

# The 2015-16 Concise Guide to Wyoming Coal

*Welcome to the Concise Guide, an educational effort to raise awareness of the economic contribution and value of Wyoming's coal industry.*

*Wyoming has led the nation in coal production since 1986 and currently mines 39 percent of the nation's coal.*



WYOMING MINING  
ASSOCIATION



## A Culture of Safety

Safety remains a top priority and core cultural value for Wyoming's coal mining industry. In fact, Wyoming coal mines are recognized as some of the safest mining operations in the nation. Safe mines are productive mines, and at the end of the day our goal is for every employee to arrive home safely.

All mines employ dedicated safety professionals, and all employees are trained in proper safety practices to foster a safe work environment.

- 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.

Data from the Bureau of Labor Statistics shows that working in a Wyoming coal mine is safer than a number of common occupations. On average, a coal miner can expect to work their entire career without a lost-time accident, defined as a non-fatal workplace illness or injury resulting in at least one day away from work to recuperate.

## Wyoming Coal Industry in 2015

The coal industry remains in a challenging business environment. Despite these obstacles, coal is a significant source of energy, generating 39 percent of the nation's electricity in 2014. While difficult market and regulatory conditions continue to put pressure on Wyoming's mines, they are still the low-cost industry leaders. As the nation's preeminent coal producer, Wyoming is home to 9 of the top 10 producing mines in the nation. Wyoming coal is a secure, abundant and affordable source of fuel that accounts for 15 percent of US domestic electric power generation. Wyoming has led the nation in coal production since 1986. Two Wyoming mines alone, North Antelope Rochelle and Black Thunder, provided 20 percent of all coal mined in the United States. In total, Wyoming produced over 392 million tons of coal in 2014, up 1.2 percent from 2013.

## Wyoming's Coal Resources

Wyoming is home to over 1.4 trillion tons of total coal resources in seams ranging in thickness from five feet to some in excess of 200 feet in the Powder River Basin (PRB). Recent estimates give Wyoming more than 165 billion tons of recoverable coal. While other regions of the country also have



considerable resources, Wyoming's growth as the center of the nation's coal production has been driven by several factors:

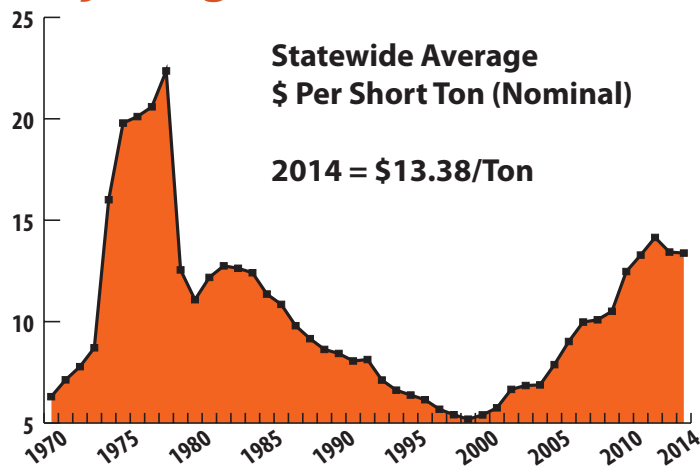
- Low sulfur composition of the coal.
- Lower production costs due to the coal's proximity to the surface.
- World-class recoverable coal seams.

During 2014, 360 million tons of coal was moved by unit trains to energy markets in 30 states across the country. Another 25 million tons were consumed by power plants in Wyoming. Unit trains are single destination trains with up to 150 cars. Up to 80 unit trains leave the PRB daily. On average, coal is mined at the staggering rate of 12 tons per second. Trains do not stop to be loaded, but move through the loading chute at up to 2 mph. It takes less than one minute to load a train car and

