

United States Energy Association

Coal in the U.S. Southeast: Reliability Anchor and Emerging Platform for Carbon and Critical Mineral Innovation

OVERVIEW

Coal has played a foundational and transformative role in shaping the Southeastern United States' electric power system, industrial capacity, and long-term regional economic expansion. For decades, coal-fired generation underpinned the Southeast's rise as a manufacturing hub, supported population growth across fast-expanding metropolitan areas, and provided reliable electricity necessary for defense installations, chemical production, transportation infrastructure, and advanced manufacturing. Although coal's share of electricity generation has declined over the past decade due to sustained competition from low-cost natural gas, rapid renewable deployment, and regulation, it remains a strategically important component of the Southeast's diversified energy portfolio.

The Southeast retains a large and operationally significant coal fleet. Coal continues to provide firm capacity during periods of peak demand, extreme weather stress, and intermittent renewable energy production, enabling grid stability in a rapidly growing region with rising electricity needs. Beyond its power-sector role, coal and coal-derived materials remain embedded in the Southeast's industrial supply chains, particularly in construction, materials manufacturing, and emerging carbon-based product markets. This article examines coal's historical role in the Southeast, assesses its current operational footprint as of 2026, and evaluates pathways to stabilize, modernize, and diversify the coal economy.

HISTORICAL CONTEXT: COAL'S ROLE IN THE SOUTHEAST

Coal's role in the Southeastern United States is rooted in the region's mid-20th century electrification, industrial expansion, and federal infrastructure development. While coal mining in Appalachia began in the 19th century, large-scale integration of coal into the Southeast's power system accelerated after World War II, as electricity demand grew rapidly alongside population migration, air conditioning adoption, development of military installations, and growth in industrial manufacturing (U.S. Energy Information Administration, *Coal Explained*; U.S. Census Bureau historical population data).

POSTWAR EXPANSION AND FEDERAL ELECTRIFICATION

The establishment of the Tennessee Valley Authority (TVA) in 1933 marked a turning point in the region's energy system. Initially hydro-focused, TVA expanded into coal-fired generation beginning in the 1950s to meet rising demand. Between the mid 1950's and late 1970's, TVA brought multiple large coal units online, transforming the Tennessee Valley into one of the largest public power systems in the United States (TVA historical generation data; EIA *Electric Power Annual*). Across the broader Southeast, vertically integrated utilities, including Duke Energy, Southern Company, and Dominion Energy, constructed major coal fleets between the 1950s and 1980s. This buildout coincided with sustained regional electricity demand growth. From 1960 to 2000, electricity retail sales in the South more than quadrupled (U.S. Energy Information Administration).

COAL SUPPLY CHAINS: INTERSTATE AND NATIONAL INTEGRATION

The Southeast historically depended on interstate coal supply chains. Coal transported to Southeastern plants primarily originated from:

- Central Appalachia (West Virginia, eastern Kentucky, southwest Virginia)
- Northern Appalachia (Pennsylvania, Ohio)
- Powder River Basin (Wyoming, Montana)

By the early 2000s, the Powder River Basin had become the largest coal-producing region in the United States, supplying over 40% of total U.S. coal production (U.S. Energy Information Administration, *Annual Coal Report 2024*). Southeastern utilities diversified their coal sourcing during the 1990s and 2000s to include low-sulfur Western coal in response to Clean Air Act compliance requirements (EIA Coal Data Browser; EPA Clean Air Act implementation data). Rail infrastructure became essential to this model, linking Appalachian and Western coal basins to power plants across Georgia, Alabama, Tennessee, North Carolina, South Carolina, Virginia, and Florida (Surface Transportation Board coal freight data).

COAL DOMINANCE IN SOUTHEASTERN GENERATION

By the mid-2000s, coal had become the dominant fuel in much of the Southeastern electric power system. In 2005, coal accounted for approximately (U.S. Energy Information Administration, *Electric Power Annual 2005* state generation tables):

- 68% of electricity generation in Alabama
- 63% in Georgia
- 61% in North Carolina
- 57% in South Carolina
- 57% in Tennessee

Nationally, coal supplied about 50% of U.S. electricity generation in 2005 (EIA Electric Power Annual 2005). In several Southeastern states, coal's share of electricity generation exceeded the national average. This dominance was reinforced by the region's regulatory structure. Unlike deregulated wholesale markets in parts of the Midwest and Northeast, Southeastern states largely retained vertically integrated, regulated utility frameworks, under which utilities owned generation, transmission, and distribution assets within defined service territories subject to state regulatory oversight (Federal Energy Regulatory Commission; state public utility commission filings). While multiple factors influenced plant retirement decisions, the vertically integrated model, combined with long depreciation schedules and rate-based capital recovery mechanisms, contributed to a more gradual pace of coal retirements compared to competitive wholesale markets.

