

The Economic Impact of the Coal Mining Industry in Pennsylvania

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Prepared for
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Executive Summary

The Pennsylvania Coal Alliance is committed to promoting and advancing the economic and social benefit Pennsylvania's coal mining industry has on employees, businesses, communities, and consumers. This valuable natural resource provides affordable, reliable and resilient electricity, and is an integral component to producing the steel that supports our country's industrial growth and national security. Through advocacy and education, the Pennsylvania Coal Alliance, and its more than 150 members companies, seeks to participate in public policy and public opinion matters that support the employees of coal mining companies and industries throughout the state. The organization asked the Allegheny Conference on Community Development (ACCD) to perform an economic impact study of the coal mining industry in Pennsylvania. This study looks at the industry's annual impact on the Commonwealth's economy, using 2022 as a baseline year unless otherwise stated.

Measuring the current economic impact of the coal mining industry

Pennsylvania's economy benefits from the direct employment, compensation, and output of the coal mining industry, as well as from the impacts of the industry's supply chain. The current jobs within the industry, and many more in the broader economy, would not exist without the activity of the coal mining industry. Similarly, the wages paid to industry employees have an effect on the broader economy, as employees use their compensation to buy goods and services. In this report, ACCD measures the direct, indirect, and induced employment supported by the coal mining industry as well as the more than \$3.7 billion in economic output stimulated by the activity of the industry. In addition to measuring the impact of the coal mining industry, this report also measures the impact of the transportation of coal via multiple transportation methods.

The coal mining industry supports more than 11,000 jobs in Pennsylvania

Pennsylvania's coal mining industry is a vital contributor to the state's economy, with direct, indirect, and induced impacts responsible for:

Approximately 11,547 full-time jobs, about 5,164 of these directly in the coal mining industry. For each direct job in the coal mining industry, an additional 1.24 jobs are generated throughout the state, for a total employment multiplier of 2.24.

Approximately \$3.8 billion in economic output is created in Pennsylvania, \$2.2 billion of this directly by the coal mining industry.

The coal mining industry creates economic value in communities across Pennsylvania, with multiple company locations in more than half of Pennsylvania's counties.

The industry makes substantial capital investments that increase the economic impact of coal mining on the region by utilizing advanced mining machinery that costs millions of dollars to purchase, operate, and maintain while also investing in a multitude of other goods and services.

Coal is a crucial energy resource

In 2022, Pennsylvania produced approximately 8.2 million tons of anthracite coal and 40.2 million tons of bituminous coal statewide from 226 combined mines and refuse sites.¹ This coal was shipped to 21 U.S. States excluding Pennsylvania.² In 2022, bituminous coal was the largest category of exports, accounting for 6.8% of the state's total exports at \$2.6 billion, a 117.9% increase over 2016.³

In 2022, roughly 58% of all bituminous coal produced in Pennsylvania went to produce electricity.⁴ This coal contributed to the state of Pennsylvania generating nearly 24 million megawatts hours of electricity, which made it the third largest producer of electricity in the United States, beating out California and only behind the high-population states of Texas and Florida.⁵

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1. Introduction

1.1. Origins of this report

The Pennsylvania Coal Alliance is committed to promoting and advancing the economic and social benefit Pennsylvania's coal mining industry has on employees, businesses, communities, and consumers. This valuable natural resource provides affordable, reliable and resilient electricity, while producing the steel that supports our country's industrial growth and national security.

Through advocacy and education, the Pennsylvania Coal Alliance, and its more than 150 members companies, seeks to participate in public policy and public opinion matters that support the employees of coal mining companies and industries throughout the state. This report builds on research and material prepared by ACCD in a 2019 and 2014 report on the economic impact of the coal mining industry for the Pennsylvania Coal Alliance and a 2010 report for the Families Organized to Represent the Coal Economy, Inc. (F.O.R.C.E.).

The ACCD provides research and analysis on critical issues for the region's competitiveness to support improvements for living and doing business in the region. With a rich history of civic and community involvement and emphasis on comparative research and policy analysis, the organization holds a statewide reputation for objectivity, integrity, and consensus-building.

1.2 The coal mining industry's rich history in Pennsylvania

Coal is a sedimentary deposit composed primarily of carbon and hydrocarbons from compressed plant material that is readily combustible. The carbon and hydrocarbons in coal contain energy that is released through combustion, making coal an excellent and abundant source of energy. Metallurgical coal, or coking coal, is used to produce coke, a near pure form of carbon. Coke is then used as a reducing agent to remove oxygen from iron ore to produce pig iron, which is used to make steel. In addition to producing electricity and steel, coal and coal-derived compounds are necessary for producing essential products we use every day such as cement, components of water filtration, and fertilizers.

Coal has a long history in Pennsylvania, dating back to the mid-18th century. It powered the American Industrial Revolution and helped Pennsylvania's industrial centers flourish. Pennsylvania coal is widely exported to other states and countries. The extraction, processing, transportation and use of coal in Pennsylvania create economic activity that contributes to the state's economic vitality. This report explores these economic impacts.

2. Measuring the economic impact of Pennsylvania's coal mining industry

The economic impact of the coal mining industry in Pennsylvania is not limited to the employment and compensation within the industry itself. Through its supply chain, the coal mining industry creates jobs in related industries. These jobs would not exist without the activity of the coal mining industry. Similarly, the wages paid to employees have an effect on the broader economy as employees use their compensation to buy goods and services for their personal use.

To estimate the overall economic impact of the coal mining industry in Pennsylvania, ACCD used an input-output model for the state. There are several input-output models commonly used by economists to estimate multiplier effects. Because of the complexity of measuring multiplier effects, all of the models have limitations. Still, economists generally agree that the models can provide a reasonable approximation of the indirect and induced spending, and total jobs generated by a given amount of direct spending in a particular geographic area. ACCD employed the IMPLAN input-output model in developing the impact estimates of the coal mining industry on the Pennsylvania economy.

