

# **U.S. Rail Transportation And Energy Supplies**

**Presentation to:**

**National Capital Area Chapter of the  
U.S. Association for Energy  
Economics**

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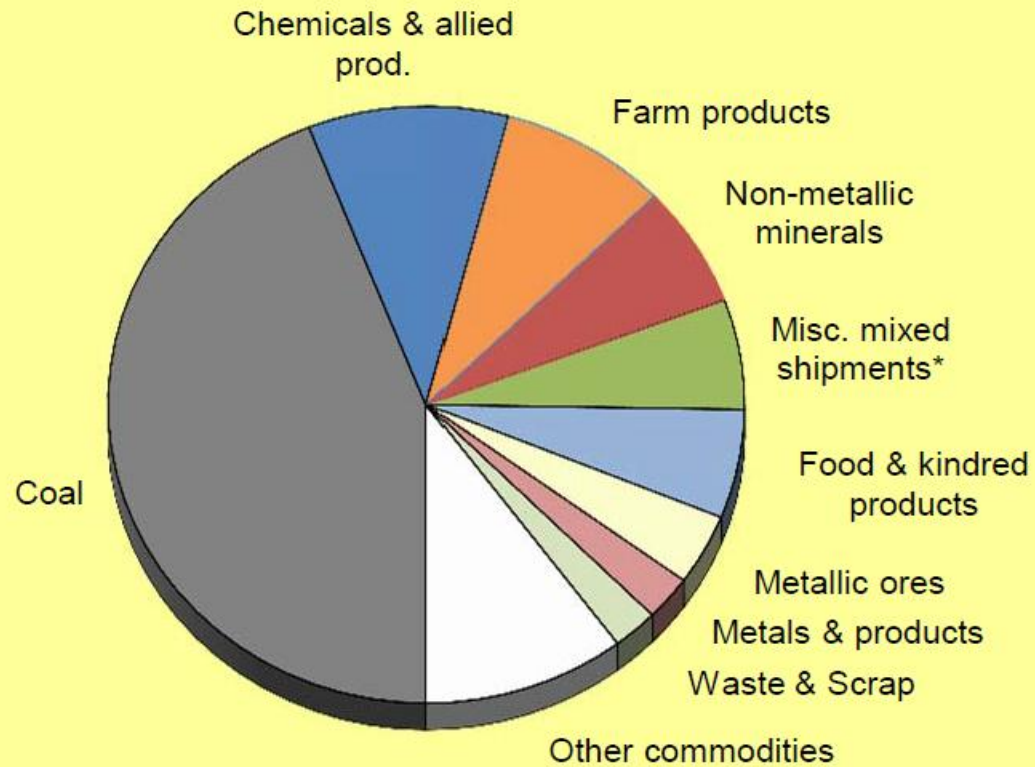


# Agenda

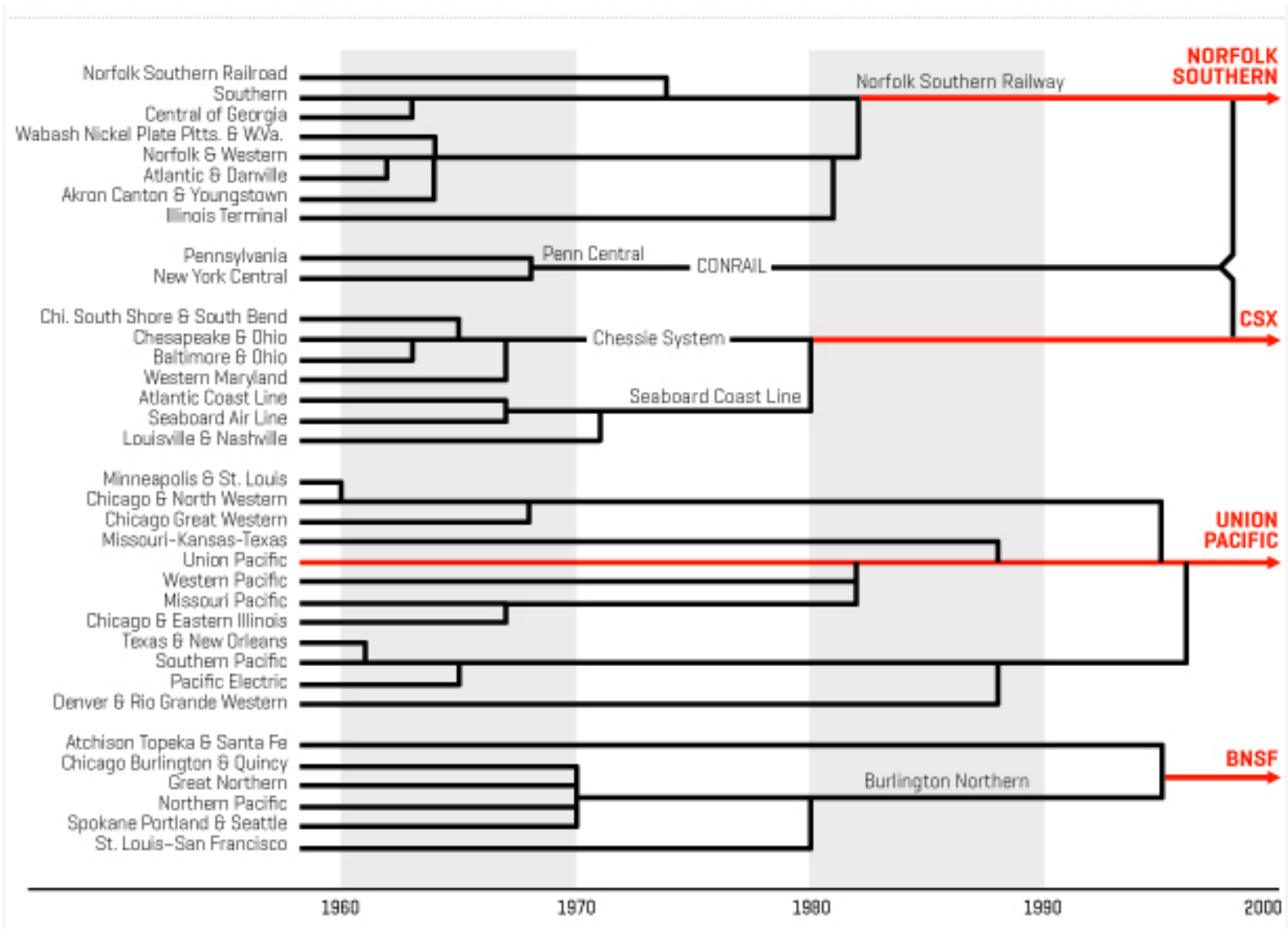
- 1. Overview of the Railroads**
- 2. Unconventional Oil Movements**
- 3. Ethanol Movements**
- 4. Coal Movements**
- 5. Parting Shots**