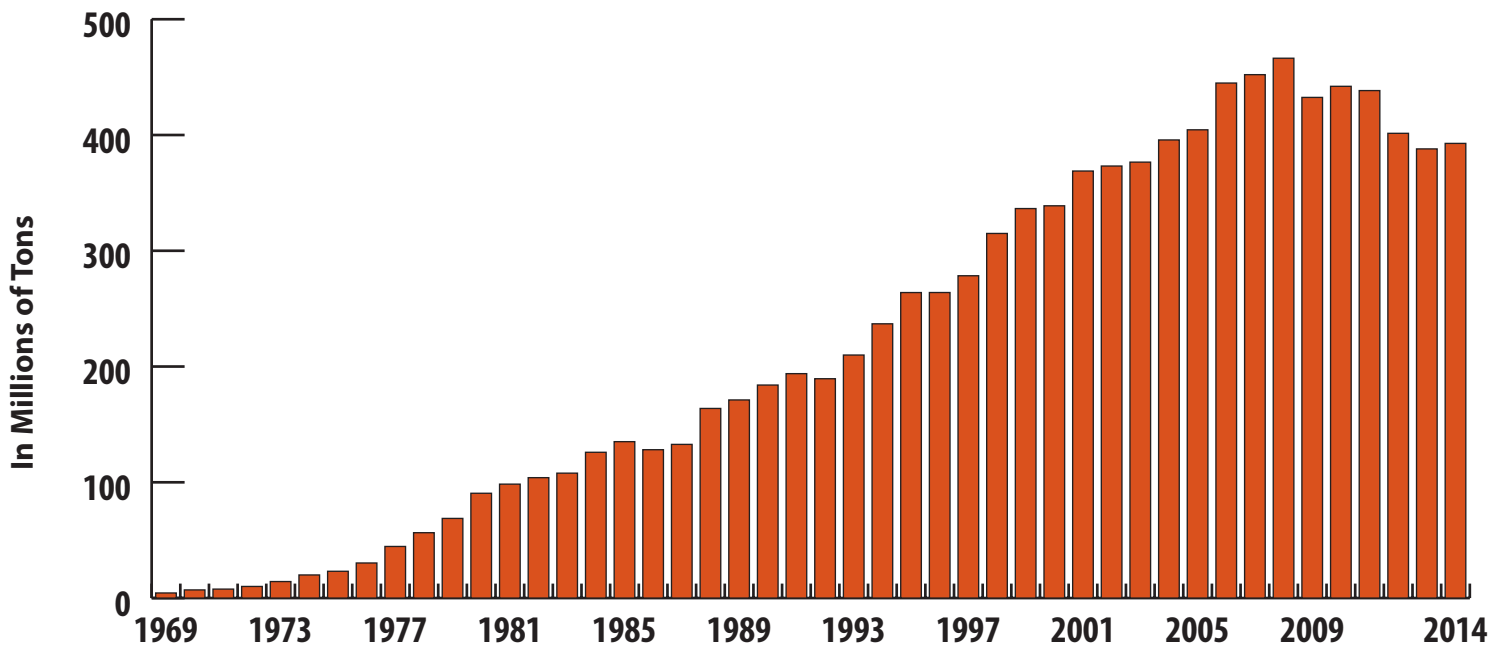
about an hour and a half to load a unit train.

Wyoming producers experienced growth in coal prices in the first decade of the twenty-first century. Recent advances in production technology for natural gas have dampened coal demand and production has slowed. The average price for Wyoming coal in 2014 was \$13.43 per ton, down 5.1 percent from 2012. Most new construction power plants are designed to operate on natural gas. Yet coal will provide a significant portion of the "base load" generating capacity for the foreseeable future. It is important to note that the nation's power plants have limited ability for "fuel switching" (changing between natural gas and coal for power). Many existing plants are simply not designed to operate on natural gas and would be very inefficient if they did so. Additionally, switching to natural gas requires significant capital investment.

