



THE EXPANDED PANAMA CANAL AND ITS IMPACT ON TRADE

2017.02.17

Jorge L. Quijano
Administrator



 CANAL DE PANAMÁ

Content

★ **Expansion?**

★ **Panama Canal Expansion Program**

★ **Impact of the Canal's Expansion**

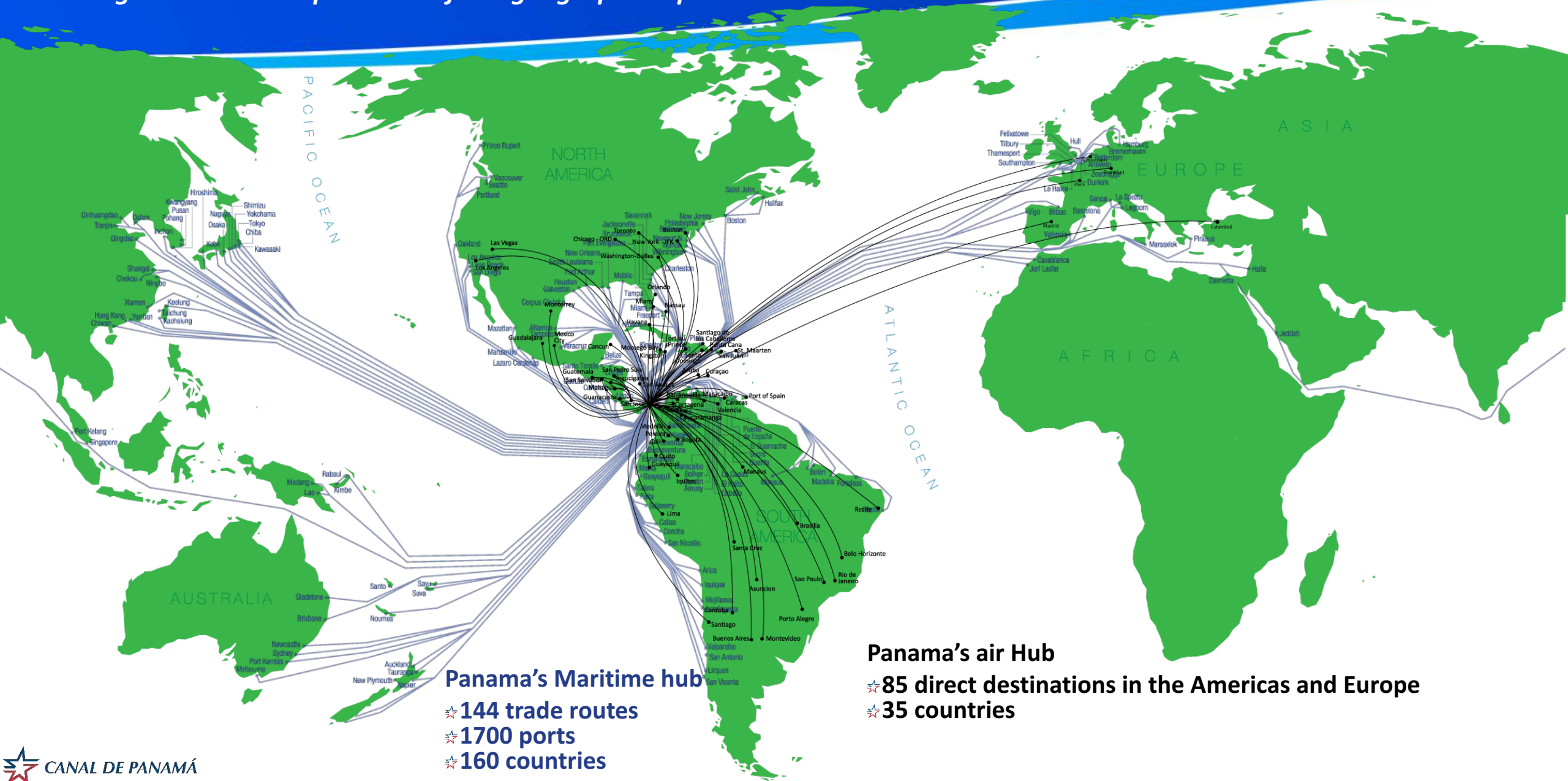
★ **Diversification Strategy**

★ **Canal Expansion Performance**

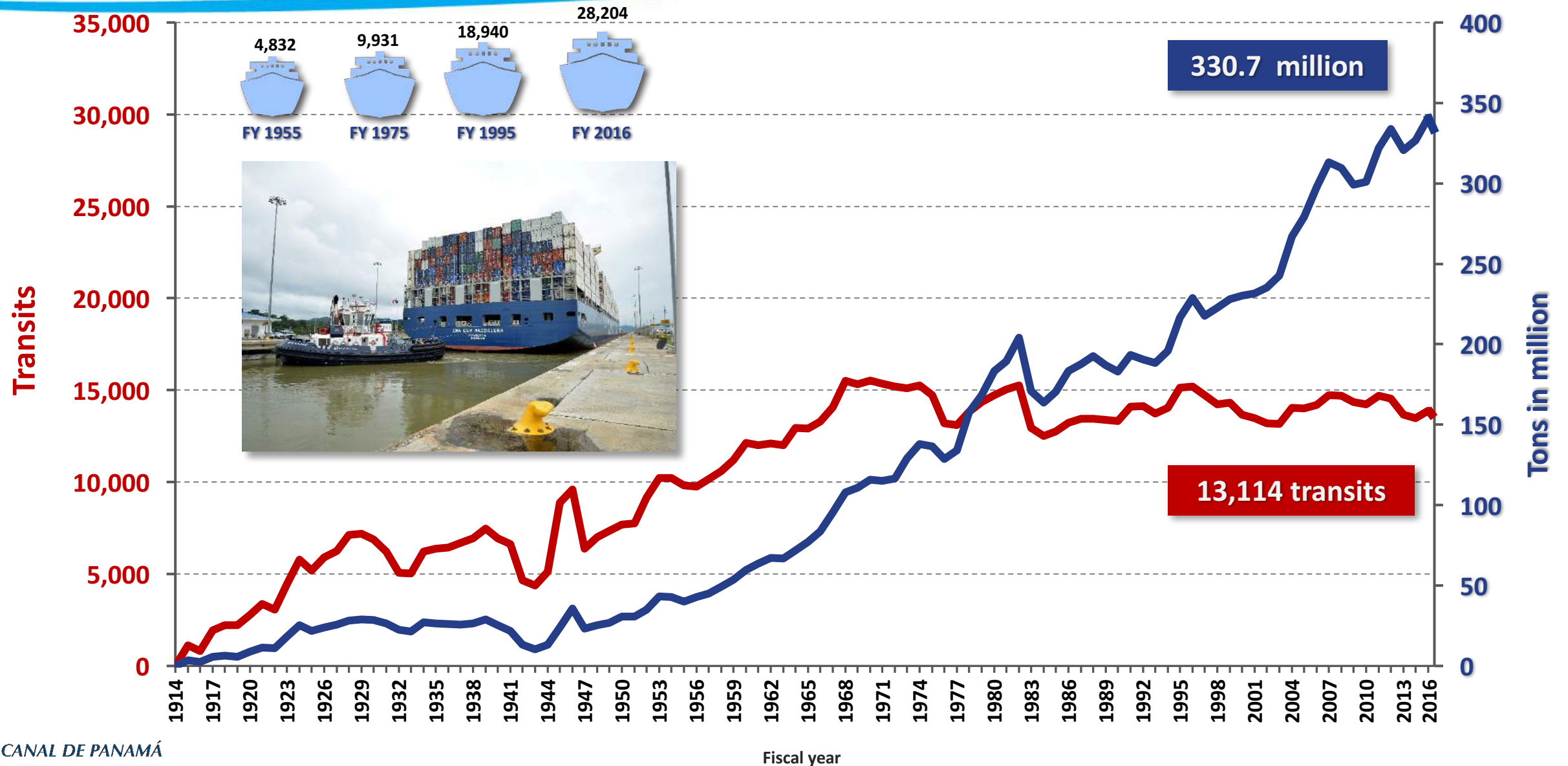


Panama: The Transportation and Logistics Hub of the Americas

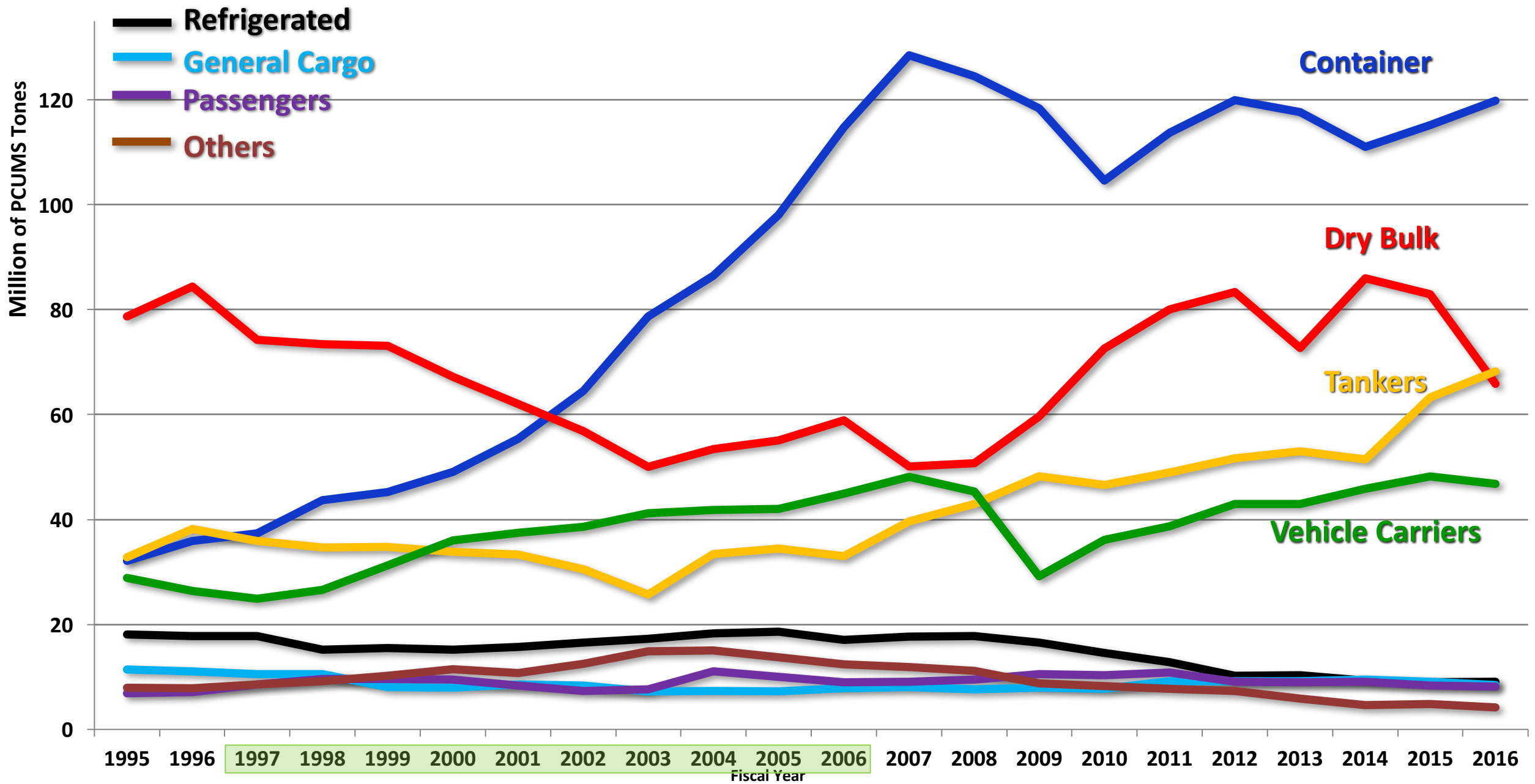
Achieving the maximum potential of our geographical position



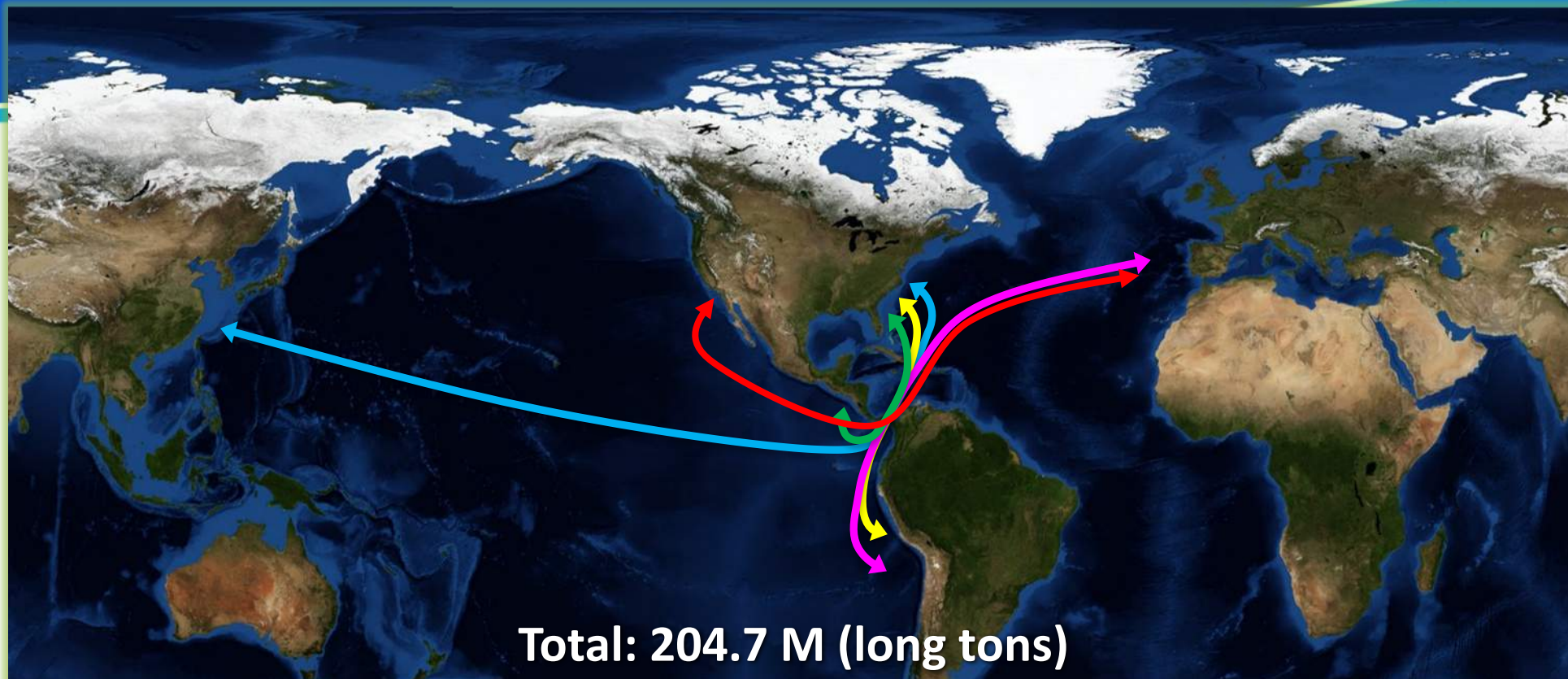
Transits and PC/UMS Tons



PCUMS Tonnage by Market Segment



Main Routes – FY 2016



Asia – U.S. East Coast		104.8M	51.2%
West coast South America- U.S. East Coast		35.9M	17.5%
West coast South America- Europe		21.8M	10.6%
West coast Cetral America - U.S. East Coast		16.0M	7.8%
Europe – U.S. & Canada west coast		12.3M	6.0%

Panama Canal Trade and Main Users



Total Cargo Movement FY 2016

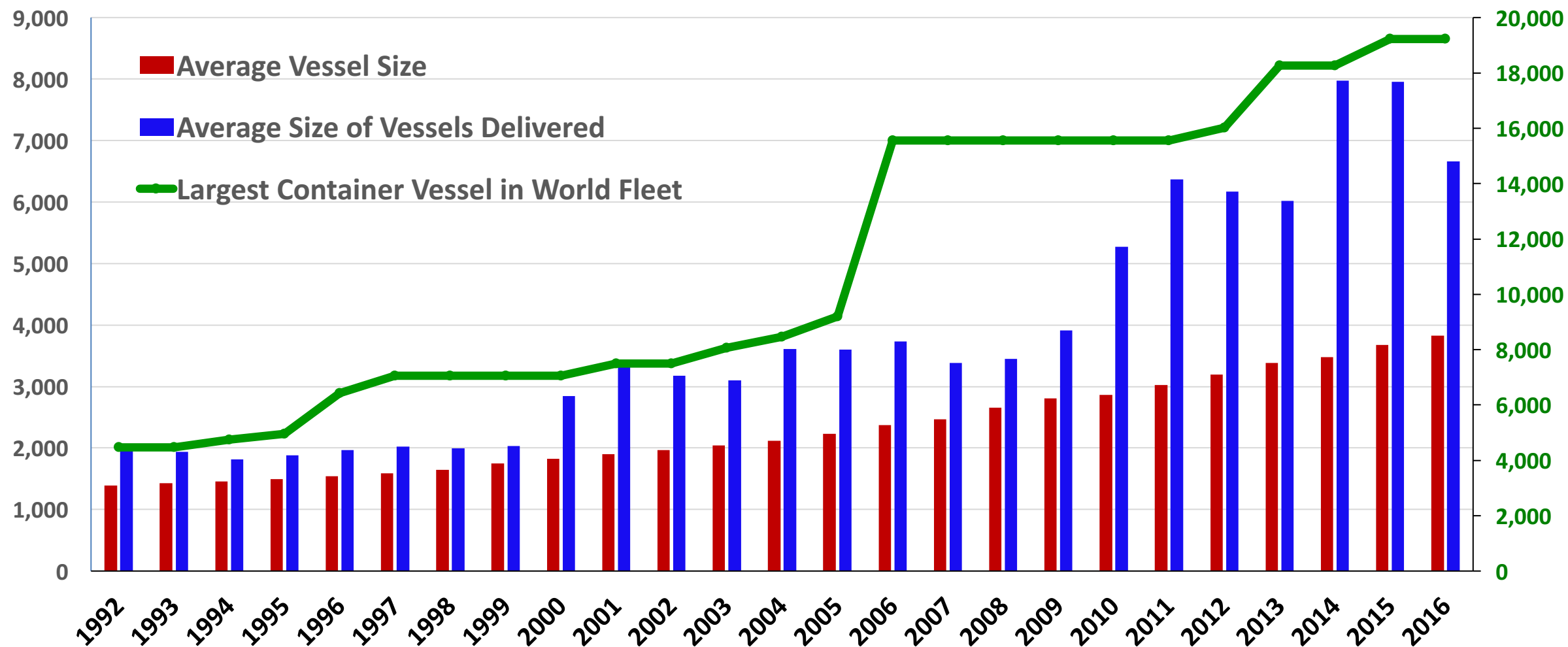
USERS	FY 2015*	FY 2016*	2016 (%)
United States	162.9	140.9	68.8
China	49.5	38.7	18.9
Chile	29.5	25.3	12.4
Peru	18.8	19.4	9.5
Japan	22.9	19.0	9.3
South Korea	18.5	16.2	7.9

Total cargo movements of 204.6 million long tons

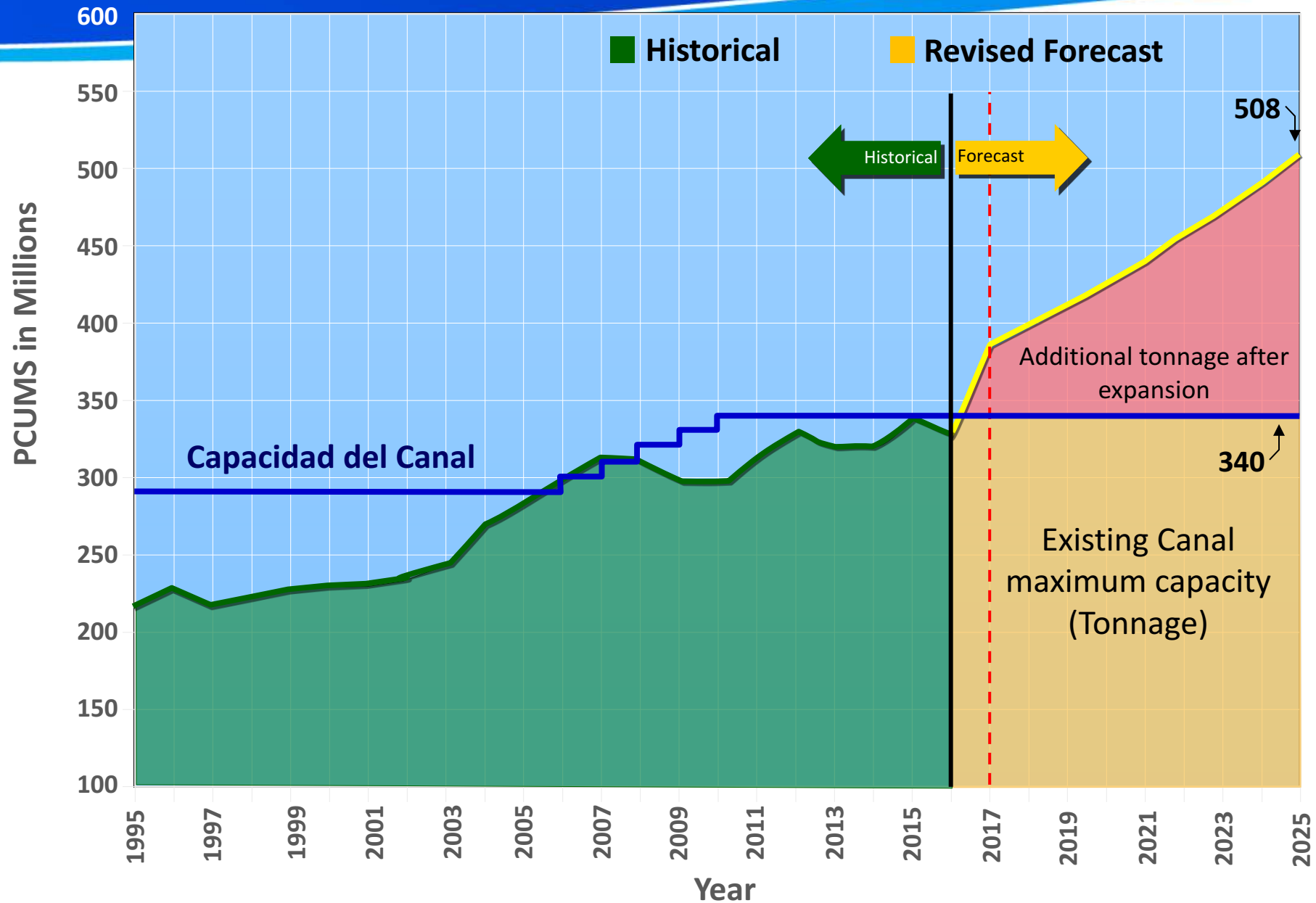
68.8 % of Canal cargo traffic originates in, or is destined to, the United States.

