United States Energy Association

Coal in the Western United States: Federal Resources, Grid Reliability, and Strategic Energy Security

OVERVIEW

Coal has played a central role in the economic development and energy infrastructure of the Western United States. Anchored primarily in the Powder River Basin (PRB) of Wyoming and Montana, Western coal resources have historically supplied electricity generation across a vast geographic region stretching from the Rocky Mountains to the Pacific Coast. The basin's low-sulfur subbituminous coal, combined with extensive rail infrastructure, enabled large-scale coal shipments to utilities across the Western Interconnection and beyond, making the region a cornerstone of the United States' domestic fuel supply.

Western coal remains strategically significant due to the scale of the Powder River Basin resource base and the role of coal-fired power plants in maintaining grid reliability across the Western electricity system. According to the U.S. Energy Information Administration (EIA), Wyoming alone accounts for roughly 40 percent of total U.S. coal production, making it the largest coal-producing state in the nation. Powder River Basin mines collectively produce hundreds of millions of short tons annually.

In 2025-2026, energy policy discussions in Washington increasingly emphasize domestic energy production, fuel security, and grid reliability as electricity demand from data centers, advanced manufacturing, and electrification increases. Given this policy context, Western coal resources and existing coal-fired generation are being evaluated as strategic assets supporting energy security, transmission stability, and industrial development. This article examines the evolving role of coal in the Western United States, focusing on resource development, reliability considerations in the Western Interconnection, federal land policy, industrial demand drivers, and potential pathways for modernization and strategic utilization.

HISTORICAL CONTEXT: DEVELOPMENT OF WESTERN COAL RESOURCES

Coal development in the Western United States followed a different trajectory than in the industrial coal regions of Appalachia or the Illinois Basin. While coal mining in the Rocky Mountain states dates back to the nineteenth century, large-scale development of Western coal accelerated in the late twentieth century with the expansion of the Powder River Basin. The basin's coal seams are exceptionally thick and located close to the surface, allowing for large-scale surface mining operations with relatively low production costs. These geologic advantages, combined with the low sulfur content of Powder River Basin coal, made the region particularly attractive to utilities seeking to comply with emissions regulations introduced under the Clean Air Act amendments.

The chart below outlines major phases in coal's historical development across the West:

Phase	Period	Defining Characteristics	Policy / Market Drivers	Strategic Significance
Early Coal Development in the Rocky Mountain West	Mid-1800s-1940s	Coal mining begins in Colorado, Utah, Montana, and New Mexico; production supports railroads, mining operations, and early Western settlements	Expansion of railroads; regional mining booms; industrial demand from rail transport and smelting	Establishes coal as an early energy source supporting Western transportation, mining, and settlement
Postwar Power Development and Regional Electrification	1950s-1960s	Construction of large coal-fired power plants in the interior West to support rapid population growth and industrial expansion	Federal hydropower development; growing electricity demand in Western states; vertically integrated utility model	Coal becomes a major baseload electricity source supporting urban expansion across the Western United States
Powder River Basin Expansion	1970s-1990s	Rapid development of large-scale surface mining in Wyoming and Montana; expansion of dedicated rail corridors transporting low-sulfur coal across the United States	Clean Air Act compliance; demand for low-sulfur coal; improvements in surface mining technology and rail logistics	Powder River Basin emerges as the largest coal-producing region in the United States
National Coal Supply Integration	1990s-2008	Powder River Basin coal becomes a major national fuel supply source; large-scale shipments to utilities across the Midwest and West	Expansion of rail infrastructure; competitive mining costs; nationwide demand for low-sulfur coal	Western coal becomes central to U.S. electricity generation supply chains
Shale Gas Competition & Market Transition	2008-2015	Natural gas expansion and relatively flat electricity demand growth reduced coal generation; early retirements of Western coal plants began	Shale gas revolution; changing electricity markets; environmental regulations	Coal production declines but Powder River Basin remains dominant U.S. supply region
Energy Transition & Regional Retirements	2015-2023	Accelerated retirement announcements for coal plants in Colorado, New Mexico, and Arizona; rapid growth of wind and solar in Western states	State clean energy mandates; federal tax incentives for renewables; declining renewable costs	Coal generation share declines while remaining plants provide firm capacity for reliability
Reliability Focus & Strategic Resource Evaluation	2024-February 2026	Increased focus on coal generation as Western electricity demand rises; evaluation of carbon capture, hydrogen, and critical minerals from coal byproducts	NERC reliability assessments; DOE carbon programs; February 2026 federal energy security directives	Coal is recognized as a strategic, reliability, and industrial resource

