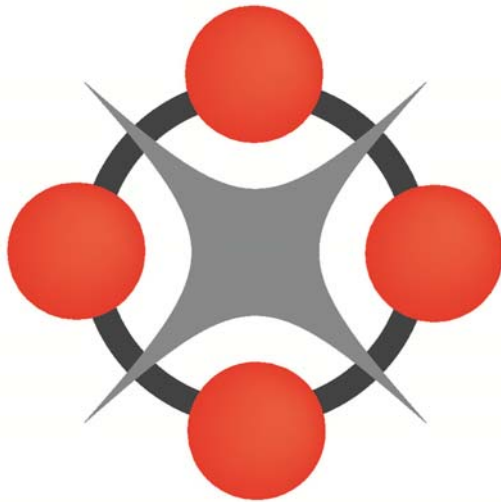


Effect of the Panama Canal Expansion on US Grain Exports



Jason Bittner
Tim Baird

National Center for Freight &
Infrastructure Research &
Education (CFIRE)
University of Wisconsin

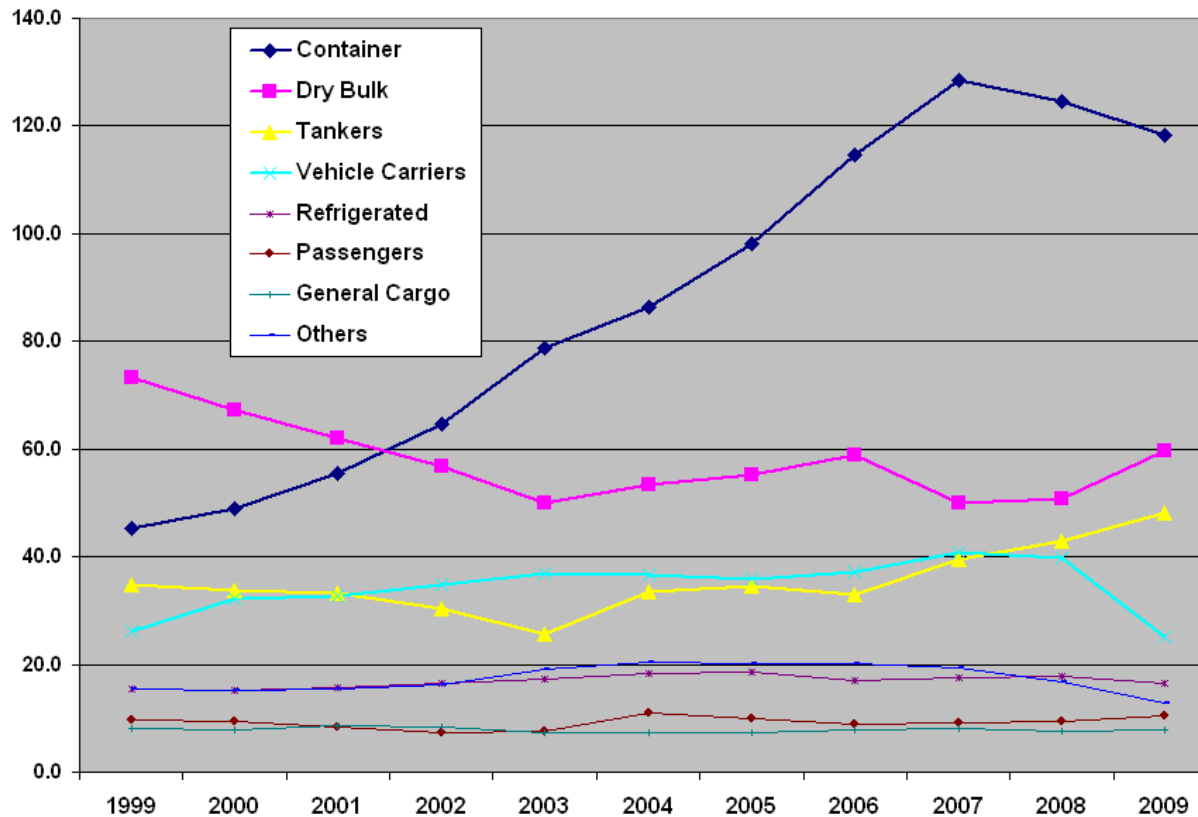
National Center for Freight & Infrastructure Research & Education

Overview

- Canal Basics
 - Expansion
 - Queuing and Reservation System
- Grain Trade Fundamentals
- Energy and Environmental Analysis
- Industry Expectations



Panama Canal Volumes



Grain is dominant

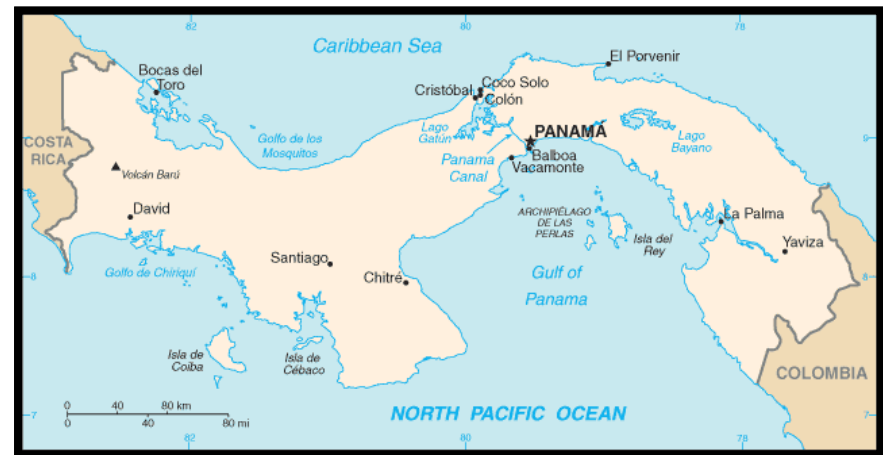
- Corn
- Soybeans
- Wheat

Vessel Tonnage Capacity (million PCUMS tons)



