2015 AAPA Executive Management Conference

Rancho Bernardo, San Diego, CA *May 4, 2015*

Planning for Future Transportation Realities

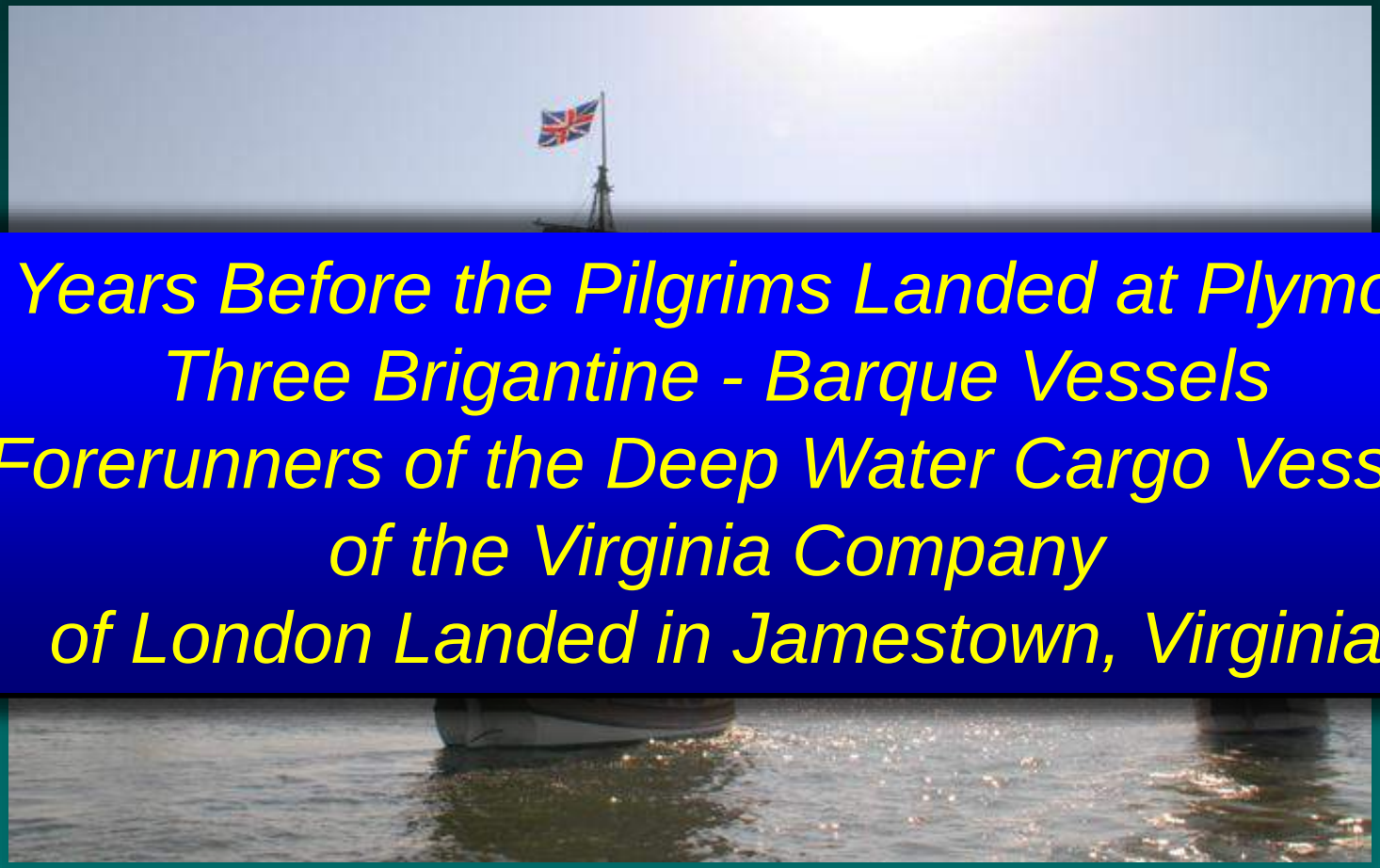
M. John Vickerman

VICKERMAN & ASSOCIATES, LLC

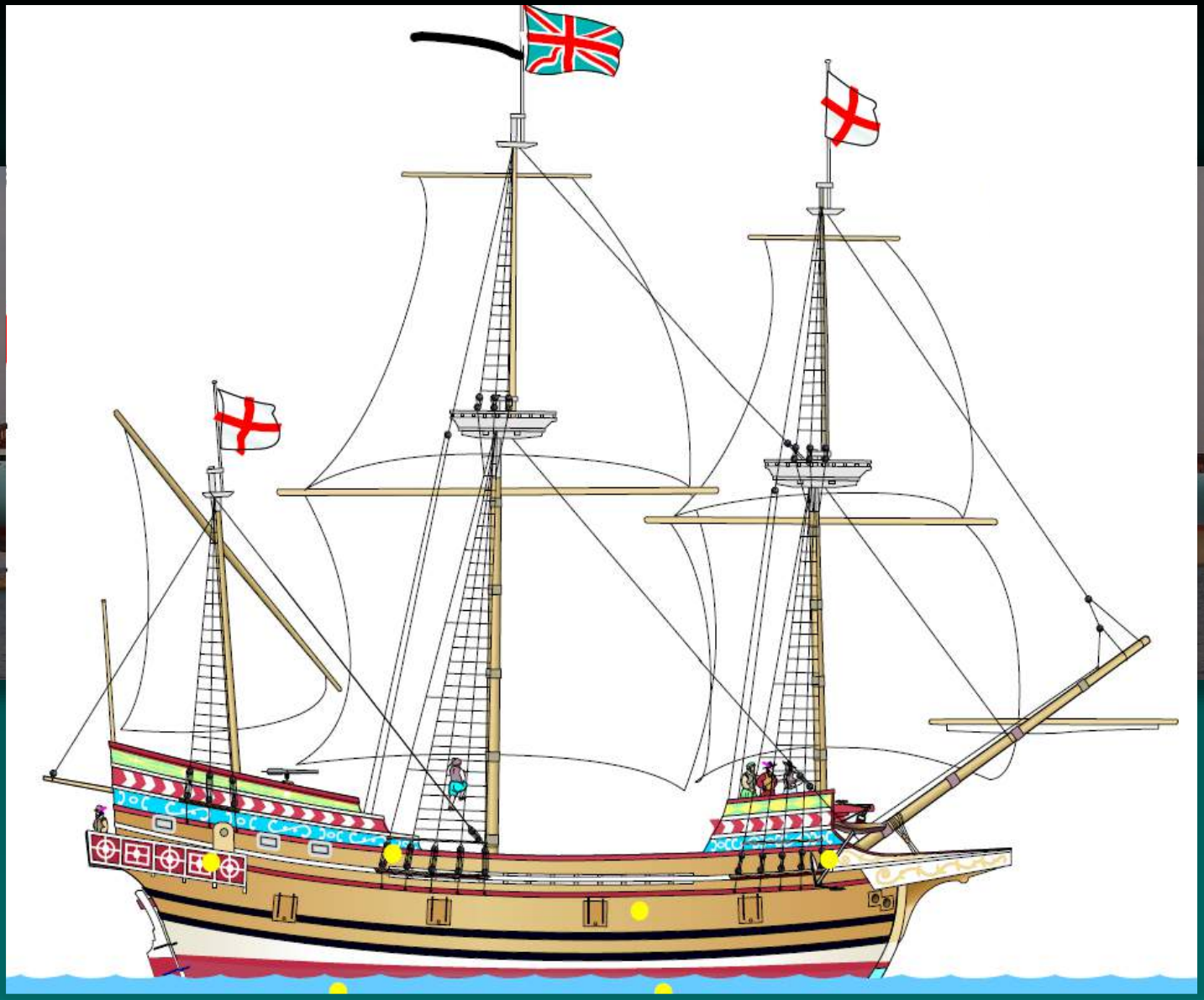
Williamsburg, Virginia

408 Years Ago: 1607

A Voyage of Three Vessels Created the First Permanent English Port in Jamestown, VA



13 Years Before the Pilgrims Landed at Plymouth,
Three Brigantine - Barque Vessels
(Forerunners of the Deep Water Cargo Vessel)
of the Virginia Company
of London Landed in Jamestown, Virginia



Godspeed Brigantine/Barque, Circa 1607
Deadweight Tonnage: 40 tons
LOA: 88 feet; Crew: 13, Passengers: 39

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M/S EMMA MÆRSK

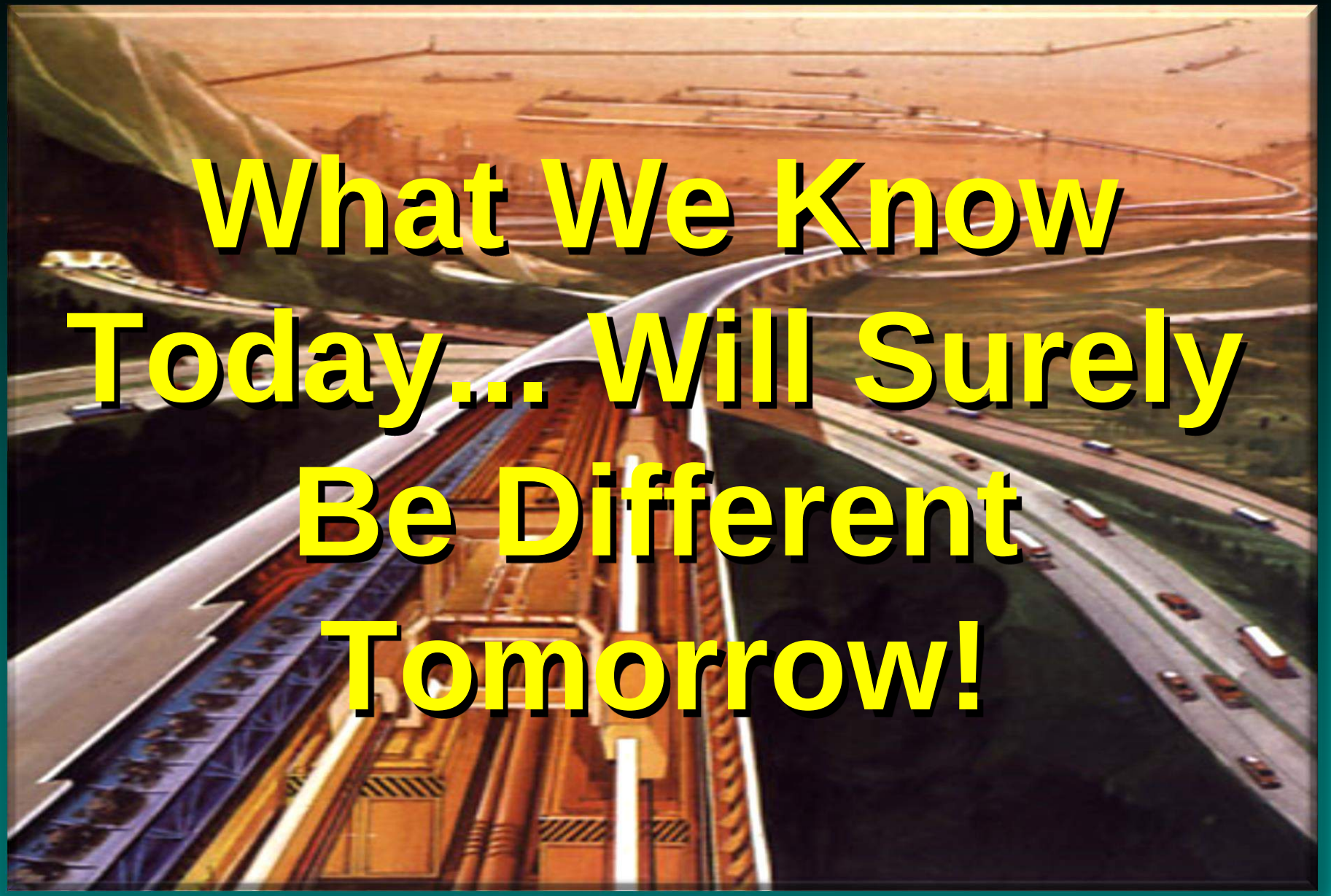
Circa 2013

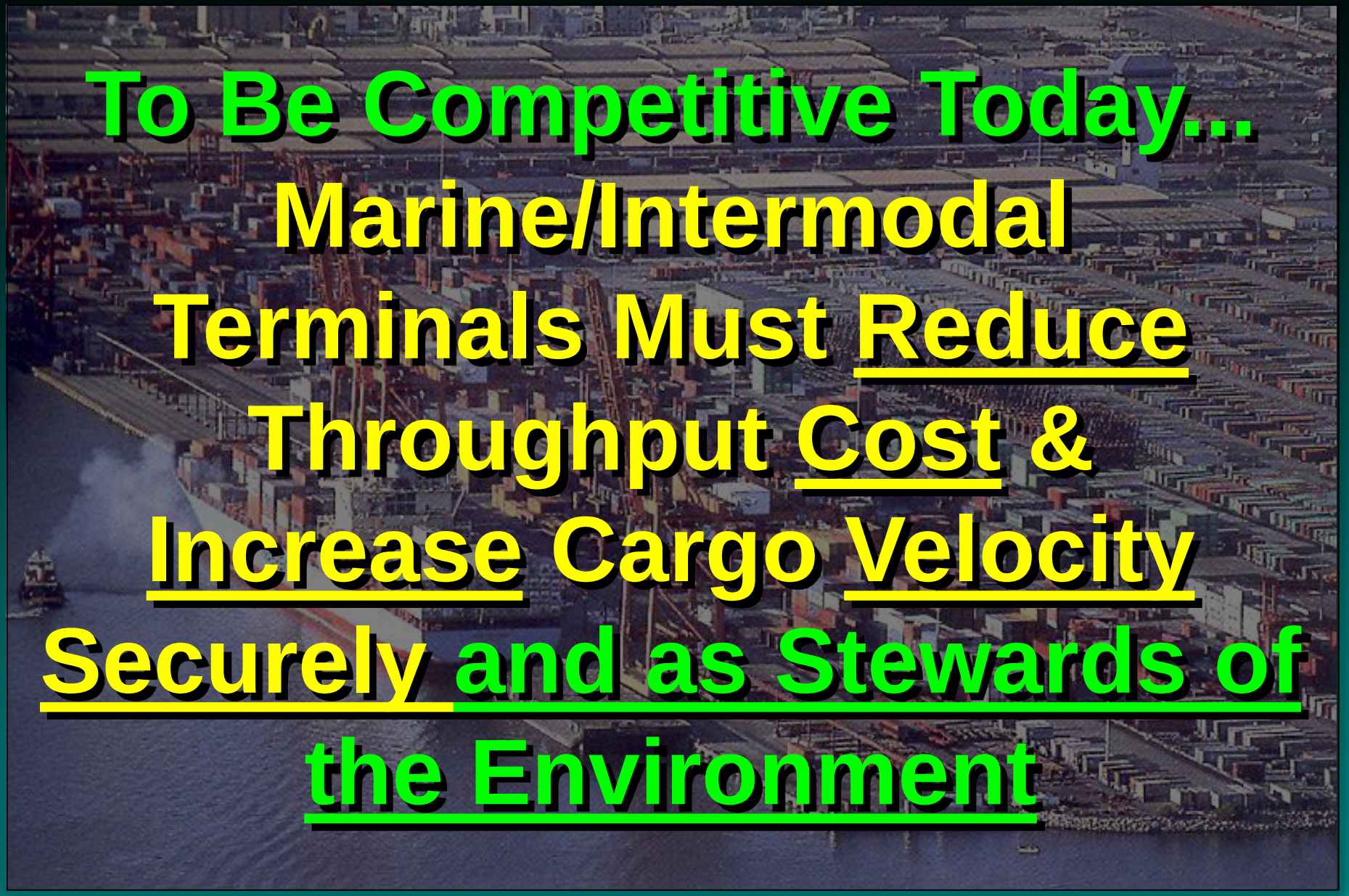
Godspeed Brigantine/Barque, Circa 1607

Vessel Cargo Handling Circa 1955

Cargo Handling Circa 2010

US Navy Fast Frigate Circa 2045





The Evolution of Today's Global Shipping Lanes

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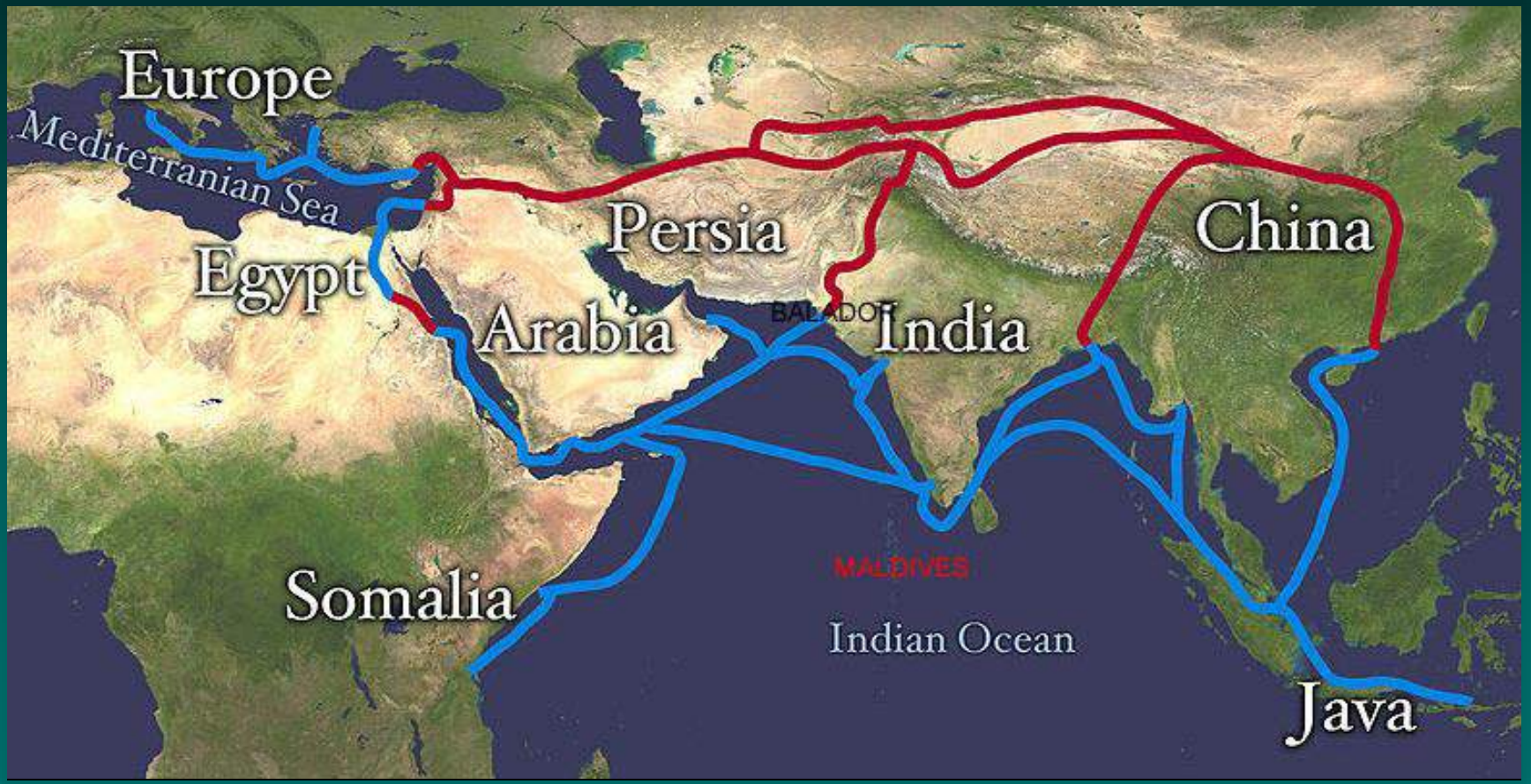
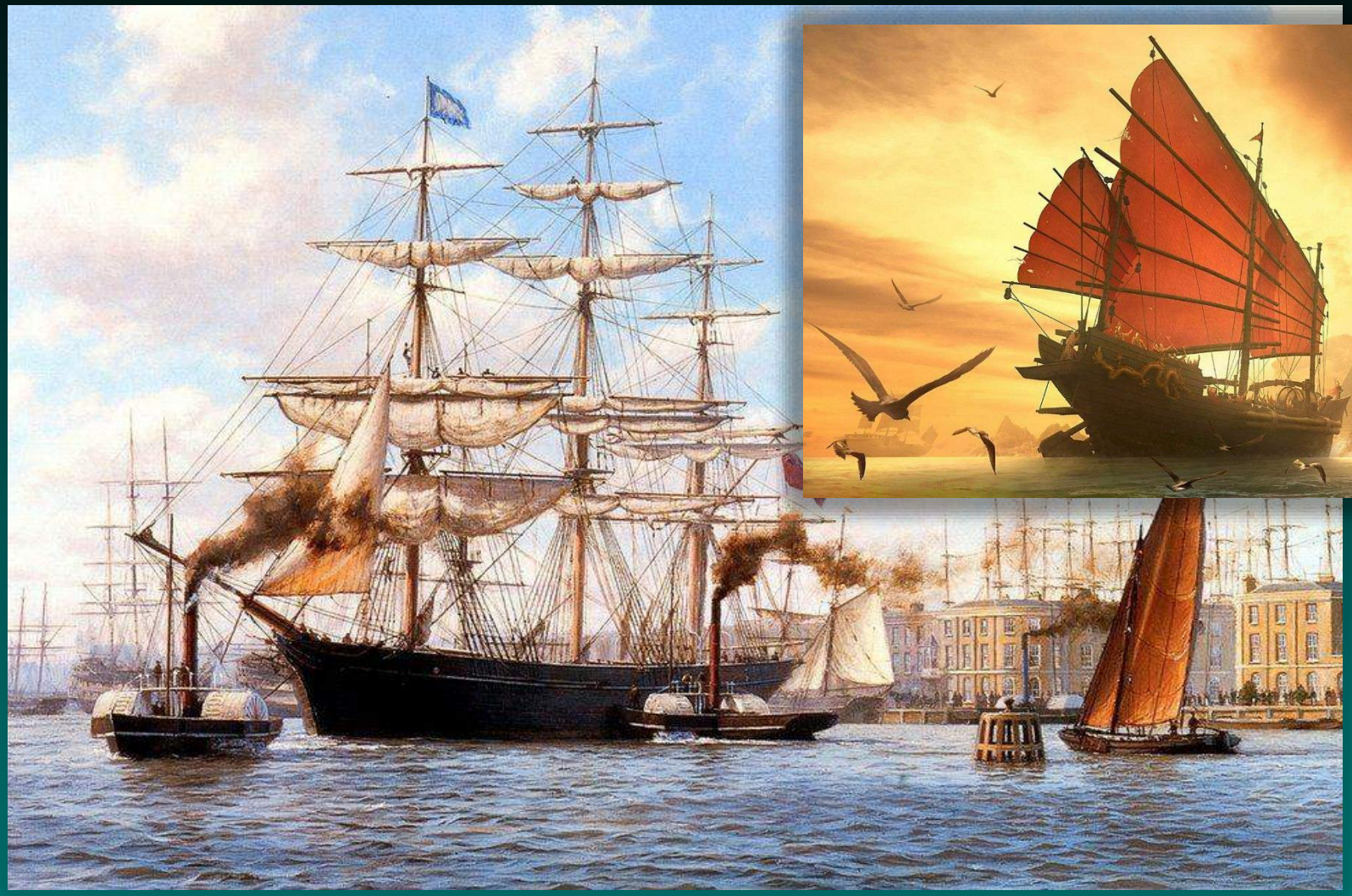
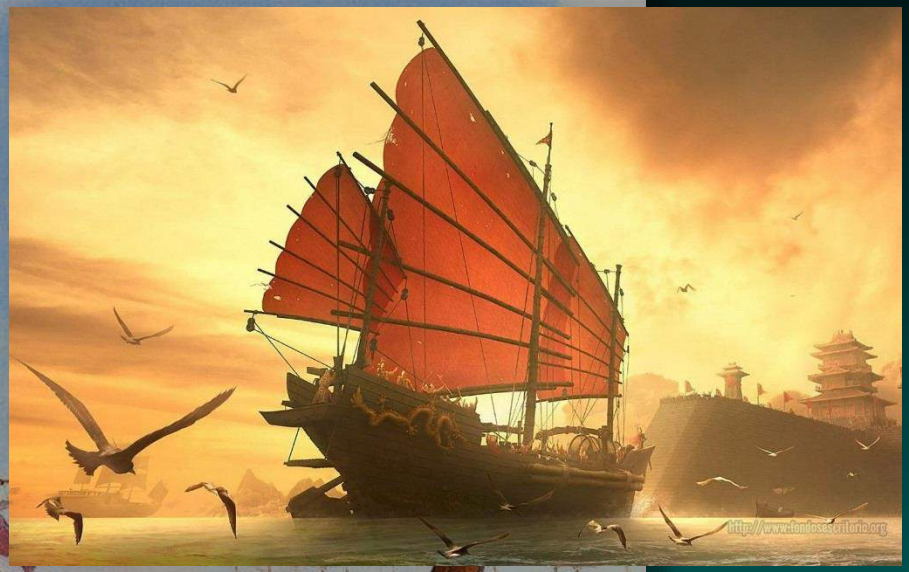
The Maritime Silk Road Replaced the Overland Silk Road as the Primarily Trading Route Across Eurasia After the Yuan Dynasties (618 to 907)



The Marine Silk Road was a Precursor to:





Today's Modern supply chain logistics, distribution and shipping transportation networks

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The World's Primary Shipping Routes

The Marine Silk Road

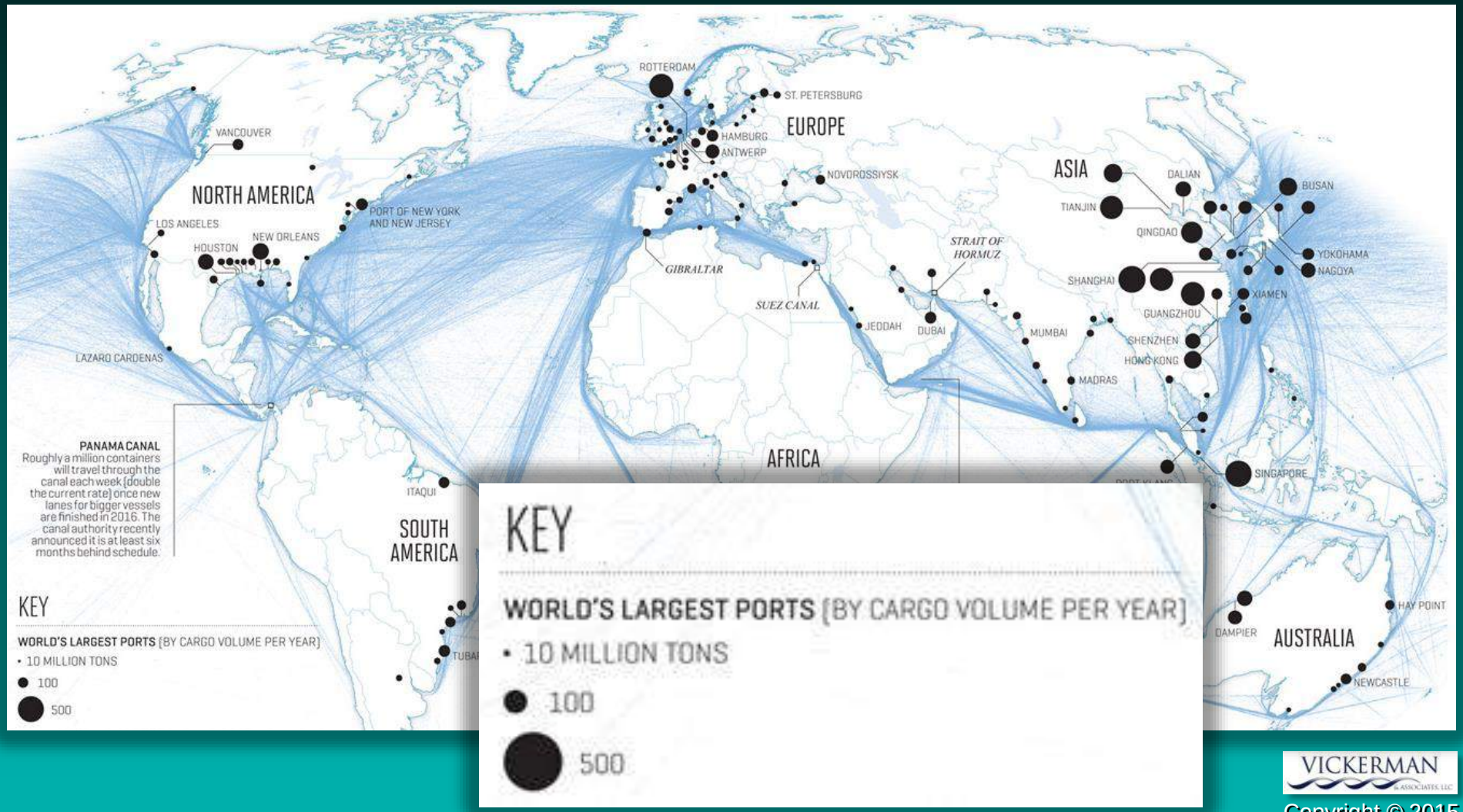
90% of Global Trade is Carried Out by Shipping

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

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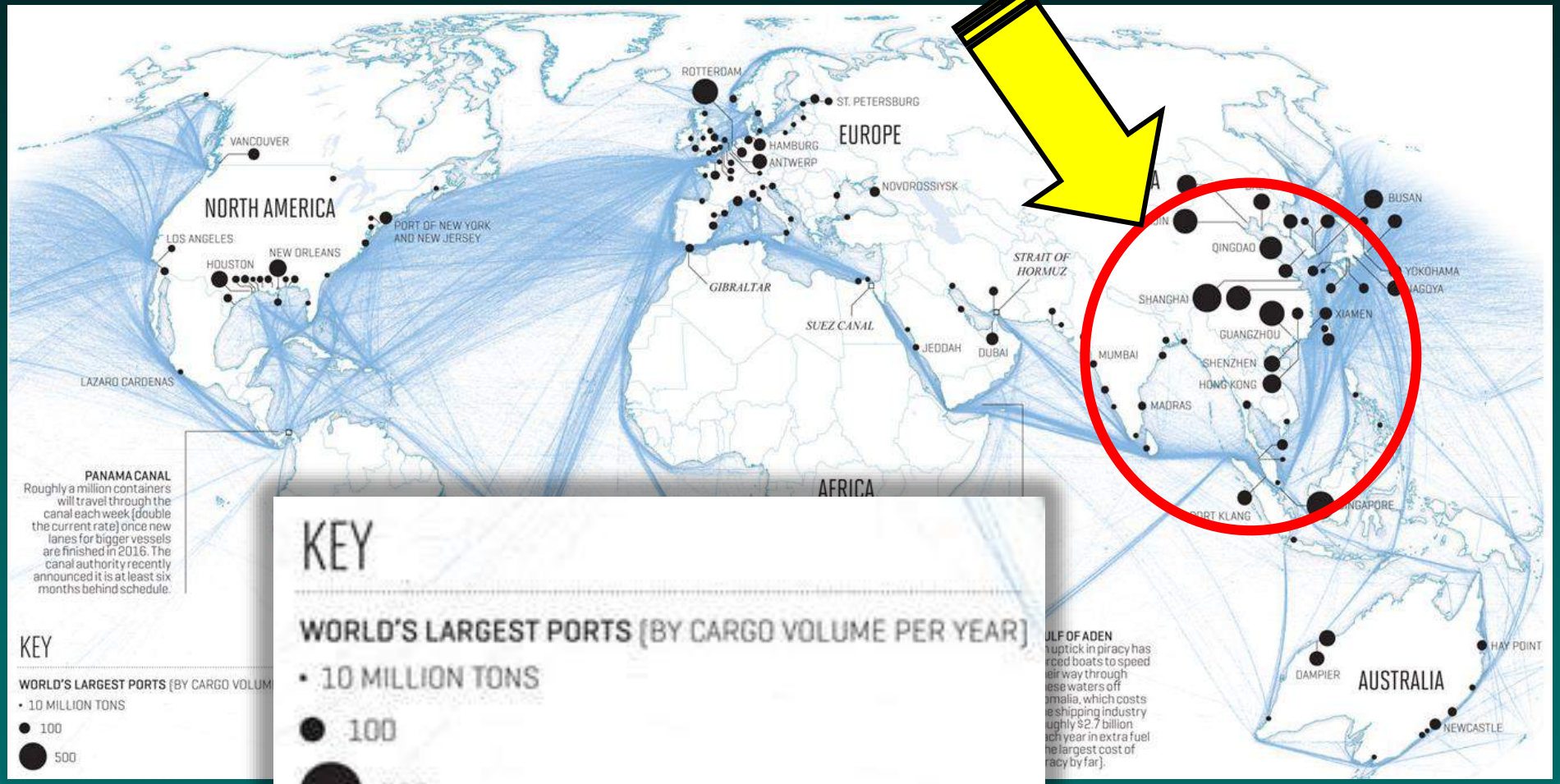
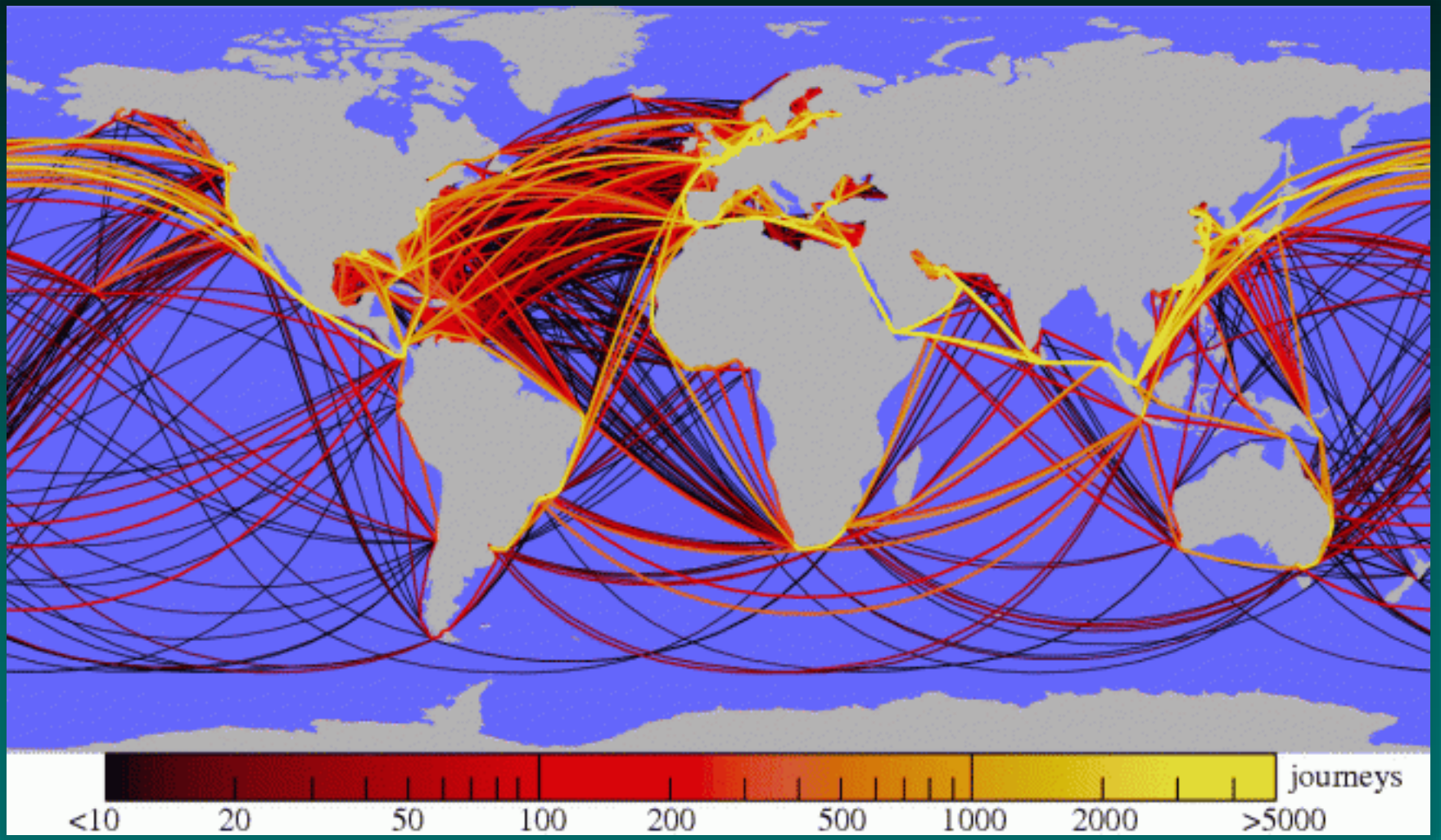
The World's Largest Ports Are Connected Via The Maritime Silk Road



Global Shipping Routes Plotted by AIS GPS

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



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

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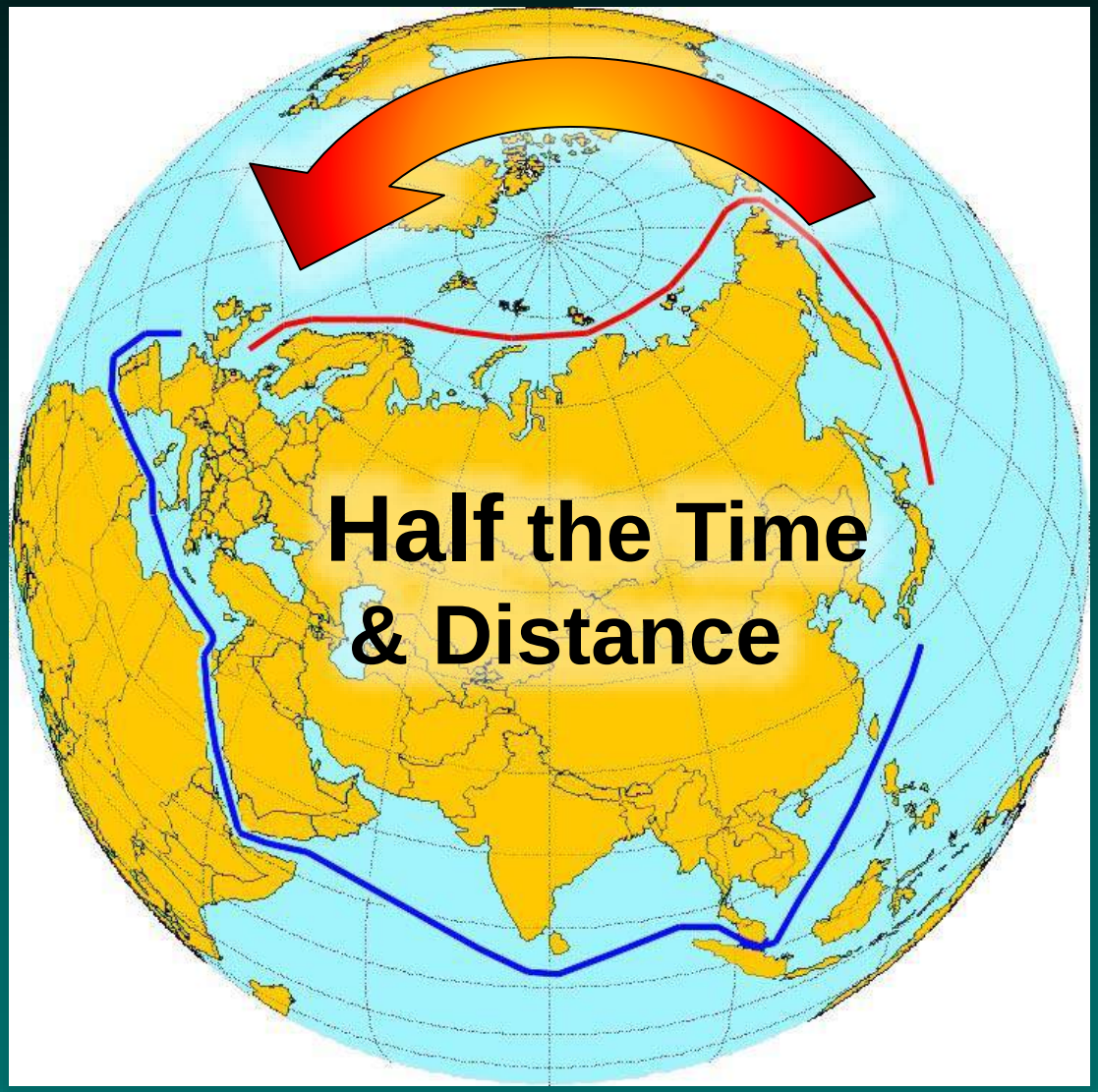
Shorter – Faster Arctic Ocean Route

2+ Months A Year Using Convoys



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International External Industry Pressures Driving Today's Logistics

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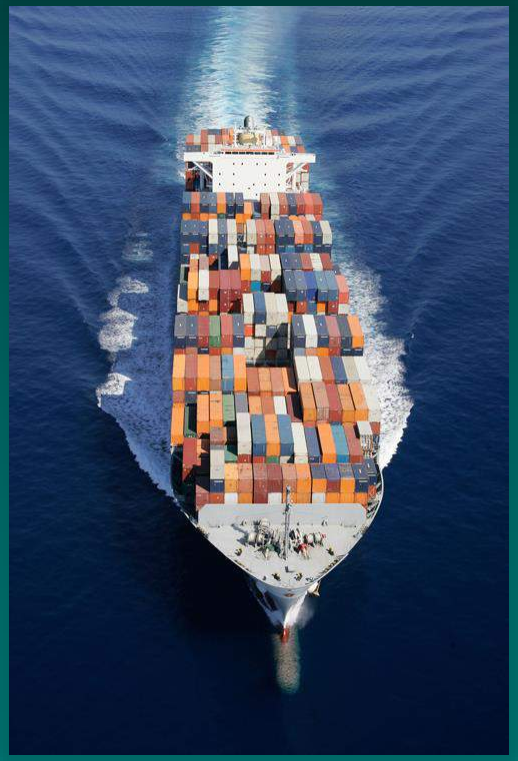
More than 98% of everything we consume, wear, eat, drive and construct is brought to us via ships through the North American port system.