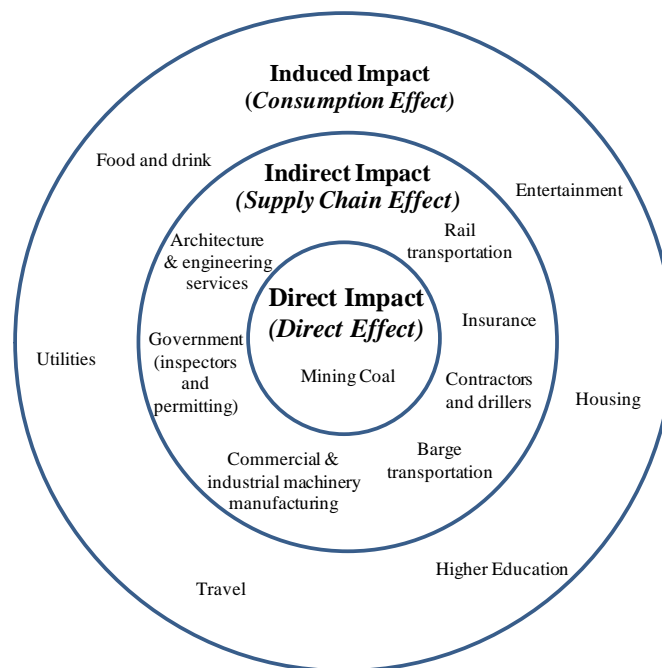
The IMPLAN model organizes the economy into 546 separate industries and has comprehensive data on every area of the United States. IMPLAN was originally created in 1978 by the United States Forest Service (USFS) to assist in developing 5-year management plans. In 1985, the responsibility for developing IMPLAN data sets shifted to the University of Minnesota. As demand grew for regional models by non-USFS organizations, IMPLAN (then Minnesota IMPLAN Group (MIG, Inc.)) was established in 1993 as an independent corporation for the purpose of developing and selling all future iterations of the IMPLAN database and software. Based in Hendersonville, North Carolina, since 2013, IMPLAN's tools are used by more than 1,000 public and private institutions.

2.1. Direct, indirect and induced economic impact

The economic impact of the coal mining industry on the Pennsylvania economy is not limited to the employment and other activity directly related to the coal mining industry. Through its supply chain, the coal mining industry creates jobs in related industries, and some of these jobs would not exist without the activity of the coal mining industry. Similarly, the wages paid to employees working in the coal mining industry have an effect on the broader economy as employees use their compensation to buy goods and services.

The *Direct Spending* of the coal mining industry in the Pennsylvania economy is the total the industry spends on payroll, goods (such as equipment) and services (such as engineering contracts). The money spent by the coal mining industry in its supply chain is spent again by local businesses. Businesses make their own purchases and pay employees – termed *Indirect Spending*. Employees throughout the supply chain use their salaries and wages to purchase goods and services from other businesses for personal consumption – termed *Induced Spending*. A chain reaction of indirect and induced spending continues, with subsequent rounds of additional spending gradually diminished through savings, taxes, and expenditures made outside the state. This economic ripple effect is measured by IMPLAN and other input-output economic models, using a series of multipliers to provide estimates of the number of times each dollar of input, or direct spending, cycles through the economy in terms of indirect and induced output, or additional spending, personal income and employment. Figure 1 presents an illustration of some direct, indirect and induced impacts of the coal mining industry.

Figure 1 - The coal mining industry has an impact on the broader economy through indirect and induced spending



2.2. Methodology

The ACCD modeled the impact of the coal mining industry within the state of Pennsylvania. The Pennsylvania coal mining industry will have economic impacts outside the state and coal mining industry companies located outside Pennsylvania will have an impact on the Pennsylvania economy, but for purposes of this analysis, these impacts were not considered. Studies done at the national level on the impact of the coal mining industry on Pennsylvania may not align with these results because of this difference in geographic scope. The impact of the coal mining industry was considered from several different perspectives, including employment at the state level as well as additional geographies of focus. Additionally, the ACCD considered the impact of coal moved by multiple modes of transportation, including rail, waterway, and truck. These separate impacts cannot be compared to or added to the statewide impact of the coal mining industry, as each impact is representative of a segment of activity in the coal mining industry.

To determine the impact of the coal mining industry in Pennsylvania, ACCD used the core industry as the ‘*Coal mining*’ IMPLAN industry sector. The Mine Safety and Health Administration (MSHA) reported that coal mining directly supported 5,164 full time jobs in Pennsylvania in 2023 and after comparing this number to others available through the Pennsylvania Department of Energy, U.S. Bureau of Labor Statistics and Lightcast, the ACCD found it to be the most accurate and used it as the primary direct input for the state impact. MSHA data also informed the inputs for the impacts modeled for underground coal mining in Greene and Washington counties as well as underground coal mining in the Allegheny Mountain Region. The U.S. Energy Information Administration (EIA) published the average annual cost of transportation of coal for Northern Appalachia in 2021 in 2021 dollars per ton. These prices were applied to the tonnage moved by railroad, waterway, and truck in 2022 which was provided by the Pennsylvania Coal Alliance in order to determine an appropriate industry output.

To determine the economic impact of the coal mining industry in Pennsylvania, the ACCD used data from the MSHA provided by the Pennsylvania Coal Alliance and EIA to run six operations impacts:

- 5,164 in direct industry employment in Pennsylvania to the *Coal mining* IMPLAN industry
- 2,121 in direct underground coal mining industry employment in Greene and Washington counties to the *Coal mining* IMPLAN industry
- 1,043 in direct underground coal mining industry employment in the Allegheny Mountain Region in Pennsylvania to the *Coal mining* IMPLAN industry. The Allegheny Mountain Region is defined as Armstrong, Cambria, Clearfield, Indiana, Jefferson, Somerset, and Westmoreland counties
- \$608,232,102 in industry output to the *Coal mining* IMPLAN industry to determine the impact of coal moved by railroad transportation
- \$65,859,456 in industry output to the *Coal mining* IMPLAN industry to determine the impact of coal moved by waterway transportation
- \$193,227,390 in industry output to the *Coal mining* IMPLAN industry to determine the impact of coal moved by truck transportation