Panama Canal Expansion Project

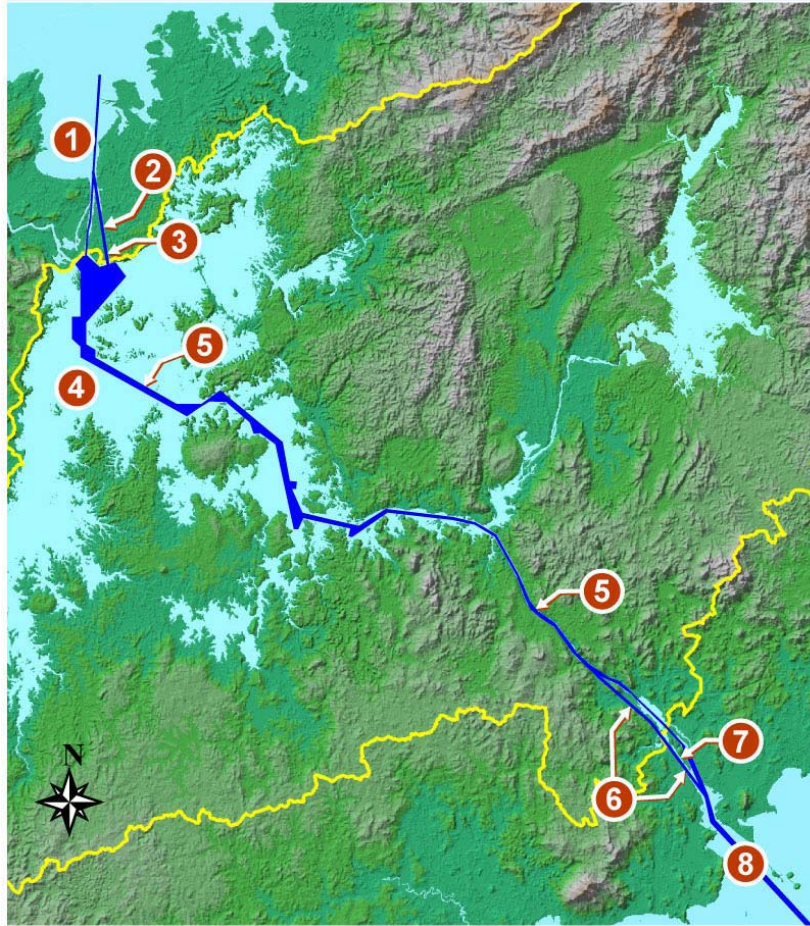
- Proposed and approved via referendum in 2006
- Construction began in 2007
- Expected to open to traffic in 2015
- Current capacity: Max 965 feet and 39 ft draft and about 70,000 mt
- Expanded 1200 feet
 - 50' draft



Source: solarnavigator.net



Components of Third Set of Locks Project



Project components include the expansion and creation of channels on the Atlantic (1-2) and Pacific (6,8) sides, increasing the depth of Lake Gatun (4-5), and installing new three-basin Post-Panamax locks (3,7)

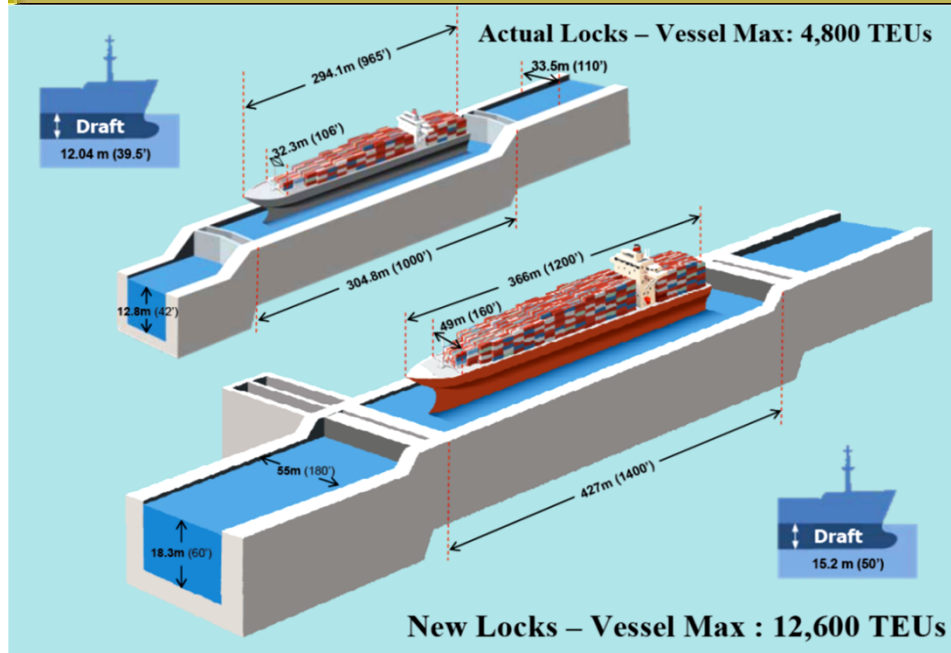
Aerial View of the Construction Sites of the New Locks



Source: Panama Canal Authority, 2006



CANAL PROFILE



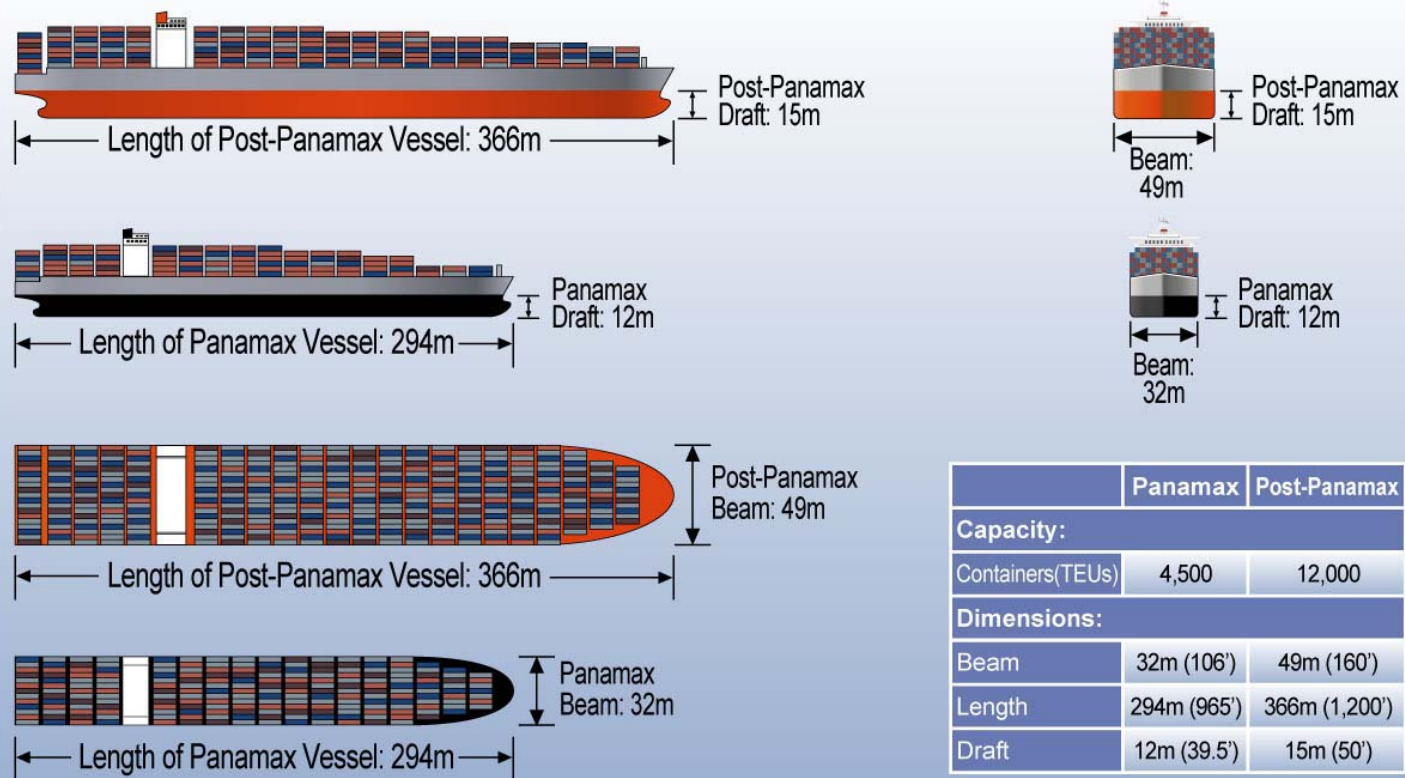
Atlantic Ocean Side Location of Locks



Pacific Ocean Side Location of Locks



Comparison between Panamax and Post-Panamax Container Vessels



The expanded locks will be able to accommodate vessels carrying over 250% of present maximum capacities.

