

Dim Future for Illinois Basin Coal

Market Forces and Shifting Preferences Are Eroding Customer Base Domestically and Abroad

Executive Summary

Twenty years from now, most of the Illinois Basin coal industry will be gone. Currently one of the major U.S. producing regions of thermal coal for domestic and foreign electricity generation, by 2040 it will have largely faded away as utilities shift to cleaner, cheaper generation resources.

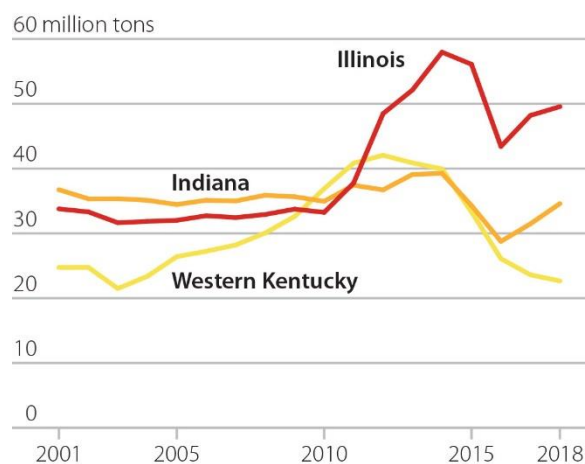
In 2018, the Illinois Basin produced 106.8 million tons of thermal coal, about 14 percent of the total mined nationwide. Most of that total was used domestically, the remainder was exported. The Basin, which straddles the Ohio River in parts of three states—southern Illinois, southwest Indiana and western Kentucky—does not produce any of the metallurgical coal used in steelmaking, meaning it cannot escape the rapid transition now under way in the electric generation sector, both domestically and abroad.

Domestic utilities, which bought nearly 80 percent of the region's coal in 2018, have already announced retirement dates for a significant number of plants over this period, as competitive electric markets compel a shift to newer, less expensive and cleaner wind, solar and gas generation, increasingly supported with energy storage. Notably, these retirements include the largest single purchaser of Illinois Basin coal, Duke's Gibson plant in Indiana, which will close in phases by 2038.

Gibson's closing will not be unique, however. From the beginning of 2019 through 2024, at least 15 U.S. plants that buy Illinois Basin coal—in Alabama, Florida, Georgia, Indiana, Kentucky, North Carolina and Tennessee—will be fully or partially retired. That number, which only reflects formal announcements by utilities, is likely to grow as the economics of coal-fired generation continue to deteriorate relative to renewables and gas.

Even those plants that remain online are likely to be used less and less, reflecting a trend that has seen capacity factors at most coal-fired power plants in the U.S. decline sharply over the past decade.

Illinois Basin Coal Production by State



Source: Energy Information Administration

Coal exports, seen just a decade ago as a potential growth market, face the same market threats, particularly in Europe which is moving aggressively away from thermal coal. In addition, there is growing competition from foreign coal suppliers such as Russia and Columbia for this shrinking market.

These threats are already having a major impact in the region. Just in the past year, producers have closed or idled mines that produced almost nine million tons of coal in 2018. Further closures are likely, both in the near- and long-term.

The Illinois Basin will clearly be hit hard economically by the structural decline of the region's coal industry. Now is the time for local, state and federal policymakers to be planning for the transition in order to minimize the impact of additional coal mine closures, job losses and mining company financial hardships.

Table of Contents

Executive Summary	1
Overview	4
The Company-by-Company View.....	8
Alliance, Murray-Foresight, Peabody, Hallador, Arch, White Stallion.....	8
State-by-State and Customer-Base Slippage	15
Retirement Dates Loom for More Coal Plants.....	15
Florida, Georgia, Illinois, Indiana, Kentucky	18
The Export-Market Problem	21
Market Forces Continue to Work Against Coal Overseas, Too	21
Conclusion	23
Structural and Permanent Decline; Opportunity in New Energy Models.....	23
About the Authors	25

Table of Figures

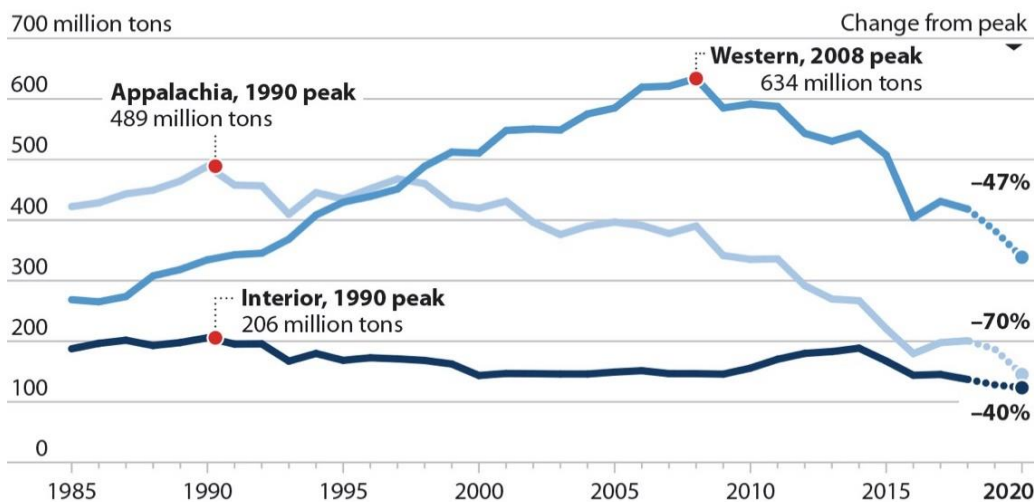
U.S. Regional Coal Production, 1985-2018, With Estimates to 2020	4
Illinois Basin Coal Production, 2018.....	7
Alliance Resource Partners.....	9
Murray Energy – Foresight Energy	10
Peabody Energy.....	11
Hallador Energy.....	12
Arch Coal	13
White Stallion	14
Plants Using Illinois Basin Coal, 2018	15
Power Plants Using Illinois Basin Coal, 2018, Announced Retirements.....	17
U.S. Thermal Coal Exports, and Exports from the Illinois Basin	22
U.S. Thermal Coal Exports, Quarterly.....	23

Overview

By 2020, Illinois Basin production will have fallen 40 percent since its peak in 1990, part of a widespread decline in the U.S. (see the chart below). Other major coal-producing regions such as Appalachia¹ and the Powder River Basin^{2 3} are faring even worse, with the drop in Appalachian production expected to hit 70 percent by next year compared to its peak, also in 1990. In the West, the decline has been happening even faster, and on a bigger scale: peak production occurred only a decade ago, in 2008, but by the end of 2020 will have been cut almost in half. The entire U.S. coal sector—long dominant in terms of electricity generation market share—is losing out to cheaper forms of energy that include gas-fired power and renewables (wind and solar), and it is doing so at a quickening pace.⁴

U.S. Regional Coal Production, 1985-2018, With Estimates to 2020

Output has fallen sharply in all three major coal mining regions. From their peak years to 2020 (using the latest estimates from the U.S. Energy Information Administration), production is expected to have fallen by 40 percent in the Interior, which includes the Illinois Basin, 47 percent in the West, and 70 percent in Appalachia.



Source: Energy Information Administration (2019-2020 estimates from Nov. 2019 Short-Term Energy Outlook)

Power markets are modernizing, and traditional coal-fired generation is becoming increasingly anachronistic. In 2018, 15,500 megawatts (MW), or 6 percent of all coal-fired capacity in the U.S., was retired, with an additional 14,000MW retiring this year, and many plants that are still in operation are being used less and less frequently by utilities. This year alone, power generation from coal has fallen by 13.4 percent through September, compared to the same period in 2018.⁵ The result has been widespread financial carnage over the past two years for the coal industry,

¹ S&P Global Market Intelligence. [Coal production fell 15.1% quarter to quarter at top Northern Appalachia mines](#), November 2019.

² IEEFA. [Powder River Basin Coal Industry Is in Long-Term Decline](#). March 2019.

³ S&P Global Platts. [Moody's expects Powder River Basin coal mine closures in early 2020s](#). October 2019.

⁴ IEEFA. [Data shows U.S. shift away from coal-fired generation is intensifying](#). November 2019.

⁵ EIA, [Electric Power Monthly](#), November 2019, table ES1.B.

in which 11 U.S. mining company bankruptcies have occurred. One recent news headline crystallized the trend and put the very future of American coal mining in question—“Bankrupt giants hand unwanted coal mines to unknown firms.”⁶

In the Illinois Basin specifically, the pace of mine closure announcements has picked up in recent months. In addition, other Illinois Basin mines have been “temporarily idled,” a misleading industry term that suggests those mines will reopen when economic conditions improve, but in fact likely will never return to production. Such idlings, can, however, serve as a way to stave off mandated reclamation.

