



Panama Canal Expansion



Jeffrey McKee

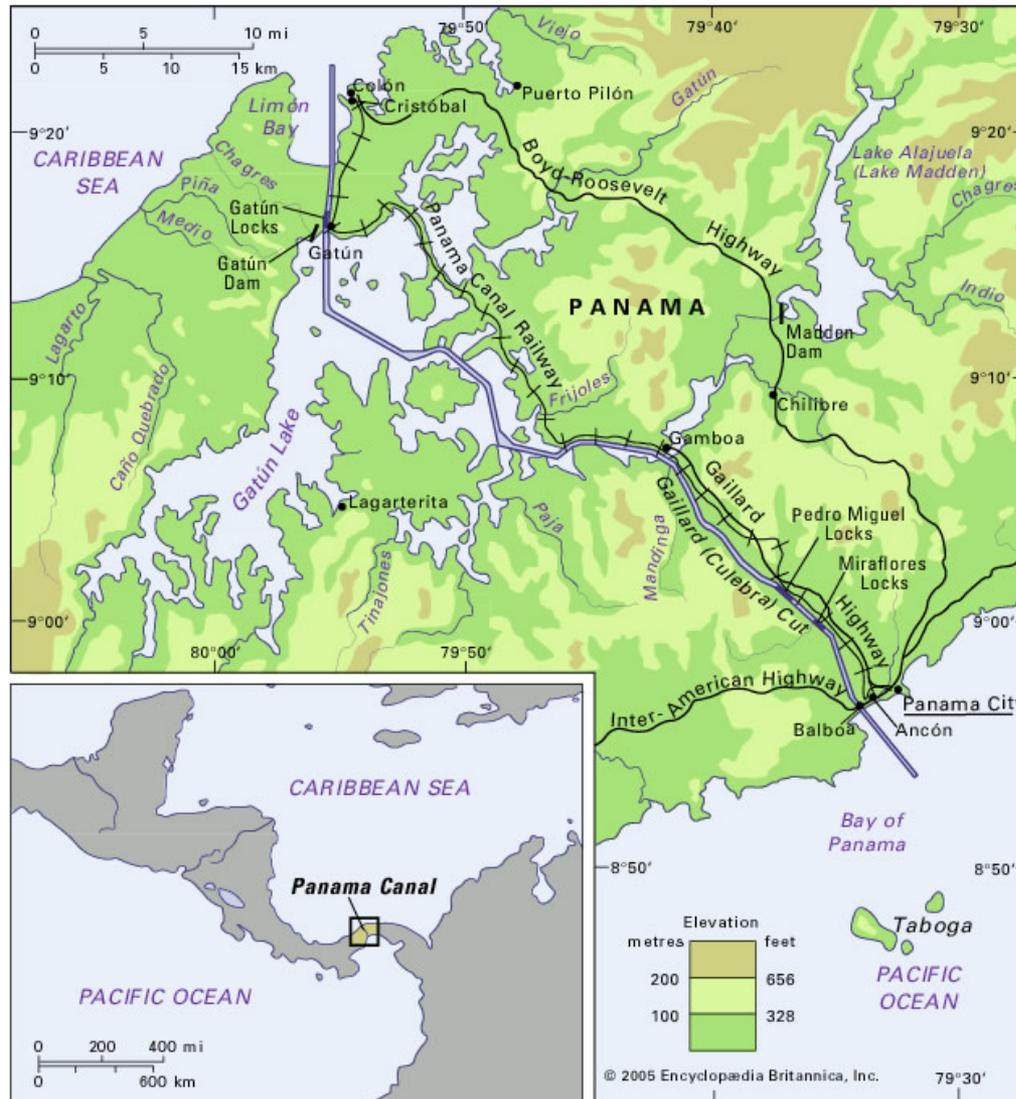
Coastal Navigation Program Manager

U.S. Army Corps of Engineers, Headquarters

October 29, 2009

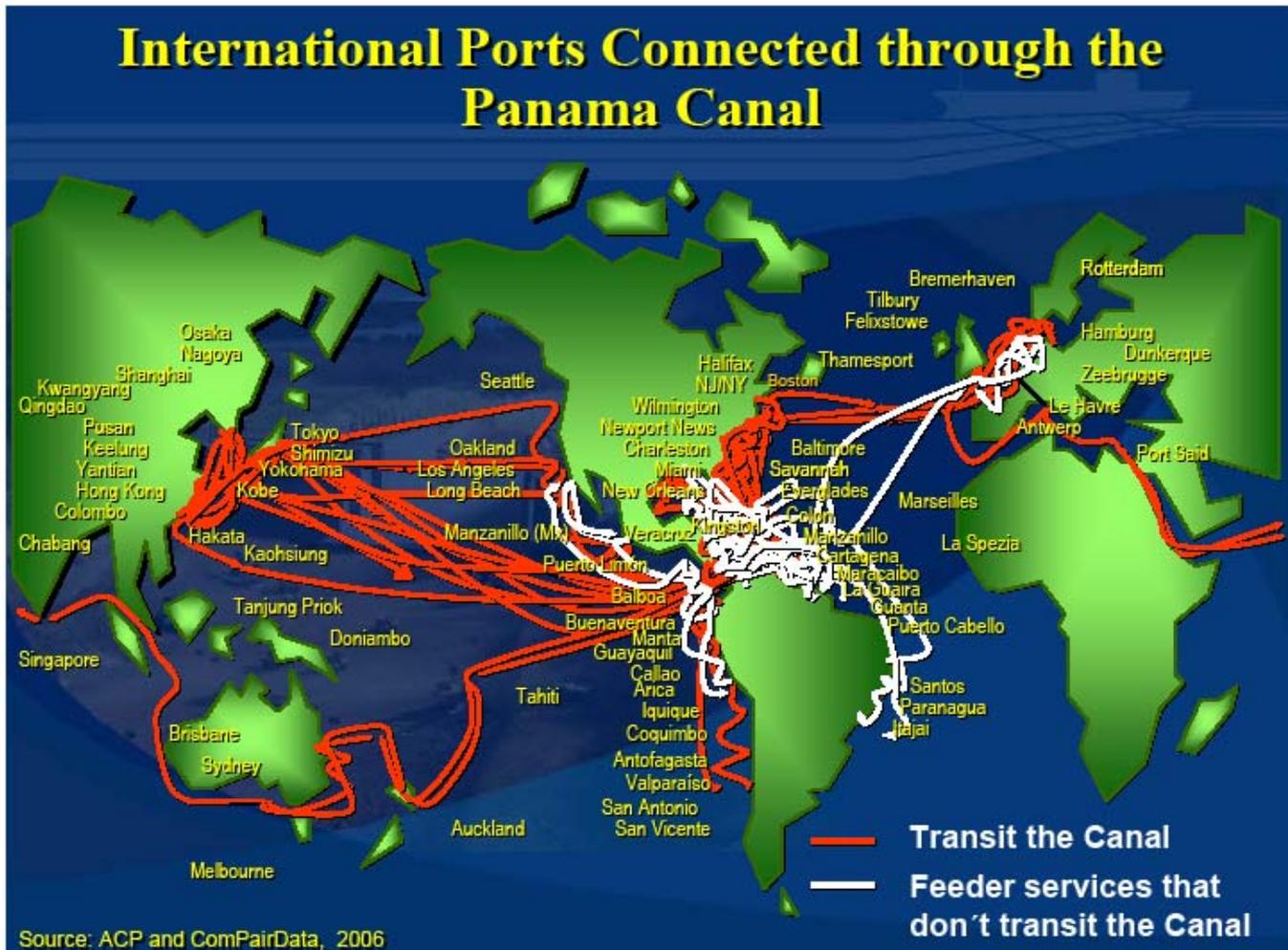


Panama Canal



