

COAL TRANSPORTATION ECONOMICS

CCTR Basic Facts File # 7

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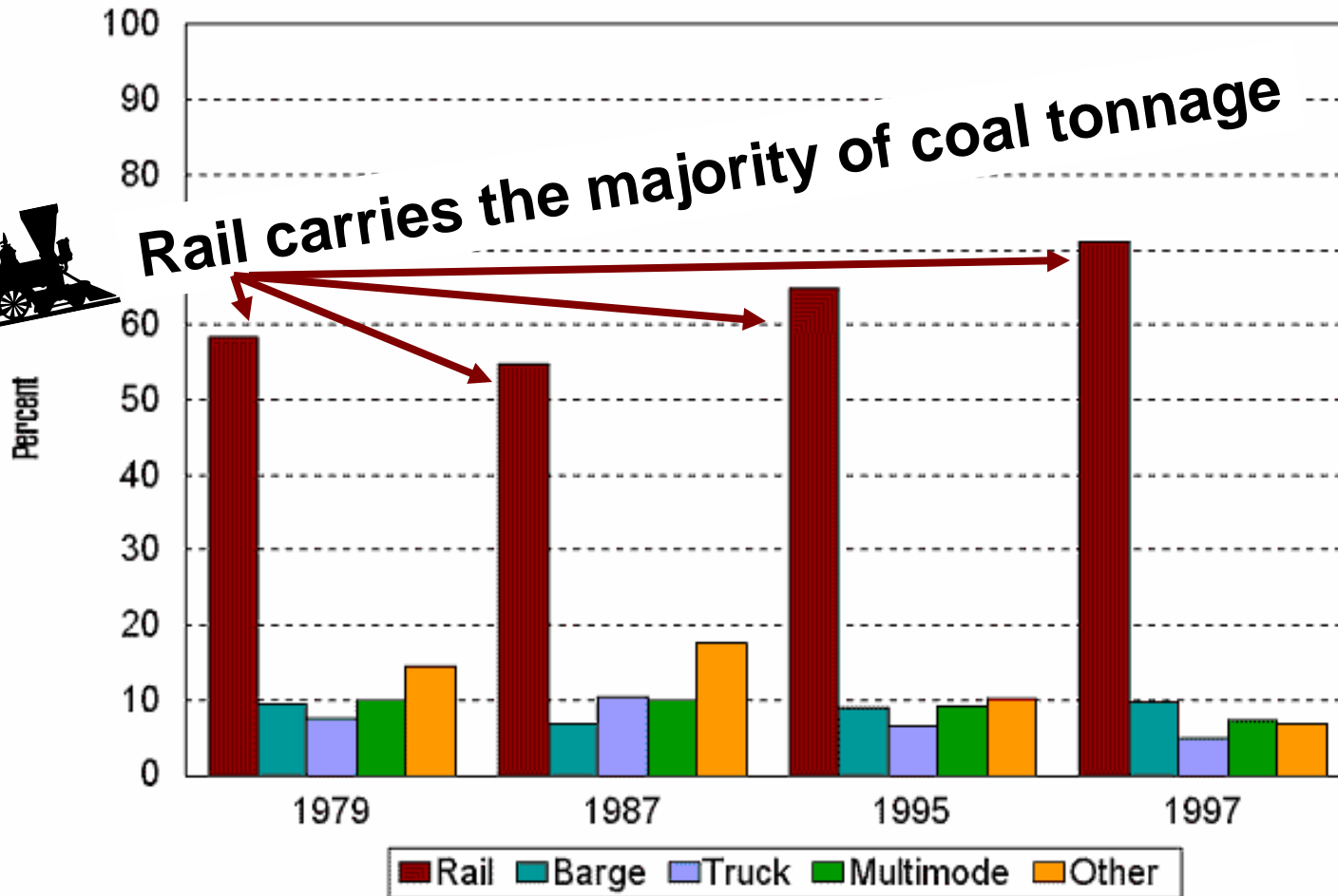
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April 2007