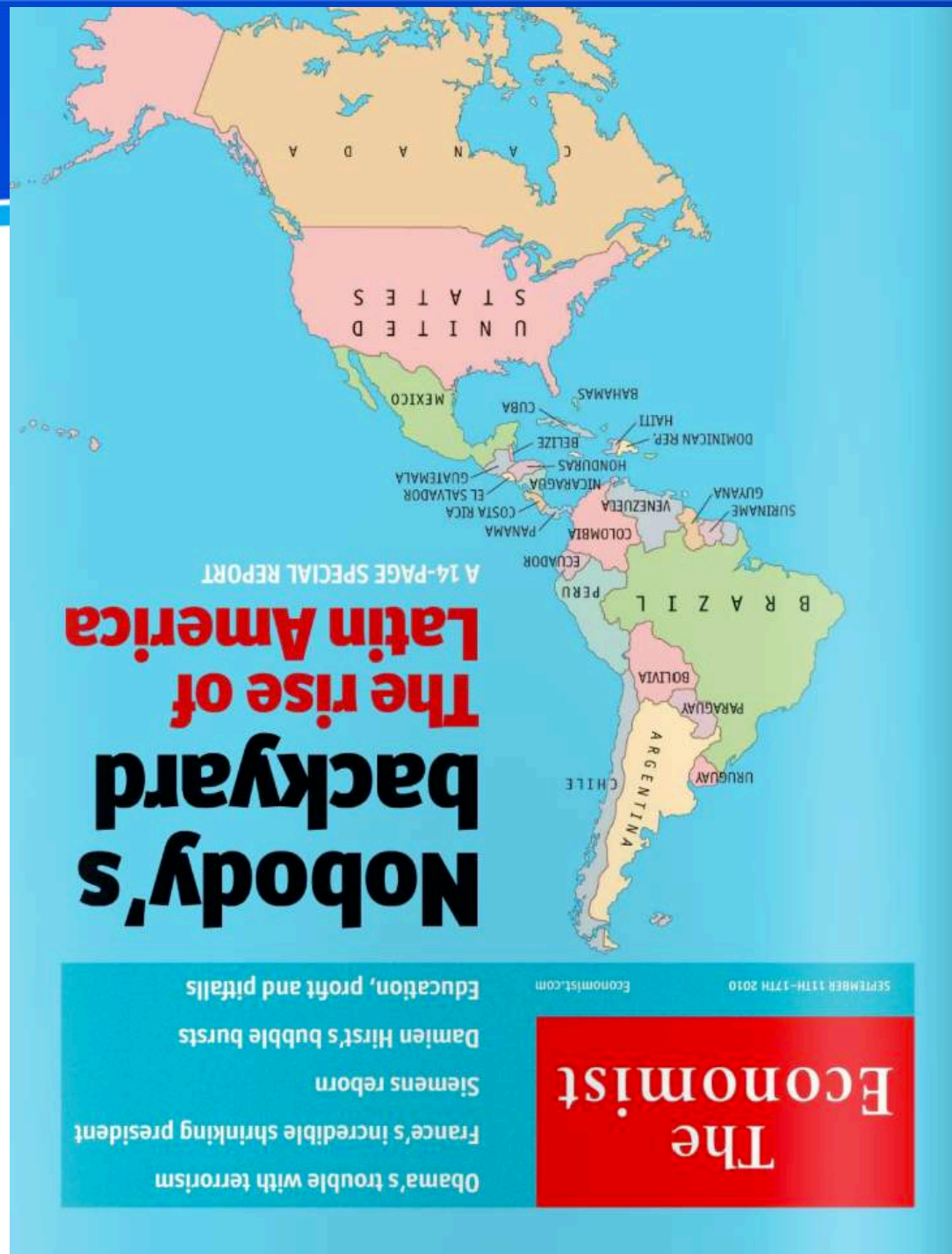
Global Fleet of Container Vessels in TEUs

Size Evolution 1992- 2016



Long Term Demand Forecast

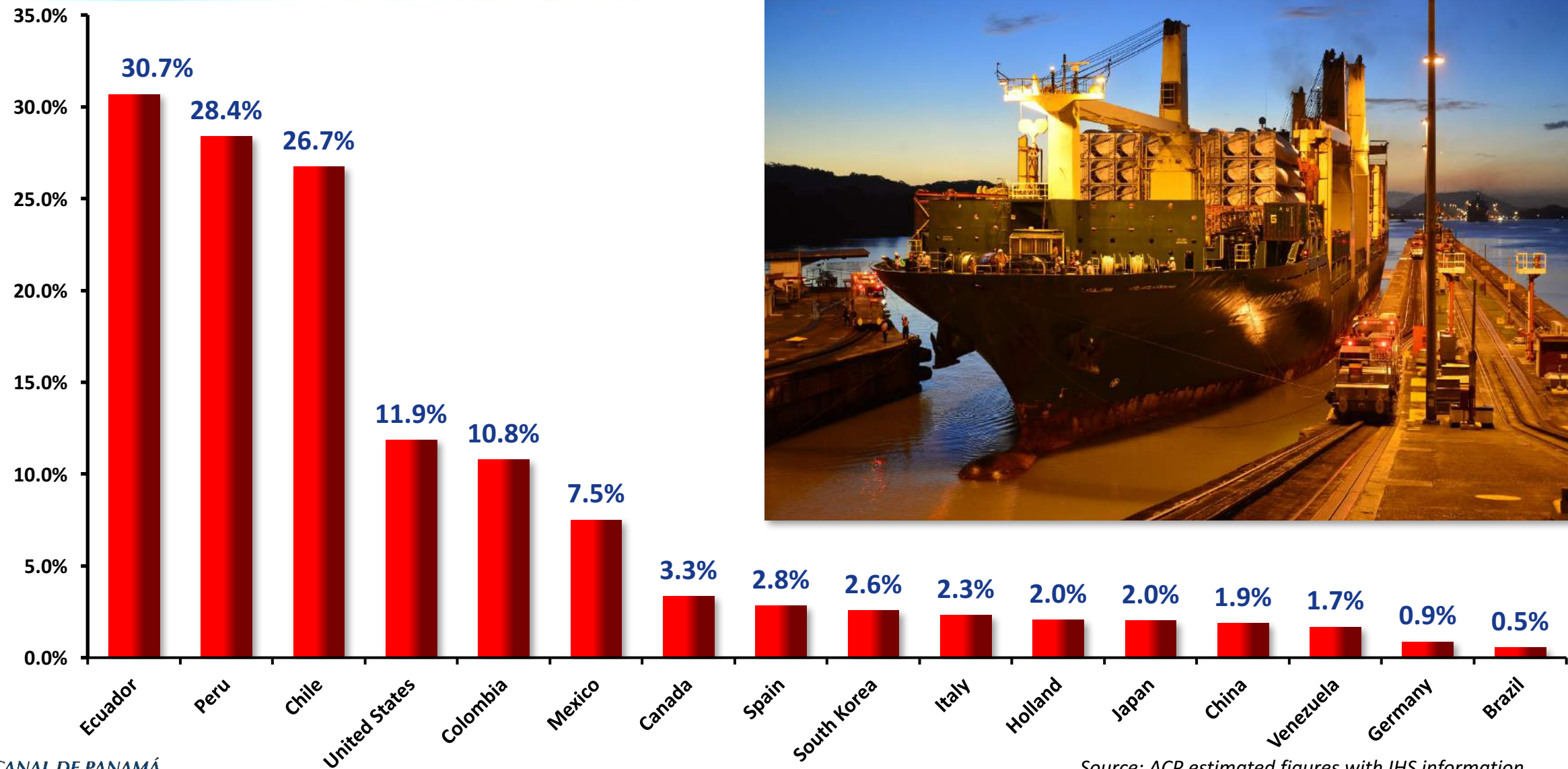




Latin American Population / Projected Growth - 2010-2030



Relative Importance of the Canal on the International Seaborne Trade of Selected Countries 2015



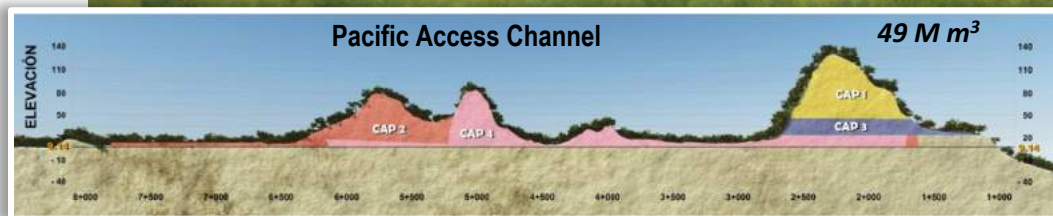
Content

✧ Expansion?

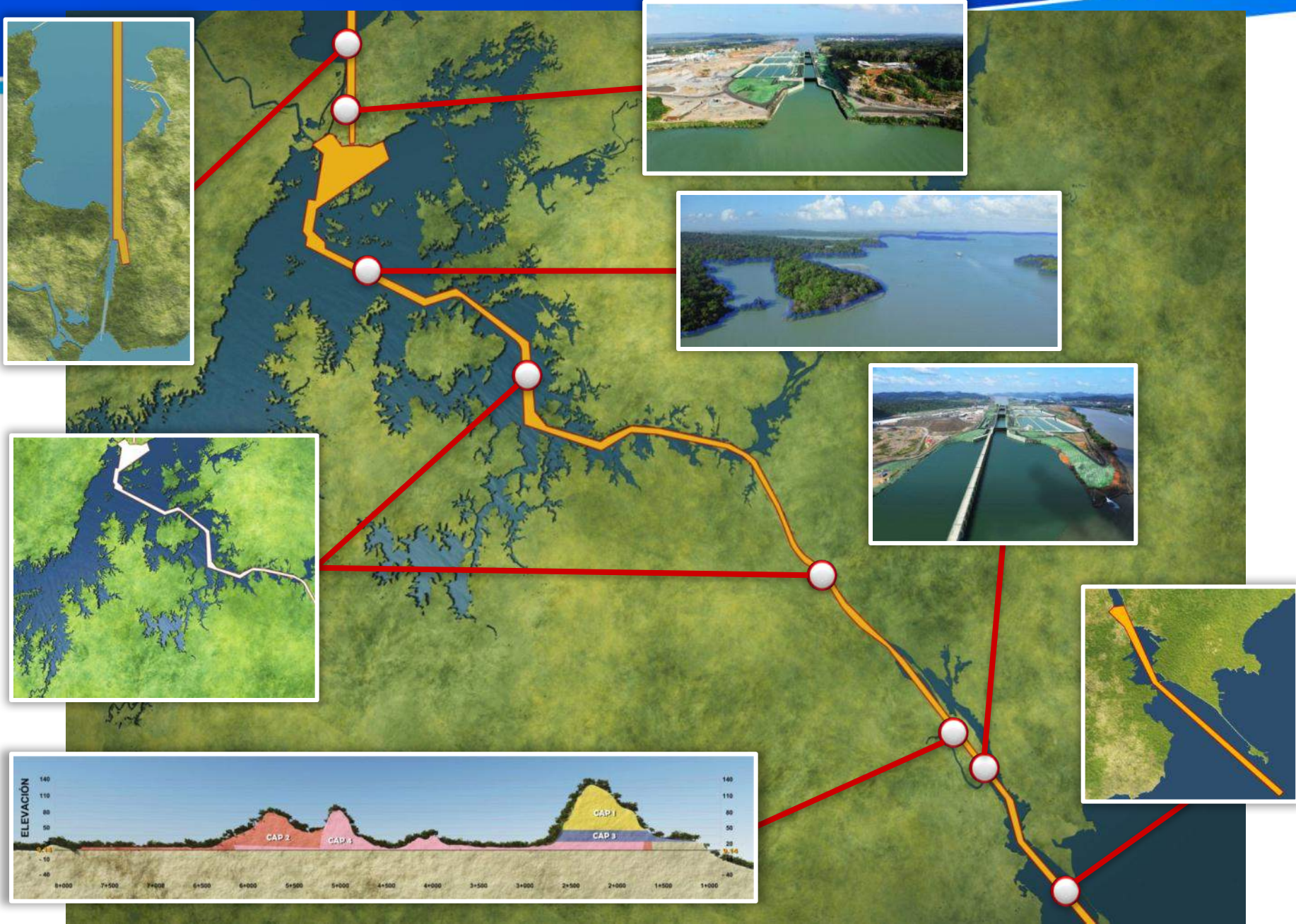
✧ Panama Canal Expansion Program



Program Components

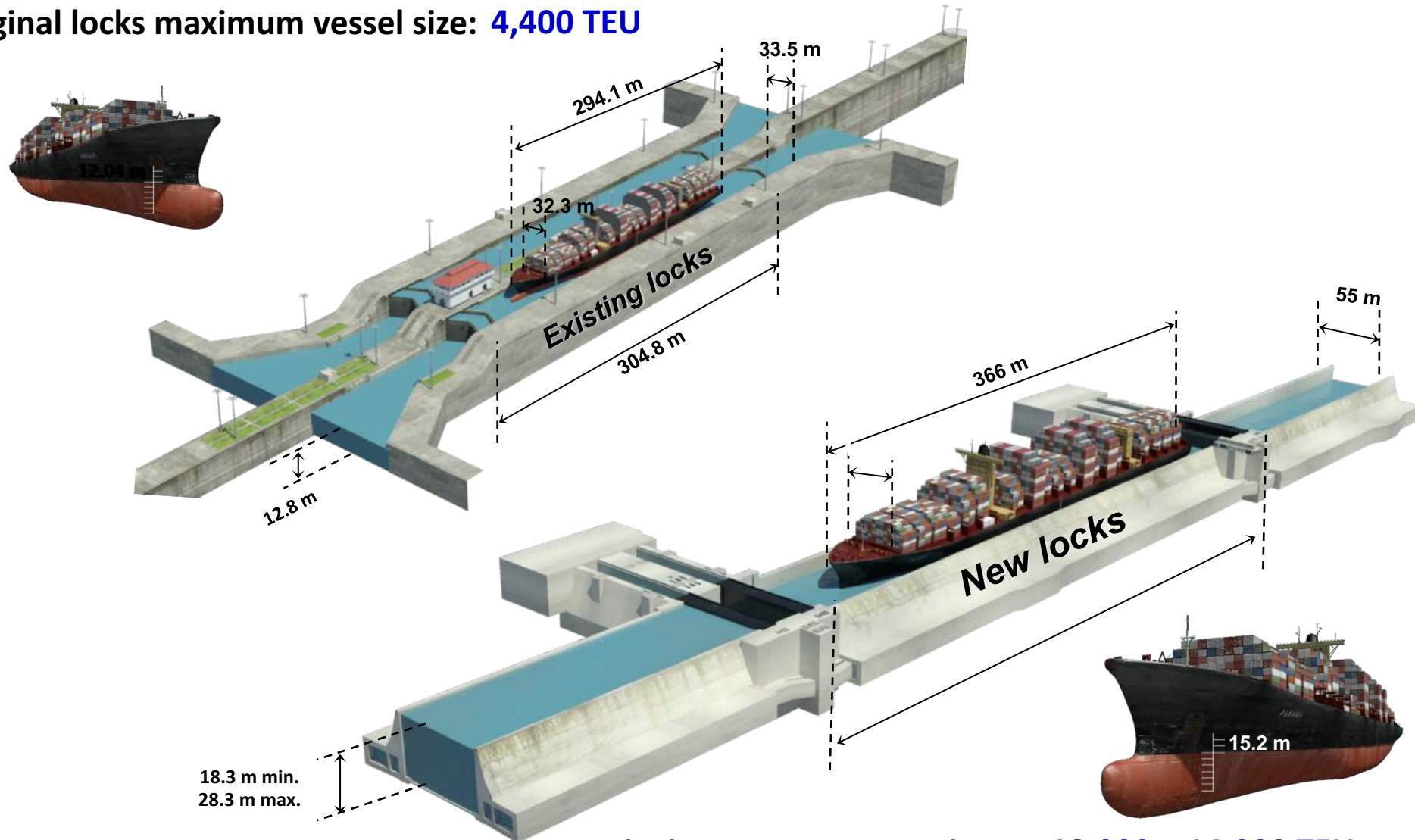


Program Components



Locks and vessels size

Original locks maximum vessel size: **4,400 TEU**



New locks maximum vessel size: **13,000 – 14,000 TEU**

★ PANAMA CANAL EXPANSION ★



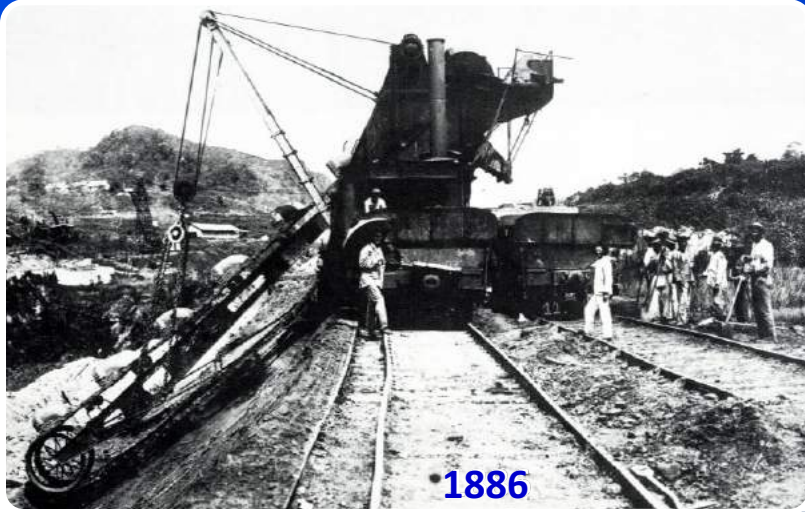
CANAL DE PANAMÁ

2011-2016



EarthCam

Volumes of excavation and dredging



Original

200

Current Expansion

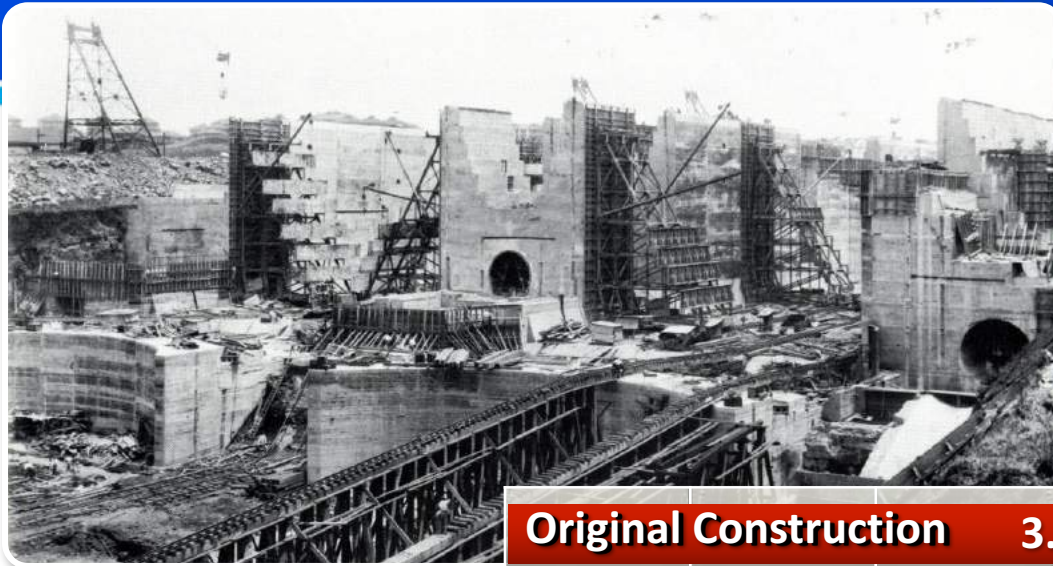
155

78%

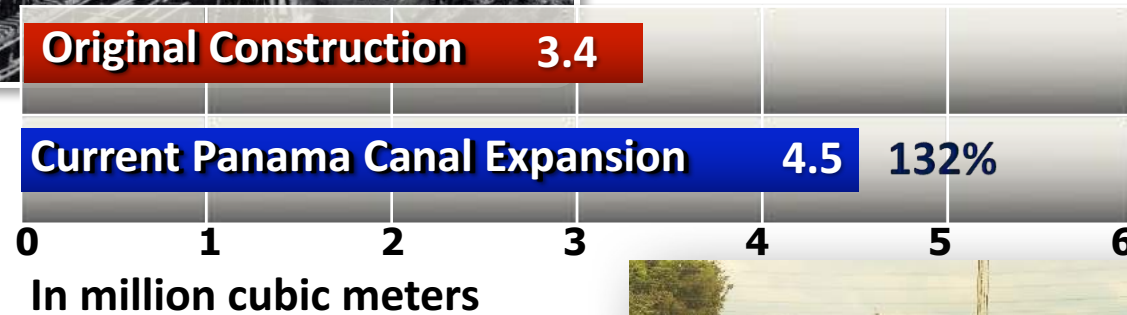
0 50 100 150 200 250
In million cubic meters