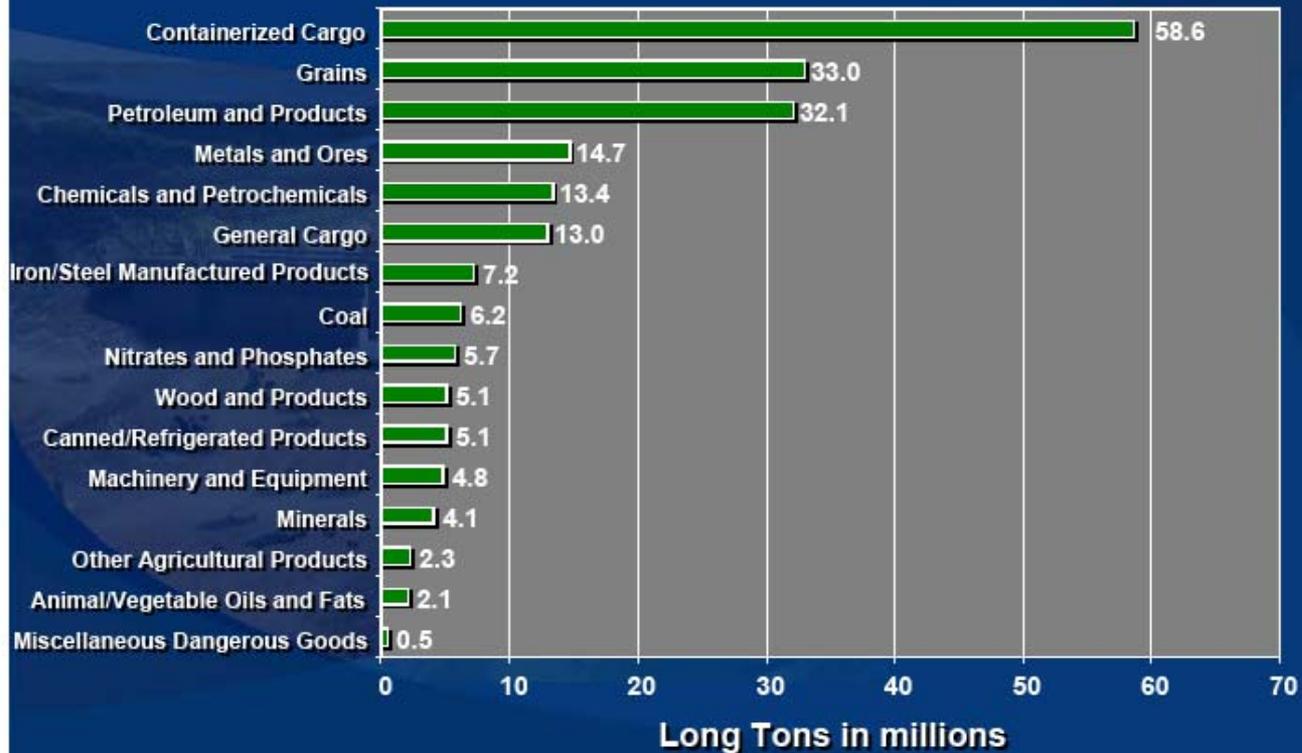


International Ports Connected through the Panama Canal



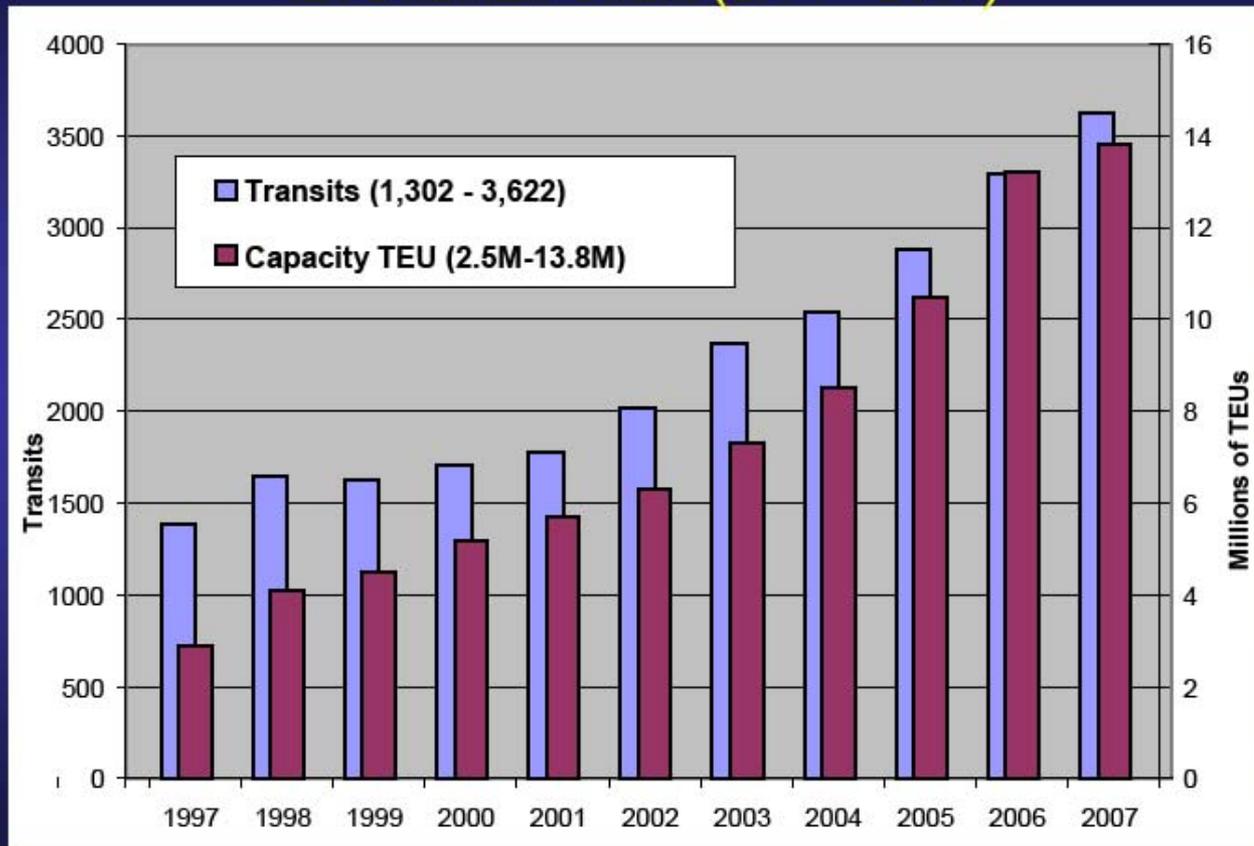


Principal Commodities that Transit the Panama Canal Fiscal Year 2007





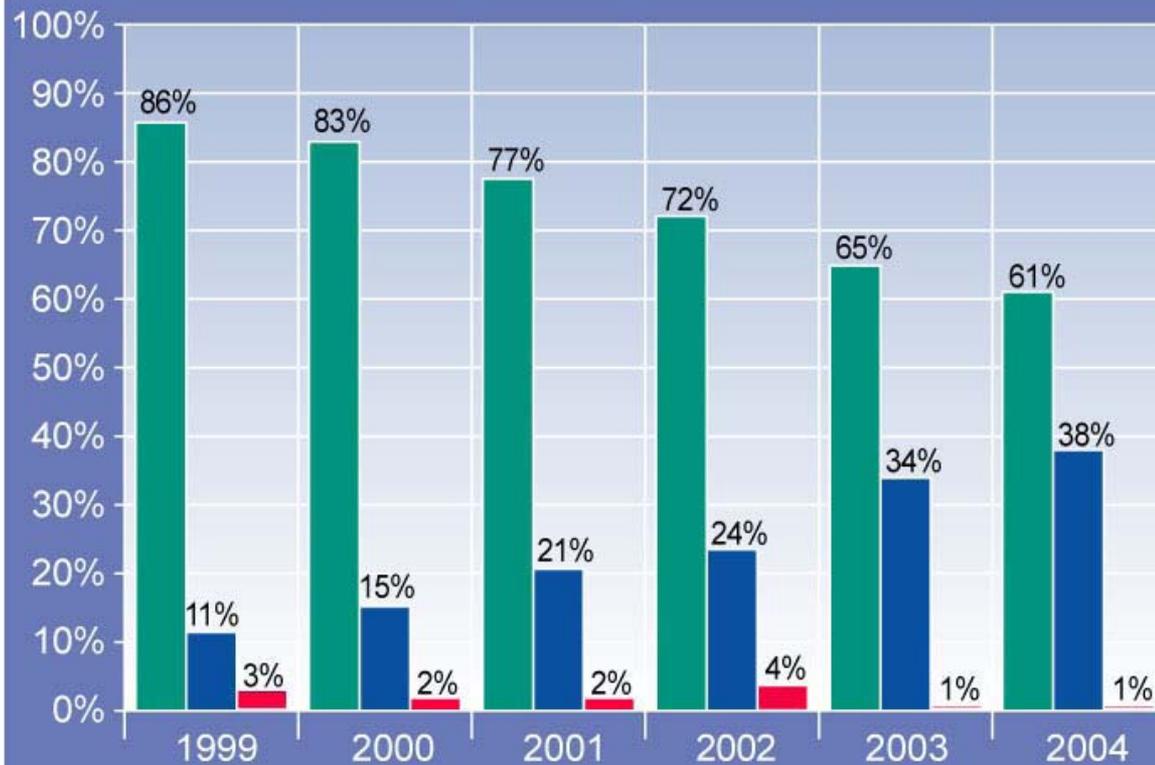
Growth of container traffic through the Panama Canal (1997 - 2007)



Based on the capacity of transiting vessels – Source: CompairData



Panama Canal Market Share of the Container Segment on the Asia to the U.S. East Coast Route

