Government Revenues 2022 (projected)

The lignite industry was projected to contribute $53 million in government revenues directly from the firms in the industry. Tax revenues arising from secondary business activity, based on projections of industry activity, were estimated to generate an additional $50.6 million in government revenues. A projected total of $103.5 million in state and local tax revenues were created by the Lignite Industry in North Dakota in 2022.

Coal conversion and coal severance taxes were estimated at $15.8 million. Other substantial contributions to state and local government revenues from secondary economic effects were from sales taxes ($23.5 million) and property taxes ($18 million).

State and Local Government Revenues, Lignite Industry, North Dakota, 2022 (projected)

Government Revenue	Paid Directly by the Industry	Collected from Indirect and Induced Activity	Total Collections
	---------- 000s 2022 $ ----------		
Coal Severance Tax	10,450	---	10,450
Coal Conversion Tax	5,360	---	5,360
Sales, Property, and Corporate Income Taxes (reported in survey data)	25,667	---	25,667
Social Insurance Tax	1,996	1,183	3,179
Personal Income Tax	3,107	2,264	5,371
Sales Tax	see above	23,457	23,457
Property Tax	see above	18,082	18,082
Corporate Income Tax	see above	1,310	1,310
Other Taxes	2,349	1,331	3,680
Non Taxes	4,024	3,003	7,027
Totals	**52,953**	**50,630**	**103,583**

Share of State Economy

A key means of placing an industry contribution study into context is showing its share of a broader economy. The lignite energy industry represents an important share of the North Dakota's economy. The lignite energy industry represented 2.6 percent of the state's gross state product and 4 percent of the state's gross business volume. The industry represented about 2.8 percent of the state's total labor income. The industry represents about 1.2 percent of all state and local government revenues.

The lignite energy industry share of employment was 2.3 percent of statewide employment. Those shares are based on a state total for both wage and salary jobs and sole proprietors/self employed jobs. The industry's share of the state economy was not estimated for 2022 as state-level data was unavailable prior to completing the study.

ANNUAL SHARE OF STATE TOTALS, North Dakota Lignite Energy Industry

Industry Segment	Labor Income	Value-added (GSP)	Total Output	State and Local Government Revenues
State-level Values for 2021	$37.3 billion	$77.0 billion	$142.7 billion	$9.954 billion
Mining	0.81%	0.60%	0.64%	---
Conversion	1.80%	1.29%	2.23%	---
Transmission and Distribution	0.23%	0.71%	1.08%	---
All Segments	2.83%	2.60%	3.95%	1.20%

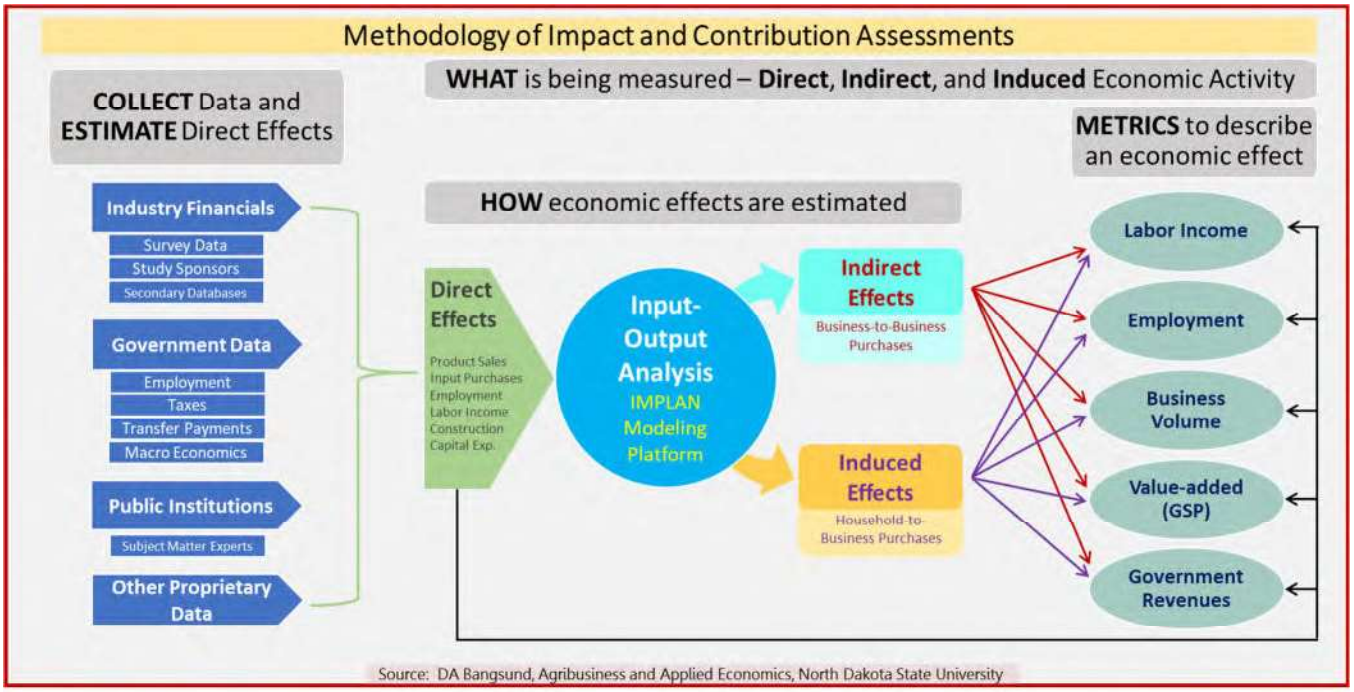
ANNUAL SHARE OF STATE EMPLOYMENT, North Dakota Lignite Energy Industry