National Modal Shares of U.S. Utility Contract Coal Tonnage

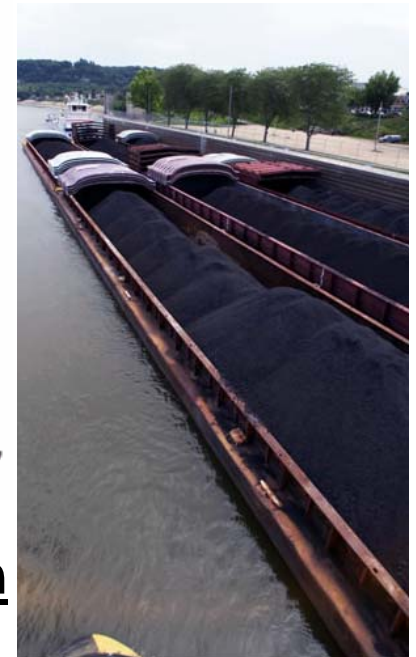
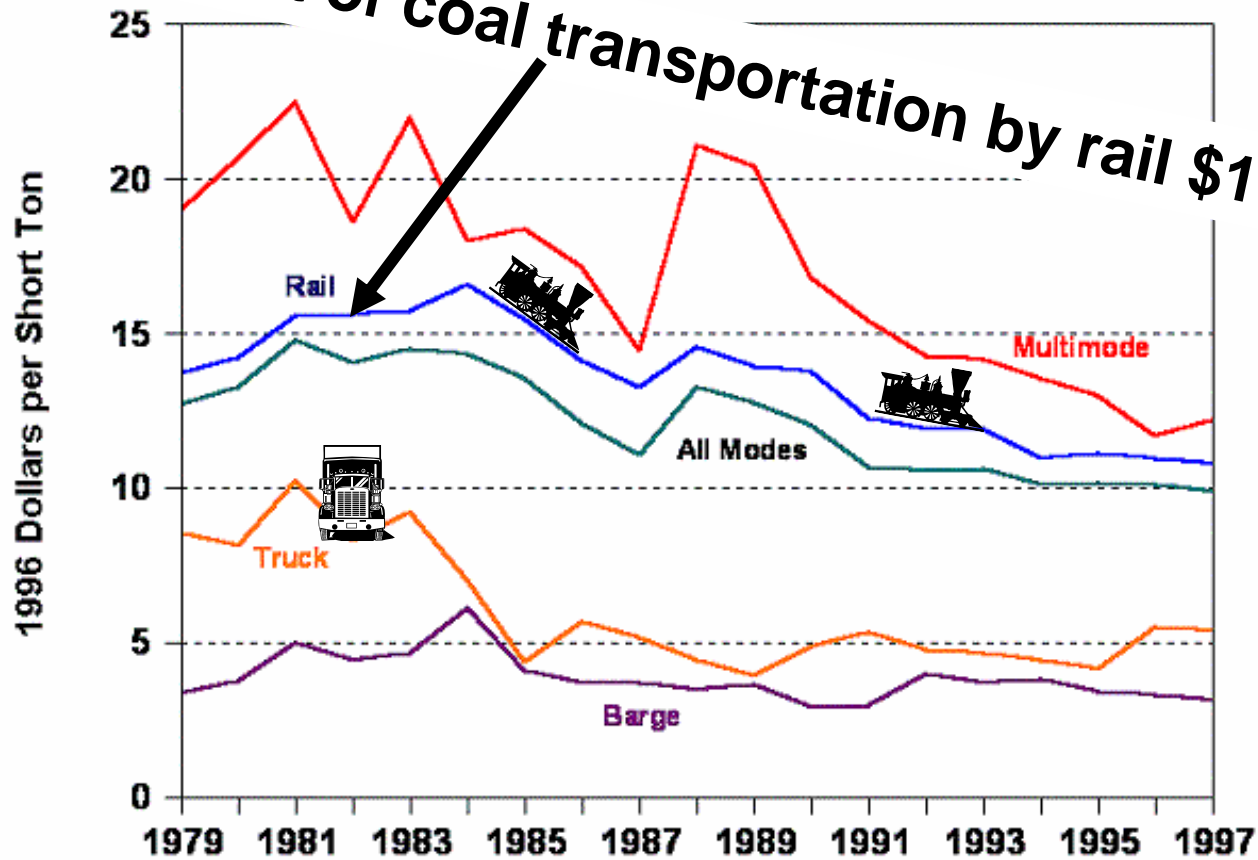