RELIABILITY IN THE WESTERN INTERCONNECTION

Electricity systems in the Western United States operate within the Western Interconnection, a synchronized power grid spanning fourteen U.S. states as well as portions of Canada and Mexico. Reliability coordination and regional planning are conducted through the Western Electricity Coordinating Council (WECC), which serves as the regional reliability entity under the oversight of the North American Electric Reliability Corporation (NERC).

The Western Interconnection faces several reliability challenges that differ from those in other U.S. power systems. Large geographic distances between generation resources and major load centers require extensive high-voltage transmission infrastructure, while extreme weather events, wildfire-related transmission disruptions, and hydropower variability add additional complexity to system operations. Reliability assessments published by NERC have identified growing challenges in maintaining resource adequacy in parts of the Western Interconnection as electricity demand continues to grow. Several Western states have adopted aggressive renewable energy targets, resulting in rapid expansion of wind and solar capacity. Because these resources are weather dependent, maintaining reliability requires complementary generation capable of sustaining electricity production during periods of low renewable output.

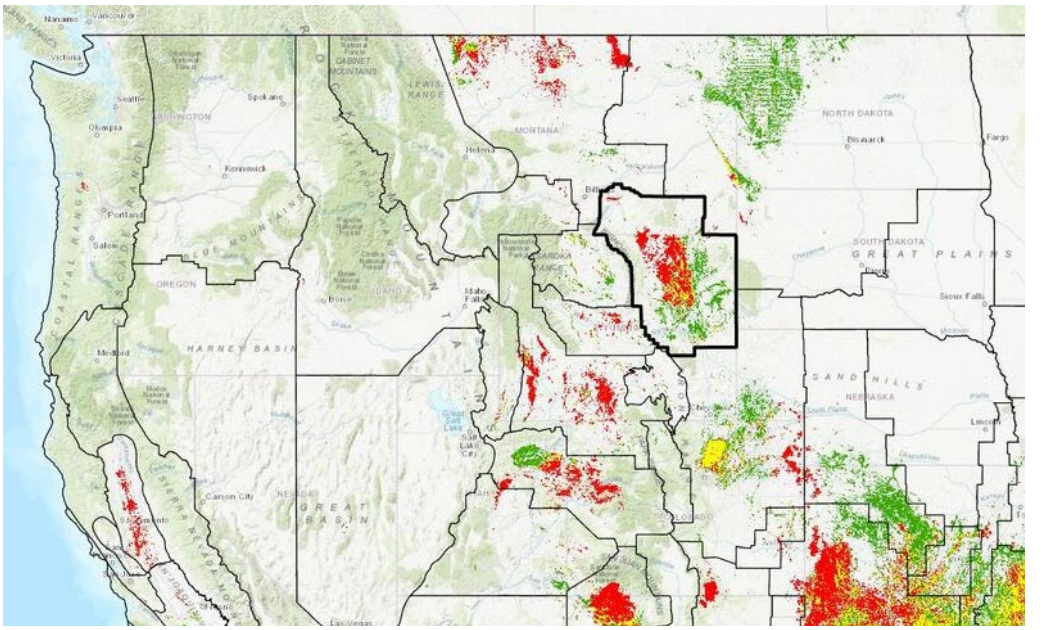
Coal-fired power plants historically provided a substantial share of firm generation across the Western grid. The Western coal fleet continues to provide important reliability services. Coal plants also maintain significant on-site fuel inventories that can sustain operations for extended periods without reliance on real-time fuel deliveries.