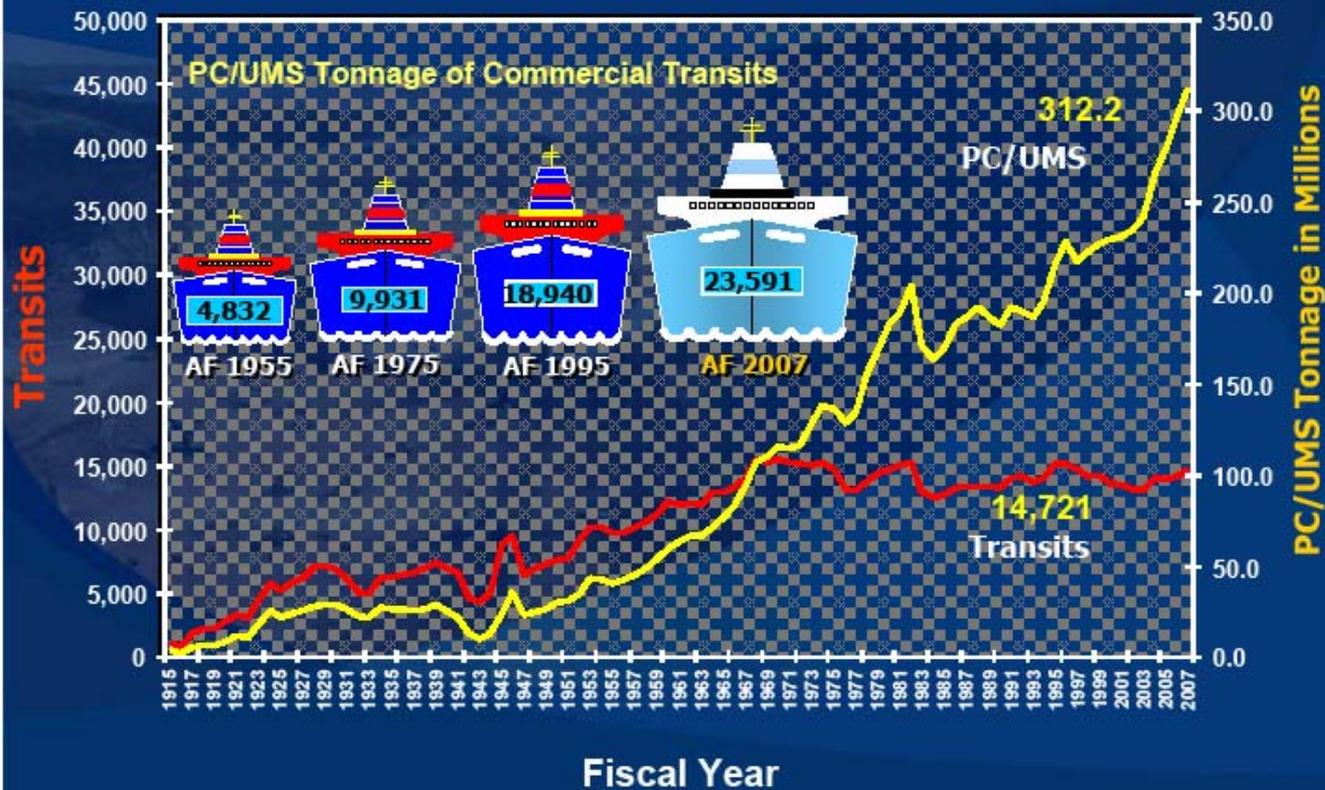


- U.S. Intermodal System
- Panama Canal
- Suez Canal

Source: ACP data base, PIERS, AAR

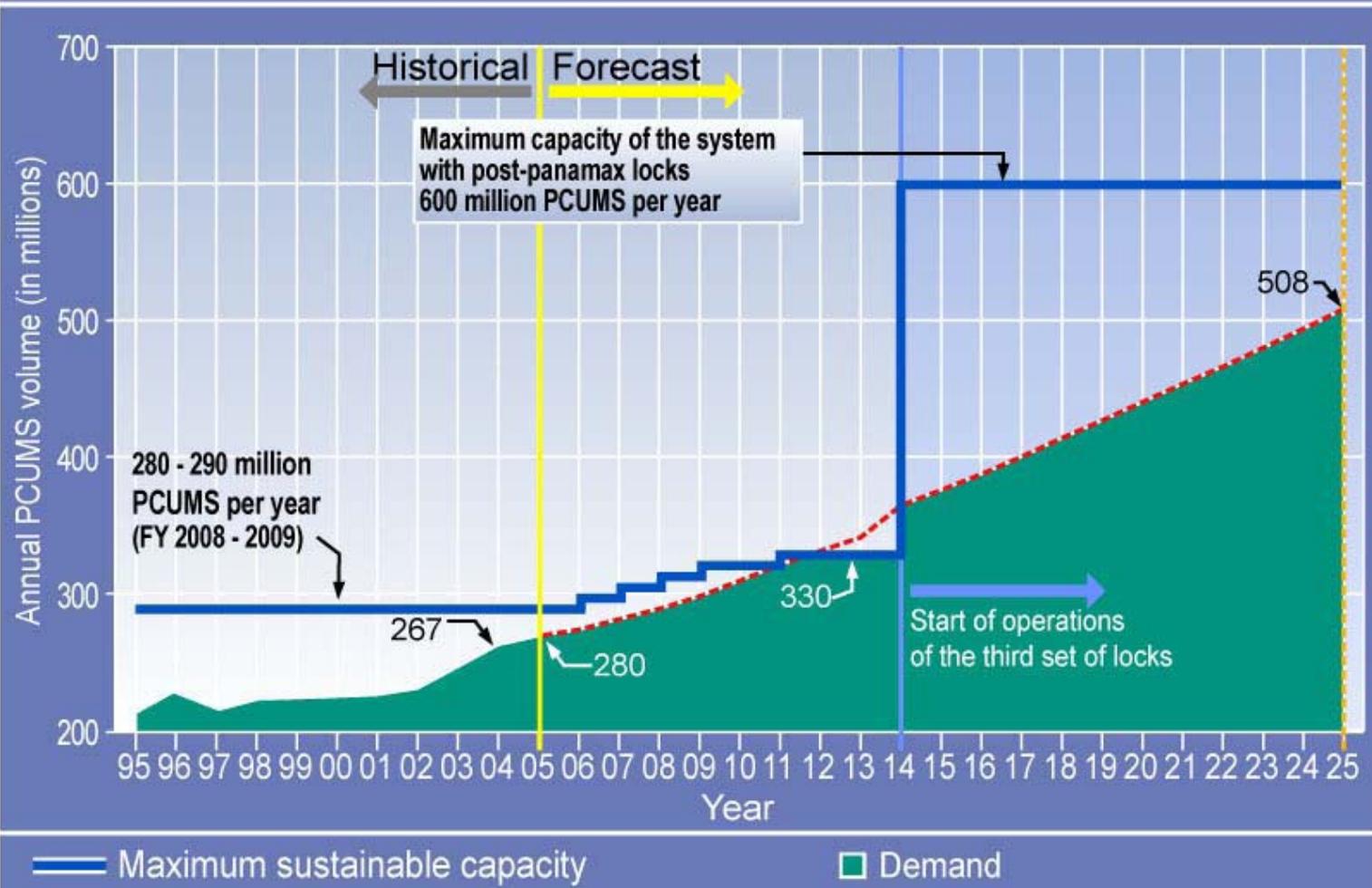


Transits vs. PC/UMS Tonnage FY1915 – FY2007





Maximum Sustainable Capacity of the Canal Expanded with the Third Set of Locks

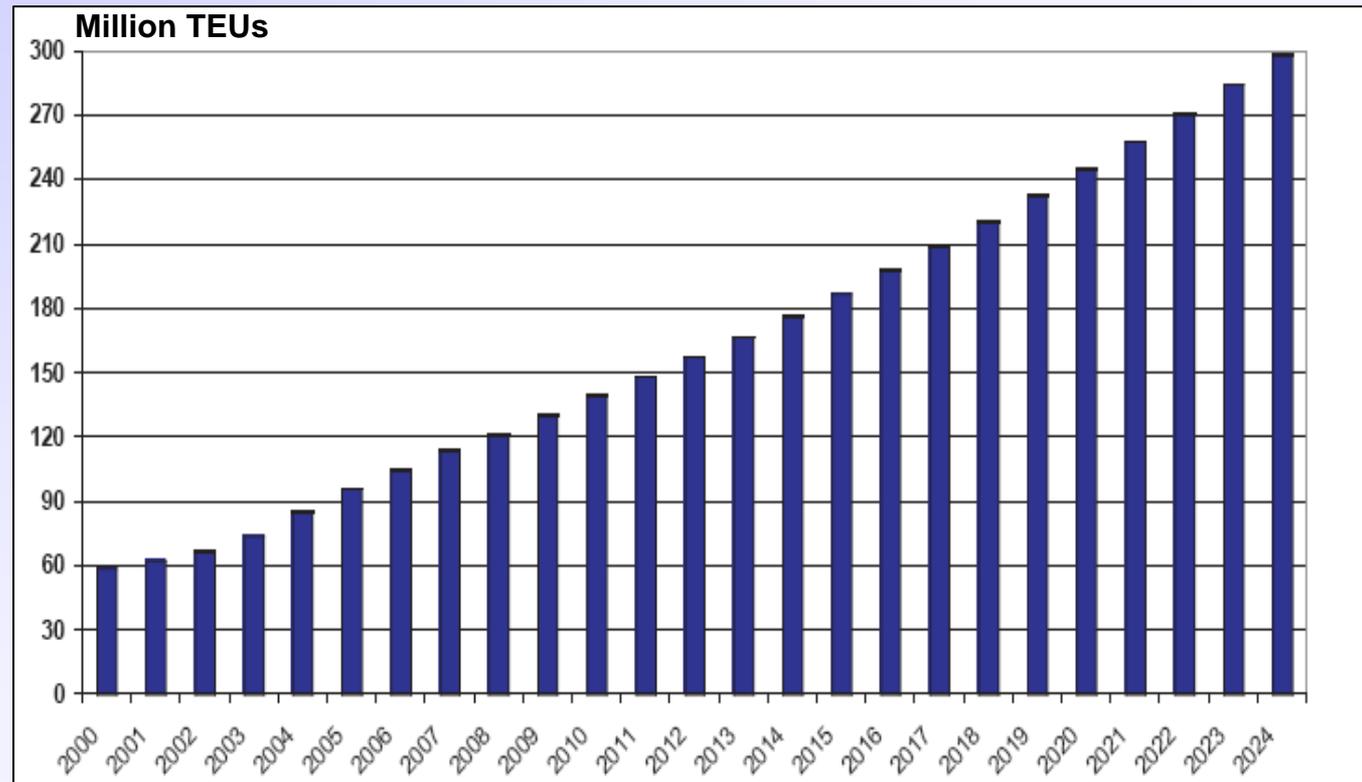