Source: <http://www.eia.doe.gov/cneaf/coal/ctrdb/tab31.html>



Average Utility Contract Coal Transportation Rate Per Ton

Average cost of coal transportation by rail \$17 to \$12/Ton

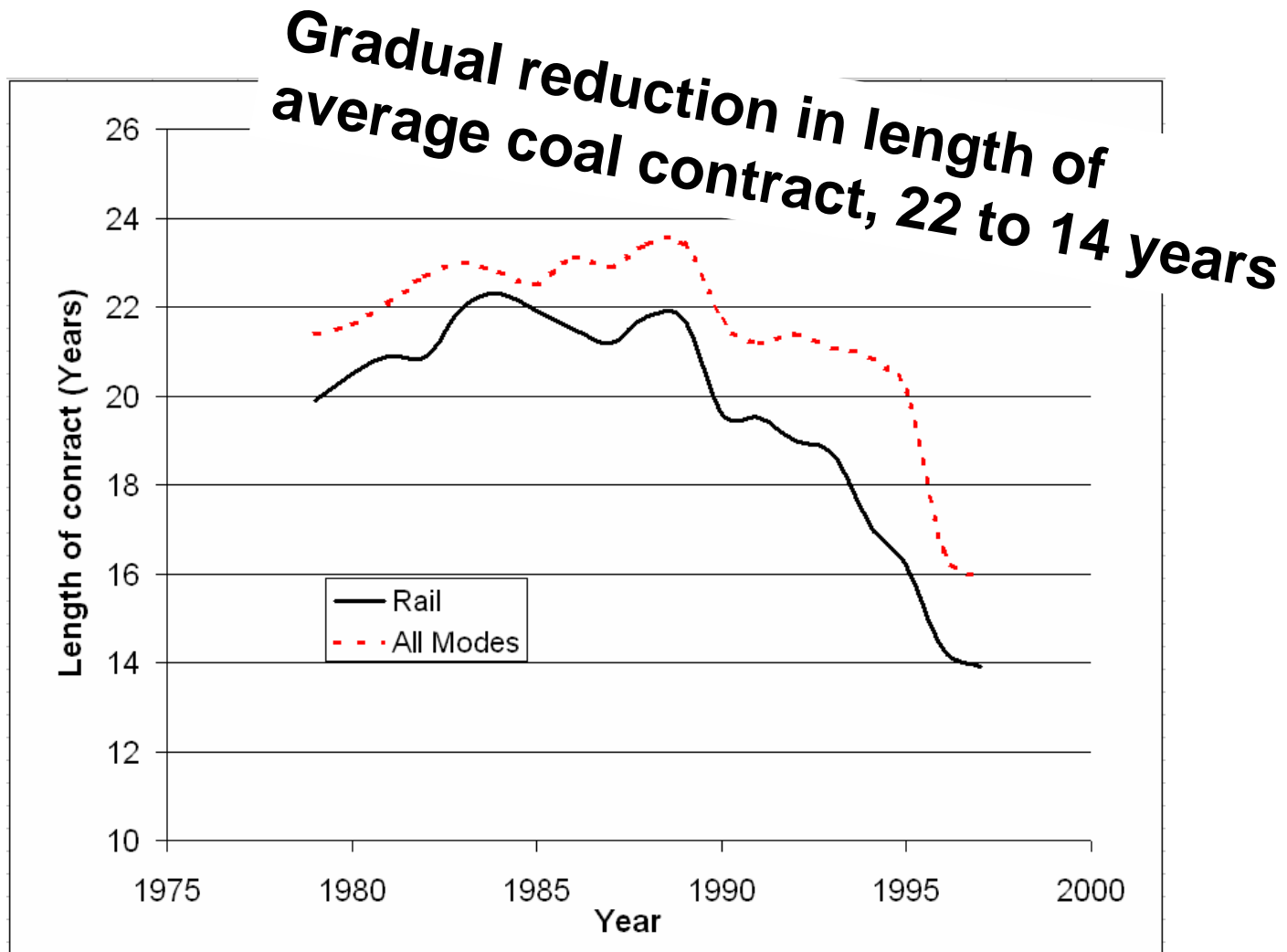


2005 Average cost: Coal transportation by rail = \$11.68/Ton

Source: <http://www.eia.doe.gov/cneaf/coal/ctrdb/ctrdb.html>
RAILROAD FACTS 2006 Edition, p.29



Average Duration of Utility Coal Contracts, 1979-1997



Source: <http://www.eia.doe.gov/cneaf/coal/ctrdb/tab33.html>



Utility Contract Coal Tonnage Shipped Between Supply & Demand Regions (MTons)

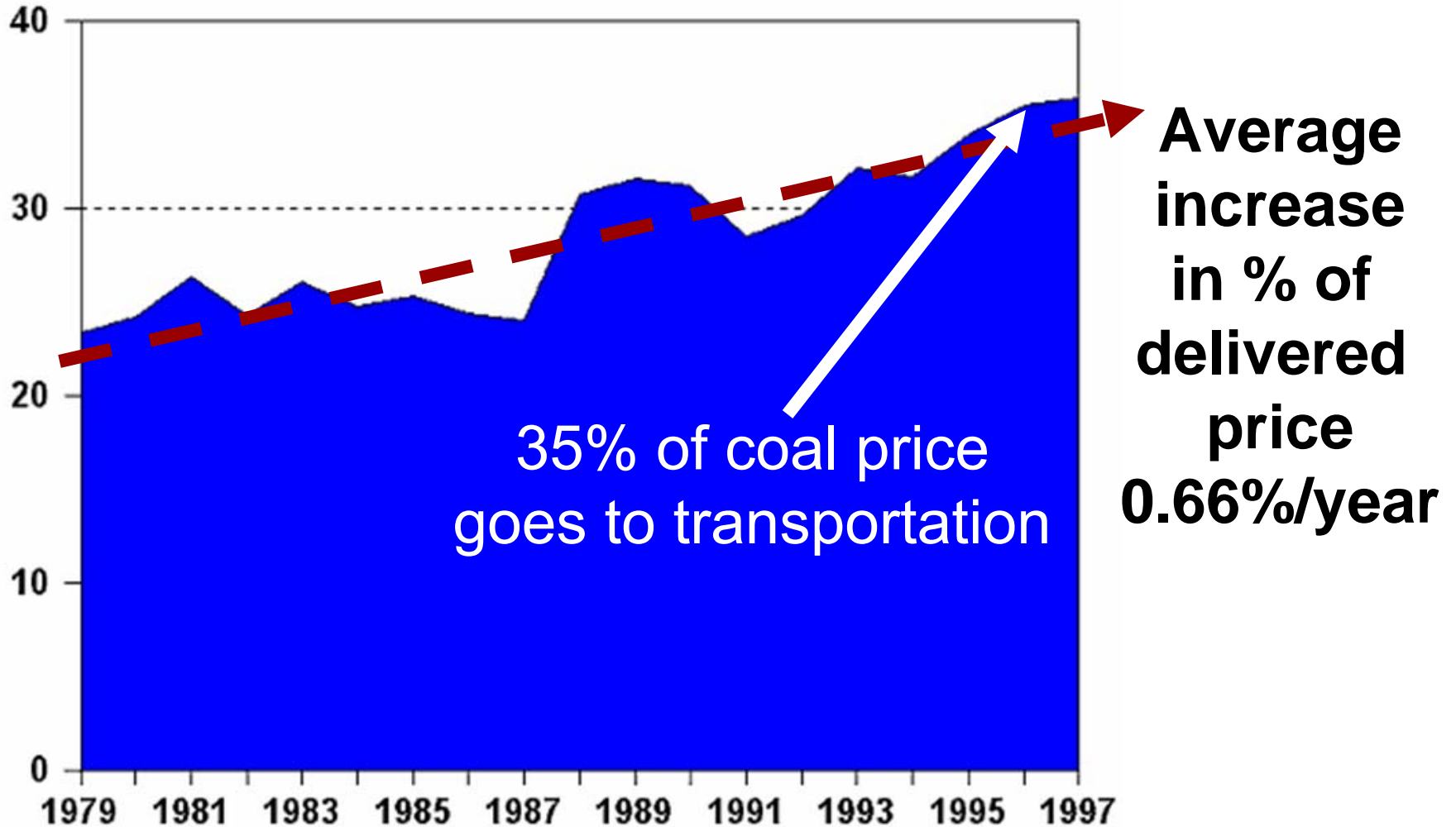
Year	Supply Region	Demand Region				U.S. Total
		Northeast	Midwest	South	West	
1997	Appalachia	36.4	40.6	121.4	--	198.4
	Interior	--	30.8	17.0	--	47.8
	Western	--	148.2	81.5	40.1	269.8
	U.S.	36.4	219.7	219.9	40.1	516.0



Source: <http://www.eia.doe.gov/cneaf/coal/ctrdb/tab52.html>



Utility Contract Transportation Cost as a Percentage of Delivered Price, 1979-1997



Source: <http://www.eia.doe.gov/cneaf/coal/ctrdb/tab36.html>

Note: Import records are excluded.
Source: Energy Information Administration, Coal Transportation Rate Database.