CURRENT STATUS: PRODUCTION AND GENERATION

COAL PRODUCTION

Coal production in the Western United States is heavily concentrated in Wyoming and Montana, with additional mining activity in Colorado, Utah, and New Mexico. The Powder River Basin remains the dominant production region.

According to the U.S. Energy Information Administration's Annual Coal Report, Wyoming produced more than 200 million short tons of coal in recent years, far exceeding production in any other state. Montana produced approximately 35-40 million short tons, while Colorado and Utah maintained smaller but still significant production levels. The Powder River Basin's large-scale surface mines produce low-sulfur subbituminous coal used primarily for electricity generation. These mines supply utilities across the Western and Midwestern United States through extensive rail networks.



Powder River Basin, Source: U.S. Geological Survey (USGS)

COAL GENERATION IN WESTERN STATES

Several large coal-fired power plants continue to operate in the Western United States and play important roles in regional electricity systems. These facilities are typically large, multi-unit stations that provide firm generation capacity, on-site fuel security, and support for transmission stability across the Western Interconnection. In early 2026, EPA finalized a significant change to the Mercury and Air Toxics Standards (MATS) compliance framework for coal- and oil-fired electric generating units. The February 2026 final rule repealed the 2024 MATS amendments and returned the program to the 2012 standards, eliminating the 2024 requirements for a tighter filterable particulate matter limit for existing coal-fired units, a tighter mercury standard for lignite-fired units, and mandatory particulate matter continuous emissions monitoring systems for compliance demonstrations. EPA characterized the repeal as reducing regulatory costs and preserving flexibility for existing generation, while public-health and environmental organizations and several states have filed legal challenges. Accordingly, MATS remains a material regulatory consideration for the coal fleet, but the current operative federal standard is no longer the 2024 tightened rule.

The table below highlights several major coal-fired power plants currently operating in Western states:

Plant	State	Approximate Capacity (MW)	Notes
Colstrip Generating Station	Montana	1,480 MW (Units 3-4 operating)	One of the largest coal plants in the Western U.S.; major power supplier across the Northwest
Four Corners Power Plant	New Mexico	1,540 MW	Serves utilities in Arizona and the Southwest; long-standing regional baseload facility
Hunter Power Plant	Utah	1,300 MW	Important PacifiCorp coal facility serving Utah and surrounding states
Huntington Power Plant	Utah	900 MW	Coal plant integrated with regional transmission network
Jim Bridger Power Plant	Wyoming	1,050 MW coal-only	One of the largest coal plants in the Western Interconnection
Wyodak Power Plant	Wyoming	330 MW	Mine-mouth plant located directly at a Powder River Basin mine
Craig Station	Colorado	1,200 MW	Major coal plant in northwestern Colorado
Comanche Generating Station (Unit 3)	Colorado	750 MW	Colorado's newest and largest coal unit (2010)
Springerville Generating Station	Arizona	1,620 MW	Important baseload plant for Arizona utilities
Coronado Generating Station	Arizona	760 MW	Supplies power across the Southwest grid
Dave Johnston Power Plant	Wyoming	745 MW	PacifiCorp coal plant serving the Rocky Mountain Power system
Laramie River Station	Wyoming	1,700 MW	Large multi-state cooperative coal facility

Source: U.S. Energy Information Administration, Preliminary Monthly Electric Generator Inventory, Form EIA-860M, March 2026. Capacities reflect approximate operating coal-fired net summer capacity and are rounded. EIA-860M values are preliminary monthly estimates and may be revised in subsequent releases or in final annual EIA-860 data.

