

2006 Port Finance Seminar

May 16, 2006

Sheraton Inner Harbor Hotel, Baltimore MD



WHAT DOES THE FUTURE HOLD?

M. John Vickerman



Norfolk, Virginia

The Year is 2026

We are Gathered in **May 2026** to celebrate the **70th Anniversary** of the start of Global Containerization



Dubai Ports World's Fast Transshipment Logistics Base



Maritime Industry Mega Trends: A 2026 Perspective

April 26, 1956

58 Modified 35-foot Truck Containers

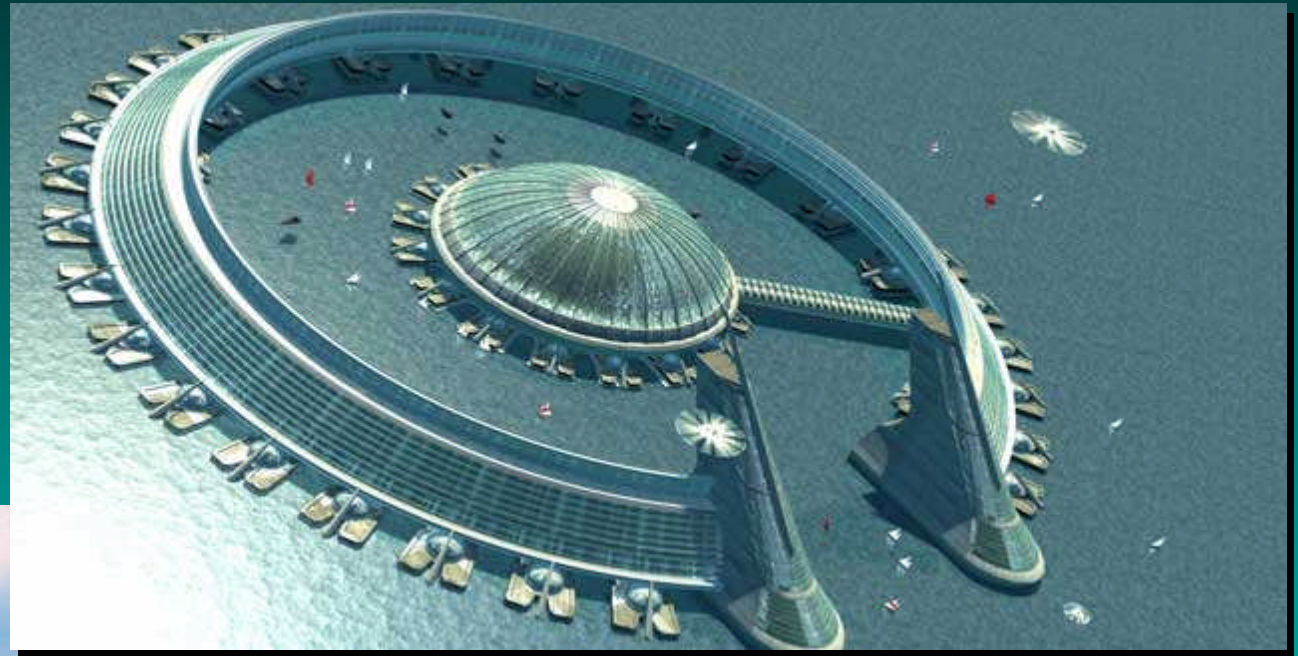
**The world's first
container ship
departed for the
historical sailing
of the world's first
container ship.**

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



The Adolescence of Containerization: Cargo Handling Circa 2005

2026 Offshore Moveable Fast Logistics Transshipment Centers

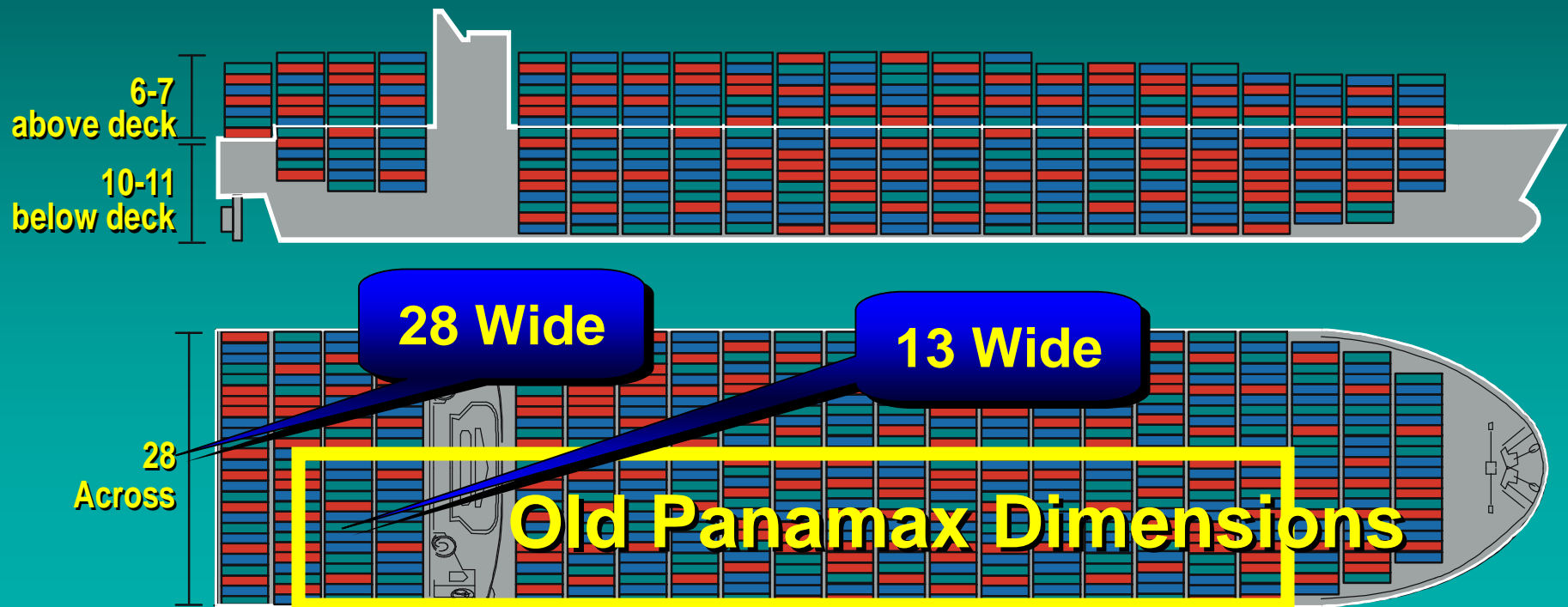


Today's 15,000 TEU Containership

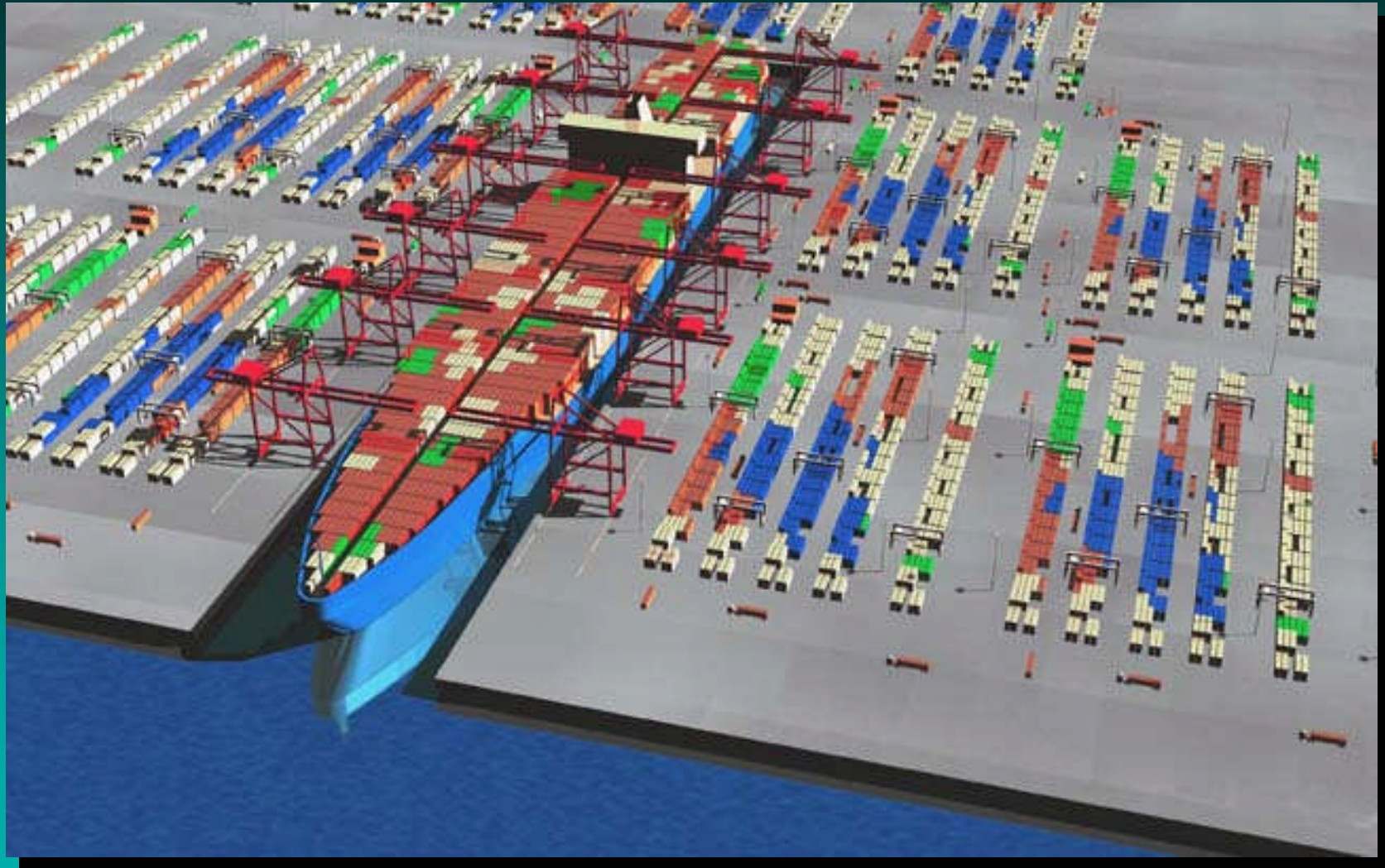
LOA. = 400 m (1,312 ft.)

Draft = 14 m (46 ft.)

BEAM = 69 m (226 ft.)



The Port of Baltimore's Container Ship-in-a-Slip Concept



In 2026, the Cruise Ship Industry has Evolved From the Small 4000 Passenger Vessel to Ships with More Than 12,000 Passengers

