



WYOMING MINING
ASSOCIATION

CONCISE GUIDE TO WYOMING COAL



wyomingmining.org

WMA Coal Market Report for 2021.

The Concise Guide to Wyoming Coal is produced by the Wyoming Coal Information Committee of the Wyoming Mining Association. Cheyenne, Wyoming,

2021-2022



WELCOME!

THE CONCISE GUIDE HIGHLIGHTS THE ECONOMIC CONTRIBUTION AND VALUE OF WYOMING'S COAL INDUSTRY.

Wyoming has led the nation in coal production since 1986 and currently mines 41% of America's coal.

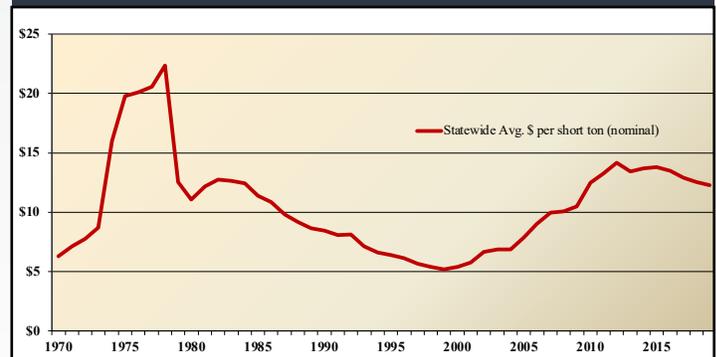
A CULTURE OF SAFETY

Safety is a core cultural value for Wyoming's coal mining industry, and Wyoming coal mines are recognized as some of the safest mining operations in the nation. Safe mines are productive mines, and the Wyoming coal industry is committed to providing a safe working environment for all employees and contractors.

All Wyoming coal mines employ dedicated safety professionals, and all employees are trained in proper safety practices to foster a safe work environment and build and maintain the culture of safety.

- All new employees attend 40 hours of safety training prior to their first day on the job.
- All employees participate regularly in safety refresher training.
- Every shift starts with safety briefings and walk-around inspections.
- Employees earn safety bonuses to encourage safe and vigilant work practices.
- The Mine Safety and Health Administration regulates all Wyoming mines.
- In the continued COVID-19 environment, all coal mining operations have policies and procedures in place to maintain a safe working environment for their miners.

WYOMING COAL PRICES (1970-2020)



DESPITE THE UNCERTAINTIES, COAL CONTINUES TO OFFER A SECURE, ABUNDANT AND AFFORDABLE SOURCE OF FUEL AND REMAINS A SIGNIFICANT SOURCE OF ENERGY, GENERATING AN ESTIMATED 19 PERCENT OF THE NATION'S ELECTRICITY IN 2019.

WYOMING COAL INDUSTRY IN 2021

Wyoming has led the nation in coal production since 1986. Today, the industry continues to operate in an environment of long-term structural change. Strong competition with low natural gas prices and new combined-cycle natural gas generation capacity coming online across the country has continued to weaken coal's market share. Coal production in the United States peaked in 2008 at 1.17 billion tons and has since declined 40 percent. Conversely, natural gas consumption for electrical power generation grew a staggering 120 percent between 2005 and 2020. Additionally, increased competition from heavily subsidized renewables, restrictive regulation and state energy portfolio mandates in customer states are also eroding the demand for Wyoming coal. However, with America re-opening in 2021 following the COVID-19 pandemic, demand for electricity and thermal coal is increasing and Wyoming coal production is up an estimated 9.3 percent over the last year.

Additionally, coal provides stable baseload generating capacity that can help compensate for the vagaries of renewable electricity production. Despite the uncertainties, coal remains a secure, abundant and affordable source of fuel and a significant source of energy, generating an estimated 19 percent of the nation's electricity in 2019 (latest). Based on estimates by the Energy Information Administration, coal's share of power generation will drop further to about 13 percent of total electricity generation by 2050.