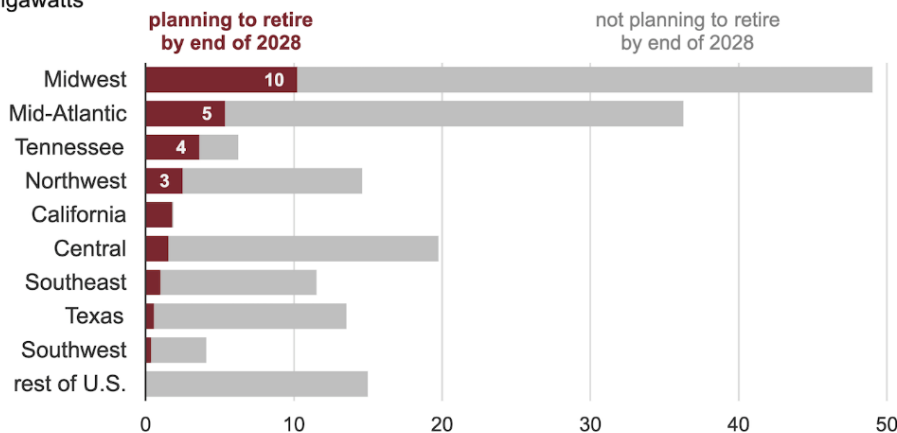
TRANSITION PERIOD: 2008-2026

Beginning in the late 2000s, structural shifts reshaped coal's role in both the nation and the Southeastern United States. The rapid expansion of shale gas production led to sustained declines in natural gas prices, significantly increasing gas-fired generation competitiveness (U.S. Energy Information Administration, *Natural Gas Annual*). At the same time, renewable generation capacity expanded, with substantial utility-scale investment in solar in North Carolina and Georgia (EIA, *Electric Power Monthly*). Aging coal units also faced rising environmental compliance and maintenance costs, accelerating retirement decisions across the Southeast region. Nationally, these trends resulted in a sustained contraction of coal-fired generation capacity. Between 2010 and 2024, total U.S. coal-fired generating capacity declined by more than 40% (EIA, *Preliminary Monthly Electric Generator Inventory 2025*).

Coal's share of total U.S. electricity generation fell from approximately 45% in 2010 to about 15% in 2024 (EIA, Electric Power Monthly 2025 data). Despite this national decline, the Southeast retained a comparatively larger portion of its coal fleet as a result of operating in a regulated market and long-term resource planning frameworks. From 2020 through early 2026, coal in the Southeastern United States entered a phase best characterized as measured consolidation rather than abrupt decline. In 2020, the Tennessee Valley Authority (TVA) retired the final coal unit at Paradise Fossil Plant. TVA subsequently retired Bull Run Fossil Plant in December 2023, continuing the trend of selective retirement of aging assets (TVA public filings, 2020-2023). These actions aligned with broader national patterns but occurred within a structured, utility-led transition process.

During 2021-2022, fuel price volatility and heightened attention to grid reliability reinforced the value of firm generation. The North American Electric Reliability Corporation (NERC) emphasized the value of fuel assurance and resource adequacy in multiple Seasonal and Long-Term Reliability Assessments, underscoring the importance of maintaining firm capacity during extreme weather events. In this environment, remaining coal units in the Southeast continued to contribute to reliability margins, even as overall utilization declined.

U.S. operating coal capacity by region (May 2025)
gigawatts



Data source: U.S. Energy Information Administration, *Preliminary Monthly Electric Generator Inventory*, May 2025
Note: Regions are based on *Hourly Electric Grid Monitor* balancing authority groupings.

By 2025-2026, Southeastern utilities continued retiring selected units while retaining core coal facilities to support system reliability, particularly in states experiencing sustained population growth and rising electricity demand. According to EIA's May 2025 Preliminary Monthly Electric Generator Inventory, less than 1 GW of coal capacity in the Southeast is scheduled to retire by the end of 2028. Furthermore, 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 U.S. coal fleet.