Industry Segment	Total Employment	Wage and Salary	Self-employed
State-level Values for 2021	557,702	434,811	122,691
Mining	0.59	3184#	3175#
Conversion	1.51	31k<#	31;9#
Transmission and Distribution	0.19	314:#	313;#
		#	#
All Segments	2.30%	419:(#	4169(#

Supplemental Materials

Economic Contribution Analysis

An economic contribution assessment measures the gross size of some aspect or component of an economy, and is usually measured in conjunction with the overall size of a given economy over a specified period. Size is estimated by combining direct or first-round effects (e.g., industry expenditures, business sales, new employment) with economic modeling to estimate how those first round effects generate business-to-business transactions and household spending on consumer goods and services. Both of those conduits for economic output can be framed using labor income, employment, value-added, gross business volume and government revenues.



Key Terms and Concepts

Direct Effects: First-round of payments for services, labor, and materials and/or sales of an industry's products.

Indirect Effects: Economic activity created through purchases of goods and services by businesses.

Induced Effects: Economic activity created through purchases of goods and services by households.

Industry Output and Gross Business Volume: Industry output is the value of all goods and services produced and supported by an industry. In most industries, output is largely synonymous with sales; however, for some sectors output also includes changes in product inventory. For lignite energy industry, direct output includes both sales and inventory adjustments.

When output from business-to-business transactions (*indirect*) and households-to-businesses (*induced*) are measured, they also are described as the *sum of gross receipts* as annual adjustments to inventories are largely unquantified and not distinguished from sales. *Gross business volume* (GBV) therefore includes direct output/sales and includes secondary sales from indirect and induced economic activity.

Value-added: Value-added is synonymous with measures of gross domestic product (GDP) and gross state product (GSP), are some of the most commonly used economic measures to indicate the economic size and change in economic output. However, official government estimates of GDP and GSP do not include secondary economic effects generated by any industry. For lignite energy industry, official government estimates are primarily limited to coal mining, coal conversion, and transmission/distribution. Economic contribution assessments include secondary economic effects, and include GSP from those effects, thereby providing a more realistic and representative portrait of an industry.

Key components of value-added include labor income, consumption of fixed capital, profits, business current transfer payments (net), and income derived from dividends, royalties, and interest. In nontechnical terms, value-added is equal to product value minus production inputs. For example, value-added from coal mining would be the value of coal sold less the value of the inputs consumed in mining the coal. Depreciation charged to durable assets (e.g., buildings, pipelines, processing equipment) are not included in value-added measures.

Employment Compensation: Wages, salaries, and benefits earned by an employee.

Proprietor Income: Payments received by self-employed individuals and unincorporated business owner/operators.

Labor Income: Wages, salaries, and benefits for employees and compensation for self-employed individuals.

Input-output Analysis (I-O): Mathematical application of the interdependence among producing and consuming sectors in an economy.

I-O Matrix: Depiction of an economy using a grid of rows and columns that represents consumption and production for each economic sector in an economy.

Intermediate Inputs: Goods and services consumed in one year to produce another good or service. Intermediate inputs do not include expenditures for capital inputs used for multiple production seasons (e.g., machinery, buildings).

Capital Inputs: Represent the use of inputs to produce another good or service that are not consumed in one production season and are subject to depreciation. *Capital expenditures* represent the purchase of those depreciable assets.

Industry Balance Sheet: Dividing an industry or economic sector into various components for use in estimating the economic effects using input-output analysis. Components of the balance sheet include measures of output, wage and salary employment, self-employment, payroll and proprietor income, other property type income, taxes on production and imports, and intermediate inputs.