Transportation Rate per Ton-Mile

Average Utility Contract Coal Transportation Rate per Ton-Mile by Transportation Mode, 1979-1997 (Mills in 1996 Dollars)

Year	Rail	Barge	Truck	Multimode ¹	Other ²	All Modes
1980	28.3	15.6	123.1	28.2	38.8	28.2
1990	21.9	10.4	192.0	15.8	35.3	20.7
1997	13.6	9.3	140.0	11.4	26.3	13.4

¹Includes shipments that use any combination of rail, truck, barge, and collier transportation.

²Includes shipments for which mode is unknown, including conveyor, tramway, and slurry pipeline.

Note: Import records are excluded. One mill equals 0.1 cent. In computing the average rate per ton-mile, shipments for which the rate, distance, or tonnage was not reported were not used.

Rail & barge rates have reduced but not truck rates



Indiana: Utility Contract Coal Shipments in 1997 by Utility, Contract Expiration Date & Power Plant

Utility Name	Date Expires	Plant Name	Supplier Name	Mine Name	State of Origin	Transport Mode	Distance (Miles)	Coal Shipped (Million Short Tons)	Sulfur (Percent by Weight)	Btus (Per Pound)	Mine-mouth Price (1996 Dollars)	Trans. Rate (1996 Dollars)	Delivered Price ^a (1996 Dollars)
Public Service Co of IN Inc (continued)													
	2003	Gibson	Peabody COALSALES	Hawthorn	IN	Train	73	0.020	2.10	10976	N/A	N/A	26.40
	2003	Wabash River	Peabody COALSALES	Hawthorn	IN	Train	35	0.020	1.76	10829	N/A	N/A	23.39
*	2004	R Gallagher	Peabody Coalsales	Federal	WV	Barge	340	0.201	2.12	13214	N/A	N/A	28.55
	2010	Cayuga	Falcon Coal Co	Various	IN	Train	75	0.102	1.13	10818	N/A	N/A	30.42
*	2010	Gibson	Falcon Coal Co	Various	IN	Train	150	2.715	1.31	10944	N/A	N/A	30.78
	2010	Wabash River	Falcon Coal Co	Various	IN	Train	35	0.331	1.11	10774	N/A	N/A	30.30
	1998	Merrimack	Cyprus Amax	Emerald	PA	Train	875	0.265	1.36	13208	26.38	18.04	45.76

* Example 1: Gallagher in 1997, 201,000 Tons of coal transported 340 miles by barge
 = $$(340 \times 0.0093)/\text{Ton} = \underline{\$3.16/\text{Ton}}$; 201,000 Tons x \$3.16 = \$ 635,160

* Example 2: Gibson in 1997, 2,715,000 Tons of coal transported 150 miles by train
 = $$(150 \times 0.0136)/\text{Ton} = \underline{\$2.04/\text{Ton}}$; 2,715,000 Tons x \$2.04 = \$5,539,000

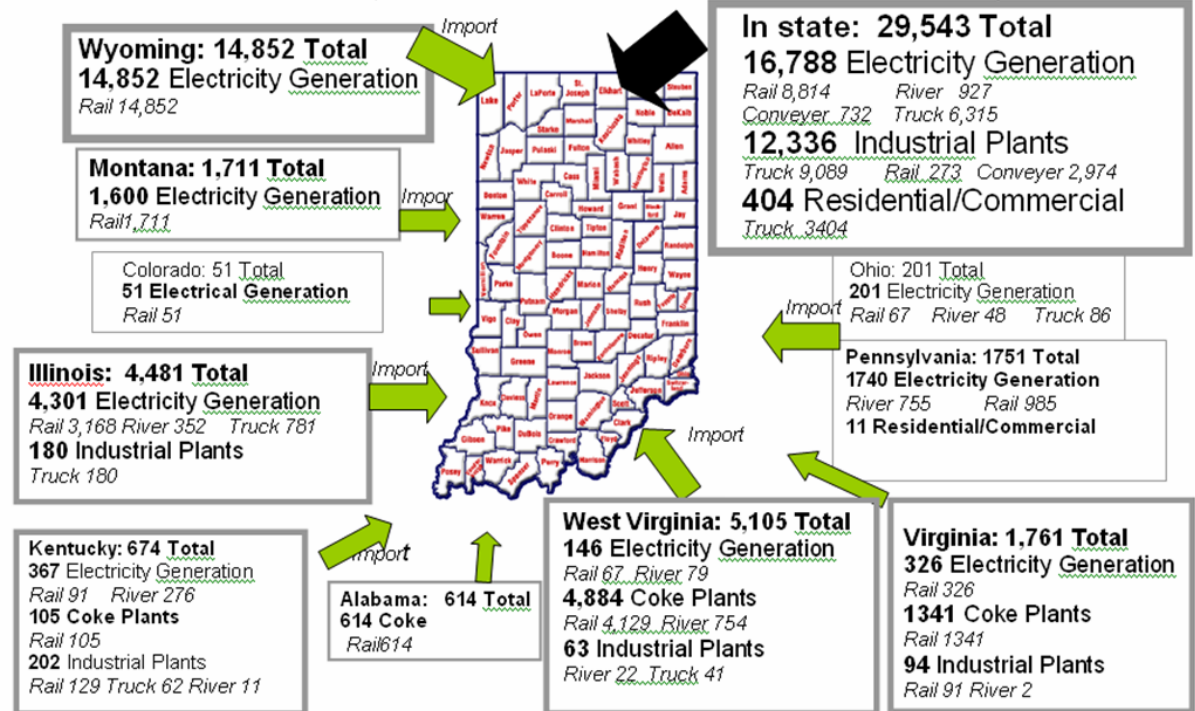


Western Coals to Indiana

In 2004 the total amount of **Western coal imported into Indiana by rail** amounted to **16.614 MTons**

