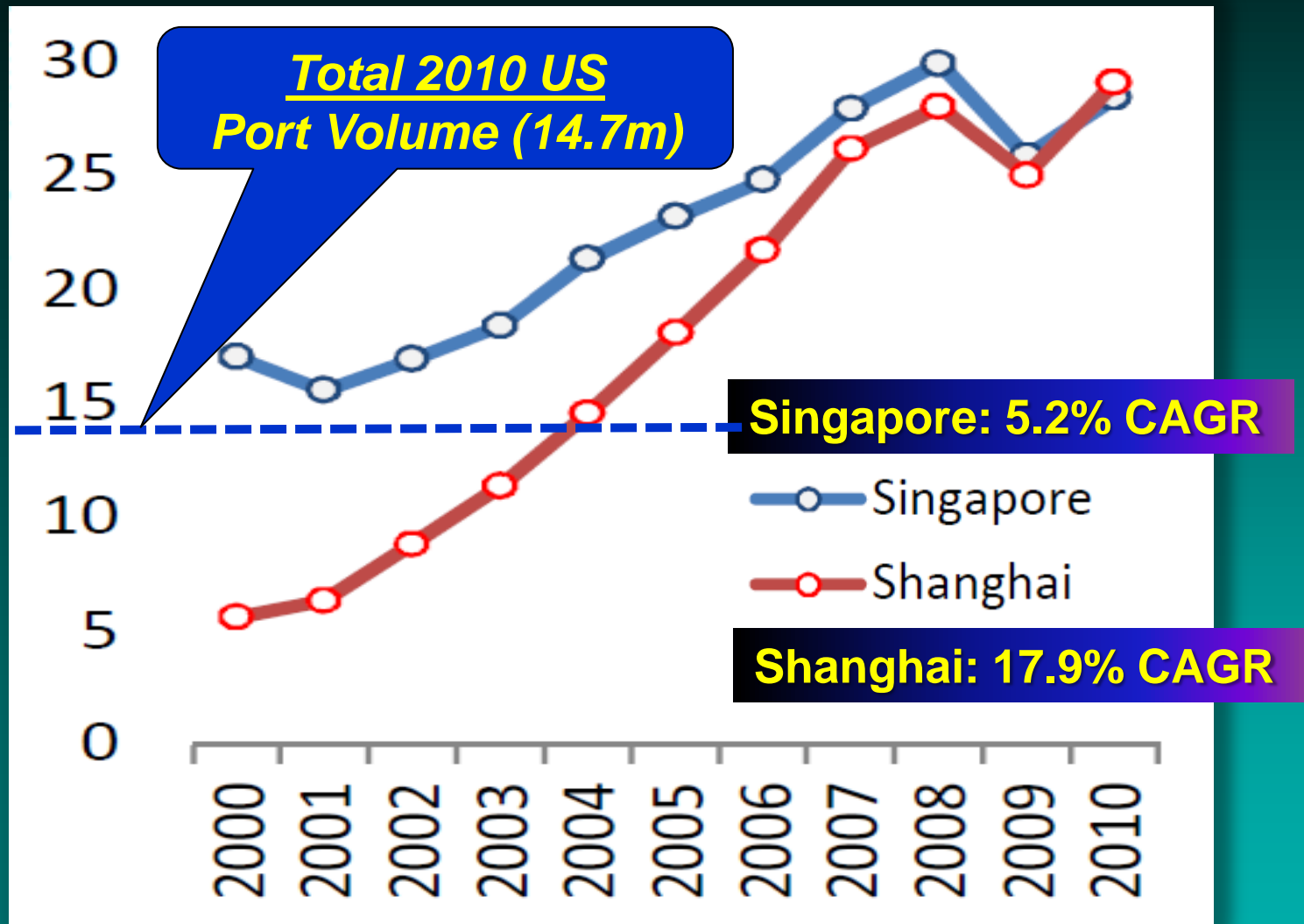
# China Breaks Container World Record

Of the 10 busiest ports in the world in 2010, Nine are in Asia; of the top 10, Six are on the Chinese mainland

Chinese Ports hit an all-time monthly high of 12.44 Million TEUs in May 2010 with Six of the Top 10 Chinese Ports reporting Record Volumes.

# Singapore vs. Shanghai Container Volumes

## 2000 through 2010 Volumes in Millions of TEUs



# ***Full Global Recovery:***

Singapore-based PSA posted a 14.4 percent increase  
in throughput in 2010

*65.12 million TEUs* handled by the PSA Group,  
a new record for the Singapore (4.4 x total US volume)





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# The Astounding Ocean Marine Carrier Industry Comeback



An aerial photograph of a large blue and red Maersk container ship beached on a sandy shore. The ship is heavily loaded with multi-colored shipping containers. The background shows a coastal town and a body of water. The text is overlaid on the top half of the image.

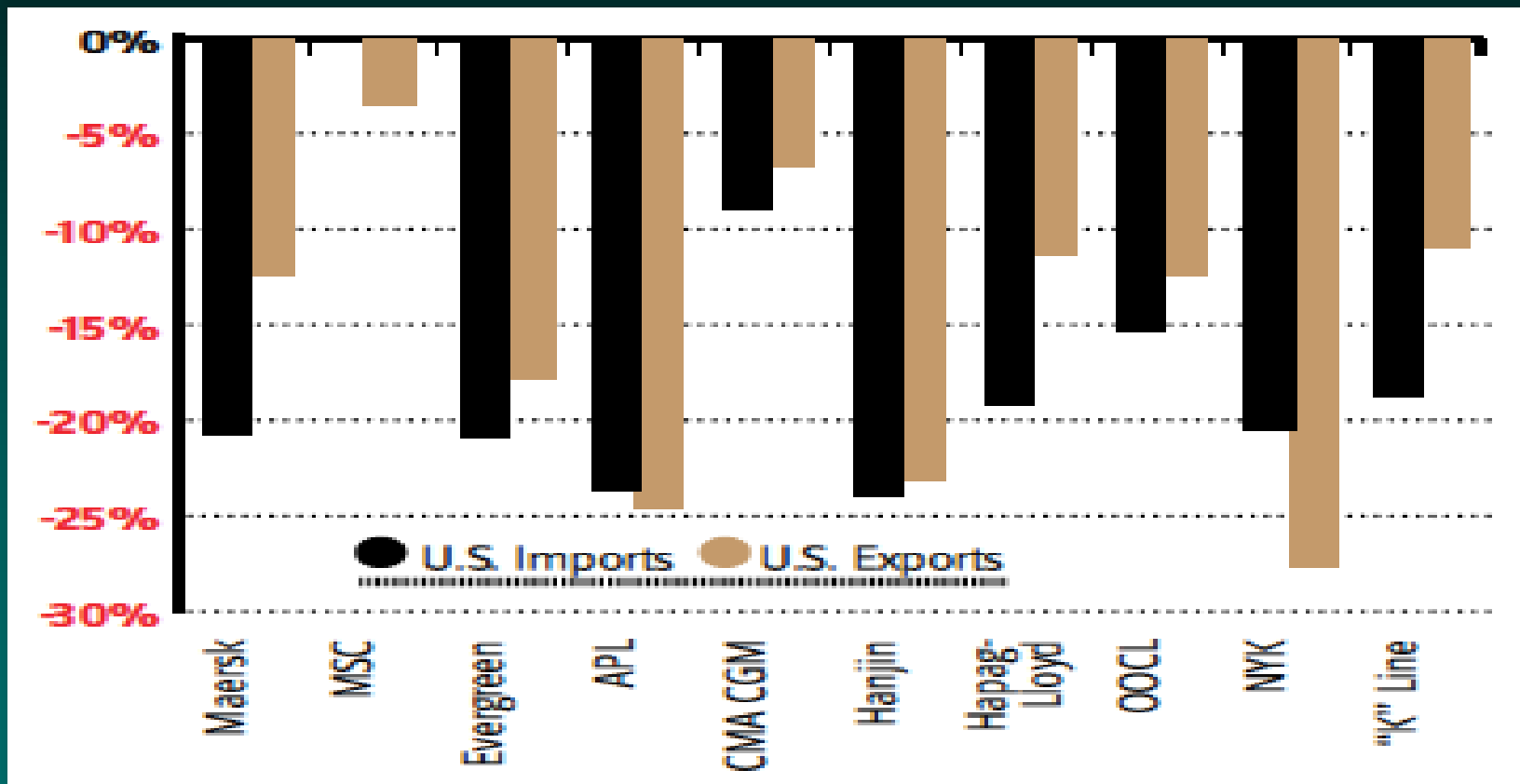
# 2009 Carrier Losses: Container Ocean Carriers Suffered \$52 Million/Day Average Loss