Volume of concrete for the construction of the Locks



◀ Original Locks



New Locks ▶



Expansion Works Direct Accumulated Workforce

Projects	Contractors	Subcontractors	Total
Pacific Access Channel Excavation– PAC1	475	214	689
Pacific Access Channel Excavation– PAC2	492	620	1,112
Pacific Access Channel Excavation– PAC3	345	577	922
Widening and Deepening of the North and Gatun Lake Reaches	185	226	411
Pacific Access Channel North Entrance	366	1,575	1,941
Dredging of the Pacific Entrance	817	520	1,337
Dredging of the Atlantic Entrance	636	416	1,052
Pacific Access Channel Excavation– CAP4	2,069	1,047	3,116
Design and Construction of the Third Set of Locks	14,580	9,872	24,452
Reforestation and Wildlife Rescue	1,345	0	1,345
Heavy equipment rental	244	0	244
Paleontological and archeological services	85	0	85
Other contracts	2,835	338	3,173
Subtotal	24,482	15,405	39,887
ACP			1,281
Total Direct Accumulated Workforce Projection			41,168



**Max Concurrent:
14,000 workers**

Workers from 80 countries participated

ALBANIA	ECUADOR	KOREA-SOUTH	SERBIA
ANGOLA	EL SALVADOR	LITHUANIA	SINGAPORE
ARGENTINA	ERITREA	MALAYSIA	SLOVAKIA
AUSTRALIA	FRANCE	MALTA	SLOVENIA
BAHAMAS	GAMBIA, THE	MEXICO	SOUTH AFRICA
BELGIUM	GERMANY	MOLDOVA	SPAIN
BOLIVIA	GHANA	MOROCCO	SWAZILAND
BOSNIA AND HERZEGOVINA	GREAT BRITAIN	NETHERLANDS	SWEDEN
BRAZIL	GUATEMALA	NICARAGUA	SWITZERLAND
BRITISH INDIAN OCEAN TERRITORY	HAITI	NORWAY	SYRIAN ARAB REPUBLIC
BULGARIA	HONDURAS	PAKISTAN	THAILAND
CAMEROON	HUNGARY	PANAMA	TURKEY
CANADA	ICELAND	PARAGUAY	UKRAINE
CHILE	INDIA	PERU	UNITED STATES
CHINA	IRAN	PHILIPPINES	URUGUAY
COLOMBIA	IRELAND	POLAND	UZBEKISTAN
COSTA RICA	ITALY	PORTUGAL	VATICAN CITY
CROATIA	JAMAICA	PUERTO RICO	VENEZUELA
CUBA	JAPAN	ROMANIA	ZIMBABWE
DOMINICAN REPUBLIC	KOREA-NORTH	RUSSIAN FEDERATION	

Inaugurations of the Panama Canal

15 of August 1914



Connected two Oceans

26 of June 2016



Connecting the present with the future

Expanded Panama Canal - 2017



Content

✧ Expansion?

✧ Panama Canal Expansion Program

✧ Impact of the Canal's Expansion

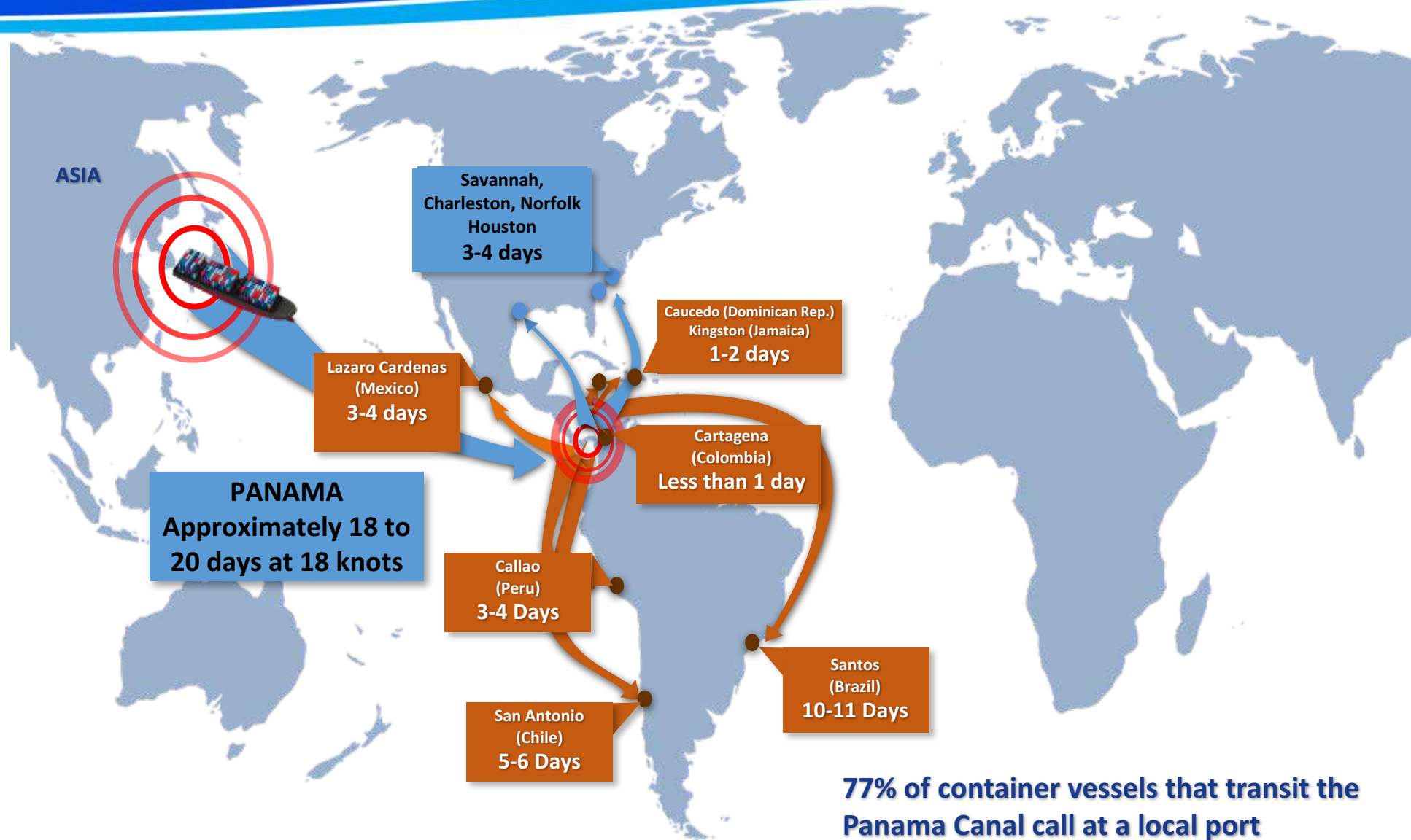


Impact of the Panama Canal Expansion

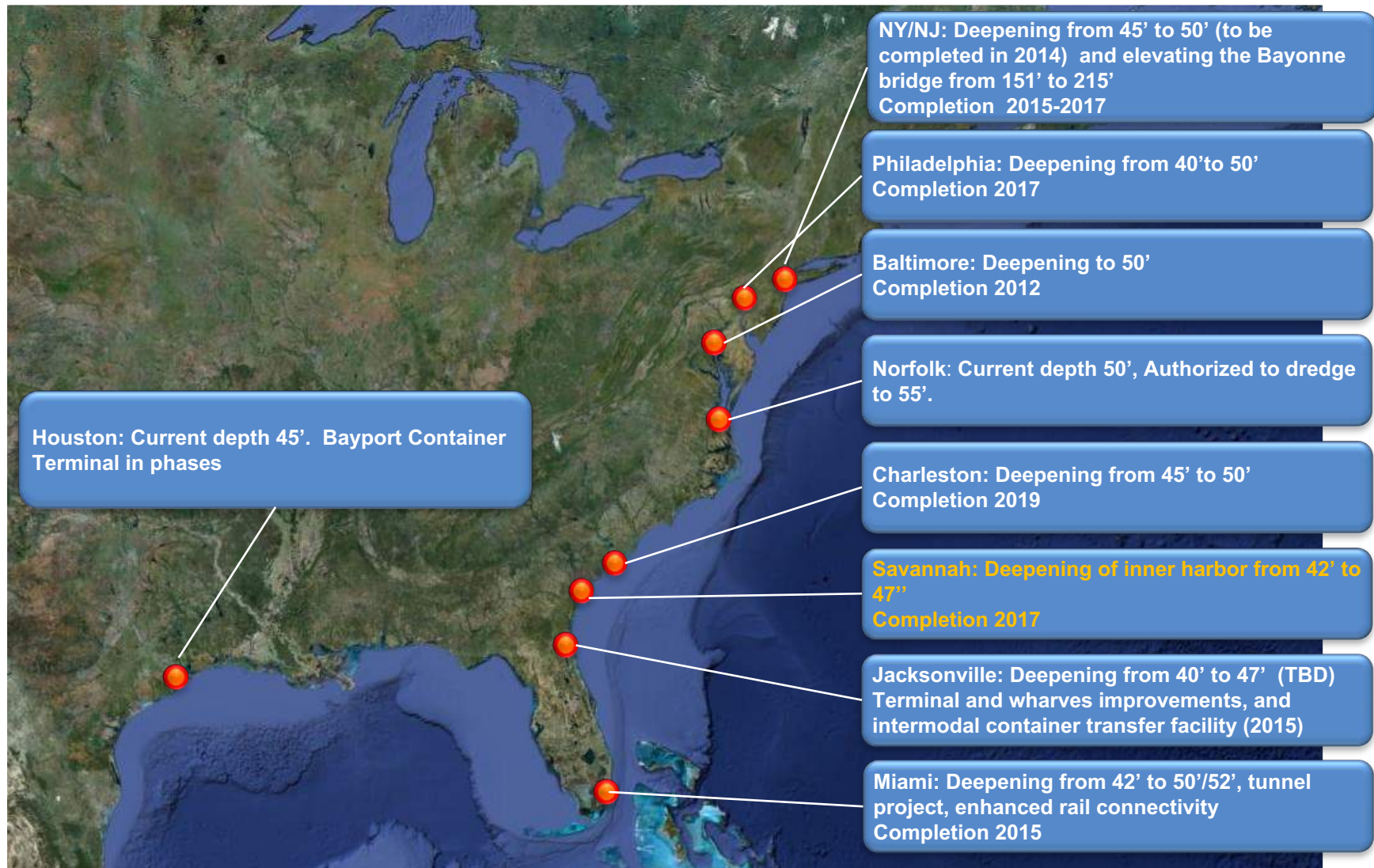


The Panama Canal

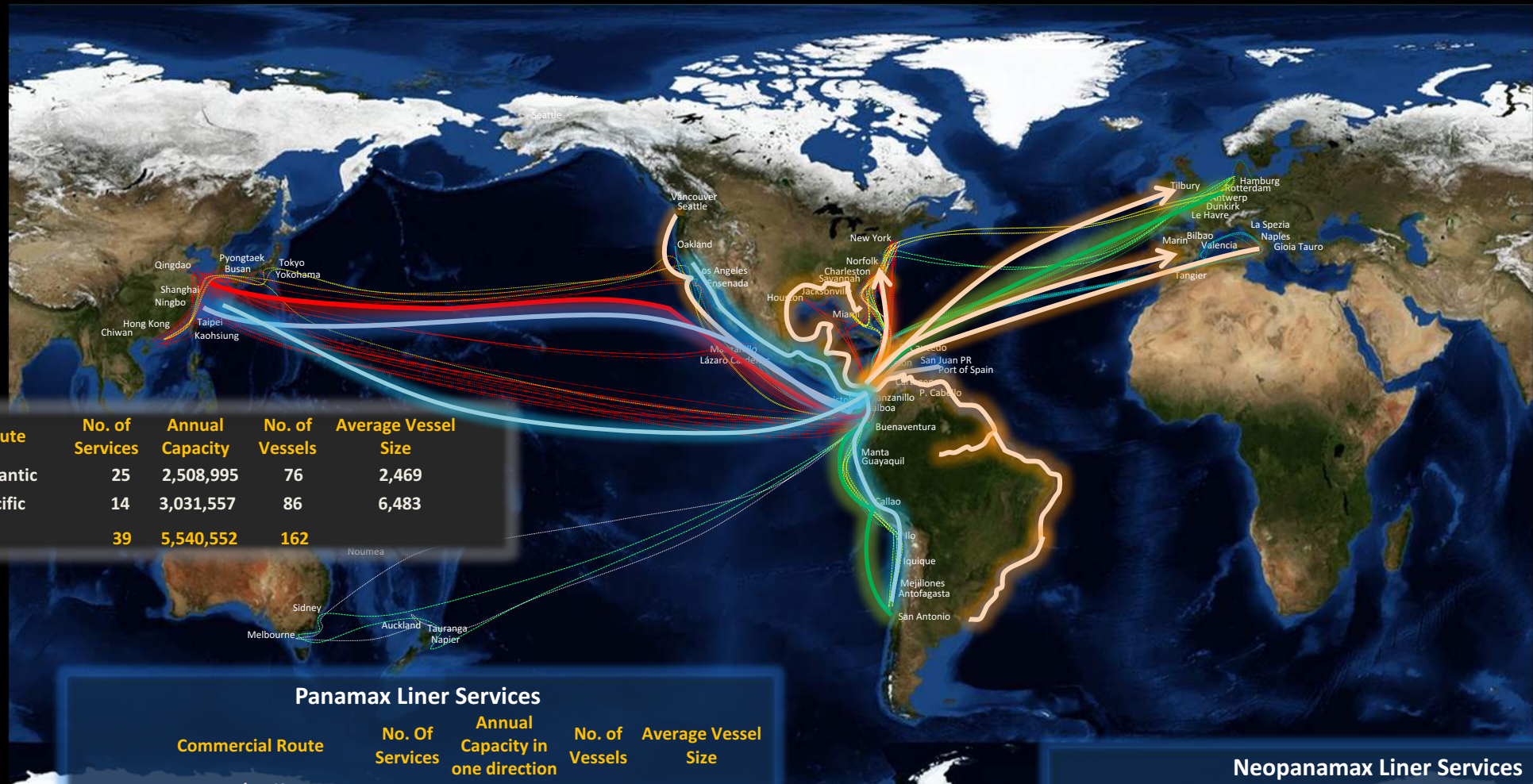
It is all about reliability, connectivity, and value added services



Main U.S. East and Gulf Coast Ports with Infrastructure Projects in Preparation for the Expansion



Liner Services Connectivity of Panama



Panamax Liner Services				
Commercial Route	No. Of Services	Annual Capacity in one direction	No. of Vessels	Average Vessel Size
Asia – USEC / Gulf	5	1,227,015	51	4,733
WCSA – Europe	7	1,085,789	57	3,115
WCUS – Europe	2	396,891	19	3,816
Pendulum	1	255,601	15	4,915
WCSA – USEC	2	229,194	8	2,336
Australia – USEC	1	177,736	10	3,418
Australia – Europe	1	73,446	7	2,825
Total	19	3,445,672	167	3,878

Neopanamax Liner Services				
Commercial Route	No. Of Services	Annual Capacity in one direction	No. of Vessels	Average Vessel Size
Asia – USEC	7	3,096,301	71	8,496
WCSA – Europe	1	470,798	10	9,054
USWC – Europe	1	469,286	10	9,000
Asia – Caribbean	1	464,009	11	8,899
Total	10	4,500,393	102	8,645

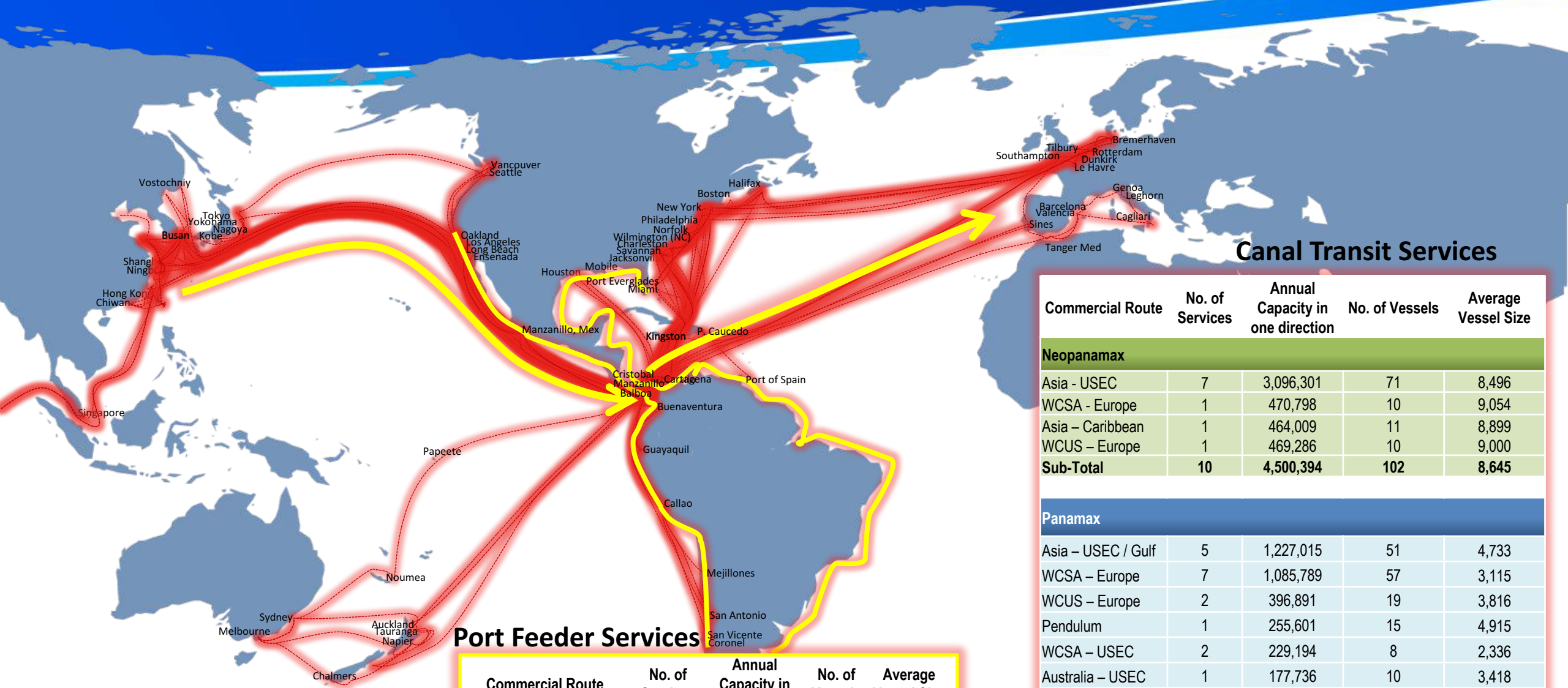
Impact of the expanded Canal on Container Services

(Lines Perspective based on economies of scale)

Lower transport cost per TEU



Liner Services Connectivity of Panama



Canal Transit Services

Commercial Route	No. of Services	Annual Capacity in one direction	No. of Vessels	Average Vessel Size
Neopanamax				
Asia - USEC	7	3,096,301	71	8,496
WCSA - Europe	1	470,798	10	9,054
Asia – Caribbean	1	464,009	11	8,899
WCUS – Europe	1	469,286	10	9,000
Sub-Total	10	4,500,394	102	8,645
Panamax				
Asia – USEC / Gulf	5	1,227,015	51	4,733
WCSA – Europe	7	1,085,789	57	3,115
WCUS – Europe	2	396,891	19	3,816
Pendulum	1	255,601	15	4,915
WCSA – USEC	2	229,194	8	2,336
Australia – USEC	1	177,736	10	3,418
Australia – Europe	1	73,446	7	2,825
Sub-Total	19	3,445,672	167	3,878
Total	29	7,946,066	269	5,685

Port Feeder Services

Commercial Route	No. of Services	Annual Capacity in one direction	No. of Vessels	Average Vessel Size
Feeder Services Atlántico	25	2,508,995	76	2,469
Feeder Services Pacífico	14	3,031,557	86	6,483
Total	39	5,540,552	162	

Source: ACP MEMN, Compair Data, October 2016

Unparalleled Market Reach

8.4% of U.S. Population or 25.8 Million U.S. Consumers within 300 mile radius
12.9% of U.S. Population or 39.8 Million U.S. Consumers within 500 mile radius
45.9% of U.S. Population or 141.8 Million U.S. Consumers within 1,000 mile radius

INTERMODAL ACCESS

- ✓ Three Class I Railways (BNSF, UP, KCS) with direct access to key intermodal hubs
- ✓ 1,400 major truck firms
- ✓ 16 intrastate & interstate highways network from Houston



Port Houston's Rail Network

Inter-rail agreements with CSX, NS & others offer rail connectivity to the Eastern U.S., Canada and Mexico.