Wyoming's mines, operating leaner and more efficient than ever, remain America's low-cost industry leaders and will continue to offer low-cost fuel for power generating facilities with long operating life-spans. Home to six of the nation's top 10 producing mines, Wyoming provides about 50 percent of all thermal coal used for electricity production in the nation. That translates to about 7.9 percent of U.S. domestic electric power generation. In total, Wyoming produced over 218 million tons of coal in 2020, down 21 percent from 2019.

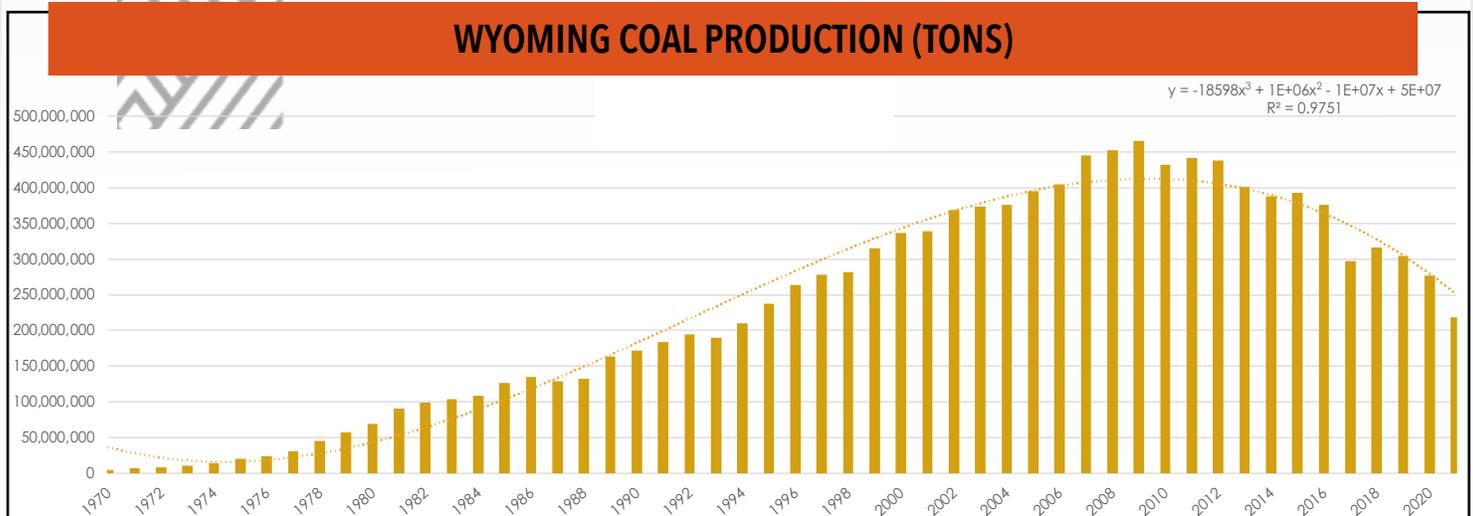


WYOMING'S COAL RESOURCES

Wyoming is home to over 1.4 trillion tons of total coal resources in seams ranging in thickness from 5 feet to some in excess of 200 feet in the Powder River Basin (PRB). Recent estimates from the Wyoming Geological Survey give Wyoming more than 165 billion tons of recoverable coal. While other regions of the country also hold considerable resources, Wyoming's position as the nation's largest and most productive coal region is attributed to several factors:

- Low sulfur composition of the coal.
- Lower production costs due to the coal's proximity to the surface.
- World-class recoverable coal seams.
- Hyper-efficient rail infrastructure.

