

United States Energy Association

## Coal in the Midwestern United States: Baseload Strength, Industrial Integration, and Reliability

### OVERVIEW

Coal has been foundational to the economic and industrial development of the Midwestern United States. Stretching from the Illinois Basin through Indiana, Ohio, Kentucky, Missouri, and into portions of Michigan and western Pennsylvania, the Midwest has historically been both a major coal-producing and coal-consuming region. The region's energy system developed around abundant domestic bituminous coal resources and large-scale coal-fired generation that powered steel production, automotive manufacturing, chemicals, agriculture, and heavy industry, forming the backbone of America's industry and export capacity.

The Midwest retains one of the largest concentrations of coal-fired generating capacity in the country. As of 2025-2026, generators on the Midcontinent Independent System Operator (MISO) continue to operate roughly 40-50 gigawatts (GW) of coal capacity, representing one of the most significant regional coal fleets in the United States (EIA Form 860; MISO Planning Resource Auction data). Portions of western PJM, including Ohio and western Pennsylvania, also contribute to the Midwest's coal generation. In February 2026, federal policy signals emphasizing energy security and domestic fuel production reinforced coal's role in grid reliability. In a region facing tightening reserve margins and rising demand from advanced manufacturing and data infrastructure, coal continues to serve as a fuel-secure source of high-capacity generation. This article examines the evolving role of coal in the Midwestern United States, focusing on its contribution to grid reliability, industrial integration, fuel security, regulatory constraints, and emerging pathways for modernization.

### HISTORICAL CONTEXT: COAL AND THE INDUSTRIAL MIDWEST

Coal's development in the Midwestern United States is closely tied to the rise of the nation's industrial heartland. Anchored in the Illinois Basin (spanning Illinois, Indiana, and western Kentucky) the region's abundant bituminous coal resources supported steel production, automotive manufacturing, agricultural processing, and the rail and river networks along the Ohio and Mississippi Rivers. Large centralized coal plants were later constructed to provide high-capacity, fuel-secure electricity for expanding postwar populations and industrial growth.

Although shale gas expansion after 2005 introduced sustained competitive pressure, coal retirements in the Midwest have been comparatively measured, reflecting the region's heavy industrial load, legacy infrastructure, and continued reliance on firm generation. More recently, tightening reserve margins and federal energy security directives issued in February 2026 have reinforced coal's role in reliability planning and industrial policy discussions.

The chart below outlines the major phases in coal's historical development and strategic transition across the Midwestern energy system.

Phase	Period	Defining Characteristics	Policy / Market Drivers	Strategic Significance
<b>Early Commercial Development</b>	Early 1800s-1860	Initial bituminous coal extraction in the Illinois Basin (Illinois, Indiana, western Kentucky); river and rail transport enable regional distribution	Expansion of railroads and river transport (Ohio & Mississippi Rivers); early industrial and agricultural demand	Establishes coal as foundational fuel for regional industry and transportation
<b>Industrial Expansion &amp; National Growth</b>	1870s-1920s	Rapid expansion of Illinois Basin production; coal fuels steel, railroads, agricultural processing, and heavy manufacturing in Ohio, Indiana, Michigan	Industrialization; urban population growth; rise of Midwest manufacturing hubs (steel, automotive)	Midwest becomes central to U.S. industrial output supported by domestic coal supply
<b>Electrification &amp; Wartime Production</b>	1930s-1945	Large-scale expansion of coal-fired generation; coal powers electrification and wartime industrial output	New Deal Rural Electrification; World War II industrial mobilization	Coal underpins national defense manufacturing and regional grid expansion
<b>Postwar Baseload Expansion</b>	1946-1970s	Construction of large, centralized coal plants serving vertically integrated utilities; rising air-conditioning load	Postwar economic expansion; regulated utility model; industrial growth	Coal becomes dominant baseload fuel across Midwest power systems
<b>Environmental Regulation &amp; Technology Adaptation</b>	1970s-1990s	Clean Air Act compliance; installation of scrubbers; shift toward low-sulfur coal blending; mechanization and productivity gains	Federal environmental regulation; emissions standards; productivity improvements	Coal fleet modernizes and maintains competitiveness within regulated utility structures
<b>Shale Gas Competition &amp; Market Evolution</b>	2000-2015	Natural gas expansion pressures coal generation; gradual capacity retirements; increasing renewable integration	Shale revolution; FERC-driven market reforms; growth of Midcontinent Independent System Operator and PJM Interconnection markets	Coal share declines but remains significant due to industrial load and demand
<b>Accelerated Transition &amp; Capacity Tightening</b>	2015-2023	Continued coal retirements; renewable expansion; early storage deployment; tightening reserve margins in parts of MISO	State clean energy policies; tax incentives for renewables; low natural gas prices; capacity market reforms	Coal generation footprint contracts but retains critical capacity value in high-load periods
<b>Reliability Focus &amp; Industrial Repositioning</b>	2024-February 2026	Emphasis on baseload generation; load growth from AI and advanced manufacturing; evaluation of carbon capture and critical minerals pathways	NERC Long-Term & Seasonal Reliability Assessments (2024-2025); DOE programs on CCUS and critical minerals; February 2026 White House energy security directives	Coal generation is recognized as a baseload fuel for reliability, industrial demand,

