We call this paper "Coal Facts" because it provides basic information and data related to coal-fired electricity. Most of the data are taken from independent sources, such as the Energy Information Administration. The paper is based on the most current information available as of March 2016.

ELECTRICITY SOURCES

- ✓ Coal was responsible for 33.2% of electricity generated in the U.S. during 2015, more than any other source of electricity.[1] During 2015, natural gas was responsible for 32.7% of electricity generation, nuclear power 19.5%, and renewable energy (including hydroelectric power) 13.3%.[2] Non-hydroelectric renewables (wind, solar, geothermal, and biomass) were responsible for 7.3%.[3]
- ✓ Coal is projected to provide 33.4% of U.S. electricity in 2016 and 33.4% in 2017.[4] Natural gas is projected to generate 32.4 % of U.S. electricity in 2016 and 31.6 % in 2017.[5]
- ✓ Coal is projected to remain the dominant fuel for electricity generation in the U.S. through 2040, according to the Energy Information Administration's (EIA) 2015 Annual Energy Outlook (AEO).[6] (EIA's projections do not take into account EPA's Power Plan, which has been stayed by the Supreme Court.)

U.S. COAL FLEET

- ✓ At the end of 2014, there were 491 coal-fired power plants in the U.S.[7] As of December 2015, there were 1,042 individual coal-fired electric generating units representing approximately 285,000 megawatts (MW) of electric generating capacity.[8] By comparison, there were 317,000 MW of coal-fired electric generating capacity in 2010.[9]
- ✓ From 2011 to 2015, 17 new coal units (totaling 8,956 MW) began operation.[10]

- ✓ Since 2010, owners of coal plants have announced that 81,423 MW of coal-fired generating capacity has shut down, will be shutting down, or will be converting to other fuels, with the majority of these occurring by the end of 2016. Of this total, EPA policies have been cited as a factor in the closure of 66,967 MW (410 coal units) in 37 states.[11] Ohio, Pennsylvania, Alabama, Indiana, Kentucky, and Georgia have the most closures due to EPA policies.

ELECTRICITY PRICES

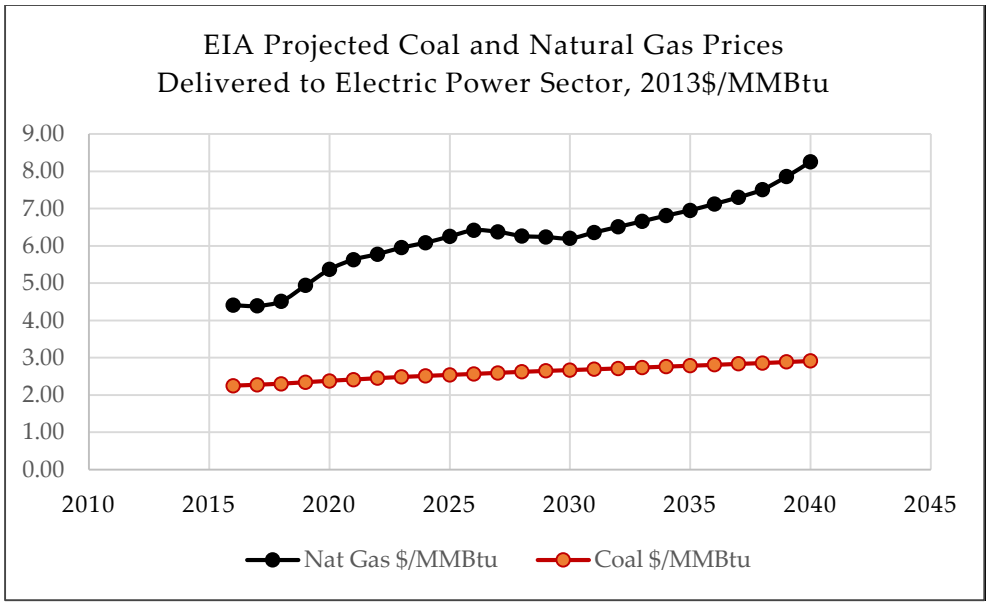
- ✓ The U.S. average retail price for electricity was 10.42 cents per kilowatt-hour (kWh) in 2015.[12] The average family spent $114 per month on electricity in 2014.[13]
- ✓ Twenty-two (22) states that generate, on average, less than 8% of their electricity from coal pay an average of 12.95 cents per kWh for their electricity, which is 24% *more* than the national average price of electricity.[14]
- ✓ Fifteen (15) states that, on average, generate nearly 70% of their electricity from coal pay an average of 9.10 cents per kWh, which is 13% *less* than the national average.[15]