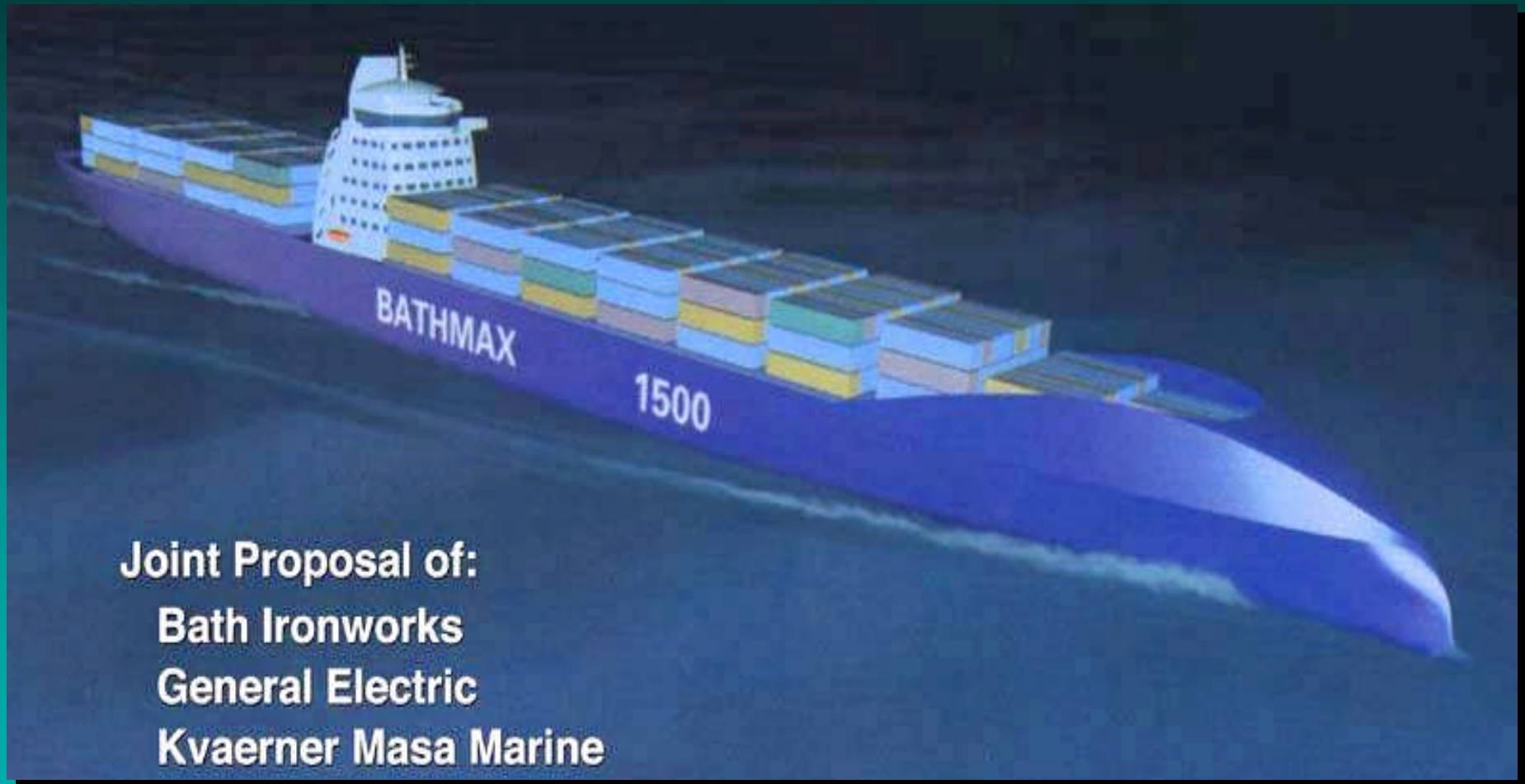


2006: 4,200 berths



2026: 12,800 berths

Bathmax 180 High Speed (45 knot) Container Ship Initiated Service in 2020



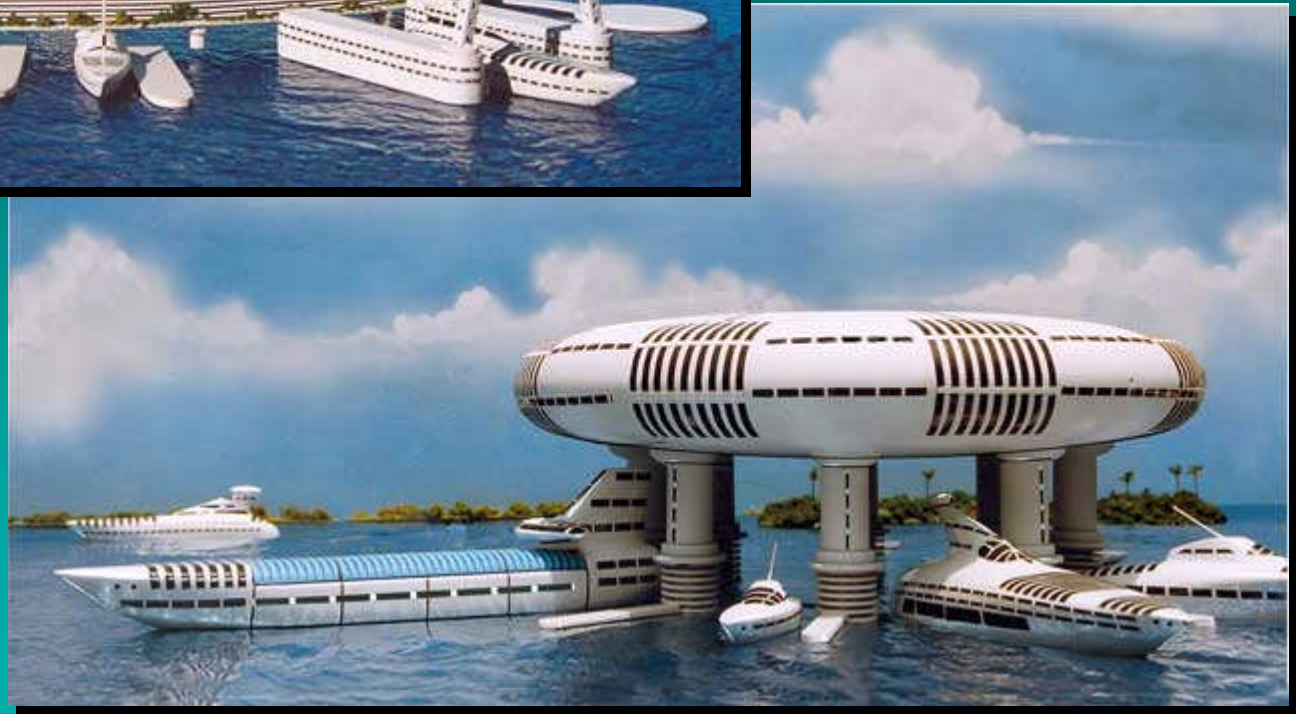
US Navy Fast Littoral Frigate (Christened Last Month, March 2026)

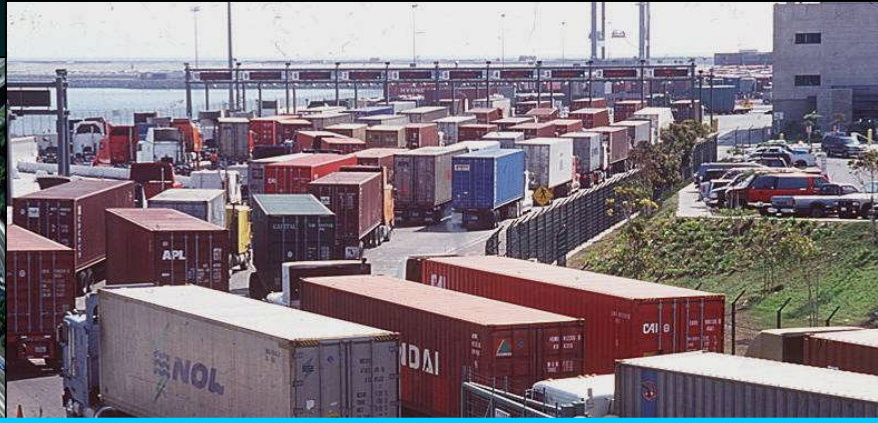


US Navy's D. Rumsfeld Advanced Border Patrol Craft Circa 2021



Littoral Destination Cruise & Cargo Hub



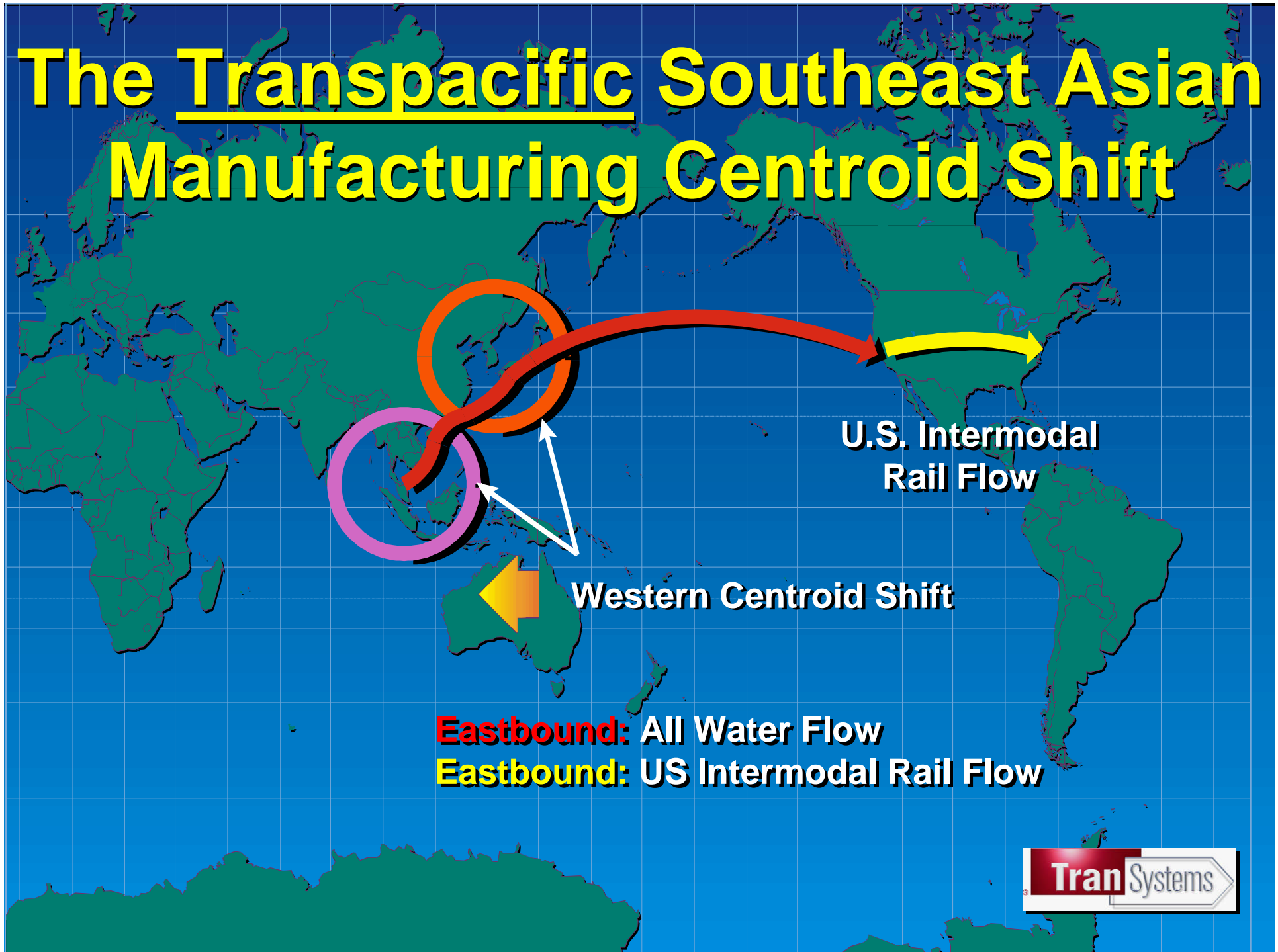


In 2026, The Legacy North American Ports & Their Intermodal Systems Have Become Severely Congested



Where's my cargo?
Americas Systems Inc. develops a port system that allows companies to obtain information on shipments
BY CHRIS DUPIN

The Transpacific Southeast Asian Manufacturing Centroid Shift



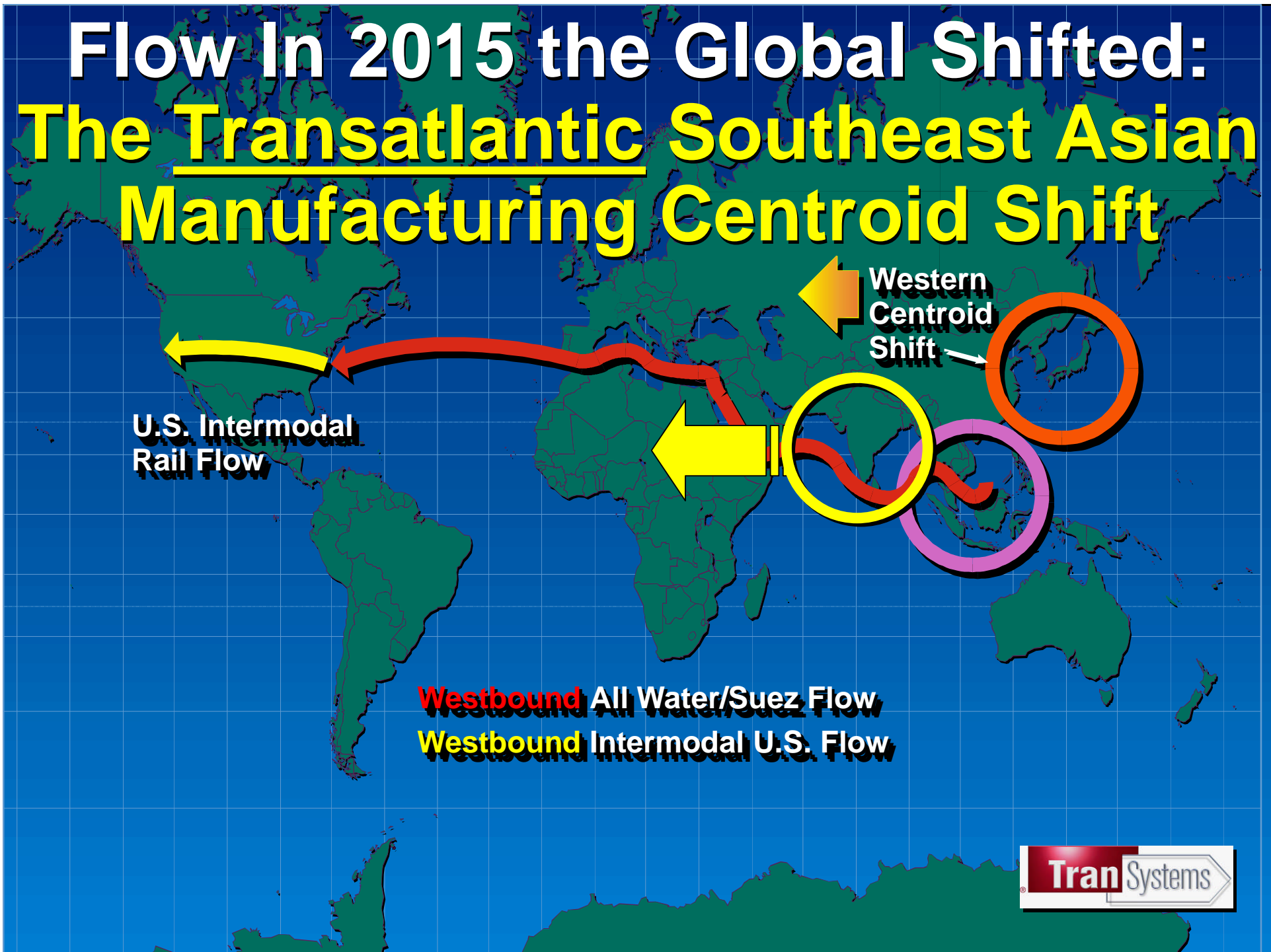
Flow In 2015 the Global Shifted: The Transatlantic Southeast Asian Manufacturing Centroid Shift