2020: 218,561,923 TONS, LOWEST SINCE 1994



AS UTILITIES CONSIDERED PROJECTIONS FOR A COLDER WINTER IN 2022 AND HIGHER NATURAL GAS PRICES, THE WYOMING COAL INDUSTRY EXPERIENCED AN UNANTICIPATED INCREASE IN DEMAND IN THE LATTER MONTHS OF 2021. THIS BODES WELL FOR WYOMING PRODUCERS IN THE SHORT TERM

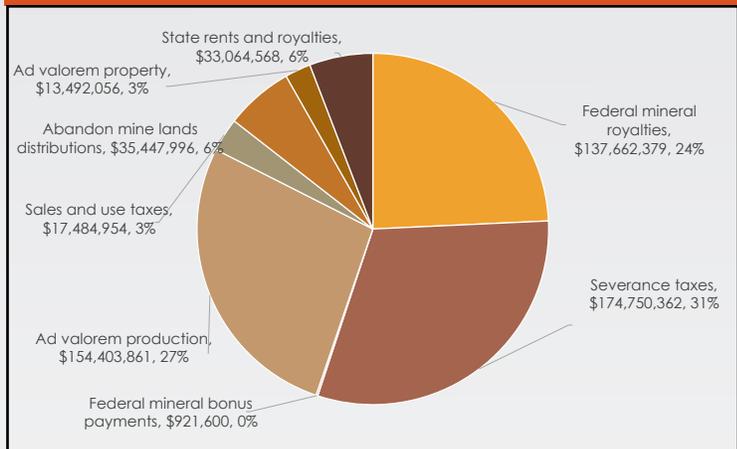
During 2020, 196 million tons of coal moved by unit trains (single destination trains with up to 150 cars) to energy markets in 25 states across the country. Wyoming power plants consumed another 20 million tons during the year, and 2.3 million tons went to other uses.

- On average, coal is mined at the staggering rate of 12 tons per second.
- Up to 50 unit trains leave the PRB daily.
- Rather than stopping, trains are loaded as they move through the loading chute at speeds up to two mph.
- It takes less than one minute to load a train car and about ninety minutes to load a unit train.

The average price for Wyoming coal in 2020 was \$12.25 per ton, down 26 cents per ton from 2019. While most newly constructed power plants are designed to operate on natural gas, coal will continue to provide a significant portion of “baseload” generating capacity for the foreseeable future. Fuel switching, or changing between natural gas and coal for power, is limited as many existing plants are either not designed to operate on natural gas or they do not currently have a pipeline to deliver the quantity of gas needed for operations.

WYOMING HAS EMERGED AS A NATIONAL LEADER IN COAL TECHNOLOGY DEVELOPMENT AND RESEARCH.

2020 ESTIMATED STATE/LOCAL REVENUE FROM COAL MINING*



COAL WAS THE POWER SOURCE FOR ABOUT 19 PERCENT OF THE NATION'S ELECTRICITY IN 2020.

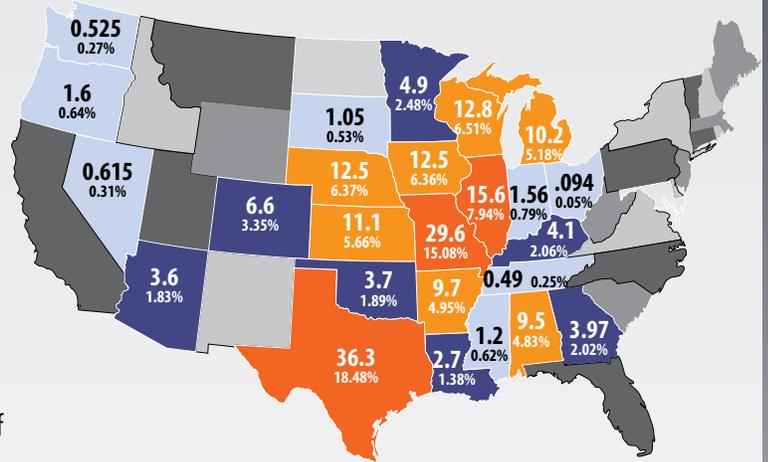
OUTLOOK FOR THE FUTURE

Coal is a reliable and economically efficient energy source that will continue to be used for decades. The Department of Energy's Annual Energy Outlook 2021 predicts that in the absence of major climate legislation, U.S. coal production will decline slightly through 2050. Yet coal will remain a strong fuel source in America's energy mix. Coal was the power source for about 19 percent of the nation's electricity in 2020. Electrical power generation is by far the largest consumer of coal in the United States, using about 82 percent of all coal mined.