Put bluntly, declining demand means more mines across the Illinois Basin will need to close in the months and years ahead—just as more coal mines will close nationally—and those closures will likely come at a faster rate than has previously been seen.

The decline of the American coal industry more generally is gaining momentum, pushed out by cheap gas from fracking and rapidly falling costs for wind, solar and storage. These trends are discussed in greater detail in IEEFA’s annual coal-outlook report published eight months ago⁷ and in regional IEEFA research published this year that has included analysis of the Powder River Basin of Montana and Wyoming and of coal-fired generation in the Southeast U.S. (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Virginia).⁸

The continuing rise of renewables, which are increasingly competitive and in many cases cheaper than coal-fired power, was detailed in a Lazard report published just this month.⁹ “That phenomenon has increased this year,” a Lazard representative said in a report follow-up.¹⁰ “There are situations where the cost of building new wind and the cost of building new solar are cheaper than keeping a coal or nuclear plant operating. And even on an unsubsidized basis, we’re starting to see those costs undercut the marginal cost of coal and nuclear.”

Similar sentiments have even been voiced by executives within the coal-mining industry itself. Speaking generally of Illinois Basin coal mines, a Hallador Energy executive, for instance, said on an earnings report call in May of this year, “Some of these assets are not long for this world.”¹¹

Likewise, executives at big utility companies are openly acknowledging the phase-out of coal-fired generation. The CEO of Xcel Energy, for example, said in a June 2018 speech, “It’s not a matter of if we’re going to retire our coal fleet in this nation, it’s just a matter of when.”¹² Xcel is of note for two reasons. One, its size (Xcel sells power across the Upper Midwest and in the West), and, two, its aggressive renewable energy buildout, which S&P Global Market Intelligence concluded in a

⁶ E&E News. [Bankrupt giants hand unwanted coal mines to unknown firms](#). November 2019.

⁷ IEEFA. [Coal Outlook 2019: Domestic Market Decline Continues](#). March 2019.

⁸ IEEFA. [Coal-Fired Power Generation in Freefall Across Southeast U.S.](#) October 2019.

⁹ Lazard: [Lazard’s Levelized Cost of Energy Analysis, Version 12.0](#). November 2019.

¹⁰ S&P Global Market Intelligence. [Renewable energy costs continue to abate, beating coal and nuclear, Lazard says](#). November 2019.

¹¹ Hallador Energy Company. [First Quarter 2019 Earnings Conference Call](#). May 2017.

¹² Greentech Media. [Xcel CEO Says Retiring the US Coal Fleet ‘Just a Matter of When’](#). June 2018.

September 2018 analysis “augers well” for Xcel to deliver on its goals of increasing long-term earnings per share by 5 to 6 percent annually and increase dividends annually by 6 to 7 percent.¹³

As the decline in Illinois Basin’s coal-production continues, companies that have mines in the region will continue to face market pressure. They include (ranked by amount of Illinois Basin production) Alliance Resource Partners, Murray Energy and its partner Foresight Energy, Peabody Energy, Hallador, Arch Coal and White Stallion.

State-by-state reviews of these companies’ utility customers offer another window on why the Illinois Basin coal industry is in such peril. As major customers in states like Florida, for instance, continue to move aggressively away from coal, demand for Illinois Basin coal will weaken further. And export markets aren’t likely to be of much help, as Murray Energy executives conceded when the company filed for bankruptcy in October.¹⁴

The map on page 7 shows recent coal-industry activity across the Illinois Basin.

¹³ S&P Global Market Intelligence. [With wind at its back, Xcel Energy's renewables build-out augurs well for growth](#). September 2018.

¹⁴ S&P Global Market Intelligence. [Logistics chain adapting to US coal sector's decline, export volatility](#). November 2014.

Illinois Basin Coal Production, 2018

Total production: 106.8 million tons

Market forces are beginning to work against the coal-mining industry in the Illinois Basin. Declines in export demand and gathering momentum around retirements of coal-fired plants will affect every state and every company in the basin. Recent mine closures and idlings are part of an emerging long-term trend that will likely result in fewer mines regionally and far less production. On this map, circle sizes are proportional to production; the top five regional mines are labeled.

ILLINOIS

49.6 million tons

20 producing mines

Top 5 mines:

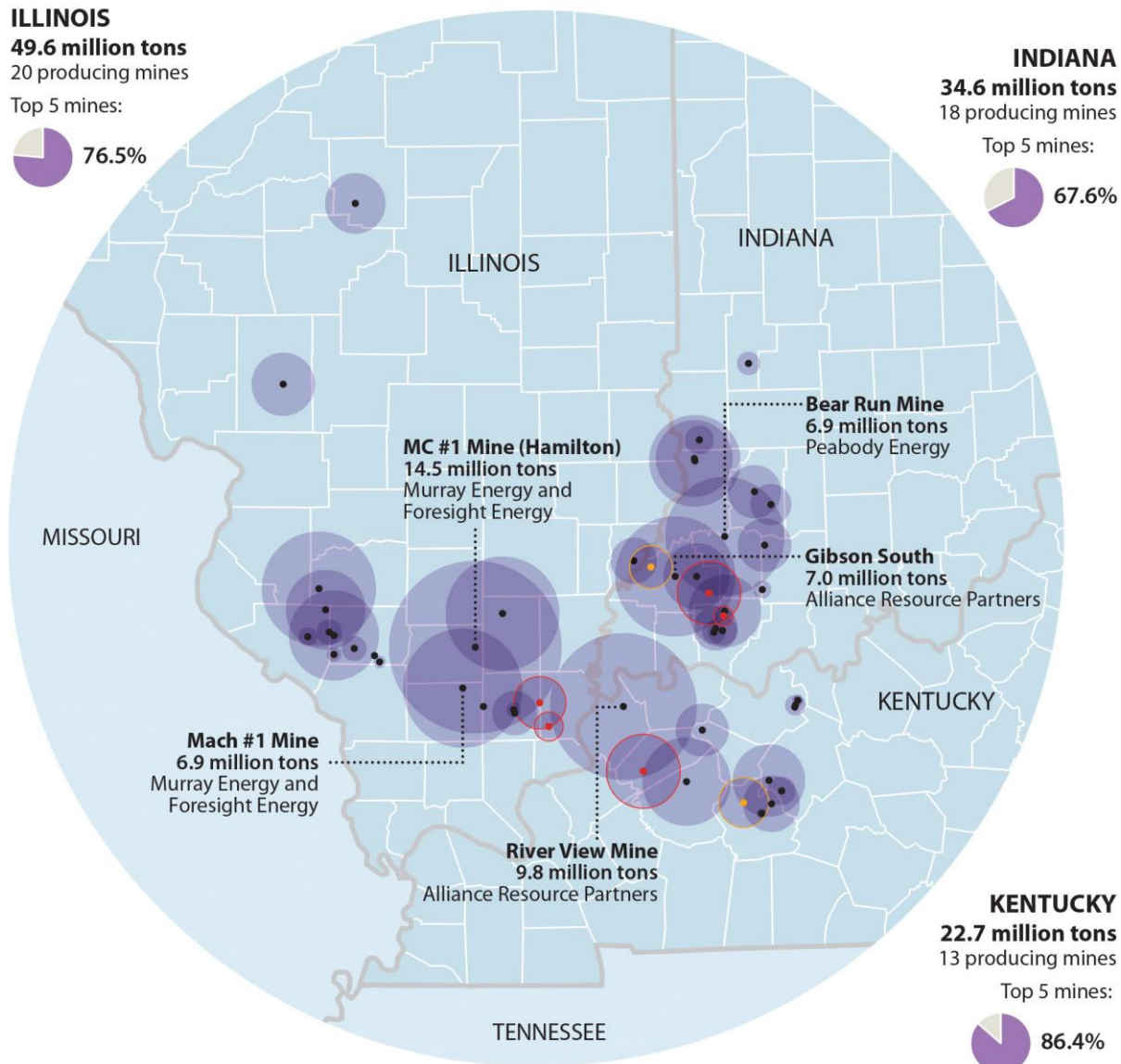


INDIANA

34.6 million tons

18 producing mines

Top 5 mines:

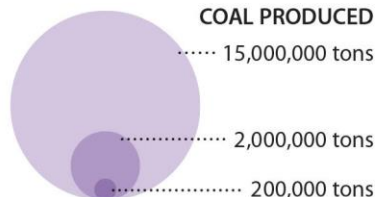


KENTUCKY

22.7 million tons

13 producing mines

Top 5 mines:



Sources: Energy Information Administration; S&P Global Market Intelligence

The Company-by-Company View

Alliance, Murray-Foresight, Peabody, Hallador, Arch, White Stallion

The company-by-company maps on the following pages show the geographic presence of the six biggest producers in the basin. Ranked by Illinois Basin production in 2018, they are Alliance Resource Partners (29.9 million tons), Murray/Foresight Energy (28.6 million tons), Peabody Energy (18.6 million tons), Hallador Energy (7.6 million tons), Arch Coal (6.3 million tons) and White Stallion (5.6 million tons); together these companies produced 90 percent of all the coal mine produced in the basin in 2018.

