

U.S. Coal Outlook 2020: Market Trends Pushing Industry Ever Closer to a Reckoning

Competition, Financing, Consolidation, Muni/Co-op Preferences, Export Markets

Executive Summary

The rapid transition under way in the U.S. electricity generation sector was on blunt display in February when renewable generation (wind, utility-scale solar and hydropower) produced more electricity for the month than coal. This winter-month result was unprecedented but will likely occur with greater frequency in the months ahead.

The February numbers are of note because they highlight the rapid pace of change. Over the course of the month, coal-fired generation produced 54.7 million megawatt-hours of electricity—the lowest monthly total in at least 10 years. The previous low, set last April, was 60 million MWh. Coal generation in February had never fallen below 80 million MWh and was well above 100 million MWh as recently as 2015.

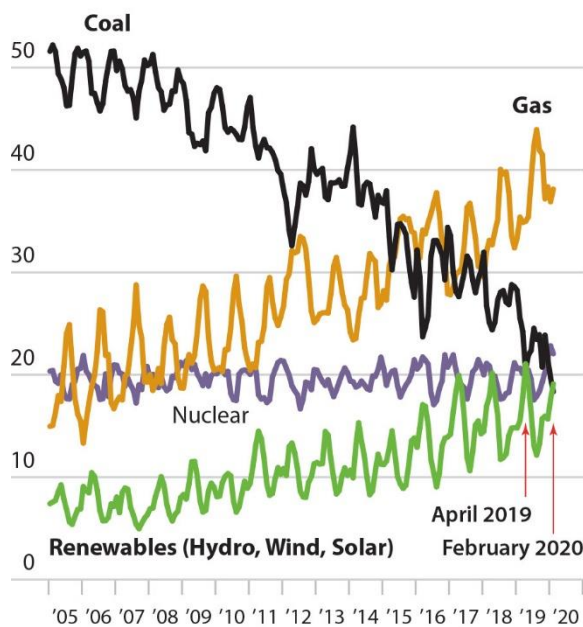
IEEFA projected last November that renewables would fully outpace coal-fired generation on an annual basis in 2021. That likelihood persists, and the transition in fact is gaining speed as utilities phase out coal-fired generation and turn to gas and renewables.

While coal is declining, both gas and renewables are ascending, indicative of a new normal in electricity generation. IEEFA projects now that coal's share of the generation market (23.5% in 2019) will fall soon below 20% of the national total, perhaps as early as this year. Looking somewhat farther into the future, IEEFA sees coal's share of the generation market potentially dropping to 10% or less by 2025.

Fuels Used for Electricity Generation

Share of net generation, monthly. Renewable generation includes utility-scale solar, wind and hydropower. In April 2019, for the first time, renewable generation surpassed coal—and it happened again in February.

60% share of net generation (utility-scale)



Source: Energy Information Administration

Political support for coal remains strong in several pockets of the country, and some policymakers are trying to slow its decline. Recent legislation in Wyoming and Indiana, for example, aims to prop up coal-fired power plants by making it more difficult for utilities to close them. Similarly, a new law in Ohio provides a ratepayer bailout to keep two uncompetitive coal plants online. Elsewhere, several companies and jurisdictions are pushing for financially unviable carbon-capture retrofits to keep dying coal plants alive.

None of these initiatives make economic sense, all are out of step with market forces, and none will have more than a stopgap effect.

The U.S. coal sector has been in decline for a long time—year upon year—and 2020 will be no different. Indeed, this may be the year in which an array of market forces in combination may simply overwhelm the industry.

Five problems persist:

- Long-term low gas prices and capacity expansion by both the solar and wind sectors will continue to take market share from coal;
- Current levels of production capacity are unsustainable;
- Coal-industry financing is increasingly difficult to secure, raising the price of insurance and making it harder to meet bonding requirements;
- Investor-owned utilities continue to move away from coal;
- Cooperative and municipal utilities are reconsidering their historical support for coal-fired generation; and
- Exports, particularly of steam coal, are likely to fall as other countries move toward cleaner generation.

While it can be difficult to appreciate the speed of the decline of the U.S. coal industry, the numbers speak for themselves. In 2014, coal supplied 38.6% of the nation's electricity needs. By 2019, that figure had dropped to 23.4%. By 2025, the number will approach if not collapse into single digits.

Coal's importance will continue to decline, in other words, as market erosion gains momentum across the industry through 2020 and beyond.

The coronavirus pandemic will clearly have a serious effect on the economy for the remainder of 2020, at a minimum dampening growth significantly and possibly pushing the world into recession. Meanwhile, the price war between Saudi Arabia and Russia has thrown the global oil industry into turmoil, creating as-yet unknown impacts on the coal sector. Nonetheless, the trends that have impaired the U.S. coal industry for years will persist.