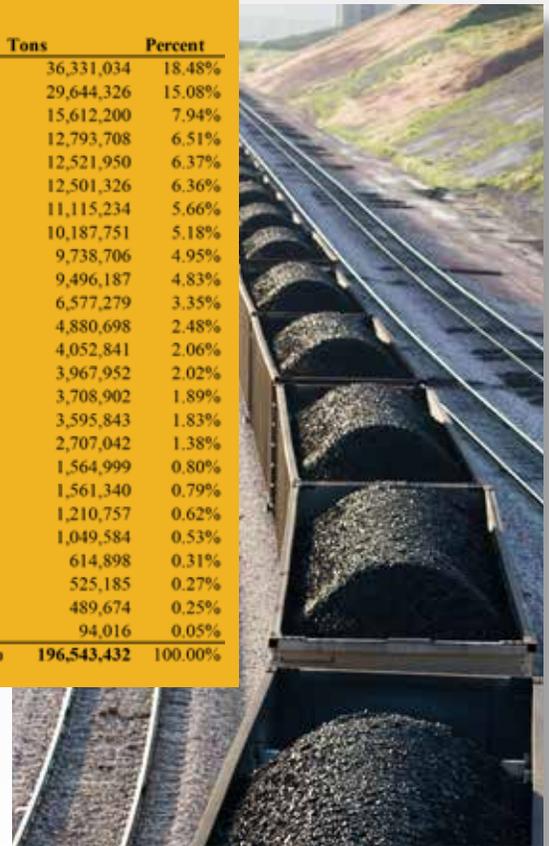
Wyoming has emerged as a national leader in coal technology development and research. The State of Wyoming has partnered with several utility cooperatives to create a \$21 million



COAL SHIPMENTS FROM WYOMING, 2020



2020			
Rank	State	Tons	Percent
1	TX	36,331,034	18.48%
2	MO	29,644,326	15.08%
3	IL	15,612,200	7.94%
4	WI	12,793,708	6.51%
5	NE	12,521,950	6.37%
6	IA	12,501,326	6.36%
7	KS	11,115,234	5.66%
8	MI	10,187,751	5.18%
9	AR	9,738,706	4.95%
10	AL	9,496,187	4.83%
11	CO	6,577,279	3.35%
12	MN	4,880,698	2.48%
13	KY	4,052,841	2.06%
14	GA	3,967,952	2.02%
15	OK	3,708,902	1.89%
16	AZ	3,595,843	1.83%
17	LA	2,707,042	1.38%
18	WA	1,564,999	0.80%
19	IN	1,561,340	0.79%
20	MS	1,210,757	0.62%
21	SD	1,049,584	0.53%
22	NV	614,898	0.31%
23	OR	525,185	0.27%
24	TN	489,674	0.25%
25	OH	94,016	0.05%
Grand Tot		196,543,432	100.00%



ing coal production, as most of the coal in the state is used for domestic power consumption. The industry is also closely watching congressional actions on tax related issues, that could have a damaging cost on operating budgets, including fees such as AML and Black Lung Excise Tax, as well as certain extraction industry deductions that allow for price competitiveness. Despite the strong headwinds from Washington D.C. the industry remains optimistic that the reality of baseload generation will have to be factored into any long-term policy decisions, and that coal will play a vital role in America's energy mix for years to come.

On the taxation front, coal remains a prime source of revenue for state and local governments. Unfortunately, with the state of Wyoming continuing to face a troubling revenue picture for the foreseeable future, legislative efforts to increase tax burdens remain a concern for the industry.

public-private partnership to study the capture, sequestration and management of carbon emissions at the Wyoming Integrated Test Center (ITC). Using 20 MW of coal-based flue gas power generation, research conducted at the ITC is discovering new and more economical ways to capture CO2 from post-combustion processes as well as commercial uses of carbon dioxide. Teams in the final round of the NRG COSIA Carbon XPRIZE completed testing in late 2020 and the facility is welcoming new projects from MTR and GTI in 2021. Since coming online in 2019, the Wyoming ITC has attracted more than \$100 million in carbon management projects.

