

“COAL FACTS”

June 2020

This paper includes information related to the nation’s coal fleet. Most of the data are taken from independent sources, in particular, the Energy Information Administration (EIA). The paper relies on the most current information available as of June 2020.

ELECTRICITY SOURCES

- ✓ Coal was responsible for 23.5% of electricity generated in the U.S. during 2019. Natural gas was responsible for 38.4%, nuclear power 19.7%, and renewable energy (including hydroelectric power) 17.5%. Non-hydroelectric renewables (wind, solar, geothermal and biomass) were responsible for 10.9%.¹
- ✓ Coal is projected to provide 16.5% of U.S. electricity in 2020 and 20% in 2021. Natural gas is projected to generate 40% of U.S. electricity in 2020 and 35% in 2021.²
- ✓ In 2030, coal is projected to provide 18% of U.S. electricity generation, with natural gas providing 32%.³

COAL FLEET

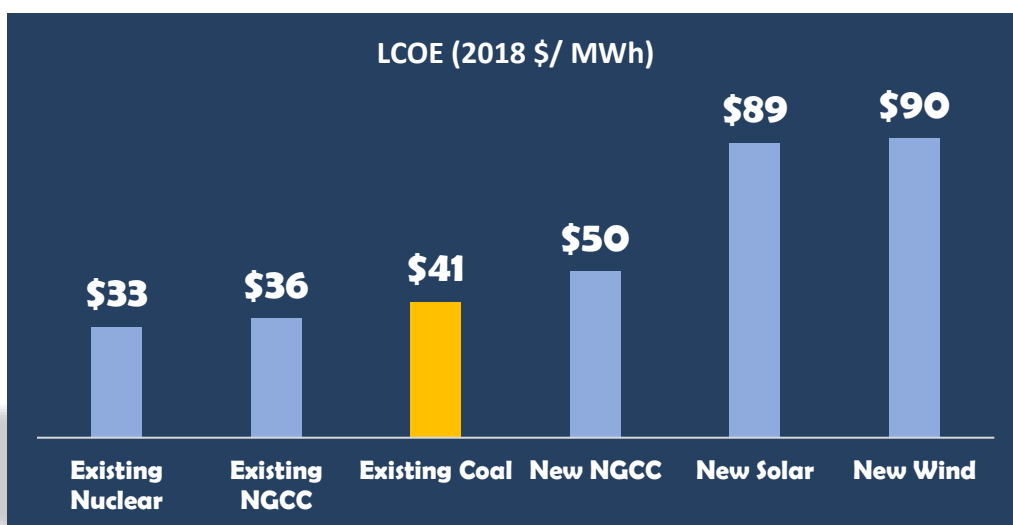
- ✓ At the end of 2019, there were 545 individual coal-fired electric generating units (EGUs) representing approximately 224,689 megawatts (MW) of generating capacity.⁴ There were 317,000 MW of coal-fired electric generating capacity in 2010.
- ✓ Approximately two-thirds of the coal fleet’s generating capacity is located in RTO/ISO regions (which have 66% of all generating capacity). The regions with the largest amounts of coal capacity are MISO (56,722 MW), PJM (50,884 MW), SPP (23,682 MW), and ERCOT (14,047 MW).⁵
- ✓ The average capacity factor of the U.S. coal fleet was 47.5% in 2019, compared to 67% in 2010.⁶
- ✓ As of March 2020, the average coal plant burning subbituminous coal had a stockpile that represented 114 days of burn; plants burning bituminous coal had a stockpile representing 127 days of burn. Over the last five years, the average subbituminous coal plant had a stockpile of 73 days of burn; the average bituminous plant had a stockpile of 80 days of burn.⁷
- ✓ Since 2010, owners of coal-fired EGUs have announced that 141,500 MW of coal-fired generating capacity have retired, will be retiring, or will be converting to other fuels. Nearly 68% of these shutdowns had occurred by the end of 2019. Ohio, Pennsylvania, Indiana, Illinois, Alabama, Texas, Missouri, Michigan, Kentucky, and

Virginia have the most retiring coal-fired generating capacity.⁸

- ✓ The average age at the time of retirement for the coal units that have retired or announced retirement was 49 years, and the average size of these units was approximately 195 MW. The average age of the remaining coal fleet is approximately 45 years, and the average size is 345 MW.⁹

LOWER COST

- ✓ On average, the levelized cost of electricity (LCOE) for an existing coal-fired power plant is less than new natural gas combined cycle, wind, or solar capacity. The chart below compares levelized costs.¹⁰



EMISSIONS

- ✓ Emissions per kilowatt-hour of sulfur dioxide (SO₂), nitrogen oxides (NO_x), and particulate matter (PM) from coal-fired power plants have been reduced by 93% over the period 1970-2019.¹¹
- ✓ Approximately \$122 billion had been invested in emission controls through 2017. Owners of coal-fired EGUs are expected to spend an additional \$5 billion for emission controls through 2020.¹²
- ✓ Virtually all U.S. coal-fired electric generating capacity has installed controls to reduce emissions of SO₂, NO_x, PM, mercury, acid gases, and non-mercury metals.¹³
- ✓ The U.S. coal fleet emitted 973 million metric tons (tonnes) of CO₂ in 2019.¹⁴ U.S. energy-related CO₂ emissions totaled over 5.13 billion tonnes in 2019.¹⁵ Therefore, the coal fleet emitted 19% of U.S. energy-related CO₂ emissions last year.
- ✓ The coal fleet is the number three source (19% share) of energy-related CO₂ emissions in the U.S. economy. Petroleum (mostly transportation) is first (46%) and natural gas is second (32%).¹⁶

- ✓ Global anthropogenic greenhouse gas (GHG) emissions are estimated to be in the range of 51.8 billion tonnes in 2018.¹⁷ Therefore, the U.S. coal fleet is responsible for less than 2% of worldwide anthropogenic GHG emissions.