DESTINATION	TRANSIT TIME FROM HOUSTON
Chicago	4 days
Memphis	3 days
St. Louis	2 days
Kansas City	2 days

- ✓ 94 weekly Intermodal departures and arrivals
- ✓ 16 weekly trains between Chicago, 4 of which are express trains
- ✓ 12 weekly trains between St. Louis
- ✓ Daily trains between Memphis



INTERNATIONAL RAIL



BNSF UP
FERROMEX
KCSM



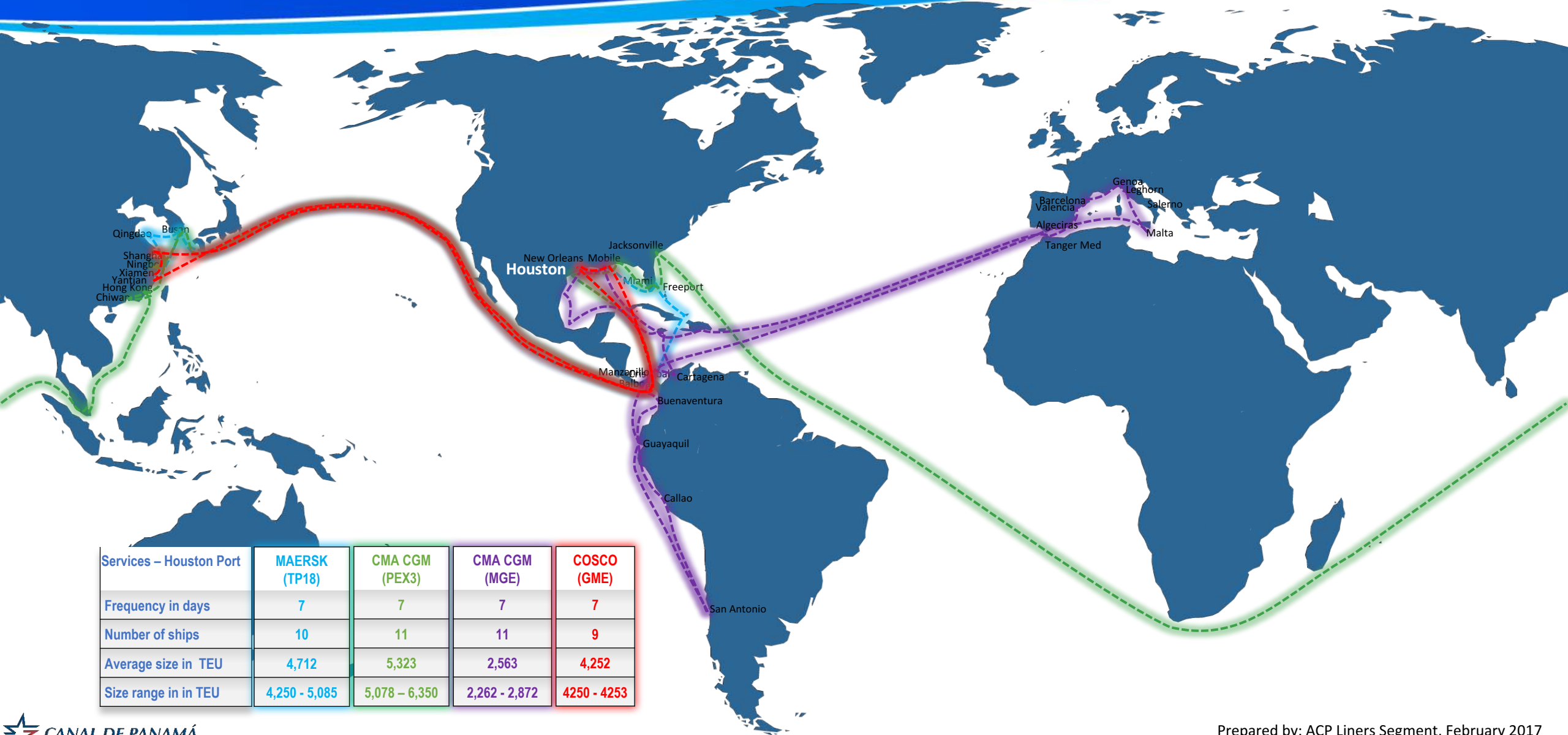
PORT CORPUS CHRISTI®

Moving America's Energy

connect with us: portofcc.com



Liner Services Calling at the Port of Houston



Services – Houston Port	MAERSK (TP18)	CMA CGM (PEX3)	CMA CGM (MGE)	COSCO (GME)
Frequency in days	7	7	7	7
Number of ships	10	11	11	9
Average size in TEU	4,712	5,323	2,563	4,252
Size range in in TEU	4,250 - 5,085	5,078 – 6,350	2,262 - 2,872	4250 - 4253

Bureau of Transportation Statistics Port Ranking by Tonnage for 2014

Position	Port	Tonnage
1	South Louisiana	267.4M
2	Houston	234.3M
3	New York & New Jersey	126.2M
4	Beaumont	87.3M
5	Long Beach	85.0M
6	Corpus Christi	84.9M

Texas Deep Water Sea Ports

Navigational Channel Depths



Ports in Texas

Port	Depth	Imports	Exports
Beaumont	40 ft.	Forest products, military cargo, steel, project cargo	Grain, potash, forest products, military cargo, project cargo
Port Arthur	40 ft.	Steel slabs, forest products, project cargo, miscellaneous steel	Forest products, petroleum coke, steel pipe, project cargo
Corpus Christi	45 ft.	Crude oil, gas oil, fuel oil, feed stock, naphtha, frozen beef, large wind turbine components	Fuel oil, gasoline, feed stock, diesel, alumina, petroleum coke
Houston	45 ft.	Petroleum and petroleum products, iron and steel products, plastic, cereals	Food, machinery, animal feed
Galveston	45 ft.	Bananas, pineapples, melons, agricultural equipment, machinery, vehicles	Grains, machinery, vehicles, agricultural equipment, project cargo
Freeport	45 ft.	Chemicals, clothing, crude, food, LNG, paper goods, resins, windmills	Autos, chemicals, clothing, food, paper products, resins, LNG

Potential PostPanamax Trade - Grains



95K DWT
Mini Capesize

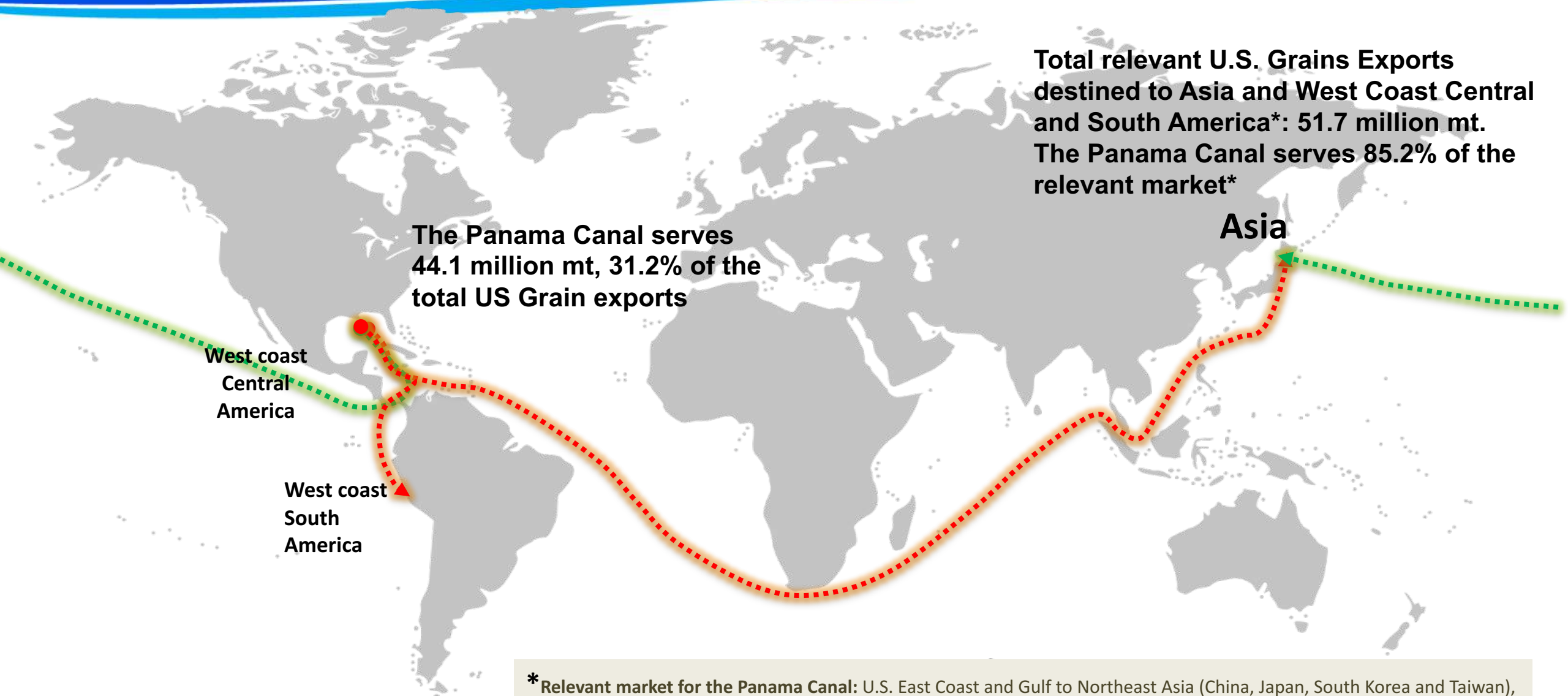
Grains: U.S. Gulf – China

Panama: 10,069 nm

Cape of Good Hope: 15,353 nm

Savings: 5,284 nm, 14 knots, 16 days

Total US Grains Exports (Calendar year 2016): 141.4 million tons



***Relevant market for the Panama Canal:** U.S. East Coast and Gulf to Northeast Asia (China, Japan, South Korea and Taiwan), West Coast of Central and South America and flows from the U.S. Pacific to Europe.

OPPORTUNITIES & THE PANAMA CANAL



NEW CARGO OPPORTUNITIES

LNG & LPG (Export)

Crude Oil & Refined Products (Export)

Grain (Export)

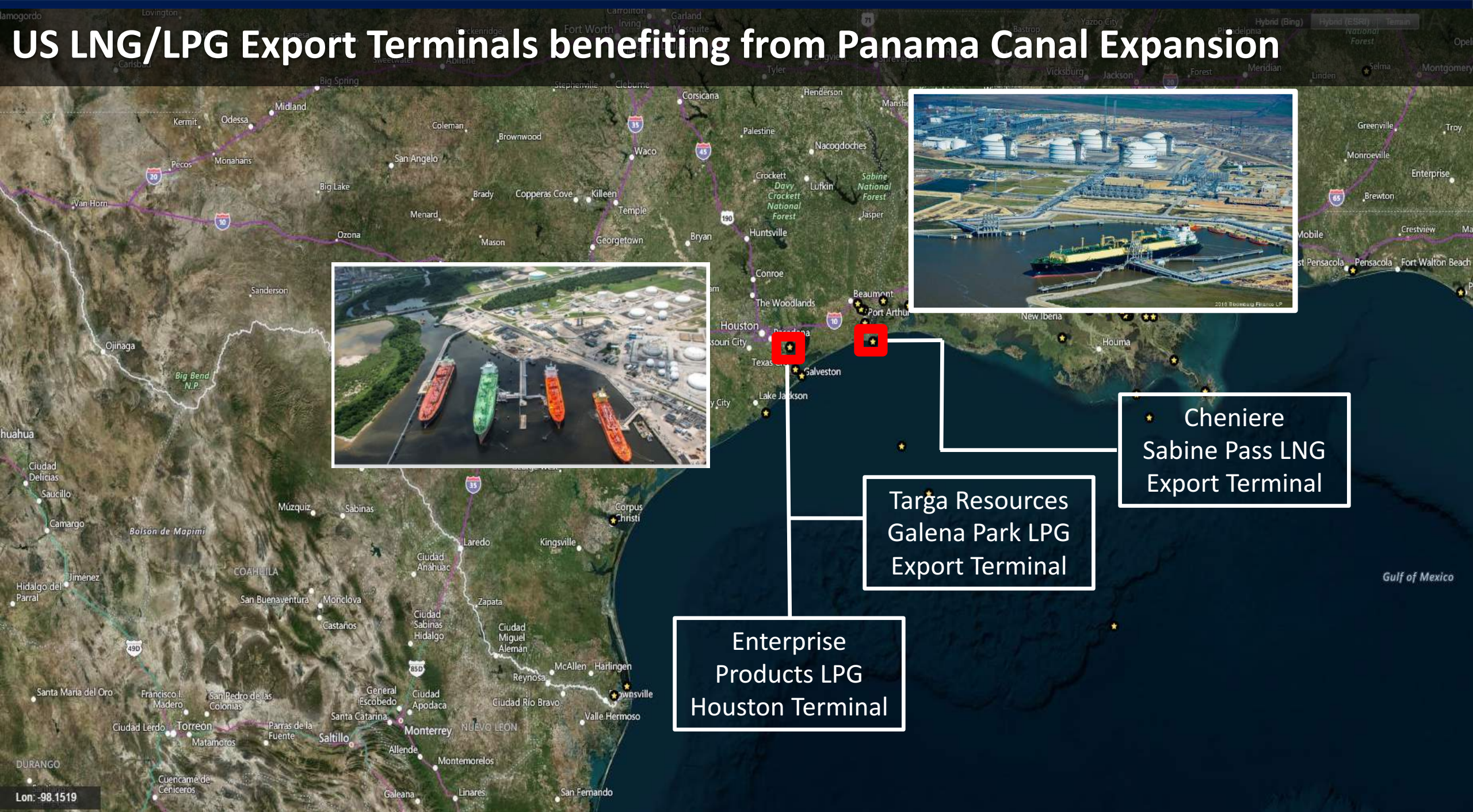
Containers (Import & Export)

Resins in Containers

Project Cargo (Import & Export)

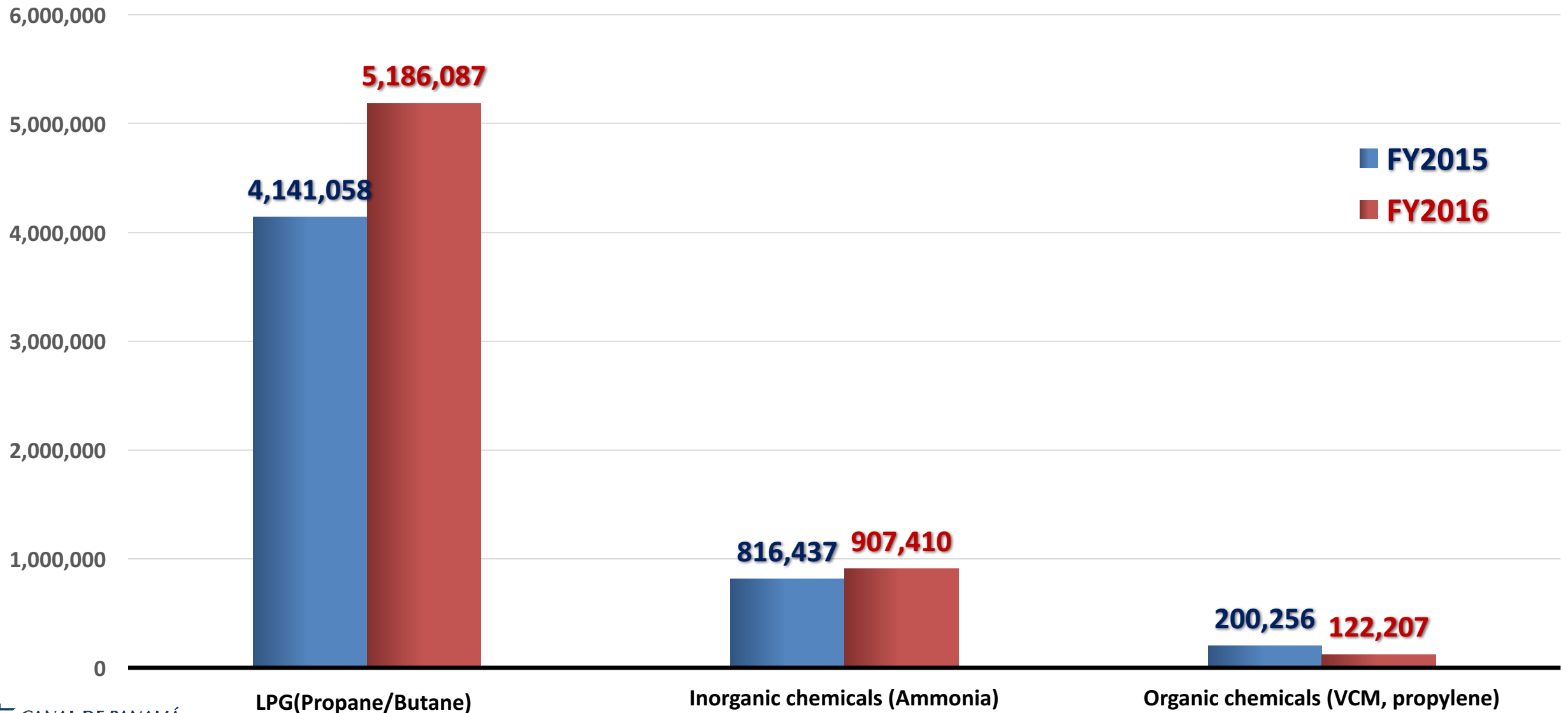
Destination Port	Time in Days (16kn)
Santiago	10
Hong Kong	28
Tokyo	23

US LNG/LPG Export Terminals benefiting from Panama Canal Expansion

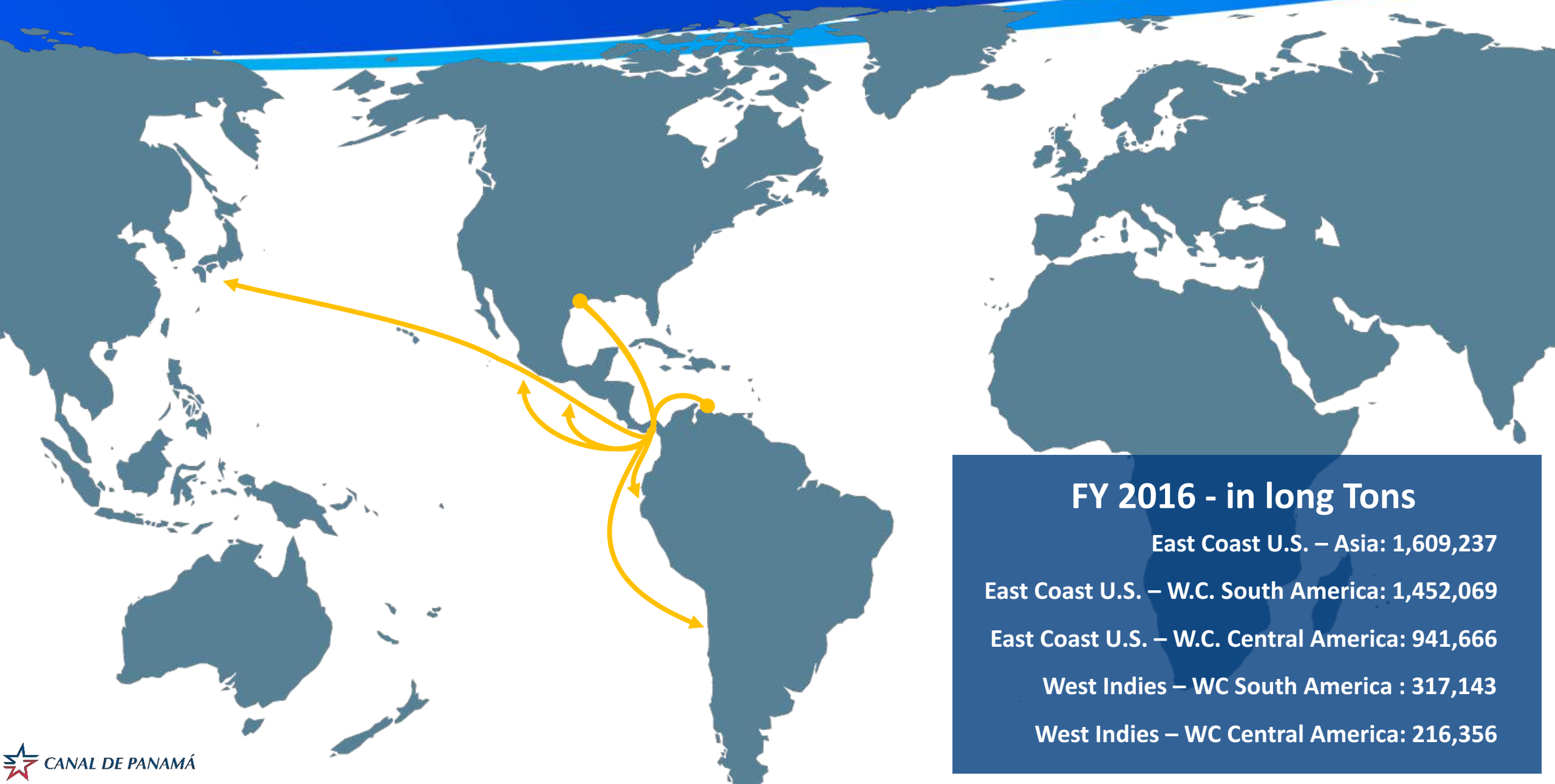


LPG Flows Through the Panama Canal

FY 2016 vs FY 2015 (in long Tons)