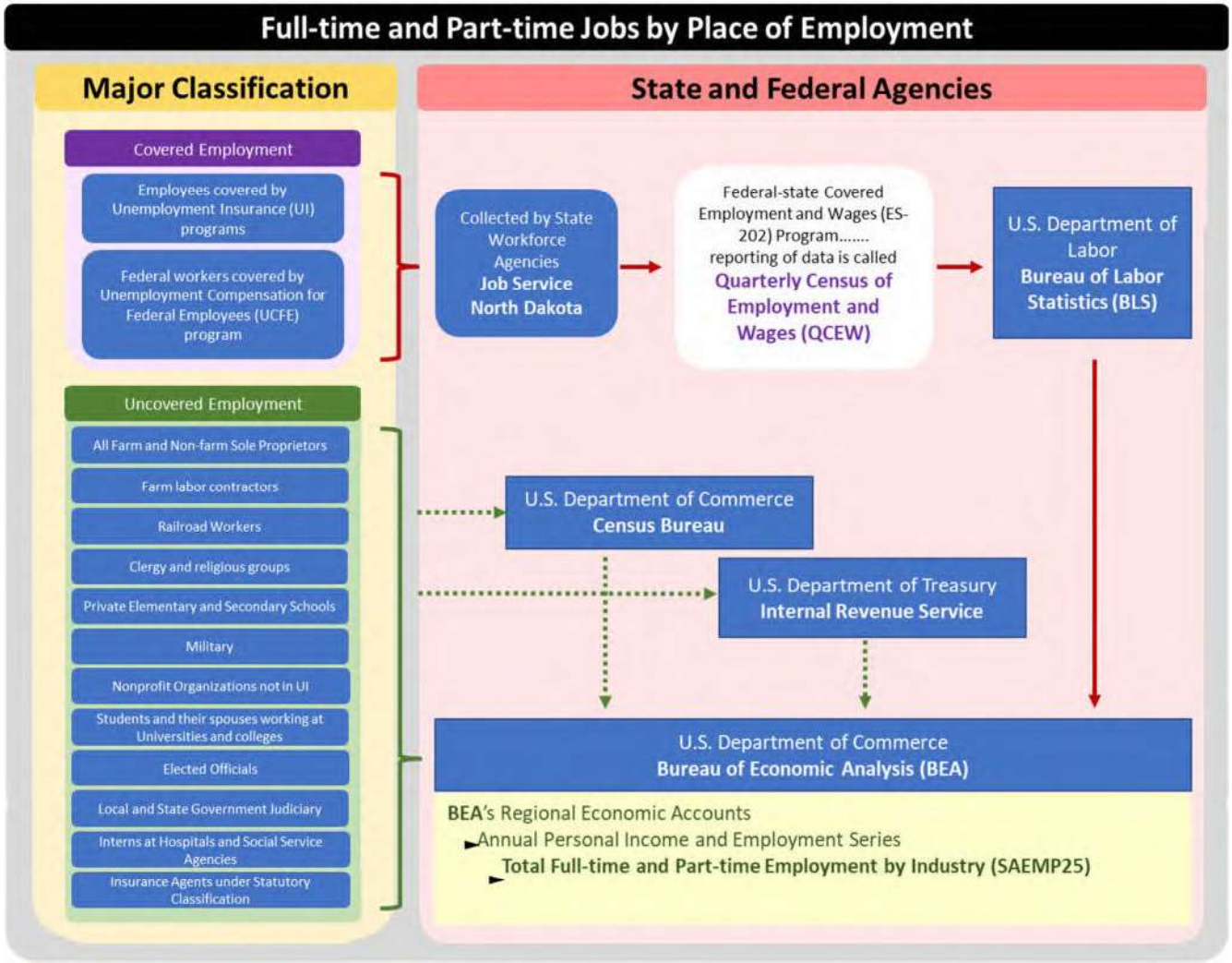
Institutions: Represent governments and other non-private entities consuming goods and services in an economy.

Households: Represent one or more individuals in a specific living arrangement for which income from all sources is used to purchase goods and services.

North American Industry Classification System (NAICS): Government classification system for all goods and services produced in the economy.