Other projects are being pursued throughout the state and at the University of Wyoming to unlock the untapped potential of Wyoming's coal resource for innovative carbon and composite materials to create products ranging from car and airplane parts to medical devices and building products. The Wyoming Innovation Center (WylC) broke ground this year and is expected to feature two buildings and seven demonstration sites for pilot plants. The WylC will focus on evaluating the commercial viability of high-value nonfuel, low- or zero-emissions products made from coal and extracting rare earth elements found in the fly ash of coal burned at local power plants. WylC's first tenant is the National Energy Technology Laboratory. The University of Wyoming School of Energy Resources continues its research work on Carbon Capture, Use and Storage (CCUS) technology, as well as carbon engineering and in-situ mining techniques of critical minerals and rare earths from coal and other sediments.

REGULATORY & TAX ENVIRONMENT



The industry experienced regulatory relief under the Trump Administration. However, the industry can expect a significant change in regulatory and policy environment with the new Biden Administration. The Environmental Protection Agency has announced its intention to replace the American Clean Energy (ACE) rule promulgated under the Trump Administration as a replacement to the Clean Power Plan (CPP). While it is currently unclear what this will look like, we can be assured it will place great pressure on utilities to further reduce coal use at generating facilities across the country. The agency has also resurrected the Waters of the US (WOTUS) rule which will further add to the regulatory burden on the coal industry.

Several pieces of legislation have been introduced in Congress that threaten the long-term health of the coal industry. A couple of bills that would have significant effect on Wyoming coal would reinstitute a moratorium on the Federal Coal Leasing Program, as well as to eliminate the option of self-bonding. Also, Congress has widely been rumored to be looking toward developing a so called "Clean Energy Standard" in 2021 that would accelerate the closure of coal generating facilities across the nation. This standard would have an incredibly harmful impact on Wyo-

LEASE BONUS BIDS

Leasing federal coal reserves is a detailed, time consuming and highly-regulated process. Each proposed lease must be requested through the Bureau of Land Management (BLM) in a Lease by Application (LBA) request. A mining company nominates proposed tracts for lease and the BLM completes detailed environmental assessments or environmental impact statements. The BLM assesses proposals to determine the coal's market value, scope of the application and establishes sale parameters. Interested companies with the ability to economically and viably mine the coal submit competitive bids. The lease is either awarded to the highest bidder or rejected if the BLM deems the offer too low.

Successful bidders for a coal lease pay a bonus bid for each ton of reserves. This is an additional payment on top of the royalty paid to the federal government when the coal is mined. Coal lease payments are split between the state and federal government and paid out over a five-year period.

Wyoming has received more than \$2.3 billion in coal bonus bid dollars since 2003. The money has funded most new schools built in the last decade, as well as highways and community colleges across the state. Every Wyoming county has benefitted from these funds.

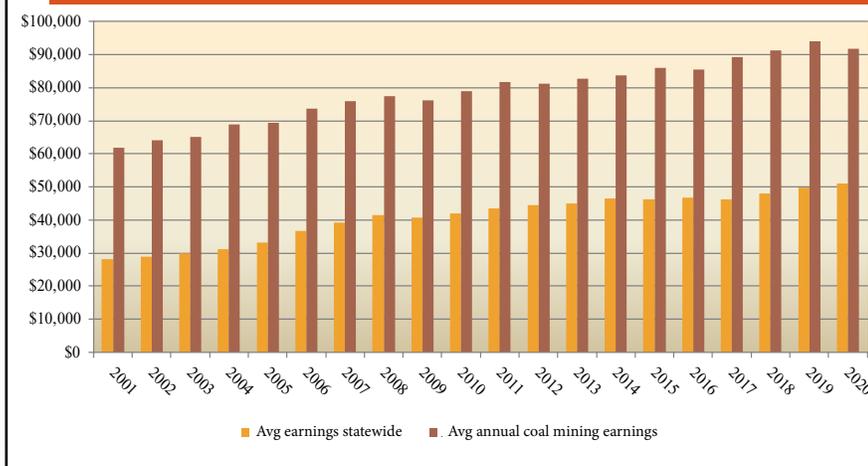
Unfortunately, as a result of decreased coal demand, this revenue stream has significantly declined. There were no bonus monies received in 2019 and only one payment of about \$460,000 in 2020. There are only three potential leases currently pending in the BLM LBA system. State revenue from coal will continue to be impacted until more federal coal is mined.

