
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549**

Form 10-K

- ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2019
or
 TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

Commission file number: 1-13105



ArchCoal

Arch Coal, Inc.

(Exact name of registrant as specified in its charter)

Delaware

43-0921172

(State or other jurisdiction
of incorporation or organization)

(I.R.S. Employer
Identification Number)

One CityPlace Drive

Suite 300

St. Louis

Missouri

63141

(Address of principal executive offices)

(Zip code)

Registrant's telephone number, including area code: **(314) 994-2700**

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common Stock, \$0.01 par value	ARCH	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

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Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes No

The aggregate market value of the voting stock held by non-affiliates of the registrant (excluding outstanding shares beneficially owned by directors, officers, other affiliates and treasury shares) as of **June 30, 2019** was approximately \$1.5 billion.

Indicate by check mark whether the registrant has filed all documents and reports required to be filed by Section 12, 13 or 15(d) of the Securities Exchange Act of 1934 subsequent to the distribution of securities under a plan confirmed by a court. Yes No

At January 31, 2020 there were 15,131,573 shares of the registrant's common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement to be filed with the Securities and Exchange Commission in connection with the 2020 annual stockholders' meeting are incorporated by reference into Part III of this Form 10-K.

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If you are not familiar with any of the mining terms used in this report, we have provided explanations of many of them under the caption "Glossary of Selected Mining Terms" on page 31 of this report. Unless the context otherwise requires, all references in this report to "Arch," "we," "us," or "our" are to Arch Coal, Inc. and its subsidiaries.

CAUTIONARY STATEMENTS REGARDING FORWARD-LOOKING INFORMATION

This report contains forward-looking statements, within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, such as our expected future business and financial performance, and are intended to come within the safe harbor protections provided by those sections. The words "anticipates," "believes," "could," "estimates," "expects," "intends," "may," "plans," "predicts," "projects," "seeks," "should," "will" or other comparable words and phrases identify forward-looking statements, which speak only as of the date of this report. Forward-looking statements by their nature address matters that are, to different degrees, uncertain. Actual results may vary significantly from those anticipated due to many factors, including:

- changes in the demand for our coal, by the electric generation and steel industries;
- geologic conditions, weather and other inherent risks of coal mining that are beyond our control;
- competition, both within our industry and with producers of competing energy sources, including the effects from any current or future legislation or regulations designed to support, promote or mandate renewable energy sources;
- excess production and production capacity;
- our ability to acquire or develop coal reserves in an economically feasible manner;
- our ability to fund substantial capital expenditures;
- inaccuracies in our estimates of our coal reserves;
- availability and price of mining and other industrial supplies;
- disruptions in the supply of coal from third parties;
- availability of skilled employees and other workforce factors;
- our ability to collect payments from our customers;
- defects in title or the loss of a leasehold interest;
- railroad, barge, truck, ocean vessel and other transportation performance and costs;
- our ability to successfully integrate the operations that we acquire;
- our ability to secure new coal supply arrangements or to renew existing coal supply arrangements;
- our relationships with, and other conditions affecting our customers;
- the loss of, or significant reduction in, purchases by our largest customers;
- our ability to service our outstanding indebtedness;
- our ability to comply with the restrictions imposed by our Term Loan Debt Facility, Securitization Facility or Inventory Facility (each as defined below), other financing arrangements or any subsequent financing or credit facilities;
- the availability and cost of surety bonds;

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- our ability to manage the market and other risks associated with certain trading and other asset optimization strategies;
- risks due to our international operations;
- cyber-attacks or other security breaches that disrupt our operations, or that result in the unauthorized release of proprietary or confidential information;
- the loss of key personnel or the failure to attract additional qualified personnel;
- our ability to pay dividends or repurchase shares of our common stock in accordance with our announced intent or at all;
- the effects of foreign and domestic trade policies, actions or disputes on the level of trade among the countries and regions in which we operate, the competitiveness of our exports, or our ability to export;
- terrorist attacks, military action or war;
- our ability to obtain and renew various permits;
- existing and future legislation and regulations affecting both our coal mining operations and our customers' coal usage, governmental policies and taxes, including those aimed at reducing emissions of elements such as mercury, sulfur dioxides, nitrogen oxides, particulate matter or greenhouse gases;
- the accuracy of our estimates of reclamation and other mine closure obligations;
- the existence of hazardous substances or other environmental contamination on property owned or used by us;
- existing and future litigation based on the alleged effects of climate change;
- our ability to complete the proposed joint venture transaction with Peabody Energy ("Peabody") in a timely manner, including obtaining regulatory approvals and satisfying other closing conditions;
- our ability to achieve the expected synergies from the joint venture;
- our ability to successfully integrate the operations of certain mines in the joint venture; and
- other factors, including those discussed in "Legal Proceedings", set forth in Item 3 of this report and "Risk Factors," set forth in Item 1A of this report.

All forward-looking statements in this report, as well as all other written and oral forward-looking statements attributable to us or persons acting on our behalf, are expressly qualified in their entirety by the cautionary statements contained in this section and elsewhere in this report. These factors are not necessarily all of the important factors that could affect us. These risks and uncertainties, as well as other risks of which we are not aware or which we currently do not believe to be material, may cause our actual future results to be materially different than those expressed in our forward-looking statements. These forward-looking statements speak only as of the date on which such statements were made, and we do not undertake to update our forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required by the federal securities laws.

PART I

ITEM 1. BUSINESS

Introduction

We are one of the world's largest coal producers. For the year ended December 31, 2019, we sold approximately 90 million tons of coal, including approximately 0.5 million tons of coal we purchased from third parties. We sell substantially all of our coal to power plants, steel mills and industrial facilities. At December 31, 2019, we operated 8 active mines located in each of the major coal-producing regions of the United States. The locations of our mines and access to export facilities enable us to ship coal worldwide. We incorporate by reference the information about the geographical breakdown of our coal sales for the respective periods covered within this Form 10-K contained in Note 23 to the Consolidated Financial Statements.

Our History

We were organized in Delaware in 1969 as Arch Mineral Corporation. In July 1997, we merged with Ashland Coal, Inc., a subsidiary of Ashland Inc. that was formed in 1975. As a result of the merger, we became one of the largest producers of low-sulfur coal in the eastern United States.

In June 1998, we expanded into the western United States when we acquired the coal assets of Atlantic Richfield Company. This acquisition included the Black Thunder and Coal Creek mines in the Powder River Basin of Wyoming, the West Elk mine in Colorado and a 65% interest in Canyon Fuel Company, which operated three mines in Utah. In October 1998, we acquired a leasehold interest in the Thundercloud reserve, a 412-million-ton federal reserve tract adjacent to the Black Thunder mine.

In July 2004, we acquired the remaining 35% interest in Canyon Fuel Company. In August 2004, we acquired Triton Coal Company's North Rochelle mine adjacent to our Black Thunder operation. In September 2004, we acquired a leasehold interest in the Little Thunder reserve, a 719-million-ton federal reserve tract adjacent to the Black Thunder mine.

In December 2005, we sold the stock of Hobet Mining, Inc., Apogee Coal Company and Catenary Coal Company and their four associated mining complexes (Hobet 21, Arch of West Virginia, Samples and Campbells Creek) and approximately 455 million tons of coal reserves in Central Appalachia to Magnum Coal Company, which was subsequently acquired by Patriot Coal Corporation.

In October 2009, we acquired Rio Tinto's Jacobs Ranch mine complex in the Powder River Basin of Wyoming, which included 345 million tons of low-cost, low-sulfur coal reserves, and integrated it into the Black Thunder mine.

In June 2011, we acquired International Coal Group, Inc., which owned and operated mines primarily in the Appalachian Region of the United States.

In August 2013, we sold the equity interests of Canyon Fuel Company, LLC ("Canyon Fuel"), which owned and operated our Utah operations.

In January 2016, Arch and substantially all of its wholly owned domestic subsidiaries (the "Filing Subsidiaries" and, together with Arch, the "Debtors") filed voluntary petitions for reorganization (collectively, the "Bankruptcy Petitions") under Chapter 11 of Title 11 of the U.S. Code (the "Bankruptcy Code") in the United States Bankruptcy Court for the Eastern District of Missouri (the "Court"). The Debtor's Chapter 11 Cases (collectively, the "Chapter 11 Cases") were jointly administered under the caption *In re Arch Coal, Inc., et al.*, Case No. 16-40120 (lead case). During the bankruptcy proceedings, each Debtor operated its business as a "debtor in possession" under the jurisdiction of the Court and in accordance with the applicable provisions of the Bankruptcy Code and the orders of the Court.

In September 2016, the Bankruptcy Court entered an order, Docket No. 1324, confirming the Debtors' Fourth Amended Joint Plan of Reorganization under Chapter 11 of the Bankruptcy Code (the "Plan").

In October 2016, Arch Coal emerged from Chapter 11 and the Plan became effective on such date (the "Effective Date").

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For additional information, see Note 3, “Emergence from Bankruptcy,” to our Consolidated Financial Statements included within this Form 10-K.

In June 2019, Arch Coal entered into a definitive implementation agreement (the “Implementation Agreement”) with Peabody Energy Corporation (“Peabody”), to establish a joint venture that will combine the respective Powder River Basin and Colorado mining operations of Arch Coal and Peabody. Pursuant to the terms of the Implementation Agreement, Arch Coal will hold a 33.5% economic interest, and Peabody will hold a 66.5% economic interest in the joint venture. At the closing of the joint venture transaction, certain of the respective subsidiaries of Arch Coal and Peabody will enter into an Amended and Restated Limited Liability Company Agreement (the “LLC Agreement”). Under the terms of the LLC Agreement, the governance of the joint venture will be overseen by the joint venture’s board of managers, which will initially be comprised of three representatives appointed by Peabody and two representatives appointed by Arch. Decisions of the board of managers will be determined by a majority vote subject to certain specified matters set forth in the LLC Agreement that will require a supermajority vote. Peabody, or one of its affiliates, will initially be appointed as the operator of the joint venture and will manage the day-to-day operations of the joint venture, subject to the supervision of the joint venture’s board of managers.

Formation of the joint venture is subject to customary closing conditions, including the termination or expiration of the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, the receipt of certain other required regulatory approvals and the absence of injunctions or other legal restraints preventing the formation of the joint venture. Formation of the joint venture does not require approval of the respective stockholders of either Arch or Peabody.

Coal Characteristics

End users generally characterize coal as thermal coal or metallurgical coal. Heat value, sulfur, ash, moisture content, and volatility, in the case of metallurgical coal, are important variables in the marketing and transportation of coal. These characteristics help producers determine the best end use of a particular type of coal. The following is a description of these general coal characteristics:

Heat Value. In general, the carbon content of coal supplies most of its heating value, but other factors also influence the amount of energy it contains per unit of weight. The heat value of coal is commonly measured in Btus. Coal is generally classified into four categories, lignite, subbituminous, bituminous and anthracite, reflecting the progressive response of individual deposits of coal to increasing heat and pressure. Anthracite is coal with the highest carbon content and, therefore, the highest heat value, nearing 15,000 Btus per pound. Bituminous coal, used primarily to generate electricity and to make coke for the steel industry, has a heat value ranging between 10,500 and 15,500 Btus per pound. Subbituminous coal ranges from 8,300 to 13,000 Btus per pound and is generally used for electric power generation. Lignite coal is a geologically young coal which has the lowest carbon content and a heat value ranging between 4,000 and 8,300 Btus per pound.

Sulfur Content. Federal and state environmental regulations, including regulations that limit the amount of sulfur dioxide that may be emitted as a result of combustion, have affected and may continue to affect the demand for certain types of coal. The sulfur content of coal can vary from seam to seam and within a single seam. The chemical composition and concentration of sulfur in coal affects the amount of sulfur dioxide produced in combustion. Coal-fueled power plants can comply with sulfur dioxide emission regulations by burning coal with low sulfur content, blending coals with various sulfur contents, purchasing emission allowances on the open market and/or using sulfur dioxide emission reduction technology.

Ash. Ash is the inorganic residue remaining after the combustion of coal. As with sulfur, ash content varies from seam to seam. Ash content is an important characteristic of coal because it impacts boiler performance and electric generating plants must handle and dispose of ash following combustion. The composition of the ash, including the proportion of sodium oxide and fusion temperature, is also an important characteristic of coal, as it helps to determine the suitability of the coal to end users. The absence of ash is also important to the process by which metallurgical coal is transformed into coke for use in steel production.

Moisture. Moisture content of coal varies by the type of coal, the region where it is mined and the location of the coal within a seam. In general, high moisture content decreases the heat value and increases the weight of the coal, thereby making it more expensive to transport. Moisture content in coal, on an as-sold basis, can range from approximately 2% to over 30% of the coal’s weight.

Other: Users of metallurgical coal measure certain other characteristics, including fluidity, swelling capacity and volatility to assess the strength of coke produced from a given coal or the amount of coke that certain types of coal will yield. These characteristics may be important elements in determining the value of the metallurgical coal we produce and market.

The Coal Industry

Background. Coal is mined globally using various methods of surface and underground recovery. Coal is used primarily for the generation of electric power and steel production but is also used for chemical, food and cement processing. Coal is traded globally and can be transported to demand centers by ocean-going vessels, rail, barge, truck or conveyor belt.

Total world coal production increased around 3.3% to approximately 7.8 billion metric tons in 2019 according to preliminary data from the International Energy Agency (IEA). China is the largest producer of coal in the world, producing over 3.6 billion metric tons in 2019 according to the Chinese National Bureau of Statistics. The United States and India follow China with total coal production of over 600 million metric tons each in 2019 based on preliminary data.

The primary nations that are supplying coal to the global power and steel markets are Australia and Indonesia, as well as Russia, the United States, Canada, Colombia and South Africa.

We produce coal used for electric power generation (thermal) and coal used in the production of steel (metallurgical). All of our thermal coal production occurs in the United States at mines located in Wyoming, Colorado and Illinois. All of our metallurgical coal is produced at operations in West Virginia. Heat value and sulfur content are the most important variables in the economic marketing and transportation of thermal coal. Carbon content, the composition of the non-carbon volatiles and other chemical constituents are critical characteristics for metallurgical coal.

Much of our coal is sold at the mine where title and risk of loss transfer to the customer as coal is loaded into the railcar or truck. Customers are generally responsible for transportation - typically using third party carriers. There are, however, some agreements where we retain responsibility for the coal during delivery to the customer site or intermediate terminal. Our international coal usually changes title and risk of loss as coal is loaded on an ocean vessel. Normally we contract for transportation services from the mine to the ocean loading port. On rare occasion, we retain title to the coal to the ocean delivery port.

We seek to establish long-term relationships with customers through exemplary customer service while operating safe and environmentally responsible mines. In 2019, we shipped to 31 states and 16 countries. During the year, we supplied coal to 84 domestic and 33 foreign customers. In 2019, approximately 92% of our coal sales volume was sold as a thermal product with the remaining 8% as metallurgical. However, due to the significantly higher selling price of our metallurgical coal, our metallurgical segment contributed 43% of our sales revenue in 2019.

Coal was used to produce approximately 24% of the electric power generated in the U.S. in 2019 based on preliminary data from the Energy Information Administration (EIA.) The coal we produced fueled approximately 3.4% of the electricity produced in the U.S. in 2019. We also exported 5% of our thermal coal production to customers outside the U.S. in 2019.

We rank among the largest metallurgical coal producers in the U.S. Based on internal estimates, we produced around 9% of total U.S. metallurgical coal in 2019. Our metallurgical coal was sold to 3 domestic customers and shipped to 16 international destinations in 2019.

We operate in a very competitive environment. We compete with domestic and international coal producers, traders or brokers as well as producers of other energy sources including natural gas, renewables and nuclear, as well as other non-coal based forms of steel production. We compete using price, coal quality, transportation, optionality, customer administration, reputation and reliability.

Coal demand and coal prices are tied to coal consumption patterns which are influenced by many uncontrollable factors. For power generation, the price of coal is affected by the relative supply and demand of competitive coal, transportation, availability and price of other non-coal forms of power production (particularly, natural gas but also renewables), regulatory limits on using coal, taxes, the weather and economic conditions. For metallurgical coal, the price of coal is affected by the supply, demand and price of competitive coal, transportation, the price of steel, demand for steel, as well as regulations, taxes and economic conditions.

We have an experienced and knowledgeable sales and marketing group. This group is dedicated to meeting customer needs, coordinating transportation, providing accounting services and managing risk.

U.S. Coal Production. The United States is among the top three largest coal producers in the world, exceeded only by China and roughly equivalent to India based on preliminary data. According to the EIA, there are over 250 billion short tons of

recoverable coal in the United States. The U.S. Department of Energy estimates that current domestic recoverable coal reserves could supply enough electricity to satisfy domestic demand for over 300 years.

Coal is mined from coal basins throughout the United States, with the major production centers located in the western United States, the Appalachian region and the Interior. According to the EIA and Mine Safety and Health Administration (MSHA), U.S. coal production decreased by an estimated 51 million tons in 2019, to around 705 million tons.

The EIA subdivides United States coal production into three major areas: Western, Appalachia and Interior.

The Western area includes the Powder River Basin and the Western Bituminous region. According to the EIA, coal produced in the western United States decreased from an estimated 418 million short tons in 2018 to 381 million short tons in 2019. The Powder River Basin is located in northeastern Wyoming and southeastern Montana and is the largest producing region in the United States. Coal from this region is sub-bituminous coal with low sulfur content ranging from 0.2% to 0.9% and heating values ranging from 8,300 to 9,500 Btu. Powder River Basin coal generally has a lower heat content than other regions and is produced from thick seams using surface recovery methods. The Western Bituminous region includes Colorado, Utah and southern Wyoming. Coal from this region typically has low sulfur content ranging from 0.4% to 0.8% and heating values ranging from 10,000 to 12,200 Btu. Western bituminous coal has certain quality characteristics, especially its higher heat content and low sulfur, that make this a desirable coal for domestic and international power producers.

The Appalachia region is divided into north, central and southern regions. According to the EIA, coal produced in the Appalachian region decreased from 201 million short tons in 2018 to 193 million short tons in 2019. Appalachian coal is located near the prolific eastern shale-gas producing regions. Central Appalachian thermal coal is disadvantaged for power generation because of the depletion of economically attractive reserves, increasing costs of production and permitting issues. However, virtually all U.S. metallurgical coal is produced in Appalachia and the relative scarcity and high-quality of this coal allows for a pricing premium over thermal coal. Appalachia, while still a major producer of thermal coal, is undergoing a shift towards heavier reliance on metallurgical coal production for both domestic and international use. This is especially the case in Central Appalachia.

Northern Appalachia includes Pennsylvania, Northern West Virginia, Ohio and Maryland. Coal from this region generally has a high heat value ranging from 10,300 to 13,500 Btu and a sulfur content ranging from 0.8% to 4.0%. Central Appalachia includes Southern West Virginia, Virginia, Kentucky and Northern Tennessee. Coal mined from this region generally has a high heat value ranging from 11,400 to 13,200 Btu and low sulfur content ranging from 0.2% to 2.0%. Southern Appalachia primarily covers Alabama and generally has a heat content ranging from 11,300 to 12,300 Btu and a sulfur content ranging from 0.7% to 3.0%. Southern Appalachia mines are primarily focused on metallurgical markets.

The Interior region includes the Illinois Basin and Gulf Lignite production in Texas and Louisiana, and a small producing area in Kansas, Oklahoma, Missouri and Arkansas. The Illinois Basin is the largest producing region in the Interior and consists of Illinois, Indiana and western Kentucky. According to the EIA, coal produced in the Interior region decreased from 137 million short tons in 2018 to approximately 131 million short tons in 2019. Coal from the Illinois Basin generally has a heat value ranging from 10,100 to 12,600 Btu and has a sulfur content ranging from 1.0% to 4.3%. Despite its high sulfur content, coal from the Illinois Basin can generally be used by electric power generation facilities that have installed emissions control devices, such as scrubbers.

Coal Mining Methods

The geological characteristics of our coal reserves largely determine the coal mining method we employ. We use two primary methods of mining coal: surface mining and underground mining.

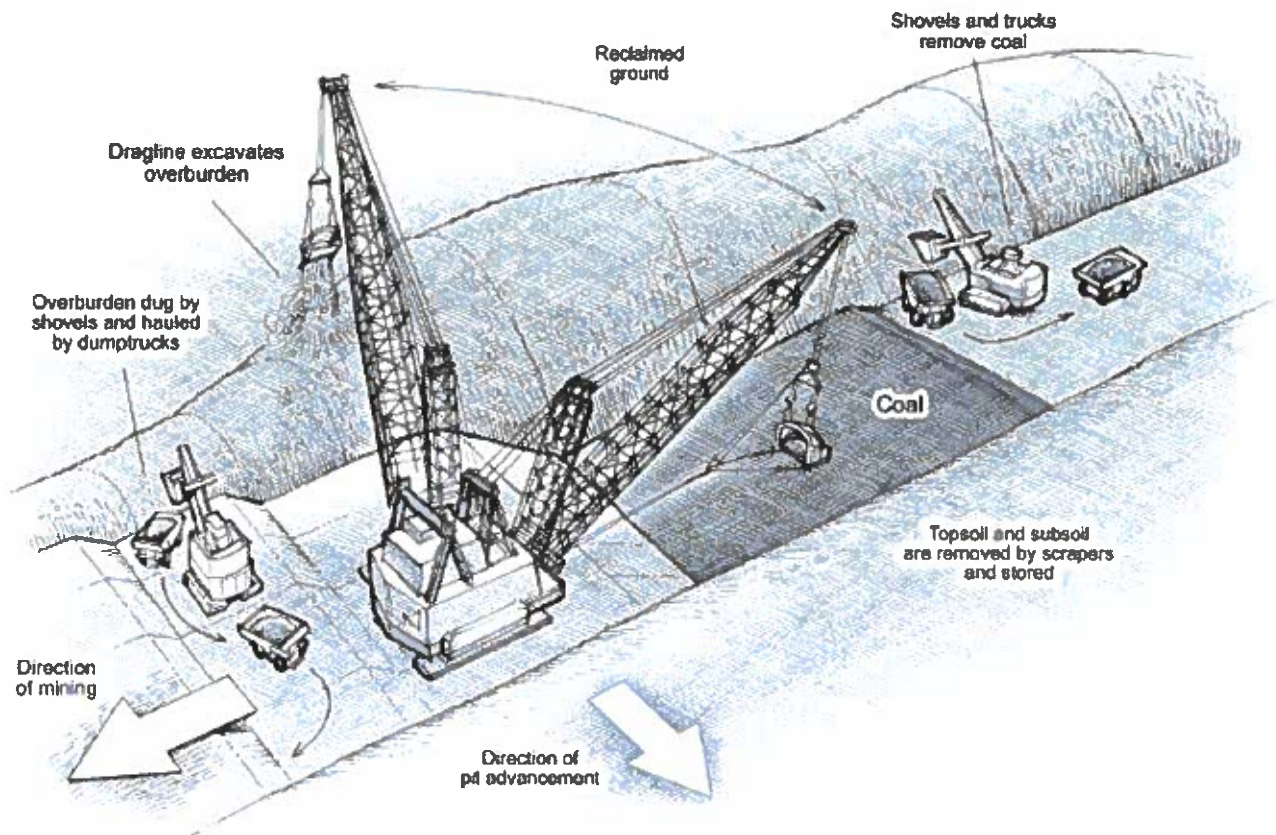
Surface Mining. We use surface mining when coal is found close to the surface. We have included the identity and location of our surface mining operations below under "Our Mining Operations-General." The majority of the thermal coal we produce comes from surface mining operations.

Surface mining involves removing the topsoil then drilling and blasting the overburden (earth and rock covering the coal) with explosives. We then remove the overburden with heavy earth-moving equipment, such as draglines, power shovels, excavators and loaders. Once exposed, we drill, fracture and systematically remove the coal using haul trucks or conveyors to transport the coal to a preparation plant or to a loadout facility. We reclaim disturbed areas as part of our normal mining activities. After final coal removal, we use draglines, power shovels, excavators or loaders to backfill the remaining pits with the overburden removed at the beginning of the process. Once we have replaced the overburden and topsoil, we reestablish

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vegetation and plant life into the natural habitat and make other improvements that have local community and environmental benefits.

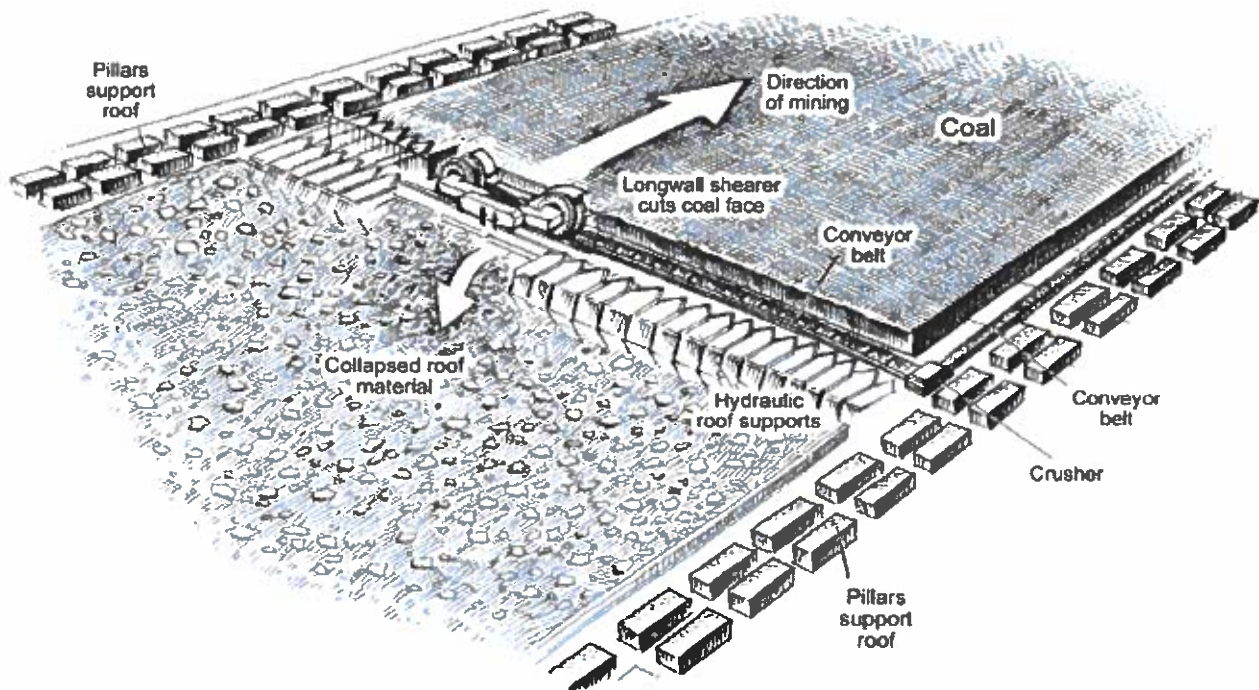
The following diagram illustrates a typical dragline surface mining operation:



Underground Mining. We use underground mining methods when coal is located deep beneath the surface. We have included the identity and location of our underground mining operations below under “Our Mining Operations-General.”

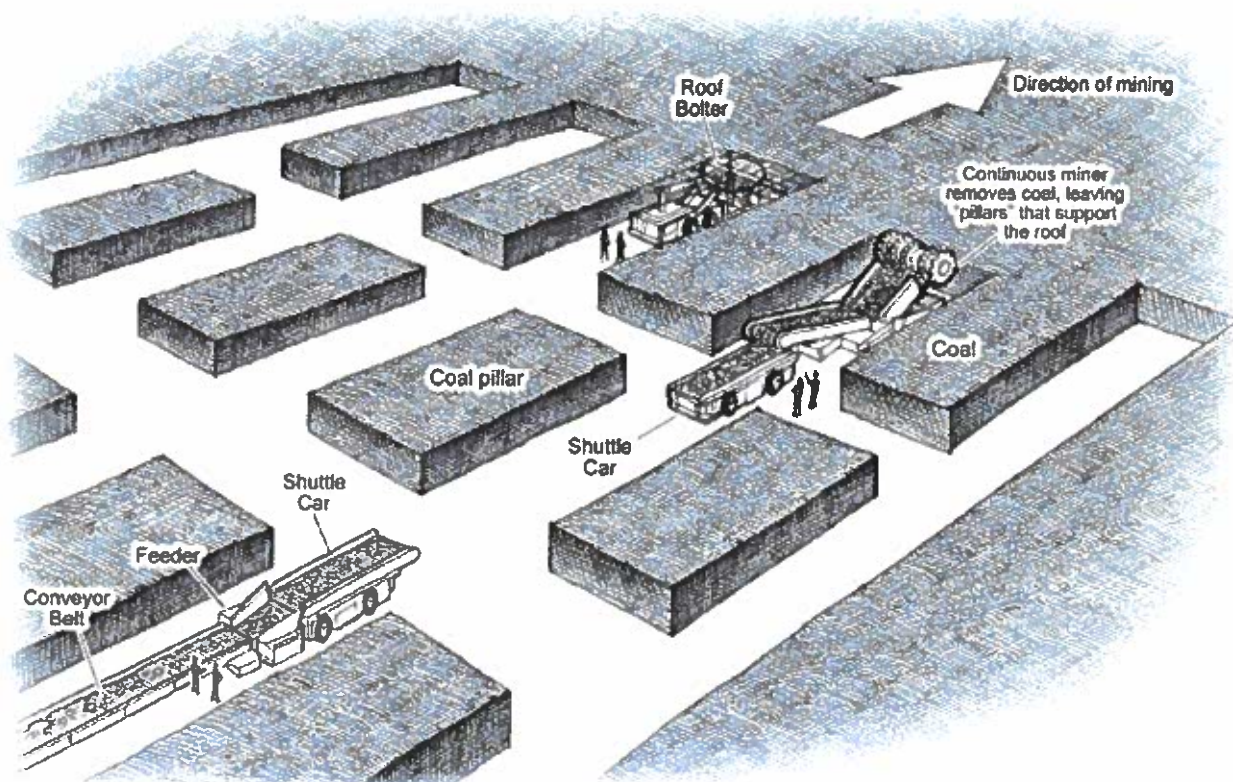
Our underground mines are typically operated using one or both of two different mining techniques: longwall mining and room-and-pillar mining.

Longwall Mining. Longwall mining involves using a mechanical shearer to extract coal from long rectangular blocks of medium to thick seams. Ultimate seam recovery using longwall mining techniques can exceed 75%. In longwall mining, continuous miners are used to develop access to these long rectangular coal blocks. Hydraulically powered supports temporarily hold up the roof of the mine while a rotating drum mechanically advances across the face of the coal seam, cutting the coal from the face. Chain conveyors then move the loosened coal to an underground mine conveyor system for delivery to the surface. Once coal is extracted from an area, the roof is allowed to collapse in a controlled fashion. The following diagram illustrates a typical underground mining operation using longwall mining techniques:



Room-and-Pillar Mining. Room-and-pillar mining is effective for small blocks of thin coal seams. In room-and-pillar mining, a network of rooms is cut into the coal seam, leaving a series of pillars of coal to support the roof of the mine. Continuous miners are used to cut the coal and shuttle cars are used to transport the coal to a conveyor belt for further transportation to the surface. The pillars generated as part of this mining method can constitute up to 40% of the total coal in a seam. Higher seam recovery rates can be achieved if retreat mining is used. In retreat mining, coal is mined from the pillars as workers retreat. As retreat mining occurs, the roof is allowed to collapse in a controlled fashion.

The following diagram illustrates our typical underground mining operation using room-and-pillar mining techniques:



Coal Preparation and Blending. We crush the coal mined from our Powder River Basin mining complexes and ship it directly from our mines to the customer. Typically, no additional preparation is required for a saleable product. Coal extracted from some of our underground mining operations contains impurities, such as rock, shale and clay occupying a wide range of particle sizes. All of our mining operations in the Appalachia region use a coal preparation plant located near the mine or connected to the mine by a conveyor. These coal preparation plants allow us to treat the coal we extract from those mines to ensure a consistent quality and to enhance its suitability for particular end-users. In addition, depending on coal quality and customer requirements, we may blend coal mined from different locations, including coal produced by third parties, in order to achieve a more suitable product.

The treatments we employ at our preparation plants depend on the size of the raw coal. For coarse material, the separation process relies on the difference in the density between coal and waste rock and, for the very fine fractions, the separation process relies on the difference in surface chemical properties between coal and the waste minerals. To remove impurities, we crush raw coal and classify it into various sizes. For the largest size fractions, we use dense media vessel separation techniques in which we float coal in a tank containing a liquid of a pre-determined specific gravity. Since coal is lighter than its impurities, it floats, and we can separate it from rock and shale. We treat intermediate sized particles with dense medium cyclones, in which a liquid is spun at high speeds to separate coal from rock. Fine coal is treated in spirals, in which the differences in density between coal and rock allow them, when suspended in water, to be separated. Ultra fine coal is recovered in column flotation cells utilizing the differences in surface chemistry between coal and rock. By injecting stable air bubbles through a suspension of ultra-fine coal and rock, the coal particles adhere to the bubbles and rise to the surface of the column where they are removed. To minimize the moisture content in coal, we process most coal sizes through centrifuges. A centrifuge spins coal very quickly, causing water accompanying the coal to separate.

For more information about the locations of our preparation plants, you should see the section entitled “Our Mining Operations.”

Our Mining Operations

General. At December 31, 2019, we operated 8 active mines in the United States. Our reportable business segments are based on two distinct lines of business, metallurgical coal and thermal coal, and may include a number of mine complexes. We manage our coal sales by market, not by individual mining complex. Geology, coal transportation routes to customers, and regulatory environments also have a significant impact on our marketing and operations management. Our mining operations are evaluated based on Adjusted EBITDA, per-ton cash operating costs (defined as including all mining costs except depreciation, depletion, amortization, accretion on asset retirements obligations, and pass-through transportation expenses), and on other non-financial measures, such as safety and environmental performance. Adjusted EBITDA is defined as net income attributable to the Company before the effect of net interest expense, income taxes, depreciation, depletion and amortization, the amortization of sales contracts, and the accretion on asset retirement obligations. Adjusted EBITDA may also be adjusted for items that may not reflect the trend of future results by excluding transactions that are not indicative of our core operating performance. We use Adjusted EBITDA to measure the operating performance of our segments and allocate resources to our segments. Adjusted EBITDA is not a measure of financial performance in accordance with generally accepted accounting principles, and items excluded from Adjusted EBITDA are significant in understanding and assessing our financial condition. Therefore, Adjusted EBITDA should not be considered in isolation, nor as an alternative to net income, income from operations, cash flows from operations or as a measure of our profitability, liquidity or performance under generally accepted accounting principles. Furthermore, analogous measures are used by industry analysts to evaluate the Company's operating performance. Investors should be aware that our presentation of Adjusted EBITDA may not be comparable to similarly titled measures used by other companies. Our reportable segments are the Powder River Basin (PRB) segment containing our primary thermal operations in Wyoming; the Metallurgical (MET) segment, containing our metallurgical operations in West Virginia and the Other Thermal segment containing our supplementary thermal operations in Colorado and Illinois. For additional information about the operating results of each of our segments for the years ended December 31, 2019, 2018, and 2017, see Note 26, "Segment Information" to our Consolidated Financial Statements.

In December of 2019 we sold our Coal-Mac operation, Coal-Mac LLC, which had been part of our Other Thermal segment, to Condor Holdings LLC. For further information on the sale of Coal-Mac LLC to Condor Holdings LLC, please see Note 5 to the Consolidated Financial Statements, "Divestitures."

In general, we have developed our mining complexes and preparation plants at strategic locations in close proximity to rail or barge shipping facilities. Coal is transported from our mining complexes to customers by means of railroads, trucks, barge lines, and ocean-going vessels from terminal facilities. We currently own or lease under long-term arrangements all of the equipment utilized in our mining operations. We employ sophisticated preventative maintenance and rebuild programs and upgrade our equipment to ensure that it is productive, well-maintained and cost-competitive.

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The following table provides a summary of information regarding our active mining complexes as of December 31, 2019, including the total sales associated with these complexes for the years ended December 31, 2019, 2018, and 2017 and the total assigned reserves associated with these complexes at December 31, 2019. The amount disclosed below for the total cost of property, plant and equipment of each mining complex does not include the costs of the coal reserves that we have assigned to an individual complex.

Mining Complex	Mines	Mining Equipment	Railroad	Tons Sold ⁽¹⁾			Total Cost of Property, Plant and Equipment at December 31, 2019 (\$ millions)	Total Assigned Recoverable Reserves (Million tons)
				2017	2018	2019		
Powder River Basin:								
Black Thunder	S	D, S	UP/BN	70.5	71.1	72.0	\$ 299.4	747.7
Coal Creek	S	D, S	UP/BN	9.0	8.0	2.6	44.5	92.2
Metallurgical:								
Mountain Laurel	U	CM	CSX	1.5	1.9	1.4	32.6	21.4
Beckley	U	CM	CSX	1.0	1.0	1.0	63.5	25.5
Leer South/Sentinel	U	CM	CSX	1.5	1.2	1.1	197.5	43.2
Leer	U	LW, CM	CSX	3.2	3.5	4.1	252.9	48.3
Other Thermal:								
West Elk	U	LW, CM	UP	4.9	4.8	4.1	49.9	50.5
Viper	U	CM	—	1.7	1.8	1.5	35.3	40.4
Totals				93.3	93.3	87.8	\$ 975.6	1,069.2

S = Surface mine D = Dragline UP = Union Pacific Railroad
U = Underground mine S = Shovel/truck CSX = CSX Transportation
 LW = Longwall BN = Burlington Northern-Santa Fe Railway
 CM = Continuous miner

- (1) Tons of coal we purchased from third parties that were not processed through our loadout facilities are not included in the amounts shown in the table above.

Powder River Basin

Black Thunder. Black Thunder is a surface mining complex located on approximately 35,400 acres in Campbell County, Wyoming. The Black Thunder complex extracts thermal coal from the Upper Wyodak and Main Wyodak seams.

We control a significant portion of the coal reserves through federal and state leases. The Black Thunder mining complex had approximately 747.7 million tons of proven and probable reserves at December 31, 2019.

The Black Thunder mining complex currently consists of four active pit areas and two active loadout facilities. We ship all of the coal raw to our customers via the Burlington Northern Santa Fe and Union Pacific railroads. We do not process the coal mined at this complex. Each of the loadout facilities can load a 15,000-ton train in less than two hours.

Coal Creek. Coal Creek is a surface mining complex located on approximately 7,400 acres in Campbell County, Wyoming. The Coal Creek mining complex extracts thermal coal from the Wyodak-R1 and Wyodak-R3 seams.

We control a significant portion of the coal reserves through federal and state leases. The Coal Creek mining complex had approximately 92.2 million tons of proven and probable reserves at December 31, 2019.

The Coal Creek complex currently consists of one active pit area and a loadout facility. We ship all of the coal raw to our customers via the Burlington Northern Santa Fe and Union Pacific railroads. We do not process the coal mined at this complex. The loadout facility can load a 15,000-ton train in less than three hours.

Metallurgical

Mountain Laurel. Mountain Laurel is an underground mining complex located on approximately 38,200 acres in Logan County and Boone County, West Virginia. Underground mining operations at the Mountain Laurel mining complex extracts High-vol B metallurgical coal from the Cedar Grove and Alma seams, and we are currently developing access to further High-vol B reserves in the 2 Gas seam. Including the 2 Gas seam, the Mountain Laurel mining complex has approximately 21.4 million tons of proven and probable reserves at December 31, 2019.

We process all of the coal through a 1,400-ton-per-hour preparation plant before shipping the coal to our customers via the CSX railroad. The loadout facility can load a 15,000-ton train in less than four hours.

Beckley. The Beckley mining complex is located on approximately 19,700 acres in Raleigh County, West Virginia. Beckley is extracting high quality, low-volatile metallurgical coal in the Pocahontas No. 3 seam. The Beckley mining complex had approximately 25.5 million tons of proven and probable reserves at December 31, 2019.

Coal is belted from the mine to a 600-ton-per-hour preparation plant before shipping the coal via the CSX railroad. The loadout facility can load a 10,000-ton train in less than four hours.

Leer South/Sentinel. The Leer South/Sentinel mining complex consists of the existing Sentinel underground mine in the Clarion seam, the Leer South longwall operation being developed in the Lower Kittanning seam, a preparation plant and a loadout facility located on approximately 26,000 acres in Barbour County, West Virginia. Plant and coal handling facilities are being upgraded to handle longwall volumes and will include a 1,600 ton-per-hour preparation plant located near the mine, as well as a loadout facility served by the CSX railroad and connected to the plant by a 4,000 ton-per-hour conveyor system. The loadout facility will be capable of loading a 15,000 ton unit train in less than four hours.

Coal quality is primarily High-vol A metallurgical coal similar to our Leer Complex. The Leer South/Sentinel mining complex had approximately 43.2 million tons of proven and probable reserves at December 31, 2019. Full production will not be realized until the longwall is placed into service in the second half of 2021. A significant portion of the reserves at Leer South are owned rather than leased from third parties.

Leer. The Leer Complex, located in Taylor County, West Virginia, includes approximately 48.3 million tons of coal reserves as of December 31, 2019 and has primarily High-vol A metallurgical quality coal in the Lower Kittanning seam, and is part of approximately 92,600 acres that is considered our Tygart Valley area. Substantially all of the reserves at Leer are owned rather than leased from third parties.

All the production is processed through a 1,400 ton-per-hour preparation plant and loaded on the CSX railroad. A 15,000-ton train can be loaded in less than four hours.

Other Thermal

West Elk. West Elk is an underground mining complex located on approximately 18,500 acres in Gunnison County, Colorado. The West Elk mining complex extracts thermal coal from the E seam.

We control a significant portion of the coal reserves through federal and state leases. The West Elk mining complex had approximately 50.5 million tons of proven and probable reserves at December 31, 2019.

The West Elk complex currently consists of a longwall, continuous miner sections and a loadout facility. We ship most of the coal raw to our customers via the Union Pacific railroad. The loadout facility can load an 11,000-ton train in less than three hours.

Viper. The Viper mining complex consists of one underground coal mine and a preparation plant located on approximately 40,200 acres in central Illinois near the city of Springfield. Mining operations extract thermal coal from the Illinois No. 5 seam, also referred to as the Springfield seam. All coal is processed through an 800 ton-per-hour preparation plant and shipped to customers by on-highway trucks.

We control a significant portion of the coal reserves through private leases. As of December 31, 2019, we had approximately 40.4 million tons of proven and probable reserves.

Sales, Marketing and Trading

Overview. Coal prices are influenced by a number of factors and can vary materially by region. The price of coal within a region is influenced by general marketplace conditions, the supply and price of alternative fuels to coal (such as natural gas and renewables), production costs, coal quality, transportation costs involved in moving coal from the mine to the point of use and mine operating costs. For example, in thermal coal markets, higher heat and lower ash content generally result in higher prices, and higher sulfur and higher ash content generally result in lower prices within a given geographic region. In metallurgical coal markets, chemical properties within the coal determine price differences.

The cost of coal at the mine is also influenced by geologic characteristics such as seam thickness, overburden ratios and depth of underground reserves. It is generally less expensive to mine coal seams that are thick and located close to the surface than to mine thin underground seams. Within a particular geographic region, underground mining, which is the primary mining method we use in certain of our Appalachian mines, is generally more expensive than surface mining, which is the mining method we use in the Powder River Basin. This is the case because of the higher capital costs, including costs for construction of extensive ventilation systems, and higher per unit labor costs due to lower productivity associated with underground mining.

Our sales, marketing and trading functions are principally based in St. Louis, Missouri and consist of sales and trading, transportation and distribution, quality control and contract administration personnel as well as revenue management. We also have sales representatives in our Singapore and London offices. In addition to selling coal produced from our mining complexes, from time to time we purchase and sell coal mined by others, some of which we blend with coal produced from our mines. We focus on meeting the needs and specifications of our customers rather than just selling our coal production.

Customers. The Company markets its thermal and metallurgical coal to steel producers, domestic and foreign power generators, and other industrial facilities. For the year ended December 31, 2019, we derived approximately 21% of our total coal revenues from sales to our three largest customers, ArcelorMittal, T S Global Procurement Company Pte. and Southern Company and approximately 47% of our total coal revenues from sales to our 10 largest customers.

In 2019, we sold coal to domestic customers located in 31 different states. The locations of our mines enable us to ship coal to most of the major coal-fueled power plants in the United States.

In addition, in 2019 we exported coal to Europe, Asia, Central and South America and Africa. Exports to seaborne countries were \$1.0 billion, \$1.1 billion and \$0.7 billion for the years ended December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019 and 2018, trade receivables related to metallurgical-quality coal sales totaled \$98.6 million and \$126.5 million, respectively, or 59% and 63% of total trade receivables, respectively. We do not have foreign currency exposure for our international sales as all sales are denominated and settled in U.S. dollars.

The Company's seaborne revenues by coal shipment destination for the year ended December 31, 2019, were as follows:

(In thousands)	
Europe	\$ 537,117
Asia	322,029
Central and South America	82,476
Africa	18,698
Total	<u>\$ 960,320</u>

Long-Term Coal Supply Arrangements

As is customary in the coal industry, we enter into fixed price, fixed volume long-term supply contracts, the terms of which are sometimes more than one year, with many of our customers. Multiple year contracts usually have specific and possibly different volume and pricing arrangements for each year of the contract. Long-term contracts allow customers to secure a supply for their future needs and provide us with greater predictability of sales volume and sales prices. In 2019, we sold approximately 56% of our coal under long-term supply arrangements. The majority of our supply contracts include a fixed price for the term of the agreement or a pre-determined escalation in price for each year. Some of our long-term supply agreements may include a variable pricing system. While most of our sales contracts are for terms of one to five years, some are as short as one month. At December 31, 2019, the average volume-weighted remaining term of our long-term contracts for metallurgical and thermal coal was approximately 2.7 years, with remaining terms ranging from one to four years. At December 31, 2019, remaining tons under long-term supply agreements, including those subject to price re-opener or extension provisions, were approximately 129 million tons.

We typically sell coal to North American customers under long-term arrangements through a "request-for-proposal" process. The terms of our coal sales agreements are dictated by general marketplace conditions, the availability and price of alternative fuels, the quality of the coal we have available to sell, our mine operations (including operating costs), the length of contract, as well as negotiations with customers. Consequently, the terms of these contracts may vary to some extent by customer, including base price adjustment features, price re-opener terms, coal quality requirements, quantity parameters, permitted sources of supply, future regulatory changes, extension options, *force majeure*, termination, damages and assignment provisions. Our long-term supply contracts typically contain provisions to adjust the base price due to new statutes, ordinances or regulations. We typically sell our metallurgical coal to non-North American customers based on various indices or agreements to mutually negotiate the price. These agreements generally are for one year and can reset pricing with each shipment. Additionally, some of our contracts contain provisions that allow for the recovery of costs affected by modifications or changes in the interpretations or application of any applicable statute by local, state or federal government authorities. These provisions only apply to the base price of coal contained in these supply contracts. In some circumstances, a significant adjustment in base price can lead to termination of the contract.

Certain of our contracts contain index provisions that change the price based on changes in market based indices or changes in economic indices or both. Certain of our contracts contain price re-opener provisions that may allow a party to commence a renegotiation of the contract price at a pre-determined time. Price re-opener provisions may automatically set a new price based on prevailing market price or, in some instances, require us to negotiate a new price, sometimes within a specified range of prices. In a limited number of agreements, if the parties do not agree on a new price, either party has an option to suspend the agreement for the pricing period not agreed to. In addition, certain of our contracts contain clauses that may allow customers to terminate the contract in the event of certain changes in environmental laws and regulations that impact their operations.

Coal quality and volumes are stipulated in coal sales agreements. In most cases, the annual pricing and volume obligations are fixed, although in some cases the volume specified may vary depending on the customer consumption requirements. Most of our coal sales agreements contain provisions requiring us to deliver coal within certain ranges for specific coal characteristics such as heat content (for thermal coal contracts), volatile matter (for metallurgical coal contracts), and for both types of contracts, sulfur, ash and moisture content. Failure to meet these specifications can result in economic penalties, suspension or cancellation of shipments or termination of the contracts.

