

COLUMBUS AND THE COAL COUNTRY RAILROADS

by James M. Cavanaugh, 2021



Pennsylvania Railroad Class J1 2-10-4 No. 6478 in the lead, passing the Chase Avenue Yard with a coal drag heading to Logansport on the Bradford Line. Photo from Ryan Hoover Collection.

Background: Coal, Railroads and Columbus Development

The post-Civil War industrial boom that made the United States a global power was led by availability of highly productive labor and low-cost energy sources, principally coal. While Columbus was not a mining center, coal transport and distribution and the rise of mining equipment and technology enterprises drove its emergence as a major city during this period.

Columbus railroads played a key role in this activity. Some of the 15 Central Ohio rail lines saw coal haulage rise to more than 50 percent of their traffic and revenue bases at times from the late 1800s through the Great Depression, followed by a second surge of coal business during World War II and into the early 1950s. Many of these railroads were born on the prospects for coal transport. Not unexpectedly, some died a slow death once the coal they hauled was physically exhausted or no longer in demand.

This five-part article examines the connection between Columbus railroads and the coal industry, including coal traffic flowing through the Columbus rail network during this dynamic era.

The story of Columbus railroads and coal is difficult to tell railroad by railroad. But it seems most logical to narrate this history for each of the five big railroads that eventually emerged in Columbus, the Pennsylvania (with five lines meeting in the City), the New York Central (four lines), the Chesapeake & Ohio (three lines), Baltimore & Ohio (two lines) and the Norfolk & Western (only one line during the big coal era, but providing perhaps the steadiest stream of northbound coal over several key interchanges). These early railroads frequently went through

realignments due to bankruptcies, corporate consolidations and government antitrust intervention. Interestingly, one line with only obscure traces now remaining, the Columbus, Sandusky & Hocking (CS&H), played a big part in the coal business of at least three of the five big railroads, with its fragments becoming ancestral parts of the PRR, NYC and N&W.

The Source - Ohio Coal Mines



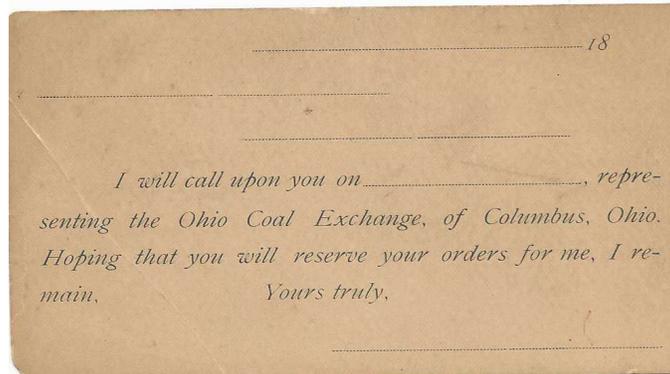
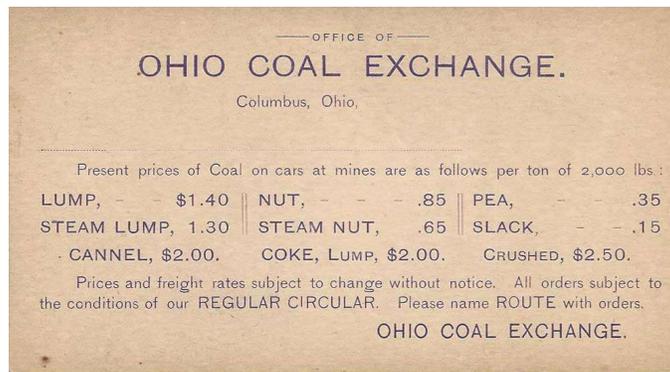
The Congo Mine, Drakes, Ohio, on the Zanesville & Western (c. 1910)

Coal was initially discovered in Ohio in Tuscarawas County in 1755. The first commercial shipments of Ohio coal flowed from Jefferson County around 1800, and over three billion tons has followed. Some 25 of Ohio's 88 counties had substantial productive coal mines active from the mid-1800s up through the late 1900s; a smaller number continue to this day. These "Coal Counties" comprise the Appalachian portion of the State, bordering the Ohio River in a line running north approximately from Portsmouth to Millersburg in Holmes County, and then northeast to Youngstown. Between 1880 and the end of World War II, this area was among the top producing deposits of bituminous coal on the entire planet.