The IMPLAN model determines the impact that each industry has on the economy, including employment, total value added, employee compensation, proprietor income, and property income. These are defined as follows:

- **Employment** – Stated as full-time equivalent jobs.
- **Output** – Value of the total production an industry, event, or company.
- **Total Value Added** – The difference between an industry, event or company’s total output and the cost of its intermediate inputs (consumption of goods and services purchased from other industries or imported). Value added, which measures the contribution to the Gross Domestic Product, consists of Labor Income, Other Property Type Income and Indirect Business Taxes.
 - **Labor Income** – Consisting of:
 - *Employee Compensation* – Payroll costs for the industry, including salaries and benefits.
 - *Proprietor Income* – Payments received by self-employed individuals as income, including income received by private business owners.
 - **Other Investor and Property Owner Income** – Payments for rents received on properties, royalties from contracts, dividends paid by corporations, and corporate profits earned by corporations.
 - **Taxes on Production and Imports** – Includes taxes on sales, property and production but not payroll taxes or end of year income or corporate taxes.

3. The economic impact of the coal mining industry in Pennsylvania

To determine the economic impact of the coal mining industry in Pennsylvania, the number of employees as determined by the MSHA (5,164) was input into the *Coal mining* IMPLAN industry as direct employment. This value determined the direct, indirect, and induced impact in employment, output, and value added.

As shown in Table 1, Pennsylvania’s coal mining industry is a vital contributor to the state’s economy, providing support through direct, indirect, and induced impacts:

- **Approximately 11,550 full and part-time jobs**, more than 5,100 of these directly in the *Coal mining* industry. For each direct *Coal mining* job, an additional 1.24 jobs are generated throughout Pennsylvania for a total multiplier of 2.24.
- **Nearly \$3.8 billion in total output**, including \$2.2 billion in total spending from *Coal mining* alone.
- **Approximately \$2.1 billion in total value added to the Pennsylvania economy**, \$1.2 billion of this directly created by *Coal mining*. This includes:
 - Approximately \$955 million in labor income (\$809 million in employee compensation and \$146 million in proprietors’ income).
 - Property income contributed about \$984 million.
 - Indirect business taxes added over \$154 million to the economy.

Table 1 – Economic Impact Summary of the Coal Mining Industry in Pennsylvania in 2022

	Direct	Indirect	Induced	Total	Multiplier ¹
Employment	5,164	2,845	3,538	11,547	2.24
Output	\$2,243,382,691	\$900,678,172	\$646,870,417	\$3,790,931,279	1.69
Total Value Added ²	\$1,230,023,032	\$480,326,577	\$382,239,430	\$2,092,589,039	1.70
Labor Income	\$466,995,025	\$264,013,496	\$223,621,950	\$954,630,471	2.04
Employee Compensation	\$374,757,551	\$235,593,431	\$198,772,108	\$809,123,090	2.16
Proprietors Income	\$92,237,473	\$28,420,065	\$24,849,842	\$145,507,381	1.58
Other Property Type Income	\$688,743,236	\$166,505,772	\$128,508,093	\$983,757,101	1.43
Taxes on Production and Imports	\$74,284,772	\$49,807,310	\$30,109,387	\$154,201,468	2.08

Assumptions: Model run allocating 5,164 in industry employment in Pennsylvania to the *Coal mining* IMPLAN industry (21) in the year 2022.

¹ Total impact divided by direct impact

² Total Value Added represents the industry's contribution to Gross Regional Product

Source: IMPLAN

Compiled by the Allegheny Conference on Community Development, March 2024

3.1. Employment: The coal mining industry generates approximately 11,547 full-time equivalent jobs in Pennsylvania

Among the approximately 11,547 full-time equivalent jobs that the *Coal mining* industry supports, the *Coal mining* industry supports about 5,164 jobs directly. The roughly 6,383 indirect and induced jobs are in industries that supply goods and services to the coal mining industry, as well as in industries across the entire economy as employees of the coal mining industry and its supply chain spend their income on various goods and services.

Table 2 shows the industries that are identified in the model as seeing the largest number of jobs supported as a result of the activity of the coal mining industry. The *Management of Companies and Enterprises* industry sees the largest indirect impact with 294 jobs generated as a result of the activity of the coal mining industry in Pennsylvania. The rest of the indirect impact on employment is spread across a large number of industry sectors.

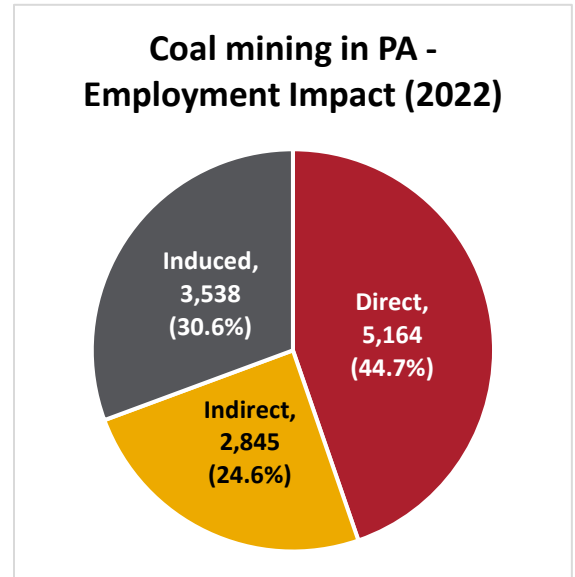


Table 2 - Employment Impact of the Coal Mining Industry in Pennsylvania in 2022

Industry	Direct	Indirect	Induced	Total
Coal mining	5,164	65	0	5,229
Management of companies and enterprises	0	294	36	330
Other financial investment activities	0	156	80	235
Wholesale - Machinery, equipment, and supplies	0	133	3	135
Maintenance and repair construction of nonresidential structures	0	115	9	124
Rail transportation	0	102	1	103
Truck transportation	0	101	31	132
Architectural, engineering, and related services	0	101	7	107
Commercial and industrial machinery and equipment rental and leasing	0	83	3	86
Services to buildings	0	83	21	104
Legal services	0	79	29	108
<i>Total Other Industries</i>	<i>0</i>	<i>1,535</i>	<i>3,318</i>	<i>4,853</i>
Total All Industries	5,164	2,845	3,538	11,547