Our coal sales agreements also typically contain *force majeure* provisions allowing temporary suspension of performance by us or our customers, during the duration of events beyond the control of the affected party, including events such as strikes, adverse mining conditions, mine closures or serious transportation problems that affect us or unanticipated plant

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outages that may affect the buyer. Our contracts also generally provide that in the event a *force majeure* circumstance exceeds a certain time period, the unaffected party may have the option to terminate the purchase or sale in whole or in part. Some contracts stipulate that this tonnage can be made up by mutual agreement or at the discretion of the buyer. Agreements between our customers and the railroads servicing our mines may also contain *force majeure* provisions.

In most of our thermal coal contracts, we have a right of substitution (unilateral or subject to counterparty approval), allowing us to provide coal from different mines, including third-party mines, as long as the replacement coal meets quality specifications and will be sold at the same equivalent delivered cost.

In some of our coal supply contracts, we agree to indemnify or reimburse our customers for damage to their or their rail carrier's equipment while on our property, which results from our or our agents' negligence, and for damage to our customer's equipment due to non-coal materials being included with our coal while on our property.

Trading. In addition to marketing and selling coal to customers through traditional coal supply arrangements, we seek to optimize our coal production and leverage our knowledge of the coal industry through a variety of other marketing, trading and asset optimization strategies. From time to time, we may employ strategies to use coal and coal-related commodities and contracts for those commodities in order to manage and hedge volumes and/or prices associated with our coal sales or purchase commitments, reduce our exposure to the volatility of market prices or augment the value of our portfolio of traditional assets. These strategies may include physical coal contracts, as well as a variety of forward, futures or options contracts, swap agreements or other financial instruments, in coal or other commodities such as natural gas.

We maintain a system of complementary processes and controls designed to monitor and manage our exposure to market and other risks that may arise as a consequence of these strategies. These processes and controls seek to preserve our ability to profit from certain marketing, trading and asset optimization strategies while mitigating our exposure to potential losses. You should see Item 7A, entitled "Quantitative and Qualitative Disclosures About Market Risk" for more information about the market risks associated with these strategies at December 31, 2019.

Transportation. We ship our coal to domestic customers by means of railcars, barges, or trucks, or a combination of these means of transportation. We generally sell coal used for domestic consumption free on board (f.o.b.) at the mine or nearest loading facility. Our domestic customers normally bear the costs of transporting coal by rail, barge or truck.

Historically, most domestic electricity generators have arranged long-term shipping contracts with rail, trucking or barge companies to assure stable delivery costs. Transportation can be a large component of a purchaser's total cost. Although the purchaser pays the freight, transportation costs still are important to coal mining companies because the purchaser may choose a supplier largely based on cost of transportation. Transportation costs borne by the customer vary greatly based on each customer's proximity to the mine and our proximity to the loadout facilities. Trucks and overland conveyors haul coal over shorter distances, while barges, Great Lake carriers and ocean vessels move coal to export markets and domestic markets requiring shipment over the Great Lakes and several river systems.

Most coal mines are served by a single rail company, but much of the Powder River Basin is served by two rail carriers: the Burlington Northern-Santa Fe railroad and the Union Pacific railroad. We generally transport coal produced at our Appalachian mining complexes via the CSX railroad. Besides rail deliveries, some customers in the eastern United States rely on a river barge system.

We generally sell coal to international customers at export terminals, and we are usually responsible for the cost of transporting coal to the export terminals. We transport our coal to Atlantic coast terminals, Pacific coast terminals or terminals along the Gulf of Mexico for transportation to international customers. Our international customers are generally responsible for paying the cost of ocean freight. We may also sell coal to international customers delivered to an unloading facility at the destination country.

We own a 35% interest in Dominion Terminal Associates, a partnership that operates a ground storage-to-vessel coal transloading facility in Newport News, Virginia. The facility has a rated throughput capacity of 20 million tons of coal per year and ground storage capacity of approximately 1.7 million tons. The facility primarily serves international customers, as well as domestic coal users located along the Atlantic coast of the United States. From time-to-time, we may lease a portion of our port capacity to third parties.

Competition

The coal industry is intensely competitive. The most important factors on which we compete are coal quality, delivered costs to the customer and reliability of supply. In thermal coal, another important factor is the cost competitiveness of our coal relative to alternative fuels. Our principal domestic coal-producing competitors include Blackhawk Mining LLC; Contura Energy; Coronado Coal LLC; Corsa Coal Corp.; Eagle Specialty Materials LLC; Navajo Transitional Energy Company, LLC; Peabody Energy Corp.; Ramaco Resources and Warrior Met Coal, Inc. Some of these coal producers are larger than we are and have greater financial resources and larger reserve bases than we do. We also compete directly with a number of smaller producers in each of the geographic regions in which we operate, as well as companies that produce coal from one or more foreign countries, such as Australia, Colombia, Indonesia and South Africa. In thermal coal, our principal competitor is natural gas and other alternative fuels.

Specifically, coal competes directly with other fuels, such as natural gas, nuclear energy, hydropower, wind, solar and petroleum, for steam and electrical power generation. Costs and other factors relating to these alternative fuels, such as safety and environmental considerations, as well as tax incentives and various mandates, affect the overall demand for coal as a fuel and the price we can charge for the coal.

Suppliers

Principal supplies used in our business include petroleum-based fuels, explosives, tires, steel and other raw materials as well as spare parts and other consumables used in the mining process. We use third-party suppliers for a significant portion of our equipment rebuilds and repairs, drilling services and construction. We use sole source suppliers for certain parts of our business such as explosives and fuel, and preferred suppliers for other parts of our business such as original equipment suppliers, dragline and shovel parts and related services. We believe adequate substitute suppliers are available. For more information about our suppliers, you should see Item 1A, "Risk Factors-Increases in the costs of mining and other industrial supplies, including steel-based supplies, diesel fuel and rubber tires, or the inability to obtain a sufficient quantity of those supplies, could negatively affect our operating costs or disrupt or delay our production."

Environmental and Other Regulatory Matters

Federal, state and local authorities regulate the U.S. coal mining industry with respect to matters such as employee health and safety and the environment, including the protection of air quality, water quality, wetlands, special status species of plants and animals, land uses, cultural and historic properties and other environmental resources identified during the permitting process. Reclamation is required during production and after mining has been completed. Materials used and generated by mining operations must also be managed according to applicable regulations and law. These laws have, and will continue to have, a significant effect on our production costs and our competitive position.

We endeavor to conduct our mining operations in compliance with applicable federal, state and local laws and regulations. However, due in part to the extensive, comprehensive and changing regulatory requirements, violations during mining operations occur from time to time. We cannot assure you that we have been or will be at all times in complete compliance with such laws and regulations. Expenditures we incur to maintain compliance with all applicable federal and state laws have been and are expected to continue to be significant. Federal and state mining laws and regulations require us to obtain surety bonds to guarantee performance or payment of certain long-term obligations, including mine closure and reclamation costs, federal and state workers' compensation benefits, coal leases and other miscellaneous obligations. Compliance with these laws has substantially increased the cost of coal mining for domestic coal producers.

Future laws, regulations or orders, as well as future interpretations and more rigorous enforcement of existing laws, regulations or orders, may require substantial increases in equipment and operating costs and delays, interruptions or a termination of operations, the extent to which we cannot predict. Future laws, regulations or orders may also cause coal to become a less attractive fuel source, thereby reducing coal's share of the market for fuels and other energy sources used to generate electricity. As a result, future laws, regulations or orders may adversely affect our mining operations, cost structure or our customers' demand for coal.

The following is a summary of the various federal and state environmental and similar regulations that have a material impact on our business:

Mining Permits and Approvals. Numerous governmental permits or approvals are required for mining operations. When we apply for these permits and approvals, we may be required to prepare and present to federal, state or local authorities data pertaining to the effect or impact that any proposed production or processing of coal may have upon the environment. For

example, in order to obtain a federal coal lease, an environmental impact statement must be prepared to assist the BLM in determining the potential environmental impact of lease issuance, including any collateral effects from the mining, transportation and burning of coal, which may in some cases include a review of impacts on climate change. The authorization, permitting and implementation requirements imposed by federal, state and local authorities may be costly and time consuming and may delay commencement or continuation of mining operations. In the states where we operate, the applicable laws and regulations also provide that a mining permit or modification can be delayed, refused or revoked if officers, directors, shareholders with specified interests or certain other affiliated entities with specified interests in the applicant or permittee have, or are affiliated with another entity that has, outstanding permit violations. Thus, past or ongoing violations of applicable laws and regulations could provide a basis to revoke existing permits and to deny the issuance of additional permits.

In order to obtain mining permits and approvals from federal and state regulatory authorities, mine operators must submit a reclamation plan for restoring, upon the completion of mining operations, the mined property to its prior condition or other authorized use. Typically, we submit the necessary permit applications several months or even years before we plan to begin mining a new area. Some of our required permits are becoming increasingly more difficult and expensive to obtain, and the application review processes are taking longer to complete and becoming increasingly subject to challenge, even after a permit has been issued.

Under some circumstances, substantial fines and penalties, including revocation or suspension of mining permits, may be imposed under the laws described above. Monetary sanctions and, in severe circumstances, criminal sanctions may be imposed for failure to comply with these laws.

Surface Mining Control and Reclamation Act. The Surface Mining Control and Reclamation Act, which we refer to as SMCRA, establishes mining, environmental protection, reclamation and closure standards for all aspects of surface mining as well as many aspects of underground mining. Mining operators must obtain SMCRA permits and permit renewals from the Office of Surface Mining, which we refer to as OSM, or from the applicable state agency if the state agency has obtained regulatory primacy. A state agency may achieve primacy if the state regulatory agency develops a mining regulatory program that is no less stringent than the federal mining regulatory program under SMCRA. All states in which we conduct mining operations have achieved primacy and issue permits in lieu of OSM.

SMCRA permit provisions include a complex set of requirements which include, among other things, coal prospecting; mine plan development; topsoil or growth medium removal and replacement; selective handling of overburden materials; mine pit backfilling and grading; disposal of excess spoil; protection of the hydrologic balance; subsidence control for underground mines; surface runoff and drainage control; establishment of suitable post mining land uses; and revegetation. We begin the process of preparing a mining permit application by collecting baseline data to adequately characterize the pre-mining environmental conditions of the permit area. This work is typically conducted by third-party consultants with specialized expertise and includes surveys and/or assessments of the following: cultural and historical resources; geology; soils; vegetation; aquatic organisms; wildlife; potential for threatened, endangered or other special status species; surface and ground water hydrology; climatology; riverine and riparian habitat; and wetlands. The geologic data and information derived from the other surveys and/or assessments are used to develop the mining and reclamation plans presented in the permit application. The mining and reclamation plans address the provisions and performance standards of the state's equivalent SMCRA regulatory program, and are also used to support applications for other authorizations and/or permits required to conduct coal mining activities. Also included in the permit application is information used for documenting surface and mineral ownership, variance requests, access roads, bonding information, mining methods, mining phases, other agreements that may relate to coal, other minerals, oil and gas rights, water rights, permitted areas, and ownership and control information required to determine compliance with OSM's Applicant Violator System, including the mining and compliance history of officers, directors and principal owners of the entity.

Once a permit application is prepared and submitted to the regulatory agency, it goes through an administrative completeness review and a thorough technical review. Also, before a SMCRA permit is issued, a mine operator must submit a bond or otherwise secure the performance of all reclamation obligations. After the application is submitted, a public notice or advertisement of the proposed permit is required to be given, which begins a notice period that is followed by a public comment period before a permit can be issued. It is not uncommon for a SMCRA mine permit application to take over a year to prepare, depending on the size and complexity of the mine, and anywhere from six months to two years or even longer for the permit to be issued. The variability in time frame required to prepare the application and issue the permit can be attributed primarily to the various regulatory authorities' discretion in the handling of comments and objections relating to the project received from the general public and other agencies. Also, it is not uncommon for a permit to be delayed as a result of litigation related to the specific permit or another related company's permit.

In addition to the bond requirement for an active or proposed permit, the Abandoned Mine Land Fund, which was created by SMCRA, requires that a fee be paid on all coal produced. The proceeds of the fee are used to restore mines closed or abandoned prior to SMCRA's adoption in 1977, as well as fund other state and federal initiatives. The current fee is \$0.28 per ton of coal produced from surface mines and \$0.12 per ton of coal produced from underground mines. In 2019, we recorded \$22.9 million of expense related to these reclamation fees.

Surety Bonds. Mine operators are often required by federal and/or state laws, including SMCRA, to assure, usually through the use of surety bonds, payment of certain long-term obligations including mine closure or reclamation costs, federal and state workers' compensation costs, coal leases and other miscellaneous obligations. Although surety bonds are usually noncancelable during their term, many of these bonds are renewable on an annual basis and collateral requirements may change.

The costs of these bonds have widely fluctuated in recent years while the market terms of surety bonds have generally hardened for mine operators. These changes in the terms of the bonds have been accompanied at times by a decrease in the number of companies willing to issue surety bonds. As of December 31, 2019, we posted an aggregate of approximately \$528.9 million in surety bonds for reclamation purposes. In addition, we had approximately \$156.5 million of surety bonds, cash and letters of credit outstanding at December 31, 2019 to secure workers' compensation, coal lease and other obligations.

For additional information, please see "Failure to obtain or renew surety bonds on acceptable terms could affect our ability to secure reclamation and coal lease obligations and, therefore, our ability to mine or lease coal which could have a material, adverse effect on our business and results of operations," contained in Item 1A, "Risk Factors—Risk Related to Our Operations," for a discussion of certain risks associated with our surety bonds.

Mine Safety and Health. Stringent safety and health standards have been imposed by federal legislation since Congress adopted the Mine Safety and Health Act of 1969. The Mine Safety and Health Act of 1977 significantly expanded the enforcement of safety and health standards and imposed comprehensive safety and health standards on all aspects of mining operations. In addition to federal regulatory programs, all of the states in which we operate also have programs aimed at improving mine safety and health. Collectively, federal and state safety and health regulation in the coal mining industry is among the most comprehensive and pervasive systems for the protection of employee health and safety affecting any segment of U.S. industry.

Under the Black Lung Benefits Revenue Act of 1977 and the Black Lung Benefits Reform Act of 1977, each coal mine operator must secure payment of federal black lung benefits to claimants who are current and former employees and to a trust fund for the payment of benefits and medical expenses to claimants who last worked in the coal industry prior to July 1, 1973. The trust fund is funded by an excise tax on production of up to \$1.10 per ton for coal mined in underground operations and up to \$0.55 per ton for coal mined in surface operations. These amounts may not exceed 4.4% of the gross sales price. This excise tax does not apply to coal shipped outside the United States. In 2019, we recorded \$20.0 million of expense related to this excise tax.

Clean Air Act. The federal Clean Air Act and similar state and local laws that regulate air emissions affect coal mining directly and indirectly. Direct impacts on coal mining and processing operations include Clean Air Act permitting requirements and emissions control requirements. These include emissions of ozone precursors and particulate matter which may include controlling fugitive dust. The Clean Air Act also indirectly affects coal mining operations, for example, by extensively regulating the emissions of fine particulate matter measuring 2.5 micrometers in diameter or smaller, sulfur dioxide, nitrogen oxides, mercury and other compounds emitted by coal-fueled power plants and industrial boilers, which are the largest end-users of our coal. Already stringent regulation of emissions further tightened throughout the Obama Administration, such as the Mercury and Air Toxics Standard (MATS), finalized in 2011 and discussed in more detail below. In addition, the U.S. Environmental Protection Agency, which we refer to as the EPA, has issued regulations with respect to other emissions, such as greenhouse gases (GHG's), from new, modified, reconstructed and existing electric generating units, including coal-fired plants. Other GHG regulations apply to industrial boilers (see discussion of Climate Change, below). Although the Trump Administration has proposed repealing or loosening a number of these regulations as described below, it is unclear the degree to which these proposals will take effect, or to what extent they will survive into future Administrations. Collectively, regulations of air emissions, as well as uncertainty regarding the future course of regulation could eventually reduce the demand for coal.

Clean Air Act requirements that may directly or indirectly affect our operations include the following:

- *Acid Rain.* Title IV of the Clean Air Act, promulgated in 1990, imposed a two-phase reduction of sulfur dioxide emissions by electric utilities. Phase II became effective in 2000 and applies to all coal-fueled power plants with a capacity of more than 25-megawatts. Generally, the affected power plants have sought to comply with these

requirements by switching to lower sulfur fuels, installing pollution control devices, reducing electricity generating levels or purchasing or trading sulfur dioxide emissions allowances. Although we cannot accurately predict the future effect of this Clean Air Act provision on our operations, we believe that implementation of Phase II has been factored into the pricing of the coal market.

- *Particulate Matter.* The Clean Air Act requires the EPA to set national ambient air quality standards, which we refer to as NAAQS, for certain pollutants associated with the combustion of coal, including sulfur dioxide, particulate matter, nitrogen oxides and ozone. Areas that are not in compliance with these standards, referred to as non-attainment areas, must take steps to reduce emissions levels. For example, NAAQS currently exist for particulate matter measuring 10 micrometers in diameter or smaller (PM10) and for fine particulate matter measuring 2.5 micrometers in diameter or smaller (PM2.5), and the EPA revised the PM2.5 NAAQS on December 14, 2012, making it more stringent. The states were required to make recommendations on nonattainment designations for the new NAAQS in late 2013. The EPA issued final designations for most areas of the country in 2012 and made some revisions in 2015. Individual states must now identify the sources of emissions and develop emission reduction plans. These plans may be state-specific or regional in scope. Under the Clean Air Act, individual states have up to 12 years from the date of designation to secure emissions reductions from sources contributing to the problem. Future regulation and enforcement of the new PM2.5 standard, as well as future revisions of PM standards, will affect many power plants, especially coal-fueled power plants, and all plants in non-attainment areas.
- *Ozone.* On October 26, 2015, the EPA published a final rule revising the existing primary and secondary NAAQS for ozone, reducing them to 70ppb on an 8-hour average. On November 17, 2016, the EPA issued a proposed implementation rule on non-attainment area classification and state implementation plans (SIPs). The EPA published a final rule in November 2017 that issued area designations with respect to ground-level ozone for approximately 35% of the U.S. counties, designating them as either “attainment/unclassifiable” or “unclassifiable.” In April 2018 and July 2018, the EPA issued ozone designations for all areas not addressed in the November 2017 rule. States with moderate or high nonattainment areas must submit SIPs by October 2021. Significant additional emission control expenditures will likely be required at certain coal-fueled power plants to meet the new stricter NAAQS. Nitrogen oxides, which are a byproduct of coal combustion, are classified as an ozone precursor. As a result, emissions control requirements for new and expanded coal-fueled power plants and industrial boilers will continue to become more demanding in the years ahead. On December 6, 2018, the EPA issued a Final Rule implementing the 2015 Ozone NAAQS for nonattainment areas (“2015 Ozone Implementation Rule”). The 2015 Ozone Implementation Rule is notable for providing greater flexibility to States to consider international sources of pollution and other mechanisms for relief from strict application of the standard. With such flexibility, the effect on demand for coal will vary by state.
- *NOx SIP Call.* The Nitrogen Oxides State Implementation Plan (NOx SIP) Call program was established by the EPA in October 1998 to reduce the transport of ozone on prevailing winds from the Midwest and South to states in the Northeast, which said that they could not meet federal air quality standards because of migrating pollution. The program was designed to reduce nitrous oxide emissions by one million tons per year in 22 eastern states and the District of Columbia. Phase II reductions were required by May 2007. As a result of the program, many power plants were required to install additional emission control measures, such as selective catalytic reduction devices. Installation of additional emission control measures has made it more costly to operate coal-fueled power plants, which could make coal a less attractive fuel.
- *Interstate Transport.* The EPA finalized the Clean Air Interstate Rule, which we refer to as CAIR, in March 2005. CAIR called for power plants in 28 Eastern states and the District of Columbia to reduce emission levels of sulfur dioxide and nitrous oxide, which could lead to non-attainment of PM2.5 and ozone NAAQS in downwind states (interstate transport), pursuant to a cap and trade program similar to the system now in effect for acid deposition control. In July 2008, in *State of North Carolina v. EPA* and consolidated cases, the D.C. Circuit disagreed with the EPA’s reading of the Clean Air Act and vacated CAIR in its entirety. In December 2008, the D.C. Circuit revised its remedy and remanded the rule to the EPA. The EPA proposed a revised transport rule on August 2, 2010 (75 Fed. Reg. 45209) to address attainment of the 1997 ozone NAAQS and the 2006 PM2.5 NAAQS. The rule was finalized as the Cross State Air Pollution Rule (CSAPR) on July 6, 2011, with compliance required for SO2 reductions beginning January 1, 2012 and compliance with NOx reductions required by May 1, 2012. Numerous appeals of the rule were filed and, on August 21, 2012, the D.C. Circuit vacated the rule, leaving the EPA to continue implementation of the CAIR. Controls required under the CAIR, especially in conjunction with other rules, may have affected the market for coal inasmuch as multiple existing coal fired units were being retired rather than having required controls installed.

The U.S. Supreme Court agreed to hear the EPA's appeal of the decision vacating CSAPR and on April 29, 2014, issued an opinion reversing the August 21, 2012 D.C. Circuit decision, remanding the case back to the D.C. Circuit. The EPA then requested that the court lift the CSAPR stay and toll the CSAPR compliance deadlines by three years. On October 23, 2014, the D.C. Circuit granted the EPA's request, and that court later dismissed all pending challenges to the rule on July 28, 2015 but it remanded some state budgets to the EPA for further consideration. CSAPR Phase 1 implementation began in 2015, with Phase 2 beginning in 2017. CSAPR generally requires greater reductions than under CAIR. As a result, some coal-fired power plants will be required to install costly pollution controls or shut down which may adversely affect the demand for coal. Finally, in October 2016, the EPA issued an update to the CSAPR to address interstate transport of air pollution under the more recent 2008 ozone NAAQS and the state budgets remanded by the D.C. Circuit. Consolidated judicial challenges to the rule are now pending, but on August 10, 2017, the D.C. Circuit suspended briefing in the litigation after industry petitioners challenging the rule requested to delay proceedings so the EPA can determine whether to reconsider the revised CSAPR. On June 29, 2018, the EPA issued a proposed determination that the 2016 CSAPR Update Rule fully addresses states' interstate transport obligations under the 2008 ozone NAAQS. However, the EPA has also signaled in a variety of 2018 memoranda that states may have more flexibility to consider international emissions and higher thresholds in developing SIPS than under prior guidance. It is not clear how the combination of upholding the 2016 CSAPR Update Rule while allowing greater SIP flexibility will affect decisions to install controls or shut down units, and any resulting effects on the demand for coal. On September 13, 2019 the D.C. Circuit upheld most of the 2016 CSAPR Update Rule, but vacated a provision that allowed upwind states to continue to contribute significantly to downwind states' noncompliance beyond downwind states' statutory compliance deadlines. To the extent that upwind states are forced to revisit their State Implementation Plans to comply with the ruling, this may affect their demand for coal.

- *Mercury.* In February 2008, the D.C. Circuit vacated the EPA's Clean Air Mercury Rule (CAMR), which was promulgated to reduce mercury emissions from coal-fired power plants and remanded it to the EPA for reconsideration. In response, the EPA announced an Electric Generating Unit (EGU) Mercury and Air Toxics Standard (MATS) on December 16, 2011. The MATS was finalized April 16, 2012, and required compliance for most plants by 2015. In addition, before the court decision vacating the CAMR, some states had either adopted the CAMR or adopted state-specific rules to regulate mercury emissions from power plants that are more stringent than the CAMR. MATS compliance, coupled with state mercury and air toxics laws and other factors have required many plants to install costly controls, re-fire with natural gas or to retire, which may adversely affect the demand for coal.

MATS was challenged in the D.C. Circuit, which upheld the rule on April 15, 2013. Petitioners successfully obtained Supreme Court review, and on June 29, 2015, the Supreme Court issued a 5-4 decision striking down the final rule based on the EPA's failure to consider economic costs in determining whether to regulate. The case was remanded to the D.C. Circuit. The EPA began reconsideration of costs, and petitioners unsuccessfully sought a stay of the rule in the Supreme Court in February 2016. In April 2016, the EPA issued a MATS 2016 Supplemental Finding, a final finding that it is appropriate and necessary to set standards for emissions of air toxics from coal- and oil-fired power plants. That finding is now being challenged in court. Therefore, the rule remains in effect until further order of the D.C. Circuit. The D.C. Circuit denied petitioners' motion to temporarily halt the pending litigation to allow the new administration to evaluate whether it can resolve any issues raised in the case. However, in April 2017, the EPA requested a delay in the D.C. Circuit proceedings while the EPA is reviewing the determinations of the prior administration. On December 27, 2018, the EPA released a Supplemental Cost Finding, concluding that direct regulation of air toxics from coal- and oil-fired power plants is not cost-justified, but proposing to leave the emissions standards and other requirements of the 2012 rule in place.

- *Regional Haze.* The EPA has initiated a regional haze program designed to protect and improve visibility at and around national parks, national wilderness areas and international parks, particularly those located in the southwest and southeast United States. Under the Regional Haze Rule, affected states were required to submit regional haze SIPs by December 17, 2007, that, among other things, were to identify facilities that would have to reduce emissions and comply with stricter emission limitations. The vast majority of states failed to submit their plans by December 17, 2007, and the EPA issued a Finding of Failure to Submit plans on January 15, 2009 (74 Fed. Reg. 2392). The EPA had taken no enforcement action against states to finalize implementation plans and was slowly dealing with the state Regional Haze SIPs that were submitted, which resulted in the National Parks Conservation Association commencing litigation in the D.C. Circuit on August 3, 2012, against the EPA for failure to enforce the rule (*National Parks Conservation Act v. EPA, D.C. Cir.*). Industry groups, including the Utility Air Regulatory Group intervened. The EPA ultimately agreed in a consent decree with environmental groups to impose regional haze federal implementation plans (FIPs) or to take action on regional haze SIPs before the agency for 42 states and the District of Columbia. The EPA has completed those actions for all but several states in its first planning period (2008-2010). In many eastern states, the EPA has allowed states to meet “best available retrofit control technology” (BART) requirements for power plants through compliance with CAIR and CSAPR (a policy under pending litigation). Other states have had BART imposed on a case-by-case basis, and where the EPA found SIPs deficient, it disapproved them and issued FIPs. It is possible that the EPA may continue to increase the stringency of control requirements imposed under the Regional Haze Program as it moves toward the next planning period, which could be delayed until 2021.

This program may result in additional emissions restrictions from new coal-fueled power plants whose operations may impair visibility at and around federally protected areas. This program may also require certain existing coal-fueled power plants to install additional control measures designed to limit haze-causing emissions, such as sulfur dioxide, nitrogen oxides, volatile organic chemicals and particulate matter. These limitations could affect the future market for coal. However, on January 18, 2018, the EPA announced that it was revisiting the 2017 Regional Haze Rule revisions, and announced an intent to commence a new rulemaking. On September 11, 2018, the EPA released a “Regional Haze Reform Roadmap” and reaffirmed its commitment to additional rulemaking. On August 20, 2019, EPA issued guidance to states in preparing SIPs to meet the 2021 deadline, highlighting state flexibility. Additional regional haze litigation is likely.

- *New Source Review.* A number of pending regulatory changes and court actions are affecting the scope of the EPA’s new source review program, which under certain circumstances requires existing coal-fueled power plants to install the more stringent air emissions control equipment required of new plants. The new source review program is continually revised and such revisions may impact demand for coal nationally.

Climate Change. Carbon dioxide, which is defined to be a greenhouse gas, is a by-product of burning coal. Global climate issues, including with respect to greenhouse gases such as carbon dioxide and the relationship that greenhouse gases may have with perceived global warming, continue to attract significant public and scientific attention. For example, the Fourth and Fifth Assessment Reports of the Intergovernmental Panel on Climate Change have expressed concern about the impacts of human activity, especially from fossil fuel combustion, on global climate issues. As a result of the public and scientific attention, several governmental bodies increasingly are focusing on global climate issues and, more specifically, levels of emissions of carbon dioxide from coal combustion by power plants. Future regulation of greenhouse gas emissions in the United States could occur pursuant to future U.S. treaty obligations, statutory or regulatory changes and the federal, state or local level or otherwise.

Demand for coal also may be impacted by international efforts to reduce emissions of greenhouse gases. For example, in December 2015, representatives of 195 nations reached a climate accord that will, for the first time, commit participating countries to lowering greenhouse gas emissions. Further, the United States and a number of international development banks, such as the World Bank, the European Investment Bank and European Bank for Reconstruction and Development, have announced that they will no longer provide financing for the development of new coal-fueled power plants, subject to very narrow exceptions.

Although the U.S. Congress has considered various legislative proposals that would address global climate issues and greenhouse gas emissions, no such federal proposals have been adopted into law to date. In the absence of U.S. federal legislation on these topics, the U.S. Environmental Protection Agency (the “EPA”) has been the primary source of federal oversight, although future regulation of greenhouse gases and global climate matters in the United States could occur pursuant to future U.S. treaty obligations, statutory or regulatory changes under the Clean Air Act, federal adoption of a greenhouse gas regulatory scheme or otherwise.

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In 2007, the U.S. Supreme Court held that the EPA has authority under the Clean Air Act to regulate carbon dioxide emissions from automobiles and can decide against regulation only if the EPA determines that carbon dioxide does not significantly contribute to climate change and does not endanger public health or the environment. Although the Supreme Court's holding did not expressly involve the EPA's authority to regulate greenhouse gas emissions from stationary sources, such as coal-fueled power plants, the EPA since has determined on its own that it has the authority to regulate greenhouse gas emissions from power plants, and the EPA has published a formal determination that six greenhouse gases, including carbon dioxide, endanger both the public health and welfare of current and future generations.

In 2014, the EPA proposed a sweeping rule, known as the "Clean Power Plan," to cut carbon emissions from existing electric generating units, including coal-fired power plants. A final version of the Clean Power Plan was adopted in August 2015. The final version of the Clean Power Plan aims to reduce carbon dioxide emissions from electrical power generation by 32% by 2030 relative to 2005 levels through reduction of emissions from coal-burning power plants and increased use of renewable energy and energy conservation methods. Under the Clean Power Plan, states are free to reduce emissions by various means and must submit emissions reduction plans to the EPA by September 2016 or, with an approved extension, September 2018. If a state has not submitted a plan by then, the Clean Power Plan authorizes the EPA to impose its own plan on that state. In order to determine a state's goal, the EPA has divided the country into three regions based on connected regional electricity grids. States are to implement their plans by focusing on (i) increasing the generation efficiency of existing fossil fuel plants, (ii) substituting lower carbon dioxide emitting natural gas generation for coal-powered generation and (iii) substituting generation from new zero carbon dioxide emitting renewable sources for fossil fuel powered generation. States are permitted to use regionally available low carbon generation sources when substituting for in-state coal generation and coordinate with other states to develop multi-state plans. Following the adoption, 27 states sued the EPA, claiming that the EPA overstepped its legal authority in adopting the Clean Power Plan. In February 2016, the U.S. Supreme Court ordered the EPA to halt enforcement of the Clean Power Plan until a lower court rules on the lawsuit and until the Supreme Court determines whether or not to hear the case. In October 2017, the EPA commenced rulemaking proceedings to rescind the Clean Power Plan, and in December 2017, the EPA published an Advanced Notice of Proposed Rulemaking announcing an intent to commence a new rulemaking to replace the Clean Power Plan with an alternative framework for regulating carbon dioxide.

In a parallel litigation, 25 states and other parties filed lawsuits challenging the EPA's final New Source Performance Standards rules, which we refer to as NSPS, for carbon dioxide emissions from new, modified, and reconstructed power plants under the Clean Air Act. One of the primary issues in these lawsuits is the EPA's establishment of standards of performance based on technologies including carbon capture and sequestration, which we refer to as CCS. New coal plants cannot meet the new standards unless they implement CCS, which reportedly is not yet commercially available or technically feasible. In conjunction with the EPA's proposal to rescind the Clean Power Plan, the EPA also requested a stay of the NSPS litigation. The D.C. Circuit granted the request, and the litigation has been held in abeyance since then.

On June 19, 2019, the EPA finalized the Affordable Clean Energy (ACE) rule as a replacement for the Clean Power Plan. The ACE rule establishes emission guidelines for states to develop plans to address greenhouse gas emissions from existing coal-fired power plants. The ACE rule has several components: a determination of the best system of emission reduction for greenhouse gas emissions from coal-fired power plants, a list of "candidate technologies" states can use when developing their plans, a new preliminary applicability test for determining whether a physical or operational change made to a power plant may be a "major modification" triggering New Source Review, and new implementing regulations for emission guidelines under Clean Air Act section 111(d). If sustained, the ACE rule would reduce the regulatory burden from the Clean Power Plan and NSPS for new, modified and reconstructed power plant. This could increase demand for coal, but the ACE rule is the subject of litigation and its ultimate effect on demand is unknown.

In December 2015, 195 nations (including United States) signed the Paris Agreement, a long-term, international framework convention designed to address climate change over the next several decades. This agreement entered into force in November 2016 after more than 70 countries, including the United States, ratified or otherwise agreed to be bound by the agreement. The United States was among the countries that submitted its declaration of intended greenhouse gas reductions in early 2015, stating its intention to reduce U.S. greenhouse gas emissions by 26-28% by 2025 compared to 2005 levels. Whether and to what extent the United States meets its stated intention likely depends on several factors, including whether the ACE rule is implemented. In June 2017, The Trump Administration announced the United States intends to withdraw from the Paris Agreement. In November 2019, The Trump administration formally initiated the withdrawal process, which would provide for an exit date of November 2020. Whether the United States will adhere to the Paris Agreement's exit process is, and the terms on which the United States may reenter the Paris agreement or a separately negotiated agreement are, uncertain at this time. Regardless of the extent to which the United States ultimately participates in these reductions, over the long term, international participation in the Paris Agreement framework could reduce overall demand for coal which could have a material adverse impact on us. These effects could be more adverse to the extent the United States ultimately participates in these reductions (whether via the Paris Agreement or otherwise).

Several U.S. states have enacted legislation establishing greenhouse gas emissions reduction goals or requirements or joined regional greenhouse gas reduction initiatives. Some states also have enacted legislation or regulations requiring electricity suppliers to use renewable energy sources to generate a certain percentage of power or that provide financial incentives to electricity suppliers for using renewable energy sources. For example, nine northeastern states currently are members of the Regional Greenhouse Gas Initiative, which is a mandatory cap-and-trade program established in 2005 to cap regional carbon dioxide emissions from power plants. Six Midwestern states and one Canadian province entered into the Midwestern Regional Greenhouse Gas Reduction Accord to establish voluntary regional greenhouse gas reduction targets and develop a voluntary multi-sector cap-and-trade system to help meet the targets, although it has been reported that the members no longer are actively pursuing the group's activities. Lastly, California and Quebec remain members of the Western Climate Initiative, which was formed in 2008 to establish a voluntary regional greenhouse gas reduction goal and develop market-based strategies to achieve emissions reductions, and those two jurisdictions have adopted their own greenhouse gas cap-and-trade regulations. Several states and provinces that originally were members of these organizations, as well as some current members, have joined the new North America 2050 initiative, which seeks to reduce greenhouse gas emissions and create economic opportunities aside from cap-and-trade programs. Any particular state, or any of these or other regional group, may have or adopt in the future rules or policies that cause some users of coal to switch from coal to a lower carbon fuel. There can be no assurance at this time that a carbon dioxide cap-and-trade-program, a carbon tax or other regulatory or policy regime, if implemented by any one or more states or regions in which our customers operate or at the federal level, will not affect the future market for coal in those states or regions and lower the overall demand for coal.

Clean Water Act. The federal Clean Water Act (sometimes shortened to CWA) and corresponding state and local laws and regulations affect coal mining operations by restricting the discharge of pollutants, including dredged and fill materials, into waters of the United States. The Clean Water Act provisions and associated state and federal regulations are complex and subject to amendments, legal challenges and changes in implementation. Recent court decisions and regulatory actions have created uncertainty over Clean Water Act jurisdiction and permitting requirements that could variously increase or decrease the cost and time we expend on Clean Water Act compliance.

The scope of waters that fall within the Clean Water Act's jurisdiction is expansive and may include features not commonly understood to be a stream or wetland. In June 2015, the EPA issued a new rule defining the scope of "waters of the United States" (WOTUS) that are subject to regulation. The 2015 WOTUS rule was challenged by a number of states and private parties in various federal courts. In December 2017, the EPA and the Army Corps of Engineers (the "Corps") proposed a rule to repeal the 2015 WOTUS rule. The repeal took effect on December 23, 2019. In December 2018, the EPA and Corps also formally proposed a rule revising the definition of "Waters of the United States." On January 23, 2020, EPA and the Corps announced the finalization of this rule. The new definition substantially reduces the scope of waters that fall within the Clean Water Act's jurisdiction, in part by excluding ephemeral streams, which potentially qualified as "Waters of the United States" under the 2015 WOTUS rule. The repeal of the 2015 WOTUS rule and implementation of the pre-2015 rule have also been challenged in federal courts, and the final re-definition rule will likely be challenged as well.

Clean Water Act requirements that may directly or indirectly affect our operations include the following:

- *Water Discharge.* Section 402 of the Clean Water Act creates a process for establishing effluent limitations for discharges to streams that are protective of water quality standards through the National Pollutant Discharge Elimination System, which we refer to as the NPDES, or an equally stringent program delegated to a state regulatory agency. Regular monitoring, reporting and compliance with performance standards are preconditions for the issuance and renewal of NPDES permits that govern discharges into waters of the United States, especially on selenium, sulfate and specific conductance. Discharges that exceed the limits specified under NPDES permits can lead to the imposition of penalties, and persistent non-compliance could lead to significant penalties, compliance costs and delays in coal production. In addition, the imposition of future restrictions on the discharge of certain pollutants into waters of the United States could increase the difficulty of obtaining and complying with NPDES permits, which could impose additional time and cost burdens on our operations. You should see Item 3, "Legal Proceedings," for more information about certain regulatory actions pertaining to our operations. Discharges of pollutants into waters that states have designated as impaired (i.e., as not meeting present water quality standards) are subject to Total Maximum Daily Load, which we refer to as TMDL, regulations. The TMDL regulations establish a process for calculating the maximum amount of a pollutant that a water body can receive while maintaining state water quality standards. Pollutant loads are allocated among the various sources that discharge pollutants into that water body. Mine operations that discharge into water bodies designated as impaired will be required to meet new TMDL allocations. The adoption of more stringent TMDL-related allocations for our coal mines could require more costly water treatment and could adversely affect our coal production.

The Clean Water Act also requires states to develop anti-degradation policies to ensure that non-impaired water bodies continue to meet water quality standards. The issuance and renewal of permits for the discharge of pollutants to waters that have been designated as “high quality” are subject to anti-degradation review that may increase the costs, time and difficulty associated with obtaining and complying with NPDES permits.

Under the Clean Water Act, citizens may sue to enforce NPDES permit requirements. Beginning in 2012, multiple citizens’ suits were filed in West Virginia against mine operators for alleged violations of NPDES permit conditions requiring compliance with West Virginia’s water quality standards. Some of the lawsuits alleged violations of water quality standards for selenium, whereas others alleged that discharges of conductivity and sulfate were causing violations of West Virginia water quality standards that prohibit adverse effects to aquatic life. The suits sought penalties as well as injunctive relief that would limit future discharges of selenium, conductivity or sulfate through the implementation of expensive treatment technologies. The federal district court for the Southern District of West Virginia has ruled in favor of the citizen suit groups in multiple suits alleging violations of the water quality standard for selenium and in two suits alleging violations of water quality standards due to discharge of conductivity (one of which was upheld on appeal by the United States Court of Appeals for the Fourth Circuit in January 2017). In 2015, the West Virginia Legislature amended the West Virginia Water Pollution Control Act and associated rules to expressly prohibit the direct enforcement of water quality standards against permit holders. On March 27, 2019, the EPA approved these changes.

Citizens may also sue under the Clean Water Act when pollutants are being discharged without NPDES permits. Beginning in 2013, multiple citizens’ suits were filed in West Virginia against landowners alleging ongoing discharges of pollutants, including selenium and conductivity, from valley fills at reclaimed mining sites. In each case, the reclamation bond had been released and the mining and NPDES permits had been terminated following the completion of reclamation. While it is difficult to predict the outcome of such suits, any determination that discharges from valley fills require NPDES permits could result in increased compliance costs following the completion of mining at our operations.

- *Dredge and Fill Permits.* Many mining activities, such as the development of refuse impoundments, fresh water impoundments, refuse fills, valley fills, and other similar structures, may result in impacts to waters of the United States, including wetlands, streams and, in certain instances, man-made conveyances that have a hydrologic connection to such streams or wetlands. Under the Clean Water Act, coal companies are required to obtain a Section 404 permit from the Corps, prior to conducting such mining activities. The Corps is authorized to issue general “nationwide” permits for specific categories of activities that are similar in nature and that are determined to have minimal adverse effects on the environment. Permits issued pursuant to Nationwide Permit 21, which we refer to as NWP 21, generally authorize the disposal of dredged and fill material from surface coal mining activities into waters of the United States, subject to certain restrictions. Since March 2007, permits under NWP 21 were reissued for a five-year period with new provisions intended to strengthen environmental protections. There must be appropriate mitigation in accordance with nationwide general permit conditions rather than less restricted state-required mitigation requirements, and permit holders must receive explicit authorization from the Corps before proceeding with proposed mining activities. Notwithstanding the additional environmental protections designed in the NWP 21, on July 15, 2009, the Corps proposed to immediately suspend the use of NWP 21 in six Appalachian states, including West Virginia, Kentucky and Virginia where the Company conducts operations. On June 17, 2010, the Corps announced that it had suspended the use of NWP 21 in the same six states although it remained for use elsewhere. In February 2012, the Corps proposed to reissue NWP 21, albeit with significant restrictions on the acreage and length of stream channel that can be filled in the course of mining operations. The Corps’ decisions regarding the use of NWP 21 does not prevent the Company’s operations from seeking an individual permit under § 404 of the CWA, nor does it restrict an operation from utilizing another version of the nationwide permit, NWP 50, authorized for small underground coal mines that must construct fills as part of their mining operations.

Resource Conservation and Recovery Act. The Resource Conservation and Recovery Act, which we refer to as RCRA, may affect coal mining operations through its requirements for the management, handling, transportation and disposal of hazardous wastes. Many mining wastes are excluded from the regulatory definition of hazardous wastes, and coal mining operations covered by SMCRA permits are by statute exempted from RCRA permitting. RCRA also allows the EPA to require corrective action at sites where there is a release of hazardous substances. In addition, each state has its own laws regarding the proper management and disposal of waste material. In June 2010, the EPA released a proposed rule to regulate the disposal of certain coal combustion residuals, which we refer to as CCR. The proposed rule set forth two very different options for regulating CCR under RCRA. The first option called for regulation of CCR as a hazardous waste under Subtitle C, which creates a comprehensive program of federally enforceable requirements for waste management and disposal. The second option

utilized Subtitle D, which would give the EPA authority to set performance standards for waste management facilities and would be enforced primarily through citizen suits. The proposal left intact the so-called Bevill exemption for beneficial uses of CCR. The EPA finalized the CCR rule on December 19, 2014, setting nationwide solid nonhazardous waste standards for CCR disposal. On April 17, 2015, the EPA finalized regulations under the solid waste provisions (Subtitle D) of RCRA and not the hazardous waste provisions (Subtitle C) which became effective on October 19, 2015. The final rule establishes national minimum criteria for existing and new CCR landfills, surface impoundments and lateral expansions, and also establishes structural integrity criteria for new and existing surface impoundments (including establishing requirements for owners and operators to conduct periodic structural integrity-related assessments). The criteria include location restrictions, design and operating criteria, groundwater monitoring and corrective action, closure requirements and post-closure care and recordkeeping, notification and internet posting requirements. While classification of CCR as a hazardous waste would have led to more stringent restrictions and higher costs, this regulation may still increase our customers' operating costs and potentially reduce their ability to purchase coal. In addition, contamination caused by the past disposal of CCR, including coal ash, could lead to citizen suit enforcement against our customers under RCRA or other federal or state laws and potentially reduce the demand for coal. In another development regarding coal combustion wastes, the EPA conducted an assessment of impoundments and other units that manage residuals from coal combustion and that contain free liquids following a massive coal ash spill in Tennessee in 2008, the EPA contractors conducted site assessments at many impoundments and is requiring appropriate remedial action at any facility that is found to have a unit posing a risk for potential failure. The EPA is posting utility responses to the assessment on its web site as the responses are received. After industry groups filed a suit in the D.C. Circuit, challenging the 2015 rule, former EPA Administrator Pruitt issued a letter on September 13, 2017 indicating the agency's decision to reconsider the rule in response to industry petitions. On August 22, 2018, the D.C. Circuit remanded the rule at EPA's request. On August 18, 2019, EPA issued a proposed revised rule that would modify standards regarding beneficial use and assessing environmental harm. Future regulations resulting from the EPA coal combustion refuse assessments may impact the ability of the Company's utility customers to continue to use coal in their power plants.

Comprehensive Environmental Response, Compensation and Liability Act. The Comprehensive Environmental Response, Compensation and Liability Act, which we refer to as CERCLA, and similar state laws affect coal mining operations by, among other things, imposing cleanup requirements for threatened or actual releases of hazardous substances that may endanger public health or welfare or the environment. Under CERCLA and similar state laws, joint and several liability may be imposed on waste generators, site owners and lessees and others regardless of fault or the legality of the original disposal activity. Although the EPA excludes most wastes generated by coal mining and processing operations from the hazardous waste laws, such wastes can, in certain circumstances, constitute hazardous substances for the purposes of CERCLA. In addition, the disposal, release or spilling of some products used by coal companies in operations, such as chemicals, could trigger the liability provisions of the statute. Thus, coal mines that we currently own or have previously owned or operated, and sites to which we sent waste materials, may be subject to liability under CERCLA and similar state laws. In particular, we may be liable under CERCLA or similar state laws for the cleanup of hazardous substance contamination at sites where we own surface rights.

Endangered Species. The Endangered Species Act and other related federal and state statutes protect species threatened or endangered with possible extinction. Protection of threatened, endangered and other special status species may have the effect of prohibiting or delaying us from obtaining mining permits and may include restrictions on timber harvesting, road building and other mining or agricultural activities in areas containing the affected species. A number of species indigenous to our properties are protected under the Endangered Species Act or other related laws or regulations. Based on the species that have been identified to date and the current application of applicable laws and regulations, however, we do not believe there are any species protected under the Endangered Species Act that would materially and adversely affect our ability to mine coal from our properties in accordance with current mining plans. We have been able to continue our operations within the existing spatial, temporal and other restrictions associated with special status species. On August 12, 2019, the United States Fish & Wildlife Service announced a new Endangered Species Act implementing regulations that would relax requirements and add flexibility in certain respects, and consequently do not alter our assessment of our ability to comply.

Should more stringent protective measures be developed and applied to threatened, endangered or other special status species or to their critical habitat, then we could experience increased operating costs or difficulty in obtaining future mining permits.

Use of Explosives. Our surface mining operations are subject to numerous regulations relating to blasting activities. Pursuant to these regulations, we incur costs to design and implement blast schedules and to conduct pre-blast surveys and blast monitoring. In addition, the storage of explosives is subject to strict regulatory requirements established by four different federal regulatory agencies. For example, pursuant to a rule issued by the Department of Homeland Security in 2007, facilities in possession of chemicals of interest, including ammonium nitrate at certain threshold levels, must complete a screening review in order to help determine whether there is a high level of security risk such that a security vulnerability assessment and site security plan will be required.

Other Environmental Laws. We are required to comply with numerous other federal, state and local environmental laws in addition to those previously discussed. These additional laws include, for example, the Safe Drinking Water Act, the Toxic Substance Control Act and the Emergency Planning and Community Right-to-Know Act.

Employees

At December 31, 2019, we employed approximately 3,700 full- and part-time employees. We believe that our relations with employees are good.