Collectively, the maps suggest stability—that is, they show how most mines in the region remain open. But they also show a developing trend of either permanent closures or companies designating mines as “temporarily idled,” a highly misleading term. The reality in today’s rapidly changing electric generation market is that these idled mines will probably never reopen.

Thus, the “temporary” idling in November of the Gibson North Mine in Indiana by Alliance likely means this mine will never again produce coal; 185 workers were affected. Gibson North produced nearly 900,000 tons in 2018, and 1.7 million tons in the first nine months of 2019.¹⁵ In August, Alliance permanently closed the Dotiki mine in Kentucky, affecting about 200 workers. At this mine, production in 2018 totalled 2.5 million tons.¹⁶ Similarly, Murray Energy/Foresight Energy ceased production in April at Paradise #9 in Kentucky, which produced 1.1 million tons in 2018, and Peabody in October closed the Somerville Central Mine in Indiana, which produced 2.1 million tons in 2018. In December, Peabody will finish closing its Wildcat Hills mine complex in Illinois, which produced 1.7 million tons in 2018, and the company in the past year has closed two smaller mines—one each in Illinois and Indiana—that together produced 600,000 tons in 2018.

Collectively, then, almost 9 million tons, or 8.4 percent of the Illinois Basin’s 106.8 tons of production in 2018 has been taken off the market in the past year or so for lack of demand, and additional production cuts are likely based on the EIA’s short-term forecast for 2020, which sees production cuts increasing to 11 million tons.

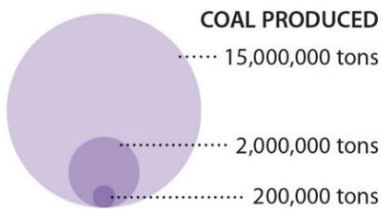
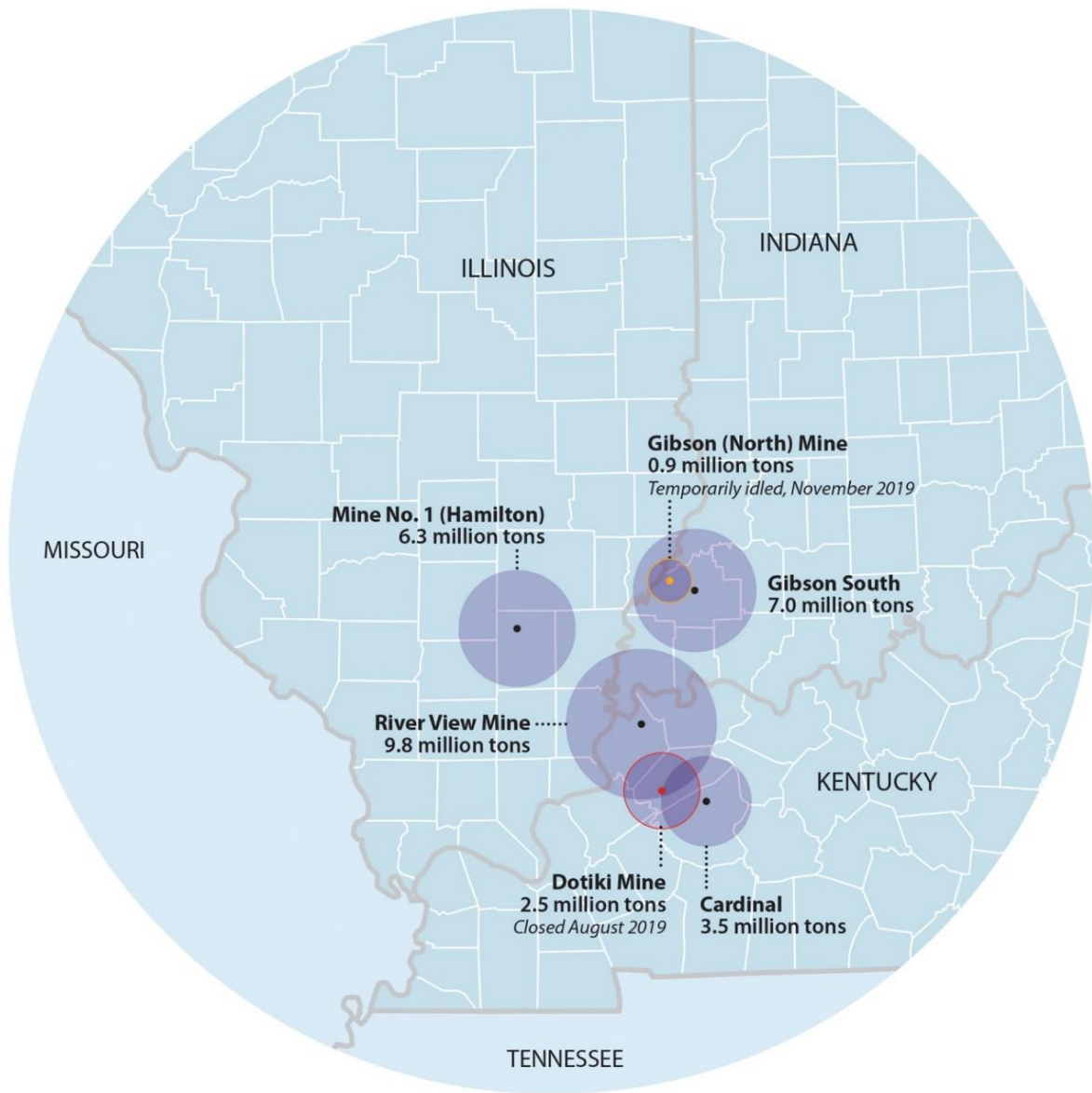
The effect will be substantial on companies that operate in the Illinois Basin, and the recent mine closures noted above—by Alliance, by the recently bankrupt Murray/Foresight and by Peabody—signal a future in which Illinois Basin producers will continue to lose customers in the U.S. and in foreign markets alike.

¹⁵ Alliance Resource Partners. [Alliance Resource Partners, L.P. Announces Issuance of WARN Act Notice at Gibson Complex](#). November 2019.

¹⁶ Alliance Resource Partners. [Alliance Resource Partners, L.P. Announces Coal Production Ceasing at Dotiki Mine](#), August 2019.