Unfortunately, as a result of decreased coal demand, this revenue stream has run out. The last payment on coal leased to date was \$5.3 million in 2018, and there are only three potential leases currently pending in the BLM LBA system. State revenue from coal will continue to be impacted until more federal coal is needed.

LOCAL BENEFITS

Coal is an important source of income for Wyoming and is the second largest source of tax revenue for state and local governments, after oil (Oil displaced natural gas in 2020 as the number one source of state revenue and coal outpaced gas). Coal mining companies remit taxes and royalty payments to all branches of government, federal, state and local. Coal's estimated contribution to Wyoming in 2020 was about \$548 million in taxes, royalties and fees, reflecting a \$166.8 million, or 23.3 percent, decrease from 2019. The decrease highlights the magnitude of the continued slowdown in Wyoming's coal industry in recent years.

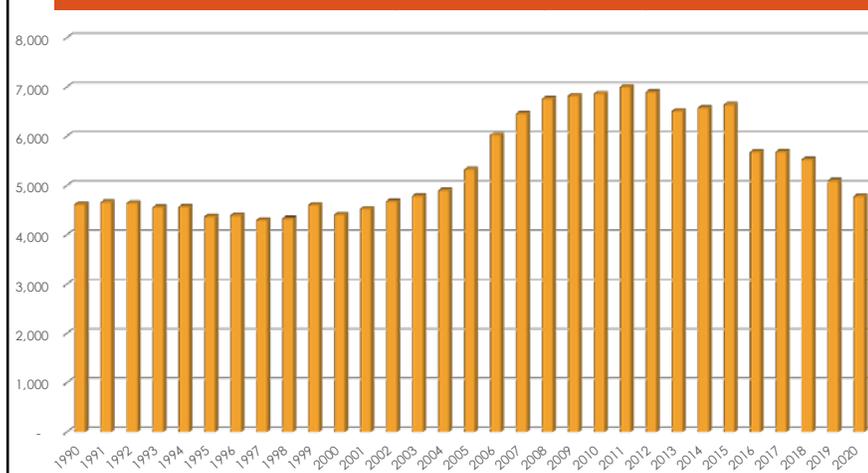
WYOMING AVERAGE WAGES (2001-2020)



In 2021, Wyoming received \$2.5 million in Abandon Mine Lands (AML) regulatory grant funding. The state no longer receives "prior year replacement" funds. The state also received \$35 million in "certified in lieu" funds. These are monies that are authorized as "replacement" funds based on AML collections that are no longer distributed.

Employment in Wyoming's 15 operating coal mines declined 12.8 percent 2020. Wyoming coal mines now employ just 4,747 workers directly in the industry. This is down 32 percent from a peak of 7,004 employees in 2011. Coal industry jobs are among the best paying in the state with Wyoming coal miners collecting an average wage of \$91,780, excluding benefits. A coal miner's take-home pay is almost twice the statewide average wage of \$50,990 per worker. Estimates indicate that each coal industry position supports an additional two jobs in the service and supply sectors, bringing direct and indirect employment to more than 15,000 workers.

WYOMING EMPLOYMENT



RECLAMATION

Reclaimed mine lands represent sustainable development in action, and Wyoming coal mine reclamation remains among the best in the world. Reclamation is done contemporaneously in a multi-stage process once the recoverable coal is removed. Highly-trained specialists employed by the mines manage the reclamation, and state and federal personnel provide oversight to ensure compliance with all applicable laws. Reclamation at Wyoming coal mines has been recognized with multiple awards as the best in the nation. All Wyoming coal mines are fully bonded with the Wyoming Department of Environmental Quality.

