

**REMARKS OF MICHELLE BLOODWORTH
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Good afternoon. My name is Michelle Bloodworth, President and CEO of America's Power, and I am pleased to speak today. America's Power advocates on behalf of coal-fired electricity. Our members represent all of the industries involved in the coal supply chain: electricity generators, coal producers, railroads, barges, and equipment manufacturers. Our mission is focused on coal-fired electricity and the nation's fleet of coal-fired power plants, not on issues directly related to coal production.

At the outset, I want to mention that survey results from this past week show that two-thirds of voters support the continued use of coal to generate electricity. It is important that Congress and the Administration take this into account in developing energy policy.

There are at least two other things I hope you will take away from my remarks today.

The first is that the nation needs a genuine all-the-above energy strategy that promotes economic prosperity, grid reliability and resilience, and a cleaner, healthier environment. By genuine, I mean a strategy that does more than give lip service to all-the-above. Right now, our energy policies are being driven more by biased preferences than by realistic criteria. The U.S. should take advantage of all electricity resources that can provide reliable, resilient, and affordable electricity. These include fossil fuels, nuclear power, hydro, wind, solar, demand response, and others. Moreover, electricity sources should be on a path to becoming cleaner through technology innovation.

Second, the coal fleet must be an integral part of the all-the-above strategy for the foreseeable future because it supports grid reliability and resilience, helps keep electricity prices affordable, provides fuel security, and serves as an insurance policy when other electricity sources are not available (for example, wind and solar) or are too expensive (sometimes, natural gas).

A FEW FACTS

Coal was responsible for about 20 percent of electricity generated in the U.S. last year. During 2020, coal provided at least one-quarter of the electricity in 17 states. Coal is mined in 23 states and used to generate electricity in 46 states. Approximately 58 percent of coal was produced west of the Mississippi River and 42 percent in the east.

Emissions per kilowatt-hour of sulfur dioxide (SO₂), nitrogen oxides (NO_x), and particulate matter (PM) from the coal fleet have been reduced by more than 90 percent since the Clean Air Act was passed by Congress. This progress can be attributed, in part, to the more than \$120 billion that has been invested in emission controls by owners of the coal fleet. Virtually all U.S. coal-fired generating capacity has installed controls to reduce emissions of SO₂, NO_x, PM, mercury, and other pollutants.

In terms of fuels, the coal fleet is the number three source (19 percent) of energy-related carbon emissions in the U.S. economy. Petroleum (mostly transportation) is first (46 percent), and natural gas is second (32 percent).

The U.S. coal fleet is responsible for less than 2 percent of worldwide anthropogenic greenhouse gas emissions. China emits 28 percent of global emissions because it has the largest coal fleet in the world which is more than four times the size of the U.S. coal fleet. Moreover, China continues expanding its coal fleet. Chinese coal plants proposed or under construction total 247,000 megawatts (MW), an amount larger than the existing U.S. coal fleet (234,000 MW). As you know, China says that it will *stop increasing* its carbon emissions by the end of this decade, while President Biden has pledged to *reduce* U.S. emissions by 50 percent or more by then.

COAL RETIREMENTS

Unfortunately, close to 60 percent of the nation's coal fleet has either retired or announced plans to retire. Past EPA policies were responsible for almost half of these coal retirements. To put this into perspective, EPA policies have shut down enough coal-fired generating capacity to power the states of West Virginia, Washington, Wyoming, and Kentucky combined.

Approximately two-thirds of the nation's coal-fired generating capacity is located in regions with organized wholesale power markets. The regions with the most coal retirements are PJM, MISO, SPP, and ERCOT. These four regions have more than 110,000 MW of coal-fired generation that has retired or announced retirement, so far. The reason I mention this is because these wholesale markets do not properly value the attributes provided by the coal fleet that I mentioned earlier, especially resilience and fuel security. The combination of undervalued coal-fired generation and future environmental regulations are certain to cause even more coal retirements if regulators are not careful. We estimate that at least another 70,000 MW of coal-fired generation is at risk of retirement over the next 3 years even without new regulations.

CARBON-FREE ELECTRICITY

America's Power believes that a technology-based strategy that promotes innovation, allows time for technology deployment, and is genuinely all-the-above is the best approach to reducing carbon emissions. The clean coal technology program that DOE established in the mid-1980s, along with support from the private sector, has helped the coal fleet achieve the 90 percent-plus emission reductions that I mentioned earlier, but it took patience and sustained support to achieve that result.

As you know, President Biden has announced a goal to achieve carbon-free electricity by 2035 and pledged to establish an Energy Efficiency and Clean Energy Standard as a way to achieve this goal. Without major technology breakthroughs, this goal will eliminate the use of coal and gas to produce electricity within the next 15 years, even though fossil fuels provide more than 60 percent of the nation's electricity supply. We do not believe that President Biden's 2035 goal is realistic or achievable.