U.S. Intermodal
Rail Flow

Western
Centroid
Shift

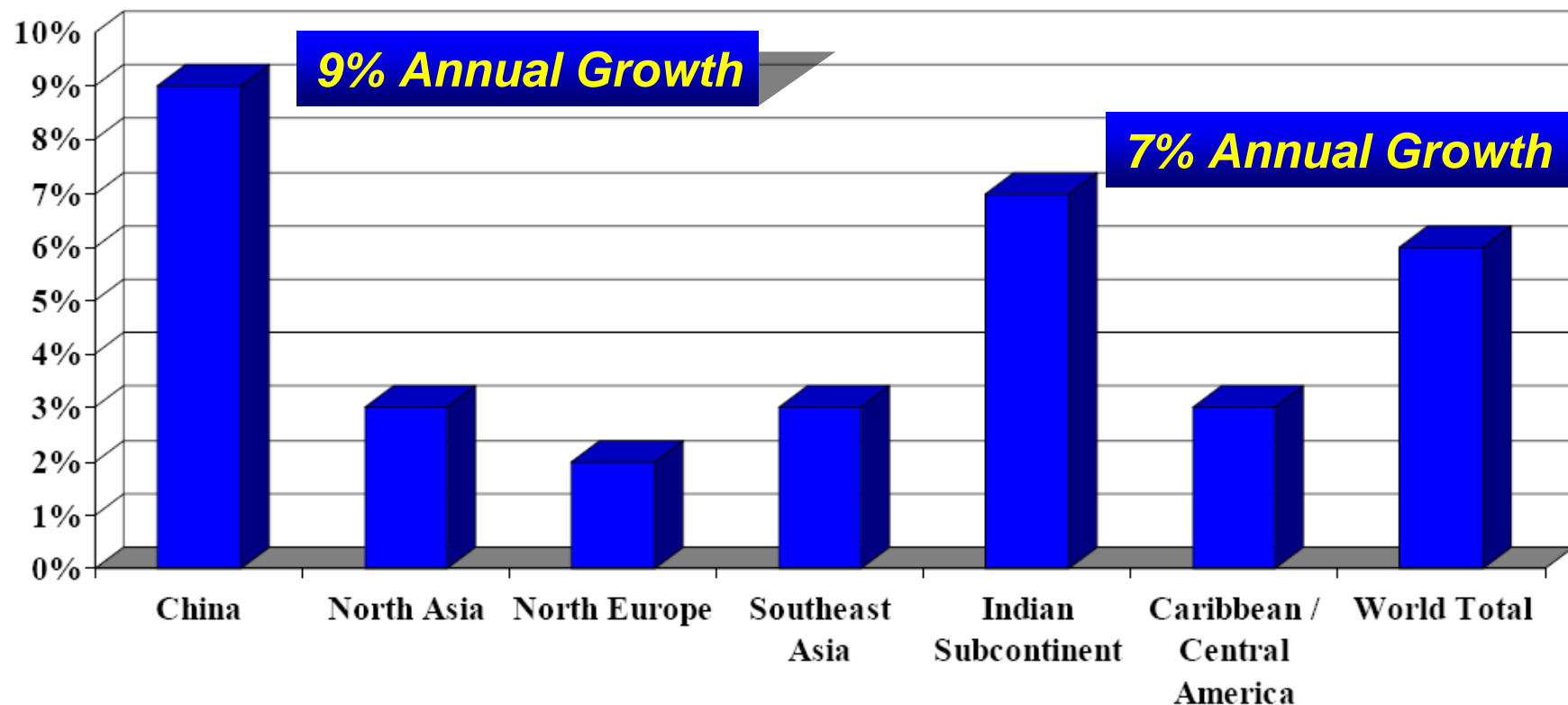
Westbound All Water/Suez Flow
Westbound Intermodal U.S. Flow

Tran Systems



In the 2020's, China & India Continue To Drive North American Container Trade

Annual Growth by Trade Lane 2005 to 2020



Source: Global Insight, Norbridge

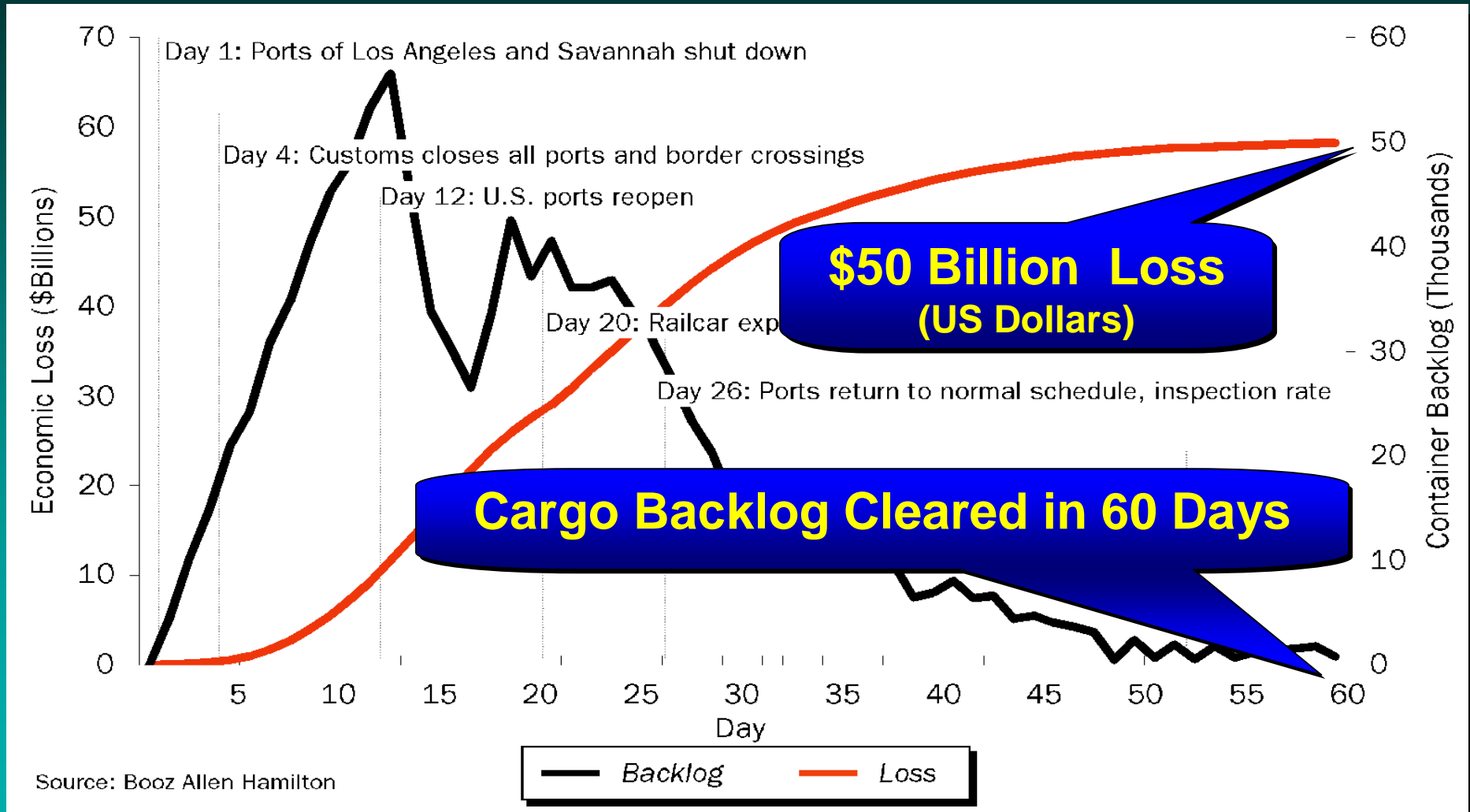
By 2006 Ports were Experiencing Dramatic Surges in Seaport Security Costs

Port of Miami's Security Costs Today are 600% Higher Than that of 2001



The 2011 US Port Security Breach

A Major Supply Chain Disruption Event



What We Learned from 2011:

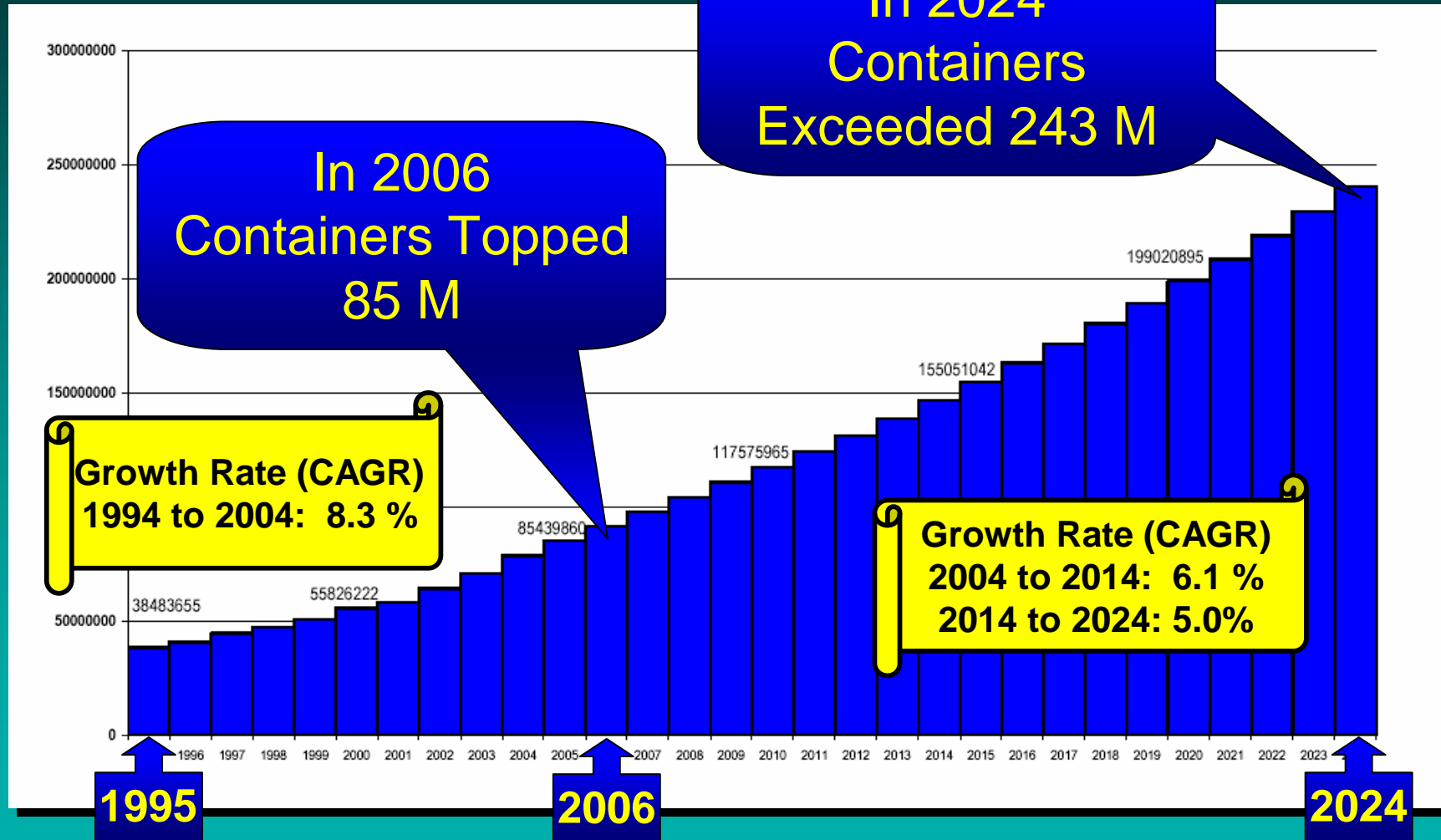
Port Productivity & Port Security Are Not Mutually Exclusive





International Maritime Cargo Demand Trends

World Container History in TEUs (186% Increase in Next 20 Years)



Source: Global Insight,

2006 Global Market Economic Shifts (Country GDP Rank)

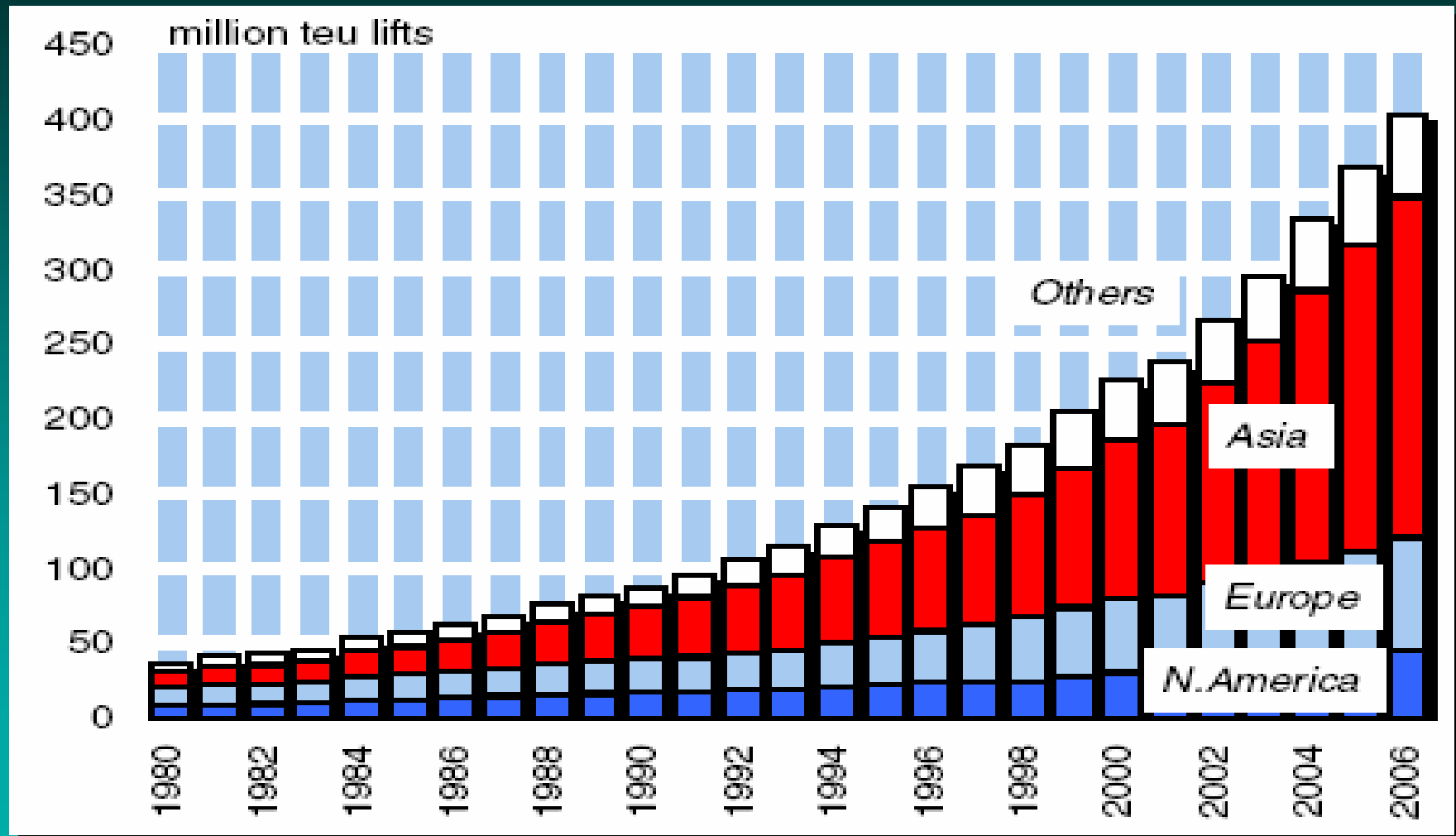
	2000	2010	2020	2030	2040	2050
#1	USA	USA	USA	USA	USA	CHINA #1
	Japan	Japan	CHINA	CHINA	CHINA	USA #2
	Germany	Germany	Japan	Japan	INDIA	INDIA #3
	UK	UK	Germany	INDIA	Japan	Japan
	France	CHINA	UK	Russia	Russia	Brazil #5
	Italy	France	INDIA	UK	Brazil	Russia
#7	CHINA	Italy	France	Germany	UK	UK
#8	Brazil	INDIA	Russia	France	Germany	Germany
#9	INDIA	Russia	Italy	Brazil	France	France
	Russia	Brazil	Brazil	Italy	Italy	Italy