Coal by Destination State in 2004 - Indiana

State Total of 60,744 Thousand short tons & methods of transportation



State Totals: 40,481 Electricity Generation, 6,944 Coke Plants, 12,875 Industrial Plants, 429 Resid/Com

Source: http://www.eia.doe.gov/cneaf/coal/page/coaldistrib/d_in.html



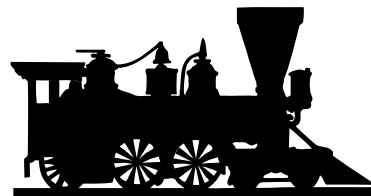


Western Coal by Rail to Indiana

Consider transporting 16.614 Million Tons of coal for 1200 miles at **\$0.0136 per Ton mile (1997 rates) by rail:**

$$1200 \times 0.0136 = \underline{\underline{\$16.32 \text{ per Ton}}}$$

$$\text{Total cost to transport 16.614 Million Tons} \\ = 16.32 \times 16,614,000 = \underline{\underline{\$271.14 \text{ Million/year}}}$$





Delivered Price of PRB Coal to Barge Served Ohio River Power Plants, 2004

	(\$ / short ton)	(\$ / MBtu)
PRB 8,800 coal FOB mine	\$7 - \$8	\$0.40 - \$0.45
Rail transportation to river terminal	\$11 - \$12	\$0.62 - \$0.68
<u>Transloading to barge</u>	\$1 - \$2	\$0.06 - \$0.11
Barge cost to plants on the Ohio River	\$4 - \$5	\$0.23 - \$0.28
PRB coal delivered - \$ / ton	\$23 - \$27	\$1.31 - \$1.53

Rockport ≈ 7.7 MTons of PRB coal
Clifty Creek ≈ 6.1 MTons of PRB coal
 }
 13.8 MTons x \$19/Ton
 = **\$262.2 Million**
 for coal transport



In State Average Price of Coal Delivered to End Use Sector, 2004-5

\$/short Ton	2005		2004	
	Electric Utility	Industrial Plant	Electric Utility	Industrial Plant
Indiana	30.15	58.11	25.70	40.00
Illinois	21.43	33.10	22.05	29.66
Ohio	37.00	58.87	31.99	47.40
Kentucky	36.01	65.42	32.22	51.47
Wyoming	16.71	25.89	15.28	25.23