# 1. Overview of the Railroads

# Class I Commodities 2010

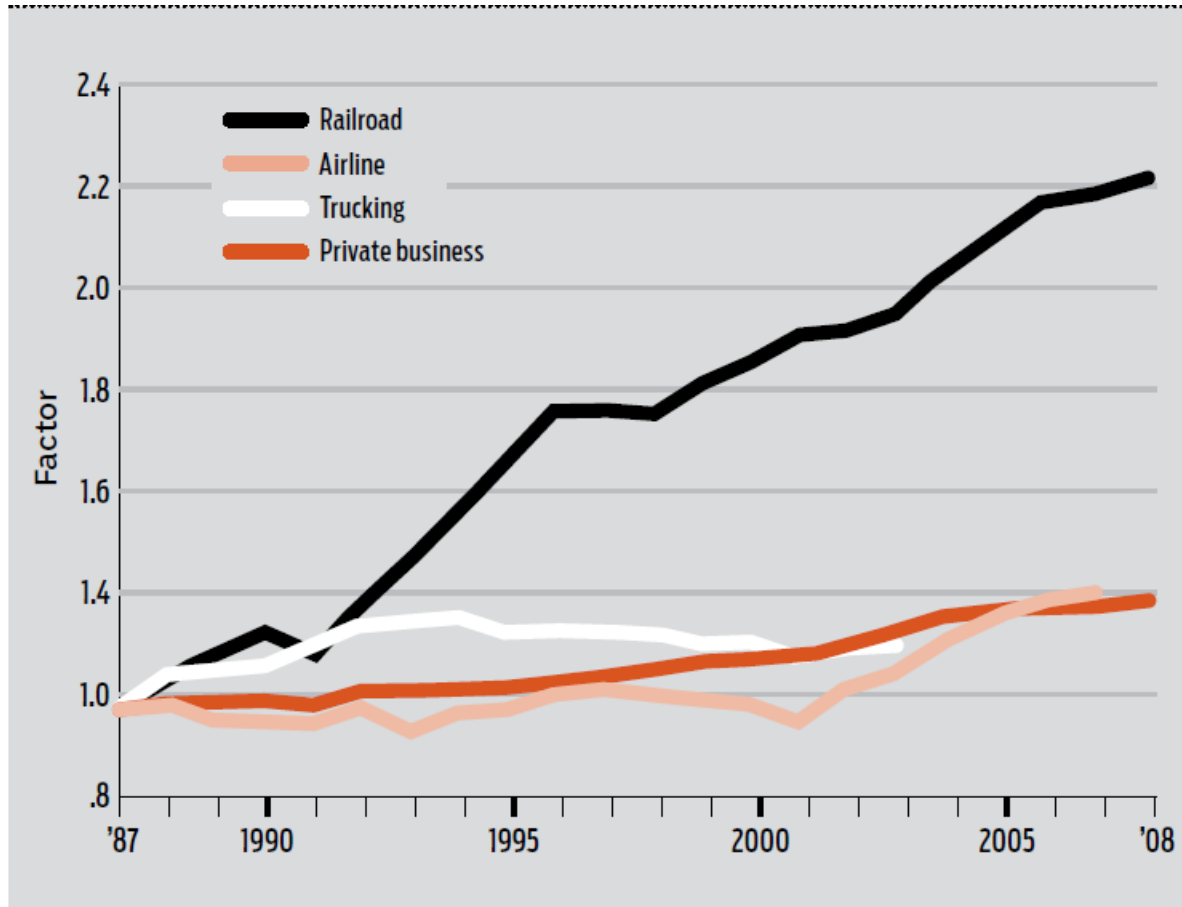


# Post Staggers Act Rail Mergers



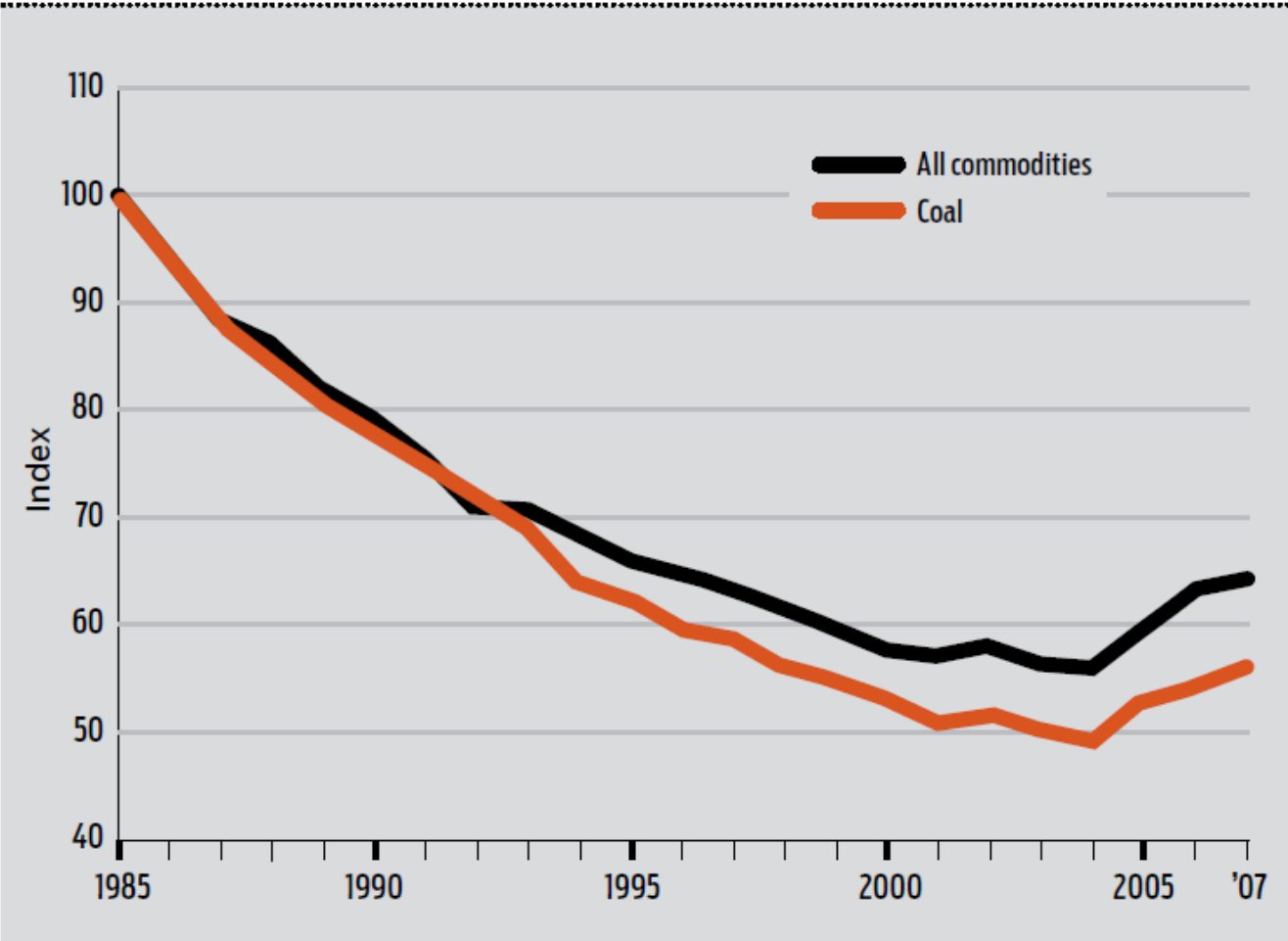
Fortune 9/26/11 pg. 166

# Total Factor Productivity 1987–2008



Sources: "Patterns of Productivity Growth for U.S. Class I Railroads: An Examination of Pre- and Post- Deregulation Determinants," by Philip E. Schoech and Joseph A. Swanson, 2010; "Estimation and Analysis of Multifactor Productivity in Truck Transportation, 1987–2003," by A.D. Apostolides, 2009; Bureau of Labor Statistics

# Real Rate Indexes for Freight Rail Transportation 1985–2007



Sources: *Surface Transportation Board Study of Railroads Rates: 1985–2007*, and *Rate Study Workbook*, both prepared by the U.S. Surface Transportation Board, January 16, 2009



