

To Barge or Not to Barge: The Outlook for Barge Transportation

BY EMILY S. MEDINE

Most U.S. coal is delivered by rail and barge. Sometimes in combination; sometimes in competition. The 2002 Energy Information Administration data shows about two-thirds of all U.S. coal deliveries were by rail. Barge accounted for about 11%. The balance was transported by truck, conveyors, vessel, and other. The barge market for coal, which is more than 100 million tons, is concentrated in the eastern United States with most deliveries being on the Mississippi and Ohio Rivers.

Coal transportation patterns have changed over time with the change in coal supply. The Energy Policy Act of 1992 required the Secretary of the Department of Energy to file no fewer than three reports on the change in coal transportation rates and coal distribution patterns as a result of compliance with the 1990 Amendments to the Clean Air Act.¹ The third and final report which was filed in October 2000 found there had been a substantial increase in rail delivery while barge and trucking held their market shares. The decline occurred in the other modes, primarily conveyor, which is consistent with the complete switching of multiple mine mouth utility supplies to the Powder River Basin including Associated Electric Power's Thomas Hill and Texas Municipal Power Authority's Gibbons Creek.

Other reports contain the same findings but do not address the changing fundamental economics of barge delivery of coal. Barges have already lost market to rail in deliveries which encompass multiple modes and may

no longer be more economical than rail in certain market situations. They have retained a share of the market primarily because of Section 29 tax credits.

Several coal-fired plants in the eastern United States had received coal by multiple modes, including rail to barge. These plants have shifted to all rail delivery if rail delivery is available. This switch occurred, for example, at several Georgia Power plants which had taken coal from the Illinois Basin. The Illinois Basin coal was railed or trucked to the river, put into barges, and then transloaded back into rail for ultimate delivery to the plant. This particular transportation sequence was an artifact of several old, long-term coal supply agreements for Illinois coal combined with a change in environmental requirements and intra-state limitations of the transport of high sulfur coal. Similar shifts to all rail have occurred at other utilities and additional shifts are expected at First Energy's Sammis and Bruce Mansfield stations and TVA's Cumberland plant. The switch to all rail from some combination of rail and barge reflects improvements in rail transportation costs combined with the savings in handling.

The improvements in rail transportation costs, in fact, have been so significant that in certain circumstances rail movements of coal are more economical than barge movements. This phenomenon came to light in a recent proceeding before the Florida Public Service Commission with the disclosure of

Tampa Electric (TECO) data which had previously been held to be confidential. TECO had requested approval of a new long-term contract with an affiliate, Teco Transport, for moving approximately 5 million tons per year of coal to TECO's Big Bend station. In this proceeding, TECO revealed its typical transportation costs to move Illinois Basin coal to the Ohio and Mississippi Rivers. TECO rails or trucks the coal to a river dock, barges the coal to its transloading terminal near New Orleans, then ocean barges to Big Bend (See Exhibit 1).

TECO disclosed that in 2001 while it was paying in excess of \$20/ton for coal by water to Big Bend, it was paying \$16.35/ton (including all rail car costs) for rail delivery of coal to its Tampa-area Gannon plant over approximately the same distance. The Big Bend station is 10 miles from Gannon and should have similar rail rates.²

The reasons for the TECO rail rate being lower than water route delivery are easy to understand. Direct rail from western Kentucky to Big Bend is about 975 miles. By contrast, the water distance alone for moving the same coal to Tampa is closer to 1,500 miles; 1,000 on the river and almost 500 miles across the Gulf. While the degree of the differences in distances can vary, rail direct distances are often shorter than barge haul distances. Given the distance differential and each mode's speed, the distance in transit time between rail direct and barge can be huge. In the case of TECO's Big Bend station, unit trains have a six to eight day cycle time. The Ohio and Mississippi barge route alone to New Orleans has a 12-day cycle time, not including loading or unloading. The ocean barge takes another six days, not including loading and unloading, and delays might result in a total cycle time of about 10 days under good conditions. Crews must be paid for 25 days to man shipments by the water route (river and ocean), including 18 days under power. A unit train is under power six to eight days. Also, barge crew sizes are more than double rail crew requirements.

Barging can also have other costs associated with it. Because of the transit time and because of regular problems with the waterways (e.g., low water, high water,

Exhibit 1 - TECO Transportation Costs Illinois Basin Coal To Big Bend

Rail to River Dock	\$4.10 ¹
River to Davant, LA	\$5.61 ²
Ocean Barge & Load at Davant	\$10.65 ²
Total	\$20.36

1. Based on Dec. 1998 vs. Nov. 1998 FPSC, 423-2(b) data for Galatia shipments FOB mine vs. FOB barge.

2. Data from TECO 2001 FPSC 423-2(b) filings.

freezing, and congestion), utilities need to maintain larger inventories at barge-served plants than at rail-served plants. In Florida, for example, rail-served utilities maintain 45 to 60 day inventories while TECO's barge served Big Bend plant is authorized by the Florida Commission to carry 98 days of inventory at Big Bend and Davant. For barge coal users on the Upper Mississippi and Great Lakes, the river is not navigable from late October to early April due to winter freeze periods. Plants without rail service must carry more than 100 days of coal inventory entering the winter.