Source: Global Insight, 2005



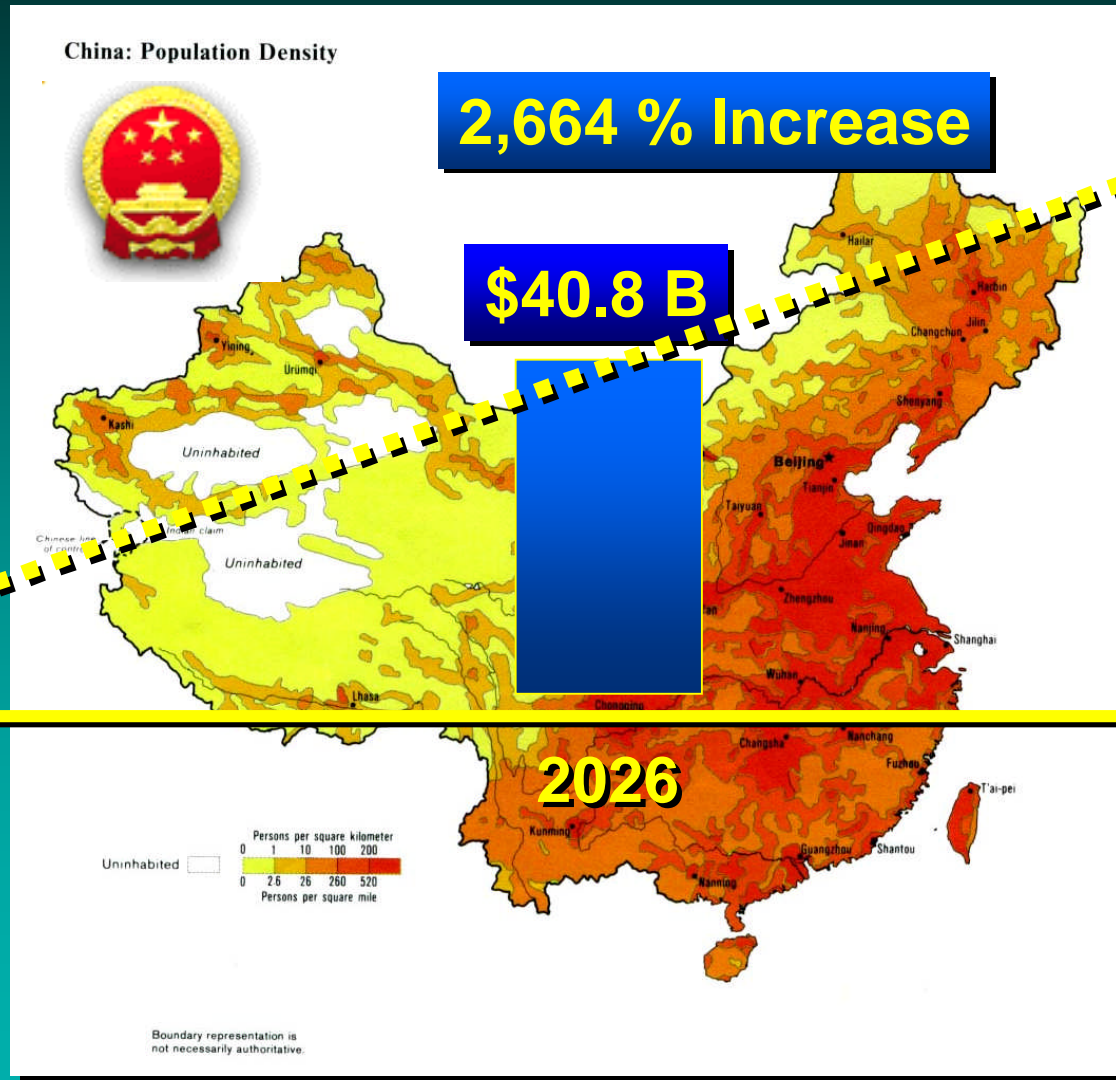
The Asian Import Trade Challenge Continues

Global Interdependent Economics Have Resulted in a Major Product Sourcing Shift to Asia

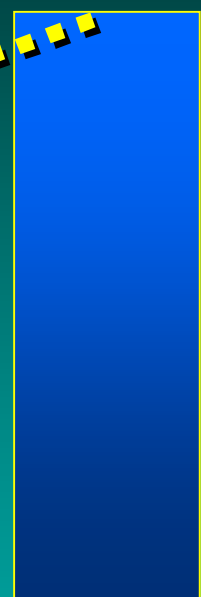


Source: Clarkson Research Studies

China – US 47 Year Trade Growth (Billions US \$)

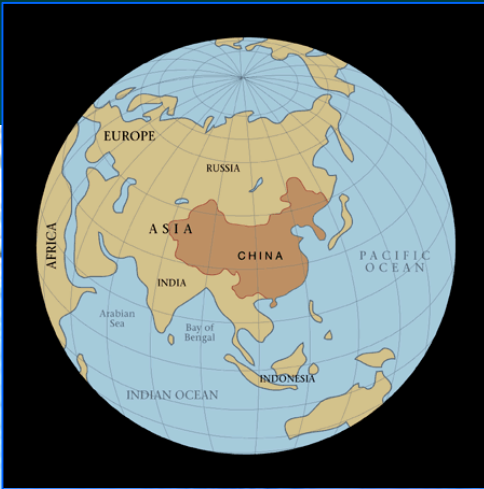


\$69.1 B



2026

China-US: 2006 Comparisons



2006 Population:
US: 298 million
China: 1,307 million
(1/5 World)

The number of Chinese children in elementary school is equivalent to the total US population.

In 2020, China's Ministry of Railway, in Cooperation Agreement with the US BNSF Railroad, Completed The Doublestacked Intermodal Rail System

- China's high volume efficient intermodal network
- **\$242 billion program initiated in 2005, completed 2020**
- On-dock & near-dock intermodal transfer yards at ports
- Ministry to build 18 mega-terminals with 7 at seaports, 40 smaller Intermodal terminals

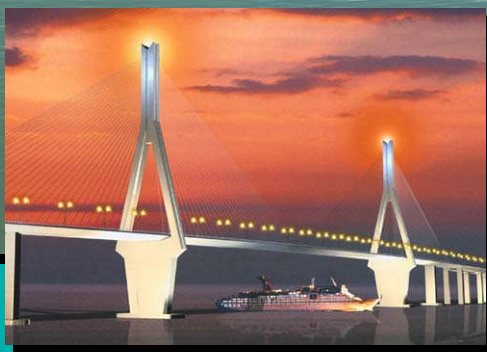
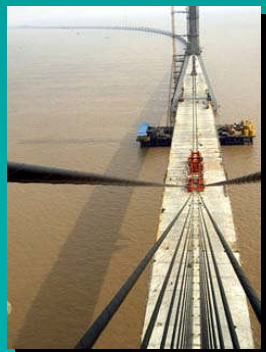
铁路



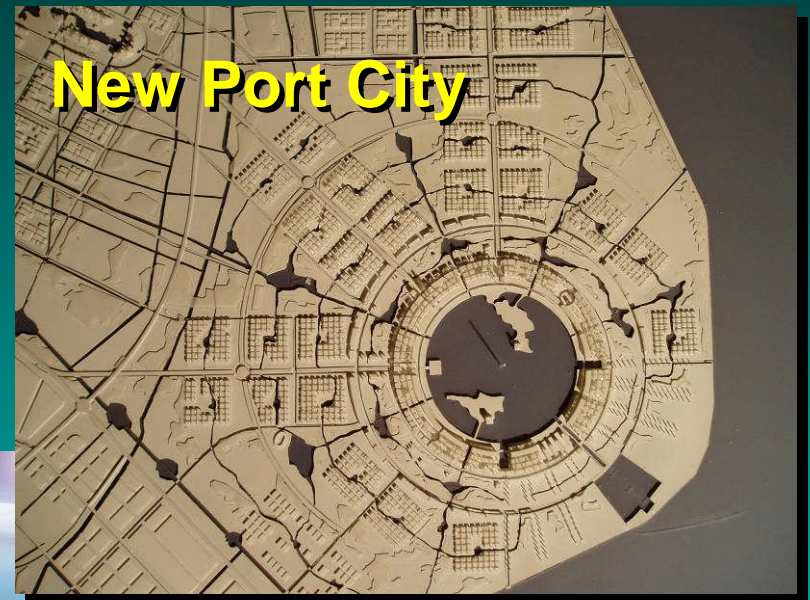
Shanghai International Shipping Center Initiated in 2003, Completed 2010 Yangshan Deep Port & Logistics Park



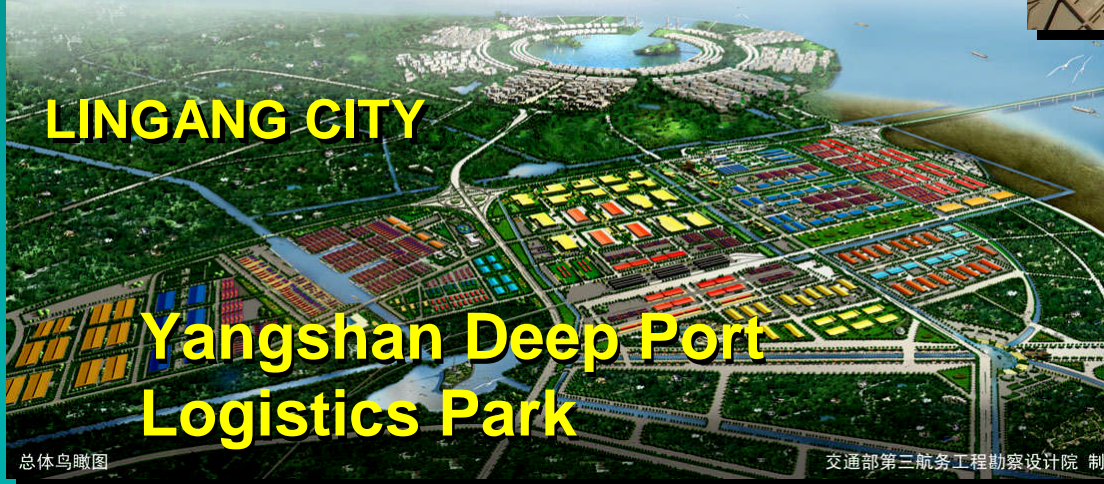
**20 Mile New Port Access Bridge
Constructed in 3 yrs in 2006**