# Rail Equity Index v S&P 500 -5 years



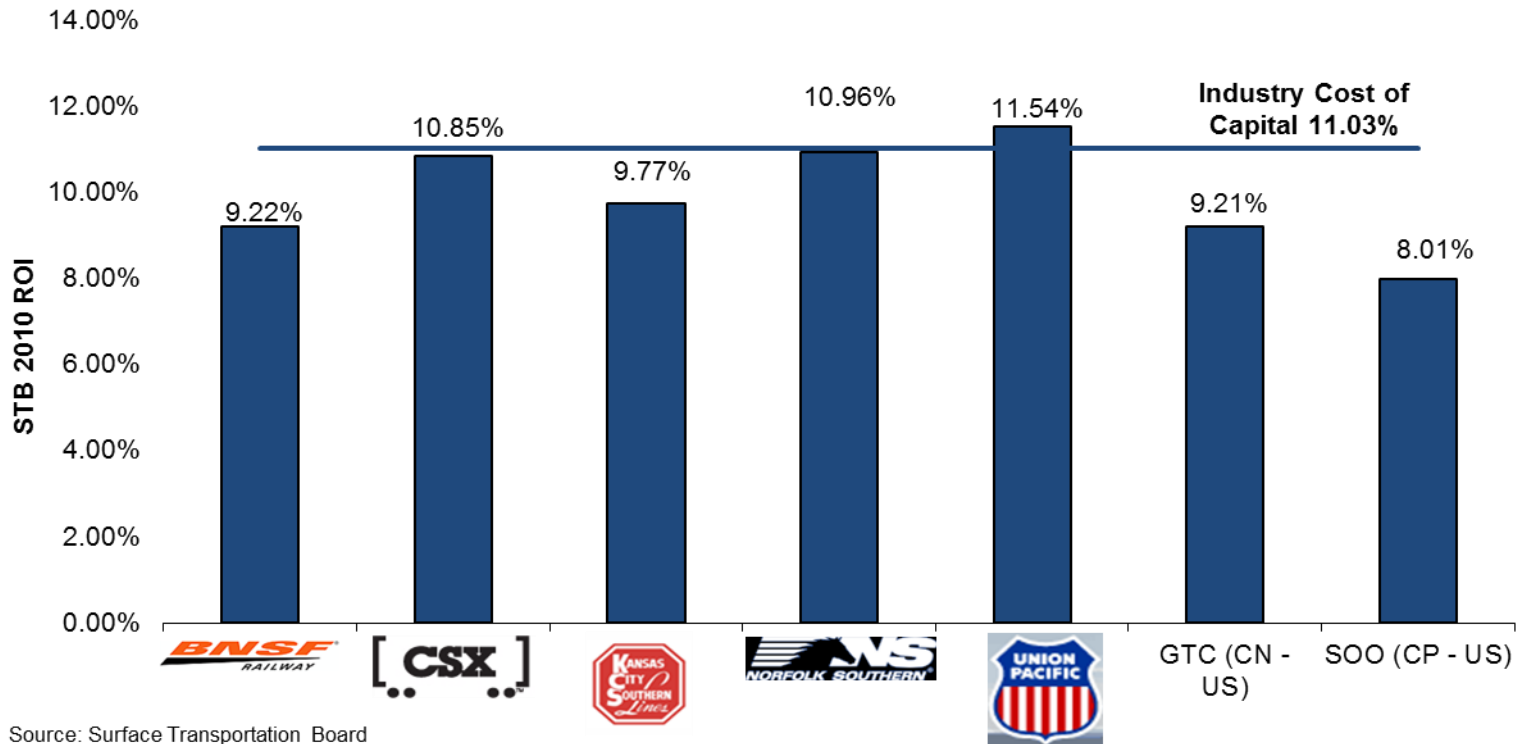
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Dow Jones U.S. Railroads Index, Bigcharts.com

# Railroad Revenue Adequacy

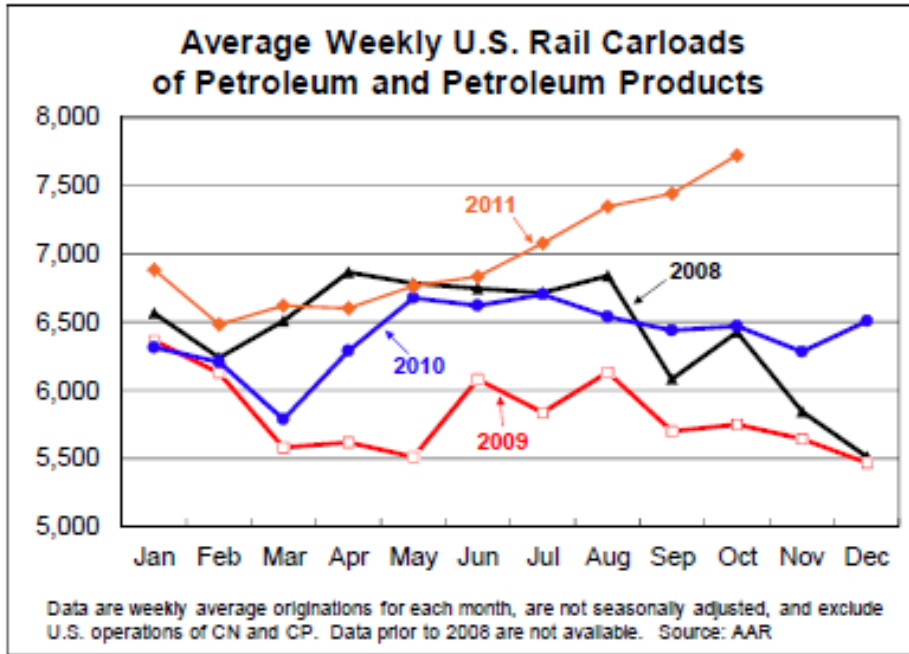
US Class I Railroads 2010 Return on Investment



