

# Railroads As A Coal Transportation System

by John H. Hertog



**T**he U.S. railroads have responded magnificently to the demand for increased transportation service brought about by the burgeoning use of coal by industry and for electric-power generation during the past decade. All of the coal that needs to be moved is being moved and there is surplus railroad capacity that is ready to accept even greater demands.

Certainly there is no need for a coal-slurry pipeline system from the standpoint of transportation capacity, nor does there appear to be an economic need for those redundant systems.

One of the major issues that has been before Congress for several years is that of granting slurry pipelines the privilege of federal eminent-domain power.

The Burlington Northern Railroad opposes such legislation when that very special privilege—denied to other competing modes of transportation—may be granted without evidence of any overall public interest or need and when the recipients of the privilege would not be required to do business as common carriers.

The arguments have been heard that coal-slurry pipelines require eminent-domain authority because they have been unable to cross railroad rights of way. That litigation battle was won by the pipelines some time ago, and I think it is important to note that our company, as well as the railroad industry generally, is ready to negotiate crossing rights in many areas of planned pipeline development.



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## States Should Decide

Promoters of pipelines, in seeking legislation to give them eminent domain, are trying to take away state sovereignty in a very important area, that is, the power to condemn private property for public use.

Few private companies have been granted this power. Most of those that have eminent domain—notably railroads and electric utilities—have gained it not from the federal government but from states.

For a private company to obtain this power from the federal government, some overwhelming public need must be shown. Slurry promoters have not done this.

Proponents cannot show that pipelines are essential for moving coal. The railroad system is capable of meeting all projected demands for the transportation of coal.

Do pipelines confer any overall benefit on the public? Slurry promoters claim they eventually could deliver coal more cheaply than railroads—but cannot prove it. And even if it were true, overall costs to the public could go up because railroads would have to raise other rates to make up for the revenues lost to slurry pipelines.

Pipeline costs cannot be known until after the pipeline is built. The most prominent example is the proposed ETSI pipeline, which now has an estimated construction cost in excess of \$3 billion. This is more than a four-fold increase since as recently as 1976, when the promoters estimated the cost to be \$750 million. Clearly a capital-intensive

system such as a slurry pipeline is in danger of sinking of its own weight in times of high interest rates such as these.

Pipeline promoters cannot show that slurry development would promote the national transportation policy. That policy calls for a healthy rail network. By diverting coal from that network, the pipelines would sap its strength. If the railroad system could not survive on its own, it would have to be underwritten or nationalized by the government.

## The Common Carrier Obligation

Railroads are common carriers. They are required to provide service to any customer willing to pay the published rates.

But promoters of slurry pipelines are seeking the privilege of committing their entire capacity to customers who sign long-term contracts before the pipelines are even built. This means they would not really have common-carrier obligation to any shipper who does not agree to sign a contract before the line is built. Clearly the pipelines are designed to benefit only a handful of very large mines and utility companies. Railroads exist to serve all sizes of shippers and receivers wherever they may be.

Under the terms of the Staggers Rail Act of 1980, railroads can enter into contract rate agreements with shippers. But railroad companies cannot commit their entire capacity of any type of equipment to contracts. Indeed, a railroad can be found to have violated its common-carrier obligation if as little as 40% of its capacity of some types of cars is tied up in contracts. Slurry

promoters are unwilling to accept such limitations on their contract rights.

Slurry pipelines would not really be common carriers. Moreover, pipelines would make it more difficult for railroads to fulfill their common-carrier obligations because pipelines would skim the cream off the top of the railroad industry's coal-traffic base—high-volume movements over regular routes.

When it comes to moving coal, railroads are doing it right, at the right price. However, denied these profits, the railroad industry would be less able to make the investments necessary to meet all of its common-carrier obligations.

## Unit Trains Save Energy

Coal-slurry pipelines have a long way to go to match railroads in fuel efficiency.