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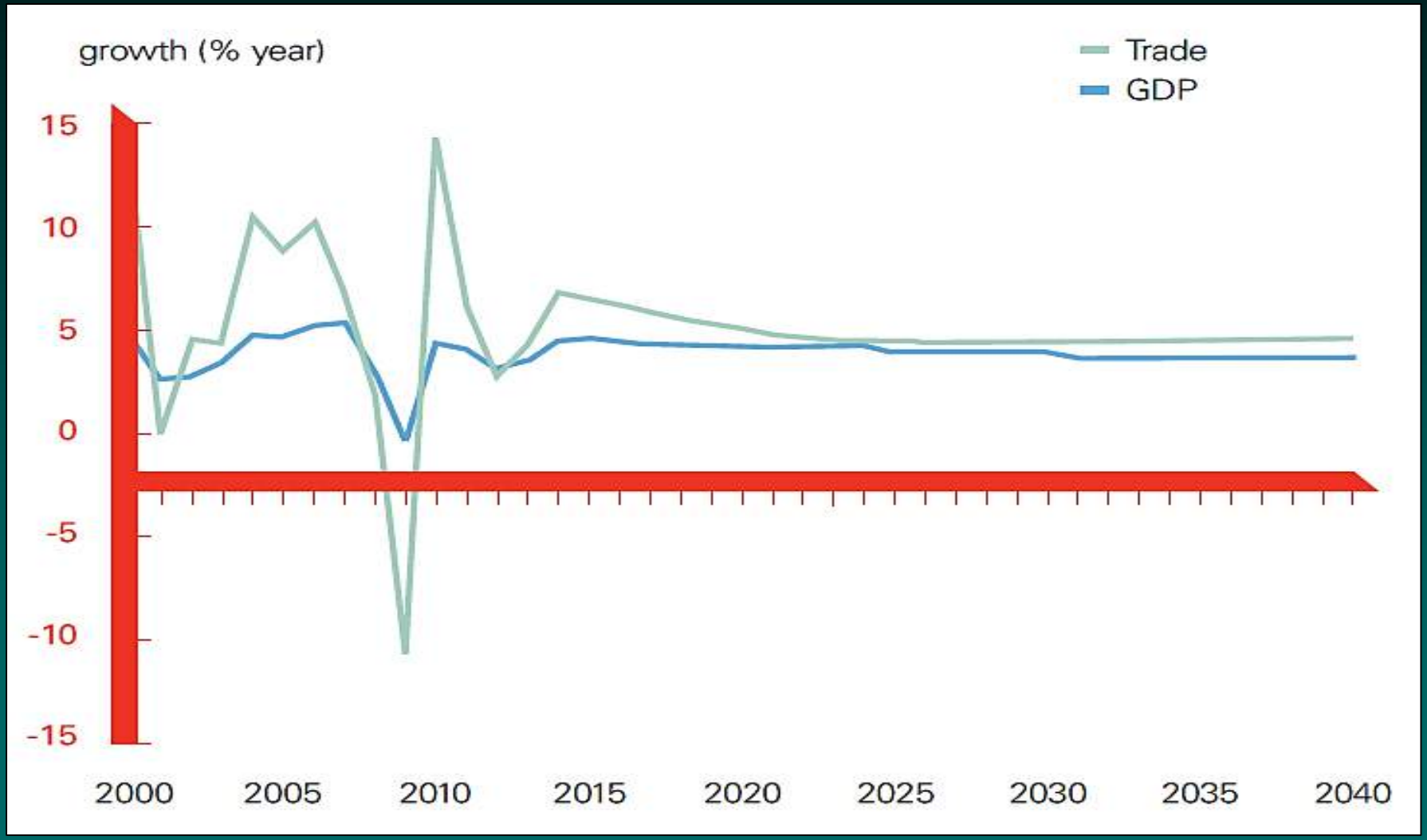
Relationship Between US Trade and US Prosperity – 1930 to 2005

(US Trade & Gross Domestic Product - $ Billions)

Source: USDOT Based on USDOC Data

Growth in GDP and World Trade

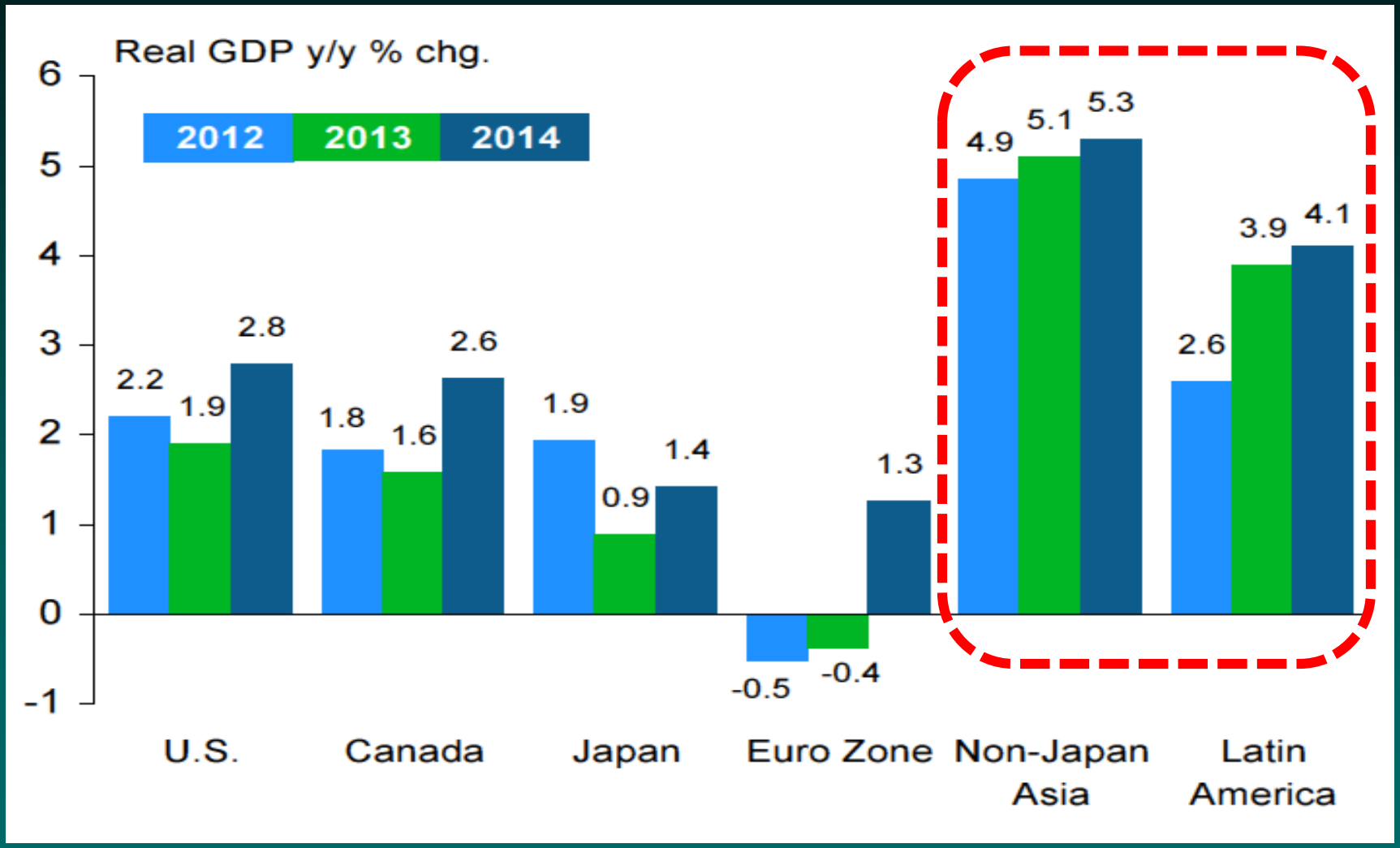
World trade will grow by 73% in the next 15 years. With merchandise trade volumes in 2025 hitting $43.6 trillion compared to today's $27.2 trillion



Source: Oxford Economics 2013

Continuing Economic Global Growth

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

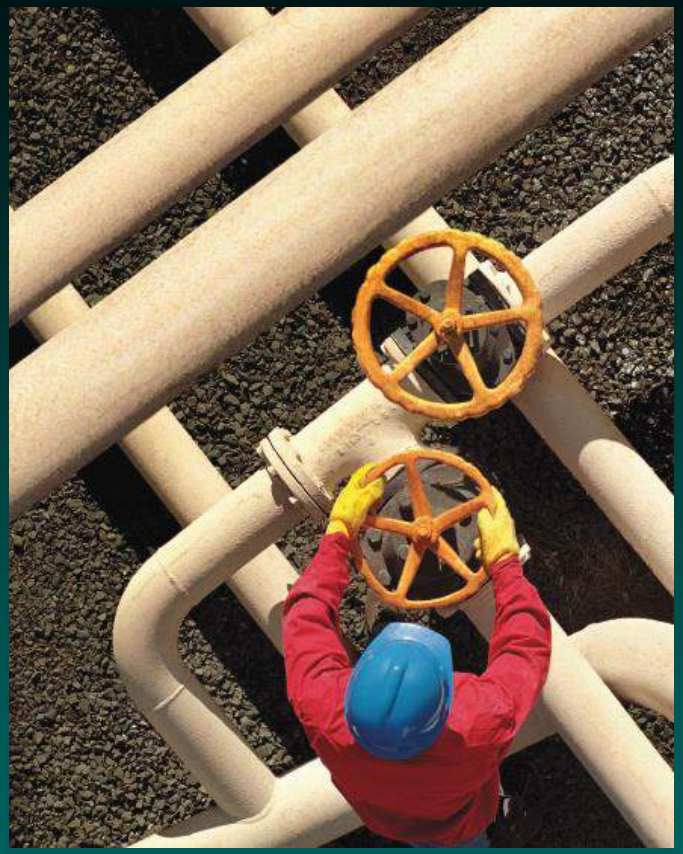


Source: TD Economics Forecast as of March 2013

America's New Energy Self Sufficiency

VICKERMAN & ASSOCIATES, LLC

Shale Gas: A Game Changer for US Competitiveness



US oil production recently hit a 20-year high and could surpass Saudi Arabia's output by 2019.

The US has a 100-year supply of natural gas, & will be the world's largest natural gas producer by end of 2015.

Source: US Energy Information Administration, US Department of Energy

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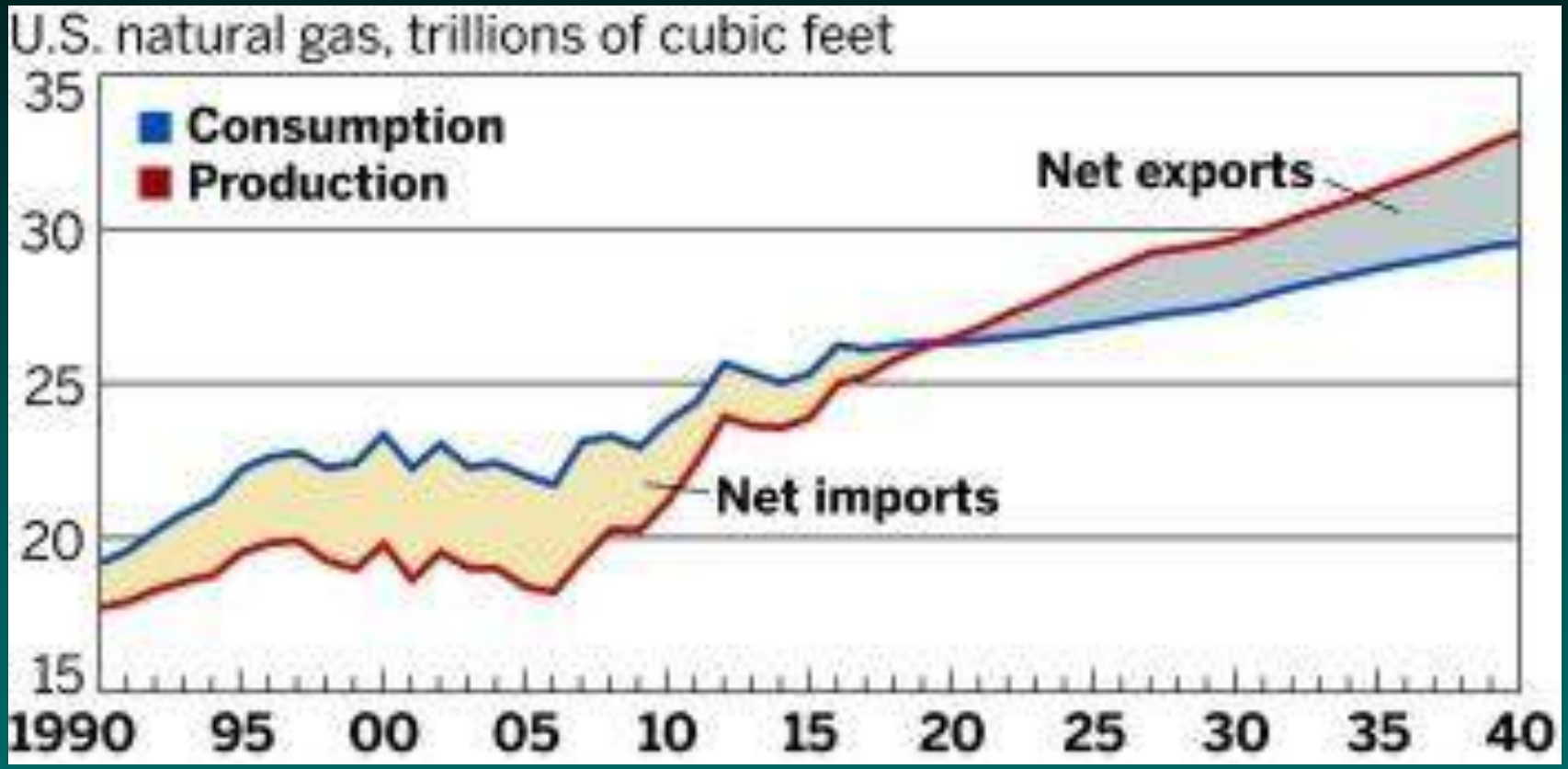
Independent Statistics & Analysis
U.S. Energy Information Administration

US Natural Gas Production

(Trillions of Cubic Feet)



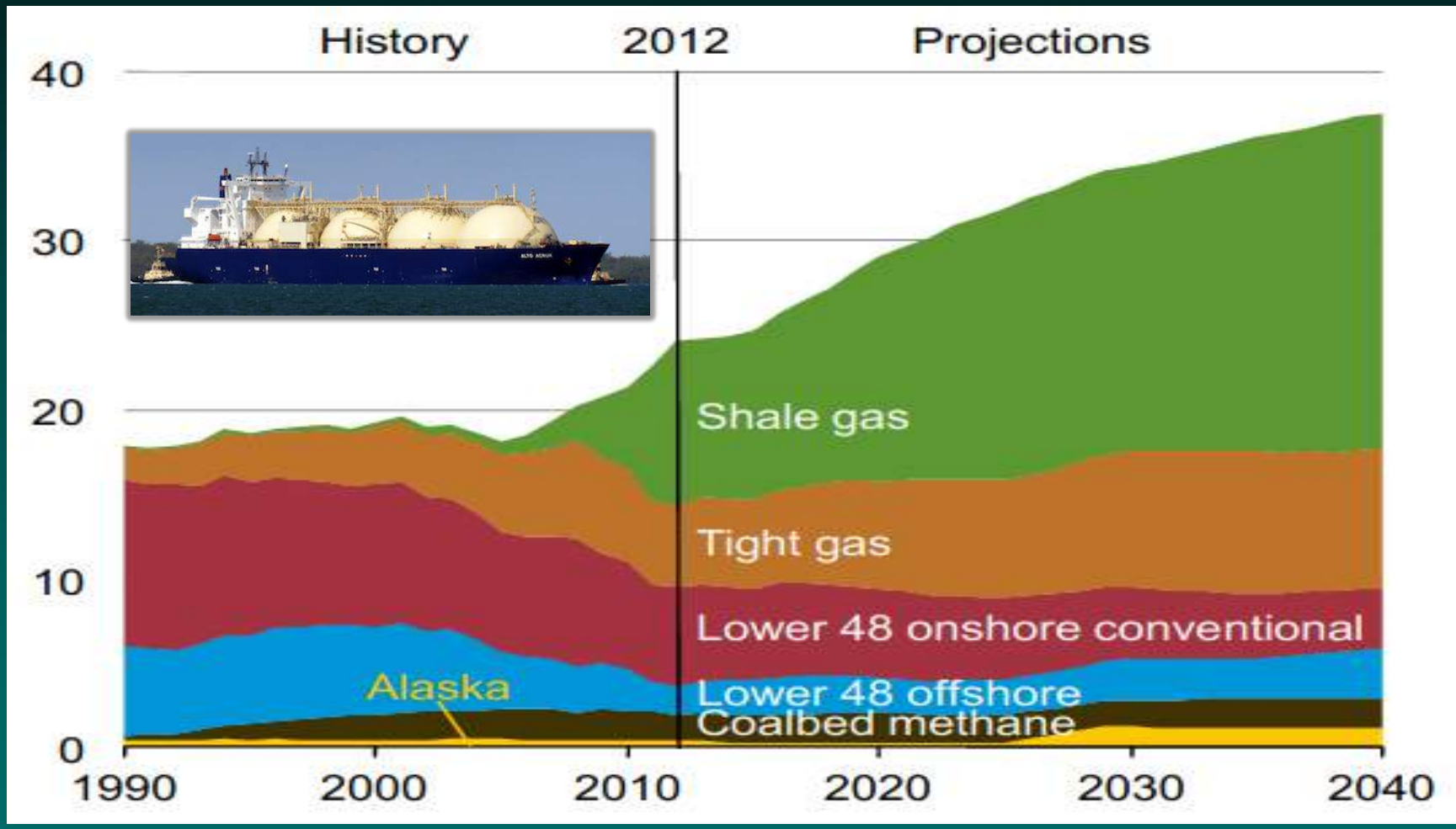
By 2020, U.S. is Projected to Be a Net Exporter of Natural Gas

Source: Derived from US Energy Information Administration: EIA AE 02014

Independent Statistics & Analysis
U.S. Energy Information Administration

US Natural Gas Production by Source

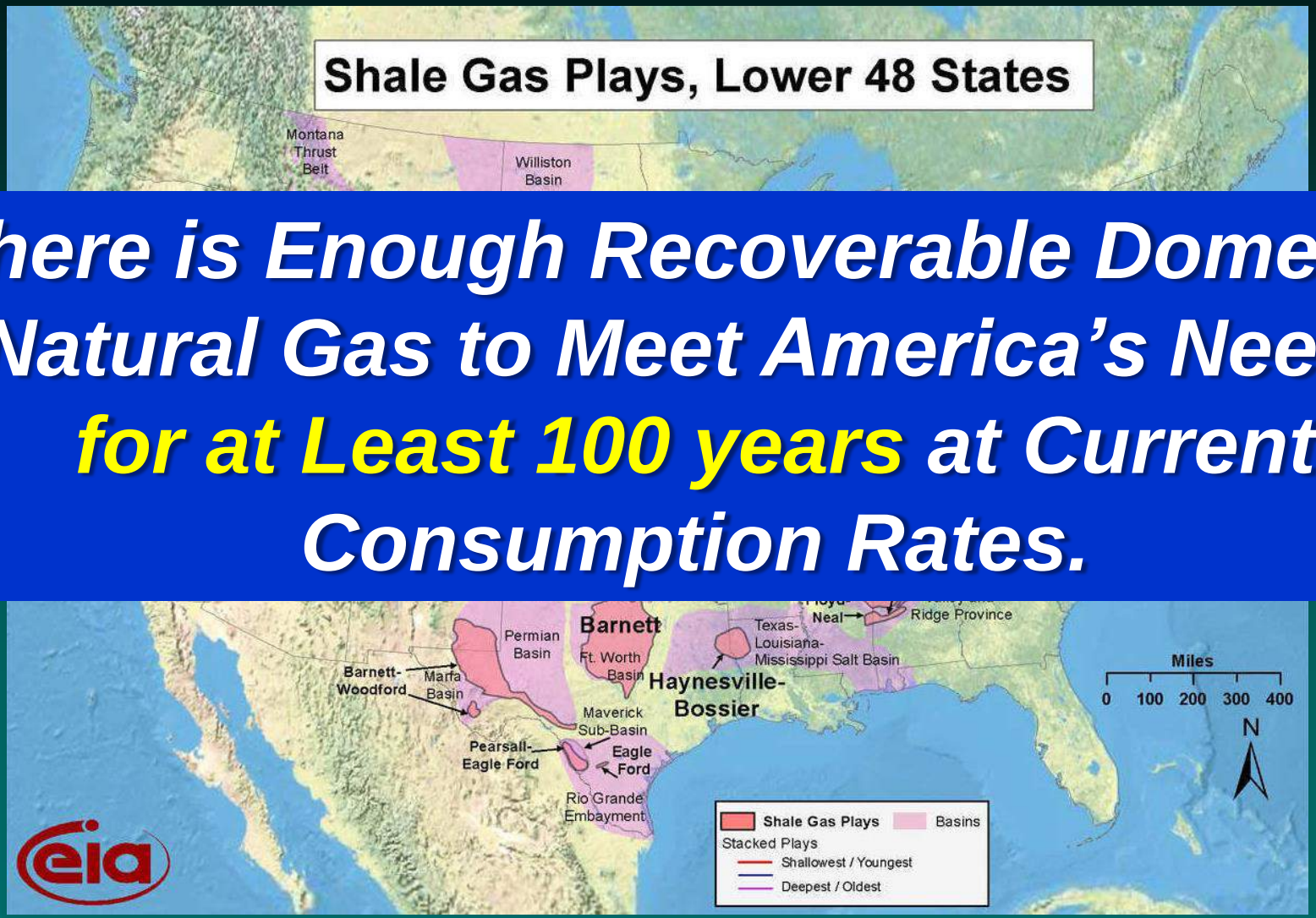
(Trillion Cubic Feet)



Source: Derived from US Energy Information Administration: EIA AE 02014

Independent Statistics & Analysis
U.S. Energy Information Administration

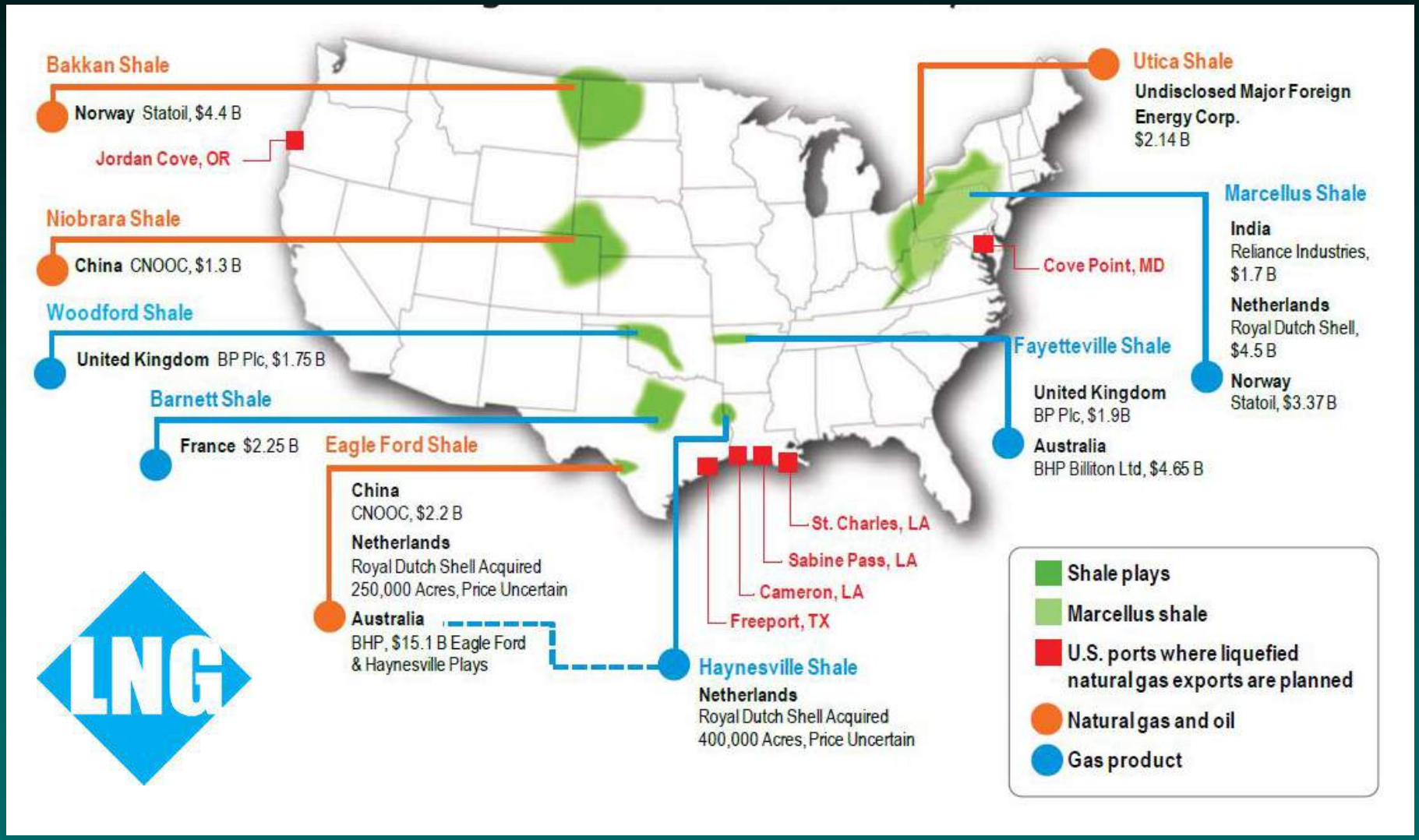
US Shale Gas Basins in North America



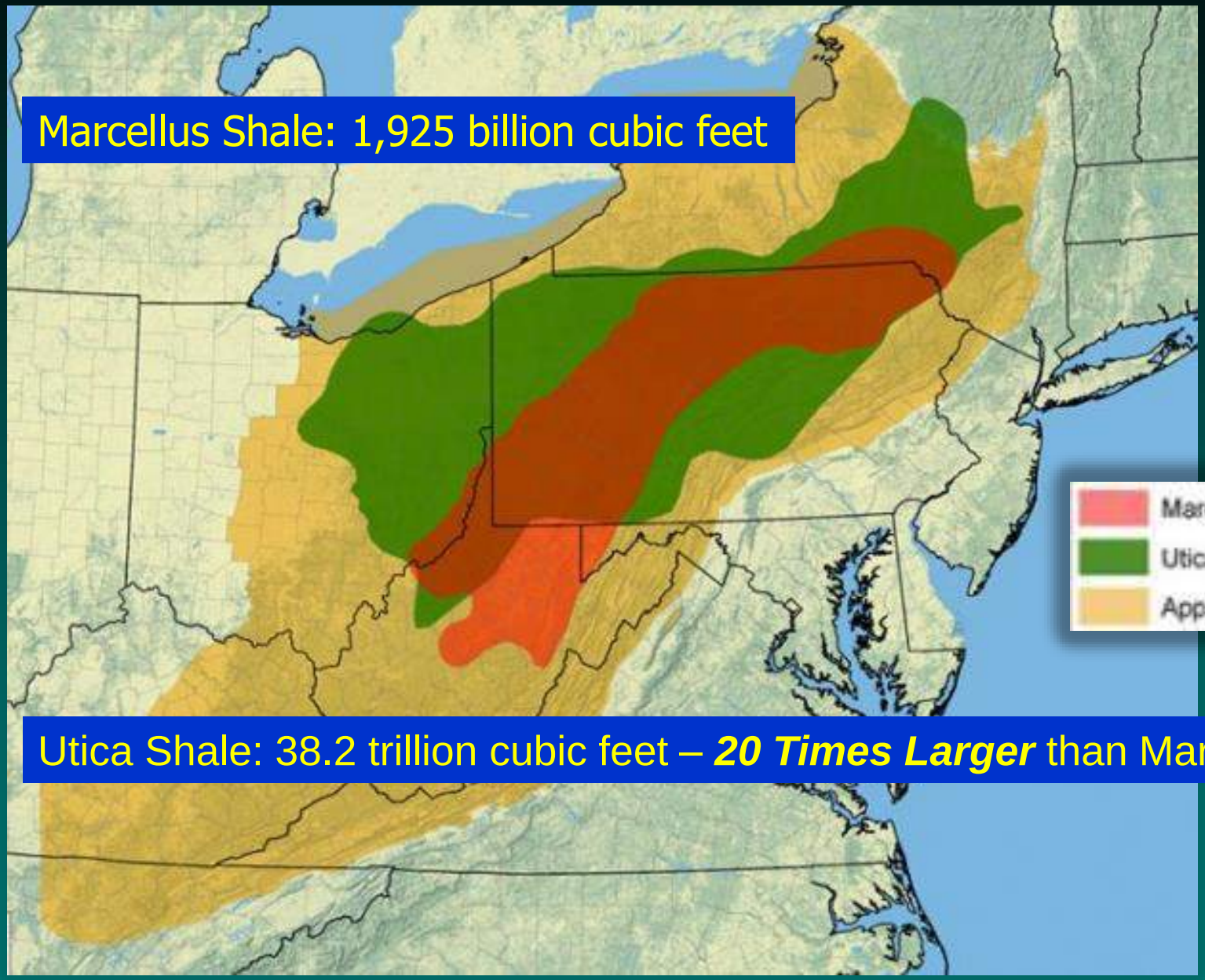
There is Enough Recoverable Domestic Natural Gas to Meet America's Needs for at Least 100 years at Current Consumption Rates.

Source: Derived from US Energy Information Administration: EIA AE 02014

Foreign Investment in US Gas and Oil

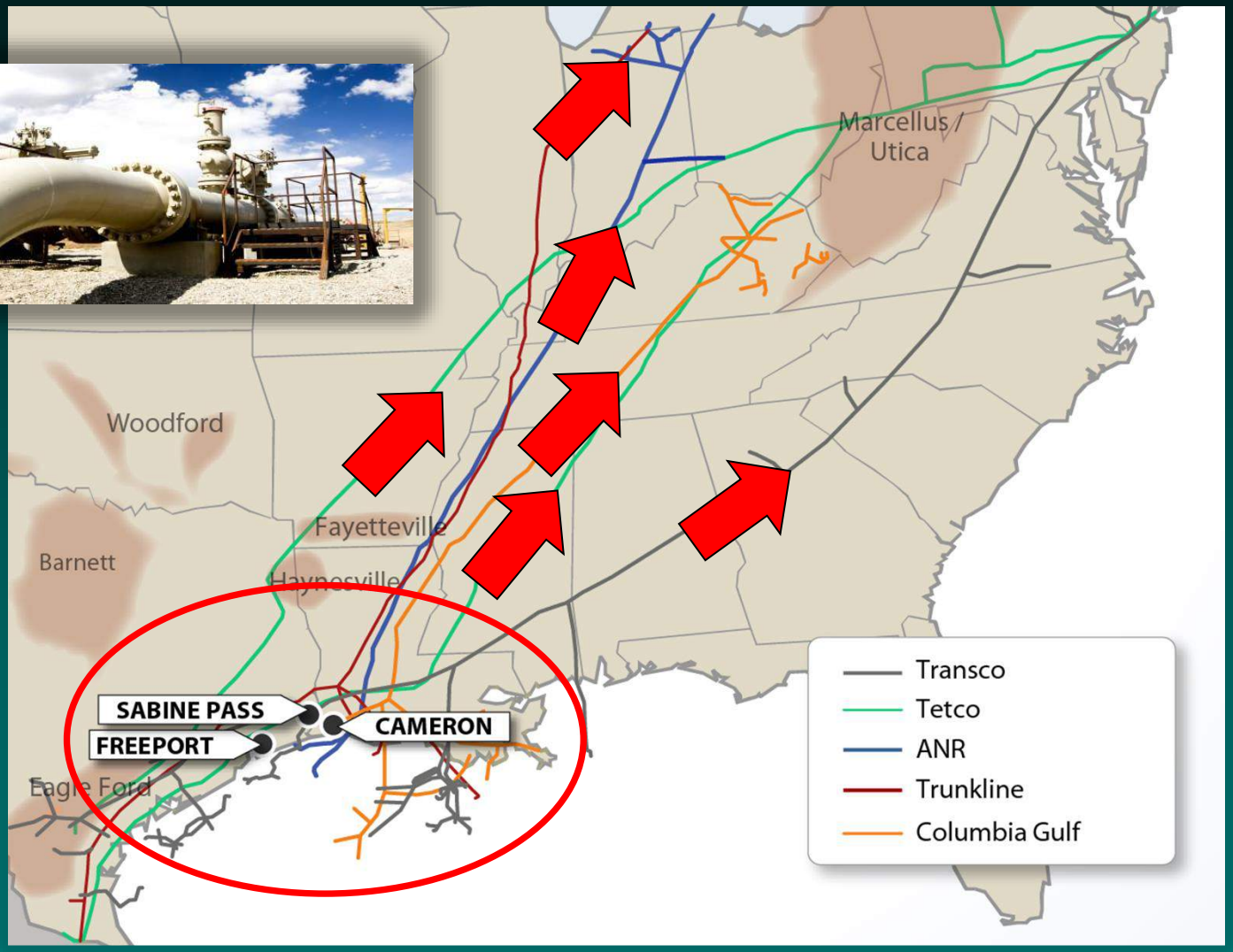


Marcellus/Utica/Appalachian Shale Basins



US LNG Exporters Target Marcellus Shale as Feed Gas

(Liquefaction Participants are Now in the Market for Dedicated Pipeline Supply to Match Their Exporting Needs)



Source: Poten & Partners' in July 2014 LNG in World Markets Research Report

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US LNG Exporters Target Marcellus Shale as Feed Gas

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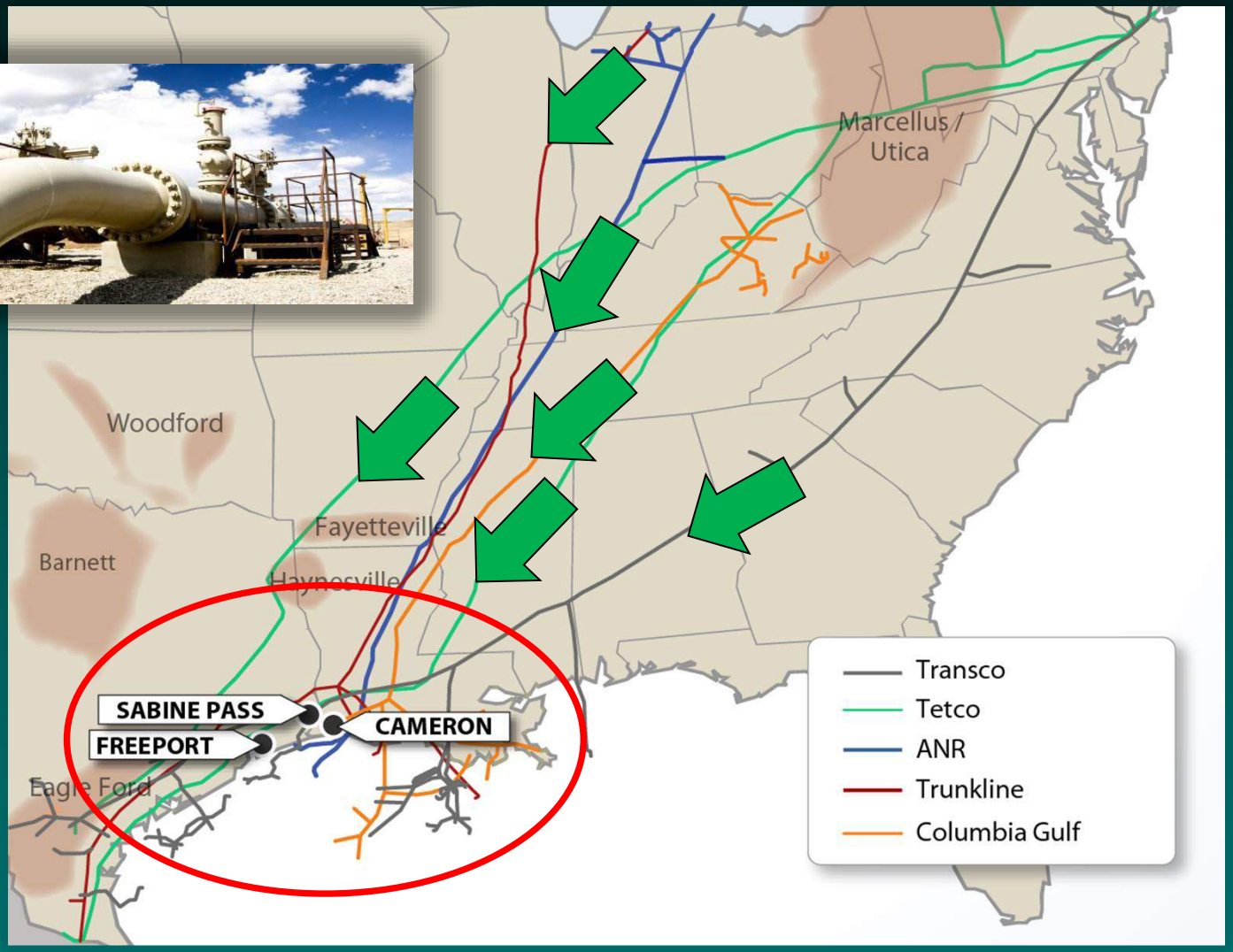