Main LPG Routes Through the Panama Canal



FY 2016 - in long Tons

East Coast U.S. – Asia:	1,609,237
East Coast U.S. – W.C. South America:	1,452,069
East Coast U.S. – W.C. Central America:	941,666
West Indies – WC South America :	317,143
West Indies – WC Central America:	216,356

Neopanamax Trade - LNG



PostPanamax

Cargo capacity:
137,100 m³

**LNG: U.S. Gulf – Japan/South
Korea/China/Taiwan**

Panama: 9,214 nm

Suez: 14,570 nm

Savings: 5,356 nm, 19.5 knots, 11.4 days

OPPORTUNITIES & THE PANAMA CANAL



NEW CARGO OPPORTUNITIES

LNG & LPG (Export)

Crude Oil & Refined Products (Export)

Grain (Export)

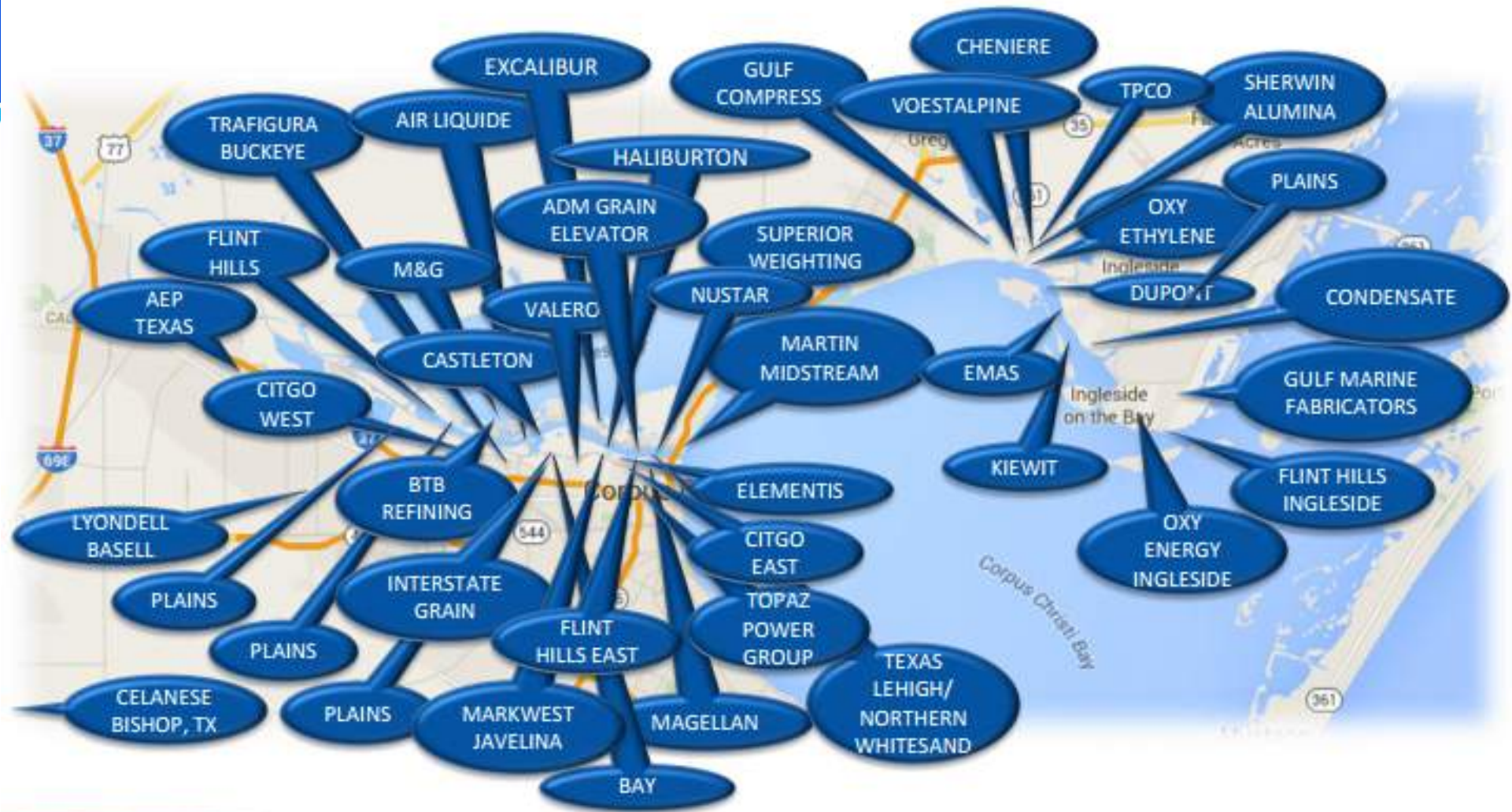
Containers (Import & Export)

Resins in Containers

Project Cargo (Import & Export)

Destination Port	Time in Days (16kn)
Santiago	10
Hong Kong	28
Tokyo	23

\$35 BILLION OF INVESTMENT



PORT CORPUS CHRISTI®

Moving America's Energy

connect with us; portofcc.com



MAJOR INVESTMENTS ON INNER HARBOR

NuStar/Martin

Upgrades to systems tripled
loading capacity
\$220m multi-phase build-out

Trafigura/Buckeye

\$500M terminal to export Eagle
Ford Crude Oil and Condensate

M&G Chemicals

Largest PTA/PET Resin facility
in the World
\$1.1 billion Investment

Magellan Midstream Partners

\$250M Condensate splitter
under construction



PORT CORPUS CHRISTI®

Moving America's Energy

connect with us: portofcc.com



MAJOR INVESTMENTS AT LA QUINTA GATEWAY TERMINAL

Voestalpine Texas
Hot Briquetted Iron Production
Operational Q3 2016

Oxy Ingleside Energy Center
Permian Oil and LPG export facility
Operational Q2 2016

**Tianjin Pipe
Corporation America**
\$1 Billion Seamless Steel
Pipe Manufacturing Plant
Phase 2 Completion Q4 2017

**Cheniere Corpus Christi
Liquefaction Facility**
\$10 Billion First 2 trains
Up to \$20 Billion at full build-out
Train 1 operational 2018

Ingleside Ethylene LLC
\$1.5 Billion Ethane Cracker
OxyChem – Mexichem
Joint Venture
Operational Q1 2017



PORTCORPUSCHRISTI®

Moving America's Energy

connect with us: portofcc.com



Content

✧ Expansion?

✧ Panama Canal Expansion Program

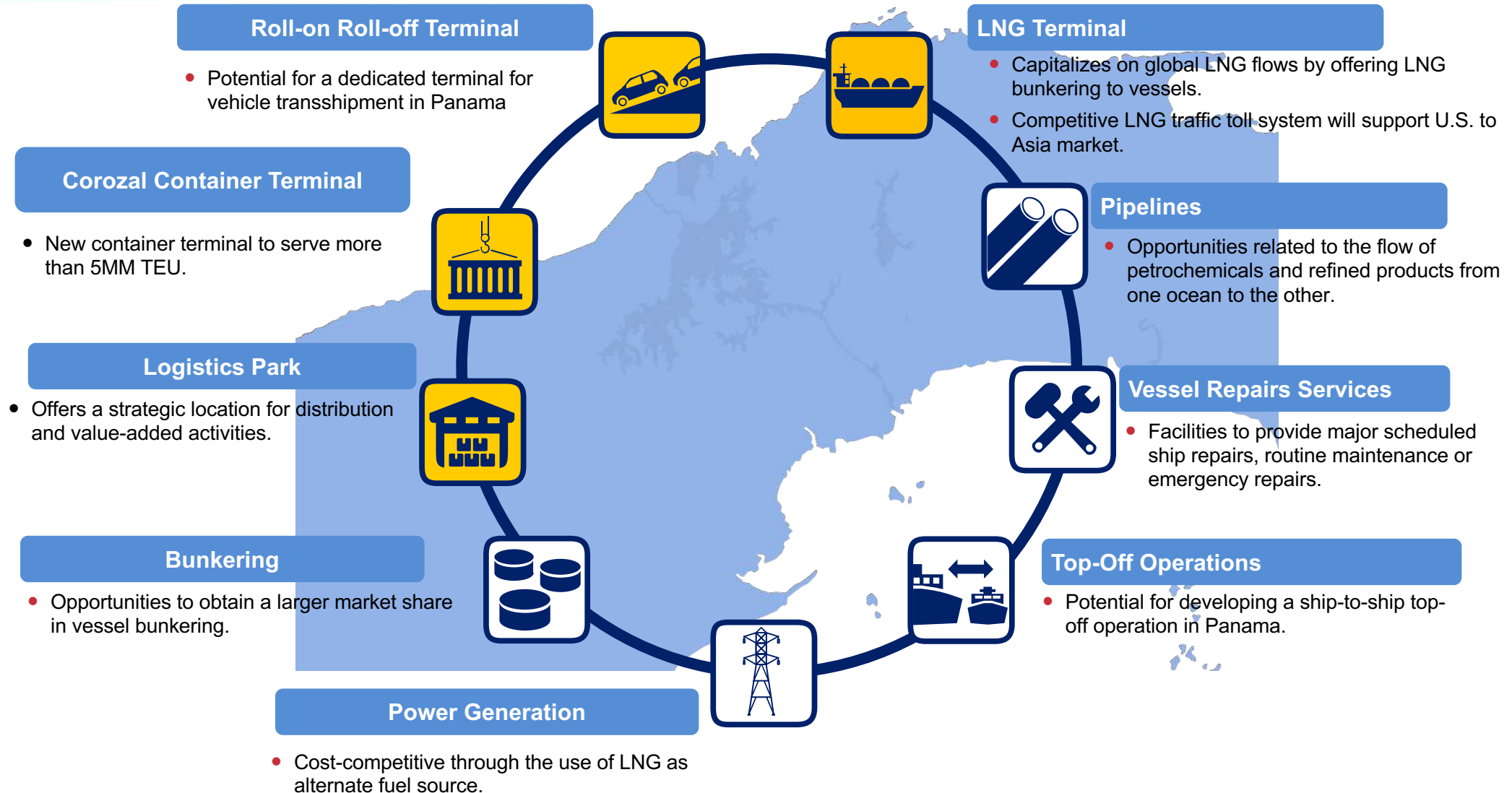
✧ Impact of the Canal's Expansion

✧ Diversification Strategy

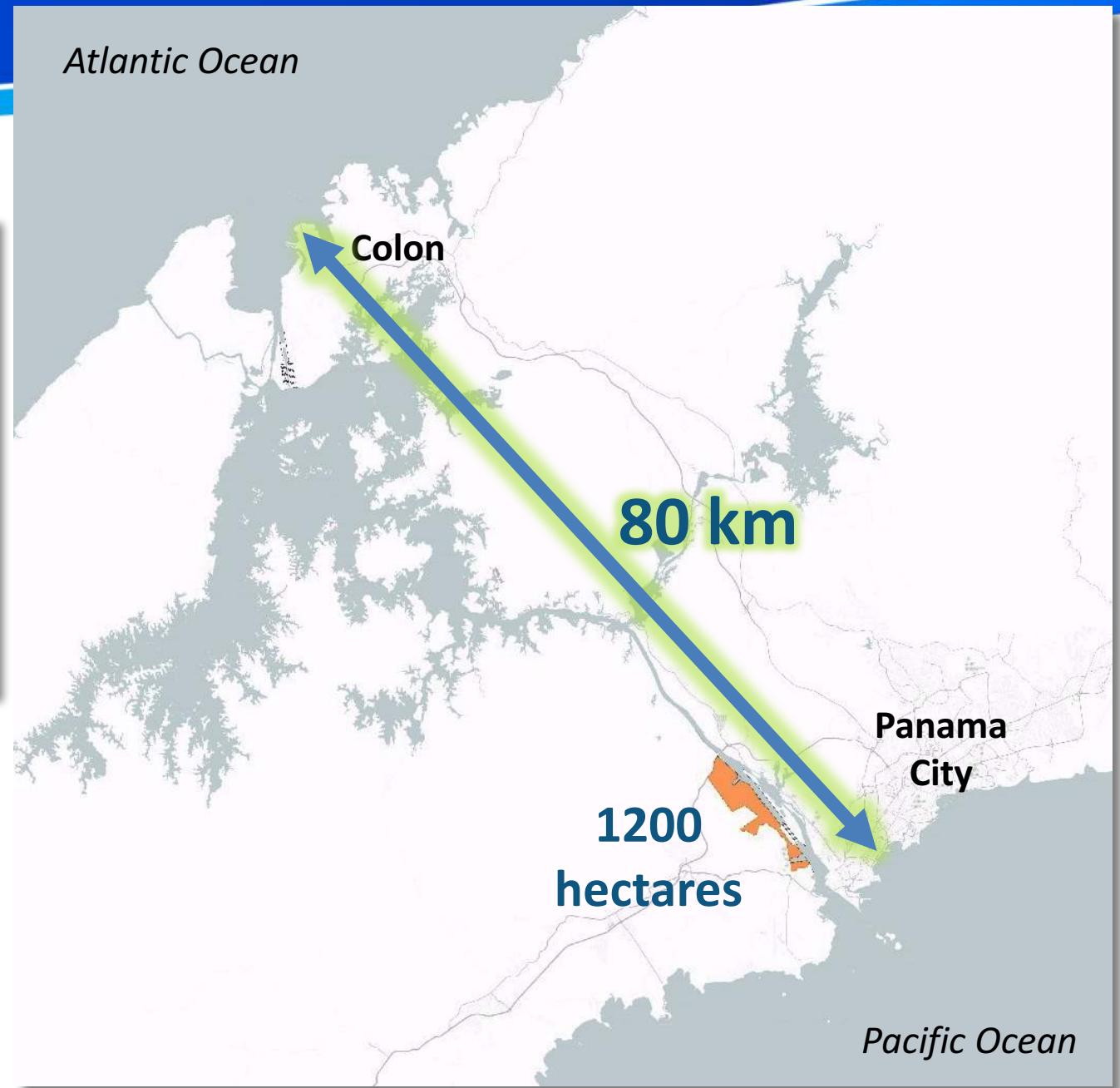
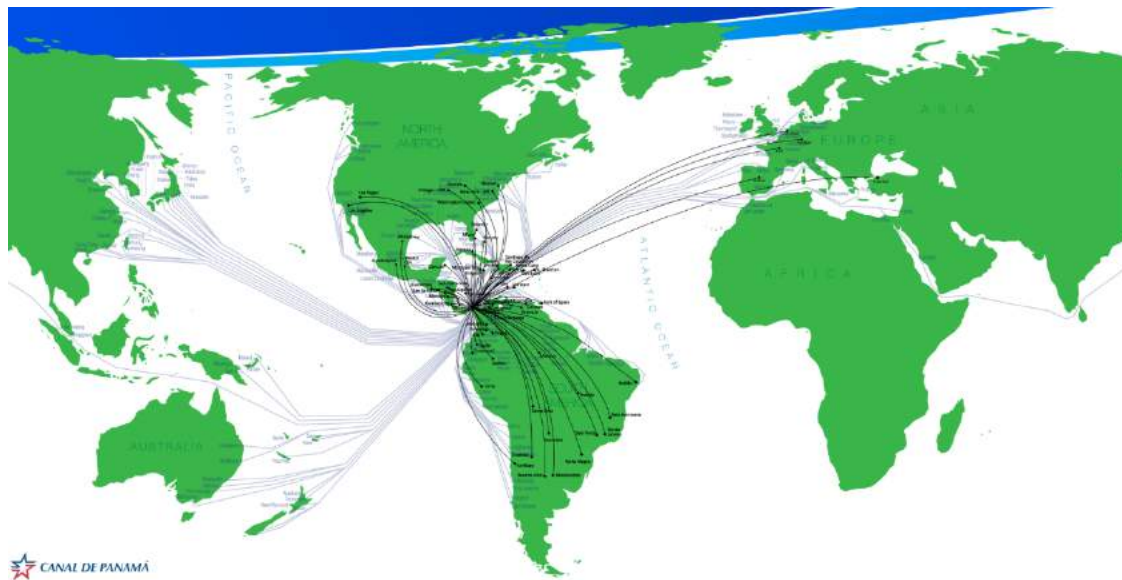