COAL AND NATURAL GAS PRICES

- ✓ The table below compares February 2016 EIA projected coal and natural gas prices ($ per MMBtu) delivered to the electric power sector. Natural gas prices are projected to increase 14% and coal prices less than 1%.[16]

	2016	2017
Natural gas	**$3.54**	**$4.05**
Coal	**$2.18**	**$2.20**

- ✓ EIA projects that natural gas prices for electric power generation will nearly double between 2016 and 2040. Coal prices are projected to rise 30% over the same period.[17]



CLEANER COAL

- ✓ Emissions per kWh of sulfur dioxide (SO_2), nitrogen oxides (NO_x), and particulate matter (PM) from coal-fired power plants have been reduced by 92% over the period 1970-2015.[18]
- ✓ Approximately $111 billion has been invested through 2015 to help achieve these emission reductions. Owners of coal-fired generating units are expected to spend an additional $16 billion for emission controls from 2016 through 2020.[19]
- ✓ Today, well over 90% of U.S. coal-fired electric generating capacity has installed advanced air pollution controls to reduce emissions of SO_2, NO_x, PM, mercury, acid gases, and non-mercury metals.[20]
- ✓ At least 15 clean coal technologies are being used today by the U.S. coal fleet.[21]

STATES

- ✓ Coal is used to generate electricity in 48 states. Only Rhode Island (mostly natural gas) and Vermont (mostly renewables) do not generate any electricity from coal.[22] Coal provides at least half the electricity in 15 states and at least one quarter of the electricity in 28 states.[23]

- ✓ During 2015, the ten (10) states that generated the most kilowatt-hours of electricity from coal were Texas, Indiana, Illinois, Kentucky, Ohio, West Virginia, Pennsylvania, Missouri, Michigan, and Wyoming.[24]
- ✓ During 2015, the ten (10) states with the highest percentage of electricity from coal were West Virginia (94%), Wyoming (88%), Kentucky (87%), Missouri (78%), Utah (76%), North Dakota (75%), Indiana (75%), New Mexico (62%), Nebraska (62%), and Colorado (60%).[25]

U.S. COAL

- ✓ According to EIA, the U.S. has the largest recoverable coal reserves in the world.[26] The U.S. is capable of meeting domestic demand for coal for roughly 280 years (260 billion tons total / 917 million tons of coal consumed in 2014).[27]
- ✓ Ninety-two (92) percent of the coal consumed in the U.S. is used to generate electricity.[28] Coal is also used in the steel, paper, cement, and plastics industries, and to produce activated carbon (for water purification) and carbon fibers (for fuel cells and electronics).[29]
- ✓ Coal is mined in 25 states.[30] Wyoming is the largest coal-producing state, followed by West Virginia, Kentucky, Pennsylvania, and Illinois.[31]
- ✓ According to EIA, domestic coal production totaled 895 million tons in 2015, and is projected to fall to 834 million tons in 2016 and 841 million tons in 2017.[32] Approximately 55% of 2015 coal production came from the western U.S., with 45% from the east.[33]

WORLDWIDE COAL

- ✓ Globally, coal was responsible for 39% of electricity produced in 2012, followed by natural gas at 23%, renewable energy at 21%, nuclear power at 11%, and petroleum liquids at 4%.[34]
- ✓ For 2012 and 2013, U.S. coal demand represented about 12% of total global coal consumption. Asia (led by China and India) consumes over six times as much coal as the U.S. and represents 70% of global consumption.[35]
- ✓ By 2035, global coal consumption is projected to increase by about 40%, with non-OECD Asian demand growing by 58%.[36]