Source: Poten & Partners' in July 2014 LNG in World Markets Research Report

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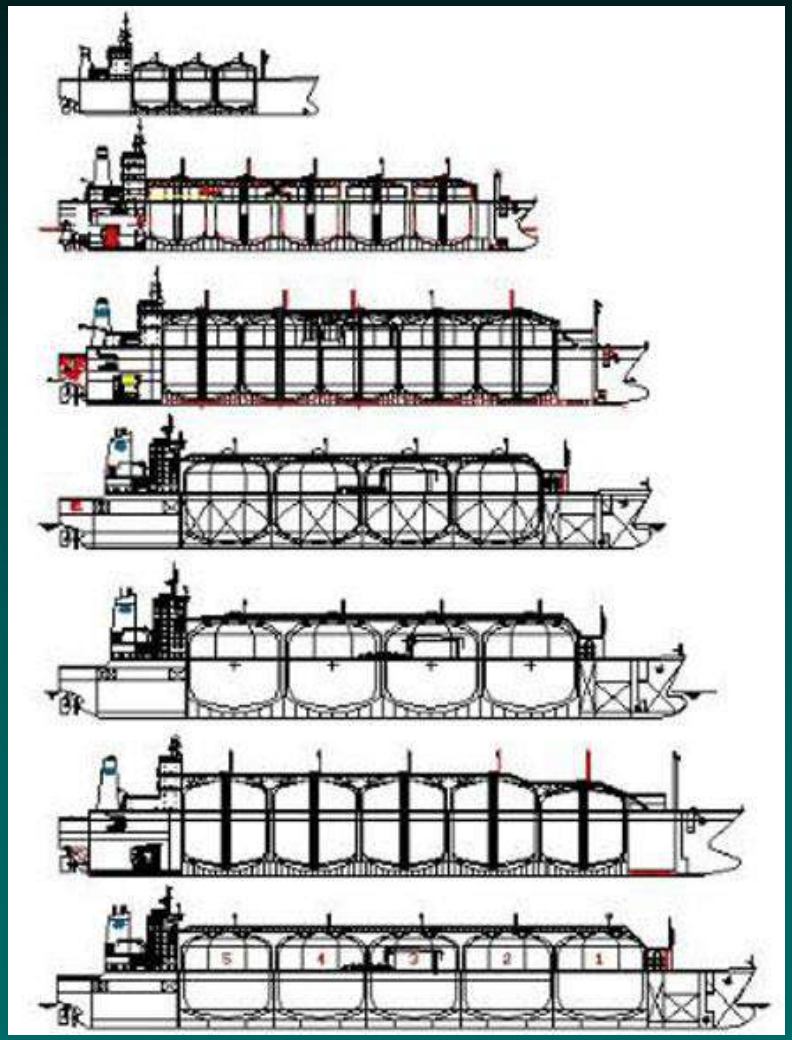
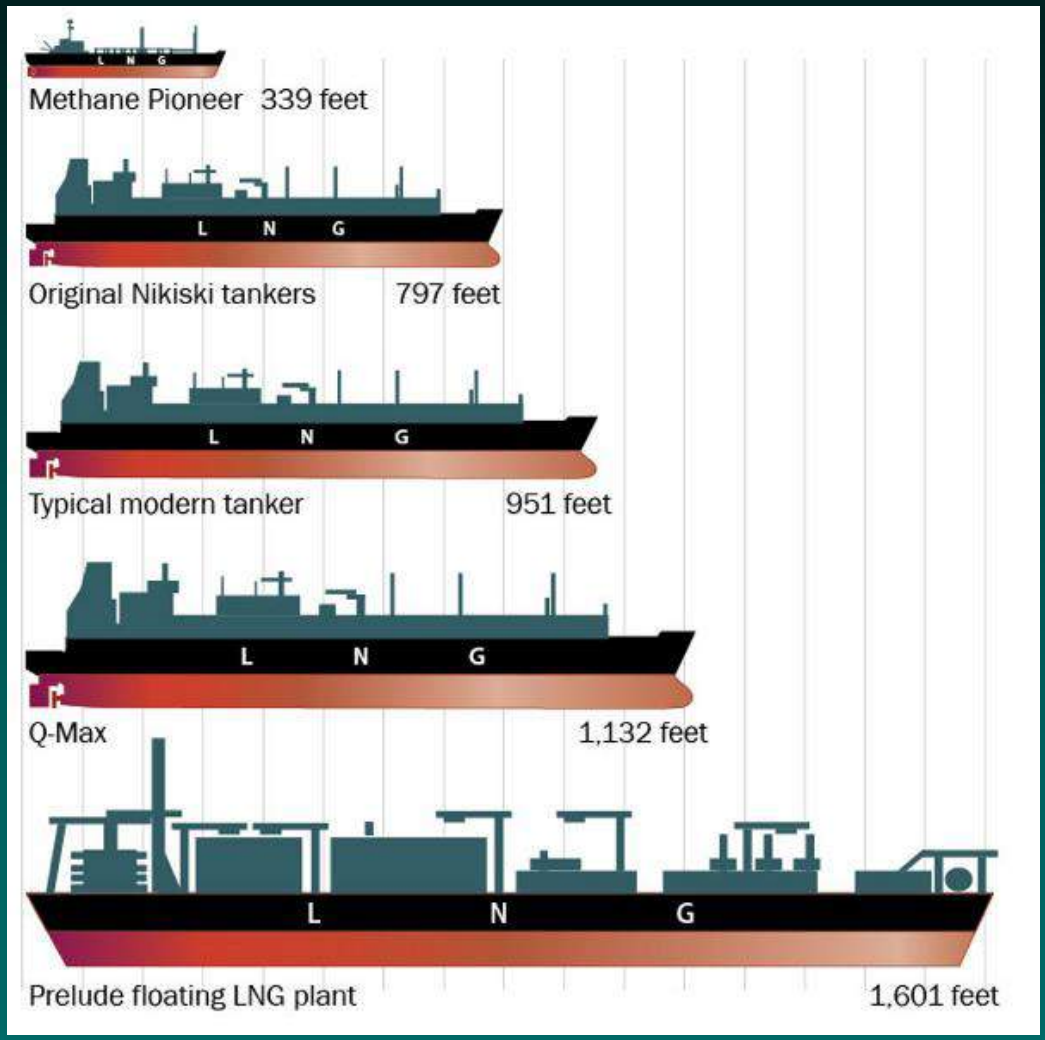
Impacts of the World's Largest Gas Carriers VLGCs

U.S. LNG Export Terminal

LNG Tanker Vessel Size Evolution





Maximum Draft for Any LNG Ship is 12 Meters for LNG Loading and Regasification Terminals

Panamax LNG Vessel Dimensions	
Length:	345 m (1,132 ft.)
Beam:	53.8 m (177 ft.)
Height	34.7 m (114 ft.)
Draft	12 m (39 ft.)
Capacity	266,000 cubic meters 9,400,000 cu ft.

The first **Q-Max** LNG carrier, **Mozah**, was built in November 2007.

Largest Gas Ocean Carrier: Q-Max LNG

Q-Max (Qatar Max)

Gross Tonnage: 164,000 t

Summer DWT: 129,000 t

Applications to Export LNG to Non-FTA Countries

Source; Office of Fossil Energy, Application Received by DOE to Export Domestically Produced LNG from the Lower US

Shell's FLNG

The Largest Floating Structure in the World

Shell's Floating Liquefied Natural Gas Facility,

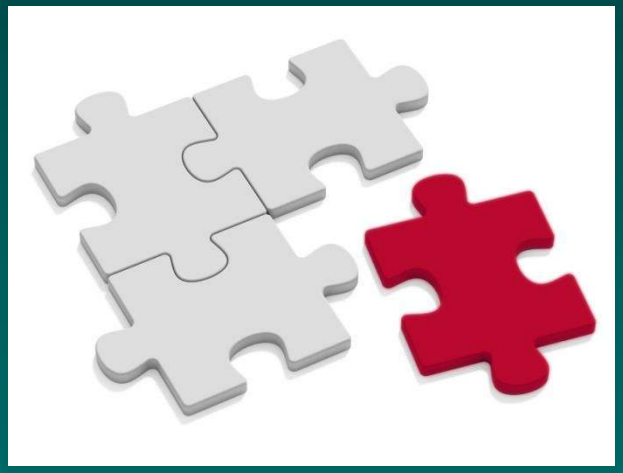
Who Owns & Controls Today's Cargo?

- The "***Shipper***" or "***Beneficial Cargo Owner***" ***(BCO)***
- **BCO** = **Importer of record**, the entity that physically takes possession of cargo at destination and **does not act as a third party** in the movement of such goods
- The person or company who is usually the **supplier or owner of commodities shipped**.

Key Success Factor:

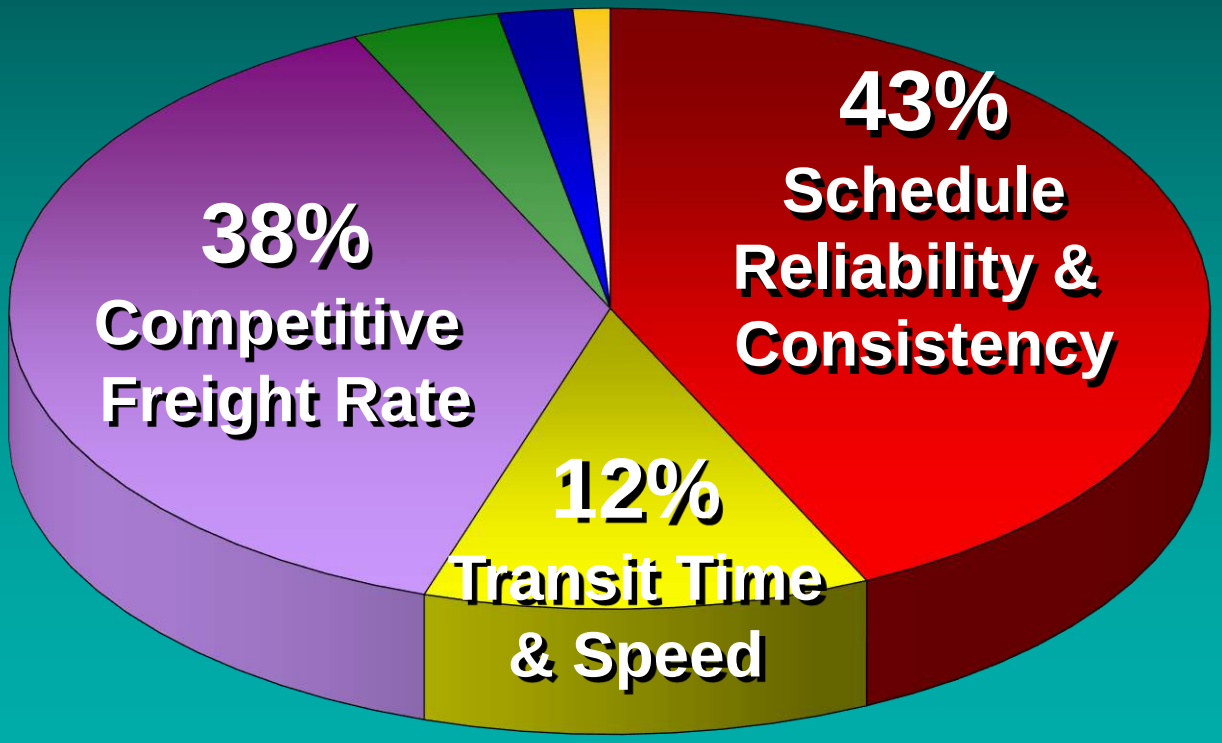
Cargo Will Flow "*Downhill*" to the "***Lowest Cost - Best Service Levels***"

(Total Logistics Costs From Origin to Destination)



Above All Be MARKET DRIVEN

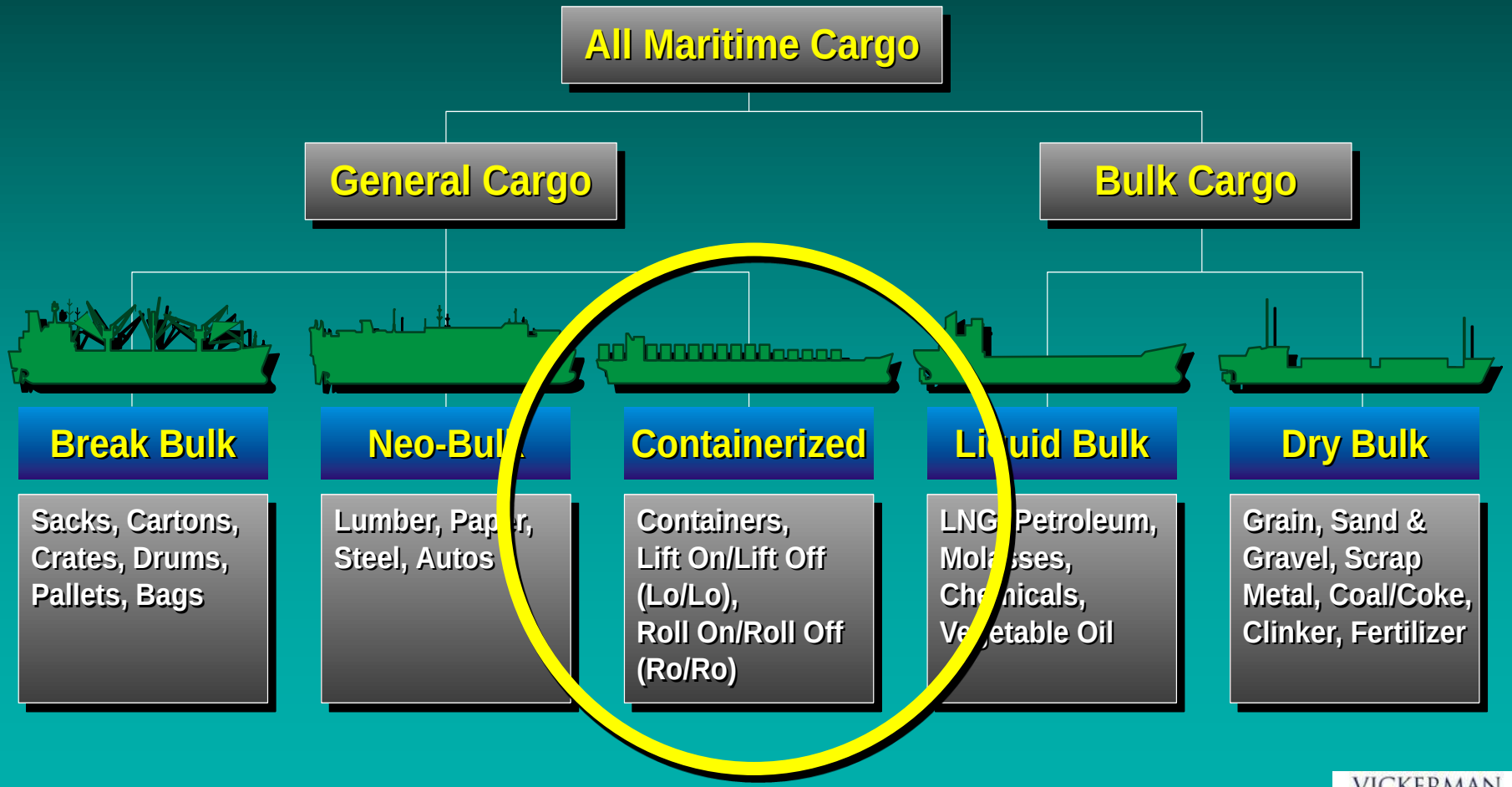
Poll of the Top 1000 "Blue Chip" Multinational Shipper Priorities



Today's Logistics Truth:

"The customer wants more and is willing to pay less for it."

Functional Classification of Global Maritime Cargoes



The TEU (Twenty Foot Equivalent Unit)

"The Port & Container Shipping Unit of Measure"

1 TEU = One 20 ft. ISO Container

1 FEU = 2 TEUs = One 40 ft. Container

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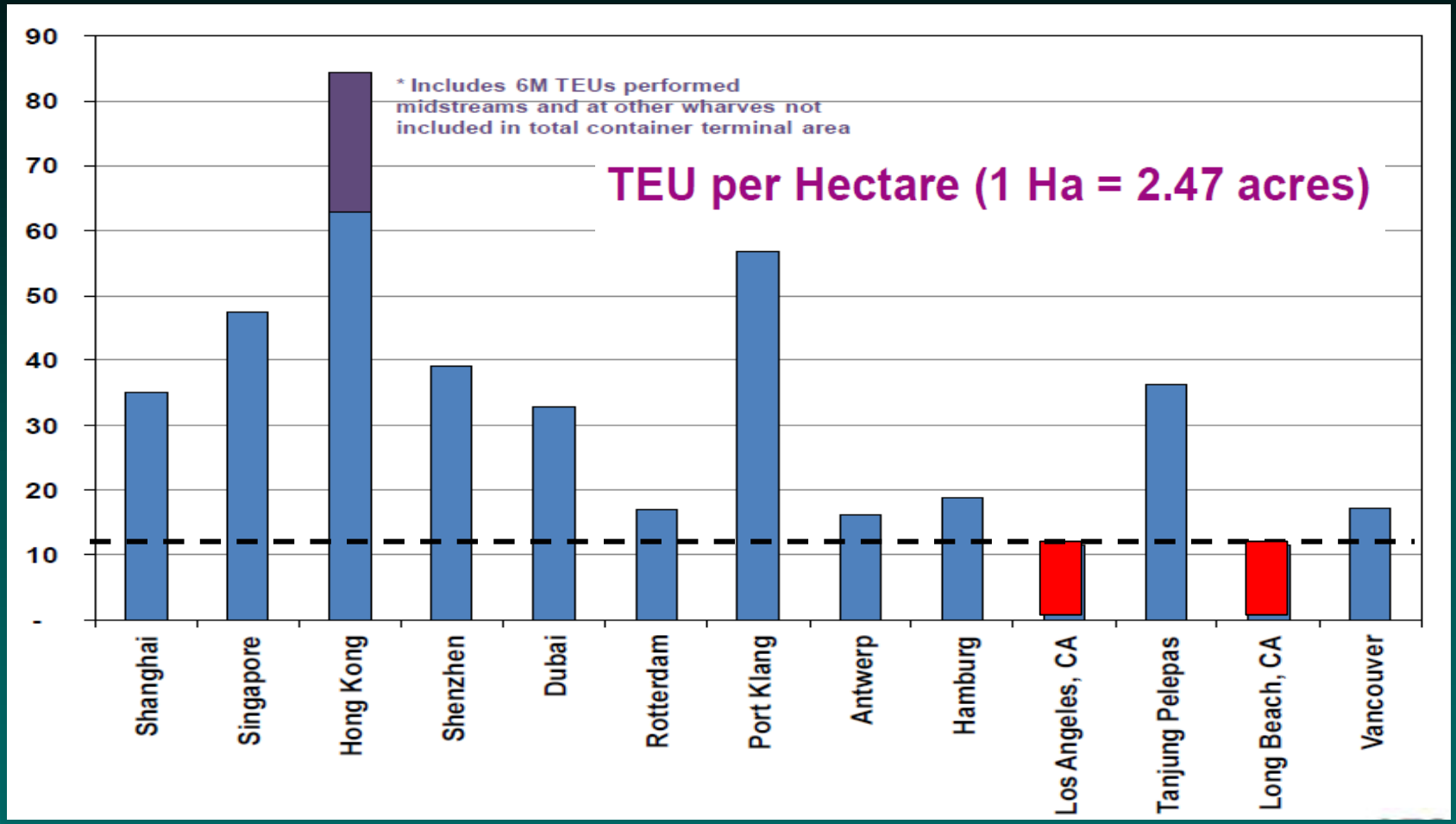
How Much Can a Single Container Hold?

(Example 40 ft. Container)

						Example Value $
	=	1,890 Cases	@	$25.50/Case	=	$48,195
	=	315 20” TVs	@	$299/TV	=	$94,185
	=	10,000 Pairs	@	$30/pair	=	$300,000
	=	432,000 Packs	@	$4.00/Pack	=	$1,728,000

Top Global Container Port Productivity

(TEUs/Hectare in Thousands)



Global Ocean Carriers & Terminal Operators
Do Not Consider North American Ports as
"Best Case Practice"

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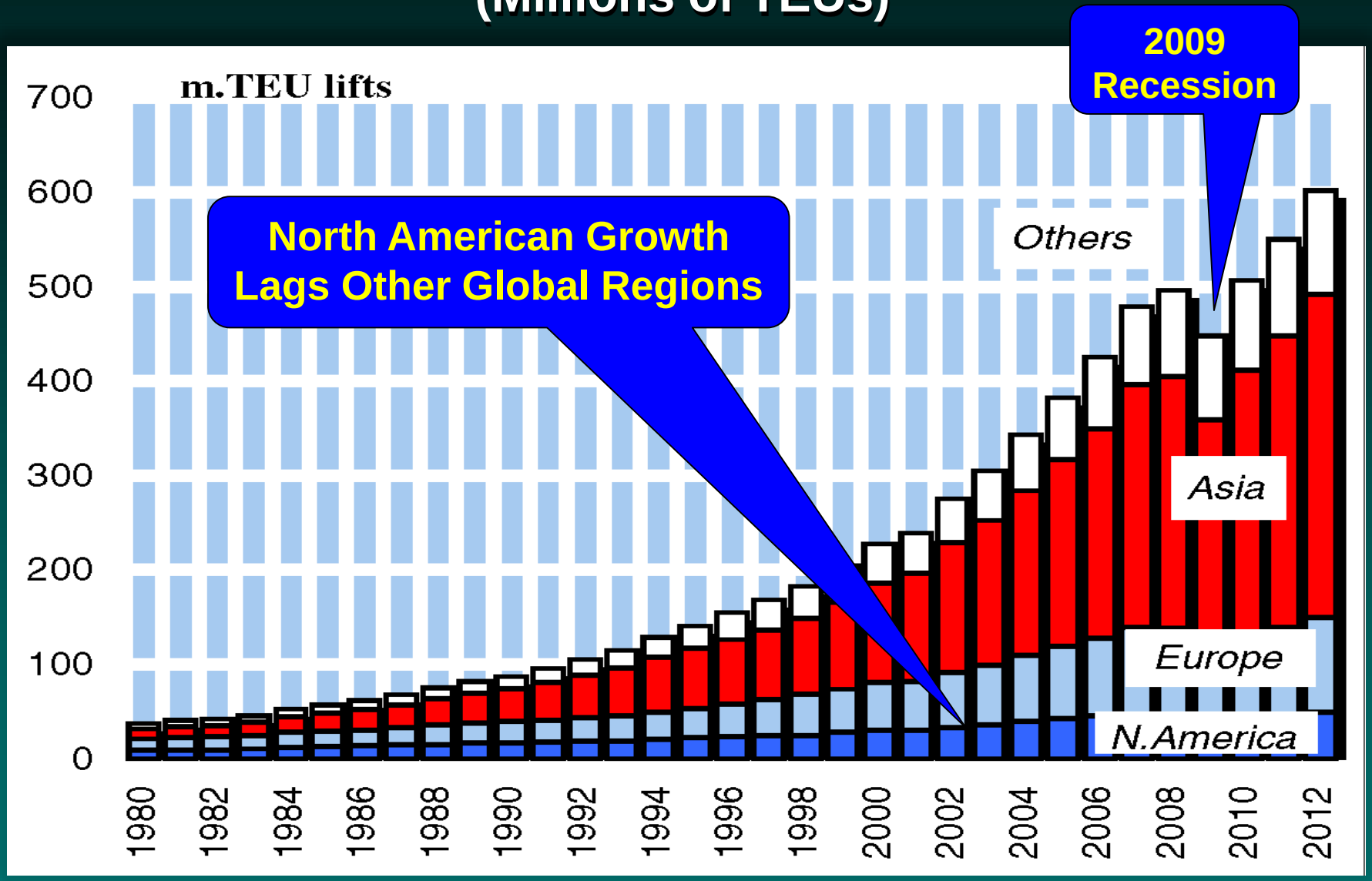
International Maritime Cargo Demand Trends

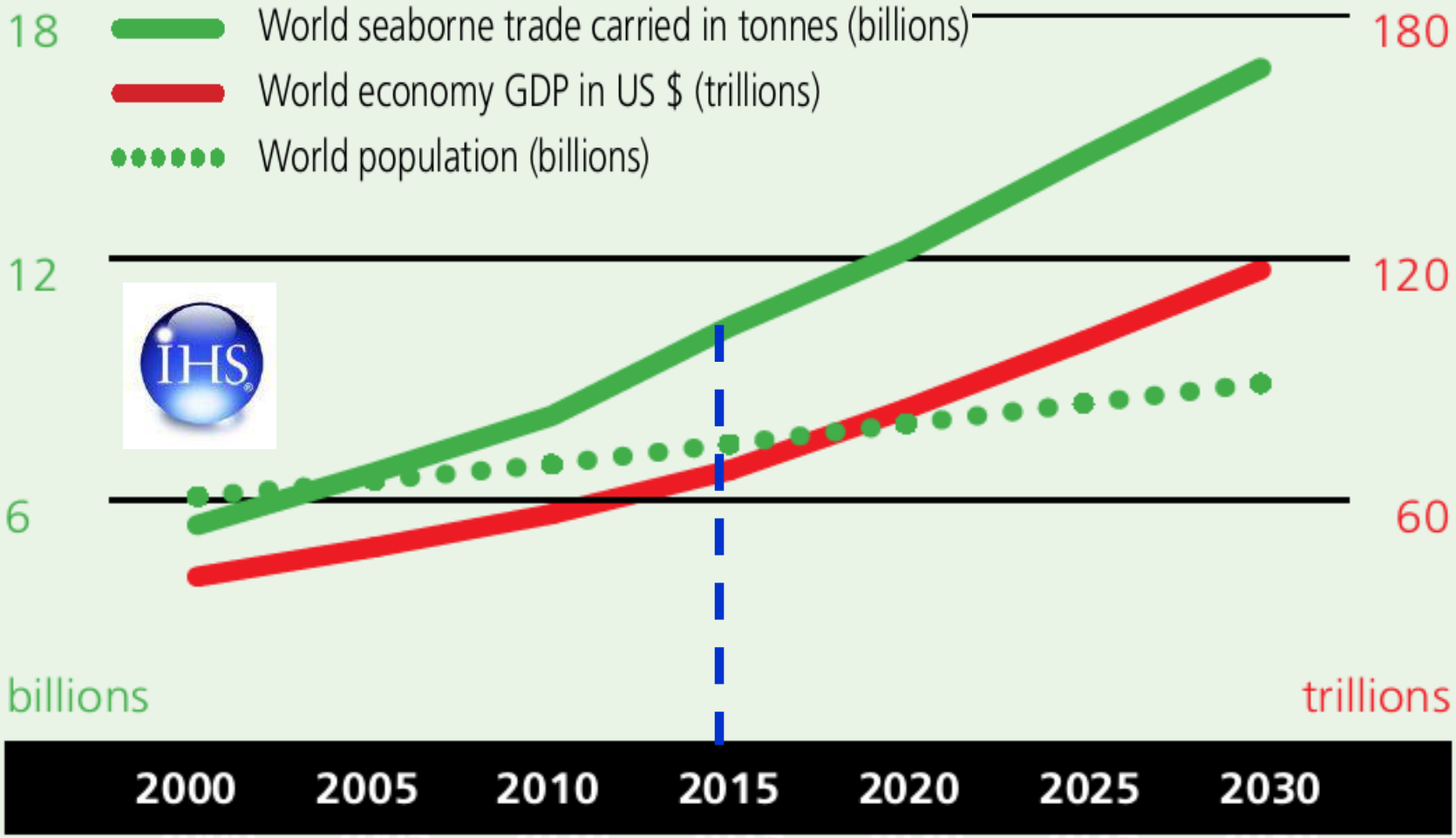
Historical Global Container Market Demand

(Millions of TEUs)



Source: Drewry Shipping Consultants

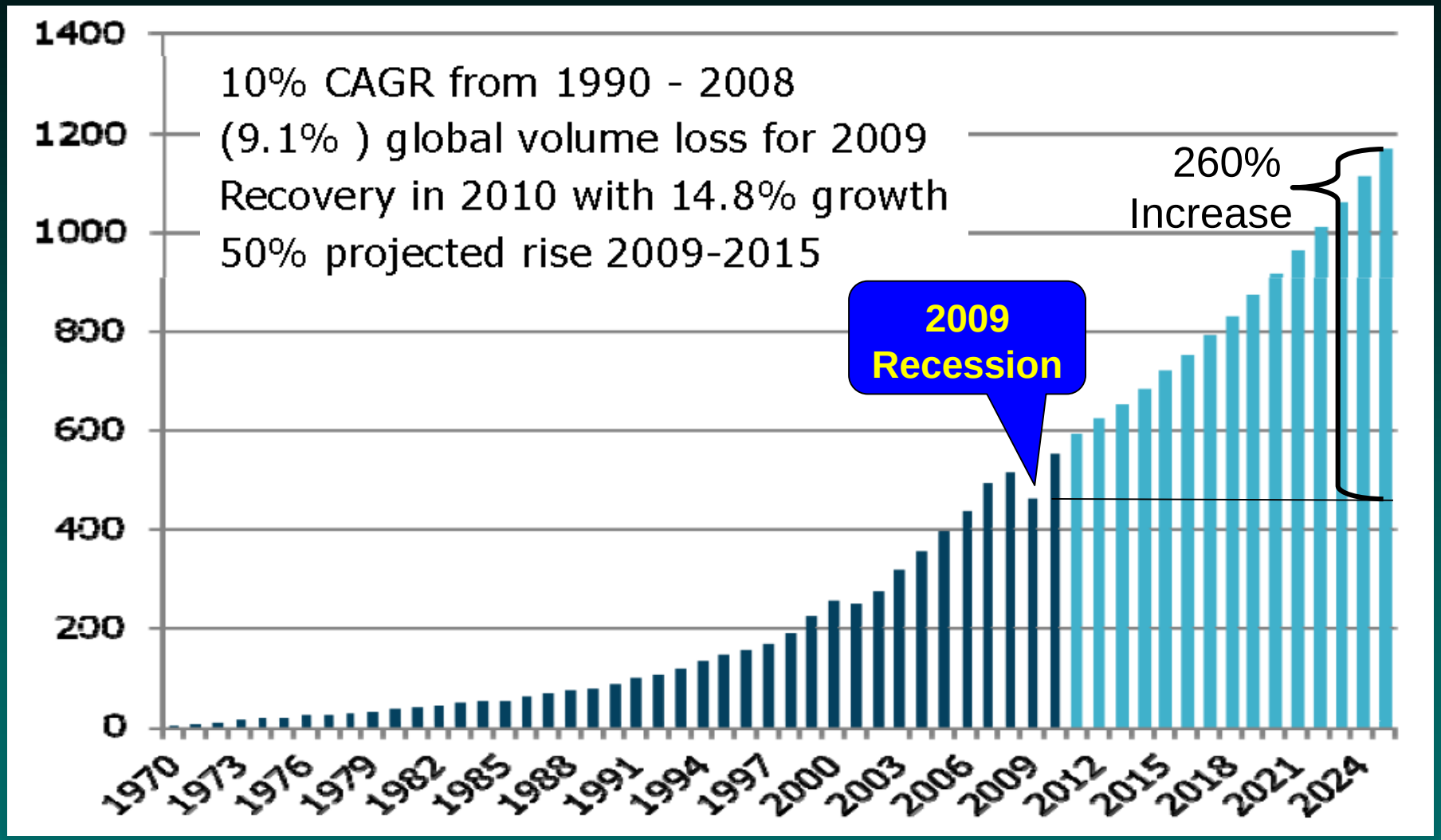
2015 Predicted Increases in World Seaborne Trade & Global Population



Source: IHS Global Insight – World Seaborne Trade, OECD Statistics, UN Population

2025 World Container Port Market Demand

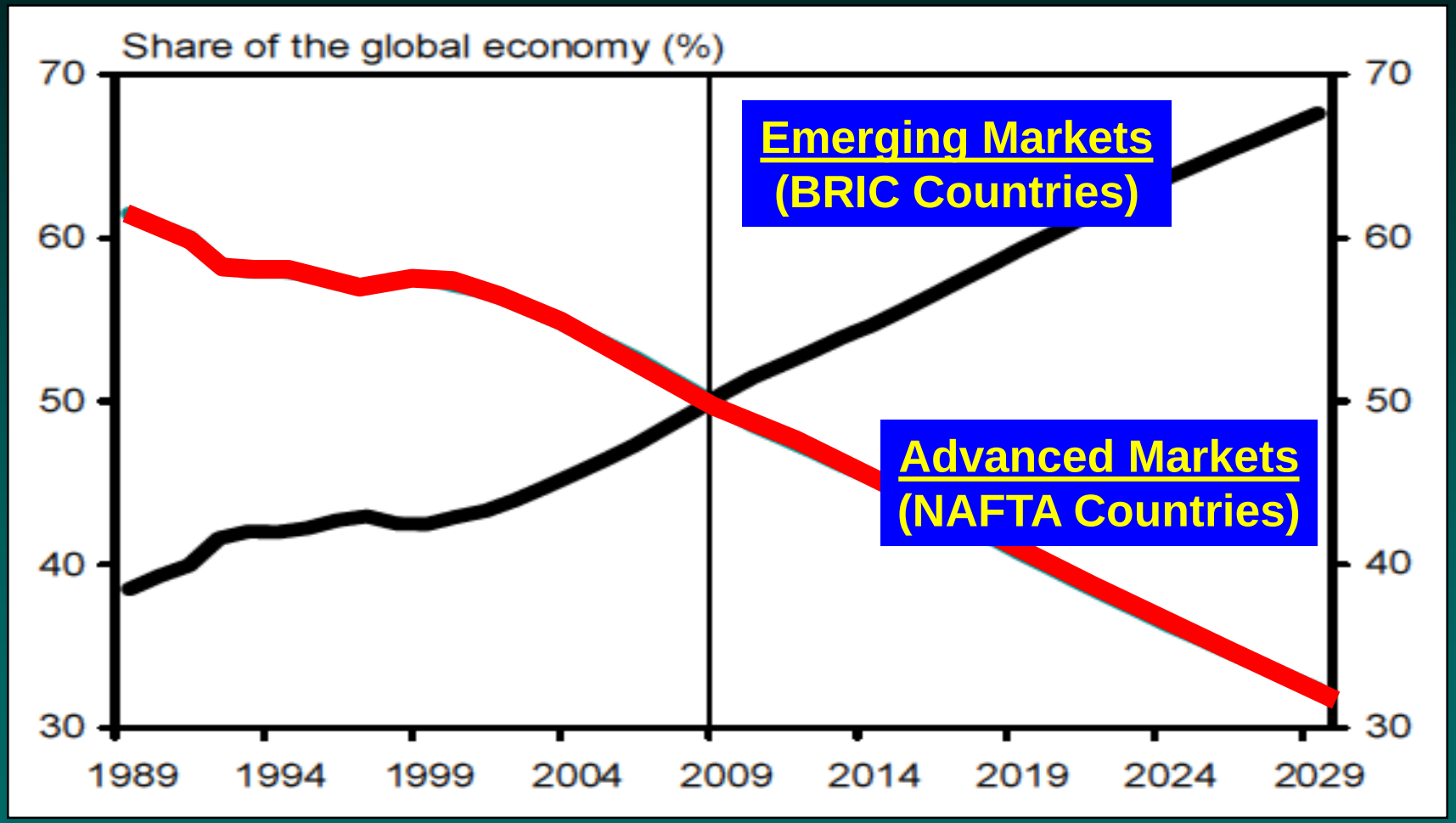
(Millions of TEUs)



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

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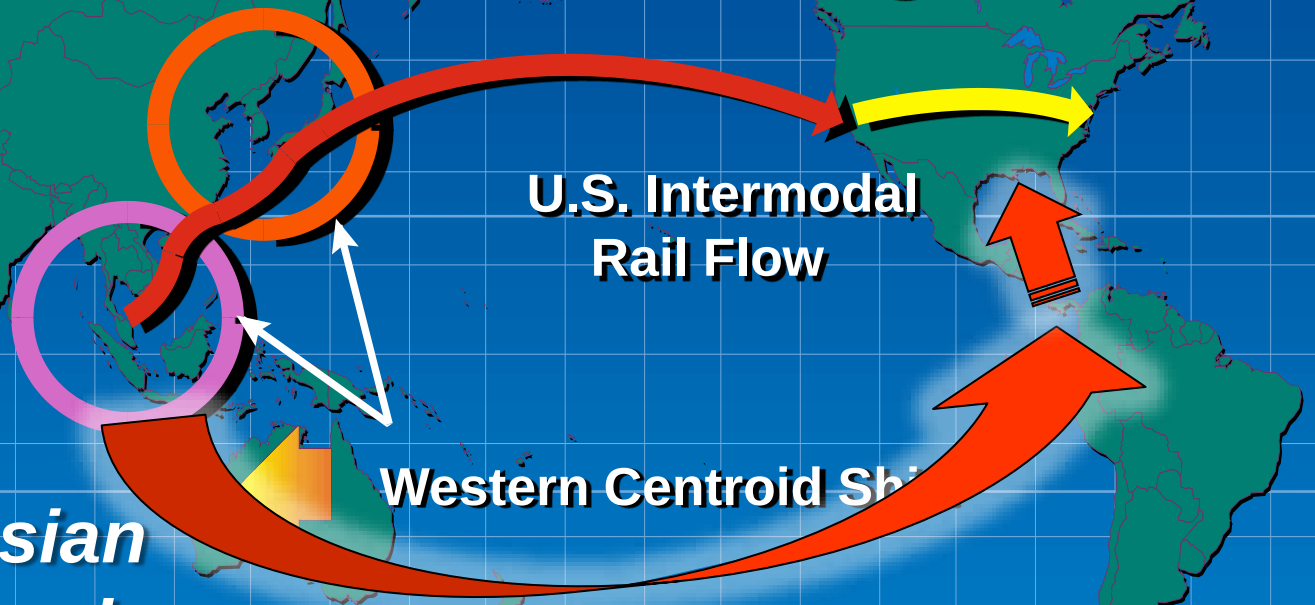
Southeast Asian Manufacturing Centroid Shift

Current Inbound U.S. Cargo Flow



Expanded Asian Panama Canal 2014 Flows

Eastbound: All Water Flow
Eastbound: US Intermodal Rail Flow

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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

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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

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The Growing Asian Import Trade Challenge

Container Transhipment World Records

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.