Source: IMPLAN

Compiled by the Allegheny Conference on Community Development, March 2024

3.2. Total Output: Coal Extraction a nearly \$3.8 Billion Dollar Industry

The total output of a particular industry is the value created by the industry’s employment and activities as well as its intermediate inputs, which are the consumption of goods and services purchased from another industry or imported. A double-counting occurs in including both final expenditures and intermediate expenditures in an industry’s total output, but the measure is an accurate picture of the portion of the overall economy affected in some way by the coal mining industry. In all, the *Coal mining* industry is involved in nearly \$3.8 billion of Pennsylvania’s overall statewide economy. \$2.2 billion was from *Coal mining* activities directly with top indirect and induced contributing industries of *Management of Companies and Enterprises*, *Owner-occupied dwellings*, and *Rail Transportation* accounting for about 5.7% of total output.

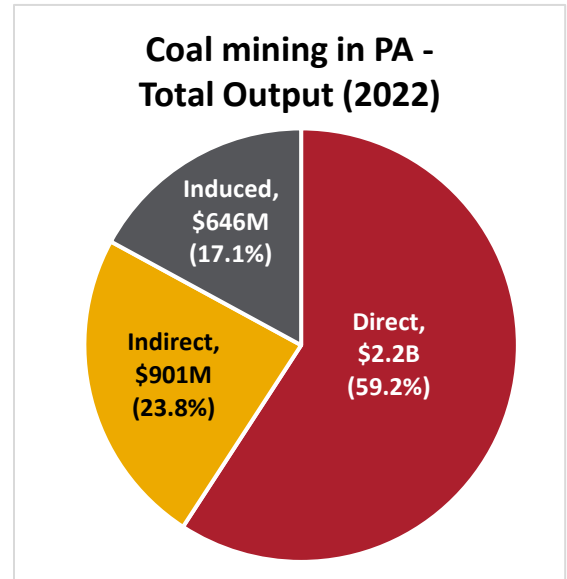


Table 3 - Output Impact of the Coal Mining Industry in Pennsylvania in 2022

Industry	Direct	Indirect	Induced	Total
Coal mining	\$2,243,382,691	\$28,070,677	\$42,283	\$2,271,495,651
Management of companies and enterprises	\$0	\$81,374,532	\$9,978,606	\$91,353,138
Owner-occupied dwellings	\$0	\$0	\$68,761,548	\$68,761,548
Rail transportation	\$0	\$54,152,944	\$562,667	\$54,715,611
Electric power transmission and distribution	\$0	\$42,249,120	\$7,799,673	\$50,048,794
Other financial investment activities	\$0	\$31,139,337	\$15,913,367	\$47,052,704
Wholesale - Machinery, equipment, and supplies	\$0	\$45,578,714	\$998,681	\$46,577,395
Petroleum refineries	\$0	\$42,019,545	\$4,273,067	\$46,292,612
Hospitals	\$0	\$0	\$45,726,345	\$45,726,345
Monetary authorities and depository credit intermediation	\$0	\$25,879,939	\$19,167,629	\$45,047,568
Other real estate	\$0	\$0	\$22,166,048	\$39,558,305
<i>Total Other Industries</i>	<i>\$0</i>	<i>\$532,821,106</i>	<i>\$451,480,502</i>	<i>\$984,301,608</i>
Total All Industries	\$2,243,382,691	\$900,678,172	\$646,870,417	\$3,790,931,279

Source: IMPLAN

Compiled by the Allegheny Conference on Community Development, March 2024

3.3. Total Value Added: The coal mining industry adds over \$2 billion to Pennsylvania’s Gross Domestic Product

The total value added by an industry can be understood to be the industry’s contribution to the Pennsylvania economy as part of the Gross Domestic Product (GDP), or as the sum value of all of the labor income, profits, rents and indirect business taxes generated in the operation of the industry over a year. The *Coal mining* industry created over \$1.2 billion in direct total value added – the value of the labor income paid to employees and contractors, the payments to property owners and the indirect state taxes generated in Pennsylvania in 2022. These components are discussed in the following sections. The direct value added stimulated an additional \$862 million in total value added across the broader Pennsylvania economy, including in companies that supply products to the coal mining industry and in companies that supply goods and services to the employees of the coal mining industry and its supply chain. In total, over \$2 billion was added to Pennsylvania’s GDP as a result of *Coal mining* industry activity, the majority of this directly through the *Coal mining* sector. The industries that are identified in the model as seeing the largest total value added as a result of the activity of the coal mining industry can be found in table 4.