Diversification Strategy

Areas with development potential

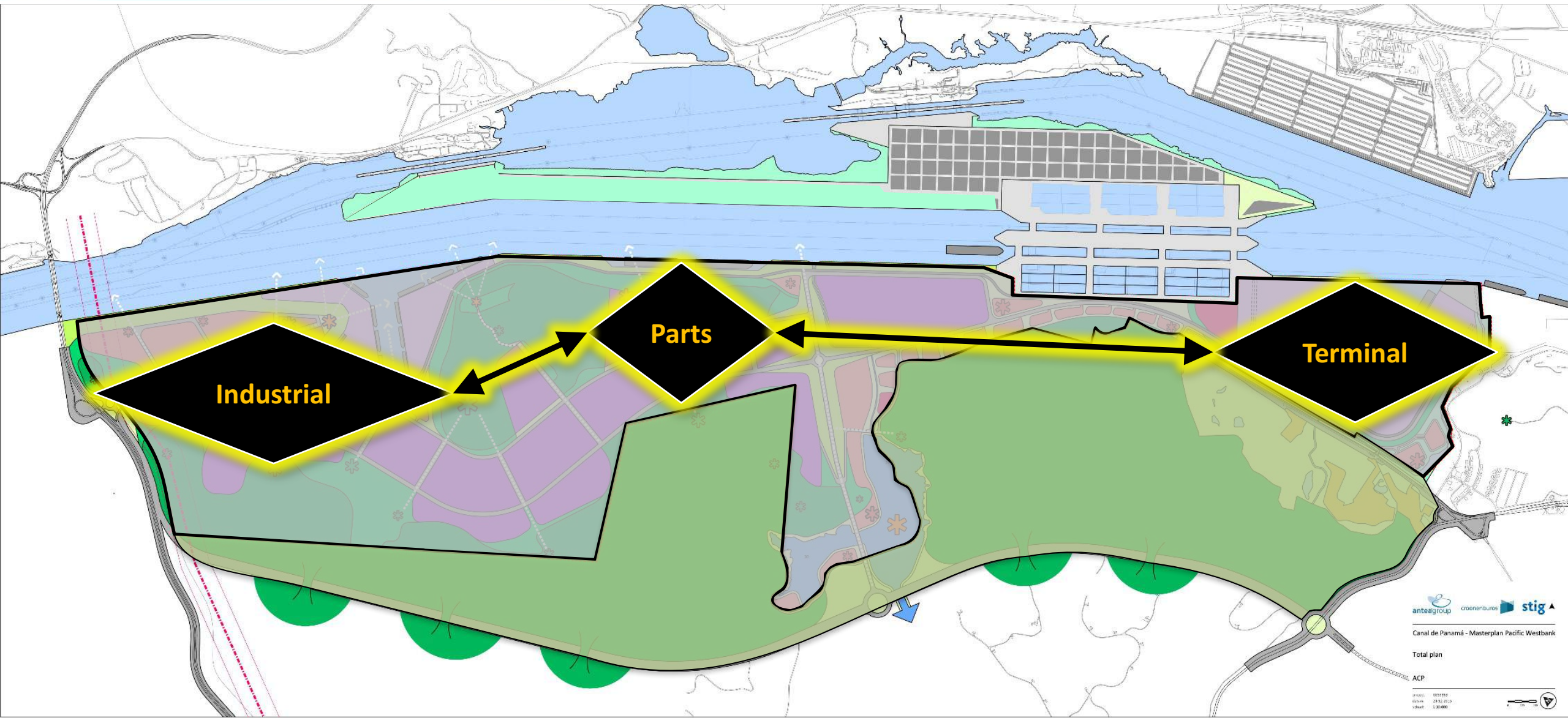


Location of the 1,200 Hectares



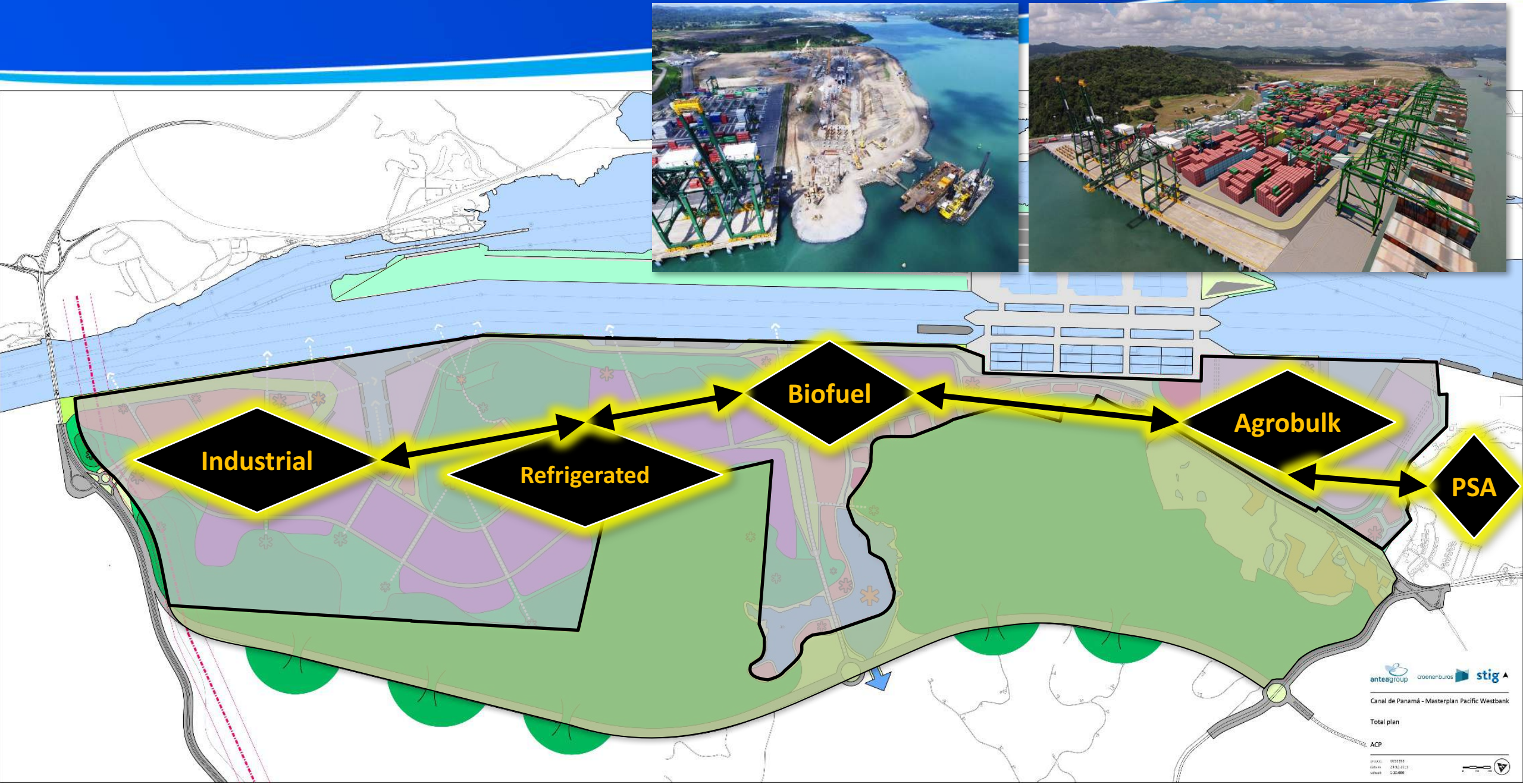


Ro-Ro Emphasis



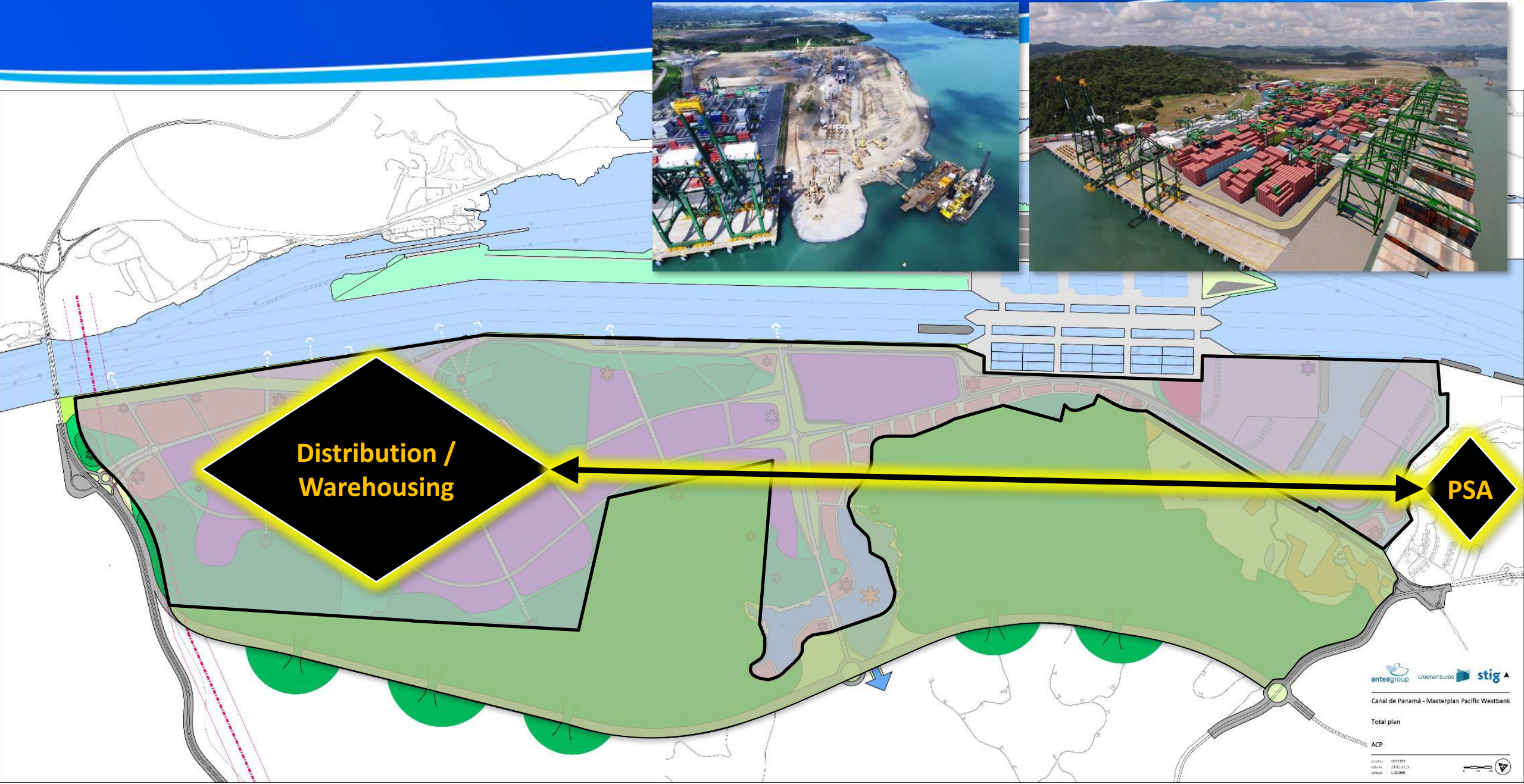
Food/Perishable Goods Emphasis

PSA: 2 millions TEU capacity



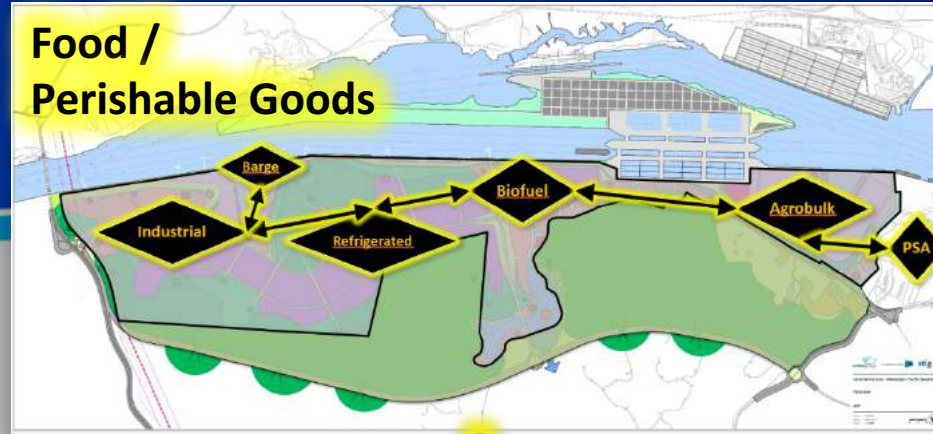
Logistics Park Emphasis

PSA: 2 millions TEU capacity

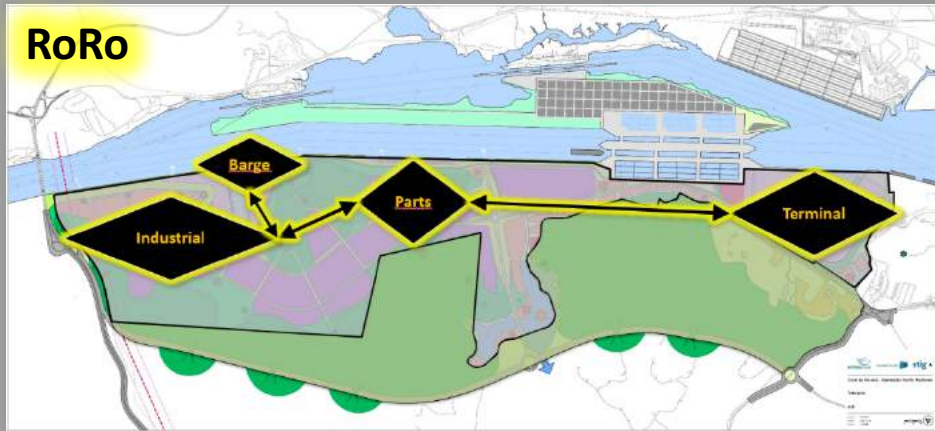


Cluster mix development

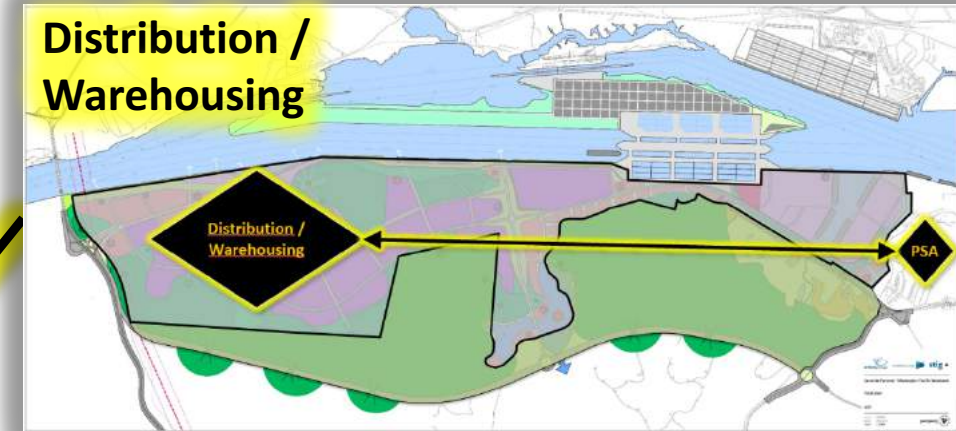
Food / Perishable Goods



RoRo



Distribution / Warehousing

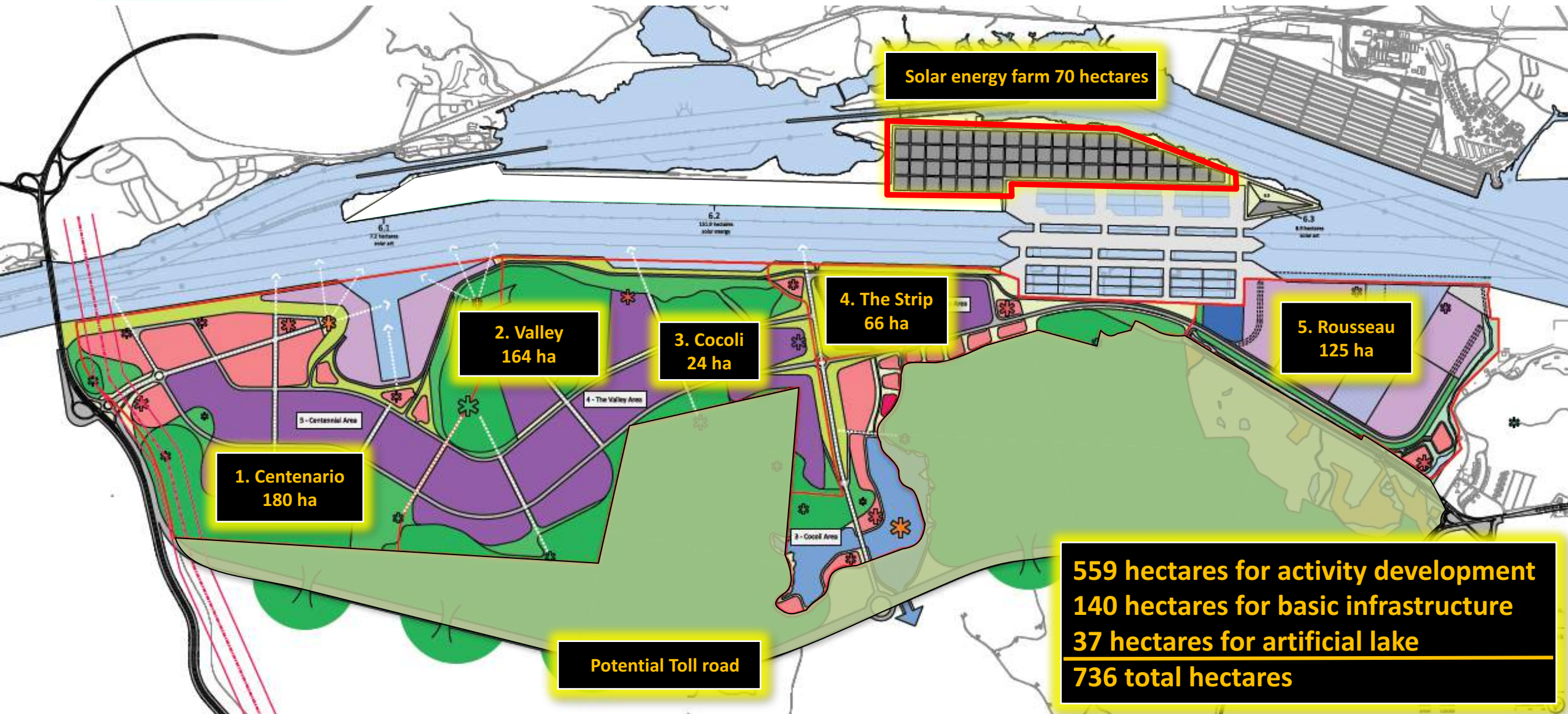


Mixed cluster



- A mixed cluster eliminates dependency on one cluster.
- Allows for synergies to emerge between the clusters

Area to be developed: 736 has.



Complete Development





Ports development in Panama

New projects



Panama Colon Port, Inc.



Panama Ports Company – Cristobal



Corozal Port - Proposed



Panama Ports Company - Balboa



Colon Container Terminal




Manzanillo International Terminal (MIT)



PSA

TEU capacity	
Present	10.7M
Under construction	1.5M
Future developments	7.3M
Total	19.5M

 Specifically related to the new Center for Advances in Port Management and the Center's role in providing a bridge to that future, the needs you see in workforce training in the decades ahead.

Content

✧ Expansion?

✧ Panama Canal Expansion Program

✧ Impact of the Canal's Expansion

✧ Diversification Strategy

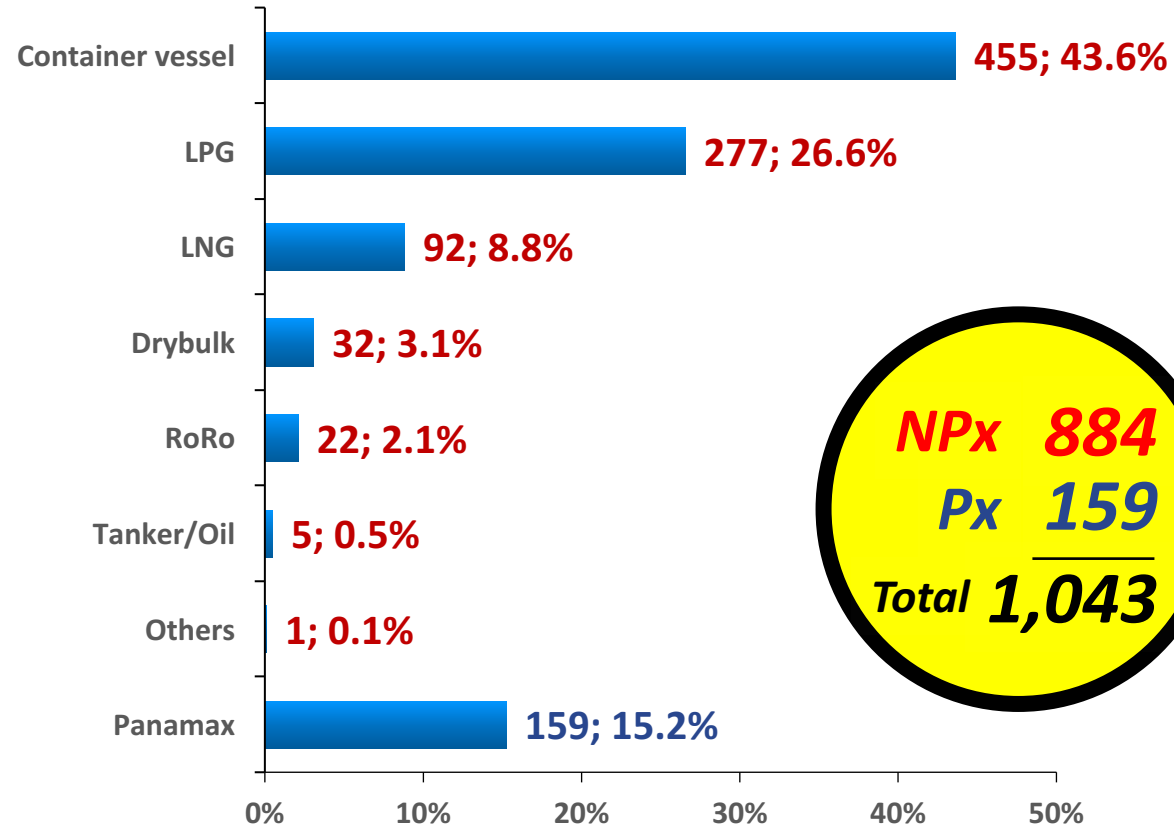
✧ Canal Expansion Performance



Neopanamax Locks – Vessel transits

Transits

(from 26-Jun-2016 to 24-Feb-2017)

