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TO THE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OF PENNSYLVANIA

"Concerns Regarding the EPA's Proposed Clean Power Plan"

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Harrisburg, PA

Good morning, my name is Terry Jarrett. I am a former Commissioner with the Missouri Public Service Commission. Today I am appearing on behalf of the National Mining Association's Count on Coal Program. I appreciate the opportunity to share my perspective on the Environmental Protection Agency's proposed 111(d) for fossil fueled Electrical Generation Units.

The Environmental Protection Agency (EPA) is charting a new course with its proposed rules to limit carbon emissions from existing generation units, principally aimed at coal-fired electricity plants. As a former state utility regulator, my first priorities were to ensure reliable electricity to customers at an affordable rate. My experience has shown that the best way to achieve reliability and affordability is to have a diverse portfolio that includes all fuel sources for generating electricity. Coal has been an important cornerstone of a reliable and affordable energy mix in the past, and moving forward must remain so to maintain reliability and affordability.

Our country needs an energy plan that focuses on the consumer and the costs to families and businesses and that keeps electricity reliable, protects the environment, and improves our economic and national security. Such a plan must include coal, natural gas, wind, solar,

hydropower, nuclear, geothermal, and biomass, along with energy efficiency and demand response programs, to meet our energy needs. An approach that truly includes all of the above will accomplish the goals of protecting the environment while keeping rates affordable and the power grid reliable.

The proposed EPA regulations will change the system of power generation in fundamental ways; by the agency's own estimates, nationwide electricity prices will increase 6 or 7 percent, in some cases as much as 12 percent. Other studies, such as one in Ohio, estimate that electricity prices could increase by as much as 30%. I have attached a copy of the Ohio report to my written comments.

Closing down coal-fired utility plants will drive up consumer costs because there isn't a way to replace the base power load power that these coal plants generate. As a result, ratepayers can expect sharp increases in their monthly bills and must prepare for the eventual reality that there may not be enough energy available on the grid to heat and cool their homes, power their businesses, or drive the manufacturing renaissance many business experts predict over the next few years.

States that rely heavily on coal as a fuel source for electricity—like Pennsylvania—will be especially hard hit. My understanding is that Pennsylvania generates about 44% of its electricity from coal. The EPA is proposing that Pennsylvania lower carbon emissions to a rate of 1,052 pounds per megawatt hour by 2030, down from 1,540 in 2012. That is a 32% decrease. It means that Pennsylvania likely will have to shut down thirteen (13) coal plants to achieve this mandate.

Shutting down coal plants and using more expensive sources for electricity generation means that electricity prices will increase for Pennsylvania ratepayers. And, many of these other fuel sources are not as reliable as coal, putting the reliability of the electric grid at risk.

Last winter's Polar Vortex gives us a window into a future without coal. The Polar Vortex pushed electricity prices to more than ten times last year's average in many parts of the country as electricity use surged due to the extremely cold weather. And, the Polar Vortex shows how vulnerable the grid can be. Some areas in the Eastern United States came perilously close to blackouts, saved in large part by coal plants running at peak capacity. Many of the coal-based power plants that operated during the coldest days of this past winter are slated to close in the next few years. Now, a recent report from PJM Interconnection, the regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia, has found that in the event of another polar vortex-like winter, without coal plants there could be insufficient electricity to meet peak demand. At best, that means consumers will get walloped by massive electricity bills come spring; at worst, the grid would be so stressed that blackouts could occur. The Midcontinent Independent System Operator, the regional transmission operator managing the grid for much of the Midwest and South, is currently predicting a 2.3 gigawatt capacity shortfall in 2016 due to planned coal plant retirements in its territory. Blackouts could be a real and persistent threat in the coming years if too many coal plants are forced to retire prematurely.