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Intense Price Competition from Gas and Renewables Continues to Eat into Coal's Market Share

No single indicator highlights the problems facing coal-fired power generation in the U.S. more than low Henry Hub spot prices for gas: In 2019, that marker averaged \$2.56 per million British thermal units (mmBtu), and gas use for electricity generation climbed 8.3%. Through mid-March this year, the Henry Hub spot price average was below \$2 per mmBtu, and gas-fuelled electricity has grown to provide 37.5% of the nation's power-generation mix. This trend, coupled with an increase in renewable generation, has pushed coal's share of the generation market to less than 19% year to date.

Gas prices aren't likely to rise significantly anytime soon. The latest short-term energy outlook by the Energy Information Administration (EIA) has Henry Hub gas prices averaging \$2.11 per mmBtu this year—the lowest level in more than 20 years (when gas accounted for only about 10% of overall U.S. electricity generation).

These low gas prices are "especially problematic" for coal, "because very few coal plants are going to be directly competitive at \$2 [per MMBtu] natural gas," asserts Wood Mackenzie analyst Gregory Marmon.¹ That price level, Marmon says, is "another nail in the coffin going forward."²

**Very few coal plants are
going to be competitive
at \$2/ MMBtu
for natural gas.**

More than 270 gigawatts (GW) of combined cycle gas generation is installed now in the U.S.³ compared to roughly 230GW of coal-fired capacity. In 2019, U.S. combined cycle gas units operated at an average capacity factor of 56.8% compared to 47.5% for the coal fleet—this represents the first time coal's average has fallen below the 50% mark in decades. The discrepancy between gas and coal capacity factors is likely to widen this year as low gas prices persist.

By focusing on just the 50 largest coal-fired plants in the U.S., one can see how rapid the electricity-sector transition is occurring. In 2010, those 50 plants posted an average capacity factor of 73.7%; in 2019 the average was 48.1%. As telling: In 2010, 15 of the 50 posted an average capacity factor of more than 80% (and one was at 79.96%); in 2019, by contrast, only two of the 50 largest plants topped 80%. In 2010, only one of the 50 largest plants posted a capacity factor below 50%; in 2019, 27 performed below that level.

The continued build-out of no-fuel-cost solar and wind is also putting enormous pressure on coal generators. As of the end of 2019, 105.5GW of wind capacity and 71.3GW of solar generation (including utility-scale and smaller commercial and

¹ S&P Global Market Intelligence "Analysts project weak Q4'19 coal earnings; low gas prices expected to hurt coal," Feb. 3, 2020,

² Ibid.

³ EIA. *Electric Power Monthly, Table 6.1*. March 24, 2020.

residential rooftop installations) were in operation across the U.S.—and much more is on the horizon. The American Wind Energy Association estimates that 44GW⁴ of new turbine capacity is in the development pipeline, while the Solar Energy Industries Association says more than 45GW of new solar is under development.⁵

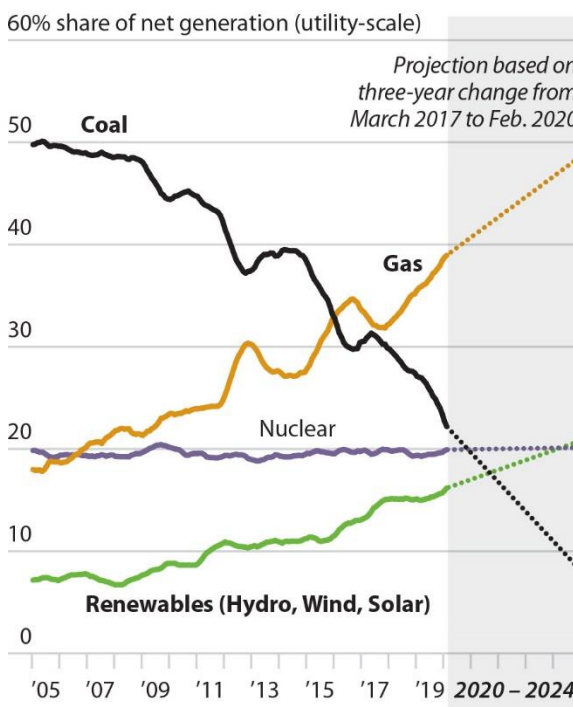
The combination of low gas prices and sharply rising wind and solar generation capacity is quickly reshaping the U.S. electricity market, as is abundantly clear in year-to-date generation data available from the EIA. IEEFA noted earlier this year that renewable generation (including wind, solar and hydro) had topped coal’s electric output for the month of February, a winter-month result that would have been unthinkable even two years ago. Through March 25, renewables are meeting more of the nation’s electricity needs than coal.