Reclamation stages include:

- Backfilling the void with overburden during the mining process.
- Contouring the filled surface.
- Replacing topsoil and preparing the surface.
- Preparing the seedbed and sowing approved seed mixtures.
- Monitoring plant growth and fauna populations.

Approved seed mixtures used in reclamation promote higher vegetative

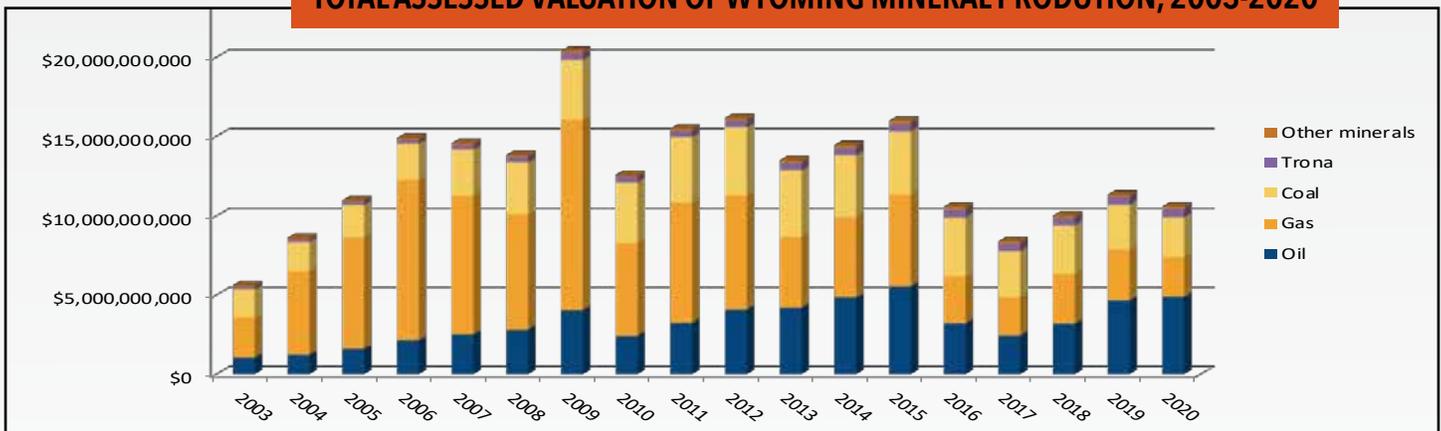
output than what is found on pre-mined land, attracting animals and plants to re-establish and promote a sustainable ecosystem. The success of reclamation is apparent on reclaimed land in the Powder River Basin and at other sites across Wyoming, such as PacifiCorp's project near the Dave Johnson power plant at Glenrock.

Land which houses facilities such as mine shops, coal plants, long-term roads, and ponds is included in the lease permit, but cannot be reclaimed until long-term use is complete. Reclamation focuses on all other areas, as demonstrated by comparison of current disturbance and reclamation acres year to year.

Reclamation goes beyond just restoring contours and reseeding native plant species. Reclamation specialists strive to build sustainable natural ecosystems using innovative methods and new techniques to further enhance reclaimed areas. Some examples include:

- Re-establishment of water features and storage in reclaimed streams, stock ponds and wetlands.
- Replacement of sage grouse breeding grounds.
- Establishment of mosaic patterns in grassland and shrubland reclamation.
- Replacement of rock outcrops and providing prey base habitats for eagles and other predators.
- Reconstruction of prairie dog towns and reclamation of mountain plover habitat.