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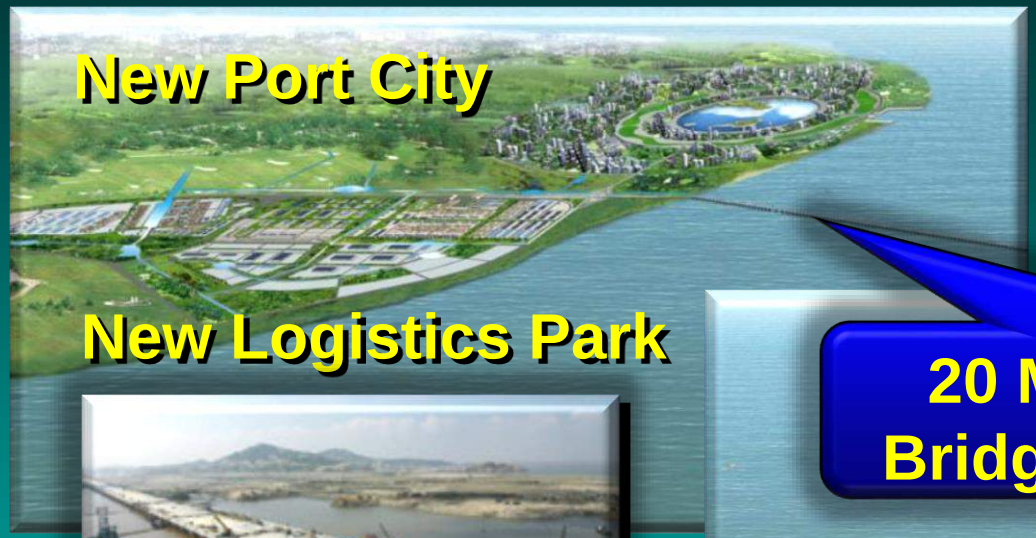
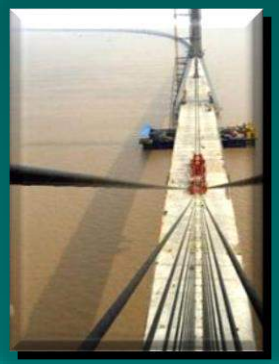
Shanghai International Shipping Center

Yangshan Deep Port & Logistics Park





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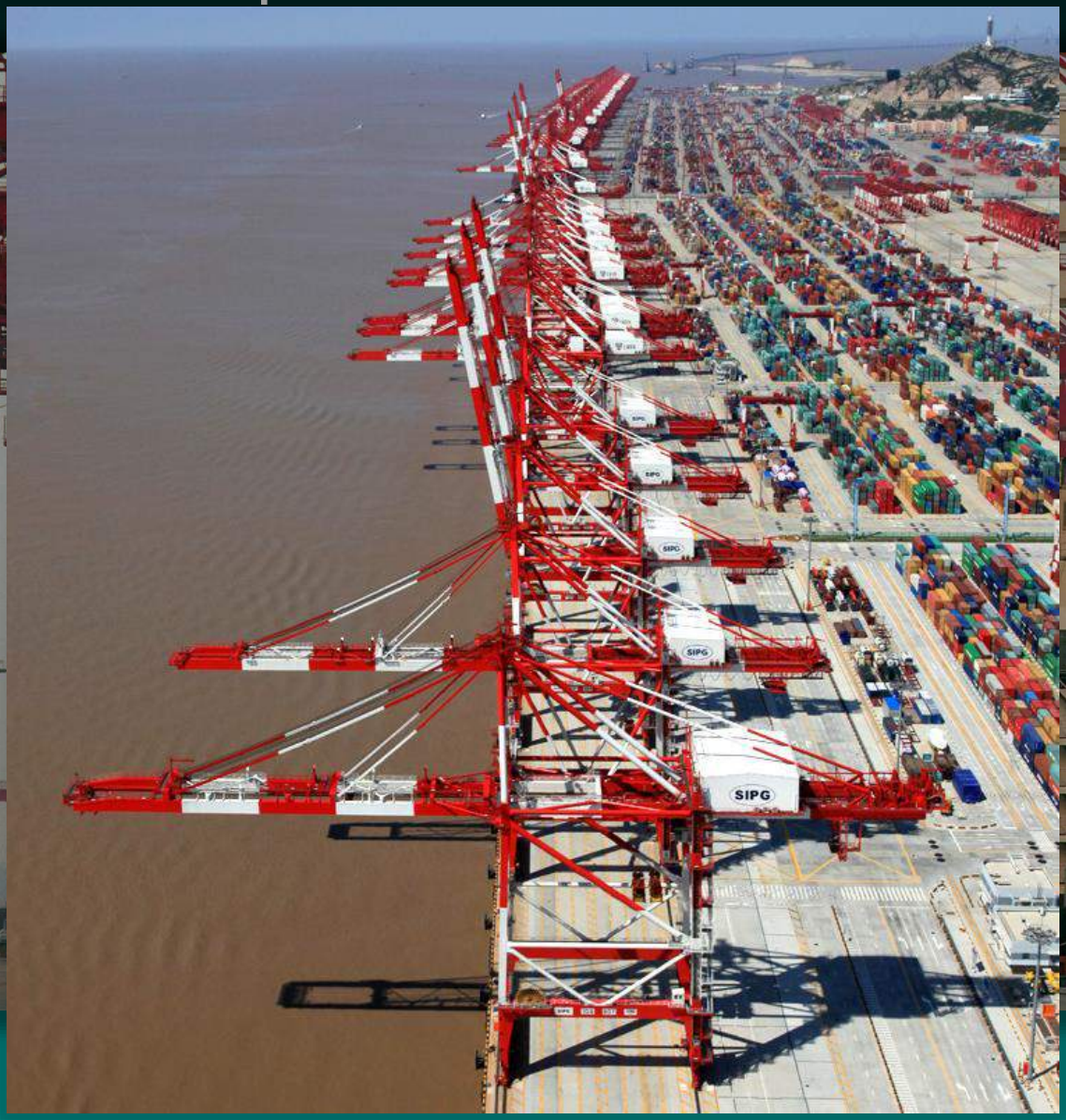
Shanghai International Shipping Center

Yangshan Deep Port - 20 Mile Bridge Access

Shanghai Yangshan Deep-Water Harbour

Yangshan Deep Port – 54 Berths East China Sea



Shanghai International Shipping Center

Yangshan Deep Port & Logistics Park

Shanghai Port Set a 2011 Record by Handling over 30 million TEUs

New Emerging Economic Global Drivers

(~~BRIC~~ → ASEAN 2016 + India)

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Huge Population Growth Over Next Decade
Top 10 countries to add 422 million people by 2020

Country	2010	2020	Nominal Change	% Change
India	1,173,108,018	1,326,093,247	152,985,229	13.0%
China	1,330,141,295	1,384,545,220	54,403,925	4.1%
Ethiopia	88,013,491	120,420,018	32,406,527	36.8%
USA	310,232,863	341,386,665	31,153,802	10.0%
Nigeria	152,217,341	182,344,492	30,127,151	19.8%
Pakistan	177,276,594	204,274,257	26,997,663	15.2%
Congo	70,916,439	95,605,489	24,689,050	34.8%
Indonesia	242,968,342	267,532,450	24,564,108	10.1%
Bangladesh	158,065,841	180,753,264	22,687,423	14.4%
Brazil	201,103,330	222,607,506	21,504,176	10.7%

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Asian Hourly Wage Rates in US Dollars

	2008	2009	2010*	2011*	2012*	2013*	2014*	2015*
CHINA	1.56	1.63	1.83	2.16	2.51	2.90	3.2[illegible]	3.66
HONG KONG	7.24	7.27	7.42	7.64	7.95	8.27	8.68	9.11
INDIA	0.50	0.49	0.53	0.57	0.61	0.66	0.7[illegible]	0.78
INDONESIA	0.51	0.51	0.59	0.67	0.77	0.88	0.98	1.08
JAPAN	24.30	26.23	22.59	21.70	20.41	19.81	19.51	18.73
SOUTH KOREA	13.21	11.27	13.31	14.54	16.49	18.70	20.91	23.38
MALAYSIA	2.99	2.80	2.97	3.18	3.38	3.58	3.80	4.03
PHILIPPINES	1.65	1.59	1.67	1.77	1.87	1.99	2.11	2.24
SINGAPORE	13.18	12.86	13.18	13.85	14.69	15.59	16.53	17.54
TAIWAN	7.24	6.56	6.95	7.19	7.50	7.85	8.19	8.52
THAILAND	1.08	1.06	1.04	1.08	1.19	1.27	1.35	1.42
VIETNAM	0.81	0.86	0.87	0.89	0.97	1.03	1.07	1.10

Source: JOC, IMA Asia – Asia Forecasts 2010

By 2015/16, the ASEAN Economic Community Will Form a *Single Regional Common Market* with *One Manufacturing Base*

ASEAN
BUSINESS & INVESTMENT SUMMIT
2012 PHNOM PENH CAMBODIA

In 2012, U.S. goods trade was $198 billion, up from $145 billion in 2009, making ASEAN the fourth largest U.S. export market and fifth largest overall trading partner.

VICKERMAN & ASSOCIATES, LLC

Association of Southeast Asia Nations (ASEAN)
2015 ASEAN CONNECTIVITY

47 Seaports Will Be Built Across ASEAN by 2015/16

The Rise of the Asean Economies

Ho Chi Minh City Regional New Port Container Terminal Development

(12 Port Terminals in 14 years)

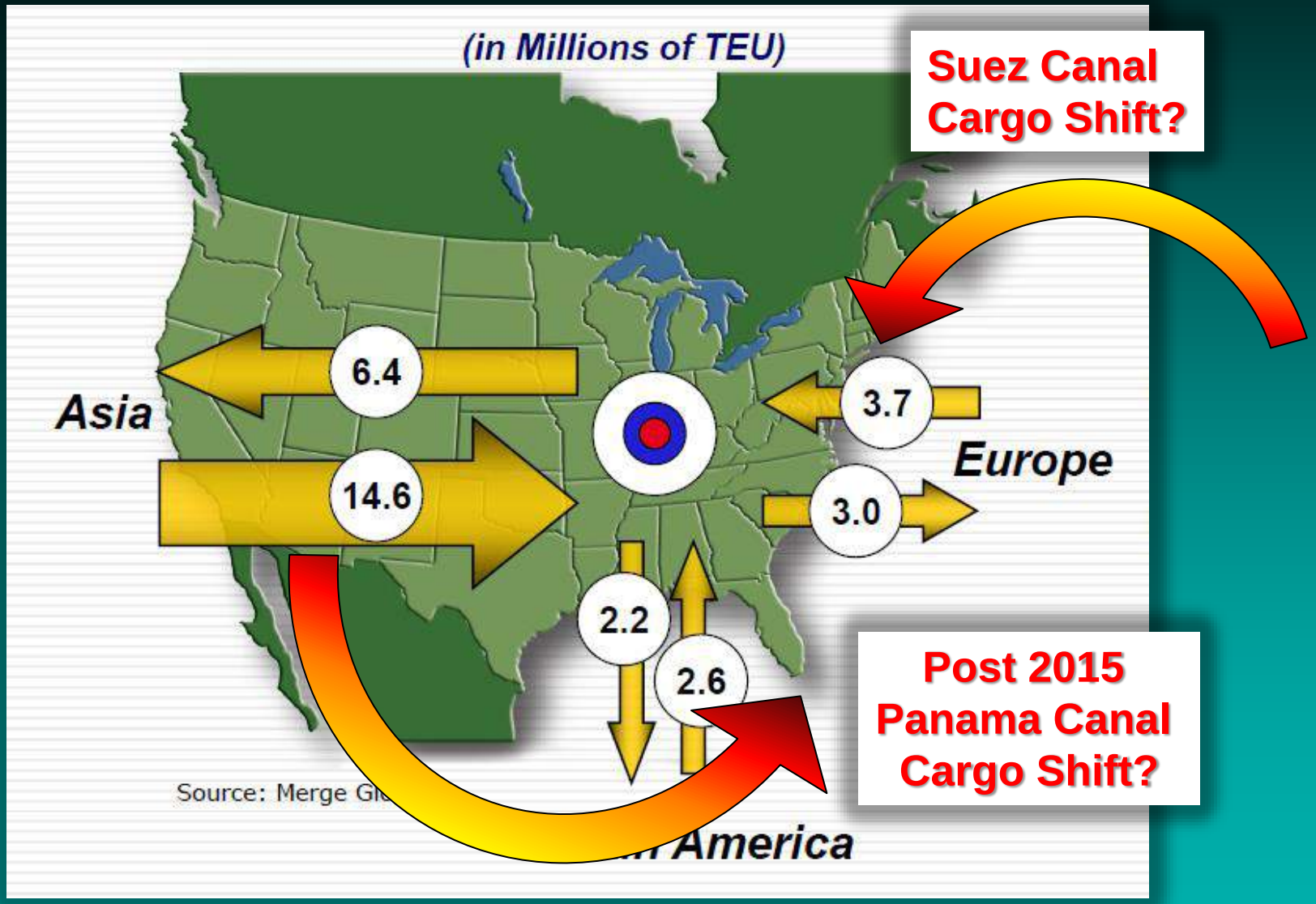
VIETNAM – Has Become the <u>Apparel Distribution Capital</u> of the World – The "Apparel Shipper"

VIETNAM - Ho Chi Minh City, (Saigon)
Bitexco Financial Tower

VICKERMAN & ASSOCIATES, LLC

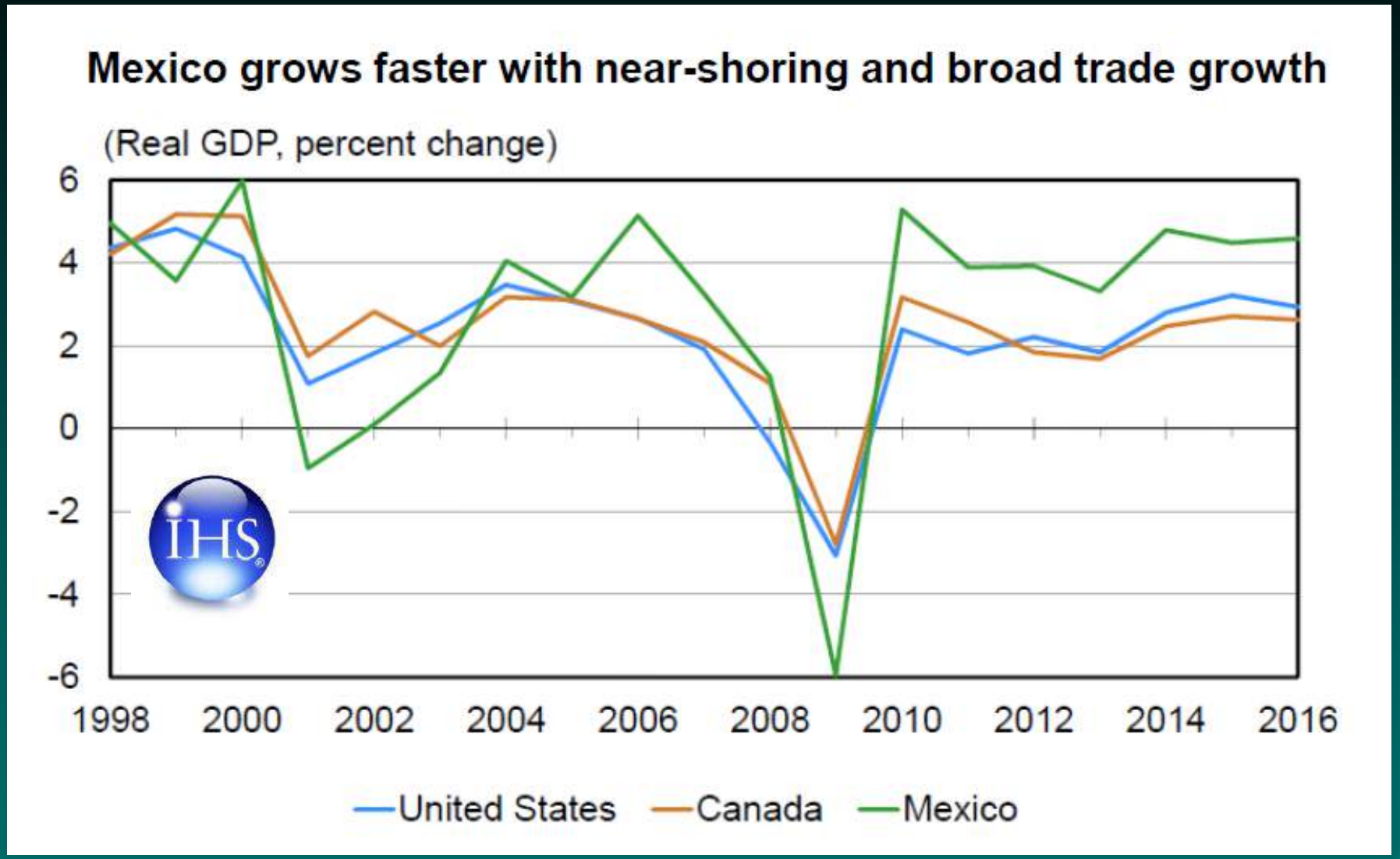
US Containerized Ocean Trade Flows (2007)

(West Coast Ports Handle 63% of Imports)

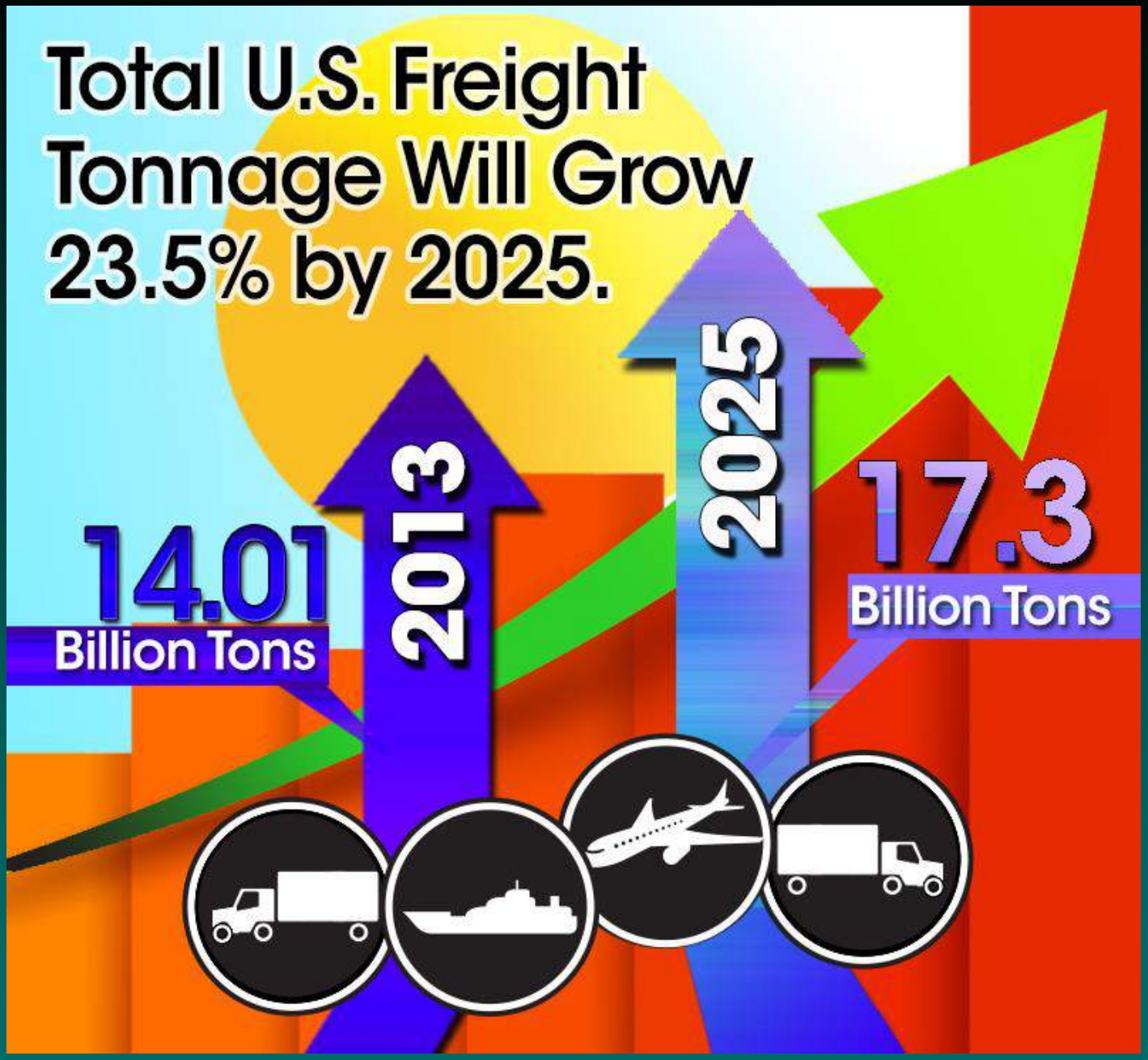


Source: CSX Transportation May 12, 2011 - Director of Strategic Analysis

NAFTA Trade Partners Are Growing



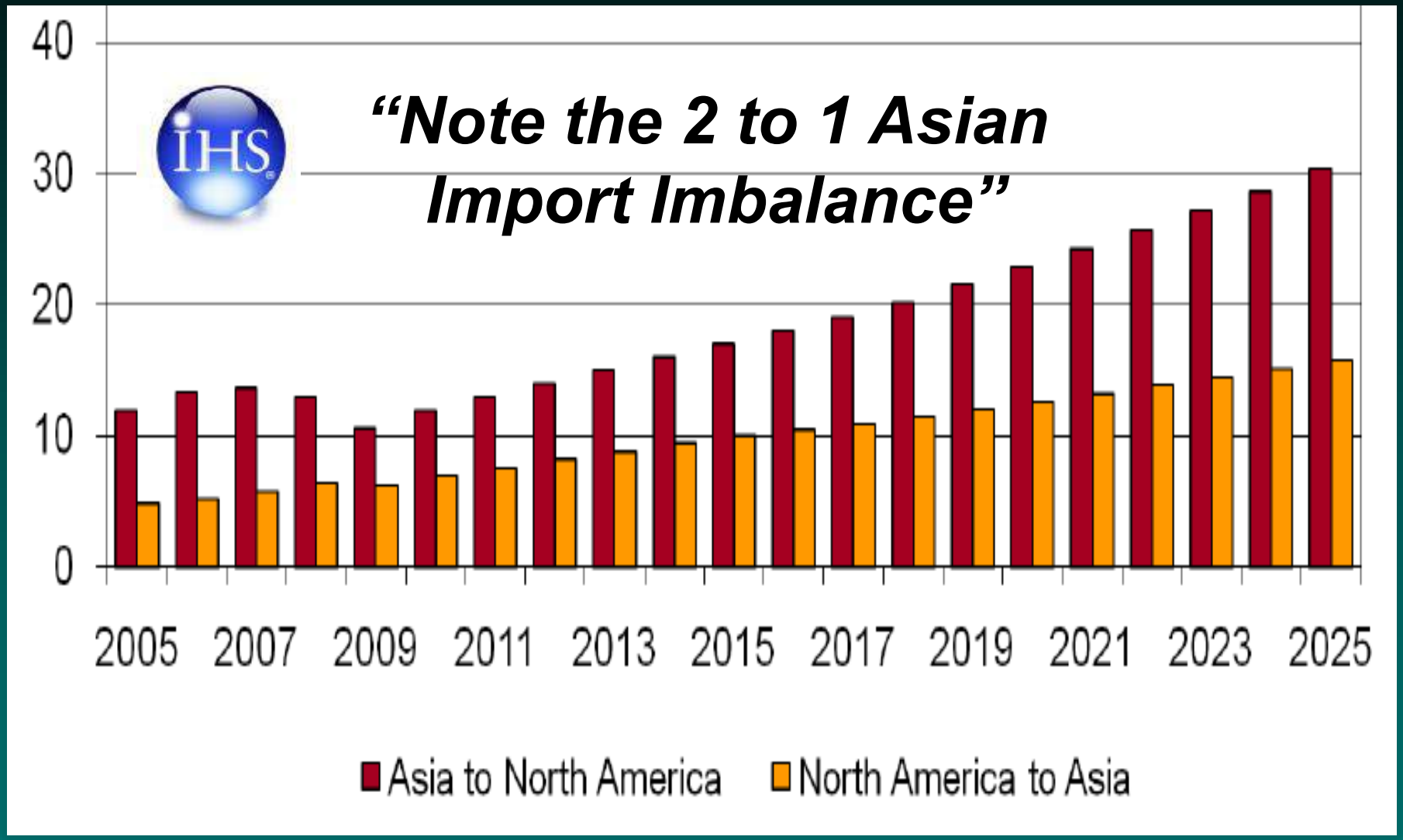
Source: IHS Global Insight – World Trade Service



Source: ATA US Freight Transportation 2025 Forecast

Transpacific Container Trade Recovery

(Millions of TEUs)



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

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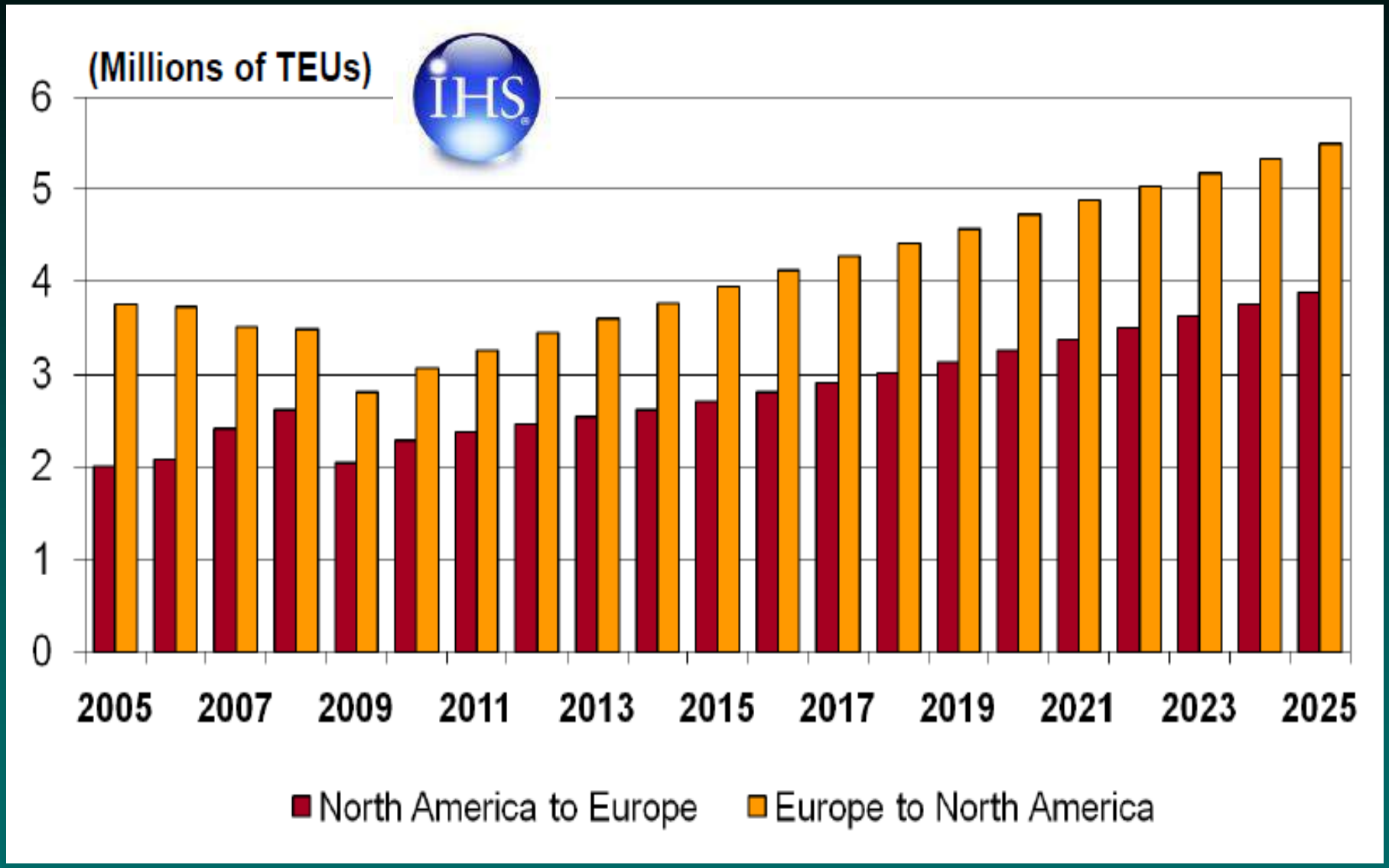
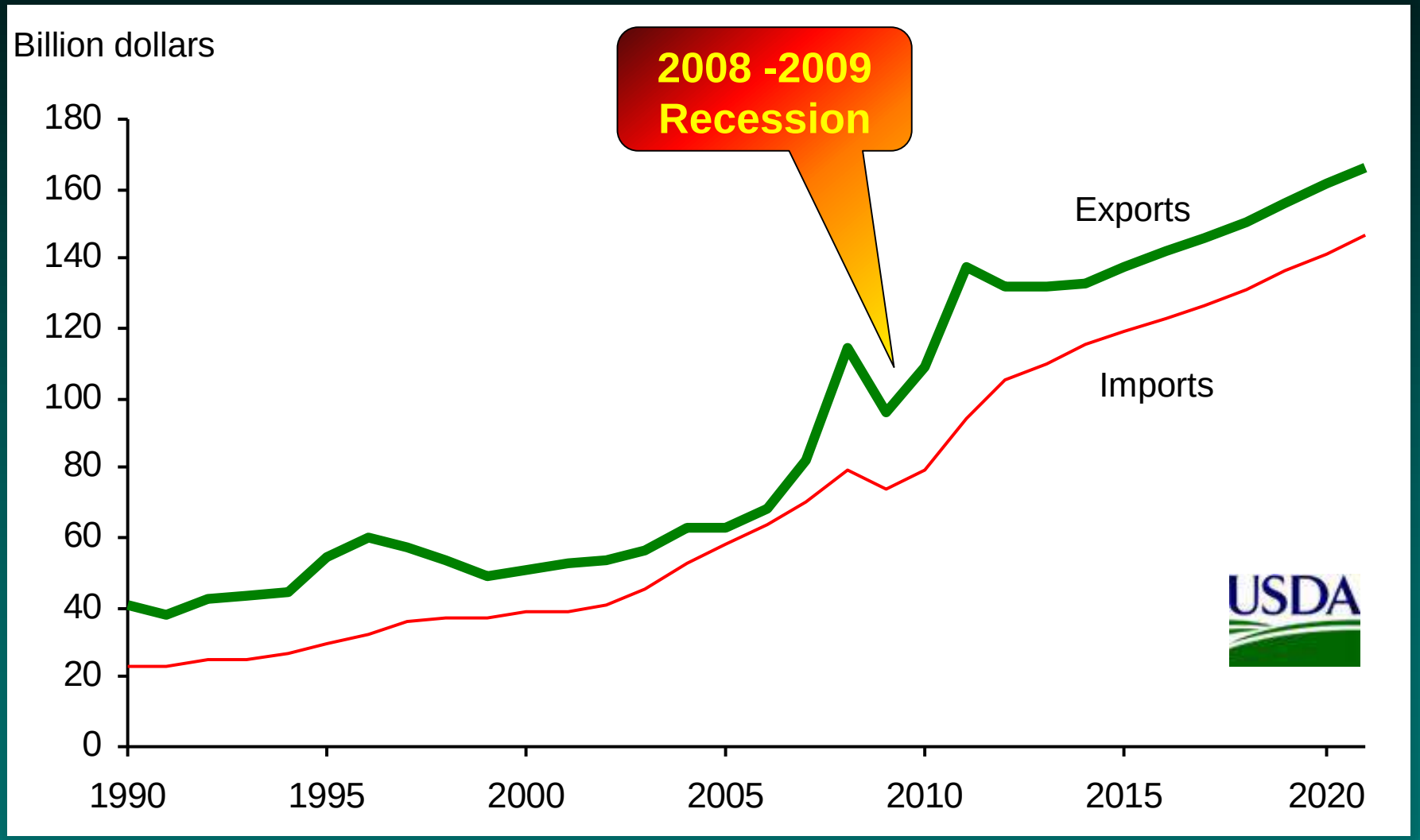
Transatlantic Container Trade Recovery



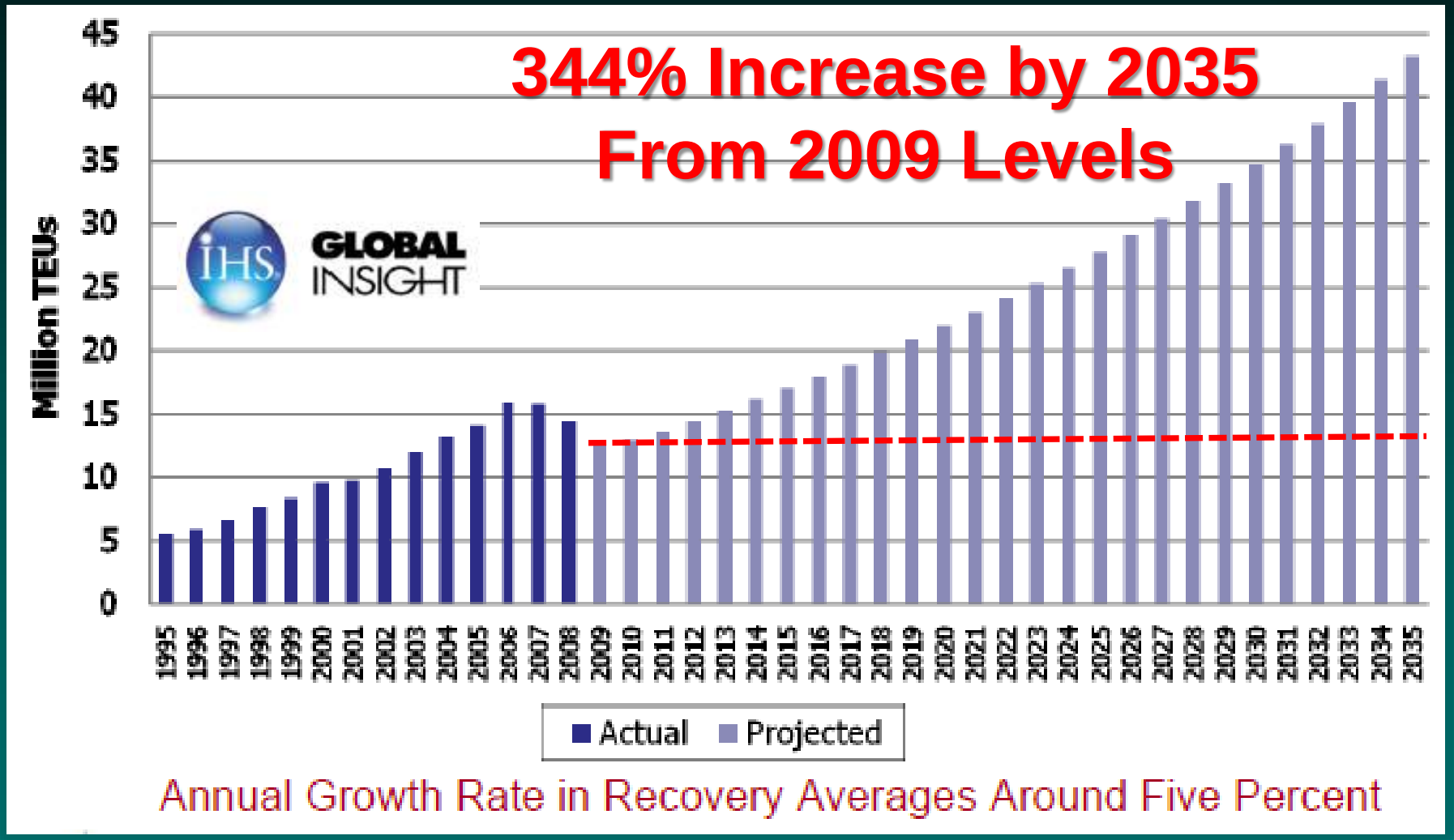
Source: IHS – Global Insight -The Global Outlook – October 14, 2010

US Agricultural Trade Value Forecast



Source: USDA Economic Research Service - USDA Agricultural Projections to 2021

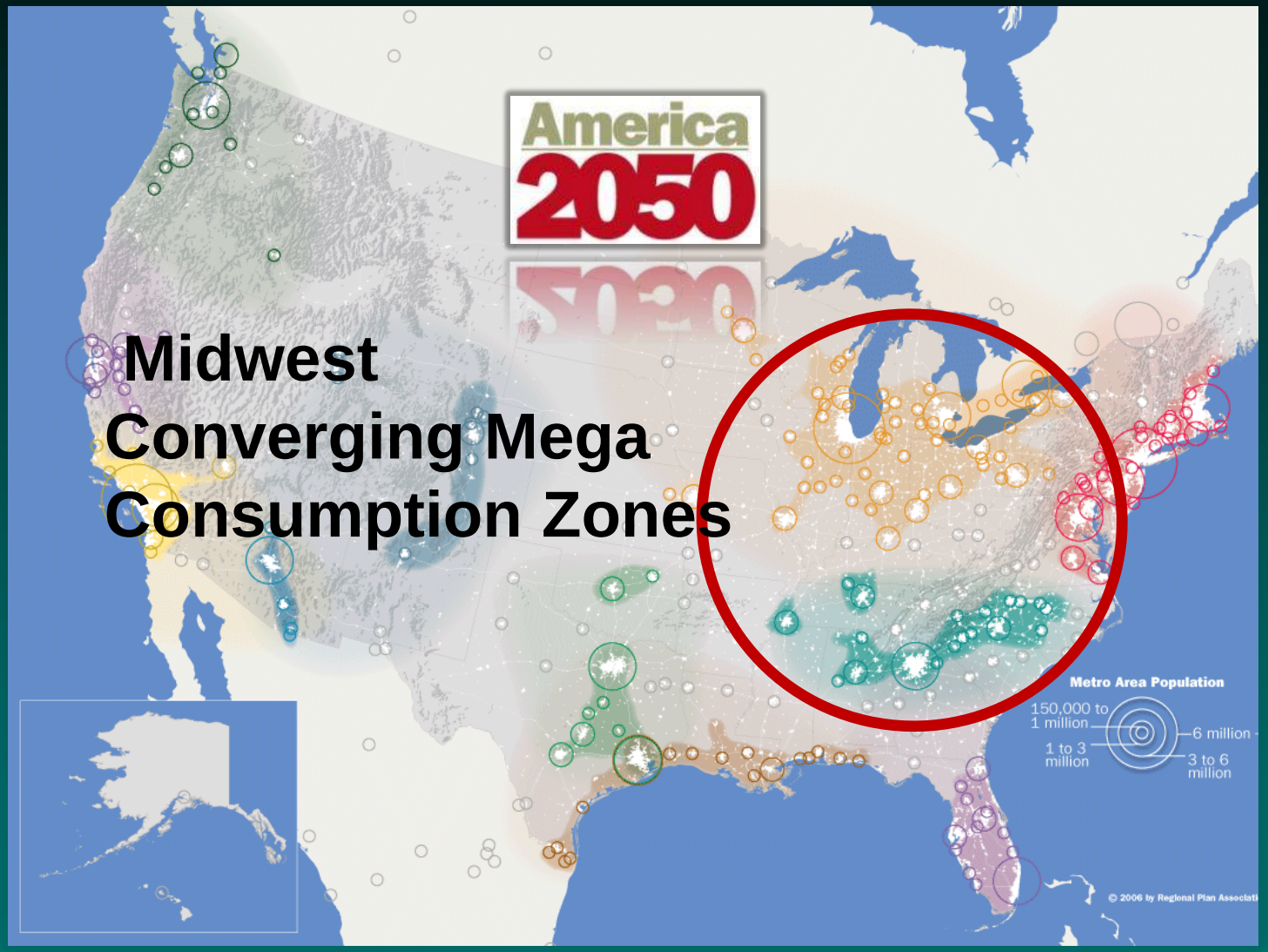
San Pedro Bay (POLA +POLB) Container Volume Forecast