Source: Surface Transportation Board

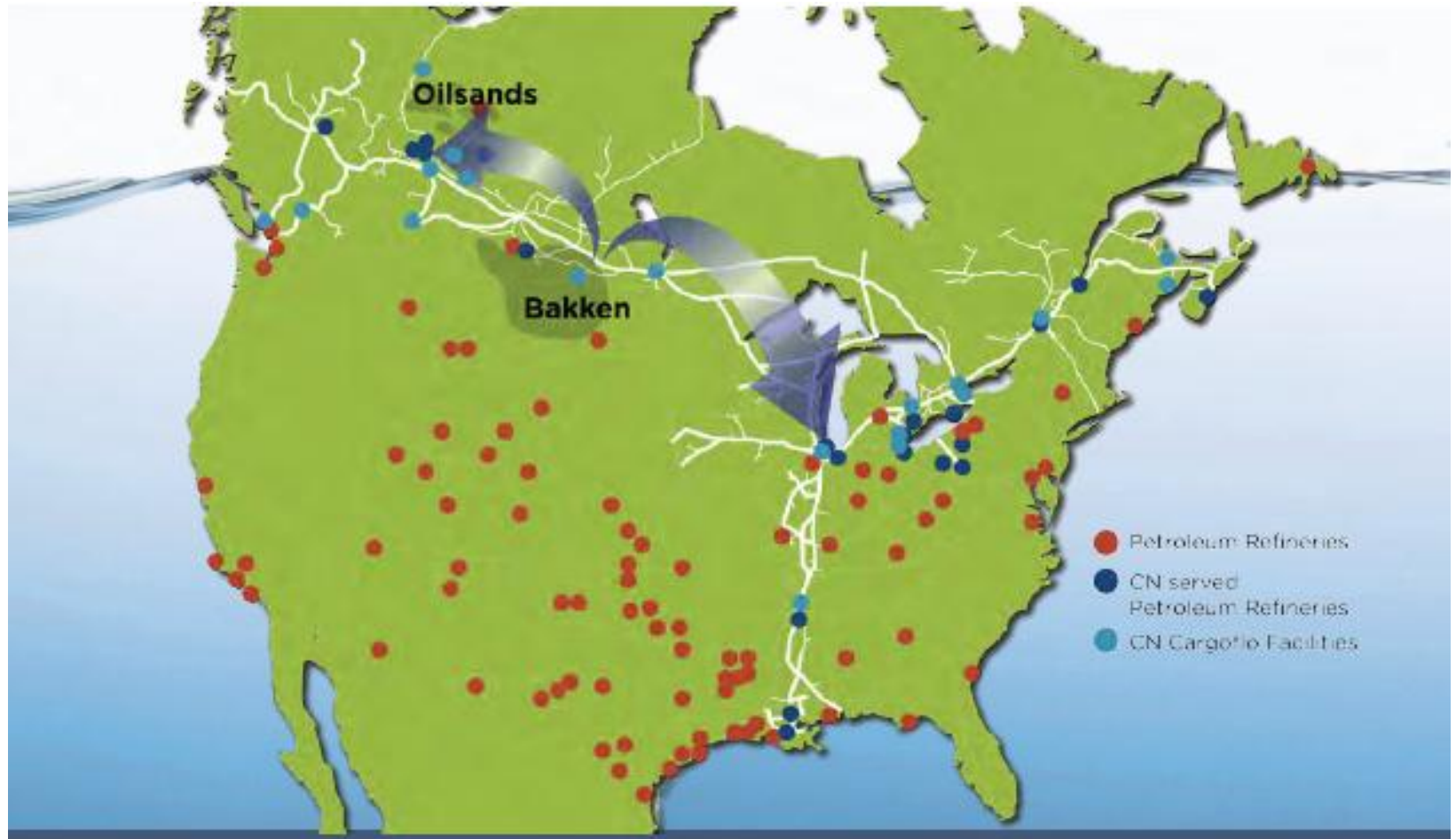
# 2.UNCONVENTIONAL OIL MOVEMENTS

# Unconventional Oil

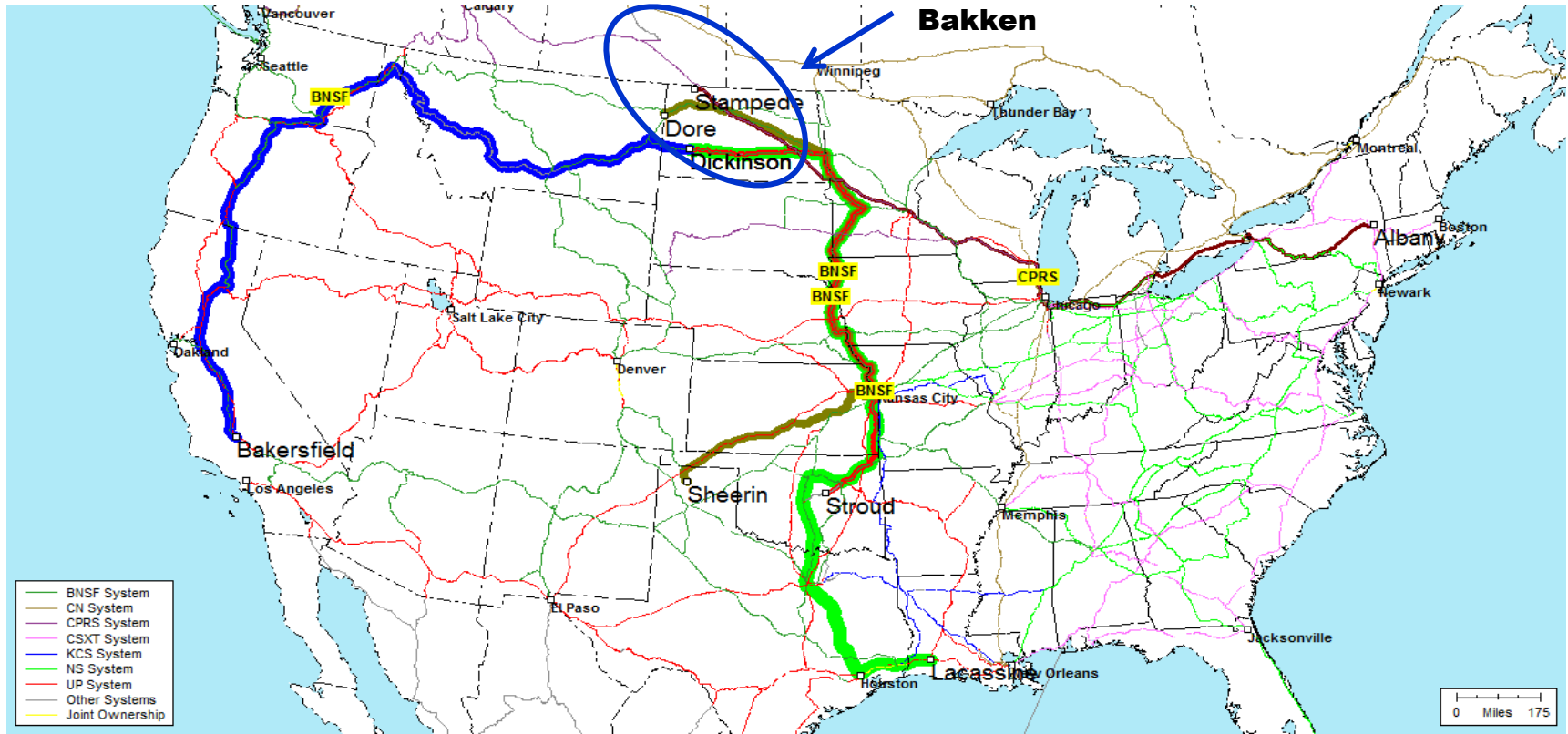


- **Most of the growth in rail movement of petroleum products has been due to crude oil**
- **BNSF and CP handle 25% of crude produced in the Bakken area of ND**
  - **About 110,000 barrels/day**
- **Crude production expected to double by 2016**
- **BNSF and CP making investments to increase capacity to handle 10 unit trains/day**

# New Oil Sources



# Major Rail Crude Oil Unit Train Lanes



**Crude Oil moves by rail to most refineries with rail service however major flows are concentrated in a few lanes**

# Crude Oil Railcars



- **Rail shipments of crude oil move in general service 30,000 gallon tank cars**
- **Demand for these cars is very high – builders sold out through most of 2012**
- **Lease costs have doubled since early 2010**