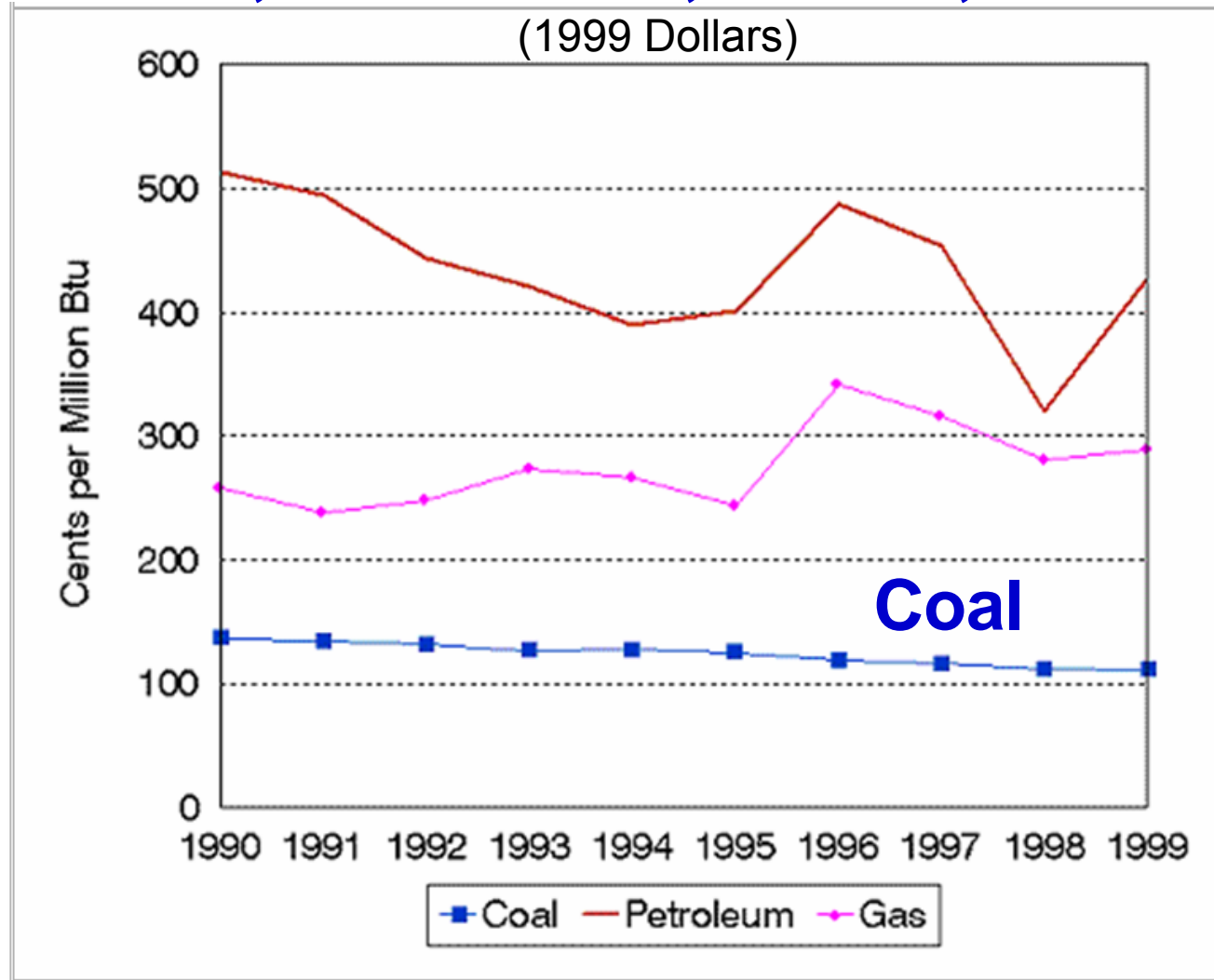
17.3% increase

$$30.15 - 16.71 = \$13.44/\text{Ton}$$

Source: <http://www.eia.doe.gov/cneaf/coal/page/acr/table34.html>



Indiana Utility Delivered Fuel Costs for Coal, Petroleum, & Gas, 1990-1999

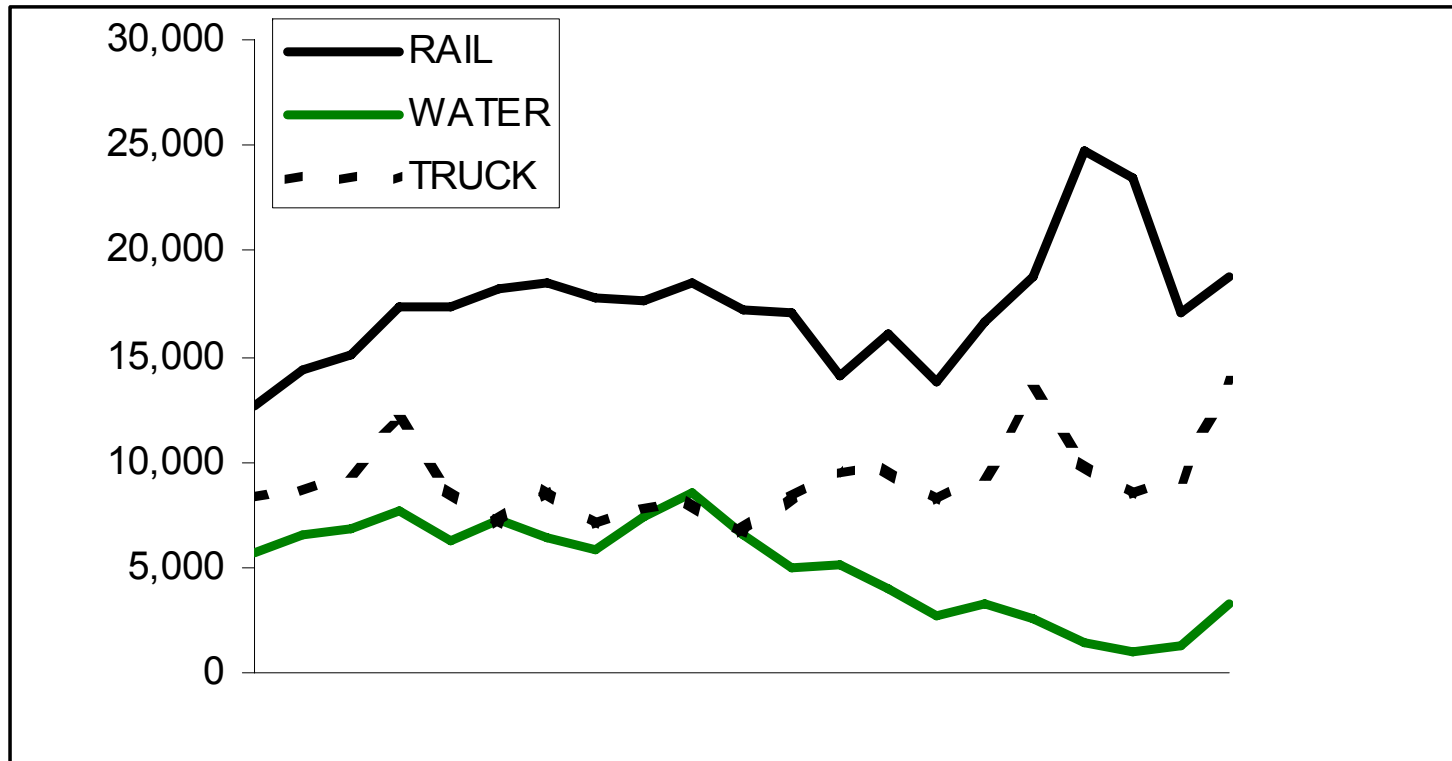


Source: http://www.eia.doe.gov/cneaf/electricity/st_profiles/indiana/fig4.html



Transporting Indiana Coal, 1981-2001

(Thousand Tons)



Source: U.S. Department of Energy, <http://www.indianacoal.com/transportation.html>



Coal Handling at the Port of Indiana Mt Vernon



Indiana coal being loaded onto a barge via 7ft wide conveyor at a rate of 1 Ton/sec