Source: IHS Global Insight 2010 Forecast

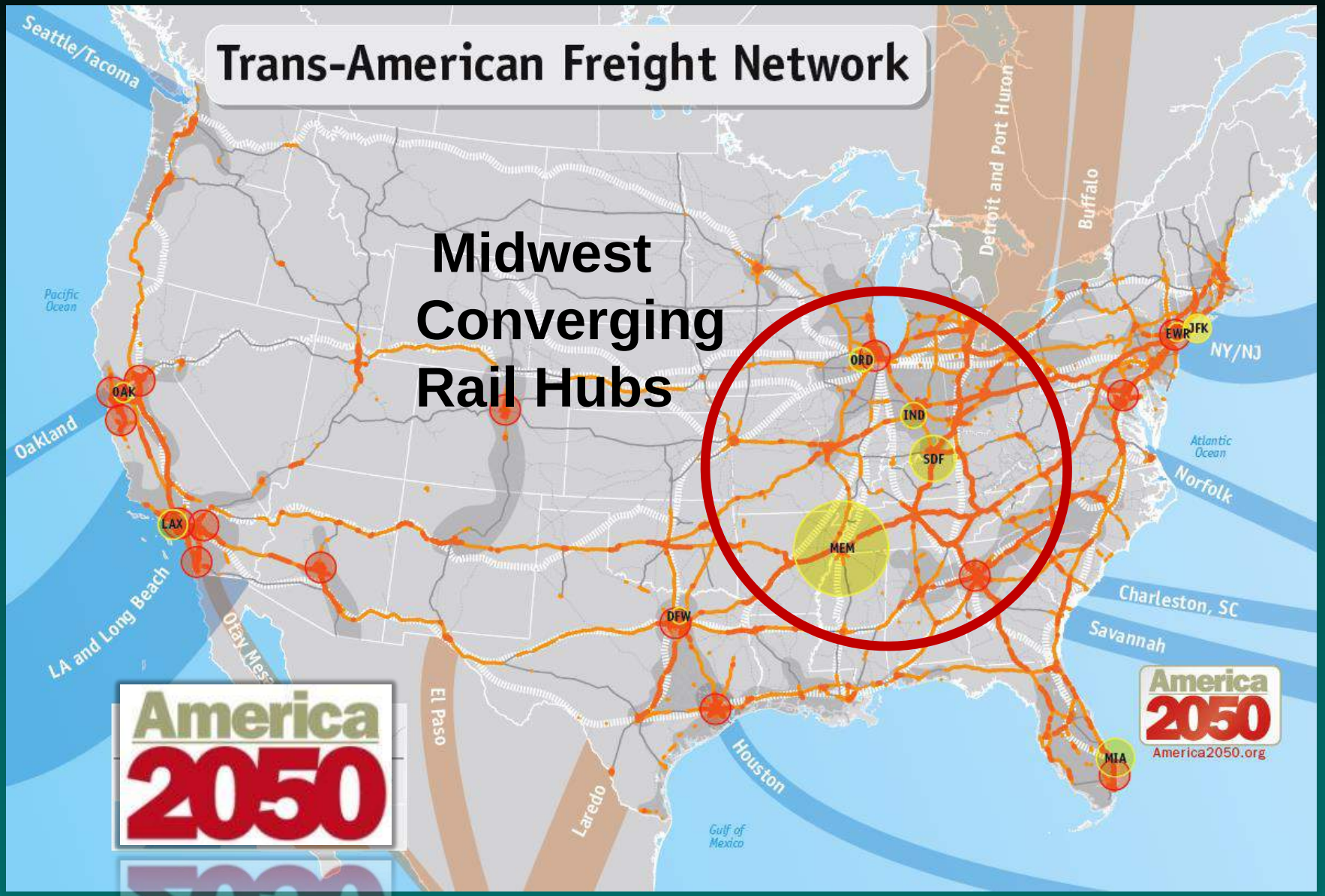
North American Emerging Mega-Regions

Future US Growth Areas



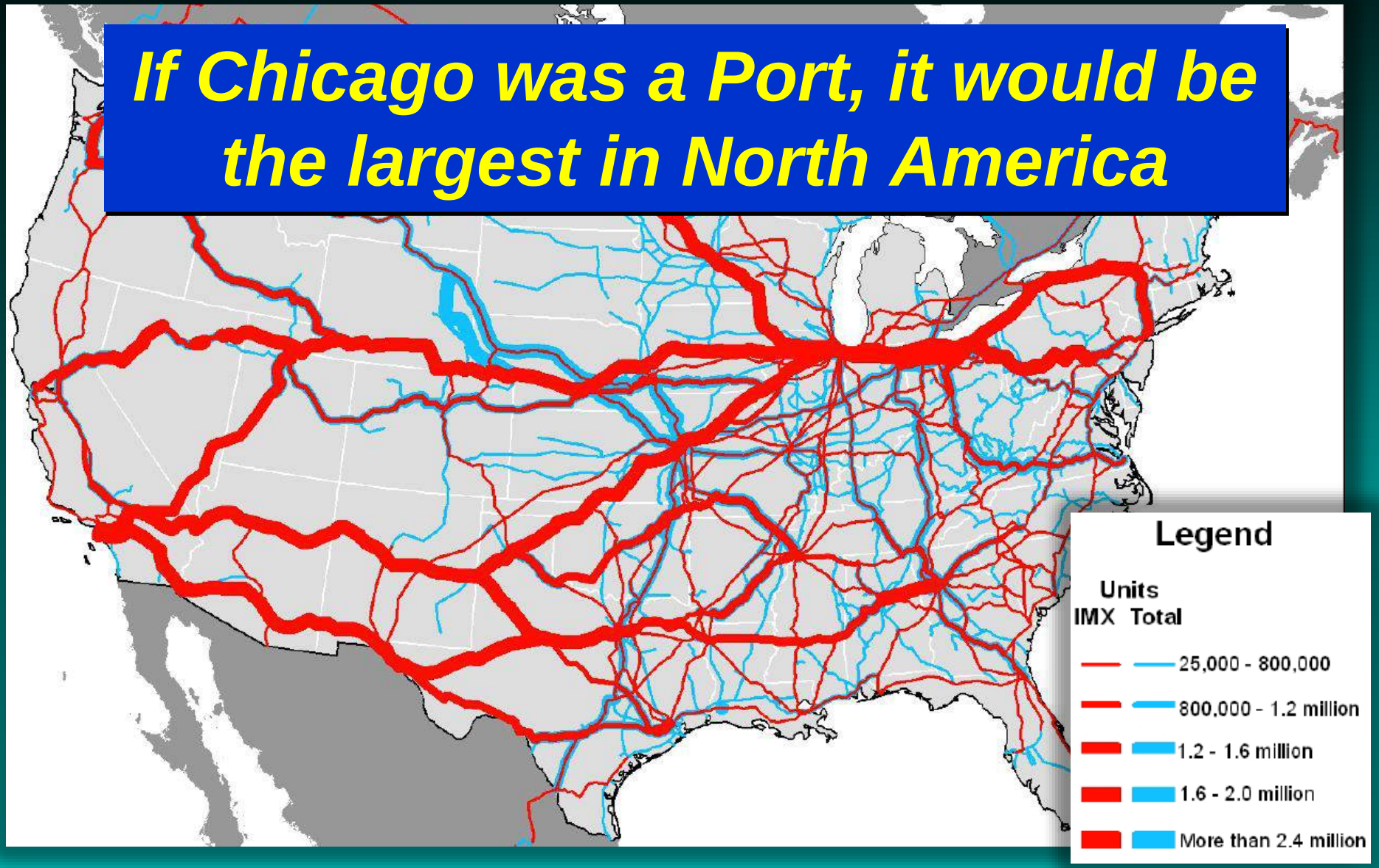
Source: America 2050 Prospects - Regional Plan Association

2050 Trans-American Freight Network



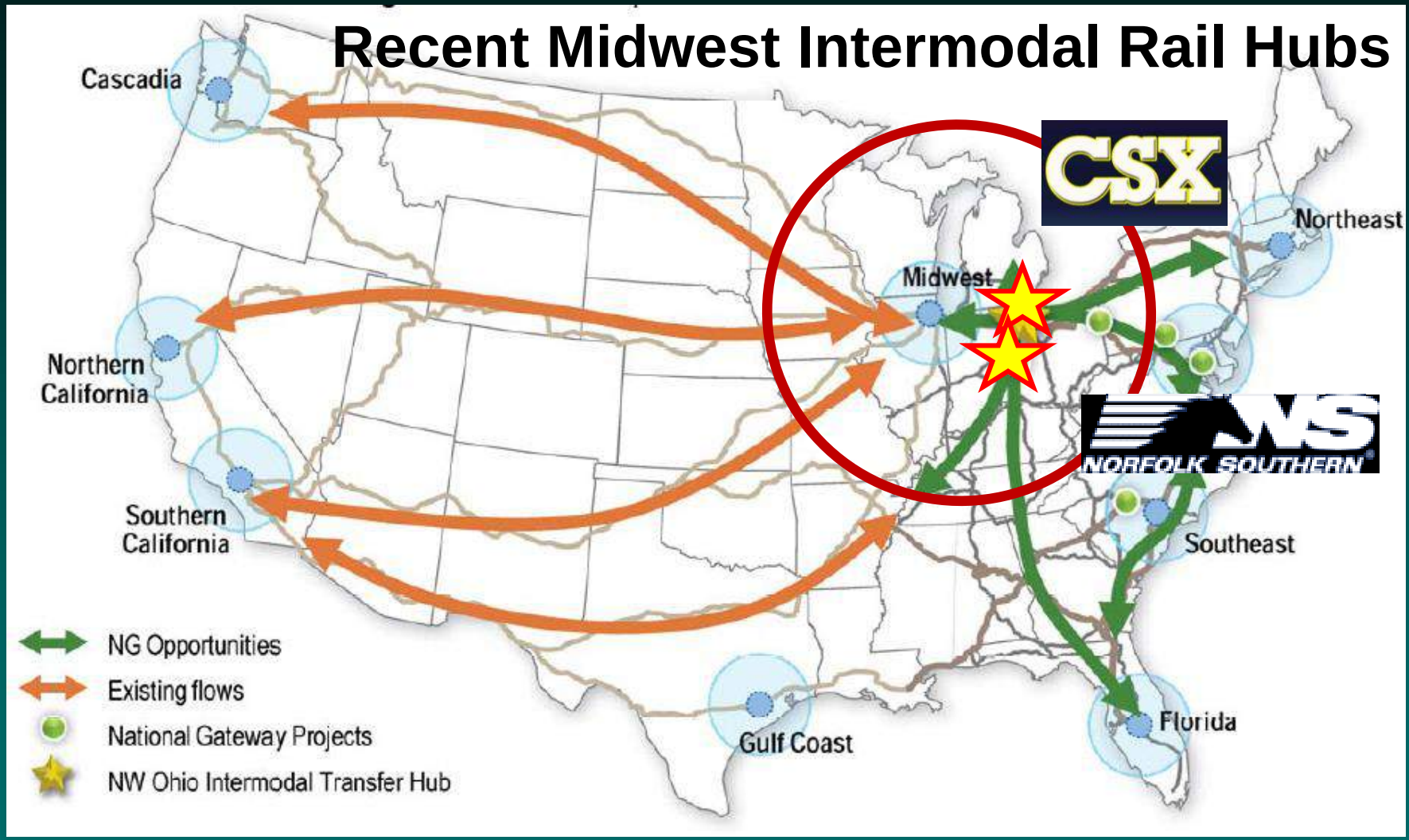
2035 Intermodal Rail Car Volumes

If Chicago was a Port, it would be the largest in North America



VICKERMAN & ASSOCIATES, LLC

CSX & NS National Expansion of Integrated Intermodal Rail Logistics Centers



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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

1st Generation (Pre-1960 - 1970)

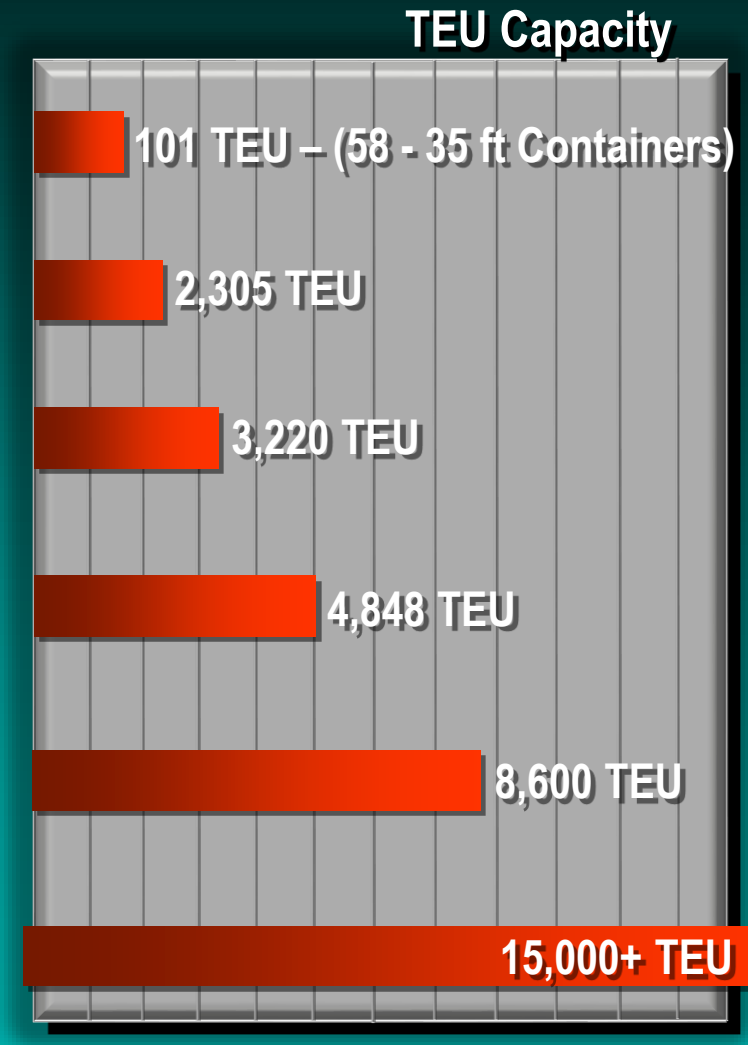
2nd Generation (1970 - 1980)

3rd Generation (1985)

4th Generation (1986 - 2000)

5th Generation (2000 - 2006)

6th Generation (2006 - 2012)



VICKERMAN & ASSOCIATES, LLC

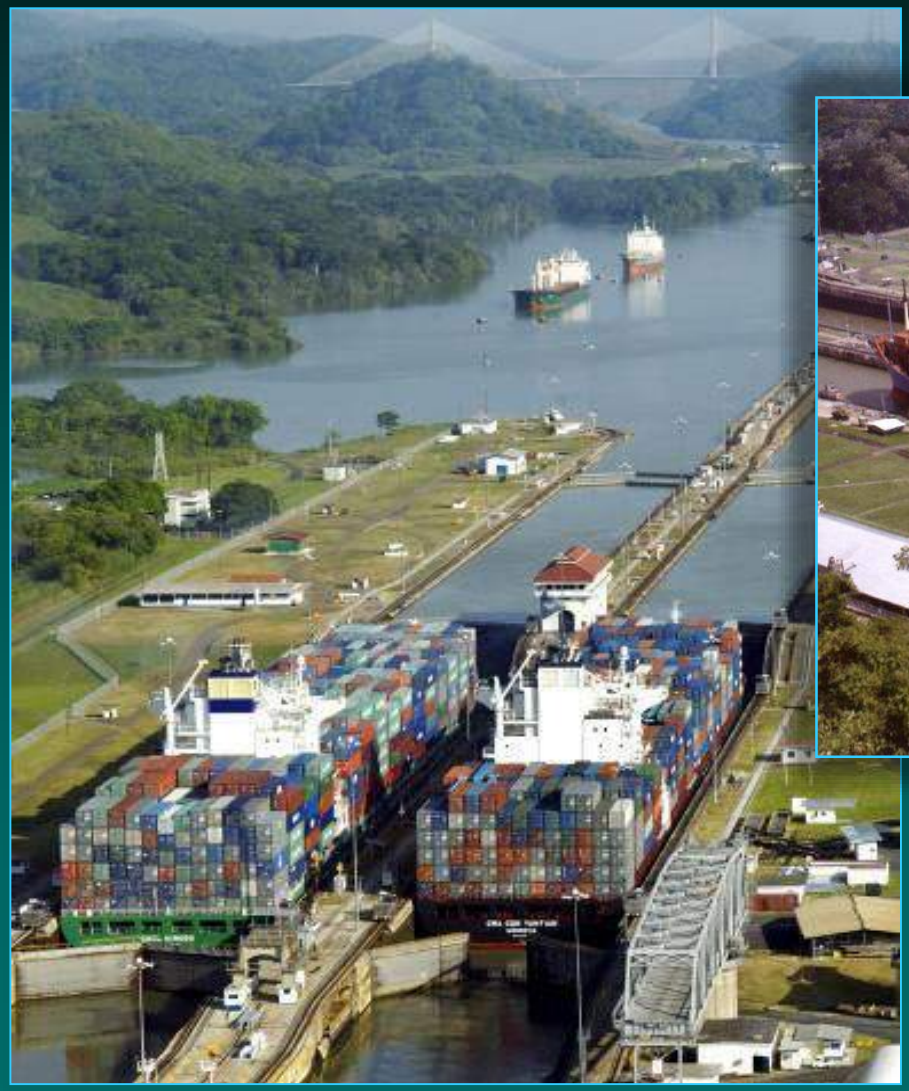
World Container Ship Evolution

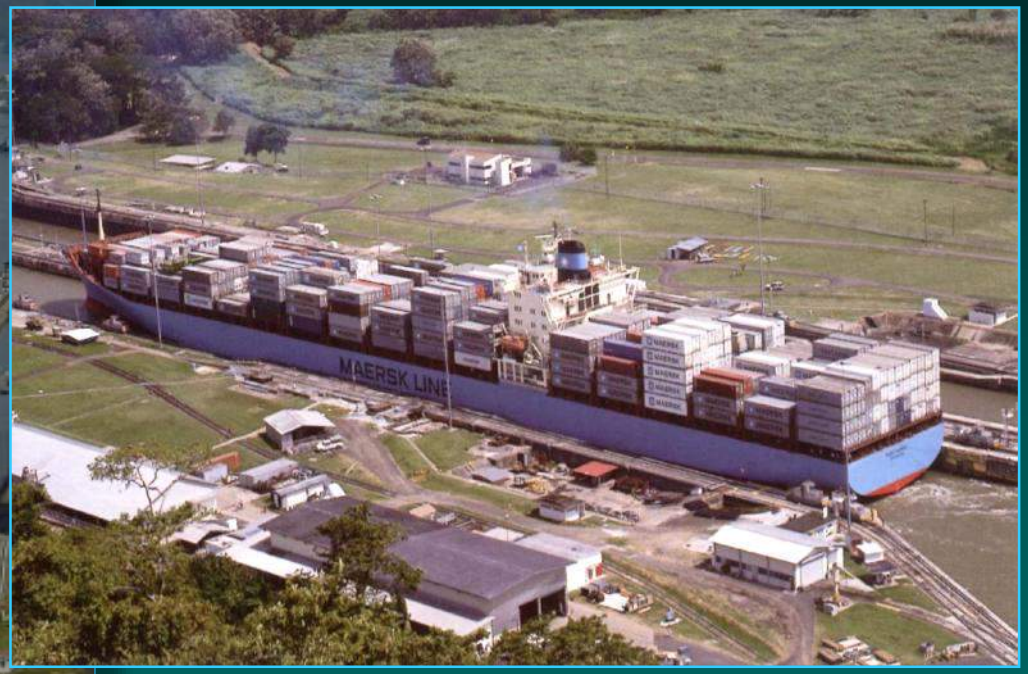
24% increase in the average container ship size from 2008 to 2012

The Stage is set to Jump again to 22,000 TEU Mega Container Vessels

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

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





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CMA-CGM's Marco Polo – 16,020 TEUs

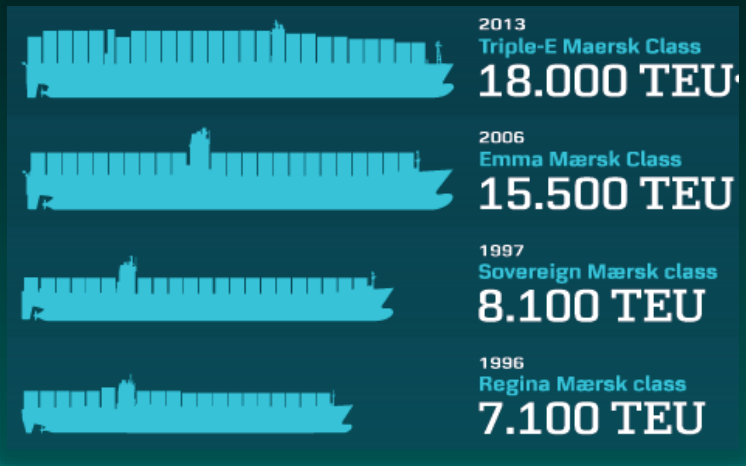
Built by Daewoo Shipbuilding and Marine Engineering (DSME) in South Korea – January 2013

VICKERMAN & ASSOCIATES, LLC

*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*

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

VICKERMAN & ASSOCIATES, LLC

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

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21,000 TEU Ultra Large Twin Engine Container Ship

ALPHALINER

23 Containers Wide

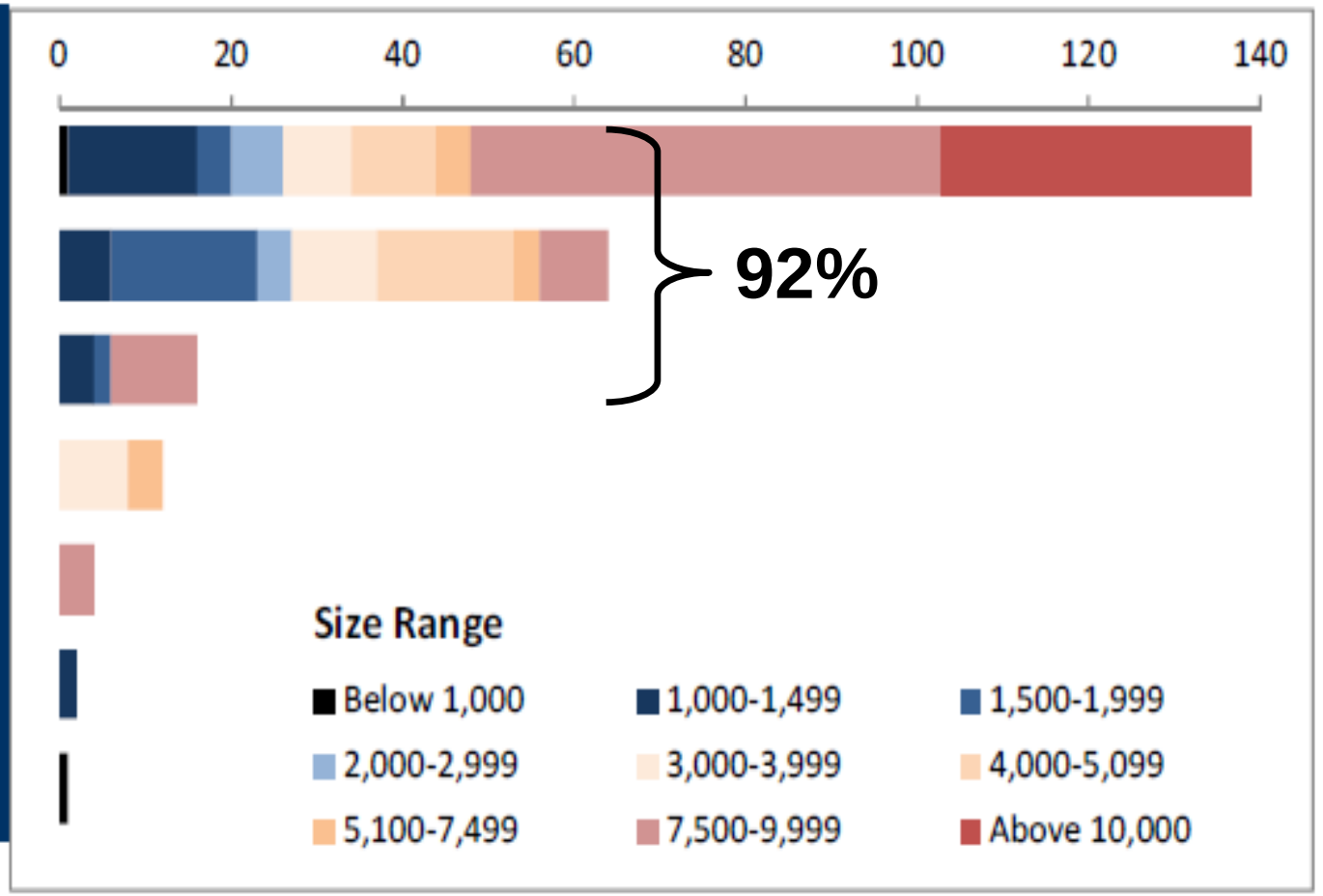
Source: Alphaliner Newsletter Volume 2011 Issue 4

VICKERMAN & ASSOCIATES, LLC

Containership Orders – Country of Build

(Orders Since January 2010)

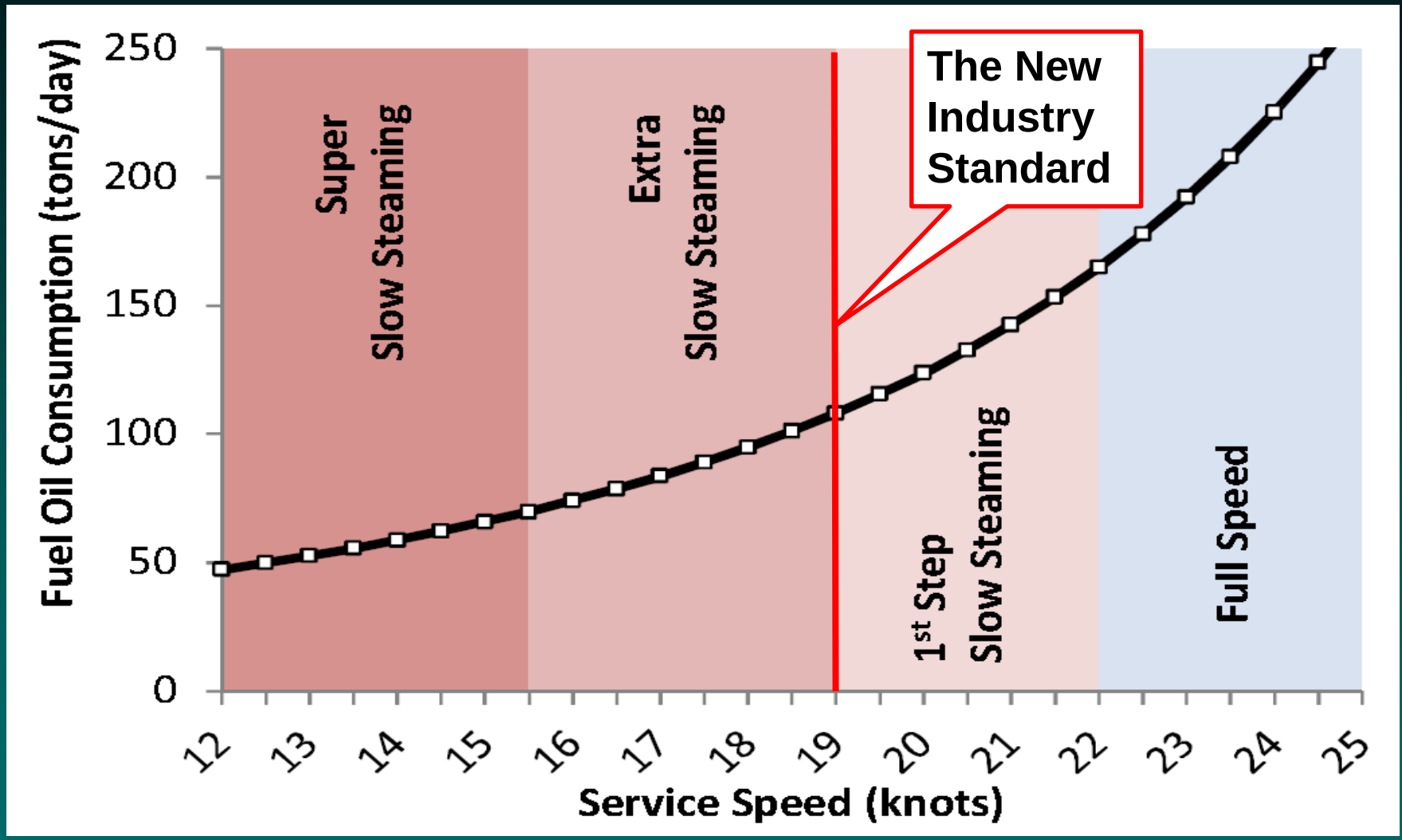
Country	Units
S Korea	139
China	64
Taiwan	16
Philippines	12
Romania	4
Japan	2
Germany	1



Source: Alphaliner Newsletter Volume 2011 Issue 21

Slow Steaming & Fuel Oil Consumption

(8,500 TEU Vessels)



Source: Alphaliner Newsletter Volume 2012 Issue 14

Future Mega Container Vessel Characteristics:

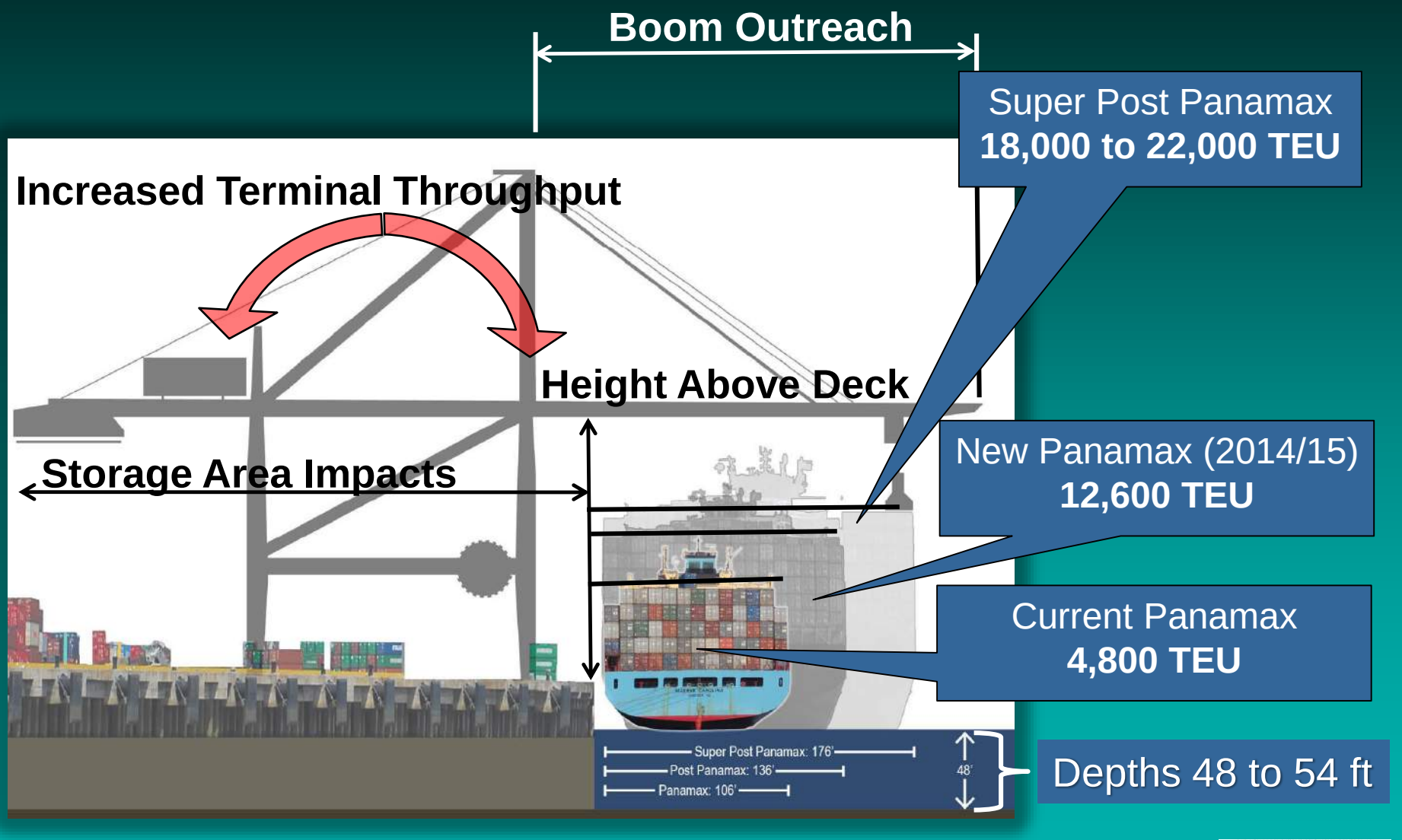
Capacity = up to 22,000 TEUs
Deck Stow: 23 wide & 7- 9 Containers above hatch
Length = up to 1,445 ft (4.5 Football Fields)
Beam = up to 194 ft
Deadweight Tonnage = 220,000 Long Tons
Draft = up to 54 ft

Far Exceeds the 2014/15 Panama Third Lane Capacity

VICKERMAN & ASSOCIATES, LLC

Vessel Size Expansion - Terminal Impacts

(Port Terminal Infrastructure & Equipment Geometry Impacts)



Source: Georgia Ports Authority and Vickerman & Associates

NYK LOGISTICS & MEGACARRIER

Future Container Vessel: NYK Super Eco Ship

VICKERMAN & ASSOCIATES, LLC

NYK LOGISTICS & MEGACARRIER

Future Container Vessel: NYK Super Eco Ship

VICKERMAN & ASSOCIATES, LLC

MS Oasis of the Seas:

(6,360 passengers, 2,100 crew: 361m LOA, 66m wide, standing at a height of 72m)

MS Oasis of the Seas:

(6,360 passengers, 2,100 crew: 361m LOA, 66m wide, standing at a height of 72m)

New Era of LNG Vessels is on the Horizon:

Will LNG be the Fuel of the Future for Shipping ?

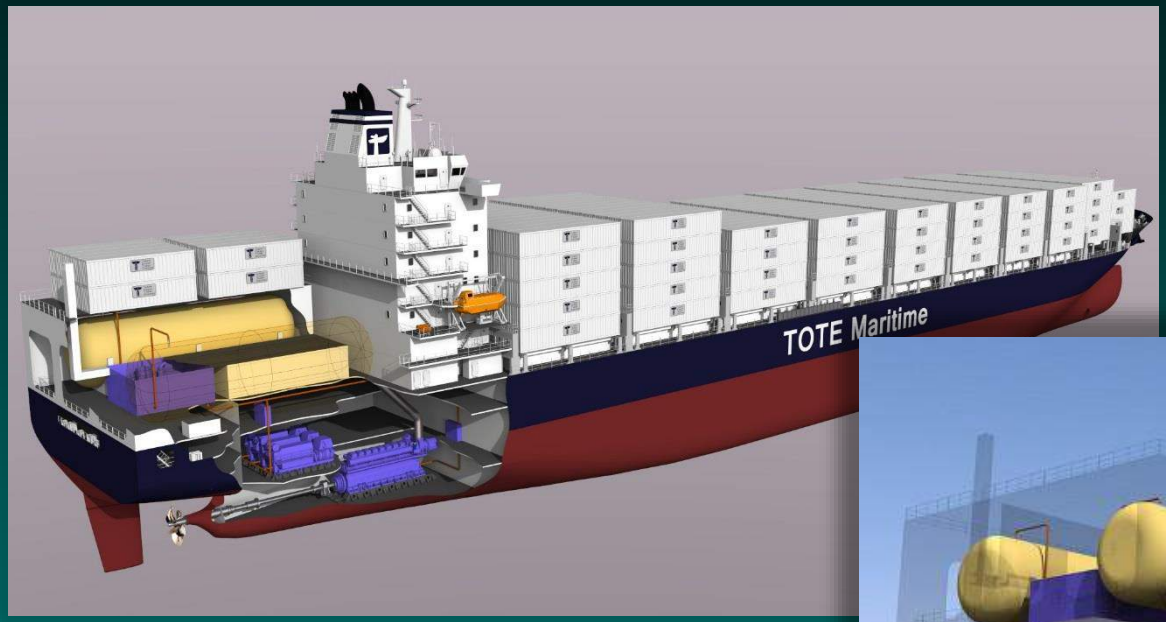
VICKERMAN & ASSOCIATES, LLC

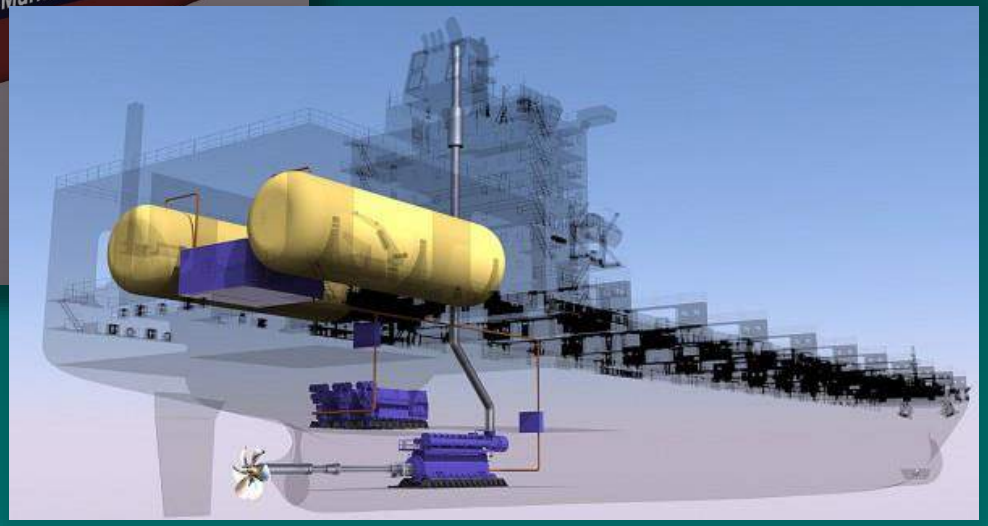
TODAY: Viking Energy, an LNG-powered offshore supply boat – Courtesy of Eidesvik

TOTE Orders Two New LNG Powered Container Ships & Two RO/RO Conversions: Largest LNG Powered Ships in the World

These ships will be the largest ships in the world powered primarily by Liquefied Natural Gas (LNG).