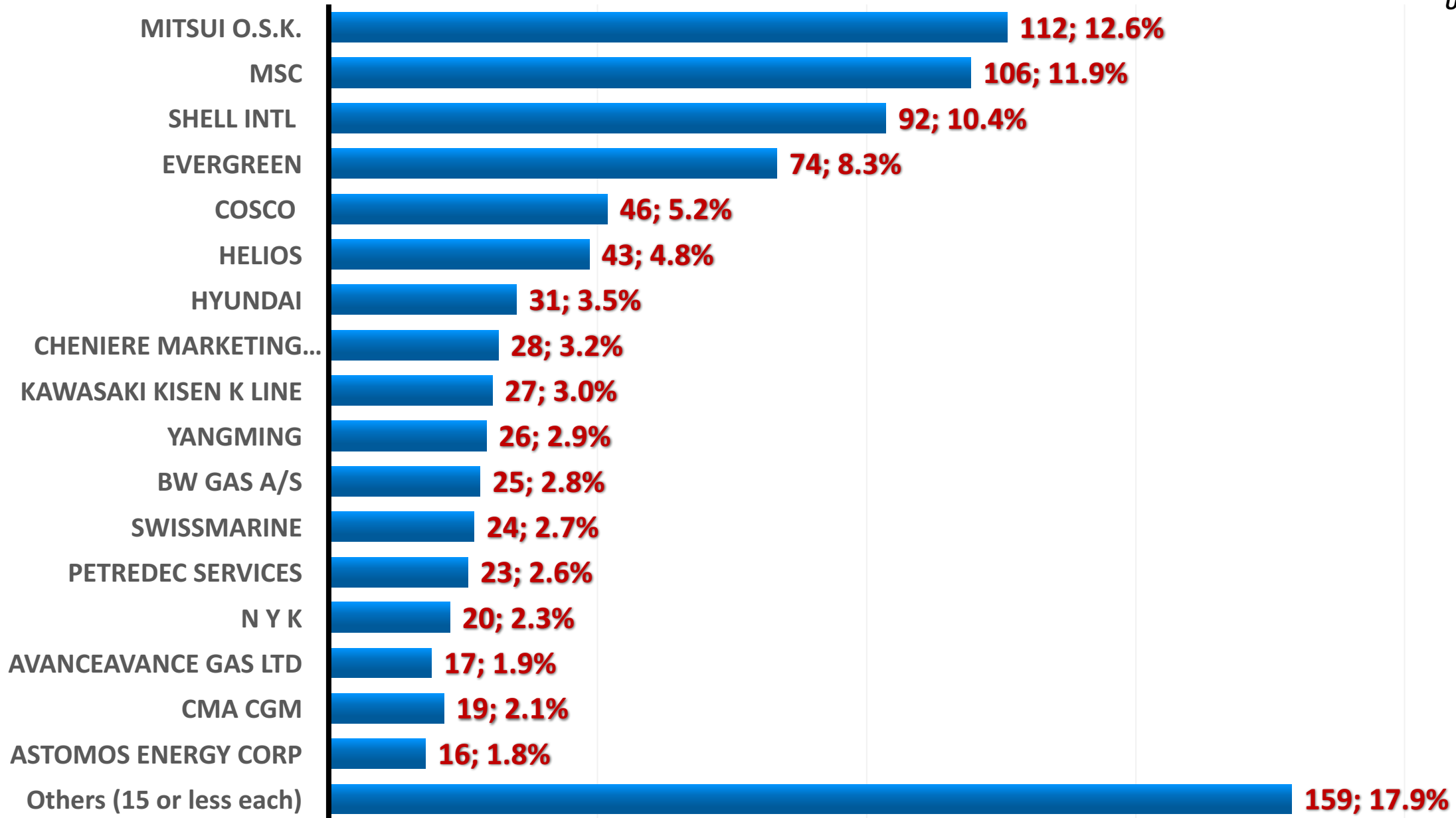


Updated as of 24-Feb-2017 (inclusive)



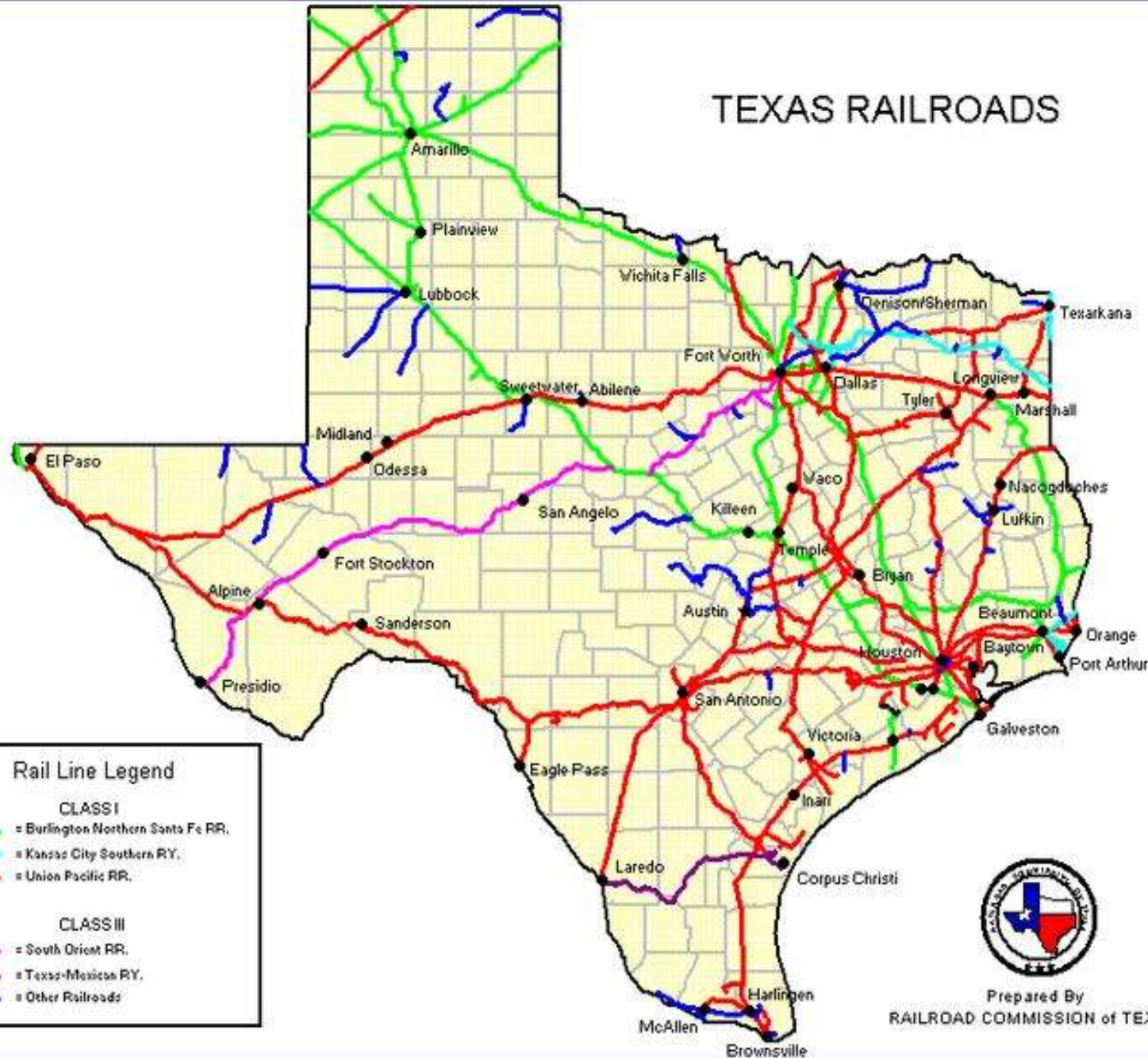
Vessels transits distribution per operator

Updated as of 24-Feb-2017





TEXAS RAILROADS



UNION PACIFIC RAILROAD (UP)

- ✓ Largest network in the United States. One of the world's largest transportation companies.
- ✓ Operates 8,500 locomotives over 32,100 route-miles in 23 states west of Chicago, Illinois and New Orleans, Louisiana.

BURLINGTON NORTHERN SANTA FE RAILWAY (BNSF)

- ✓ Second largest freight railroad network in North America, second to the Union Pacific Railroad (its primary competitor for Western U.S. freight).
- ✓ 32,500 miles (52,300 km) of track in 28 states, and over 8,000 locomotives.
- ✓ It has three transcontinental routes that provide rail links between the western and eastern United States.

KANSAS CITY SOUTHERN RAILWAY COMPANY.

- ✓ Smallest and third-oldest Class I railroad in North America (just behind UP and Canadian Pacific Railway) still in operation.
- ✓ Currently operating in a region consisting of ten central U.S. states.
- ✓ KCS also owns and indirectly operates Kansas City Southern de México (KCSM) in the central and northeastern states of México, and is the only Class I Railroad to own any track both inside and outside of Mexico's boundaries (Ferromex is the only other Class I operating in Mexico).
- ✓ Including all trackage owned by wholly owned subsidiaries, KCS owns a total of approximately 9,600 kilometers (6,000 route miles) of track.

The **BNSF** and **UP** have a duopoly on all transcontinental freight rail lines in the Western U.S. and share trackage rights over thousands of miles of track.

Texas Deep Water Sea Ports Navigational Channel Depths



Texas Deep Draft Commercial Ports

Ports	Official Name	Classification	Channel Depth (ft.)	Channel Width (ft.)
Port of Orange	Orange County Navigation and Port District	Niche	30	200
Port of Beaumont	Port of Beaumont Navigation District of Jefferson County	Comprehensive	40	400
Port of Port Arthur	Port of Port Arthur Navigation District	Specialized	40	450
Port of Houston	Port of Houston Authority	Comprehensive	45	530
Port of Texas City	Texas City Terminal Railway Company	Specialized	40-45	1200
Port of Galveston	Board of Trustees of the Galveston Wharves	Comprehensive	45	1200
Port Freeport	Port Freeport	Comprehensive	45	400
Calhoun Port Authority	Calhoun Port Authority	Specialized	36	200
Port of Corpus Christi	Port of Corpus Christi Authority of Nueces County, Texas	Comprehensive	45	300
Port Isabel	Port Isabel-San Benito Navigation District	Niche	36	200
Port of Brownsville	Brownsville Navigation District	Specialized	42	250

Source: Overview of Texas Ports and Waterways, Senate Select Committee on Texas Ports, Wednesday, May 04, 2016, 11:30 A.M, Texas Department of Transportation

<https://tti.tamu.edu/policy/wp-content/uploads/2015/08/TxDOT-Ports-Testimony-050416.pdf>

Main imports and exports by commodity type of selected Texas Ports

Port	Imports	Exports
Beaumont	Forest products, aggregate, military cargo, steel, project cargo.	Bulk grain, potash, forest products, military cargo, project cargo.
Brownsville	Steel slab, hot and cold roll, steel plate, steel beams (billets), iron ore.	Steel products, petroleum products, lubricants, and grain
Corpus Christi	Crude oil, gas oil, fuel oil, bauxite ore, feed stock, naphtha, condensate, reformat, toluene, frozen beef, fresh fruits.	Fuel oil, gasoline, feed stock, diesel, alumina, petroleum coke, toluene, cumene gas oil, asphalt, coal.
Freeport	Aggregate, chemicals, clothing, foods (fruit), crude, LNG, paper goods, plastics, windmills.	Autos, chemicals, clothing, foods, paper goods, resins, rice.
Galveston	Wind power equipment, bananas, agricultural equipment, machinery, vehicles, fertilizer products, lumber products, military-related cargoes.	Bulk grains, containers, machinery, vehicles, linerboard and paper, carbon black, light fuels.
Houston	Petroleum and petroleum products; containers; iron and steel; crude fertilizers and minerals; organic chemicals; wood and articles of wood.	Petroleum and petroleum products; containers; organic chemicals; cereals and cereal products; plastics; animal or vegetable fats and oils.
Port Arthur	Steel slabs, woodpulp, newsprint, lumber, plywood, project cargo, military.	Linerboard, plywood, steel pipe.

Houston: A Gateway to the World

Strategic Location

- Huge Local Market - 39.8 million consumers within 500 miles
- Gateway to all U.S. and North America market
- Easy access to Mexico, Caribbean, and Latin America

Pro-Business Environment

- Low taxes & low government regulation
- Low cost environment
- Excellent labor environment

Strong Infrastructure

- World class airport system
- Extensive railway access and efficient road and highway system
- Well developed sea port



Panama Canal Opportunity

✧ **East Asian imports currently represent 31% of PHA's total inbound container trade volume**

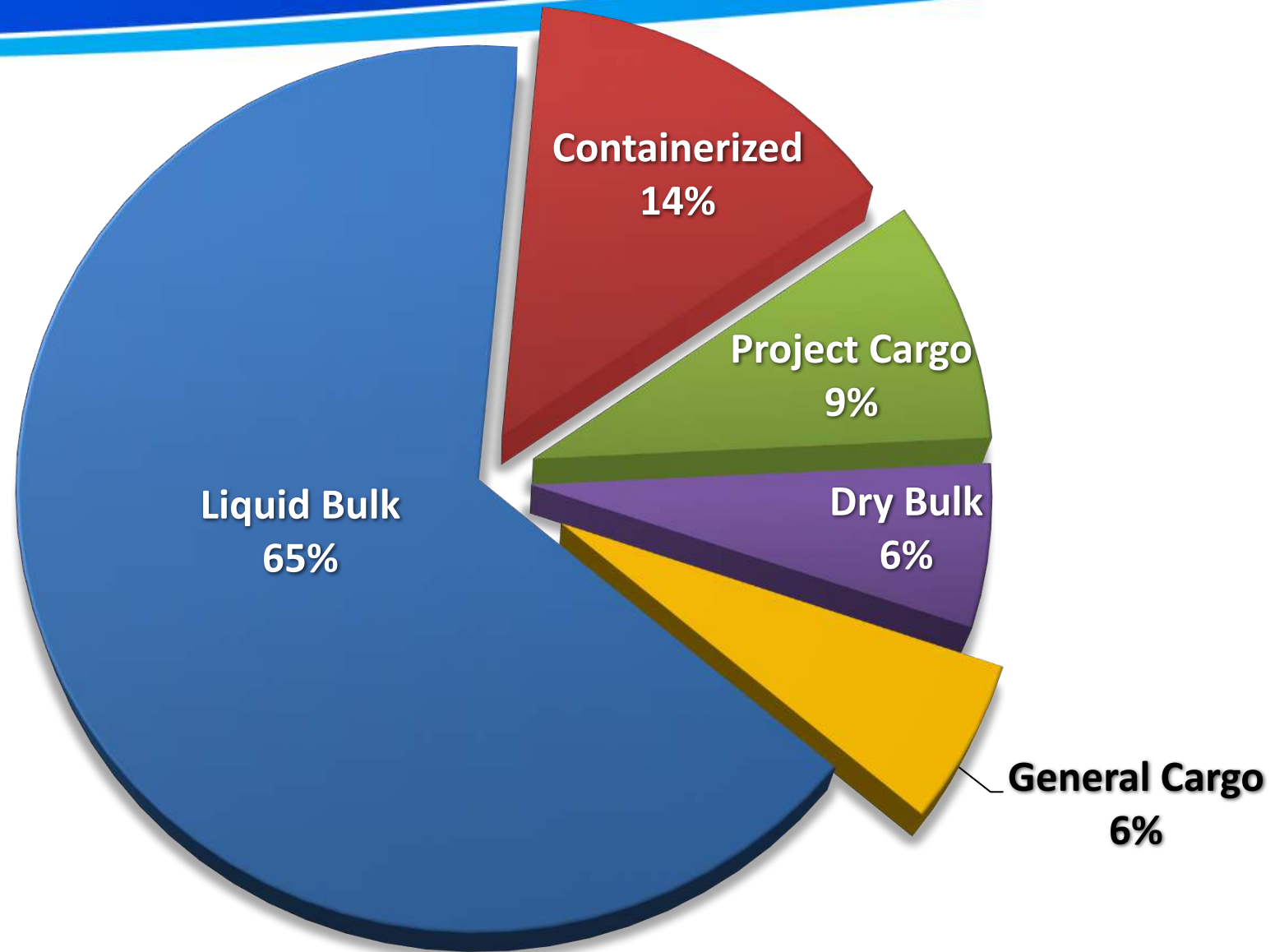
- Fastest growing population growth in the U.S.
- Increased consumer demand
- Centrally located gateway

✧ **Expanded Panama Canal brings new efficiencies**

- Larger ships = lower cost per container
- Higher efficiency port (highest productivity in the U.S.)
- Attractive alternative gateway to Texas, Midwest and Latin America

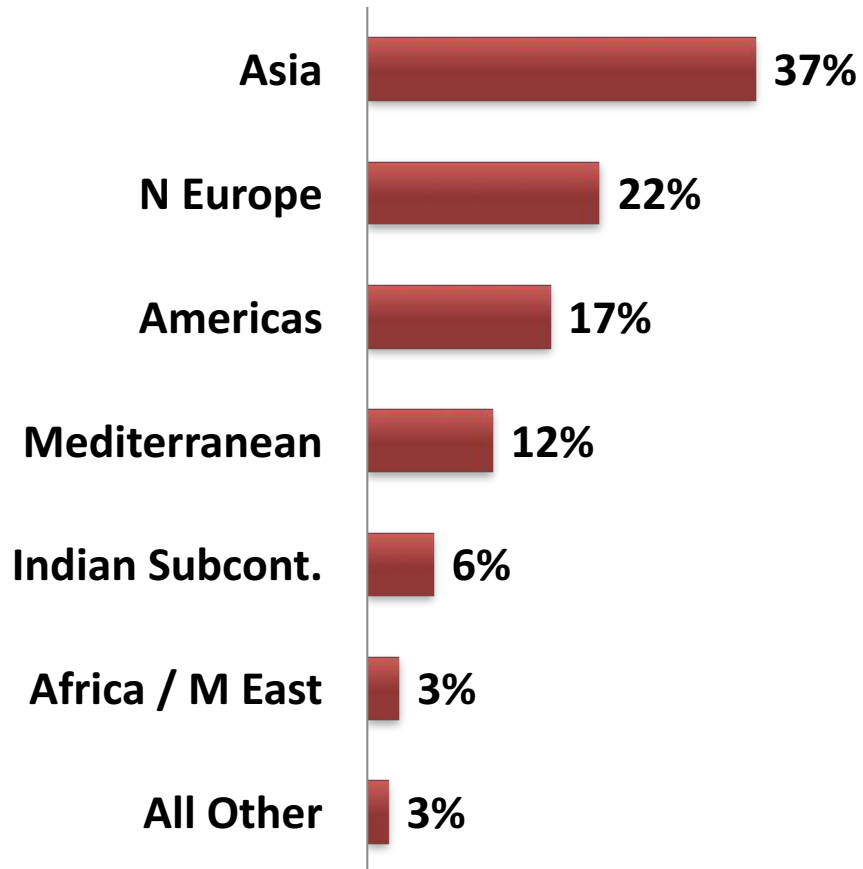
Port of Houston

Cargo Segments – 2016

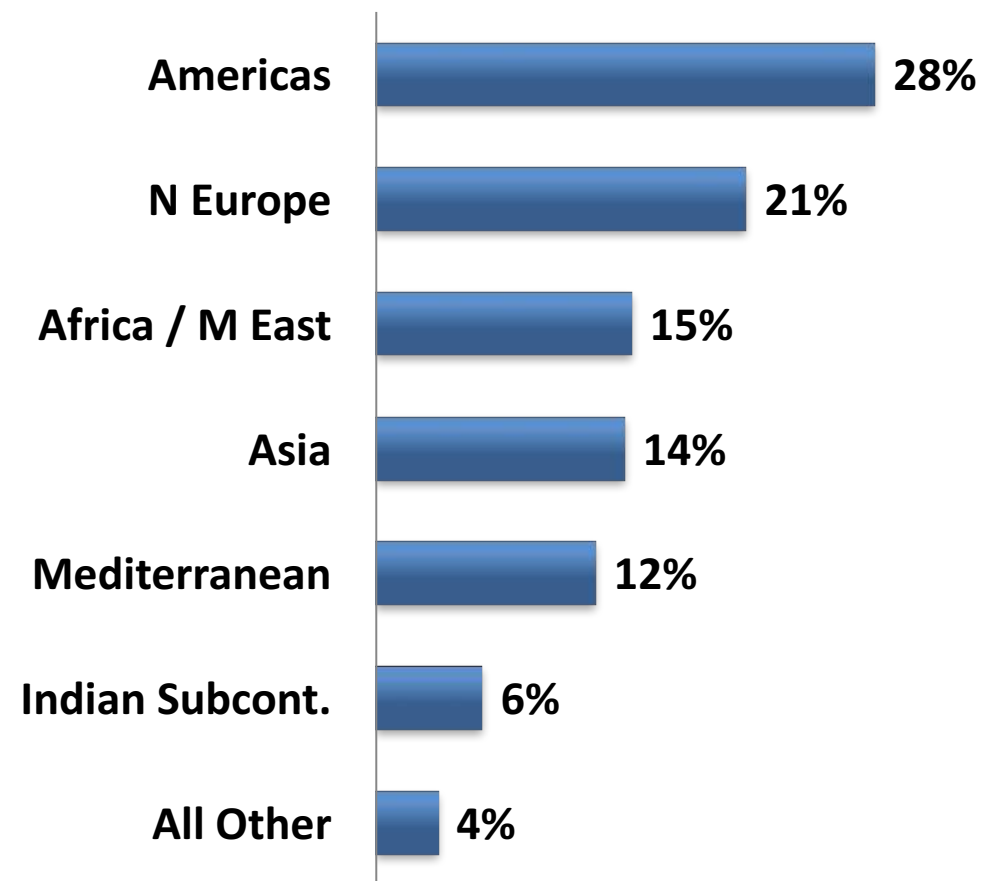


Port Houston Container Trade Share – 2016

Imports by Trade Region



Exports by Trade Region



Top Container Carriers

January through December 2016

TOP 10 CARRIERS	IMPORTS	EXPORTS	TOTAL TEU	PERCENTAGE
Maersk Sealand	178,222	151,939	330,161	18.3%
MSC	187,557	139,908	327,465	18.2%
Hapag Lloyd	120,397	131,915	252,312	14.0%
CMA-CGM	113,617	132,039	245,656	13.6%
China Ocean Shipping	46,839	99,346	146,185	8.1%
Seaboard Marine	68,058	32,940	100,999	5.6%
Hamburg Sud	62,884	33,955	96,839	5.4%
Zim Container	23,280	27,032	50,312	2.8%
Sealand	23,904	12,735	36,639	2.0%
Hanjin Shipping Company	11,212	24,842	36,055	2.0%