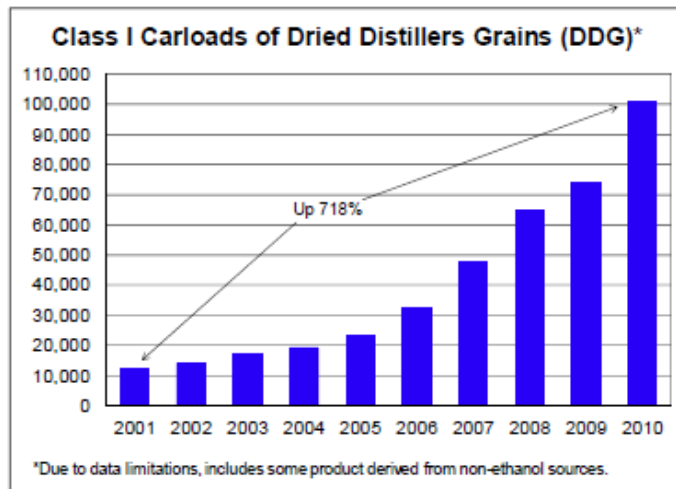
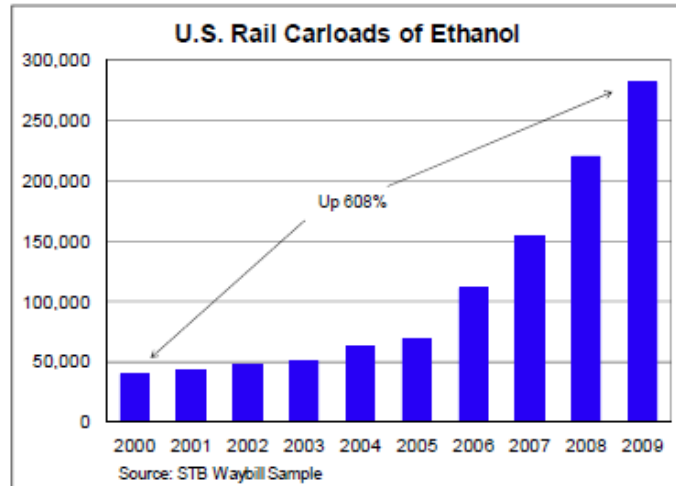
# Crude Oil Transport Rates

## Average Per Barrel

Rail	\$	15
Pipeline	\$	3
Rail Premium	\$	12

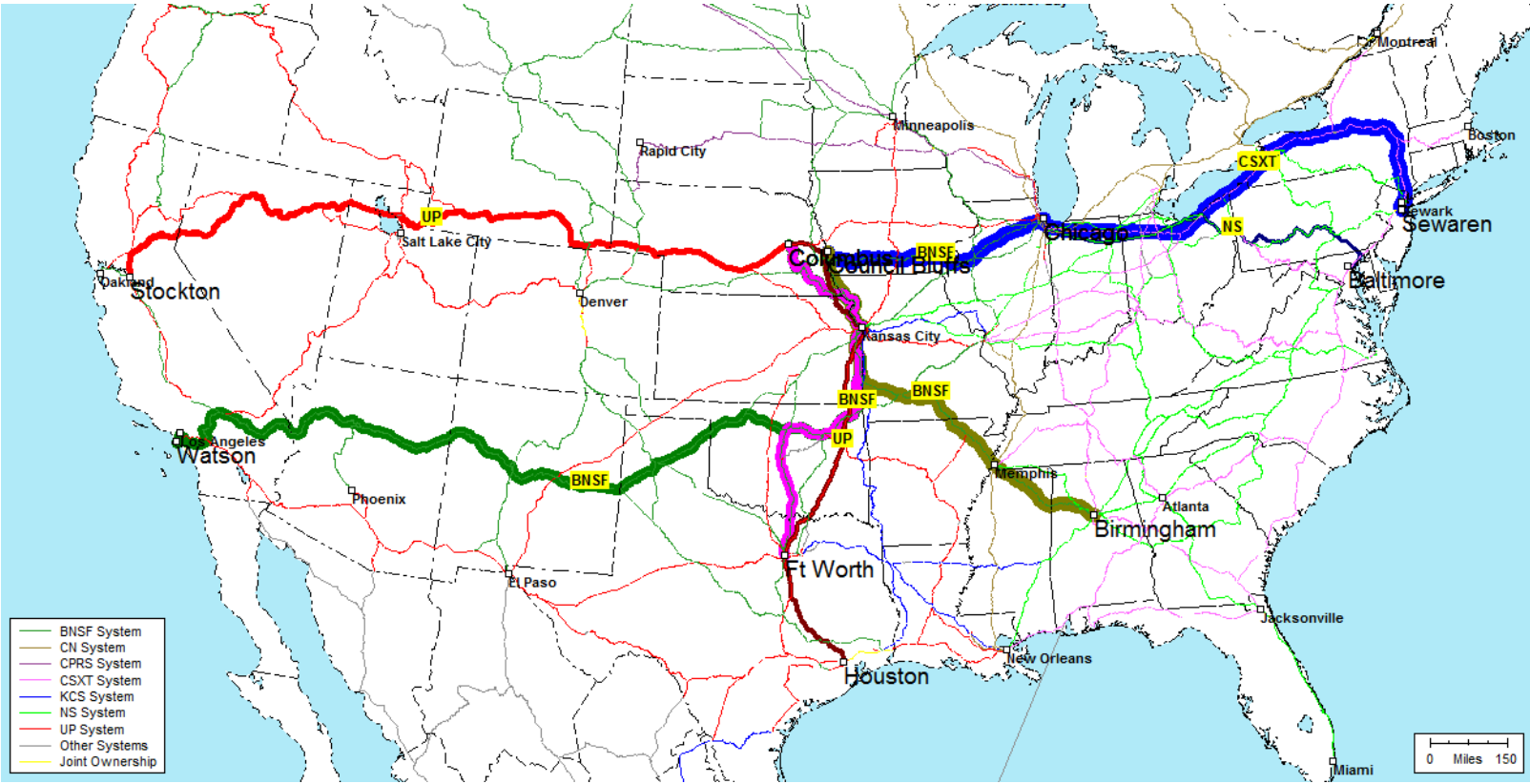
# 3. ETHANOL MOVEMENTS

# Railroad Ethanol Volumes



- **Railroads account for 70-75% of US ethanol shipments**
- **Railroads handled more than 280,000 ethanol carloads in 2009**
  - Increase from 40,000 in 2000
- **Ethanol is an important and growing business for US railroads but accounts for only about 1.1% of total carloads**
- **Railroads also handle 100,000 carloads of dried distillers grains (DDG), a byproduct of ethanol production**

# Key Ethanol Unit Train Lanes



**Unit train shipments of ethanol are increasing but there is still a shortage of unit train capable terminals**



# Ethanol Rail Rates

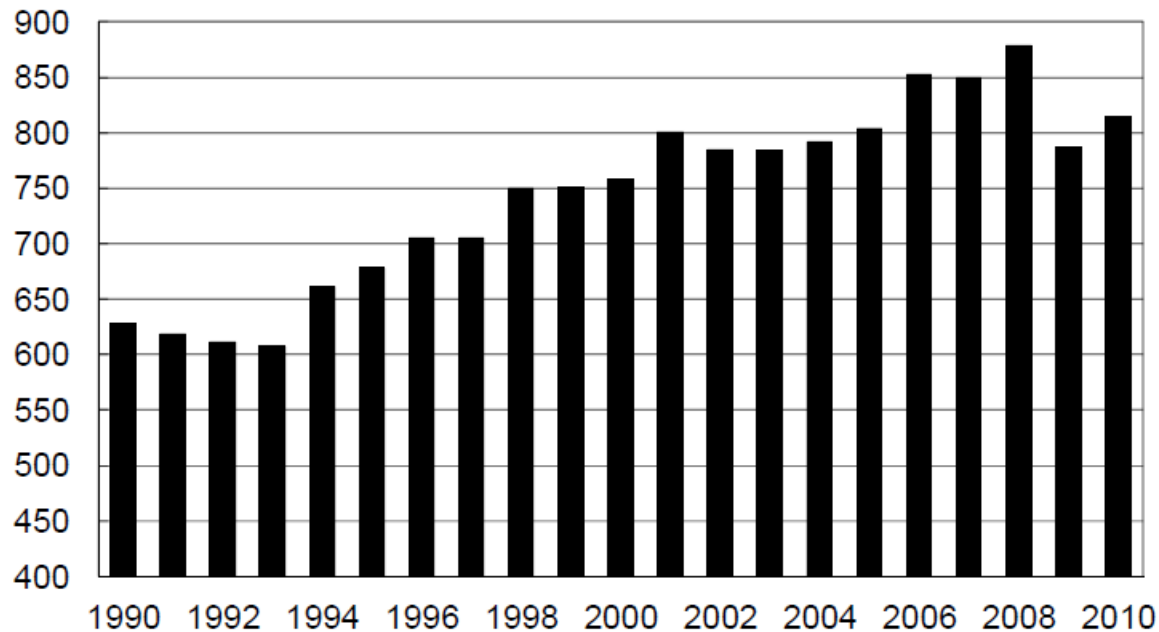
Origin/Destination	Railroad	80 Car		Spread
		Single Cars	Unit Train	
Council Bluffs, IA - Chicago, IL	BNSF	\$ 3,680	\$ 2,800	\$ 880
Chicago, IL - Sewaren, NJ	CSXT	\$ 3,558	\$ 3,058	\$ 500
	Total	\$ 7,238	\$ 5,858	\$ 1,380