COAL'S STRATEGIC VALUE IN THE SOUTHEAST

Coal continues to provide strategic value in the Southeastern United States, particularly in the areas of fuel security and industrial integration. One of coal's distinguishing characteristics is on-site large quantities storage near power plants. Unlike natural gas systems that rely on continuous pipeline delivery, coal-fired plants typically maintain weeks to months of fuel inventory. This stockpiling capability enhances resilience during pipeline constraints, extreme cold events, hurricanes, or other infrastructure disruptions. The North American Electric

Reliability Corporation (NERC) has repeatedly emphasized the importance of fuel assurance and winterization in recent Seasonal and Long-Term Reliability Assessments (NERC, 2024-2025). In February 2026, President Donald Trump announced that the Department of Energy would invest \$175m to upgrade six coal plants in North Carolina, Ohio, West Virginia, Kentucky and Virginia. Following this announcement, TVA, the largest public utility provider in the United States, voted to extend the lifespan of two coal plants (Cumberland Fossil Plant and Kingston Fossil Plant) beyond their previously scheduled retirement dates, citing rising electricity demand including growth from data centers.

Beyond electricity generation, coal is integrated into the Southeast's industrial economy. The region hosts significant cement manufacturing, steel mill production, chemical and petrochemical facilities, advanced manufacturing operations, and major defense-related industrial infrastructure (U.S. Census Bureau; U.S. Department of Defense industrial base reports).

Coal-fired power provides the stable, high-capacity electricity required for:

- Chemical and petrochemical production along the Gulf Coast
- Pulp and paper manufacturing
- Automotive and aerospace manufacturing
- Defense installations and shipbuilding

Coal combustion byproducts, including fly ash, bottom ash, and synthetic gypsum, are widely used in construction materials. According to the U.S. Environmental Protection Agency, beneficial use of coal combustion residuals in concrete and wallboard reduces the need for raw materials and improves performance characteristics in infrastructure applications (EPA, Coal Combustion Residuals Beneficial Use Program). The Federal Highway Administration further recognizes fly ash as a supplementary cementitious material that enhances durability and reduces Portland cement demand in highway construction (FHWA Sustainable Pavements Program).

Coal in the Southeast functions not only as a power-sector input but as a component of broader industrial supply chains, linking electricity reliability with construction materials, manufacturing inputs, and long-term infrastructure development.

AI-DRIVEN ELECTRICITY DEMAND GROWTH

Rapid expansion of artificial intelligence computing and hyperscale data centers is reshaping electricity demand patterns across the Southeast. Utilities in Tennessee, Georgia, North Carolina, and Virginia have reported upward revisions to load forecasts driven by data center development, advanced manufacturing, and digital infrastructure investment. These facilities require large volumes of continuous, high-reliability power, reinforcing the importance of firm generation resources within vertically integrated Southeastern utility systems.

While there are no documented cases in the region of data center operators purchasing and operating decommissioned coal generating units, interactions between data center development and coal infrastructure have taken other forms. In Alabama, for example, Google announced plans to develop a data center at the site of TVA's retired Widows Creek coal plant, leveraging existing transmission infrastructure rather than operating legacy coal generation. More broadly, industry research has explored repurposing retired coal plant sites and grid interconnections for data centers, storage, or new generation assets, though such concepts remain distinct from data center ownership or operation of coal units.

In this context, existing coal assets are increasingly evaluated not solely through historical generation trends, but through their potential contribution to maintaining system reliability amid accelerating demand growth.

NATIONAL SECURITY AND DEFENSE INFRASTRUCTURE CONSIDERATIONS

Recent federal actions have further elevated coal's role within the broader framework of national security and defense infrastructure resilience. On February 11, 2026, President Donald Trump signed an executive order directing the Department of Defense to purchase electricity generated by coal-fired power plants as part of a broader energy security and reliability initiative. The Southeastern United States hosts a significant concentration of U.S. military installations, naval shipyards, aerospace manufacturing hubs, and defense-related industrial facilities. The region includes major Army, Air Force, and Navy installations, as well as shipbuilding and advanced manufacturing centers that support national security logistics and procurement. In this context, coal's ability to provide on-site fuel security and firm capacity aligns with broader national security considerations, particularly during extreme weather events, cyber or infrastructure disruptions, or supply chain volatility affecting pipeline-dependent fuels.

PATHWAYS TO STABILIZE AND OPTIMIZE COAL ASSETS

MODERNIZATION OF EXISTING COAL INFRASTRUCTURE

Southeastern utilities are prioritizing optimizing remaining coal assets rather than pursuing new construction. Strategies include enhanced operational flexibility and digital performance monitoring and predictive maintenance to improve reliability and cost efficiency. In limited cases, utilities have evaluated biomass co-firing or blending, though such approaches remain supplemental rather than systemic. The overarching strategy is asset maximization within a diversified and reliability-focused portfolio.