Coal-fired generation may temporarily overtake renewables during the days remaining in the current quarter, but trends in recent weeks are clearly a harbinger of things to come. The chart to the right shows IEEFA’s projection of how quickly this transition will evolve—and it will be quick indeed. Based on data from the past three years and projecting from it, IEEFA expects renewables to move ahead of coal-fired generation in 2021 and top nuclear by 2024. These projections do not include contributions from residential and other distributed solar resources. Coal’s share of the U.S. electricity market could very well drop to 10% or less by 2025.

Short-term economic uncertainty caused by the coronavirus pandemic and the recent collapse in oil prices may slow this transition slightly, but the trend is clear: Coal is being driven to the brink by continued low gas prices and steady additions of wind and solar.

Fuels Used for Electricity Generation, with Projection to 2024

Share of net generation, monthly, based on an average of each month with the previous 11 months. Trend lines through 2024 are based on a continuation of the three-year change from March 2017 through February 2020.



Sources: Energy Information Administration; IEEFA analysis

⁴ AWEA. *U.S. Wind Industry Quarterly Market Report*. January 2020.

⁵ SEIA. *U.S. Solar Market Insight*. March 17, 2020.

Industrywide Pressure to Consolidate

Last year was marked by a rash of coal company bankruptcies, a trend that has continued into the new year, with Foresight Energy the latest to seek protection with its Chapter 11 filing on March 10.

These filings have resulted largely in the mines and their associated equipment being bought by another company in hopes that the buyer will profit when the market tightens.

What has yet to develop is an industry strategy based on acceptance that existing production capacity exceeds demand, meaning that more and more tons of coal are chasing fewer and fewer buyers. For example, in its year-end 2019 financial presentation, CONSOL Energy cited figures from Doyle Trading Consultants showing that 13 million tons of thermal coal capacity had been taken off the market in 2019 and early 2020.⁶ This could be spun as potentially good news for CONSOL, but it isn't. The problem for coal producers is that U.S. utilities used 97.7 million fewer tons of coal for electricity generation last year than in 2018, starkly illustrating that there is still significant overcapacity.

Here, Foresight's bankruptcy filing is emblematic of the industry's unwillingness to confront the reality of a declining market.

"[M]arket conditions have created a sort of race to the bottom for the coal industry, with heavy competition among coal suppliers for a shrinking customer base, all within a challenging regulatory and legislative atmosphere," Robert Moore, Foresight's president and CEO, wrote in the company's court filing.⁷

Market conditions have created a sort of race to the bottom for the coal industry.

Moore went on to say that because the company had negotiated with its lenders before the filing, it expected its reorganization to be "swift and efficient," likely taking only about four months.⁸

After shedding much of its debt, in other words, the company will rejoin the "race to the bottom" with most of its mines presumably still operating.

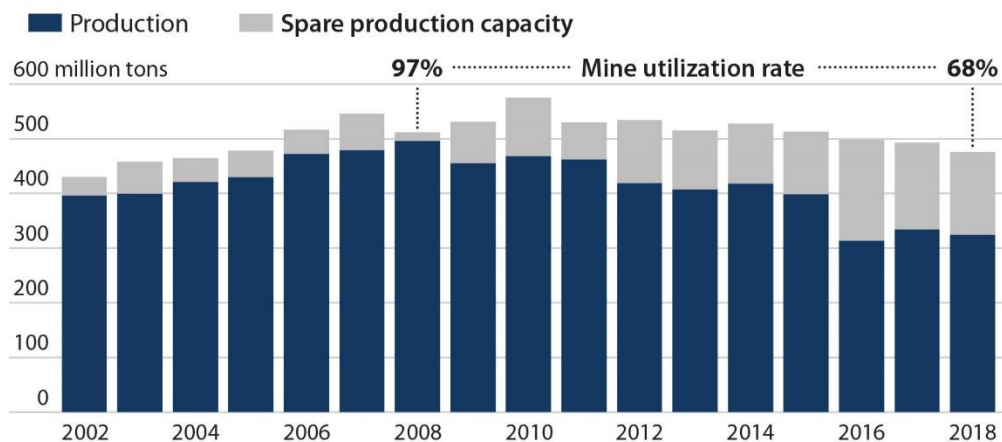
⁶ CONSOL Energy. [Investors Presentation](#). Feb. 24, 2020.

⁷ S&P Global Market Intelligence, [Foresight seeks court aid to restructure amid US coal's 'race to the bottom'](#), March 10, 2020.