### Wyoming Coal Prices, 1970-2014



## Wyoming Coal Production, 1969-2014

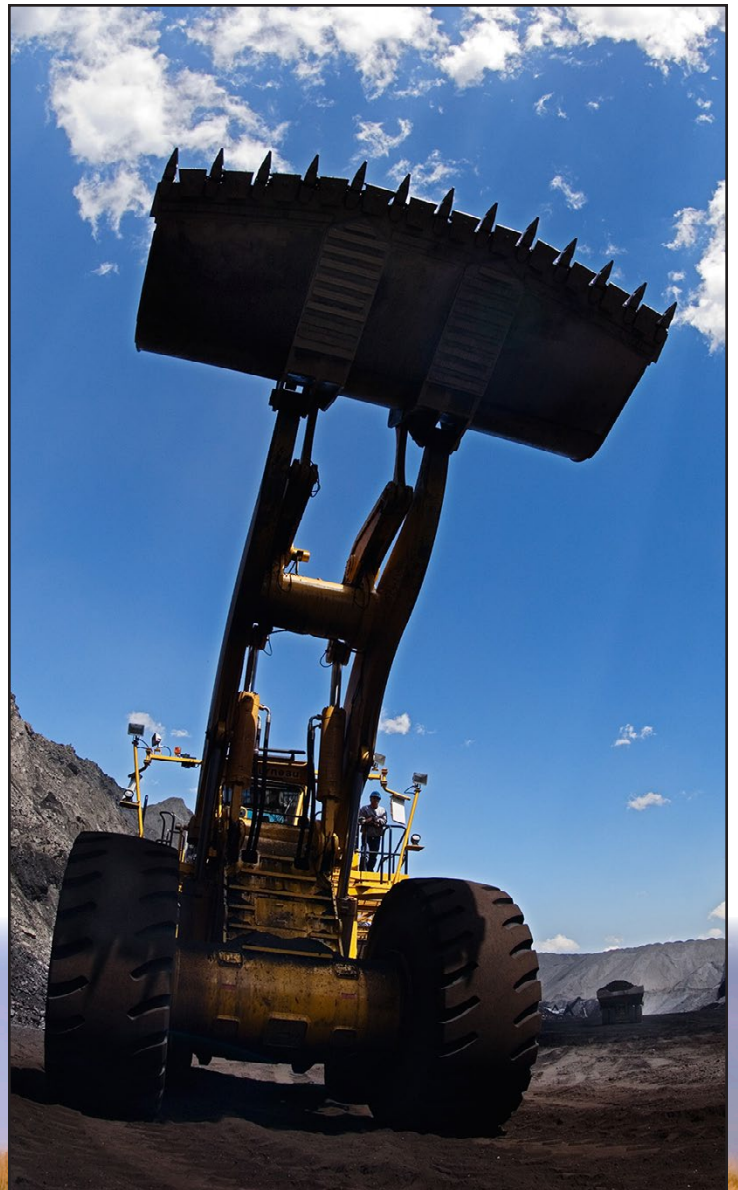


### Technology and the Future

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 2015 predicts U.S. coal production could potentially increase 60 million tons by 2040. Electrical power generation is by far the largest consumer of coal in the United States, using about 91 percent of all coal mined.