FUEL SECURITY AND LONG-DISTANCE TRANSMISSION

The Western electricity system relies heavily on long-distance transmission infrastructure connecting remote generation resources to major population centers. Coal plants have historically supplied these networks with stable, generation at key nodes across the grid. In addition, coal-fired plants offer significant fuel security, with many maintaining large on-site fuel inventories capable of sustaining operations for weeks or months without reliance on real-time fuel delivery. This operational resilience is increasingly emphasized in policy discussions concerning grid reliability and energy security.

FEDERAL RESOURCE POLICY AND COAL LEASING

A defining feature of coal production in the Western United States is the significant role of federal land management. A large share of the coal reserves in the Powder River Basin are located on federally owned lands administered by the Bureau of Land Management (BLM), which manages coal resources under the federal coal leasing program (U.S. Department of the Interior, Bureau of Land Management; U.S. Geological Survey). The federal coal leasing program governs how these resources are developed, establishing leasing terms, royalty structures, and regulatory requirements that shape production across the region. As a result, federal leasing decisions play a central role in determining the pace and scope of Western coal development. Debates surrounding federal land management frequently intersect with broader national energy policy discussions, including domestic energy security, regulation, and long-term resource development priorities.

FEDERAL ENERGY POLICY SIGNALS (2025-2026)

Recent federal policy developments have placed renewed emphasis on the importance of reliable generation and domestic energy resources in maintaining grid reliability. On February 11, 2026, the Presidential Executive Order 14240: *"Strengthening United States National Defense with America's Beautiful Clean Coal Power Generation Fleet"* highlighted coal-fired generation as a strategic energy asset supporting national security and industrial competitiveness, including measures directing federal agencies to prioritize fuel-secure electricity sources for critical infrastructure and defense-related facilities (White House, Fact Sheet: Strengthening United States National Defense with America's Clean Coal Power Generation Fleet, February 11, 2026). These policy signals reflect growing concerns about maintaining reliable electricity supply as demand rises due to advanced manufacturing, artificial intelligence infrastructure, and electrification.

ELECTRICITY DEMAND GROWTH AND STRATEGIC INDUSTRIES

The Western United States is experiencing rapid growth in electricity demand driven by several emerging industrial and digital sectors. Large-scale data centers supporting artificial intelligence and cloud computing are expanding in states such as Arizona, Nevada, and Utah. These facilities require continuous high-capacity electricity supply and often seek locations with stable energy infrastructure and competitive power costs. Advanced manufacturing industries, including semiconductor fabrication, battery production, and mineral processing, are also expanding in parts of the Western United States. These industries depend on reliable electricity to support energy-intensive industrial processes. In addition, Western states host numerous defense installations and strategic industrial facilities that place a high priority on energy security and reliability. As electricity demand increases, energy planners must balance the integration of new renewable resources with the need to maintain adequate generation capacity.

STRATEGIC PATHWAYS FOR WESTERN COAL ASSETS

There are several pathways for maintaining the strategic value of Western coal resources. These pathways focus on technological innovation, industrial integration, and critical minerals:

CARBON CAPTURE UTILIZATION AND STORAGE (CCUS) AND ENHANCED OIL RECOVERY (EOR)

Carbon capture, utilization, and storage (CCUS) technologies represent one potential pathway for extending the operational life of coal-fired generation. Federal incentives such as the Section 45Q carbon sequestration tax credit, administered by the Internal Revenue Service (IRS), provide financial support for the deployment of carbon capture systems at power plants and industrial facilities (U.S. Department of the Treasury; Internal Revenue Code Section 45Q). Captured CO_2 can also be utilized in enhanced oil recovery (EOR), where it is injected into existing oil fields to increase production while permanently storing carbon underground, further linking CCUS deployment to domestic energy production and resource utilization.