⁸ Ibid.

Powder River Basin: Coal Production and Spare Production Capacity

Although coal production has fallen sharply in Wyoming and Montana's Powder River Basin, mines have not been closed and spare production capacity remains high. IEEFA considers this unsustainable, and it continues to undercut the financial viability of all coal mining companies in the region.



Source: Energy Information Administration

Excess capacity persists across the industry, but the situation in the Powder River Basin (PRB) is especially bad. The 16 PRB mines produced 496 million tons of coal in 2008, the year U.S. coal production overall peaked at 1.172 million tons. As of the end of 2018, those 16 mines still had the capacity to produce 476 million tons, while the amount mined in 2018 was just 324 million tons.⁹

Things got worse in 2019, with PRB production dropping to less than 300 million tons as markets shrank for the region's thermal coal. The same 16 mines are still up and running, producing too much coal for a declining market, effectively undercutting the entire sector's financial viability.

Current production capacity across the industry is unsustainable, and 2020 will very likely see the beginning of a long-overdue rethinking of production capacity in the U.S, as is undoubtedly necessary and as even some in the industry are now willing to say publicly.

In an Alliance Resource Partners 2019 earnings call in January, the president and CEO, Joseph Craft, said: "Additional supply rationalization is necessary to correct the continuing oversupply situation. [Alliance] anticipates that much of this market correction will occur this year, making 2020 an inflection point for domestic thermal coal producers."¹⁰

⁹ Today in Energy. [Sixteen mines in the Powder River Basin produce 43% of U.S. coal.](#) Aug. 26, 2019.

¹⁰ S&P Global Market Intelligence. [Alliance CEO says 2020 will be a year of US coal supply correction.](#) Jan. 27, 2020.

Coal Company Bankruptcy List	
2017	
Armstrong Energy Inc.	
Mississippi Minerals	
2018	
Mission Coal	
Westmoreland Coal	
2019	
Trinity Coal	
Piney Woods Resources Inc.	
Cloud Peak Energy	One of the top 10 miners in 2018
Cambrian Holding	
Blackjewel/Revelation Energy	One of the top 10 miners in 2018
Blackhawk Mining	
Murray Energy	Largest privately held coal company in U.S.
2020	
Foresight Energy	

More Barriers to Financing Are a Fast-Growing Threat

Costs associated with day-to-day business activities, including insurance, bonding, divestment and general financing needs—will grow across the coal industry this year and into the future. As it becomes increasingly expensive to operate, the price of the coal, especially thermal coal, will be capped by the competition from renewables and gas. Those two forces combined—competition and financing—will drive a decline in profitability and force some companies out of business.

IEEFA publishes an online database that tracks how the financial industry continues to back away from coal,¹¹ and current data shows that at least 115 institutions (each with at least \$10 billion in assets under management or outstanding loans) have announced policies restricting support for thermal coal mining and/or the development of new coal-fired generation projects. The early movers on this front were largely European-based companies, but U.S. companies are moving in the same direction. For example, in 2019, four leading U.S.-focused insurance companies (Chubb, Axis Capital, Liberty Mutual and The Hartford) announced restrictions on business ties with the coal sector.

¹¹ IEEFA. [Financial institutions are restricting coal funding](#). March 2020.

This activity is already having an impact. Andy Eidson, executive vice president and chief financial officer of Contura Energy, told analysts last November that it was becoming difficult for producers to find insurers willing to work with his company: "The general disposition of the insurance markets against the coal industry [is] making it tougher to find carriers."¹² Those comment presaged announcements by Liberty and Hartford in December.

In February, Eidson returned to this theme when Contura released its preliminary 2019 results. "When you look at the broader insurance markets, whether it's federal black lung, whether it's workers' compensation, even as simple as property and casualty insurance, the coal stigma is increasing the rate per thousand on any policy. It's really creating a lot of cost pressure across the board."¹³

These costs aren't likely to fall anytime soon. In a recent report on five European insurers, (Allianz SE, AXA SA, Swiss Re AG, Munich Re Co., and Zurich Insurance Group AG) Moody's Investors Service concluded that those companies' decisions to back away from coal were wise. "It reduces their exposure to potential climate-change liability risk and reduces the risk of their investment assets becoming stranded," wrote Brandan Holmes, a Moody's vice president.¹⁴

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Coal's financing problems aren't limited to insurance issues.

In a January report, Benjamin Nelson, vice president and senior credit officer at Moody's, warned that "access to capital is a growing concern for coal producers that will become more evident amid weaker industry conditions."¹⁵ Financing costs across the entire sector will increase, Nelson added, especially in the bond markets.