Source: Panama Canal Authority, 2006



Queuing



- Reservation System
- Ancillary Fees



Source: Jason Bittner, 2010

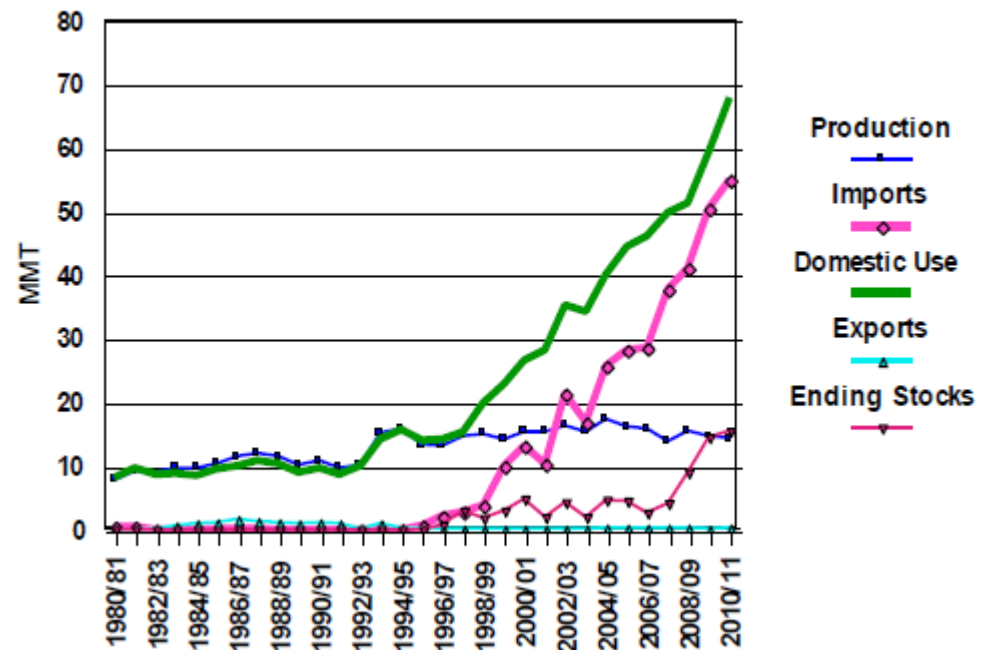
Fundamentals

- Demand
 - China
 - Ethanol
- Technology and Space
 - Genetically Modified Crops/Disease Resistance
- Logistics Changes
 - PNW Export Capacity
 - Shuttle Trains
 - Ocean Rate Differentials
- Energy and Emissions Characterizations



China Soybean Demand

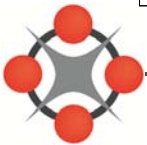
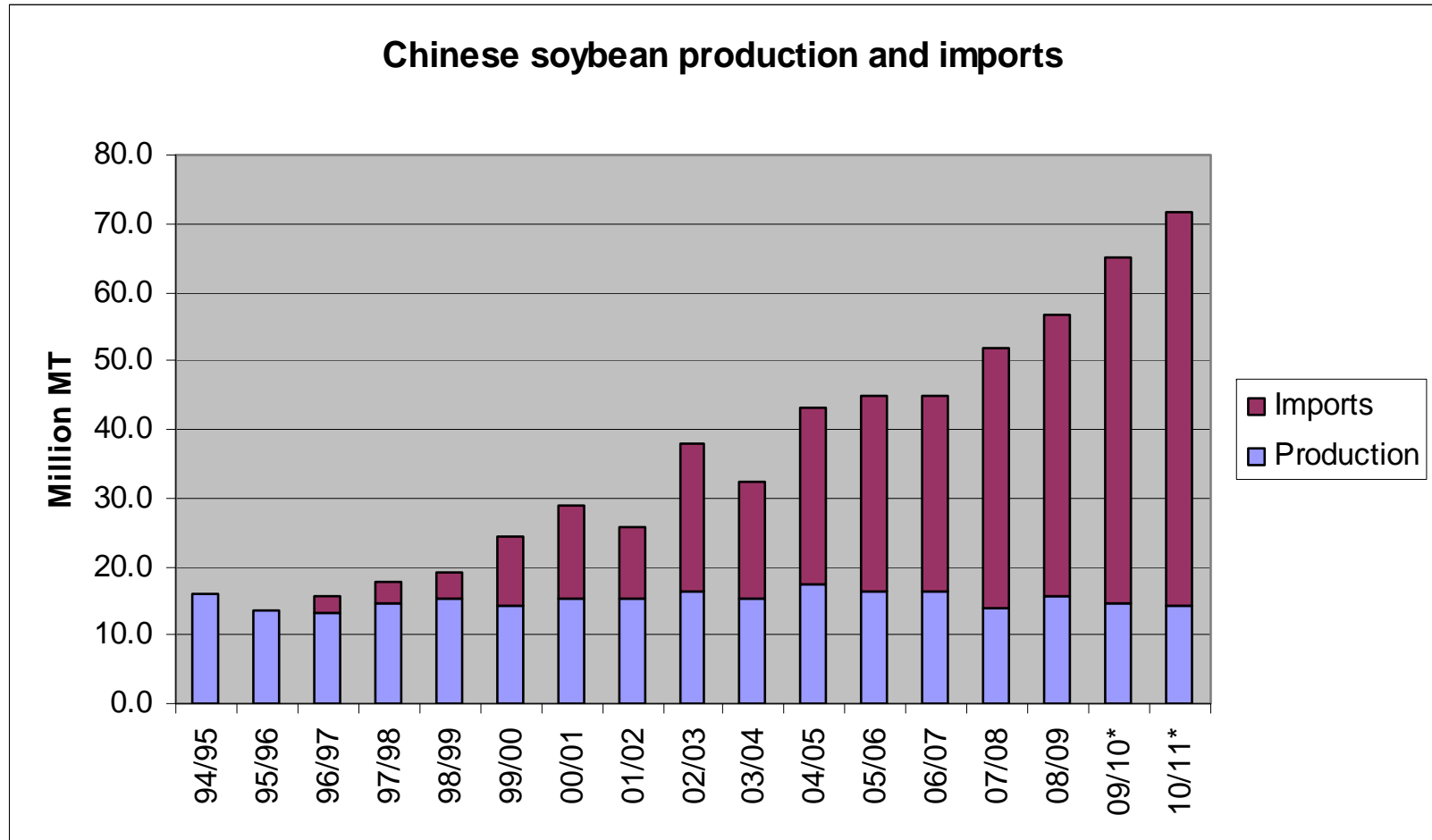
- No Growth in Production
- 18% Increase in Demand
- Original Projected Import 42mmt / now expect 65 mmt