## CURRENT STATUS: PRODUCTION AND GENERATION

### COAL PRODUCTION

The Illinois Basin is one of the largest concentrations of bituminous coal resources in the United States. According to the U.S. Energy Information Administration (EIA) and the U.S. Geological Survey (USGS), Illinois and Indiana remain among the most significant coal-producing states east of the Mississippi River (EIA Annual Coal Report 2024; USGS Mineral Commodity Summaries 2025). According to EIA's 2024 Annual Coal Report, Illinois produced approximately 32 million short tons of coal in 2024, while Indiana produced roughly 26 million short tons, reinforcing the Illinois Basin's continued role as a significant Midwestern supply source. The basin's demonstrated reserves are proximate to major Midwestern load centers, reducing transport complexity and supporting regional fuel security.

### COAL GENERATION AND CAPACITY

Coal's share of total generation is a key in-state generation source in several Midwestern states, including:

- Indiana
  - Missouri
  - Kentucky
  - Illinois (downstate regions)
- (EIA State Electricity Profiles 2024; EIA Electric Power Monthly 2025)

## WHAT IS EFFECTIVE LOAD CARRYING CAPABILITY (ELCC)?

Effective Load Carrying Capability (ELCC) is a reliability metric used by grid operators to assess how much a power resource contributes to meeting electricity demand during peak system conditions. Unlike traditional capacity ratings, ELCC accounts for the variability and availability of resources under stress scenarios, such as extreme weather or high demand periods. As a result, resources like coal typically receive higher ELCC values than weather-dependent resources such as wind and solar.

MISO operates tens of gigawatts of coal capacity, making it one of the largest regional coal fleets in the country as coal continues to receive substantial capacity accreditation value within MISO's Planning Resource Auction framework. In a resource adequacy construct increasingly influenced by Effective Load Carrying Capability (ELCC) methodologies for wind and solar, coal units maintain capacity. As ELCC adjustments reduce accredited capacity values for variable resources during peak conditions, the contribution of coal generation remains central to meeting Planning Reserve Margin Requirements (PRMR).

### FUEL SECURITY ADVANTAGE

A defining feature of coal plants is on-site fuel storage. Many U.S. coal plants maintain 30-90 days of fuel inventory, insulating operations from short-term fuel supply disruptions. This contrasts with natural gas generation, which relies on just-in-time pipeline delivery and may face constraints during periods of elevated demand or infrastructure stress. Fuel security considerations have gained renewed policy attention in the context of grid resilience, national defense installations, and industrial reliability requirements. Resources with secure, on-site fuel supplies provide an added layer of system reliability by reducing exposure to fuel delivery risks and supply chain interruptions.

## 2026 POLICY SIGNALS

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 national security and reliability asset and directed federal procurement measures supporting coal-based electricity for critical facilities. In this policy context, coal's strategic value can be assessed alongside transmission expansion, storage deployment, and new firm capacity additions. In addition to the February 11, 2026 executive actions aimed at reinforcing coal's role in grid reliability, EPA announced on February 20, 2026 that it would revisit and ease recently tightened Mercury and Air Toxics Standards (MATS) requirements for coal-fired power plants. The agency framed the move as part of a broader effort to preserve generation and mitigate reliability and energy supply risks in regions facing tightening reserve margins. The decision signals a shift in the federal compliance landscape for coal operators, potentially affecting near-term operating costs, retrofit decisions, and retirement timelines. This action represents a material policy development in the 2025–2026 regulatory environment and warrants consideration in any forward-looking assessment of the Midwest coal fleet.