Rail Providers for Indiana's Power Plants

Rank	Mine Name	Mine Operator	Production, 000 (tons) '05	Rail Provider *
1	Somerville	Black Beauty Coal Company	8,144	ISRR (CSX, NS)
2	Farmersburg	Black Beauty Coal Company	3,846	CSX (INDR)
3	Gibson County	Gibson County Coal, LLC	3,506	CSX (NS, ISRR)
4	Prosperity	Five Star Mining Inc.	3,155	(CSX, ISRR)
5	Francisco	Black Beauty Coal Company	2,913	NS (CSX, ISRR)
6	Air Quality	Black Beauty Coal Company	2,131	CSX (ISRR)
7	Cannelburg	Solar Sources Inc.	1,989	ISRR (CSX)
8	Viking	Black Beauty Coal Company	1,548	ISRR (CSX)
9	Cypress Creek	Vigo Coal Co Inc.	1,288	NS/ISRR/SCS (CSX)
10	Miller Creek	Black Beauty Coal Company	1,016	(CSX, INRR, ISRR)

* Rail providers; parenthesis indicate other potential providers within a 15 mile radius

SOURCE: 2006; Indiana Coal Council, Inc.

NOTE: Rail Abbreviations:



CSX: CSX Transportation
 NS: Norfolk Southern Corporation
 INDR: The Indiana Rail Road
 ISRR: Indiana Southern Railroad
 SCS: Squaw Creek Southern



Domestic Distribution of U.S. Coal by Destination State, Consumer, Origen & Method of Transportation

January-December 2001, (Thousand Short Tons)

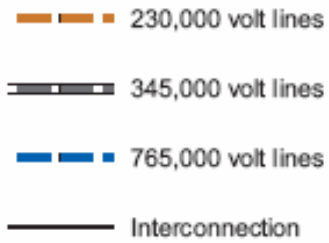
Coal-Producing State of Origin by Method of Transportation	Electricity Generation	Coke Plants	Industrial Plants (Except Coke)	Residential and Commercial	Total
DESTINATION: INDIANA (Continued)					
<u>Indiana</u>	27,193	-	3,575	240	31,007
Railroad	16,459	-	743	*	17,202
River	472	-	-	-	472
Truck	9,498	-	2,827	240	12,565
<i>Tramway, Conveyor, and Slurry</i>					
Pipeline	763	-	5	-	768



Coal burning electric power plants
Generation capacity (MW)