Source: W. Wilson, North Dakota State University

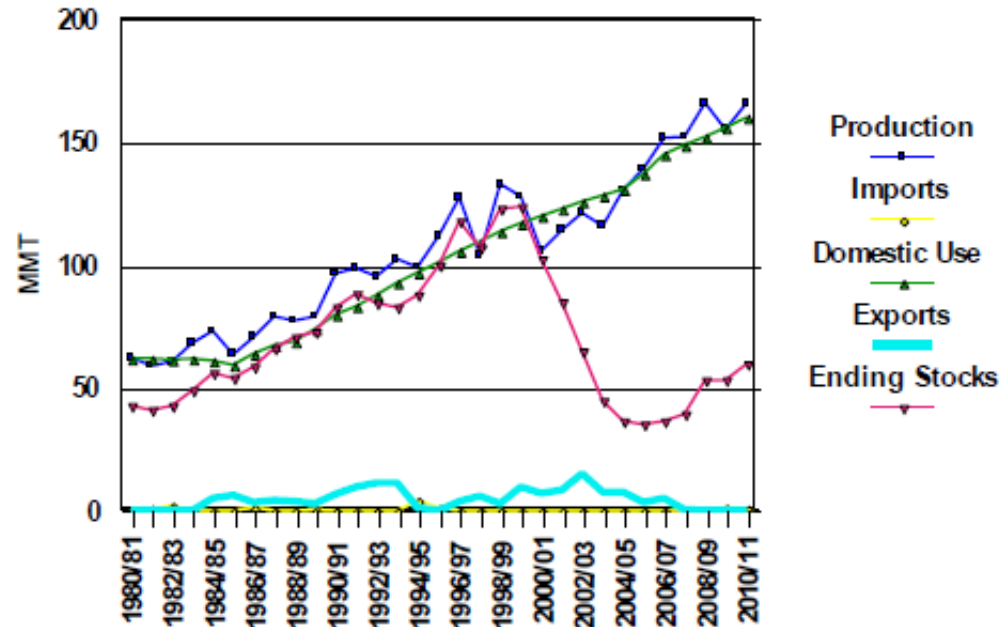


China Soybean Demand



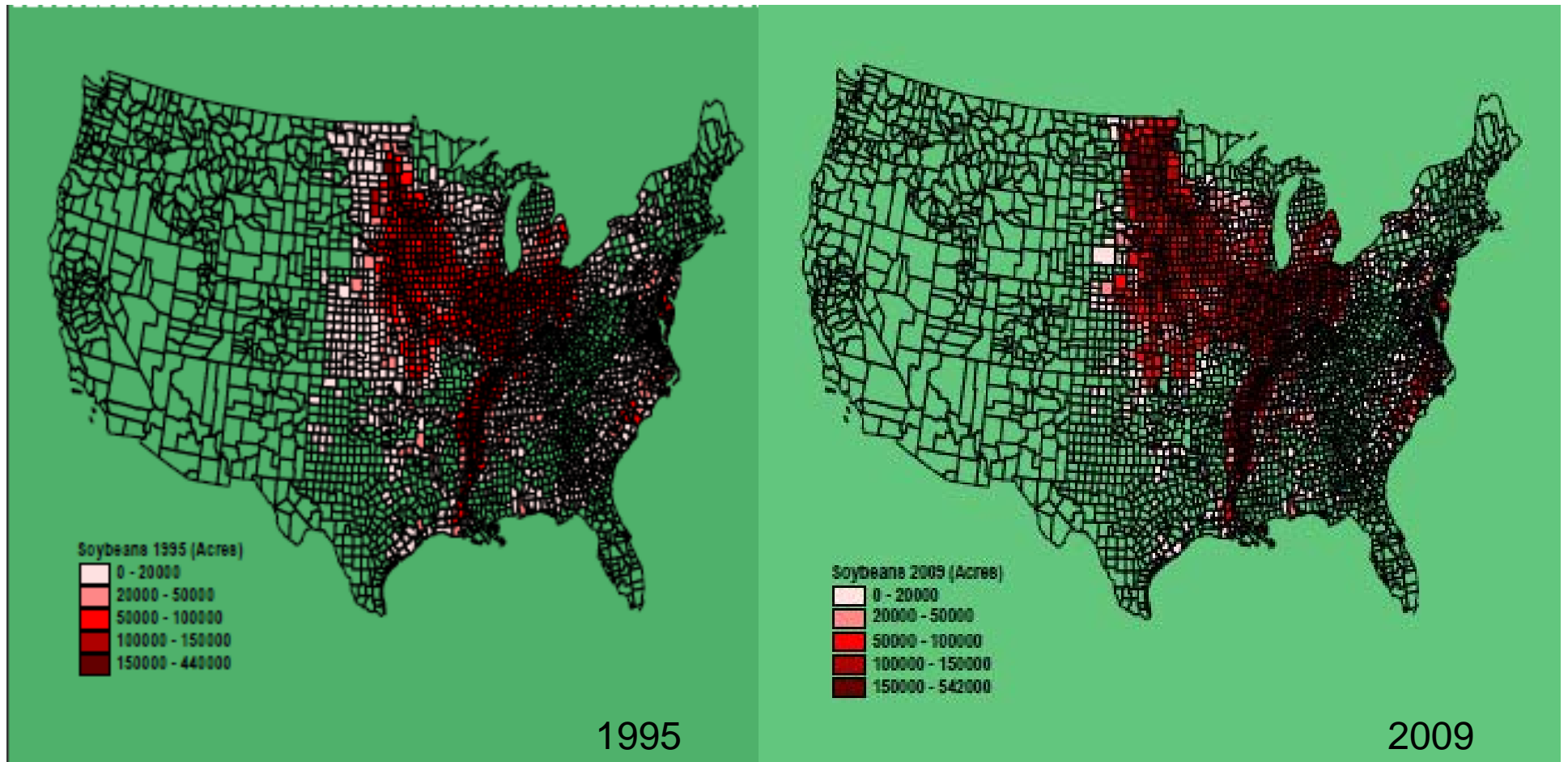
China Corn Demand

- Drawing Down of Stocks
- Hanver Li (JCI Intelligence) anticipates that China will import as much as 15mmt in 2014-2015.