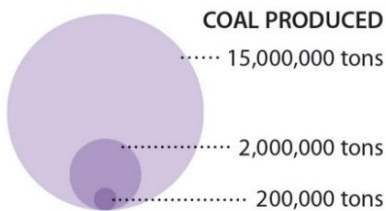
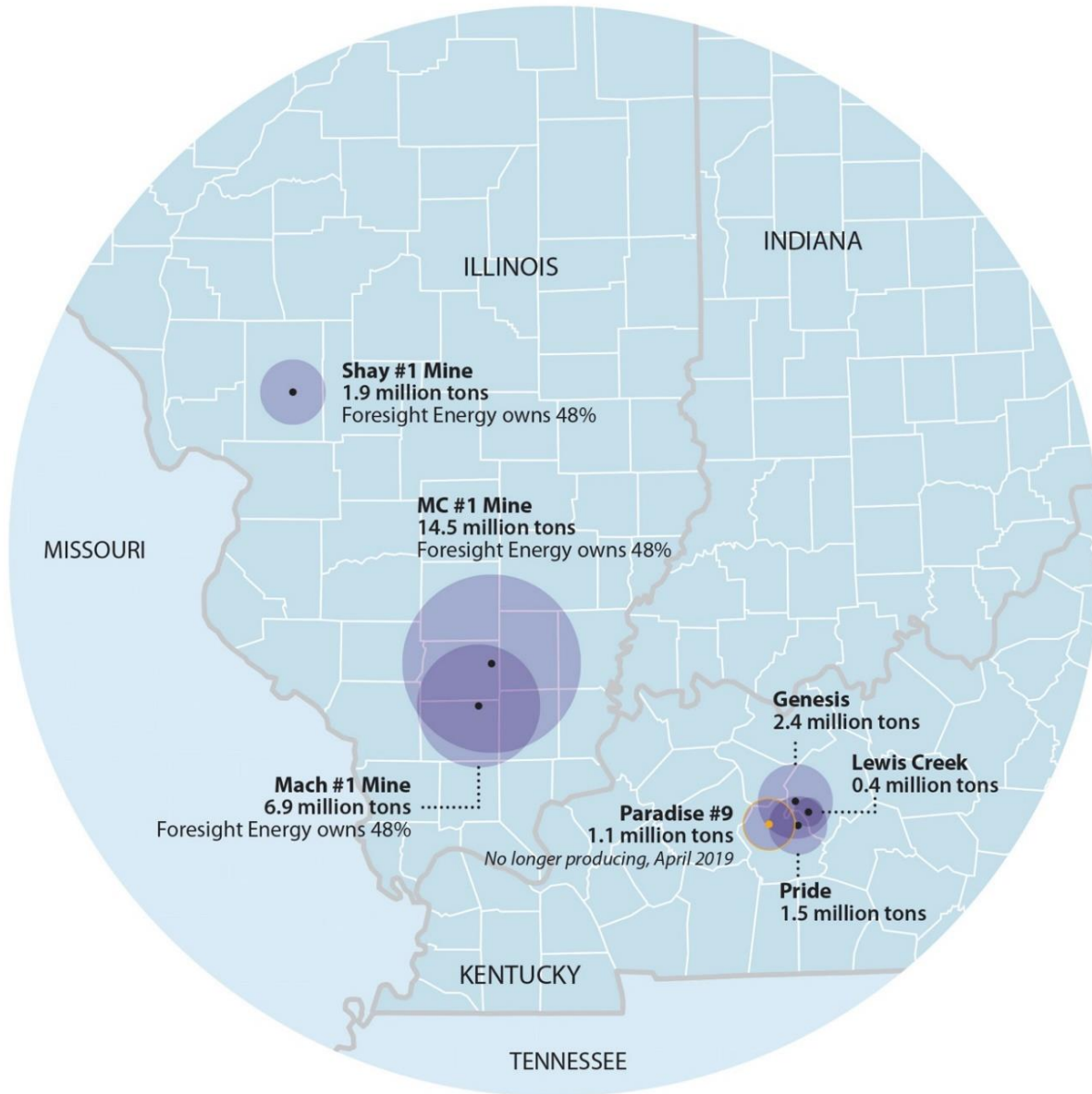
Alliance Resource Partners 29.9 million tons produced 6 mines

28.0% of Illinois Basin production, 2018



Sources: Energy Information Administration; S&P Global Market Intelligence

Murray Energy – Foresight Energy
28.6 million tons produced
7 mines 4 Murray Energy mines
 and 3 mines 48% owned by Foresight Energy
 26.8% of Illinois Basin coal, 2018



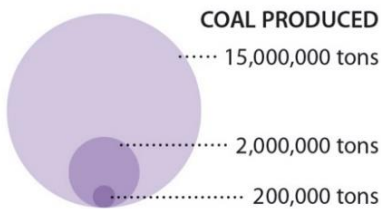
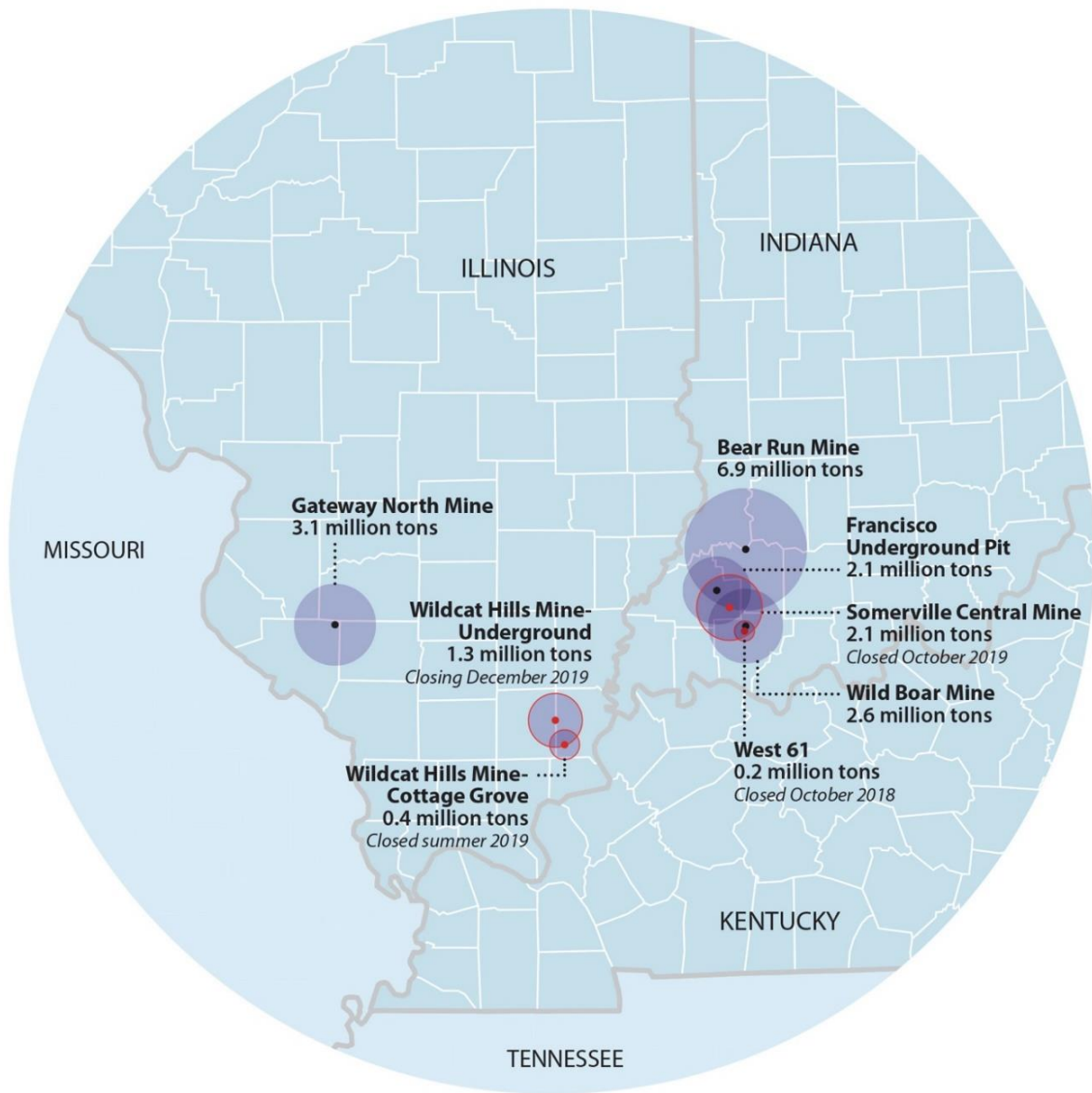
Sources: Energy Information Administration; S&P Global Market Intelligence

Peabody Energy

18.6 million tons produced

8 mines

17.4% of Illinois Basin production, 2018



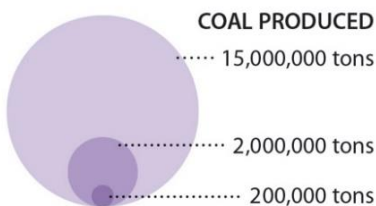
Sources: Energy Information Administration; S&P Global Market Intelligence

Hallador Energy

7.6 million tons produced

4 mines

7.1% of Illinois Basin production, 2018



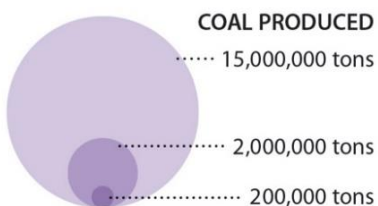
Sources: Energy Information Administration; S&P Global Market Intelligence

Arch Coal

6.3 million tons produced

5 mines *Includes 4 mines 51% owned by CBR Investments*

5.9% of Illinois Basin production, 2018



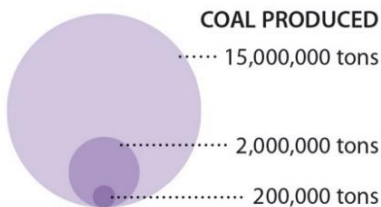
Sources: Energy Information
Administration; S&P Global
Market Intelligence

