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IS THERE STILL A CASE FOR COAL?

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On March 27, the EPA proposed what it calls the first "Clean Air Act standard for carbon pollution for new power plants."[1] The proposal, if enacted, will effectively outlaw the construction of new coal-fired power plants in the United States. It is one of a myriad of rules leading to what some have called the "regulatory death" of domestic coal-fired electricity production. Shortly after the EPA announcement, Democratic Senator Joe Manchin of West Virginia said the move shows that the EPA is engaged "in a war on coal."

There's no denying that coal has earned its reputation as a relatively dirty fuel. Generating electricity by burning coal results in higher levels of carbon emissions than does burning oil or natural gas. But the EPA should not prohibit the use of coal based on its carbon dioxide emissions. Doing so ignores modern advances in plant design and construction that have steadily improved air quality. But more to the point, prohibiting coal will increase the cost of producing electricity—a cost which will ultimately be paid by consumers—while doing almost nothing to reduce global carbon-dioxide emissions.

Despite its drawbacks, coal remains a cheap, easily accessed, and abundant domestic fuel source. In other words, there is still a case for coal.

The EPA should revisit its proposed ban on new coal-fired power plants. It is bad policy for several reasons:

1. The anti-coal regulatory regime reduces access to a vital source of energy.
2. Electricity producers need to retain a balanced fuel mix. Prohibiting a specific fuel has been tried in the past by regulators.

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3. The newest coal plants are clean by traditional EPA measures.
4. Prohibiting construction of new coal-fired generation units won't do anything to achieve the EPA's stated purpose of reducing global carbon dioxide emissions.

Introduction

Coal has been an essential fuel for electricity production in America ever since Thomas Edison used it in the first central power plant on Pearl Street in lower Manhattan in 1882. Coal provides about 46 percent of domestic electricity, with natural gas providing about 24 percent and nuclear 20 percent.[2] The remainder comes from hydroelectric power and other renewables.

The EPA's proposed rule on new coal-fired generation units is the result of litigation that reached the Supreme Court in 2007. The high court instructed the agency to determine whether carbon dioxide could be considered a pollutant under the Clean Air Act. In 2009, the agency said that the gas was a pollutant and therefore had to be regulated. It concluded that greenhouse gases "endanger both the public health and the public welfare of current and future generations."[3]

On March 27, 2012, the agency released a 257-page proposed rule which, if enacted, will cap the amount of carbon dioxide that can be emitted by new fossil-fueled electricity generation units at no more than 1,000 pounds per megawatt-hour.[4] Coal-fired units emit about 1,800 pounds of carbon dioxide per megawatt-hour, while natural gas-fired units emit about 800 pounds of carbon dioxide per megawatt-hour.[5]

Coal is the most vilified energy source. And the coal industry is under fire like never before. One of America's most influential environmental groups, the Sierra Club, is leading an effort called "beyond coal" which aims to close down all coal-fired electricity production in the United States.[6] To be sure, burning coal has significant environmental impacts, including air pollution. The coal industry also causes serious damage on the surface of the earth through strip mines, mountaintop removal, and ash ponds at power plants. In addition, hundreds of miners die each year in the world's coal mines. While these impacts are undeniable, coal continues to present a compelling value for electricity production because deposits of the fuel are abundant, widely dispersed, easily mined, and they are not controlled by any OPEC-like cartels. For all of those reasons, coal will remain an attractive option for many decades to come.

Outlawing coal-fired generation reduces access to a vital source of U.S. energy.

America isn't the Saudi Arabia of coal; it's the OPEC of coal. The U.S. has about 237 billion tons of coal reserves—about 28 percent of the world's known deposits. America's coal deposits contain 900 billion barrels of oil equivalent, that's nearly as much as the 1 trillion barrels of proved oil reserves held by OPEC.[7] At current rates of consumption, the United States has about 241 years of coal supply.[8]

Since the days of Edison, abundant supplies of domestic coal have allowed the United States to provide nearly every consumer with electricity. And for decades, coal-fired generation units have provided the cheapest source of electricity. The latest data from the Energy Information Administration shows that over the next five years, coal and natural gas-fired electricity production will have cost advantages over every other type of generation. By 2016, the agency expects gas-fired electricity generation will cost about $63 per megawatt-hour while coal-fired production will cost $95. By comparison, onshore wind-generated electricity is expected to cost about $96 per megawatt-hour and solar photovoltaic generation will cost $211.[9] Offshore wind energy production will be even more expensive at about $244 per megawatt-hour.