Forecast Total World Container Trade

2000 - 2024

- More than doubles from 60 million TEUs in 2000 to 135 million in 2010
- Forecast to increase to 300 million TEUs by 2024



Source: Global Insight, Inc. Apr 2008.



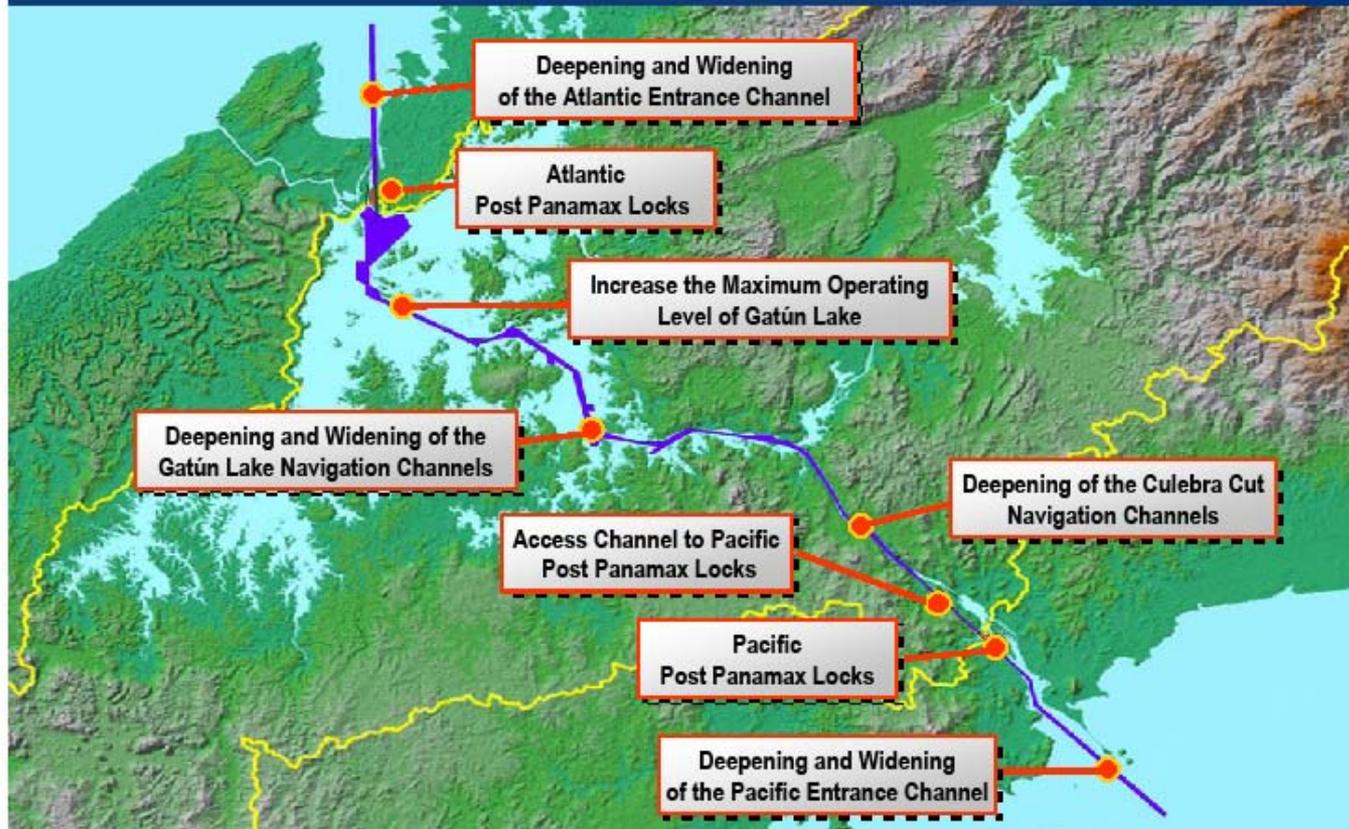
Orderbook of Post Panamax (5,000+) Full Container Ship - Dec. 2007