## AI, ADVANCED MANUFACTURING, AND LOAD GROWTH

The Midwest is entering a new phase of electricity demand growth driven by:

- Artificial intelligence computing infrastructure
- Hyperscale data centers
- Semiconductor fabrication
- Battery and electric vehicle manufacturing
- Electrification of industrial processes
- Domestic reshoring of heavy industry

MISO's long-term planning documents reflect rising load forecasts and increased interconnection activity tied to energy-intensive industrial facilities. The region's competitive electricity costs, established transmission backbone, skilled workforce, and proximity to domestic fuel supplies position it as a destination for advanced manufacturing expansion. Large-scale AI and manufacturing facilities require continuous, high-capacity power. In this context, existing coal capacity represents part of the region's available firm supply portfolio during a period of structural economic expansion. Retention, optimization, or selective modernization of coal units may provide planning flexibility while new generation and transmission projects progress through lengthy permitting and interconnection processes.

## PATHWAYS TO STABILIZE AND OPTIMIZE THE COAL INDUSTRY IN THE MIDWEST

Strategic pathways for coal emphasize optimization of generation plants, industrial integration, and modernization, including the following:

### CRITICAL MINERALS FROM COAL AND COAL ASH

Research supported by DOE and the National Energy Technology Laboratory (NETL) has examined the recovery of rare earth elements and other critical minerals from coal ash and refuse streams. The Midwest hosts significant legacy coal ash inventories and operating sites that may serve as candidates for pilot-scale mineral recovery.

Such initiatives align with federal efforts to strengthen domestic critical mineral supply chains and reduce dependence on foreign sources.

## 1. Modernization of Existing Coal Infrastructure

Key measures include:

- Flexible dispatch and improved ramping
- Digital performance optimization and predictive maintenance
- Heat-rate improvements and outage reduction
- Selective emissions-control upgrades
- Evaluation of carbon capture integration under Section 45Q incentives

## 2. Industrial Integration and Metallurgical Coal

The Midwest’s coal ecosystem intersects directly with heavy manufacturing. Metallurgical coal supports domestic steelmaking operations in Indiana and Ohio. River transport infrastructure along the Ohio and Mississippi Rivers enables efficient coal movement and export access. Existing coal plant sites may also be repositioned for:

- Carbon capture and utilization hubs
- Advanced materials production
- Hydrogen or ammonia integration projects
- Critical mineral recovery facilities from coal ash and refuse

## 3. Workforce and Regional Continuity

Midwest coal regions sustain skilled labor pools in:

- Mining operations
- Heavy equipment maintenance
- Power plant operations
- Mechanical and electrical systems

## CONCLUSION

Coal is a pillar of reliability in the power system of the Midwestern United States. As reserve margins tighten and demand grows from advanced manufacturing and AI-driven infrastructure, baseload capacity continues to provide essential system stability. Coal’s on-site fuel storage and reliability offer a level of energy security that remains difficult to replicate with variable resources alone. Federal policy direction in 2025-2026 has increasingly emphasized domestic energy production, grid reliability, and affordable power to support American industry. In this context, the Midwest’s coal fleet is evaluated not only by its share of generation, but by its role in ensuring resource adequacy, fuel security, industrial continuity, and national economic strength. As the region attracts continued investment in manufacturing and digital infrastructure, reliability-driven planning will remain central to sustaining economic expansion. Coal’s future role will be shaped by market dynamics, regulatory frameworks, technological advancement, and evolving federal priorities.

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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.