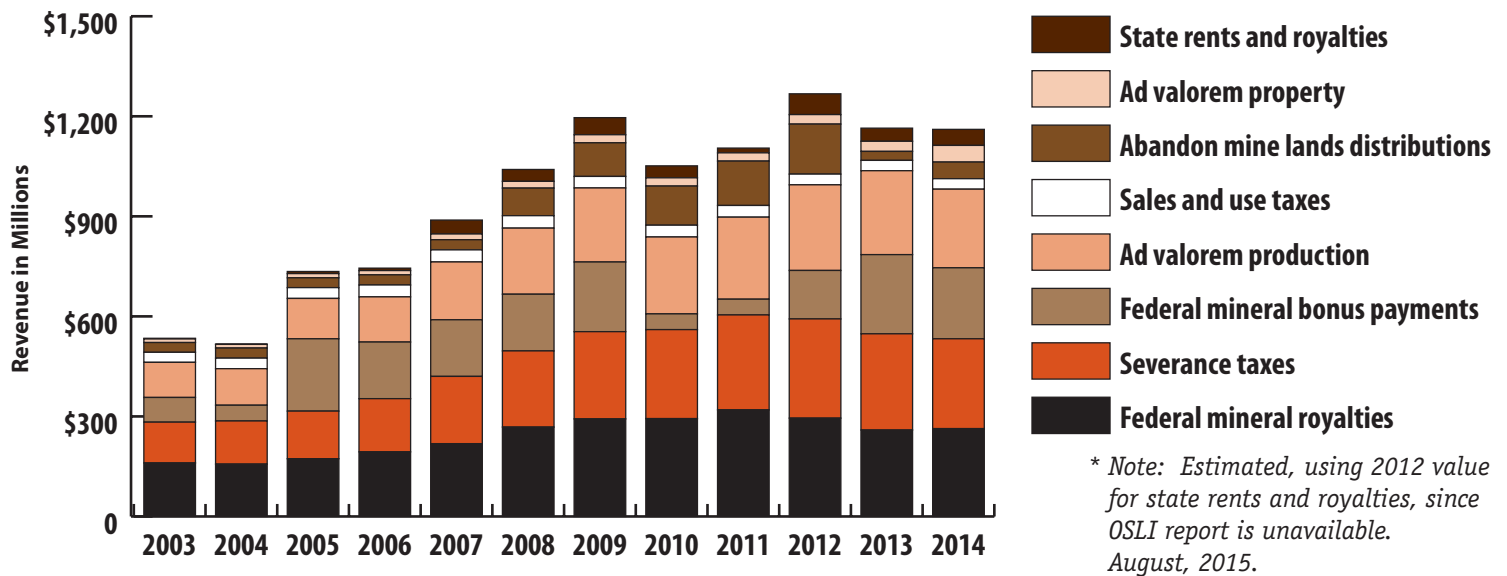
Wyoming remains a national focal point of coal technology development and research.

- The Dry Fork and Black Hills power-generation plants near Gillette use state-of-the-art environmental technology.
- The Dry Fork Station power generation facility will host the Integrated Test Facility to research and develop carbon capture technology.
- DKRW continues to advance its clean coal project near Medicine Bow.
- New developments are expected in Integrated Gasification Combined Cycle (IGCC) technology to further enhance the efficiency of coal-fired generation.
- The University of Wyoming School of Energy Resources is doing research to understand carbon capture and sequestration (CCS) processes.
- In 2012, the Wyoming State Legislature redirected \$10 million of Abandoned Mine Land funds to the University Wyoming School of Energy Resources for clean coal research.
- Since 2007 almost \$41 million has been awarded by the Clean Coal Task Force for research in areas such as development of new technologies that reduce emissions from coal, integration of carbon capture technologies, and pilot-scale demonstrations of emerging technologies.
- As international demand for coal grows, Wyoming producers continue efforts to expand shipping ports to facilitate export sales.