# 4. COAL MOVEMENTS

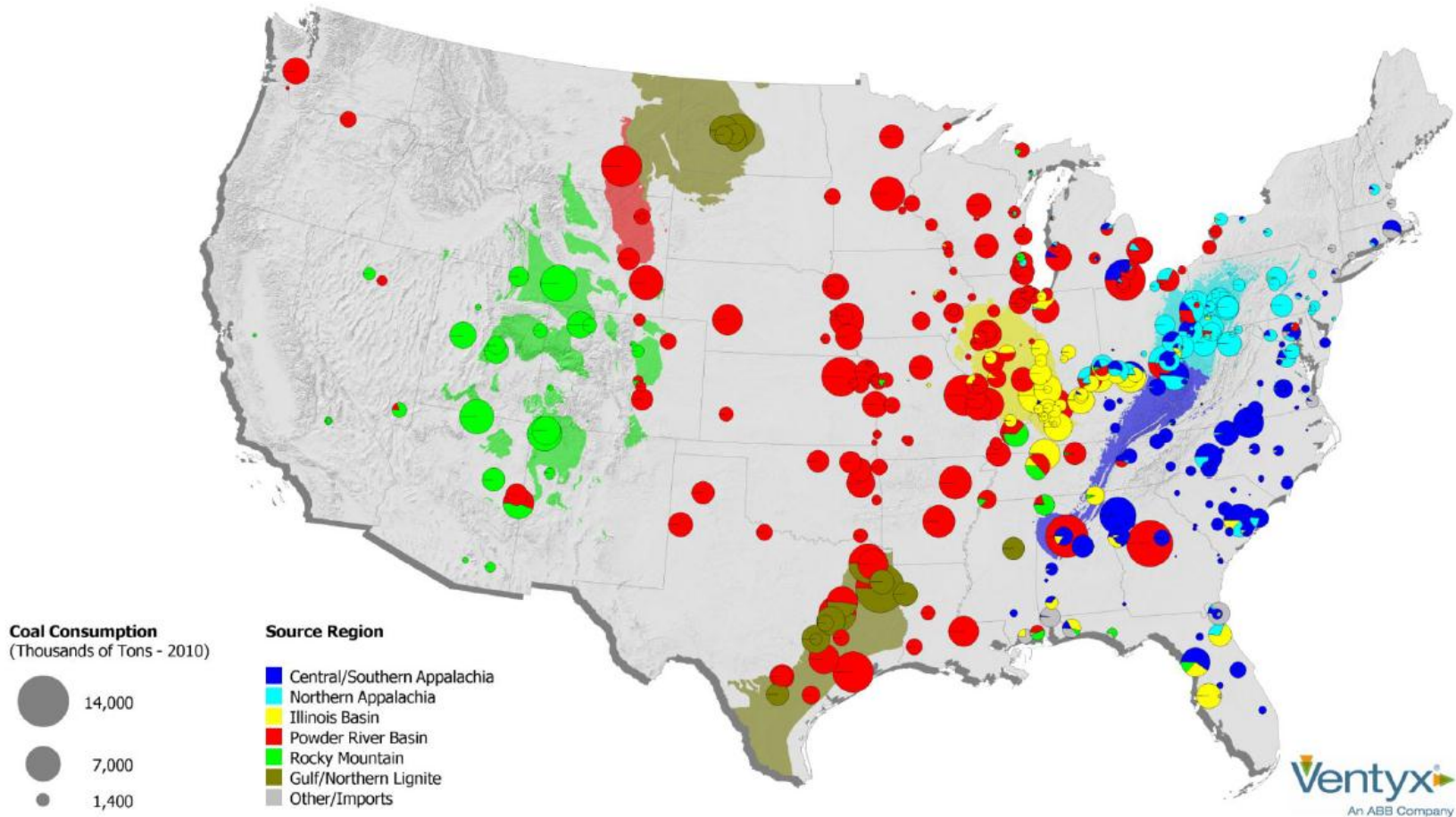
# Railroads Originate 85% of US Coal

U.S. Rail Tons of Coal Originated  
(Millions)