**Shoals of Red Ink:  
\$19 Billion in Losses in 2009**



# ***In 2009 the Ocean Carriers Lost \$10 Billion Every Six Months***

*Jan-Sept 2009 vs 2008*

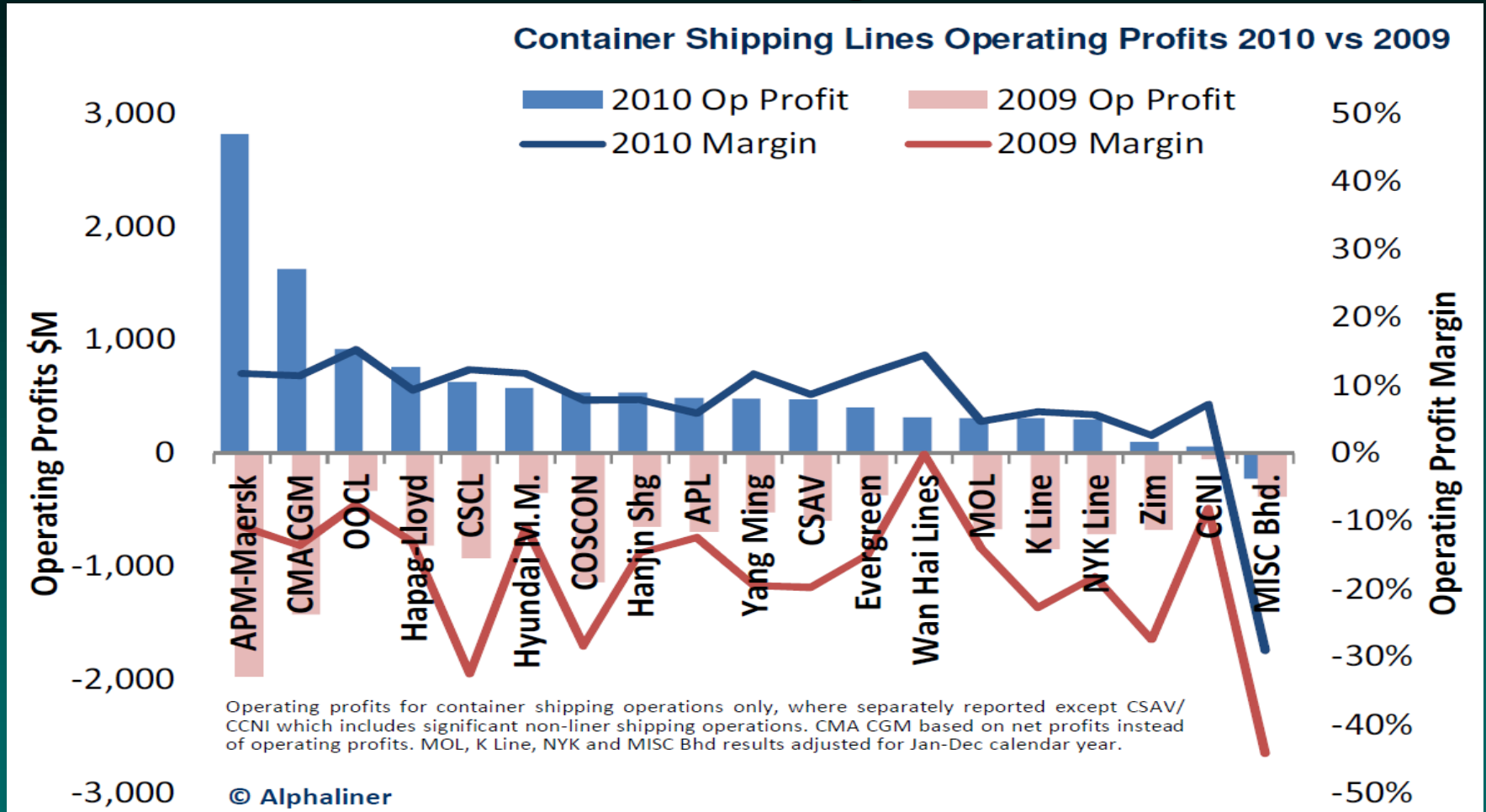


**Note: MSC's US Import Volume was Flat Through the First Nine Months of 2009**

Source: JOC Top 40 Container Lines, PIERS Global Intelligence Solutions



# 2010: Container Carriers Most Profitable Performance in History - \$14B in Profit

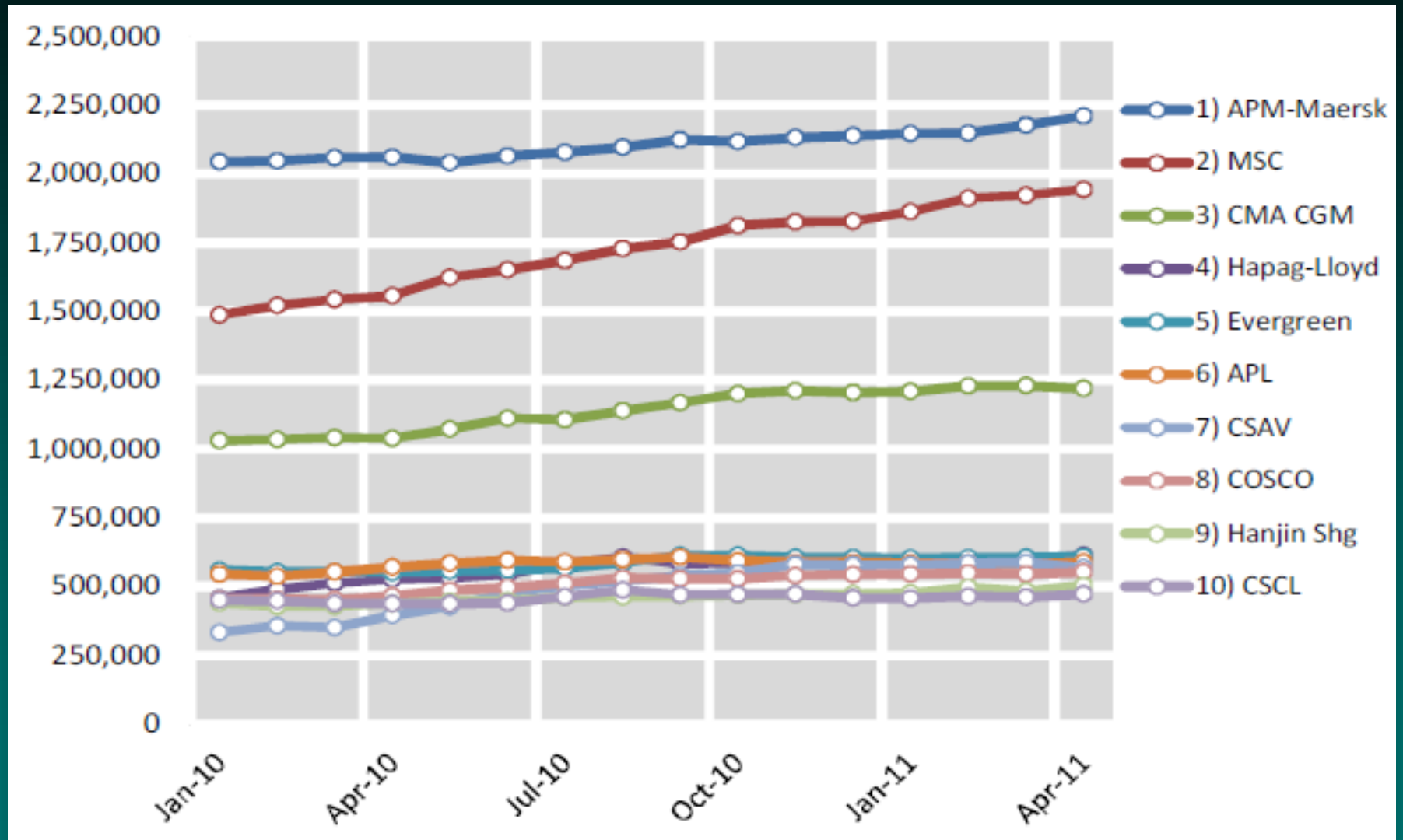


**2010: Total Revenues Rising 42%; Total Container Handlings Increased by 14%; Freight Rates Increased 26%**

Source: Alphaliner Newsletter Volume 2011 Issue 16

# 2011 Top Containership Carriers

## (Monthly Change in Operating Capacity (TEUs))



Source: Alphaliner Newsletter Volume 2011 Issue 16

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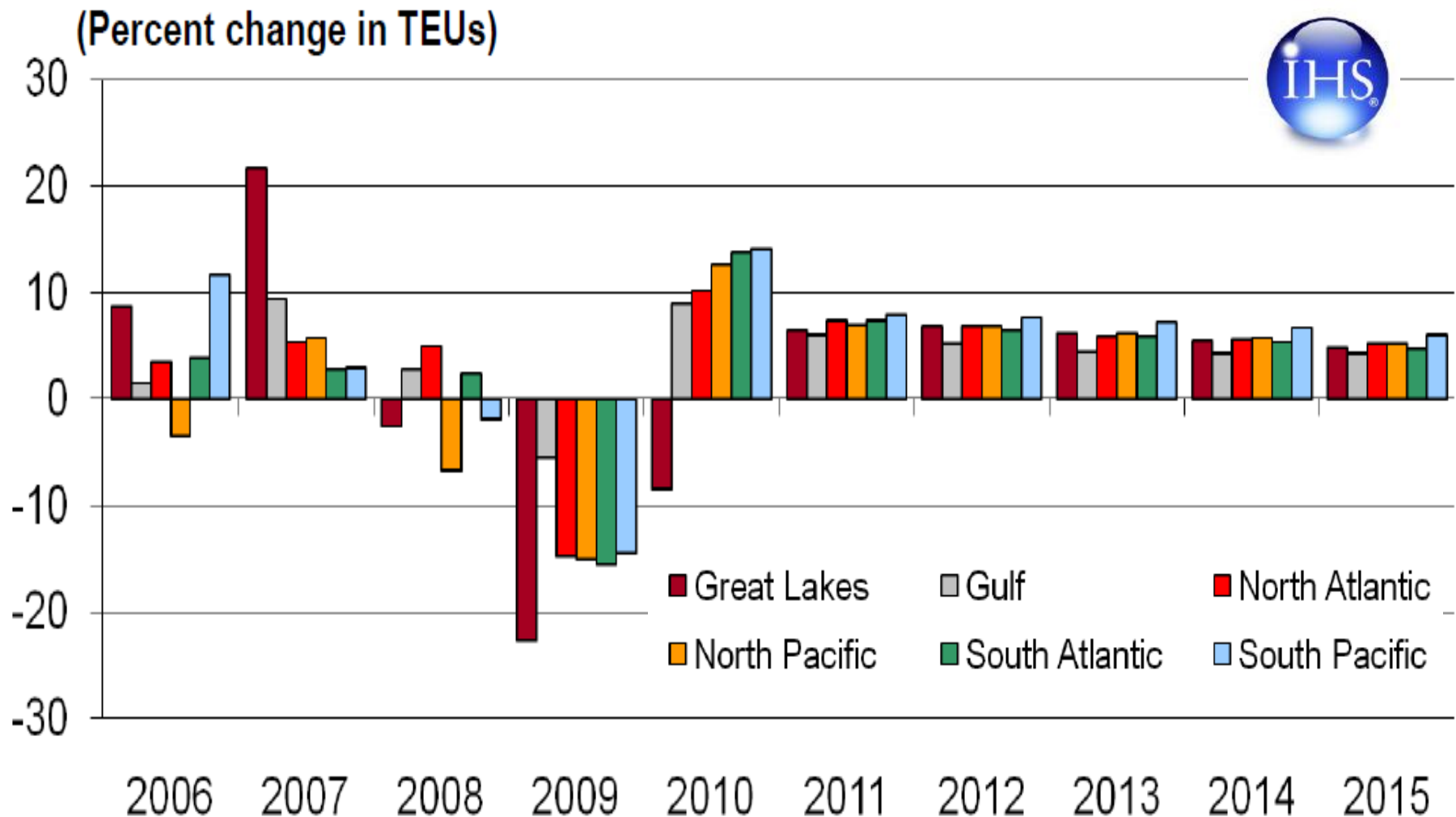
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# North American Cargo Demand Trends

*(Déjà vu Experience)*



# Container Growth Rates by North American Coast



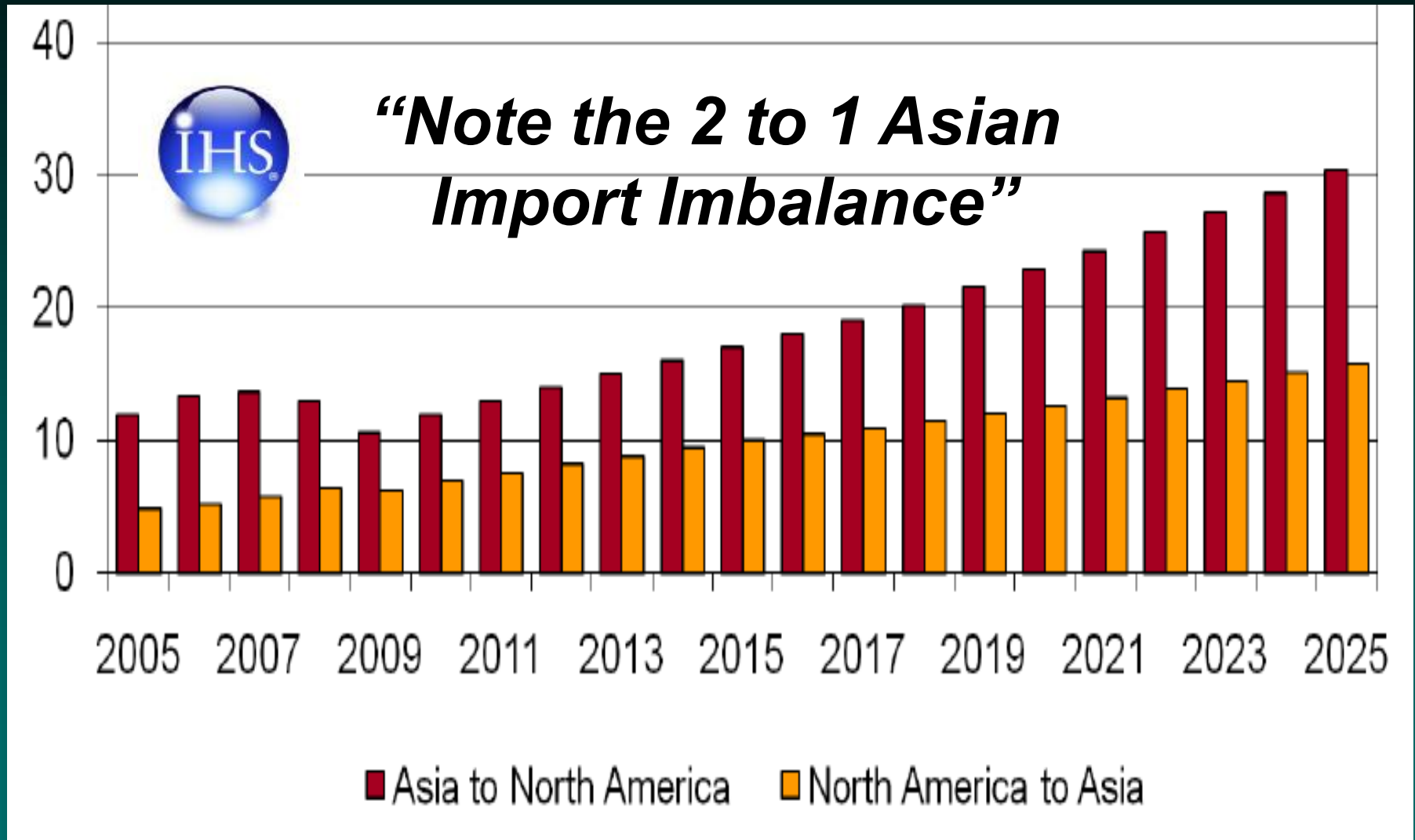
Source: IHS Global Insight – World Trade Service

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# Transpacific Container Trade Recovery

(Millions of TEUs)

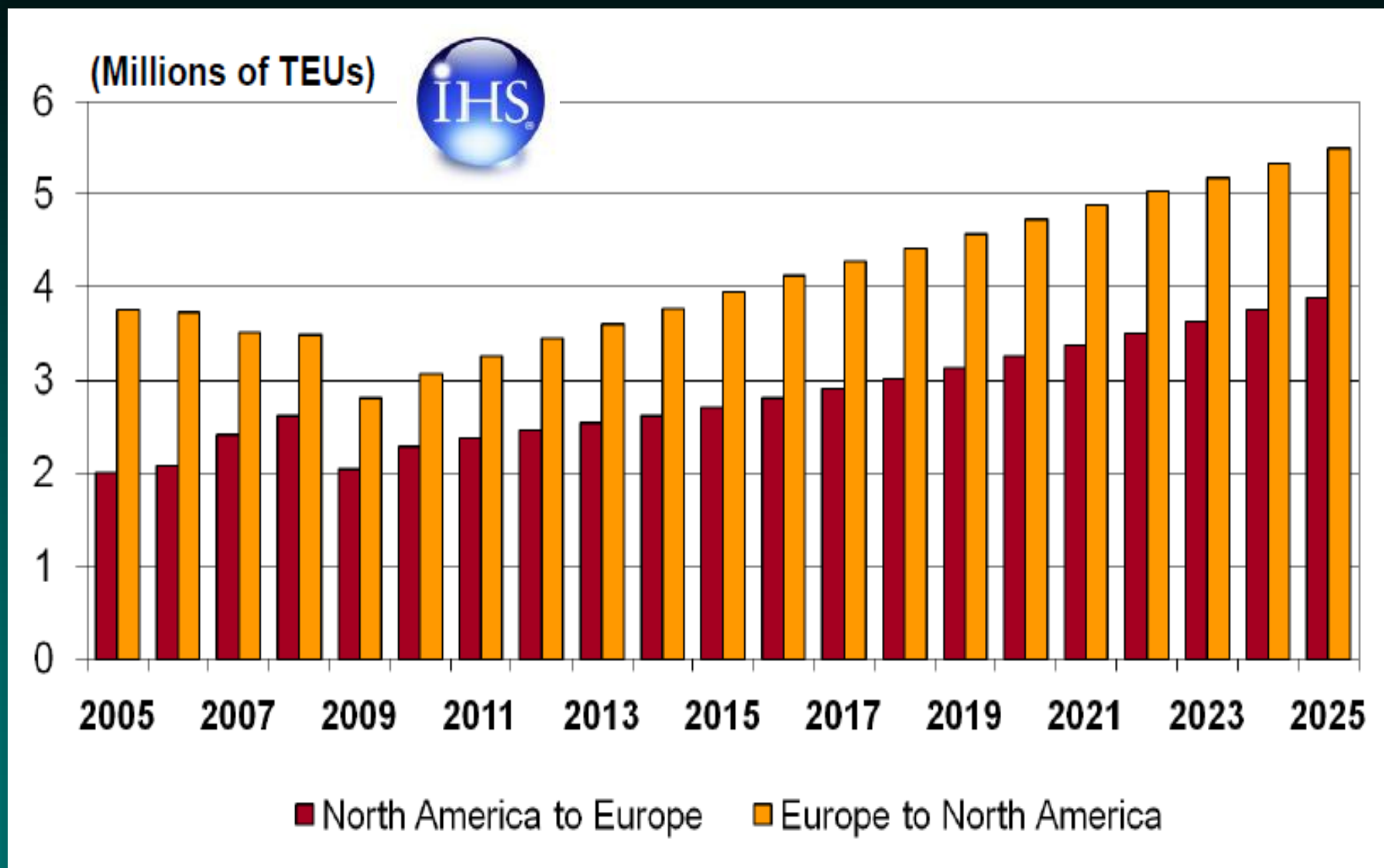


Source: HIS – Global Insight -The Global Outlook – October 14, 2010

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# Transatlantic Container Trade Recovery



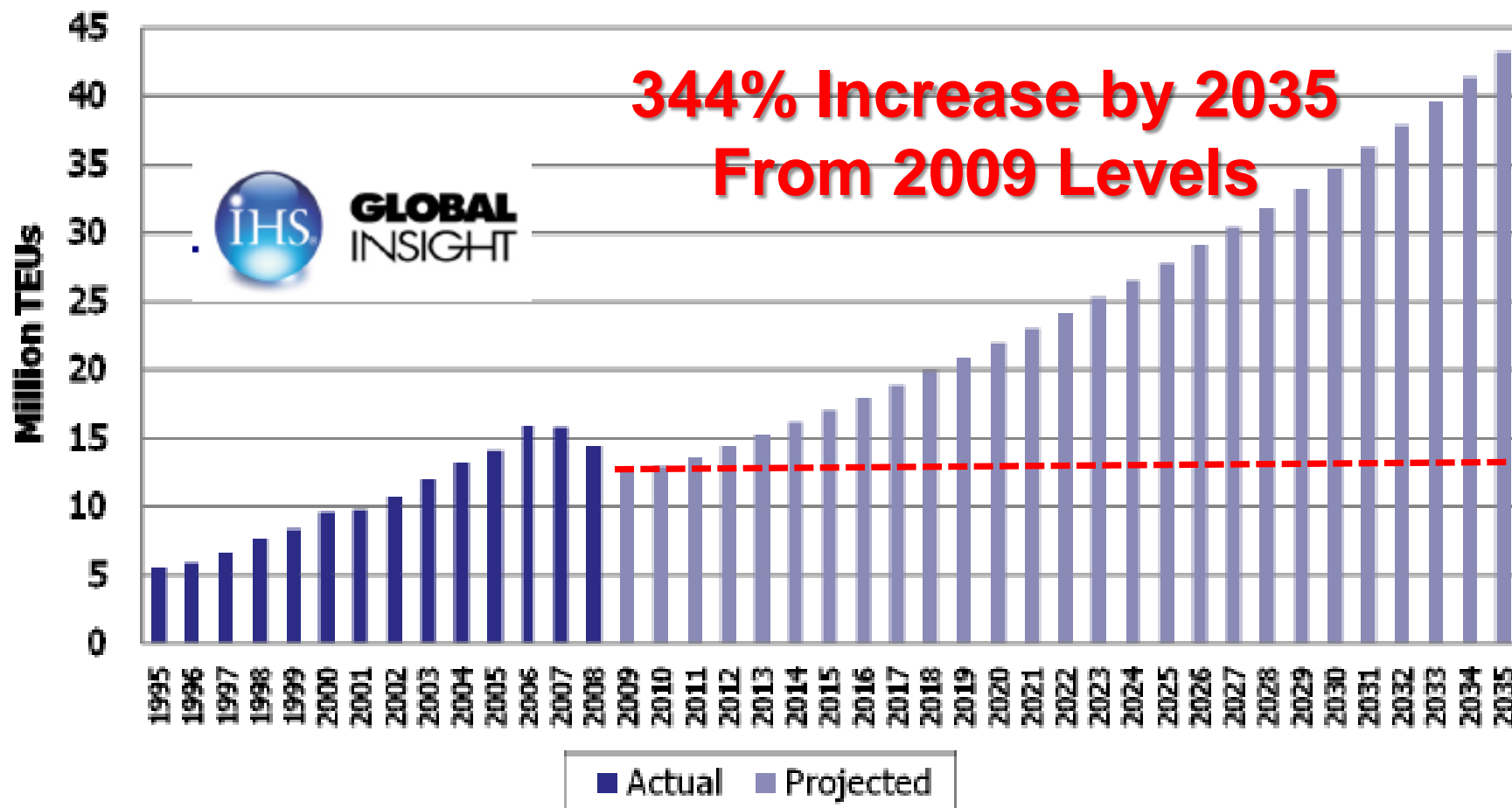
Source: HIS – Global Insight -The Global Outlook – October 14, 2010

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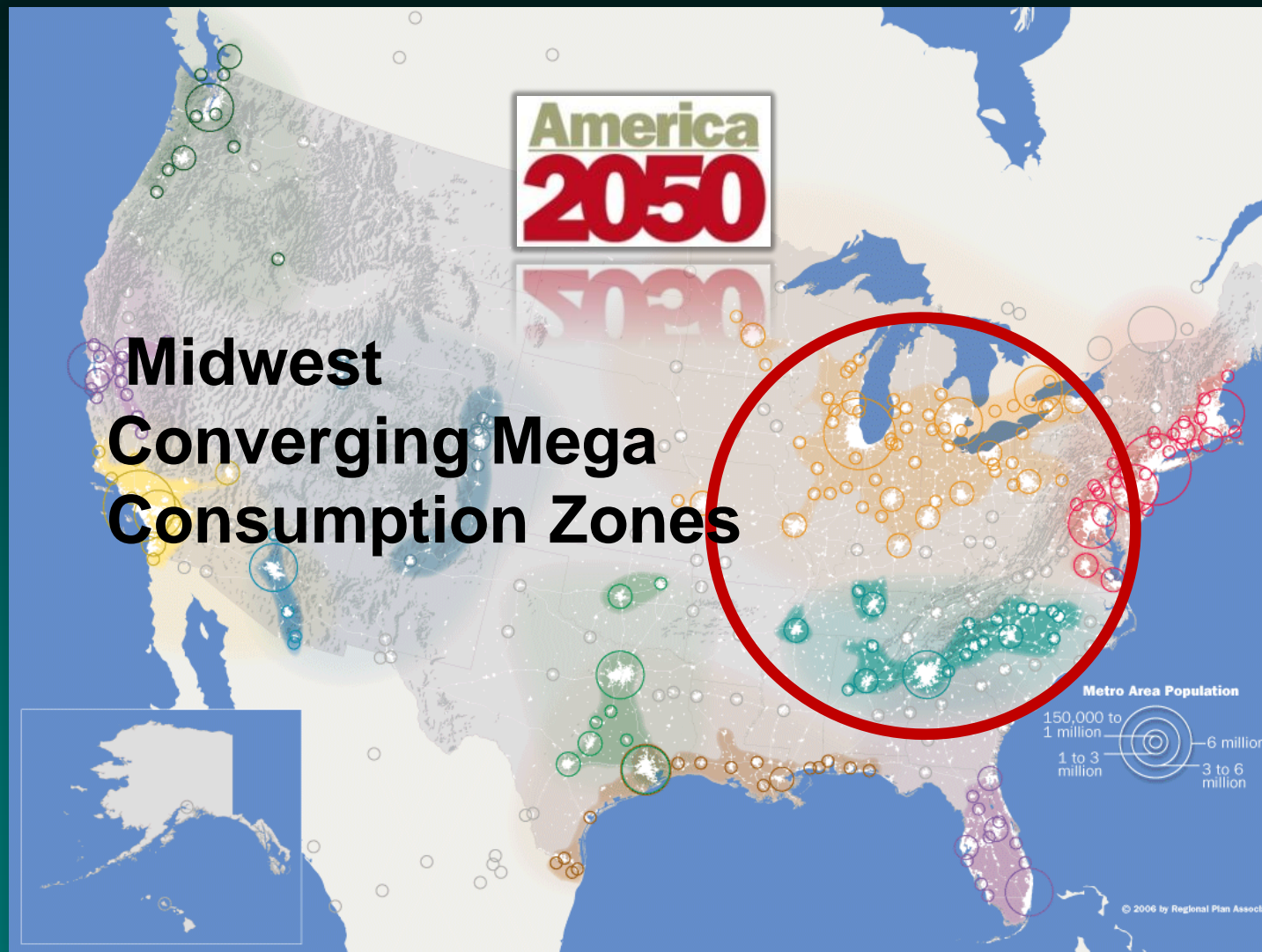
# San Pedro Bay (POLA +POLB) Container Volume Forecast