WORKFORCE CONTINUITY

Coal plant and mining workers in the Southeastern United States possess skill sets highly transferable to other industrial sectors, including industrial operations, bulk materials handling, heavy equipment operation, advanced manufacturing, and power plant maintenance. As portions of the coal fleet retire or operate at a reduced rate, utilities and regional economic development entities have emphasized workforce redeployment and retraining strategies. These efforts align with broader federal priorities focused on domestic manufacturing expansion, grid infrastructure development, and supply chain security. Based on EIA and MSHA data for 2024, direct coal mining employment in the traditional Southeastern states (Alabama, Kentucky, Virginia, Mississippi, and West Virginia) totals roughly 23,800 workers, with additional coal power plant operation jobs bringing the total coal-specific workforce in the region to approximately 27,000-30,000 jobs in 2024. The continuity of industrial labor expertise remains a strategic asset for energy reliability and industrial competitiveness in the region.

BEYOND POWER GENERATION: EXPANDING COAL'S INDUSTRIAL VALUE

CRITICAL MINERALS AND RARE EARTH ELEMENTS

Research supported by the National Energy Technology Laboratory (NETL) under the U.S. Department of Energy has identified measurable concentrations of rare earth elements (REEs) in coal ash, coal refuse, and acid mine drainage materials within Appalachian and Southeastern coal basins. The U.S. Geological Survey Mineral Commodity Summaries (2025) continue to highlight U.S. rare earth supply chain vulnerability and recognize secondary and unconventional domestic sources, including coal-related materials, as areas of active research. DOE-supported pilot projects in the Appalachian region are advancing extraction and separation technologies toward demonstration-scale applications in anticipation of commercial deployment.

CONSTRUCTION AND INFRASTRUCTURE MATERIALS

According to the U.S. Environmental Protection Agency (EPA) and Federal Highway Administration (FHWA):

- Fly ash improves concrete durability
- Reduces Portland cement demand
- Performs well in high humidity climates

Southeastern states (including Georgia, Florida, Alabama, and North Carolina) routinely use fly ash in highways, bridges, and port infrastructure. Given continued population growth across the Southeast, demand for construction materials remains robust.

ADVANCED CARBON MATERIALS

Under the Department of Energy's 2025 reorganization, research on coal-derived advanced materials is supported through the Office of Critical Minerals and Energy Innovation, working in coordination with the Hydrocarbons and Geothermal Energy Office and NETL. These programs focus on developing higher-value carbon products from coal and coal byproducts, including:

- Activated carbon for water and air filtration
- Carbon fibers and structural composites
- Battery-grade carbon materials
- Graphitic and specialty carbon products for industrial applications

The Southeast's advanced manufacturing base (automotive, aerospace, defense) provides potential downstream markets for coal-derived carbon materials.

STRATEGIC GROWTH CONSIDERATIONS

Looking forward, coal's role in the Southeastern United States will depend less on restoring large-scale coal generation expansion and more on strategically aligning existing assets with emerging industrial, supply-chain, and resilience priorities. Several policy and market enablers are central to this transition:

(1) Sustained federal support for research, pilot, and demonstration-scale deployment remains critical. As stated previously, under the Department of Energy's 2025 reorganization, fossil energy research and development functions have been consolidated within the newly established Hydrocarbons and Geothermal Energy Office, while critical minerals and materials initiatives have been centralized under a dedicated DOE office focused on Critical Mineral and Energy Innovation. These reorganized offices continue to support programs focused on recovery of rare earth elements (REEs) and other critical minerals from coal and coal byproducts, as well as advanced carbon materials development (U.S. Department of Energy; National Energy Technology Laboratory). NETL remains the primary implementation arm for these initiatives, advancing pilot-scale projects for rare earth extraction from coal ash and acid mine drainage materials. The U.S. Geological Survey's Mineral Commodity Summaries 2025 continues to highlight U.S. vulnerability in critical mineral supply chains, underscoring the strategic relevance of developing domestic secondary sources such as coal byproducts (USGS, 2025). Demonstration funding plays a pivotal role in transitioning recovery technologies from laboratory validation to production in support of domestic supply-chain security.