A reasoned and responsible approach is needed. What we do not want, and what consumers will not accept, are skyrocketing electricity prices and blackouts because of ill-timed and poorly planned closings of coal plants. Our current economic recovery may not be able to withstand the

impacts of this proposed rule without significant harm. Overreaching change that would negatively impact reliable service and affordable electricity prices could be devastating. If the result is less productivity, higher unemployment, and consumers struggling to pay higher electric bills, the costs are too high. Economic, reliability and security concerns must be more prominently considered than is conceived in the proposed rule, which appears to rely almost exclusively on projected benefits that are difficult to quantify and even more difficult to assign a fair economic value. The EPA and the administration are out of step with mainstream Democrats and Republicans and the general public who support a rational, sensible approach, one which is sensitive to the needs both of the environment and of the middle class and the working poor, which will be crushed by the EPA rules. We simply can't afford the EPA in its current trajectory.

REPORT--STAFF OF THE PUBLIC UTILITIES COMMISSION OF OHIO

Introduction:

Staff was asked to estimate the impact of "The President's Climate Action Plan" on the cost of electricity production in Ohio. In specific, an objective in the presidential report calls for a 17% economy-wide reduction in CO_2 emissions from 2005 levels by the year 2020. A 17% economy-wide reduction in CO_2 emissions requires about a 30% reduction in CO_2 emissions in the power sector[1].

Study Assumptions/Methodology:

1. Natural gas was used as the fuel of choice that would displace future coal use.
2. Data from Velocity Suite were used to compute the amount of CO_2 emitted by the power sector during the **reference year** (2005) in the U.S. and in Ohio.
3. In 2005, Ohio power plants contributed about 5.54% to the total CO_2 emissions in the U.S. power industry.
4. The targeted amounts of CO_2 reduction levels were computed for the U.S. and for Ohio during the **study year** (2020).
5. Data from Velocity Suite were used to estimate average heat rates and emission factors for large coal units and natural gas combined cycle units.
6. The average heat rates and emission factors were then used to convert tons of CO2 reductions required in Ohio to megawatt-hours (MWh) of electricity fuel-switched from coal to natural gas in Ohio.
7. In estimating the production cost deferential as a result of fuel switching from coal to natural gas, a 3^2 factorial design experiment was conducted:
    a. Two variables (factors) were considered - coal and natural gas price forecasts in 2020.
    b. Three levels were considered for each fuel – low price forecast, medium price forecast, and high price forecast (Source: EIA).

Study Findings:

1. Ohio would need to switch roughly **35.5 million MWh** from being generated by coal to being generated by natural gas in the year 2020.
2. If in the year 2020, Senate Bill 221 mandates are materialized, Ohio would need to switch only 12.5 million MWh from being generated by coal to being generated by natural gas. The remaining **23 million MWh** would either be generated by zero carbon generation, biomass, or would be conserved due to the implementation of EE programs.

[1] This statistic is based on Future 8 results in the EISPC study.

3. Excluding the impact of SB 221 RPS and EE mandates in 2020, Table 1 summarizes the production cost differential in Ohio from fuel switching using nine separate scenarios of coal and natural gas price forecasts. ***The net impact on a customer's generation bill in Ohio would be as low as an additional 0.04 cent/KWh or 0.85% (for the scenario of low gas & high coal prices) or as high as an additional 1.23 cents/KWh or 28.35%[2] (for the scenario of high gas & low coal prices). A summary for all nine scenarios considered, in terms of a net increase or a percent increase, is displayed in Table 1.a.***
4. Including the impact of SB 221 RPS and EE mandates in 2020, Table 2 summarizes the production cost differential in Ohio from fuel switching using nine separate scenarios of coal and natural gas price forecasts. ***The net impact on a customer's generation bill in Ohio would be as low as and additional 0.01 cent/KWh or 0.30% (for the scenario of low gas & high coal prices) or as high as and additional 0.43 cents/KWh or 10.01% (for the scenario of high gas & low coal prices). A summary for all nine scenarios considered, in terms of a net increase or a percent increase, is displayed in Table 2.a.***

Notes:

The production cost differentials displayed in Table 1 are purely the costs of producing energy; they do not include the cost of constructing the new combined cycle units (estimated at $6.7 billion)[3] that would be needed to displace the retired coal units nor do they include the cost of decommissioning the displaced coal units and terminating any long-term coal contracts tied to these units (unknown at this time).