Unit-train operations are 43% more energy efficient than slurry pipelines, according to the Congressional Budget Office's February 1982 study, "Energy Use in Freight Transportation." (see table, next page)

The CBO found that a pipeline uses an estimated 1,270 BTUs per ton-mile while a unit coal train uses 890 BTUs.

These are overall "modal" comparisons that include far more than propulsion energy, the actual fuel used to move freight. These modal estimates reflect factors such as energy used in manufacturing transportation equipment and constructing and maintaining rights-of-way, as well as route circuitry.

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## How freight energy efficiencies compare

### Percent of total energy used\*

Transport method	BTUs used per ton-mile of cargo	Propulsion	Vehicle manufacture	Construction	Maintenance	circuity
Railroad—overall	1,720	38	5	12	10	34
Trailer on flat car	2,040	49	4	10	7	30
Unit coal train	890	42	7	11	7	34
Truck						
Average intercity	3,420	61	3	9	9	18
Barge—overall	990	42	4	5	3	45
Upstream	1,280	45	3	4	2	45
Downstream	620	35	6	8	5	45
Air						
All-cargo plane	28,610	92	1	0.5 or less	3	5
Belly freight	3,900	92	1	1	3	5
Oil pipeline	500	65	0	5	20	10
Coal slurry pipeline	1,270	79	0	4	8	9

\*Totals may not add due to rounding

Source: Congressional Budget Office.

Note: Energy used by railroads in washing coal and subsequent dewatering of coal shipped by rail, plus energy used to grind coal before use by utilities was not included in CBO report. (Table provided by Oil and Gas Journal)

actual energy used to transport freight, the unit train at 370 BTUs is almost three times as energy-efficient as a slurry pipeline, which uses 1,000 BTUs per ton-mile for propulsion, according to the Congressional Budget Office. Last year unit-train coal accounted for 51% of BN's revenue ton miles.

But that's not all.

The CBO cautions that the pipeline energy estimates are based on engineering studies, "and the history of the most new forms of transportation shows that performance in practice is often not as good as suggested by the first engineering estimates."

In the national effort to save energy, railroads—which are already in place

## Alternative Solutions to Railroad Impacts on Communities: Problem Identification; Case Studies; and Summary Report (3 Vols)

Published October, 1981, this three volume technical report, jointly sponsored by the U.S. Departments of Transportation and Energy, Minnesota DOT, North Dakota State Highway Department, and Burlington Northern, Inc., presents the results of a study to identify community problems resulting from railroad operations. As coal has come to play a more significant role in meeting the nation's energy needs, the community impact of increased train movement has become a growing concern. The first volume deals with identifying problems like pedestrian safety, vehicle safety, delays in travel, environmental issues, and community development. Volume two illustrates

six case studies of communities experiencing conflicts. In each case alternative, low-cost actions were identified and remedial actions were demonstrated. The final summary volume describes the preconditions necessary for the actions to be feasible and clarifies the role the railroad and community must play to resolve the conflicts.

This report is available at no charge to state and local governments by sending a self-addressed mailing label to: Technology Sharing Program (I-40), U. S. Department of Transportation, Washington, D.C. 20590. Please request the document by name when ordering.

with lots of extra capacity—beat slurry pipelines by an impressive margin.

### Burlington Northern Hauls Coal

The Burlington Northern Railroad is very involved with Western Coal. BN has been in the vanguard of the Powder River Basin coal boom since its beginning. With our rail system and our connections with other railroads (see map), we link the mines of the Powder River Basin with virtually every electric utility plant in the country.

The future of this development looks bright. Coal consumption continues to rise steadily and the transportation system for moving coal from mines to where it is used is working very well. We truly have become streamlined coal transporters.

Coal traffic accounts for more than half of the Burlington Northern Railroad's freight ton miles. From less than 20 million tons in 1970, BN originated 112 million tons of coal last year, with most of it shipped from the Powder River Basin.

We also handle coal that originates on other railroads, and when we added that to the calculation of 1981 traffic, we came up with almost 118 million tons of coal handled by BN.

We are serving 43 electric utilities in 20 states, with the coal moving to a total of 53 destinations. This is done in cooperation with many other railroads and several water carriers.