TOTAL ASSESSED VALUATION OF WYOMING MINERAL PRODUCTION, 2003-2020



2020 WYOMING PRODUCTION BY COUNTY

Location/operator	Mine	Employees	Production
Campbell County			
Black Hills Energy	Wyodak	62	3,736,695
Buckskin Mining Co.	Buckskin Mine	166	9,699,282
Eagle Specialty Minerals LLC	Belle Ayr	252	11,174,953
Eagle Specialty Minerals LLC	Eagle Butte	230	12,303,698
Navajo Transitional Energy Co.	Antelope Mine	512	19,809,826
Navajo Transitional Energy Co.	Cordero Rojo Mine	272	9,773,845
Peabody	Caballo Mine	177	11,626,318
Peabody	Rawhide Mine	119	9,494,090
Peabody Powder River Mining LLC	North Antelope/Rochelle Complex	1,015	66,111,840
Thunder Basin Coal Co. LLC	Black Thunder Mine	1,078	50,188,766
Thunder Basin Coal Co. LLC	Coal Creek Mine	63	2,141,507
Western Fuels of Wyoming, Inc.	Dry Fork Mine	61	3,930,829
Lincoln County			
Kemmerer Operations Inc.	Kemmerer Mine	245	2,474,821
Sweetwater County			
Black Butte Coal Co.	Black Butte and Lucite Hills	142	2,216,235
Pacific Minerals dba Bridger Coal Co.	Surface operations	225	1,454,849
Bridger Coal Co.	Underground operations	128	2,424,369
		4,747	218,561,923

SELECTED REFERENCES

Foulke, Thomas, Roger Coupal and David Taylor. Economic Trends in Wyoming's Mineral Sector: Coal, 2nd edition. University of Wyoming Extension Bulletin B-1116R. Laramie, Wyoming. December, 2013.

U.S. Department of Energy. Energy Information Administration. Coal Data Browser Coal Data Browser - Aggregate coal mine production for all coal (eia.gov) Accessed July, 2021.

U.S. Department of Energy, Energy Information Administration. Annual Energy Outlook 2021. Annual Energy Outlook 2021 Narrative (eia.gov). Accessed July 2021.

U.S. Department of Energy. Energy Information Administration. Annual Coal Report. Available from: Annual Coal Reports - U.S. Energy Information Administration (EIA). Accessed July 2021.

U.S. Department of Labor, Bureau of Labor Statistics. Quarterly Census of Employment and Wages. Available from: Databases, Tables & Calculators by Subject (bls.gov). Accessed July, 2021.

Wyoming, State of. Department of Administration & Information. Wyoming 2020-Just the Facts. Available from: Facts2020.xlsx (state.wy.us). Accessed July, 2021.

Wyoming, State of. Department of Employment. Office of Mine Inspector. Annual Report of the State Inspector of Mines, 2020. Available from: Mines Inspection & Safety (wyomingworkforce.org) Accessed July, 2021.

The Concise Guide to Wyoming Coal is produced by the Wyoming Coal Information Committee of the Wyoming Mining Association. Cheyenne, Wyoming, September 2021.

WMA WYOMING COAL INFORMATION COMMITTEE

Eagle Specialty Materials

Matt Cook • 307.687.3460 • matt.cook@peming.com

Arch Resources Inc.

Deck Slone • 314.994.2717 • dslone@archcoal.com

Black Butte Coal Company

Steve Gili • 307.382.6200 • s.gili@aecoal.com

Buckskin Mining Company

Marc Kenley • 307.686.5494 • marc.kenley@kiewit.com

Navajo Transitional Energy Company

Steve Williams • 307.685.4582 • steve.williams@navenergy.com

PacificCorp-Rocky Mountain Power

Sharon Fain • 307.275.6415 • sharon.fain@pacificcorp.com

Peabody

Julie Gates • 314.342.3400 • jgates@peabodyenergy.com

Kemmerer Mine

Shane Durgin • 307.800.8125 • durgin@kemmerermine.com

Wyodak Resources Development Corp.

Marc Ostrem • 307.687.8916 • marc.ostrem@blackhillscorp.com

Wyoming Mining Association

Travis Deti • 307.635.0331 • tdeti@wyomingmining.org



WYOMING MINING
ASSOCIATION

For More Info Visit: www.wyomingmining.org