# Trend in Wyoming State and Local Government Revenue



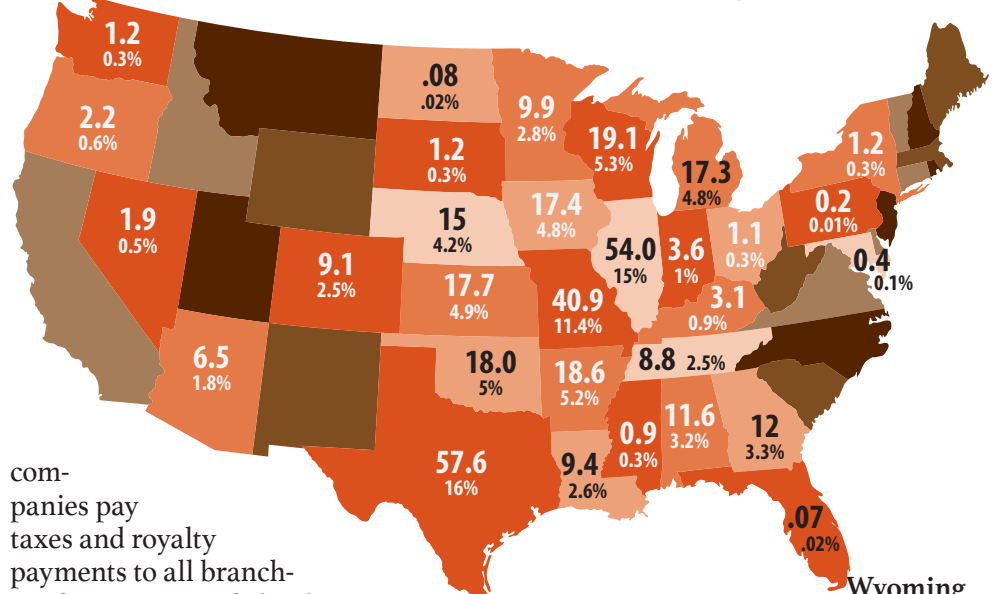
## Regulatory Environment

The federal regulatory environment remains very challenging. The implementation of the Environmental Protection Agency's Clean Power Plan (CPP) will have a direct impact on Wyoming's coal industry. As states are forced to cut CO<sub>2</sub> emissions, coal-fired power plants will be targeted. The CCP has many US utilities considering the cost of compliance for coal-fired generation to meet stricter emissions standards. States charged with making the deepest cuts tend to be heavy users of Wyoming coal. Changes to the Bureau of Land Management's Coal Leasing Program could have impacts, as well. An increase in royalty rates paid on leased coal would drive up costs of mining. Others issues, such as the Office of Surface Mining Reclamation and Enforcement's proposed Stream Protection Rule and expected delays in permitting to ensure compliance with the National Environmental Policy Act, have the potential to negatively affect Wyoming coal operations, as well.

## Local Benefits

Coal is an important source of income for Wyoming and is the state's second largest source of tax revenue for state and local governments. Coal mining

## Coal Shipments From Wyoming, 2014



companies pay taxes and royalty payments to all branches of government, federal, state and local. Coal's estimated contribution to Wyoming in 2014 was over \$1.1 billion in taxes paid. The collected revenue reflects a \$27.5 million (or 2.4 percent) decrease from 2013. The decrease comes from declining production orders from power plants that are either generating less power or have switched to natural gas for fuel.

A 2012 revision of federal statutes changed the allocation of Abandoned Mine Land (AML) funds to coal producing states like Wyoming. In 2014, Wyoming received \$49.9 million in AML funds, double from 2013, but

State	CO <sub>2</sub> ▼	Wyoming Coal (Tons)
South Dakota	48%	1,168,020
North Dakota	45%	84,881
Illinois	44%	54,024,690
Kansas	44%	17,719,457
Wyoming	44%	24,890,853
Iowa	42%	17,438,584
Kentucky	41%	3,088,186
Wisconsin	41%	19,148,582
Colorado	40%	9,143,097
Nebraska	40%	14,985,023
Tennessee	40%	8,811,034
Indiana	39%	3,613,405
Michigan	39%	17,280,605
Missouri	37%	40,904,356
Ohio	37%	1,105,391
Pennsylvania	35%	22,985
Alabama	33%	11,616,405
		245,045,554

down from over \$150 million in 2012. The state no longer receives “prior year replacement” funds. The law change means that future AML funding will not be linked to production, regardless of the amount generated by the AML tax (\$0.28 per ton on surface mined coal) paid by companies. Wyoming’s AML staff estimates that Wyoming will lose \$718 million over the next 10 years unless changes can be made in the statutes.

Wyoming’s 20 coal mines employed a total of 6,578 workers in 2014, a 23 percent increase over the past 10 years, up 0.9 percent from 2013. Employment growth was driven, in part, by increased overburden removal. Overburden includes the soil and organic matter that lies above the coal seam. The industry also employs an additional 2,500 contractors directly.

Coal industry jobs are among the best paying in the state. Wyoming coal miners take home an average wage of \$83,594 before benefits – almost twice the statewide average wage of \$46,480 per worker. Estimates indicate that each coal industry position drives the need for three additional jobs in the state.

## Lease Bonus Bids

Leasing federal coal reserves is a detailed, highly regulated process. Each proposed lease is requested through the Bureau of Land Management (BLM) in a Lease by Application or LBA request. A mining company nominates proposed tracts for lease and the BLM completes detailed environmental assessments or environmental impact statements.