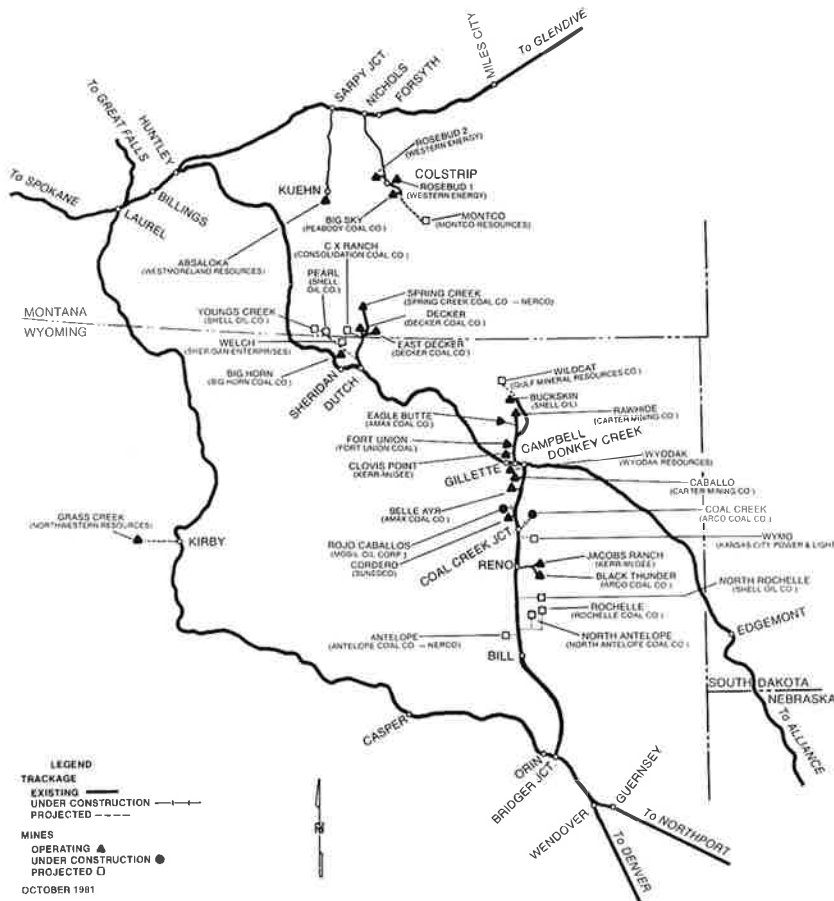
In 1975, only five operating coal mines dotted the Powder River Basin range lands. Today Burlington Northern serves 19 mines in the basin, and we know of at least 17 other mines being planned. Ten of the 20 largest mines in the country are in the basin.

However, despite our growing business, the railroad has had excess capacity for coal. Last year several more million tons of coal could have been hauled from the Powder River Basin if the demand had been there. Approximately 4,000 BN coal cars were in storage. Also in storage during 1981 were several thousand coal cars owned by shippers.

### Billion-Dollar Improvements

Our coal-transportation capability came about because of an extensive program to upgrade major segments of our system and acquire the cars and locomotives for efficient coal handling. It involved laying heavier rail over

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thousands of miles of our system, construction of hundreds of miles of new tracks and sidings, widespread installation of automatic signals, and construction of major repair facilities for equipment used in coal hauling. The cost of all these coal-related improvements and acquisitions has been more than one billion dollars.

BN intends to keep the system in good condition and add to its capacity as necessary, but a point has been reached where the substantial additions of the past will meet market needs for some time.

The goal for Burlington Northern for the last several years has been improvement of coal service. Our turnaround times and overall dependability have improved dramatically. Today a physical system and a trained work force is in place that can meet current and future service needs.

Railroads were the key that opened the West in the last century. And now railroads are again very important in what has been called the second opening of the West—the rapid development of the region's great energy resources. The railroad is on the right track and we intend to stay there.