Transmission lines



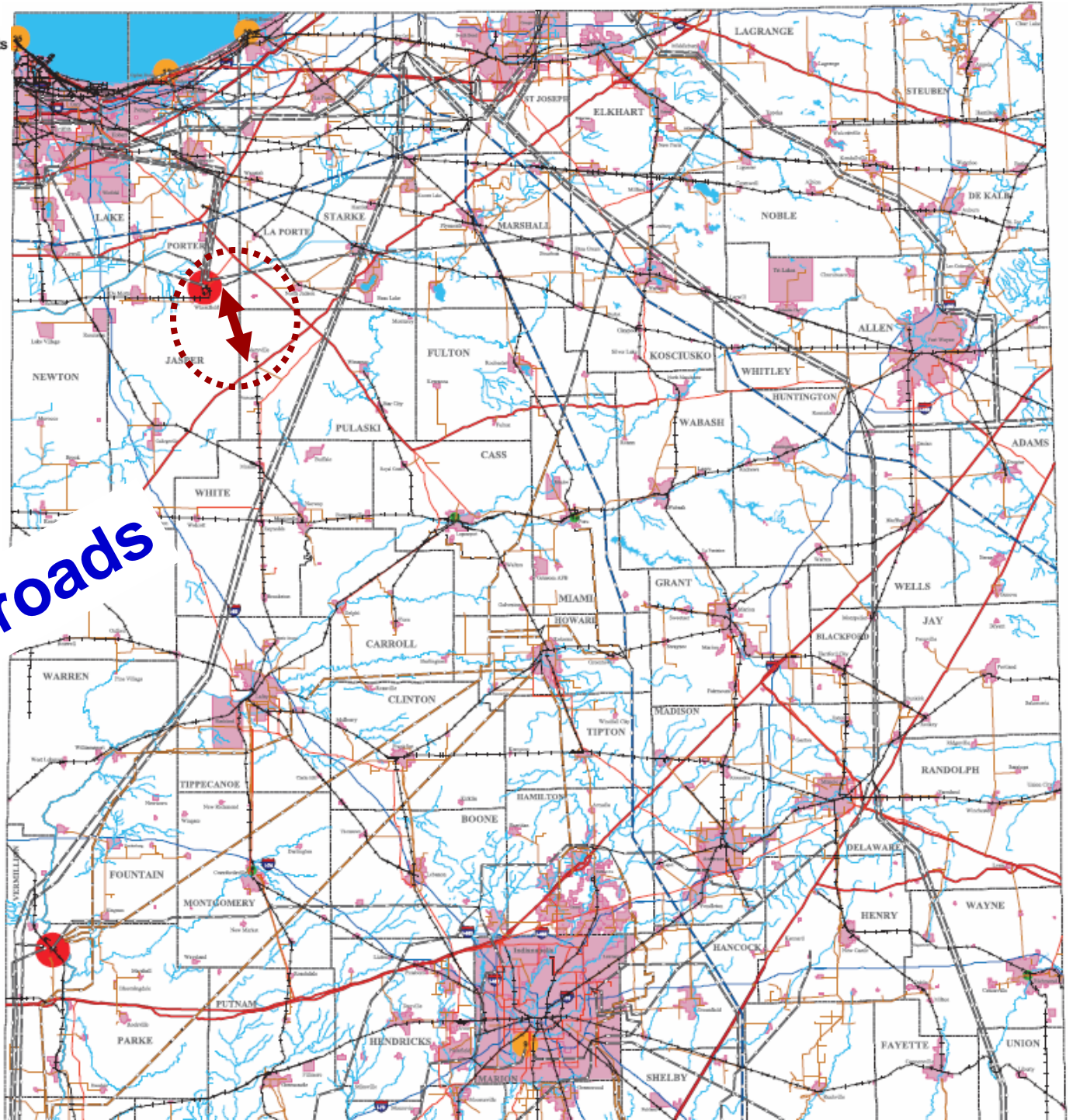
Natural gas pipeline



Railroads

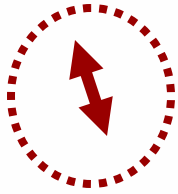
Interstate highway

Rivers

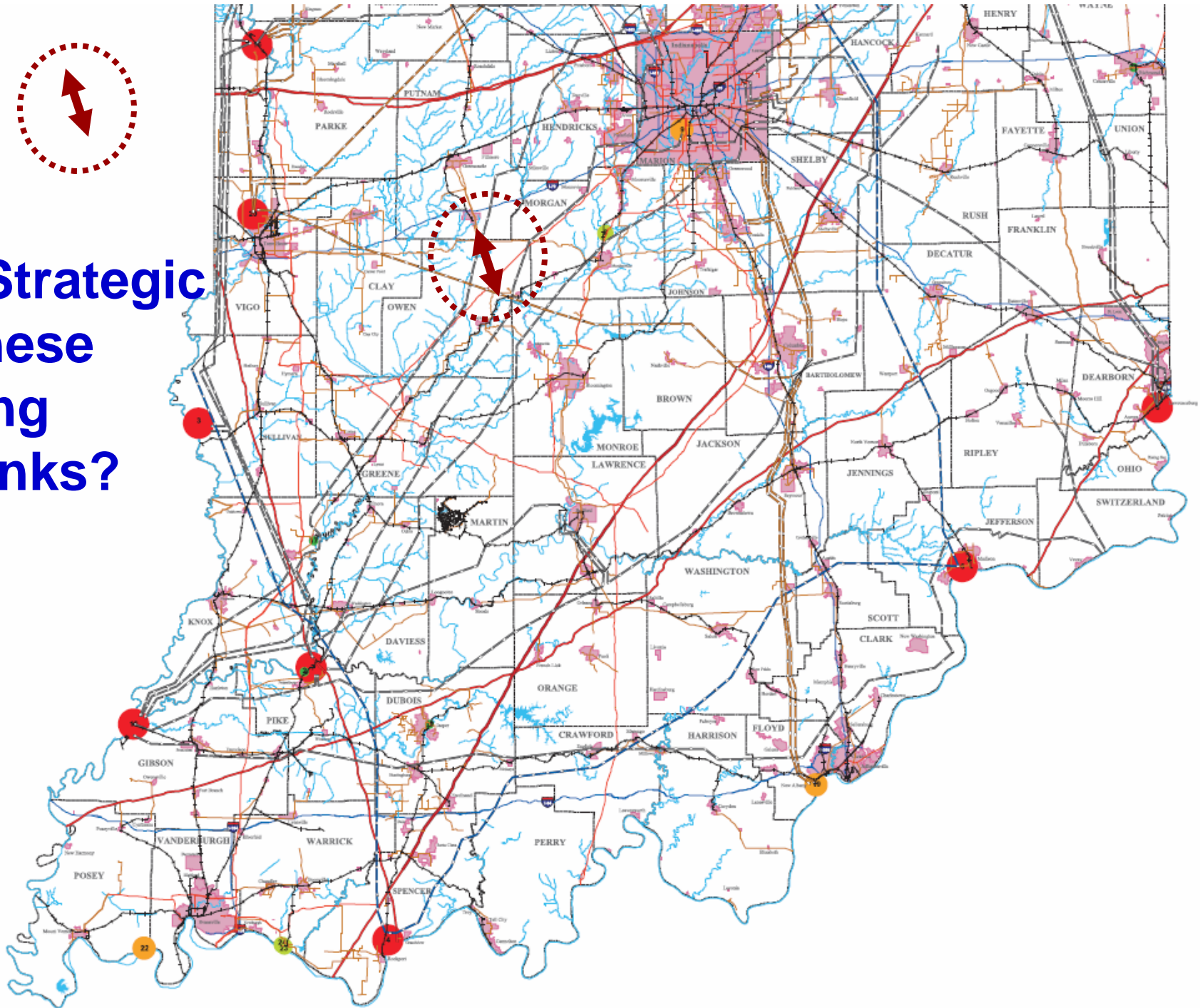


Indiana's Railroads





How Strategic Are these Missing Rail-links?





Railroads Struggling to Meet Demand

"It's not increased generations causing the stockpile to go down," Basin Electric spokesman Robb said.

"It's lack of coal deliveries."

Entergy Arkansas said its coal shipments declined up to 20 % last year, forcing it to reduce operations at two power plants in Arkansas and to buy power on the open market. Wisconsin utilities incurred nearly \$50 million in extra costs last year because of interruptions in coal shipments.

David Wilks, president of energy supply for the Minneapolis-based Xcel Energy, testified before a Senate committee last month that power companies may be forced to buy up to \$2 Billion worth of natural gas to make up for a coal shortfall.

Source: <http://www.bismarcktribune.com/articles/2006/06/11/news/state/116220.txt>

"Railroads struggling to meet demand for coal", By BOB MOEN, Associated Press Writer, 06-11-2006

Indiana Center for Coal Technology Research