Shanghai International Shipping Center Shanghai Close-Port New City



上海



**A new city
Integrating global
freight logistics**

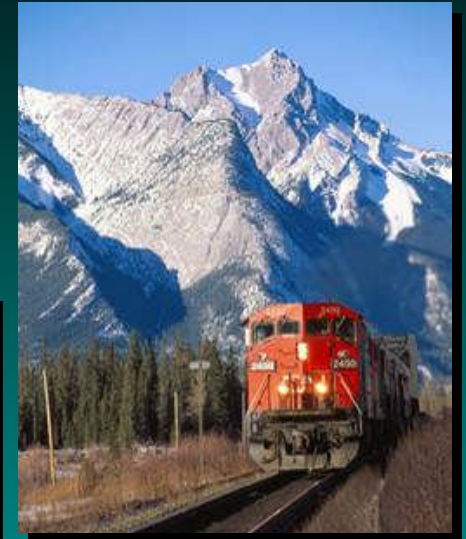
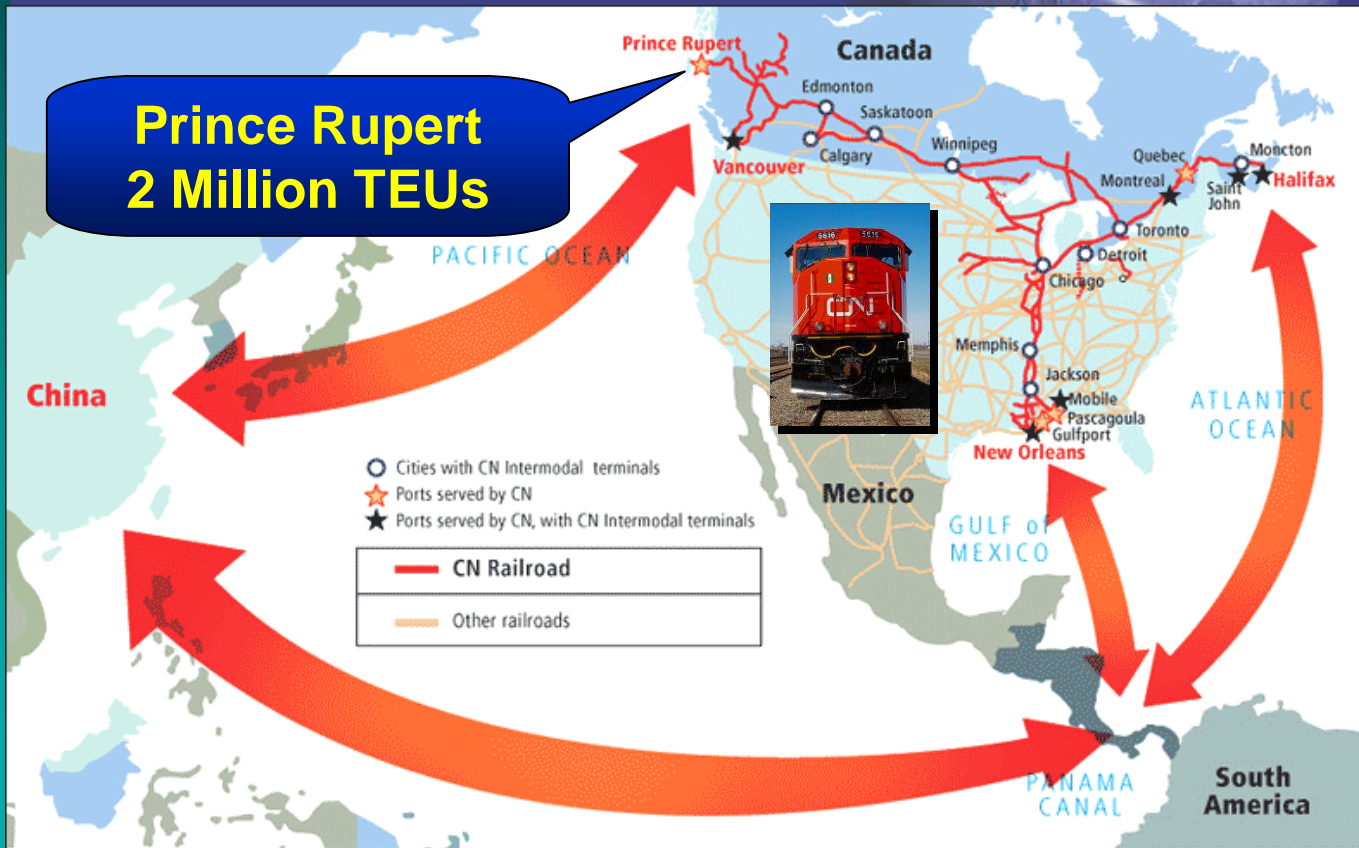
New North American Container Gateway by 2010