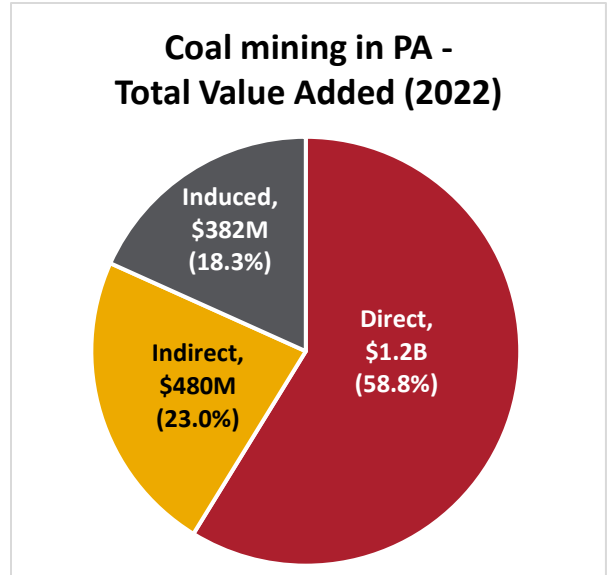


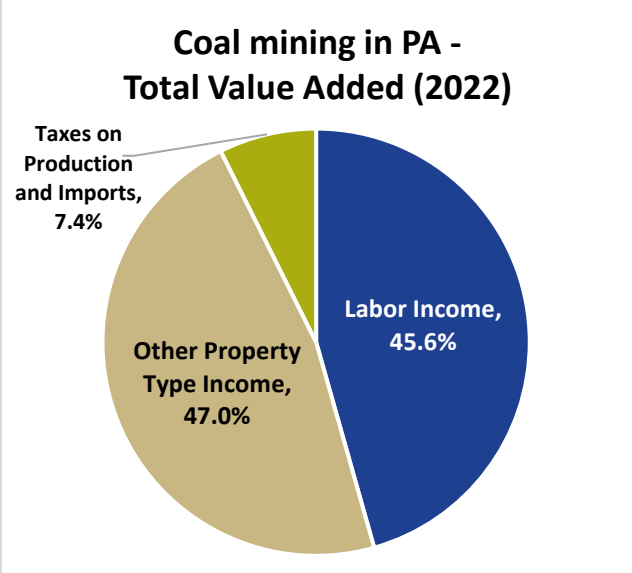
Table 4 - Value Added by the Coal Mining Industry in Pennsylvania in 2022

Industry	Direct	Indirect	Induced	Total
Coal mining	\$1,230,023,032	\$15,390,856	\$23,183	\$1,245,437,071
Management of companies and enterprises	\$0	\$53,806,080	\$6,598,006	\$60,404,086
Owner-occupied dwellings	\$0	\$0	\$56,976,789	\$56,976,789
Wholesale - Petroleum and petroleum products	\$0	\$24,286,946	\$2,739,985	\$27,026,931
Monetary authorities and depository credit intermediation	\$0	\$14,639,876	\$10,842,827	\$25,482,703
Hospitals	\$0	\$0	\$25,081,887	\$25,081,887
Wholesale - Machinery, equipment, and supplies	\$0	\$24,470,814	\$536,183	\$25,006,997
Commercial and industrial machinery and equipment rental and leasing	\$0	\$23,309,046	\$813,988	\$24,123,034
Rail transportation	\$0	\$22,424,712	\$233,000	\$22,657,713
Electric power transmission and distribution	\$0	\$18,693,251	\$3,450,989	\$22,144,240
Legal services	\$0	\$15,408,129	\$5,697,757	\$21,105,886
<i>Total Other Industries</i>	<i>\$0</i>	<i>\$267,896,866</i>	<i>\$269,244,836</i>	<i>\$537,141,702</i>
Total All Industries	\$1,230,023,032	\$480,326,577	\$382,239,430	\$2,092,589,039

Source: IMPLAN

Compiled by the Allegheny Conference on Community Development, March 2024

The following sections discuss each component of Total Value Added, which includes Labor Income, Other Property Type Income, and Taxes on Production and Imports. Other Property Type Income accounts for the largest share of total value added at 47.0% (\$983M), followed by Labor Income at 45.6% (\$954M) and Taxes on Production and Imports at 7.4% (\$154M).



3.4. Total Value Added: Labor Income

Labor income makes up approximately 45.6% of the *Coal mining* industry’s total value added to the Pennsylvania economy. Labor income constitutes employee compensation and proprietor income. Employee compensation makes up the bulk of the labor income in the *Coal mining* industry. Of the \$954 million in labor income that can be attributed to the activity of the *Coal mining* industry and its ripple effects in the economy, about 48.9% is paid directly into the *Coal mining* industry. The other approximately \$487 million of labor income occurs in the supply chain through *Coal mining* industry purchases and in the broader economy through employee spending. The industries that are identified in the model as seeing the largest amount of labor income as a result of the activity of the *Coal mining* industry can be found in the following table. The *Management of companies and enterprises* and *Rail Transportation* industries saw the largest indirect impact because of their place in the supply chain for the *Coal mining* industry. The largest induced impact on employee compensation is seen in the medical field, especially in *Hospitals* and *Offices of Physicians*. Those sectors saw over \$35 million in induced labor income.

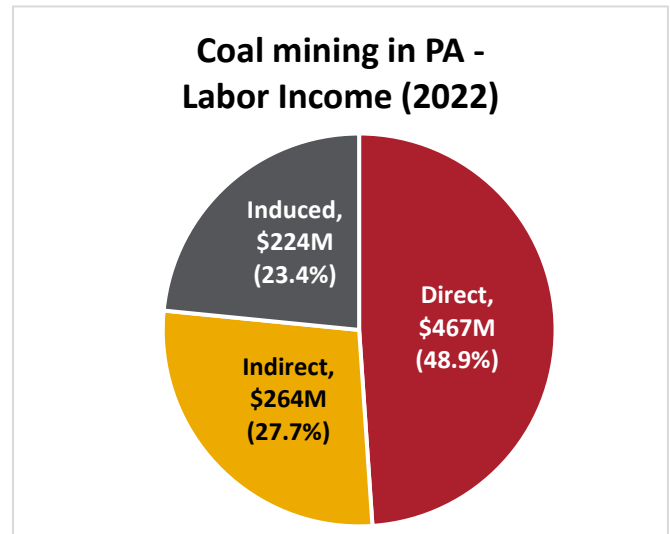


Table 5 - Labor Income Impact of the Coal Mining Industry in Pennsylvania in 2022