White Stallion

5.6 million tons produced

5 mines

5.2% of Illinois Basin production, 2018

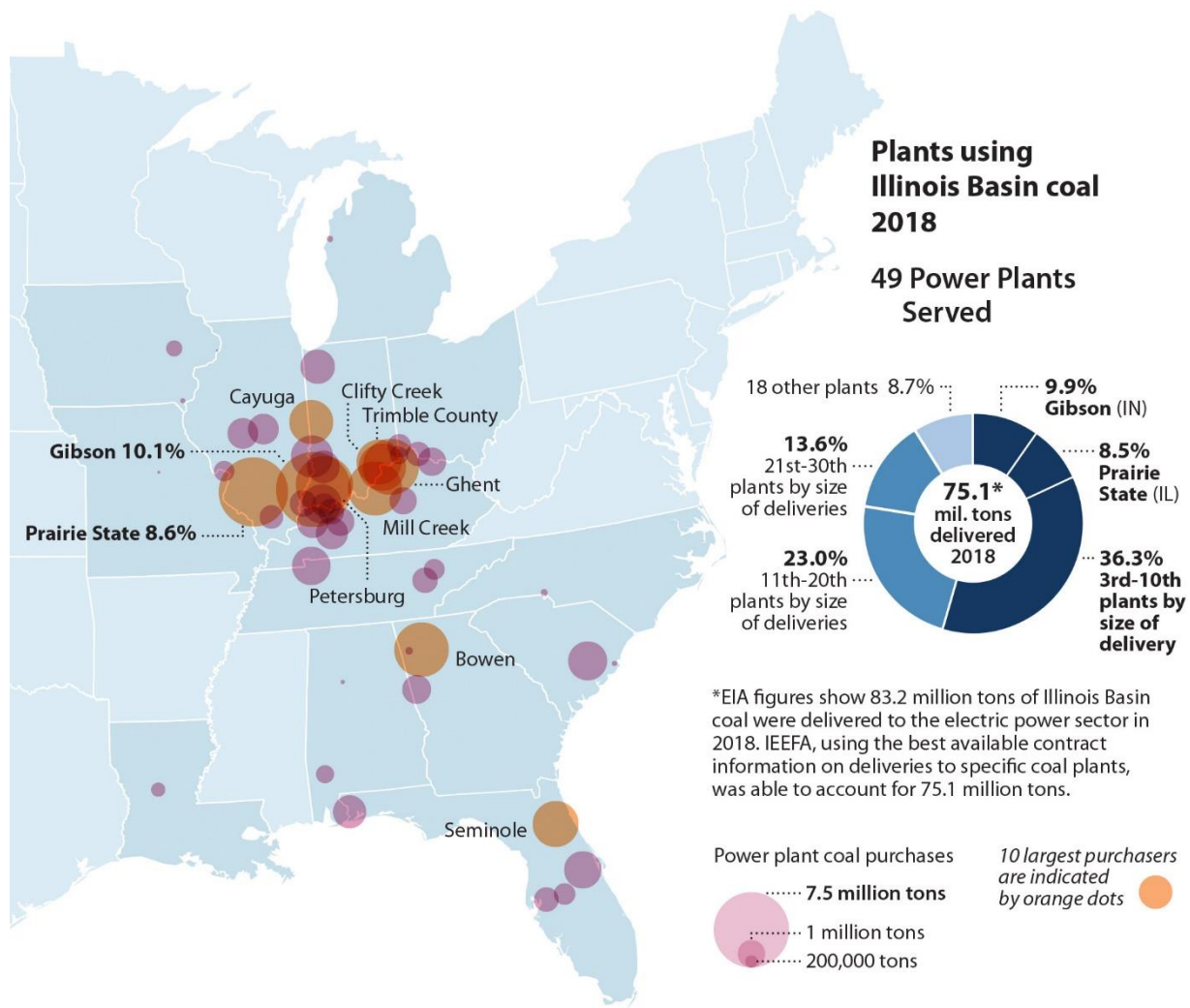


Sources: Energy Information
Administration; S&P Global
Market Intelligence

State-by-State and Customer-Base Slippage

Retirement Dates Loom for More Coal Plants

The problem facing the Illinois Basin coal-mining industry is made clear by focusing on its 49 domestic power-plant customers, which collectively consumed nearly 80 percent of 2018 production and are scattered across states that run from the heart of the Midwest into the Deep South. The 10 largest customers, shown below with orange circles, stretch across Florida, Georgia, Illinois, Indiana and Kentucky, and together use more than half of the coal the basin delivers domestically. The other 39 customers are marked by purple circles. The size of the circles is proportional to the amount of Illinois Basin coal delivered.



A significant portion of this customer base will be phased out over the next five years, based on already-announced retirement plans (see the map on page 17).

A clear view of the future of the basin's customer base can be seen in Duke Energy Indiana's June announcement about its retirement plan for the Gibson coal-fired plant. The closure of this plant, the Illinois Basin's largest single coal customer, accounting for almost 10 percent of sales in 2018, almost certainly signals an end date for most of the Illinois Basin coal industry. Situated on the Wabash River across from Mt. Carmel, Ill., the Gibson plant is one of the largest power plants in the U.S., with more than 3,100MW of capacity, and it sits in the heart of Indiana's coal-mining area, very close to Alliance Resource Partners' Gibson coal mine complex.

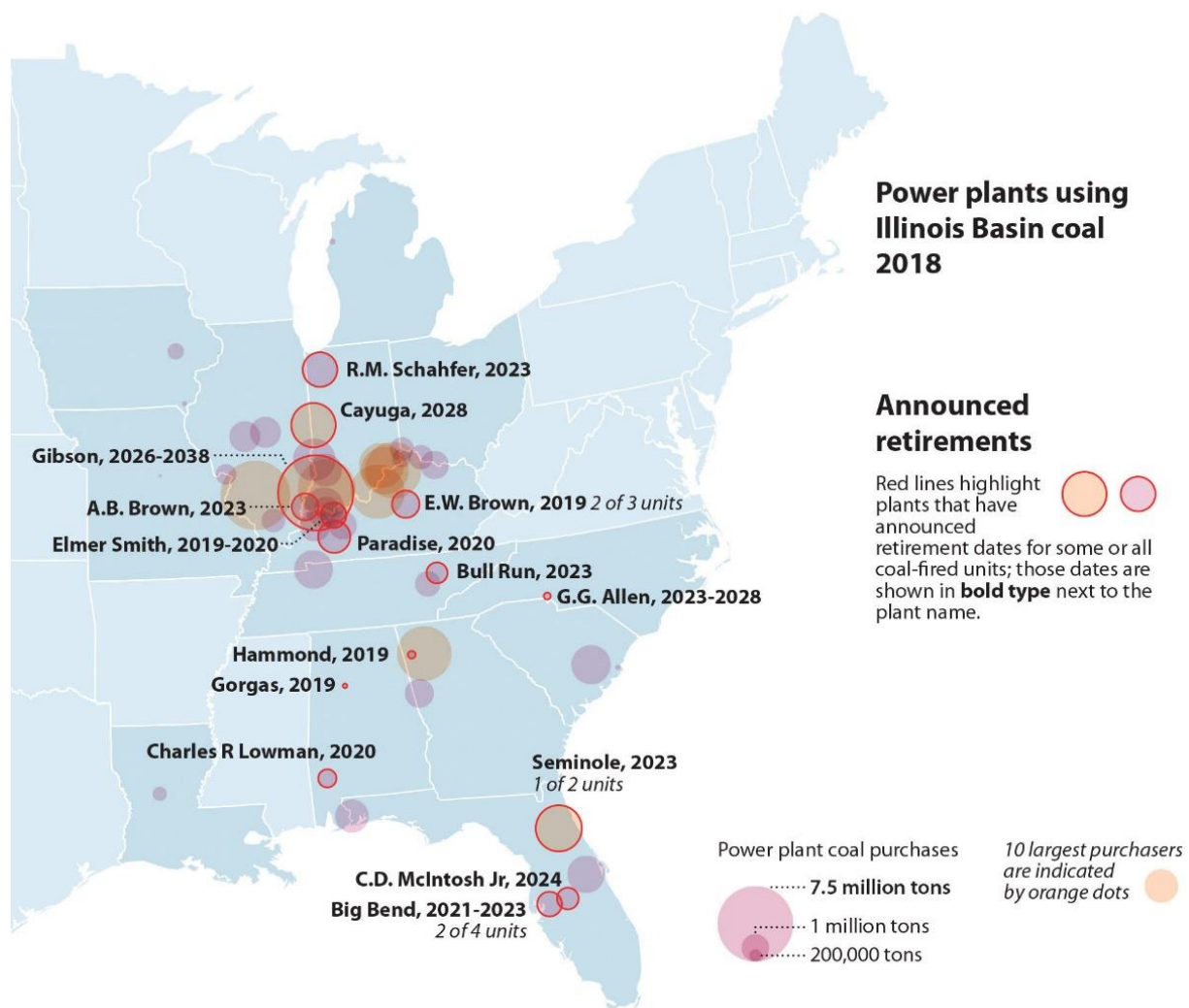
The dates of the planned closures of the plant's five units, each of which has a nameplate capacity of about 630MW, suggest the timeline the decline of the region's coal industry will follow as well. Unit 4, for example, will now be shut down in 2026, nearly 20 years earlier than its originally-planned retirement in 2044, according to Duke (all the units began operation between 1975 and 1982). Units 3 and 5 will now be shut in 2034, a decade before their previously expected retirements in 2043 and 2047, respectively. The last two units, Units 1 and 2, will be retired in 2038 instead of 2041 and 2040. Yet even these retirement dates may be optimistic: utilities have frequently accelerated their retirement timeframes as coal-plant economics have worsened.

