

Data-center energy needs, executive orders and highwall mining play a part in new opportunity for coal

by Randall Morris

After years of steadily declining employment and production, the U.S. coal industry is having a moment. In 2016, when Donald Trump was running for U.S. President, he cast a spotlight on coal mining in his campaign speeches, promising to end the “War on Coal.” Fast forward to 2025. On the first day of his second term, President Trump signed the National Energy Emergency Act, which

noted in a statement that the United States’ “abundance of energy and natural resources ... have historically powered our Nation’s economic prosperity” and vowed to remove regulations that have hindered developing these resources — regulations that resulted in job reductions and higher energy costs for U.S. consumers, while weakening national security.

“There has been an increase in electricity prices in the United States of over 30 percent in the past four years,” said Rich Nolan, president and chief executive officer of the National Mining Association (NMA). “This administration wants to focus on that, inflation and on increasing electricity availability to help lower the price over time by incentivizing energy policy. Coal is definitely a high priority for this administration.”

Part of the White House’s strategy is to facilitate investment in coal-fired plants. The shift comes at a time when the reliance of coal-powered energy plants has been waning. According to the U.S. Energy Information Administration, 7.5 GW of electrical capacity from coal-fired plants was retired in 2024,

following the retirement of 22.3 GW of electric generating power the two years prior.

Keeping up with energy demand from data centers

In contrast, utility provider Southern Co. filed with regulators to extend the life of three coal-powered plants, originally scheduled to be closed within the next 10 years, to meet increased energy demand, largely from data centers. Data centers currently account for 3 percent of the nation’s energy demand, but that is predicted to nearly triple to 8 percent by the end of the decade, according to a report published by investment firm Goldman Sachs in 2024. Data centers already consume more than 10 percent of electricity production in at least five states, according to the International Energy Agency (IEA).

This administration’s renewed focus on fossil fuels for energy, combined with the immediate and ongoing need for electricity for artificial

emphasizes domestic energy production as a matter of national security and focuses on incentivizing domestic energy resources. Then on April 8, President Trump issued an executive order opening federal land to coal mining to reinvigorate “America’s beautiful clean coal industry.”

As the nation seeks to identify reliable solutions to meet its ever-growing energy needs, the administration is going all in on proven, reliable and readily available natural resources, including coal. This means the coal industry is positioned to play a pivotal role in the administration’s stated energy policy, and highwall mining could be an integral factor in helping the industry optimize the extraction of

ore to make the most of this moment.

Meeting expanding energy needs

The White House

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Photo courtesy of Gainwell Engineering

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The National Mining Association is working to raise the profile of mining as an occupation.

intelligence (AI) centers, is providing a window of opportunity for domestic coal mining, and brings the United States more in line with increased global coal consumption for energy production. Led by China and India, coal consumption reached a record high of 8.77 Gt (9.6 billion st), in 2023, as reported by the IEA.

Optimizing output with highwall mining

With the anticipated increase in demand for energy production, it makes financial sense for mine operators to optimize extraction, and that is where highwall mining can help maximize resources. As a complementary process to surface mining or underground mining, highwall mining can be employed by operators to extend the extraction process to access reserves that would have otherwise been left behind when the amount of overburden would make extraction economically unfeasible. Even in those situations when it might be profitable to remove the overburden to mine a particular coal seam, highwall mining can make it more profitable as it eliminates the need to remove the top layer covering the coal seam. Operators can contour around the highwall or dig a pit and access the ore without removing all the overburden.

“What’s attractive about highwall mining is the low cost of production compared to surface and underground mining, allowing access to seams of high-quality metallurgical coal that were otherwise not available,” said Jason Sizemore, general manager for North American operations for Gainwell Engineering, a manufacturer of mining equipment.

Highwall mining accounts for an estimated 4 percent of domestic production. Much of the output is clean coal that requires no further processing — and thus no processing fees. It is often sold on the spot market, specifically for blending. Sizemore estimates that there are 40 to 55 highwall miners in operation at any given time in the United States, employed by both mine operators and contract miners.

By connecting multiple push beams, a continuous miner can extract coal up to 304 m (1,000 ft) perpendicular from the face of the highwall, at seam heights as much as 5.5 m (18 ft) high. Once the highwall miner reaches the maximum depth, the machine is repositioned around the highwall and the process is repeated until maximum coal volume is achieved.

The cost-efficient highwall mining process provides high-yield output. For example, in just one bench, a seam that is 2 m (6 ft) high, 3 m (10 ft) wide and 304 m (1,000 ft) deep would produce a yield of 1,700 m³ (60,000 cu ft) of coal, extracted by a small crew of just six to nine skilled workers. The process also offers an additional safety benefit. The operator is seated in a cab at the rear of the highwall miner, and the crew works safely away from the mine face. No one works underground.

Meeting the challenges of future workforce

The anticipated uptick in coal production, however, underscores an ongoing industry concern: will there be enough miners to meet the challenge? According to the Society for Mining, Metallurgy & Exploration (SME), over half of the mining industry’s current workforce will retire by 2029 and will need to be replaced.

The mining industry, of course, is not alone in difficulties with attracting and retaining workforce. It is a challenge faced by nearly every industry in the United States, noted Nolan. That is why, as an advocate for the industry, the NMA is working with the nation’s legislators to pass the Mining Schools Act. Currently moving through Congress, the purpose of the act is to build a highly educated and skilled workforce for the future by providing grants to the nation’s mining schools through the Department of Education.

The NMA is also working to raise the profile of mining as an occupation, and to bring attention to the well-paid, high-tech positions available as the industry continues to bring technological innovation to the process of mining. Promoting careers in mining is a crucial step that is overdue, said Sizemore, adding, “As a country, we have made it challenging to attract the mining workforce. We lost a significant number of skilled people in the last economic downturn, and many experienced career workers are retiring. Their knowledge and backgrounds are invaluable, and they’ll be difficult to replace.”

The Trump administration’s energy agenda is a reminder that coal mining has been an invaluable part of the energy-producing industry for generations. And it provides an exceptional opportunity as the coal mining industry positions itself for a productive and profitable future. ■