Executive Officers of the Registrant

The following is a list of our executive officers, their ages as of February 11, 2020 and their positions and offices during the last five years:

Name	Age	Position
Paul T. Demzik	58	Mr. Demzik has served as our Senior Vice President and Chief Commercial Officers since January 2019. From June 2013 to January 2019, Mr. Demzik served as Head of Thermal Coal Trading with Anglo American Marketing Limited in London and served as President of Peabody COALTRADE, LLC from July 2005 to July 2012.
John T. Drexler	50	Mr. Drexler has served as our Senior Vice President and Chief Financial Officer since 2008. Mr. Drexler served as our Vice President-Finance and Accounting from 2006 to 2008. From 2005 to 2006, Mr. Drexler served as our Director of Planning and Forecasting. Prior to 2005, Mr. Drexler held several other positions within our finance and accounting department.
John W. Eaves	62	Mr. Eaves has served as our Chief Executive Officer since 2012. Mr. Eaves served as our Chairman of the Board from 2015 to 2016 and our President and Chief Operating Officer from 2006 to 2012. From 2002 to 2006, Mr. Eaves served as our Executive Vice President and Chief Operating Officer. Mr. Eaves currently serves on the boards of the National Association of Manufacturers, the National Mining Association and CF Industries Holdings, Inc. Mr. Eaves was previously a director of Advanced Emissions Solutions, Inc. and former chairman of the National Coal Council.
Robert G. Jones	63	Mr. Jones has served as our Senior Vice President-Law, General Counsel and Secretary since 2008. Mr. Jones served as Vice President-Law, General Counsel and Secretary from 2000 to 2008.
Paul A. Lang	59	Mr. Lang has served as our President and Chief Operating Officer since April 2015. He has served as our Executive Vice President and Chief Operating Officer since April 2012 and as our Executive Vice President-Operations from August 2011 to April 2012. Mr. Lang served as Senior Vice President-Operations from 2006 through August 2011, as President of Western Operations from 2005 through 2006 and President and General Manager of Thunder Basin Coal Company from 1998 to 2005. Mr. Lang is a director of Knight Hawk Holdings, LLC. Mr. Lang also served on the development board of the Mining Department of the Missouri University of Science & Technology, and is the former chairman of the University of Wyoming's School of Energy Resources Council.
Deck S. Slone	56	Mr. Slone has served as our Senior Vice President-Strategy and Public Policy since June 2012. Mr. Slone served as our Vice President-Government, Investor and Public Affairs from 2008 to June 2012. Mr. Slone served as our Vice President-Investor Relations and Public Affairs from 2001 to 2008. In the past Mr. Slone served as the chairman of the National Coal Council, the immediate past co-chair of the Carbon Utilization Research Council, and the Chair of the National Mining Association's Energy Policy Task Force.
John A. Ziegler, Jr.	53	Mr. Ziegler has served as our Senior Vice President & Chief Administrative Officer since January 2019. Mr. Ziegler served as our Chief Commercial Officer since March 2014. Mr. Ziegler served as our Vice President-Human Resources from April 2012 to March 2014. From October 2011 to April 2012, Mr. Ziegler served as our Senior Director-Compensation and Benefits. From 2005 to October 2011 Mr. Ziegler served as Vice President-Contract Administration, President of Sales, then finally Senior Vice President, Sales and Marketing and Marketing Administration. Mr. Ziegler joined Arch Coal in 2002 as Director-Internal Audit. Prior to joining Arch Coal, Mr. Ziegler held various finance and accounting positions with bioMerieux and Ernst & Young.

Available Information

We file annual, quarterly and current reports, and amendments to those reports, proxy statements and other information with the Securities and Exchange Commission. You may access and read our filings without charge through the SEC's website, at *sec.gov*.

We also make the documents listed above available without charge through our website, *archcoal.com*, as soon as practicable after we file or furnish them with the SEC. You may also request copies of the documents, at no cost, by telephone at (314) 994-2700 or by mail at Arch Coal, Inc., One CityPlace Drive, Suite 300, St. Louis, Missouri, 63141 Attention: Senior Vice President-Strategy and Public Policy. The information on our website is not part of this Annual Report on Form 10-K.

GLOSSARY OF SELECTED MINING TERMS

Certain terms that we use in this document are specific to the coal mining industry and may be technical in nature. The following is a list of selected mining terms and the definitions we attribute to them.

Assigned reserves	Recoverable reserves designated for mining by a specific operation.
Bituminous coal	Coal used primarily to generate electricity and to make coke for the steel industry with a heat value ranging between 10,500 and 15,500 Btus per pound.
Btu	A measure of the energy required to raise the temperature of one pound of water one degree of Fahrenheit.
Coking coal	Coal used to produce coke, the primary source of carbon used in steelmaking.
Compliance coal	Coal which, when burned, emits 1.2 pounds or less of sulfur dioxide per million Btus, requiring no blending or other sulfur dioxide reduction technologies in order to comply with the requirements of the Clean Air Act.
Continuous miner	A machine used in underground mining to cut coal from the seam and load it onto conveyors or into shuttle cars in a continuous operation.
Dragline	A large machine used in surface mining to remove the overburden, or layers of earth and rock, covering a coal seam. The dragline has a large bucket, suspended by cables from the end of a long boom, which is able to scoop up large amounts of overburden as it is dragged across the excavation area and redeposit the overburden in another area.
Hard coal	Coal of gross calorific value greater than 5700 kcal/kg on an ashfree but moist basis and further disaggregated into anthracite, coking coal and other bituminous coal.
Lignite Coal	Coal with the lowest carbon content and a heat value ranging between 4,000 and 8,300 Btus per pound.
Longwall mining	One of two major underground coal mining methods, generally employing two rotating drums pulled mechanically back and forth across a long face of coal.
Low-sulfur coal	Coal which, when burned, emits 1.6 pounds or less of sulfur dioxide per million Btus.
Metallurgical coal	Coal used in steel production either as coking coal or pulverized coal injection (PCI).
Preparation plant	A facility used for crushing, sizing and washing coal to remove impurities and to prepare it for use by a particular customer.
Probable reserves	Reserves for which quantity and grade and/or quality are computed from information similar to that used for proven reserves, but the sites for inspection, sampling and measurement are farther apart or are otherwise less adequately spaced.
Proven reserves	Reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings or drill holes; grade and/or quality are computed from the results of detailed sampling and (b) the sites for inspection, sampling and measurement are spaced so closely and the geologic character is so well defined that size, shape, depth and mineral content of reserves are well established.
Pulverized coal injection coal (PCI)	Coal that is introduced directly into the blast furnace as a source of energy and carbon in the steelmaking process.
Reclamation	The restoration of land and environmental values to a mining site after the coal is extracted. The process commonly includes "recontouring" or shaping the land to its approximate original appearance, restoring topsoil and planting native grass and ground covers.
Recoverable reserves	The amount of proven and probable reserves that can actually be recovered from the reserve base taking into account all mining and preparation losses involved in producing a saleable product using existing methods and under current law.
Reserves	That part of a mineral deposit which could be economically and legally extracted or produced at the time of the reserve determination.
Subbituminous coal	Coal used primarily to generate electricity with a heat value ranging between 8,300 and 13,000 Btus per pound.
Room-and-pillar mining	One of two major underground coal mining methods, utilizing continuous miners creating a network of "rooms" within a coal seam, leaving behind "pillars" of coal used to support the roof of a mine.
Unassigned reserves	Recoverable reserves that have not yet been designated for mining by a specific operation.

ITEM 1A. RISK FACTORS.

Our business involves certain risks and uncertainties. In addition to the risks and uncertainties described below, we may face other risks and uncertainties, some of which may be unknown to us and some of which we may deem immaterial. The following review of important risk factors should not be construed as exhaustive and should be read in conjunction with other cautionary statements that are included herein or elsewhere. If one or more of these risks or uncertainties occur, our business, financial condition or results of operations may be materially and adversely affected.

Risks Related to Our Operations

Coal prices are subject to change based on a number of factors and can be volatile. If there is a decline in prices, it could materially and adversely affect our profitability and the value of our coal reserves.

Our profitability and the value of our coal reserves depend upon the prices we receive for our coal. The contract prices we may receive in the future for coal depend upon factors beyond our control, including the following:

- the domestic and foreign supply of and demand for coal;
- the domestic and foreign demand for electricity and steel;
- competition for production of steel from electric arc furnaces, which may limit demand for coking coal;
- the quantity and quality of coal available from competitors;
- competition for production of electricity from non-coal sources, including the price and availability of alternative fuels;
- domestic and foreign air emission standards for coal-fueled power plants and the ability of coal-fueled power plants to meet these standards;
- adverse weather, climatic or other natural conditions, including unseasonable weather patterns;
- domestic and foreign economic conditions, including economic slowdowns and the exchange rates of U.S. dollars for foreign currencies;
- domestic and foreign legislative, regulatory and judicial developments, environmental regulatory changes or changes in energy policy and energy conservation measures that would adversely affect the coal industry, such as legislation limiting carbon emissions or providing for increased funding and incentives for alternative energy sources;
- the imposition of tariffs, quotas, trade barriers and other trade protection measures;
- the proximity to, capacity of and cost of transportation and port facilities; and
- technological advancements, including those related to alternative energy sources, those intended to convert coal-to-liquids or gas and those aimed at capturing, using and storing carbon dioxide.

Declines in the prices we receive for our future coal sales contracts, could materially and adversely affect us by decreasing our profitability, cash flows, liquidity and the value of our coal reserves.

Unfavorable economic and market conditions have adversely affected and may continue to affect our revenues and profitability.

Our profitability depends, in large part, on conditions in the markets that we serve, which fluctuate in response to various factors beyond our control. The prices at which we sell our coal are largely dependent on prevailing market prices. We have experienced significant price volatility at times during the past several years as the demand for, and price of, coal has been subject to pressure for a variety of reasons, including reductions in domestic and international demand for metallurgical and thermal coal.

Global economic downturns have also had and in the future could have a negative impact on us. These conditions have, in the past, led to extreme volatility of prices, severely limited liquidity and credit availability, and resulted in declining valuations of assets. If there are downturns in economic conditions, our and our customers' businesses, financial condition and results of operations could be adversely affected. Furthermore, because we typically seek to enter into long-term arrangements for the sale of a substantial portion of our coal, the average sales price we receive for our coal may lag behind any general economic recovery. There can be no assurance that our cost control actions and capital discipline, or any other actions that we may take, will be sufficient to offset any adverse effect these conditions may have on our business, financial condition or results of operations.

The effects of foreign and domestic trade policies, actions or disputes on the level of trade among the countries and regions in which we operate could negatively impact our business, financial condition or results of operations.

Tariffs imposed by the current presidential administration could potentially lead to trade disputes with other foreign governments and adversely impact global economic conditions. For instance, in March 2018, the current administration imposed a 25% tariff on all imported steel into the United States which could negatively impact the global demand for steel, and in turn, the demand for metallurgical coal. In addition, continued or worsening U.S.-China trade tensions may result in additional tariffs or other protectionist measures that materially, adversely affect foreign demand for our coal.

In addition, potential changes to international trade agreements, trade policies, trade concessions or other political and economic arrangements may benefit coal producers operating in countries other than the United States. We may not be able to compete on the basis of price or other factors with companies that in the future benefit from favorable foreign trade policies or other arrangements.

Competition could put downward pressure on coal prices and, as a result, materially and adversely affect our revenues and profitability.

We compete with numerous other domestic and foreign coal producers for domestic and international sales. Overcapacity and increased production within the coal industry, both domestically and internationally, and decelerating steel demand in Asia have at times, and could in the future, materially reduce coal prices and therefore materially reduce our revenues and profitability. In addition, our ability to ship our coal to international customers depends on port capacity, which is limited. Increased competition within the coal industry for international sales could result in us not being able to obtain throughput capacity at port facilities, or the rates for such throughput capacity increasing to a point where it is not economically feasible to export our coal.

The domestic coal industry has experienced consolidation in recent years, including consolidation among some of our major competitors. In addition, substantial overcapacity exists in the coal industry and several other large coal companies have also filed, and others may file, bankruptcy proceedings which could enable them to lower their production costs and thereby reduce the price for coal. Consolidation in the coal industry or current or future bankruptcy proceedings of our coal competitors could adversely affect our competitive position.

In addition to competing with other coal producers, we compete generally with producers of other fuels, such as natural gas. Natural gas pricing has declined significantly in recent years. The decline in the price of natural gas has caused demand for coal to decrease and adversely affected the price of our coal. Sustained periods of low natural gas prices have also contributed to utilities phasing out or closing existing coal-fired power plants and continued low prices could reduce or eliminate construction of any new coal-fired power plants. This trend has, and could continue to have, a material adverse effect on demand and prices for our coal. Moreover, the construction of new pipelines and other natural gas distribution channels may increase competition within regional markets and thereby decrease the demand for and price of our coal.

Furthermore, several states have enacted legislative mandates requiring electricity suppliers to use renewable energy sources to generate a certain percentage of power.

Any decrease in the coal consumption of electric power generators could result in less demand and lower prices for coal, which could materially and adversely affect our revenues and results of operations.

Thermal coal accounted for 92% of our coal sales by volume during 2019. The majority of these sales were to electric power generators. The amount of coal consumed for electric power generation is affected primarily by the overall demand for electricity, the availability, quality and price of competing fuels (particularly natural gas) for power generation and governmental regulations which may dictate an alternate source of fuel regardless of economics. Overall economic activity and the associated demand for power by industrial users can have significant effects on overall electricity demand and can be impacted by a number of factors. An economic slowdown can significantly slow the growth of electricity demand and could result in reduced demand for coal. For example, declines in the rate of international economic growth in countries such as China, India or other developing countries could further negatively impact the demand for U.S. coal and result in a continuing oversupply of coal in the marketplace. Weather patterns can also greatly affect electricity demand. Extreme temperatures, both hot and cold, cause increased power usage and, therefore, increase generating requirements from all sources. Mild temperatures, on the other hand, result in lower electrical demand, which allows generators to choose the source of power generation that is most cost efficient.

Gas-fueled generation has the potential to displace coal-fueled generation, particularly from older, less efficient coal-powered generators and this has occurred to date. We expect that many of the new power plants constructed in the United States

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to meet increasing demand for electricity generation will be fueled by natural gas because gas-fired plants are cheaper to construct and permits to construct these plants are easier to obtain as natural gas combustion is seen as having a lower environmental impact than coal combustion. In addition, state and federal mandates for increased use of electricity from renewable energy sources also have an impact on the market for our coal. Several states have enacted legislative mandates requiring electricity suppliers to use renewable energy sources to generate a certain percentage of power. There have been numerous proposals to establish a similar uniform national standard, although none of these proposals have been enacted to date. The costs of certain renewable energy sources have become increasingly competitive to coal, and possible advances in technologies and incentives, such as tax credits, to enhance the economics of renewable energy sources could make these sources even more competitive. Any reduction in the amount of coal consumed by electric power generators could reduce the price of coal that we mine and sell, thereby reducing our revenues and materially and adversely affecting our business and results of operations.

Our coal mining operations are subject to operating risks that are beyond our control, which could result in materially increased operating expenses and decreased production levels and could materially and adversely affect our profitability.

We conduct underground and surface mining operations. Certain factors beyond our control, including those listed below, could disrupt our coal mining operations, adversely affect production and shipments and increase our operating costs:

- poor mining conditions resulting from geological, hydrologic or other conditions that may cause instability of highwalls or spoil piles or cause damage to nearby infrastructure or mine personnel;
- a major incident at the mine site that causes all or part of the operations of the mine to cease for some period of time;
- mining, processing and plant equipment failures and unexpected maintenance problems;
- adverse weather and natural disasters, such as heavy rains or snow, flooding and other natural events affecting operations, transportation or customers;
- the unavailability of raw materials, equipment (including heavy mobile equipment) or other critical supplies such as tires, explosives, fuel, lubricants and other consumables of the type, quantity and/or size needed to meet production expectations;
- unexpected or accidental surface subsidence from underground mining;
- accidental mine water discharges, fires, explosions or similar mining accidents;
- delays or closures by third-parties that transport coal shipments; and
- competition and/or conflicts with other natural resource extraction activities and production within our operating areas, such as coalbed methane extraction or oil and gas development.

If any of these conditions or events occurs, particularly at our Black Thunder and Leer mining complexes, which accounted for approximately 84% of the coal volume we sold and 62% of the revenue we generated in 2019, our coal mining operations may be disrupted and we could experience a delay or halt of production or shipments or our operating costs could increase significantly. In addition, if our insurance coverage is limited or excludes certain of these conditions or events, then we may not be able to recover for losses incurred as a result of such conditions or events, some of which may be substantial.

Our inability to acquire additional coal reserves or our inability to develop coal reserves in an economically feasible manner may adversely affect our business.

Our profitability depends substantially on our ability to mine and process, in a cost-effective manner, coal reserves that possess the quality characteristics desired by our customers. As we mine, our coal reserves decline. As a result, our future success depends upon our ability to obtain, through acquisition or redevelopment of owned reserves, coal that is economically recoverable. If we fail to acquire or develop additional coal reserves, our existing reserves will eventually be depleted. We may not be able to obtain replacement reserves when we require them. If available, replacement reserves may not be available at favorable prices, or we may not be capable of mining those reserves at costs that are comparable with our existing coal reserves. In certain locations, leases for oil, natural gas and coalbed methane reserves are located on, or adjacent to, some of our reserves, potentially creating conflicting interests between us and lessees of those interests. Other lessees' rights relating to these mineral interests could prevent, delay or increase the cost of developing our coal reserves. These lessees may also seek damages from us based on claims that our coal mining operations impair their interests.

Our ability to obtain coal reserves in the future could also be limited by the availability of cash we generate from our operations or available financing, restrictions under our existing or future financing arrangements, competition from other coal producers, the lack of suitable acquisition or lease-by-application, ("LBA"), opportunities or the inability to acquire coal properties or LBAs on commercially reasonable terms. Increased opposition from non-governmental organizations and other third parties may also lengthen, delay or adversely impact the acquisition or LBA process. If we are unable to acquire

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replacement reserves, our future production may decrease significantly and our operating results may be negatively affected. In addition, we may not be able to mine future reserves as profitably as we do at our current operations.

In January 2016, the federal government imposed a moratorium on new leases for coal mined from federal lands as part of a review of the government's management of federally-owned coal. In March 2017, the U.S. Secretary of the Interior signed Secretarial Order 3348 lifting that moratorium and halting the Federal Coal Program Programmatic Environmental Impact Statement that was in process at the time. Litigation was filed in the United States District Court for the District of Montana challenging the lifting of the moratorium as a violation of the National Environmental Policy Act ("NEPA"), the Mineral Leasing Act and the Federal Land Policy and Management Act. In April 2019, the court ruled that the Secretarial Order lifting the moratorium was a federal action necessitating an environmental analysis under NEPA. Following that decision, in May 2019, the Department of the Interior issued a draft environmental assessment analyzing the potential effects of lifting the coal moratorium. The ultimate outcome of the litigation and the government's review is uncertain and could have a material and adverse impact on our business in any number of ways including by limiting our ability to mine reserves under ongoing or future applications, by increasing the costs or timeframe associated with obtaining leases under the LBA program, by making it uneconomical for us to participate in the programs or by preventing us from obtaining replacement reserves if the LBA program were terminated.

To maintain and grow our business, we will be required to make substantial capital expenditures which we may be unable to fund.

Our business plan and strategy require substantial capital expenditures. Maintaining mines, expanding mines and related infrastructure and developing new mines are capital intensive. Specifically, the exploration, permitting and development of metallurgical coal reserves, the maintenance of machinery, equipment and facilities and compliance with safety, health and environmental laws and regulations require ongoing capital expenditures. We cannot assure you that we will be able to maintain our production levels or generate sufficient cash flow, or that we will have access to sufficient financing to continue our production, exploration, permitting and development activities at or above our present levels and on our current or projected timelines, and we may be required to defer all or a portion of our capital expenditures. If we do not make sufficient or effective capital expenditures, we will be unable to maintain and grow our business. To fund our capital expenditures, we will be required to use cash from our operations, incur debt or sell additional equity securities. Our ability to obtain financing or our ability to access the capital markets for future equity or debt offerings may be limited by our financial condition at the time of any such financing or offering and the covenants in our existing debt agreements, as well as by general economic conditions, contingencies and uncertainties that are beyond our control. Our results of operations, business and financial condition may be materially adversely affected if we cannot make such capital expenditures.

Inaccuracies in our estimates of our coal reserves could result in decreased profitability from lower than expected revenues or higher than expected costs.

Our future performance depends on, among other things, the accuracy of our estimates of our proven and probable coal reserves. We base our estimates of reserves on engineering, economic and geological data assembled, analyzed and reviewed by internal and third-party engineers and consultants. We update our estimates of the quantity and quality of proven and probable coal reserves annually to reflect the production of coal from the reserves, updated geological models and mining recovery data, the tonnage contained in new lease areas acquired and estimated costs of production and sales prices. There are numerous factors and assumptions inherent in estimating the quantities and qualities of, and costs to mine, coal reserves, including many factors beyond our control, including the following:

- quality of the coal;
- geological and mining conditions, which may not be fully identified by available exploration data and/or may differ from our experiences in areas where we currently mine;
- the percentage of coal ultimately recoverable;
- the assumed effects of regulation, including the issuance of required permits, taxes, including severance and excise taxes, and royalties, and other payments to governmental agencies;
- assumptions concerning the timing for the development of the reserves;
- assumptions concerning physical access to the reserves; and
- assumptions concerning equipment and productivity, future coal prices, operating costs, including for critical supplies such as fuel, tires and explosives, capital expenditures and development and reclamation costs.

As a result, estimates of the quantities and qualities of economically recoverable coal attributable to any particular group of properties, classifications of reserves based on risk of recovery, estimated cost of production and estimates of future

net cash flows expected from these properties as prepared by different engineers, or by the same engineers at different times, may vary materially due to changes in the above factors and assumptions. Actual production recovered from identified reserve areas and properties, and revenues and expenditures associated with our mining operations, may vary materially from estimates. Any inaccuracy in our estimates related to our reserves could result in decreased profitability from lower than expected revenues and/or higher than expected costs.

Failure to obtain or renew surety bonds on acceptable terms could affect our ability to secure reclamation and coal lease obligations and, therefore, our ability to mine or lease coal, which could have a material adverse effect on our business and results of operations.

Federal and state laws require us to obtain surety bonds or post letters of credit to secure performance or payment of certain long-term obligations, such as mine closure or reclamation costs, federal and state workers' compensation costs, coal leases and other obligations. The costs of surety bonds have fluctuated in recent years while the market terms of such bonds have generally become less favorable to mine operators. These changes in the terms of the bonds have been accompanied at times by a decrease in the number of companies willing to issue surety bonds. In addition, federal and state regulators are considering making financial assurance requirements with respect to mine closure and reclamation more stringent. Because we are required by federal and state law to have these bonds in place before mining can commence or continue, our failure to maintain surety bonds, letters of credit or other guarantees or security arrangements would materially and adversely affect our ability to mine or lease coal.

Increases in the costs of mining and other industrial supplies, including steel-based supplies, diesel fuel and rubber tires, or the inability to obtain a sufficient quantity of those supplies, could negatively affect our operating costs or disrupt or delay our production.

Our coal mining operations use significant amounts of steel, diesel fuel, explosives, rubber tires and other mining and industrial supplies. The cost of roof bolts we use in our underground mining operations depends on the price of scrap steel. We also use significant amounts of diesel fuel and tires for trucks and other heavy machinery, particularly at our Black Thunder mining complex. There has been some consolidation in the supplier base providing mining materials to the coal industry, such as suppliers of explosives in the U.S. and suppliers of both surface and underground equipment globally, that has limited the number of sources for these materials. If the prices of mining and other industrial supplies, particularly steel based supplies, diesel fuel and rubber tires, increase, our operating costs could be negatively affected. In addition, if we are unable to procure these supplies, our coal mining operations may be disrupted or we could experience a delay or halt in our production.

Disruptions in the quantities of coal purchased from other third parties could temporarily impair our ability to fill customer orders or increase our operating costs.

We purchase coal from third parties that we sell to our customers. Operational difficulties at mines operated by third parties from whom we purchase coal, changes in demand from other coal producers and other factors beyond our control could affect the availability, pricing, and quality of coal purchased by us. Disruptions in the quantities of coal purchased by us could impair our ability to fill our customer orders or require us to purchase coal from other sources in order to satisfy those orders. If we are unable to fill a customer order or if we are required to purchase coal from other sources at higher prices and/or lower quality, in order to satisfy a customer order, we could lose existing customers and our operating costs could increase.

Our profitability depends upon the coal supply agreements we have with our customers. Changes in purchasing patterns in the coal industry could make it difficult for us to extend our existing coal supply agreements or to enter into new agreements in the future.

The success of our businesses depends on our ability to retain our current customers, renew our existing customer contracts and solicit new customers. Our ability to do so generally depends on a variety of factors, including the quality and price of our products, our ability to market these products effectively, our ability to deliver on a timely basis and the level of competition that we face. If current customers do not honor current contract commitments, or if they terminate agreements or exercise *force majeure* provisions allowing for the temporary suspension of performance, our revenues will be adversely affected. Changes in the coal industry may cause some of our customers not to renew, extend or enter into new coal supply agreements or to enter into agreements to purchase fewer tons of coal or on different terms or prices than in the past. In addition, uncertainty caused by federal and state regulations, including under the U.S. Clean Air Act, could deter our customers from entering into coal supply agreements. Also, the availability and price of competing fuels, such as natural gas, could influence the volume of coal a customer is willing to purchase under contract.

Our coal supply agreements typically contain *force majeure* provisions allowing the parties to temporarily suspend performance during specified events beyond their control. Most of our coal supply agreements also contain provisions requiring us to deliver coal that satisfies certain quality specifications, such as heat value, sulfur content, ash content, hardness and ash fusion temperature. These provisions in our coal supply agreements could result in negative economic consequences to us, including price adjustments, having to purchase replacement coal in a higher-priced open market, the rejection of deliveries or, in the extreme, contract termination. Our profitability may be negatively affected if we are unable to seek protection during adverse economic conditions or if we incur financial or other economic penalties as a result of these provisions of our coal supply agreements. For more information about our long-term coal supply agreements, you should see the section entitled “Long-Term Coal Supply Arrangements” under Item 1.

Our ability to collect payments from our customers could be impaired if their creditworthiness deteriorates, and our financial position could be materially and adversely affected by the bankruptcy of any of our significant customers.

Our ability to receive payment for coal sold and delivered depends on the continued creditworthiness of our customers. If we determine that a customer is not creditworthy, we may be able to withhold delivery under the customer’s coal sales contract. If this occurs, we may decide to sell the customer’s coal on the spot market, which may be at prices lower than the contracted price, or we may be unable to sell the coal at all. Furthermore, the bankruptcy of any of our significant customers could materially and adversely affect our financial position.

In addition, our customer base may change with deregulation as utilities sell their power plants to their non-regulated affiliates or third parties that may be less creditworthy, thereby increasing the risk we bear for customer payment default. Some power plant owners may have credit ratings that are below investment grade, or may become below investment grade after we enter into contracts with them. Furthermore, our metallurgical customers operate in a highly competitive and cyclical industry where their creditworthiness could deteriorate rapidly. In addition, competition with other coal suppliers could force us to extend credit to customers and on terms that could increase the risk of payment default. Customers in other countries may also be subject to other pressures and uncertainties that may affect their ability to pay, including trade barriers, exchange controls and local economic and political conditions.

A defect in title or the loss of a leasehold interest in certain properties or surface rights could limit our ability to mine our coal reserves or result in significant unanticipated costs.

We conduct a significant part of our coal mining operations on properties that we lease. A title defect or the loss of a lease or surface rights could adversely affect our ability to mine the associated coal reserves. We may not verify title to our leased properties or associated coal reserves until we have committed to developing those properties or coal reserves. We may not commit to develop properties or coal reserves until we have obtained necessary permits and completed exploration. As such, the title to properties that we intend to lease or coal reserves that we intend to mine may contain defects prohibiting our ability to conduct mining operations. Similarly, our leasehold interests may be subject to superior property rights of other third parties. In order to conduct our mining operations on properties where these defects exist, we may incur unanticipated costs. In addition, some leases require us to produce a minimum quantity of coal and require us to pay minimum production royalties. Our inability to satisfy those requirements may cause the leasehold interest to terminate.

The availability, reliability and cost-effectiveness of transportation facilities and fluctuations in transportation costs could affect the demand for our coal or impair our ability to supply coal to our customers.

We depend upon barge, ship, rail, truck and belt transportation systems, as well as seaborne vessels and port facilities, to deliver coal to our customers. Disruptions in transportation services due to weather-related problems, mechanical difficulties, strikes, lockouts, bottlenecks, route closures and other events beyond our control could impair our ability to supply coal to our customers. Since we do not have long-term contracts with all transportation providers we utilize, decreased performance levels over longer periods of time could cause our customers to look to other sources for their coal needs. In addition, increases in transportation costs, including the price of gasoline and diesel fuel, could make coal a less competitive source of energy when compared to alternative fuels or could make coal produced in one region of the United States less competitive than coal produced in other regions of the United States or abroad. If we experience disruptions in our transportation services or if transportation costs increase significantly and we are unable to find alternative transportation providers, our coal mining operations may be disrupted, we could experience a delay or halt of production or our profitability could decrease significantly. In addition, a growing portion of our coal sales in recent years has been into export markets, and we are actively seeking additional international customers. Our ability to maintain and grow our export sales revenue and margins depends on a number of factors, including the existence of sufficient and cost-effective export terminal capacity for the shipment of coal to foreign markets. At present, there is limited terminal capacity for the export of coal into foreign markets. Our access to existing and future terminal capacity may be adversely affected by, among other factors, regulatory and permit requirements, environmental

and other legal challenges, public perceptions and resulting political pressures, foreign and domestic trade policies, operational issues at terminals and competition among domestic coal producers for access to limited terminal capacity. If we are unable to maintain terminal capacity, or are unable to access additional future terminal capacity for the export of our coal on commercially reasonable terms, or at all, our results could be materially and adversely affected.

From time to time we enter into “take or pay” contracts for rail and port capacity related to our export sales. These contracts require us to pay for a minimum quantity of coal to be transported on the railway or through the port regardless of whether we sell and ship any coal. If we fail to acquire sufficient export sales to meet our minimum obligations under these contracts, we are still obligated to make payments to the railway or port facility, which could have a negative impact on our cash flows, profitability and results of operations.

The loss of, or a significant reduction in, purchases by our largest customers could adversely affect our profitability.

For the year ended December 31, 2019, we derived approximately 21% of our total coal revenues from sales to our three largest customers and approximately 47% of our total coal revenues from sales to our ten largest customers. We are currently discussing the extension of coal sales agreements with some of these customers. However, we may be unsuccessful in obtaining coal supply agreements with those customers, and some or all of these customers could discontinue purchasing coal from us. If any of those customers, particularly any of our three largest customers, were to significantly reduce the quantities of coal it purchases from us, or if we are unable to sell coal to those customers on terms as favorable to us, it may have an adverse impact on the results of our business.

We may incur losses as a result of certain marketing, trading and asset optimization strategies.

We seek to optimize our coal production and leverage our knowledge of the coal industry through a variety of marketing, trading and other asset optimization strategies. We maintain a system of complementary processes and controls designed to monitor and control our exposure to market and other risks as a consequence of these strategies. These processes and controls seek to balance our ability to profit from certain marketing, trading and asset optimization strategies with our exposure to potential losses. Our risk monitoring and mitigation techniques, and accompanying judgments cannot anticipate every potential outcome or the timing of such outcomes. In addition, the processes and controls that we use to manage our exposure to market and other risks resulting from these strategies involve assumptions about the degrees of correlation or lack thereof among prices of various assets or other market indicators. These correlations may change significantly in times of market turbulence or other unforeseen circumstances. As a result, we may experience volatility in our earnings as a result of our marketing, trading and asset optimization strategies.

International growth in our operations adds new and unique risks to our business.

We have sales offices in Singapore and the United Kingdom. The international expansion of our operations increases our exposure to country and currency risks. In addition, our international offices sell our coal to new customers and customers in new countries, whose business practices and reputations are not as well known to us. We also face new and increased political risks, including the potential for expropriation of assets and limitations on the repatriation of earnings. In the event that we are unable to effectively manage these new risks, our results of operations, financial position or cash flows could be adversely affected by these activities.

If we sustain cyber-attacks or other security breaches that disrupt our operations, or that result in the unauthorized release of proprietary or confidential information, we could be exposed to significant liability, reputational harm, loss of revenue, increased costs or other risks.

We have become increasingly dependent on information technology systems to operate our business and to comply with regulatory, legal and tax requirements. As our dependence on digital technologies has increased, the risk of cyber incidents, including both deliberate attacks and unintentional events, also has increased. A cyber-attack may involve persons gaining unauthorized access to our digital systems or systems maintained on our behalf for purposes of gathering, monitoring, releasing, misappropriating or corrupting proprietary or confidential information, or causing operational disruption. In addition, certain cyber incidents, such as surveillance, may remain undetected for an extended period. Strategic targets, such as energy-related assets, may be at greater risk of future cyber-attacks than other targets in the United States.

To date, we have not experienced any material losses relating to cyber incidents. However, our systems may be susceptible to cyber incidents or security breaches which could result in unauthorized access to our facilities or to information we are trying to protect. Failure of our systems, whether caused maliciously or inadvertently, may lead to unauthorized physical access to one or more of our facilities or locations, or electronic access to our proprietary or confidential information and could

result in, among other things, unfavorable publicity, litigation by parties affected by such breach, disruptions to our operations, loss of customers and financial obligations that may not be covered by our insurance for damages, fines or penalties related to the theft, release or misuse of such information, any of which could have a substantial impact on our results of operations, financial condition or cash flow. As cyber threats continue to evolve, we may be required to expend significant additional resources to modify or enhance our protective measures or to investigate and remediate any system vulnerabilities.

Our ability to operate our business effectively could be impaired if we lose key personnel or fail to attract qualified personnel.

We manage our business with a number of key personnel, the loss of whom could have a material adverse effect on us, absent the completion of an orderly transition. In addition, we believe that our future success will depend greatly on our continued ability to attract and retain highly skilled and qualified personnel, particularly personnel with mining experience. Failure to retain or attract key personnel could have a material adverse effect on us.

We may be unable to comply with the restrictions imposed by our Term Loan Debt Facility and other financing arrangements.

The agreements governing our outstanding financing arrangements impose a number of restrictions on us. For example, the terms of our credit facilities, leases and other financing arrangements contain financial and other covenants that may create limitations on our ability to borrow the full amount under our credit facilities, effect acquisitions or dispositions and incur additional debt and require us to comply with various affirmative covenants. The Term Loan Debt Facility contains customary affirmative and negative covenants, which include restrictions on (i) indebtedness, (ii) liens, (iii) liquidations, mergers, consolidations and acquisitions, (iv) disposition of assets or subsidiaries, (v) affiliate transactions, (vi) creation or ownership of certain subsidiaries, partnerships and joint ventures, (vii) continuation of or change in business, (viii) restricted payments, (ix) prepayment of subordinated and junior lien indebtedness, (x) restrictions in agreements on dividends, intercompany loans and granting liens on collateral, (xi) loans and investments, (xii) sale and leaseback transactions, (xiii) changes in organizational documents and fiscal year and (xiv) transactions with respect to bonding subsidiaries. Our ability to comply with these provisions may be affected by events beyond our control and our failure to comply could result in an event of default under the Term Loan Debt Facility.

We may not be able to pay dividends or repurchase shares of our common stock in accordance with our announced intent or at all.

The Board of Directors' determinations regarding dividends and share repurchases will depend on a variety of factors, including our net income, cash flow generated from operations or other sources, liquidity position and potential alternative uses of cash, such as acquisitions and organic growth opportunities, as well as economic conditions and expected future financial results.

Our ability to declare future dividends and make future share repurchases will depend on our future financial performance, which in turn depends on the successful implementation of our strategy and on financial, competitive, regulatory, technical and other factors, general economic conditions, demand and selling prices for our products and other factors specific to our industry, many of which are beyond our control. Therefore, our ability to generate cash depends on the performance of our operations and could be limited by decreases in our profitability or increases in costs, regulatory changes, capital expenditures or debt servicing requirements.

Any failure to pay dividends or repurchase shares of our common stock could negatively impact our reputation, lessen investor confidence in us, and cause the market price of our common stock to decline.

Risks Related to Environmental, Other Regulations and Legislation

Extensive environmental regulations, including existing and potential future regulatory requirements relating to air emissions, affect our customers and could reduce the demand for coal as a fuel source and cause coal prices and sales of our coal to materially decline.

Coal contains impurities, including but not limited to sulfur, mercury, chlorine and other elements or compounds, many of which are released into the air when coal is burned. The operations of our customers are subject to extensive environmental regulation particularly with respect to air emissions. For example, the federal Clean Air Act and similar state and local laws extensively regulate the amount of sulfur dioxide, particulate matter, nitrogen oxide, and other compounds emitted into the air from electric power plants, which are the largest end-users of our coal. A series of more stringent requirements

relating to particulate matter, ozone, haze, mercury, sulfur dioxide, nitrogen oxide and other air pollutants may be developed and implemented. For instance, the Clean Power Plan, if implemented in the form promulgated under the Obama administration, would severely limit emissions of carbon dioxide which would adversely affect our ability to sell coal. However, in April 2017, the EPA announced that it was initiating a review of the Clean Power Plan consistent with President Trump's Executive Order 13783, and, in October 2017, the EPA published a proposed rule to formally repeal the Clean Power Plan. In August 2018, the EPA proposed the Affordable Clean Energy rule which revises the agency's interpretation of Clean Air Act section 111(d). The EPA finalized the Affordable Clean Energy rule in June 2019. The rule offers the power generation industry incentives to invest in coal-fired power plants and provides guidelines for reducing carbon dioxide emissions by making on-site "heat rate improvements." The final rule promulgated by the EPA is subject to judicial review, and, as such, the future of that rule and the Clean Power Plan and its attendant regulations is unclear. In December 2015, the United States and 195 other countries reached an agreement (the "Paris Agreement") during the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change, a long-term, international framework convention designed to address climate change over the next several decades. In June 2017, the Trump administration filed formal notice with the United Nations that the United States plans to withdraw from the Paris Agreement and to seek negotiations either to reenter the Paris Agreement on different terms or to establish a new framework agreement. The Trump administration formally initiated the withdrawal process in November 2019, which would provide for an exit date of November 2020. Whether the United States will adhere to the Paris Agreement's exit process is, and the terms on which the United States may reenter the Paris Agreement or a separately negotiated agreement are, uncertain at this time. However, any efforts to control and/or reduce greenhouse gas emissions by the United States or other countries that have also pledged "Nationally Determined Contributions," or concerted conservation efforts that result in reduced electricity consumption, could adversely impact coal prices, our ability to sell coal and, in turn, our financial position and results of operations.

We are also subject to state and local regulations, which may be more stringent than federal rules. For example, although the United States has initiated the process for withdrawing from the Paris Agreement, certain United States cities and states have announced their intention to satisfy their proportionate obligations under the Paris Agreement. In addition, almost one-half of states have taken measures to track and reduce emissions of greenhouse gases, and some states have elected to participate in voluntary regional cap-and-trade programs like the Regional Greenhouse Gas Initiative in the northeastern United States. State and local governments may pass laws mandating the use of alternative energy sources, such as wind power and solar energy, which may decrease demand for our coal products. State and local commitments and regulations could have a material adverse effect on our business, financial condition and results of operations.

Considerable uncertainty is associated with these air emissions initiatives, and the content of regulatory requirements in the United States and other countries continues to evolve and develop, which could require significant emissions control expenditures for many coal-fueled power plants. As a result, these power plants may switch to other fuels that generate fewer of these emissions, may install more effective pollution control equipment that reduces the need for low sulfur coal, or may cease operations, possibly reducing future demand for coal and a reduced need to construct new coal-fueled power plants. Any switching of fuel sources away from coal, closure of existing coal-fired plants or reduced construction of new plants could have a material adverse effect on demand for and prices received for our coal. Alternatively, less stringent air emissions limitations, particularly related to sulfur, to the extent enacted, could make low sulfur coal less attractive, which could also have a material adverse effect on the demand for and prices received for our coal.

You should see Item 1, "Environmental and Other Regulatory Matters" for more information about the various governmental regulations affecting the market for our products.

The demand for our products and market for our securities, as well as our ability to access the capital markets and obtain financing and insurance upon favorable terms may be significantly impacted by increased pressure from political and regulatory authorities, along with environmental activist groups, and lending and investment policies adopted by financial institutions and insurance companies to address concerns about the environmental impacts of coal combustion, including perceived impacts on the global climate. These activities and developments may potentially materially and adversely impact our future financial results, liquidity and growth prospects.

Concerns about the environmental impacts of coal combustion are resulting in increased regulation in many jurisdictions, unfavorable lending policies by government-backed lending institutions and development banks and divestment efforts affecting the investment community, which could significantly affect demand for our products or our securities. Global climate issues continue to attract significant public and scientific attention. For example, the Fourth and Fifth Assessment Reports of the Intergovernmental Panel on Climate Change have expressed concern about the impacts of human activity, especially from fossil fuel combustion, on the global climate. As a result of the public and scientific attention, several governmental bodies increasingly are focusing on climate issues and, more specifically, levels of emissions of carbon dioxide from coal combustion by power plants. The Clean Power Plan would severely limit emissions of carbon dioxide, possibly

reducing future demand for coal. However, as discussed above, the EPA has replaced the Clean Power Plan with the Affordable Clean Energy rule. The EPA's Affordable Clean Energy rule is currently subject to judicial review, and as such, the future of that rule and the Clean Power Plan is unclear. Additionally, a number of governments pledged to control and reduce greenhouse gas emissions under the Paris Agreement, which may impact demand for coal resources despite the United States' August 2017 notice that it intends to withdraw its commitment.

Future regulation of greenhouse gas emissions in the United States could occur pursuant to future treaty obligations, statutory or regulatory changes at the federal, state or local level or otherwise. The enactment of laws or the passage of regulations regarding greenhouse gas emissions from the combustion of coal by the U.S., some of its states or other countries, or other actions to limit emissions have resulted in, and may continue to result in, electricity generators switching from coal to other fuel sources or coal-fueled power plant closures. Further, policies limiting available financing for the development of new coal-fueled power plants could adversely impact the global demand for coal in the future. You should see Item 1, "Environmental and Other Regulatory Matters-Climate Change" for more information about governmental regulations relating to greenhouse gas emissions.

There have been recent efforts by members of the general financial and investment communities, such as investment advisors, sovereign wealth funds, public pension funds, universities and other groups, to divest themselves and to promote the divestment of securities issued by companies involved in the fossil fuel extraction market, such as coal producers. In California, for example, legislation was signed into law in October 2015 requiring California's state pension funds to divest investments in companies that generate 50% or more of their revenue from coal mining. Also, in December 2017, the Governor of New York announced that the New York Common Fund would immediately cease all new investments in entities with "significant fossil fuel activities," and the World Bank announced that it would no longer finance upstream oil and gas after 2019, except in "exceptional circumstances." Other activist campaigns have urged banks to cease financing coal-driven businesses. As a result, numerous banks, other financing sources and insurance companies have taken actions to limit available financing and insurance coverage for the development of new coal-fueled power plants and coal mines and utilities that derive a majority of their revenue from thermal coal. The impact of such efforts may adversely affect the demand for and price of our securities and impact our access to the capital and financial markets.

Any future laws, regulations or other policies of the nature described above may adversely impact our business in material ways. The degree to which any particular law, regulation or policy impacts us will depend on several factors, including the substantive terms involved, the relevant time periods for enactment and any related transition periods. We routinely attempt to evaluate the potential impact on us of any proposed laws, regulations or policies, which requires that we make several material assumptions. From time to time, we determine that the impact of one or more such laws, regulations or policies, if adopted and ultimately implemented as proposed, may result in materially adverse impacts on our operations, financial condition or cash flow. In general, it is likely that any future laws, regulations or other policies aimed at reducing greenhouse gas emissions will negatively impact demand for our coal.

Our failure to obtain and renew permits necessary for our mining operations could negatively affect our business.

Mining companies must obtain numerous permits that impose strict regulations on various environmental and operational matters in connection with coal mining. These include permits issued by various federal, state and local agencies and regulatory bodies. The permitting rules, and the interpretations of these rules, are complex, change frequently and are often subject to discretionary interpretations by the regulators, all of which may make compliance more difficult or impractical, and may possibly preclude the continuance of ongoing operations or the development of future mining operations. The public, including non-governmental organizations, anti-mining groups and individuals, have certain statutory rights to comment upon and submit objections to requested permits and environmental impact statements prepared in connection with applicable regulatory processes, and otherwise engage in the permitting process, including bringing citizens' lawsuits to challenge the issuance of permits, the validity of environmental impact statements or the performance of mining activities. Accordingly, required permits may not be issued or renewed in a timely fashion or at all, or permits issued or renewed may be conditioned in a manner that may restrict our ability to efficiently and economically conduct our mining activities, any of which would materially reduce our production, cash flow and profitability.

Federal or state regulatory agencies have the authority to order certain of our mines to be temporarily or permanently closed under certain circumstances, which could materially and adversely affect our ability to meet our customers' demands.

Federal or state regulatory agencies have the authority, under certain circumstances following significant health and safety incidents, such as fatalities, to order a mine to be temporarily or permanently closed. If this occurred, we may be required to incur capital expenditures to re-open the mine. In the event that these agencies order the closing of our mines, our coal sales contracts generally permit us to issue *force majeure* notices which suspend our obligations to deliver coal under these contracts.

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However, our customers may challenge our issuances of *force majeure* notices. If these challenges are successful, we may have to purchase coal from third-party sources, if it is available, to fulfill these obligations, incur capital expenditures to re-open the mines and/or negotiate settlements with the customers, which may include price reductions, the reduction of commitments, the extension of time for delivery or the termination of customers' contracts. Any of these actions could have a material adverse effect on our business and results of operations.

Extensive environmental regulations impose significant costs on our mining operations, and future regulations could materially increase those costs or limit our ability to produce and sell coal.

The coal mining industry is subject to increasingly strict regulation by federal, state and local authorities with respect to environmental matters such as:

- limitations on land use;
- mine permitting and licensing requirements;
- reclamation and restoration of mining properties after mining is completed and required surety bonds or other instruments to secure those reclamation and restoration obligations;
- management of materials generated by mining operations;
- the storage, treatment and disposal of wastes;
- remediation of contaminated soil and groundwater;
- air quality standards;
- water pollution;
- protection of human health, plant-life and wildlife, including endangered or threatened species;
- protection of wetlands;
- the discharge of materials into the environment;
- the effects of mining on surface water and groundwater quality and availability; and
- the management of electrical equipment containing polychlorinated biphenyls.

The costs, liabilities and requirements associated with the laws and regulations related to these and other environmental matters may be costly and time-consuming and may delay commencement or continuation of exploration or production operations. Failure to comply with these laws and regulations may result in the assessment of administrative, civil and criminal penalties, the imposition of cleanup and site restoration costs and liens, the issuance of injunctions to limit or cease operations, the suspension or revocation of permits and other enforcement measures that could have the effect of limiting production from our operations. We may incur material costs and liabilities resulting from claims for damages to property or injury to persons arising from our operations. If we are pursued for sanctions, costs and liabilities in respect of these matters, our mining operations and, as a result, our profitability could be materially and adversely affected.

New legislation or administrative regulations or new judicial interpretations or administrative enforcement of existing laws and regulations, including proposals related to the protection of the environment that would further regulate and tax the coal industry, may also require us to change operations significantly or incur increased costs, which could have a material adverse effect on our financial condition and results of operations. Please refer to the section entitled "Environmental and Other Regulatory Matters" in Item 1 for more information about the various governmental regulations affecting us.

If the assumptions underlying our estimates of reclamation and mine closure obligations are inaccurate, our costs could be greater than anticipated.