Annual Growth Rate in Recovery Averages Around Five Percent

# North American Emerging Mega-Regions

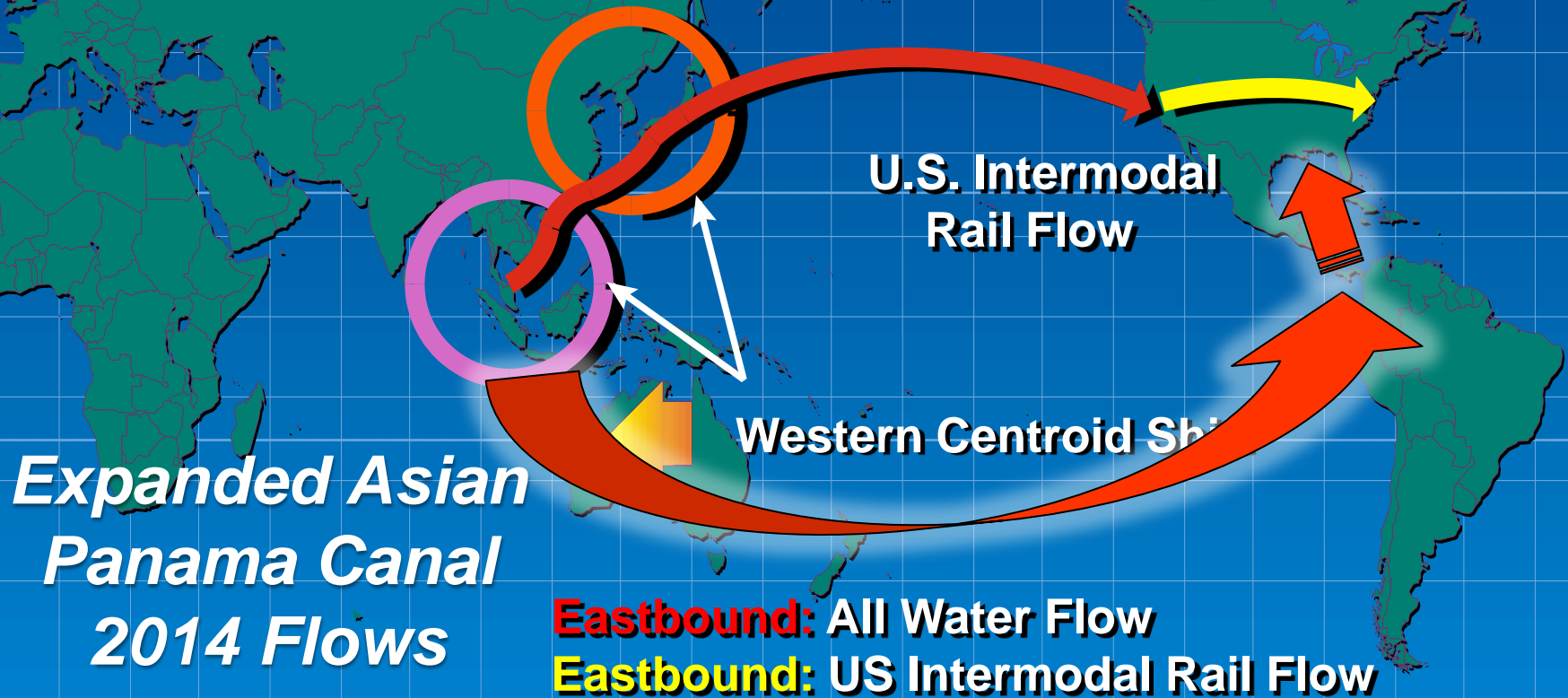
## *Future US Growth Areas*



Source: America 2050 Prospects - Regional Plan Association

# Southeast Asian Manufacturing Centroid Shift

## Current Inbound U.S. Cargo Flow





# Southeast Asian Manufacturing Centroid Shift

Cu

Flow

U.S. In  
Rail Fl



**With Manufacturing Centroid Shifts Into Vietnam  
and/or India, The North American East Coast will  
See Dramatically More Westbound Suez Traffic**

# Hong Kong - New York: Panama vs. Suez Canal Transit Times & Distances

## Panama Canal Route

**11,277 miles & 21.3 Days**

*In Nautical Miles  
at 22 Knots*

*Approx.  
\$425,000  
Per  
Transit  
(8,000 TEUs)*

## Suez Canal Route

**11,628 miles & 22.0 Days**

Source: Dataloy Distance Tables

# Suez Canal Container Vessel Convoy Traffic

*(Ships Currently Transit the Suez Canal in 3 Daily Convoys)*



## 2014 Suez Canal Pricing Strategy:

The Suez Canal has an opportunity to competitively alter global shipping patterns by undercutting 2014/15 Panama Canal new pricing strategy.





The map illustrates the Suez Canal and its associated infrastructure in Egypt. Key features include:

- Navigation canals:** Suez Canal, Al-Kibrit Navigational Canal, Al-Suwayf al-Hawwah Canal, Al-Abbasiyah al-Hawwah Canal, Al-Isma'iliyah Canal, and the Great Bitter Lake.
- Drainage canals:** Al-Baqar Drainage Canal, Lake Manzala, Lake Tinnah, and Lake Maryut.
- Railroads and stations:** Indicated by lines with cross-ticks and solid black squares, respectively. Major stations include Port Said, Bur Fu'ad, Al-Qantarah, Al-Ballah, Al-Firdan, Ismailia, Mu'asjar al-Isma'iliyah, Sarabiyyum, Abu Sultan, Khamsah, Faid, Junayfah, Ash-Shallufah, Tis'ah, Al-Kubri, Suez, Ash-Shatt, and Bur Tawfiq.
- Salt marshes:** Represented by wavy line patterns along the coast.
- Geographical context:** The Mediterranean Sea to the north, the Gulf of Suez to the south, and the Red Sea to the east.
- Scale and coordinates:** A scale bar shows distances up to 10 miles and 15 kilometers. Latitude and longitude coordinates are marked along the map's edges.
- Inset map:** Located in the top right, showing the Red Sea and the Gulf of Aden.
- Legend:** Located in the bottom left corner, defining the symbols for navigation canals, drainage canals, railroads, railroad stations, and salt marshes.
- Copyright:** ©1994 EB, Inc.

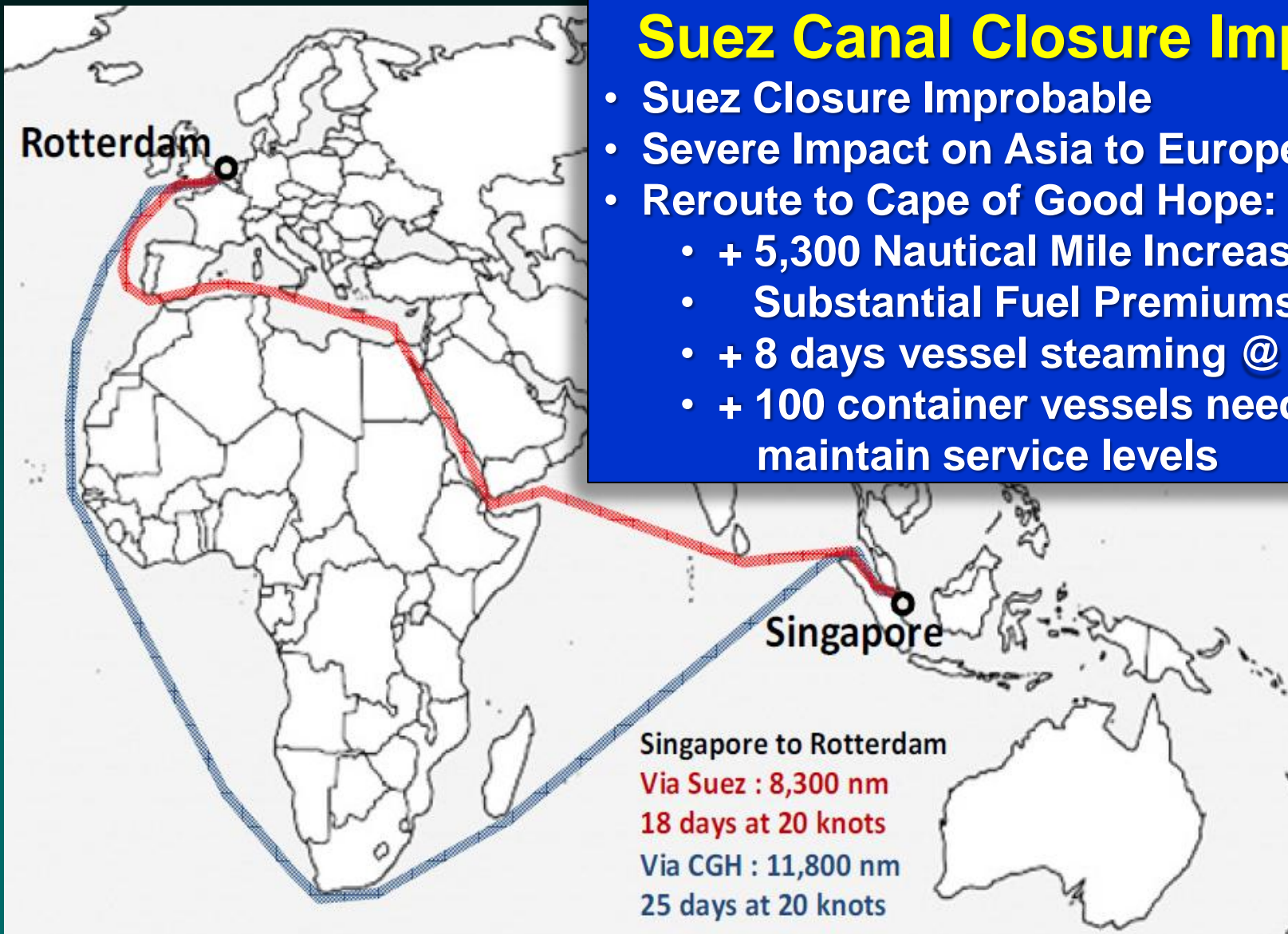


- **Suez Canal Closed Twice Before:**
  - 1956 - 1957 (6 months)
  - 1967 – 1975 “Six Day Arab-Israeli War”
- Heavy military presence along the Canal
- UN Peacekeeping force at the Suez Canal is reported to be 90 % U.S. Military
- **Weekly Vessel Transit History:**



# Suez Canal Closure Implications:

*(Singapore to Rotterdam Via Suez vs. Cape of Good Hope)*



## Suez Canal Closure Impacts

- Suez Closure Improbable
- Severe Impact on Asia to Europe Trade
- Reroute to Cape of Good Hope:
  - + 5,300 Nautical Mile Increase
  - Substantial Fuel Premiums
  - + 8 days vessel steaming @ 20 knots
  - + 100 container vessels needed to maintain service levels

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# Maritime Vessel Technology Trends





April 26, 1956

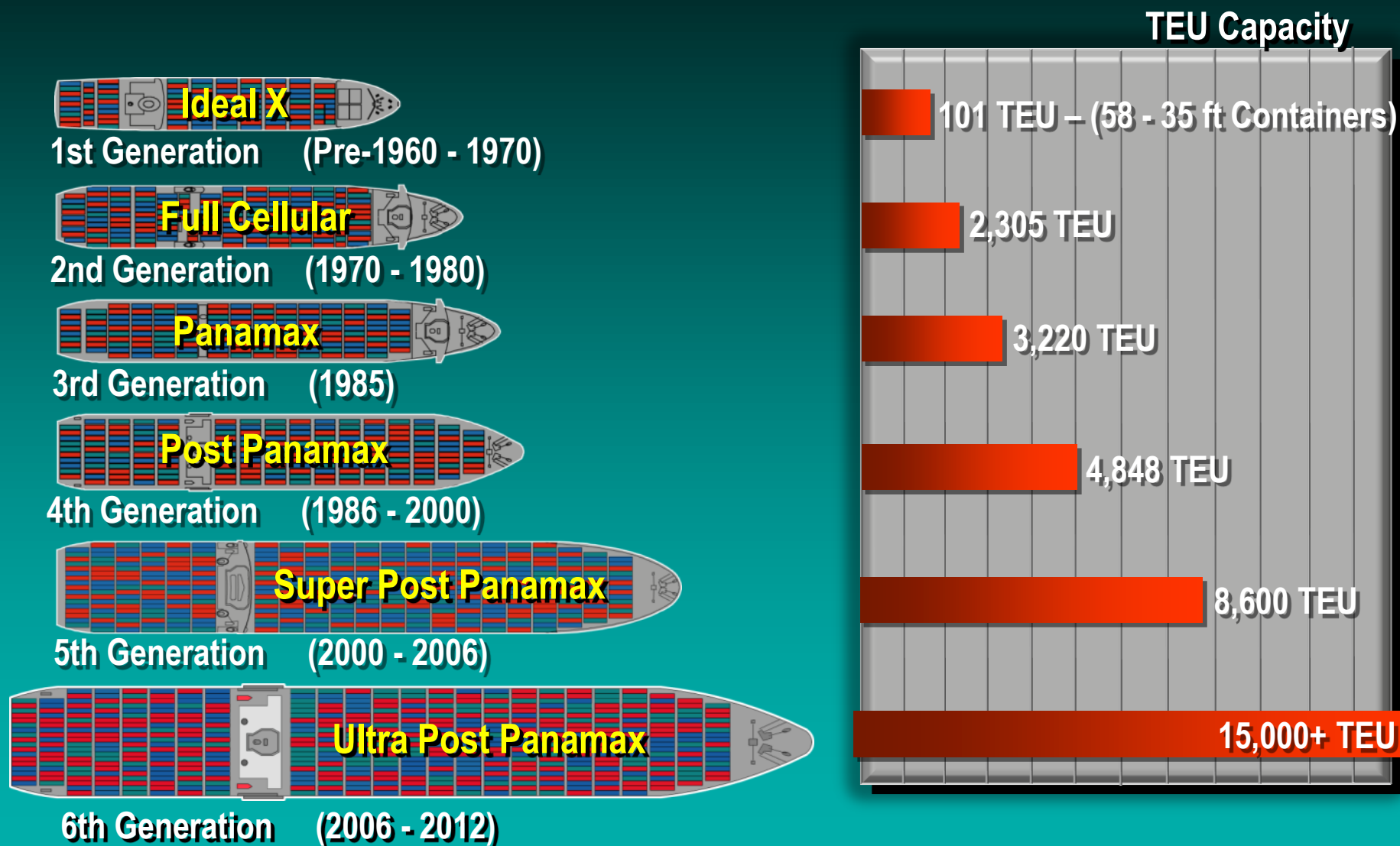
58 Modified 35-foot Truck Containers

The deck of the *Ideal X*  
at Port Newark  
preparing for the  
historical sailing  
of the world's first  
containership.

April 2006:  
50 Year Anniversary of the Container

*In 1955 Malcolm McLean, sold McLean Trucking,  
and secured a bank loan of US\$42 million to build the  
world's first container ship.*

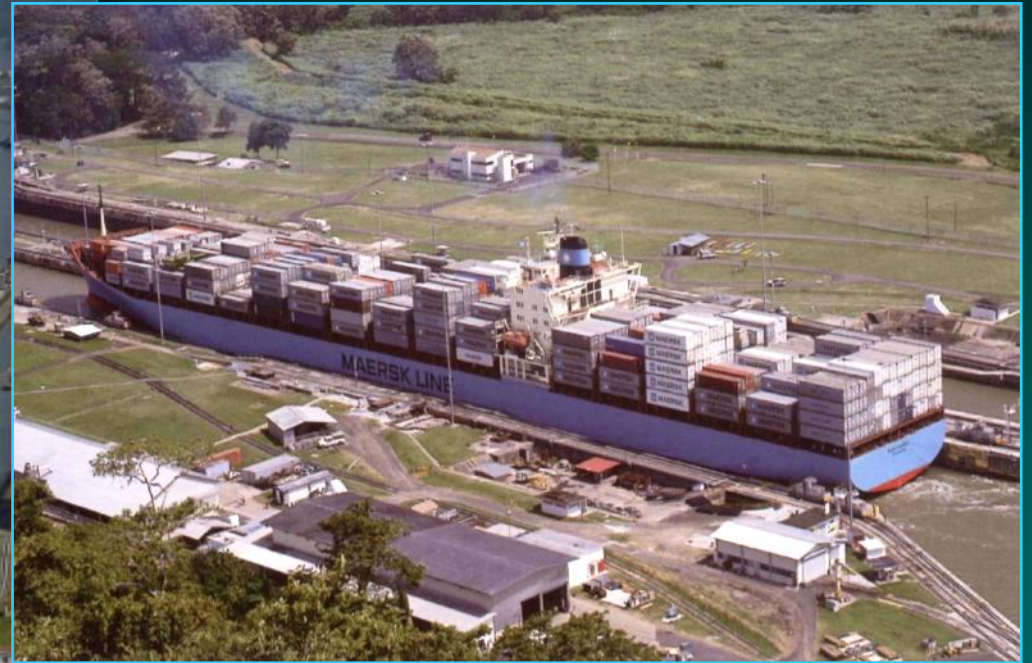
# World Container Ship Evolution





# Madison Maersk (3,928 TEUs) in the Panama Canal

(Current Max Panamax Vessel Approx. 4,800 TEUs)







# A.P. Moller-Maersk L Class M/S Emma Maersk

(15,000 TEU Vessel - 22 Containers Wide)



Length: 1,302 ft, Width: 207 ft, Net Cargo: 123,200 tons

**Quay Cranes: 10**, Engine: 14 in-line cylinders diesel engine (110,000 BHP)

Cruise Speed: 31 mi/h, Full Crew: 13, Construction cost - US \$145 M+

Source: Maritime World Logistics Inc..