CRITICAL MINERALS FROM COAL AND COAL BYPRODUCTS

Research supported by the U.S. Department of Energy and the National Energy Technology Laboratory (NETL) has examined the potential for recovering rare earth elements (REEs) and other critical minerals from coal, coal ash, and associated byproducts (NETL Critical Minerals Initiative). These materials are essential inputs for advanced technologies including electric vehicles, renewable energy systems, defense applications, and advanced electronics. Studies by the U.S. Geological Survey have identified coal and coal byproducts as potential unconventional sources of rare earth elements, suggesting that recovery technologies could contribute to strengthening domestic critical mineral supply chains while creating new economic opportunities in coal-producing regions (USGS Mineral Commodity Summaries; USGS Rare Earth Elements in Coal).

INDUSTRIAL INTEGRATION AND ENERGY INNOVATION

Coal infrastructure in the Western United States may also support emerging industrial initiatives including advanced carbon materials manufacturing, and energy storage technologies. Existing power plant sites often possess valuable infrastructure such as transmission interconnections, water resources, rail access, and skilled workforces, which may facilitate redevelopment for new industrial applications. Repurposing existing energy infrastructure for new industrial uses may allow coal-producing regions to participate in evolving energy supply chains while preserving workforce expertise and regional economic activity. Several federal research initiatives led by the U.S. Department of Energy are exploring the potential for coal-derived carbon products, hydrogen production pathways, and other advanced uses of coal resources within a broader framework of industrial innovation and energy security.

CONCLUSION

Coal in the Western United States has evolved from a dominant source of electricity generation to a strategically managed component of a changing energy system. The Powder River Basin remains the largest coal-producing region in the country, supplying utilities across the Western and Midwestern United States and continuing to play an important role in domestic energy production and fuel security. The Western coal fleet continues to provide reliable generation capacity, transmission stability, and on-site fuel resilience. At the same time, emerging federal policy priorities emphasizing energy security, domestic resource development, and industrial competitiveness are prompting renewed consideration of how coal resources and infrastructure can support evolving energy systems. As electricity demand grows across the Western United States, the future role of coal will likely be shaped by a combination of market dynamics, technological innovation, and federal and state energy policy.

THE UNITED STATES ENERGY ASSOCIATION (USEA) Founded in 1924, the United States Energy Association (USEA) is a nonprofit, nonpartisan, and non-lobbying organization that serves as a neutral forum for dialogue across the global energy sector. USEA's mission rests on two pillars: first, convening stakeholders to exchange insights on policy, regulation, science, technology and finance to advance reliable, affordable energy for economic growth and prosperity; and second, partnering with the U.S. Government, members, and international allies to expand access to U.S. energy resources and technology to strengthen energy security worldwide.

With over 100 member organizations, USEA's members include government agencies, utilities, architect and engineering firms, nonprofits, think tanks, academic institutions, Fortune 500 companies, and leading engineering consultancies that span the breadth of energy sources and technology. As an industry convener, USEA provides a trusted, nonpartisan, and technology-neutral forum to inform policy discussions, highlight innovation, and chart pathways for strengthening U.S. energy leadership. USEA also hosts flagship events, webinars, briefings, and workshops to advance dialogue on emerging energy issues.

USEA's team of international specialists partners with U.S. federal agencies, including the Department of Energy (DOE), Department of State, and other government entities, to strengthen U.S. competitiveness and open opportunities for U.S. businesses in global energy markets, including grid-enhancing technologies, liquified natural gas (LNG) exports, small modular reactors, and cybersecurity.

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SOURCE LIST

United States Government and Federal Agencies

U.S. Energy Information Administration (EIA). Annual Coal Report 2024
https://www.eia.gov/coal/annual/

U.S. Energy Information Administration (EIA). Coal Data Browser - Production by State
https://www.eia.gov/coal/data/browser/

U.S. Energy Information Administration (EIA). Electric Power Monthly
https://www.eia.gov/electricity/monthly/

U.S. Energy Information Administration (EIA). Today in Energy: U.S. Coal Production and Consumption Trends
https://www.eia.gov/todayinenergy/

U.S. Department of the Interior - Bureau of Land Management (BLM). Federal Coal Leasing Program
https://www.blm.gov/programs/energy-and-minerals/coal