Source: W. Wilson, North Dakota State University

Planted Areas - Soybeans



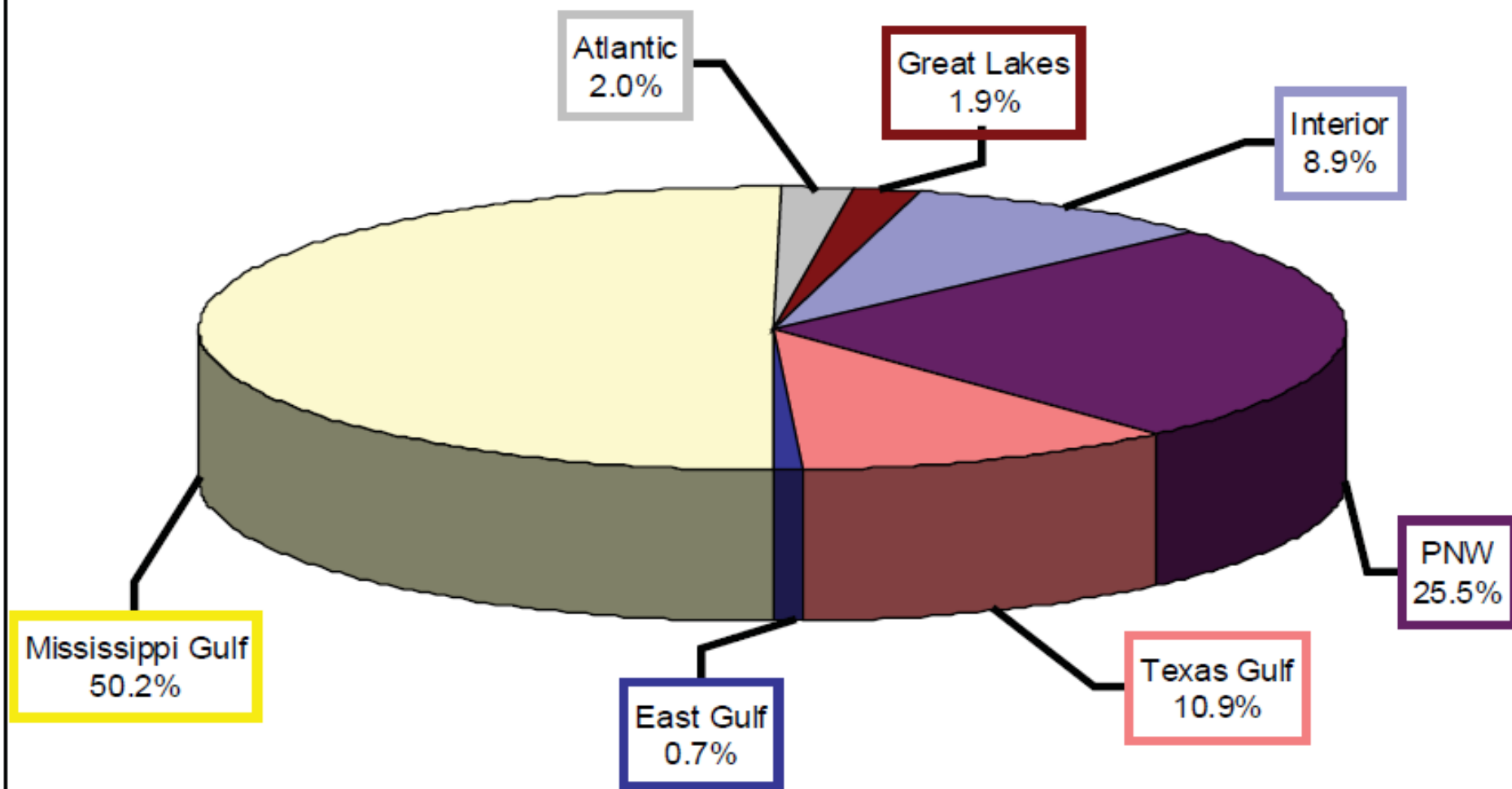
Source: W. Wilson, North Dakota State University

Ethanol

- Continued pressure for growth and domestic consumption
- Fuel Prices
- Higher blends (E15, E17, E20, E85)