Employment Sources and Measures

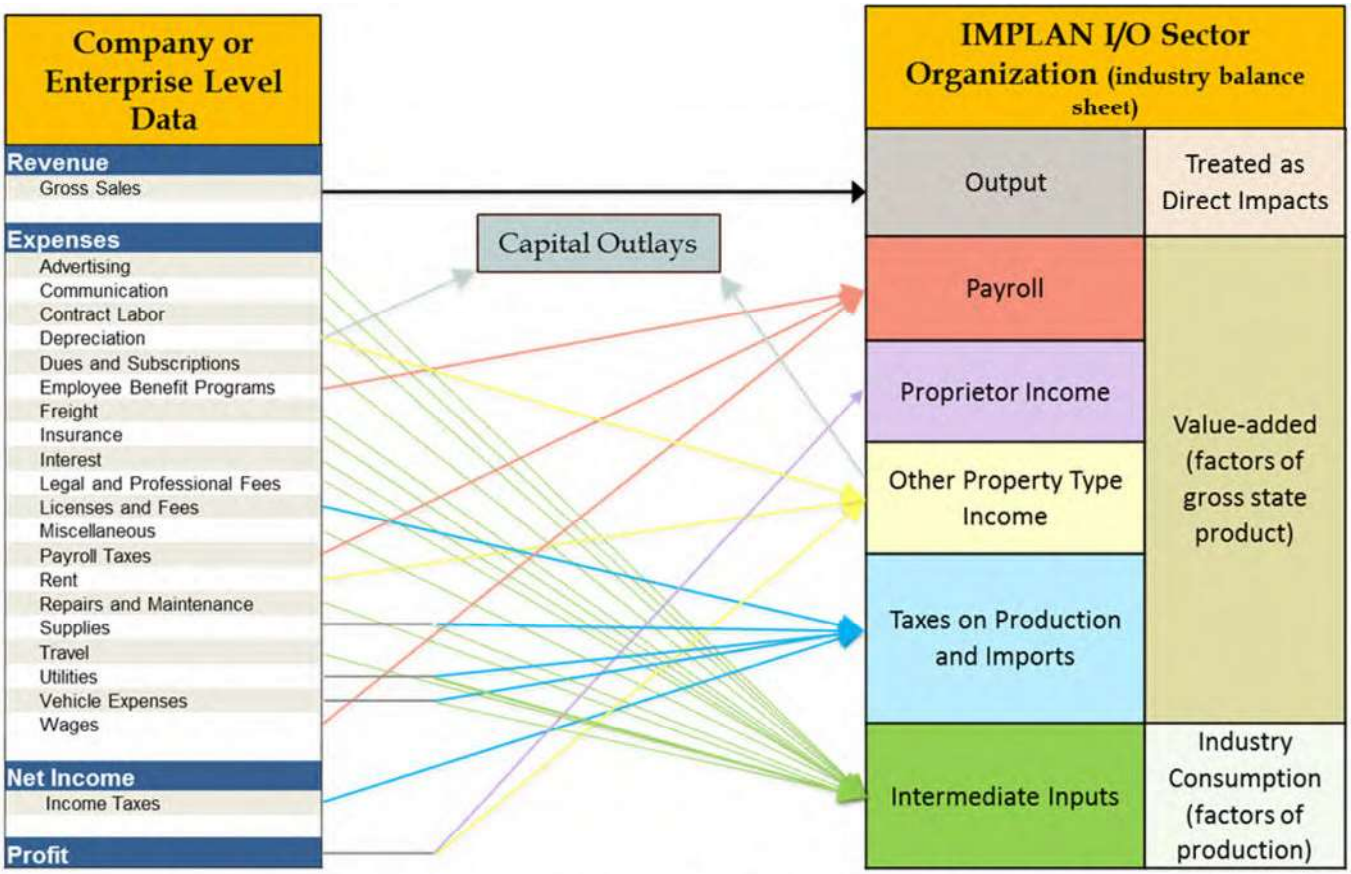
Employment is broadly measured in two distinct categories: covered and uncovered. Covered workers are those that are employed by a business, institution, or government agency, receive a wage or salary, and are subject to unemployment insurance (UI). Jobs that fall under an UI program are called 'covered' employment. Quarterly Census of Employment and Wages (QCEW) employment reported by Job Service North Dakota is 'covered' employment. QCEW data are collected for each state and reported by the U.S. Bureau of Labor Statistics (BLS). Therefore, employment statistics for self-employed individual cannot be derived from QCEW data.



Developing Economic Sector Profiles

An industry balance sheet or economic profile is one of the most important elements in economic contribution studies. Nearly all key economic metrics have their origin within an industry's economic profile/sector. Information and data to create economic sector profiles were collected from surveys of industry firms and data from government agencies.

While the IMPLAN modeling platform provides baseline economic profiles generated from proprietary estimation techniques applied to government data, this study relied on state-sourced data and industry input to create a customized IO matrix. The process of developing study-specific economic profiles and then modifying an IO matrix is time consuming and requires considerable empirical analysis, but the results from those efforts produce a credible and transparent evaluation of an industry's role in an economy.



General Transposition of Financial Information into IMPLAN Economic Sector Profiles

Source: DA Bangsund, Department of Agribusiness and Applied Economics, NDSU

Treatment of Traditional Economic Sectors Supporting Lignite Energy Industry

This summary omits specific details of how the secondary economic effects are distributed among the state's numerous economic sectors and sub-sectors. Several economic sectors support the lignite energy industry by providing inputs and services to various segments of the industry. Examples include manufacturing, financial institutions, legal representation, business services, industrial equipment and machinery, among others. Under some definitions, those activities and sectors are presented as "direct" segments of the industry. However, from the perspective of how this study's input-output analysis was structured, those sectors represent "indirect" economic output of the industry, meaning those sectors are supported and sustained from purchases relating to lignite energy industry mining, conversion, and transportation/distribution.

Acknowledgments

Special thanks are extended to Jason Bohrer, President, Lignite Energy Council, for his leadership, guidance, and information throughout the study, and to Kay LaCoe, Vice President of Communications, Lignite Energy Council who assisted with the surveys and soliciting industry cooperation for the study.

The study authors and study sponsors would like to thank all the companies and individuals that took the time to complete and return the survey materials. This study, with its reliance on industry data, would not have been possible without industry cooperation.

Financial support was provided by the North Dakota Lignite Energy Council. We express our appreciation for their support.

We wish to thank Edie Nelson, Department of Agribusiness and Applied Economics, for document preparation.

The authors assume responsibility for any errors of omission, logic, or otherwise. Any opinions, findings, and conclusions expressed in this publication are those of the authors and do not necessarily reflect the view of the NDSU Department of Agribusiness and Applied Economics or the NDSU Center for Social Research.