SMCRA and counterpart state laws and regulations establish operational, reclamation and closure standards for all aspects of surface mining, as well as most aspects of underground mining. We base our estimates of reclamation and mine closure liabilities on permit requirements, engineering studies and our engineering expertise related to these requirements. Our management and engineers periodically review these estimates. The estimates can change significantly if actual costs vary from our original assumptions, major operational changes are implemented or if governmental regulations change significantly. We are required to record new obligations as liabilities at fair value under U.S. GAAP. In estimating fair value, we considered the estimated current costs of reclamation and mine closure and applied inflation rates and a third-party profit, as required. The third-party profit is an estimate of the approximate markup that would be charged by contractors for work performed on our behalf. The resulting estimated reclamation and mine closure obligations could change significantly if actual amounts change significantly from our assumptions, which could have a material adverse effect on our results of operations and financial condition.

Our operations may impact the environment or cause exposure to hazardous substances, and our properties may have environmental contamination, which could result in material liabilities to us.

Our operations currently use hazardous materials and generate limited quantities of hazardous wastes from time to time. We could become subject to claims for toxic torts, natural resource damages and other damages as well as for the investigation and cleanup of soil, surface water, groundwater, and other media. Such claims may arise, for example, out of conditions at sites that we currently own or operate, as well as at sites that we previously owned or operated, or at sites that we may acquire. Under certain federal and state environmental laws, our liability for such conditions may be joint and several with other owners/operators, so that we may be held responsible for more than our share of the contamination or other damages, or even for the entire share. Liability under these laws is generally strict. Accordingly, we may incur liability without regard to fault or to the legality of the conduct giving rise to the conditions.

We maintain extensive coal refuse areas and slurry impoundments at a number of our mining complexes. Such areas and impoundments are subject to extensive regulation. Slurry impoundments can fail, which could release large volumes of coal slurry into the surrounding environment. Structural failure of an impoundment can result in extensive damage to the environment and natural resources, such as bodies of water that the coal slurry reaches, as well as liability for related personal injuries and property damages, and injuries to wildlife. Some of our impoundments overlie mined-out areas, which can pose a heightened risk of failure and of damages arising out of failure. If one of our impoundments were to fail, we could be subject to substantial claims for the resulting environmental contamination and associated liability, as well as for fines and penalties.

Drainage flowing from or caused by mining activities can be acidic with elevated levels of dissolved metals, a condition referred to as “acid mine drainage,” which we refer to as AMD. The treating of AMD can be costly. Although we do not currently face material costs associated with AMD, it is possible that we could incur significant costs in the future.

These and other similar unforeseen impacts that our operations may have on the environment, as well as exposures to hazardous substances or wastes associated with our operations, could result in costs and liabilities that could materially and adversely affect us.

Changes in the legal and regulatory environment could complicate or limit our business activities, increase our operating costs or result in litigation.

The conduct of our businesses is subject to various laws and regulations administered by federal, state and local governmental agencies in the United States. These laws and regulations may change, sometimes dramatically, as a result of political, economic or social events or in response to significant events. Environmental and other non-governmental organizations and activists, many of which are well funded, continue to exert pressure on regulators and other government bodies to enact more stringent laws and regulations. For instance, increasing attention to global climate change has resulted in an increased possibility of governmental investigations and, potentially, private litigation against us and our customers. For example, claims have been made against certain energy companies alleging that greenhouse gas emissions constitute a public nuisance. While our business is not a party to any such litigation, we could be named in actions making similar allegations. Moreover, the proliferation of successful climate change litigation could adversely impact demand for coal and ultimately have a material adverse effect on our business, financial condition and results of operations. Changes in the legal and regulatory environment in which we operate may impact our results, increase our costs or liabilities, complicate or limit our business activities or result in litigation. Such legal and regulatory environment changes may include changes in such items as: the processes for obtaining or renewing permits; federal LBA programs; costs associated with providing healthcare benefits to employees; health and safety standards; accounting standards; taxation requirements; competition laws; and trade policies, including policies concerning tariffs, quotas, trade barriers and other trade protection measures.

We or our customers could be subject to litigation based on the alleged effects of climate change.

Increasing attention to global climate change has resulted in an increased possibility of governmental investigations and, potentially, private litigation against us and our customers. For example, claims have been made against certain energy companies alleging that greenhouse gas emissions constitute a public nuisance. While the United States Supreme Court held that federal common law provides no basis for public nuisance claims against energy companies, state law tort claims remain a possibility and a source of concern, and we could be named in actions making similar allegations. Moreover, the proliferation of successful climate change litigation could adversely impact demand for coal and ultimately have a material adverse effect on our business, financial condition and results of operations.

Risks Related to Income Taxes

Our ability to use net operating losses and alternative minimum tax credits is subject to limitation.

The ability to use our net operating losses (“NOLs”) and alternative minimum tax (“AMT”) credits has been limited by the “ownership change” under Section 382 of the Internal Revenue Code (the “Code”) that occurred on our emergence from bankruptcy in 2016 (the “Emergence Ownership Change”). The limitation resulting from the Emergence Ownership Change is substantial and applies to all NOLs and AMT credits existing at the time of the Emergence Ownership Change. The limitation resulting from the Emergence Ownership Change may have a significant impact on our ability to offset future taxable income with carryforward NOLs. NOLs and AMT credits generated after the Emergence Ownership Change are generally not subject to the limitations.

As a result of the discharge of debt in the Chapter 11 Cases, we and our subsidiaries were required to reduce the amount of our NOLs and AMT credits and other tax attributes existing at the end of 2016.

U.S. tax legislation may materially adversely affect our financial condition, results of operations and cash flows.

U.S. tax legislation enacted on December 22, 2017 (the “Tax Cut and Jobs Act”) significantly changed the U.S. federal income taxation of U.S. corporations. Changes include the reduction of the U.S. corporate income tax rate, elimination of the AMT tax system, limitation of interest deductions and revision of the rules governing NOLs.

As a result of the Tax Cuts and Jobs Act, there was a remeasurement of our deferred tax assets and liabilities, which resulted in \$330.9 million of income tax expense in 2017 and \$16.7 million of income tax benefit in 2018, with offsetting valuation allowance adjustments. In addition, we incurred a one-time transition tax of \$1.5 million on the mandatory deemed repatriation of cumulative foreign earnings, which deemed repatriation tax was offset with NOL carryforwards (with an offsetting valuation allowance adjustment). Due to the elimination of the corporate AMT regime, existing AMT credits as of December 31, 2018 will be refunded during 2019-2022, and therefore the valuation allowance previously recorded against these credits has been released and the credits have been reclassified from a deferred tax asset to short term and long term receivables. As a result of limitations imposed by the Tax Cuts and Jobs Act on deductible compensation paid to certain “covered” employees, we recorded \$0.2 million of tax expense in 2017, \$4.0 million of tax expense in 2018, and \$3.9 million of tax expense in 2019, with offsetting valuation allowance adjustments.

The Tax Cut and Jobs Act is subject to potential amendments and technical corrections, as well as interpretations and implementing regulations by the Treasury Department and Internal Revenue Service (“IRS”), any of which could lessen or increase certain adverse impacts of the legislation. In addition, there is uncertainty with respect to how these U.S. federal income tax changes will affect state and local taxation, which often uses federal taxable income as a starting point for computing state and local tax liabilities.

We continue to work with our tax advisors to determine the full impact that the recent tax legislation as a whole will have on us. We urge our investors to consult with their legal and tax advisors with respect to such legislation.

Risks Related to Proposed Joint Venture with Peabody

The joint venture with Peabody may not be completed in a timely manner, or at all.

There can be no assurance that the joint venture with Peabody will be completed in a timely manner, or at all. Formation of the joint venture is subject to customary closing conditions, including the termination or expiration of the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, the receipt of certain other required regulatory approvals and the absence of injunctions or other legal restraints preventing the formation of the joint venture. It is not certain that these closing conditions will be met or waived, that the necessary approvals will be obtained, or that we will be able to successfully enter into the joint venture.

We face risks and uncertainties due both to the pendency of the joint venture transaction as well as the potential failure to consummate the joint venture in a timely manner, or at all, including:

- we may not realize any or all of the potential benefits of the joint venture, including expected synergies;
- we will remain liable for significant transaction costs, including legal, financial advisory, accounting, and other costs relating to the joint venture, even if it is not consummated;

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- if the Implementation Agreement is terminated by us before we complete the joint venture, under certain circumstances, we may be required to pay a termination fee to Peabody of up to \$40.0 million;
- the pending joint venture transaction could have an adverse impact on our relationships with employees, customers and suppliers; and
- the attention of our management and employees may be diverted from day-to-day operations.

The occurrence of any of these events, individually or in combination could have a material adverse effect on our business, financial condition or results of operations.

There are risks associated with the conduct of joint ventures or joint operations.

To the extent we hold or acquire interests in any joint ventures or joint operations or enter into any joint ventures or joint operations in the future, including the pending joint venture with Peabody, the existence or occurrence of one or more of the following circumstances and events could have a material adverse impact on our profitability or the viability of our interests held through joint ventures, which could have a material adverse impact on our business, financial condition or results of operations:

- inconsistent economic, political or business interests or goals between partners or disagreements with partners on strategy for the most efficient development or operation of mines;
- the inability to control certain strategic decisions made in respect of properties;
- the ability of partners to block actions that we believe to be in our or the joint venture's best interests;
- the inability of partners to meet their financial and other obligations to the joint venture, joint operation or third parties; and
- litigation between partners regarding management, funding or other decisions related to the joint venture or joint operation.

To the extent that we are not the operator of a joint venture or joint operation properties, the success of such operations will be beyond our control. In many cases we will be bound by the decisions made by the operator in the operation of such property, and will rely on the operator to manage the property and to provide accurate information related to such property. We can provide no assurance that all decisions of operators of properties we do not control will achieve the expected results.

As a result of the Joint Venture, we could be deemed an "investment company" under the Investment Company Act of 1940, as amended (the "1940 Act"). This would impose significant restrictions on us and would be likely to have a material adverse impact on our financial condition and results of operations.

On June 18, 2019, we entered into a definitive implementation agreement with Peabody Energy Corporation to establish a joint venture that is expected to combine the respective Powder River Basin and Colorado mining operations of both companies. On December 20, 2019, we applied for an order (the "Order") seeking exemptive relief from the U.S. Securities and Exchange Commission (the "SEC") pursuant to Section 3(b)(2) of the 1940 Act to confirm that we are primarily engaged in the business of coal production, a business or businesses other than that of investing, reinvesting, owning, holding, or trading in securities and, therefore, is not an "investment company," as such term is defined in the 1940 Act.

There are no assurances that we will be successful in obtaining an order from the SEC excluding or exempting us from registration under the 1940 Act.

If we elect to consummate the Joint Venture without obtaining the Order and a sufficient amount of our assets are deemed to be "investment securities" within the meaning of the 1940 Act, and we are unable to rely on an exemption under the 1940 Act, we would either have to register as an investment company under the 1940 Act, obtain exemptive relief from the SEC or modify our organizational structure or our contract rights to fall outside the definition of an investment company. Registering as an investment company could, among other things, materially limit our ability to engage in transactions with affiliates, including the purchase and sale of certain securities or other property to or from our affiliates, restrict our ability to borrow funds, engage in other transactions involving leverage or issue additional capital stock and require us to add additional directors

who are independent of us or our affiliates. The occurrence of some or all of these events may have a material adverse effect on our business.

ITEM 1B. UNRESOLVED STAFF COMMENTS.

None.

ITEM 2. PROPERTIES.

Our Properties

At December 31, 2019, we owned or controlled, primarily through long-term leases, approximately 28,292 acres of coal land in Ohio, 1,060 acres of coal land in Maryland, 10,095 acres of coal land in Virginia, 323,736 acres of coal land in West Virginia, 81,470 acres of coal land in Wyoming, 268,337 acres of coal land in Illinois, 33,272 acres of coal land in Kentucky, 9,840 acres of coal land in Montana, 358 acres of coal land in Pennsylvania, and 19,146 acres of coal land in Colorado. In addition, we also owned or controlled through long-term leases smaller parcels of property in Alabama, Indiana, Washington, Arkansas, California, Utah and Texas. We lease approximately 57,863 acres of our coal land from the federal government and approximately 22,385 acres of our coal land from various state governments. Certain of our preparation plants or loadout facilities are located on properties held under leases which expire at varying dates over the next 30 years. Most of the leases contain options to renew. Our remaining preparation plants and loadout facilities are located on property owned by us or for which we have a special use permit.

Our executive headquarters occupies leased office space at One CityPlace Drive, in St. Louis, Missouri. Our subsidiaries currently own or lease the equipment utilized in their mining operations. You should see Item 1, "Our Mining Operations" for more information about our mining operations, mining complexes and transportation facilities.

Our Coal Reserves

We estimate that we owned or controlled approximately 1.8 billion tons of proven and probable recoverable reserves at December 31, 2019. Our coal reserve estimates at December 31, 2019 were prepared by our engineers and geologists and reviewed by Weir International, Inc., a mining and geological consultant. Our coal reserve estimates are based on data obtained from our drilling activities and other available geologic data. Our coal reserve estimates are periodically updated to reflect past coal production and other geologic and mining data. Acquisitions or sales of coal properties will also change these estimates. Changes in mining methods or the utilization of new technologies may increase or decrease the recovery basis for a coal seam.

Our coal reserve estimates include reserves that can be economically and legally extracted or produced at the time of their determination. In determining whether our reserves meet this standard, we take into account, among other things, our potential inability to obtain a mining permit, the possible necessity of revising a mining plan, changes in estimated future costs, changes in future cash flows caused by changes in costs required to be incurred to meet regulatory requirements and obtaining mining permits, variations in quantity and quality of coal, and varying levels of demand and their effects on selling prices. We use various assumptions in preparing our estimates of our coal reserves. You should see "Inaccuracies in our estimates of our coal reserves could result in decreased profitability from lower than expected revenues or higher than expected costs" contained in Item 1A, "Risk Factors."

The following tables present our estimated assigned and unassigned recoverable coal reserves at December 31, 2019:

**Total Assigned Reserves
(Tons in millions)**

	Total Assigned Recoverable Reserves	Proven	Probable	Sulfur Content (lbs. per million Btus)			As Received Btus per lb. (1)	Reserve Control		Mining Method		Past Reserve Estimates	
				<1.2	1.2-2.5	>2.5		Leased	Owned	Surface	Under-ground	2017	2018
Wyoming	840	835	5	799	41	—	8,836	840	—	840	—	1,025	911
Colorado	51	45	6	51	—	—	11,433	51	—	—	51	53	54
Central App.	47	34	13	20	27	—	13,623	36	11	—	47	69	57
Northern App.	92	65	27	6	86	—	13,247	10	82	—	92	35	73
Illinois	40	21	19	—	—	40	10,707	33	7	—	40	35	43
Total	1,070	1,000	70	876	154	40	9,617	970	100	840	230	1,217	1,138

(1) As received Btus per lb. includes the weight of moisture in the coal on an as sold basis.

**Total Unassigned Reserves
(Tons in millions)**

	Total Unassigned Recoverable Reserves	Proven	Probable	Sulfur Content (lbs. per million Btus)			As Received Btus per lb. ⁽¹⁾	Reserve Control		Mining Method	
				<1.2	1.2-2.5	>2.5		Leased	Owned	Surface	Under-ground
Wyoming	260	214	46	213	47	—	8,415	260	—	260	—
Central App.	49	42	7	14	23	12	12,503	2	47	31	18
Northern App.	139	71	68	—	136	3	12,943	7	132	—	139
Illinois	284	188	96	—	—	284	11,165	61	223	3	281
Total	732	515	217	227	206	299	10,617	330	402	294	438

(1) As received Btus per lb. includes the weight of moisture in the coal on an as sold basis.

Federal and state legislation controlling air pollution affects the demand for certain types of coal by limiting the amount of sulfur dioxide which may be emitted as a result of fuel combustion and encourages a greater demand for low-sulfur coal. All of our identified coal reserves have been subject to preliminary coal seam analysis to test sulfur content. Of these reserves, approximately 61% consist of compliance coal, or coal which emits 1.2 pounds or less of sulfur dioxide per million Btus upon combustion, while an additional approximately 12% could be sold as low-sulfur coal. The balance is classified as high-sulfur coal. Most of our reserves are suitable for the domestic steam coal markets. A substantial portion of the low-sulfur and compliance coal reserves at a number of our Appalachian mining complexes may also be used as metallurgical coal.

The carrying cost of our coal reserves at December 31, 2019 was \$363 million, consisting of \$2 million of prepaid royalties and a net book value of coal lands and mineral rights of \$361 million.

Reserve Acquisition Process

We acquire a significant portion of the coal we control in the western United States through the LBA process. Under this process, before a mining company can obtain new coal reserves, the coal tract must be nominated for lease, and the company must win the lease through a competitive bidding process. The LBA process can last anywhere from five to ten years or more from the time the coal tract is nominated to the time a final bid is accepted by the BLM. After the LBA is awarded, the company then conducts the necessary testing to determine what amount can be classified as reserves.

To initiate the LBA process, companies wanting to acquire additional coal must file an application with the BLM's state office indicating interest in a specific coal tract. The BLM reviews the initial application to determine whether the application conforms to existing land-use plans for that particular tract of land and that the application would provide for maximum coal recovery. The application is further reviewed by a regional coal team at a public meeting. Based on a review of the available information and public comment, the regional coal team will make a recommendation to the BLM whether to continue, modify or reject the application.

If the BLM determines to continue the application, the company that submitted the application will pay for a BLM-directed environmental analysis or an environmental impact statement to be completed. This analysis or impact statement is subject to publication and public comment. The BLM may consult with other governmental agencies during this process, including state and federal agencies, surface management agencies, Native American tribes or bands, the U.S. Department of Justice or others as needed. The public comment period for an analysis or impact statement typically occurs over a 60-day period.

After the environmental analysis or environmental impact statement has been issued and a recommendation has been published that supports the lease sale of the LBA tract, the BLM schedules a public competitive lease sale. The BLM prepares an internal estimate of the fair market value of the coal that is based on its economic analysis and comparable sales analysis. Prior to the lease sale, companies interested in acquiring the lease must send sealed bids to the BLM. The bid amounts for the lease are payable in five annual installments, with the first 20% installment due when the mining operator submits its initial bid for an LBA. Before the lease is approved by the BLM, the company must first furnish to the BLM an initial rental payment for the first year of rent along with either a bond for the next 20% annual installment payment for the bid amount, or an application for history of timely payment, in which case the BLM may waive the bond requirement if the company successfully meets all the qualifications of a timely payor. The bids are opened at the lease sale. If the BLM decides to grant a lease, the lease is awarded to the company that submitted the highest total bid meeting or exceeding the BLM's fair market value estimate, which is not published. The BLM, however, is not required to grant a lease even if it determines that a bid meeting or exceeding the fair market value of the coal has been submitted. The winning bidder must also submit a report setting forth the nature and extent of its coal holdings to the U.S. Department of Justice for a 30-day antitrust review of the lease. If the successful bidder was not the initial applicant, the BLM will refund the initial applicant certain fees it paid in connection with the application process, for example the fees associated with the environmental analysis or environmental impact statement, and the winning bidder will bear those costs. Coal won through the LBA process and subject to federal leases are administered by the U.S. Department of Interior under the Federal Coal Leasing Amendment Act of 1976. In addition, we occasionally add small coal tracts adjacent to our existing LBAs through an agreed upon lease modification with the BLM. Once the BLM has issued a lease, the company must also complete the permitting process before it can mine the coal. Please refer to the section entitled "Environmental and Other Regulatory Matters" under Item 1.

Most of our federal coal leases have an initial term of 20 years and are renewable for subsequent 10-year periods and for so long thereafter as coal is produced in commercial quantities. These leases require diligent development within the first ten years of the lease award with a required coal extraction of 1.0% of the total coal under the lease by the end of that 10-year period. At the end of the 10-year development period, the lessee is required to maintain continuous operations, as defined in the applicable leasing regulations. In certain cases a lessee may combine contiguous leases into a logical mining unit, which we refer to as an LMU. This allows the production of coal from any of the leases within the LMU to be used to meet the continuous operation requirements for the entire LMU. Some of our mines are also subject to coal leases with applicable state regulatory agencies and have different terms and conditions that we must adhere to in a similar way to our federal leases. Under these federal and state leases, if the leased coal is not diligently developed during the initial 10-year development period or if certain other terms of the leases are not complied with, including the requirement to produce a minimum quantity of coal or pay a minimum production royalty, if applicable, the BLM or the applicable state regulatory agency can terminate the lease prior to the expiration of its term.

On January 15, 2016, the federal government ordered a moratorium on new leases for coal mined from federal lands as part of a review of the government's management of federally-owned coal. In March 2017, the U.S. Secretary of Interior signed Secretarial Order 3348 lifting that moratorium and halting the Federal Coal Program Programmatic Environmental

Impact Statement that was in process at the time. In April 2019, the federal district court for the District of Montana held that the Secretary of the Interior violated the National Environmental Policy Act in failing to undertake environmental review before lifting the moratorium. The court deferred ordering remedies until the completion of further briefing and negotiation between the parties. In response, the Department prepared an environmental assessment in May 2019. The parties have not agreed, and the court has not yet determined, whether the environmental assessment is sufficient to address the deficiencies identified by the court. Consequently, the Bureau of Land Management is continuing to process federal coal lease applications in accordance with regulations and guidance that existed before Secretarial Order 3338, but the matter remains under litigation. Any future delays in processing applications resulting from the litigation could prevent us from obtaining replacement reserves when we require them. Also, the outcome of the government's review is uncertain and could have a material and adverse impact on our business in any number of ways including by limiting our ability to mine reserves under ongoing or future applications, by increasing the costs or timeframe associated with obtaining leases under the LBA program, by making it uneconomical for us to participate in the programs or by preventing us from obtaining replacement reserves if the LBA program were to be terminated. Please see "Our inability to acquire additional coal reserves or our inability to develop coal reserves in an economically feasible manner may adversely affect our business," contained in Item 1A, "Risk Factors" for more information.

Title to Coal Property

Title to coal properties held by lessors or grantors to us and our subsidiaries and the boundaries of properties are normally verified at the time of leasing or acquisition. However, in cases involving less significant properties and consistent with industry practices, title and boundaries are not completely verified until such time as our independent operating subsidiaries prepare to mine such reserves. If defects in title or boundaries of undeveloped reserves are discovered in the future, control of and the right to mine such reserves could be adversely affected. You should see "A defect in title or the loss of a leasehold interest in certain property or surface rights could limit our ability to mine our coal reserves or result in significant unanticipated costs" contained in Item 1A, "Risk Factors" for more information.

At December 31, 2019, approximately 28% of our coal reserves were held in fee, with the balance controlled by leases, most of which do not expire until the exhaustion of mineable and merchantable coal. Under current mining plans, substantially all reported leased reserves will be mined out within the period of existing leases or within the time period of assured lease renewals. Royalties are paid to lessors either as a fixed price per ton or as a percentage of the gross sales price of the mined coal. The majority of the significant leases are on a percentage royalty basis. In some cases, a payment is required, payable either at the time of execution of the lease or in annual installments. In most cases, the prepaid royalty amount is applied to reduce future production royalties.

From time to time, lessors or sublessors of land leased by our subsidiaries have sought to terminate such leases on the basis that such subsidiaries have failed to comply with the financial terms of the leases or that the mining and related operations conducted by such subsidiaries are not authorized by the leases. Some of these allegations relate to leases upon which we conduct operations material to our consolidated financial position, results of operations and liquidity, but we do not believe any pending claims by such lessors or sublessors have merit or will result in the termination of any material lease or sublease.

We leased approximately 50,430 acres of property to other coal operators in 2019. We received royalty income of \$4.5 million during 2019 from the mining of approximately 1.8 million tons, \$6.2 million during 2018 from the mining of approximately 2.3 million tons and \$4.1 million during 2017 from the mining of approximately 1.2 million tons on those properties. We have included reserves at properties leased by us to other coal operators in the reserve figures set forth in this report.

ITEM 3. LEGAL PROCEEDINGS.

We are involved in various claims and legal actions arising in the ordinary course of business, including employee injury claims. After conferring with counsel, it is the opinion of management that the ultimate resolution of these claims, to the extent not previously provided for, will not have a material adverse effect on our consolidated financial condition, results of operations or liquidity.

ITEM 4. MINE SAFETY DISCLOSURES.

The statement concerning mine safety violations or other regulatory matters required by Section 1503(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act and Item 104 of Regulation S-K is included in Exhibit 95 to this Annual Report on Form 10-K for the period ended December 31, 2019.

PART II**ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES.**

Our common stock is listed on the New York Stock Exchange ("NYSE") under the symbol "ARCH" and has been trading since October 5, 2016 upon our emergence from bankruptcy. No prior established public trading market existed for this newly issued common stock prior to this date. Based upon information provided by our transfer agent, as of January 31, 2020, we had two stockholders of record. As many of our shares are held by brokers and other institutions on behalf of shareholders, we are unable to estimate the total number of beneficial holders of our common stock represented by these record holders.

Holders of our common stock are entitled to receive dividends when they are declared by our Board of Directors. We paid dividends on our common stock totaling \$30.2 million in 2019. There is no assurance as to the amount or payment of dividends in the future because they will be subject to ongoing Board review and authorization will be based on a number of factors, including business and market conditions, the Company's future financial performance and other capital priorities.

The following table sets forth for each period indicated the dividends paid per common share and the per share high and low closing prices for our common stock as reported on the NYSE for the periods presented:

	<u>High</u>	<u>Low</u>	<u>Dividends per common share</u>
Year Ended December 31, 2019			
First quarter	\$ 93.64	\$ 80.69	\$ 0.45
Second quarter	99.96	86.71	0.45
Third quarter	93.81	69.31	0.45
Fourth quarter	86.00	70.41	0.45
Year Ended December 31, 2018			
First quarter	\$ 100.71	\$ 85.66	\$ 0.40
Second quarter	100.57	76.52	0.40
Third quarter	94.52	75.85	0.40
Fourth quarter	97.36	78.87	0.40

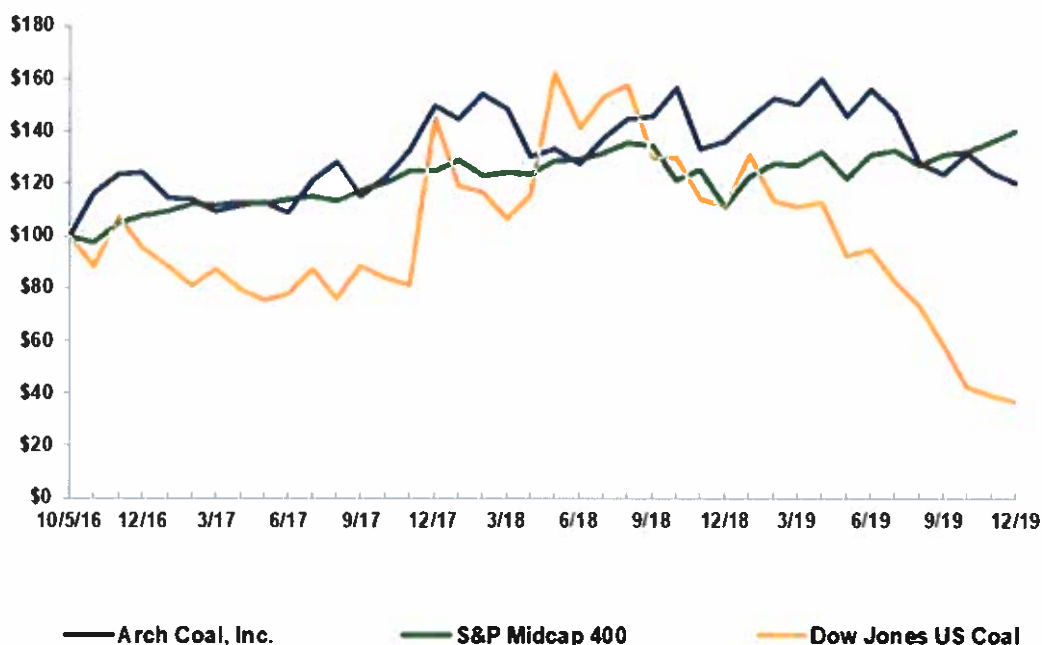
Stockholder Return Performance Presentation

The following graph compares the cumulative 39-month total return of holders of Arch Coal, Inc.'s common stock with the cumulative total returns of the S&P Midcap 400 index and the Dow Jones US Coal Index. The graph assumes that the value of the investment in our common stock, the S&P Midcap 400 index, and the Dow Jones US Coal Index (including reinvestment of dividends) was \$100 on October 5, 2016 and tracks it through December 31, 2019.

In years prior to 2019, the total shareholder return of our common stock was compared to the total returns of the S&P Midcap 400 index and a customized group of peer companies. In recent years, the bankruptcy of certain companies deemed to be our peers has caused fluctuations in the companies comprising our peer group from one year to the next. To mitigate the impact of these fluctuations and provide more consistency to the performance graph disclosure year after year, in 2019, we elected to replace our peer group with the Dow Jones US Coal Index for disclosure purposes.

COMPARISON OF 39 MONTH CUMULATIVE TOTAL RETURN*

Among Arch Coal, Inc., the S&P Midcap 400 Index and the Dow Jones US Coal Index



*\$100 invested on 10/5/16 in stock or 9/30/16 in index, including reinvestment of dividends
Fiscal year ending December 31

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	10/5/2016	12/31/16	12/31/17	12/31/18	12/31/19
Arch Coal, Inc.	100.00	123.89	149.93	136.01	120.18
S&P Midcap 400	100.00	107.42	124.87	111.03	140.11
Dow Jones US Coal Index	100.00	94.95	145.36	111.67	36.59

The stock price performance included in this graph is not necessarily indicative of future stock price performance.

Issuer Purchases of Equity Securities

During April 2019, the Board of Directors of Arch Coal, Inc. approved an incremental \$250 million to the share repurchase program bringing the total authorization to \$1.05 billion. The table below represents all share repurchases for the three months ended December 31, 2019:

Date	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Program	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plan (in thousands)
October 1 through October 31, 2019	127,002	\$ 78.73	127,002	\$ 223,118
November 1 through November 30, 2019	6,377	\$ 78.39	6,377	\$ 222,618
December 1 through December 31, 2019	—	\$ —	—	\$ 222,618
Total shares repurchased	133,379	\$ 78.72	133,379	

As of December 31, 2019, we had repurchased 10,088,378 shares at an average share price of \$82.01 per share for an aggregate purchase price of approximately \$827 million since inception of the stock repurchase program, and the remaining authorized amount for stock repurchases under this program is \$223 million.

The timing of any future share repurchases, and the ultimate number of shares purchased, will depend on a number of factors, including business and market conditions, the Company's future financial performance and other capital priorities. The shares will be acquired in the open market or through private transactions in accordance with the Securities and Exchange Commission requirements. The share repurchase program has no termination date, but may be amended, suspended or discontinued at any time and does not commit the Company to repurchase shares of its common stock. The actual number and value of the shares to be purchased will depend on the performance of the Company's stock price and other market conditions.

ITEM 6. SELECTED FINANCIAL DATA.

	Successor				Predecessor	
	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017	October 2 through December 31, 2016	January 1 through October 1, 2016	Year Ended December 31, 2015
(In thousands, except per share data)						
Income Statement Data:						
Revenues	\$ 2,294,352	\$ 2,451,787	\$ 2,324,623	\$ 575,688	\$ 1,398,709	\$ 2,573,260
Asset impairment and mine closure costs	—	—	—	—	129,267	2,628,303
Income (loss) from operations	242,870	279,138	234,336	46,086	(255,423)	(2,865,063)
Interest expense	(16,485)	(20,471)	(26,905)	(11,241)	(135,888)	(397,979)
Non-operating expenses	(2,029)	(5,348)	(6,885)	(727)	1,626,113	(27,910)
Income (loss) from continuing operations	233,799	312,577	238,450	33,449	1,242,081	(2,913,142)
Basic earnings (loss) per common share	\$ 14.42	\$ 15.90	\$ 10.05	\$ 1.34	\$ 58.33	\$ (136.86)
Diluted earnings (loss) per common share	\$ 13.52	\$ 15.15	\$ 9.84	\$ 1.31	\$ 58.28	\$ (136.86)
Balance Sheet Data:						
Total assets	\$ 1,867,756	\$ 1,887,060	\$ 1,979,632	\$ 2,136,597	\$ 2,123,829	\$ 5,041,881
Working capital	395,767	549,448	496,913	566,391	522,465	(4,361,009)
Current maturities of debt	20,753	17,797	15,783	11,038	6,662	5,042,353
Long-term debt, less current maturities	290,066	300,186	310,134	351,841	353,272	30,953
Other long-term obligations	626,174	552,718	669,552	725,948	786,015	755,283
Arch Coal stockholders' equity	640,536	704,821	665,865	746,577	687,483	(1,244,289)
Cash Flow Data:						
Cash provided by (used in) operating activities	419,714	417,963	396,474	84,192	(228,218)	(44,367)
Depreciation, depletion and amortization, including amortization of sales contracts, net	111,621	130,670	176,449	33,400	190,853	370,534
Capital expenditures	266,356	95,272	59,205	15,214	82,434	119,024
Net proceeds from the issuance of long term debt	—	—	298,500	—	—	—
Payments to retire debt, including redemption premium	—	—	(325,684)	—	—	—
Purchases of treasury stock	244,998	280,871	301,512	—	—	—
Dividend payments	30,220	31,269	24,369	—	—	—
Operating Data:						
Tons sold	90,305	96,792	98,218	26,812	67,128	127,632
Tons produced	90,012	95,416	96,686	26,619	66,658	126,820
Tons purchased from third parties	526	1,140	1,532	193	481	1,287

- (1) Our 2016 results were impacted by the filing of bankruptcy, subsequent emergence and the application of fresh start accounting. See Note 3 to the Consolidated Financial Statements, "Emergence from Bankruptcy," for additional information.
- (2) Our results in 2015 were impacted by further weakening of both the thermal and metallurgical coal markets. We incurred \$2.6 billion of mine closure and asset impairment charges during the year.

The selected financial information presented above for the years ended December 31, 2019, 2018, 2017, the period October 2 through December 31, 2016, the period from January 1 through October 1, 2016, and the year ended 2015 was derived from, and is qualified by, reference to our Consolidated Financial Statements, including the notes thereto, contained elsewhere herein. The selected financial information should be read in conjunction with the Consolidated Financial Statements and related notes and Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations."

As a result of the application of fresh start accounting as of the Plan Effective Date, the financial statements on or prior to October 1, 2016 are not comparable with the financial statements after October 1, 2016. References to “Successor” refer to the Company after October 1, 2016, after giving effect to the application of fresh start accounting; references to “Predecessor” refer to the Company on or prior to October 1, 2016.

ITEM 7. MANAGEMENT’S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

Overview

Our results for the year ended December 31, 2019 were impacted by softening of coking coal markets in the back half of the year, and domestic and international thermal coal markets that faced continued pressure. Coking coal markets weakened beginning in the third quarter of 2019, and continued softening for the remainder of the year. The weakness in coking coal markets is related to slowing global economic growth, particularly in Europe. Declining margins have led to production curtailments by steel producers, particularly in Europe, that have negatively impacted spot demand for coking coal as well as prompt and forward coking coal prices. We believe the current softness in coking coal pricing is demand driven, and that higher cost marginal coking coal production sources will be pressured at current prompt and forward pricing levels. Global capital investment in new coking coal production capacity remains limited, and we believe the current pricing environment will likely keep capital investment limited. We believe this limited long term capital investment in the industry and pressure on marginal high cost coking coal production sources will provide support to coking coal markets in the long term. The ongoing implementation of tariffs and trade disputes appear to be contributing factors in the slowing of global economic growth, particularly in Europe and China. Favorable resolution of these trade disputes may have a favorable impact on coking coal markets going forward.

Domestic thermal coal markets were pressured by low natural gas pricing and continued expansion of subsidized renewable generation sources. Despite these significant pressures, domestic thermal demand and pricing remained at levels that supported positive cash margins for both of our thermal segments throughout 2019. Current year natural gas pricing was meaningfully lower than during the prior year due to increased production and higher levels of storage for the competing fuel. Natural gas production levels are expected to continue to increase, although at a slower rate, and natural gas is expected to pressure domestic thermal coal demand in the long term. Additionally, subsidized renewable generation, particularly wind generation, continues to expand in all regions of the country and is expected to pressure domestic thermal coal demand in the long term. Generator coal stockpiles increased over the course of the year on a tonnage basis, and are currently above both historical averages based on days of burn, and physical volumes at the end of the prior year. International thermal coal market pricing declined significantly over the first half of the current year and remained at depressed levels that are uneconomic for effectively all of our thermal operations. However, the forward positions we entered into in previous periods allowed our operations to continue to economically ship coal into these markets throughout 2019.

In the fourth quarter of 2019 we sold our Coal-Mac operation, which had been part of our Other Thermal segment. Coal-Mac’s results for the first eleven and a half months of 2019 are included in our full year 2019 results, and in all preceding periods’ results presented herein.

In the third quarter of 2017 we sold our Lone Mountain operation, which had been part of our Metallurgical segment. Lone Mountain’s results for the first nine months of 2017 are included in our full year 2017 results presented herein.

Results of Operations

Year Ended December 31, 2019 and 2018

Revenues. Our revenues include sales to customers of coal produced at our operations and coal purchased from third parties. Transportation costs are included in cost of coal sales and amounts billed by us to our customers for transportation are included in revenues.

Coal sales. The following table summarizes information about our coal sales for the years ended December 31, 2019 and 2018:

	Year Ended December 31, 2019	Year Ended December 31, 2018	(Decrease) / Increase
	(In thousands)		
Coal sales	\$ 2,294,352	\$ 2,451,787	\$ (157,435)
Tons sold	90,305	96,792	(6,487)

On a consolidated basis, coal sales in 2019 decreased approximately \$157.4 million or 6.4% from 2018, and tons sold decreased approximately 6.5 million tons or 6.7%. Coal sales from Metallurgical operations decreased approximately \$46.1 million, due to decreased pricing, partially offset by increased coking coal volume. Powder River Basin coal sales decreased approximately \$57.5 million due to decreased volume, partially offset by slightly improved pricing, and Other Thermal coal sales decreased approximately \$51.7 million due to decreased volume and pricing. See discussion in “Operational Performance” for further information about segment results.

Costs, expenses and other. The following table summarizes costs, expenses and other components of operating income for the years ended December 31, 2019 and 2018:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Increase / (Decrease) in Net Income
	(In thousands)		
Cost of sales (exclusive of items shown separately below)	\$ 1,873,017	\$ 1,925,202	\$ 52,185
Depreciation, depletion and amortization	112,055	119,563	7,508
Accretion on asset retirement obligations	20,548	27,970	7,422
Amortization of sales contracts, net	(434)	11,107	11,541
Change in fair value of coal derivatives and coal trading activities, net	(18,601)	9,118	27,719
Selling, general and administrative expenses	95,781	100,300	4,519
Costs related to proposed joint venture with Peabody Energy	13,816	—	(13,816)
Loss on sale of Coal-Mac LLC	9,008	—	(9,008)
Preference Rights Lease Application settlement income	(39,000)	—	39,000
(Gain) loss on sale of Lone Mountain Processing, Inc.	4,304	—	(4,304)
Other operating income, net	(19,012)	(20,611)	(1,599)
Total costs, expenses and other	<u>\$ 2,051,482</u>	<u>\$ 2,172,649</u>	<u>\$ 121,167</u>

Cost of sales. Our cost of sales for the year ended December 31, 2019 decreased approximately \$52.2 million or 2.7% versus 2018. The decrease consists primarily of reductions of approximately \$52.5 million in operating taxes and royalties, \$11.5 million in purchased coal costs, and \$23.9 million due to a build in coal inventories versus a draw on coal inventories in the prior year. These cost decreases were partially offset by increases of approximately \$24.2 million in labor related costs, and \$12.0 million in other miscellaneous costs primarily outside services and subsidence mitigation. See discussion in “Operational Performance” for further information about segment results.

Depreciation, depletion and amortization. Our depreciation, depletion and amortization costs for the year ended December 31, 2019 decreased versus 2018 primarily due to reduced depreciation and development amortization in our Powder River Basin segment.

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Accretion on asset retirement obligation. Our accretion of asset retirement obligations for the year ended December 31, 2019, decreased versus 2018, due to the significant reduction in our Powder River Basin asset retirement obligation liability at the end of 2018 due to mine plan changes.

Amortization of sales contracts, net. The decrease in amortization of sales contracts, net in 2019 versus 2018 is primarily related to the value of certain Powder River Basin supply contracts being fully amortized at the end of 2018.

Change in fair value of coal derivatives and coal trading activities, net. The benefit in 2019 versus the cost in the prior year is primarily related to mark-to-market gains on coal derivatives that we utilized to hedge our price risk for international thermal coal shipments. As international thermal markets declined during the current year, the market value of these positions increased.

Selling, general and administrative expenses. The decrease in selling, general and administrative expenses in 2019 versus 2018 is primarily due to decreased legal costs of approximately \$2.3 million and compensation costs of approximately \$1.8 million.

Costs related to proposed joint venture with Peabody Energy. On June 18, 2019, we entered into a definitive implementation agreement (the "Implementation Agreement") with Peabody, to establish a joint venture that will combine the companies' Powder River Basin and Colorado mining operations. All costs associated with execution of the Implementation Agreement are reflected herein. For further information on our proposed joint venture with Peabody Energy see Note 6, "Joint Venture with Peabody Energy" to the Consolidated Financial Statements.

Loss on sale of Coal-Mac LLC. During the year ended December 31, 2019, we sold Coal-Mac LLC to Condor Holdings LLC, incurring a loss of approximately \$9.0 million. For further information on the sale of Coal-Mac LLC to Condor Holdings LLC, please see Note 5, "Divestitures" to the Consolidated Financial Statements.

Preference Rights Lease Application (PRLA) settlement income. Our PRLA settlement income relates to a settlement with the United States Department of Interior over a long-standing dispute on the valuation and disposition of a PRLA Arch controlled in northwestern New Mexico. For further information on our PRLA settlement income see Note 7, "Preference Rights Lease Application Settlement Income" to the Consolidated Financial Statements.

(Gain) Loss on sale of Lone Mountain Processing LLC. During the year ended December 31, 2017, we sold Lone Mountain Processing LLC and Cumberland River Coal LLC to Revelation Energy LLC, generating a gain of approximately \$21.3 million. Our loss on sale of Lone Mountain Processing, LLC in the current year relates to recognition of certain contingent workers' compensation liabilities, both occupational disease and traumatic, that may accrue to us as a result of the bankruptcy filing by Revelation Energy LLC. For further information on the sale of Lone Mountain Processing LLC and Cumberland River Coal LLC to Revelation Energy LLC, please see Note 5, "Divestitures" to the Consolidated Financial Statements.

Other operating income, net. The decline in other operating income, net in 2019 versus 2018 results primarily from reduced income from equity investments of approximately \$3.4 million, the unfavorable impact of mark to market movements on heating oil positions of approximately \$1.8 million, option premium benefit in the prior year of approximately \$2.2 million, and reduced royalty income of approximately \$1.8 million, offset by the favorable impact of coal derivative settlements in the current year of approximately \$9.2 million.

Non-operating expense. The following table summarizes non-operating expense for the years ended December 31, 2019 and 2018:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Increase / (Decrease) in Net Income
	(In thousands)		
Non-service related pension and postretirement benefit costs	\$ (2,053)	\$ (3,202)	\$ 1,149
Net loss resulting from early retirement of debt and debt restructuring	—	(485)	485
Reorganization income (loss), net	24	(1,661)	1,685
Total nonoperating expense	\$ (2,029)	\$ (5,348)	\$ 3,319

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Nonoperating expenses declined in the year ended December 31, 2019 versus 2018 primarily due to post retirement obligation gain amortization in the current year and costs associated with the repricing of our term loan and from Chapter 11 reorganization costs in the prior year. See further discussion in Note 20, "Employee Benefit Plans", Note 3, "Emergence from Bankruptcy," and Note 13, "Debt and Financing Arrangements" to the Consolidated Financial Statements.

Provision for (benefit from) income taxes. The following table summarizes our provision for income taxes for the years ended December 31, 2019 and 2018:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Increase / (Decrease) in Net Income
	(In thousands)		
Provision for (benefit from) income taxes	\$ 248	\$ (52,476)	\$ (52,724)

See Note 14, to the Consolidated Financial Statements "Taxes," for a reconciliation of the statutory federal income tax provision (benefit) at the statutory rate to the actual benefit from taxes.

Operational Performance

Year Ended December 31, 2019 and 2018

Our mining operations are evaluated based on Adjusted EBITDA, per-ton cash operating costs (defined as including all mining costs except depreciation, depletion, amortization, accretion on asset retirements obligations, and pass-through transportation expenses), and on other non-financial measures, such as safety and environmental performance. Adjusted EBITDA is defined as net income attributable to the Company before the effect of net interest expense, income taxes, depreciation, depletion and amortization, the amortization of sales contracts, the accretion on asset retirement obligations, and non-operating income (expense). Adjusted EBITDA may also be adjusted for items that may not reflect the trend of future results by excluding transactions that are not indicative of our core operating performance. Adjusted EBITDA is not a measure of financial performance in accordance with generally accepted accounting principles, and items excluded from Adjusted EBITDA are significant in understanding and assessing our financial condition. Therefore, Adjusted EBITDA should not be considered in isolation, nor as an alternative to net income, income from operations, cash flows from operations or as a measure of our profitability, liquidity or performance under generally accepted accounting principles. Furthermore, analogous measures are used by industry analysts to evaluate the Company's operating performance. Investors should be aware that our presentation of Adjusted EBITDA may not be comparable to similarly titled measures used by other companies.

The following table shows operating results of coal operations for the years ended December 31, 2019 and 2018.

	Year Ended December 31, 2019	Year Ended December 31, 2018	Variance
<i>Powder River Basin</i>			
Tons sold (in thousands)	74,531	79,542	(5,011)
Coal sales per ton sold	\$ 12.08	\$ 12.03	\$ 0.05
Cash cost per ton sold	\$ 10.63	\$ 10.45	\$ (0.18)
Cash margin per ton sold	\$ 1.45	\$ 1.58	\$ (0.13)
Adjusted EBITDA (in thousands)	\$ 110,528	\$ 126,525	\$ (15,997)
<i>Metallurgical</i>			
Tons sold (in thousands)	7,769	7,747	22
Coal sales per ton sold	\$ 105.33	\$ 111.72	\$ (6.39)
Cash cost per ton sold	\$ 66.07	\$ 66.85	\$ 0.78
Cash margin per ton sold	\$ 39.26	\$ 44.87	\$ (5.61)
Adjusted EBITDA (in thousands)	\$ 305,363	\$ 349,524	\$ (44,161)
<i>Other Thermal</i>			
Tons sold (in thousands)	7,717	9,089	(1,372)
Coal sales per ton sold	\$ 38.07	\$ 36.06	\$ 2.01
Cash cost per ton sold	\$ 32.85	\$ 28.95	\$ (3.90)
Cash margin per ton sold	\$ 5.22	\$ 7.11	\$ (1.89)
Adjusted EBITDA (in thousands)	\$ 41,495	\$ 68,620	\$ (27,125)

This table reflects numbers reported under a basis that differs from U.S. GAAP. See the "Reconciliation of Non-GAAP measures" below for explanation and reconciliation of these amounts to the nearest GAAP figures. Other companies may calculate these per ton amounts differently, and our calculation may not be comparable to other similarly titled measures.

Powder River Basin — Adjusted EBITDA for the year ended December 31, 2019, declined from the year ended December 31, 2018 due to decreased volume and increased cash cost per ton sold versus the prior year. The volume decline was due to the continued increase in generation from competing fuels, in particular low cost natural gas and subsidized renewable sources, particularly wind. Volume was further impacted by off-site flooding that disrupted rail performance in the first half of the current year. Pricing improved slightly in the current year due to an increase in the percentage of higher quality tons sold from scaling back operations at our lower quality Coal Creek mine. Due to market weakness for lower quality Powder River Basin coal, we decided to reduce operations at our Coal Creek mine rather than pursue uneconomic business. The resulting change in the mix of tons sold put upward pressure on both sales price per ton sold and cash cost per ton sold. We believe the reduction at Coal Creek will last at least through 2020. Cash cost per ton sold increased in the current year due to the volume decrease and lower percentage of Coal Creek volume, but the increase in cash cost per ton sold was mitigated somewhat by the reversion of the Federal Black Lung Excise Tax rate to the pre-1986 rates. The current period Federal Black Lung Excise Tax rate for surface mines is \$0.25 per ton or 2% of gross selling price on all domestic sales, versus the prior year

period rate of \$0.55 per ton sold or 4.4% of gross selling price. At this time, Federal Black Lung Excise Tax rates for 2020 are set to return to the higher rates that applied from 1986 through 2018.