(2) Public-private partnerships can accelerate commercialization. The Southeast's concentration of regulated utilities, research universities, national laboratories, advanced manufacturers, and construction industries creates a favorable ecosystem for integrated development. DOE-supported partnerships linking utilities,

materials science research institutions, and downstream manufacturers can connect coal-derived materials directly to end-use markets in infrastructure, filtration, batteries, and advanced composites. This collaborative model reduces commercial risk while aligning coal-related innovation with broader domestic manufacturing and strategic materials priorities.

- (3) Regulatory clarity surrounding the beneficial reuse of coal combustion residuals (CCRs) remains essential. The U.S. Environmental Protection Agency’s Coal Combustion Residuals Rule continues to provide the federal framework governing disposal and beneficial use, encouraging responsible reuse in construction and manufacturing. Predictable permitting pathways and consistent state-level implementation reduce uncertainty for infrastructure developers and private investors. The Federal Highway Administration continues to recognize fly ash as an approved supplementary cementitious material, reinforcing long-term demand in transportation and infrastructure projects.
- (4) Workforce alignment and industrial upskilling will shape regional resilience. Coal-sector workers possess transferable expertise in heavy equipment operations, materials handling, industrial process control, and mechanical systems. Federal and state workforce programs that prioritize advanced manufacturing, materials processing, and critical mineral recovery can facilitate continuity of skilled labor in coal-dependent communities while supporting broader domestic industrial competitiveness.
- (5) Data centers and AI facilities require continuous, high-capacity, and highly reliable power, and are increasingly viewed as foundational to economic strength, technological leadership, and defense capability. In this context, firm generation resources take on geopolitical significance. China continues to expand both its coal-fired generation capacity and its domestic digital infrastructure footprint, integrating energy security with industrial policy and long-term strategic planning. As the United States increases domestic computing and advanced manufacturing, maintaining sufficient generation resources (including existing coal assets) supports grid stability during periods of rapid load growth, extreme weather, or fuel supply constraints. For capacity Southeastern utilities, decisions regarding coal fleet optimization are increasingly evaluated not solely through historical generation shares, but through their contribution to national energy security, supply chain resilience, and sustained industrial competitiveness in an era of strategic competition.

CONCLUSION

Coal in the Southeastern United States continues to play a strategic role in a region marked by population growth, rising electricity demand, and expanding manufacturing. Under the current federal policy framework, including a February 2026 Executive Order directing the U.S. Department of Defense to prioritize long-term coal power purchases for military and mission-critical facilities, coal’s contribution to energy security has been elevated as a matter of national defense and infrastructure resilience. Sustaining existing coal infrastructure in the Southeastern United States supports not only reliability and workforce continuity but also emerging federal priorities on domestic materials, critical supply chains, and energy dominance.

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.

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

United States Government and National Institutions

Coal Production, Generation & Capacity Data

U.S. Energy Information Administration (EIA)

Annual Coal Report 2024

U.S. Department of Energy

<https://www.eia.gov/coal/annual/>

U.S. Energy Information Administration (EIA)

Electric Power Monthly (2025 data / latest available)

U.S. Department of Energy

<https://www.eia.gov/electricity/monthly/>

U.S. Energy Information Administration (EIA)

Preliminary Monthly Electric Generator Inventory 2025

U.S. Department of Energy

<https://www.eia.gov/electricity/data/eia860m/>

U.S. Energy Information Administration (EIA)

Electric Power Annual 2005 (State Coal Generation Shares)

U.S. Department of Energy

https://www.eia.gov/electricity/annual_archive/

U.S. Energy Information Administration (EIA)

Coal Data Browser - Production by Basin (Powder River Basin Share)

U.S. Department of Energy

<https://www.eia.gov/coal/data/browser/>

Coal Stockpiles & Fuel Security

U.S. Energy Information Administration (EIA)

Coal Stocks and Days of Burn Data

U.S. Department of Energy

<https://www.eia.gov/coal/stocks/>

North American Electric Reliability Corporation (NERC)

Seasonal Reliability Assessments (2024–2025)

Fuel Assurance & Winterization Findings

<https://www.nerc.com/pa/RAPA/Pages/ReportsDL.aspx>

Natural Gas Competition & Market Shifts

U.S. Energy Information Administration (EIA)

Natural Gas Annual

U.S. Department of Energy

<https://www.eia.gov/naturalgas/annual/>

Grid Structure & Regulation
Federal Energy Regulatory Commission (FERC)
Electric Reliability and Market Oversight Reports
<https://www.ferc.gov/industries-data/electric>