Range Size	Number of Vessels	Capacity	Average Vessel Size
13,000 - 13,300	37	486,672	13,153
12,000 - 12,999	43	542,840	12,624
11,000 - 11,999	10	113,800	11,380
10,000 - 10,999	28	280,536	10,019
9,000 - 9,999	34	327,470	9,631
8,000 - 8,999	124	1,044,242	8,421
7,000 - 7,999	12	89,598	7,467
6,000 - 6,999	94	612,132	6,512
5,000 - 5,999	52	278,932	5,364
Total order (5,000+)	434	3,776,222	8,701

Source: Clarksons - on-line Service, Dec. 2007



Canal Expansion Program Components



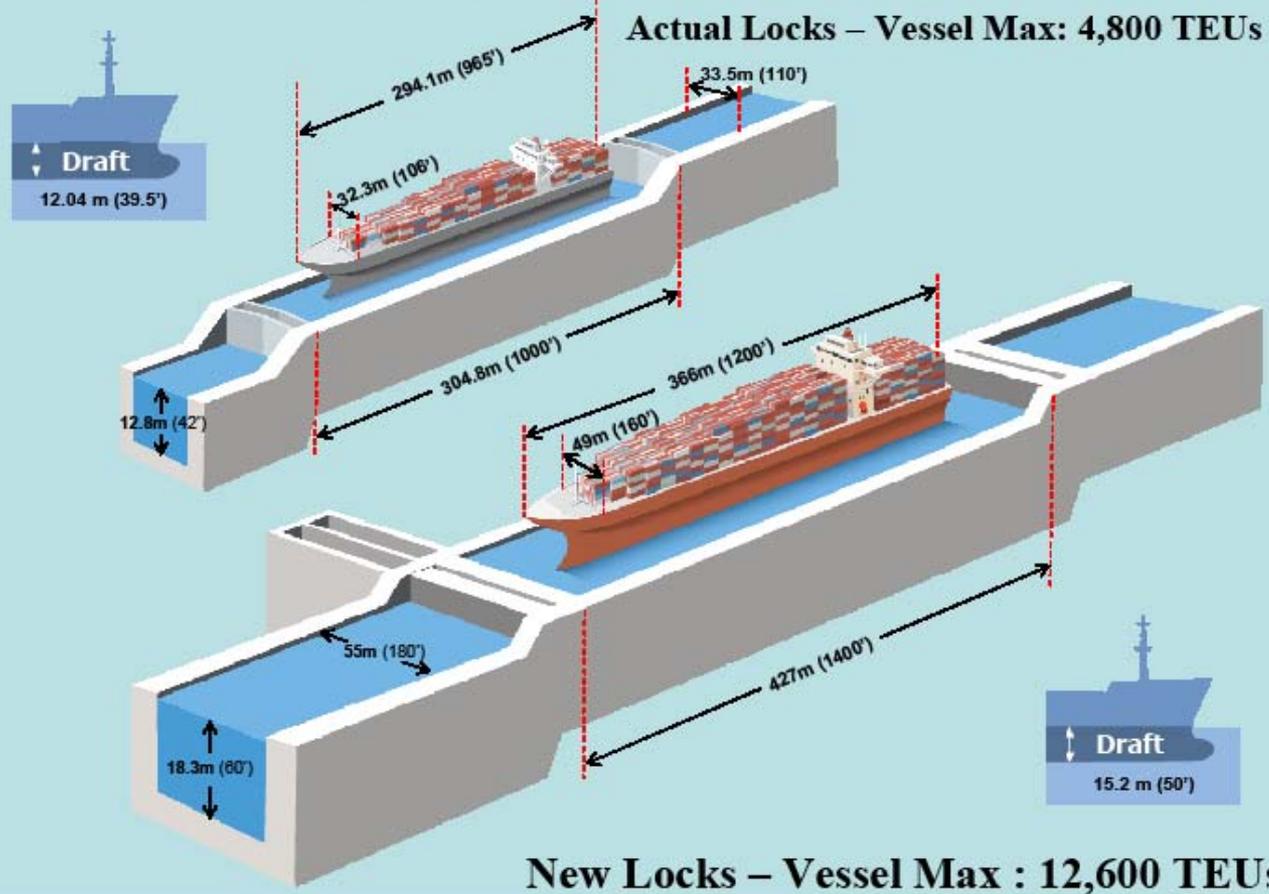


Lock Configuration Conceptual Design

- ◆ 3 Lift Locks
- ◆ 3 Water Saving Basins per Lift
 - ◆ (60% water saving)
- ◆ Approach Walls at the Entrances
- ◆ Side port Filling and Emptying
- ◆ Rolling Gates
- ◆ Vessel Positioning with Tugs