Data are for Class I railroads. Source: AAR *Freight Commodity Statistics*

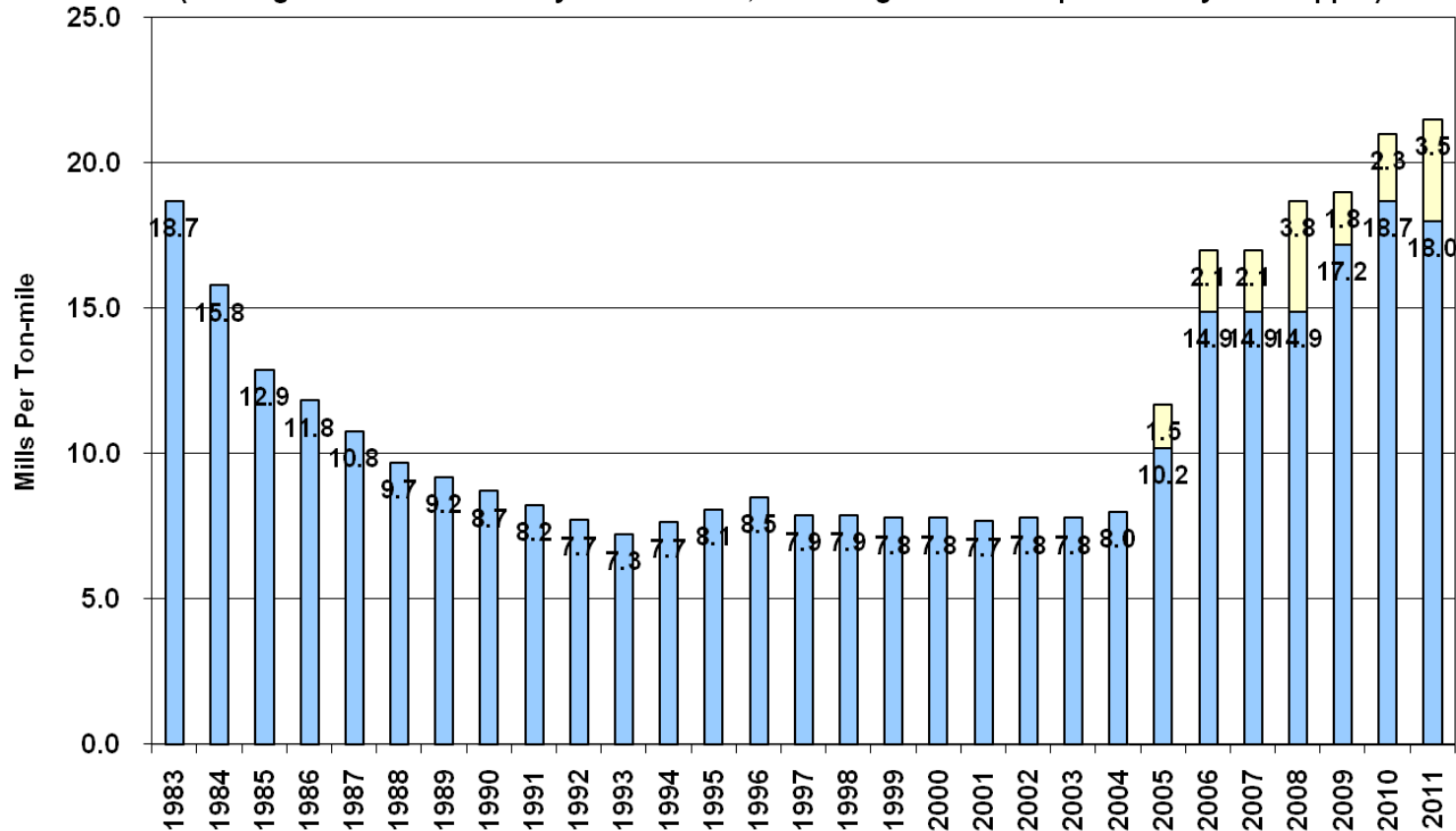
# Coal Distribution



# Historical Rail Rates for PRB Coal Shipments to Competitively-Served Destinations

## Rail Rates for Shipments of PRB Coal to Competitively-Served Destinations on BNSF or UP

(starting rates for new multi-year contracts, assuming railcars are provided by the shipper)



Sources: Estimates by Fieldston Co., Inc., PA Consulting Group, Pace Global Energy Services, and Hellerworx.



■ Base Rate ■ Fuel Surcharge

# Coal Exports - Play A Significant Role in Eastern Coal Markets

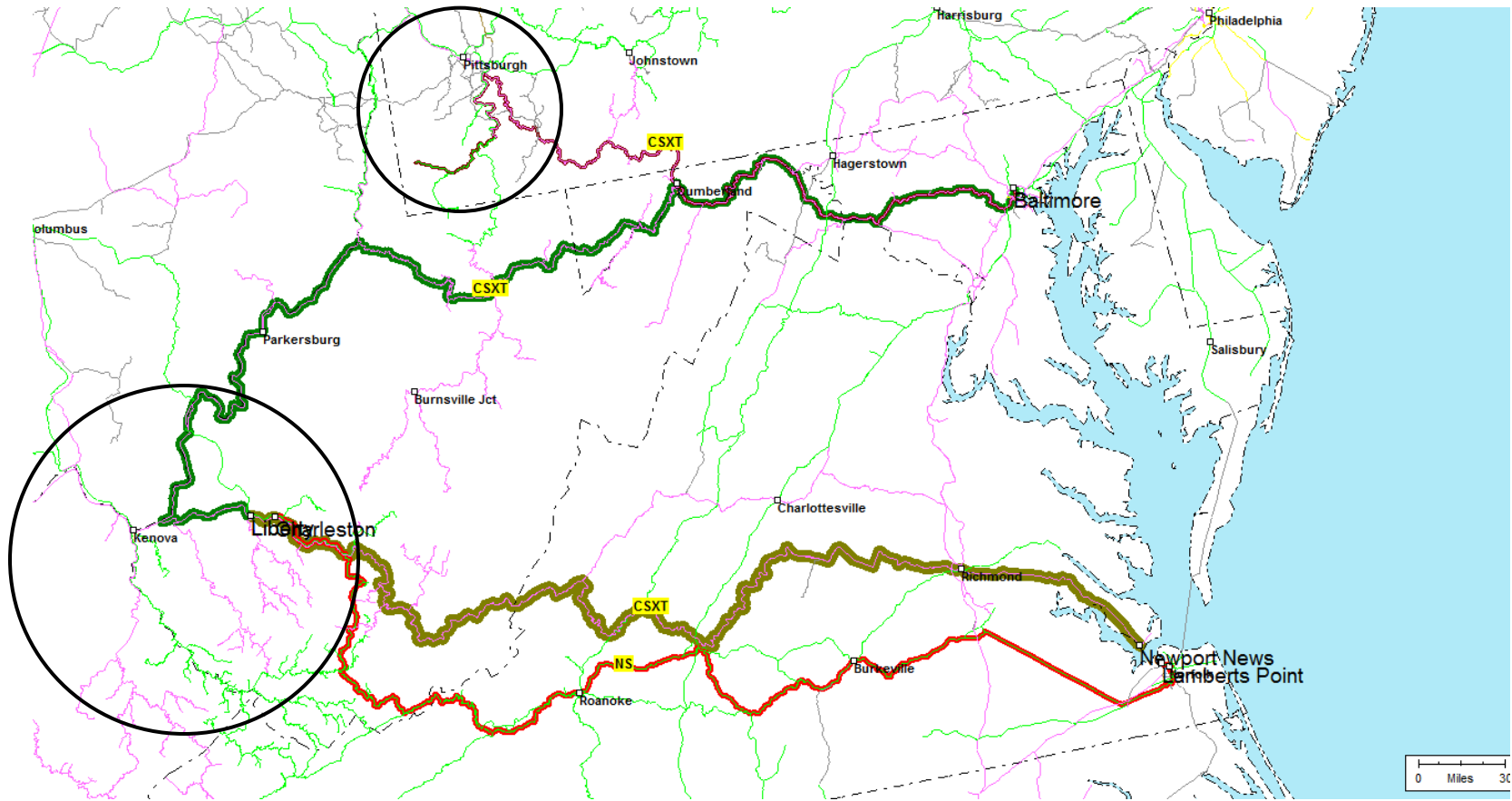
## Estimated Percentage of Coal Exported, 2010

	Total Production (million short tons)	Estimated Exports (million short tons)	Export %
CAPP	185	38	20.5%
NAPP	131	15	11.5%
ILB	106	6	5.7%
PRB (WY + MT)	468	6	1.3%

Sources: Coal production data from MSHA.