Metallurgical — Adjusted EBITDA for the year ended December 31, 2019, decreased from the year ended December 31, 2018 due to reduced pricing over the second half of the current year as discussed in the Overview. Our cash cost per ton sold for the year ended December 31, 2019, decreased versus the prior year due to increased productivity at our Leer mine and lower operating taxes and royalties. These cost benefits were largely offset by decreased productivity at our Mountain Laurel mine as conditions were difficult in the mine's final longwall panels. The Mountain Laurel mine ceased longwall operations in the fourth quarter of the current year and is transitioning to dedicated continuous miner operations. Total tons sold increased slightly as coking coal volume increased and associated thermal coal volume decreased. The change in sales mix put upward pressure on sales price per ton.

The adverse geologic conditions in the final Mountain Laurel longwall panel prevented us from recovering approximately two thirds of the longwall system's hydraulic shields. These shields were planned to be rebuilt and utilized at our Leer South mine currently under development. We are finalizing a claim under our insurance policy that will cover the amount of capital required to replace the abandoned shields with new shields.

Our metallurgical segment sold 6.8 million tons of coking coal and 1.0 million tons of associated thermal coal in the year ended December 31, 2019, as compared to 6.7 million tons of coking coal and 1.1 million tons of associated thermal coal in the prior year. Longwall operations accounted for approximately 71% of our shipment volume in both the current and prior years.

Other Thermal— Adjusted EBITDA for the year ended December 31, 2019 declined from the year ended December 31, 2018 due to reduced sales volume and increased cash cost of tons sold. Tons sold volume decreased at all three of our Other Thermal operations in the current year due to continued softness in both domestic and international thermal coal markets as discussed in the Overview section. The volume decline was largest at our West Elk mine due to a planned first quarter reduction to accommodate customer delivery schedules and our longwall development requirements, and an unfavorable international pricing environment in the second half of the year. The decreased percentage of tons sold from the lower priced and lower cost West Elk mine contributed to the increases in both pricing and cash cost per ton sold.

In December of the current year we sold our Other Thermal operation, Coal-Mac LLC, to Condor Holdings LLC. For further information on the sale of Coal-Mac LLC to Condor Holdings LLC, please see Note 5 to the Consolidated Financial Statements, "Divestitures."

Results of Operations

Year Ended December 31, 2018 and 2017

Revenues. Our revenues include sales to customers of coal produced at our operations and coal purchased from third parties. Transportation costs are included in cost of coal sales and amounts billed by us to our customers for transportation are included in revenues.

Coal sales. The following table summarizes information about our coal sales for the years ended December 31, 2018 and 2017:

	Year Ended December 31, 2018	Year Ended December 31, 2017	(Decrease) / Increase
(In thousands)			
Coal sales	\$ 2,451,787	\$ 2,324,623	\$ 127,164
Tons sold	96,792	98,218	(1,426)

On a consolidated basis, coal sales in 2018 increased approximately \$127.2 million or 5.5% from 2017, while tons sold decreased approximately 1.4 million tons or 1.5%. Coal sales from ongoing Metallurgical operations increased approximately \$223.7 million, primarily on increased pricing. Powder River Basin coal sales decreased approximately \$50.9 million primarily due to decreased pricing, and Other Thermal coal sales increased approximately \$32.4 million due to increased pricing. Lone Mountain, an operation that we divested in 2017, provided approximately \$74.9 million in coal sales in 2017. A net transportation related increase of approximately \$36.8 million is included in the pricing increases discussed above. The increased transportation is primarily related to increased exports as a percentage of volume in the Metallurgical and Other Thermal segments. See discussion in "Operational Performance" for further information about segment results.

Costs, expenses and other. The following table summarizes costs, expenses and other components of operating income for years ended December 31, 2018 and 2017:

	Year Ended December 31, 2018	Year Ended December 31, 2017	Increase / (Decrease) in Net Income
(In thousands)			
Cost of sales (exclusive of items shown separately below)	\$ 1,925,202	\$ 1,839,993	\$ (85,209)
Depreciation, depletion and amortization	119,563	122,464	2,901
Accretion on asset retirement obligations	27,970	30,209	2,239
Amortization of sales contracts, net	11,107	53,985	42,878
Change in fair value of coal derivatives and coal trading activities, net	9,118	7,222	(1,896)
Selling, general and administrative expenses	100,300	87,952	(12,348)
(Gain) loss on sale of Lone Mountain Processing, Inc.	—	(21,297)	(21,297)
Other operating income, net	(20,611)	(30,241)	(9,630)
Total costs, expenses and other	\$ 2,172,649	\$ 2,090,287	\$ (82,362)

Cost of sales. Our cost of sales for year ended December 31, 2018 increased approximately \$85.2 million or 4.6% versus 2017. The increase consists primarily of increased transportation costs of approximately \$42.2 million, labor related costs of approximately \$37.4 million, repairs and supplies costs of approximately \$30.5 million, and a net increase in change in coal inventory costs of approximately \$31.0 million at ongoing operations. These cost increases were partially offset by the previously discussed sale of Lone Mountain which incurred approximately \$75.2 million of cost of sales in 2017. See discussion in "Operational Performance" for further information about segment results.

Depreciation, depletion and amortization. Our depreciation, depletion and amortization costs for the year ended December 31, 2018 decreased versus 2017 due to reduced depreciation of plant and equipment and amortization of development costs of approximately \$8.1 million. Of this total approximately \$4.5 million is related to our Lone Mountain operation in 2017. This reduction is partially offset by increased depletion of reserves of approximately \$5.2 million primarily in our metallurgical segment.

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Accretion on asset retirement obligation. Our accretion of asset retirement obligations for the year ended December 31, 2018, decreased versus 2017, primarily at idle properties where we have performed significant reclamation.

Amortization of sales contracts, net. The decrease in amortization of sales contracts, net in 2018 versus 2017 is primarily related to the value of certain Powder River Basin supply contracts being fully amortized at the end of 2017.

Change in fair value of coal derivatives and coal trading activities, net. The increased cost in 2018 versus 2017 is primarily related to mark-to-market losses on coal derivatives that we entered to hedge our price risk for anticipated international thermal coal shipments. As international thermal markets strengthened during 2018, the market value of these positions declined.

Selling, general and administrative expenses. The increase in selling, general and administrative expenses in 2018 versus 2017 is primarily due to increased compensation costs of approximately \$9.0 million, of which approximately \$6.1 million is stock based, and professional services of approximately \$2.9 million.

Gain on sale of Lone Mountain Processing, Inc. During the year ended December 31, 2017, we sold Lone Mountain Processing Inc. and Cumberland River Coal LLC to Revelation Energy LLC, generating a gain of approximately \$21.3 million. For further information on the sale of Lone Mountain Processing Inc. and Cumberland River Coal LLC to Revelation Energy LLC, please see Note 5 to the Consolidated Financial Statements, “Divestitures.”

Other operating income, net. The decreased benefit from other operating income, net in 2018 versus 2017 consists primarily of decreased income from equity investments of approximately \$2.0 million, and the unfavorable impact of coal derivative settlements in 2018 versus 2017 of approximately \$8.5 million, partially offset by increased miscellaneous revenues including outlease royalty income, transloading fees, and net gains on asset sales of approximately \$1.8 million.

Non-operating expense. The following table summarizes non-operating expense for the years ended December 31, 2018 and 2017:

	Year Ended December 31, 2018	Year Ended December 31, 2017	Increase / (Decrease) in Net Income
(In thousands)			
Non-service related pension and postretirement benefit costs	\$ (3,202)	\$ (1,940)	\$ (1,262)
Net loss resulting from early retirement of debt and debt restructuring	(485)	(2,547)	2,062
Reorganization income (loss), net	(1,661)	(2,398)	737
Total nonoperating expense	<u>\$ (5,348)</u>	<u>\$ (6,885)</u>	<u>\$ 1,537</u>

Nonoperating expenses declined in the year ended December 31, 2018 versus 2017 primarily due to costs associated with our efforts to replace our securitization facility and term loan in 2017, partially offset by costs associated with the repricing of our term loan in 2018, and reduced expenses associated with our Chapter 11 reorganization. Additionally, we adopted ASU 2017-07, “Compensation-Retirement Benefits (Topic 715) Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost,” and now reflect these costs as nonoperating expenses. See further discussion in Note 3, “Emergence from Bankruptcy,” and Note 13, “Debt and Financing Arrangements” to the Consolidated Financial Statements.

Provision for (benefit from) income taxes. The following table summarizes our provision for income taxes for the years ended December 31, 2018 and 2017:

	Year Ended December 31, 2018	Year Ended December 31, 2017	Increase / (Decrease) in Net Income
(In thousands)			
Provision for (benefit from) income taxes	\$ (52,476)	\$ (35,255)	\$ 17,221

See Note 14, to the Consolidated Financial Statements “Taxes,” for a reconciliation of the statutory federal income tax provision (benefit) at the statutory rate to the actual benefit from taxes.

Operational Performance

Year Ended December 31, 2018 and 2017

Our mining operations are evaluated based on Adjusted EBITDA, per-ton cash operating costs (defined as including all mining costs except depreciation, depletion, amortization, accretion on asset retirements obligations, and pass-through transportation expenses), and on other non-financial measures, such as safety and environmental performance. Adjusted EBITDA is defined as net income attributable to the Company before the effect of net interest expense, income taxes, depreciation, depletion and amortization, the amortization of sales contracts, the accretion on asset retirement obligations, and non-operating income (expense). Adjusted EBITDA may also be adjusted for items that may not reflect the trend of future results by excluding transactions that are not indicative of our core operating performance. Adjusted EBITDA is not a measure of financial performance in accordance with generally accepted accounting principles, and items excluded from Adjusted EBITDA are significant in understanding and assessing our financial condition. Therefore, Adjusted EBITDA should not be considered in isolation, nor as an alternative to net income, income from operations, cash flows from operations or as a measure of our profitability, liquidity or performance under generally accepted accounting principles. Furthermore, analogous measures are used by industry analysts to evaluate the Company's operating performance. Investors should be aware that our presentation of Adjusted EBITDA may not be comparable to similarly titled measures used by other companies.

The following table shows operating results of coal operations for the years ended December 31, 2018 and 2017.

	Year Ended December 31, 2018	Year Ended December 31, 2017	Variance
<i>Powder River Basin</i>			
Tons sold (in thousands)	79,542	80,604	(1,062)
Coal sales per ton sold	\$ 12.03	\$ 12.49	\$ (0.46)
Cash cost per ton sold	\$ 10.45	\$ 10.53	\$ 0.08
Cash margin per ton sold	\$ 1.58	\$ 1.96	\$ (0.38)
Adjusted EBITDA (in thousands)	\$ 126,525	\$ 158,882	\$ (32,357)
<i>Metallurgical</i>			
Tons sold (in thousands)	7,747	8,192	(445)
Coal sales per ton sold	\$ 111.72	\$ 90.17	\$ 21.55
Cash cost per ton sold	\$ 66.85	\$ 60.76	\$ (6.09)
Cash margin per ton sold	\$ 44.87	\$ 29.41	\$ 15.46
Adjusted EBITDA (in thousands)	\$ 349,524	\$ 243,616	\$ 105,908
<i>Other Thermal</i>			
Tons sold (in thousands)	9,089	9,205	(116)
Coal sales per ton sold	\$ 36.06	\$ 34.85	\$ 1.21
Cash cost per ton sold	\$ 28.95	\$ 24.20	\$ (4.75)
Cash margin per ton sold	\$ 7.11	\$ 10.65	\$ (3.54)
Adjusted EBITDA (in thousands)	\$ 68,620	\$ 102,006	\$ (33,386)

This table reflects numbers reported under a basis that differs from U.S. GAAP. See the "Reconciliation of Non-GAAP measures" below for explanation and reconciliation of these amounts to the nearest GAAP figures. Other companies may calculate these per ton amounts differently, and our calculation may not be comparable to other similarly titled measures.

Powder River Basin — Adjusted EBITDA for the year ended December 31, 2018, declined from the year ended December 31, 2017. Pricing in the current year was negatively impacted by the annual roll off and replacement of a portion of our term contracts at the end of the prior year. Some of these prior year contracts had been executed during stronger market environments. Increased natural gas and wind generation and above normal generator coal stockpiles pressured Powder River Basin markets throughout the current year. Volume decreased year over year reflecting the increase in electric generation from competing fuels and above normal generator stockpiles, offset to some degree by our ability to capitalize on shipping disruptions at other mines in the basin precipitated by excessive rainfall. Cash cost per ton sold declined year over year despite inflationary pressure, particularly for diesel fuel. Our efforts to "right size" our Powder River Basin operations coupled with lower sales sensitive costs, offset inflationary pressures, particularly diesel fuel.

Metallurgical — Adjusted EBITDA for the year ended December 31, 2018, increased from the year ended December 31, 2017 due to significant pricing improvement, and pricing continues to be supported by strength in international and domestic steel markets. Throughout 2018 our pricing benefited from our decision to commit less of our planned production

to North American annual fixed price contracts, leaving a greater portion exposed to stronger pricing in the international coking coal markets. Our sales volume decline versus 2017 was effectively all related to the divestiture of Lone Mountain. Lone Mountain sold approximately 1.0 million tons in 2017. Tons sold from ongoing operations increased over 0.5 million tons versus 2017. Our cash cost per ton sold for the year ended December 31, 2018, increased versus 2017 due to increased operating tax and royalty costs, increased labor costs, and inflationary pressure on parts, supplies, and services, as well as the timing of some major repairs. Inflationary pressure on labor, goods, and services utilized in our metallurgical segment has continued to build throughout the current year as the coking coal industry in the Appalachian geographic region attempts to maximize production to take advantage of the currently strong coking coal markets. Operating taxes and royalties are impacted by the increase in coal sales per ton sold and an increase in the severance tax rate at our Beckley Mine.

Our metallurgical segment sold 6.7 million tons of coking coal and 1.1 million tons of associated thermal coal in the year ended December 31, 2018, as compared to 6.4 million tons of coking coal, 0.5 million tons of PCI coal, and 1.3 million tons of associated thermal coal in 2017. Longwall operations accounted for approximately 71% of our shipment volume in 2018 and 57% of our shipment volume in 2017.

Other Thermal— Adjusted EBITDA for the year ended December 31, 2018 declined from the year ended December 31, 2017. 2018 was pressured by lower sales and production volume at our West Elk operation and increased costs at our West Elk and Coal-Mac operations. West Elk costs increased due to higher levels of continuous miner production as compared to the prior year, which was necessary to maintain adequate longwall development. Inflationary pressure further impacted costs, particularly materials, supplies, and diesel fuel.

Reconciliation of NON-GAAP measures

Non-GAAP Segment coal sales per ton sold

Non-GAAP Segment coal sales per ton sold is calculated as segment coal sales revenues divided by segment tons sold. Segment coal sales revenues are adjusted for transportation costs, and may be adjusted for other items that, due to generally accepted accounting principles, are classified in “other income” on the consolidated income statements, but relate to price protection on the sale of coal. Segment coal sales per ton sold is not a measure of financial performance in accordance with generally accepted accounting principles. We believe segment coal sales per ton sold provides useful information to investors as it better reflects our revenue for the quality of coal sold and our operating results by including all income from coal sales. The adjustments made to arrive at these measures are significant in understanding and assessing our financial condition. Therefore, segment coal sales revenues should not be considered in isolation, nor as an alternative to coal sales revenues under generally accepted accounting principles.

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Year Ended December 31, 2019 (In thousands)	Powder River Basin	Metallurgical	Other Thermal	Idle and Other	Consolidated
GAAP Revenues in the Consolidated Income Statements	\$ 915,750	\$ 990,550	\$ 377,202	\$ 10,850	\$ 2,294,352
Less: Adjustments to reconcile to Non-GAAP Segment coal sales revenue					
Coal risk management derivative settlements classified in "other income"	—	(1,122)	(6,782)	—	(7,904)
Coal sales revenues from idled or otherwise disposed operations not included in segments	—	—	—	10,820	10,820
Transportation costs	15,079	173,352	90,151	30	278,612
Non-GAAP Segment coal sales revenues	\$ 900,671	\$ 818,320	\$ 293,833	\$ —	\$ 2,012,824
Tons sold	74,531	7,769	7,717		
Coal sales per ton sold	\$ 12.08	\$ 105.33	\$ 38.07		

Year Ended December 31, 2018 (In thousands)	Powder River Basin	Metallurgical	Other Thermal	Idle and Other	Consolidated
GAAP Revenues in the Consolidated Income Statements	\$ 973,248	\$ 1,036,621	\$ 428,884	\$ 13,034	\$ 2,451,787
Less: Adjustments to reconcile to Non-GAAP Segment coal sales revenue					
Coal risk management derivative settlements classified in "other income"	—	—	8,718	—	8,718
Coal sales revenues from idled or otherwise disposed operations not included in segments	—	—	—	13,034	13,034
Transportation costs	16,388	171,126	92,438	—	279,952
Non-GAAP Segment coal sales revenues	\$ 956,860	\$ 865,495	\$ 327,728	\$ —	\$ 2,150,083
Tons sold	79,542	7,747	9,089		
Coal sales per ton sold	\$ 12.03	\$ 111.72	\$ 36.06		

Year Ended December 31, 2017 (In thousands)	Powder River Basin	Metallurgical	Other Thermal	Idle and Other	Consolidated
GAAP Revenues in the Consolidated Income Statements	\$ 1,024,197	\$ 887,839	\$ 396,504	\$ 16,083	\$ 2,324,623
Less: Adjustments to reconcile to Non-GAAP Segment coal sales revenue					
Coal risk management derivative settlements classified in "other income"	—	—	200	—	200
Coal sales revenues from idled or otherwise disposed operations not included in segments	—	—	—	15,061	15,061
Transportation costs	17,437	149,212	75,491	1,022	243,162
Non-GAAP Segment coal sales revenues	\$ 1,006,760	\$ 738,627	\$ 320,813	\$ —	\$ 2,066,200
Tons sold	80,604	8,192	9,205		
Coal sales per ton sold	\$ 12.49	\$ 90.17	\$ 34.85		

Non-GAAP Segment cash cost per ton sold

Non-GAAP Segment cash cost per ton sold is calculated as segment cash cost of coal sales divided by segment tons sold. Segment cash cost of coal sales is adjusted for transportation costs, and may be adjusted for other items that, due to generally accepted accounting principles, are classified in “other income” on the consolidated income statements, but relate directly to the costs incurred to produce coal. Segment cash cost per ton sold is not a measure of financial performance in accordance with generally accepted accounting principles. We believe segment cash cost per ton sold better reflects our controllable costs and our operating results by including all costs incurred to produce coal. The adjustments made to arrive at these measures are significant in understanding and assessing our financial condition. Therefore, segment cash cost of coal sales should not be considered in isolation, nor as an alternative to cost of sales under generally accepted accounting principles.

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Year Ended December 31, 2019 (In thousands)	Powder River Basin	Metallurgical	Other Thermal	Idle and Other	Consolidated
GAAP Cost of sales in the Consolidated Income Statements	\$ 803,996	\$ 686,673	\$ 343,656	\$ 38,692	\$ 1,873,017
Less: Adjustments to reconcile to Non-GAAP Segment cash cost of coal sales					
Diesel fuel risk management derivative settlements classified in "other income"	(3,036)	—	—	—	(3,036)
Transportation costs	15,079	173,353	90,151	30	278,613
Cost of coal sales from idled or otherwise disposed operations not included in segments	—	—	—	28,712	28,712
Other (operating overhead, certain actuarial, etc.)	—	—	—	9,950	9,950
Non-GAAP Segment cash cost of coal sales	791,953	513,320	253,505	—	1,558,778
Tons sold	74,531	7,769	7,717		
Cash Cost Per Ton Sold	\$ 10.63	\$ 66.07	\$ 32.85		

Year Ended December 31, 2018 (In thousands)	Powder River Basin	Metallurgical	Other Thermal	Idle and Other	Consolidated
GAAP Cost of sales in the Consolidated Income Statements	\$ 851,414	\$ 689,053	\$ 355,544	\$ 29,191	\$ 1,925,202
Less: Adjustments to reconcile to Non-GAAP Segment cash cost of coal sales					
Diesel fuel risk management derivative settlements classified in "other income"	4,056	—	—	—	4,056
Transportation costs	16,388	171,126	92,438	—	279,952
Cost of coal sales from idled or otherwise disposed operations not included in segments	—	—	—	18,884	18,884
Other (operating overhead, certain actuarial, etc.)	—	—	—	10,307	10,307
Non-GAAP Segment cash cost of coal sales	\$ 830,970	\$ 517,927	\$ 263,106	\$ —	\$ 1,612,003
Tons sold	79,542	7,747	9,089		
Cash Cost Per Ton Sold	\$ 10.45	\$ 66.85	\$ 28.95		

Year Ended December 31, 2017 (In thousands)	Powder River Basin	Metallurgical	Other Thermal	Idle and Other	Consolidated
GAAP Cost of sales in the Consolidated Income Statements	\$ 863,836	\$ 646,911	\$ 298,229	\$ 31,017	\$ 1,839,993
Less: Adjustments to reconcile to Non-GAAP Segment cash cost of coal sales					
Diesel fuel risk management derivative settlements classified in "other income"	(2,645)	—	—	—	(2,645)
Transportation costs	17,437	149,212	75,491	1,022	243,162
Cost of coal sales from idled or otherwise disposed operations not included in segments	—	—	—	28,065	28,065
Other (operating overhead, certain actuarial, etc.)	—	—	—	1,930	1,930
Non-GAAP Segment cash cost of coal sales	\$ 849,044	\$ 497,699	\$ 222,738	\$ —	\$ 1,569,481
Tons sold	80,604	8,192	9,205		
Cash Cost Per Ton Sold	\$ 10.53	\$ 60.76	\$ 24.20		

Reconciliation of Segment Adjusted EBITDA to Net Income

The discussion in “Results of Operations” above includes references to our Adjusted EBITDA for each of our reportable segments. Adjusted EBITDA is defined as net income attributable to the Company before the effect of net interest expense, income taxes, depreciation, depletion and amortization, the amortization of sales contracts, and the accretion on asset retirement obligations. Adjusted EBITDA may also be adjusted for items that may not reflect the trend of future results by excluding transactions that are not indicative of our core operating performance. We use Adjusted EBITDA to measure the operating performance of our segments and allocate resources to our segments. Adjusted EBITDA is not a measure of financial performance in accordance with generally accepted accounting principles, and items excluded from Adjusted EBITDA are significant in understanding and assessing our financial condition. Therefore, Adjusted EBITDA should not be considered in isolation, nor as an alternative to net income, income from operations, cash flows from operations or as a measure of our profitability, liquidity or performance under generally accepted accounting principles. Investors should be aware that our presentation of Adjusted EBITDA may not be comparable to similarly titled measures used by other companies. The table below shows how we calculate Adjusted EBITDA.

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
<i>(In thousands)</i>			
Net income	\$ 233,799	\$ 312,577	\$ 238,450
Income tax (benefit) provision	248	(52,476)	(35,255)
Interest expense, net	6,794	13,689	24,256
Depreciation, depletion and amortization	112,055	119,563	122,464
Accretion on asset retirement obligations	20,548	27,970	30,209
Amortization of sales contracts, net	(434)	11,107	53,985
Costs related to proposed joint venture with Peabody Energy	13,816	—	—
Loss on sale of Coal-Mac LLC	9,008	—	—
Preference Rights Lease Application settlement income	(39,000)	—	—
Loss (gain) on sale of Lone Mountain Processing, Inc.	4,304	—	(21,297)
Net loss resulting from early retirement of debt and debt restructuring	—	485	2,547
Non-service related postretirement benefit costs	2,053	3,202	1,940
Reorganization items, net	(24)	1,661	2,398
Adjusted EBITDA	<u>363,167</u>	<u>437,778</u>	<u>419,697</u>
EBITDA from idled or otherwise disposed operations	12,926	2,492	3,253
Selling, general and administrative expenses	95,781	100,300	87,952
Other	(14,488)	4,099	(6,398)
Segment Adjusted EBITDA from coal operations	<u>\$ 457,386</u>	<u>\$ 544,669</u>	<u>\$ 504,504</u>

Other includes primarily income from our equity investments, certain changes in the fair value of coal derivatives and coal trading activities, certain changes in fair value of heating oil derivatives we use to manage our exposure to diesel fuel pricing, net EBITDA provided by our land company, and certain miscellaneous revenue.

For the year ended December 31, 2019, amounts included in Other increased EBITDA by approximately \$14.5 million versus reducing EBITDA approximately \$4.1 million in the year ended December 31, 2018. The increase in EBITDA was primarily related to favorable change in value of coal derivatives of approximately \$20.3 million, and favorable change in value of heating oil derivatives of approximately \$5.3 million, partially offset by reduced income from equity investments of approximately \$3.4 million and reduced net EBITDA provided by our land company of approximately \$2.9 million.

Other for the year ended December 31, 2018, reduced EBITDA approximately \$4.1 million versus providing approximately \$6.4 million in EBITDA in year ended December 31, 2017. The decline in EBITDA was primarily related to

unfavorable change in value of heating oil derivatives of approximately \$6.1 million, unfavorable change in value of coal derivatives of approximately \$2.2 million, and reduced income from equity investments of approximately \$2.0 million.

Liquidity and Capital Resources

Our primary sources of liquidity are proceeds from coal sales to customers and certain financing arrangements. Excluding significant investing activity, we intend to satisfy our working capital requirements and fund capital expenditures and debt-service obligations with cash generated from operations and cash on hand. Our focus is prudently managing costs, including capital expenditures, maintaining a strong balance sheet, and ensuring adequate liquidity.

On April 27, 2017, our Board of Directors authorized a share repurchase program for up to \$300 million of our common stock, and has subsequently authorized additional amounts bringing the total authorization to \$1.05 billion. During the year ended December 31, 2019, we repurchased 2,872,548 shares of our stock for approximately \$243.5 million, bringing total repurchases to 10,088,378 shares for approximately \$827.4 million. The timing of any future share purchases, and the ultimate number of shares to be purchased, will depend on a number of factors, including business and market conditions, our future financial performance, and other capital priorities. The shares will be acquired in the open market or through private transactions in accordance with Securities and Exchange Commission requirements.

On April 27, 2017, our Board of Directors authorized a quarterly common stock cash dividend of \$0.35 per share, which we increased to \$0.40 per share on February 13, 2018. On February 14, 2019 we announced a further increase in the quarterly dividend to \$0.45 per share. During the year ended December 31, 2019, we paid four quarterly cash dividends of \$0.45 per share, totaling approximately \$30.2 million, and bringing total dividends paid since initiation to approximately \$85.9 million. On February 6, 2020 we announced an increase in the quarterly dividend to \$0.50 per share. The next dividend is scheduled to be paid on March 13, 2020 to stockholders of record at the close of business on March 3, 2020.

Given the volatile nature of coal markets, we believe it is important to take a prudent approach to managing our balance sheet and liquidity. We plan to implement our dividend policy and share repurchase program while targeting liquidity levels between \$400 million and \$500 million, a significant portion of which will be cash. There could be future periods when our liquidity falls below our targeted levels. In the future, we will continue to evaluate our capital allocation initiatives in light of the current state of and our outlook for coal markets; the amount of our planned production that has been committed and priced; the capital needs of the business; and other strategic opportunities.

On March 7, 2017, we entered into a senior secured term loan credit agreement in an aggregate principal amount of \$300 million (the "Term Loan Debt Facility") with Credit Suisse AG, Cayman Islands Branch, as administrative agent and collateral agent and the other financial institutions from time to time party thereto. The Term Loan Debt Facility was issued at 99.50% of the face amount and will mature on March 7, 2024. The term loans provided under the Term Loan Debt Facility (the "Term Loans") are subject to quarterly principal amortization payments in an amount equal to \$750,000. Proceeds from the Term Loan Debt Facility were used to repay all outstanding obligations under our previously existing term loan credit agreement, dated as of October 5, 2016.

On April 3, 2018, we entered into the Second Amendment (the "Second Amendment") to the Term Loan Debt Facility. The Second Amendment reduced the interest rate on the Term Loans to, at our option, either (i) the London interbank offered rate ("LIBOR") plus an applicable margin of 2.75%, subject to a 1.00% LIBOR floor, or (ii) a base rate plus an applicable margin of 1.75%. For further information regarding the New Term Loan Debt Facility see Note 13 to the Consolidated Financial Statements "Debt and Financing Arrangements".

We have entered into a series of interest rate swaps to fix a portion of the LIBOR interest payments due under the term loan. As interest payments are made on the term loan, amounts in accumulated other comprehensive income will be reclassified into earnings through interest expense to reflect a net interest on the term loan equal to the effective yield of the fixed rate of the swap plus 2.75% which is the spread on the LIBOR term loan as amended. For further information regarding the interest rate swaps see Note 13 to the Consolidated Financial Statements "Debt and Financing Arrangements".

On August 27, 2018, (the "Securitization Facility Closing Date"), we extended and amended our trade accounts receivable securitization facility provided to Arch Receivable Company, LLC, a special -purpose entity that is a wholly owned subsidiary of Arch Coal ("Arch Receivable") (the "Extended Securitization Facility"), which supports the issuance of letters of credit and requests for cash advances. The Extended Securitization Facility maintained the \$160 million borrowing capacity and extended the maturity date to the date that is three years after the Securitization Facility Closing Date. Additionally, the amendment provided us the opportunity to utilize credit insurance to increase the pool of eligible receivables. Pursuant to the

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Extended Securitization Facility, Arch Receivable also agreed to a revised schedule of fees payable to the administrator and the providers of the Extended Securitization Facility. For further information regarding the Securitization Facility see Note 13 to the Consolidated Financial Statements “Debt and Financing Arrangements”.

On April 27, 2017 (the “Inventory Facility Closing Date”), we entered into a senior secured inventory-based revolving credit facility in an aggregate principal amount of \$40 million (the “Inventory Facility”) with Regions Bank (“Regions”) as administrative agent and collateral agent, as lender and swingline lender, and as letter of credit issuer. Availability under the Inventory Facility is subject to a borrowing base consisting of (i) 85% of the net orderly liquidation value of eligible coal inventory, (ii) the lesser of (x) 85% of the net orderly liquidation value of eligible parts and supplies inventory and (y) 35% of the amount determined pursuant to clause (i), and (iii) 100% of our Eligible Cash (defined in the Inventory Facility), subject to reduction for reserves imposed by Regions.

The commitments under the Inventory Facility will terminate on the date that is the earliest to occur of (i) the third anniversary of the Inventory Facility Closing Date, (ii) the date, if any, that is 364 days following the first day that Liquidity (defined in the Inventory Facility and consistent with the definition in the Securitization Facility) is less than \$250 million for a period of 60 consecutive days and (iii) the date, if any, that is 60 days following the maturity, termination or repayment in full of the Securitization Facility.

Revolving loan borrowings under the Inventory Facility bear interest at a per annum rate equal to, at our option, either the base rate or the London interbank offered rate plus, in each case, a margin ranging from 2.00% to 2.50% (in the case of LIBOR loans) and 1.00% to 1.50% (in the case of base rate loans) determined using a Liquidity-based grid. Letters of credit under the New Inventory Facility are subject to a fee in an amount equal to the applicable margin for LIBOR loans, plus customary fronting and issuance fees.

On November 19, 2018, we amended and extended the Inventory Facility to increase the total aggregate principal amount available to \$50 million subject to borrowing base calculations described above. For further information regarding the Inventory Facility see Note 13 to the Consolidated Financial Statements “Debt and Financing Arrangements”.

On December 31, 2019 we had total liquidity of approximately \$412 million including \$289 million in unrestricted cash and equivalents, and short term investments in debt securities, with the remainder provided by availability under our credit facilities, and funds withdrawable from brokerage accounts. The table below summarizes our availability under our credit facilities as of December 31, 2019:

	Face Amount	Borrowing Base	Letters of Credit Outstanding	Availability	Contractual Expiration
	(Dollars in thousands)				
Securitization Facility	\$ 160,000	\$ 124,400	\$ 15,487	\$ 108,913	August 27, 2021
Inventory Facility	50,000	50,000	35,946	14,054	August 27, 2021
Total	<u>\$ 210,000</u>	<u>\$ 174,400</u>	<u>\$ 51,433</u>	<u>\$ 122,967</u>	

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The following is a summary of cash provided by or used in each of the indicated types of activities:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
(In thousands)			
Cash provided by (used in):			
Operating activities	\$ 419,714	\$ 417,963	\$ 396,474
Investing activities	(239,111)	(103,952)	(130,638)
Financing activities	(292,520)	(322,676)	(368,656)

Cash Flow

Cash provided by operating activities in the year ended December 31, 2019 increased slightly versus the year ended December 31, 2018 due to an approximately \$21 million favorable year over year change in working capital requirements, particularly in receivables, a net positive impact versus the prior year period of approximately \$33 million from the margin accounts associated with our coal derivative positions, and receipt of approximately \$52 million in federal income tax refunds in the current year period, partially offset by reduced operating earnings and receipt of an approximately \$24 million income tax refund in the prior year.

Cash provided by operating activities in the year ended December 31, 2018 increased versus the year ended December 31, 2017 primarily due to improved operating earnings, along with a federal income tax refund of \$24.3 million. Offsetting that partially were additional working capital requirements of approximately \$40 million.

Cash used in investing activities in the year ended December 31, 2019 increased versus the year ended December 31, 2018 primarily due to an increase in capital expenditures in the current year of approximately \$171 million as we ramped up our Leer South development expenditures along with the purchase of additional reserves contiguous to our Leer property for approximately \$52.5 million, partially offset by the net sale of short-term investments of approximately \$28 million in current year versus net purchases of approximately \$7 million in the prior year.

Cash used in investing activities in the year ended December 31, 2018 declined versus the year ended December 31, 2017 primarily due to the net purchase of short-term investments of approximately \$69 million in 2017 versus \$7 million in the 2018, partially offset by an increase in capital expenditures in 2018 of approximately \$36 million which included initial Leer South development expenditures, and reduced proceeds from disposals and divestitures in 2018 of approximately \$12 million. Capital expenditures in 2017 were at minimal levels.

Cash used in financing activities in the year ended December 31, 2019 declined versus the year ended December 31, 2018 primarily due to reduced purchases of treasury stock in the current year.

Cash used in financing activities in the year ended December 31, 2018 declined versus the year ended December 31, 2017 primarily due to reduced purchases of treasury stock in 2018, higher net payments on outstanding debt in 2017, and higher 2017 financing costs associated with our Term Loan Debt Facility, Securitization Facility, and Inventory Facility discussed above. For further information regarding our debt facilities see Note 13, "Debt and Financing Arrangements" to the Consolidated Financial Statements.

Contractual Obligations

	Payments Due by Period				Total
	2020	2021-2022	2023-2024	after 2024	
	(Dollars in thousands)				
Long-term debt, including related interest	\$ 35,234	\$ 37,634	\$ 298,327	\$ —	\$ 371,195
Operating leases	3,616	6,659	6,413	8,001	24,689
Coal lease rights	3,794	6,599	5,165	43,375	58,933
Coal purchase obligations	4,150	—	—	—	4,150
Unconditional purchase obligations	166,357	—	—	—	166,357
Total contractual obligations	<u>\$ 213,151</u>	<u>\$ 50,892</u>	<u>\$ 309,905</u>	<u>\$ 51,376</u>	<u>\$ 625,324</u>

The related interest on long-term debt was calculated using rates in effect at December 31, 2019 for the remaining term of outstanding borrowings.

Coal lease rights represent non-cancelable royalty lease agreements, as well as lease bonus payments due.

Unconditional purchase obligations include open purchase orders and other purchase commitments, which have not been recognized as a liability. The commitments in the table above relate to contractual commitments for the purchase of materials and supplies, payments for services and capital expenditures.

The table above excludes our asset retirement obligations. Our consolidated balance sheet reflects a liability of \$252.8 million including amounts classified as a current liability for asset retirement obligations that arise from SMCRA and similar state statutes, which require that mine property be restored in accordance with specified standards and an approved reclamation plan. Asset retirement obligations are recorded at fair value when incurred and accretion expense is recognized through the expected date of settlement. Determining the fair value of asset retirement obligations involves a number of estimates, as discussed in the section entitled “Critical Accounting Policies” below, including the timing of payments to satisfy the obligations. The timing of payments to satisfy asset retirement obligations is based on numerous factors, including mine closure dates. Please see the notes to our Consolidated Financial Statements for more information about our asset retirement obligations.

The table above also excludes certain other obligations reflected in our consolidated balance sheet, including estimated funding for pension and postretirement benefit plans and worker’s compensation obligations. The timing of contributions to our pension plans varies based on a number of factors, including changes in the fair value of plan assets and actuarial assumptions. Please see the section entitled “Critical Accounting Policies” below for more information about these assumptions. We expect to make no contributions to our pension plans in 2020.

Please see the Notes to our Consolidated Financial Statements for more information about the amounts we have recorded for workers’ compensation and pension and postretirement benefit obligations.

Off-Balance Sheet Arrangements

In the normal course of business, we are a party to certain off-balance sheet arrangements. These arrangements include guarantees, indemnifications, financial instruments with off-balance sheet risk, such as bank letters of credit and performance or surety bonds. Liabilities related to these arrangements are not reflected in our consolidated balance sheets, and we do not expect any material adverse effects on our financial condition, results of operations or cash flows to result from these off-balance sheet arrangements.

We use a combination of surety bonds, letters of credit and cash to secure our financial obligations for reclamation, workers' compensation, coal lease obligations and other obligations as follows as of December 31, 2019:

	Reclamation Obligations	Lease Obligations	Workers' Compensation Obligations	Other	Total
	(Dollars in thousands)				
Surety bonds	\$ 528,877	\$ 29,506	\$ 80,113	\$ 3,982	\$ 642,478
Letters of credit	—	—	36,579	1,354	37,933
Cash on deposit with others	590	—	5,000	—	5,590

Critical Accounting Policies

We prepare our financial statements in accordance with accounting principles that are generally accepted in the United States. The preparation of these financial statements requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses as well as the disclosure of contingent assets and liabilities. Management bases our estimates and judgments on historical experience and other factors that are believed to be reasonable under the circumstances. Additionally, these estimates and judgments are discussed with our audit committee on a periodic basis. Actual results may differ from the estimates used under different assumptions or conditions. We have provided a description of all significant accounting policies in the notes to our Consolidated Financial Statements. We believe that of these significant accounting policies, the following may involve a higher degree of judgment or complexity:

Derivative Financial Instruments

We utilize derivative instruments to manage exposures to commodity prices and interest rate risk on long-term debt. Additionally, we may hold certain coal derivative instruments for trading purposes. Derivative financial instruments are recognized in the balance sheet at fair value. Certain coal contracts may meet the definition of a derivative instrument, but because they provide for the physical purchase or sale of coal in quantities expected to be used or sold by us over a reasonable period in the normal course of business, they are not recognized on the balance sheet.

Certain derivative instruments are designated as the hedge instrument in a hedging relationship. In a cash flow hedge, we hedge the risk of changes in future cash flows related to the underlying item being hedged. Changes in the fair value of the derivative instrument used as a hedge instrument in a cash flow hedge are recorded in other comprehensive income. Amounts in other comprehensive income are reclassified to earnings when the hedged transaction affects earnings and are classified in a manner consistent with the transaction being hedged.

We formally document all relationships between hedging instruments and hedged items, as well as our risk management objectives for undertaking various hedge transactions. We evaluate the effectiveness of our hedging relationships both at the hedge inception and on an ongoing basis.

Impairment of Long-lived Assets

We review our long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. These events and circumstances include, but are not limited to, a current expectation that a long-lived asset will be disposed of significantly before the end of its previously estimated useful life, a significant adverse change in the extent or manner in which we use a long-lived asset or a change in its physical condition.

When such events or changes in circumstances occur, a recoverability test is performed comparing projected undiscounted cash flows from the use and eventual disposition of an asset or asset group to its carrying amount. If the projected undiscounted cash flows are less than the carrying amount, an impairment is recorded for the excess of the carrying amount over the estimate fair value, which is generally determined using discounted future cash flows. If we recognize an impairment loss, the adjusted carrying amount of the asset becomes the new cost basis. For a depreciable long-lived asset, the new cost basis will be depreciated (amortized) over the remaining estimated useful life of the asset.

We make various assumptions, including assumptions regarding future cash flows in our assessments of long-lived assets for impairment. The assumptions about future cash flows and growth rates are based on the current and long-term business plans related to the long-lived assets. Discount rate assumptions are based on an assessment of the risk inherent in the future cash flows of the long-lived assets. These assumptions require significant judgments on our part, and the conclusions that we reach could vary significantly based upon these judgments.

Asset Retirement Obligations

Our asset retirement obligations arise from SMCRA and similar state statutes, which require that mine property be restored in accordance with specified standards and an approved reclamation plan. Significant reclamation activities include reclaiming refuse and slurry ponds, reclaiming the pit and support acreage at surface mines, and sealing portals at deep mines. Our asset retirement obligations are initially recorded at fair value, or the amount at which the obligations could be settled in a current transaction between willing parties. This involves determining the present value of estimated future cash flows on a mine-by-mine basis based upon current permit requirements and various estimates and assumptions, including estimates of disturbed acreage, reclamation costs and assumptions regarding equipment productivity. We estimate disturbed acreage based on approved mining plans and related engineering data. Since we plan to use internal resources to perform the majority of our reclamation activities, our estimate of reclamation costs involves estimating third-party profit margins, which we base on our historical experience with contractors that perform certain types of reclamation activities. We base productivity assumptions on historical experience with the equipment that we expect to utilize in the reclamation activities. In order to determine fair value, we discount our estimates of cash flows to their present value. We base our discount rate on the rates of treasury bonds with maturities similar to expected mine lives, adjusted for our credit standing.

Accretion expense is recognized on the obligation through the expected settlement date. On at least an annual basis, we review our entire reclamation liability and make necessary adjustments for permit changes as granted by state authorities, changes in the timing and extent of reclamation activities, and revisions to cost estimates and productivity assumptions, to reflect current experience. Any difference between the recorded amount of the liability and the actual cost of reclamation will be recognized as a gain or loss when the obligation is settled. We expect our actual cost to reclaim our properties will be less than the expected cash flows used to determine the asset retirement obligation. At December 31, 2019, our balance sheet reflected asset retirement obligation liabilities of \$252.8 million, including amounts classified as a current liability. As of December 31, 2019, we estimate the aggregate undiscounted cost of final mine closures to be approximately \$528.6 million.

See the rollforward of the asset retirement obligation liability in Note 15 to the Consolidated Financial Statements, "Asset Retirement Obligations".

Employee Benefit Plans

We have non-contributory defined benefit pension plans covering certain of our salaried and hourly employees. Benefits are generally based on the employee's years of service and compensation. The actuarially-determined funded status of the defined benefit plans is reflected in the balance sheet.

The calculation of our net periodic benefit costs (pension expense) and benefit obligation (pension liability) associated with our defined benefit pension plans requires the use of a number of assumptions. These assumptions are summarized in Note 20, "Employee Benefit Plans", to the Consolidated Financial Statements. Changes in these assumptions can result in different pension expense and liability amounts, and actual experience can differ from the assumptions.

- The expected long-term rate of return on plan assets is an assumption reflecting the average rate of earnings expected on the funds invested or to be invested to provide for the benefits included in the projected benefit obligation. We establish the expected long-term rate of return at the beginning of each fiscal year based upon historical returns and projected returns on the underlying mix of invested assets. The pension plan's investment targets are 27% equity and 73% fixed income securities. Investments are rebalanced on a periodic basis to approximate these targeted guidelines. The long-term rate of return assumptions are less than the plan's actual life-to-date returns. The impact of lowering the expected long-term rate of return on plan assets 0.5% for 2019 would have been an increase in expense of approximately \$1.1 million.
- The discount rate represents our estimate of the interest rate at which pension benefits could be effectively settled. Assumed discount rates are used in the measurement of the projected, accumulated and vested benefit obligations and the service and interest cost components of the net periodic pension cost. The determination of the discount rate was updated from our actuary's proprietary Yield Curve model, under which the expected benefit payments of the plan are matched against a series of spot rates from a market basket of high quality fixed income securities. The impact of lowering the discount rate 0.5% for 2019 would have been a decrease in expense of approximately \$0.8 million.

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The differences generated from changes in assumed discount rates and returns on plan assets are amortized into earnings using the corridor method, whereby the unrecognized (gains)/losses in excess of 10% of the greater of the beginning of the year projected benefit obligation or market-related value of assets are amortized over the average remaining life expectancy of the plan participants.

We also currently provide certain postretirement medical and life insurance coverage for eligible employees. Generally, covered employees who terminate employment after meeting eligibility requirements are eligible for postretirement coverage for themselves and their dependents. The salaried employee postretirement benefit plans are contributory, with retiree contributions adjusted periodically, and contain other cost-sharing features such as deductibles and coinsurance.

Actuarial assumptions are required to determine the amounts reported as obligations and costs related to the postretirement benefit plan. The discount rate assumption reflects the rates available on high-quality fixed-income debt instruments at year-end and is calculated in the same manner as discussed above for the pension plan. A change of 0.5% in these assumptions would not have had a significant impact on the benefit costs in 2019.

Income Taxes

We provide for deferred income taxes for temporary differences arising from differences between the financial statement and tax basis of assets and liabilities existing at each balance sheet date using enacted tax rates expected to be in effect when the related taxes are expected to be paid or recovered. We initially recognize the effects of a tax position when it is more than 50 percent likely, based on the technical merits, that that position will be sustained upon examination, including resolution of the related appeals or litigation processes, if any. Our determination of whether or not a tax position has met the recognition threshold considers the facts, circumstances, and information available at the reporting date.

We reassess our ability to realize our deferred tax assets annually in the fourth quarter, during our annual budget process, or when circumstances indicate that the ability to realize deferred tax assets has changed. The assessment takes into account expectations of future taxable income or loss, available tax planning strategies and the reversal of temporary differences. The development of these expectations involves the use of estimates such as production levels, operating profitability, timing of development activities and the cost and timing of reclamation work. A valuation allowance may be recorded to reflect the amount of future tax benefits that management believes are not likely to be realized.

A valuation allowance is difficult to avoid when a company is in a cumulative loss position. A cumulative loss position is defined as a cumulative pre-tax loss for the current and two preceding years. Because of the 2016 bankruptcy, we were in a cumulative loss position in 2017 and 2018. As a cumulative loss constitutes significant negative evidence with regards to future taxable income, in 2017 and 2018 we relied solely on the expected reversal of taxable temporary differences to support the future realization of our deferred tax assets.

As of December 31, 2019, we are no longer in a cumulative loss position. In 2019, our assessment took into account expectations of future taxable income, available tax planning strategies and the reversal of temporary differences. Based on significant near-term uncertainty in market pricing and uncertainty surrounding other planned changes in our operating structure, we will not release the valuation allowance in 2019.

As of December 31, 2019, we had a valuation allowance against our deferred tax assets of \$506.3 million. If actual outcomes differ from our expectations, we may adjust our valuation allowance through income tax expense in the period such determination is made.

During 2018, the IRS completed an audit of AMT NOL carryback claims the Company filed in prior periods. In addition, the Company filed an amended 2016 tax return which changed the amount of available tax attributes and the mix used to offset its bankruptcy cancellation of indebtedness income as of January 1, 2017. As a result, the Company increased available alternative minimum tax ("AMT") credits, which are allowed to be refunded under the Tax Cuts and Jobs Act of 2017 ("The Act") and reduced other tax attributes as of that date. In total, these changes resulted in a recorded benefit from income taxes of \$48.8 million, which was net of a \$26.6 million uncertain tax position charge.