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

STATE OF NORTH DAKOTA, STATE OF WEST VIRGINIA, STATE OF ALASKA, STATE OF ARKANSAS, STATE OF GEORGIA, STATE OF IDAHO, STATE OF INDIANA, STATE OF IOWA, STATE OF KANSAS, COMMONWEALTH OF KENTUCKY, STATE OF LOUISIANA, STATE OF MISSISSIPPI, STATE OF MISSOURI, STATE OF MONTANA, STATE OF NEBRASKA, STATE OF OKLAHOMA, STATE OF SOUTH CAROLINA, STATE OF SOUTH DAKOTA, STATE OF TENNESSEE, STATE OF TEXAS, STATE OF UTAH, COMMONWEALTH OF VIRGINIA, AND STATE OF WYOMING, *Petitioners*, v. U.S. ENVIRONMENTAL PROTECTION AGENCY, *Respondent*.	Case No. 24-1119

DECLARATION OF JAMES F. HUSTON
IN SUPPORT OF PETITIONERS' MOTION TO STAY FINAL RULE

I, James F. Huston, hereby declare and state under penalty of perjury that the following is true and correct to the best of my knowledge and is based on my personal knowledge or information available to me in the performance of my official duties:

1. My name is James F. Huston, and my business address is 101 W. Washington St., Suite 1500 E, Indianapolis, Indiana, 46204. I am over the age of 18, have personal knowledge of the subject matter, and am competent to testify concerning the matters in this declaration.

2. I have served as Chairman of Indiana Utility Regulatory Commission (IURC) since March 2018 and served as a Commissioner since November 2014. I also serve on the National Association of Regulatory Utility Commissioners (NARUC) Committee on Gas and on the Gas Technology Institute's Public Interest Advisory Committee. I was recently appointed to the Member Representatives Committee of the North American Electric Reliability Corporation (NERC). I earned my Bachelor of Science and Master of Arts degrees from Ball State University.

3. The IURC is responsible for ensuring safe and reliable service at just and reasonable rates for the utilities it regulates, including electric utilities, serving retail customers in Indiana. As Chairman and a member of the IURC, I have responsibility over proceedings before the IURC, working with staff in reviewing the evidence presented, and making determinations based on the applicable laws and the public interest, as well as establishing rules and guidelines requiring appropriate short-term and long-term planning. Because of the potential impact on resource reliability and retail rates, IURC Commissioners and staff also review and participate in the stakeholder processes of the two regional transmission organizations ("RTOs") that have Indiana electric utilities as members, the Mid-continent Independent System Operator, Inc. ("MISO") and the PJM Interconnection, LLC ("PJM"), and in the related regional state committees, the Organization of MISO States ("OMS") and the Organization of PJM States, Inc. ("OPSI"). In addition, the IURC monitors filings affecting Indiana utilities and intervenes and provides comments to the Federal Energy Regulatory Commission ("FERC").

4. I am submitting this declaration in support of Petitioners' Motion to Stay the Final Rule published by the U.S. Environmental Protection Agency (EPA) on May 7, 2024, entitled

"National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units Review of the Residual Risk and Technology Review," 89 Fed. Reg. 38,508 (Final Rule), which sets a more stringent standard for filterable particulate matter ("PM") emissions from existing coal-fired power plants (going from 0.030 lbs/MMBtu to 0.010 lbs/MMBtu) and revises start-up requirements.

5. Continued reliability of the electric generation and transmission systems must be an important consideration as the U.S. EPA moves forward with this rule. The Indiana General Assembly established a balanced approach to electric generation regulatory decisions in Indiana Code section 8-1-2-0.6, which declares that it is the continuing policy of the State of Indiana "that decisions concerning Indiana's electric generation resource mix, energy infrastructure, and electric service ratemaking constructs must consider" the following attributes (commonly referenced as the "Five Pillars"):
    a. Reliability,
    b. Affordability,
    c. Resiliency,
    d. Stability, and
    e. Environmental sustainability
6. While the U.S. EPA's main concern is environmental and climate, the elimination of too much electric generation too quickly may cause even greater issues, affecting the other key attributes needed for electric generation and the affordability of electricity generally.
7. As Chairman, I have concerns that the Final Rule will undermine the reliability and resiliency of the electric grids upon which the State of Indiana and its citizens rely and could result in significantly higher prices for electricity in Indiana.

The Final Rule Threatens an Already Vulnerable Power Grid

8. The power grids providing electricity to Indiana are already stretched thin and do not have the resiliency or the buffer of excess dispatchable generation that they had ten or even five years ago.

9. MISO's reserve margins "have been exhausted through load growth and unit retirements," and the entire region will experience a 4.7 GW shortfall beginning in 2028 if "currently expected generator requirements actually occur." And this shortfall, caused in part by early retirements of Electric Generating Units (EGUs), will compromise grid reliability. *MISO's Response to the Reliability Imperative*, 6, 11–12, (updated February 2024), https://cdn.misoenergy.org/2024%20Reliability%20Imperative%20report%20Feb.%2021%20Final504018.pdf?v=20240221104216.