# 2010: Evergreen Orders 100 New Containerships, delivery 2010-2012



**32 vessels** of a new type with a capacity of 8,000 TEUs each  
**20 additional S-type** (7,024-TEU) ships  
**20 additional U-type** (5,364-TEU) ships  
**20+ 2,000-TEU feeder ships** of a new type

Source: JOC April, 9 2010



# MSC Daniela 15,000+ TEUs World's Largest Container Ship

Built by Samsung Shipbuilding & Heavy industries Co. Ltd in South Korea and delivered to Mediterranean Shipping Company in December 2009. She is the largest container ship ever built.



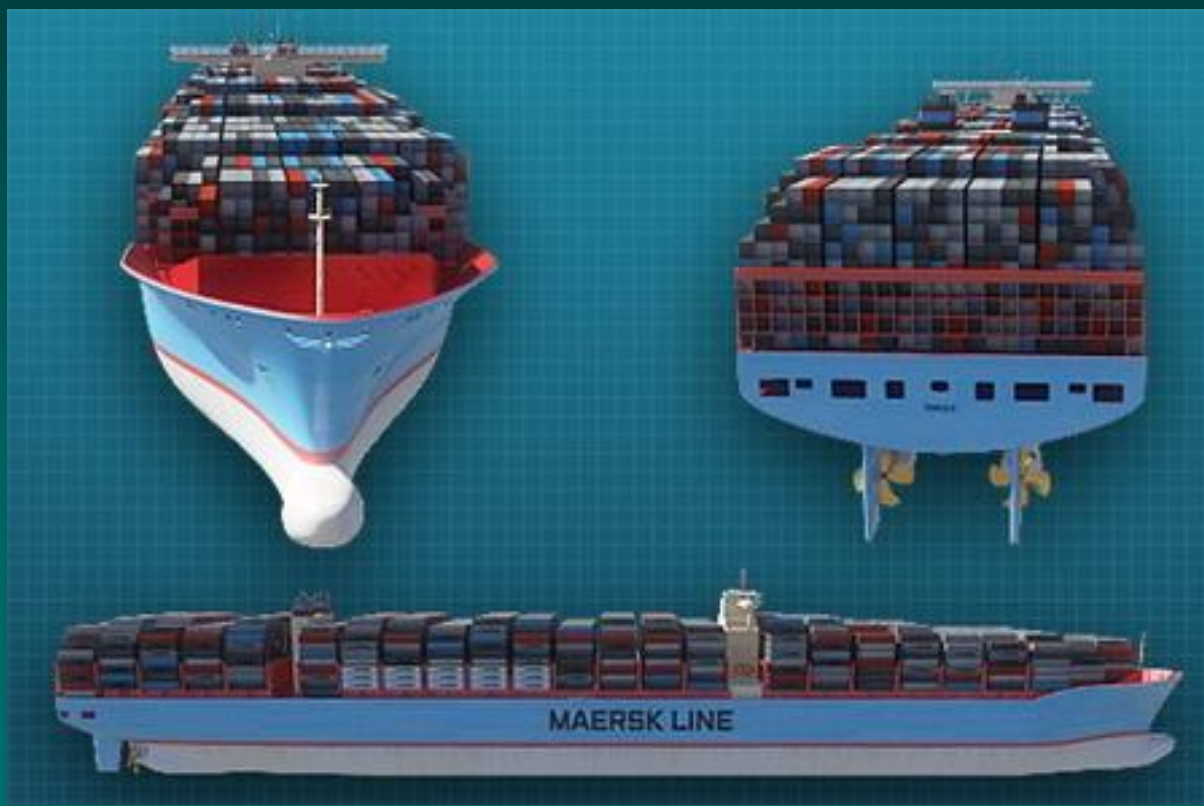




**MAERSK**  
LINE, LIMITED

## February 2011: A.P. Moller-Maersk Orders 30 – 18,000 TEU Container Vessels “*Largest in the World*”

Daewoo Shipbuilding & Marine Engineering has won a **US\$2 billion** order from A P Moeller-Maersk to build **10 vessels of 18,000 TEU** capacity each. Daewoo is in talks with Maersk to build a **further 20 ships** of same capacity for a total order worth **\$6 billion**, Korean firm's biggest ever single order



Source: Cargonews Asia – e-Cargo news Asia February 18, 2011



**MAERSK**  
LINE, LIMITED

# February 2011: A.P. Moller-Maersk Orders 30 – 18,000 TEU Container Vessels “*Largest in the World*”



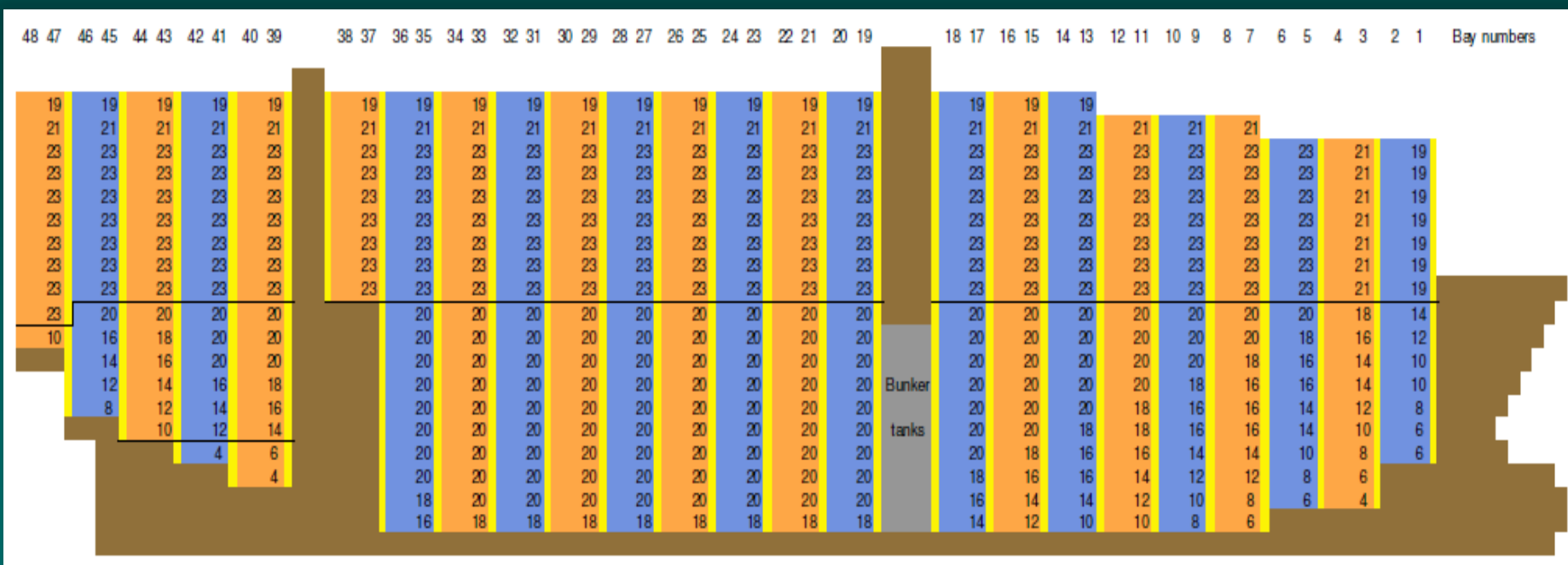
**23 Containers Wide – 9 Tiers Above the Hatch**

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**Total Capacity = 8,077 FEU Containers = 18,054 TEUs**  
**Capacity Above the Hatch = 4,639 FEU HC (9 High Tiers)**  
**Capacity Under the Deck: 3,438 FEU HC = 7,685 TEUs**



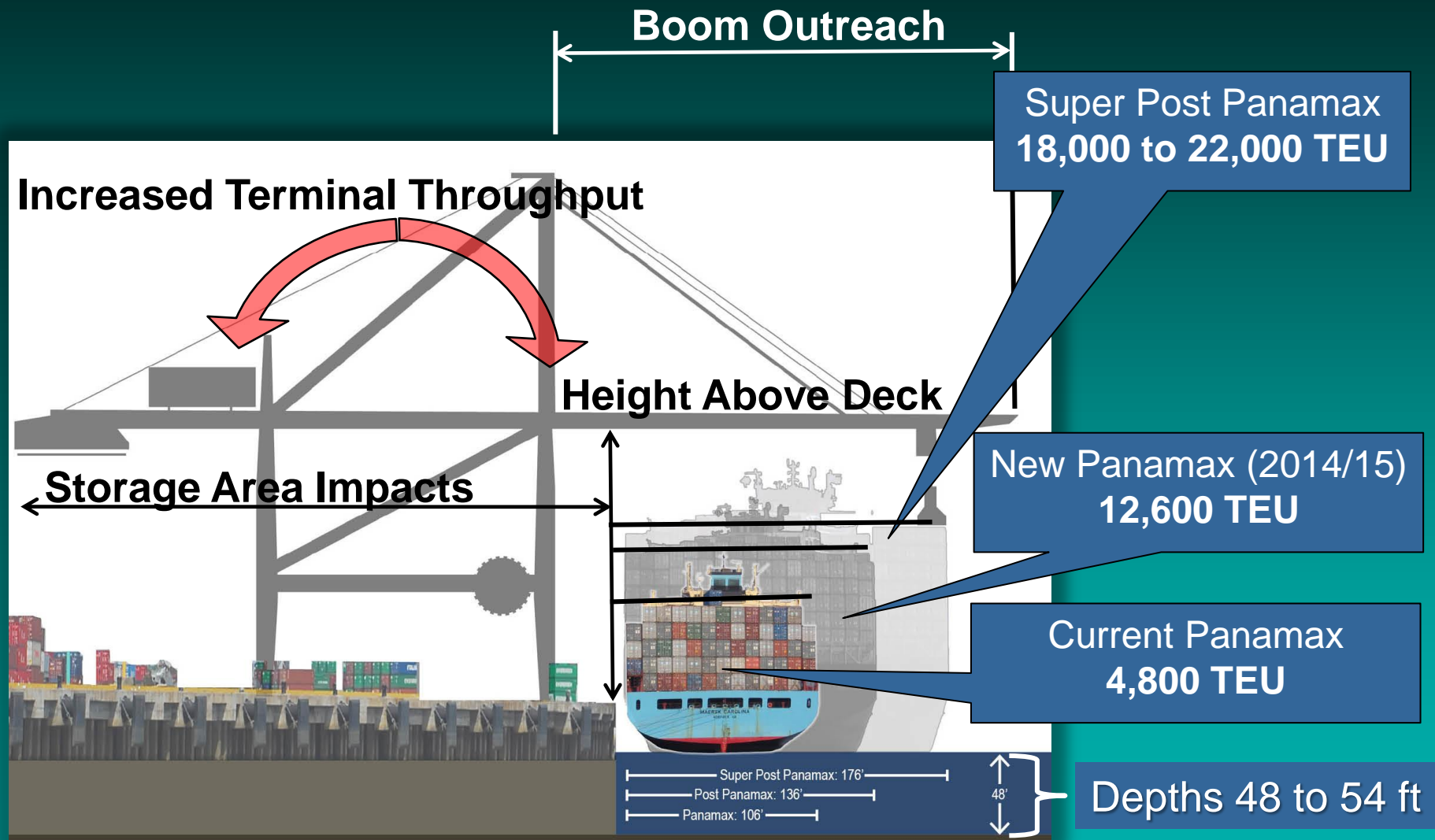
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# Vessel Size Expansion - Terminal Impacts

(Port Terminal Infrastructure & Equipment Geometry Impacts)



Source: Georgia Ports Authority and Vickerman & Associates

# 21,000 TEU Ultra Large Twin Engine Container Ship - 2011



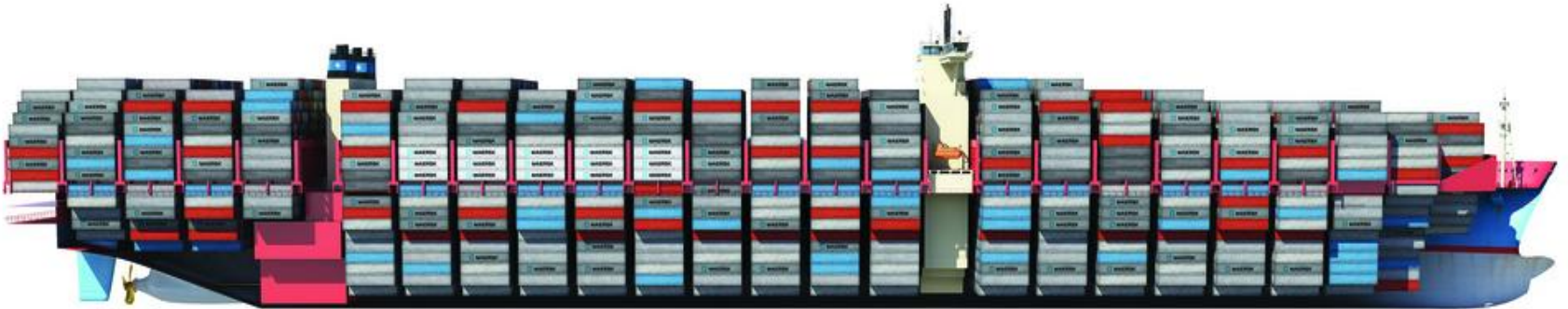
**ALPHALINER**

**23 Containers Wide**



Source: Alphaliner Newsletter Volume 2011 Issue 4

# Future Container Vessel Characteristics:



*Capacity = up to **22,000 TEUs***

*Deck Stow: **23 wide** & 7- 9 Containers above hatch*

*Length = up to **1,445 ft** (4.5 Football Fields)*

*Beam = up to **194 ft***

*Deadweight Tonnage = **220,000 Long Tons***

*Draft = up to **54 ft***

***Far Exceeds the 2014/15 Panama Third Lane Capacity***



# NYK Super Eco Ship



# NYK Super Eco Ship

## NYK Super Eco Ship 2030

Green Ship Design for the Future

TOTAL  
CO<sub>2</sub>  
reduction  
**70%**

Nominated for the  
**Clean Innovation** award  
at Nor-Shipping 2009

**ELOMATIC**  
CONSULTING & ENGINEERING

**NYK LINE**  
REGULAR SERVICE

**Monohakobi**  
Technology Institute

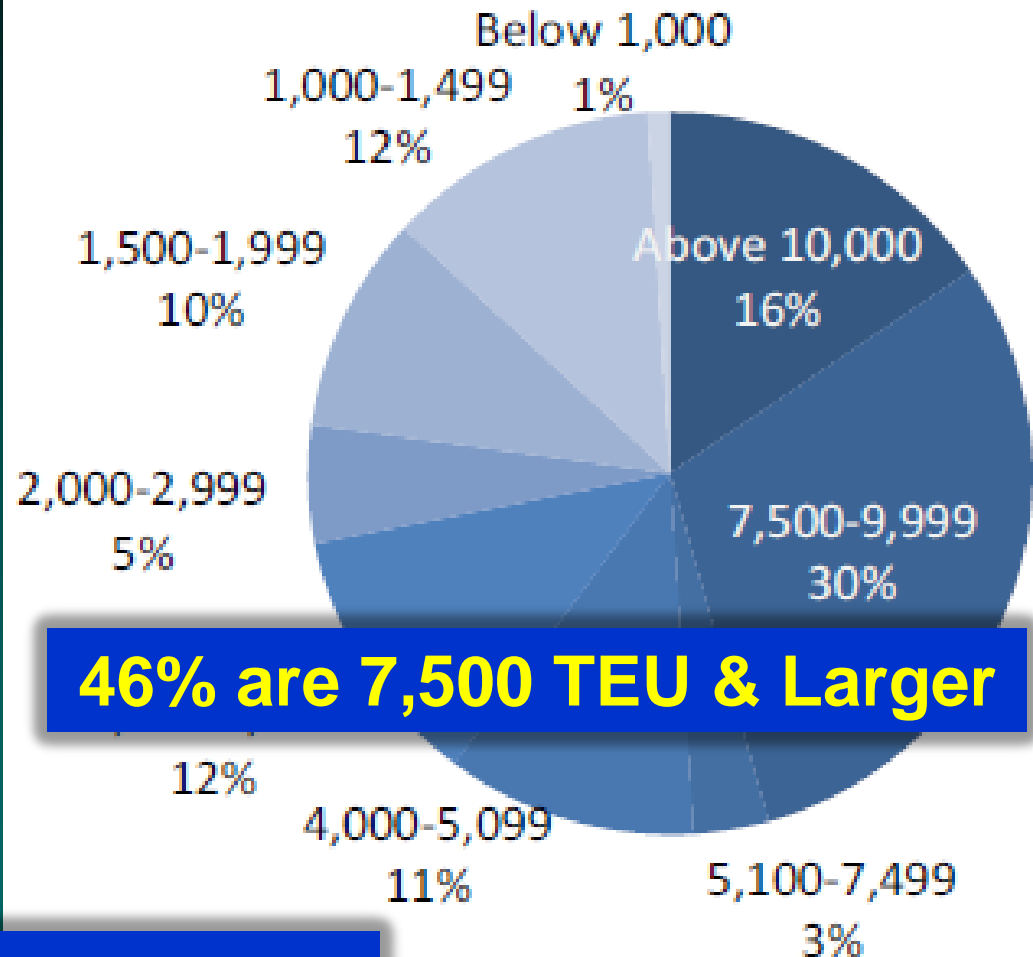
**Garroni Design**

# 2010 - 2011 New Containership Orders

(Size Range, Order Percentage, & Country of Built)