On December 22, 2017, the Act was signed into law making significant changes to the Internal Revenue Code. The Company provided its best estimate of the impact of the Act at December 31, 2017 and during 2018 completed its analysis as provided by SAB 118. The Company has not recorded any adjustments related to the Act during 2018 that would materially change the amounts recorded at December 31, 2017.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

We manage our commodity price risk for our non-trading, thermal coal sales through the use of long-term coal supply agreements, and to a limited extent, through the use of derivative instruments. Sales commitments in the metallurgical coal market are typically not long-term in nature, and we are therefore subject to fluctuations in market pricing.

Our commitments for 2020 are as follows:

	2020	
	Tons (in millions)	\$ per ton
Metallurgical		
Committed, North America Priced Coking	1.8	\$ 107.11
Committed, North America Unpriced Coking	—	
Committed, Seaborne Priced Coking	0.2	\$ 83.44
Committed, Seaborne Unpriced Coking	2.2	
Committed, Priced Thermal	0.1	\$ 19.74
Committed, Unpriced Thermal	0.4	
Powder River Basin		
Committed, Priced	58.1	\$ 12.22
Committed, Unpriced	1.8	
Other Thermal		
Committed, Priced	3.1	\$ 33.65
Committed, Unpriced	0.3	

We are also exposed to commodity price risk in our coal trading activities, which represents the potential future loss that could be caused by an adverse change in the market value of coal. Our coal trading portfolio included forward, swap and put and call option contracts at December 31, 2019. The estimated future realization of the value of the trading portfolio is \$0.5 million of losses in 2020.

We monitor and manage market price risk for our trading activities with a variety of tools, including Value at Risk (VaR), position limits, management alerts for mark to market monitoring and loss limits, scenario analysis, sensitivity analysis and review of daily changes in market dynamics. Management believes that presenting high, low, end of year and average VaR is the best available method to give investors insight into the level of commodity risk of our trading positions. Illiquid positions, such as long-dated trades that are not quoted by brokers or exchanges, are not included in VaR.

VaR is a statistical one-tail confidence interval and down side risk estimate that relies on recent history to estimate how the value of the portfolio of positions will change if markets behave in the same way as they have in the recent past. While presenting VaR will provide a similar framework for discussing risk across companies, VaR estimates from two independent sources are rarely calculated in the same way. Without a thorough understanding of how each VaR model was calculated, it would be difficult to compare two different VaR calculations from different sources. The level of confidence is 95%. The time across which these possible value changes are being estimated is through the end of the next business day. A closed-form delta-neutral method used throughout the finance and energy sectors is employed to calculate this VaR. VaR is back tested to verify usefulness.

On average, portfolio value should not fall more than VaR on 95 out of 100 business days. Conversely, portfolio value declines of more than VaR should be expected, on average, 5 out of 100 business days. When more value than VaR is lost due to market price changes, VaR is not representative of how much value beyond VaR will be lost.

During the year ended December 31, 2019, VaR for our coal trading positions that are recorded at fair value through earnings ranged from \$0.1 million to \$0.2 million. The linear mean of each daily VaR was \$0.1 million. The final VaR at December 31, 2019 was under \$0.1 million.

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We are exposed to fluctuations in the fair value of coal derivatives that we enter into to manage the price risk related to future coal sales, but for which we do not elect hedge accounting. Any gains or losses on these derivative instruments would be offset in the pricing of the physical coal sale. During the year ended December 31, 2019 VaR for our risk management positions that are recorded at fair value through earnings ranged from \$0.1 million to \$1.9 million. The linear mean of each daily VaR was \$1.0 million. The final VaR at December 31, 2019 was under \$0.1 million.

We are also exposed to the risk of fluctuations in cash flows related to our purchase of diesel fuel. We expect to use approximately 34 to 40 million gallons of diesel fuel for use in our operations during 2020. We may enter into forward physical purchase contracts, as well as purchased heating oil options, to reduce volatility in the price of diesel fuel for our operations. At December 31, 2019, we had purchased heating oil call options for approximately 10.1 million gallons for the purpose of protecting against substantial increases in price relating to future diesel purchases. These positions reduce our risk of cash flow fluctuations related to these fuel purchases but the positions are not accounted for as hedges. A \$0.25 per gallon decrease in the price of heating oil would not result in an increase in our expense related to the heating oil derivatives.

We are exposed to market risk associated with interest rates due to our existing level of indebtedness. At December 31, 2019, of our \$316.8 million principal amount of debt outstanding, approximately \$291.8 million of outstanding borrowings have interest rates that fluctuate based on changes in the market rates. An increase in the interest rates related to these borrowings of 25 basis points would not result in a material annualized increase in interest expense based on interest rates in effect at December 31, 2019, because we have fixed the majority of the LIBOR portion of the interest rate on our term loan using interest rate swaps. See Note 13, "Debt and Financing Arrangements" to the Consolidated Financial Statements for additional information on the interest rate swaps.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA.

The Consolidated Financial Statements and consolidated financial statement schedule of Arch Coal, Inc. and subsidiaries are included in this Annual Report on Form 10-K beginning on page F-1.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE.

None.

ITEM 9A. CONTROLS AND PROCEDURES.

We performed an evaluation under the supervision and with the participation of our management, including our chief executive officer and chief financial officer, of the effectiveness of the design and operation of our disclosure controls and procedures as of December 31, 2019. Based on that evaluation, our management, including our chief executive officer and chief financial officer, concluded that the disclosure controls and procedures were effective as of such date. There were no changes in our internal control over financial reporting during the fiscal quarter to which this report relates that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

We incorporate by reference the opinion of independent registered public accounting firm and management's report on internal control over financial reporting included within the Financial Statement section of this Annual Report on Form 10-K.

ITEM 9B. OTHER INFORMATION.

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE.

Except for the disclosures contained in Part I of this report under the caption “Executive Officers of the Registrant”, the information required under this item is incorporated herein by reference to “Director Qualifications, Diversity and Biographies,” “Section 16(a) Beneficial Ownership Reporting Compliance,” “Corporate Governance Guidelines and Code of Business Conduct,” “Nomination Process for Election of Directors” and “Board Meetings and Committees” in our Proxy Statement for the 2020 Annual Meeting of Stockholders, which is expected to be filed with the SEC within 120 days after the close of our fiscal year.

ITEM 11. EXECUTIVE COMPENSATION.

The information required under this item is incorporated herein by reference to “Executive Compensation,” “Director Compensation,” “Compensation Committee Interlocks and Insider Participation” and “Personnel and Compensation Committee Report” in our Proxy Statement for the 2020 Annual Meeting of Stockholders, which is expected to be filed with the SEC within 120 days after the close of our fiscal year.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS.

The information required under this item is incorporated herein by reference to “Equity Compensation Plan Information,” “Security Ownership of Directors and Executive Officers” and “Security Ownership of Certain Beneficial Owners” in our Proxy Statement for the 2020 Annual Meeting of Stockholders, which is expected to be filed with the SEC within 120 days after the close of our fiscal year.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE.

The information required under this item is incorporated herein by reference to “Certain Relationships and Related Transactions” and “Director Independence” in our Proxy Statement for the 2020 Annual Meeting of Stockholders, which is expected to be filed with the SEC within 120 days after the close of our fiscal year.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES.

The information required under this item is incorporated herein by reference to “Fees Paid to Auditors” in our Proxy Statement for the 2020 Annual Meeting of Stockholders, which is expected to be filed with the SEC within 120 days after the close of our fiscal year.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES.

Financial Statements

Reference is made to the index set forth on page F-1 of this report.

Financial Statement Schedules

The following financial statement schedule of Arch Coal, Inc. is at the page indicated:

<u>Schedule</u>	<u>Page</u>
Valuation and Qualifying Accounts	F- 50

All other financial statement schedules listed under SEC rules but not included in this report are omitted because they are not applicable or the required information is provided in the notes to our consolidated financial statements.

Exhibits

Reference is made to the Exhibit Index on the following page.

ITEM 16. FORM 10-K SUMMARY.

None.

Exhibits to be included in 10-K

	Description
2.1	<u>Debtors' Fourth Amended Joint Plan of Reorganization Under Chapter 11 of the Bankruptcy Code (incorporated by reference to Exhibit 2.1 of Arch Coal's Current Report on Form 8-K filed on September 15, 2016).</u>
2.2	<u>Order Confirming Debtors' Fourth Amended Joint Plan of Reorganization Under Chapter 11 of the Bankruptcy Code on September 13, 2016 (incorporated by reference to Exhibit 2.2 of Arch Coal's Current Report on Form 8-K filed on September 15, 2016).</u>
3.1	<u>Amended and Restated Certificate of Incorporation of Arch Coal, Inc. 10.19 (incorporated by reference to Exhibit 3.1 of Arch Coal's registration statement on Form 8-A filed on October 4, 2016).</u>
3.2	<u>Bylaws of Arch Coal, Inc. (incorporated by reference to Exhibit 3.2 of Arch Coal's registration statement on Form 8-A filed on October 4, 2016).</u>
4.1	<u>Form of specimen Class A Common Stock certificate (incorporated by reference to Exhibit 4.1 of Arch Coal's Current Report on Form 8-K filed on October 11, 2016).</u>
4.2	<u>Form of specimen Class B Common Stock certificate (incorporated by reference to Exhibit 4.2 of Arch Coal's Current Report on Form 8-K filed on October 11, 2016).</u>
4.3	<u>Form of specimen Series A Warrant certificate (incorporated by reference to Exhibit A of Exhibit 10.5 of Arch Coal's Current Report on Form 8-K filed on October 11, 2016).</u>
4.4	<u>Description of Registrant's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934, as amended.</u>
10.1	<u>Credit Agreement, dated as of March 7, 2017, among Arch Coal, Inc. as borrower, the lenders from time to time party thereto and Credit Suisse AG, Cayman Islands Branch, in its capacities as administrative agent and as collateral agent (incorporated by reference to Exhibit 10.1 of Arch Coal's Current Report on Form 8-K filed on March 8, 2017).</u>
10.2	<u>First Amendment to Credit Agreement, dated as of September 25, 2017, among Arch Coal, Inc. as borrower, the lenders from time to time party thereto and Credit Suisse AG, Cayman Islands Branch, in its capacities as administrative agent and as collateral agent (incorporated by reference to Exhibit 10.1 of Arch Coal's Current Report on Form 8-K filed on September 25, 2017).</u>
10.3	<u>Second Amendment to Credit Agreement, dated as of April 3, 2018, among Arch Coal, Inc. as borrower, the lenders from time to time party thereto and Credit Suisse AG, Cayman Islands Branch, in its capacities as administrative agent and as collateral agent (incorporated by reference to Exhibit 10.1 of Arch Coal's Current Report on Form 8-K filed on April 3, 2018).</u>
10.4	<u>Credit Agreement, dated as of April 27, 2017, among Arch Coal, Inc. and certain of its subsidiaries, as borrowers, the lenders from time to time party thereto Regions Bank, in its capacities as administrative agent and as collateral agent (incorporated by reference to Exhibit 10.1 of Arch Coal's Current Report on Form 8-K filed on May 2, 2017).</u>
10.5	<u>First Amendment to Credit Agreement dated November 19, 2018 by and among Arch Coal, Inc. and certain of its subsidiaries, as borrowers, the lenders from time to time party thereto Regions Bank, in its capacities as administrative agent and as collateral agent (incorporated by reference to Exhibit 10.5 to Arch Coal's Annual Report on Form 10K for the year ended 2018).</u>
10.6	<u>Third Amended and Restated Receivables Purchase Agreement among Arch Receivable Company, LLC, as seller, Arch Coal Sales Company, Inc., as initial servicer, PNC Bank, National Association as administrator and issuer of letters of credit thereunder and the other parties party thereto, as securitization purchasers (incorporated by reference to Exhibit 10.2 of Arch Coal's Current Report on Form 8-K filed on October 11, 2016).</u>
10.7	<u>First Amendment to Third Amended and Restated Receivables Purchase Agreement, dated as of April 27, 2017, among Arch Receivable Company, LLC, as seller, Arch Coal Sales Company, Inc., as servicer, PNC Bank, National Association as administrator and issuer of letters of credit thereunder and the other parties party thereto, as securitization purchasers (incorporated by reference to Exhibit 10.2 of Arch Coal's Current Report on Form 8-K filed on May 2, 2017).</u>
10.8	<u>Second Amendment to Third Amended and Restated Receivables Purchase Agreement, dated as of August 27, 2018, among Arch Receivable Company, LLC, as seller, Arch Coal Sales Company, Inc., as servicer, PNC Bank, National Association as administrator and issuer of letters of credit thereunder and the other parties party thereto, as securitization purchasers (incorporated by reference to Exhibit 10.7 of Arch Coal's Quarterly Report on Form 10-Q for the period ended September 30, 2018).</u>
10.9	<u>Third Amendment to Third Amended and Restated Receivables Purchase Agreement, dated as of May 1, 2019, among Arch Receivable Company, LLC, as seller, Arch Coal Sales Company, Inc., as servicer, PNC Bank, National Association as administrator and issuer of letters of credit thereunder and the other parties party thereto, as securitization purchasers (incorporated by reference to Exhibit 10.9 of Arch Coal's Quarterly Report on Form 10-Q for the period ended June 30, 2019).</u>

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- 10.10 Second Amended and Restated Purchase and Sale Agreement among Arch Coal, Inc. and certain subsidiaries of Arch Coal, Inc., as originators (incorporated by reference to Exhibit 10.3 of Arch Coal's Current Report on Form 8-K filed on October 11, 2016).
- 10.11 First Amendment to the Second Amended and Restated Purchase and Sale Agreement, dated as of December 21, 2016, among Arch Coal, Inc. and certain subsidiaries of Arch Coal, Inc., as originators (incorporated by reference to Exhibit 10.7 of Arch Coal's Current Report on Form 8-K filed on October 31, 2017).
- 10.12 Second Amendment to the Second Amended and Restated Purchase and Sale Agreement, dated as of April 27, 2017, among the Arch Coal, Inc. and certain subsidiaries of the Arch Coal, Inc., as originators (incorporated by reference to Exhibit 10.3 of Arch Coal's Current Report on Form 8-K filed on May 2, 2017).
- 10.13 Second Amended and Restated Sale and Contribution Agreement between Arch Coal, Inc., as the transferor, and Arch Receivable Company, LLC (incorporated by reference to Exhibit 10.4 of Arch Coal's Current Report on Form 8-K filed on October 11, 2016).
- 10.14 First Amendment to the Second Amended and Restated Sale and Contribution Agreement, dated as of April 27, 2017, between Arch Coal, Inc., as the transferor, and Arch Receivable Company, LLC (incorporated by reference to Exhibit 10.4 of Arch Coal's Current Report on Form 8-K filed on May 2, 2017).
- 10.15 Warrant Agreement, dated as of October 5, 2016, between Arch Coal, Inc. and American Stock Transfer & Trust Company, LLC, as Warrant Agent (incorporated by reference to Exhibit 10.5 of Arch Coal's Current Report on Form 8-K filed on October 11, 2016).
- 10.16 Indemnification Agreement between Arch Coal and the directors and officers of Arch Coal and its subsidiaries (form) (incorporated by reference to Exhibit 10.6 of Arch Coal's Current Report on Form 8-K filed on October 11, 2016).
- 10.17 Registration Rights Agreement between Arch Coal and Monarch Alternative Capital LP and certain other affiliated funds (incorporated by reference to Exhibit 10.1 of Arch Coal's Current Report on Form 8-K filed on November 21, 2016).
- 10.18 Coal Lease Agreement dated as of March 31, 1992, among Allegheny Land Company, as lessee, and UAC and Phoenix Coal Corporation, as lessors, and related guarantee (incorporated herein by reference to the Current Report on Form 8-K filed by Ashland Coal, Inc. on April 6, 1992).
- 10.19 Federal Coal Lease dated as of January 24, 1996 between the U.S. Department of the Interior and the Thunder Basin Coal Company (incorporated herein by reference to Exhibit 10.20 to Arch Coal's Annual Report on Form 10-K for the year ended December 31, 1998).
- 10.20 Federal Coal Lease Readjustment dated as of November 1, 1967 between the U.S. Department of the Interior and the Thunder Basin Coal Company (incorporated herein by reference to Exhibit 10.21 to Arch Coal's Annual Report on Form 10-K for the year ended December 31, 1998).
- 10.21 Federal Coal Lease effective as of May 1, 1995 between the U.S. Department of the Interior and Mountain Coal Company (incorporated herein by reference to Exhibit 10.22 to Arch Coal's Annual Report on Form 10-K for the year ended December 31, 1998).
- 10.22 Federal Coal Lease dated as of January 1, 1999 between the Department of the Interior and Ark Land Company (incorporated herein by reference to Exhibit 10.23 to Arch Coal's Annual Report on Form 10-K for the year ended December 31, 1998).
- 10.23 Federal Coal Lease effective as of March 1, 2005 by and between the United States of America and Ark Land LT, Inc. covering the tract of land known as "Little Thunder" in Campbell County, Wyoming (incorporated by reference to Exhibit 99.1 to the Current Report on Form 8-K filed by Arch Coal on February 10, 2005).
- 10.24 Modified Coal Lease (WYW71692) executed January 1, 2003 by and between the United States of America, through the Bureau of Land Management, as lessor, and Triton Coal Company, LLC, as lessee, covering a tract of land known as "North Rochelle" in Campbell County, Wyoming (incorporated by reference to Exhibit 10.24 to Arch Coal's Annual Report on Form 10-K for the year ended December 31, 2004).
- 10.25 Coal Lease (WYW127221) executed January 1, 1998 by and between the United States of America, through the Bureau of Land Management, as lessor, and Triton Coal Company, LLC, as lessee, covering a tract of land known as "North Roundup" in Campbell County, Wyoming (incorporated by reference to Exhibit 10.24 to Arch Coal's Annual Report on Form 10-K for the year ended December 31, 2004).
- 10.26* Form of Employment Agreement for Executive Officers of Arch Coal, Inc. (incorporated herein by reference to Exhibit 10.4 to Arch Coal's Annual Report on Form 10-K for the year ended December 31, 2011).
- 10.27* Arch Coal, Inc. Deferred Compensation Plan (incorporated herein by reference to Exhibit 10.26 to Arch Coal's Annual Report on Form 10-K for the year ended December 31, 2014).
- 10.28* Arch Coal, Inc. Outside Directors' Deferred Compensation Plan (incorporated herein by reference to Exhibit 10.4 of Arch Coal's Current Report on Form 8-K filed on December 11, 2008).
- 10.29* Arch Coal, Inc. Supplemental Retirement Plan (as amended on December 5, 2008) (incorporated herein by reference to Exhibit 10.2 to Arch Coal's Current Report on Form 8-K filed on December 11, 2008).

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- 10.30* [Arch Coal, Inc. 2016 Omnibus Incentive Plan \(incorporated herein by reference to Exhibit 99.1 to Arch Coal's Registration Statement on Form S-8 filed on November 1, 2016\).](#)
- 10.31* [Form of Restricted Stock Unit Contract \(Time-Based Vesting\) \(incorporated herein by reference to Exhibit 10.1 to Arch Coal's Current Report on Form 8-K filed on November 30, 2016\).](#)
- 10.32* [Form of Restricted Stock Unit Contract \(Performance-Based Vesting\) \(incorporated herein by reference to Exhibit 10.2 to Arch Coal's Current Report on Form 8-k filed on November 30, 2016\).](#)
- 10.33 [Stock Repurchase Agreement dated September 13, 2017, among Arch Coal, Inc. and Monarch Alternative Solutions Master Fund Ltd, Monarch Capital Master Partners III LP, MCP Holdings Master LP, Monarch Debt Recovery Master Fund Ltd and P Monarch Recovery Ltd. \(incorporated by reference to Exhibit 10.1 of Arch Coal's Current Report on Form 8-K filed on September 19, 2017\).](#)
- 10.34 [Stock Repurchase Agreement dated December 8, 2017, among Arch Coal, Inc. and Monarch Alternative Solutions Master Fund Ltd, Monarch Capital Master Partners III LP, MCP Holdings Master LP and Monarch Debt Recovery Master Fund Ltd. \(incorporated by reference to Exhibit 10.1 of Arch Coal's Current Report on Form 8-K filed on December 11, 2017\).](#)
- 10.35* [Form of Cash Retention Award Agreement for the Chief Executive Officer, Chief Operating Officer and Chief Financial Officer of the Company \(incorporated by reference to Exhibit 10.37 to Arch Coal's annual Report on Form 10-K for the year ended 2018\).](#)
- 10.36 [Implementation Agreement, dated as of June 18, 2019, by and between Arch Coal, Inc. and Peabody Energy Corporation \(incorporated by reference to Exhibit 2.1 of Arch Coal's Current Report on Form 8-K/A filed on June 19, 2019\).](#)
- 21.1 [Subsidiaries of the registrant.](#)
- 23.1 [Consent of Ernst & Young LLP.](#)
- 23.2 [Consent of Weir International, Inc.](#)
- 24.1 [Power of Attorney](#)
- 31.1 [Rule 13a-14\(a\)/15d-14\(a\) Certification of John W. Eaves.](#)
- 31.2 [Rule 13a-14\(a\)/15d-14\(a\) Certification of John T. Drexler.](#)
- 32.1 [Section 1350 Certification of John W. Eaves.](#)
- 32.2 [Section 1350 Certification of John T. Drexler.](#)
- 95 [Mine Safety Disclosure Exhibit](#)
- 101 The following financial statements from the Company's Annual Report on Form 10-K for the year ended December 31, 2019, formatted in Inline XBRL: (1) Consolidated Income Statements, (2) Consolidated Statements of Comprehensive Income (Loss), (3) Consolidated Balance Sheets, (4) Consolidated Statements of Cash Flows, (5) Consolidated Statements of Stockholders' Equity and (6) Notes to Consolidated Financial Statements, tagged as blocks of text and including detailed tags.
- 104 Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).

* Denotes a management contract or compensatory plan or arrangement.

Signatures

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Arch Coal, Inc.

/s/ John W. Eaves

John W. Eaves
Chief Executive Officer, Director

February 11, 2020

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Signatures	Capacity	Date
<u>/s/ John W. Eaves</u> John W. Eaves	Chief Executive Officer, Director (Principal Executive Officer)	February 11, 2020
<u>/s/ John T. Drexler</u> John T. Drexler	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	February 11, 2020
<u>/s/ John W. Lorson</u> John W. Lorson	Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 11, 2020
<u>*</u> James N. Chapman	Chairman	February 11, 2020
<u>*</u> Patrick J. Bartels, Jr.	Director	February 11, 2020
<u>*</u> Sherman K. Edmiston III	Director	February 11, 2020
<u>*</u> Patrick A. Kriegshauser	Director	February 11, 2020
<u>*</u> Richard A. Navarre	Director	February 11, 2020
<u>*</u> Holly Keller Koepfel	Director	February 11, 2020
<u>*</u> Robert B. Hamill	Director	February 11, 2020

*By /s/ Robert G. Jones
Robert G. Jones,
Attorney-in-Fact

FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Arch Coal, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Arch Coal, Inc. and subsidiaries (the Company) as of December 31, 2019 and 2018, the related consolidated statements of income, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and the financial statement schedule listed in the Index at Item 15 (collectively referred to as the "financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 11, 2020, expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the account or disclosure to which it relates.

Asset Retirement Obligation (ARO) Liability

Description of Critical Audit Matter At December 31, 2019, the Company's asset retirement obligations totaled \$252.8 million. As discussed in Note 2 and Note 15 of the consolidated financial statements, the Company's obligations associated with the retirement of long-lived assets are recognized at fair value at the time the obligations are incurred. Upon initial recognition of a liability, a corresponding amount is capitalized as part of the carrying value of the related long-lived asset. The Company reviews its asset retirement obligations at least annually and makes necessary adjustments for permit changes as granted by state authorities and for revisions of estimates of the timing and extent of reclamation activities and cost estimates.

Management's estimate involves a high degree of subjectivity and auditing the significant assumptions utilized by management in estimating the fair value of the liability requires judgement. In particular, the obligation's fair value is determined using a discounted cash flow technique and is based upon mining permit requirements and various assumptions including discount rates, market risk premium, estimates of disturbed acreage, life of the mine, reclamation costs and assumptions regarding equipment productivity.

How we addressed the Matter in our Audit We obtained an understanding, evaluated the design and tested the operating effectiveness of the controls over the Company's accounting for asset retirement obligations, including controls over management's review of the significant assumptions described above.

We assessed the work of the Company's engineering specialists in identifying asset retirement obligation activities against legislative requirements and assessing their timing and likely cost. We compared the Company's methodology to calculate the asset retirement obligation with industry practice and understanding of the business. We evaluated management's assumptions by validating the underlying inputs within the calculations and recosting studies, including those listed above. We involved a specialist to assist in our evaluation of the accuracy of management's assumptions within the Company's asset retirement obligation estimate including reviewing mine closure regulatory requirements, mine plans and engineering drawings for consistency with permit requirements and conducting visual observations of mining and reclamation areas.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1997.

St. Louis, Missouri

February 11, 2020

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Arch Coal, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Arch Coal, Inc. and subsidiaries internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control- Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Arch Coal, Inc. and subsidiaries (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2019 and 2018, the related consolidated statements of income, comprehensive income, stockholders' equity and cash flows for the years ended December 31, 2019, 2018 and 2017 and the related notes and financial statement schedule listed in the Index at Item 15, and our report dated, February 11, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young, LLP

St. Louis, Missouri
February 11, 2020

REPORT OF MANAGEMENT

The management of Arch Coal, Inc. (the “Company”) is responsible for the preparation of the consolidated financial statements and related financial information in this annual report. The financial statements are prepared in accordance with accounting principles generally accepted in the United States and necessarily include some amounts that are based on management’s informed estimates and judgments, with appropriate consideration given to materiality.

The Company maintains a system of internal accounting controls designed to provide reasonable assurance that financial records are reliable for purposes of preparing financial statements and that assets are properly accounted for and safeguarded. The concept of reasonable assurance is based on the recognition that the cost of a system of internal accounting controls should not exceed the value of the benefits derived. The Company has a professional staff of internal auditors who monitor compliance with and assess the effectiveness of the system of internal accounting controls.

The Audit Committee of the Board of Directors, comprised of independent directors, meets regularly with management, the internal auditors, and the independent auditors to discuss matters relating to financial reporting, internal accounting control, and the nature, extent and results of the audit effort. The independent auditors and internal auditors have full and free access to the Audit Committee, with and without management present.

MANAGEMENT’S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of Arch Coal, Inc. (the “Company”) is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Securities Exchange Act Rule 13a-15(f). Our internal control over financial reporting is a process designed under the supervision of our principal executive officer and principal financial officer to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America.

Because of its inherent limitations, internal control over financial reporting may not detect or prevent misstatements. Projections of any evaluation of the effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or processes may deteriorate.

Under the supervision and with the participation of the Company’s management, including its principal executive officer and principal financial officer, the Company conducted an evaluation of the effectiveness of its internal control over financial reporting as of December 31, 2019 based on the criteria set forth in *Internal Control-Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on its evaluation, management concluded that the Company’s internal control over financial reporting is effective as of December 31, 2019.

The Company’s independent registered public accounting firm, Ernst & Young LLP, has issued an audit opinion on the Company’s internal control over financial reporting as of December 31, 2019.

Arch Coal, Inc. and Subsidiaries
Consolidated Income Statements
(in thousands, except per share data)

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Revenues	\$ 2,294,352	\$ 2,451,787	\$ 2,324,623
Costs, expenses and other operating			
Cost of sales (exclusive of items shown separately below)	1,873,017	1,925,202	1,839,993
Depreciation, depletion and amortization	112,055	119,563	122,464
Accretion on asset retirement obligations	20,548	27,970	30,209
Amortization of sales contracts, net	(434)	11,107	53,985
Change in fair value of coal derivatives and coal trading activities, net	(18,601)	9,118	7,222
Selling, general and administrative expenses	95,781	100,300	87,952
Costs related to proposed joint venture with Peabody Energy	13,816	—	—
Loss on sale of Coal-Mac LLC	9,008	—	—
Preference Rights Lease Application settlement income	(39,000)	—	—
(Gain) loss on sale of Lone Mountain Processing, Inc.	4,304	—	(21,297)
Other operating income, net	(19,012)	(20,611)	(30,241)
	<u>2,051,482</u>	<u>2,172,649</u>	<u>2,090,287</u>
Income from operations	242,870	279,138	234,336
Interest expense, net			
Interest expense	(16,485)	(20,471)	(26,905)
Interest and investment income	9,691	6,782	2,649
	<u>(6,794)</u>	<u>(13,689)</u>	<u>(24,256)</u>
Income before nonoperating expenses	236,076	265,449	210,080
Nonoperating income (expense)			
Non-service related pension and postretirement benefit costs	(2,053)	(3,202)	(1,940)
Net loss resulting from early retirement of debt and debt restructuring	—	(485)	(2,547)
Reorganization income (loss), net	24	(1,661)	(2,398)
	<u>(2,029)</u>	<u>(5,348)</u>	<u>(6,885)</u>
Income before income taxes	234,047	260,101	203,195
Provision for (benefit from) income taxes	248	(52,476)	(35,255)
Net income	<u>\$ 233,799</u>	<u>\$ 312,577</u>	<u>\$ 238,450</u>
Earnings per common share			
Basic earnings per common share	<u>\$ 14.42</u>	<u>\$ 15.90</u>	<u>\$ 10.05</u>
Diluted earnings per common share	<u>\$ 13.52</u>	<u>\$ 15.15</u>	<u>\$ 9.84</u>
Weighted average shares outstanding			
Basic weighted average shares outstanding	<u>16,218</u>	<u>19,663</u>	<u>23,725</u>
Diluted weighted average shares outstanding	<u>17,298</u>	<u>20,629</u>	<u>24,240</u>

The accompanying notes are an integral part of the consolidated financial statements.

Arch Coal, Inc. and Subsidiaries
Consolidated Statements of Comprehensive Income (Loss)
(in thousands)

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Net income	\$ 233,799	\$ 312,577	\$ 238,450
Derivative instruments			
Comprehensive income (loss) before tax	(5,892)	2,681	647
Income tax benefit (provision)	—	—	—
	<u>(5,892)</u>	<u>2,681</u>	<u>647</u>
Pension, postretirement and other post-employment benefits			
Comprehensive income (loss) before tax	(32,038)	20,591	(4,347)
Income tax benefit (provision)	—	—	—
	<u>(32,038)</u>	<u>20,591</u>	<u>(4,347)</u>
Available-for-sale securities			
Comprehensive income (loss) before tax	323	(343)	(387)
Income tax benefit (provision)	—	—	—
	<u>323</u>	<u>(343)</u>	<u>(387)</u>
Total other comprehensive income (loss)	<u>(37,607)</u>	<u>22,929</u>	<u>(4,087)</u>
Total comprehensive income	<u>\$ 196,192</u>	<u>\$ 335,506</u>	<u>\$ 234,363</u>

The accompanying notes are an integral part of the consolidated financial statements.

Arch Coal, Inc. and Subsidiaries
Consolidated Balance Sheets
(in thousands, except per share data)

	December 31, 2019	December 31, 2018
Assets		
Current assets		
Cash and cash equivalents	\$ 153,020	\$ 264,937
Short-term investments	135,667	162,797
Trade accounts receivable	168,125	200,904
Other receivables	21,143	48,926
Inventories	130,898	125,470
Other current assets	97,894	75,749
Total current assets	706,747	878,783
Property, plant and equipment		
Coal lands and mineral rights	450,539	396,125
Plant and equipment	639,399	510,683
Deferred mine development	252,108	194,363
	1,342,046	1,101,171
Less accumulated depreciation, depletion and amortization	(357,537)	(266,343)
Property, plant and equipment, net	984,509	834,828
Other assets		
Prepaid royalties	1,600	600
Deferred income taxes	82	170
Equity investments	105,588	104,676
Other noncurrent assets	69,230	68,003
Total other assets	176,500	173,449
Total assets	<u>\$ 1,867,756</u>	<u>\$ 1,887,060</u>
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	\$ 133,060	\$ 128,024
Accrued expenses and other current liabilities	157,167	183,514
Current maturities of debt	20,753	17,797
Total current liabilities	310,980	329,335
Long-term debt	290,066	300,186
Asset retirement obligations	242,432	230,304
Accrued pension benefits	5,476	16,147
Accrued postretirement benefits other than pension	80,567	83,163
Accrued workers' compensation	215,599	174,303
Other noncurrent liabilities	82,100	48,801
Total liabilities	1,227,220	1,182,239
Stockholders' equity		
Common stock, \$0.01 par value, authorized 300,000 shares, issued 25,220 and 25,047 shares at December 31, 2019 and 2018, respectively	252	250
Paid-in capital	730,551	717,492
Treasury stock, 10,088 and 7,216 shares at December 31, 2019 and 2018, respectively, at cost	(827,381)	(583,883)
Retained earnings	731,425	527,666
Accumulated other comprehensive income	5,689	43,296
Total stockholders' equity	640,536	704,821
Total liabilities and stockholders' equity	<u>\$ 1,867,756</u>	<u>\$ 1,887,060</u>

The accompanying notes are an integral part of the consolidated financial statements.

Arch Coal, Inc. and Subsidiaries
Consolidated Statements of Cash Flows
(in thousands)

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Operating activities			
Net income	\$ 233,799	\$ 312,577	\$ 238,450
Adjustments to reconcile net income to cash provided by (used in) operating activities:			
Depreciation, depletion and amortization	112,055	119,563	122,464
Accretion on asset retirement obligations	20,548	27,970	30,209
Amortization of sales contracts, net	(434)	11,107	53,985
Prepaid royalties expensed	4,270	134	2,905
Deferred income taxes	13,501	18,701	(21,965)
Employee stock-based compensation expense	21,989	17,519	10,437
Loss (Gain) on disposals and divestitures	8,304	(625)	(24,327)
Amortization relating to financing activities	3,691	4,179	3,736
Preference Rights Lease Application settlement income	(39,000)	—	—
Net loss resulting from early retirement of debt and debt restructuring	—	485	2,547
Changes in:			
Receivables	30,713	(22,903)	8,370
Inventories	(15,251)	3,490	(19,626)
Income taxes receivable/payable	38,152	(46,971)	(6,834)
Coal derivative assets and liabilities, including margin account	10,117	(779)	(7,342)
Accounts payable, accrued expenses and other current liabilities	(28,222)	(14,208)	17,173
Asset retirement obligations	(11,455)	(9,743)	(20,584)
Pension, postretirement and other postemployment benefits	(209)	(4,703)	(15,253)
Other	17,146	2,170	22,129
Cash provided by operating activities	419,714	417,963	396,474
Investing activities			
Capital expenditures	(266,356)	(95,272)	(59,205)
Minimum royalty payments	(1,249)	(584)	(5,296)
Proceeds from disposals and divestitures	6,135	1,083	12,920
Purchases of short term investments	(205,216)	(143,328)	(258,948)
Proceeds from sales of short term investments	233,074	136,630	190,064
Investments in and advances to affiliates, net	(5,499)	(2,481)	(10,173)
Cash used in investing activities	(239,111)	(103,952)	(130,638)
Financing activities			
Proceeds from issuance of term loan due 2024	—	—	298,500
Payments to extinguish term loan due 2021	—	—	(325,684)
Payments on term loan	(3,000)	(3,000)	(2,250)
Net payments on other debt	(5,373)	(6,077)	(694)
Debt financing costs	—	(1,257)	(10,149)
Dividends paid	(30,220)	(31,269)	(24,369)
Purchases of treasury stock	(244,998)	(280,871)	(301,512)
Payments for taxes related to net share settlement of equity awards	(8,961)	—	—
Expenses related to debt restructuring	—	(50)	(2,360)
Other	32	(152)	(138)
Cash provided by (used in) financing activities	(292,520)	(322,676)	(368,656)
Decrease in cash and cash equivalents, including restricted cash	(111,917)	(8,665)	(102,820)
Cash and cash equivalents, including restricted cash, beginning of period	264,937	273,602	376,422
Cash and cash equivalents including restricted cash, end of period	<u>\$ 153,020</u>	<u>\$ 264,937</u>	<u>\$ 273,602</u>
SUPPLEMENTAL CASH FLOW INFORMATION			
Cash paid during the period for interest	<u>\$ 16,627</u>	<u>\$ 17,493</u>	<u>\$ 34,691</u>
Cash refunded during the period for income taxes, net	<u>\$ 52,272</u>	<u>\$ 24,330</u>	<u>\$ 7,958</u>

The accompanying notes are an integral part of the consolidated financial statements.

Arch Coal, Inc. and Subsidiaries
Consolidated Statements of Stockholders' Equity
Three Years Ended December 31, 2019

	Common Stock	Paid-In Capital	Treasury Stock, at Cost	Retained Earnings (Accumulated Deficit)	Accumulated Other Comprehensive Income (Loss)	Total
(In thousands, except per share data)						
BALANCE AT DECEMBER 31, 2016	\$ 250	\$ 688,424	\$ —	\$ 33,449	\$ 24,454	\$ 746,577
Dividends on common shares	—	—	—	(24,667)	—	(24,667)
Employee stock-based compensation	—	10,437	—	—	—	10,437
Issuance of 17,233 shares of common stock under long-term incentive plan	—	1,244	—	—	—	1,244
Warrants exercised	—	20	—	—	—	20
Purchase of 3,977,215 shares of common stock under share repurchase program	—	—	(302,109)	—	—	(302,109)
Total comprehensive income (loss)	—	—	—	238,450	(4,087)	234,363
BALANCE AT DECEMBER 31, 2017	\$ 250	\$ 700,125	\$ (302,109)	\$ 247,232	\$ 20,367	\$ 665,865
Dividends on common shares	—	—	—	(32,143)	—	(32,143)
Employee stock-based compensation	—	17,519	—	—	—	17,519
Purchase of 3,238,615 shares of common stock under share repurchase program	—	—	(281,774)	—	—	(281,774)
Common stock withheld related to net share settlement of equity awards	—	(161)	—	—	—	(161)
Warrants exercised	—	9	—	—	—	9
Total comprehensive income	—	—	—	312,577	22,929	335,506
BALANCE AT DECEMBER 31, 2018	\$ 250	\$ 717,492	\$ (583,883)	\$ 527,666	\$ 43,296	\$ 704,821
Dividends on common shares	—	—	—	(30,040)	—	\$ (30,040)
Employee stock-based compensation	—	21,989	—	—	—	\$ 21,989
Issuance of 172,720 shares of common stock under long-term incentive plan	2	—	—	—	—	\$ 2
Common stock withheld related to net share settlement of equity awards	—	(8,962)	—	—	—	\$ (8,962)
Warrants exercised	—	32	—	—	—	\$ 32
Purchase of 2,872,548 shares of common stock under share repurchase program	—	—	(243,498)	—	—	\$ (243,498)
Total comprehensive income (loss)	—	—	—	233,799	\$ (37,607)	\$ 196,192
BALANCE AT DECEMBER 31, 2019	<u>\$ 252</u>	<u>\$ 730,551</u>	<u>\$ (827,381)</u>	<u>\$ 731,425</u>	<u>\$ 5,689</u>	<u>\$ 640,536</u>

Arch Coal, Inc. and Subsidiaries
Notes to Consolidated Financial Statements

1. Basis of Presentation

The accompanying consolidated financial statements include the accounts of Arch Coal, Inc. and its subsidiaries and controlled entities (the “Company”). Unless the context indicates otherwise, the terms “Arch” and the “Company” are used interchangeably in this Annual Report on Form 10-K. The Company’s primary business is the production of thermal and metallurgical coal from surface and underground mines located throughout the United States, for sale to utility, industrial and steel producers both in the United States and around the world. The Company currently operates mining complexes in West Virginia, Illinois, Wyoming and Colorado. All subsidiaries are wholly-owned. Intercompany transactions and accounts have been eliminated in consolidation.

2. Accounting Policies

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States for financial reporting and U.S. Securities and Exchange Commission regulations.

Accounting Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and revenues and expenses in the accompanying consolidated financial statements and the disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

Cash and Cash Equivalents

Cash and cash equivalents are stated at cost. Cash equivalents consist of highly-liquid investments with an original maturity of three months or less when purchased.

Accounts Receivable

Accounts receivable are recorded at amounts that are expected to be collected, based on past collection history, the economic environment and specified risks identified in the receivables portfolio.

Inventories

Coal and supplies inventories are valued at the lower of average cost or market. Coal inventory costs include labor, supplies, equipment costs, transportation costs incurred prior to the transfer of title to customers and operating overhead. The costs of removing overburden, called stripping costs, incurred during the production phase of the mine are considered variable production costs and are included in the cost of the coal extracted during the period the stripping costs are incurred.

Investments and Membership Interests in Joint Ventures

Investments and membership interests in joint ventures are accounted for under the equity method of accounting if the Company has the ability to exercise significant influence, but not control, over the entity. The Company’s share of the entity’s income or loss is reflected in “Other operating income, net” in the Consolidated Income Statements. Information about investment activity is provided in Note 10 to the Consolidated Financial Statements, “Equity Method Investments and Membership Interests in Joint Ventures.”

Investments in debt securities and marketable equity securities that do not qualify for equity method accounting are classified as available-for-sale and are recorded at their fair values. Unrealized gains and losses on these investments are recorded in other comprehensive income or loss. A decline in the value of an investment that is considered other-than-temporary would be recognized in operating expenses.

Sales Contracts

Coal supply agreements (sales contracts) valued during fresh start accounting or acquired in a business combination are capitalized at their fair value and amortized over the tons of coal shipped during the term of the contract. The fair value of a sales contract is determined by discounting the cash flows attributable to the difference between the contract price and the prevailing forward prices for the tons under contract at the date of acquisition.

Exploration Costs

Costs to acquire permits for exploration activities are capitalized. Drilling and other costs related to locating coal deposits and evaluating the economic viability of such deposits are expensed as incurred.

Prepaid Royalties

Leased mineral rights are often acquired through royalty payments. When royalty payments represent prepayments recoupable against royalties owed on future revenues from the underlying coal, they are recorded as a prepaid asset, with amounts expected to be recouped within one year classified as current. When coal from these leases is sold, the royalties owed are recouped against the prepayment and charged to cost of sales. An impairment charge is recognized for prepaid royalties that are not expected to be recouped.

Property, Plant and Equipment

Plant and Equipment

Plant and equipment were recorded at fair value at emergence during fresh start accounting; subsequent purchases of property, plant and equipment have been recorded at cost. Interest costs incurred during the construction period for major asset additions are capitalized. The Company capitalized \$2.9 million and \$0.3 million of interest costs during years ended December 31, 2019 and 2018, respectively. Expenditures that extend the useful lives of existing plant and equipment or increase the productivity of the asset are capitalized. The cost of maintenance and repairs that do not extend the useful life or increase the productivity of the asset is expensed as incurred.

Preparation plants and loadouts are depreciated using the units-of-production method over the estimated recoverable reserves, subject to a minimum level of depreciation. Other plant and equipment are depreciated principally using the straight-line method over the estimated useful lives of the assets, limited by the remaining life of the mine. The useful lives of mining equipment, including longwalls, draglines and shovels, range from 1 to 18 years. The useful lives of buildings and leasehold improvements generally range from 3 to 18 years.

Deferred Mine Development

Costs of developing new mines or significantly expanding the capacity of existing mines are capitalized and amortized using the units-of-production method over the estimated recoverable reserves that are associated with the property being benefited. Costs may include construction permits and licenses; mine design; construction of access roads, shafts, slopes and main entries; and removing overburden to access reserves in a new pit. Additionally, deferred mine development includes the asset cost associated with asset retirement obligations. Coal sales revenue related to incidental production during the development phase will be recorded as coal sales revenue with an offset to cost of coal sales based on the estimated cost per ton sold for the mine when the asset is in place for its intended use.

Coal Lands and Mineral Rights

Rights to coal reserves may be acquired directly through governmental or private entities. A significant portion of the Company's coal reserves are controlled through leasing arrangements. Lease agreements are generally long-term in nature (original terms range from 10 to 50 years), and substantially all of the leases contain provisions that allow for automatic extension of the lease term providing certain requirements are met. Leases of mineral reserves and related land leases are exempt from the provisions of the leasing standard.

The net book value of the Company's coal interests was \$360.9 million and \$338.1 million at December 31, 2019 and 2018, respectively. Payments to acquire royalty lease agreements and lease bonus payments are capitalized as a cost of the underlying mineral reserves and depleted over the life of proven and probable reserves. Coal lease rights are depleted using the units-of-production method, and the rights are assumed to have no residual value.

The Company currently does not have any future lease bonus payments.

Depreciation, depletion and amortization

The depreciation, depletion and amortization related to long-lived assets is reflected in the income statement as a separate line item. No depreciation, depletion or amortization is included in any other operating cost categories.

Impairment

If facts and circumstances suggest that the carrying value of a long-lived asset or asset group may not be recoverable, the asset or asset group is reviewed for potential impairment. If this review indicates that the carrying amount of the asset will not be recoverable through projected undiscounted cash flows generated by the asset and its related asset group over its remaining life, then an impairment loss is recognized by reducing the carrying value of the asset to its fair value. The Company may, under certain circumstances, idle mining operations in response to market conditions or other factors. Because an idling is not a permanent closure, it is not considered an automatic indicator of impairment.

Deferred Financing Costs

The Company capitalizes costs incurred in connection with new borrowings, the establishment or enhancement of credit facilities and the issuance of debt securities. These costs are amortized as an adjustment to interest expense over the life of the borrowing or term of the credit facility using the interest method. Debt issuance costs related to a recognized liability are presented in the balance sheet as a direct reduction from the carrying amount of that liability whereas debt issuance costs related to a credit facility with no balance outstanding are shown as an asset. The unamortized balance of deferred financing costs shown as an asset was \$3.0 million at December 31, 2019, with \$2.0 million classified as current; the unamortized balance of deferred financing costs shown as an asset at December 31, 2018 was \$4.7 million with \$2.2 million classified as current. The current amounts are classified within "Other current assets" and the noncurrent amounts are classified within "Other noncurrent assets." For information on the unamortized balance of deferred financing fees related to outstanding debt, see Note 13 to the Consolidated Financial Statements, "Debt and Financing Arrangements."

Revenue Recognition

Revenues include sales to customers of coal produced at Company operations and coal purchased from third parties. The Company recognizes revenue at the time risk of loss passes to the customer at contracted amounts. Transportation costs are included in cost of sales and amounts billed by the Company to its customers for transportation are included in revenues.

Other Operating Income, net

Other operating income, net in the accompanying Consolidated Income Statements reflects income and expense from sources other than physical coal sales, including: bookouts, or the practice of offsetting purchase and sale contracts for shipping convenience purposes; contract settlements; royalties earned from properties leased to third parties; income from equity investments (Note 10, "Equity Method Investments and Membership Interests in Joint Ventures"); non-material gains and losses from divestitures and dispositions of assets; and realized gains and losses on derivatives that do not qualify for hedge accounting and are not held for trading purposes (Note 11, "Derivatives"); and land management expenses.

Asset Retirement Obligations

The Company's legal obligations associated with the retirement of long-lived assets are recognized at fair value at the time the obligations are incurred. Accretion expense is recognized through the expected settlement date of the obligation. Obligations are incurred at the time development of a mine commences for underground and surface mines or construction begins for support facilities, refuse areas and slurry ponds. The obligation's fair value is determined using a discounted cash flow technique and is based upon permit requirements and various estimates and assumptions that would be used by market participants, including estimates of disturbed acreage, reclamation costs and assumptions regarding equipment productivity. Upon initial recognition of a liability, a corresponding amount is capitalized as part of the carrying value of the related long-lived asset.

The Company reviews its asset retirement obligation at least annually and makes necessary adjustments for permit changes as granted by state authorities and for revisions of estimates of the amount and timing of costs. For ongoing operations, adjustments to the liability result in an adjustment to the corresponding asset. For idle operations, adjustments to the liability are recognized as income or expense in the period the adjustment is recorded. Any difference between the recorded obligation and the actual cost of reclamation is recorded in profit or loss in the period the obligation is settled. See additional discussion in Note 15, "Asset Retirement Obligations."

Loss Contingencies

The Company accrues for cost related to contingencies when a loss is probable and the amount is reasonably determinable. Disclosure of contingencies is included in the financial statements when it is at least reasonably possible that a material loss or an additional material loss in excess of amounts already accrued may be incurred. The amount accrued represents the Company's best estimate of the loss, or, if no best estimate within a range of outcomes exists, the minimum amount in the range.