10. PJM recently warned of capacity deficiencies and reliability degradation as dispatchable thermal plants are retired prematurely. In a February 2023 report on the risks relating to energy resource transitions that a movement away from base load dispatchable generation will cause PJM stated:

> The composition of the PJM Interconnection Queue has evolved significantly in recent years, primarily increasing in the amount of renewables, storage, and hybrid resources and decreasing in the amount of natural gas-fired resources entering the queue . . .
>
> By the 2028/2029 Delivery Year and beyond, at Low New Entry scenario levels, projected reserve margins would be 8%, as projected demand response may be insufficient to cover peak demand expectations, unless new entry progresses at levels exhibited in the High New Entry scenario. This will require the ability to maintain needed existing resources, as well as quickly incentivize and integrate new entry. . .

> Thermal generators are retiring at a rapid pace due to government and private sector policies as well as economics . . .
>
> PJM' s interconnection queue is composed primarily of intermittent and limited-duration resources. Given the operating characteristics of these resources, we need multiple megawatts of these resources to replace 1 MW of thermal generation.

Energy Transition in PJM· Resource Retirements & Replacements & Risks, 1, 10, 16 (Feb. 24, 2023), https://bit.ly/3DOBR1P.

11. These power grids are interdependent, so a reduction in EGUs anywhere in the RTOs to which Indiana belongs will likely affect all members.

12. If the Final Rule forces even more coal generation sources to shut down prematurely, it could impact grid reliability and the provision of reliable electricity to the people of Indiana and all MISO and PJM member regions.

13. While Indiana does not operate any lignite power plants, these plants are essential for grid reliability. The plants are able to respond to fluctuating grid demands, either ramping up or decreasing production as necessary.

14. The Final Rule may cause coal plants in the MISO and PJM grids to close. Given the current regulatory landscape, MISO and PJM will have to move towards even more intermittent resources, such as wind or solar, and will need more online reserve resources to provide the constant balance of supply to load when wind and solar resources are intermittent; that is, when the wind is not blowing (or blowing unevenly) or the sun is not shining (or shining unevenly). Both MISO's and PJM's generation interconnection queues are overloaded and slow moving, so getting sufficient generation interconnected in time is also an issue.

Impact of the Final Rule on Indiana's Electricity Pricing

15. Indiana has a diverse portfolio of power generation resources, including wind, coal, solar, hydroelectric, and natural gas. Once accounting for more than 90% of Indiana's electricity, coal-fired electricity generation is now less than half of the State's total energy generation. Electricity prices have risen in Indiana, changing Indiana's ranking from the 4th lowest in prices in 2002 to 29th lowest in 2022, according to the U.S. Energy Information Administration.

16. EPA's claims that the Rule will not affect the price of electricity is not true in Indiana. If a stay is not granted, Indiana's existing coal-fired power plants will have to comply with more stringent filterable particulate matter emission requirements and unit start-up requirements, and at least four facilities will, at minimum, have to install PM Continuous Emissions Monitoring Systems.

17. The costs for these installations are passed on to consumers through rate changes for cost recovery as required by law. For example, from 2013 to 2015, the IURC approved over $1 billion in cost recovery due to compliance costs of federally mandated environmental requirements, including costs for compliance with the original MATS rule.

Executed in Indianapolis, Indiana, on May 29, 2024.

James F. Huston
Chairman
Indiana Utility Regulatory Commission

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

STATE OF NORTH DAKOTA, STATE OF WEST VIRGINIA, STATE OF ALASKA, STATE OF ARKANSAS, STATE OF GEORGIA, STATE OF IDAHO, STATE OF INDIANA, STATE OF IOWA, STATE OF KANSAS, COMMONWEALTH OF KENTUCKY, STATE OF LOUISIANA, STATE OF MISSISSIPPI, STATE OF MISSOURI, STATE OF MONTANA, STATE OF NEBRASKA, STATE OF OKLAHOMA, STATE OF SOUTH CAROLINA, STATE OF SOUTH DAKOTA, STATE OF TENNESSEE, STATE OF TEXAS, STATE OF UTAH, COMMONWEALTH OF VIRGINIA, AND STATE OF WYOMING, *Petitioners*, v. U.S. ENVIRONMENTAL PROTECTION AGENCY, *Respondent*.	Case No. 24-1119

DECLARATION OF CHARLOTTE R. LANE
IN SUPPORT OF PETITIONERS' MOTION TO STAY FINAL RULE

I, Charlotte R. Lane, make the following declaration pursuant to 28 U.S.C. § 1746 and state under penalty of perjury that the following is true and correct to the

best of my knowledge and is based on my personal knowledge or information available to me in the performance of my official duties:

1. I am the Chairman of the Public Service Commission of West Virginia (PSCWV) I have held this position from July 1, 2019, to present and from 1997 to 2001. I served as Commissioner from 1985 to 1991. I served on the International Trade Commission from 2003 to 2011. I also served for several years in the West Virginia House of Delegates. I served as President of the Mid-Atlantic Conference of Regulated Utility Commissioners as well as a member of the Board of Directors of the National Association of Utility Regulatory Commissioners. I practiced law in State and Federal Courts in West Virginia for many years. I was awarded the Justitia Officium Award from the West Virginia College of Law and the Distinguished Alumnus Award from Marshall University. I am also a Fellow of the American Bar Foundation and the West Virginia Bar Foundation. I am over the age of 18, have personal knowledge of the subject matter, and am competent to testify concerning the matters in this declaration.