TOTE Orders Two New LNG Powered Container Ships & Two RO/RO Conversions: Largest LNG Powered Ships in the World

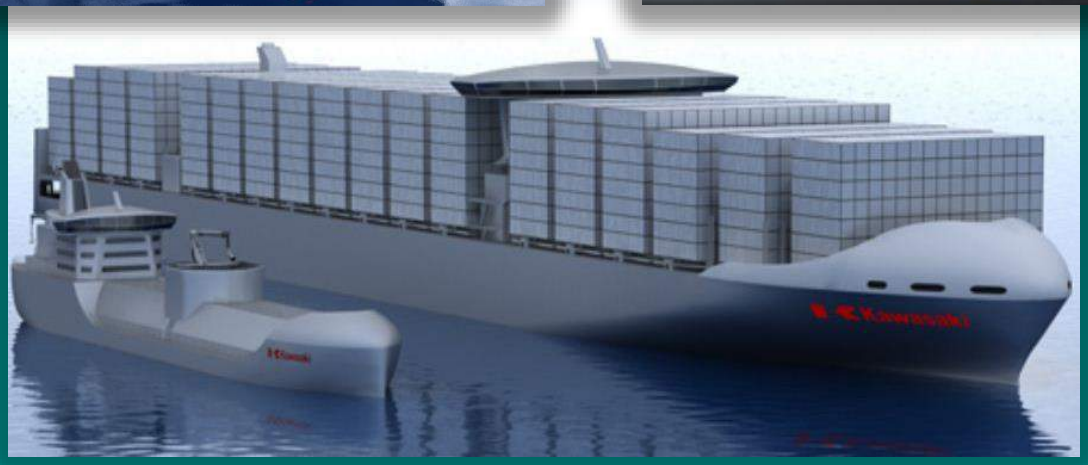




Two 839-foot Orca-class vessels to liquefied natural gas-diesel dual fuel operation for Seattle-Alaska service and two 764-foot new-builds for the Florida-Puerto Rico trade

VICKERMAN & ASSOCIATES, LLC

Kawasaki Heavy Industries 9,000 TEU container ship Fuelled by LNG



A new type of LNG tank that provides more space for container cargo.

Germanischer Lloyd (GL) & IHI Marine United Inc. (IHIMU)

Concept Study 13,000 TEU Container Vessel Fuelled by LNG

The eFuture 13000C design (©IHIMU)

VICKERMAN & ASSOCIATES, LLC

LNG Vessel Bunkering: *North American Ports Are Not Prepared…*

VICKERMAN & ASSOCIATES, LLC

Shell's FLNG

The Largest Floating Structure in the World

Shell's Floating Liquefied Natural Gas Facility,

Panama Canal Expansion: New Capacity

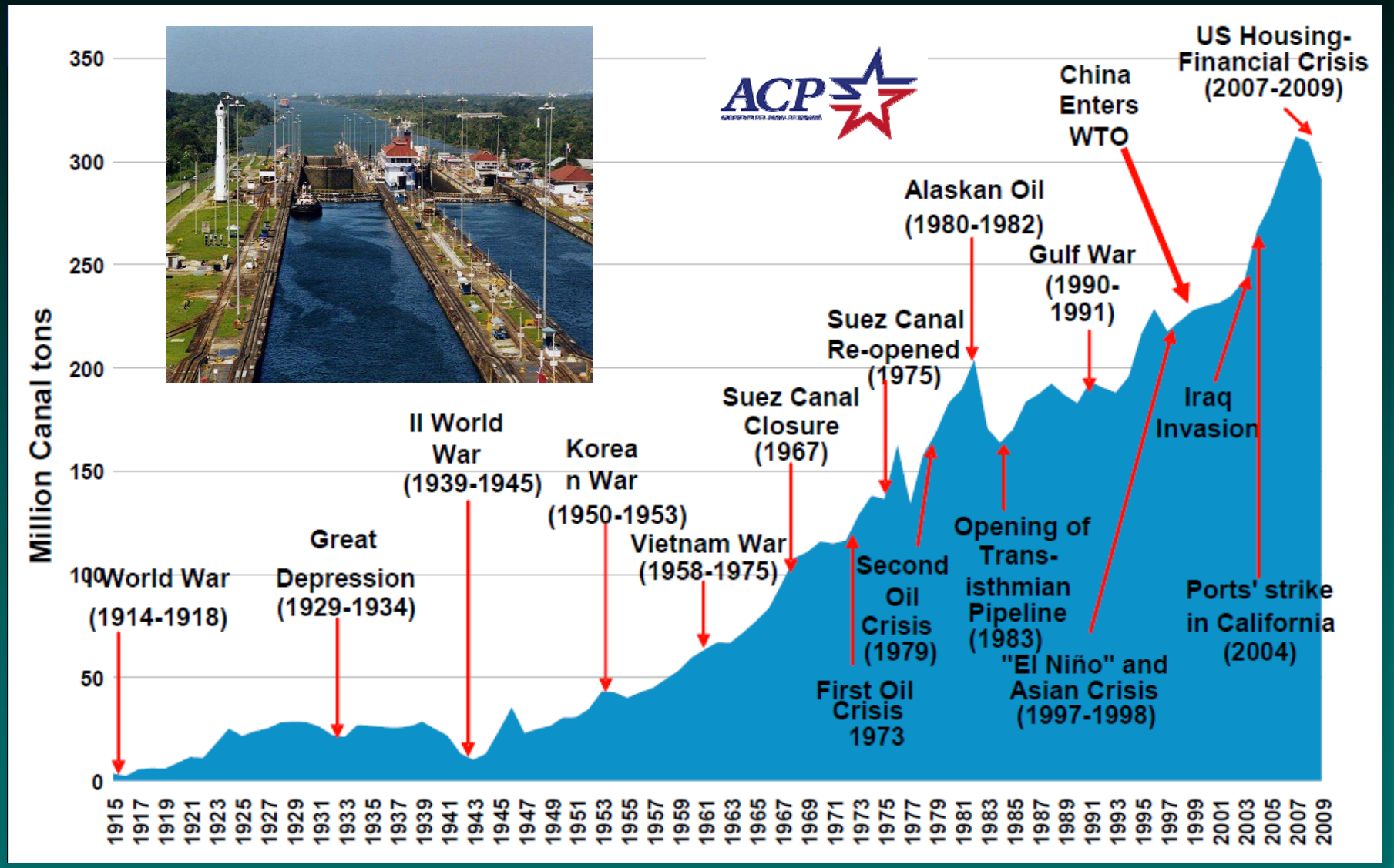
Panama Canal Route

ACP

The Autoridad Del Canal de Panama

VICKERMAN & ASSOCIATES, LLC

Panama Canal Historical Tonnage Traffic

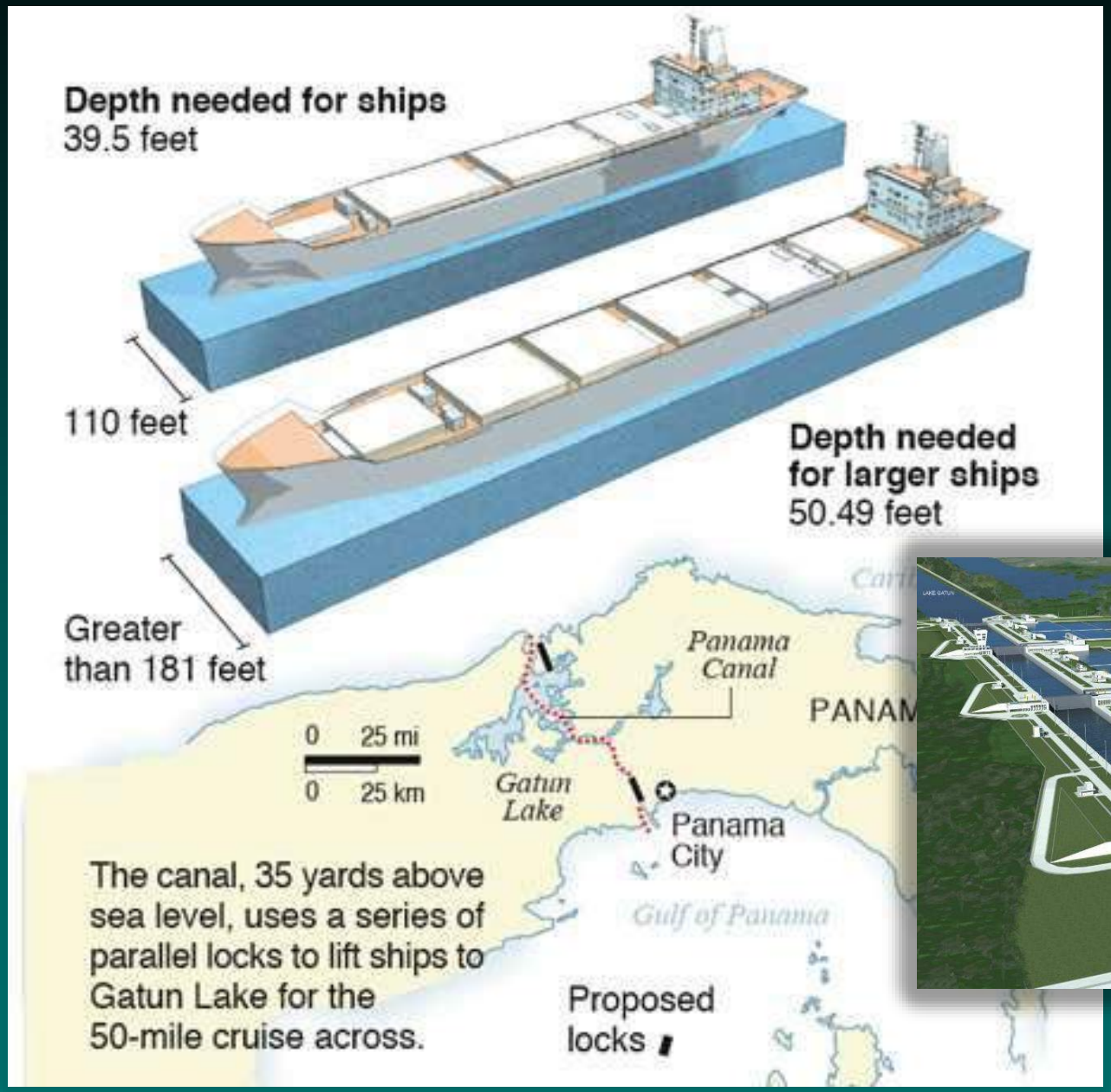


Source: ACP Data

The Panama Canal Circa 1914

Panama Canal Today

Expansion of the Panama Canal: Circa 2015

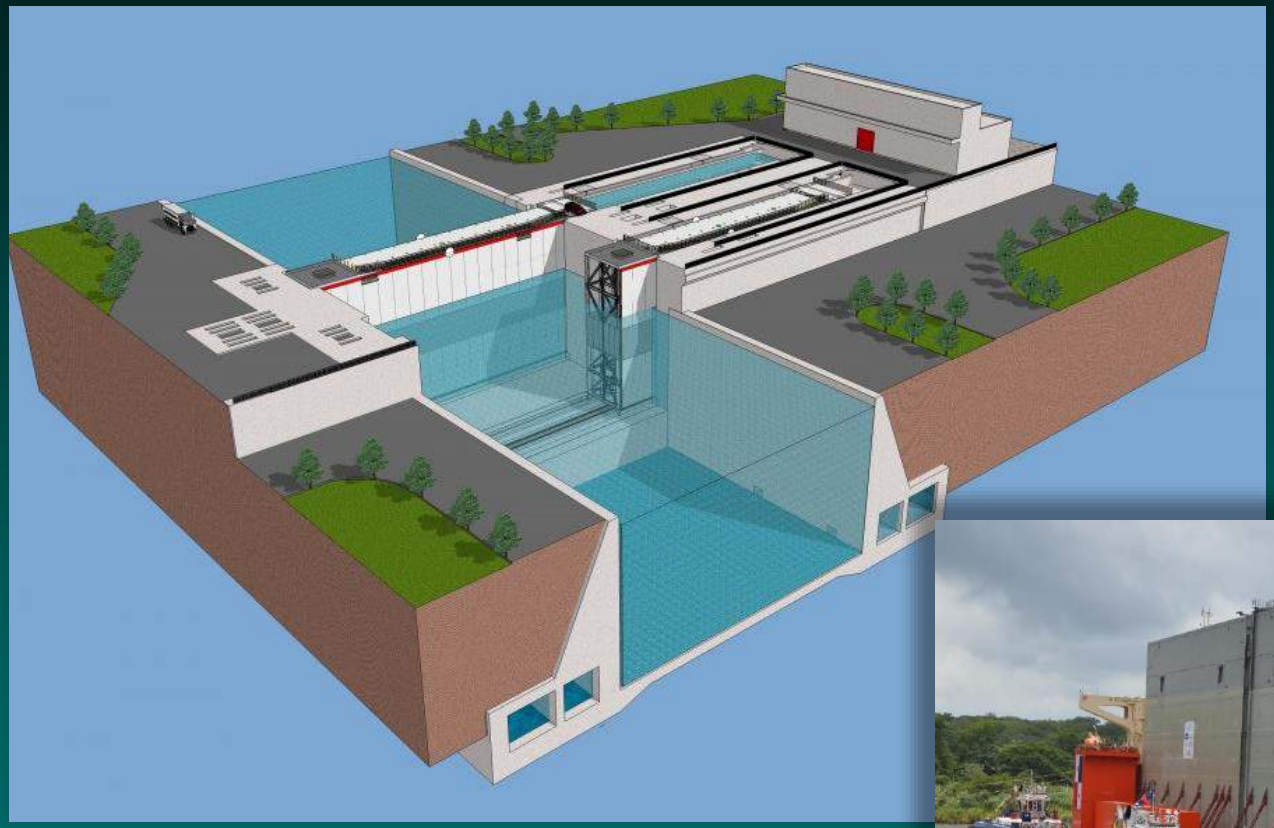


Post 2016 Panama Canal

The Autoridad Del Canal de Panama

Panama Canal Third Lane Expansion Circa 2016

Panama Canal Third Lane Expansion Circa 2016



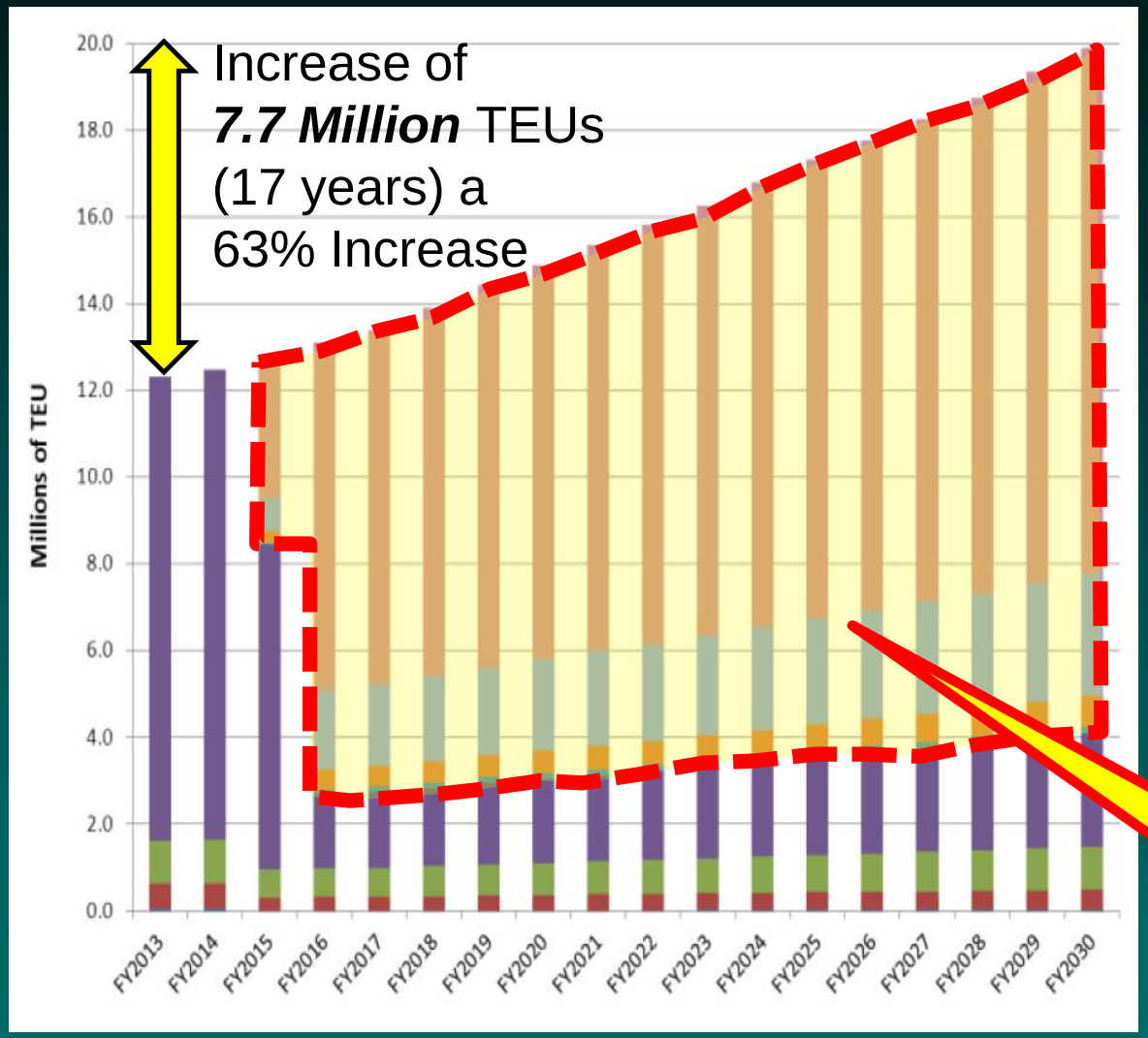
ACP
The Autoridad Del Canal de Panama

VICKERMAN & ASSOCIATES, LLC

A $5.25 Billion Investment in a 3rd Set of Locks Equating to 16% of Panama's National GDP

Canal TEU Forecast by Vessel Beam

(FY2013 to FY 2030 – Millions of TEUs)



The Autoridad Del Canal de Panama

- 140' or more
- 120' – 139.99'
- 107' – 119.99'
- 100' – 106.99' (> 39.5' Draft)
- 100' – 106.99' (< 39.5' Draft)
- 91' – 99.99'
- 80' – 90.99'
- Less than 80'

Beyond Current Panamax Width

Source: Container Market Segment and Transhipment Study – Oct 2012 ACP/M&N

A Larger Share of Other Vessels Will be Able to Transit the Canal - Fully Loaded

Crude Oil - 0% to 42%

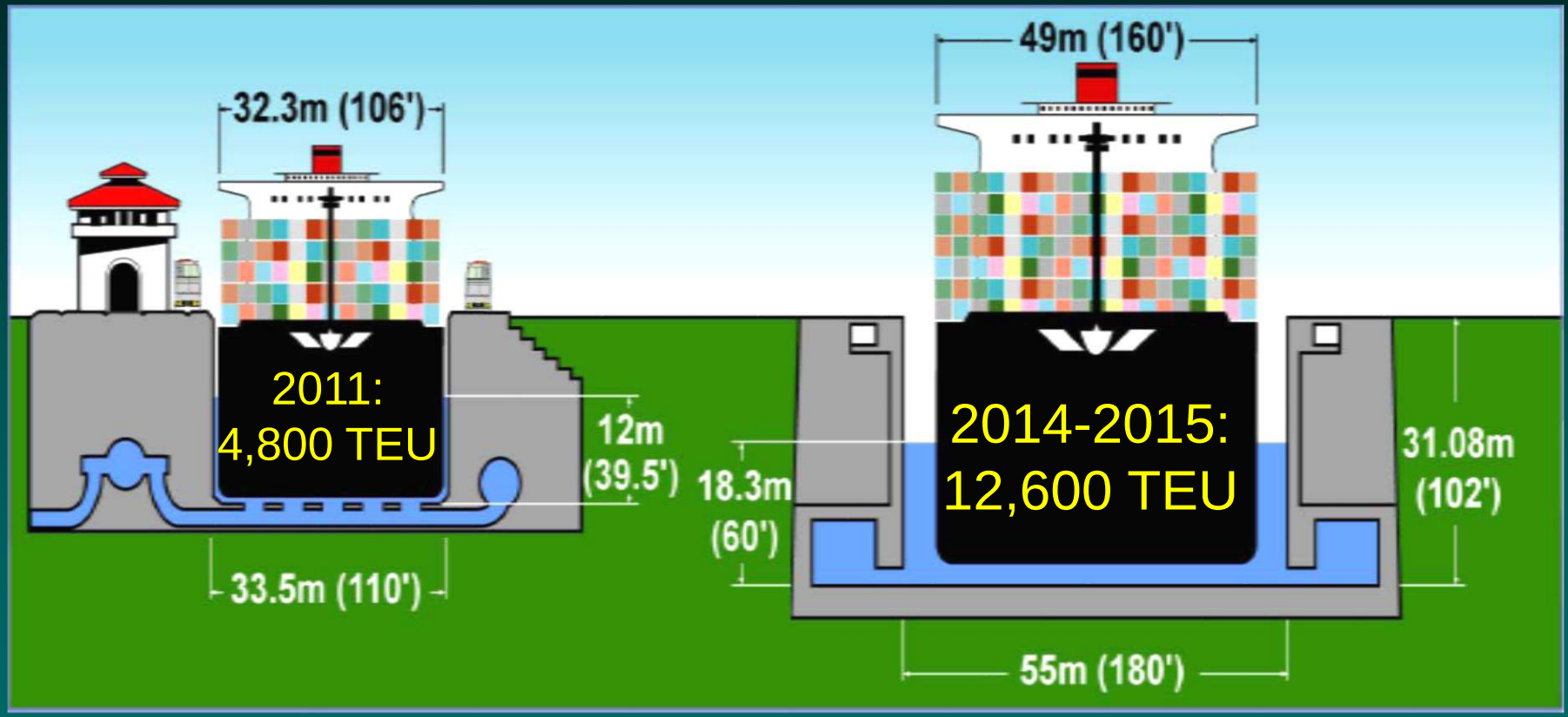
LNG - 10% to 90%

Dry Bulk - 55% to 80%

VICKERMAN & ASSOCIATES, LLC

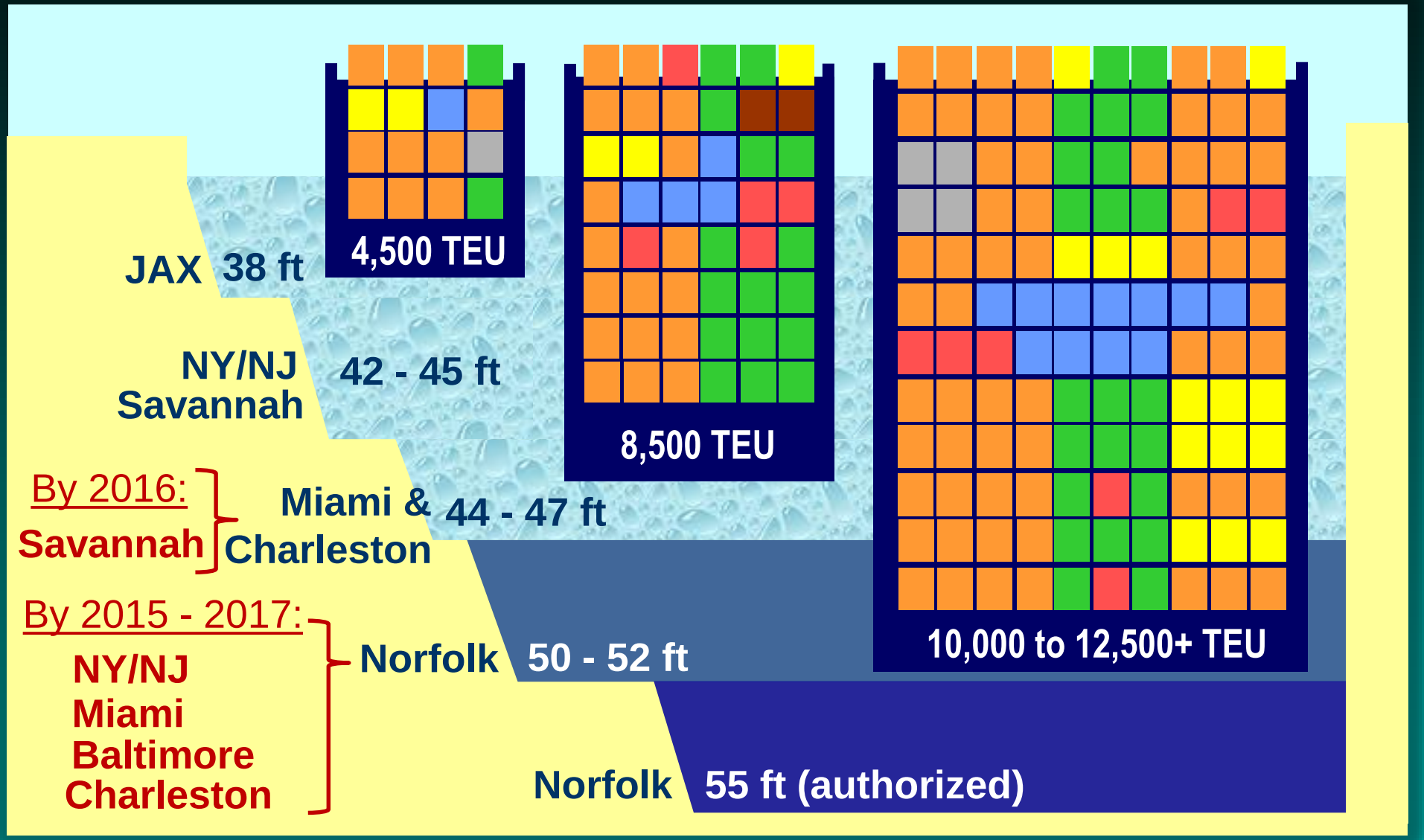
The Autoridad Del Canal de Panama

Panama Canal Third Lane Expansion Capabilities



Source: ACP Expansion Project

Today Only the VPA & PANY/NJ Can Handle The New 2016 Panamax Vessels Fully Loaded

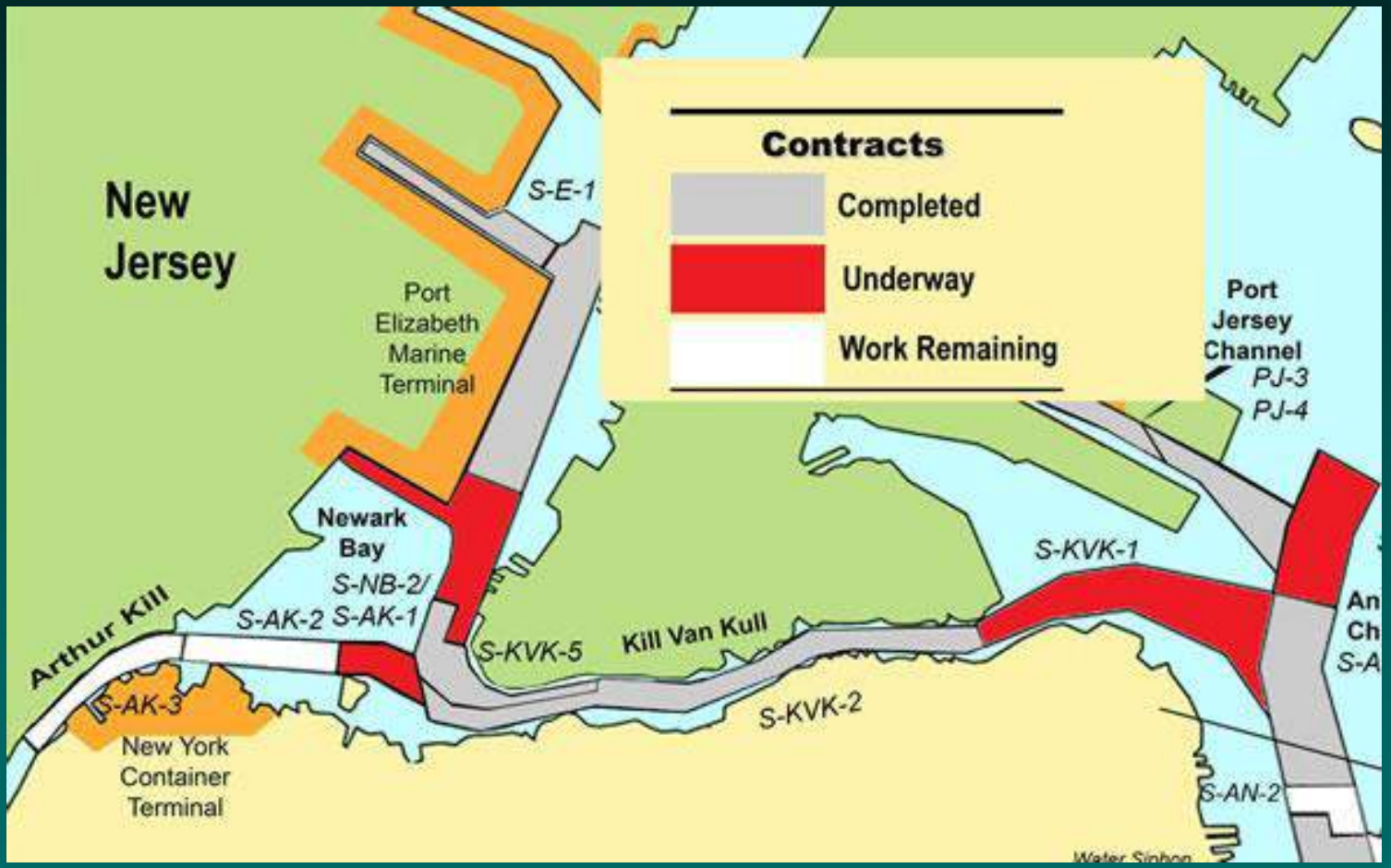


Source: Virginia Port Authority (VPA)

VICKERMAN & ASSOCIATES, LLC

Port Authority of New York & New Jersey Entrance Channel & Harbor Dredging Program

($1.6 Billion Program, Completion December 2014)

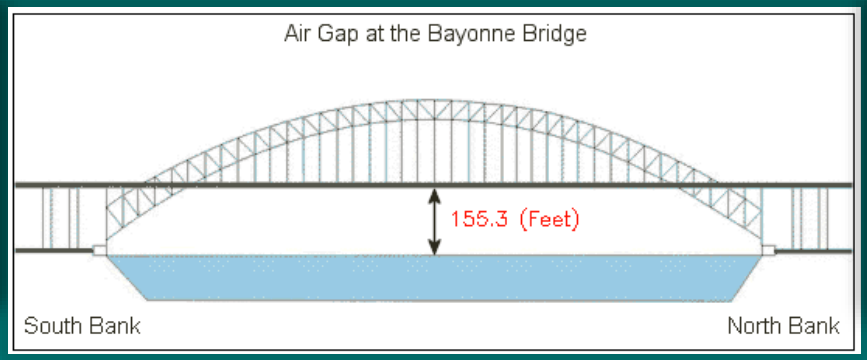


Raising of the Bayonne Bridge

(Estimated at $1.2 billion)

Future Clearance: 214 ft

Current Clearance: 155.3 ft



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VICKERMAN & ASSOCIATES, LLC

August 9th, 2013: World's Largest Containership *Mærsk Mc-Kinney Møller:* First Transit Through the Suez Canal

Panama Canal Expansion Alternatives

VICKERMAN & ASSOCIATES, LLC

Nicaragua's $40 Billion Contract with Chinese HKND to Dig a Rival to the Panama Canal

Alternative "Dry Canal" Proposals to Counteract Anticipated Canal Fees/Costs

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.

VICKERMAN & ASSOCIATES, LLC

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!

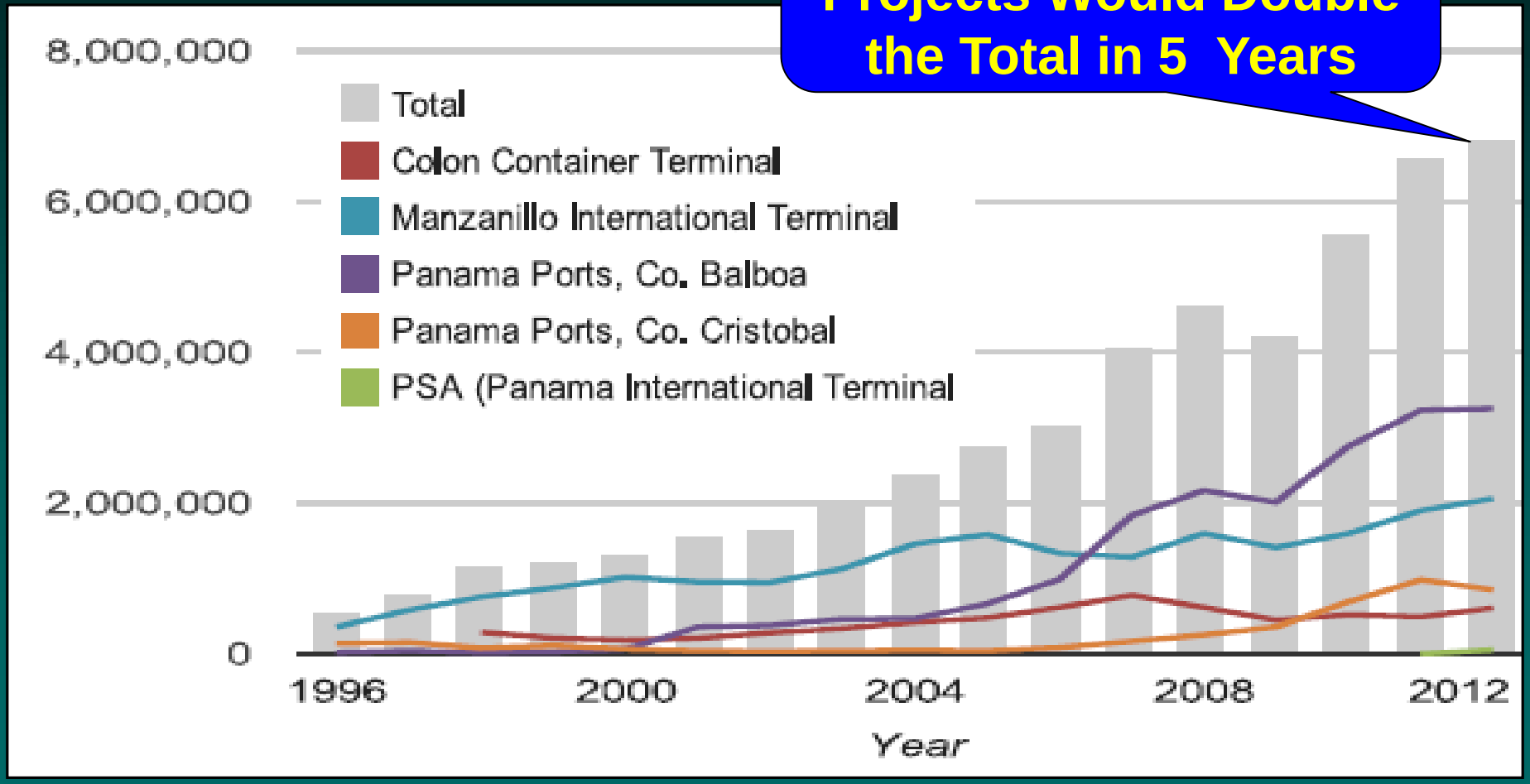
Emerging New Caribbean Transhipment Center

VICKERMAN & ASSOCIATES, LLC

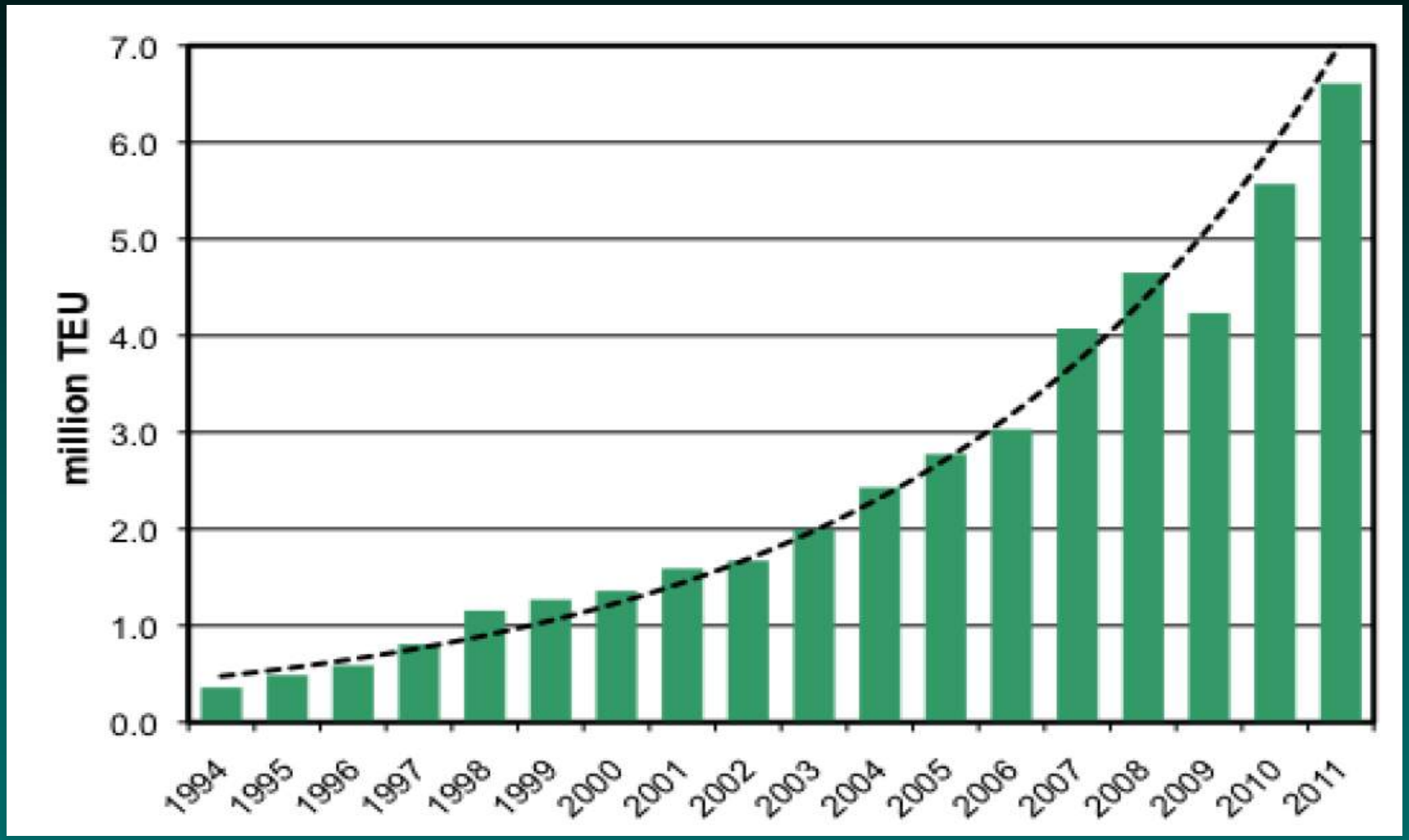
Panama Ports Annual *Transhipment Growth*