U.S. Department of the Interior - Bureau of Land Management. Powder River Basin Coal Leasing and Development
https://www.blm.gov/programs/energy-and-minerals/coal/powder-river-basin

U.S. Geological Survey (USGS). Powder River Basin Coal Province
https://www.usgs.gov/energy-and-minerals/energy-resources-program/science/powder-river-basin

U.S. Geological Survey (USGS). Mineral Commodity Summaries 2025 - Rare Earth Elements
https://www.usgs.gov/centers/nmic/mineral-commodity-summaries

U.S. Geological Survey (USGS). Rare Earth Elements in Coal and Coal Fly Ash
https://www.usgs.gov/publications

U.S. Department of Energy. Coal-Derived Carbon Products and Advanced Materials Research
https://www.energy.gov/fecm/coal-carbon-products

U.S. Department of the Treasury / Internal Revenue Service (IRS). Section 45Q - Carbon Oxide Sequestration Credit
https://www.irs.gov/credits-deductions/businesses/section-45q-credit-for-carbon-oxide-sequestration

Reliability and Grid Institutions

North American Electric Reliability Corporation (NERC). Long-Term Reliability Assessment
https://www.nerc.com/pa/RAPA/Pages/default.aspx

North American Electric Reliability Corporation (NERC). Reliability Risk Priorities Report
https://www.nerc.com/pa/RAPA/rrp/Pages/default.aspx

Western Electricity Coordinating Council (WECC). Western Interconnection Reliability Assessments
https://www.wecc.org/reliability

Western Electricity Coordinating Council (WECC). Western Electricity System Planning and Transmission Studies
https://www.wecc.org/Planning

Federal Energy and Environmental Policy

The White House. Fact Sheet: Strengthening United States National Defense with America's Clean Coal Power Generation Fleet. February 11, 2026
https://www.whitehouse.gov

U.S. Environmental Protection Agency (EPA). Mercury and Air Toxics Standards (MATS)
https://www.epa.gov/mats

U.S. Environmental Protection Agency (EPA). Regulatory Update: Mercury and Air Toxics Standards. February 20, 2026
https://www.epa.gov/mats

U.S. Environmental Protection Agency (EPA). Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired Power Plants
https://www.epa.gov/stationary-sources-air-pollution

Energy Infrastructure and Power Sector Data

Federal Energy Regulatory Commission (FERC). Energy Infrastructure Updates and Generation Statistics
https://www.ferc.gov/industries-data/electric/power-sales-and-markets

U.S. Energy Information Administration (EIA). Electric Generator Inventory (EIA-860)
https://www.eia.gov/electricity/data/eia860/

U.S. Energy Information Administration (EIA). Electric Power Plant Operations (EIA-923)
https://www.eia.gov/electricity/data/eia923/

Energy Information Administration (EIA). State Electricity Profiles - Western States
https://www.eia.gov/electricity/state/

Critical Minerals and Energy Innovation

U.S. Department of Energy - National Energy Technology Laboratory (NETL). Critical Minerals Recovery from Coal and Coal Byproducts
https://netl.doe.gov/coal/crosscutting-research/rare-earth-elements

National Energy Technology Laboratory (NETL). Carbon Storage Atlas and Carbon Management Research
https://netl.doe.gov/coal/carbon-storage

National Energy Technology Laboratory (NETL). Advanced Coal-Based Carbon Products Initiative
https://netl.doe.gov/coal/carbon-products

Industrial Energy Demand and Electricity Growth

International Energy Agency (IEA). Electricity 2025: Analysis and Forecast to 2027
https://www.iea.org/reports/electricity-2025

International Energy Agency (IEA). Coal 2025: Analysis and Forecast to 2030
https://www.iea.org/reports/coal-2025

International Energy Agency (IEA). World Energy Outlook 2023
https://www.iea.org/reports/world-energy-outlook-2023

IMAGES

U.S. Geological Survey (USGS). Powder River Basin Coal Province Map
https://www.usgs.gov/media/images/province-5033-powder-river-basin