- ✓ Globally, nearly 1.2 million MW (1,200 gigawatts) of coal capacity is under construction or in the planning phase. This is almost four times the size of the entire U.S. coal fleet. The largest amounts of coal capacity are being built in China, India, Indonesia, Vietnam, Europe, and Africa.[37]
- ✓ U.S. coal exports totaled approximately 75 million tons in 2015, a drop from 97 million tons in 2014. However, exports in 2015 remained historically high, and were 21% above average export volumes of 2002-2011.[38] EIA projects U.S. coal exports will drop to 66 million tons in 2016 and 64 million tons in 2017.[39]

March 9, 2016

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[1] U.S. Energy Information Administration (EIA), *Electric Power Monthly*, February 2016 edition, with data for December 2015. Percentages are for utility-scale generation and do not include EIA's (new) estimate of distributed solar generation.
[2] *Ibid*.
[3] *Ibid*.
[4] EIA, *Short Term Energy Outlook*, February 2016.
[5] *Ibid*. EIA states that increasing renewables generation in 2017 is projected to reduce natural gas' market share.
[6] EIA, *Annual Energy Outlook 2015*, April 2015.
[7] EIA, "Count of Electric Power Industry Power Plants By Sector, by Predominant Energy Sources Within Plant, 2004-2014," *Electric Power Annual 2014*, February 2016.
[8] *Ibid* and EIA *Electric Power Monthly*, February 2016.
[9] EIA, *Electric Power Annual 2010*, November 2011.
[10] EIA, Electric Power Monthly, February 2012, 2013, 2014, 2015, and 2016.
[11] ACCCE, *Coal Unit Retirements as of December 30, 2015*. Sources for the retirements are EIA, SNL Energy, and company announcements.
[12] EIA, *Electric Power Monthly*, February 2016.
[13] EIA, "2014 Average Monthly Bill - Residential," http://www.eia.gov/electricity/sales_revenue_price/pdf/table5_a.pdf, accessed March 2, 2016.
[14] EIA, *Electric Power Monthly*, February 2016.
[15] *Ibid*.
[16] EIA, *Short Term Energy Outlook*, February 2016.
[17] EIA, *Annual Energy Outlook 2015*, April 2015.
[18] EIA, *Electric Power Monthly*, February 2016, Table 1.1; U.S. EPA, *National Emissions Inventory*, Air Pollutant Emissions Trends Data, 1970-2014, Fuel Combustion Electric Utilities; EPA Air Markets Program data.
[19] 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.
[20] SNL Energy data, January 2016.

[21] Clean coal technologies include several types of flue gas desulfurization systems for SO_2 control; control technologies to reduce NO_x emissions; advanced particulate matter control systems; emission control technologies to reduce mercury, non-mercury metals, and acid gas emissions; supercritical and ultrasupercritical steam generators; and integrated gasification combined cycle technology.
[22] EIA, *Electric Power Monthly*, February 2016.
[23] *Ibid.*
[24] *Ibid.*
[25] *Ibid.*
[26] EIA, *International Energy Outlook 2013.*
[27] *Ibid*; coal consumption of 917 million tons in 2014 from EIA "Total Energy" data browser, accessed March 7, 2016. (2014 is the last full year available as of March 2016.)
[28] EIA, *Monthly Energy Review*, February 2016.
[29] EIA, *EnergyKids*. World Coal Association, "Uses of Coal."
[30] EIA, *Annual Coal Report: Coal Production and Number of Mines by State and Mine Type: 2013 and 2012,* April 23, 2015.
[31] *Ibid.*
[32] EIA, "Total Energy" data browser, accessed March 7, 2016, *Short Term Energy Outlook*, February 2016.
[33] *Ibid*.
[34] EIA, *International Energy Outlook 2013*.
[35] *Ibid*.
[36] *Ibid.*
[37] *Statement of the U.S. Chamber of Commerce on Paris Climate Change Agreement to U.S. House of Representatives Committee on Science, Space, and Technology*, February 2, 2016 (citing Platt's database, September 2015).
[38] EIA, "Total Energy" data browser, accessed March 7, 2016.
[39] EIA, *Short Term Energy Outlook*, February 2015.