*Beata Bialy*  
*Non-Resident Fellow*  
*United States Energy Association*

*Beata Bialy is a Non-Resident Fellow with the United States Energy Association, where she produces research and publications on energy policy, and the strategic role of domestic energy resources in supporting U.S. economic competitiveness and energy security.*

## SOURCE LIST

### Federal Energy Policy & Executive Actions

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) - Regulatory Update (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 (Final Rule, April 2024)

<https://www.epa.gov/stationary-sources-air-pollution>

Federal Register

New Source Performance Standards for Fossil Fuel-Fired Electric Generating Units (Clean Air Act Section 111)

<https://www.federalregister.gov>

### Reliability & Resource Adequacy

North American Electric Reliability Corporation (NERC)

Long-Term Reliability Assessment (January 2026)

<https://www.nerc.com>

North American Electric Reliability Corporation (NERC)

Summer Reliability Assessment (2025)

<https://www.nerc.com>

Midcontinent Independent System Operator (MISO)

Planning Resource Auction (PRA) Results - 2025/2026 Planning Year

<https://www.misoenergy.org>

Midcontinent Independent System Operator (MISO)

Planning Reserve Margin Requirement (PRMR) & Resource Adequacy Documentation

<https://www.misoenergy.org>

Midcontinent Independent System Operator (MISO)

Effective Load Carrying Capability (ELCC) Methodology

<https://www.misoenergy.org>

PJM Interconnection

Base Residual Auction (BRA) Results - 2025/2026 Delivery Year

<https://www.pjm.com>

PJM Interconnection  
Reliability Pricing Model (RPM) Overview  
<https://www.pjm.com>

Federal Energy Regulatory Commission (FERC)  
Resource Adequacy & Capacity Market Oversight  
<https://www.ferc.gov>

### **Coal Production & Resource Base**

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

U.S. Energy Information Administration (EIA)  
Form 860 - Annual Electric Generator Report  
<https://www.eia.gov/electricity/data/eia860>

U.S. Energy Information Administration (EIA)  
Electric Power Monthly (2025 Editions)  
<https://www.eia.gov/electricity/monthly>

U.S. Energy Information Administration (EIA)  
Preliminary Monthly Electric Generator Inventory (2025)  
<https://www.eia.gov/electricity/generatorinventory>

U.S. Energy Information Administration (EIA)  
State Electricity Profiles (2024)  
<https://www.eia.gov/electricity/state>

U.S. Geological Survey (USGS)  
Mineral Commodity Summaries 2025 - Coal  
U.S. Department of the Interior  
<https://www.usgs.gov/centers/nmic/mineral-commodity-summaries>

U.S. Geological Survey (USGS)  
Illinois Basin Coal Resource Assessments  
<https://www.usgs.gov>

### **Carbon Capture & Section 45Q**

U.S. Department of Energy (DOE)  
Hydrocarbons and Geothermal Energy Office  
<https://www.energy.gov/hgeo/hydrocarbons-and-geothermal-energy-office>

National Energy Technology Laboratory (NETL)  
Carbon Capture Research & Demonstration Programs  
<https://netl.doe.gov>

U.S. Department of the Treasury  
Internal Revenue Code Section 45Q - Carbon Oxide Sequestration Credit  
<https://www.irs.gov>

### **Critical Minerals & Coal Byproducts**

U.S. Geological Survey (USGS)  
Mineral Commodity Summaries 2025 - Rare Earth Elements  
U.S. Department of the Interior  
<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/rare-earth-elements-coal-and-coal-fly-ash>

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

U.S. Department of Energy (DOE)  
Critical Minerals and Materials Initiatives  
<https://www.energy.gov>

### **Fuel Security & Grid Resilience**

U.S. Department of Energy (DOE)  
Grid Resilience and Innovation Partnerships (GRIP) Program  
<https://www.energy.gov>

North American Electric Reliability Corporation (NERC)  
Energy Security & Fuel Assurance Reports  
<https://www.nerc.com>

Federal Energy Regulatory Commission (FERC)  
Reliability and Resilience Proceedings  
<https://www.ferc.gov>

U.S. Energy Information Administration (EIA)  
Coal Production & Generation Charts  
<https://www.eia.gov>

Midcontinent Independent System Operator (MISO)  
Capacity & Resource Adequacy Graphics  
<https://www.misoenergy.org>

North American Electric Reliability Corporation (NERC)  
Reliability Assessment Visualizations  
<https://www.nerc.com>

U.S. Geological Survey (USGS)  
Illinois Basin & Coal Resource Maps  
<https://www.usgs.gov>