Existing plants have been running less, too. As coal has become less competitive against gas and renewables, larger utilities have been able to fuel-switch across their generation fleets, favoring these cheaper sources whenever they can. As a result, Gibson has been running less than it could. In August, for example, the plant operated at just 33 percent of capacity, its lowest monthly level in at least two decades. In addition, as coal plants like Gibson age, they require more maintenance, and if they are run less, the overall cost of their power goes even higher, making such plants even less competitive.

With the economics of coal-fired power deteriorating, more and more utilities have been accelerating retirement dates. In northern Indiana, for instance, the utility NIPSCO recently said it would save \$4 billion by retiring its coal plants early and passing those savings on to customers.

It is worth noting that the corporate and financial relationships between the coal-mining companies and the utilities that buy their coal plays a significant role in how quickly coal is being phased out in the Illinois Basin—and across the U.S., for that matter. For the most part, utilities do not have financial stakes in coal mining, and the coal plants they have are usually part of a larger fleet of generation assets that run on a mix of fuels. This encourages them—as is broadly required by state utility oversight agencies—to operate their plants in the most economically efficient way possible, freeing them to cut expensive coal generation without incurring losses when the mines they buy from are closed. They are usually just buyers of fuel, and not in the business of extracting and processing that fuel.

In Illinois, though, there is one major exception: the 1,624MW Prairie State Energy Campus in Washington County. Prairie State is owned by a group of municipalities, public authorities and rural electric cooperatives who also own the neighboring Lively Grove coal mine that supplies the generation station. This practically-new plant, opened in 2012, is the second-largest consumer of Illinois Basin coal, accounting for 8.6 percent of all production in 2018, but it comes entirely from the Lively Grove mine. This self-contained economic structure has locked the owners into very high power costs without much flexibility to shift to cheaper and cleaner generation resources, either from their own renewables or from regional power markets that are increasingly supplying low-cost wind power. IEEFA has written extensively about the situation in past reports.^{17 18}



Source: S&P Global Market Intelligence; IEEFA research

¹⁷ IEEFA. *Cost of Coal From ‘Mine-Mouth’ Prairie State Plant Isn’t the Bargain That Was Promised*. April 2015.

¹⁸ IEEFA. *2014, Another Year of Unmet Promises for the Prairie State Energy Campus*. February 2015.

Florida, Georgia, Illinois, Indiana, Kentucky

FLORIDA

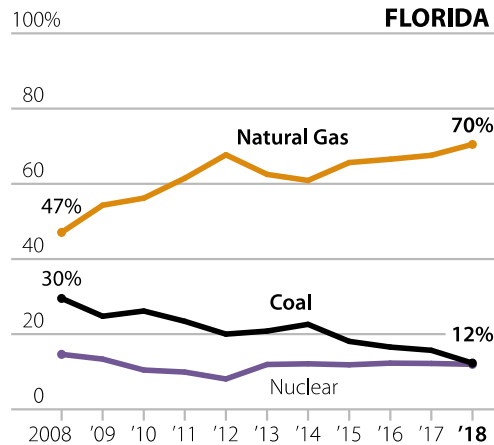
Coal-fired generation in the Sunshine State is on the way out, as can be seen in well-rooted trends that date back a decade at least. Gas-fired generation now accounts for 70 percent of all electricity production in Florida. Coal-fired plants contributed 30 percent to Florida's power mix as recently as 2008; that number had fallen to 12 percent by 2018.

The 2010 census put the state's population at 18.8 million, and by 2018 that number had risen 6 percent, to 21.3 million.¹⁹ While electricity consumption in the state has climbed with its population boom, none of that demand increase was supplied by coal.²⁰

While gas-fired generation has taken a bigger and bigger share of the market, the state's three biggest utilities—Duke Energy Florida, Florida Power and Light, and TECO Energy—have plans to install more than 11GW of solar over the next 10 years.²¹ While the state comes belatedly to solar—a circumstance rich with irony, considering how Florida's nickname is the Sunshine State—it has recently made a hard pivot toward utility-scale solar. In 2018, the three major utilities brought a total of 876MW of utility-scale solar online,²² roughly enough capacity to power almost a million homes. Simultaneously, battery storage is coming online in a fast-spreading advance that stands to bolster the uptake of solar.

Florida's coal-fired capacity has fallen by more than half over the past decade to 7,883MW, of which 2,094MW will be retired by 2024, according to utility-company announcements.

Fuel Share for Electric Power Generation
(Utility Scale, All Sectors)



Only fuels with 5% or more share in any year are shown.

Source: Energy Information Administration

¹⁹ U.S. Census Bureau. [Quick Facts Florida](#), July 2018.

²⁰ IEEFA. [Coal-Fired Power Generation in Freefall Across Southeast U.S.](#), October 2019.

²¹ Ibid.

²² Smart Electric Power Alliance. [SEPA's 2019 Solar Snapshot Report Finds Florida's Solar Market is Flourishing](#), June 2019.

GEORGIA

Electricity-generation trends in Georgia are similar to Florida’s. Coal-fired generation market share fell from 63 percent in 2008 to 25 percent in 2018. That share will drop further in the near future— and for the same reasons seen in Florida. Gas-fired generation is cheaper, as is utility scale solar (Georgia Power plans to have 2,260MW of utility-scale and distributed solar online by 2024).

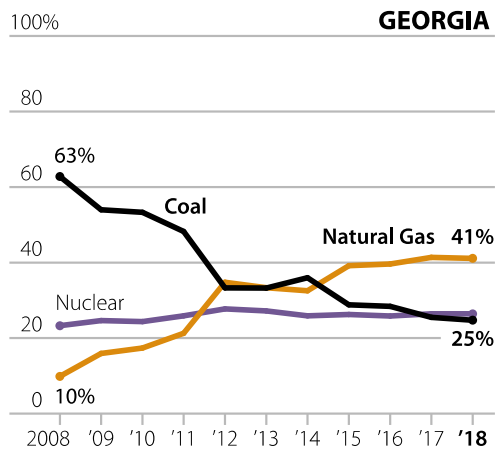
Georgia has only three coal-fired generation plants, although two are the largest in the U.S., the 3,392MW Plant Scherer and the 3,200MW Plant Bowen. The third, 1,744MW Plant Wansley, is very likely to follow in the footsteps of Plant McIntosh (142MW) and Plant Hammond (840MW),²³ both of which were retired this past July. Plant Bowen is an especially big Illinois Basin customer, ranking fifth among Illinois Basin users in 2018 (3.93 million tons). Its owner, the Southern Company subsidiary Georgia Power, published an updated integrated resource plan (IRP) this year noting “economic challenges”²⁴ facing the plant.