Prince Rupert Port Authority

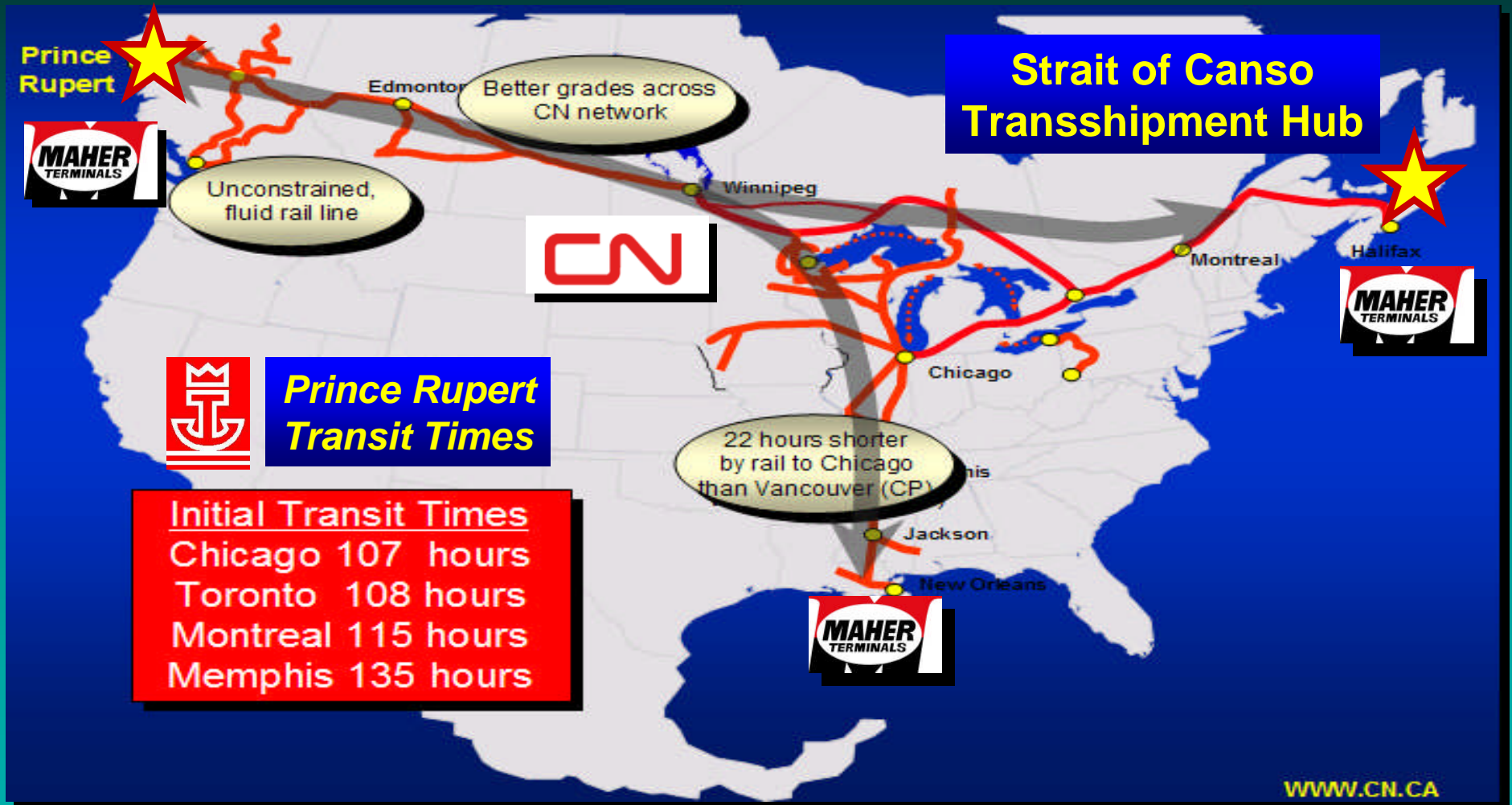
the new world port

opening a new world of opportunity

Prince Rupert
2 Million TEUs



The 2006 Emerging CN Transcontinental Land Bridge – Completed 2011



Canada's Transcontinental Asian Import Land Bridge

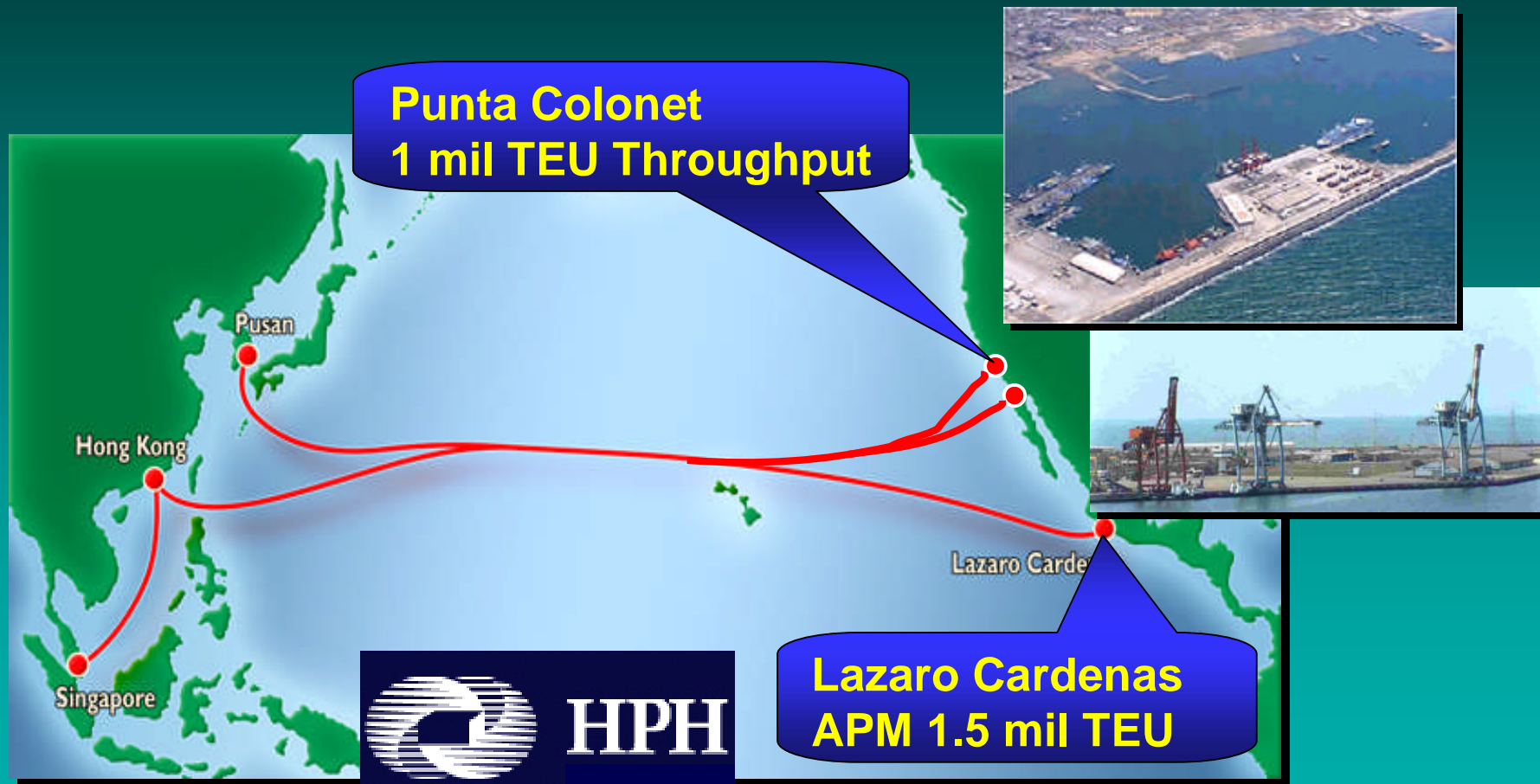


Straits of Canso

Port of Prince Rupert

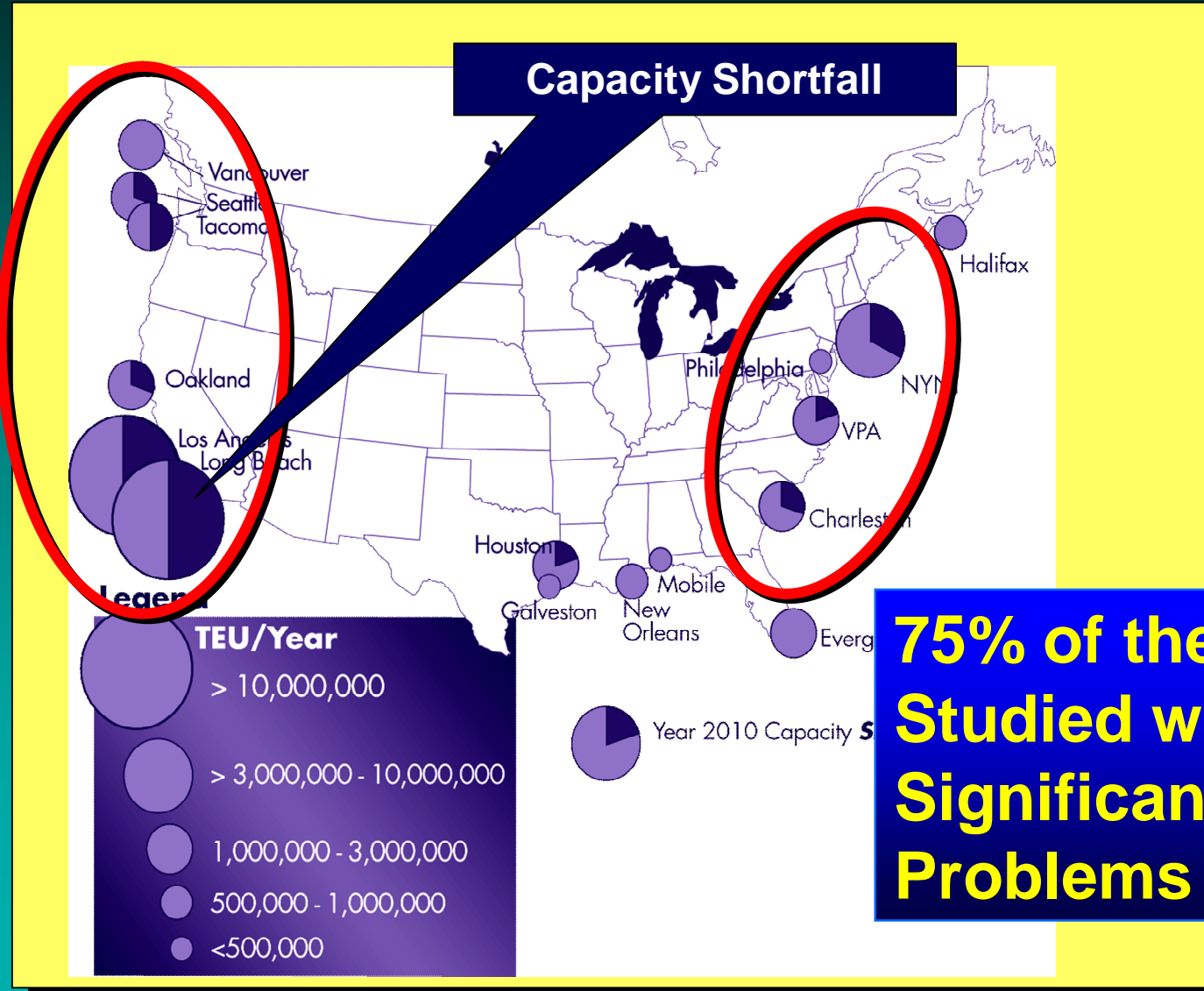


2012 Major West Coast Mexican Port Developments Planned To Avoid Port of LA/LB Congestion

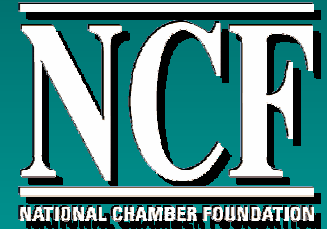


\$1.2 Billion in Port Infrastructure

2010 Projected Public Port Capacity Shortfall Came True !



75% of the 16 Ports Studied will have Significant Capacity Problems by 2010



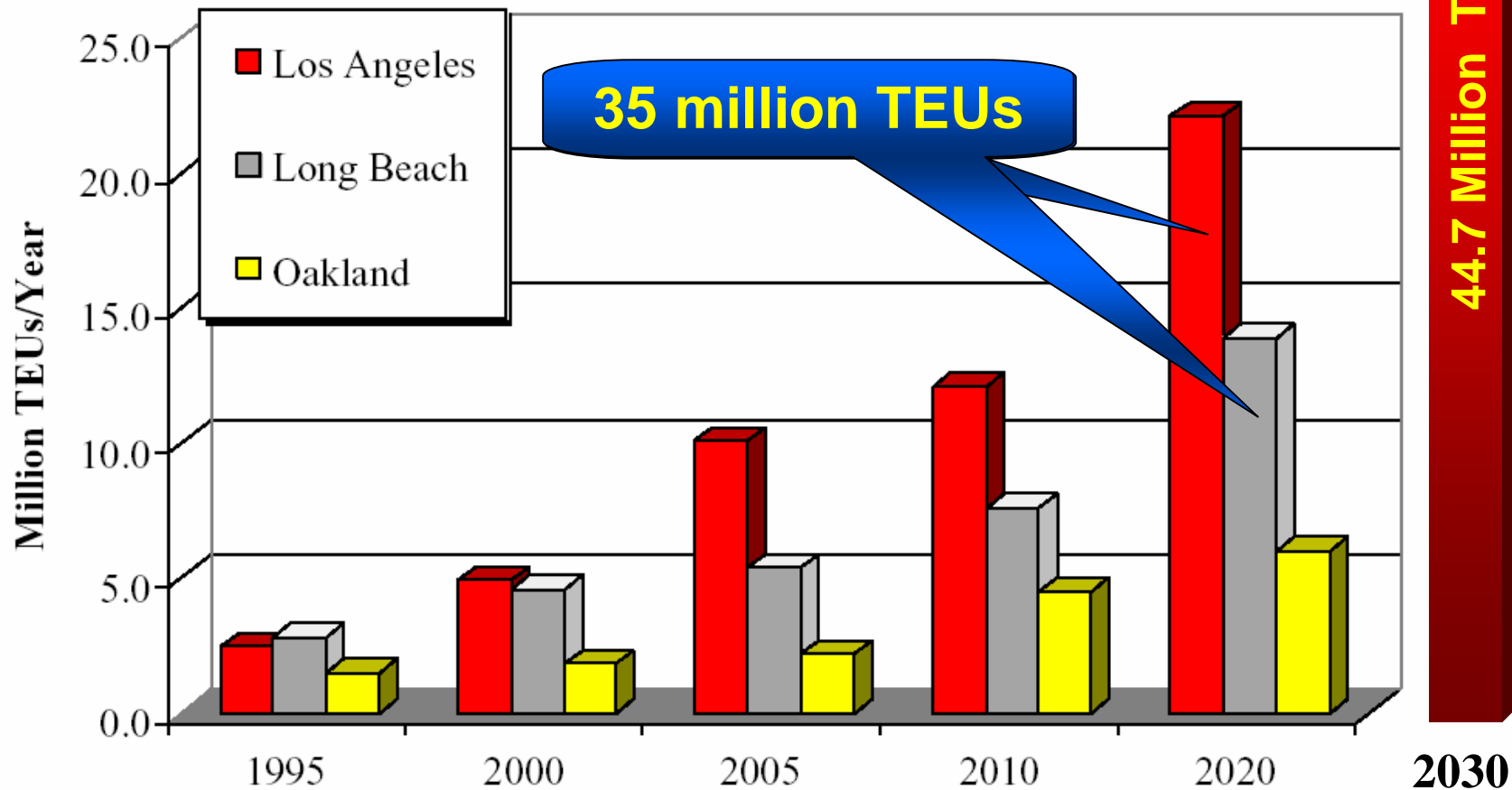
2006 North American Maritime Container Current and Future Trade Growth



(TEUs in thousands)

2004
2020

The Explosive Southern California Port Container Growth Continues

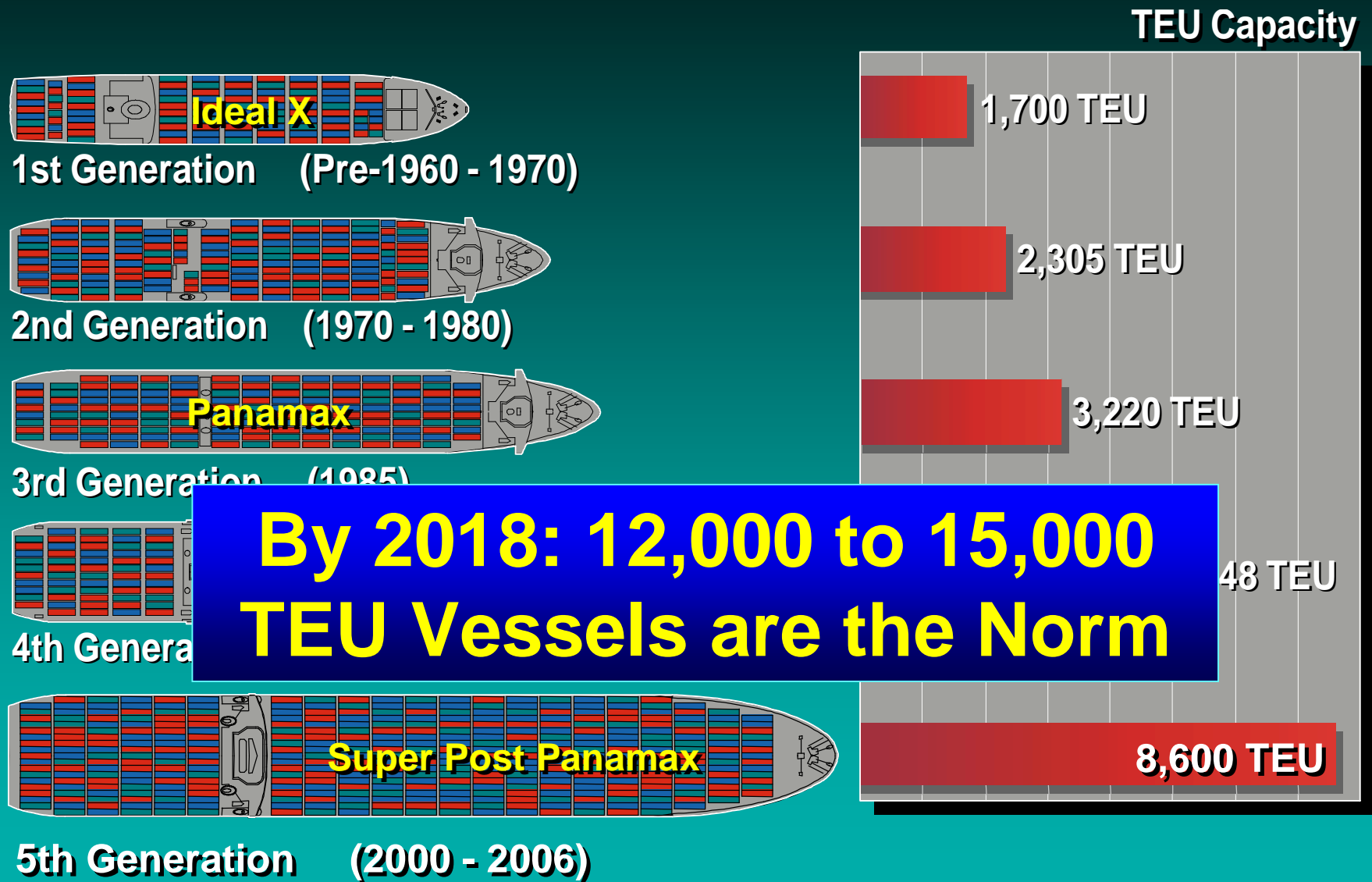


Source: California Goods Movement Action Plan – Jan 2005 Draft

The background of the slide is a futuristic, high-tech scene. It features a dark, grid-like structure in the foreground, possibly representing a data network or a digital landscape. In the upper right, there is a large, glowing, reddish-orange sphere, resembling a planet or a satellite. The overall color palette is dominated by deep blues, purples, and oranges, creating a sense of advanced technology and innovation.

Maritime Vessel Technology Trends

World Container Ship Evolution Up To 2005



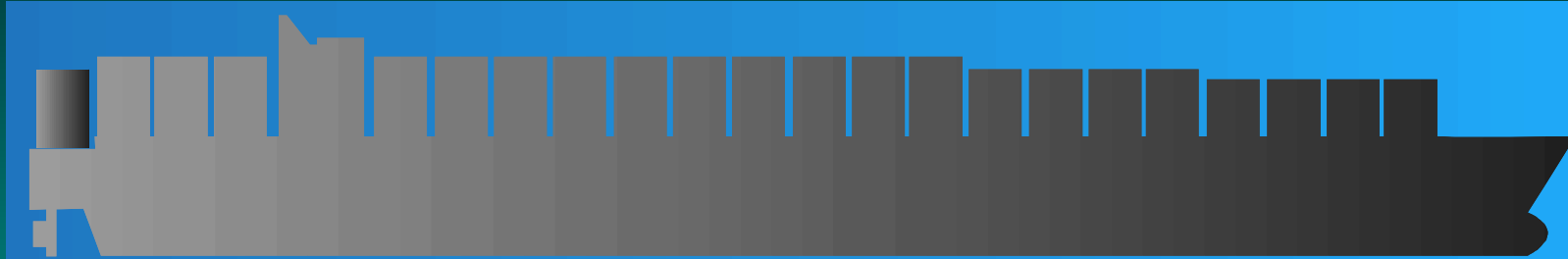
2005 COSCO Orders Four 10,000 TEU Vessels



LENGTH OVERALL	349 M (1145 FT.)
BREADTH	45.6 M (149.6 FT.)
MAX. DRAFT	17.2 M (56.4 FT.)
OPERATING SPEED	25.8 KNOTS

Source: Lloyd's Register, February 2005

By 2015 the 18,000 TEU Malaccamax



- Asia-Europe Trade Route
- **30% Cheaper** than 4800 TEU Panamax Vessel, primarily due to “Economies of Scale”
- US\$40/TEU Savings

Source: Dynamar Consultancy, Rotterdam

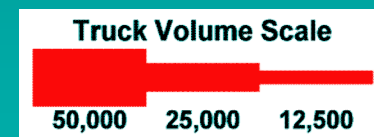
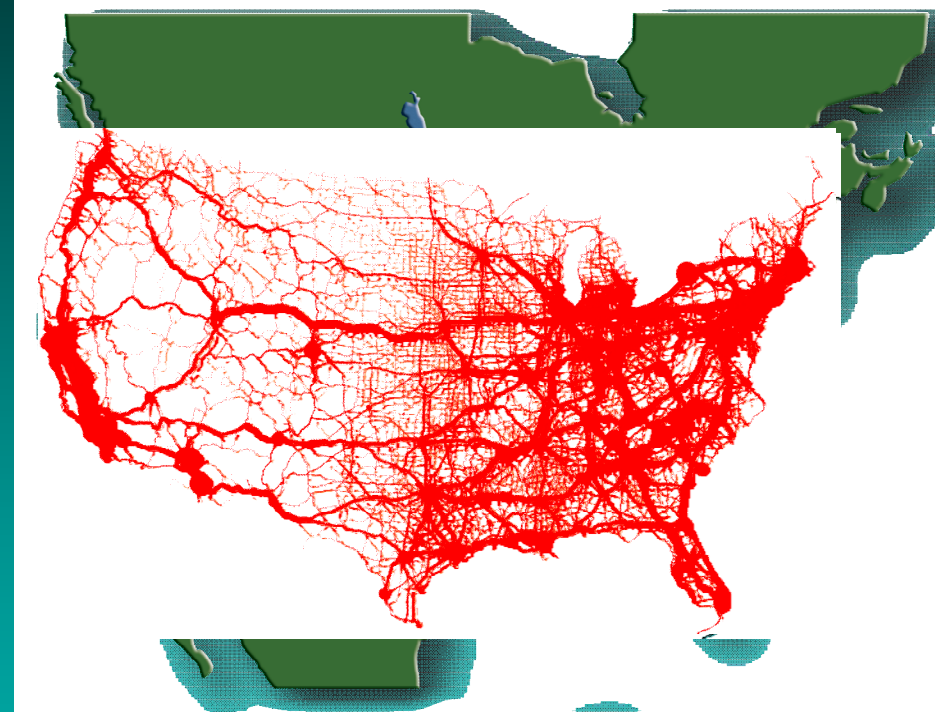
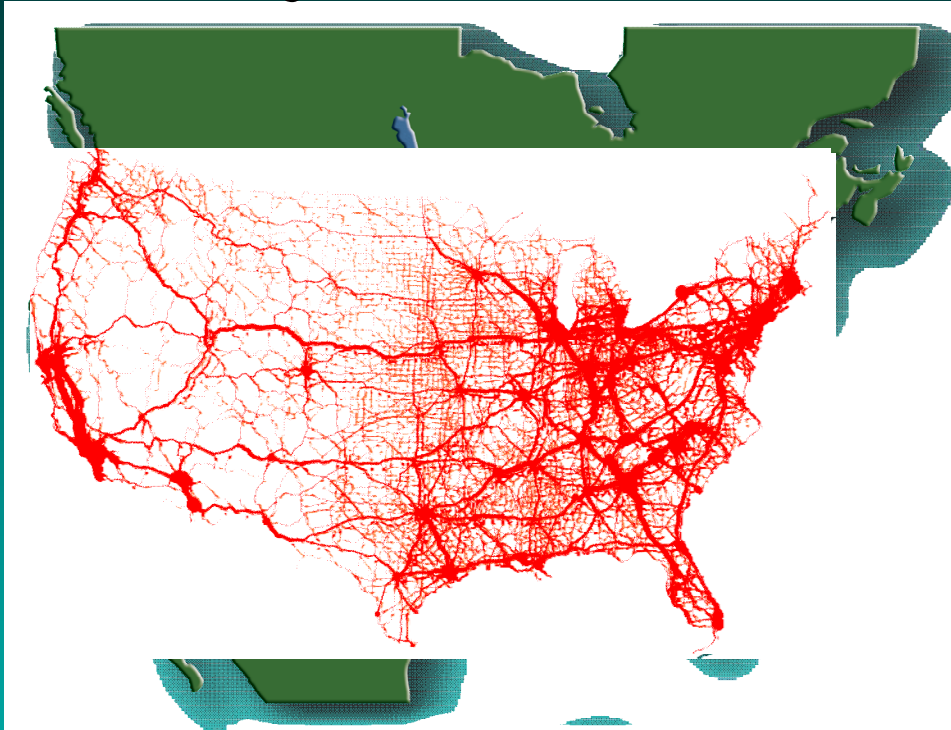
An aerial photograph of a city at sunset, with a network of red lines overlaid on the streets, suggesting a transportation or logistics system. The sun is low on the horizon, casting a warm glow over the city.