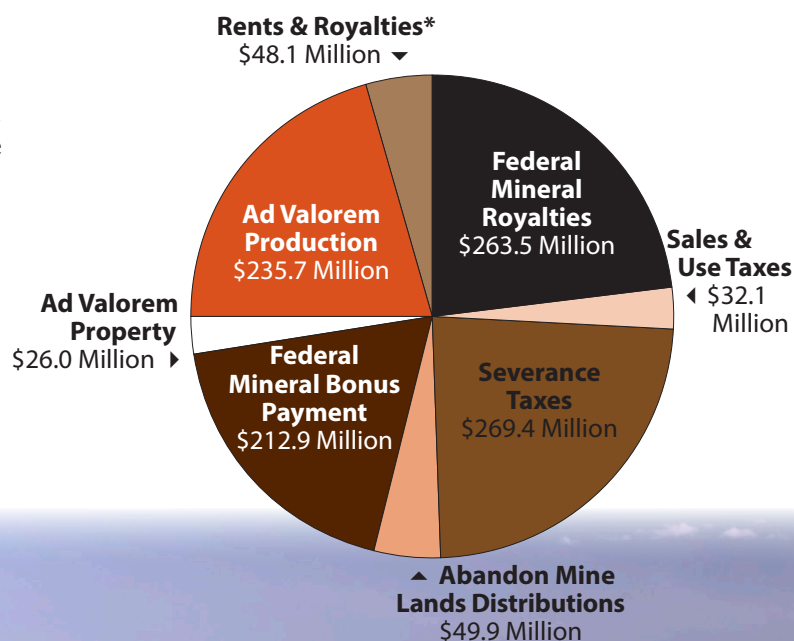
The BLM assesses proposals to determine the coal’s market value and scope of the application, and establishes sale parameters. Interested companies submit competitive bids, with the lease usually being awarded to the highest bidder. BLM also has the right to decline offers which are deemed insufficiently 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. This payment is split between the state and federal government and is paid out over a five year period. At any given time, there are potential new leases in the application process. The last payment on coal leased to date will be in 2017.

Wyoming has received over \$2 billion in coal bonus bid dollars since 1992. The money has been used to fund schools, highways and community colleges across the state. Most new schools built in the last decade have been built with coal bonus bid revenue. Every county in Wyoming has benefited from this new school construction.



## Coal contributed \$1.14 Billion in State & Local Government Revenue in Wyoming in 2014.



\* Note: Using 2012 value for state rents and royalties.





## Reclamation

Reclaimed mining lands represent sustainable development in action. 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 as the best in the nation.

Reclamation stages include:

- Backfilling the void with overburden
- 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, which now provides crucial winter habitat for elk and other indigenous species. One reclaimed site is part of a conservation easement established through the Rocky Mountain Elk Foundation.

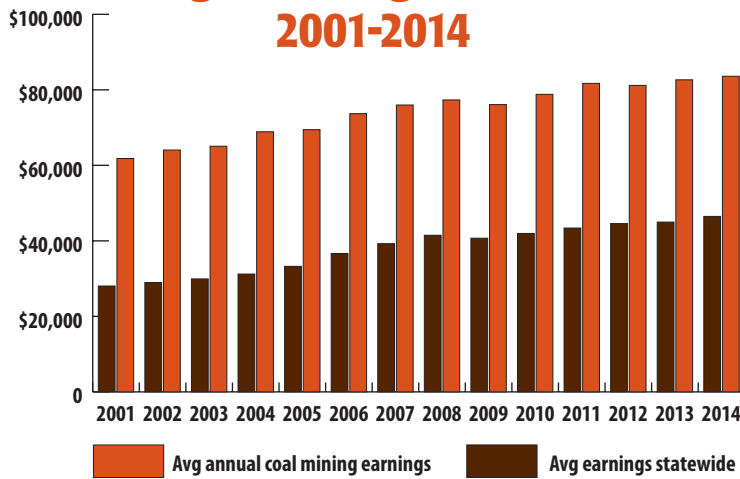
Land which houses facilities such as mine shops, coal plants and long-term roads and ponds cannot be reclaimed until long-term use is complete. Year-to-year reclamation focuses on all other areas as demonstrated by comparison of current disturbance and reclamation.