U.S. Grain Inspections, by Port Region, 2009
% of Total Bushels*

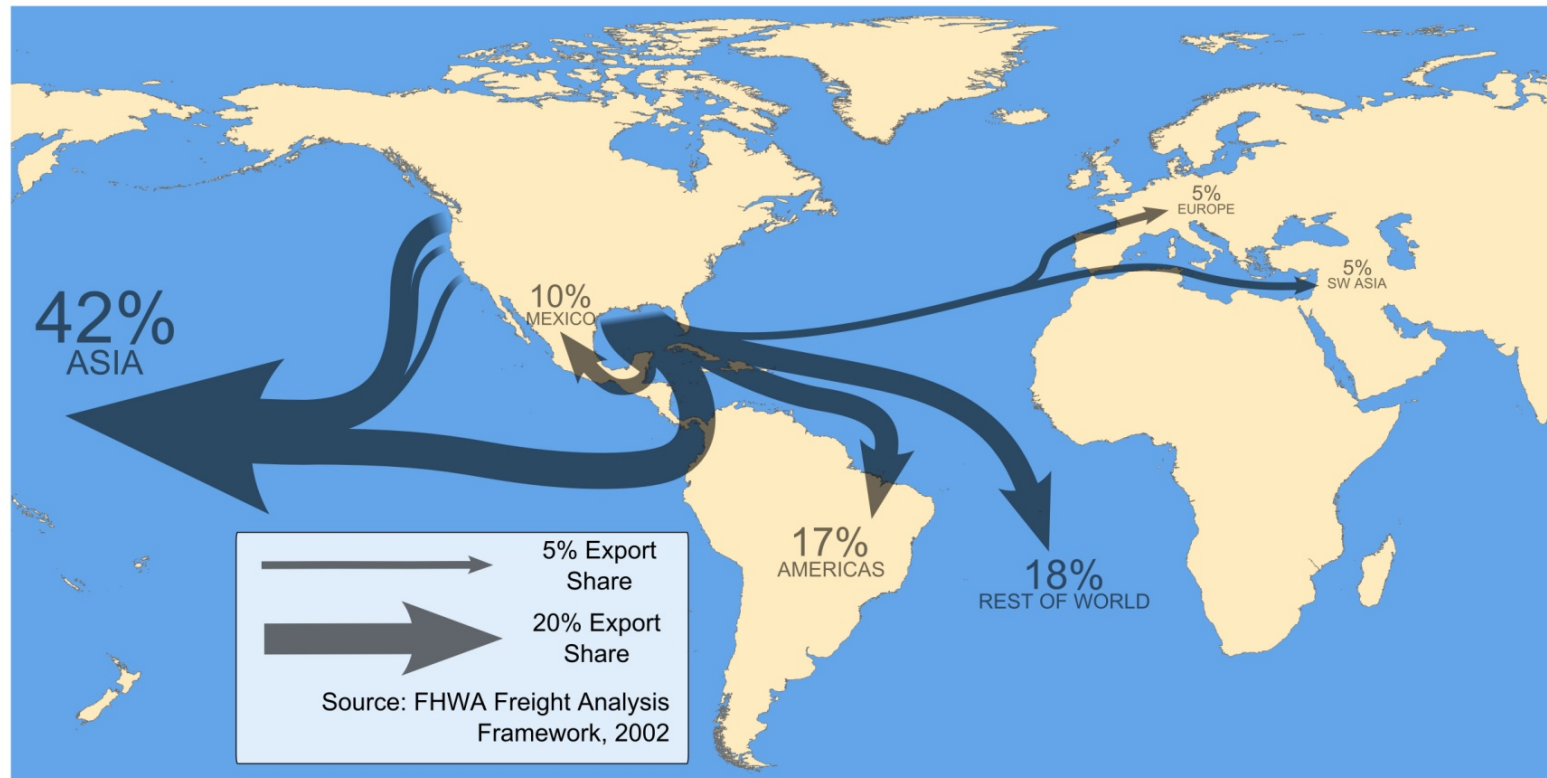


*4.179 billion bushels

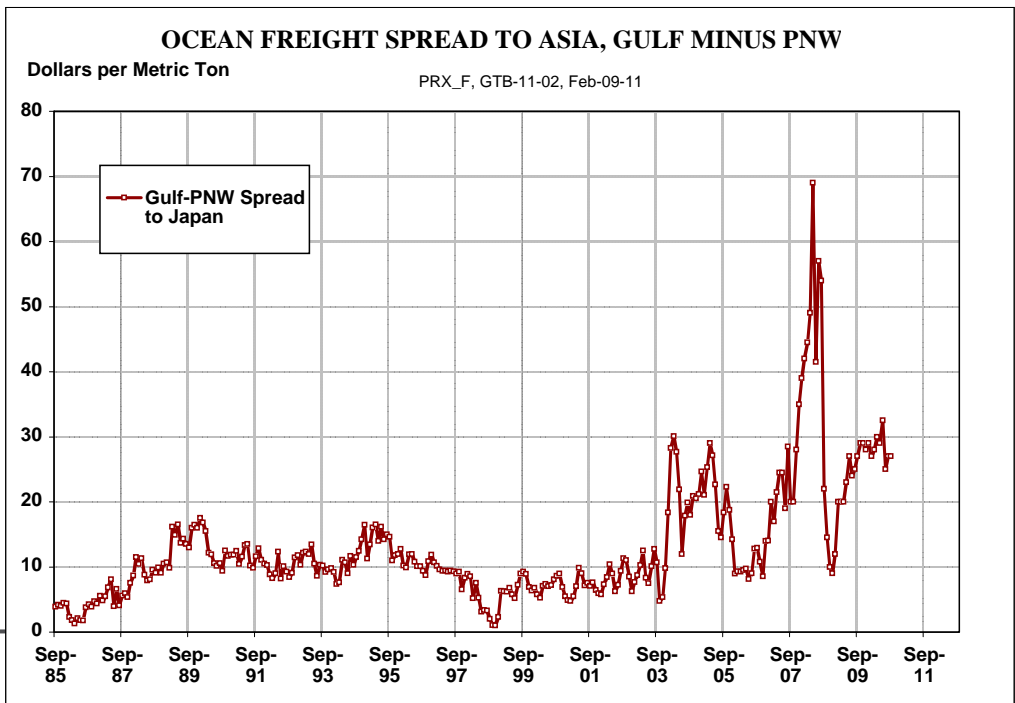
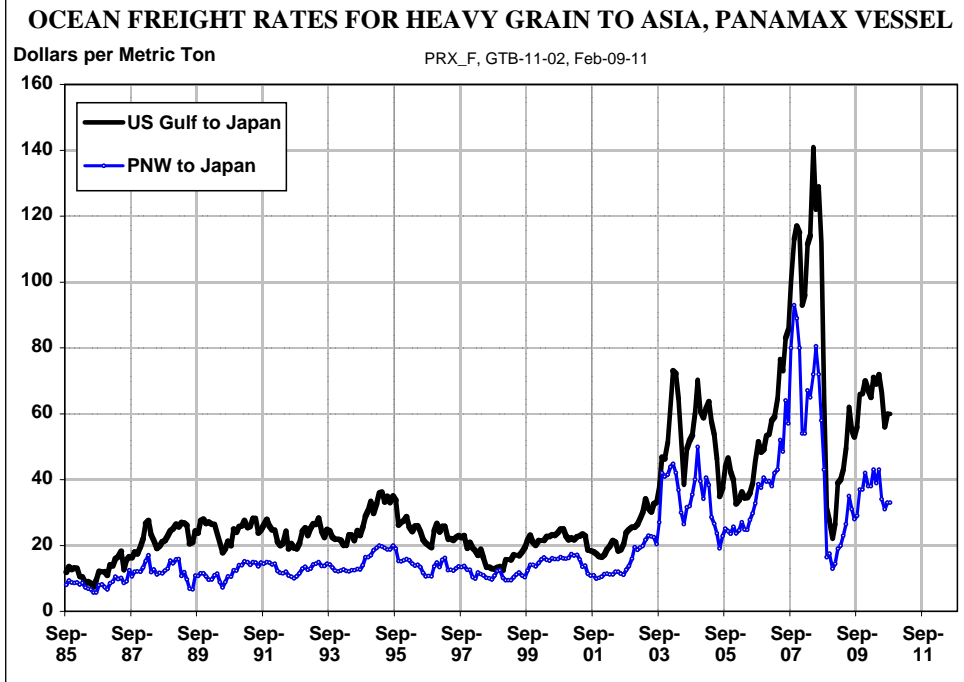
USDA, September 2010



US Grain Exports



- Ocean Rates
- Spreads
- Disruptions



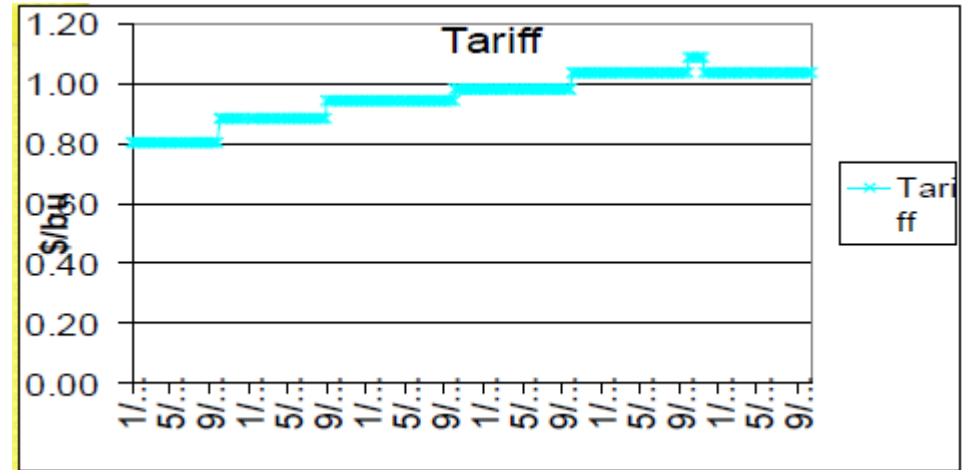
Cost Comparison

	Center Gulf (New Orleans)			East Coast (Charleston)			PNW
	56,700 MT	63,700 MT	70,000 MT	56,700 MT	63,700 MT	70,000 MT	65,000 MT
Inland Rate	\$15	\$15	\$15	\$32	\$32	\$32	\$54
Ocean Rate	\$62	\$56	\$49	\$63	\$57	\$50	\$29
Landed Cost	\$78	\$72	\$65	\$95	\$89	\$82	\$84