In its March 27 press release, the EPA said that it "does not project additional cost for industry to comply" with the new rules on coal-fired facilities.[10] But a 2010 report done by the Aspen Environmental Group for the American Public Power Association estimates that the cost of switching all domestic coal-fired generation to natural gas-fired units, will be substantial. "The capital cost to replace the 335,000 megawatts of existing coal-fired units with new combined-cycle gas-fired units amounts to $335 billion," said the report. "This

cost plus the natural gas infrastructure improvements combines to total over $700 billion should natural gas need to fully displace coal-fired generation."[11]

While that $700 billion in new investment would be spread over many years, those costs are likely to result in significant price increases for domestic electricity consumers.

The proposed EPA prohibition on new coal-fired electricity generation will repeat the regulatory mistakes of the past.

During the early and mid-1970s, U.S. policymakers were convinced that a disaster was looming and that they had to act in order to save consumers. The result: In 1978, Congress passed the Powerplant and Industrial Fuel Use Act which prohibited the use of natural gas for electricity generation.[12] Congress acted because policymakers were convinced—wrongly—that the United States was running short of natural gas. But those shortages were not caused by a physical shortage of gas. Instead, they were caused by regulatory overreach.

For instance, the Natural Gas Policy Act created a briar patch of categories for gas pricing based on whether it was sold in interstate or intrastate commerce, what type of wells were involved, and even how deep the wells were.[13]

These Byzantine rules resulted in several periods of severe natural gas shortages and a widespread belief that the country would soon run out of the fuel. In early 1977, natural gas shortages were so severe that a utility in Buffalo, New York, asked its business, industrial, and school customers to shut down for two days and asked residential customers to turn their thermostats down to 55 degrees. In Ohio, gas utilities were forced to cut off supplies to 4,500 industrial customers. Automobile plants in Michigan and Ohio were closed, putting 56,000 people out of work.[14]

The coal sector seized on the shortages to lobby Congress for regulations that would limit the use of natural gas. Legislators responded by passing the Powerplant and Industrial Fuel Use Act and domestic gas consumption plummeted. By 1986, natural gas consumption had fallen to about 44 billion cubic feet per day—a level not seen in the United States since 1965.[15]

In 1987, Congress reversed course and repealed the Powerplant and Industrial Fuel Use Act. Although the law was in effect for less than a decade, it did plenty of damage. The ban on the use of natural gas for power generation led many electric utilities—which were seeing booming demand for electricity—to build more coal plants.[16] In 1978, natural gas was generating 13.8 percent of U.S. electricity. By 1988—a decade after the Powerplant and Industrial Fuel Use Act was passed—natural gas's share of the U.S. electricity business had fallen to a modern low of just 9.3 percent. By contrast, between 1978 and 1988, coal's share of the U.S. electricity generation market soared, going from 44.2 percent to 56.9 percent, the highest level of the modern era.[17]

In July 2011, the EIA reported that coal's share of the domestic electricity market had declined to 46 percent, its lowest level in over 30 years.[18] And thanks to the shale revolution, which is allowing the production of huge quantities of low-cost natural gas, coal-fired generation capacity will likely continue falling as generators voluntarily switch to gas. But even as that voluntary fuel switching proceeds, it's a mistake for the federal government to outlaw coal-fired electricity generation. Doing so only repeats the policy mistakes made in the past.

The newest coal plants are clean by traditional EPA measures.

For decades, the EPA has focused its air-quality efforts on what are known as "criteria pollutants." The Clean Air Act requires the EPA to set standards on six constituents: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, and lead. And over the past three decades, EPA data shows dramatic reductions in those criteria pollutants even though population and energy consumption have increased. In an analysis of air quality, the agency notes:

> Between 1980 and 2010, gross domestic product increased 127 percent, vehicle miles traveled increased 96 percent, energy consumption

increased 25 percent, and U.S. population grew by 36 percent. During the same time period, total emissions of the six principal air pollutants dropped by 67 percent.[19]

Based on the EPA's decades-long focus on criteria pollutants, the coal-fired power plants now under construction will help continue the trend of improving air quality. For instance, the new 1,600-megawatt Prairie State Energy Campus, located in southern Illinois, will likely begin commercial operations within the next few months. The plant, which uses super-critical combustion technology to wring more electricity from the coal, will produce 0.182 pounds of sulfur dioxide and 0.07 pounds of nitrogen dioxide per megawatt-hour.[20] At that level, the facility will easily comply with the EPA's Cross-State Air Pollution Rule, which is scheduled to take effect in 2014. That rule limits emissions to 0.30 pounds of sulfur dioxide and 0.17 pounds of nitrogen oxide per megawatt-hour.