STATES

- ✓ Coal is used to generate electricity in 47 states. Only Rhode Island, Massachusetts (both mostly natural gas) and Vermont (mostly renewables) do not generate any electricity from coal.¹⁸
- ✓ During 2019, coal provided at least half the electricity in nine states and at least one quarter of the electricity in 19 states.¹⁹
- ✓ During 2019, the ten states that generated the most electricity from coal were Texas, Indiana, West Virginia, Missouri, Kentucky, Illinois, Ohio, Pennsylvania, Michigan and Wyoming.²⁰
- ✓ During 2019, the ten states with the highest percentage of electricity from coal were West Virginia (93%), Wyoming (86%), Kentucky (73%), Missouri (73%), Utah (65%), North Dakota (63%), Indiana (62%), Nebraska (54%), Montana (52%), and Colorado (45%).²¹

COAL PRODUCTION

- ✓ In 2019, coal was mined in 23 states.²² It was responsible for 53,000 U.S. jobs in 2018. Wyoming produced the most coal, followed by West Virginia, Illinois, Pennsylvania, and Kentucky. Approximately 59% of coal was produced west of the Mississippi River and 41% in the east.²³
- ✓ According to EIA, domestic coal production totaled 705 million tons in 2019, down from 775 million tons in 2017 but higher than the 728 million tons produced in 2016.²⁴ EIA projects U.S. coal production to be 530 million tons in 2020 and 549 million tons in 2021.²⁵
- ✓ Coal exports totaled 93 million tons in 2019, down from 115.6 million tons in 2018, and 97 million tons in 2017. EIA projects exports to increase to 63 million tons in 2020 and 70 million tons in 2021.²⁶

¹ U.S. Energy Information Administration (EIA), *Electric Power Monthly*, May 2020 edition, with data through March 2020. Percentages are for utility-scale generation and do not include EIA's estimate of distributed solar generation.

² EIA, *Short-Term Energy Outlook*, June 2020.

³ EIA, *Annual Energy Outlook With Projections to 2050*, January 29, 2020.

⁴ America's Power, *Retirement of Coal-Fired Electric Generating Units as of June 2020*. EIA, Form 860 Early Release 2018 Data, June 2020, <https://www.eia.gov/electricity/data/eia860/>. These are electric generating units over 25 MW.

⁵ S&P Global Market Intelligence, SNL Energy Data. Accessed June 2020.

⁶ EIA, *Electric Power Monthly*, May 2020, Table 6.7.A.

⁷ EIA, *Electricity Monthly Update With Data for March 2020*, May 2020.

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- ⁸ America's Power, *Retirement of Coal-Fired Electric Generating Units as of June 1, 2020*.
- ⁹ S&P Global Market Intelligence, SNL Energy Data. Accessed June 2020. Units 25 MW and larger were considered.
- ¹⁰ Stacy, Tom, and G. Taylor, *The Levelized Cost of Electricity From Existing Generating Resources*, 2019. The levelized costs for new wind and new solar include the system costs that are imposed by these renewables on dispatchable generation sources that must now backstop the intermittency of renewables in order to preserve grid reliability.
- ¹¹ EIA, *Electric Power Monthly*, May 2020, Table 1.1. Net Generation by Energy Source: Total (All Sectors); U.S. EPA, *Air Pollutant Emission Trends, National Air Emissions Trends 1970-2019*; U.S. EPA, *National Emissions Inventory*, Air Pollutant Emissions Trends Data, 1970-2019, Fuel Combustion Electric Utilities, queried June 10, 2019.
- ¹² Energy Ventures Analysis, Inc., *Capital Investments in Emission Control Retrofits in the U.S. Coal-fired Generating Fleet Through the Years—2016 Update.*, January 26, 2016.
- ¹³ Based on data from *S&P Global Market Intelligence*.
- ¹⁴ EIA, "How much of U.S. carbon dioxide emissions are associated with electricity generation?" May 26, 2020.
- ¹⁵ EIA, "Short Term Energy Outlook," June 2020.
- ¹⁶ *Ibid.*
- ¹⁷ "Trends in Global CO₂ and Total Greenhouse Gas Emissions: 2019 Report," PBL Netherlands Environmental Assessment Agency, The Hague, 2019; EIA, Short Term Energy Outlook, June 2020.
- ¹⁸ EIA, *Electric Power Monthly*, June 2020, Tables 1.3.B and 1.4.B.
- ¹⁹ *Ibid.*
- ²⁰ EIA Electric, Data Browser Accessed June 9, 2020.
- ²¹ *Ibid.*
- ²² EIA, *Quarterly Coal Report*, April 1, 2020
- ²³ EIA, *Annual Coal Report*, October 3, 2019.
- ²⁴ EIA, *Quarterly Coal Report*, April 1, 2020.
- ²⁵ EIA, *Short-Term Energy Outlook*, April 7, 2020.
- ²⁶ EIA, *US Coal Exports Decline in 2019*, March 8, 2020.