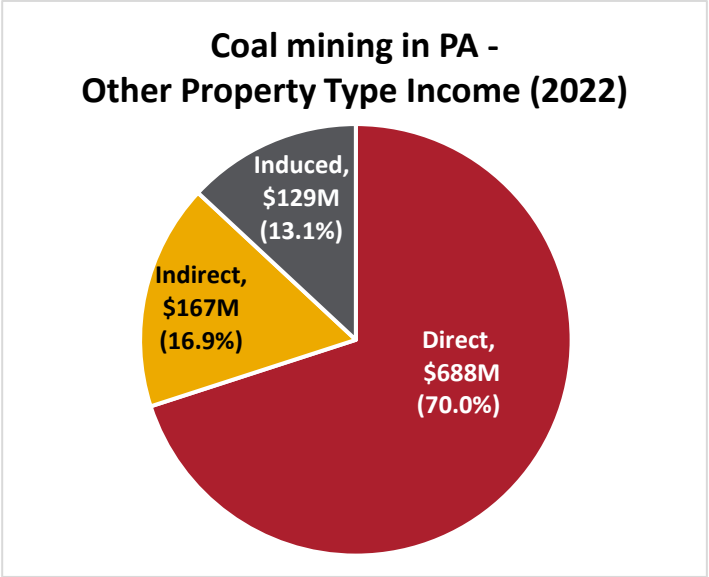
Industry	Direct	Indirect	Induced	Total
Coal mining	\$466,995,025	\$5,843,348	\$8,802	\$472,847,175
Management of companies and enterprises	\$0	\$46,811,644	\$5,740,309	\$52,551,952
Hospitals	\$0	\$0	\$21,740,486	\$21,740,486
Other financial investment activities	\$0	\$10,508,982	\$5,370,483	\$15,879,465
Offices of physicians	\$0	\$0	\$15,670,240	\$15,670,240
Rail transportation	\$0	\$13,389,180	\$139,118	\$13,528,298
Wholesale - Machinery, equipment, and supplies	\$0	\$12,818,847	\$280,875	\$13,099,722
Monetary authorities and depository credit intermediation	\$0	\$7,046,072	\$5,218,578	\$12,264,650
Legal services	\$0	\$8,811,354	\$3,258,342	\$12,069,696
Truck transportation	\$0	\$8,593,665	\$2,606,504	\$11,200,169
Architectural, engineering, and related services	\$0	\$10,301,845	\$687,977	\$10,989,822
<i>Total Other Industries</i>	<i>\$0</i>	<i>\$139,888,560</i>	<i>\$162,900,236</i>	<i>\$302,788,796</i>
Total All Industries	\$466,995,025	\$264,013,496	\$223,621,950	\$954,630,471

Source: IMPLAN

Compiled by the Allegheny Conference on Community Development, March 2024

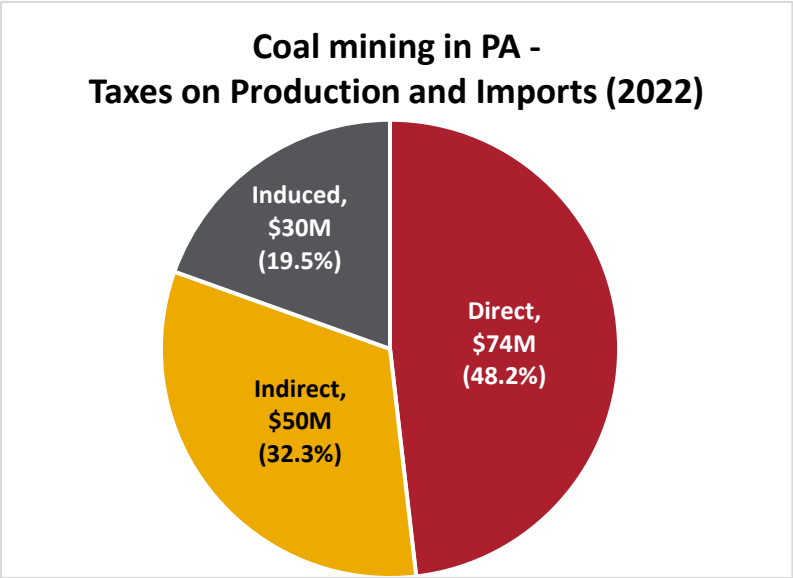
3.5. Total Value Added: Other Property Income

The Pennsylvania *Coal mining* industry generates over \$983 million in other investor and property owner income through direct, indirect and induced effects. This represents 47.0% of the total value added to the Pennsylvania economy by the *Coal mining* industry. Other property income includes payments for rents received on properties, royalties from contracts, dividends paid by corporations, and corporate profits earned by corporations. Approximately 70.0% of the other investor and property owner income occurs in the *Coal mining* industry itself. Besides the *Coal mining* industry, property income has the greatest effect on four industries: *Owner-occupied Dwellings*, *Stone mining and quarrying*, - *Commercial and industrial machinery and equipment rental and leasing*, and *Retail - Nonstore retailers* industries.



3.6. Total Value Added: Taxes on Production and Imports

Business taxes include taxes on sales, property and production paid by businesses on transactions in the production process and through the ripple effects. The *Coal mining* industry generated \$154 million in total taxes on production and imports. Payment of business taxes account for 7.4% of the total value added to the Pennsylvania economy by the *Coal mining* industry.



4. The Economic Impact of the Underground Coal Mining Industry in Greene and Washington Counties

To determine the economic impact of the underground coal mining industry in Greene and Washington counties, the number of employees as determined by the MSHA (2,303) was input into the *Coal mining* IMPLAN industry as direct employment. This value determined the direct, indirect, and induced impact in employment, output, and value added.

As shown in Table 6, the region’s underground coal mining industry is a vital contributor to the region’s economy, providing support through direct, indirect, and induced impacts:

- **Approximately 4,050 full and part-time jobs**, more than 2,300 of these directly in the *Coal mining* industry. For each direct *Coal mining* job, an additional 0.76 jobs are generated throughout the region for a total multiplier of 1.76.
- **Over \$1.7 billion in total output**, including \$1.3 billion in total spending from *Coal mining* alone.
- **Over \$1 billion in total value added to the regional economy**, \$856 million of this directly created by *Coal mining*. This includes:
 - Approximately \$418 million in labor income (\$404 million in employee compensation and \$14 million in proprietors’ income).
 - Property income contributed about \$627 million.
 - Indirect business taxes added over \$60 million to the economy.