When completed later this year, the new John W. Turk Jr. Power Plant in Arkansas will be America's first ultra-super-critical plant and it will emit even fewer criteria pollutants than the Prairie State project.[21] The 600-megawatt plant[22] will be even cleaner than Prairie State, and will emit 0.065 pounds of sulfur dioxide, and 0.05 pounds of nitrogen oxide per megawatt-hour.[23]

Over the next few months, Duke Energy will begin commercial operation of a 618-megawatt integrated gasification combined cycle coal plant in Knox County, Indiana that will be cleaner still.[24] The Edwardsport plant is expected to emit just 0.014 pounds of sulfur dioxide and 0.02 pounds of nitrogen dioxide per megawatt-hour of electricity produced.[25]

The trend toward ever-lower emissions of criteria pollutants from coal-fired electricity generation will likely continue. But the definition of what qualifies as "clean" under the EPA's rules keeps changing. On March 26, the plants listed above would have easily met the EPA's requirements for pollution. On March 27, given the new rules on carbon dioxide, they wouldn't.

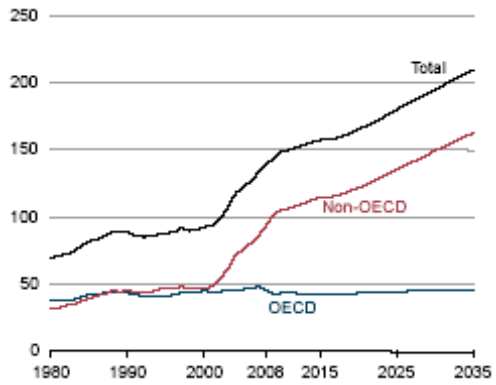
The EPA proposal won't reduce global carbon dioxide emissions.

There are two interrelated reasons why the EPA's new rules will not do much, if anything, to cut global carbon dioxide emissions. First, as domestic coal use declines, U.S. coal producers are selling more of their product overseas. Second, the ongoing increase in global coal consumption will make any reductions in U.S. coal consumption and carbon dioxide emissions insignificant.

Between 2010 and 2011, U.S. coal exports increased by more than 31 percent to about 80 million tons.[26] Coal exports now account for about eight percent of all U.S. coal production, and those exports will continue rising.[27] Peabody Energy, the giant St. Louis-based coal producer, is planning to export some of the coal it produces from its Wyoming mines to China. The company is already shipping some of its domestically produced coal to India.

U.S. coal exports are rising because global demand for the fuel is soaring. According to the Energy Information Administration, global coal use in 2012 will total 71.3 million barrels of oil equivalent per day.[28] By 2035, the agency expects coal consumption to hit 98.5 million barrels of oil equivalent per day. And nearly all of that increase in consumption will occur outside of the OECD. Indeed, between now and 2035, coal use in non-OECD countries is

Global Coal Consumption 1980 to 2035 (quadrillion Btu)



Source: EIA[30]

expected to increase by 51 percent while consumption in the OECD will likely rise by less than 8 percent.[29] The key driver behind soaring coal use in the developing world is electricity demand. For instance, between 2001 and 2010, electricity generation in the Asia Pacific region soared by 38.5 percent. The best example of surging electricity demand can be seen by looking at Vietnam, where electricity use over that time period soared by 227 percent, a rate faster than any other country on the planet.[31] Vietnam also had the biggest percentage increase in carbon dioxide emissions over that time period.

Over the last decade, largely because of increased coal consumption in power plants, global carbon-dioxide emissions rose by 28.5 percent. Over that same decade, U.S. carbon-dioxide emissions fell by 1.7 percent.[32] And here's a stubborn fact that the EPA and its allies simply refuse to acknowledge: Over the last ten years, even if U.S. carbon-dioxide emissions had gone to zero, global carbon-dioxide emissions still would have increased.

The simple truth is that banning new coal power plants in the United States won't make a whit of difference when it comes to global carbon-dioxide emissions. Instead, the prohibition on new coal plants is a de facto carbon tax on American consumers that the Obama administration is attempting to enact by bureaucratic fiat, rather than through a democratic debate about carbon-dioxide emissions and the viability of a carbon tax.

Conclusion

On the eve of World War I, the British Navy was worried about the security of its supply lines. It needed to be certain that British ships could get the oil they needed. Winston Churchill, who was serving as First Lord of the Admiralty, declared that, "Safety and certainty in oil lie in variety and variety alone."[33] In other words, Churchill knew that Britain needed to spread its bets. It couldn't rely too heavily on Persia for its oil. It needed to diversify its suppliers. The United States now faces the same issue in the electricity sector.

Maintaining a variety of generation sources—including natural gas, nuclear, hydro, and some renewables, as well as coal—will help assure that domestic electricity remains cheap, abundant, and reliable. Toward that end, the EPA should abandon its proposed rule aimed at banning new coal-fired electricity generation units.

ENDNOTES

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