North American Domestic Truck Growth and Congestion

Future US Truck Traffic Growth

Today

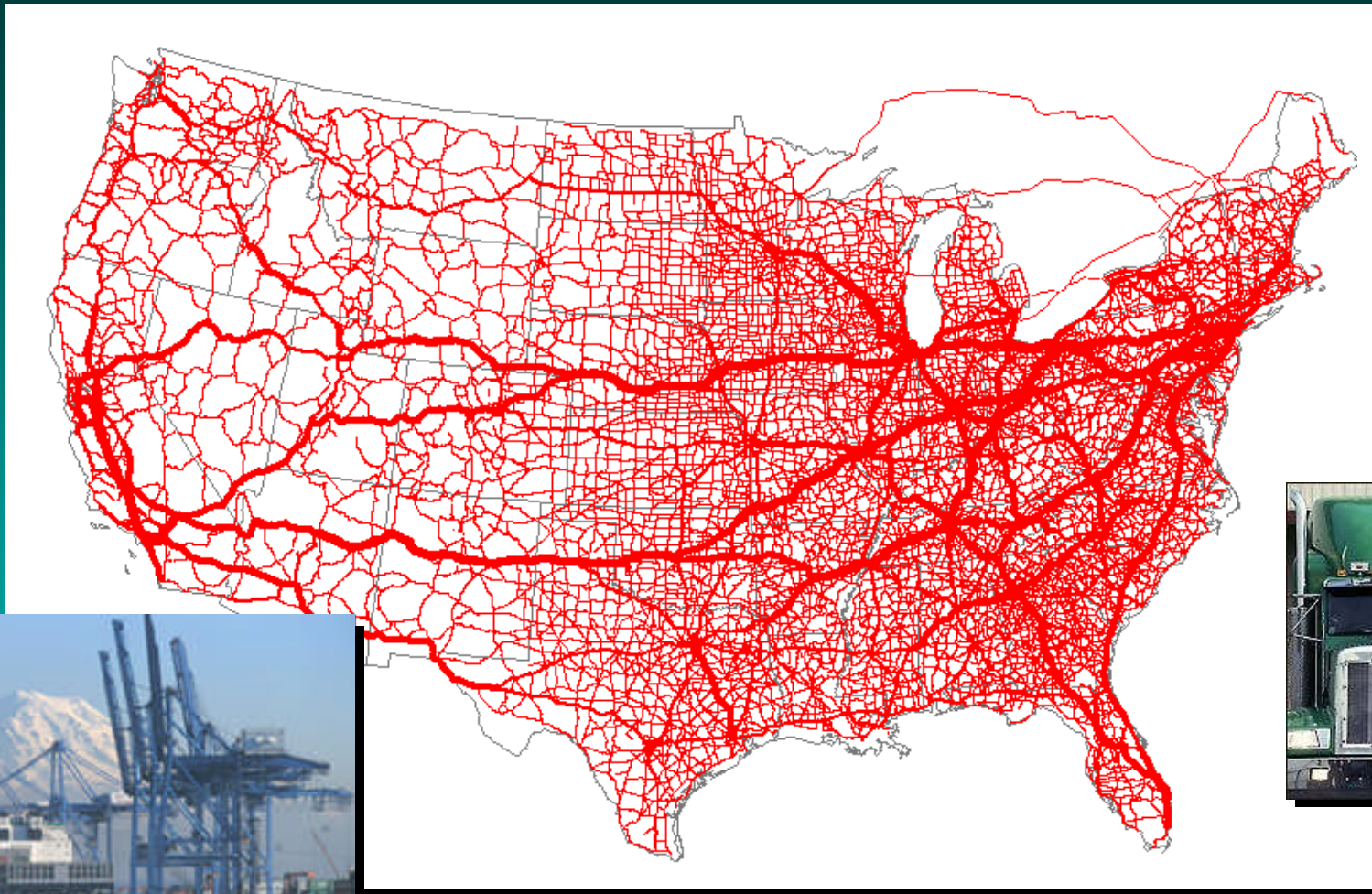
2020




Source: USDOT FHWA Freight Analysis Framework

2020 Truck Freight Flows

High-Value & Time Sensitive Products



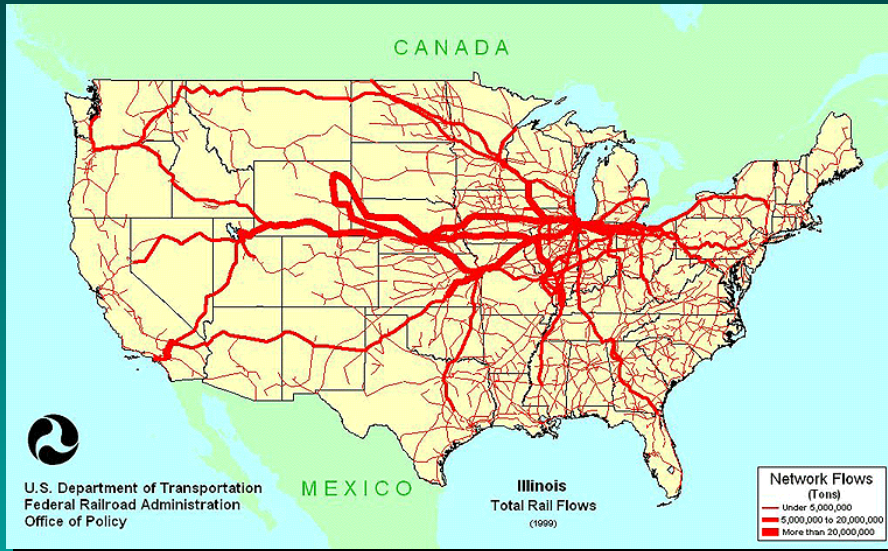
Source: USDOT FHWA Freight Analysis Framework



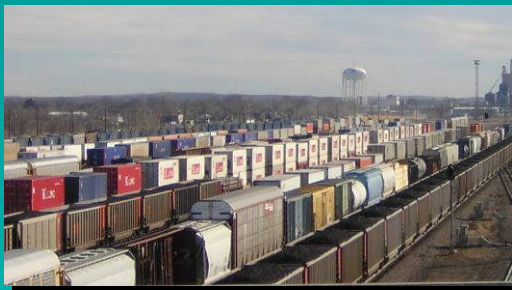
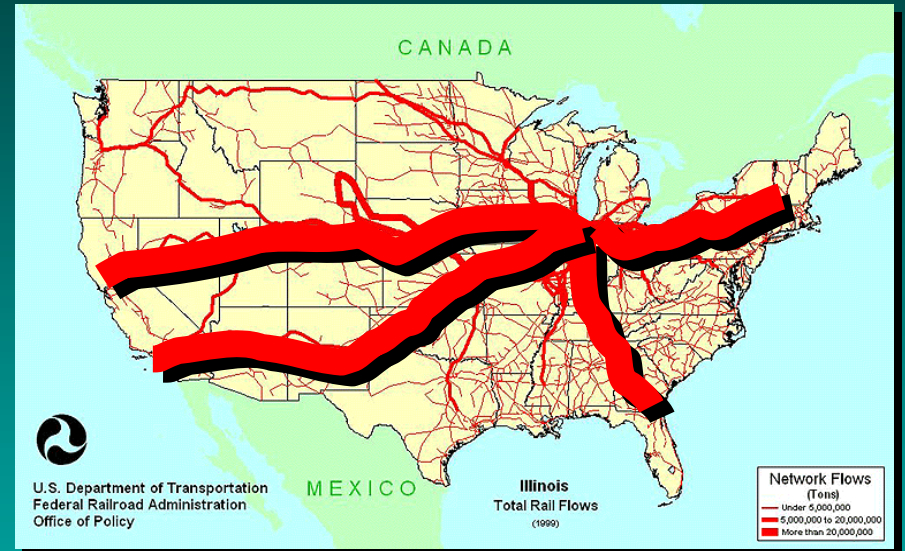
North American Class I Rail & Intermodal Growth

Future US Rail Traffic Flows

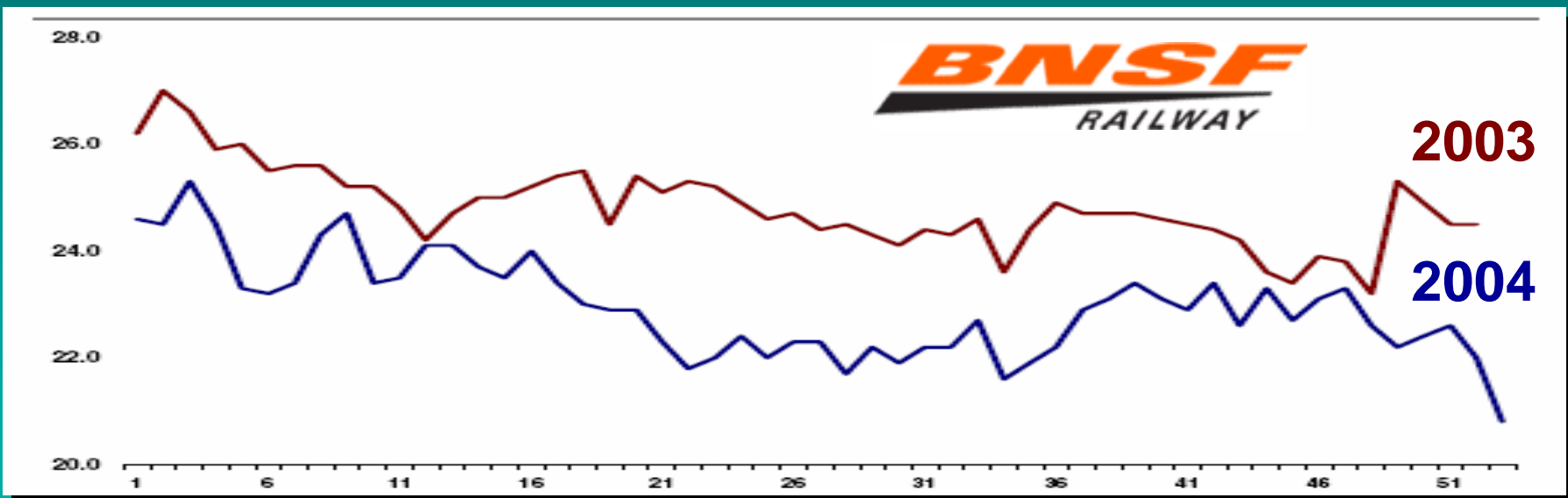
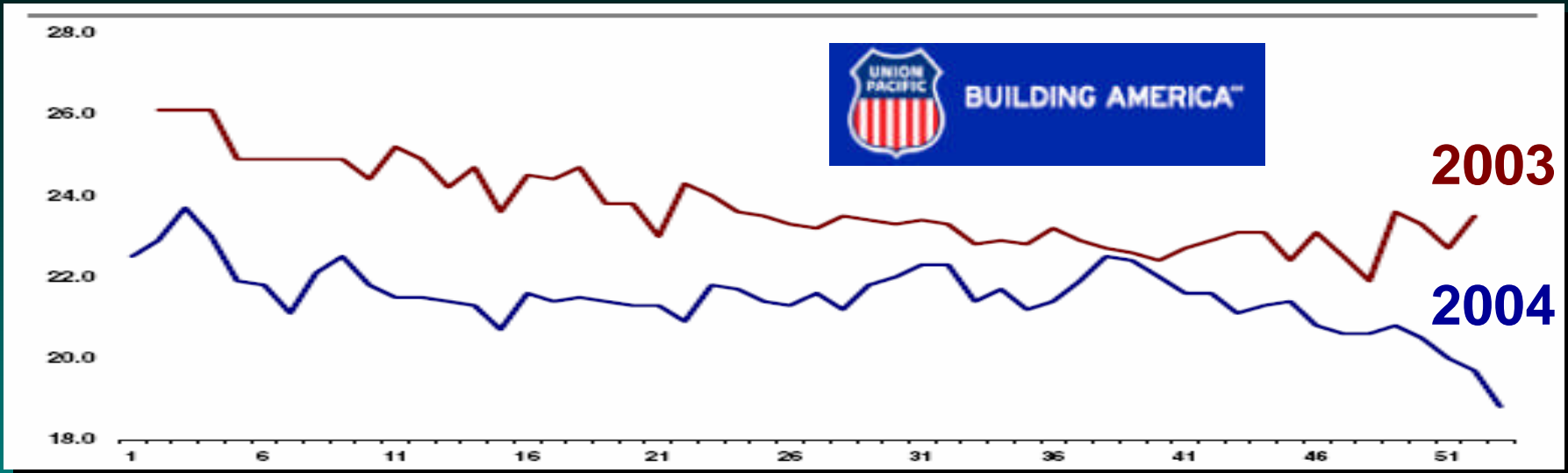
Today