Table 6 - Economic Impact Summary of the Coal Mining Industry in Greene and Washington Counties, Pennsylvania in 2022

	Direct	Indirect	Induced	Total	Multiplier ¹
Employment	2,303	892	855	4,050	1.76
Output	\$1,307,703,519	\$287,730,247	\$142,767,254	\$1,738,201,021	1.33
Total Value Added ²	\$855,773,370	\$164,206,855	\$85,362,264	\$1,105,342,489	1.29
Labor Income	\$289,896,643	\$82,090,580	\$46,286,107	\$418,273,331	1.44
Employee Compensation	\$289,937,386	\$73,745,879	\$40,375,502	\$404,058,767	1.39
Proprietors Income	(\$40,742)	\$8,344,701	\$5,910,605	\$14,214,564	N/A
Other Property Type Income	\$532,857,611	\$62,985,346	\$31,007,942	\$626,850,899	1.18
Taxes on Production and Imports	\$33,019,115	\$19,130,930	\$8,068,214	\$60,218,259	1.82

Assumptions: Model run allocating 2,303 in industry employment in the region to the *Coal mining* IMPLAN industry (21) in the year 2022.

¹ Total impact divided by direct impact

² Total Value Added represents the industry's contribution to Gross Regional Product

Source: IMPLAN

Compiled by the Allegheny Conference on Community Development, March 2024

5. The Economic Impact of the Underground Coal Mining Industry in the Allegheny Mountain Region

To determine the economic impact of the underground coal mining industry in the Allegheny Mountain Region, the number of employees as determined by the MSHA (1,043) was input into the *Coal mining* IMPLAN industry as direct employment. The Allegheny Mountain Region is defined as Armstrong, Cambria, Clearfield, Indiana, Jefferson, Somerset, and Westmoreland Counties in Pennsylvania. This value determined the direct, indirect, and induced impact in employment, output, and value added.

As shown in Table 7, the Allegheny Mountain Region's underground coal mining industry is a vital contributor to the state's economy, providing support through direct, indirect, and induced impacts:

- **Approximately 1,928 full and part-time jobs**, with 1,043 of these directly in the *Coal mining* industry. For each direct *Coal mining* job, an additional 0.85 jobs are generated throughout Pennsylvania for a total multiplier of 1.85.
- **Over \$679 million in total output**, including \$492 million in total spending from *Coal mining* alone.
- **Approximately \$386 million in total value added to the regional economy**, \$287 million of this directly created by *Coal mining*. This includes:
 - Approximately \$166 million in labor income (\$130 million in employee compensation and \$36 million in proprietors' income).
 - Property income contributed about \$191 million.
 - Indirect business taxes added over \$28 million to the economy.

Table 7 - Economic Impact Summary of the Coal Mining Industry in the Allegheny Mountain Region in 2022

	Direct	Indirect	Induced	Total	Multiplier ¹
Employment	1,043	400	485	1,928	1.85
Output	\$491,699,806	\$110,714,902	\$76,719,532	\$679,134,240	1.38
Total Value Added ²	\$287,026,273	\$55,851,766	\$43,243,956	\$386,121,995	1.35
Labor Income	\$115,607,263	\$27,233,191	\$23,125,093	\$165,965,547	1.44
Employee Compensation	\$85,118,339	\$24,141,944	\$20,424,821	\$129,685,104	1.52
Proprietors Income	\$30,488,923	\$3,091,247	\$2,700,272	\$36,280,443	1.19
Other Property Type Income	\$156,433,621	\$19,300,456	\$15,622,224	\$191,356,300	1.22
Taxes on Production and Imports	\$287,026,273	\$9,318,120	\$4,496,639	\$28,800,148	0.10

Assumptions: Model run allocating 1,043 in industry employment in the Allegheny Mountain Region to the *Coal mining* IMPLAN industry (21) in the year 2022. The Allegheny Mountain Region is defined as Armstrong, Cambria, Clearfield, Indiana, Jefferson, Somerset, and Westmoreland counties.

¹ Total impact divided by direct impact

² Total Value Added represents the industry's contribution to Gross Regional Product

Source: IMPLAN

Compiled by the Allegheny Conference on Community Development, March 2024

6. The Economic Impact of Coal Freight by Rail Transportation

The EIA published the average annual cost of transporting coal by railroad in 2022 in Northern Appalachia as \$21.26 per ton in 2022 dollars. In 2022, transporting approximately 28 million tons of bituminous coal by rail in Pennsylvania is estimated to have cost \$608,232,102. This figure was used as the direct input for the model to determine the direct, indirect, and induced impact in employment, output, and value added.

As seen in the following table, the coal moved by rail is a vital contributor to the state’s economy, providing support through direct, indirect, and induced impacts:

- **Approximately 3,131 full and part-time jobs**, with 1,400 of these directly in the *Coal mining* industry. For each direct *Coal mining* job, an additional 1.10 jobs are generated throughout Pennsylvania for a total multiplier of 2.24.
- **Over \$1.0 billion in total output**, including \$608 million in total spending from *Coal mining* alone.
- **Approximately \$567 million in total value added to the Pennsylvania economy**, \$333 million of this directly created by *Coal mining*. This includes:
 - Approximately \$259 million in labor income (\$219 million in employee compensation and \$39 million in proprietors’ income).
 - Property income contributed about \$267 million.
 - Indirect business taxes added over \$41 million to the economy.

Table 8 - Economic Impact Summary of Coal Freight Transportation by Rail Transportation in Pennsylvania in 2022

	Direct	Indirect	Induced	Total	Multiplier ¹
Employment	1,400	771	959	3,131	2.24
Output	\$608,232,102	\$244,194,350	\$175,381,291	\$1,027,807,743	1.69
Total Value Added ²	\$333,487,237	\$130,227,466	\$103,633,808	\$567,348,511	1.70
Labor Income	\$126,612,979	\$71,580,067	\$60,629,000	\$258,822,046	2.04
Employee Compensation	\$101,605,301	\$63,874,741	\$53,891,642	\$219,371,683	2.16
Proprietors Income	\$25,007,678	\$7,705,326	\$6,737,358	\$39,450,362	1.58
Other Property Type Income	\$186,733,966	\$45,143,504	\$34,841,468	\$266,718,938	1.43
Taxes on Production and Imports	\$20,140,292	\$13,503,895	\$8,163,340	\$41,807,527	2.08

Assumptions: Model run allocating \$608,232,102 in industry output in Pennsylvania to the *Coal mining* IMPLAN industry (21) to determine the impact of coal moved by rail transportation in the year 2022.