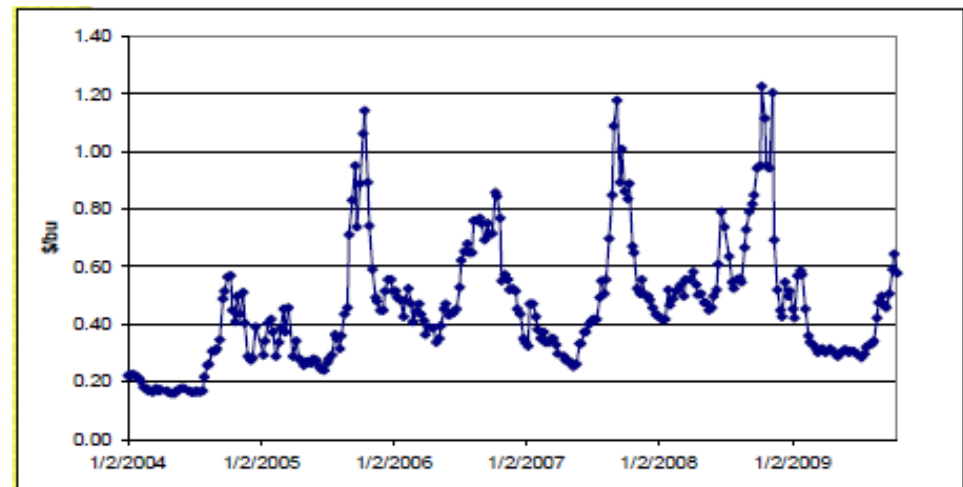


Logistics Issues in Transiting

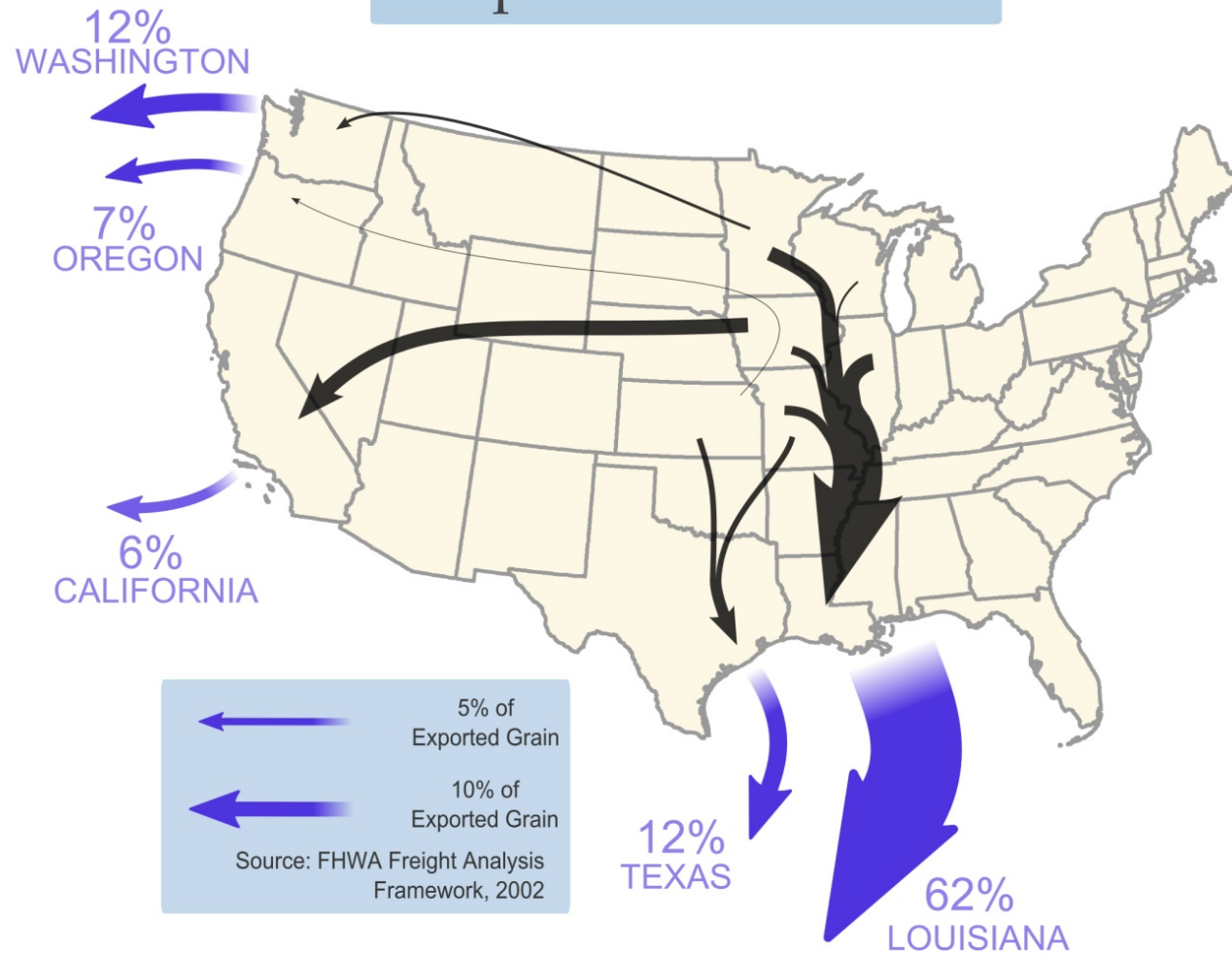
- Rail Rates



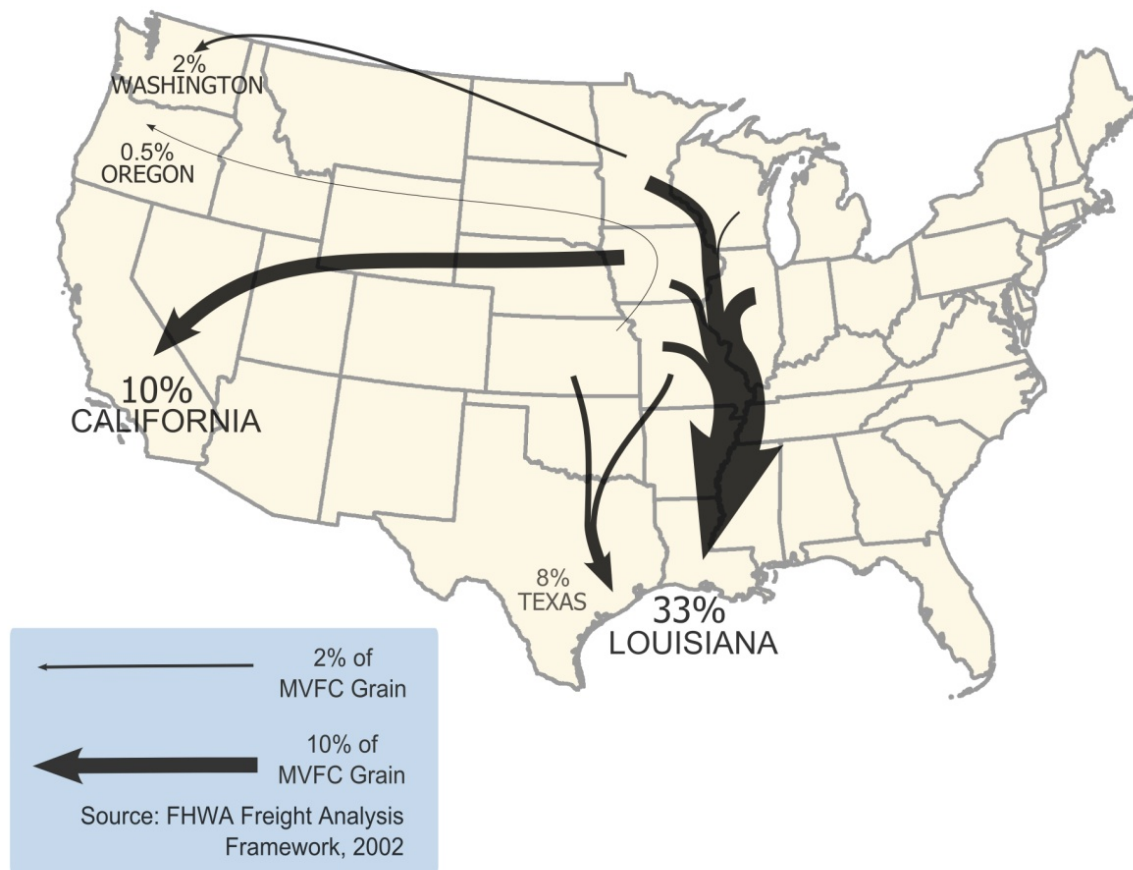
- Barge Rates

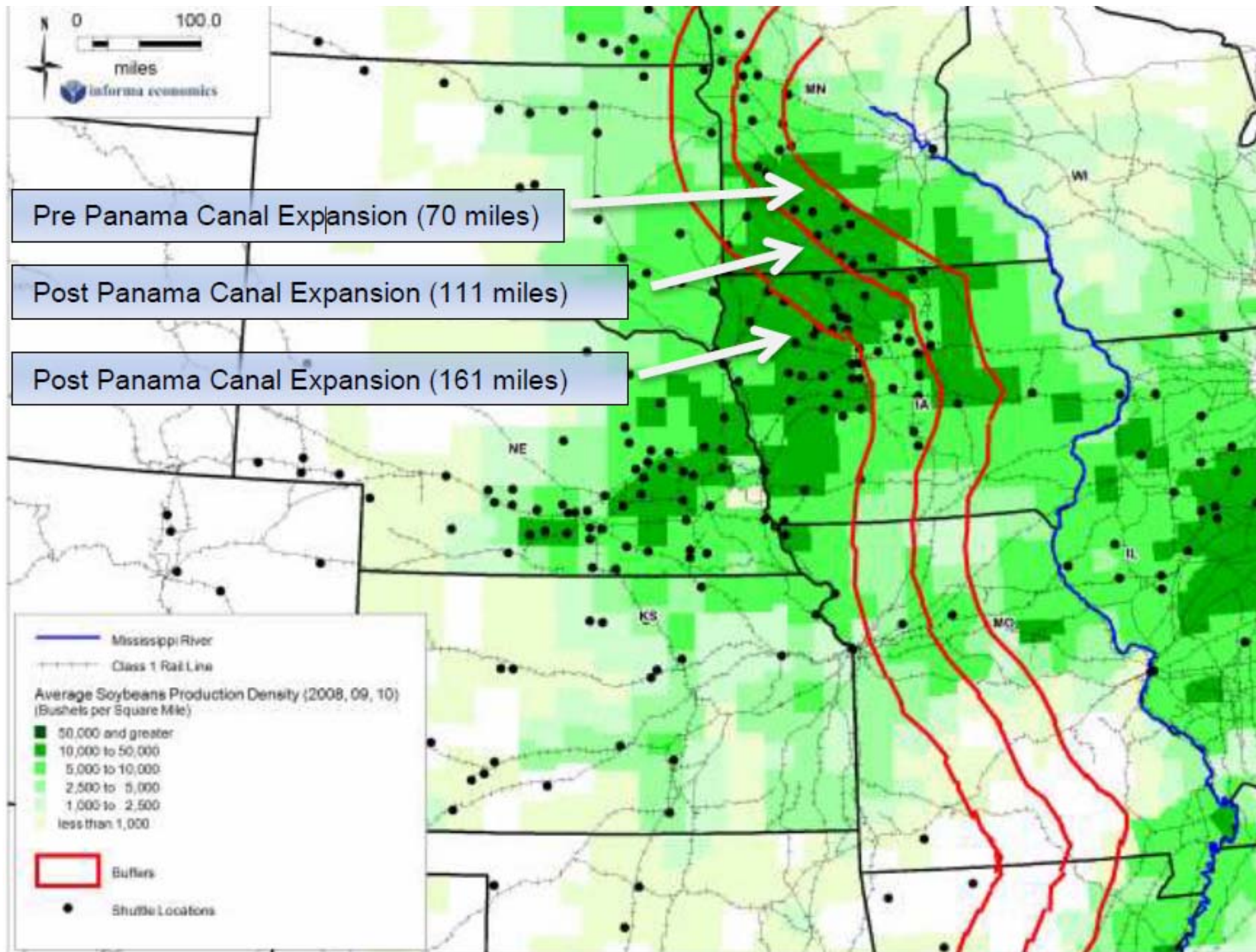


Top US Grain Ports



MVFC Domestic Grain Movements





Energy and Environmental Aspects

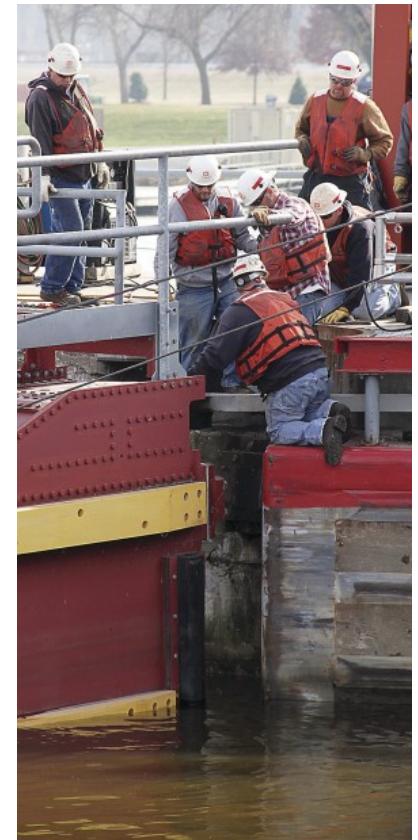
- 23% higher energy consumption in BTU
- Cost differential
- Barge Transport
- Distances



But...

"Unless the US does a better job of maintaining its navigation channels... our channel dimensions will not keep pace with larger ships," Kurt Nagle, chief executive of the American Association of Port Authorities

"Everything is connected – the rivers, the railroads, Panama. We're concerned about the logistics up and down the [Mississippi] river and our ability to feed the canal." Kendell Keith, president of the National Grain and Feed Association.



Expert and Industry Expectations



- Since 2005, average annual transit times ranged from 31.5 to 23 hours, and half or more may be spent waiting (ACP, 2005-2009)
- New locks are widely expected to **reduce wait times**

Photo source: Jason Bittner, 2010



Expert and Industry Expectations

- New locks **allow post-Panamax vessels** to navigate Canal
- Adoption is limited by capabilities of destination ports



Expert and Industry Expectations

- US Army Corps of Engineers (USACE) and PCA predict “a substantial **increase in containerized traffic**” in general; some industry reports see same trend for grain
- Agricultural exporters surveyed were uncertain about impacts on containerization
 - Many already deal in containerized grain



Expert and Industry Expectations

- Impacts on **rates are uncertain**
- USACE (2007) predicts lower overall costs and continued competitiveness with US intermodal system
 - But USDA (2008) sees trend of increasing ocean rates leading to competitive disadvantage compared to West Coast ports
- Newly approved tolls for 2011 raise rates by 14% or \$10/TEU
 - New structure incentivizes container backhaul
- Industry survey inconclusive—shows conflicting/uncertain expectations



Questions?

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