"The Singapore of Latin America"

Proposed New Port Projects Would Double the Total in 5 Years



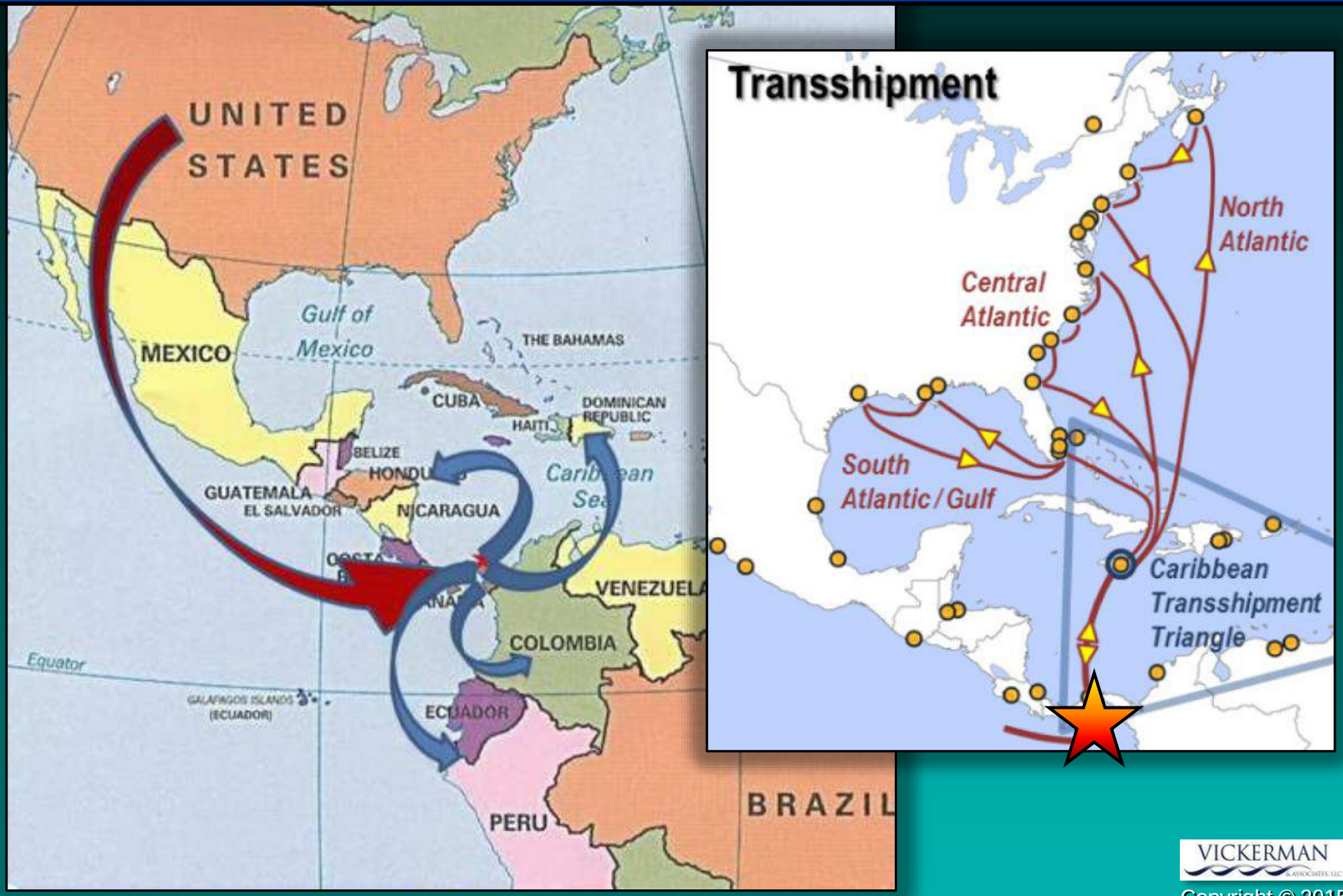
Panama Ports Container *Transhipment Growth*



6.8 Million TEUs – 18.5 % Growth Rate

VICKERMAN & ASSOCIATES, LLC

The Panama Canal Expansion Will Move the Caribbean Transhipment Center Point to Panama



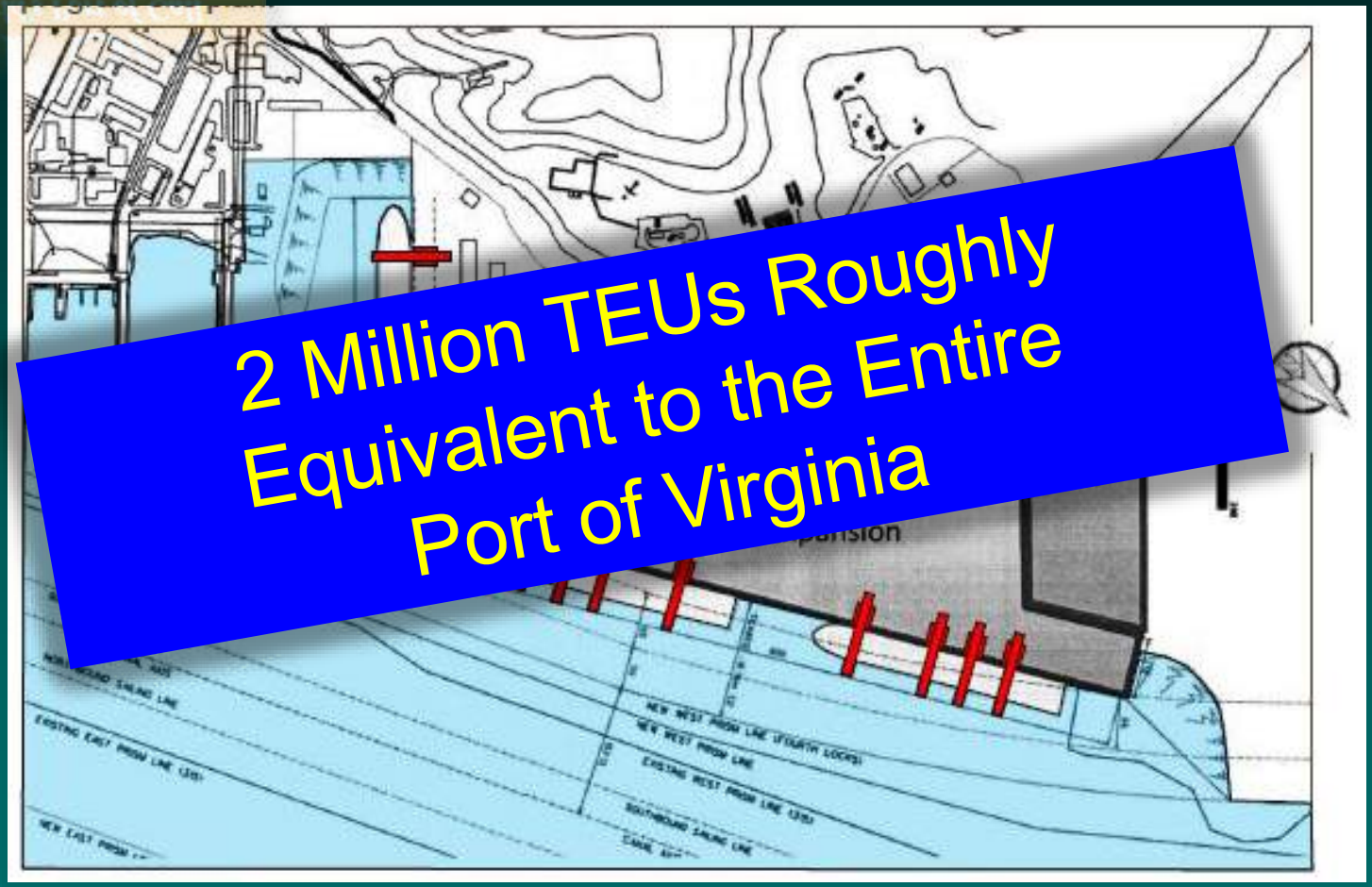
New Panama Canal Pacific Entrance Ports

More Capacity than all of the Port of Los Angeles

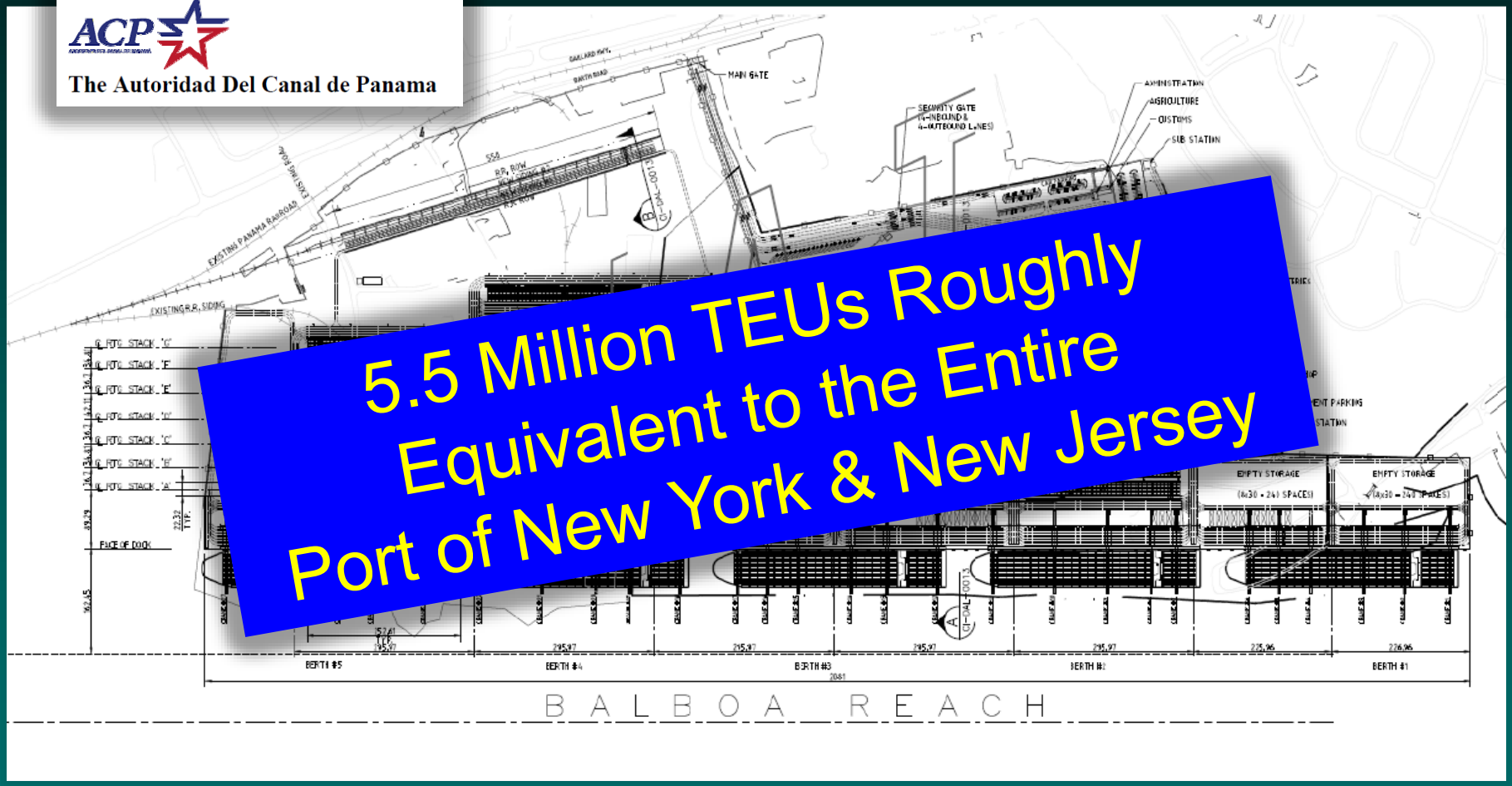
ACP

The Autoridad Del Canal de Panama

PSA Panama International Terminal (PPIT) Western Entrance Conceptual Site Plan, Phase I +II

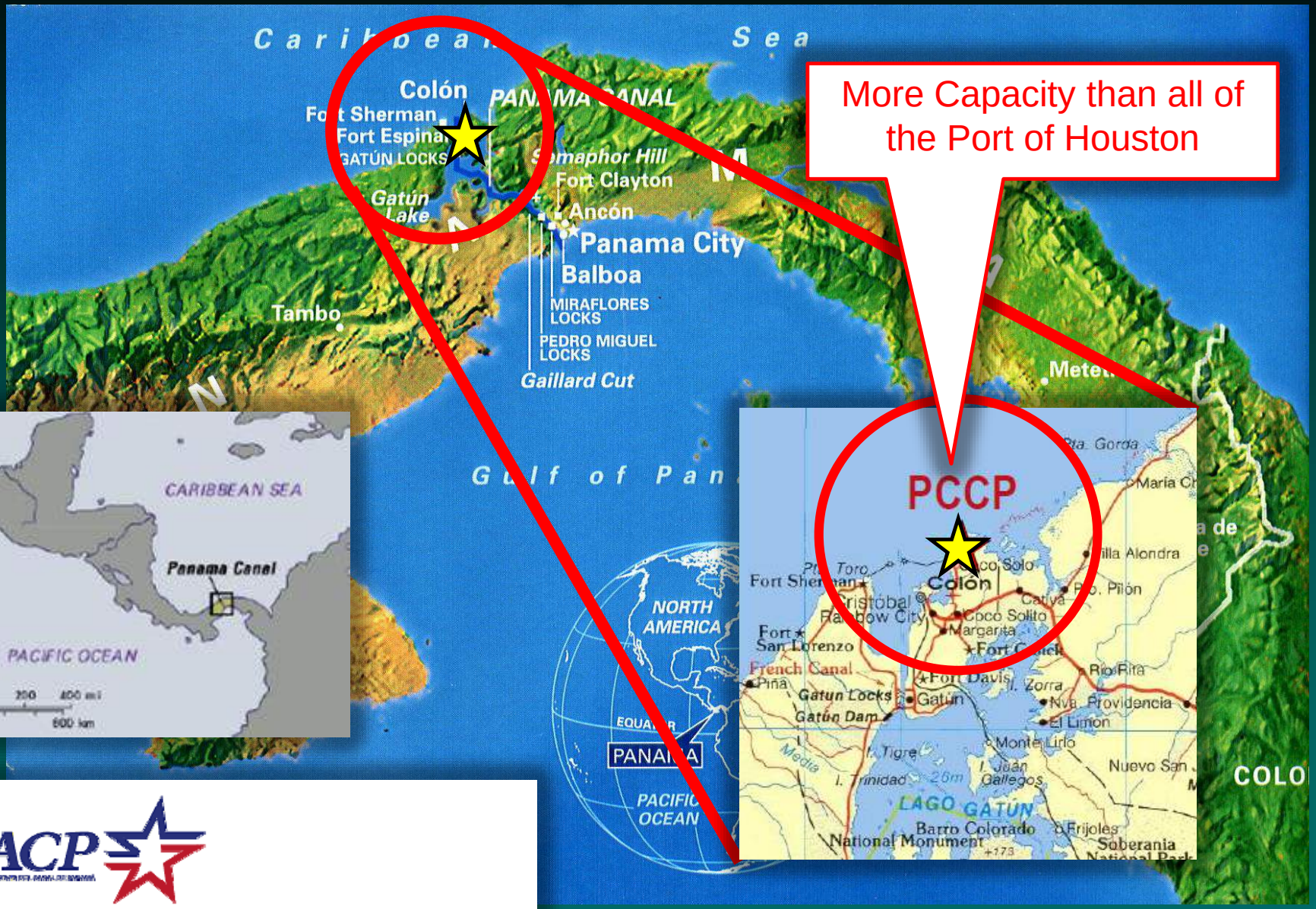


Corozal Oeste Container New Transhipment Terminal Panama Canal Western Entrance - Phase I & II



Source: ACP Expansion Project – Rodolfo Sabonge AAPA January 24, 2013

New Panama Canal Atlantic Entrance Port



ACP

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Panama Colon Container Port

(New $600 Million Container Port Panama Canal Atlantic Entrance)

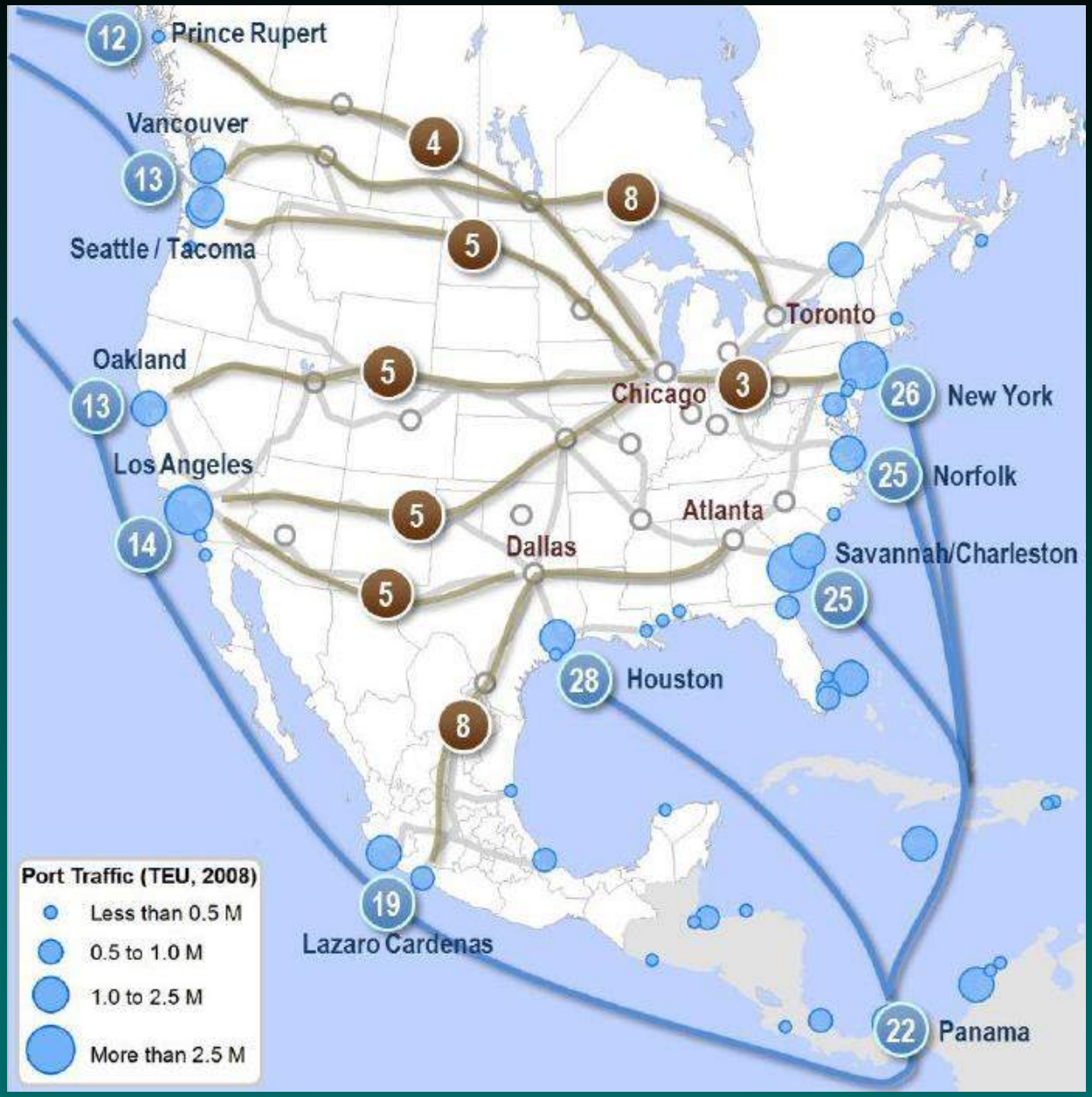
The terminal, with an initial capacity of two million TEU, will be constructed by a consortium of Asian developers under the name Panama Colon Container Port LLC (PCCP)

Panama Canal Large Vessel Market Penetration into the US Midwest

VICKERMAN & ASSOCIATES, LLC

Shanghai to North American Destination Transit Times:

(Ocean Transit and Rail Land-Bridge Routings in Days)



Source: Based on Prologis data

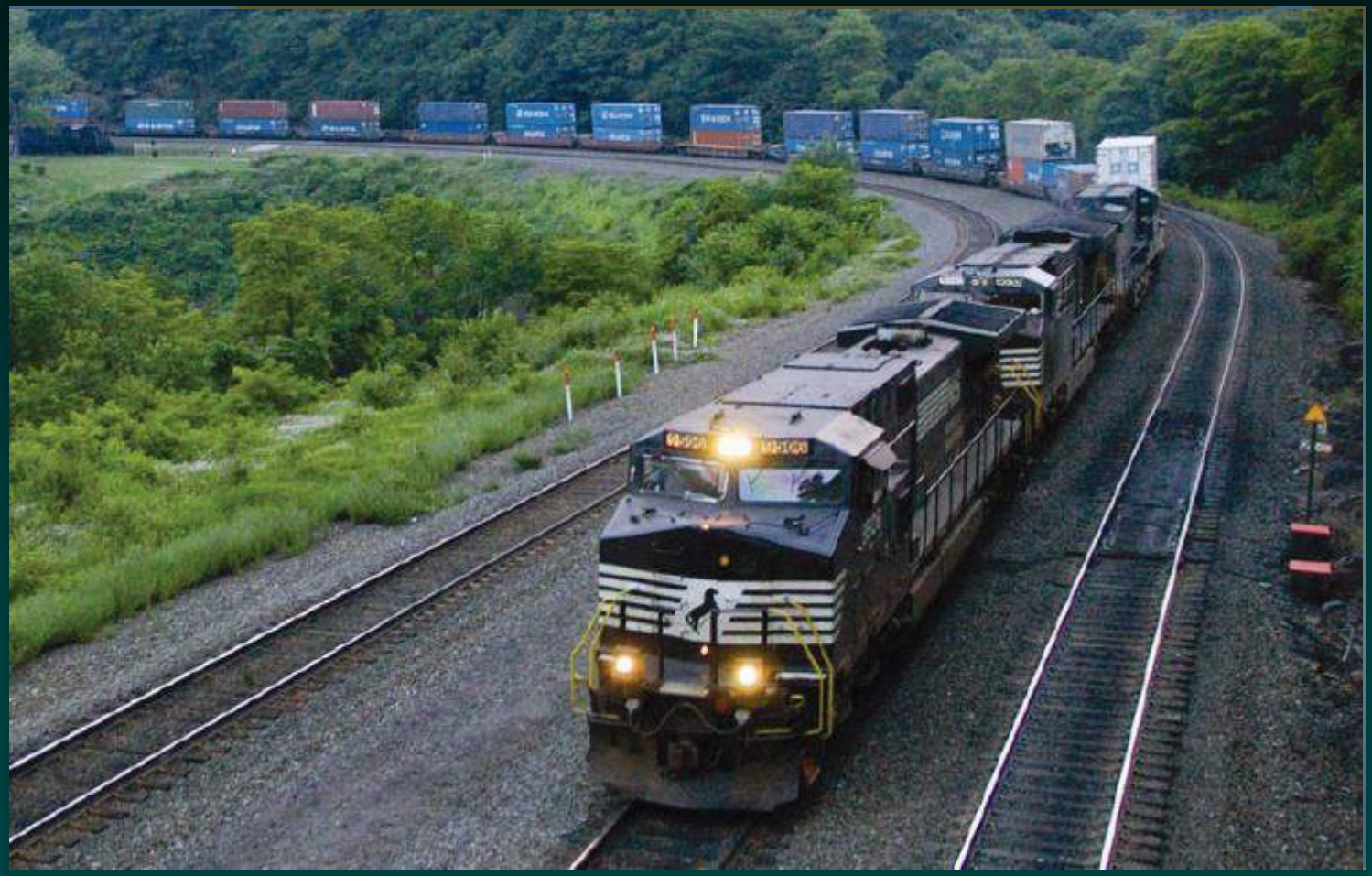
Panama Canal Vessel Deployments Will Determine New US Logistics Patterns

The Distance to New Orleans and Savannah Via the Panama Canal

A <u>Competitive & Robust</u> Landside Access to the Gateway Port's <u>Inland Market</u> will be a Key Success Factor!

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

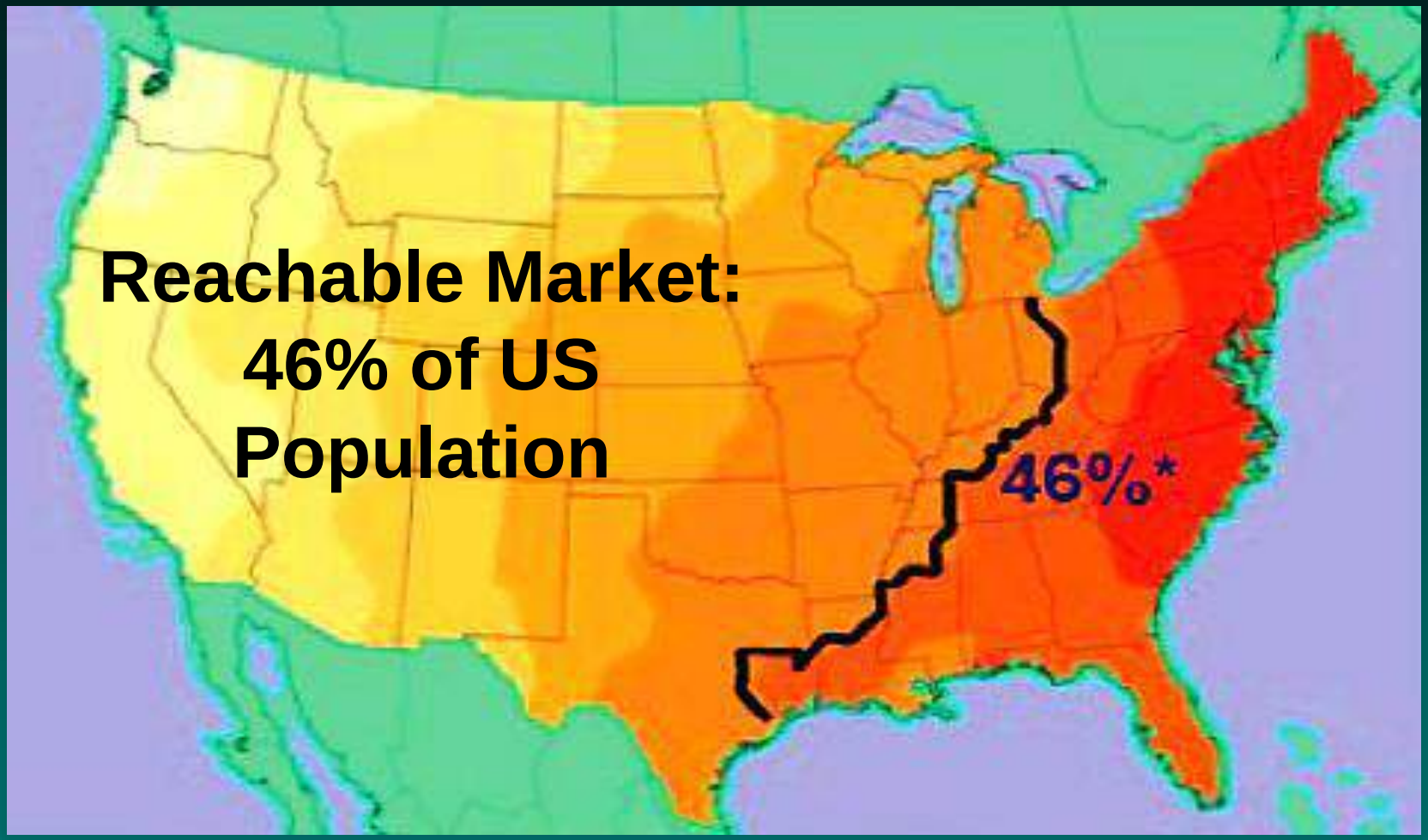
(Potential Increased Service Offerings and System Capacity)



Source: USDOT Maritime Administration (MARAD) 2009

Today's US Market Penetration

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

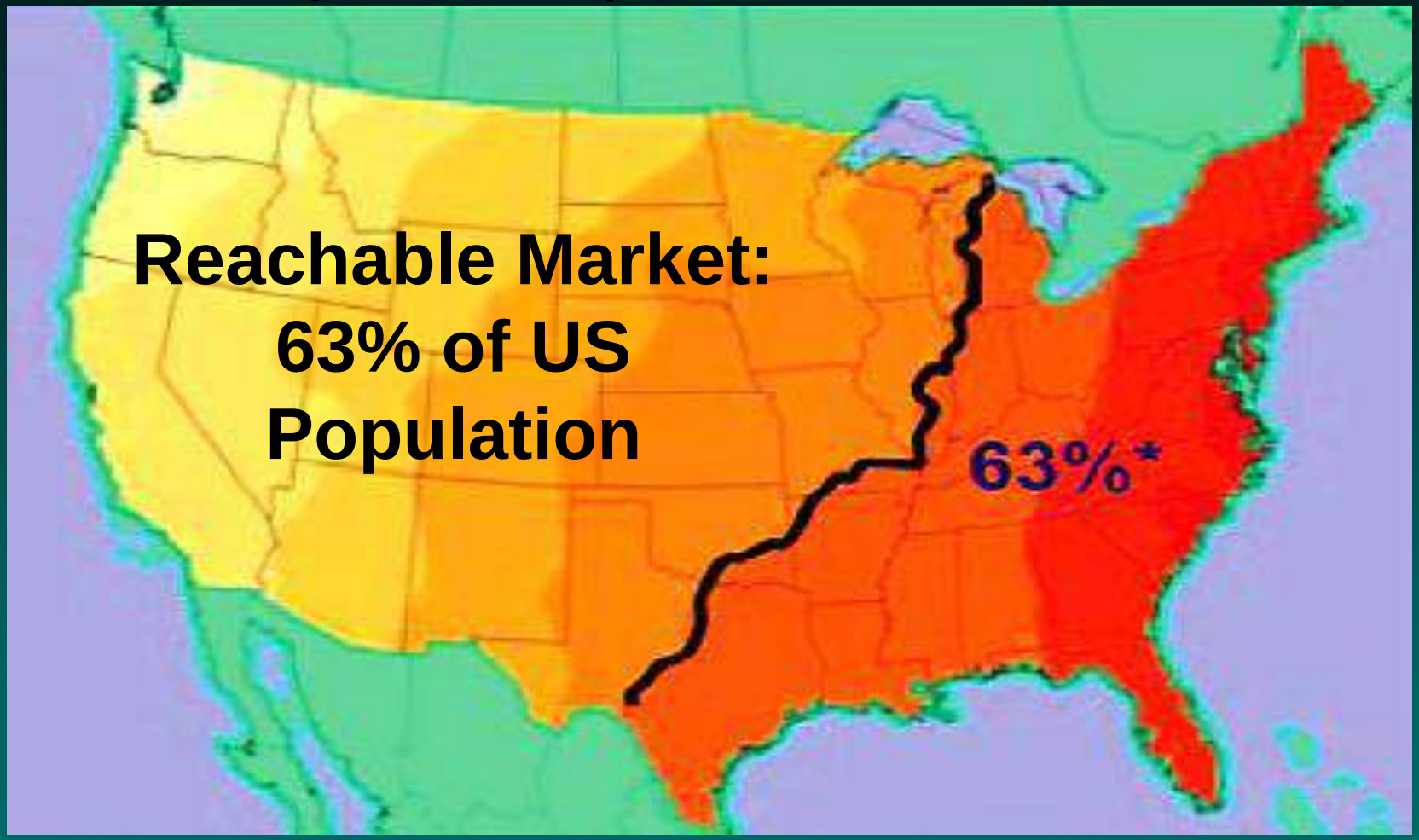


4,000 TEU ship, all-water.

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



8,000 TEU ship, all-water.

Source: PB Consultants - CSX Transportation May 12, 2011 - Director of Strategic Analysis

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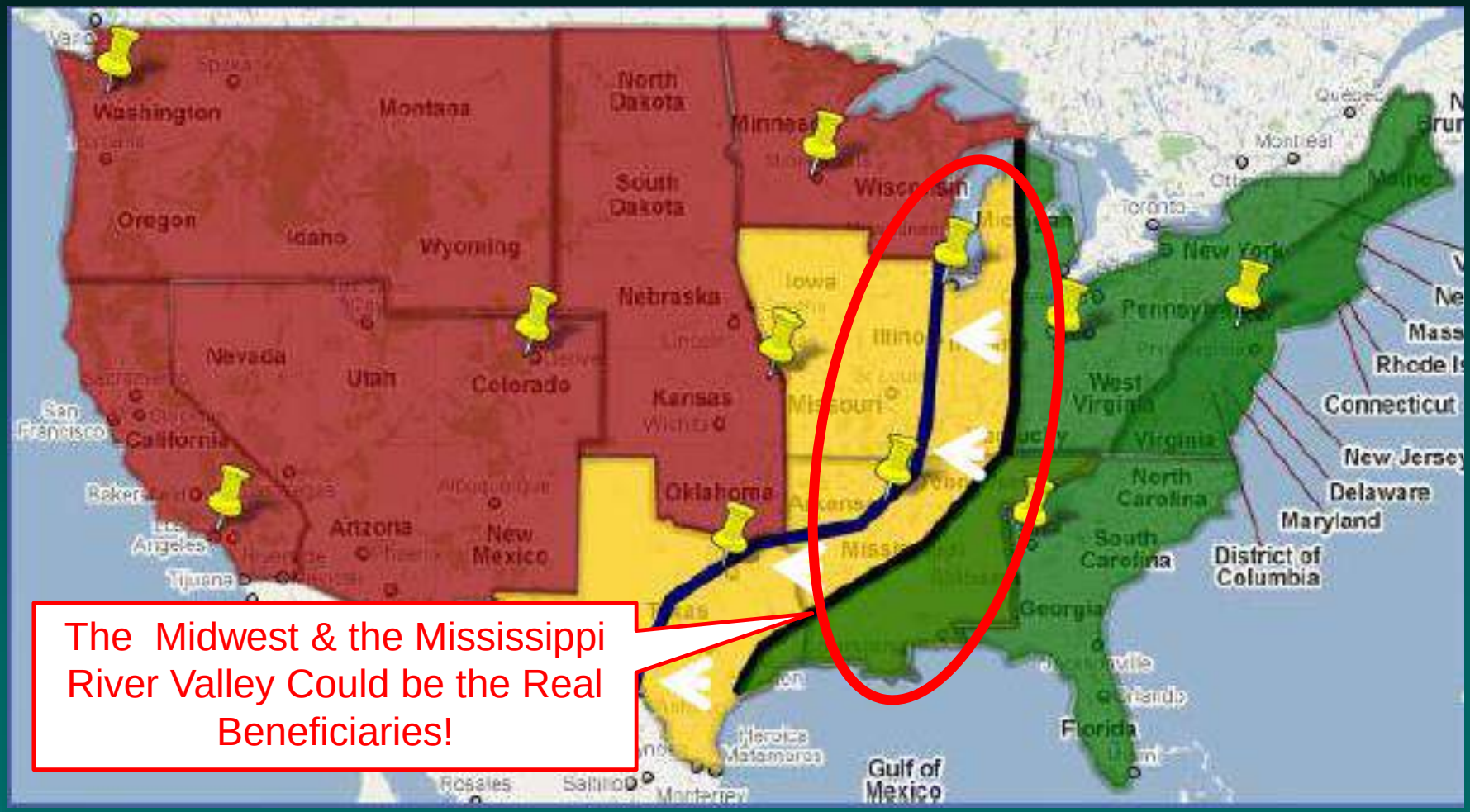
Dramatic US Market Penetration after 2016

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



Source: ACP Expansion Project – Rodolfo Sabonge AAPA January 24, 2013

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Inland Ports: Defined – A Convergence of Logistic Trends

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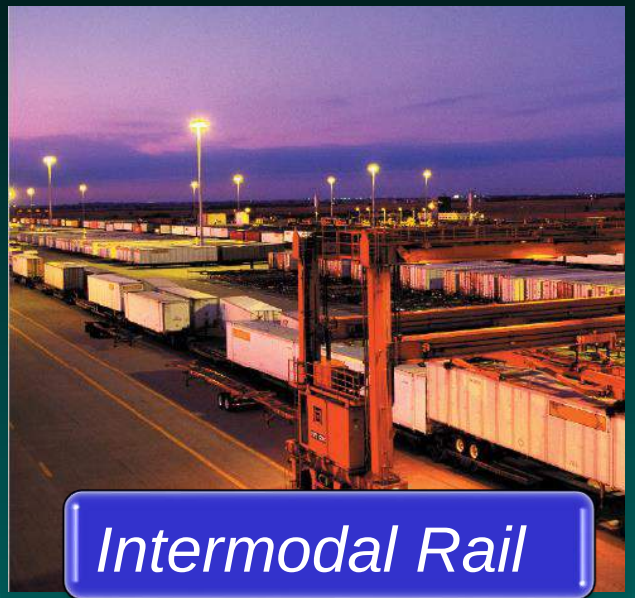
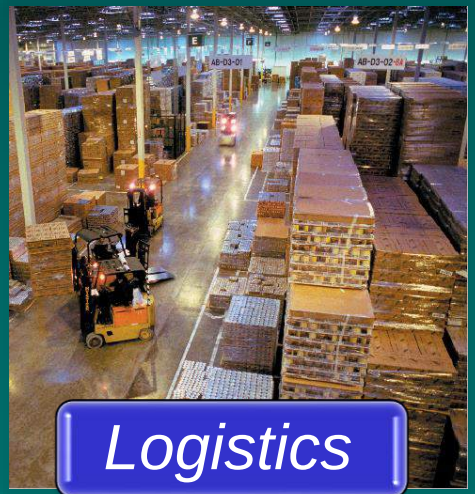
Inland Ports Defined

A Convergence of Logistics Trends

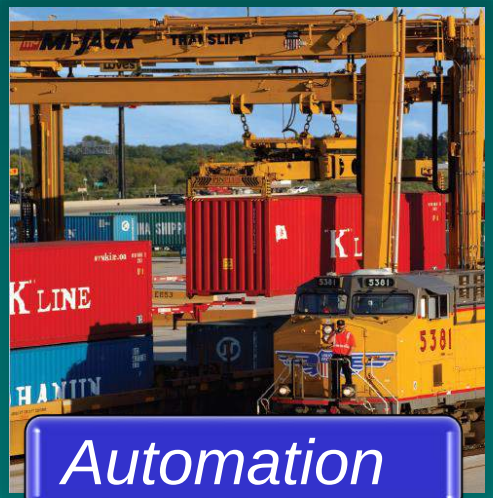
Short Sea Shipping Technology



Intermodal Rail



Logistics



Automation

Distribution Center

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Emerging Major Inland Port Logistics Centers

Throughput Capacities in Millions of TEUs

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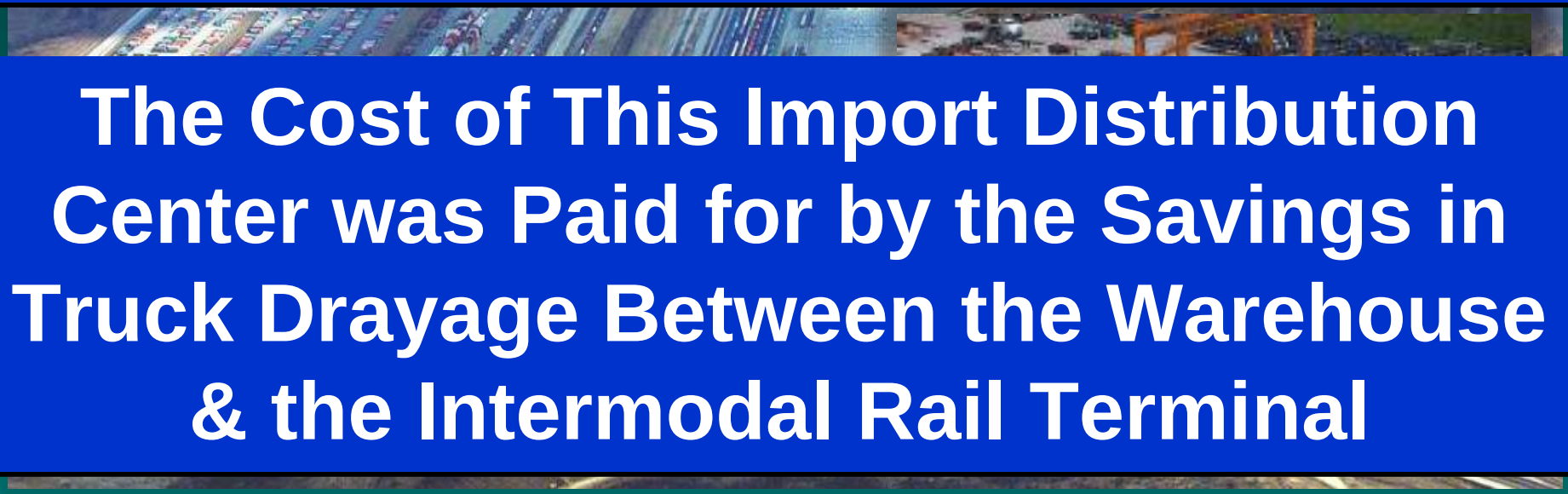
BNSF Logistics Park, Joliet. IL

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

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

Emerging Trade Opportunities for the US Midwest

"Emerging Big Ideas"

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changing course

navigating the future of the Lower Mississippi River Delta

"Changing Course":

A COMPETITION for a Project of National Significance

A 50-100 year, $15 billion plan that lays out a bold, ambitious, and essential vision for Mid-America's future.