David Stetson, Contura's CEO, acknowledged this problem during the company's February earnings call, saying it was becoming increasingly difficult for coal companies to access capital markets, whether for financing to build new mines, to expand existing ones, or to buy new equipment.¹⁶

The rise in the importance of environmental, social and governance (ESG) issues, exemplified by Blackrock's announcement earlier this year that it would be divesting its actively managed funds from coal-related investments, will also raise

¹² Seeking Alpha. [Contura Energy earnings call](#). Nov. 14, 2019.

¹³ S&P Global Market Intelligence. [Contura Energy Guidance/Update Call Transcript](#). Feb. 12, 2020.

¹⁴ Moody's Investors Service. [Insurers' retreat from coal is positive, reducing stranded asset risk, limiting liability risk](#). Feb. 24, 2020.

¹⁵ Moody's Investors Service. [Coal outlook stays negative amid declining earnings, investors' intensifying ESG concerns](#). Jan. 22, 2020.

¹⁶ Op. cit., S&P Global Market Intelligence, Feb. 12, 2020.

costs for the coal sector. ESG issues will prompt more institutions to stop doing business with coal companies, almost certainly raising costs across the sector.

One of the best summations of the issue was from Nelson, the Moody's executive, who stated in February that ESG is "like an anaconda, slowly strangling its prey. You see that this is starting to squeeze the industry."¹⁷

This squeeze will very likely only grow tighter.

Co-ops, Munis Are Acknowledging Deteriorating Coal Plant Economics

The utility industry's long-term commitments to carbon reduction was one of the overriding themes of 2019. Duke Energy, Southern Company, NextEra Energy, Entergy, PSEG and DTE Energy, among others, announced plans for significant cuts in carbon dioxide emissions. The compliance dates for most of the plans, particularly those promising net zero emissions, are still far off, generally landing at 2050. But these intentions are important, nonetheless, for changing the discussion around coal plant closures to one of *when* rather than *if*.

A similar development is taking shape among municipal and cooperative utilities, a traditional stronghold for coal-fired generation. Here, Tri-State Generation and Transmission Association is a prime example. The Colorado-based cooperative, which provides power to 43 distribution co-ops in four states (Colorado, Nebraska, New Mexico and Wyoming), fought with members for years over the high costs of its coal-fired generation and sought to prevent members from turning to cheaper resources. One member, Kit Carson Electric Cooperative, bought its way out of Tri-State and turned to another provider. Other members, including Delta Montrose Electric Association, La Plata Electric Association and United Power, also had pushed for change.

These carbon reduction decisions are changing the plant closure discussions from *if* to *when*.

In response, Tri-State in early January did an about-face, announcing plans to exit coal-fired generation entirely by 2030, beginning with the closure of the 257MW Escalante Station in New Mexico by the end of this year. In addition, the co-op pulled its support for plans to expand the Holcomb coal plant in Kansas, a long-

¹⁷ S&P Global Market Intelligence. [Energy Evolution podcast: Climate concerns are driving the financial world away from fossil fuels](#). Feb. 20, 2020.

contemplated 895MW project with Sunflower Electric Power Cooperation, leading to its cancellation. Tri-State said it would bring 1GW of new wind and solar onto its system by 2024 and allow its distribution members greater freedom to pursue the development of local renewable generation.

Hoosier Energy, a generation and transmission co-op based in coal-friendly Indiana announced in late January that it would close its 1,070MW Merom Generating Station, which is near Terre Haute and accounts for more than 50% of the co-op's installed generating capacity, by 2023 and "transition to a more diverse generation mix that includes a combination of low-cost wind, solar, natural gas and storage."¹⁸ The shift, Hoosier said, will save its 18 distribution co-op members an estimated \$700 million over 20 years while cutting the company's carbon footprint by nearly 80%.

Dairyland Power Cooperative made a similar announcement days later. The Wisconsin-based generation and transmission co-op, which provides power to 24 members and 17 municipal utilities, said it was closing the 307MW Genoa Station #3 plant by the end of 2021 as part of its move toward cleaner generation resources. As part of its transition, Dairyland is buying the entire 149MW output of the just-approved Badger State Solar project and moving forward with plans to build a new combined cycle gas-fired plant with Minnesota Power.