Derivative Instruments

The Company generally utilizes derivative instruments to manage exposures to commodity prices and interest rate risk on long-term debt. Additionally, the Company may hold certain coal derivative instruments for trading purposes. Derivative financial instruments are recognized on the balance sheet at fair value. Certain coal contracts may meet the definition of a derivative instrument, but because they provide for the physical purchase or sale of coal in quantities expected to be used or sold by the Company over a reasonable period in the normal course of business, they are not recognized on the balance sheet.

Certain derivative instruments are designated as the hedge instrument in a hedging relationship. In a fair value hedge, the Company hedges the risk of changes in the fair value of a firm commitment, typically a fixed-price coal sales contract. Changes in both the hedged firm commitment and the fair value of a derivative used as a hedge instrument in a fair value hedge are recorded in earnings. In a cash flow hedge, the Company hedges the risk of changes in future cash flows related to the

underlying item being hedged. Changes in the fair value of the derivative instrument used as a hedge instrument in a cash flow hedge are recorded in other comprehensive income or loss. Amounts in other comprehensive income or loss are reclassified to earnings when the hedged transaction affects earnings and are classified in a manner consistent with the transaction being hedged. The Company formally documents the relationships between hedging instruments and the respective hedged items, as well as its risk management objectives for hedge transactions.

The Company evaluates the effectiveness of its hedging relationships both at the hedge's inception and on an ongoing basis. Any ineffective portion of the change in fair value of a derivative instrument used as a hedge instrument in a fair value or cash flow hedge is recognized immediately in earnings. The ineffective portion is based on the extent to which exact offset is not achieved between the change in fair value of the hedge instrument and the cumulative change in expected future cash flows on the hedged transaction from inception of the hedge in a cash flow hedge or the change in the fair value. Ineffectiveness was insignificant for the periods disclosed within.

See Note 11, "Derivatives" for further disclosures related to the Company's derivative instruments.

Fair Value

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly hypothetical transaction between market participants at a given measurement date. Valuation techniques used must maximize the use of observable inputs and minimize the use of unobservable inputs. See Note 16, "Fair Value Measurements" for further disclosures related to the Company's recurring fair value estimates.

Income Taxes

Deferred income taxes are provided for temporary differences arising from differences between the financial statement and tax basis of assets and liabilities existing at each balance sheet date using enacted tax rates anticipated to be in effect when the related taxes are expected to be paid or recovered. A valuation allowance is established if it is more likely than not that a deferred tax asset will not be realized. Management reassesses the ability to realize its deferred tax assets annually in the fourth quarter or when circumstances indicate that the ability to realize deferred tax assets has changed. In determining the need for a valuation allowance, the Company considers projected realization of tax benefits based on expected levels of future taxable income, available tax planning strategies and the reversal of temporary differences.

Benefits from tax positions that are uncertain are not recognized unless the Company concludes that it is more likely than not that the position would be sustained in a dispute with taxing authorities, should the dispute be taken to the court of last resort. The Company would measure any such benefit at the largest amount of benefit that is greater than 50 percent likely of being realized upon settlement with taxing authorities.

See Note 14, "Taxes" for further disclosures about income taxes.

Benefit Plans

The Company has non-contributory defined benefit pension plans covering most of its salaried and hourly employees. On January 1, 2015 the Company's cash balance and excess pension plans were amended to freeze new service credits for any new or active employees. The Company also currently provides certain postretirement medical and life insurance coverage for eligible employees. The cost of providing these benefits is determined on an actuarial basis and accrued over the employees' period of active service.

The Company recognizes the overfunded or underfunded status of these plans as determined on an actuarial basis on the balance sheet and the changes in the funded status are recognized in other comprehensive income. The Company amortizes actuarial gains and losses over the remaining service attribution periods of the employees using the corridor method. See Note 20, "Employee Benefit Plans" for additional disclosures relating to these obligations.

Stock-Based Compensation

The compensation cost of all stock-based awards is determined based on the grant-date fair value of the award, and is recognized over the requisite service period. The grant-date fair value of option awards and restricted stock awards with a market condition is determined using a Monte Carlo simulation. Compensation cost for an award with performance conditions is accrued if it is probable that the conditions will be met. The Company accounts for forfeitures as they occur. See further discussion in Note 18, "Stock-Based Compensation and Other Incentive Plans."

Recently Adopted Accounting Guidance

In February 2016, the FASB established Topic 842, Leases, by issuing ASU 2016-02, “Leases” which requires lessees to recognize leases on-balance sheet and disclose key information about leasing arrangements. The ASU was subsequently amended by ASU 2018-01, “Land Easements Practical Expedient for Transition to Topic 842;” ASU 2018-10, “Codification Improvements to Topic 842, Leases;” and ASU 2018-11, “Targeted Improvements.” The new standard establishes a right-of-use (“ROU”) model that requires a lessee to recognize an ROU asset and lease liability on the balance sheet for all leases with a term longer than 12 months. The standard also requires a lessee to recognize a single lease cost, calculated so that the cost of the lease is allocated over the term of the lease, on a generally straight line basis. Leases of mineral reserves and related land leases have been exempted from the standard. The Company adopted ASU 2016-02 effective January 1, 2019 and elected the option to not restate comparative periods in transition and also elected the “package of practical expedients” within the standard which permits the Company not to reassess its prior conclusions about lease identification, lease classification and initial direct costs. Additionally, the Company made an election to not separate lease and non-lease components for all leases, and will not use hindsight. Finally, the Company will continue its current policy for accounting for land easements as executory contracts. The adoption of the standard had no impact on the Company’s consolidated income statement or statement of cash flows.

In April 2017, the FASB issued ASU 2017-08, “Receivables-Nonrefundable Fees and Other Costs (Subtopic 310-20), Premium Amortization on Purchased Callable Debt Securities.” The new guidance shortens the amortization period for the premium on certain purchased callable debt securities to the earliest call date. The new guidance does not change the accounting for purchased callable debt securities held at a discount. The Company adopted ASU 2017-08 effective January 1, 2019 with no impact on the Company’s financial statements.

In August 2017, the FASB issued ASU 2017-12, “Targeted Improvements to Accounting for Hedging Activities.” The new guidance provides targeted improvements to the accounting for hedging activities to better align an entity’s risk management activities and financial reporting for hedging relationships through changes to both the designation and measurement guidance for qualifying hedging relationships and the presentation of hedging results. The Company adopted ASU 2017-12 effective January 1, 2019 with no impact on the Company’s financial statements.

In February 2018, the FASB issued ASU 2018-02, “Income Statement-Reporting Comprehensive Income (Topic 220) Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income.” ASU 2018-02 provides an option to reclassify stranded tax effects within accumulated other comprehensive income to retained earnings due to the change in the U.S. federal tax rate in the Tax Cuts and Jobs Act of 2017. The Company adopted ASU 2018-02 effective January 1, 2019 with no impact on the Company’s financial statements.

In June 2018, the FASB issued ASU 2018-07, “Compensation-Stock Compensation (Topic 718), Improvements to Non-employee Share-Based Payment Accounting.” ASU 2018-07 aligns the measurement and classification guidance for share-based payments to non-employees with the guidance for share-based payments to employees. The Company adopted ASU 2018-07 effective January 1, 2019 with no impact on the Company’s financial statements.

In October 2018, the FASB issued ASU 2018-16, “Derivatives and Hedging (Topic 815), Inclusion of the Secured Overnight Financing Rate (SOFR) Overnight Index Swap (OIS) Rate as a Benchmark Interest Rate of Hedge Accounting Purposes.” The Company adopted ASU 2018-16 effective January 1, 2019 with no impact on the Company’s financial statements.

Recent Accounting Guidance Issued Not Yet Effective

In June 2016, the FASB issued ASU 2016-13, “Financial Instruments-Credit Losses (Topic 326), Measurement of Credit Losses on Financial Instruments” and also issued subsequent amendments to the initial guidance under ASU 2018-19, ASU 2019-04 and ASU 2019-05. The standard modifies the measurement approach for credit losses on financial instruments, including trade receivables, from an incurred loss method to a current expected credit loss method, otherwise known as “CECL.” The standard requires the measurement of expected credit losses to be based on relevant information, including historical experience, current conditions and a forecast that is supportable. The standard is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years; early adoption is permitted. The standard must be adopted by applying a cumulative adjustment to retained earnings. The Company anticipates adopting the standard in the first quarter of 2020, although it does not expect a significant impact to the Company’s financial results.

In August 2018, the FASB issued ASU 2018-13, “Fair Value Measurement (Topic 820): Disclosure Framework-Changes to the Disclosure Requirements for Fair Value Measurement.” The primary focus of ASU 2018-13 is to improve the effectiveness of the disclosures for fair value measurements by requiring public entities to disclose certain new information

while modifying some existing disclosure requirements. The FASB issued this ASU as part of its broader disclosure framework project, which aims to improve the effectiveness of disclosures in the notes to the financial statements by focusing on requirements that clearly communicate the most important information to users of the financial statements. The ASU is effective for public companies for fiscal years beginning after December 15, 2019, and interim periods therein with early adoption permitted. The Company does not expect a significant impact to the Company’s financial statements.

In August 2018, the FASB issued ASU 2018-14, “Compensation-Retirement Benefits-Defined Benefit Plans-General (Subtopic 715-20), Disclosure Framework-Changes to the Disclosure Requirements for Defined Benefit Plans.” ASU 2018-14 makes minor changes to the disclosure requirements for employers that sponsor defined benefit pension and postretirement benefit plants. The new guidance eliminates requirements for certain disclosures that are no longer considered cost beneficial and adds new ones that the FASB considers pertinent. The FASB issued this ASU as part of its broader disclosure framework project, which aims to improve the effectiveness of disclosures in the notes to the financial statements by focusing on requirements that clearly communicate the most important information to users of the financial statements. The ASU is effective for public companies for fiscal years beginning after December 15, 2020, and interim periods therein with early adoption permitted. The Company does not expect a significant impact to the Company’s financial statements.

3. Emergence from Bankruptcy

On January 11, 2016 (the “Petition Date”), Arch and substantially all of its wholly owned domestic subsidiaries (the “Filing Subsidiaries” and, together with Arch, the “Debtors”) filed voluntary petitions for reorganization (collectively, the “Bankruptcy Petitions”) under Chapter 11 of Title 11 of the U.S. Code (the “Bankruptcy Code”) in the United States Bankruptcy Court for the Eastern District of Missouri (the “Court”). The Debtor’s Chapter 11 Cases (collectively, the “Chapter 11 Cases”) were jointly administered under the caption *In re Arch Coal, Inc., et al.* Case No. 16-40120 (lead case). During the bankruptcy proceedings, each Debtor operated its business as a “debtor in possession” under the jurisdiction of the Court and in accordance with the applicable provisions of the Bankruptcy Code and the orders of the Court.

For periods subsequent to filing the Bankruptcy Petitions, the Company applied the FASB Accounting Standards Codification (“ASC”) 852, “Reorganizations”, in preparing its consolidated financial statements. ASC 852 requires that financial statements distinguish transactions and events that are directly associated with the reorganization from the ongoing operations of the business. Accordingly, certain revenues, expenses, realized gains and losses and provisions for losses that are realized or incurred in the bankruptcy proceedings have been recorded in a reorganization line item on the Consolidated Income Statements.

On September 13, 2016, the Bankruptcy Court entered an order, Docket No. 1324, confirming the Debtors’ Fourth Amended Joint Plan of Reorganization under Chapter 11 of the Bankruptcy Code dated as of September 11, 2016 (the “Plan”), which order was amended on September 15, 2016, Docket No. 1334.

On October 5, 2016, Arch Coal satisfied the closing conditions contemplated by the Plan, which became effective on that date (the “Effective Date”).

Reorganization Items, Net

In accordance with ASC 852, the income statement shall portray the results of operations of the reporting entity while it is in Chapter 11. Revenues, expenses (including professional fees), realized gains and losses, and provisions for losses resulting from reorganization and restructuring of the business shall be reported separately as reorganization items.

The Company’s reorganization items, net for the respective periods are as follows:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
(In thousands)			
Professional fees	\$ 24	\$ (1,661)	\$ (2,398)

Professional fees directly related to the reorganization include fees associated with advisors to the Company, certain secured creditors and the Creditors’ Committee.

4. Accumulated Other Comprehensive Income

The following items are included in accumulated other comprehensive income:

	Derivative Instruments	Pension, Postretirement and Other Post- Employment Benefits	Available-for- Sale Securities	Accumulated Other Comprehensive Income (Loss)
	(In thousands)			
January 1, 2018	\$ 647	\$ 19,720	\$ —	\$ 20,367
Unrealized gains (losses)	(4,359)	22,923	(319)	18,245
Amounts reclassified from accumulated other comprehensive income	7,040	(2,332)	(24)	4,684
December 31, 2018	\$ 3,328	\$ 40,311	\$ (343)	\$ 43,296
Unrealized gains (losses)	4,648	(27,692)	508	(22,536)
Amounts reclassified from accumulated other comprehensive income	(10,540)	(4,346)	(185)	(15,071)
December 31, 2019	<u>\$ (2,564)</u>	<u>\$ 8,273</u>	<u>\$ (20)</u>	<u>\$ 5,689</u>

The following amounts were reclassified out of accumulated other comprehensive income during the respective periods:

Details about accumulated other comprehensive income components	Year Ended December 31, 2019	Year Ended December 31, 2018	Line Item in the Consolidated Income Statements
(in thousands)			
Derivative instruments			
Coal hedges	\$ 9,480	\$ (8,206)	Revenues
Interest rate hedges	1,060	1,166	Interest expense
	—	—	Provision for (benefit from) income taxes
	<u>\$ 10,540</u>	<u>\$ (7,040)</u>	Net of tax
Pension, postretirement and other post-employment benefits			
Amortization of net actuarial gains (losses) ¹	\$ 3,020	\$ —	
Settlement gains	1,326	2,332	
	<u>\$ 4,346</u>	<u>\$ 2,332</u>	Total before tax
	—	—	Provision for (benefit from) income taxes
	<u>\$ 4,346</u>	<u>\$ 2,332</u>	Net of tax
Available-for-sale securities ²			
	\$ 185	\$ 24	Interest and investment income
	—	—	Provision for (benefit from) income taxes
	<u>\$ 185</u>	<u>\$ 24</u>	Net of tax

¹ Production-related benefits and workers' compensation costs are included in costs to produce coal.

² The gains and losses on sales of available-for-sale-securities are determined on a specific identification basis.

5. Divestitures

On December 13, 2019, the Company sold Coal-Mac LLC, an operating mine complex within the Company's Other Thermal segment to Condor Holdings, LLC. The Company received \$2.3 million of proceeds offset by \$0.2 million in closing fees; and recorded a loss of \$9.0 million which is reflected as a separate line, "Loss on sale of Coal-Mac LLC," within the Consolidated Income Statements.

On September 14, 2017, the Company sold Lone Mountain Processing LLC, an operating mine complex within the Company's metallurgical coal segment, and two idled mining companies, Cumberland River Coal LLC and Powell Mountain Energy LLC to Revelation Energy LLC. The Company received \$8.3 million of proceeds offset by \$1.4 million in disbursements related to landholder consent fees and professional fees; and recorded a gain of \$21.3 million which is reflected as a separate line, "(Gain) loss on sale of Lone Mountain Processing, Inc.," within the Consolidated Income Statements. The gain included a \$4.7 million curtailment gain related to black lung liabilities accrued for active employees at these operations. Under the terms of the purchase agreement, Revelation assumed certain traumatic workers compensation claims and pneumoconiosis (occupational disease) benefits. On July 1, 2019, Blackjewel LLC and four affiliates, including Revelation Energy LLC, filed for Chapter 11 bankruptcy. As a result of the bankruptcy, the Company recorded a \$4.3 million charge for these claims during the second quarter of 2019.

6. Joint Venture with Peabody Energy

On June 18, 2019, Arch Coal entered into a definitive implementation agreement (the "Implementation Agreement") with Peabody Energy Corporation ("Peabody"), to establish a joint venture that will combine the respective Powder River Basin and Colorado mining operations of Arch Coal and Peabody. Pursuant to the terms of the Implementation Agreement, Arch Coal will hold a 33.5% economic interest, and Peabody will hold a 66.5% economic interest in the joint venture. At the closing of the joint venture transaction, certain of the respective subsidiaries of Arch Coal and Peabody will enter into an Amended and Restated Limited Liability Company Agreement (the "LLC Agreement"). Under the terms of the LLC Agreement, the governance of the joint venture will be overseen by the joint venture's board of managers, which will initially be comprised of three representatives appointed by Peabody and two representatives appointed by Arch. Decisions of the board of managers will be determined by a majority vote subject to certain specified matters set forth in the LLC Agreement that will require a supermajority vote. Peabody, or one of its affiliates, will initially be appointed as the operator of the joint venture and will manage the day-to-day operations of the joint venture, subject to the supervision of the joint venture's board of managers.

Formation of the joint venture is subject to customary closing conditions, including the termination or expiration of the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, the receipt of certain other required regulatory approvals and the absence of injunctions or other legal restraints preventing the formation of the joint venture. Formation of the joint venture does not require approval of the respective stockholders of either Arch or Peabody.

The Company has incurred expenses of \$13.8 million during the year ended December 31, 2019 associated with the regulatory approval process of the joint venture.

7. Preference Rights Lease Application Settlement Income

The Company recorded a \$39.0 million gain during the third quarter of 2019 related to a settlement with the United States Department of Interior over a long-standing dispute, dating back to the 1970's, on the valuation and disposition of Preference Rights Lease Application that Arch controlled in northwestern New Mexico with a joint venture partner. As part of the settlement, Arch received \$67.0 million in the form of royalty credits on its federal coal leases which will be used to settle 50% of the Company's monthly royalty obligations. Additionally, as part of the settlement, Arch made a one-time payment of \$27.0 million to its' partner in the venture for its ownership interest in the underlying mineral reserves, as well as paying \$1.0 million in closing fees.

The Company has utilized \$13.3 million of the royalty credits as of December 31, 2019, and based on current planned production levels and sales commitments, anticipates the majority of the remaining balance will be monetized by the end of the 2020 calendar year.

8. Inventories

Inventories consist of the following:

(In thousands)	December 31, 2019	December 31, 2018
Coal	\$ 46,815	\$ 40,982
Repair parts and supplies	84,083	84,488
	<u>\$ 130,898</u>	<u>\$ 125,470</u>

The repair parts and supplies are stated net of an allowance for slow-moving and obsolete inventories of \$2.2 million at December 31, 2019 and \$0.6 million at December 31, 2018.

9. Investments in Available-for-Sale Securities

The Company has invested in marketable debt securities, primarily highly liquid U.S Treasury securities and investment grade corporate bonds. These investments are held in the custody of a major financial institution. These securities are classified as available-for-sale securities and, accordingly, the unrealized gains and losses are recorded through other comprehensive income.

The Company's investments in available-for-sale marketable securities are as follows:

December 31, 2019					
	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value	Balance Sheet Classification	
Cost Basis				Short-Term Investments	
(In thousands)					
Available-for-sale:					
U.S. government and agency securities	\$ 35,044	\$ 1	\$ (16)	\$ 35,029	\$ 35,029
Corporate notes and bonds	100,643	200	(205)	100,638	100,638
Total Investments	<u>\$ 135,687</u>	<u>\$ 201</u>	<u>\$ (221)</u>	<u>\$ 135,667</u>	<u>\$ 135,667</u>
December 31, 2018					
	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value	Balance Sheet Classification	
Cost Basis				Short-Term Investments	
(In thousands)					
Available-for-sale:					
U.S. government and agency securities	\$ 100,003	\$ 11	\$ (126)	\$ 99,888	\$ 99,888
Corporate notes and bonds	63,137	4	(232)	62,909	62,909
Total Investments	<u>\$ 163,140</u>	<u>\$ 15</u>	<u>\$ (358)</u>	<u>\$ 162,797</u>	<u>\$ 162,797</u>

The aggregate fair value of investments with unrealized losses that had been owned for less than a year was \$72.3 million and \$115.2 million at December 31, 2019 and 2018, respectively. The aggregate fair value of investments with unrealized losses that have been owned for over a year was \$0.0 million and \$32.4 million at December 31, 2019 and 2018, respectively.

The debt securities outstanding at December 31, 2019 have maturity dates ranging from the first quarter of 2020 through the second quarter of 2021. The Company classifies its investments as current based on the nature of the investments and their availability to provide cash for use in current operations, if needed.

10. Equity Method Investments and Membership Interests in Joint Ventures

The Company accounts for its investments and membership interests in joint ventures under the equity method of accounting if the Company has the ability to exercise significant influence, but not control, over the entity. Equity method investments are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the investments may not be recoverable.

Below are the equity method investments reflected in the consolidated balance sheets:

(In thousands)	Knight Hawk	DTA	Total
December 31, 2017	\$ 90,166	\$ 15,941	\$ 106,107
Advances to (distributions from) affiliates, net	(10,534)	2,481	(8,053)
Equity in comprehensive income (loss)	10,389	(3,767)	6,622
December 31, 2018	\$ 90,021	\$ 14,655	\$ 104,676
Sale of investment in affiliates	(1,879)	—	(1,879)
Advances to (distributions from) affiliates, net	(5,884)	5,500	(384)
Equity in comprehensive income (loss)	7,953	(4,778)	3,175
December 31, 2019	<u>\$ 90,211</u>	<u>\$ 15,377</u>	<u>\$ 105,588</u>

In December 2019, the Company sold 1% of its ownership interest in Knight Hawk Holdings, LLC (“Knight Hawk”) to a third party for \$2.0 million. After the transaction, the Company holds a 48% equity interest in Knight Hawk, a coal producer in the Illinois Basin.

The Company holds a general partnership interest in Dominion Terminal Associates (“DTA”), which is accounted for under the equity method. In March 2017, the Company paid \$7.2 million through an auction process held by one of the existing owners, increasing its ownership in DTA from 21.875% to 35%. DTA operates a ground storage-to-vessel coal transloading facility in Newport News, Virginia for use by the partners. Under the terms of a throughput and handling agreement with DTA, each partner is charged its share of cash operating and debt-service costs in exchange for the right to use the facility’s loading capacity and is required to make periodic cash advances to DTA to fund such costs.

The Company is not required to make any future contingent payments related to development financing for any of its equity investees.

11. Derivatives

Interest rate risk management

The Company has entered into interest rate swaps to reduce the variability of cash outflows associated with interest payments on its variable rate term loan. These swaps have been designated as cash flow hedges. For additional information on these arrangements, see Note 13, “Debt and Financing Arrangements” in the Consolidated Financial Statements.

Diesel fuel price risk management

The Company is exposed to price risk with respect to diesel fuel purchased for use in its operations. The Company anticipates purchasing approximately 34 to 40 million gallons of diesel fuel for use in its operations during 2020. To protect the Company’s cash flows from increases in the price of diesel fuel for its operations, the Company uses forward physical diesel purchase contracts and purchased heating oil call options. At December 31, 2019, the Company had heating oil call options for approximately 10.1 million gallons at an average strike price of \$2.28. These positions are not designated as hedges for accounting purposes, and therefore, changes in the fair value are recorded immediately to earnings.

Coal risk management positions

The Company may sell or purchase forward contracts, swaps and options in the over-the-counter coal market in order to manage its exposure to coal prices. The Company has exposure to the risk of fluctuating coal prices related to forecasted sales or purchases of coal or to the risk of changes in the fair value of a fixed price physical sales contract. Certain derivative contracts may be designated as hedges of these risks.

At December 31, 2019, the Company held derivatives for risk management purposes that are expected to settle in the following years:

(Tons in thousands)	2020	2021	Total
Coal sales	668	—	668
Coal purchases	668	—	668

The Company may also enter into natural gas options to protect the Company from decreases in natural gas prices, which could impact thermal coal demand. These options are not designated as hedges.

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Coal trading positions

The Company may sell or purchase forward contracts, swaps and options in the over-the-counter coal market for trading purposes. The Company is exposed to the risk of changes in coal prices on the value of its coal trading portfolio. The unrecognized losses of \$0.5 million in the trading portfolio are expected to be realized in 2020.

Tabular derivatives disclosures

The Company has master netting agreements with all of its counterparties which allow for the settlement of contracts in an asset position with contracts in a liability position in the event of default or termination. Such netting arrangements reduce the Company's credit exposure related to these counterparties. For classification purposes, the Company records the net fair value of all the positions with a given counterparty as a net asset or liability in the consolidated balance sheets. The amounts shown in the table below represent the fair value position of individual contracts, and not the net position presented in the accompanying consolidated balance sheets.

The fair value and location of derivatives reflected in the accompanying consolidated balance sheets are as follows:

Fair Value of Derivatives (In thousands)	December 31, 2019		December 31, 2018		
	Asset Derivative	Liability Derivative	Asset Derivative	Liability Derivative	
Derivatives Designated as Hedging Instruments					
Coal	\$ 1,351	\$ (962)	\$ 2,342	\$ (805)	
Derivatives Not Designated as Hedging Instruments					
Heating oil -- diesel purchases	133	(112)	532	—	
Coal held for trading purposes, exchange traded swaps and futures	18,467	(18,940)	10,329	(10,701)	
Coal -- risk management	11,662	(5,856)	5,672	(19,579)	
Natural gas	3	—	4	(4)	
Total	\$ 30,265	(24,908)	\$ 16,537	\$ (30,284)	
Total derivatives	\$ 31,616	\$ (25,870)	\$ 18,879	\$ (31,089)	
Effect of counterparty netting	(25,759)	25,759	(17,801)	17,801	
Net derivatives as classified in the balance sheets	\$ 5,857	\$ (111)	\$ 5,746	\$ (13,288)	\$ (12,210)

		December 31, 2019	December 31, 2018
Net derivatives as reflected on the balance sheets			
Heating oil	Other current assets	\$ 133	\$ 532
Coal	Other current assets	5,724	546
	Accrued expenses and other current liabilities	(111)	(13,288)
		\$ 5,746	\$ (12,210)

The Company had a current liability representing cash collateral owed to a margin account for derivative positions primarily related to coal derivatives of \$4.4 million at December 31, 2019 and a current asset of \$24.7 million at December 31, 2018 representing cash collateral posted to a margin account, respectively. These amounts are not included with the derivatives presented in the table above and are included in "accrued expenses and other current liabilities" and "other current assets" in the accompanying Consolidated Balance Sheets.

The effects of derivatives on measures of financial performance are as follows:

Derivatives used in Cash Flow Hedging Relationships (in thousands)

For the noted periods,

	Gain (Loss) Recognized in Other Comprehensive Income (Effective Portion)		
	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Coal sales ⁽¹⁾	\$ 10,249	\$ (7,517)	\$ (2,127)
Coal purchases ⁽²⁾	(1,231)	1,348	942
	<u>\$ 9,018</u>	<u>\$ (6,169)</u>	<u>\$ (1,185)</u>

	Gains (Losses) Reclassified from Other Comprehensive Income into Income (Effective Portion)		
	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Coal sales	\$ 10,167	\$ (10,912)	\$ —
Coal purchases	(686)	2,707	—
	<u>\$ 9,481</u>	<u>\$ (8,205)</u>	<u>\$ —</u>

No ineffectiveness or amounts excluded from effectiveness testing relating to the Company's cash flow hedging relationships were recognized in the results of operations in the respective periods.

Derivatives Not Designated as Hedging Instruments (in thousands)

For the noted periods,

	Gain (Loss) Recognized		
	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Coal trading— realized and unrealized ⁽³⁾	\$ (1,013)	\$ 135	\$ (2,047)
Coal risk management— unrealized ⁽³⁾	19,713	(9,530)	(4,648)
Natural gas trading — realized and unrealized ⁽³⁾	(99)	277	(527)
Change in fair value of coal derivatives and coal trading activities, net total	<u>\$ 18,601</u>	<u>\$ (9,118)</u>	<u>\$ (7,222)</u>
Coal risk management — realized ⁽⁴⁾	\$ 487	\$ (8,734)	\$ —
Heating oil — diesel purchases ⁽⁴⁾	\$ (2,291)	\$ (505)	\$ (1,057)

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Location in income statement:

- (1) — Revenues
- (2) — Cost of sales
- (3) — Change in fair value of coal derivatives and coal trading activities, net
- (4) — Other operating income, net

Based on fair values at December 31, 2019, amounts on derivative contracts designated as hedge instruments in cash flow hedges expected to be reclassified from other comprehensive income into earnings during the next twelve months are gains of \$0.4 million.

12. Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities consist of the following:

	December 31, 2019	December 31, 2018
(In thousands)		
Payroll and employee benefits	\$ 50,929	\$ 57,166
Taxes other than income taxes	69,061	75,017
Interest	133	156
Workers' compensation	16,119	20,044
Asset retirement obligations	10,366	13,113
Other	10,559	18,018
	<u>\$ 157,167</u>	<u>\$ 183,514</u>

13. Debt and Financing Arrangements

	December 31, 2019	December 31, 2018
(In thousands)		
Term loan due 2024 (\$291.8 and \$294.8 million face value, respectively)	\$ 290,825	\$ 293,626
Other	25,007	30,449
Debt issuance costs	(5,013)	(6,092)
	<u>\$ 310,819</u>	<u>\$ 317,983</u>
Less current maturities of debt	20,753	17,797
Long-term debt	<u>\$ 290,066</u>	<u>\$ 300,186</u>

Term Loan Facility

In 2017, the Company entered into a senior secured term loan credit agreement in an aggregate principal amount of \$300 million (the "Term Loan Debt Facility") with Credit Suisse AG, Cayman Islands Branch, as administrative agent and collateral agent (in such capacities, the "Agent"), and the other financial institutions from time to time party thereto (collectively, the "Lenders"). The Term Loan Debt Facility was issued at 99.50% of the face amount and will mature on March 7, 2024. The term loans provided under the Term Loan Debt Facility (the "Term Loans") are subject to quarterly principal amortization payments in an amount equal to \$750,000.

During 2018, the Company entered into the Second Amendment (the "Second Amendment") to its Term Loan Debt Facility. The Second Amendment further reduced the interest rate on its Term Loan Debt Facility to, at the option of Arch Coal, either (i) the London interbank offered rate ("LIBOR") plus an applicable margin of 2.75%, subject to a 1.00% LIBOR floor, or (ii) a base rate plus an applicable margin of 1.75%. The Second Amendment also resets the 1.00% call premium to apply to repricing events that occur on or prior to October 3, 2018. The LIBOR floor remains at 1.00%. There is no change to the maturities as a result of the Second Amendment.

The Term Loan Debt Facility is guaranteed by all existing and future wholly owned domestic subsidiaries of the Company (collectively, the "Subsidiary Guarantors" and, together with Arch Coal, the "Loan Parties"), subject to customary exceptions, and is secured by first priority security interests on substantially all assets of the Loan Parties, including 100% of the voting

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equity interests of directly owned domestic subsidiaries and 65% of the voting equity interests of directly owned foreign subsidiaries, subject to customary exceptions.

The Company has the right to prepay Term Loans at any time and from time to time in whole or in part without premium or penalty, upon written notice, except that any prepayment of Term Loans that bear interest at the LIBOR Rate other than at the end of the applicable interest periods therefor shall be made with reimbursement for any funding losses and redeployment costs of the Lenders resulting therefrom.

The Term Loan Debt Facility is subject to certain usual and customary mandatory prepayment events, including 100% of net cash proceeds of (i) debt issuances (other than debt permitted to be incurred under the terms of the New Term Loan Debt Facility) and (ii) non-ordinary course asset sales or dispositions, subject to customary thresholds, exceptions and reinvestment rights.

The Term Loan Debt Facility contains customary affirmative covenants and representations.

The Term Loan Debt Facility also contains customary negative covenants, which, among other things, and subject to certain exceptions, include restrictions on (i) indebtedness, (ii) liens, (iii) liquidations, mergers, consolidations and acquisitions, (iv) disposition of assets or subsidiaries, (v) affiliate transactions, (vi) creation or ownership of certain subsidiaries, partnerships and joint ventures, (vii) continuation of or change in business, (viii) restricted payments, (ix) prepayment of subordinated and junior lien indebtedness, (x) restrictions in agreements on dividends, intercompany loans and granting liens on the collateral, (xi) loans and investments, (xii) sale and leaseback transactions, (xiii) changes in organizational documents and fiscal year and (xiv) transactions with respect to bonding subsidiaries. The New Term Loan Debt Facility does not contain any financial maintenance covenant.

The Term Loan Debt Facility contains customary events of default, subject to customary thresholds and exceptions, including, among other things, (i) nonpayment of principal and nonpayment of interest and fees, (ii) a material inaccuracy of a representation or warranty at the time made, (iii) a failure to comply with any covenant, subject to customary grace periods in the case of certain affirmative covenants, (iv) cross-events of default to indebtedness of at least \$50 million, (v) cross-events of default to surety, reclamation or similar bonds securing obligations with an aggregate face amount of at least \$50 million, (vi) uninsured judgments in excess of \$50 million, (vii) any loan document shall cease to be a legal, valid and binding agreement, (viii) uninsured losses or proceedings against assets with a value in excess of \$50 million, (ix) certain ERISA events, (x) a change of control or (xi) bankruptcy or insolvency proceedings relating to the Company or any material subsidiary of the Company.

Accounts Receivable Securitization Facility

In 2018, the Company extended and amended its existing trade accounts receivable securitization facility provided to Arch Receivable Company, LLC, a special-purpose entity that is a wholly owned subsidiary of Arch Coal (“Arch Receivable”) (the “Extended Securitization Facility”), which supports the issuance of letters of credit and requests for cash advances. The amendment to the Extended Securitization Facility maintained the \$160 million borrowing capacity and extended the maturity date to the date that is three years after the Securitization Facility Closing Date. Additionally, the amendment provided the Company the opportunity to use credit insurance to increase the pool of eligible receivables for borrowing. Pursuant to the Extended Securitization Facility, Arch Receivable also agreed to a revised schedule of fees payable to the administrator and the providers of the Extended Securitization Facility.

The Extended Securitization Facility will terminate at the earliest of (i) three years from the Securitization Facility Closing Date, (ii) if the Liquidity (defined in the Extended Securitization Facility and consistent with the definition in the Inventory Facility) is less than \$175 million for a period of 60 consecutive days, the date that is the 364th day after the first day of such 60 consecutive day period and (iii) the occurrence of certain predefined events substantially consistent with the existing transaction documents. Under the Extended Securitization Facility, Arch Receivable, Arch Coal and certain of Arch Coal’s subsidiaries party to the Extended Securitization Facility have granted to the administrator of the Extended Securitization Facility a first priority security interest in eligible trade accounts receivable generated by such parties from the sale of coal and all proceeds thereof. As of December 31, 2019, letters of credit totaling \$15.5 million were outstanding under the facility with \$108.9 million of additional availability for borrowings.

Inventory-Based Revolving Credit Facility

In 2017, the Company and certain subsidiaries of Arch Coal entered into a senior secured inventory-based revolving credit facility in an aggregate principal amount of \$40 million (the "Inventory Facility") with Regions Bank ("Regions") as administrative agent and collateral agent, as lender and swingline lender (in such capacities, the "Lender") and as letter of credit issuer. Availability under the Inventory Facility is subject to a borrowing base consisting of (i) 85% of the net orderly liquidation value of eligible coal inventory, (ii) the lesser of (x) 85% of the net orderly liquidation value of eligible parts and supplies inventory and (y) 35% of the amount determined pursuant to clause (i), and (iii) 100% of Arch Coal's Eligible Cash (defined in the Inventory Facility), subject to reduction for reserves imposed by Regions.

In 2018, the Company and certain subsidiaries of Arch Coal amended and extended the Inventory Facility by increasing the facility size by \$10 million bringing the total aggregate principal amount available to \$50 million, subject to borrowing base calculations described above.

The commitments under the Inventory Facility will terminate on the date that is the earliest to occur of (i) the date, if any, that is 364 days following the first day that Liquidity (defined in the Inventory Facility and consistent with the definition in the Extended Securitization Facility (as defined below)) is less than \$250 million for a period of 60 consecutive days and (ii) the date, if any, that is 60 days following the maturity, termination or repayment in full of the Extended Securitization Facility.

Revolving loan borrowings under the Inventory Facility bear interest at a per annum rate equal to, at the option of Arch Coal, either the base rate or the London interbank offered rate plus, in each case, a margin ranging from 2.00% to 2.50% (in the case of LIBOR loans) and 1.00% to 1.50% (in the case of base rate loans) determined using a Liquidity-based grid. Letters of credit under the New Inventory Facility are subject to a fee in an amount equal to the applicable margin for LIBOR loans, plus customary fronting and issuance fees.

All existing and future direct and indirect domestic subsidiaries of Arch Coal, subject to customary exceptions, will either constitute co-borrowers under or guarantors of the Inventory Facility (collectively with the Company, the "Loan Parties"). The Inventory Facility is secured by first priority security interests in the ABL Priority Collateral (defined in the Inventory Facility) of the Loan Parties and second priority security interests in substantially all other assets of the Loan Parties, subject to customary exceptions (including an exception for the collateral that secures the Extended Securitization Facility).

Arch Coal has the right to prepay borrowings under the Inventory Facility at any time and from time to time in whole or in part without premium or penalty, upon written notice, except that any prepayment of such borrowings that bear interest at the LIBOR rate other than at the end of the applicable interest periods therefore shall be made with reimbursement for any funding losses and redeployment costs of the Lender resulting therefrom.

The Inventory Facility is subject to certain usual and customary mandatory prepayment events, including non-ordinary course asset sales or dispositions, subject to customary thresholds, exceptions (including exceptions for required prepayments under the Arch Coal's term loan facility) and reinvestment rights.

The Inventory Facility contains certain customary affirmative and negative covenants; events of default, subject to customary thresholds and exceptions; and representations, including certain cash management and reporting requirements that are customary for asset-based credit facilities. The Inventory Facility also includes a requirement to maintain Liquidity equal to or exceeding \$175 million at all times. As of December 31, 2019, letters of credit totaling \$35.9 million were outstanding under the facility with \$14.1 million additional availability for borrowings.

Interest Rate Swaps

The Company has entered into a series of interest rate swaps to fix a portion of the LIBOR interest payments due under the term loan. The interest rate swaps qualify for cash flow hedge accounting treatment and as such, the change in the fair value of the interest rate swaps are recorded on the Company's Consolidated Balance Sheet as an asset or liability with the effective portion of the gains or losses reported as a component of accumulated other comprehensive income and the ineffective portion reported in earnings. As interest payments are made on the term loan, amounts in accumulated other comprehensive income will be reclassified into earnings through interest expense to reflect a net interest on the term loan equal to the effective yield of the fixed rate of the swap plus 2.75% which is the spread on the revised LIBOR term loan. In the event that an interest rate swap is terminated prior to maturity, gains or losses in accumulated other comprehensive income will remain deferred and reclassified into earnings in the periods which the hedged forecasted transaction affects earnings.

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Below is a summary of the Company's outstanding interest rate swap agreements designated as hedges as of December 31, 2019:

Notional Amount (in millions)	Effective Date	Fixed Rate	Receive Rate	Expiration Date
\$250.0	June 28, 2019	2.025%	1-month LIBOR	June 30, 2020
\$200.0	June 30, 2020	2.249%	1-month LIBOR	June 30, 2021
\$100.0	June 30, 2021	2.315%	1-month LIBOR	June 30, 2023

The fair value of the interest rate swaps at December 31, 2019 is a liability of \$3.0 million which is recorded within Other noncurrent liabilities with the offset to accumulated other comprehensive income on the Company's Consolidated Balance Sheet. The Company realized \$1.1 million and \$1.2 million of gains, and \$0.1 million of losses during the years ended December 31, 2019, 2018 and 2017, respectively, related to settlements of the interest rate swaps which were recorded to interest expense on the Company's Consolidated Income Statements. The interest rate swaps are classified as level 2 within the fair value hierarchy.

Debt Maturities

The contractual maturities of debt as of December 31, 2019 are as follows:

Year	(In thousands)
2020	\$ 21,863
2021	8,853
2022	3,130
2023	3,161
2024	279,750
Thereafter	—
	<u>\$ 316,757</u>

Financing Costs

The Company paid financing costs of \$0.0 million, \$1.3 million and \$10.1 million during the years ended December 31, 2019, 2018 and 2017, respectively.

14. Taxes

The Company provides for deferred income taxes for temporary differences arising from differences between the financial statement and tax basis of assets and liabilities existing at each balance sheet date using enacted tax rates expected to be in effect when the related taxes are expected to be paid or recovered. The Company initially recognizes the effects of a tax position when it is more than 50 percent likely, based on the technical merits, that that position will be sustained upon examination, including resolution of the related appeals or litigation processes, if any. The Company's determination of whether or not a tax position has met the recognition threshold considers the facts, circumstances, and information available at the reporting date.

The Company reassesses our ability to realize deferred tax assets annually in the fourth quarter, during the annual budget process, or when circumstances indicate that the ability to realize deferred tax assets has changed. The assessment takes into account expectations of future taxable income or loss, available tax planning strategies and the reversal of temporary differences. The development of these expectations involves the use of estimates such as production levels, operating profitability, timing of development activities and the cost and timing of reclamation work. A valuation allowance may be recorded to reflect the amount of future tax benefits that the Company believes are not likely to be realized.

A valuation allowance is difficult to avoid when a company is in a cumulative loss position. A cumulative loss position is defined as a cumulative pre-tax loss for the current and two preceding years. Because of the 2016 bankruptcy, the Company was in a cumulative loss position in 2017 and 2018. As a cumulative loss constitutes significant negative evidence with regards to future taxable income, in 2017 and 2018, the Company relied solely on the expected reversal of taxable temporary differences to support the future realization of our deferred tax assets.

As of December 31, 2019, the Company is no longer in a cumulative loss position. In 2019, the Company's assessment took into account expectations of future taxable income, available tax planning strategies and the reversal of temporary differences. Based on significant near-term uncertainty in market pricing and uncertainty surrounding other planned changes in our operating structure, the Company will not release the valuation allowance in 2019.

As of December 31, 2019, the Company had a valuation allowance against its deferred tax assets of \$506.3 million. If actual outcomes differ from our expectations, the Company may adjust its valuation allowance through income tax expense in the period such determination is made.

Due to changes in ownership that occurred in connection with the Company's emergence from bankruptcy in 2016, there was a change in ownership for purposes of IRC Section 382. Section 382 provides a combined annual limitation with respect to the ability of a corporation to use its NOLs, AMT credits and capital loss carryforwards generated before the ownership change against future taxable income. The Company's annual limit under IRC section 382 is estimated to be \$29.8 million. The Company had a net unrealized built-in gain, based on comparing the fair value and carryover tax basis in assets, at the time of the ownership change, therefore, certain built-in gains recognized within five years after the ownership change will increase the annual IRC section 382 limit for the five year recognition period beginning October 1, 2016 through September 30, 2021. There is uncertainty surrounding which assets with built-in gain will be realized within the five year period following the Company's emergence from bankruptcy and allow the Company to realize the incremental net operating losses and credit in excess of the base 382 limitation. The Company is reflecting a deferred tax asset for the full amount of the net operating losses and credit carryforwards. If at some point in time it becomes evident that some portion of the deferred tax assets will not be realizable, the deferred tax asset, and offsetting valuation allowance will be reduced.

During 2018, the IRS completed an audit of AMT NOL carryback claims the Company filed in prior periods. In addition, the Company filed an amended 2016 tax return which changed the amount of available tax attributes and the mix used to offset its bankruptcy CODI as of January 1, 2017. As a result, the Company increased available AMT credits and reduced other tax attributes as of that date. The AMT credits do not require a valuation allowance to be recorded against them due to the law changes enacted as part of the Tax Cut and Jobs Act of 2017 ("the Act"), while the Company's other tax attributes are fully offset by a valuation allowance. The associated valuation allowance release related to the shift in attributes reflects what the Company believes will be realized upon audit of the amended tax return filing. The Company anticipates that all AMT credits will be converted to cash in the next three years as provided by The Act. In total, these changes resulted in a recorded benefit from income taxes of \$48.8 million, which was net of a \$26.6 million uncertain tax position charge.

The Company is subject to U.S. federal income tax as well as income tax in multiple state jurisdictions. The tax years 2008 through 2019 remain open to examination for U.S. federal income tax matters and 1999 through 2019 remain open to examination for various state income tax matters.

Significant components of the provision for (benefit from) income taxes are as follows:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
(In thousands)			
Current:			
Federal	\$ (36)	\$ 86	\$ 835
State	124	136	31
Total current	<u>\$ 88</u>	<u>\$ 222</u>	<u>\$ 866</u>
Deferred:			
Federal	667	(52,309)	(36,162)
State	(507)	(389)	41
Total deferred	<u>\$ 160</u>	<u>\$ (52,698)</u>	<u>\$ (36,121)</u>
	<u>\$ 248</u>	<u>\$ (52,476)</u>	<u>\$ (35,255)</u>

A reconciliation of the statutory federal income tax provision (benefit) at the statutory rate to the actual provision for (benefit from) income taxes follows:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
(In thousands)			
Income tax provision (benefit) at statutory rate	\$ 49,150	\$ 54,621	\$ 71,118
Percentage depletion allowance	(17,743)	(17,725)	(31,255)
State taxes, net of effect of federal taxes	(12,769)	4,480	7,002
Change in valuation allowance	(24,206)	(79,961)	(410,983)
Impact of Tax Cuts and Jobs Act of 2017	—	(17,645)	332,345
Other, net	5,816	3,754	(3,482)
Provision for (benefit from) income taxes	<u>\$ 248</u>	<u>\$ (52,476)</u>	<u>\$ (35,255)</u>

Significant components of the Company's deferred tax assets and liabilities that result from carryforwards and temporary differences between the financial statement basis and tax basis of assets and liabilities are summarized as follows:

	December 31, 2019	December 31, 2018
(In thousands)		
Deferred tax assets:		
Tax loss carryforwards	\$ 294,535	\$ 307,615
Tax credit carryforwards	5,297	5,394
Investment in partnerships	190,418	193,217
Other	20,387	28,747
Gross deferred tax assets	<u>\$ 510,637</u>	<u>\$ 534,973</u>
Valuation allowance	(506,316)	(530,612)
Total deferred tax assets	<u>\$ 4,321</u>	<u>\$ 4,361</u>
Deferred tax liabilities:		
Plant and equipment	2,063	3,037
Other	2,178	1,154
Total deferred tax liabilities	<u>\$ 4,241</u>	<u>\$ 4,191</u>
Net deferred tax asset	<u>\$ 80</u>	<u>\$ 170</u>

The Company has gross federal NOL carryforwards for regular income tax purposes of \$1.0 billion at December 31, 2019 that will expire between 2029 and 2037. The future annual usage of NOLs will be limited under IRC section 382.

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On December 22, 2017, the Act was signed into law making significant changes to the Internal Revenue Code. The Company provided its best estimate of the impact of the Act at December 31, 2017 and during 2018 completed its analysis as provided by SAB 118. The Company has recorded the impact of the Act in its year-end income tax provision in accordance with the guidance and interpretations available. The following items have been impacted by the Act:

- Remeasurement of deferred taxes: Deferred tax assets and liabilities attributable to the U.S. were remeasured from 35% to the reduced tax rate of 21%. The amount related to the remeasurement of certain deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future was \$330.9 million of income tax expense in 2017 and \$16.7 million of income tax benefit in 2018, related to the 2016 amended return filing, with offsetting valuation allowance adjustments.
- One-time transition tax on mandatory deemed repatriation of cumulative foreign earnings: The amount of income tax expense related to the mandatory deemed repatriation of foreign earnings was \$1.5 million based on cumulative foreign earnings of \$4.2 million. The deemed repatriation tax is completely offset with net operating loss carryforwards, with an offsetting valuation allowance adjustment and will not result in a cash tax liability.
- Elimination of the corporate AMT regime: Existing AMT credits as of December 31, 2018 will be refunded during 2019 through 2022. The Company has determined that it will receive a refund of existing AMT credits of approximately \$45.0 million, net of a \$26.6 million uncertain tax position charge. The valuation allowance previously recorded against these credits was released in 2017. The credits were reflected as a deferred tax asset. In 2018, the credits were reclassified from a deferred tax asset to short term and long term receivables.
- Elimination of executive compensation exemptions: The Act made changes to the \$1 million limit on deductible compensation paid to certain “covered” employees. The Act eliminated exemptions for qualified performance based compensation and compensation paid after termination and expanded the number of employees to which the limit applies. The Company recorded an amount of \$0.2 million of tax expense in 2017, \$6.1 million of tax expense in 2018 and \$3.9 million of tax expense in 2019, with an offsetting valuation allowance adjustment.
- Other provisions in the Act such as global intangible low-taxed income “GILTI” rules covering foreign income earned in low-tax countries, base-erosion and anti-abuse tax “BEAT,” and the foreign derived intangible income “FDII” deduction will have no material impact on the company

At December 31, 2017 additional tax losses were realized primarily as a result of the reversal of deductible temporary differences and percentage depletion. A \$35.7 million benefit was recorded from the release of valuation allowance offsetting alternative minimum tax credits that have become refundable by the Act, as well as carryback claims filed in the fourth quarter related to specific liability losses that resulted in claims for refund of previously paid alternative minimum taxes. At December 31, 2017 a \$610.6 million valuation allowance fully offsets all net deferred tax assets, other than alternative minimum tax credits.