BCO Importers and Exporters

Containerized Freight – January through December 2016
(Excludes companies not listed in PIERS, e.g., WALMART)

TOP 10 PHA IMPORTERS	TEU
Red Bull North America	11,635
Heineken USA, Inc.	10,910
Anheuser-Busch	4,200
HEB Grocery	3,716
Emser Tile	3,520
Chep USA	3,141
Goodyear Tire and Rubber	3,115
International Korea	3,066
Nestle Waters	2,983
Dubal America	2,838

TOP 10 PHA EXPORTERS	TEU
ExxonMobil Chemical	23,671
Shintech Inc.	23,098
H Muehlstein	19,558
Dow Chemical	19,652
Vinmar	13,533
Dupont Nemours	9,693
Total Petrochemicals	8,178
Oxyde Chemicals	7,190
Cargill	6,568
Montachem	6,064

Import and Export Commodities

Containerized Freight – January through December 2016

PHA IMPORT COMMODITIES	TEU
Food & Drink	136,433
Hardware & Construction Materials	113,186
Machinery, Appliances & Electronics	101,568
Retail Consumer Goods	89,082
Steel & Metals	76,853
Furniture	62,342
Resins & Plastics	53,346
Chemicals & Minerals	53,002
Automotive	49,947
Apparel & Accessories	15,867
Fabrics including Raw Cotton	15,139
Other	125,370

PHA EXPORT COMMODITIES	TEU
Resins & Plastics	275,779
Chemicals & Minerals	149,384
Food & Drink	78,317
Machinery, Appliances & Electronics	65,367
Automotive	60,311
Fabrics including Raw Cotton	37,830
Steel & Metals	27,127
Retail Consumer Goods	23,275
Apparel & Accessories	19,632
Hardware & Construction Materials	18,338
Furniture	3,925
Other	150,147

Top Breakbulk Carriers

2016 versus 2015

TOP 10 CARRIERS 2016	TONNAGE
Seaboard Marine, Ltd.	1,410,857
Star Shipping	382,310
SK Shipping	289,503
National Shipping of America	260,671
Clipper Shipping	225,830
Volkswagen Of America - FTZ	160,416
Western Bulk Carriers	131,914
Pan Ocean	117,702
Rickmers-Line (America)	103,946
Gulf Africa	90,691

TOP 10 CARRIERS 2015	TONNAGE
Seaboard Marine, Ltd.	1,338,048
Star Shipping	819,138
Pan Ocean	553,634
Clipper Shipping	333,555
Western Bulk Carriers	306,669
SK Shipping	257,904
BBC	250,135
Daewoo Logistics	243,373
Daiichi Chuo	190,529
Volkswagen Of America - FTZ	163,843

BCO Importers & Exporters

Breakbulk Freight – January through December 2016

TOP POH IMPORTERS	TONNAGE
ArcelorMittal USA	382,031
ExxonMobil Sales and Supply	355,783
Tenaris Global Service	208,553
North American Interpipe	113,708
TMK IPSCO	105,403
Concrete Reinforcing Products	93,294
TGS	79,021
CSN	73,789
VA Intertrading AG	68,308
AG Royce	60,043

TOP POH EXPORTERS	TONNAGE
Chevron Products	21,534
Tenaris	5,803
Unistel	4,742
Evrz Rocky Mountain Steel	4,308
Newmont Mining	4,016
SSAB Texas	3,730
Western Geco	3,675
Tri Costal Trdg	3,638
Exxon Neftegas	3,310
Schlumberger	2,824



Corpus Christi Inner Harbor

U.S. 5th Largest Port By Tonnage
Approx 100 million Tons/year
45ft deep channel



LNG Terminals approved by DOE/FERC

PROJECT	LOCATION	STATUS	ANNOUNCED DATE FOR OPERATIONS	TRAINS	CAPACITY (MTPA)
SABINE PASS LNG	CAMERON PARISH, LOUISIANA	UNDER CONSTRUCTION	2016	4 X (4.5 MMTPA E/O)	18
DOMINION COVE POINT	CHESAPEAKE BAY IN MARYLAND	UNDER CONSTRUCTION	2017	1X (5.75 MMTPA E/O)	5.75
CAMERON LNG	LOUISIANA, U.S.	UNDER CONSTRUCTION	2018	3 X (4.0 MMTPA E/O)	12
FREEPORT LNG	QUINTANA ISLAND, FREEPORT, TEXAS	UNDER CONSTRUCTION	2018	3X (4.4 MMTPA E/O)	13.2
CORPUS CHRISTI	LA QUINTA CHANNEL, TEXAS	APPROVED BY FERC IN DECEMBER 2014	2018	3 x (4.5 MMTPA E/O)	13.5
					62.4

Liner Services calling at Port of Houston that transit the Panama Canal

Service (deployment area)	Route	Average vessel size	Range	Vessels	Port arrivals
2M Alliance - Lone Star Express/TP18 (ASIA-PA-CAM-ECNA-CARIB-PA-CAM-ASIA (INTRAASIA))	ASIA-USEC	4,712	4250 - 5085	10	1
CMA CGM -- ANL/APL/COSCO/Evergreen Line - Pacific Express 3-PEX3 (ASIA-PA-ECNA-HOPE-ASIA (INTRAASIA))	ASIA-USEC	5,323	5078 - 6350	11	1
CMA CGM -- Hapag-Lloyd - Med Americas-MGE (MED-CARIB-ECNA-CARIB/NCSA-PA-CAM-WCSA-PA-CAM-MED)	WCSA- EUROPE	2,563	2262 - 2872	11	1
COSCO - Gulf of Mexico Express-GME (ASIA-PA-ECNA-PA-ASIA)	ASIA-USGULF	4,252	4250 - 4253	9	1
Total port arrivals					4
Total ports					4

Liner Services Calling Port of Houston That does not transit the Panama Canal

Service (deployment area)	Route	Average vessel size	Range	Vessels	Port arrivals
2M Alliance -- Safmarine - TA1/NEUATL1 (EUR-ECNA-EUR)		4,677	4544 - 4824	5	1
2M Alliance -- Safmarine - TA6/MEDGULF (MED-EUR-CARIB-ECNA-CARIB-EUR-MED)		6,271	4549 - 6732	7	1
CMA CGM -- APL - Victory Bridge (EUR-ECNA-EUR)		4,191	4043 - 4298	6	1
G6 Alliance -- ACL - Atlantic Express 2-AX2 (EUR-ECNA-EUR)		4,699	4250 - 4992	6	1
G6 Alliance -- ACL - Atlantic Express 3-AX3 (EUR-ECNA-EUR)		3,207	3200 - 3237	5	1
Hamburg Sud/MSK -- Alianca/Hapag-Lloyd/Zim - U.S. Gulf/ECSA Service via Cartagena (ECNA-CAM-NCSA-ECSA-NCSA-CAM-ECNA)		5,837	5552 - 6750	7	2
Hapag-Lloyd -- Alianca/CCNI/Hamburg Sud/Zim - MGX (MED-ECNA-CARIB-ECNA-MED)		4,349	4250 - 4843	7	1
Hapag-Lloyd -- Maersk Line/MOL/SeaLand - Gulf Express-GCS (ECNA-CAM-NCSA/CARIB-CAM-ECNA)		2,512	2468 - 2578	5	2
Hapag-Lloyd/MSK/NYK -- Alianca/Hamburg Sud/Maersk Line/Melfi Marine/SeaLand/Zim - GS1 (ECNA-CARIB-ECSA-NCSA-ECNA)		5,794	5500 - 6750	8	2
Maersk Line -- APL/Safmarine - MECL (ECNA-MED-SZ-AFRICA-MIDE-ISC-MIDE-SZ-MED-ECNA)	INDIA-USEC	6,387	6188 - 6750	11	2
MSC - Canada Gulf Bridge (ECNA-CARIB-ECNA-CARIB-ECNA)		3,533	2680 - 4132	5	1
Seaboard - North Central America via Houston (ECNA-CAM-NCSA-CAM-ECNA)		2,512	2442 - 2566	3	2
Zim/MSK - Caribbean Gulf Express-CGX (CARIB-ECNA-CARIB)		2,911	2742 - 3200	3	1
Total port arrivals					18
Total ports					13

Potential PostPanamax Trade – Crude Oil



117,055 DWT
Aframax



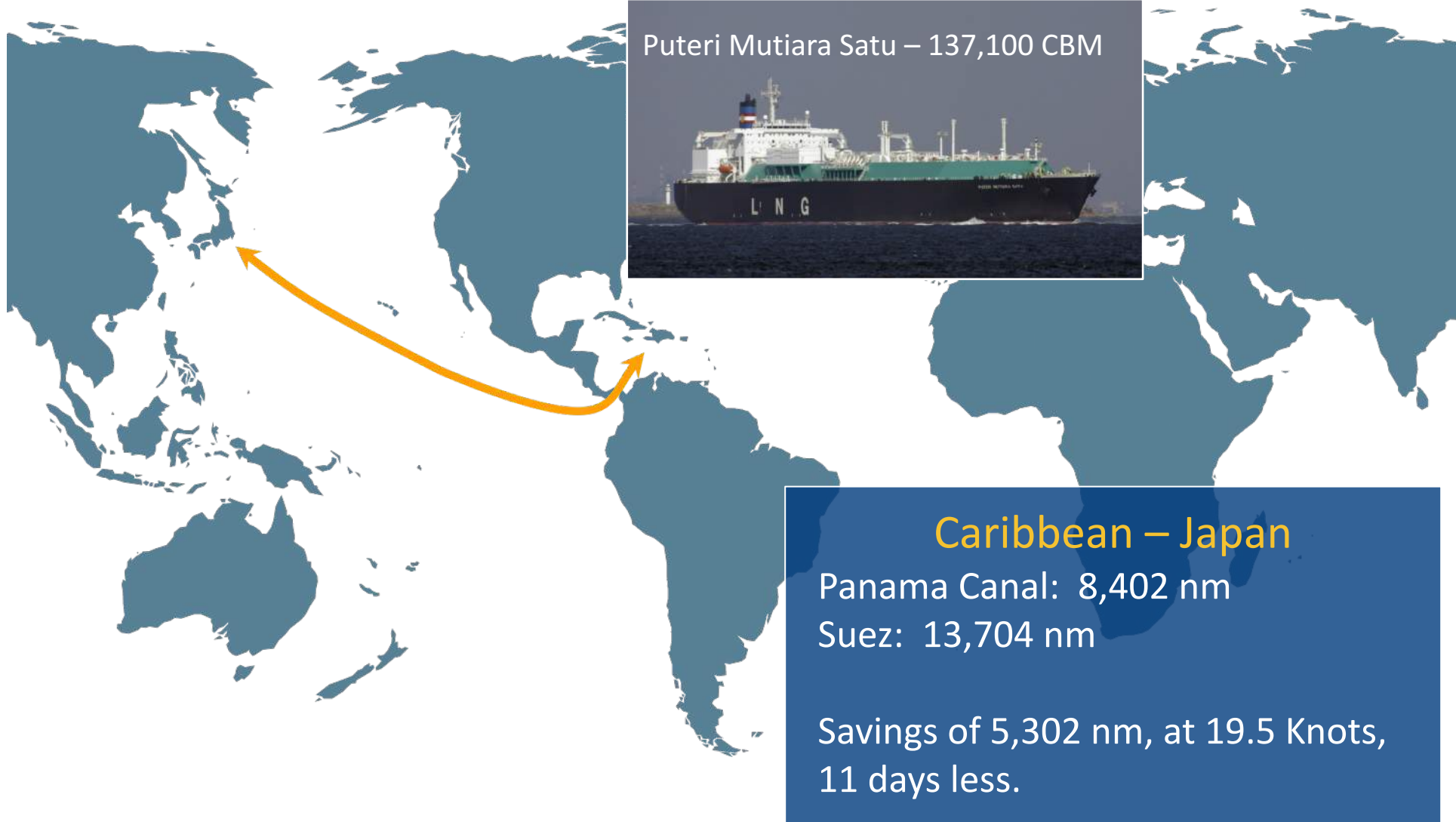
Crude Oil: Ecuador –U.S. Gulf

Panama: 2,047 nm

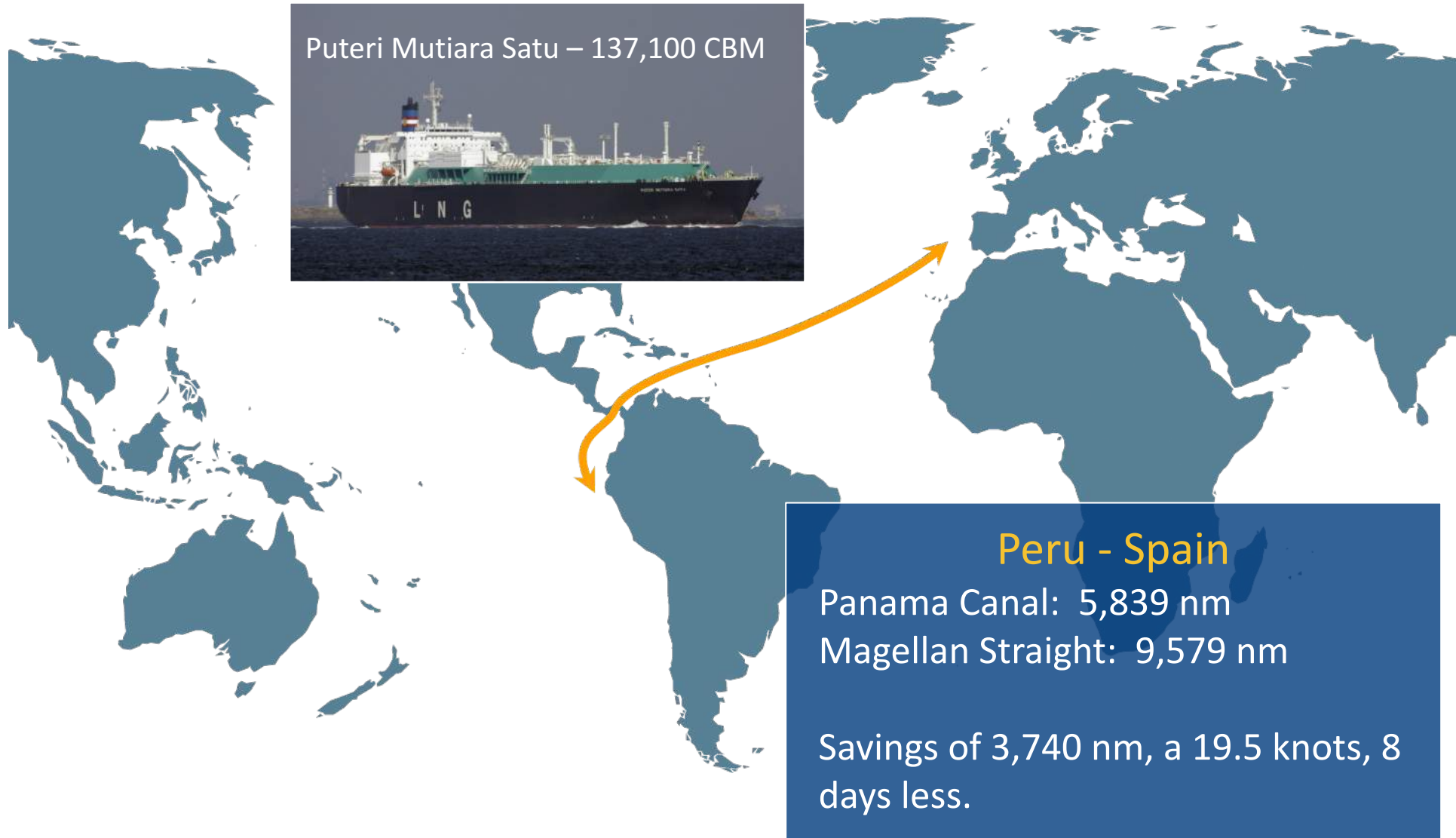
Cape of Good Hope: 10,972 nm

Savings: 8,925 nm, 15 knots, 26 days

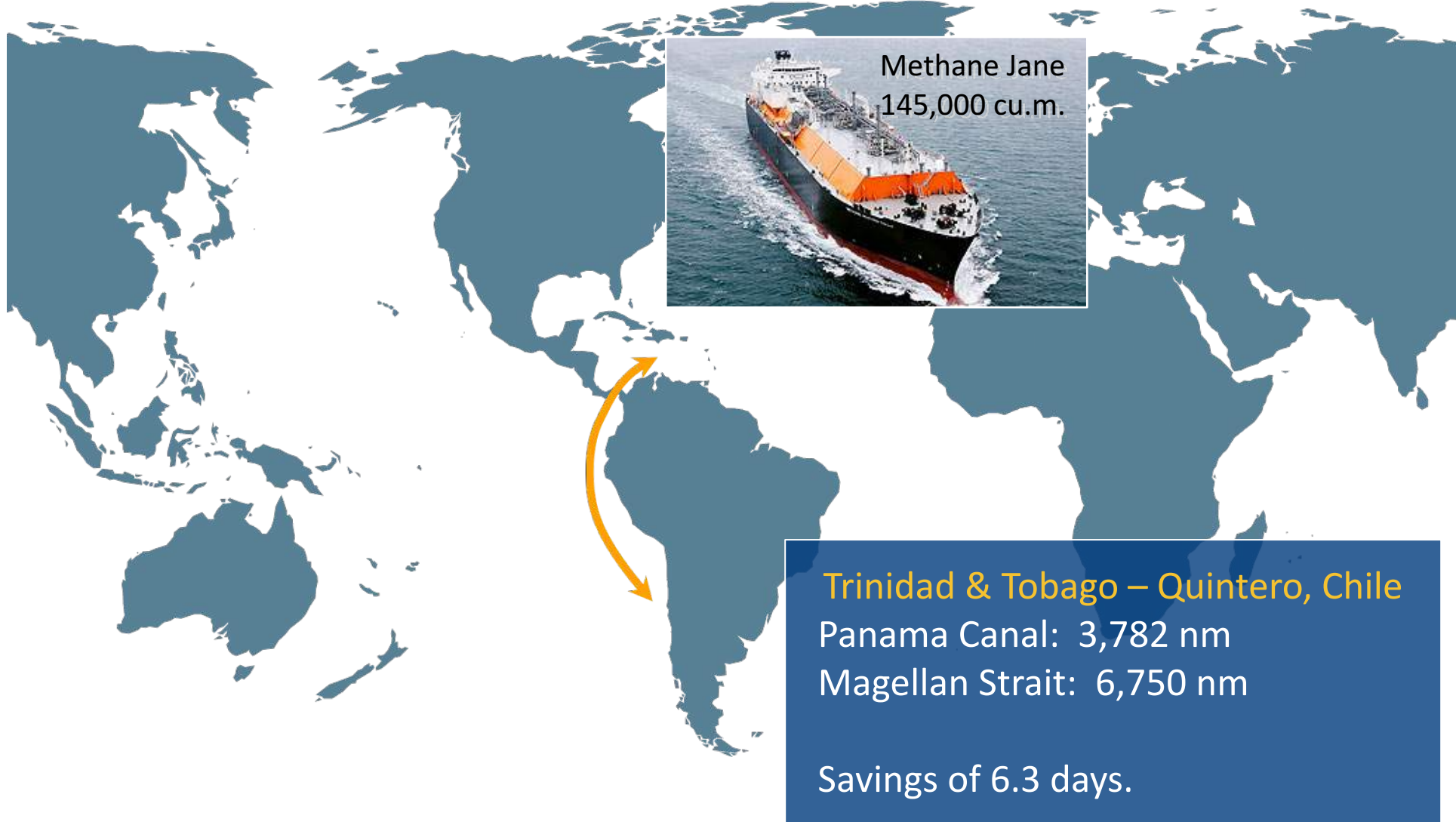
Distance Comparison



Distance Comparison



Distance Comparison



Distance Comparison



US Grains Export Comparisons with Canal Grain Flows

(Calendar Year 2016)

1. Total U.S. Grain Exports (million mt).	141.4
2. Relevant U.S. Grains Exports: destined to Asia and West Coast Central and South America (million mt).	51.7
3. U.S. Grain Exports through the Panama Canal (million mt).	44.1

3/1 Total Panama Grains vs. U.S. Grain Exports.	31.2%
3/2 U.S. Grains through the Panama Canal vs Relevant U.S. Grains Exports.	85.2%

Sources and Explanation:

1. USDA Annual Grains Inspected and/or Wtd for Export by Region and Country of Destination. Jan 2017. Includes corn, barley, sorghum, soybeans, wheat, oat, flaxseed and canola.
2. Methodology originally based on grains model developed by Nathan, taking as input grains inspections by USDA. Relevant U.S. grains exports for the Panama Canal means US. East Coast and Gulf to Northeast Asia (China, Japan, South Korea and Taiwan), West Coast of Central and South America and flows from the U.S. Pacific to Europe.
3. ACP data converted to calendar year 2016 for grains. Total U.S. East and West Coast grain exports through the Panama Canal.