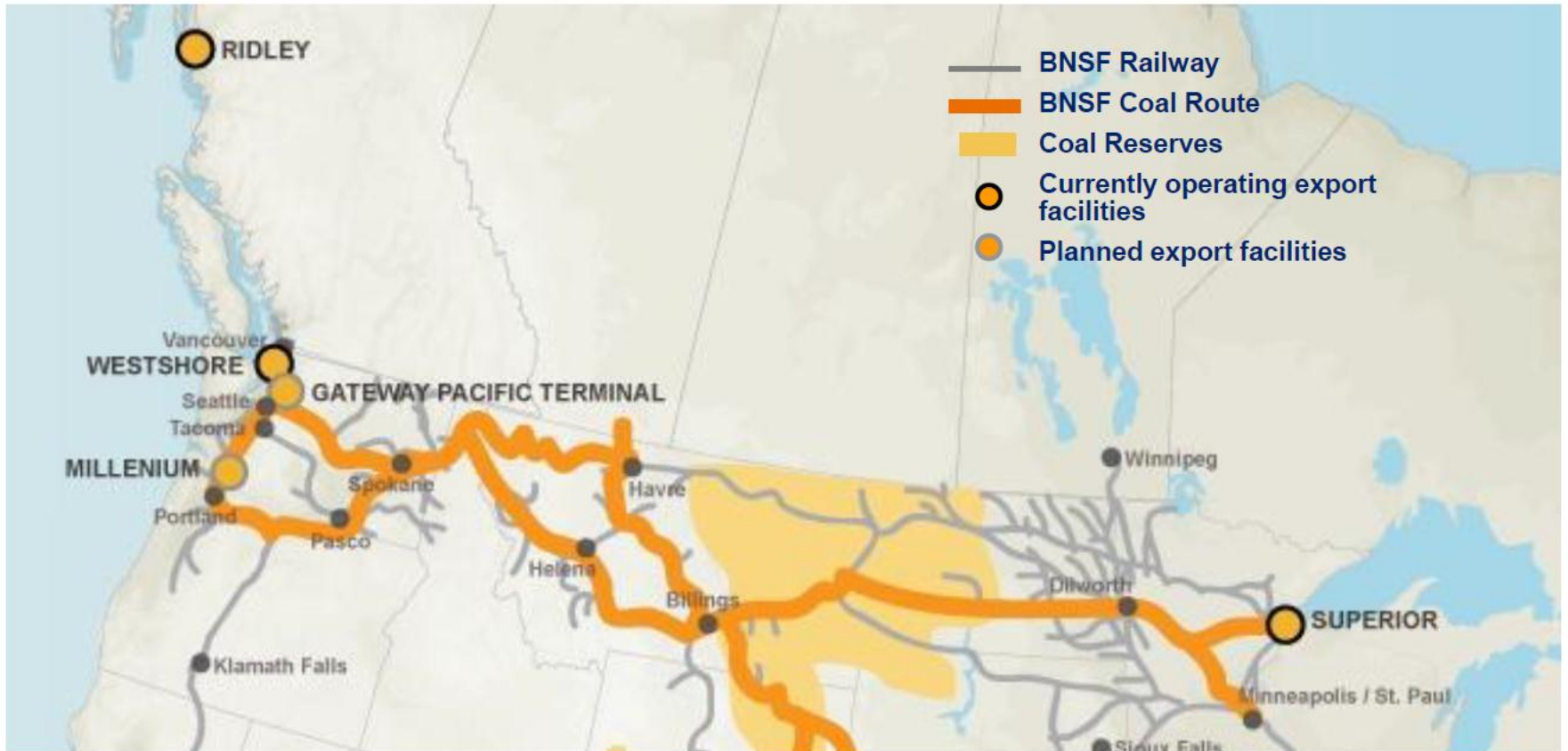
Exports estimated based on EIA data by customs district for 1Q-3Q2010.

# CSX and NS Export Corridors



- **CSX and NS both expect to set records for export coal in 2011**
- **Both view export coal as long term growth opportunity**

# Western Coal Exports?



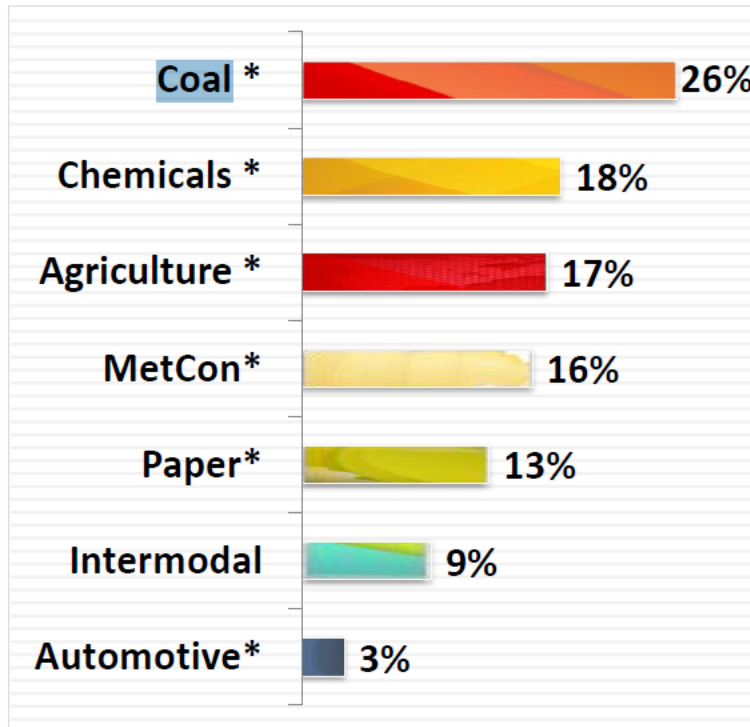
# Eastern Coal Export Challenges CSX – 2010

2009 - 2010 YOY Variance	2009	2010	Variance	% Change	# Destinations
Domestic Utility	129.8	121.6	-8.2	-6.3%	105
Domestic Other	13.5	15.0	1.5	11.1%	81
Export	22.5	30.1	7.6	33.8%	5
<b>CSX Coal</b>	<b>165.8</b>	<b>166.7</b>	<b>0.9</b>	<b>0.5%</b>	<b>191</b>

- **The decrease in utility & river volume is spread across a large number of destinations in all directions and all lanes**
- **The increase in export volume is crammed in three lanes to five destinations sourced from a relatively small number of origins**
- **6M tons of the incremental YOY export volume is all from the same O-D pairs (80% or 24 million tons of 2010 export volume from just 20 origins)**
- **And the total Coal supply is condensed as nearly 80% of all the CSX originated coal is coming from just 10 companies and 61 Loadouts**
- **The increase in export volume is in lanes with very little overlap or shared volumes with utility traffic, so the fall off in domestic utility does not free up capacity for export moves**
- **91% of Domestic Utility rail direct traffic is in Private cars and 99% of our Export traffic is in CSX System cars**

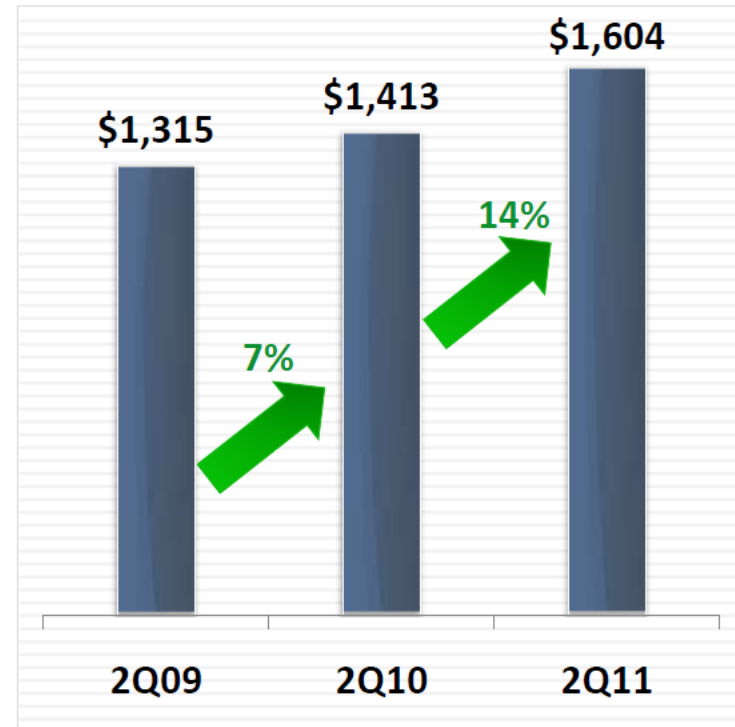


# Norfolk Southern Coal Revenue



Change in RPU  
2Q11 vs. 2Q10

\* Record RPU



RPU

## 5. Parting Shots

- **Coal will continue to dominate railroad energy traffic**
- **Carriers will invest to handle growth in Bakken and Oil Sands if rates justify it**
- **Railroad regulation may need some re-tooling, but its not a high priority and the railroads have a powerful lobby**
- **For economists who want to examine the pros and cons of deregulation, railroads are a great ongoing case study**