2. The PSCWV is responsible for regulating the service and rates of utilities, including vertically integrated electric utilities serving retail customers in West Virginia. As Chairman and a member of the PSCWV, I am charged with the responsibility for evaluating and balancing the interests of current

and future utility service customers, the general interests of the State's economy, and the interests of the utilities subject to PSCWV jurisdiction in its deliberations and decisions, including matters relating to PJM Interconnection, LLC (PJM) and the Federal Energy Regulatory Commission.

3. I am submitting this declaration in support of Petitioners' Motion to Stay the Final Rule published by the U.S. Environmental Protection Agency (EPA) on May 7, 2024, entitled "National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units Review of the Residual Risk and Technology Review," 89 Fed. Reg. 38508 (Final Rule).

4. As Chairman of the PSCWV, I have significant concerns that the Final Rule will contribute to the undermining of the reliability and resiliency of the electric grids upon which the State of West Virginia and its citizens, as well as citizens in all States, rely. This undermining is accelerated by the inability of regulators and utilities to rely on consistent and fair treatment of baseload, dispatchable coal-fired power plants with on-site multi-month fuel supplies. The EPA has clearly launched a war on coal-fired generation by its various recent rulemakings. While the EPA attempts to focus on what it believes will be a limited impact of the Final Rule, it fails to see that the Final Rule is one more nail in the coffin for baseload, dispatchable coal-fired power plants and,

as such, severely impedes the goal of a reliable, resilient, always-available power supply. Coal-fired power plants offer unique on-site, secure fuel supplies that make them invaluable as reliable and resilient electric generation resources. When the highly reliable, on-site fuel-secure baseload, dispatchable, coal-fired plants are laid to rest in the near future by EPA's efforts under rules such as the Final Rule, West Virginia and our entire region will be left dangerously over-reliant on intermittent, non-dispatchable electricity resources that cannot be called upon when needed, twenty-four hours per day, three hundred and sixty-five days per year.

5. West Virginia utilizes a variety of power generation sources, including wind, coal, hydroelectric, and natural gas. In addition, West Virginia exports a large amount of energy resources in the form of coal, oil, and natural gas. These resources are critical to the economy and security of the entire United States.

6. Beyond just its immediate impacts, the Final Rule will have further-reaching negative implications because of the message it sends that the EPA will continue its war on coal until it has buried our last coal-fired power plant. Yet the EPA's mission to kill coal-fired power generation is not supported by the agency's own benefit/cost analysis. In fact, the EPA benefit/cost analysis shows that the net benefits of the rule are negative. As a utility regulator that relies on accurate and supportable benefit/cost analyses when considering

utility investments, I am not comfortable with the EPA's efforts to whitewash its poor benefit/cost ratio by claiming that it is likely under-stating benefits of the Rule because of externalities that it believes are benefits, but it cannot quantify. EPA does this while at the same time admitting that "the estimates of compliance costs used in the net benefits analysis may provide an incomplete characterization of the true costs of the rule."[1]

7. Based on our analysis, we believe that the magnitude of the EPA's understatement of compliance costs is significant. However, just accepting the EPA benefit/cost analysis, the EPA calculates that the rule's health benefits over the next ten years will have a $300 million net present value at a 2 percent discount rate, while the net present value of the costs (which we believe are understated) will be $860 million. Thus, even by the EPA's own analysis, the ratio of benefits to the increased costs of compliance is an uneconomical 0.35 times.[2] The EPA attempts to improve its benefit to cost analysis by adding what it calls a "climate benefit" to its models. For one

[1] EPA, *Regulatory Impact Analysis for the Final National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units Review of the Residual Risk and Technology Review* ES-22 (Apr. 2024).
[2] A ratio less than 1.0 indicates an uneconomic investment; a ratio of 1.0 indicates an investment whose benefits or savings just equal its costs; and a ratio greater than 1.0 indicates an economic project. Rosalie T. Ruegg & Harold E. Marshall, BENEFIT-TO-COST RATION (BCR) AND SAVINGS-TO-INVESTMENT RATIO (SIR) 48-46 (1990).

thing, such a supposed benefit is inconsistent with its projection that there will be little to no generation or capacity reductions as a result of the MATS rule. However, even accepting the existence of a nebulous "climate benefit," the EPA's adjusted benefit to cost ratio changes only to 430/860 which is an improved, but still inefficient, benefit to cost ratio of only 0.5 times.

8. The Final Rule and all EPA actions related to energy are important to West Virginia. West Virginia is the nation's fifth largest energy producer.[3] The total capacity of all fuel-resource utility-scale generation in West Virginia is approximately 15,000 MW. About 13,000 MW of that comes from nine coal-fired power plants operating within the State.