ILLINOIS

Illinois has the strongest renewable energy standards of the five states noted here, with a goal of getting 25 percent of its power from renewable sources by 2025.²⁵

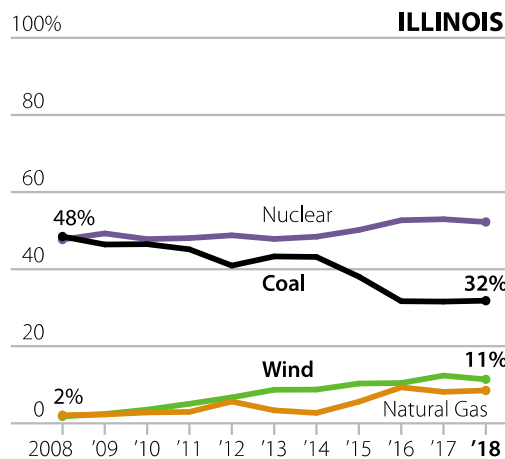
It is also where markets are driving a wave of coal plant closures that are very quickly reshaping the state’s energy economy. Vistra Energy is the prime example, having recently announced that it would close the 585MW E.D. Edwards plant at the end of

Fuel Share for Electric Power Generation (Utility Scale, All Sectors)



Only fuels with 5% or more share in any year are shown. Source: Energy Information Administration

Fuel Share for Electric Power Generation (Utility Scale, All Sectors)



Only fuels with 5% or more share in any year are shown. Source: Energy Information Administration

²³ IEEFA. *Coal-Fired Power Generation in Freefall Across Southeast U.S.*, October 2019.

²⁴ Georgia Power. *2019 IRP, Docket #42310, Section 1-7, Unit Retirements*. December 2018, 1-7.

²⁵ National Conference of State Legislatures. *State Renewable Portfolio Standards and Goals*. accessed November 2019.

2022.²⁶ The company had already announced that it would close four other coal-fired plants in Illinois this year with a total capacity of about 2,000MW.

Vistra, an energy behemoth with 10 coal-fired plants in the U.S. that have a total of 11,000MW of generation capacity, in October announced new emissions-reduction goals in which executives at the company said it “anticipates retiring more coal assets.”²⁷

INDIANA

Indiana is not considered a leader in electricity-generation transition policy, but market-driven changes are occurring, nonetheless.

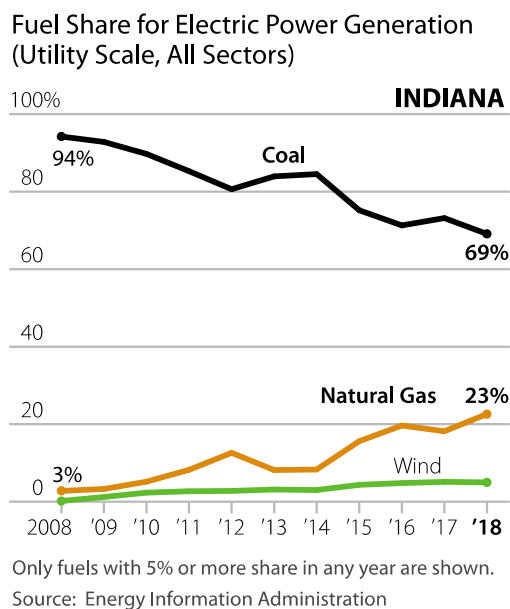
The state has a formal goal of getting 10 percent of its electricity from “clean energy” by 2025, but the parameters for meeting that target are loosely defined and favor “clean coal” technology and gas-fired generation.

Market changes may outpace state policy, however. The Northern Indiana Public Service Company (NIPSCO) this year announced plans to abandon coal-fired electricity generation entirely and to focus on utility-scale solar generation and other renewable generation. In October, NIPSCO published requests for proposals for development of 2,300MW of solar and 300MW of wind-powered generation.

“The driver for how we make decisions is really rooted in economics and costs for our customer,” an executive at the company said when the RFPs were announced.²⁸

KENTUCKY

Even Kentucky, reliant on coal for 94 percent of its electricity generation a decade ago, is changing. Coal’s share of the state’s power-generation market dropped 19 points from 2008 to 2018, a shift owing almost entirely to the rise of gas-fired generation.



²⁶ Utility Dive. [Judge OKs \\$8.6M Vistra coal plant closure settlement seen by NGOs as model for helping impacted communities](#). November 2019.

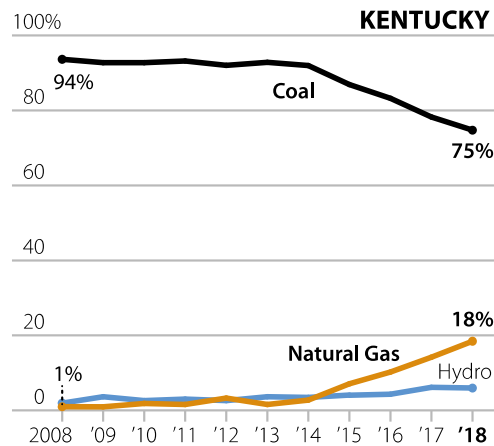
²⁷ Vistra Energy. [Vistra Energy Announces Long-Term Emissions Reduction Targets and Support for Market-Based Carbon Reduction Regime](#). October 2019.

²⁸ Greentech Media. [The Solar Boom Takes Off in the Industrial Midwest](#). October 2019.

Although Kentucky has deep cultural connections with coal, existing national power-generation trends will likely gain momentum in the state for purely economic reasons. They will be driven also by corporate policy initiatives, as U.S. companies that do business in Kentucky are adopting increasingly stringent requirements on where their electricity comes from.

Utility companies in Kentucky are also evolving. Kentucky Utilities and Louisville Gas & Electric are both subsidiaries of PPL Corporation, which last year announced plans to cut its carbon-dioxide emissions by 70 percent from 2010 levels by 2050. According to the corporation, among the measures that will be needed to reach that goal “include replacing Kentucky coal-fired generation over time with a mix of renewables and natural gas while meeting obligations to provide least-cost and reliable service to customers.”²⁹

Fuel Share for Electric Power Generation
(Utility Scale, All Sectors)



Only fuels with 5% or more share in any year are shown.
Source: Energy Information Administration

The Export-Market Problem

Market Forces Continue to Work Against Coal Overseas, Too

Beginning about a decade and a half ago, Illinois Basin producers saw potential in shipping coal to Europe, India and elsewhere for power-generation purposes.

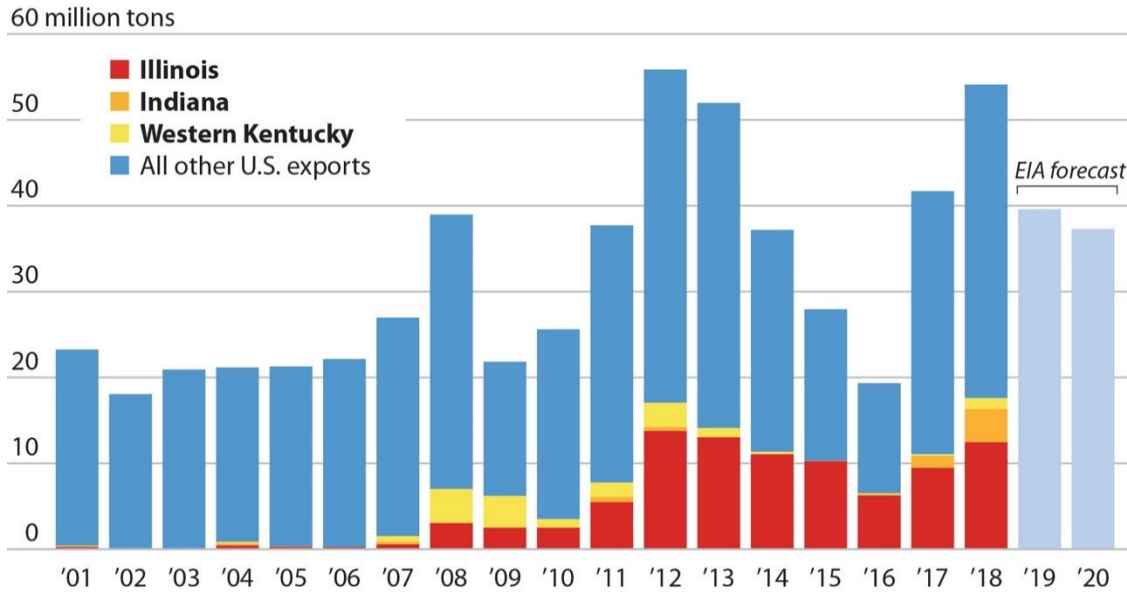
These ambitions paid off as European demand for U.S. coal rose—for a while. But the same market forces that are moving against coal in the U.S. are working against European coal-fired generation too. A handful of countries in the 28-member European Union continue to rely heavily on coal-fired power but even nations like Poland, which in some ways is the Kentucky of Europe, are seeing change.³⁰

²⁹ PPL Corporation. [2018 Sustainability Report](#).