Southern Minnesota Municipal Power Agency in early February announced plans to replace the roughly 300MW of coal-fired generation it will lose in 2030 when Xcel retires Unit 3 at the Sherco Generating Station with new solar. SMMPA, which owns 41% of the 876MW unit, said Xcel's decision provides the muni "a unique opportunity to re-imagine [itself]" and will enable it to be 80% carbon free by the end of the decade.¹⁹

Dairyland's decision to shutter the Genoa plant can be attributed largely to age, since the facility came online in 1969, but that is clearly not the case at either Escalante or Merom. The single-unit Escalante plant came online at the end of 1984 while the two units at Merom entered commercial service in 1982 and 1983. Both plants have performed well since 2010: the two units at Merom have posted an average capacity factor of 68.1% while the single unit at Escalante has averaged 63.5%. Overall, however the economics still haven't worked.

In its restructuring announcement Tri-State said: "The timeline to retire Escalante Station by the end of 2020 is driven by the economics of operating the power plant in a competitive power market, and by Tri-State's addition of low-cost renewable resources."²⁰

These announcements are just the beginning of what will become a wave of economically-driven decisions by co-ops and munis across the country to move

¹⁸ Hoosier Energy. [Press release](#). Jan. 21, 2020.

¹⁹ Minneapolis Star Tribune. [Southern Minnesota power generator commits to being 80% carbon-free by 2030](#). Feb. 5, 2020.

²⁰ Tri-State Generation and Transmission Association. [Tri-State announces retirement of all coal generation in Colorado and New Mexico](#). Jan. 9, 2020.

away from coal to cheaper resources, particularly wind, solar and storage. Which company will be next is hard to guess, but co-ops in the Plains states, where wind resources are particularly cost-effective, are prime candidates.

Great River Energy said in February that its two-unit Coal Creek Station in North Dakota was facing “economic challenges” due to low electricity prices in the Midcontinent Independent System Operator (MISO) market. Like many coal-generating stations, the economics of Coal Creek have been undercut both by low-cost gas supplies and a surge in new wind generation across MISO over the past 10 years. In 2010, coal plants in MISO—which manages the grid across 15 states and the Canadian province of Manitoba—accounted for 53% of the system’s installed capacity and 75% of its annual production.²¹ Gas accounted for 6% of the system’s yearly energy and wind 3.5%. Fast forward to the summer of 2019 and coal’s share of systemwide production fell below 40% while gas climbed to 30.6% and wind accounted for 5.4%.

During this period, Coal Creek’s performance was stellar, posting an average capacity factor of 86.3%, yet Jon Brekke, vice president and chief power-supply officer for Great River, said in February that “on an actual cost basis, we are losing money to the market [at Coal Creek].”²²

Brekke added that money that can’t be recovered from the markets—from business lost to competitors—must come from members through rate increases.

“The economics of the whole power business have changed so much that generating power by coal is just not the cheapest way to go, by a long shot,” said Doug Childs, CEO of the Utilities District of Western Indiana Rural Electric Co-Op. “Coal is just too expensive right now to be a viable generating source anymore.”

**Generating power by coal
is just not the cheapest way
to go, by a long shot.**

The odds are not going to get any better. Minnesota alone, where Great River is headquartered, has 33 utility-scale solar projects with a total planned capacity of 4,190MW and 16 wind projects with a proposed generation capacity of 3,143MW in the MISO generation queue.²³ The trend is abundantly clear. More and more renewable generation capacity will come online (in MISO and other markets), adding more financial stress to already troubled coal-fired generators, even among strong performers like Coal Creek.

The following chart shows the trend toward more closures of coal-fired plants, yet—striking as it is—it should be viewed strictly as a baseline model that doesn’t capture the full scope of what is happening to the industry. Coal Creek, for example,

²¹ Potomac Economics. [2010 State of the Market Report the MISO Electricity Markets](#). June 2011.

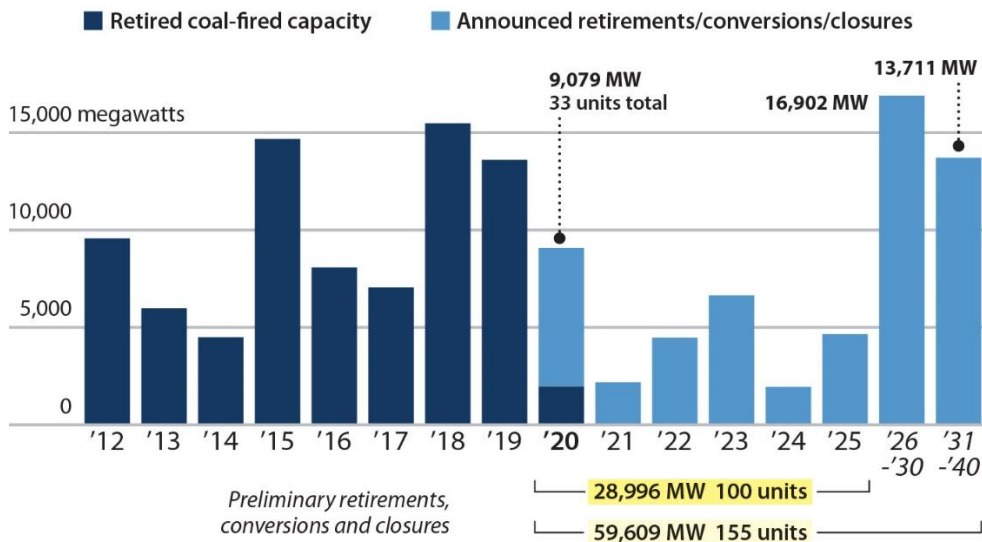
²² Minneapolis Star Tribune, [Even Great River's coal plant—next to a coal mine—is hurting financially](#), Feb. 29, 2020.