Decarbonization will require massive amounts of new wind and solar power plus other technologies to be added to the grid. EPRI has modeled some of the impacts of achieving a carbon-free grid. The grid would need to add 900,000 MW of new wind and solar power,

80,000 MW of new nuclear capacity (almost doubling the size of the nation's existing nuclear fleet), and 200,000 MW of hydrogen-fueled turbines, all within the next 15 years. The cost of these additional electric generating resources is estimated to be \$1.5 trillion plus \$200 billion for transmission upgrades for a total of \$1.7 trillion by 2035. This averages out to more than \$100 billion per year to decarbonize the U.S. electricity grid. The average price of electricity would almost double by 2035. These price increases would be even higher in the southern and eastern parts of the U.S. Another study estimated that almost 120,000 MW of wind, solar, and battery storage would have to be added to the grid *each year*. This *annual* estimate is roughly comparable to the entire U.S. total of 156,000 MW of wind, solar, and battery storage which took more than 2 *decades* to build.

A multi-billion dollar investment in new electric transmission capacity will be necessary to deliver carbon-free electricity from new wind and solar installations. The MIT Energy Initiative found that transmission infrastructure would need to be nearly doubled in order to fully decarbonize the power sector in the most cost-effective manner. The Brattle Group estimated additional transmission investment up to \$25 billion per year would be needed for a grid that is just 75 percent renewables, more than doubling the power sector's \$21.4 billion average annual transmission investment. The Brattle cost estimate of \$25 billion per year would amount to \$375 billion over a 15-year period for new transmission, almost double EPRI's estimate.

In addition to the enormous cost of transmission, completing new transmission projects by 2035 is virtually impossible because siting, approving, and building new transmission lines has become complex, time consuming, and sometimes futile. For example, the Transwest Express Transmission Line to deliver wind power from Wyoming to Nevada and California is taking almost 20 years. The Plains & Eastern Clean Line transmission project to bring wind power from Texas and Oklahoma to serve eastern power demand was essentially abandoned after 8 years due to local opposition along the construction route. The SunZia project — two high-voltage lines from New Mexico to Arizona — is taking 17 years to complete, so far.

Eliminating fossil fuels will within a short period of time could make the electricity grid less reliable and less resilient. Electricity output from wind and solar varies with weather conditions. In ERCOT, wind provided 20 percent of electricity in 2019. A sudden drop in wind production during a 2019 heat wave caused ERCOT to initiate emergency procedures in order to avoid blackouts. MISO also was forced to initiate emergency procedures during the winter of 2019 when wind output dropped by two-thirds when electricity was needed most. California, where almost one-third of the generating capacity is renewable power, was not as lucky last summer, when a drop in solar power and lack of back-up electricity sources contributed to rolling blackouts and other emergency measures that were necessary to avoid a collapse of the state's electricity grid. Recently, the CEO of the North American Electric Reliability Corporation (NERC) made the point that "In our hurry to develop a cleaner resource base, reliability and energy adequacy have to be taken into consideration."

Carbon-emitting resources will not be available if electricity is carbon free. Therefore, energy storage technology will have to be deployed to store renewable power. The most commonly proposed energy storage systems are large-scale lithium-ion battery installations. Battery cost and performance have been improving but remain high, with current cost estimates ranging from \$132 to \$245 per MW-hour of power provided to the grid. This makes battery storage cost prohibitive right now for widespread use in supporting wind and solar power.

Carbon capture, utilization, and storage (CCUS) technology could significantly reduce carbon emissions from fossil-fuel power plants, but the technology is not yet cost-effective for widespread use. Efforts to improve both CCUS and battery storage continue to show promise, but it is risky to assume they would be cost-effective enough to be widely deployed over the next 15 years.

The nation's wholesale power markets are not designed for high levels of renewable generation. Prices in these markets are based on the cost of generating power when needed, but wind and solar power output are driven by weather, not price signals or power demand. By generating power whether needed or not, wind and solar tend to artificially depress market prices below a level that conventional power generators need to break even, even when conventional generators are necessary for grid reliability. New market structures and rules will be needed to ensure power generators are fairly compensated. Past experience has shown that the process for developing and approving new market rules is very lengthy.

More than 30 percent (334,000 MW) of electric generating capacity in the U.S. is comprised of fossil-fuel generation less than 20 years old. Deciding who pays (and how much) for these undepreciated assets is a major challenge because electricity consumers will end up paying twice: first, for the remaining value of the retired plants and, second, for the cost of building new electricity sources and transmission.

NERC has determined that fuel security — a power plant's immediate access to fuel when needed — is important enough to develop guidelines to help regional electricity planners assess their exposure to fuel risk (not having fuel when it's needed). Fuel diversity can reduce the cost of electricity by allowing system operators to rely on different power plants with different fuels as the relative costs of fuels change. Both of these important attributes will decline significantly as the grid transitions to carbon-free electricity.

Decarbonizing the electricity grid will end the employment of thousands of workers. A report by the Energy Futures Initiative found that more than 185,000 jobs are supported by coal-fired power generation. All would be at risk, as would many of the 686,000 jobs supported by the natural gas industry. Many of these jobs are in rural communities that would be disproportionately harmed by job losses.

Thank you for the opportunity to speak today. I would be pleased to answer your questions.

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