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

NERC Reliability Region Map (SERC Region Coverage)
North American Electric Reliability Corporation
<https://www.nerc.com/AboutNERC/keyplayers/Pages/default.aspx>

Rail Transport & Coal Supply Chains
Surface Transportation Board (STB)
Rail Coal Freight Statistics
United States Government
<https://www.stb.gov/reports-data/rail-service-data/>

Defense Infrastructure & Military Installations
U.S. Department of Defense (DoD)
Base Structure Report (Most Recent Edition)
Office of the Under Secretary of Defense
<https://www.acq.osd.mil/eie/Downloads/BSR/>

U.S. Department of Defense (DoD)
Installation Energy & Resilience Reports
<https://www.defense.gov/Explore/Spotlight/Energy/>

Presidential and Federal Executive Actions (February 2026)
The White House
Executive Order: Strengthening United States National Defense with America's Clean Coal Power Generation Fleet
(Feb 11, 2026)
<https://www.whitehouse.gov/presidential-actions/>

The White House
Fact Sheet: President Strengthens U.S. National Defense with Coal-Fired Electricity Procurement
<https://www.whitehouse.gov/fact-sheets/>

U.S. Department of Energy (DOE)
Energy Department Announces \$175 Million to Modernize Coal Plants (Feb 11, 2026)
U.S. Department of Energy
<https://www.energy.gov/articles/energy-department-announces-175-million-modernize-coal-plants-keeping-affordable-reliable>

DOE Organizational Structure (Post-Reorganization)

U.S. Department of Energy (DOE)

DOE Organization Chart (Nov 20, 2025)

<https://www.energy.gov/sites/default/files/2025-11/Organization-Chart-11.20.2025-2.pdf>

U.S. Department of Energy (DOE)

Hydrocarbons and Geothermal Energy Office

<https://www.energy.gov/our-leadership-offices>

U.S. Department of Energy (DOE)

Office of Critical Minerals and Energy Innovation

<https://www.energy.gov/cmei/office-critical-minerals-and-energy-innovation>

Critical Minerals & Rare Earth Elements

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

U.S. Department of the Interior

<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>

Advanced Carbon Materials

National Energy Technology Laboratory (NETL)

Coal Utilization & Advanced Carbon Products Research

U.S. Department of Energy

<https://netl.doe.gov/research/coal>

U.S. Department of Energy (DOE)

Carbon Materials and Advanced Manufacturing Initiatives

<https://www.energy.gov/>

Environmental & Construction Material Use

U.S. Environmental Protection Agency (EPA)

Coal Combustion Residuals (CCR) Rule & Beneficial Use

<https://www.epa.gov/coalash>

Federal Highway Administration (FHWA)
Fly Ash and Supplementary Cementitious Materials
<https://www.fhwa.dot.gov/pavement/sustainability/>

Industrial Base & Manufacturing Context
U.S. Census Bureau
Annual Survey of Manufactures
<https://www.census.gov/programs-surveys/asm.html>

U.S. Department of Defense
Industrial Capabilities Reports
<https://www.businessdefense.gov/>

Electricity Demand Growth & Data Centers
U.S. Energy Information Administration (EIA)
Short-Term Energy Outlook (Electricity Demand & Data Center Impacts)
<https://www.eia.gov/outlooks/steo/>

North American Electric Reliability Corporation (NERC)
Long-Term Reliability Assessment - Load Growth Forecasts
<https://www.nerc.com/pa/RAPA/Pages/LTRA.aspx>

Duke Energy Integrated Resource Plan (Most Recent Filing)
State Public Utilities Commission Filings
<https://www.duke-energy.com/our-company/about-us/irp>

Georgia Power Integrated Resource Plan (Most Recent Filing)
Georgia Public Service Commission
<https://www.georgiapower.com/about/company/filings/irp.html>

Dominion Energy Integrated Resource Plan (Most Recent Filing)
Virginia State Corporation Commission
https://www.dominionenergy.com/-/media/content/about/our-company/irp/pdfs/2024-irp-w_o-appendices.pdf

Tennessee Valley Authority (TVA)
Integrated Resource Plan & Board Actions (Kingston/Cumberland Decisions)
<https://www.tva.com/energy/our-power-system/coal>

IMAGE SOURCES

Image 1: U.S. Operating Coal Capacity by Region (May 2025)
Source: U.S. Energy Information Administration (EIA), *Preliminary Monthly Electric Generator Inventory*, May 2025.
<https://www.eia.gov/electricity/data/eia860m/>