VICKERMAN & ASSOCIATES, LLC

VAN ALEN INSTITUTE

Led by the Environmental Defense Fund (EDF) & the Van Alen Institute and Funded by:

Rockefeller Foundation
Innovation for the Next 100 Years

Greater New Orleans Foundation
For a vibrant region.

blue moon FUND

THE KRESGE FOUNDATION

The WALTON FAMILY FOUNDATION

VICKERMAN & ASSOCIATES, LLC

A New Mississippi Delta For The World

"***Changing Course***" has brought together teams of the world's best engineers, scientists, planners and designers to show the "***art of the possible***" in creating a self-sustaining delta ecosystem.

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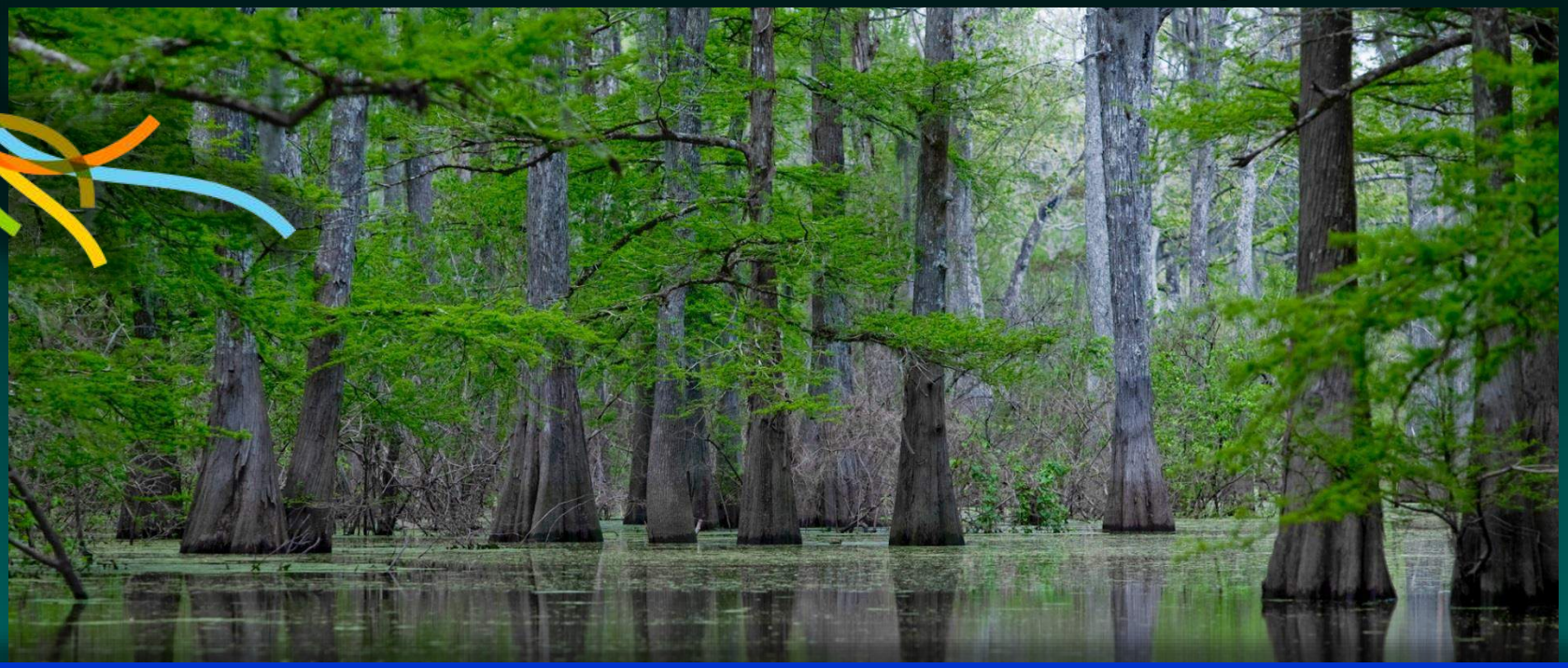
"Changing Course"

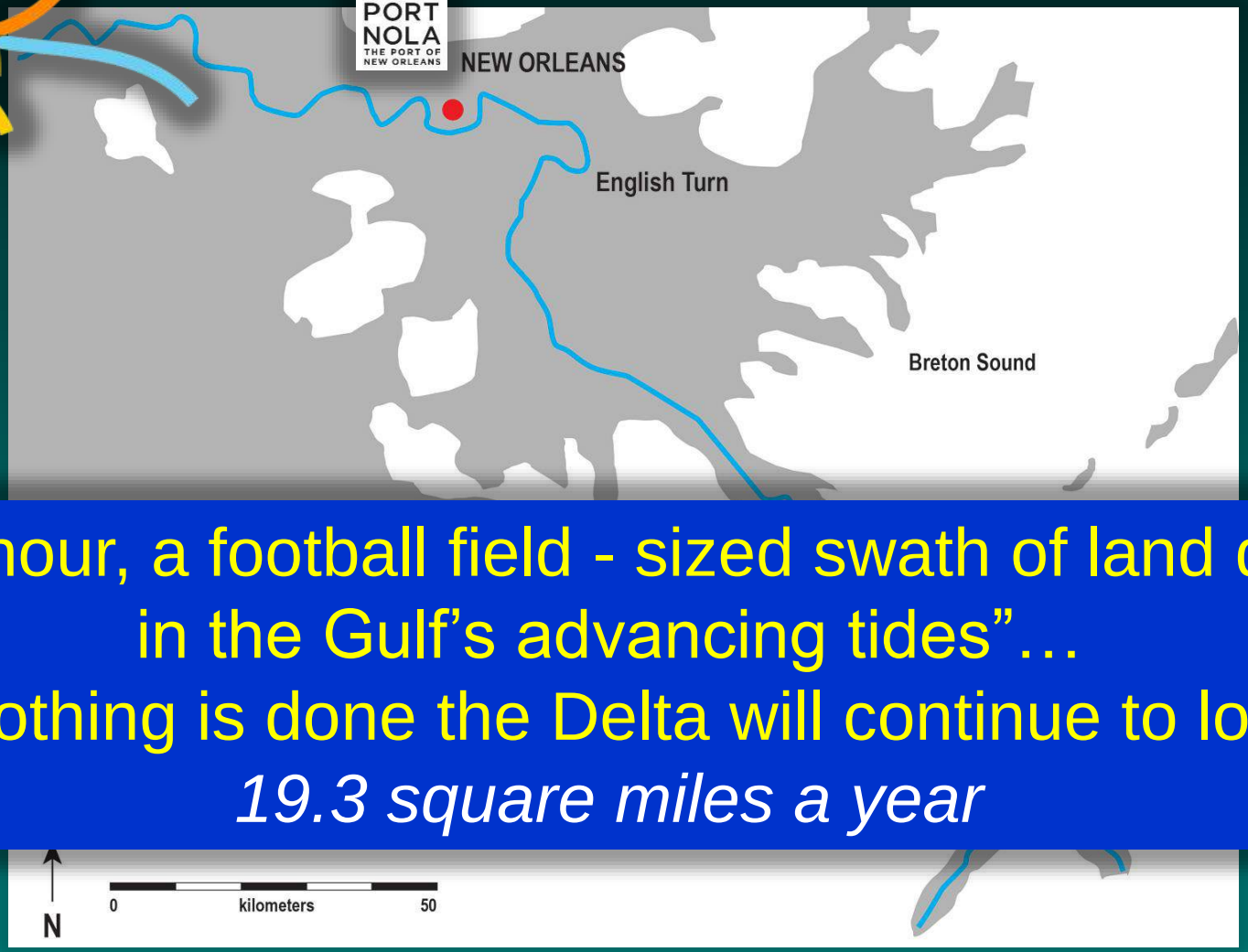
Lower Mississippi River Basin Eco System



The Mississippi River Delta Region is:
40 % of the US Marshland
30% of the US Seafood Consumption

The Lower Mississippi River Today

Over the last century, nearly 1,900 square miles of Louisiana's coastal wetlands have vanished

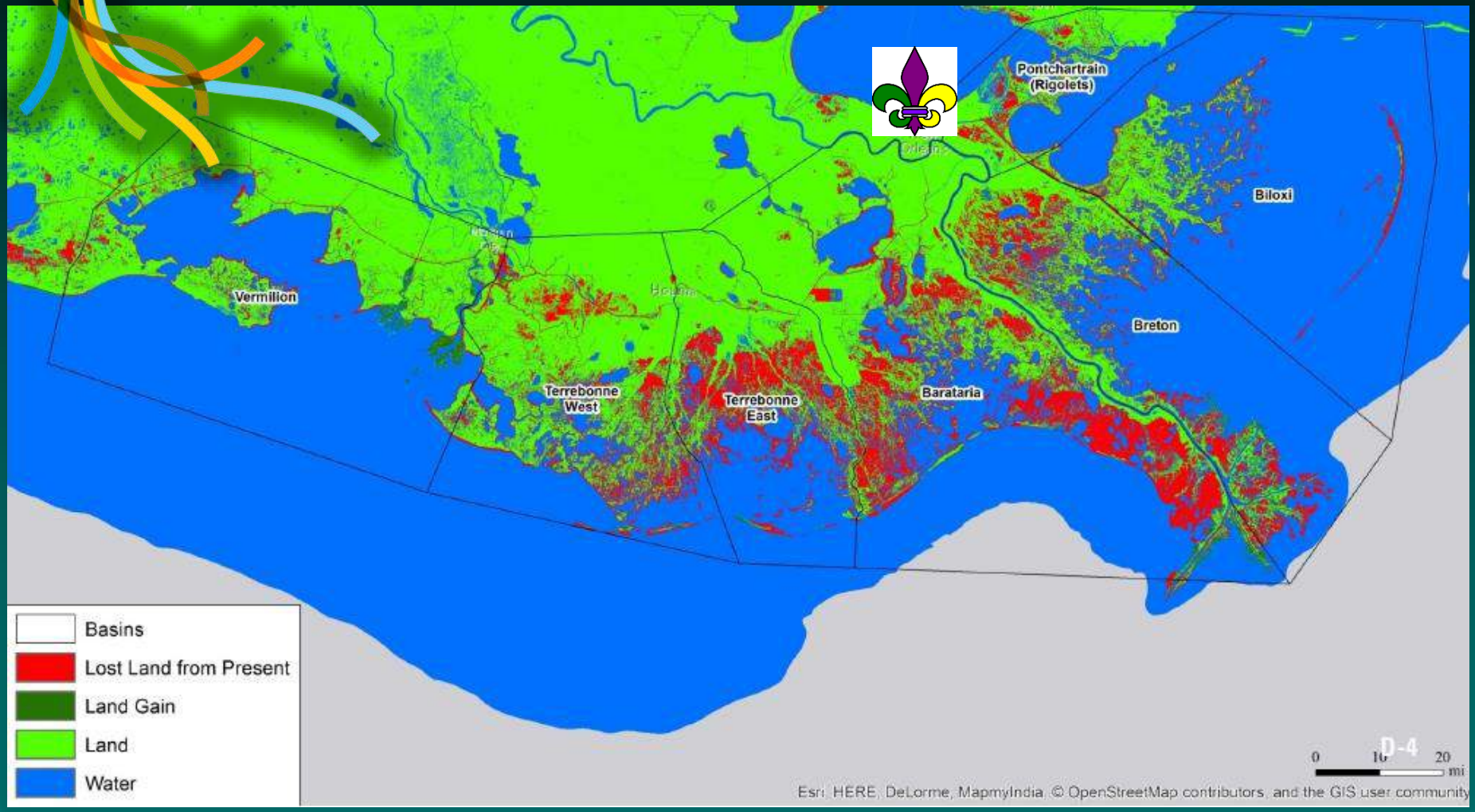


"Every hour, a football field - sized swath of land drowns in the Gulf's advancing tides"…

If nothing is done the Delta will continue to lose

19.3 square miles a year

Loss of Land From 1932 to 2015



D-4

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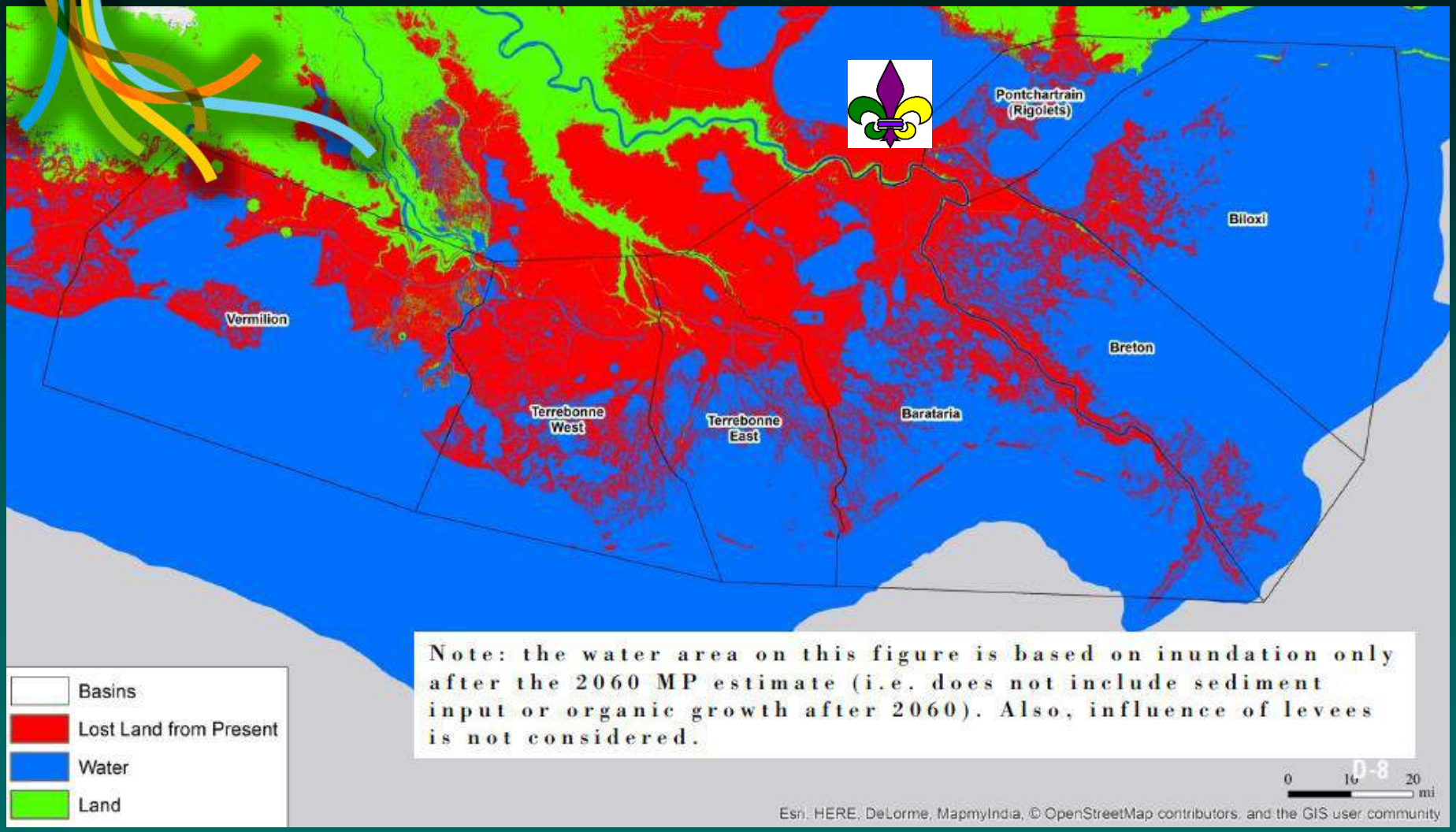
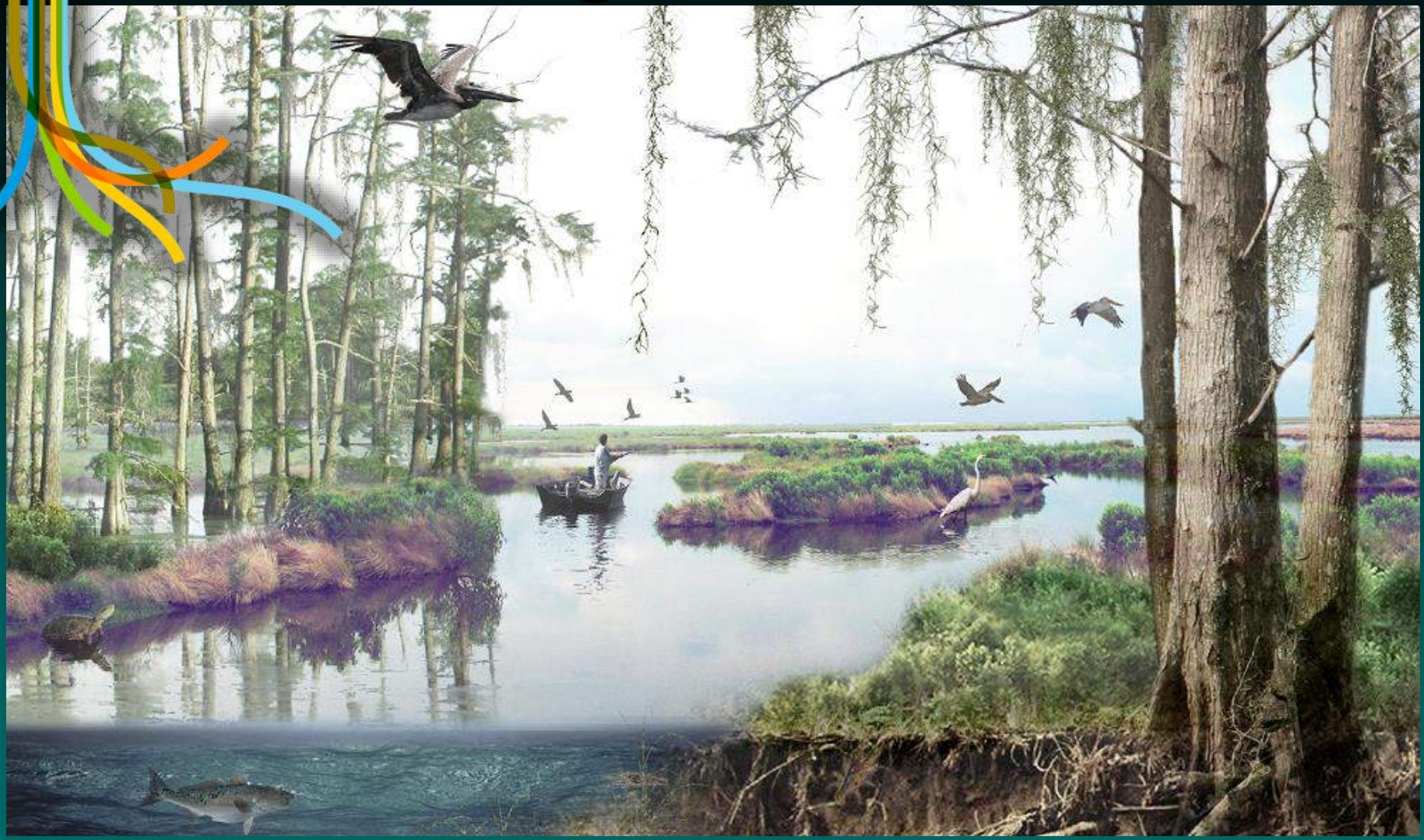
2115 Land Losses

(Sea Level Rise + Land Subsidence = 1.5 meters)



Restoring America's Delta



Without action, by **2100** Louisiana will have lost virtually **all** of its coastal wetlands.

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New Orleans is at River Mile 100

(from Mile Zero at Head of Passes)

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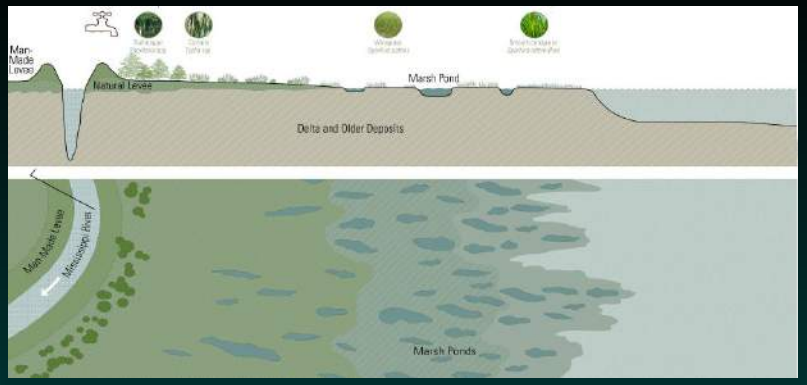
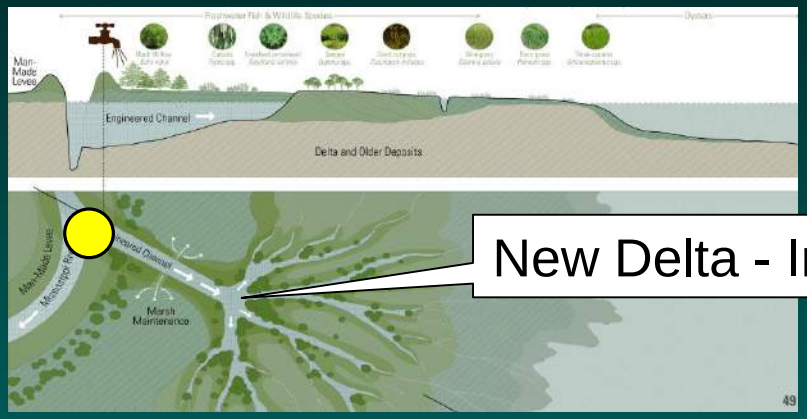
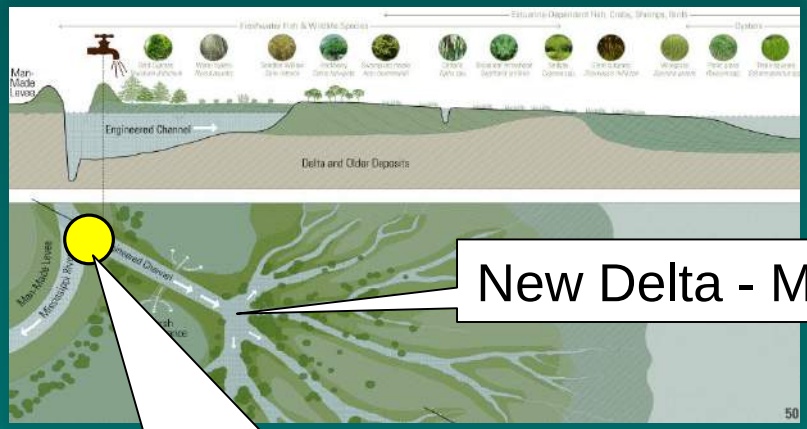
Navigational Solution:

Managed Distributaries – "Controlled New Deltas"





New Delta - Initial



New Delta - Mature

Controlled Gate

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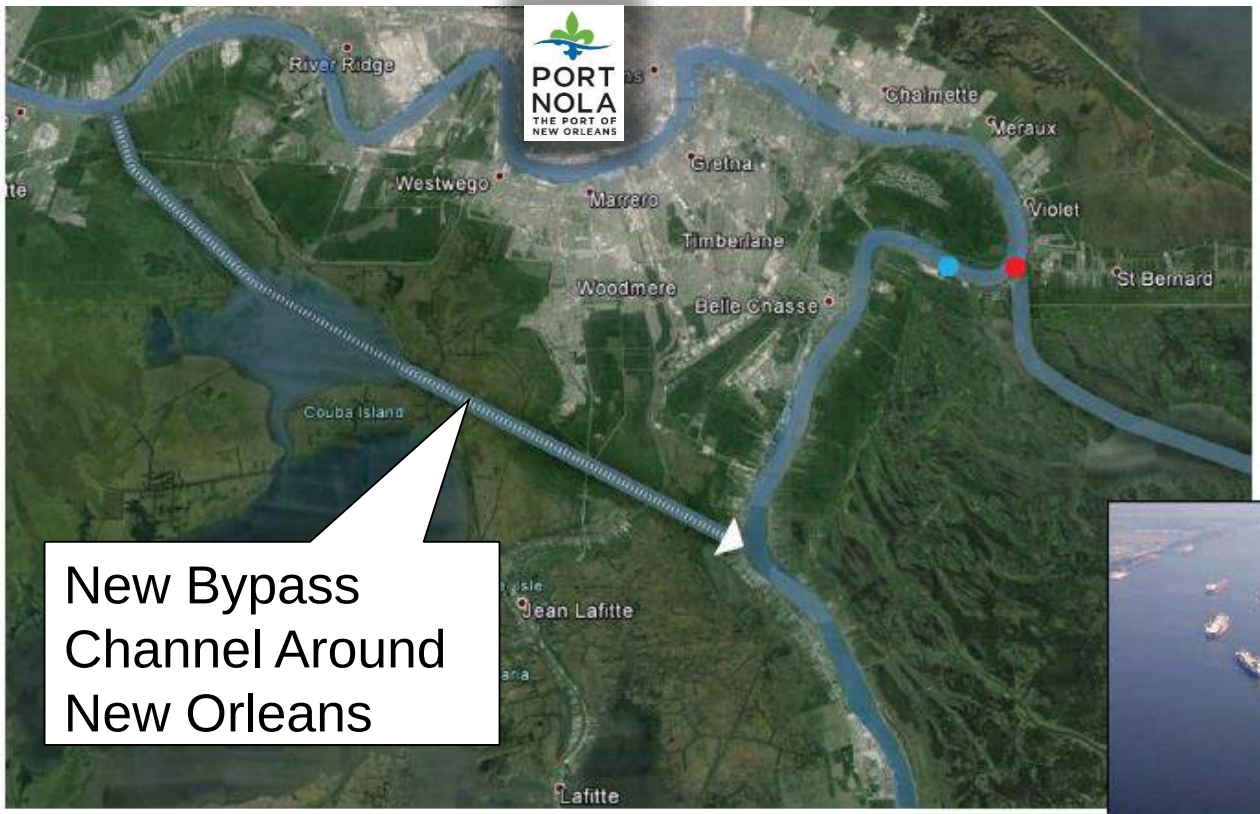
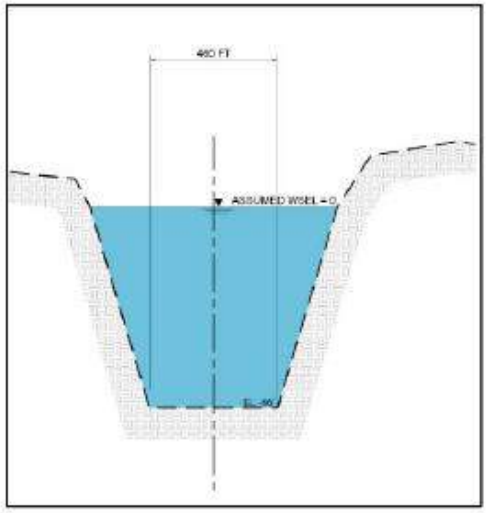
Navigational Engineering Solutions

New Orleans Bypass Channel
Reducing Distance to Baton Rouge by 30 Miles &
Eliminates Congestion in the Port of New Orleans





Distributary and vessel channel

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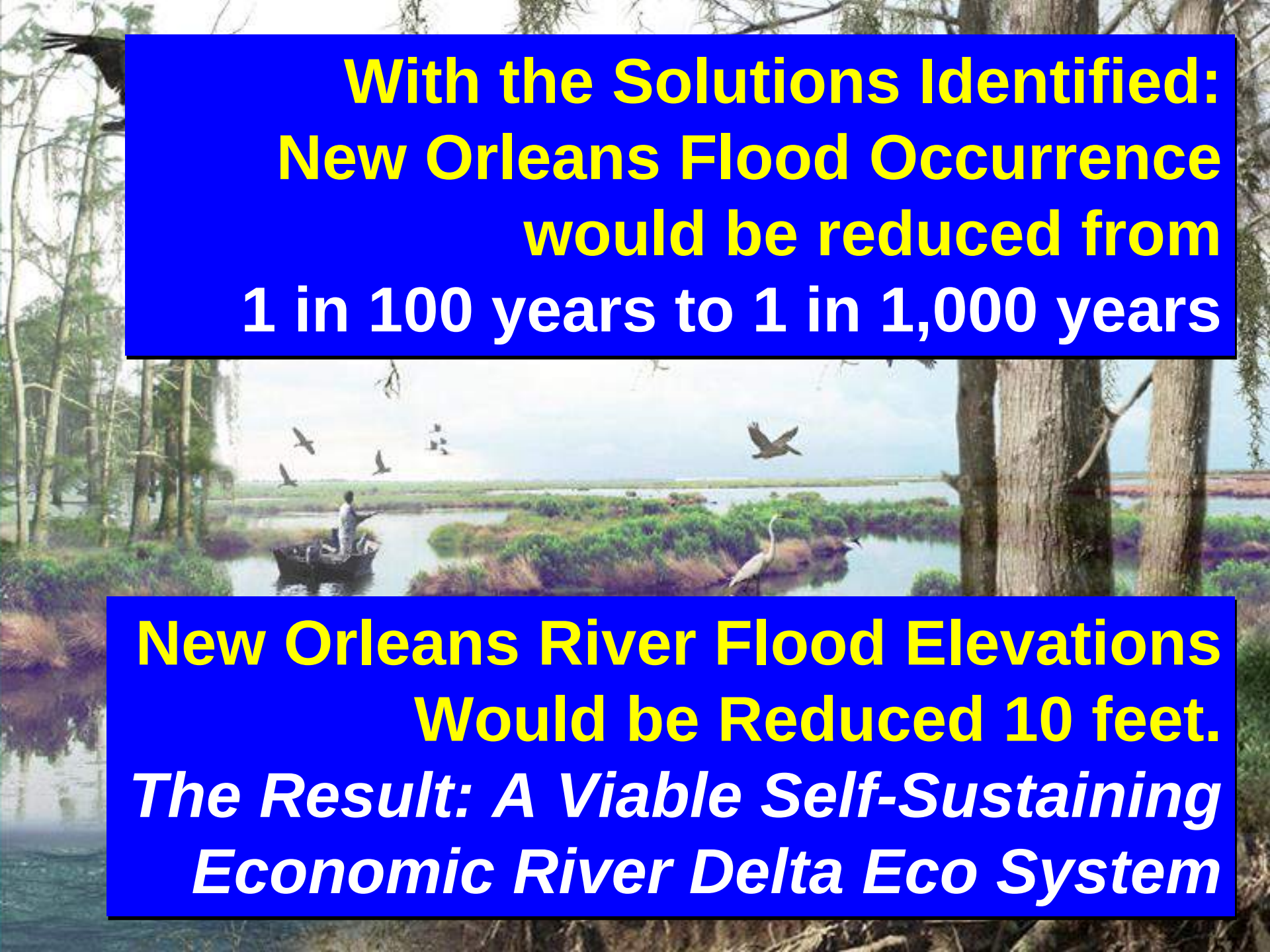

With the Solutions Identified:
New Orleans Flood Occurrence would be reduced from
1 in 100 years to 1 in 1,000 years

New Orleans River Flood Elevations Would be Reduced 10 feet.
The Result: A Viable Self-Sustaining Economic River Delta Eco System

Recommended Navigational Improvements On the Lower Mississippi will "*Shorten the Distance to Open Ocean*" for All River Ports by ***More Than 75 Miles***

Current North American Capital Spending

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2013 REPORT CARD for America's INFRASTRUCTURE

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

AMERICA'S GPA:

D+

ASCE 2013 Report Card for America's Infrastructure

ESTIMATED INVESTMENT NEEDED BY 2020:

$3.6 TRILLION

Ports: C

Railroads: C+

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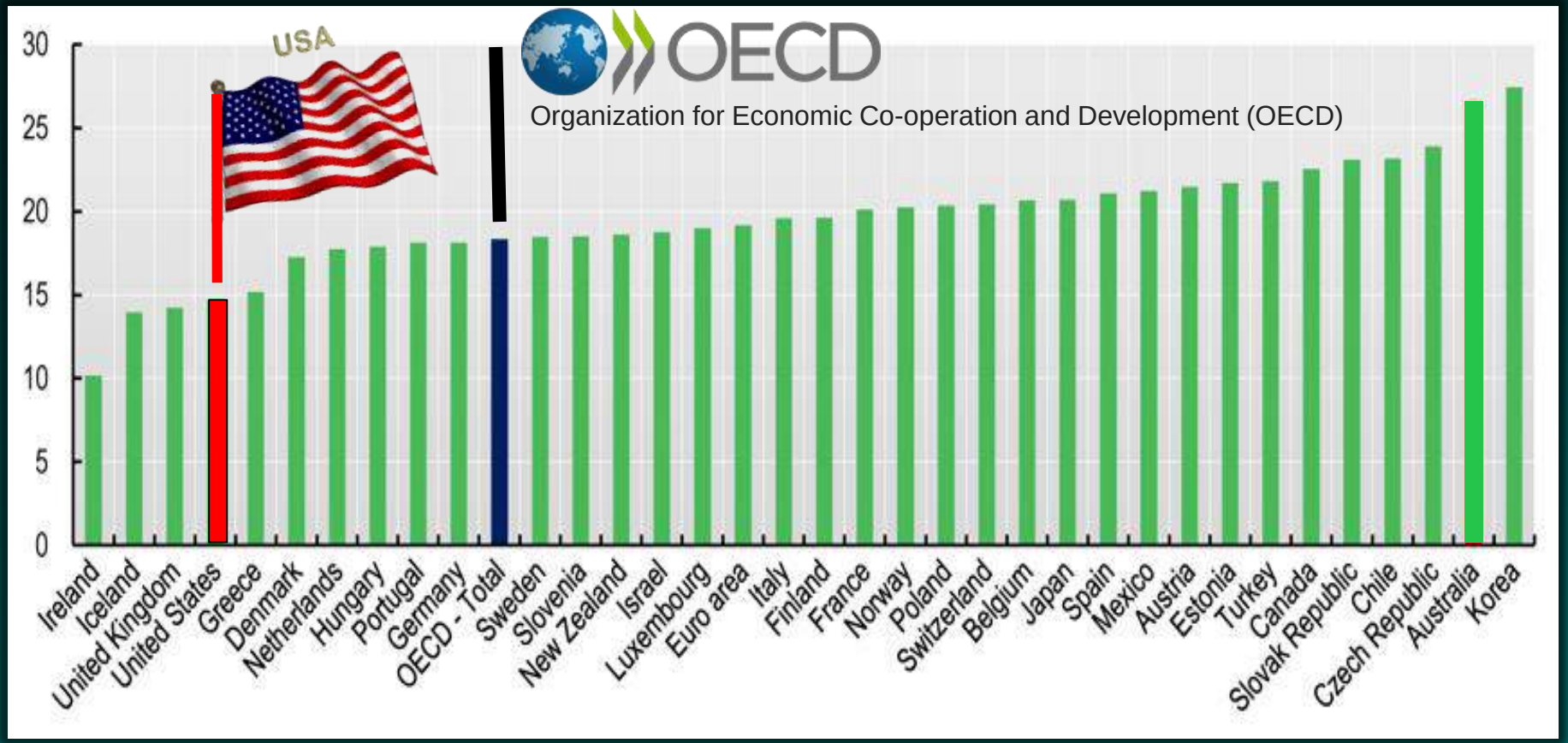
2011 International Gross Fixed Capital Formation as a Percent of GDP

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



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Thank You

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