¹ Total impact divided by direct impact

² Total Value Added represents the industry’s contribution to Gross Regional Product

Source: IMPLAN

Compiled by the Allegheny Conference on Community Development, March 2024

7. The Economic Impact of Coal Freight by Waterway Transportation

The EIA published the average annual cost of transporting coal by waterway in 2022 in Northern Appalachia as \$6.17 per ton in 2022 dollars. In 2022, transporting approximately 10 million tons of bituminous coal by waterway in Pennsylvania is estimated to have cost \$65,859,456. This figure was used as the direct input for the model to determine the direct, indirect, and induced impact in employment, output, and value added.

As seen in the following table, the coal moved by waterway is a vital contributor to the state's economy, providing support through direct, indirect, and induced impacts:

- **Approximately 339 full and part-time jobs**, with 152 of these directly in the *Coal mining* industry. For each direct *Coal mining* job, an additional 1.24 jobs are generated throughout Pennsylvania for a total multiplier of 2.24.
- **Over \$111 million in total output**, including \$66 million in total spending from *Coal mining* alone.
- **Approximately \$61 million in total value added to the Pennsylvania economy**, \$36 million of this directly created by *Coal mining*. This includes:
 - Approximately \$28 million in labor income (\$24 million in employee compensation and \$4 million in proprietors' income).
 - Property income contributed about \$29 million.
 - Indirect business taxes added over \$4 million to the economy.

**Table 9 - Economic Impact Summary of Coal Freight Transportation
by Waterway Transportation in Pennsylvania in 2022**

	Direct	Indirect	Induced	Total	Multiplier ¹
Employment	152	84	104	339	2.24
Output	\$65,859,456	\$26,441,398	\$18,990,310	\$111,291,164	1.69
Total Value Added ²	\$36,110,044	\$14,101,048	\$11,221,483	\$61,432,575	1.70
Labor Income	\$13,709,671	\$7,750,700	\$6,564,916	\$28,025,287	2.04
Employee Compensation	\$11,001,836	\$6,916,366	\$5,835,394	\$23,753,596	2.16
Proprietors Income	\$2,707,835	\$834,334	\$729,522	\$4,271,691	1.58
Other Property Type Income	\$20,219,580	\$4,888,145	\$3,772,639	\$28,880,363	1.43
Taxes on Production and Imports	\$2,180,794	\$1,462,204	\$883,928	\$4,526,925	2.08

Assumptions: Model run allocating \$65,859,456 in industry output to the *Coal mining* IMPLAN industry (21) to determine the impact of coal moved by waterway transportation in the year 2022.

¹ Total impact divided by direct impact

² Total Value Added represents the industry's contribution to Gross Regional Product

Source: IMPLAN

Compiled by the Allegheny Conference on Community Development, March 2024

8. The Economic Impact of Coal Freight by Truck Transportation

The EIA published the average annual cost of transporting coal by truck in 2022 in Northern Appalachia as \$10.06 per ton in 2022 dollars. In 2022, transporting approximately 19 million tons of bituminous coal by truck in Pennsylvania is estimated to have cost \$193,227,390. This figure was used as the direct input for the model to determine the direct, indirect, and induced impact in employment, output, and value added.

As seen in the following table, the coal moved by truck is a vital contributor to the state’s economy, providing support through direct, indirect, and induced impacts:

- **Approximately 995 full and part-time jobs**, with 445 of these directly in the *Coal mining* industry. For each direct *Coal mining* job, an additional 1.24 jobs are generated throughout Pennsylvania for a total multiplier of 2.24.
- **Over \$326 million in total output**, including \$193 million in total spending from *Coal mining* alone.
- **Approximately \$180 million in total value added to the Pennsylvania economy**, \$106 million of this directly created by *Coal mining*. This includes:
 - Approximately \$82 million in labor income (\$70 million in employee compensation and \$13 million in proprietors’ income).
 - Property income contributed about \$85 million.
 - Indirect business taxes added over \$13 million to the economy.

Table 10 - Economic Impact Summary of Coal Freight Transportation by Truck Transportation in Pennsylvania in 2022

	Direct	Indirect	Induced	Total	Multiplier ¹
Employment	445	245	305	995	2.24
Output	\$193,227,390	\$77,577,354	\$55,716,344	\$326,521,088	1.69
Total Value Added ²	\$105,944,537	\$41,371,564	\$32,923,107	\$180,239,208	1.70
Labor Income	\$40,223,289	\$22,740,052	\$19,261,041	\$82,224,382	2.04
Employee Compensation	\$32,278,676	\$20,292,170	\$17,120,670	\$69,691,517	2.16
Proprietors Income	\$7,944,613	\$2,447,882	\$2,140,371	\$12,532,865	1.58
Other Property Type Income	\$59,322,940	\$14,341,501	\$11,068,679	\$84,733,121	1.43
Taxes on Production and Imports	\$6,398,308	\$4,290,011	\$2,593,386	\$13,281,705	2.08

Assumptions: Model run allocating \$193,227,390 in industry output to the *Coal mining* IMPLAN industry (21) to determine the impact of coal moved by truck transportation in the year 2022.

¹ Total impact divided by direct impact

² Total Value Added represents the industry’s contribution to Gross Regional Product

Source: IMPLAN

Compiled by the Allegheny Conference on Community Development, March 2024

9. Appendix and Bibliography

¹ Pennsylvania Department of Environmental Protection, *Anthracite Statewide Production Summary 2022 & Bituminous Statewide Production Summary 2022*

² Energy Information Administration, *Annual Coal Report 2022*

³ US Census Bureau, *State Exports from Pennsylvania*

⁴ Energy Information Administration, *Form EIA-923*

⁵ Energy Information Administration, *Net Generation by State by Type of Producer*