New Locks Dimensions



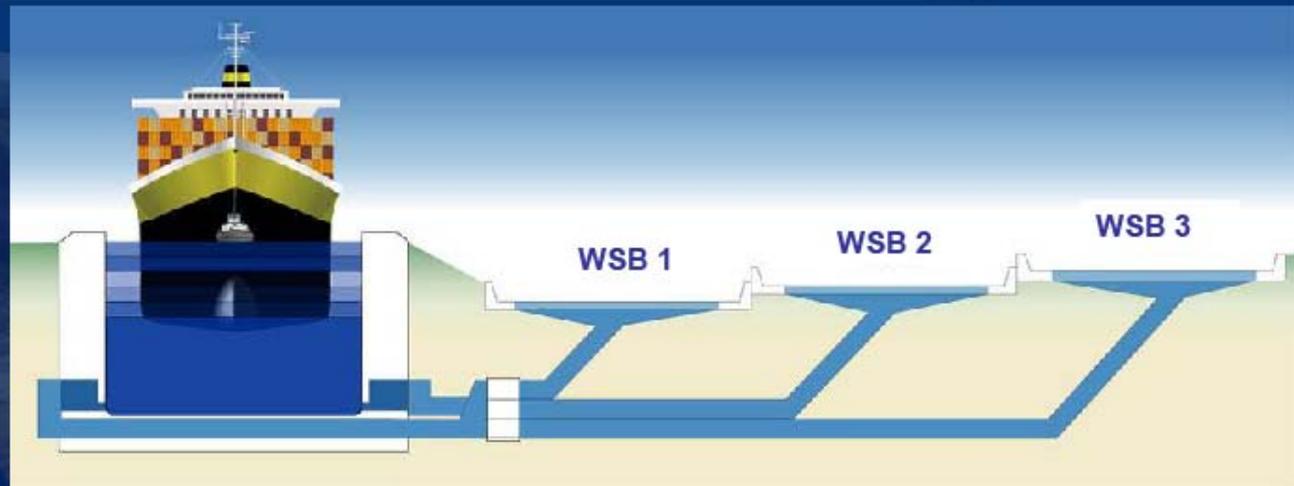


Post Panamax Lock Concept





Operation of Water Saving Basins



With the water saving basins the new locks will use **7% less** water than the existing locks





Atlantic Locks Concept





Pacific Locks Concept





Approximate Quantities Civil Work Conceptual Design

(thousands)

Material	Pacific	Atlantic	Total
Excavation (m3)	12,000	18,000	30,000
Reinforced Concrete (m3)	1,750	1,680	3,430
RCC (m3)	260	330	590
Reinforcing bars (ton)	130	130	260
Cement (ton)	540	520	1,060
*Processed Material (m3)	7,800	5,600	13,400

*Processed material includes fill and aggregate



Coastal MTS



- **Value of all foreign trade represents nearly 30% of nation's GDP**
- **Overseas waterborne trade**
 - 95% of overseas trade by volume
 - 75% of overseas trade by value
 - 16 million jobs
- **About \$2.3 trillion in economic activity**
- **Many coastal ports nearing capacity**
- **Cargo volumes in 2000 projected to double by 2020**
- **Already a generation behind in channel design – but West Coast in better shape**
- **Capacity constraints increase transportation costs, pollution, congestion**