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:

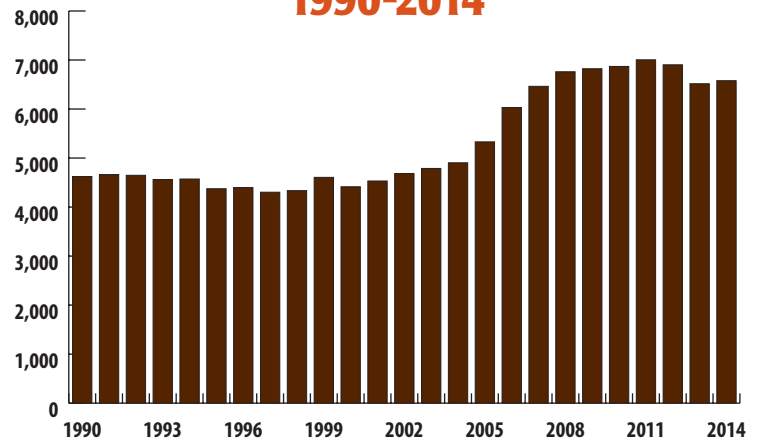
- Re-establishment of water features and storage in reclaimed streams, stock ponds and wetlands.
- Replacement of sage grouse breeding grounds.
- Establishment of mosaic patterns in grassland and shrubland reclamation.
- Replacement of rock outcrops and providing prey base habitats for eagles and other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



## Average Job Wages Over Time 2001-2014



## Wyoming Coal Employment 1990-2014



## 2014 Wyoming Coal Production by County

Location/Operator	Mine	Employees	Production
<b>Campbell County</b>			
Alpha Coal West, Inc.	Belle Ayr Mine	263	14,435,949
Alpha Coal West, Inc.	Eagle Butte Mine	286	19,137,400
Buckskin Mining Co.	Buckskin Mine	269	15,334,726
Cloud Peak Energy LLC	Cordero Rojo Complex	616	34,809,102
Peabody Caballo Coal LLC	Caballo Mine	117	7,990,986
Peabody Energy Rawhide Mine	Rawhide Mine	215	15,473,474
Powder River Coal Co.	North Antelope/Rochelle Complex	1,341	117,965,515
Thunder Basin Coal Co. LLC	Black Thunder Mine	1,634	101,016,832
Thunder Basin Coal Co. LLC	Coal Creek Mine	156	9,414,583
Western Fuels of Wyoming, Inc.	Dry Fork Mine	79	5,373,973
Wyodak Resources Develop. Corp.	Wyodak Mine	66	4,317,023
<b>Carbon County</b>			
Arch of Wyoming, LLC	Elk Mountian Mine	2	
Arch of Wyoming, LLC	Seminole II Mine	8	
<b>Converse County</b>			
Cloud Peak Energy LLC	Antelope Coal Mine	565	33,646,
<b>Hot Springs County</b>			
Grass Creek Coal Co.	Grass Creek Mine	3	12,900
<b>Lincoln County</b>			
Westmoreland Kemmerer Inc.	Kemmerer Mine	297	4,399,238
<b>Sweetwater County</b>			
Black Butte Coal Co.	Black Butte and Lucite Hills	189	4,017,845
Bridger Coal Co.	Surface operations	230	1,990,376
Bridger Coal Co.	Underground operations	236	3,369,731
<b>Uinta County</b>			
Haystack Coal Co.	Haystack Mine	6	45,100
<b>Total</b>		<b>6,578</b>	<b>392,751,713</b>
<b>Tons/employee</b>		<b>59,707</b>	

Source: State Inspector of Mines of Wyoming, 2015





The Concise Guide to Wyoming Coal is produced by the Wyoming Coal Information Committee of the Wyoming Mining Association. Cheyenne, Wyoming, August, 2015.

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