²³ MISO. [Active Projects Map](#). Accessed Feb. 24, 2020.

is not included in the figures because there still has been no official announcement of its closure.

Coal-Fired Electric Generation Retirements and Conversions

One hundred coal-fired units are set to be retired between 2020 and the end of 2025, with a total capacity of 29 gigawatts, according to utility announcements, with another 31 GW scheduled to close between 2026–2040.



Sources: EIA; PJM; S&P Global; IEEFA research (2017-2040)

As of March 18, 2020

The Myth of Export-Market Expansion

One of the persistent talking points across the U.S. coal industry is that exports offer a path to profitability and growth in the years ahead. There is money to be made through exports, particularly in metallurgical coal for steelmaking, but it is not a likely source of future growth. Rather, export markets, both for metallurgical and steam coal, are essentially constrained at current levels.

Steam Coal

Exports of steam, or thermal, coal (coal used to generate electricity) are particularly problematic for U.S. producers given the distance between U.S. ports and markets in Asia. From 2010-2018, U.S. producers sent an average of 39 million tons of steam coal overseas, ranging from a high of 55.8 million tons in 2012 to a low of 19.3 million tons in 2016. Just-released 2019 data from the EIA shows steam coal exports dropping 30% for the year, to 37.8 million tons, slightly below the long-term average.

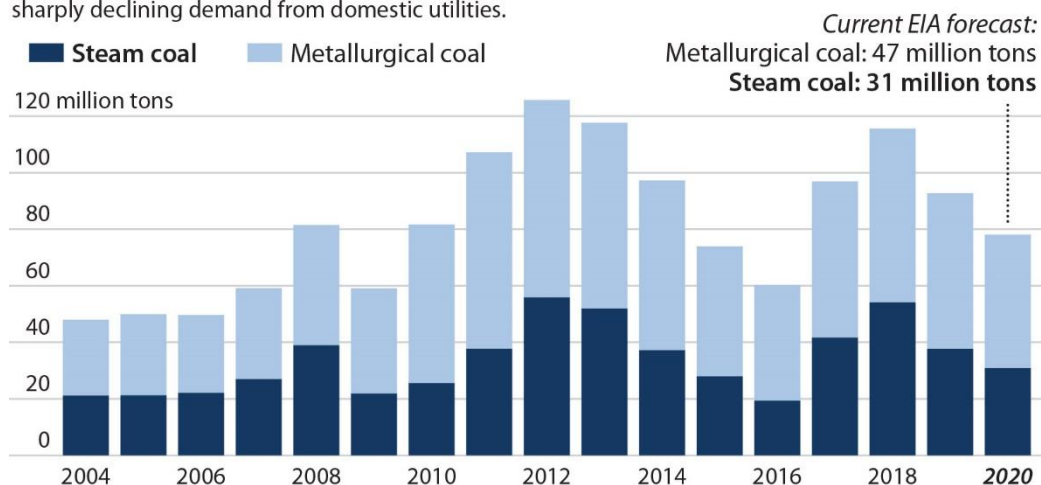
Still, the U.S. coal industry continues to talk up potential growth in steam coal exports to rapidly developing countries in Asia, particularly China and India but also South Korea, Vietnam, and others.

India's case is worth exploring because many U.S. coal industry executives have promoted it as the new China—a rapidly developing economy with a rising population that will need vast supplies of new fossil-driven electricity. In a February

investor presentation detailing its 2019 results, CONSOL Energy projected that roughly 45GW of new coal-fired capacity is in the development queue in India, on top of the 30-plus GW CONSOL says are under construction and due online by 2024.

U.S. Coal Exports

Levels of coal exports—both steam and metallurgical types—have been volatile, and appear set to decline again in 2020. Even in the best of years, however, volumes have never been enough to offset sharply declining demand from domestic utilities.