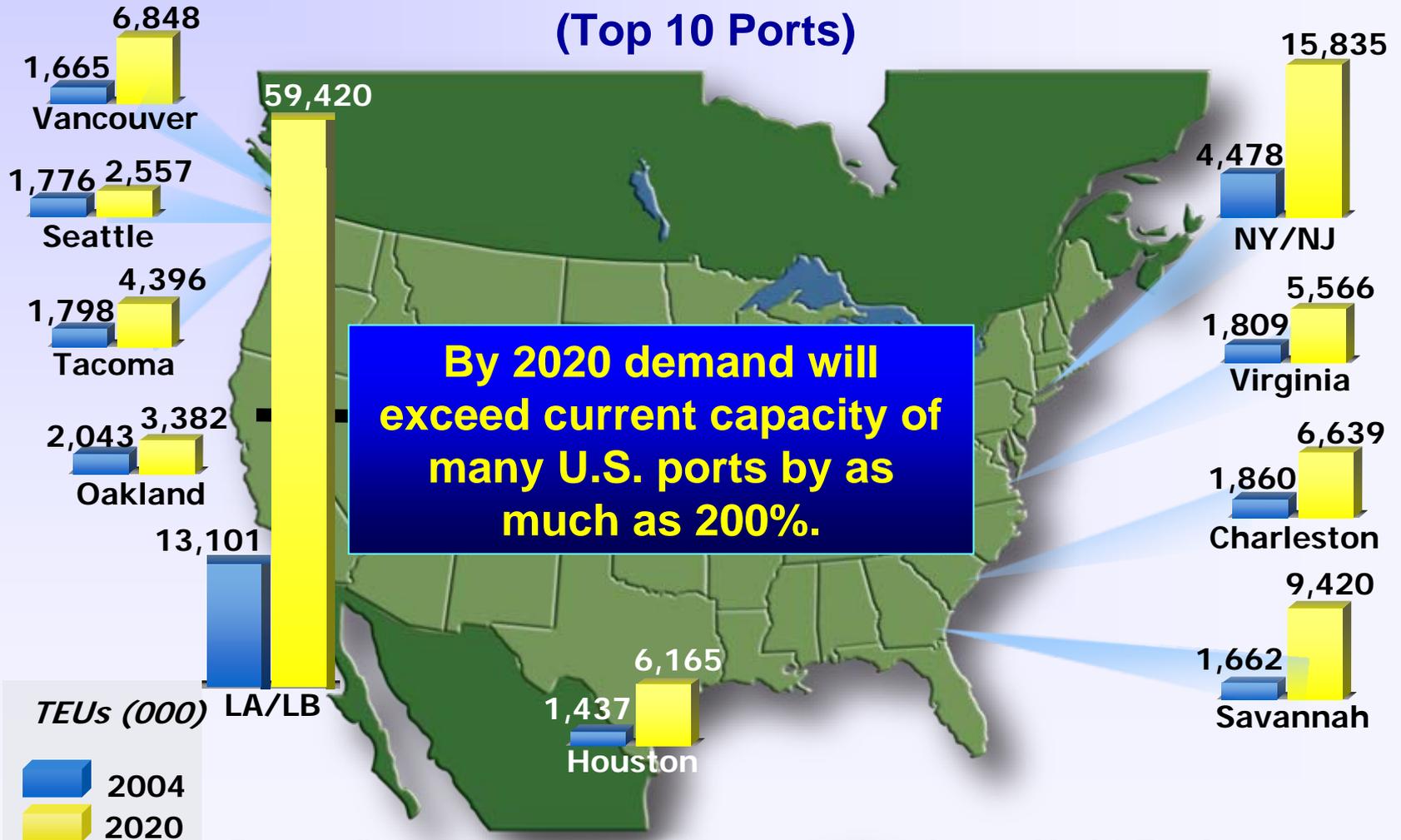


Harbors w/45' Capability

- **NY/NJ (50-foot underway)**
- **Baltimore (50-foot available)**
- **Hampton Roads (50-foot available)**
- **Charleston**
- **Mobile**
- **New Orleans**
- **Freeport**
- **Galveston**
- **Houston**
- **Corpus Christi**
- **LA/LB (>50-foot available)**
- **Oakland (50-foot underway)**
- **Seattle/Tacoma (natural depth, berths to 50 feet)**



North American Maritime Container Trade Current and Future Trade Growth

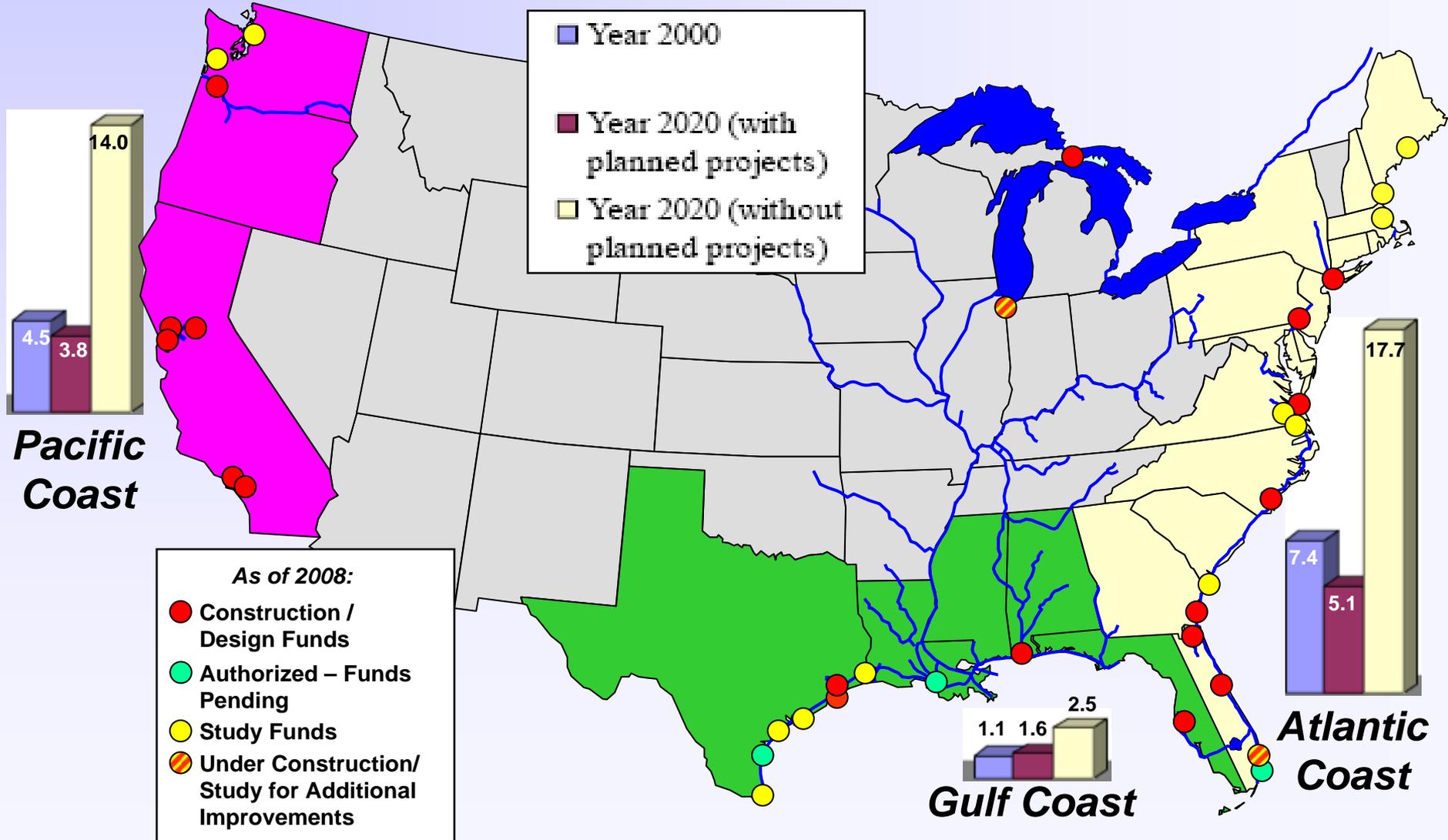


Forecast figures based on 6 year linear regression. Source: MarAd, TranSystems



Depth-Constrained Containership Calls in 2020, with and without Planned Harbor Projects

(in thousands of ship calls)





U.S. Harbor Deepening Challenges

Future Trade Volumes and Vessels

- **Study Process:** The lengthening process to study, design, authorize and fund channel improvements;
- **Funding:** The uncertainties associated with the annual federal appropriation process for projects underway;
- **Dredging:** The escalating costs of dredging and dredged material placement, and associated environmental mitigation activities; and
- **Handling Facilities and Space:** The need for vastly expanded cargo handling facilities and improved intermodal connections, coupled with limitations on port expansion and encroachment of other land uses on port facilities.



A Way Forward

- **Reliable funding stream to complete ongoing projects;**
- **Work with various government agencies, NGOs and stakeholders toward consensus on how to move forward on critical improvements;**
- **Streamline study, design and authorization process;**
- **Work with state and local port authorities to move quickly to add cargo handling facilities and improve intermodal connections; and**
- **Explore opportunities to utilize short sea shipping to shuttle cargo between load center ports and secondary ports as a way to minimize the overland move and reduce highway and rail congestion.**





Questions?

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