At December 31, 2018, the valuation allowance related to sequestration on the AMT credits has been released and the credits have been reclassified from deferred tax assets to short and long term receivables, as all AMT credits will be refunded between 2019 through 2022. The impact of the 2016 amended return and finalization of the AMT NOL 10-yr carryback claims also affects NOLs, AMT credits and the investment in partnerships. A \$530.6 million valuation allowance fully offsets all net deferred tax assets.

At December 31, 2019, a \$24.2 million benefit was recorded from the release of valuation allowance offsetting federal and state net operating losses used to offset current year taxable income. A \$506.3 million valuation allowance fully offsets all net deferred tax assets.

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A reconciliation of the beginning and ending amounts of gross unrecognized tax benefits follows:

	(In thousands)
Balance at December 31, 2016	\$ 7,455
Additions based on tax positions related to the current year	—
Additions for tax positions of prior years	3,928
Reductions as a result of lapses in the statute of limitations	—
Balance at December 31, 2017	11,383
Additions based on tax positions of prior years	28,387
Additions for tax positions related to the current year	3,228
Reductions for tax positions of prior years	(634)
Reductions as a result of lapses in the statute of limitations	(3,271)
Balance at December 31, 2018	39,093
Additions for tax positions related to the current year	2,980
Reductions for tax positions of prior years	(1,970)
Reductions as a result of lapses in the statute of limitations	\$ (374)
Balance at December 31, 2019	\$ 39,729

If recognized, the entire amount of the gross unrecognized tax benefits at December 31, 2019 would affect the effective tax rate.

The Company recognizes interest and penalties related to unrecognized tax benefits in income tax expense. The Company had accrued interest and penalties of \$0.8 million and \$0.3 million at December 31, 2019 and 2018, respectively. In the next 12 months, \$0.5 million gross unrecognized tax benefits are expected to be reduced due to the expiration of the statute of limitations.

15. Asset Retirement Obligations

The Company's asset retirement obligations arise from the Federal Surface Mining Control and Reclamation Act of 1977 and similar state statutes, which require that mine property be restored in accordance with specified standards and an approved reclamation plan. The required reclamation activities to be performed are outlined in the Company's mining permits. These activities include reclaiming the pit and support acreage at surface mines, sealing portals at underground mines, reclaiming refuse areas and slurry ponds and water treatment.

The following table describes the changes to the Company's asset retirement obligation liability:

(In thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018
Balance at beginning of period (including current portion)	\$ 243,417	\$ 328,695
Accretion expense	20,548	27,970
Obligations of divested operations	(12,185)	—
Adjustments to the liability from changes in estimates	11,438	(100,728)
Liabilities settled	(10,420)	(12,520)
Balance at period end	\$ 252,798	\$ 243,417
Current portion included in accrued expenses	(10,366)	(13,113)
Noncurrent liability	\$ 242,432	\$ 230,304

The reduction in the asset retirement obligation during the year ended December 31, 2018 primarily relates to a revised mining and reclamation plan at the Company's Black Thunder Mine. The revised plan provides for accelerated mine reclamation during the ordinary mining process, which significantly reduces the size of the mine's open pit at the time of final

reclamation. The change reduced the asset retirement obligation, and corresponding deferred mine development asset on the Company's balance sheet by \$95.6 million.

As of December 31, 2019, the Company had \$528.9 million in surety bonds outstanding and no letters of credit to secure reclamation bonding obligations. Additionally, the Company has posted \$0.6 million in cash as collateral related to reclamation surety bonds; this amount is recorded within "Noncurrent assets" on the Consolidated Balance Sheet.

16. Fair Value Measurements

The hierarchy of fair value measurements assigns a level to fair value measurements based on the inputs used in the respective valuation techniques. The levels of the hierarchy, as defined below, give the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs.

- Level 1 is defined as observable inputs such as quoted prices in active markets for identical assets. Level 1 assets include available-for-sale equity securities, U.S. Treasury securities, and coal swaps and futures that are submitted for clearing on the New York Mercantile Exchange.

- Level 2 is defined as observable inputs other than Level 1 prices. These include quoted prices for similar assets or liabilities in an active market, quoted prices for identical assets and liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities. The Company's level 2 assets and liabilities include U.S. government agency securities, coal commodity contracts and interest rate swaps with fair values derived from quoted prices in over-the-counter markets or from prices received from direct broker quotes.

- Level 3 is defined as unobservable inputs in which little or no market data exists, therefore requiring an entity to develop its own assumptions. These include the Company's commodity option contracts (coal and heating oil) valued using modeling techniques, such as Black-Scholes, that require the use of inputs, particularly volatility, that are rarely observable. Changes in the unobservable inputs would not have had a significant impact on the reported Level 3 fair values at December 31, 2019 and 2018.

The table below sets forth, by level, the Company's financial assets and liabilities that are recorded at fair value in the accompanying consolidated balance sheet:

	Fair Value at December 31, 2019			
	Total	Level 1	Level 2	Level 3
	(In thousands)			
Assets:				
Investments in marketable securities	\$ 135,667	\$ 35,029	\$ 100,638	\$ —
Derivatives	5,857	5,269	527	61
Total assets	\$ 141,524	\$ 40,298	\$ 101,165	\$ 61
Liabilities:				
Derivatives	\$ 3,065	\$ —	\$ 3,065	\$ —

	Fair Value at December 31, 2018			
	Total	Level 1	Level 2	Level 3
	(In thousands)			
Assets:				
Investments in marketable securities	\$ 162,797	\$ 99,888	\$ 62,909	\$ —
Derivatives	3,554	—	3,022	532
Total assets	\$ 166,351	\$ 99,888	\$ 65,931	\$ 532
Liabilities:				
Derivatives	\$ 13,288	\$ 13,252	\$ 36	\$ —

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The Company's contracts with its counterparties allow for the settlement of contracts in an asset position with contracts in a liability position in the event of default or termination. For classification purposes, the Company records the net fair value of all the positions with these counterparties as a net asset or liability. Each level in the table above displays the underlying contracts according to their classification in the accompanying consolidated balance sheet, based on this counterparty netting.

The following table summarizes the change in the fair values of financial instruments categorized as level 3.

(In thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018
Balance, beginning of period	\$ 532	\$ 5,426
Realized and unrealized (gains) losses recognized in earnings, net	(1,893)	(302)
Purchases	1,597	3,420
Issuances	(208)	(724)
Settlements	33	(7,288)
Ending balance	<u>\$ 61</u>	<u>\$ 532</u>

Net unrealized losses of \$1.2 million were recognized during the year ended December 31, 2019 related to level 3 financial instruments held on December 31, 2019.

Cash and Cash Equivalents

At December 31, 2019 and 2018, the carrying amounts of cash and cash equivalents approximate their fair value.

Fair Value of Long-Term Debt

At December 31, 2019 and 2018, the fair value of the Company's debt, including amounts classified as current, was \$308.0 million and \$318.6 million, respectively. Fair values are based upon observed prices in an active market, when available, or from valuation models using market information, which fall into Level 2 in the fair value hierarchy.

17. Capital Stock

Dividends

The Company declared and paid cash dividends per share during the periods presented below:

2019:	Dividends per share	Amount (in thousands)
1st quarter	\$ 0.45	\$ 7,839
2nd quarter	0.45	7,425
3rd quarter	0.45	7,000
4th quarter	0.45	7,956
Total cash dividends declared and paid	<u>\$ 1.80</u>	<u>\$ 30,220</u>

2018:	Dividends per share	Amount (in thousands)
1st quarter	\$ 0.40	\$ 8,335
2nd quarter	0.40	7,998
3rd quarter	0.40	7,633
4th quarter	0.40	7,303
Total cash dividends declared and paid	<u>\$ 1.60</u>	<u>\$ 31,269</u>

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Future dividend declarations will be subject to ongoing Board review and authorization will be based on a number of factors, including business and market conditions, the Company's future financial performance and other capital priorities.

Share Repurchase Program

During April 2019, the Board of Directors of Arch Coal, Inc. approved an incremental \$250 million to the share repurchase program bringing the total authorization to \$1.05 billion. Below is a table showing the share repurchase activity during the periods presented below:

2019:	Number of Shares	Average Repurchase Price per Share	Amount (in thousands)
1st quarter	872,317	\$ 89.70	\$ 78,249
2nd quarter	697,255	90.92	63,393
3rd quarter	1,169,597	78.11	91,357
4th quarter	133,379	78.72	10,499
Total shares repurchased	2,872,548	\$ 84.77	\$ 243,498

2018:	Number of Shares	Average Repurchase Price per Share	Amount (in thousands)
1st quarter	407,091	\$ 94.79	\$ 38,588
2nd quarter	960,105	81.54	78,287
3rd quarter	870,538	87.59	76,248
4th quarter	1,000,881	88.57	88,651
Total shares repurchased	3,238,615	\$ 87.00	\$ 281,774

The timing of any future share repurchases, and the ultimate number of shares purchased, will depend on a number of factors, including business and market conditions, the Company's future financial performance and other capital priorities. The shares will be acquired in the open market or through private transactions in accordance with the Securities and Exchange Commission requirements. The share repurchase program has no termination date, but may be amended, suspended or discontinued at any time and does not commit the Company to repurchase shares of its common stock. The actual number and value of the shares to be purchased will depend on the performance of the Company's stock price and other market conditions.

Outstanding Warrants

On the Effective Date, the Company entered into a warrant agreement (the "Warrant Agreement") with American Stock Transfer & Trust Company, LLC as warrant agent and, pursuant to the terms of the Plan, issued warrants ("Warrants") to purchase up to an aggregate of 1,914,856 shares of Class A Common Stock, par value \$0.01 per share, of Arch Coal (the "Class A Common Stock") to holders of claims arising under the Cancelled Notes (as defined below). Each Warrant expires on October 5, 2023, and is initially exercisable for one share of Class A Common Stock at an initial exercise price of \$57.00 per share. The Warrants are exercisable by a holder paying the exercise price in cash or on a cashless basis, at the election of the holder. The Warrants contain anti-dilution adjustments for stock splits, reverse stock splits, stock dividends, dividends and distributions of cash, other securities or other property, spin-offs and tender and exchange offers by Arch Coal or its subsidiaries to purchase Class A Common Stock at above-market prices.

If, in connection with a merger, recapitalization, business combination, transfer to a third party of substantially all of Arch Coal's consolidated assets or other transaction that results in a change to the Class A Common Stock (each, a "Transaction"), (i) the Transaction is consummated prior to the fifth anniversary of the Effective Date and the Transaction consideration to holders of Class A Common Stock is 90% or more listed common stock or common stock of a company that provides publicly available financial reporting, and holds management calls regarding the same, no less than quarterly ("Reporting Stock") or (ii) regardless of the consideration, the Transaction is consummated on or after the fifth anniversary of the Effective Date, the Warrants will be assumed by the surviving company and will become exercisable for the consideration that the holders of Class A Common Stock receive in such Transaction; *provided* that if the consideration such holders receive consists solely of cash, then upon the consummation of such Transaction, Arch Coal will pay for each Warrant an amount of cash equal to the greater of (i) (x) the amount of cash payable with respect to the number of shares of Class A Common Stock underlying the Warrant *minus* (y) the exercise price per share then in effect *multiplied* by the number of shares of Class A Common Stock underlying the Warrant and (ii) \$0.

If a Transaction is consummated prior to the fifth anniversary of the Effective Date in which the Transaction consideration is less than 90% Reporting Stock, a portion of the Warrants corresponding to the portion of the Transaction consideration that is Reporting Stock will be assumed by the surviving company and will become exercisable for the Reporting Stock consideration that the holders of Class A Common Stock receive in such Transaction, and the portion of the Warrants corresponding to the portion of the Transaction consideration that is not Reporting Stock will, at the option of each holder, (i) be assumed by the surviving company and will become exercisable for the consideration that the holders of Class A Common Stock receive in such Transaction or (ii) be redeemed by Arch Coal for cash in an amount equal to the Black Scholes Payment (as defined in the Warrant Agreement).

During 2019, holders of warrants had exercised 386 of the warrants, leaving 1,845,568 warrants outstanding at December 31, 2019.

As provided in ASC 825-20, "Financial Instruments," the warrants are considered equity because they can only be physically settled in Company shares, can be settled in unregistered shares, the Company has adequate authorized shares to settle the outstanding warrants and each warrant is fixed in terms of settlement to one share of Company stock subject only to remote contingency adjustment factors designed to assure the relative value in terms of shares remains fixed.

18. Stock-Based Compensation and Other Incentive Plans

Under the Company's 2016 Omnibus Incentive Plan (the "Incentive Plan"), 3.0 million shares of the Company's common stock were reserved for awards to officers and other selected key management employees of the Company. The Incentive Plan provides the Board of Directors with the flexibility to grant stock options, stock appreciation rights, restricted stock awards, restricted stock units, performance stock or units, phantom stock awards and rights to acquire stock through purchase under a stock purchase program ("Awards"). Awards the Board of Directors elects to pay out in cash do not impact the shares authorized in the Incentive Plan. Shares available for award under the plan were 2.3 million at December 31, 2019.

Restricted Stock Unit Awards

The Company may issue restricted stock and restricted stock units, which require no payment from the employee. Restricted stock cliff-vests at various dates and restricted stock units either vest ratably over or vest at the end of the award's stated vesting period. Compensation expense is based on the fair value on the grant date and is recorded ratably over the vesting period utilizing the straight-line recognition method. The employee receives cash compensation equal to the amount of dividends that would have been paid on the underlying shares.

During 2019, the Company granted both time based awards and performance based awards. The time based awards vest over either a one or three year period and the performance based awards vest over a three year period. The time based awards' grant date fair value was determined based on the stock price at the date of grant. The performance awards grant date fair value was determined using a Black-Scholes Monte Carlo simulation. A historical volatility 36% was selected for the performance-based award based on comparator companies, and the three-year risk free rate was derived from yields on U.S. Government bonds. Information regarding the restricted stock units activity and weighted average grant-date fair value follows:

	Time Based Awards		Performance Based Awards	
	Restricted Stock Units	Weighted Average Grant-Date Fair Value	Restricted Stock Units	Weighted Average Grant-Date Fair Value
(Shares in thousands)				
Outstanding at January 1, 2019	388	\$ 84.11	415	\$ 85.30
Granted	7	92.08	6	105.56
Forfeited/Canceled	(1)	92.00	(89)	67.72
Vested	(156)	79.25	(137)	67.34
Unvested outstanding at December 31, 2019	238	\$ 87.50	195	\$ 106.44

The Company recognized expense related to restricted stock units of \$22.0 million, \$17.5 million and \$10.4 million for the years ended December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019, there was \$19.2 million of unrecognized share-based compensation expense which is expected to be recognized over a weighted-average period of approximately three years.

Long-Term Incentive Compensation

The Company has a long-term incentive program that allows for the award of performance units. The total number of units earned by a participant is based on financial and operational performance measures, and may be paid out in cash or in shares of the Company's common stock. The Company recognizes compensation expense over the three year term of the grant. The liabilities are remeasured quarterly. The Company recognized expense of \$1.0 million, \$2.7 million and \$0.7 million for the years ended December 31, 2019, 2018 and 2017, respectively. The expense is included primarily in "Selling, general and administrative expenses" in the accompanying Consolidated Income Statements.

Amounts accrued and unpaid for all grants under the plan totaled \$3.0 million and \$6.9 million as of December 31, 2019 and 2018, respectively.

19. Workers' Compensation Expense

The Company is liable under the Federal Mine Safety and Health Act of 1969, as subsequently amended, to provide for pneumoconiosis (occupational disease) benefits to eligible employees, former employees and dependents. The Company currently provides for federal claims principally through a self-insurance program. The Company is also liable under various state workers' compensation statutes for occupational disease benefits. The occupational disease benefit obligation represents the present value of the actuarially computed present and future liabilities for such benefits over the employees' applicable years of service.

In addition, the Company is liable for workers' compensation benefits for traumatic injuries which are calculated using actuarially-based loss rates, loss development factors and discounted based on a risk free rate of 1.75%. Traumatic workers' compensation claims are insured with varying retentions/deductibles, or through state-sponsored workers' compensation programs.

Workers' compensation expense consists of the following components:

(In thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Self-insured occupational disease benefits:			
Service cost	\$ 6,677	\$ 7,440	\$ 6,320
Interest cost ⁽¹⁾	4,922	4,365	4,651
Net amortization ⁽¹⁾	—	—	—
Total occupational disease	\$ 11,599	\$ 11,805	\$ 10,971
Traumatic injury claims and assessments	13,050	5,395	3,208
Total workers' compensation expense	\$ 24,649	\$ 17,200	\$ 14,179

⁽¹⁾ In accordance with the adoption of ASU 2017-07, "Compensation-Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost," these costs are recorded within Nonoperating expenses in the Consolidated Income Statements on the line item "Non-service related pension and postretirement benefit costs."

The table below reconciles changes in the occupational disease liability for the respective period.

(In thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018
Beginning of period	\$ 118,900	\$ 122,426
Service cost	6,677	7,440
Interest cost	4,922	4,365
Actuarial (gain) loss	35,993	(7,071)
Benefit and administrative payments	(8,167)	(8,260)
	\$ 158,325	\$ 118,900

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The following table provides the assumptions used to determine the projected occupational disease obligation:

	Year Ended December 31, 2019	Year Ended December 31, 2018
(Percentages)		
Discount rate	3.31	4.26

Summarized below is information about the amounts recognized in the accompanying consolidated balance sheets for workers' compensation benefits:

	Year Ended December 31, 2019	Year Ended December 31, 2018
(In thousands)		
Occupational disease costs	\$ 158,325	\$ 118,900
Traumatic and other workers' compensation claims	73,393	75,447
Total obligations	231,718	194,347
Less amount included in accrued expenses	16,119	20,044
Noncurrent obligations	\$ 215,599	\$ 174,303

As of December 31, 2019, the Company had \$121.7 million in surety bonds and letters of credit outstanding to secure workers' compensation obligations.

As of December 31, 2019, the Company's recorded liabilities include \$13.6 million of obligations that are reimbursable under various insurance policies purchased by the company. These insurance receivables are recorded in the balance sheet line items "Other receivables" and "Other noncurrent assets" for \$0.5 million and \$13.1 million, respectively.

20. Employee Benefit Plans

Defined Benefit Pension and Other Postretirement Benefit Plans

The Company provides funded and unfunded non-contributory defined benefit pension plans covering certain of its salaried and hourly employees. Benefits are generally based on the employee's age and compensation. The Company funds the plans in an amount not less than the minimum statutory funding requirements or more than the maximum amount that can be deducted for U.S. federal income tax purposes.

The Company also currently provides certain postretirement medical and life insurance coverage for eligible employees. Generally, covered employees who terminate employment after meeting eligibility requirements are eligible for postretirement coverage for themselves and their dependents. The Company offers a subsidy to eligible retirees based on age and years of service at retirement and contain other cost-sharing features such as deductibles and coinsurance. The Company's current funding policy is to fund the cost of all postretirement benefits as they are paid.

On January 1, 2015, the Company's cash balance and excess plans were amended to freeze new service credits for any new or active employee.

Obligations and Funded Status.

Summaries of the changes in the benefit obligations, plan assets and funded status of the plans are as follows:

	Pension Benefits		Other Postretirement Benefits	
	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2019	Year Ended December 31, 2018
(In thousands)				
CHANGE IN BENEFIT OBLIGATIONS				
Benefit obligations at beginning of period	\$ 228,873	\$ 270,098	\$ 88,563	\$ 110,519
Service cost	—	—	480	558
Interest cost	8,141	9,269	3,505	3,674
Settlement gain	(1,326)	(2,332)	—	—
Curtailments	—	—	30	—
Benefits paid	(34,918)	(36,895)	(7,304)	(5,388)
Other-primarily actuarial (gain) loss	16,778	(11,267)	2,593	(20,800)
Benefit obligations at end of period	<u>\$ 217,548</u>	<u>\$ 228,873</u>	<u>\$ 87,867</u>	<u>\$ 88,563</u>
CHANGE IN PLAN ASSETS				
Value of plan assets at beginning of period	\$ 212,506	\$ 255,642	\$ —	\$ —
Actual return on plan assets	33,998	(6,463)	—	—
Employer contributions	216	222	7,304	5,388
Benefits paid	(34,918)	(36,895)	(7,304)	(5,388)
Value of plan assets at end of period	<u>\$ 211,802</u>	<u>\$ 212,506</u>	<u>\$ —</u>	<u>\$ —</u>
Accrued benefit cost	<u>\$ (5,746)</u>	<u>\$ (16,367)</u>	<u>\$ (87,867)</u>	<u>\$ (88,563)</u>
ITEMS NOT YET RECOGNIZED AS A COMPONENT OF NET PERIODIC BENEFIT COST				
Prior service credit	\$ 992	\$ —	\$ —	\$ —
Accumulated gain	14,537	8,899	20,333	25,936
	<u>\$ 15,529</u>	<u>\$ 8,899</u>	<u>\$ 20,333</u>	<u>\$ 25,936</u>
BALANCE SHEET AMOUNTS				
Current liability	\$ (270)	\$ (220)	\$ (7,300)	\$ (5,400)
Noncurrent liability	(5,476)	(16,147)	(80,567)	(83,163)
	<u>\$ (5,746)</u>	<u>\$ (16,367)</u>	<u>\$ (87,867)</u>	<u>\$ (88,563)</u>

Pension Benefits

The accumulated benefit obligation for all pension plans was \$217.5 million and \$228.9 million at December 31, 2019 and 2018, respectively.

The Company uses the corridor method of amortizing actuarial gains (losses); it is anticipated there will be \$0.1 million of prior service credit amortized from accumulated other comprehensive income into net periodic benefit cost during 2020.

Other Postretirement Benefits

The Company uses the corridor method of amortizing actuarial gains (losses); it is anticipated there will be \$2.1 million of gains amortized from accumulated other comprehensive income into net periodic benefit cost during 2020.

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Components of Net Periodic Benefit Cost. The following table details the components of pension and postretirement benefit costs (credits):

	Pension Benefits			Other Postretirement Benefits		
	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
<i>(In thousands)</i>						
Service cost	\$ —	\$ —	\$ —	\$ 480	\$ 558	\$ 671
Interest cost ⁽¹⁾	8,141	9,269	11,169	3,505	3,674	4,150
Curtailments	—	—	—	—	—	(520)
Settlements ⁽¹⁾	(1,326)	(2,332)	(1,532)	—	—	—
Expected return on plan assets ⁽¹⁾	(10,555)	(12,083)	(16,498)	—	—	—
Amortization of prior service credits ⁽¹⁾	(24)	—	—	—	—	—
Amortization of other actuarial losses (gains) ⁽¹⁾	(11)	—	—	(2,974)	—	—
Net benefit cost (credit)	\$ (3,775)	\$ (5,146)	\$ (6,861)	\$ 1,011	\$ 4,232	\$ 4,301

⁽¹⁾ In accordance with the adoption of ASU 2017-07, “Compensation-Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost,” these costs are recorded within Nonoperating expenses in the Consolidated Income Statements on the line item “Non-service related pension and postretirement benefit costs.”

The differences generated from changes in assumed discount rates and returns on plan assets are amortized into earnings over the remaining service attribution periods of the employees using the corridor method.

Assumptions. The following table provides the assumptions used to determine the actuarial present value of projected benefit obligations for the respective periods.

	Year Ended December 31, 2019	Year Ended December 31, 2018
(Percentages)		
Pension Benefits		
Discount rate	3.09/2.90	4.11/3.94
Other Postretirement Benefits		
Discount rate	3.09	4.12

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The following table provides the weighted average assumptions used to determine net periodic benefit cost for the respective periods.

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
(Percentages)			
Pension Benefits			
Discount rate	3.65	3.82	3.77
Expected return on plan assets	5.10	5.30	6.20
Other Postretirement Benefits			
Discount rate	4.12	3.49	3.85

The discount rates used in 2019, 2018 and 2017 were reevaluated during the year for settlements and curtailments. The obligations are remeasured at an updated discount rate that impacts the benefit cost recognized subsequent to the remeasurement.

The Company establishes the expected long-term rate of return at the beginning of each fiscal year based upon historical returns and projected returns on the underlying mix of invested assets. The Company utilizes modern portfolio theory modeling techniques in the development of its return assumptions. This technique projects rates of return that can be generated through various asset allocations that lie within the risk tolerance set forth by members of the Company's pension committee (the "Pension Committee"). The risk assessment provides a link between a pension plan's risk capacity, management's willingness to accept investment risk and the asset allocation process, which ultimately leads to the return generated by the invested assets.

The health care cost trend rate assumed for 2020 is 5.7% and is expected to reach an ultimate trend rate of 4.5% by 2038. A one-percentage-point increase in the health care cost trend rate would increase the postretirement benefit obligation at December 31, 2019 by \$8.7 million and the net periodic postretirement benefit cost for the year ended December 31, 2019 by \$0.4 million.

Plan Assets

The Pension Committee is responsible for overseeing the investment of pension plan assets. The Pension Committee is responsible for determining and monitoring appropriate asset allocations and for selecting or replacing investment managers, trustees and custodians. The pension plan's current investment targets are 27% equity and 73% fixed income securities. The Pension Committee reviews the actual asset allocation in light of these targets on a periodic basis and rebalances among investments as necessary. The Pension Committee evaluates the performance of investment managers as compared to the performance of specified benchmarks and peers and monitors the investment managers to ensure adherence to their stated investment style and to the plan's investment guidelines.

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The Company's pension plan assets at December 31, 2019 and 2018, respectively, are categorized below according to the fair value hierarchy as defined in Note 16, "Fair Value Measurements":

	Total		Level 1		Level 2		Level 3	
	2019	2018	2019	2018	2019	2018	2019	2018
(In thousands)								
Equity Securities:^(A)								
U.S. small-cap	\$ 2,319	\$ 2,751	\$ 2,319	\$ 2,751	\$ —	\$ —	\$ —	\$ —
U.S. mid-cap	1,397	1,182	1,397	1,182	—	—	—	—
U.S. large-cap	—	—	—	—	—	—	—	—
Non-U.S.	—	—	—	—	—	—	—	—
Fixed income securities:								
U.S. government securities ^(B)	50,610	43,829	35,751	38,436	14,859	5,393	—	—
Non-U.S. government securities ^(C)	2,242	2,092	—	—	2,242	2,092	—	—
U.S. government asset and mortgage backed securities ^(D)	—	7,667	—	—	—	7,667	—	—
Corporate fixed income ^(E)	108,023	68,762	—	—	108,023	68,762	—	—
State and local government securities ^(F)	2,653	3,480	—	—	2,653	3,480	—	—
Other investments ^(H)	—	5,223	—	—	—	5,223	—	—
Total	\$ 167,244	\$ 134,986	\$ 39,467	\$ 42,369	\$ 127,777	\$ 92,617	\$ —	\$ —
Assets at net asset value ^(G)	53,418	82,765						
Short-term investments ^(H)	—	7,003						
Other liabilities ^(J)	(8,860)	(12,248)						
	<u>\$ 211,802</u>	<u>\$ 212,506</u>						

^(A) Equity securities includes investments in 1) common stock, 2) preferred stock and 3) mutual funds. Investments in common and preferred stocks are valued using quoted market prices multiplied by the number of shares owned. Investments in mutual funds are valued at the net asset value per share multiplied by the number of shares held as of the measurement date and are traded on listed exchanges.

^(B) U.S. government securities includes agency and treasury debt. These investments are valued using dealer quotes in an active market.

^(C) Non-U.S. government securities includes debt securities issued by foreign governments and are valued utilizing a price spread basis valuation technique with observable sources from investment dealers and research vendors.

^(D) U.S. government asset and mortgage backed securities includes government-backed mortgage funds which are valued utilizing an income approach that includes various valuation techniques and sources such as discounted cash flows models, benchmark yields and securities, reported trades, issuer trades and/or other applicable data.

^(E) Corporate fixed income is primarily comprised of corporate bonds and certain corporate asset-backed securities that are denominated in the U.S. dollar and are investment-grade securities. These investments are valued using dealer quotes.

^(F) State and local government securities include different U.S. state and local municipal bonds and asset backed securities, these investments are valued utilizing a market approach that includes various valuation techniques and sources such as value generation models, broker quotes, benchmark yields and securities, reported trades, issuer trades and/or other applicable data.

^(G) Investments that are measured at fair value using the net asset value per share practical expedient have not been classified in the fair value hierarchy in accordance with Accounting Standards Update 2015-07. These investments are primarily mutual funds that are highly liquid with no restrictions on ability to redeem the funds into cash.

^(H) Short-term investments include governmental agency funds, government repurchase agreements, commingled funds, and pooled funds and mutual funds. Governmental agency funds are valued utilizing an option adjusted spread valuation technique and sources such as interest rate generation processes, benchmark yields and broker quotes. Investments in governmental

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repurchase agreements, commingled funds and pooled funds and mutual funds are valued at the net asset value per share multiplied by the number of shares held as of the measurement date.

⁽¹⁾ Other investments include cash, forward contracts, derivative instruments, credit default swaps, interest rate swaps and mutual funds. Investments in interest rate swaps are valued utilizing a market approach that includes various valuation techniques and sources such as value generation models, broker quotes in active and non-active markets, benchmark yields and securities, reported trades, issuer trades and/or other applicable data. Forward contracts and derivative instruments are valued at their exchange listed price or broker quote in an active market. The mutual funds are valued at the net asset value per share multiplied by the number of shares held as of the measurement date and are traded on listed exchanges.

⁽⁴⁾ Net payable amount due for pending securities purchased and sold due to broker/dealer.

Cash Flows. The Company expects to make no contributions to the pension plans in 2020.

The following represents expected future benefit payments from the plan:

	Pension Benefits	Other Postretirement Benefits
	(In thousands)	
2020	\$ 18,016	\$ 12,043
2021	16,603	12,273
2022	15,257	12,071
2023	14,240	11,974
2024	13,640	11,836
Next 5 years	60,068	58,640
	<u>\$ 137,824</u>	<u>\$ 118,837</u>

Other Plans

The Company sponsors savings plans which were established to assist eligible employees in providing for their future retirement needs. The Company's expense, representing its contributions to the plans, was \$17.5 million, \$17.9 million, and \$18.0 million for the years ended December 31, 2019, 2018, and 2017 respectively.

21. Earnings Per Common Share

The Company computes basic net income per share using the weighted average number of common shares outstanding during the period. Diluted net income per share is computed using the weighted average number of common shares and the effect of potentially dilutive securities outstanding during the period. Potentially dilutive securities may consist of warrants, restricted stock units or other contingently issuable shares. The dilutive effect of outstanding warrants, restricted stock units and other contingently issuable shares is reflected in diluted earnings per share by application of the treasury stock method.

The following table provides the basis for basic and diluted EPS by reconciling the numerators and denominators of the computations:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
(In Thousands)			
Weighted average shares outstanding:			
Basic weighted average shares outstanding	16,218	19,663	23,725
Effect of dilutive securities	1,080	966	515
Diluted weighted average shares outstanding	<u>17,298</u>	<u>20,629</u>	<u>24,240</u>

22. Leases

The Company has operating leases for mining equipment, office equipment and office space with remaining lease terms ranging from less than 1 year to approximately 8 years. Some of these leases include both lease and non-lease components which are accounted for as a single lease component as the Company has elected the practical expedient to combine these components for all leases. As most of the leases do not provide an implicit rate, the Company calculated the ROU assets and lease liabilities using its' secured incremental borrowing rate at the lease commencement date. The Company currently does not have any finance leases outstanding.

Information related to leases was as follows:

	Year Ended December 31, 2019
	(In thousands)
Operating lease information:	
Operating lease cost	\$ 3,921
Operating cash flows from operating leases	3,842
Weighted average remaining lease term in years	5.92
Weighted average discount rate	5.5%

Future minimum lease payments under non-cancellable leases as of December 31, 2019 were as follows:

Year	Amount
	(In thousands)
2020	\$ 3,616
2021	3,367
2022	3,292
2023	3,261
2024	3,152
Thereafter	8,001
Total minimum lease payments	\$ 24,689
Less imputed interest	(4,888)
Total operating lease liability	\$ 19,801
As reflected on the balance sheet:	
Accrued expenses and other current liabilities	\$ 2,514
Other noncurrent liabilities	17,287
Total operating lease liability	\$ 19,801

At December 31, 2019, the Company had a \$19.2 million ROU operating lease asset recorded within "Other noncurrent assets" on the Consolidated Balance Sheet.

The Company has no obligations for future minimum payments under capital leases for equipment at December 31, 2019 and 2018.

Rental expense, including amounts related to these operating leases and other shorter-term arrangements, amounted to \$12.0 million in 2019, \$12.4 million in 2018 and \$19.2 million in 2017.

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Royalties are paid to lessors either as a fixed price per ton or as a percentage of the gross selling price of the mined coal. Royalties under the majority of the Company's significant leases are paid on the percentage of gross selling price basis. Royalty expense, including production royalties, was \$149.5 million in 2019, \$166.1 million in 2018, and \$167.4 million in 2017.

As of December 31, 2019, certain of the Company's lease obligations were secured by outstanding surety bonds totaling \$29.5 million.

23. Risk Concentrations

Credit Risk and Major Customers

The Company has a formal written credit policy that establishes procedures to determine creditworthiness and credit limits for trade customers and counterparties in the over-the-counter coal market. Generally, credit is extended based on an evaluation of the customer's financial condition. Collateral is not generally required, unless credit cannot be established. Credit losses are provided for in the financial statements and historically have been minimal.

The Company markets its thermal coal principally to domestic and foreign electric utilities and its metallurgical coal to domestic and foreign steel producers. As of December 31, 2019 and 2018, accounts receivable from sales of thermal coal of \$69.1 million and \$73.9 million, respectively, represented 41% and 37% of total trade receivables at each date. As of December 31, 2019 and 2018, accounts receivable from sales of metallurgical-quality coal of \$98.6 million and \$126.5 million, respectively, represented 59% and 63% of total trade receivables at each date.

The Company uses shipping destination as the basis for attributing revenue to individual countries. Because title may transfer on brokered transactions at a point that does not reflect the end usage point, they are reflected as exports, and attributed to an end delivery point if that knowledge is known to the Company. The Company's foreign revenues by geographical location as follows:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
(In thousands)			
Europe	\$ 537,117	\$ 559,165	\$ 388,926
Asia	322,029	452,711	264,503
Central and South America	82,476	79,085	30,982
Africa	18,698	17,567	14,901
Brokered Sales	—	2,372	3,150
Total	\$ 960,320	\$ 1,110,900	\$ 702,462

The Company is committed under long-term contracts to supply thermal coal that meets certain quality requirements at specified prices. These prices are generally adjusted based on market indices. Quantities sold under some of these contracts may vary from year to year within certain limits at the option of the customer based on their requirements. The Company sold approximately 90.3 million tons of coal in 2019. Approximately 56% of this tonnage (representing approximately 50% of the Company's revenues) was sold under long-term contracts (contracts having a term of greater than one year). Long-term contracts range in remaining life from one to four years.

Third-party sources of coal

The Company purchases coal from third parties that it sells to customers. Factors beyond the Company's control could affect the availability of coal purchased by the Company. Disruptions in the quantities of coal purchased by the Company could impair its ability to fill customer orders or require it to purchase coal from other sources at prevailing market prices in order to satisfy those orders.

Transportation

The Company depends upon barge, rail, truck and belt transportation systems to deliver coal to its customers. Disruption of these transportation services due to weather-related problems, mechanical difficulties, strikes, lockouts, bottlenecks, and other events could temporarily impair the Company's ability to supply coal to its customers. In the past, disruptions in rail service have resulted in missed shipments and production interruptions.

24. Revenue Recognition

ASC 606-10-50-5 requires that entities disclose disaggregated revenue information in categories (such as type of good or service, geography, market, type of contract, etc.) that depict how the nature, amount, timing, and uncertainty of revenue and cash flow are affected by economic factors. ASC 606-10-55-89 explains that the extent to which an entity's revenue is disaggregated depends on the facts and circumstances that pertain to the entity's contracts with customers and that some entities may need to use more than one type of category to meet the objective for disaggregating revenue.

In general, the Company's business segmentation is aligned according to the nature and economic characteristics of its coal and customer relationships and provides meaningful disaggregation of each segment's results. The company has further disaggregated revenue between North America and Seaborne revenues which depicts the pricing and contract differences between the two. North America revenue is characterized by contracts with a term of one year or longer and typically the pricing is fixed; whereas Seaborne revenue generally is derived by spot or short term contracts with an indexed based pricing mechanism.

	PRB	MET	Other Thermal	Corporate, Other and Eliminations	Consolidated
(in thousands)					
Year Ended December 31, 2019					
North America revenues	\$ 915,750	\$ 217,381	\$ 190,051	\$ 10,850	\$ 1,334,032
Seaborne revenues	—	773,169	187,151	—	960,320
Total revenues	\$ 915,750	\$ 990,550	\$ 377,202	\$ 10,850	\$ 2,294,352
Year Ended December 31, 2018					
North America revenues	\$ 971,337	\$ 160,969	\$ 195,547	\$ 13,034	\$ 1,340,887
Seaborne revenues	1,911	875,652	233,337	—	1,110,900
Total revenues	\$ 973,248	\$ 1,036,621	\$ 428,884	\$ 13,034	\$ 2,451,787
Year Ended December 31, 2017					
North America revenues	\$ 1,024,197	\$ 312,874	\$ 269,007	\$ 16,083	\$ 1,622,161
Seaborne revenues	—	574,965	127,497	—	702,462
Total revenues	\$ 1,024,197	\$ 887,839	\$ 396,504	\$ 16,083	\$ 2,324,623

As of December 31, 2019, the Company has outstanding performance obligations for approximately 67.4 million tons of coal for 2020 representing 61.6 million tons of fixed price contracts and 5.8 million tons of variable price contracts. Additionally, the Company has outstanding performance obligations of approximately 69.0 million tons in periods beyond 2020 comprised of 64.9 million tons of fixed price contracts and 4.1 million tons of variable price contracts.

25. Commitments and Contingencies

The Company accrues for cost related to contingencies when a loss is probable and the amount is reasonably determinable. Disclosure of contingencies is included in the financial statements when it is at least reasonably possible that a material loss or an additional material loss in excess of amounts already accrued may be incurred.

The Company is a party to numerous claims and lawsuits with respect to various matters. As of December 31, 2019 and 2018, the Company had accrued \$0.2 million and \$0.2 million, respectively, for all legal matters, all classified as current. The ultimate resolution of any such legal matter could result in outcomes which may be materially different from amounts the Company has accrued for such matters. The Company believes it has recorded adequate reserves for these matters.

The Company has unconditional purchase obligations relating to purchases of coal, materials and supplies and capital commitments, other than reserve acquisitions, and is also a party to transportation capacity commitments. The future commitments under these agreements total \$170.5 million in 2020, and is immaterial thereafter.

26. Segment Information

The Company's reportable business segments are based on two distinct lines of business, metallurgical coal and thermal coal, and may include a number of mine complexes. The Company manages its coal sales by market, not by individual mining complex. Geology, coal transportation routes to customers, and regulatory environments also have a significant impact on the Company's marketing and operations management. Mining operations are evaluated based on Adjusted EBITDA, per-ton cash operating costs (defined as including all mining costs except depreciation, depletion, amortization, accretion on asset retirement obligations, and pass-through transportation expenses), and on other non-financial measures, such as safety and environmental performance. Adjusted EBITDA is not a measure of financial performance in accordance with generally accepted accounting principles, and items excluded from Adjusted EBITDA are significant in understanding and assessing our financial condition. Therefore, Adjusted EBITDA should not be considered in isolation, nor as an alternative to net income, income from operations, cash flows from operations or as a measure of our profitability, liquidity or performance under generally accepted accounting principles. The Company uses Adjusted EBITDA to measure the operating performance of its segments and allocate resources to the segments. Furthermore, analogous measures are used by industry analysts and investors to evaluate the Company's operating performance. Investors should be aware that the Company's presentation of Adjusted EBITDA may not be comparable to similarly titled measures used by other companies. The Company reports its results of operations primarily through the following reportable segments: Powder River Basin (PRB) segment containing the Company's primary thermal operations in Wyoming; the Metallurgical (MET) segment, containing the Company's metallurgical operations in West Virginia and the Other Thermal segment containing the Company's supplementary thermal operations in Colorado and Illinois. Periods presented in this note have been recast for comparability.

On December 13, 2019, the Company closed on its' definitive agreement to sell Coal-Mac LLC, an operating mine complex within the Company's other thermal coal segment. Coal-Mac is included in the Other Thermal segment results below up to the date of divestiture. For further information on the divestiture, please see Note 5, "Divestitures" to the Consolidated Financial Statements.

On September 14, 2017, the Company closed on its' definitive agreement to sell Lone Mountain Processing LLC, an operating mine complex within the Company's Metallurgical coal segment. Through this transaction the Company divested all active operations in the states of Kentucky and Virginia. Lone Mountain is included in the MET segment results below up to the date of divestiture. For further information on the divestiture, please see Note 5, "Divestitures" to the Consolidated Financial Statements.

Operating segment results for the year ended December 31, 2019, the year ended December 31, 2018, and the year ended December 31, 2017 are presented below. The Company measures its segments based on "adjusted earnings before interest, taxes, depreciation, depletion, amortization, and accretion on asset retirements obligations (Adjusted EBITDA)." Adjusted EBITDA does not reflect mine closure or impairment costs, since those are not reflected in the operating income reviewed by management. The Corporate, Other and Eliminations grouping includes these charges, as well as the change in fair value of coal derivatives and coal trading activities, net; corporate overhead; land management activities; other support functions; and the elimination of intercompany transactions.

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(In thousands)	PRB	MET	Other Thermal	Corporate, Other and Eliminations	Consolidated
Year Ended December 31, 2019					
Revenues	\$ 915,750	\$ 990,550	\$ 377,202	10,850	\$ 2,294,352
Adjusted EBITDA	110,528	305,363	41,495	(94,219)	363,167
Depreciation, depletion and amortization	20,810	74,211	14,414	2,620	112,055
Accretion on asset retirement obligation	12,542	2,123	2,413	3,470	20,548
Total Assets	256,460	625,134	105,411	880,751	1,867,756
Capital expenditures	29,420	211,718	20,088	5,130	266,356
Year Ended December 31, 2018					
Revenues	\$ 973,248	\$1,036,621	\$ 428,884	\$ 13,034	\$ 2,451,787
Adjusted EBITDA	126,525	349,524	68,620	(106,891)	437,778
Depreciation, depletion and amortization	33,120	69,560	14,699	2,184	119,563
Accretion on asset retirement obligation	19,541	1,874	2,261	4,294	27,970
Total assets	278,314	545,061	125,333	938,352	1,887,060
Capital expenditures	12,140	64,307	11,999	6,826	95,272
Year Ended December 31, 2017					
Revenues	\$ 1,024,197	\$ 887,839	\$ 396,504	\$ 16,083	\$ 2,324,623
Adjusted EBITDA	158,882	243,616	102,006	(84,807)	419,697
Depreciation, depletion and amortization	36,349	70,896	13,588	1,631	122,464
Accretion on asset retirement obligation	20,160	2,000	2,161	5,888	30,209
Total assets	390,665	548,476	134,397	906,094	1,979,632
Capital expenditures	6,212	32,678	11,901	8,414	59,205

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A reconciliation of segment Adjusted EBITDA to consolidated income (loss) from continuing operations before income taxes follows:

(In thousands)	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Income before income taxes	\$ 234,047	\$ 260,101	\$ 203,195
Interest expense, net	6,794	13,689	24,256
Depreciation, depletion and amortization	112,055	119,563	122,464
Accretion on asset retirement obligations	20,548	27,970	30,209
Amortization of sales contracts, net	(434)	11,107	53,985
Costs related to proposed joint venture with Peabody Energy	13,816	—	—
Loss on sale of Coal-Mac LLC	9,008	—	—
Preference Rights Lease Application settlement income	(39,000)	—	—
Loss (gain) on sale of Lone Mountain Processing, Inc.	4,304	—	(21,297)
Net loss resulting from early retirement of debt and debt restructuring	—	485	2,547
Non-service related postretirement benefit costs	2,053	3,202	1,940
Reorganization items, net	(24)	1,661	2,398
Adjusted EBITDA	<u>\$ 363,167</u>	<u>\$ 437,778</u>	<u>\$ 419,697</u>

27. Quarterly Selected Financial Data (unaudited)

Year Ended December 31, 2019	Three Months Ended			
	March 31	June 30	September 30	December 31
(In thousands, except per share data)				
Revenues	\$ 555,183	\$ 570,222	\$ 619,467	\$ 549,480
Gross profit	\$ 86,794	\$ 88,032	\$ 93,681	\$ 23,144
Income (loss) from operations	\$ 76,779	\$ 66,570	\$ 106,481	\$ (6,960)
Reorganization items, net	\$ 87	\$ (16)	\$ —	\$ (47)
Net income (loss)	\$ 72,741	\$ 62,840	\$ 106,769	\$ (8,551)
Diluted income (loss) per common share	\$ 3.91	\$ 3.53	\$ 6.34	\$ (0.57)

Year Ended December 31, 2018	Three Months Ended			
	March 31	June 30	September 30	December 31
(In thousands, except per share data)				
Revenues	\$ 575,295	\$ 592,349	\$ 633,180	\$ 650,963
Gross profit	\$ 81,198	\$ 77,663	\$ 109,740	\$ 101,396
Income from operations	\$ 65,167	\$ 44,595	\$ 82,886	\$ 86,490
Reorganization items, net	\$ (301)	\$ (740)	\$ (560)	\$ (60)
Net income	\$ 59,985	\$ 43,306	\$ 123,192	\$ 86,094
Diluted income per common share	\$ 2.74	\$ 2.06	\$ 6.10	\$ 4.44

**Arch Coal, Inc. and Subsidiaries
Valuation and Qualifying Accounts**

	Balance at Beginning of Year	Additions (Reductions) Charged to Costs and Expenses	Charged to Other Accounts	Deductions ^(a)	Balance at End of Year
	(In thousands)				
Year Ended December 31, 2019					
Reserves deducted from asset accounts:					
Accounts receivable and other receivables	\$ —	—	10,636 ^(b)	—	\$ 10,636
Current assets — supplies and inventory	648	1,737	(35) ^(b)	134	2,216
Deferred income taxes	530,612	(24,296)	—	—	506,316
Year Ended December 31, 2018					
Reserves deducted from asset accounts:					
Accounts receivable and other receivables	\$ —	\$ —	\$ —	\$ —	\$ —
Current assets — supplies and inventory	261	1,247	—	860	648
Deferred income taxes	610,571	(79,959)	—	—	530,612
Year Ended December 31, 2017					
Reserves deducted from asset accounts:					
Accounts receivable and other receivables	\$ —	\$ —	\$ —	\$ —	\$ —
Current assets — supplies and inventory	—	365	(17) ^(b)	87	261
Deferred income taxes	1,021,553	(410,982)	—	—	610,571

- (a) Reserves utilized, unless otherwise indicated.
- (b) Disposition of subsidiaries
- (c) Fresh start accounting adjustment