The production costs differentials displayed in Table 2 are purely the costs of producing energy; they do not include the cost of constructing the new combined cycle units (estimated at $2.37 billion)[4] that would be needed to displace the retired coal units nor do they include the cost of decommissioning the displaced coal units and terminating any long-term coal contracts tied to these units (unknown at this time).

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[2] The 2012 Ohio hub LMP was used as the average wholesale market price. Adjustments were then made to translate the wholesale price to an average retail market price in Ohio. The latter was used as the benchmark for estimating the percent increases.

[3] The cost of constructing the new combined cycle units that would displace the coal units is estimated at $6.70 billion – (i) The average load factor for the state is 60%, (ii) 6,700 MW of new combined cycle capacity would be required, and (iii) An all-in capital cost for a new combined cycle unit is about $1,000/KW.

[4] The cost of constructing the new combined cycle units that would displace the coal units is estimated at $2.37 billion – (i) The average load factor for the state is 60%, (ii) 2,370 MW of new combined cycle capacity would be required, and (iii) An all-in capital cost for a new combined cycle unit is about $1,000/KW.

Additionally, the costs of constructing renewable resources and implementing the EE programs are excluded from Table 2.

Table 1

Electricity Production Cost Increases in Ohio due to Fuel Switching from Coal to Natural Gas **(w/o Senate Bill 221 RPS & EE mandates)**			
Price Scenarios	Low Gas ($5/mmBtu)	Medium Gas ($6.15/mmBtu)	High Gas ($8/mmBtu)
Low Coal ($2.25/mmBtu)	$486,904,281.28	$947,669,226.36	**$1,685,654,021.56**
Medium Coal ($2.51/mmBtu)	$312,298,455.66	$773,063,400.74	$1,511,048,195.94
High Coal ($2.9/mmBtu)	**$50,389,717.22**	$511,154,662.30	$1,248,990,913.39

Table 1.a

Net Impacts, in cents/KWh, on a Customer's generation Bill in Ohio due to Fuel Switching from Coal to Natural Gas **(w/o Senate Bill 221 RPS & EE mandates)**			
Price Scenarios	Low Gas ($5/mmBtu)	Medium Gas ($6.15/mmBtu)	High Gas ($8/mmBtu)
Low Coal ($2.25/mmBtu)	0.36 (8.19%)	0.69 (15.94%)	**1.23 (28.35%)**
Medium Coal ($2.51/mmBtu)	0.23 (5.25%)	0.56 (13.00%)	1.10 (25.41%)
High Coal ($2.9/mmBtu)	**0.04 (0.85%)**	0.37 (8.60%)	0.91 (21.01%)

Table 2

Electricity Production Cost Increases in Ohio due to Fuel Switching from Coal to Natural Gas (**with Senate Bill 221 RPS & EE mandates**)			
Price Scenarios	Low Gas ($5/mmBtu)	Medium Gas ($6.15/mmBtu)	High Gas ($8/mmBtu)
Low Coal ($2.25/mmBtu)	$171,882,710.98	$334,537,941.04	**$595,054,909.45**
Medium Coal ($2.51/mmBtu)	$110,244,882.33	$272,900,112.38	$533,417,080.79
High Coal ($2.9/mmBtu)	**$17,788,139.34**	$180,443,369.40	$440,907,900.05

Table 2.a

Net Impacts, in cents/KWh, on a Customer's generation Bill in Ohio due to Fuel Switching from Coal to Natural Gas (**with Senate Bill 221 RPS & EE mandates**)			
Price Scenarios	Low Gas ($5/mmBtu)	Medium Gas ($6.15/mmBtu)	High Gas ($8/mmBtu)
Low Coal ($2.25/mmBtu)	0.13 (2.89%)	0.24 (5.63%)	**0.43 (10.01%)**
Medium Coal ($2.51/mmBtu)	0.08 (1.85%)	0.20 (4.59%)	0.39 (8.97%)
High Coal ($2.9/mmBtu)	**0.01 (0.30%)**	0.13 (3.03%)	0.32 (7.42%)