The counties yielding most coal transported to and through Columbus in this era were in the Hocking Valley Coal Field, including Perry, Muskingum, Athens and Hocking Counties, with some contributions from neighboring Vinton and Morgan Counties. The dense Ohio coal deposits to the east, including Jefferson County and northward, mainly fed nearby markets in northeast Ohio and Western Pennsylvania, although providing some traffic into Columbus.

The Economics of Coal Haulage

The factors that determine pricing for coal at destination include the heat value per unit of weight (expressed in British Thermal Units or "BTUs"), moisture content (expressed as a percentage of water content by weight), Sulphur content, the size of the coal lumps, non-combustible content (i.e., how "clean" the coal is and what types of boilers can use it), and the cost and time of moving the coal from the mine mouth to the buyer's destination siding.



Ohio Coal Exchange price list postcard, circa 1895. After the Sherman Antitrust Act was enacted in 1890, the federal and state governments kept a careful eye on price-fixing by coal producers.

The heat value of Ohio bituminous coal ranges from about 10,000 to 14,500 BTUs per pound, and Ohio "sub-bituminous" coal has values of 8,000 to 10,000 BTUs per pound. During the 19th Century, well before the advent of accurate scientific measurement, industrial users and even homeowners knew which coal grades and origins performed best, put out the most energy and left the least volume of corrosive ash.

The economics of rail transport are complex. Coal is heavy, requiring rugged hopper cars, and is hard on rolling stock and track. Although having the economic advantage of large volume, coal takes more manpower, horsepower and tractive effort to move over the road than mixed freight or most other bulk commodities. In the steam days, it usually took a helper engine or two to move coal trains up moderate to steep grades such as those facing the four heavy-haul railroads running northward from Columbus. The biggest locomotives such as the C&O's H-8 2-6-6-6 Alleghenies, or the PRR's J1 class 2-10-4s on the Sandusky Branch, could only do so much. Once diesels arrived, four coupled EMD F9s, with an engine crew of two men, and over 220,000 ft/lbs of starting tractive effort, almost double that of an Allegheny or J1, could walk 8,000 tons up these grades without breaking a sweat.

Often the transport cost to destination exceeds the cost of mining, cleaning, sorting and loading coal at the mine. Even high-quality coal is not competitive if you have pay to carry it too far.

A railroad's pricing point for coal transport is based on competitive factors, rather than costs. If a coal shipper has multiple routing options, as was the case in much of the Ohio Coal Counties, rail rates go down. Where coal moves to destination via several interchanging line haul railroads, they have to apportion the freight revenues, limiting the originating railroad's ability to exploit its monopoly pricing advantage from the mine to the nearest interchange point. From enactment of the Interstate Commerce Act in 1887 onward, government antitrust regulation also affected rail freight pricing. The railroad's economics are also heavily affected by the cost of balancing equipment, especially the need to deadhead empty hoppers back to the mines when no backhaul cargo is available, and payment of *per diem* fees to other railroads for hopper cars while on the railroad's property.

In the steam days, a railroad would also purchase coal for its own use from on-line suppliers, and bargain the coal price against more favorable freight rates. A railroad would be especially careful to keep a big on-line mine supplying its fuel and originating 100 or more cars a day "in the money," operating and paying freight, when other mines might be shutting down due to poor economics. Coal was also a strategic commodity, as a railroad could not operate for long without a continuous supply. The Pennsylvania Railroad stockpiled enormous coal inventories just north of Pennor Yard so as not to be caught short of fuel during post-war mineworker strikes.

In general, a railroad is economically motivated to continue to carry coal even at an overall loss, as long as the freight revenue fully covers all variable operating costs (labor, fuel, engine, car and track maintenance and repairs) plus at least some contribution to fixed costs.

Coal Consumption in Columbus

The history of coal moving to and through Columbus suggests a significant majority of volume during the peak periods was moving through the City to other points to the north and west, rather than being used locally. Columbus was never predominantly a smokestack industry town. Nevertheless, all Columbus railroads' rights-of-way were lined with utilities, factories, military, academic and health care institutions and other facilities that used coal for their boilers. Many industries clustered in the City's industrial areas such as the Neilston track complex and along the South Columbus industrial track used coal for steam and power, and some used coal for industrial chemical processes. Big institutions such as the Columbus State Hospital and the state handicapped development school at Hilltop had long spurs for their coal deliveries. The Defense Supply Center, originally built as the Columbus Quartermaster Depot in 1918, was a substantial coal user in its early years.