2020



Deteriorating West Coast Rail Performance



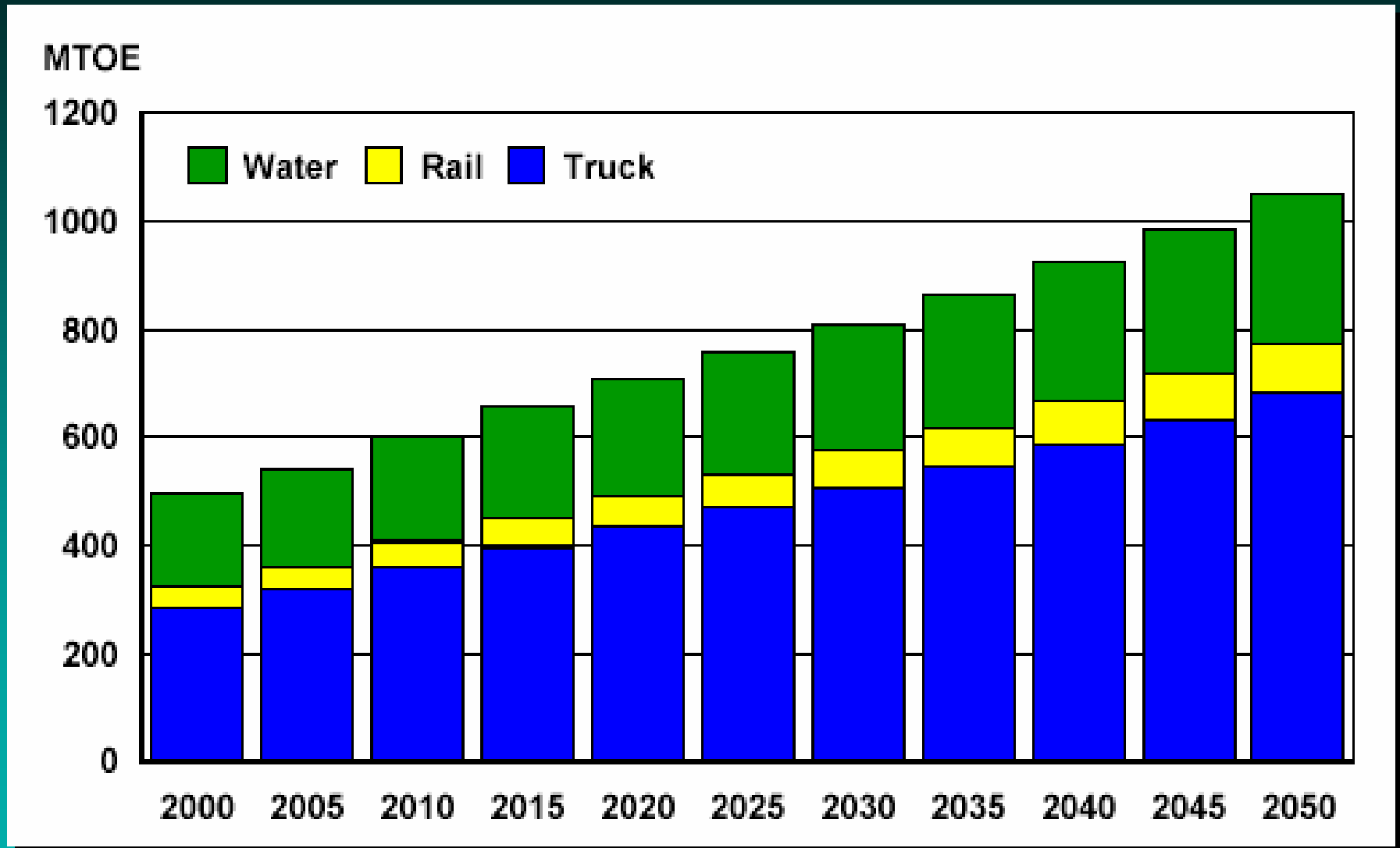
(Average Velocity - MPH)

Source: Credit Suisse First Boston

An aerial night view of a city with a prominent satellite dish in the foreground. The city lights are visible, and the sky is dark with a large satellite dish in the upper right. The text is overlaid in large, bold, yellow letters with a black drop shadow.

Environmental Concerns for Marine Vessel Emissions Continues

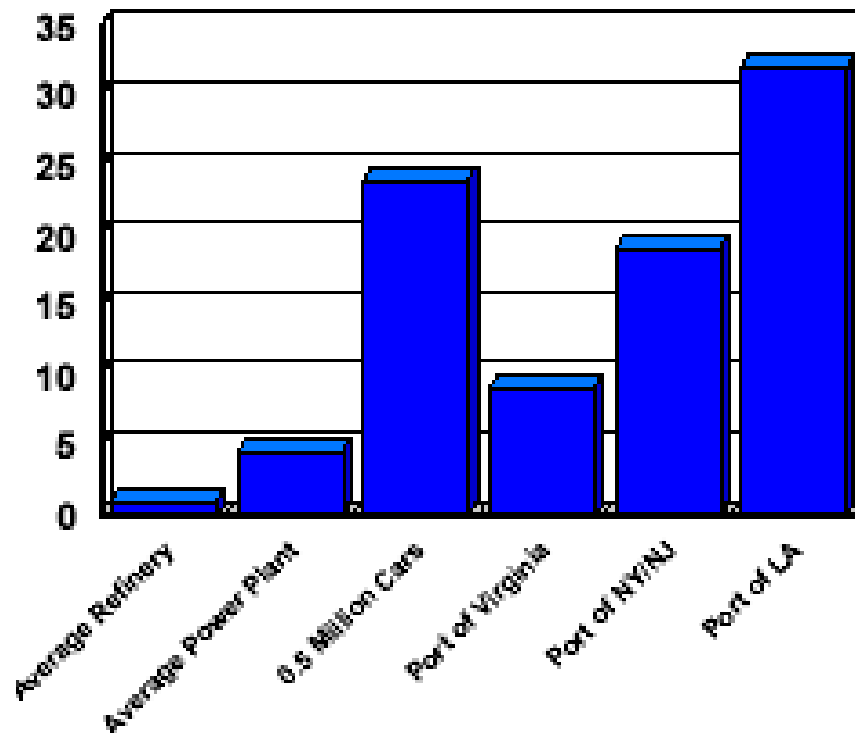
Global Freight Energy Use is on the Rise



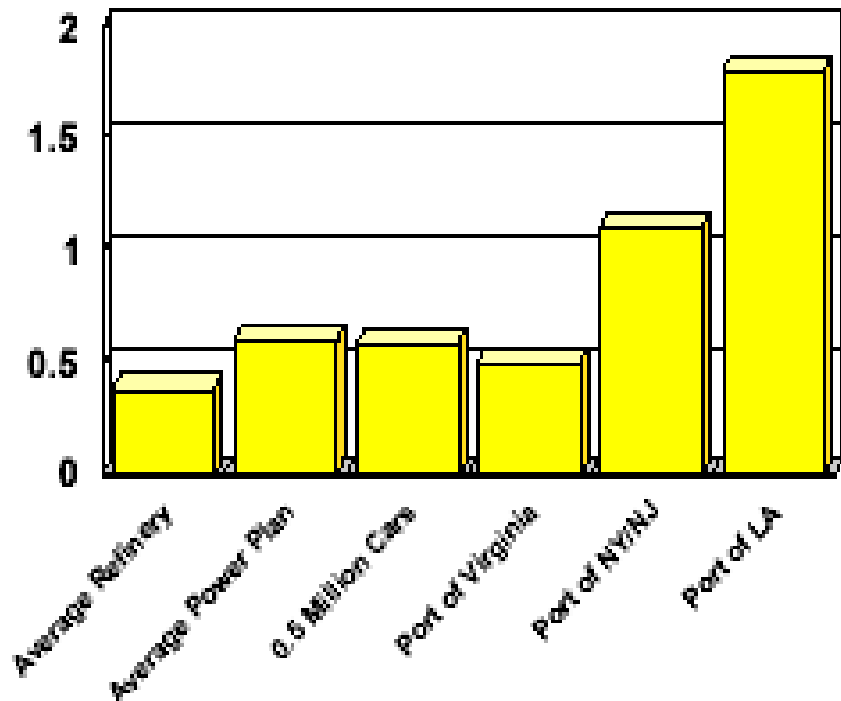
Source: 2005 Haagen Smit Worldwide Emissions Overview & NRDC "Harboring Pollution"

2006 Pollution Sources US Ports vs Other Industries...

NOx Emissions
Tons per day



PM10 Emissions
Tons per day



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

In 2006 Transportation Diesel Pollutants Put Our Health in Jeopardy



Diesel PM

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



Source: SCAQMD, Multiple Air Toxics Exposure Study II, March 2000

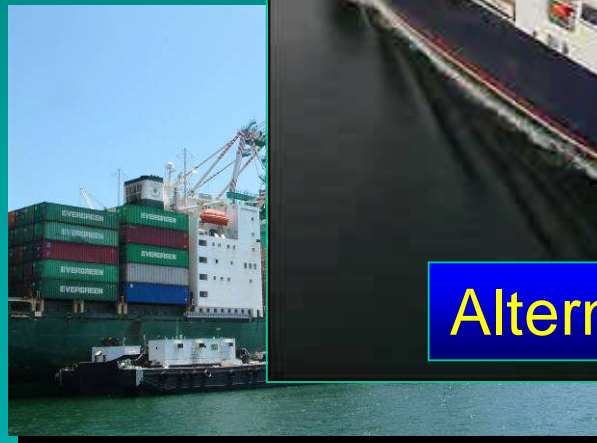
Cost-Effective Air Quality Emission Reduction Improvement Measures

**Modernize truck fleet:
Scrap dirty old trucks
Retrofit all other pre-2007 trucks**



Upgrade all cargo handling equipment with electric equipment or clean fuels

**Use clean marine fuels
Provide onshore electric power for ships at berth (Cold Iron)**



Short Sea Shipping



Alternative

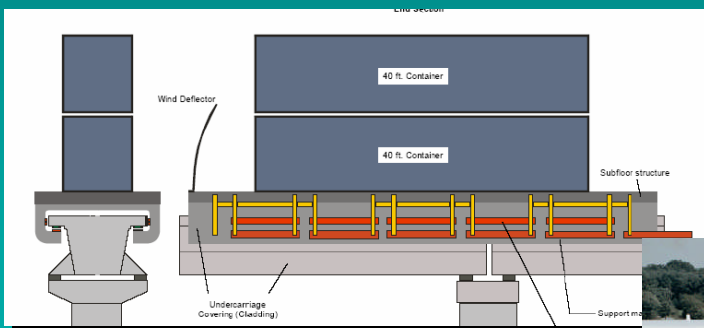
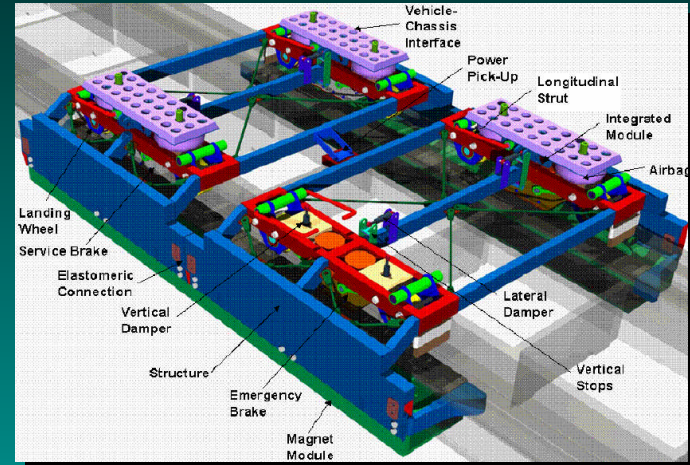
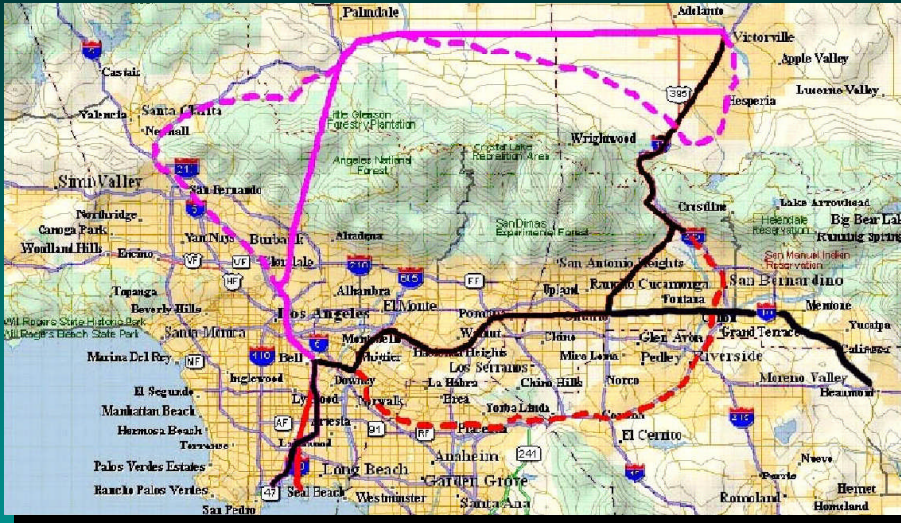


Replace locomotives with cleaner technologies, fuels, and explore rail electrification

Source: Southern California Association of Governments



MAGLEV Cargo Conveyor 2025 Demonstration Project



**Transrapid Freight
Vehicle Concept**



Copyright © 2006

Port Competitive Mandates 2006 or 2026

- Ports & intermodal linkages must change the current **cost** versus **value** relationship in the logistics chain. **Become Value Added Multipliers...**
- Successful ports & intermodal terminals in the next decade must **invest in and leverage technology** to improve terminal productivity, cost, effectiveness and reliability for all modes of transportation...**securely as environmental stewards.**

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THANK YOU

M. John Vickerman



Norfolk, Virginia