³⁰ S&P Global Market Intelligence. [A way back for onshore wind as Poland revises draft energy policy to 2040](#). November 2019.

U.S. Thermal Coal Exports, and Exports from the Illinois Basin

Exports from the Illinois Basin have surged over the past decade, rising to roughly one-third of all U.S. exports. Most of that volume is from mines in one state, Illinois.



An October report published by the Carbon Tracker Initiative showed how four of five coal-fired power plants in the EU are losing money.³¹ The report put EU coal fleet losses at €6.6 billion (US\$7.1 billion) in 2019 alone.

“Policymakers and investors should prepare to phase out coal by 2030 at the latest,” Carbon Tracker concluded, and—indeed—financiers,³² political leaders,³³ and even mining companies³⁴ continue to distance themselves from European coal-fired power.

In addition, competition from other thermal coal-exporting countries is increasing, and they may be better positioned than exporters in the Illinois Basin. For example, Platts recently reported that Colombian and Russian coal is more price competitive in European markets than Illinois Basin, Northern and Central Appalachian coal.”³⁵

Outside Europe, other countries that are big importers of U.S. thermal coal, including India, South Korea and Japan, are also accelerating their adoption of renewable power in an effort to both cut pollution and reduce dependence on imported energy. As demand for coal declines, it will be increasingly difficult to

³¹ Carbon Tracker Initiative. [Four in five EU coal plants unprofitable as renewables and gas power ahead](#). October 2019.

³² BBC News. [European Investment Bank drops fossil fuel funding](#). November 2019.

³³ Reuters. [Worried by climate change, EU moves to end fossil fuel funding](#). November 2019.

³⁴ Bloomberg News: [Another Big Mining Company Hints at a Coal-Free Future](#). November 2019.

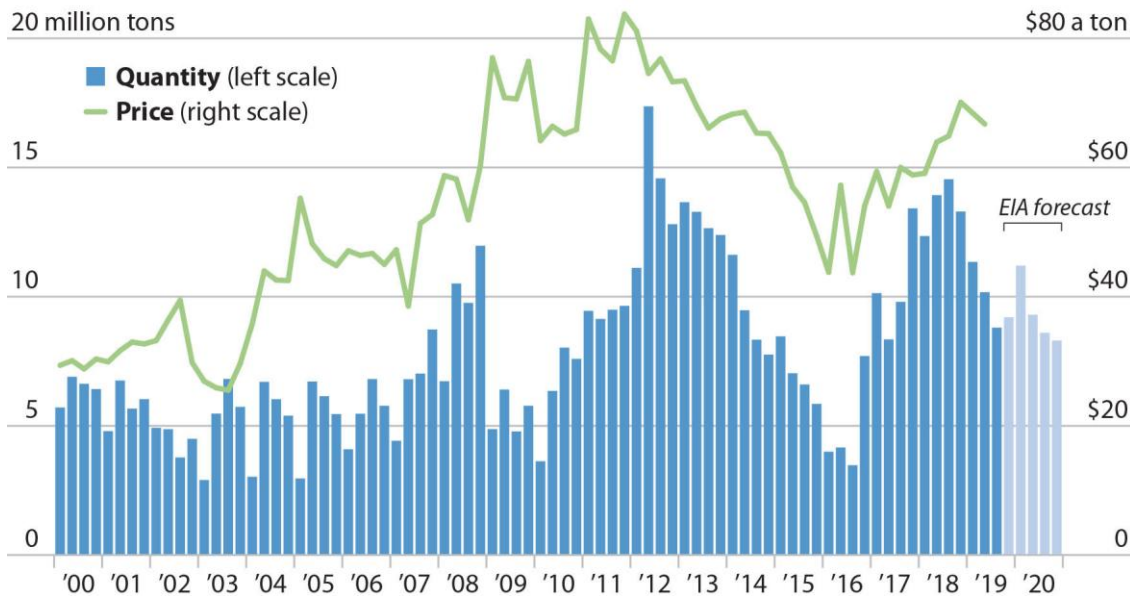
³⁵ Platts Coal Trader. “Russian, Colombian competition continuing to slow thermal coal exports”. December 2, 2019. p.8.

sustain Illinois Basin exports.

All U.S. coal exports are highly dependent on international market prices, and volumes have waxed and waned with those price fluctuations, illustrating the fundamental volatility that defines the basin's export market.

U.S. Thermal Coal Exports, Quarterly

U.S. coal export volume has fluctuated considerably in recent years, but has tracked closely with market prices. Forecasts for the fourth quarter of 2019 and 2020 are from the EIA's November Short-Term Energy Outlook.



Source: Energy Information Administration

Conclusion

Structural and Permanent Decline; Opportunity in New Energy Models

The Illinois Basin's coal industry is entering a period of structural decline.

Within the next 20 years, virtually all of the U.S. coal-fired plants that currently buy the basin's coal will be either retired or little used, the result of an economic and technologically driven energy transition in the electric power industry that favors lower-cost and cleaner alternatives. In particular, wind, solar and battery storage—especially when combined—already offer utilities distinct advantages in grid resiliency, modernization and low maintenance, all with zero fuel expenses and declining construction costs. Inexpensive gas from hydraulic fracturing is also playing a major role in this transition, though the cost of renewables has already reached parity or undercut gas in many areas. No new American coal plants will be built.

As a result of this transition, a significant portion of the Illinois Basin's domestic power-plant customers now have dates for retirement within the next few years. IEEFA expects many more retirements beyond those over the next two decades. Further, coal consumption at existing power plants has begun to decline as they become less economically competitive, a trend that will accelerate as the difference in generation cost widens.

Growth in exports, which had masked declines in domestic demand until recently, appear to have peaked and turned lower. The same technology and market-based forces at work in the U.S. are at work as well in many of the basin's current or potential export markets, including Europe, India, Japan and South Korea, where utilities plan to cut coal use while increasing power generation from renewables. This will make it challenging for U.S. thermal coal exports over the long term. As demand in these markets starts to fall, international coal markets will likely be oversupplied, leading to intense price competition. The inherent volatility of the international export market, combined with permanently shrinking domestic demand and the generally weak financial condition of the coal-mining sector will necessarily lead to lower production and fewer companies (either from attrition or consolidation) operating in the region.

Twenty years from now, most of the Illinois Basin coal industry will be gone. While this may seem like a relatively far-off time, the economic impact from the constant drumbeat of coal-plant closures, mine closures and job losses will likely be significant in the region. Limiting the harm—and benefiting from the emerging economic opportunities—from this transition will require leadership, planning and support from federal, state and local officials.

And there are many real benefits, including long-term, non-agricultural income for farmers and counties from renewable power projects, lower electricity costs for individuals and businesses, economic activity from a regional buildout of renewables, improved power-grid resilience and construction and engineering jobs. Policymakers and communities that embrace this transition will be in the best position to gain a long-term advantage from these changes, and better able to offer lasting improvements that will be beneficial for everyone.

About IEEFA

The Institute for Energy Economics and Financial Analysis conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

About the Authors

Seth Feaster

Data Analyst Seth Feaster has 25 years of experience creating visual presentations of complex data at the New York Times and more recently at the Federal Reserve Bank of New York. Feaster specializes in working with financial and energy data. He lives in New York.

Karl Cates

Transition Policy Analyst Karl Cates has been an editor for Bloomberg LP and the New York Times and a consultant to the Treasury Department-sanctioned community development financial institution (CDFI) industry. He lives in Santa Fe, New Mexico.

This report is for information and educational purposes only. The Institute for Energy Economics and Financial Analysis ("IEEFA") does not provide tax, legal, investment, financial product or accounting advice. This report is not intended to provide, and should not be relied on for, tax, legal, investment, financial product or accounting advice. Nothing in this report is intended as investment or financial product advice, as an offer or solicitation of an offer to buy or sell, or as a recommendation, opinion, endorsement, or sponsorship of any financial product, class of financial products, security, company, or fund. IEEFA is not responsible for any investment or other decision made by you. You are responsible for your own investment research and investment decisions. This report is not meant as a general guide to investing, nor as a source of any specific or general recommendation or opinion in relation to any financial products. Unless attributed to others, any opinions expressed are our current opinions only. Certain information presented may have been provided by third-parties. IEEFA believes that such third-party information is reliable, and has checked public records to verify it where possible, but does not guarantee its accuracy, timeliness or completeness; and it is subject to change without notice.