Size Range	Units Ordered
Above 10,000	32
7,500-9,999	62
5,100-7,499	7
4,000-5,099	23
3,000-3,999	24
2,000-2,999	11
1,500-1,999	20
1,000-1,499	25
Below 1,000	2

Country	Units	TEU
S Korea	127	1,038,123
China	62	269,338
Philippines	8	30,400
Taiwan	6	7,600
Japan	2	
Germany	1	



**46% are 7,500 TEU & Larger**

**92% Built by  
S. Korea & China**

liner Newsletter  
Volume 2011 Issue 17



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# Panama Canal Expansion: New Capacity

# The Panama Canal Circa 1914







The Autoridad Del Canal de Panama

# Panama Canal Today





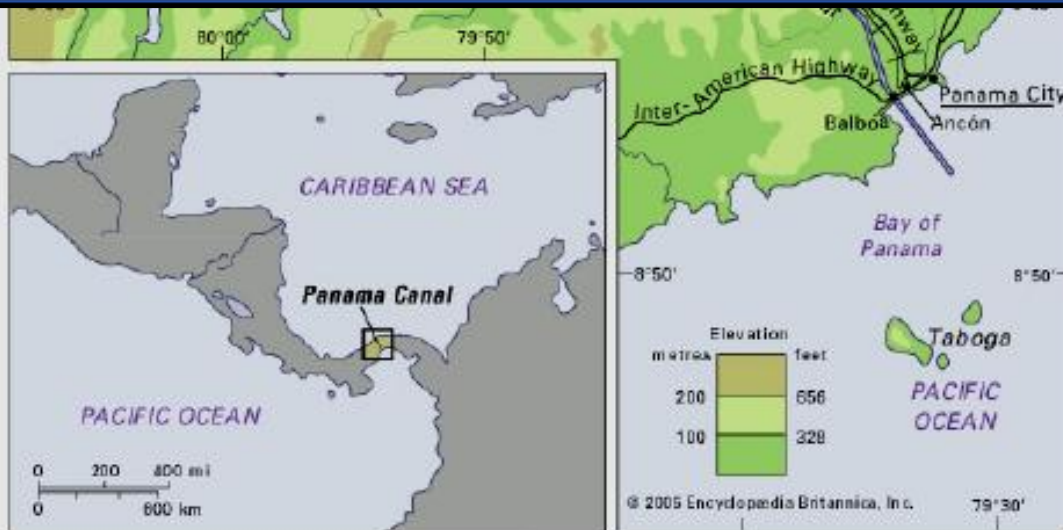
# Panama Canal Expansion



The Autoridad Del Canal de Panama

More than **14,000 ships** a year pass through the **50 mile**

**A \$5.25 Billion Investment in a 3<sup>rd</sup> Set of Locks Equating to 16% of Panama's National GDP**



Pacific Ocean & Caribbean Sea carrying **\$275 million tons of Cargo** and **\$100 billion in container shipping**

Source: ACP Data

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# FY 2009 Panama Canal Route Traffic

(Millions of Long Tons)



**1915 - 2010**

**Total Number of Transits: 1,000,972**

**Amount of Cargo: 8,587,711,605 LT**

*Source: ACP Data*



# 2010 Weekly Panama Canal Through Transits vs. Non-Transit Feeder Services



- Weekly Through Transits
- Feeder Services – No Transit

Source: ACP and Compare , 2008 Data



# Panama Maritime Authority Becomes A Major Transshipment Center

## Port Development in Panama

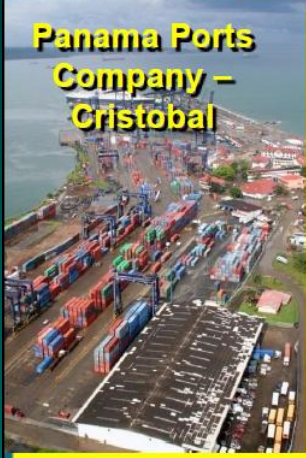
Manzanillo International Terminal (MIT)



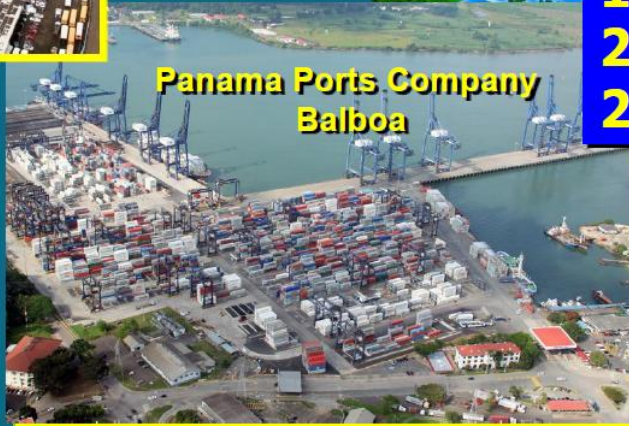
Colon Container Terminal



Panama Ports Company – Cristobal



Panama Ports Company Balboa



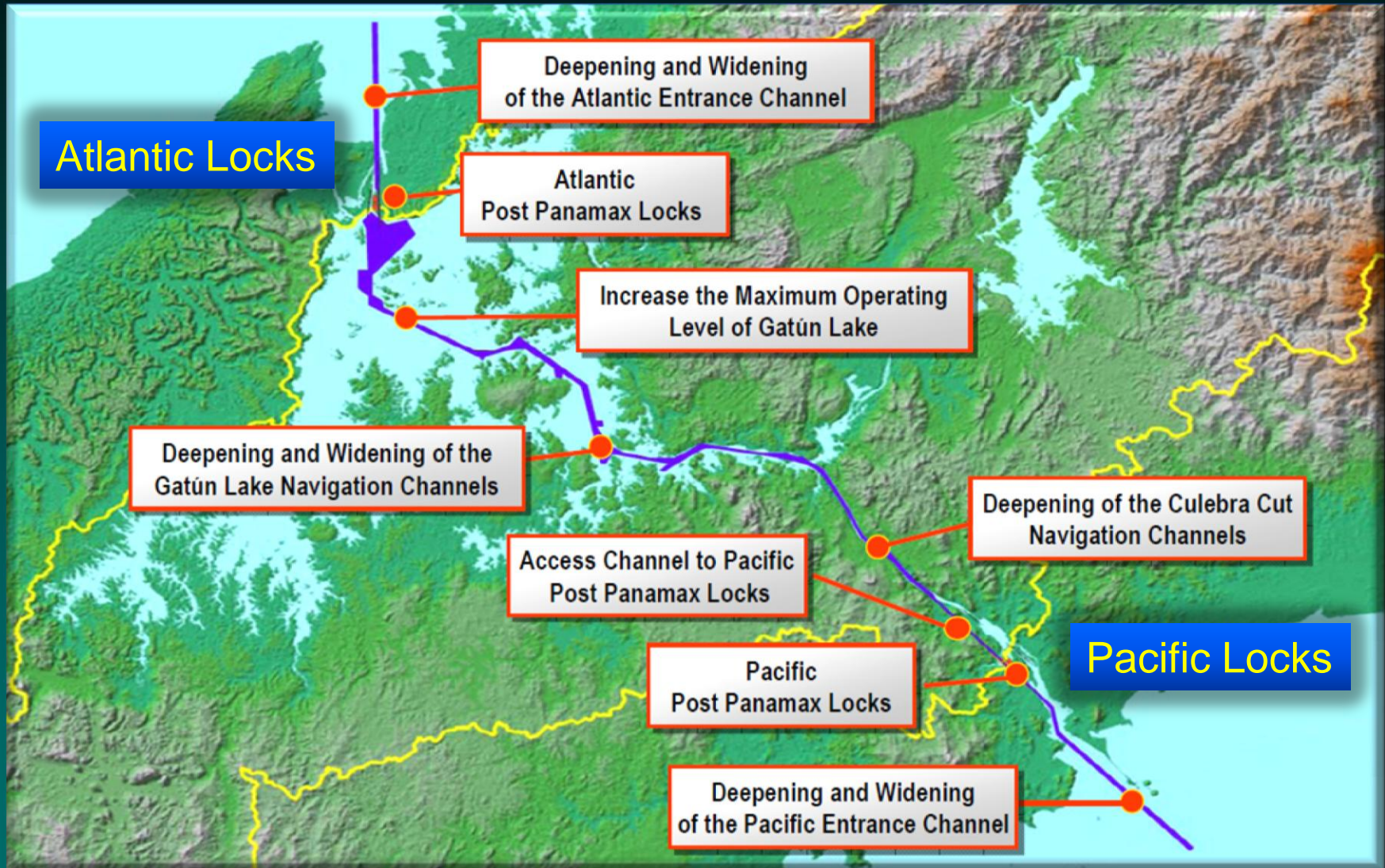
**1996: 235 Thousand TEUs**  
**2009: 4.23 Million TEUs**  
**2015: 7.4 Million TEUs**

Source: Panama Maritime Authority

Source: Panama Maritime Authority



# Panama Canal Expansion Program Components

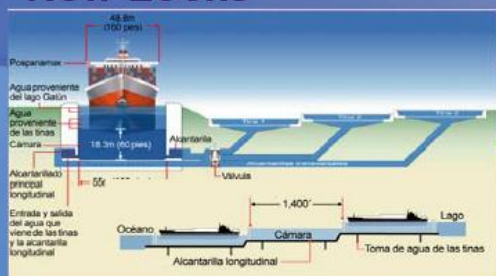


Source: ACP Information



# Cost Estimates for the Project (in million U.S. dollars)

## New Locks



2,730

620

820

## Navigational Channels



290

260

Inflation during  
construction

530

Total Investment

5,250

## Water Saving Basins



## Access Channels for the new Locks



## Water Reservoir Improvements



Estimates include contingencies





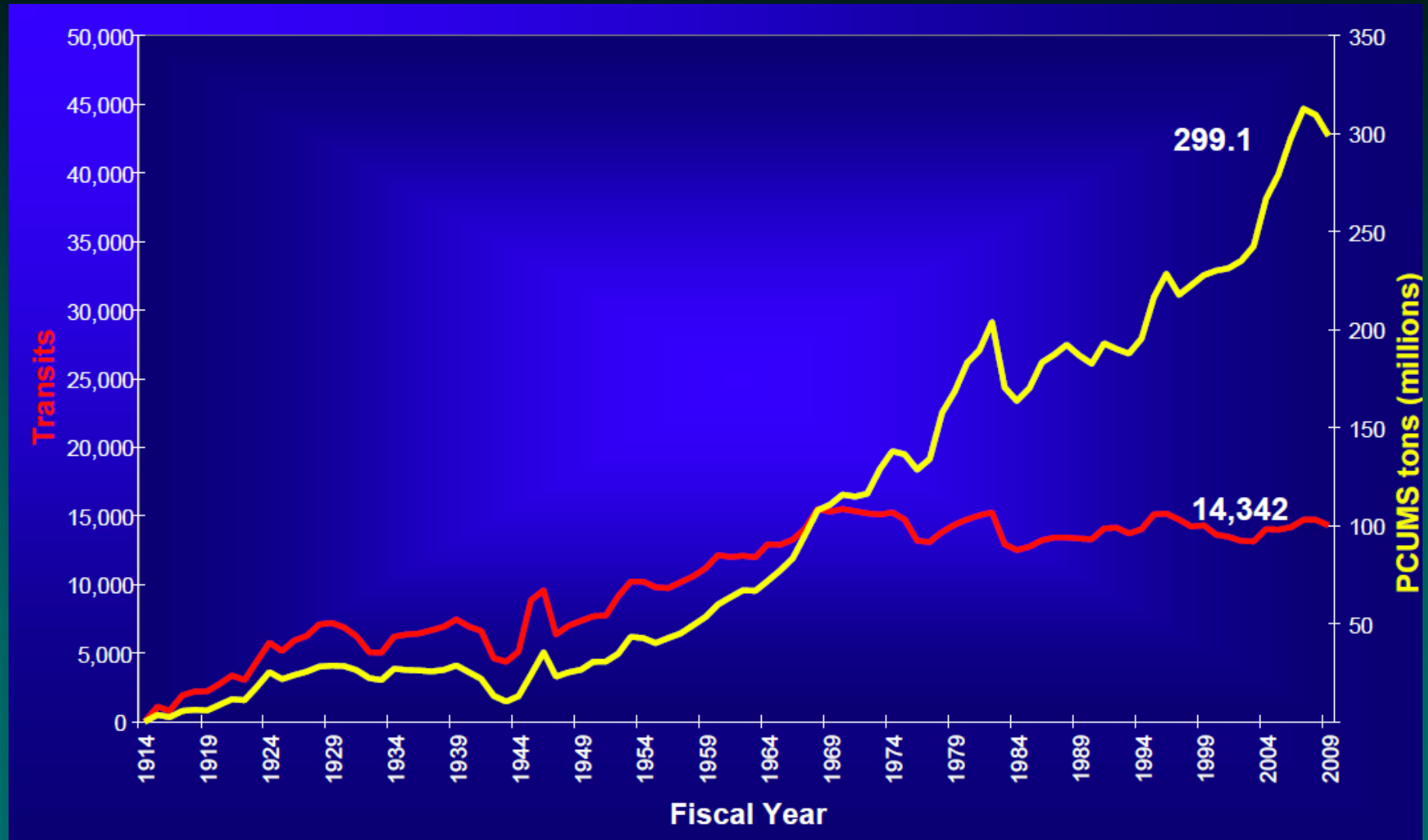
The Autoridad Del Canal de Panama

# Post 2014 Panama Canal



# Panama Canal Transit & Tonnage Traffic

(Transits and PCUMS Tonnage 1914 to 2009)

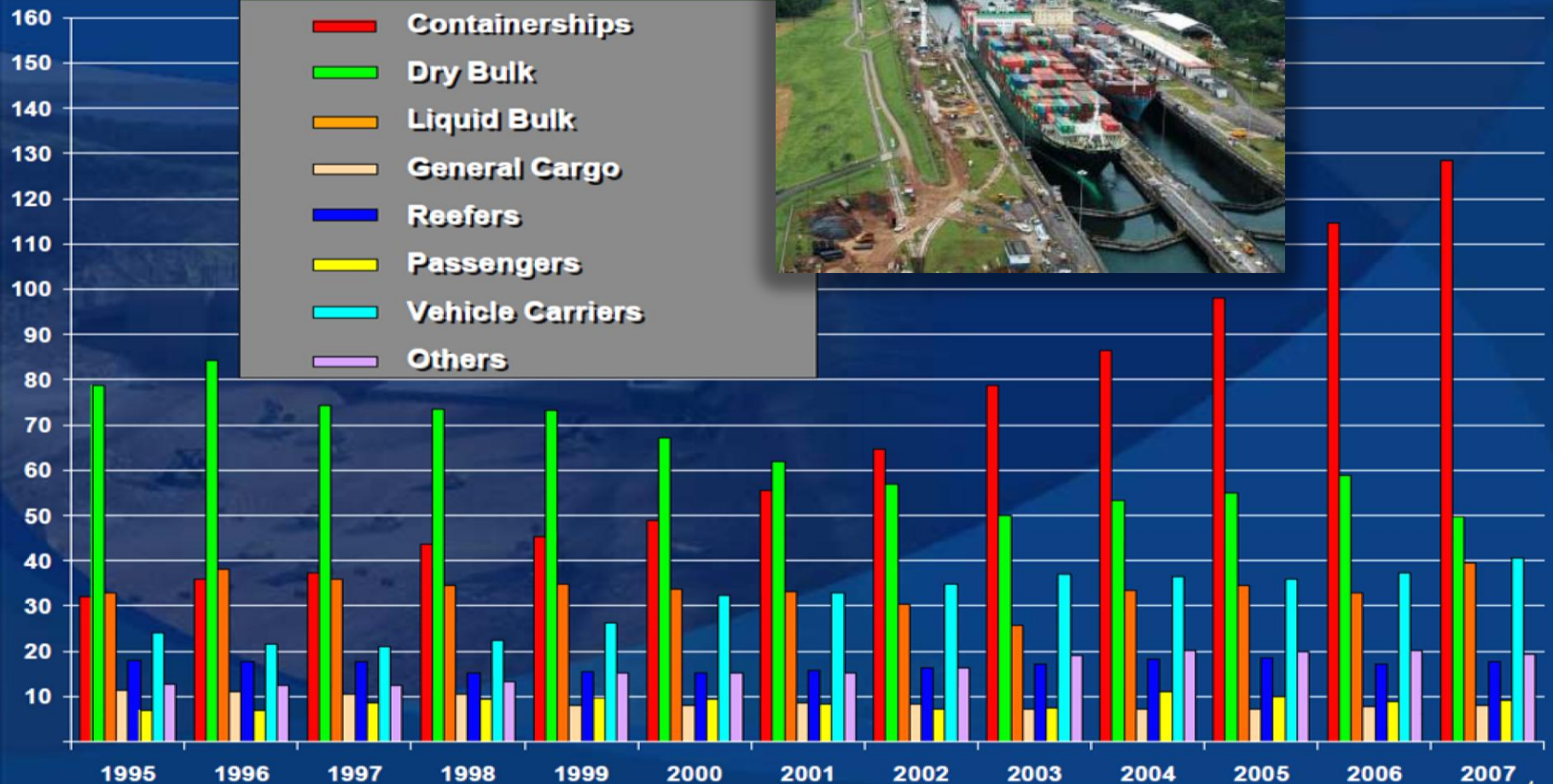


Source: ACP Data



# PC/UMS Vessel Type By Market Segment

(In Millions – FY 1995 to 2007)