McCracken power plant on the Ohio State University campus, originally built in 1918 to replace an earlier coal-fired generator and later expanded three times, produced electric power, steam and hot water for heating the massive OSU campus. McCracken received coal and shipped out its post-combustion ash via the C&O Hocking Valley Line, over a 2.5-mile spur built in 1909 with a steel through girder bridge over the Olentangy River. Later this bridge was replaced by a track recessed in the pavement of what is now the Woody Hayes Drive highway bridge opposite Ohio Stadium. Rail coal deliveries continued there until 1957.



McCracken Power Plant, 1930s

Many such coal-burning institutional facilities are long gone; virtually all stopped using coal for multiple reasons by the latter third of the 20th Century. Until the recent advent of fracking, coal continued to be substantially more economical than gas on a per-BTU basis. But air quality issues, environmental compliance costs and at times supply instability due to labor-management conflicts made coal less and less viable for many users. Ultimately climate concerns added further pressure. After "clean coal" technologies failed to perform as hoped, and fracking led to plunging natural gas prices, coal was finally out of the money economically for electric utilities and most industries.

Other very significant Columbus consumers during the peak railroad coal years were distributors of coal for home heating and cooking. From the Civil War onward into the 1920s when gas utilities began to reach urban Ohio, virtually every home, small business, public building, church or school bought coal for heating in hundredweight retail lots, usually delivered by horse and wagon to coal chutes through a basement wall opening. Every few miles on each of the rail lines fanning out from Columbus, next to the grain elevator and house track, there was a team track or separate coal siding where coal dealers picked up daily shipments.

In their earliest stages, Ohio's urban gas utilities also relied on coal as their feedstock, consuming large quantities at very dirty coal gasification plants to supply their distribution systems. Residues from toxic coal gas conversion processes have long been among the most problematic environmental remediation challenges, with numerous "Superfund" locations in the Midwest.

Interchange of Coal Hoppers in Columbus

During the peak coal haulage era, once railroads settled disputes and adopted the U.S. standard gauge, lines began to interchange cars to allow direct delivery of goods to destination over multiple rail lines rather than costly and slow transloading at railroad interconnection points. These arrangements gradually evolved into a nationwide uniform practice among all lines, now regulated by federal statutes and very detailed Association of American Railroads Interchange Rules. These rules specify how multiple railroads over which a car may run from origin to destination will receive and transport each other's cars, responsibility for maintenance and running repairs, and how they will allocate the freight money paid by the shipper based on which line provides switching, loading, terminal and weighing services, and line haul miles on each participating road. The rules also require the railroad on which a foreign line's car is located as of midnight to pay a *per diem* amount to the owner of that car for its use. For this reason, you would often see a big sign on the wall in yard offices reading "Get Foreign Cars Off the Line by Midnight."

Through these interchange practices, coal moving through Columbus on any given railroad was often hauled in hopper bearing the livery of another. The economics of rail interchange arrangements favored coal country railroads delivering their own cars to mines for loading when possible, rather than dispatching an empty hopper from another railroad to load. The railroads were also under constant pressure to have adequate empties at the mines, ready to load. Railroads facing sudden traffic surges would sometimes lease hundreds of hoppers from another railroad with excess rolling stock.

Accordingly, a high percentage of hoppers in Columbus on any given day might be from the Appalachian roads such as the Norfolk & Western and Chesapeake & Ohio or from coal origin lines such as the Virginian and Clinchfield that interchanged coal onto the railroads serving Columbus.

Interline relationships also drove coal hopper allocation practices. The New York Central's Toledo & Ohio Central and Kanawha & Michigan line which ran deep into West Virginia had a major interchange with the western end of the Virginian Railroad at Deepwater, WV, and an end-to-end connection at Swiss, WV with the Nicholas, Fayette & Greenbrier Railroad, a joint venture company owned by the NYC and C&O. The NF&G shared car fleets of the two lines and received northbound coal off the latter. Thus, it was common to see a PRR Sandusky Branch coal drag consisting of all N&W cars, or an NYC Western Branch northbound laboring uphill past Mounds with all Virginian and C&O hoppers.



Double-heading ATSF 5011 class 2-10-4 locomotives northbound with Chesapeake & Ohio hoppers on the PRR Sandusky Branch at Worthington, August 1956. Photo by J. Parker Lamb.