Source: Energy Information Administration, March 2020 Short-Term Energy Outlook

Any such expansion in India is unlikely; much of the capacity in the development phase will never begin construction, and even those units that are built will largely be replacing units due for retirement. A slowdown in Indian coal-fired generation expansion is already beginning to become apparent, with net coal-fired additions of just 3.5GW in the 2018-2019 fiscal year and an estimated 4.6GW in the current fiscal year ending in April.

Meanwhile, renewable generation additions are booming. Installed capacity in India by the end of the current fiscal year could hit 93.5GW—an increase of 17% in just a year. And the country has aggressive goals for more renewable growth, with a 2030 goal of having 450GW of installed green energy generation capacity

Installed renewable capacity in India could hit 93.5GW—an increase of 17% in just a year.

Clearly, U.S. exporters will be targeting a country trying hard to move away from coal.

There's also a question as to whether U.S. companies will have access to the Indian market at all. In February, Prahlad Joshi, India's coal and mines minister, was quoted as saying that the country planned to stop importing thermal coal entirely beginning

with the 2023-2024 fiscal year.²⁴ India imported 200 million metric tons of thermal coal in 2019, making a phase-out in just four years a challenge, but that the country is moving in that direction at all does not bode well for U.S. coal exporters.

In short—across Asia generally—distance, price and the existence of three established, and geographically closer competitors (Indonesia and South Africa, which combined to supply more than 80% of India’s imports in 2019, and Australia, the world’s second-largest thermal coal exporter after Indonesia) will, as with the met coal sector, continue to limit U.S. steam coal exports. In fact, as with met coal, it is likely U.S. steam coal exports will trend toward the bottom of the recent range.

Distance, price and competition will continue to limit U.S. steam coal exports to Asia.

Met Coal

The market for U.S. met coal averaged just over 58 million tons annually from 2010 through 2018, never dropping below 40 million tons or rising above 70 million tons. Just-released data from 2019 put U.S. met coal exports at 54.6 million tons.

Given the long-term trend and the recent downturn, expectations for substantial growth seem misplaced. Worse, U.S. met coal exports face significant potential downside as companies ramp up efforts to develop techniques to produce steel without met coal.

Two noteworthy projects already are under way to enable production of coal-free steel. The first of these projects, the HYBRIT initiative (Hydrogen Breakthrough Ironmaking Technology) is being pushed by three Swedish firms: the mining company LKAB, the steelmaker SSAB and the power producer Vattenfall. Launched in 2016, the project aims to replace “the coking coal (traditionally used in steel production to convert iron ore to iron) with hydrogen made from fossil-free electricity (primarily wind power) and water.”²⁵

The intent is to enable fossil-free steel production by 2035, but SSAB has said it intends to begin by 2026.

China’s Baowu Steel Company, the world’s largest steel producer, is developing the second initiative. Although fewer details on Baowu’s work are available, it signed a memorandum of understanding last year with mining company Rio Tinto and Tsinghua University to explore “a pathway to support the goal of reducing carbon emissions from the steel value chain.”²⁶ According to recent published reports, the

²⁴ ETenergyworld.com. [India to stop thermal coal imports from FY24: Prahlad Joshi](#). Feb. 18, 2020.

²⁵ Vattenfall. [HYBRIT; a collaboration between SSAB, LKAB and Vattenfall](#). Accessed March 2020.

²⁶ The Chemical Engineer. [Partnership to Reduce Steel Industry CO₂ Emissions](#). Oct. 25, 2019

company has established a new hydrogen research unit “to accelerate the transition away from... carbon-intensive coking coal”—with the goal of outpacing the work being done by SSAB and its HYBRIT partners.²⁷

These projects get at a core issue that has largely been ignored by U.S. coal companies in years past, but that will play an increasingly important role moving forward: The loss of social license for coal’s continued use in steelmaking, just as has been the case with coal’s lost social license for electricity generation. The steel industry accounts for an estimated 7%-9% of global carbon-dioxide emissions,²⁸ compared to the some 30% produced by electricity-generation coal use,²⁹ but a fact nonetheless that leaves the steel industry vulnerable to climate change campaigns. The HYBRIT and Baowu initiatives are in response to that pressure. Their progress does not bode well for U.S. met coal exporters.

**The loss of social license
for coal use in steelmaking
is similar to what
happened with coal
in electricity generation.**

²⁷ Australian Financial Review. [China’s Biggest Steelmaker Explores Hydrogen Substitute](#). March 5, 2020.

²⁸ Op. cit., The Chemical Engineer

²⁹ International Energy Agency. [Global Energy and CO2 Status Report](#). March 2019.

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