Source: ACP Market Research and Analysis, R. Sabonge, VP



# Typical Container Vessel Service Route

Asia to USEC: Weekly Service with 8 - 4,320 TEU Vessels  
Generating **104 Yearly Transits** and  
**\$150 million** in Annual Canal Transit Fees



Source: ACP Data

# 2025 Summary of Canal's Financial Results

## (To 2025 In Millions of Dollars – Annual Fees)



### Summary of the Expanded Canal's Financial Results

Financial Results <sup>1</sup>	Year 2005	Year 2025	Annual average growth rate
PCUMS Tons <sup>2</sup>	279	508	3.0%
Transit Revenue		6,101	8.9%
Other Revenues	92	125	1.5%
<b>Total Revenues</b>	<b>1,209</b>	<b>6,227</b>	<b>8.5%</b>
Operating Costs	444	1,016	4.2%
Fee per Net Ton <sup>3</sup>	218	668	6.5%
Public Services Fees <sup>3</sup>	2	2	0.0%
Depreciation	61	231	6.8%
<b>Net Income</b>		<b>4,310</b>	<b>11.6%</b>

**546% Increase**

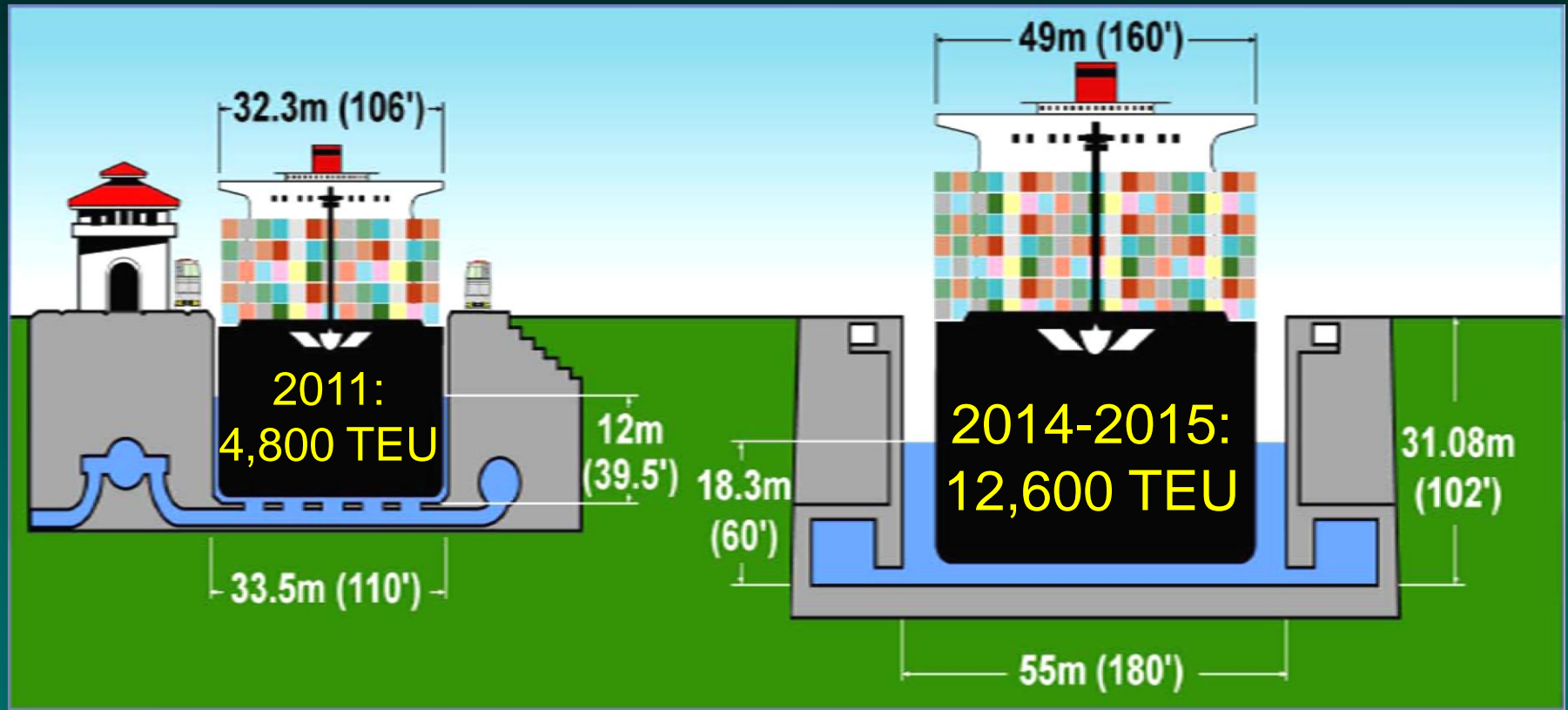
**890% Increase**

Source: ACP Financial Data



The Autoridad Del Canal de Panama

# Panama Canal Third Lane Expansion Capabilities



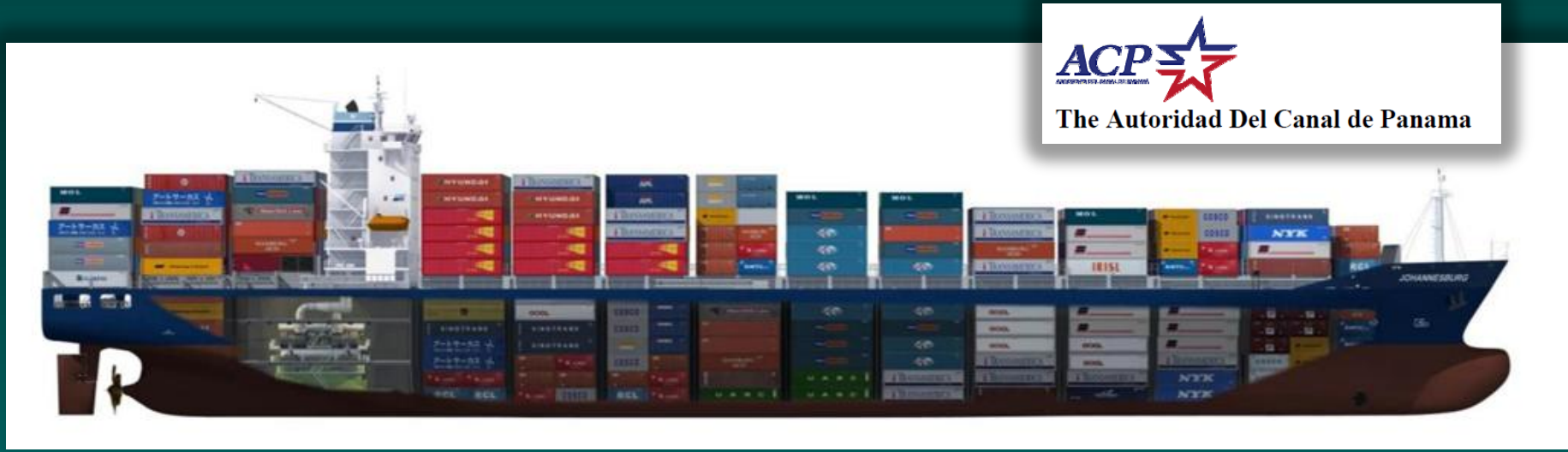
Source: ACP Expansion Proposal

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# The New Post Panamax Capacity Favors All - Water Service Routes with the Following Vessel Characteristics:



- Vessel Capacity: **9,000 to 10,000 TEUs**
- Vessel Draft: **46 to 50 feet** (tropical fresh water)
- Required Port Channel Depths: **50 to 54 feet**
- LOA: **1,000 to 1,200 feet**
- Beam: **140 to 160 feet**



## The Container Ship Colombo Express (8750 TEU)



# 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!**





# Southeast Louisiana Asian Routing Comparison – Shanghai to New Orleans



Source: Parsons Brinkerhoff - Napoleon Avenue Container terminal Development

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# **Panama Canal Expansion: Current Construction Status**

**(January 2011)**



# Pacific Locks Site





# Pacific Locks Site

January 2011





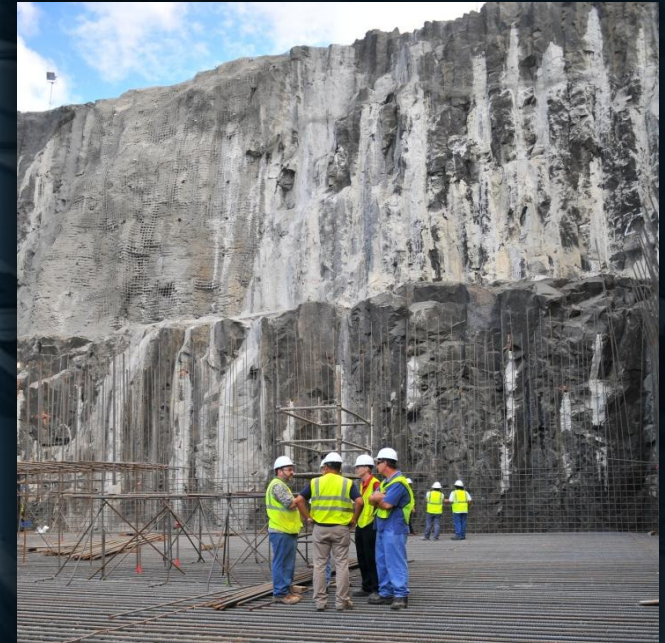
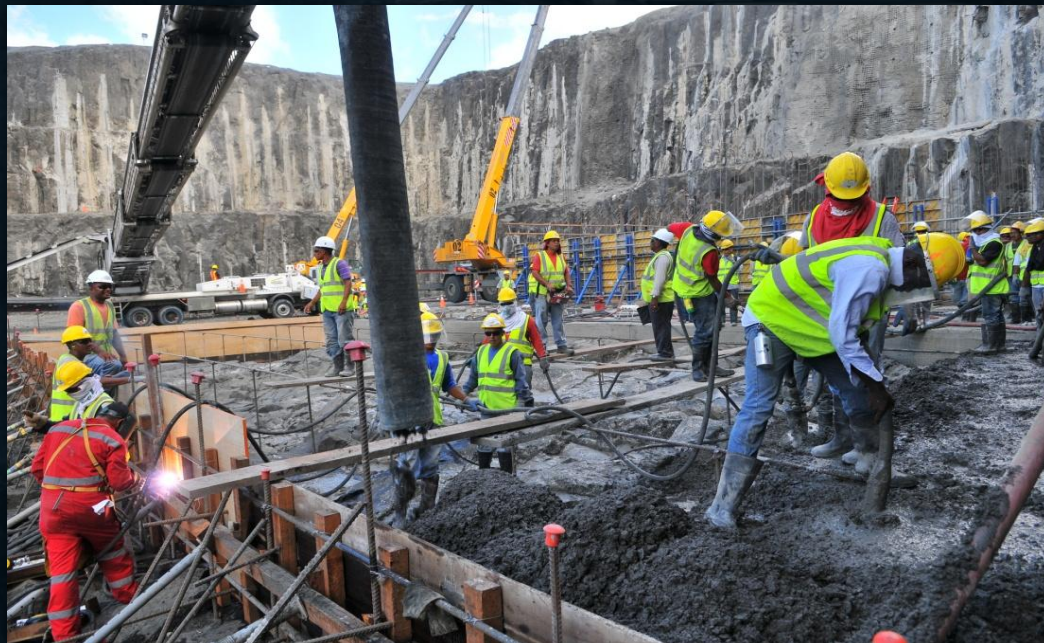
# Pacific Locks Site Construction

Lock head 2





# Pacific Locks Site Construction





# Pacific Locks Site - Finished





CANAL DE PANAMÁ

# Atlantic Locks Site



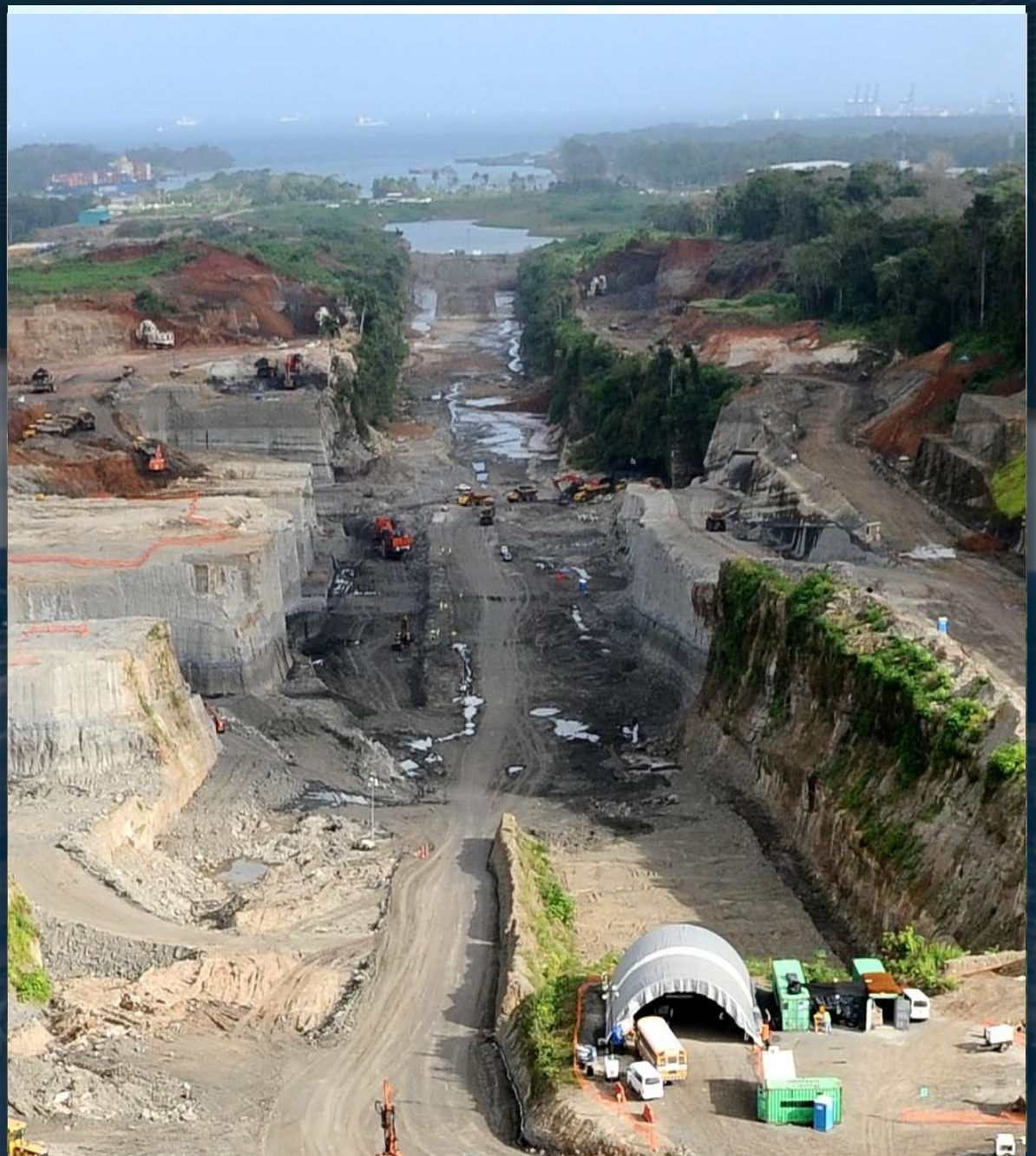


# Construction Progress

October 2009

June 2010

January 2011





# Atlantic Locks Site Construction





# Atlantic Locks Site Construction





# Atlantic Locks Site: Finished





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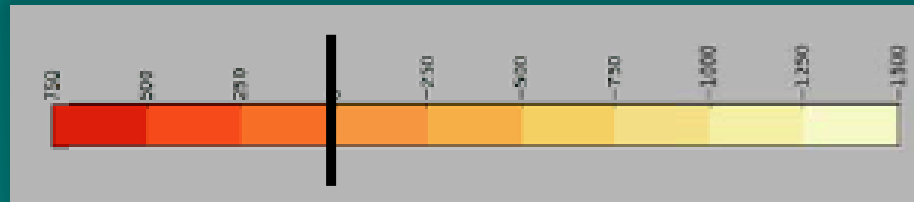
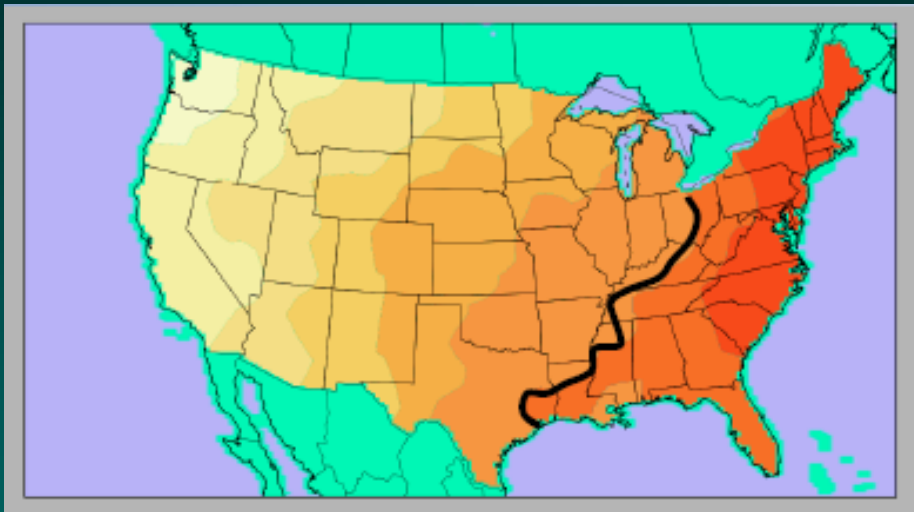
# Panama Canal Expansion:

## *Predictions & Impacts*

# Scale Economies: Panama Canal Vessel Deployment US East Coast Market Reach

4,000 TEU – 51% US Market

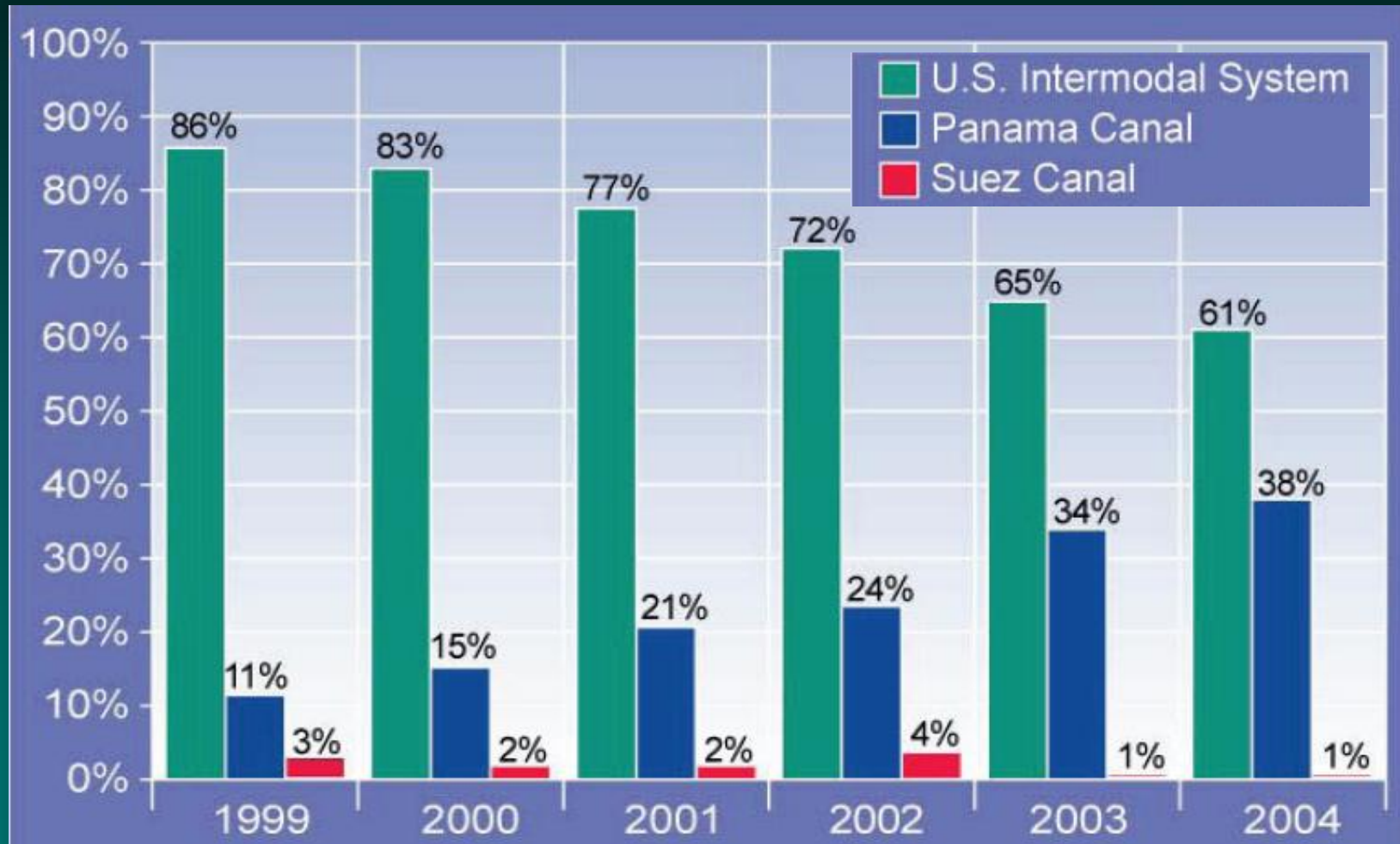
8,000 TEU – 66% US Market



Assumptions: \$400/MT Bunker; 2011 ACP Canal Tolls; 2010 Ship Charter Rates; Inland Move by Rail

Source: PANY/NJ, Halcrow Princeton Consultants, June 2010

# Panama Canal Gained Market Share in US Intermodal Transcontinental Container Trade (1999 to 2004 - Asia to USEC)



Source: ACP Data Base, PIERS, AAR



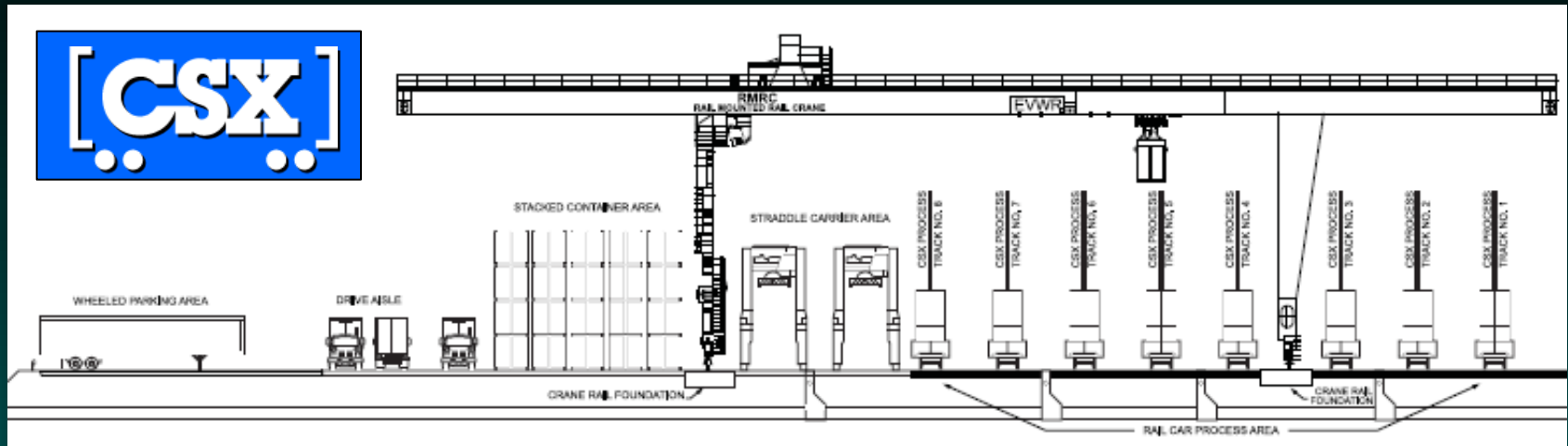
# The Primary North American Competitor to the Panama Canal is the Class I Rail Intermodal System

*(Potential Increased Service Offerings and System Capacity)*

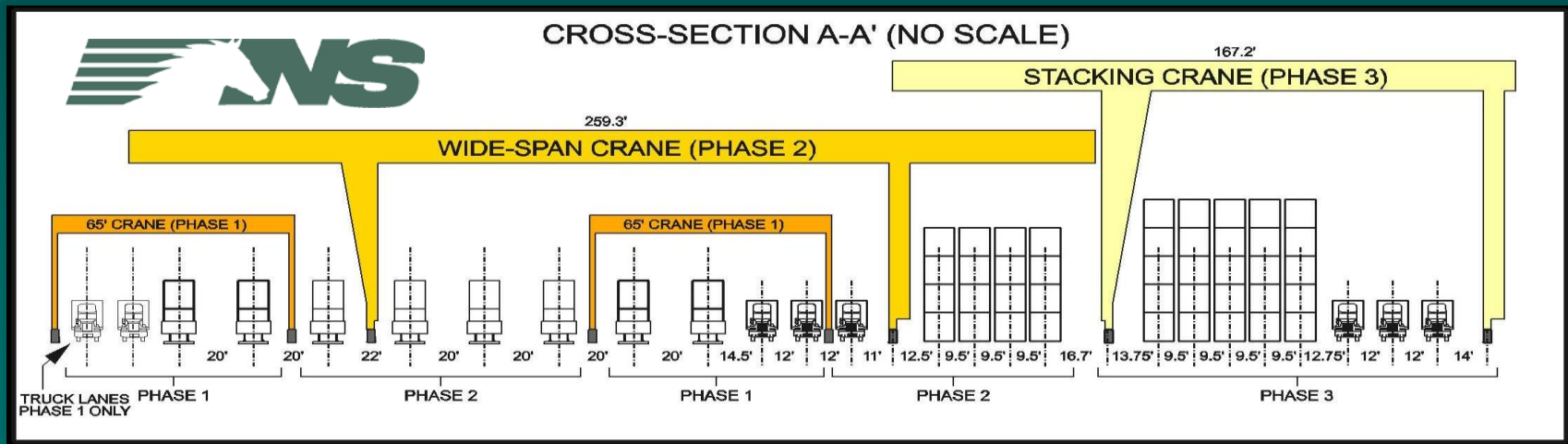


Source: USDOT Maritime Administration (MARAD) 2009

# Emerging US Green Inland Port Technologies



*CSX High Density Intermodal Crane Configuration*



*NS High Density Nested Crane Configuration*







# Norfolk Sothern Heartland DST Corridor

*(Carrier Opinions on the corridor are undecided)*



# \$842 Million CSX National Gateway



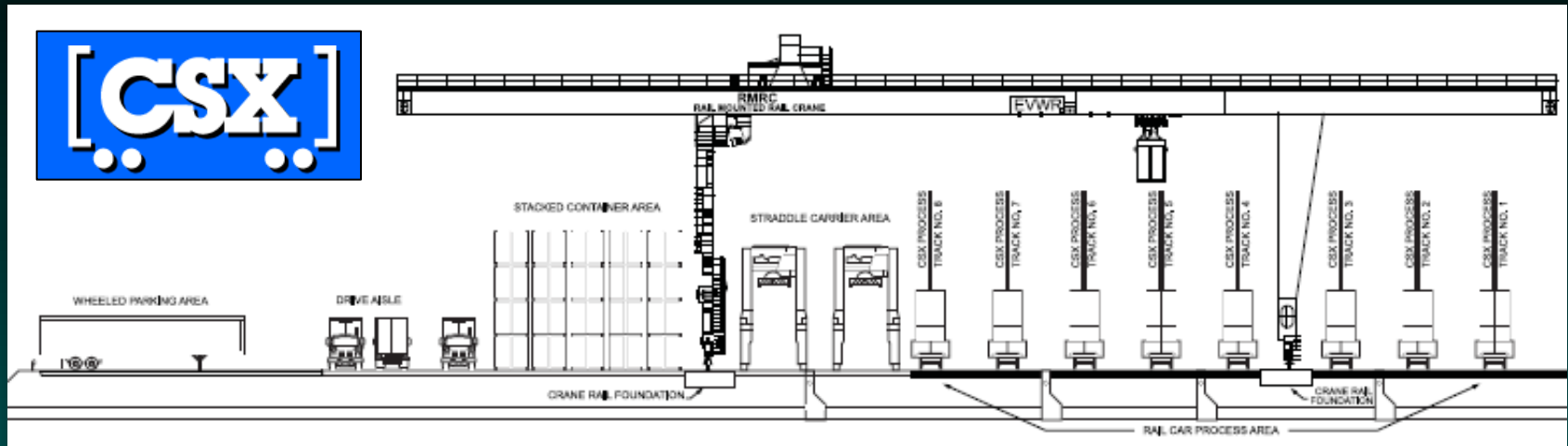
# CSX Rail Mounted Gantry (RMG) Cranes

## North Baltimore Ohio Rail Logistics Hub

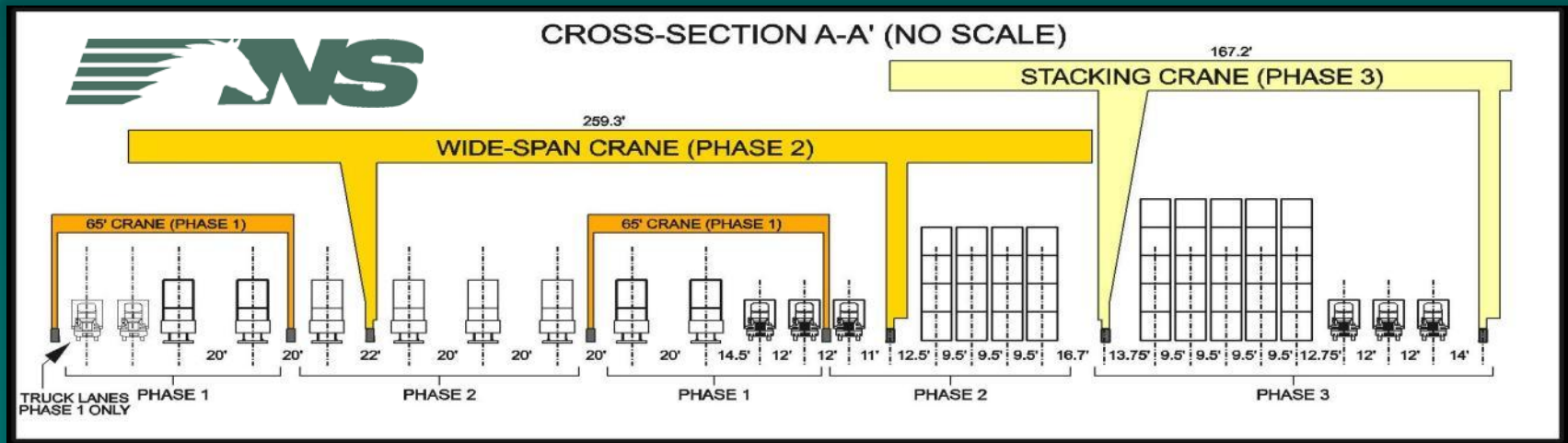




# Emerging US Green Inland Port Technologies



*CSX High Density Intermodal Crane Configuration*



*NS High Density Nested Crane Configuration*

# Dedicated Express Double Stacked Train Service



**Head Haul Rates**

**Back Haul Rates**

**Panama Canal  
Traffic Short Cut**



# Alternative “Dry Canal” Proposals to Counteract Anticipated Canal Fees/Costs



Dry Canal Proposed Routes

APM Terminals announced \$1 billion Container Port in Costa Rica

China's proposal: 136-mile “dry canal” (Pacific Port of Buenaventura & Atlantic Coast Port of Cartagena in Colombia.





# Post 2015 Expanded Canal: Predicting the Future Impacts for the US East & Gulf Coasts?

## IF:

- ✓ *West Coast Ports & Rail become/remain congested...*
- ✓ *East Coast Ports Accommodate the big ships...*
- ✓ *Canal Cost Remains Price Competitive with Suez...*
- ✓ *Cargo Trade Volumes Continue to Increase...*
- ✓ *Canal's infrastructure keeps pace with Growth...*

## Then:

- ✓ **Carriers will route as much traffic via the expanded Panama Canal as it can handle...**



# Post 2015 Expanded Canal: Predicting the Future Impacts for the US East & Gulf Coasts?

**IF:**

- ✓ *Panama Canal Tolls are Set to Maximize Revenue and not Container Volumes...*
- ✓ *East Coast Ports **Can't** Accommodate the big ships – Channel Draft & Terminal Impacts...*
- ✓ *Class I Railroads Exert Their “Pricing Flexibility”...*
- ✓ *All-Water Time is not competitive for High Value Time Sensitive Intermodal Landbridge Cargo...*

**Then:**

- ✓ **The Panama Canal Market Shift to the East and Gulf Coast May Not Occur at All!**

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# ***Inland Ports: Defined – A Convergence of Logistic Trends***



# *Inland Ports Defined*

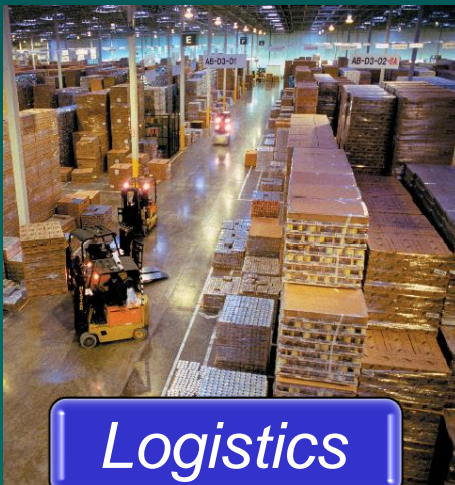
## *A Convergence of Logistics Trends*



*Short Sea Shipping Technology*



*Intermodal Rail*



*Logistics*



*Automation*



*Distribution Center*

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# ***Inland Ports: Europe's Current Strategy Applications***





# Rotterdam World Gateway- EUROGATE Builds an Inland Container Port Network

*ECT Main Terminal*



*Maasvlakte 2 Plan*



*European Shortsea Network*



*Short Sea Container Inland Port*





# ***The Dutch Transport Ministry and Port of Rotterdam Authority (PoRA) signed a Founding Agreement on June 29, 2009***

The Town of Alblasterdam, East of Rotterdam will get a Container Transferium (CT), ***a Inland Port Container Transfer Facility*** to be operated by Binnenlandse Container Terminals Nederland (BCTN).

***“This is the first time the Port Authority has promoted such a partnership. PoRA to promote transport by rail and water and to shift containers from road to the other modes of transport in order to reduce the number of trucks in the road.”***

# Dutch Transport Ministry Inland Port Container Transferium (CT) Strategy

*(Noord River, Town of Alblasserdam  
€38 million, open by end-2012)*





# Dutch Transport Ministry Inland Port Container Transferium (CT) Strategy

*(Noord River, Town of Alblasserdam  
€38 million, open by end-2012)*





# ***Emerging Major Inland Port Logistics Centers***

## ***Throughput Capacities in Millions of 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**



An aerial photograph of a large inland port facility. The port is filled with thousands of colorful shipping containers stacked in neat rows. In the foreground, a multi-lane highway is visible with several semi-trucks traveling. The background shows a flat landscape with some trees and distant buildings under a clear sky.