Further, producers are increasingly interested in ratable coal shipments. This means they prefer to ship coal in approximately equal quantities throughout the year rather than concentrated in the river navigation period. In some instances, bids reflect the ability of consumers to accept ratable coal supplies. Detroit Edison has switched to all rail for some of its Powder River Basin deliveries to Monroe to avoid the winter-related interruption in lake shipments.

As of the end of 2003, approximately 55

Section 29 plants (a.k.a. synfuel plants) were in operation. Most of the plants are located in the eastern United States and many are located on river docks where coal moves through the plants prior to being loaded into barges. Section 29 of the Internal Revenue Code of 1986, as amended, provides a tax credit for the production of synthetic fuel from coal (See Exhibit 2). In 2003, the tax credit equaled \$1.104 per MMBtu or \$27/ton for a 12,000 Btu/lb coal. Given the size of the tax credit, the plants have been sited at river docks which helps to insure a steady coal supply and provides market flexibility. Shipments have been routed through these river terminals even when other movements are more lucrative in order to obtain the tax credit. Absent the tax credit, less barging is likely. This is primarily due to the fact that a segment of this market has been propped up through these tax credits. Prior to the current high priced environment, significant production would have been shut in without the tax credit. Upon a return to equilibrium pricing in the market, production from higher cost operations is likely to be curtailed.

The bottom line is that in the future, rail

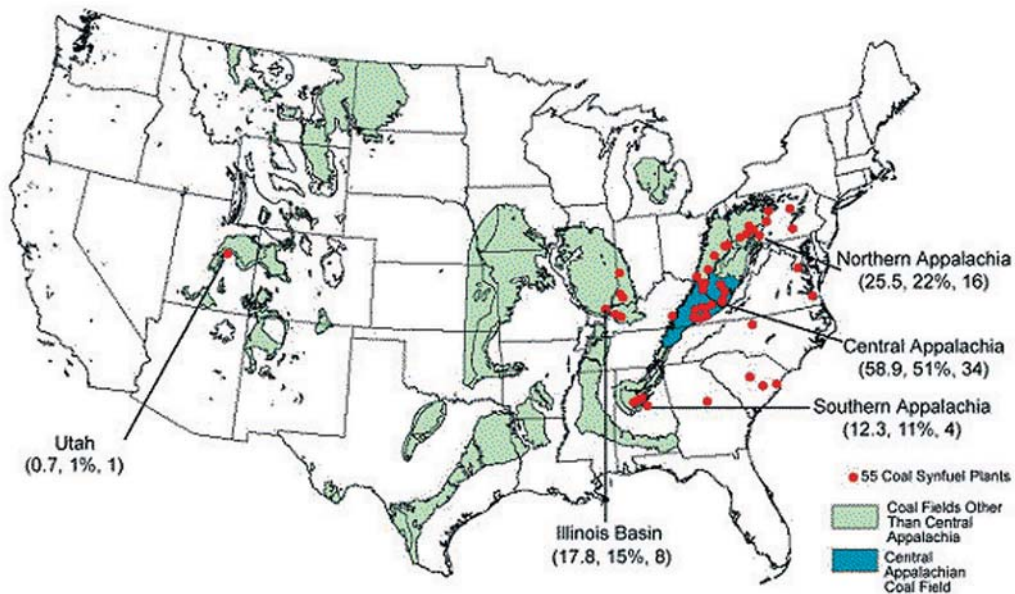
will displace significant volumes of coal that are being barged today. However, the price the railroads must pay to improve their market share is better performance than what is being experienced by some utilities today and pricing that makes the switch competitive. Utilities with barge delivery capability will retain that capability whether it is used or not in the event the railroad fails to meet its end of the service commitment.

¹ Energy Policy Act Transportation Rate Study: Final Report on Coal Transportation, October 2000.

² TECO's Big Bend plant does have a rail spur but not unit train unloading facilities. TECO has resisted CSXT's offer to install at CSXT's expense, unit train unloading facilities, preferring instead to sign a new five-year (2004-2008) contract with its affiliate transportation company. The issue before the FPSC is the prudence of this affiliate contract.

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Exhibit 2 - Coal Shipments From Coal Producing Regions to Synfuel Plants, 2003
(Million tons, % of Total, No. of Plants)



Source: U.S. Coal Supply and Demand: 2003 Review, EIA.