# ***The Inland Port:***

***“With Integrated JIT Delivery:  
The Inland Port Can Greatly  
Increase a Regions Freight  
System Capacity”***



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# Growing Environmental Concerns for Marine Vessel Emissions

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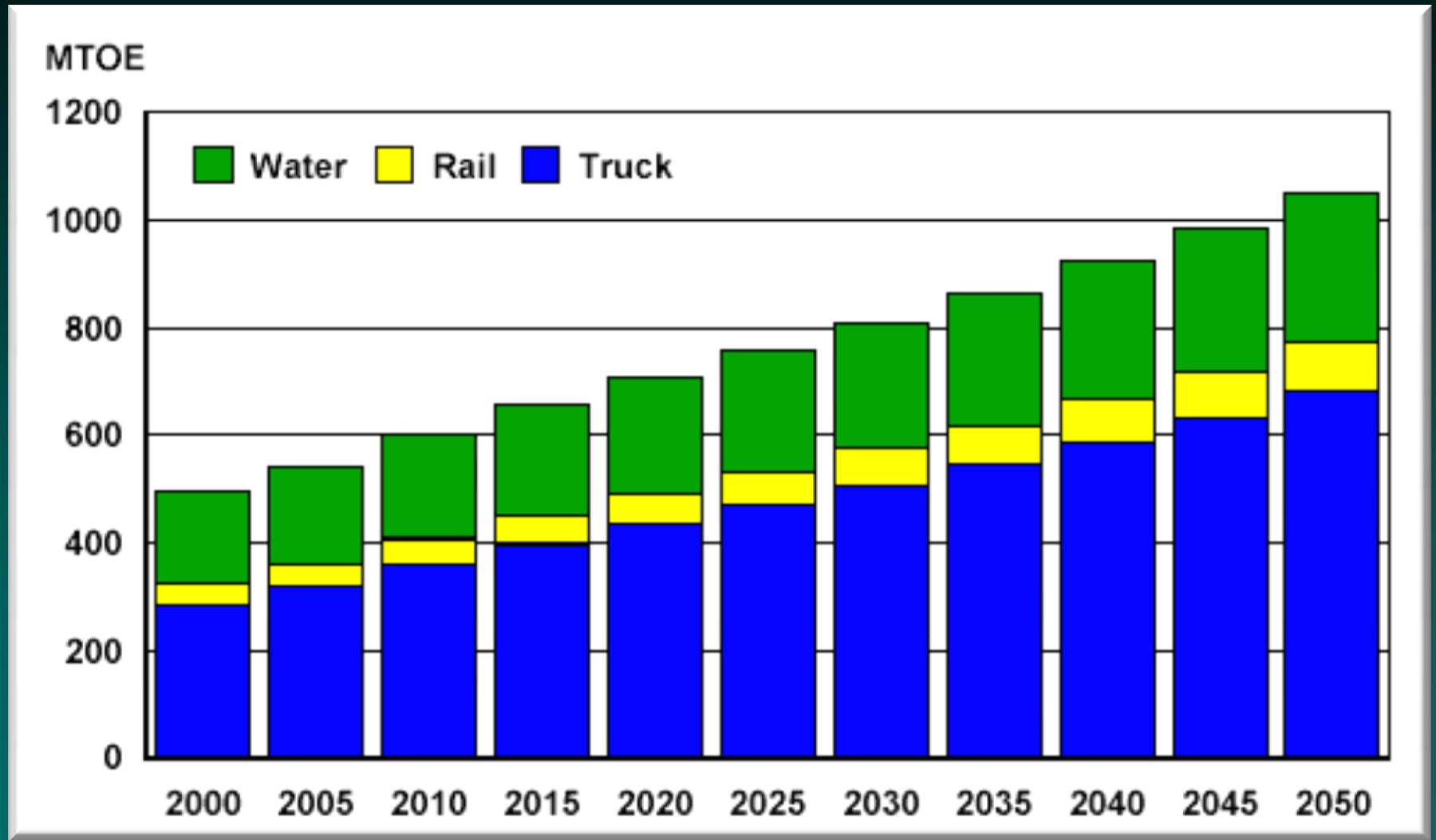
# Port of Los Angeles Commission on Diesel Emissions

*"According to the health information I've been given, this port is killing people, and we've got to cut it out as fast as we can. When I say we have to act as though our lives depend on it — because they do — that's serious talk."*

*"We're the polluters. We know it's our responsibility to clean it up,"*

S. David Freeman, President  
Los Angeles Board of Harbor Commissioners

# Global Freight Energy Use is on the Rise

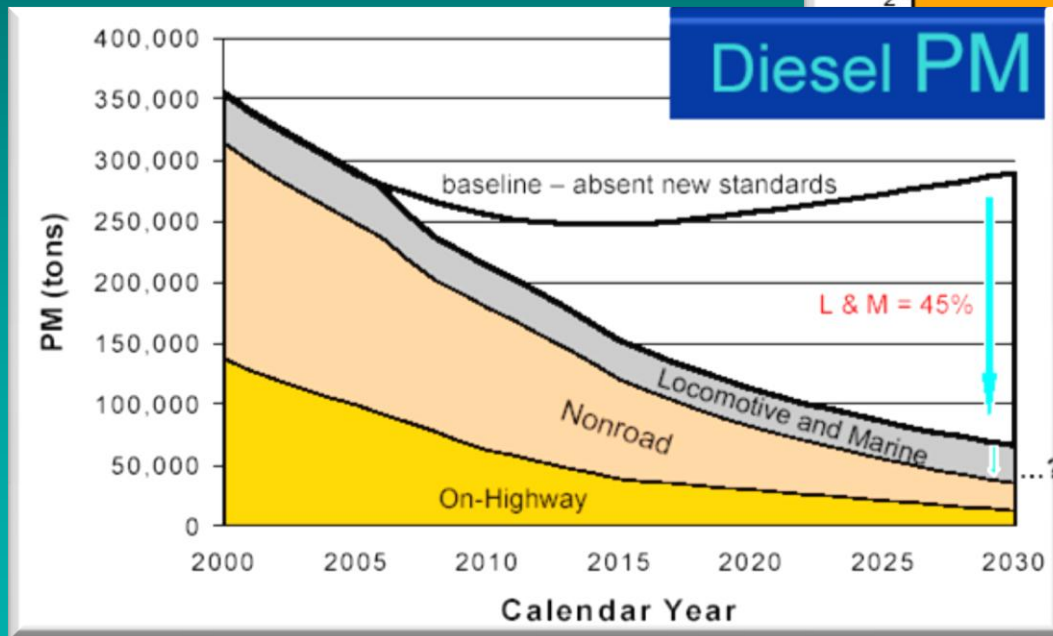
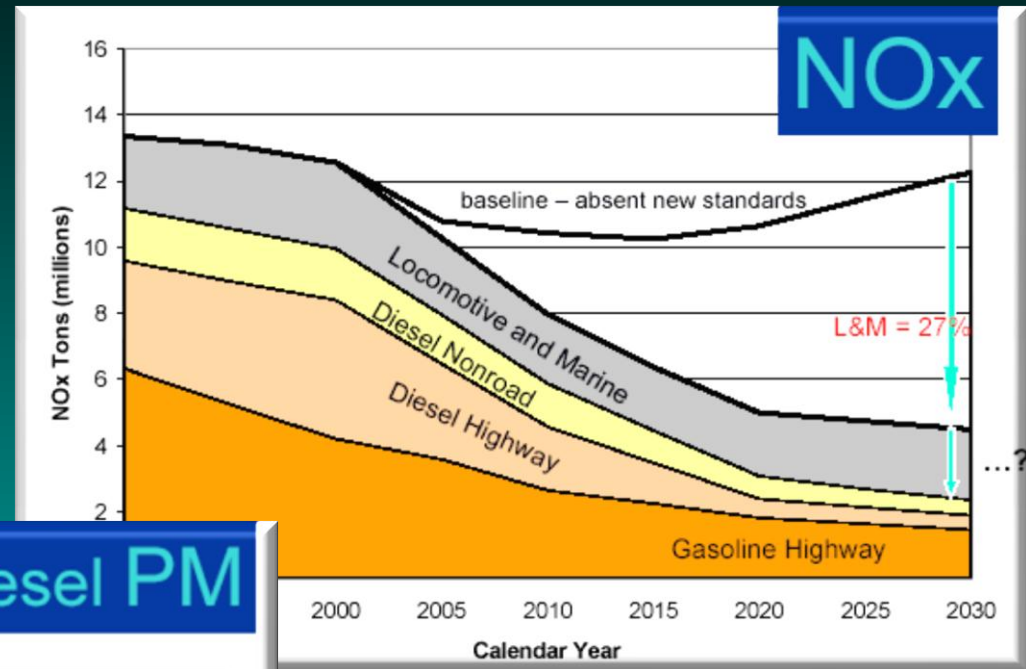


Source: 2005 Haagen Smit Worldwide Emissions Overview & NRDC "Harboring Pollution"



# Global Diesel PM & NOx Baseline Projections

Land Based Pollutants  
Have Declined with  
Regulation, but the  
Unregulated Marine  
Based Pollutants are  
Increasing



Absent New  
Standards and  
Regulations the  
Pollutant Baselines  
Are Forecast to Rise

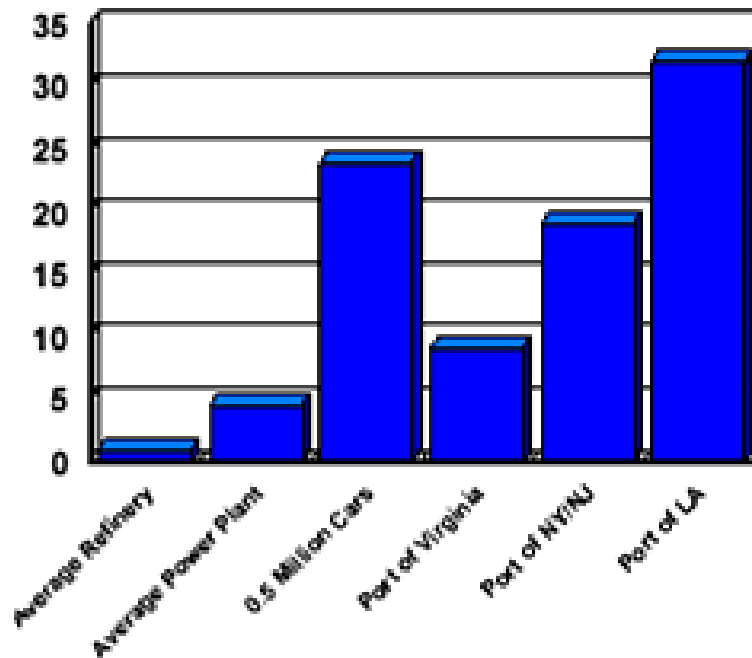
Source: 2005 Haagen Smit Worldwide Emissions Overview

# Pollution Sources

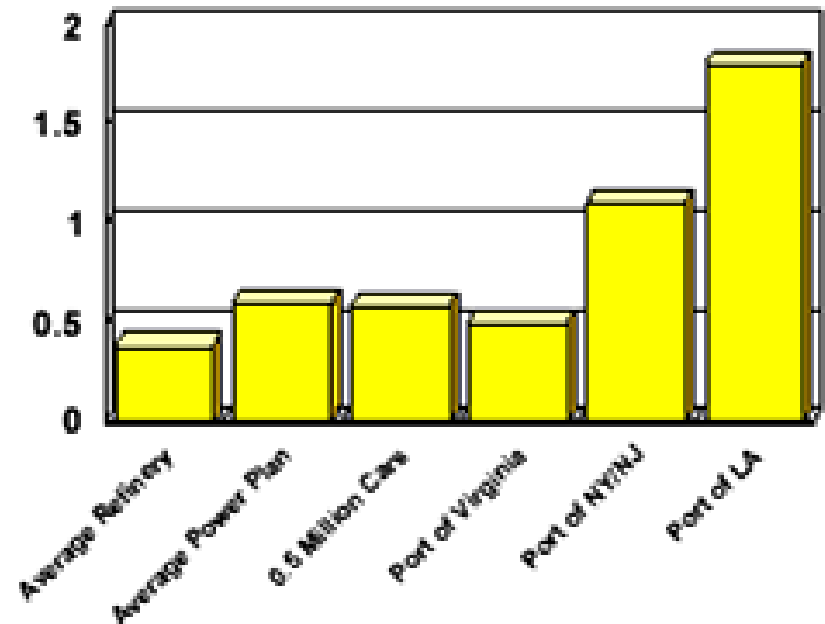
## US Ports vs Other Industries...

### We Need To Do Better

**NOx Emissions**  
Tons per day



**PM10 Emissions**  
Tons per day



# Transportation Diesel Pollutants are Putting Our Health in Jeopardy



Diesel PM

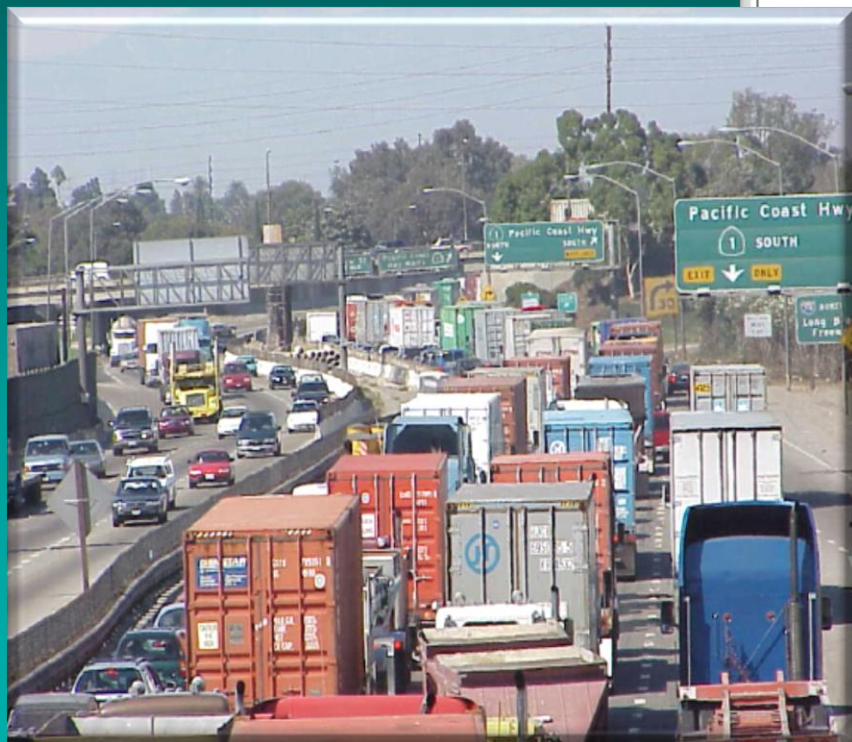
Progress has stalled and diesel emissions from ships, locomotives and port complex are projected to increase.

*Diesel pollution from cruise lines and cargo ships can increase the risk of respiratory infection, lung inflammation and asthma. Particulate matter (PM) from diesel has been linked to heart and lung diseases and, in some cases, premature death*



# South California Environmental Challenges

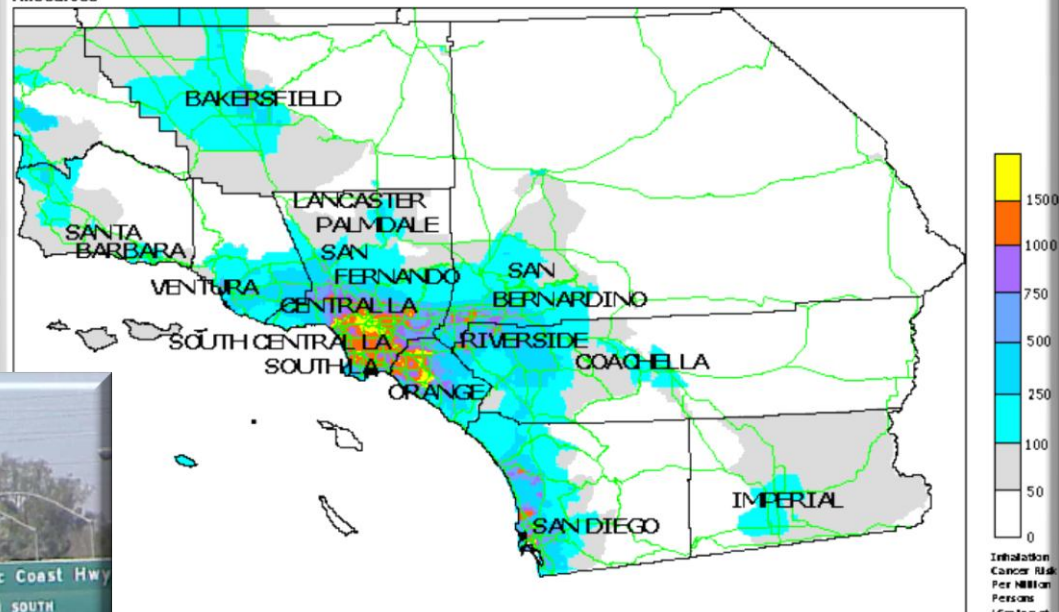
## *The “Diesel PM Death Zone”*



I-710 Typical Day from POLA/POLB

Total Risk (diesel + nondiesel)

Southern California: 1990 Cancer Risk Per Million  
All Sources



Complete list of sources not yet included in risk.  
11/8/2004

Cancer Risk Per Million

- **Environmental Constraints are Growing**
- **POLA/POLB Have had 40 major Projects Held up for Years**
- **State Looking Into User Fees**

# Port Environmental Mitigation Measures





# ***2011 Executive Management Conference***

## ***Broadening Industry Awareness - Part One***

***Saddlebrook Resort, Tampa , FL***

***May 2, 2011***



***Thank You***