9. The EPA's continually accumulating restrictions appear designed to drive coal-fired generation out of business and will not only negatively affect the cost and reliability of electricity supply in West Virginia, but the restrictions will also be economically devastating to the economy of the State which relies heavily on energy production. The West Virginia coal industry employs about 13,000 workers.[4] West Virginia has a population of about 1.77 million people,[5] with only 736,000 households.[6] The loss of West Virginia's coal

[3] EIA, West Virginia Profile Analysis (January 2024).
[4] EIA, Annual Coal Report 2022.
[5] US Census Bureau, West Virginia data.
[6] EIA, West Virginia Profile Analysis, (January 2024).

industry would have a severely disproportionate effect on the State's residents and economy. It is also important to note that the additional costs of complying with the new rules, which will be paid by so few households, will be crushing at a time when power plant jobs, coal jobs, and thousands of jobs in the related supply chain decline.

10. West Virginia has historically exported a large percentage of the power it produces. As a result, West Virginia is a net supplier of electricity to the regional grid and is historically near the top of all States in the percentage of its power generation that is exported to neighboring states. In fact, West Virginia has historically been the State with the second-highest percentage of its power generation being exported to neighboring States. On average, over the last five years, only Wyoming exported a larger percentage of its in-state electricity generation to neighboring states. Thus, the need to seriously consider premature retirement of West Virginia coal-fired generation that will be encouraged and accelerated by the EPA Rule has a significant impact on the reliability and resilience of electrical supply not only in West Virginia, but also in neighboring States, which rely on the interconnected bulk power system.

11. The EPA data which shows a significant projected growth in renewable resources over the next two decades will not be enough to reliably meet the

projected demand in growth, especially if existing dispatchable fossil generation is forced into early retirement by this Final Rule heaped on top of other fossil-fuel targeting EPA rules.

12. Dispatchable energy is energy that is available on demand and that can be increased or decreased to maintain balance in the interconnected alternating current electrical system. Energy sources such as wind and solar are considered non-dispatchable. Even when these non-dispatchable resources exceed the immediate demand for electricity, without dispatchable resources running to take up the slack in wind and solar generation when the wind decreases, even momentarily, or skies cloud up in the middle of the day, the electric system will become unstable and unreliable. This will lead to unacceptable drops or fluctuations in voltages which can damage electrical equipment and can eventually lead to rolling blackouts or energy rationing.

13. The power grids providing electricity to West Virginia (and much of the country) are already stretched dangerously thin, and they do not have the resiliency or the buffer of excess dispatchable generation that they had ten or even five years ago.

14. Without steam-powered generation to provide the dispatchable baseload power supply to assure constant and consistent electricity supplies twenty-four hours a day, three hundred and sixty-five days per year, the entire

interconnected electrical system will be relying on unreliable intermittent generation sources that cannot be dispatched because the sun does not shine and the wind does not blow twenty-four hours per day, three hundred and sixty-five days per year. Because of the ability to store many days of fuel supply on-site, coal-fired power plants are important resiliency and reliability protectors for the power grids. Only nuclear power plants can match the fuel security and reliable dispatchability offered by coal-fired power plants. But there is no chance that sufficient new nuclear plants can be planned, sited and built in time to pick up the slack as EPA rules targeting fossil-fuel fired plants—and specifically coal-fired ones—force regulators to shut down fossil-fuel fired power plants rather than spend the hundreds of millions of dollars to chase the ever-changing EPA Rules.

15. In addition to being less reliable, solar and wind resources are not less expensive relative to thermal resources. First, the coal-fired resources that are affected by the Final Rule are legacy, up-and-running generation units that have embedded ratemaking values that are much lower than the cost of new capacity. And second, it will take multiple times as much replacement generation capacity to replace thermal generation capacity with intermittent and limited-duration wind and solar generation resources. PJM has quantified the ability of wind and solar resources to serve load for delivery years 2026/27

through 2034/35 and that ability is not a one-to-one replacement. According to PJM, replacing 1,000 MW of coal-fired capacity will require either 4,200 MW of onshore wind, 2,500 MW of more expensive offshore wind, 21,400 MW of fixed solar, or 15,500 MW of more expensive tracking solar.[7]

16. Thus, even if a megawatt of new wind or solar capacity is "cheaper" to construct than a thermal facility, that advantage is offset by the need to construct "multiple megawatts of wind or solar resources to replace one [megawatt] of thermal generation."[8] And, again, these multiple MW are still not consistent and certain—they produce energy only when the wind is blowing or the sun is shining. From the perspective of a regulatory body responsible for assuring that adequate, reliable, safe and affordable utility services are available to the citizens of West Virginia, I cannot imagine a worse plan for providing adequate, reliable, safe and affordable electricity service than the premature retirement of reliable baseload dispatchable steam-driven power plants and substituting for that lost capacity and energy with up to ten time more megawatts of less reliable intermittent power supplies as will result from the Final Rule.

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[7] *See* PJM, *Preliminary ELCC Class Ratings for period Delivery Year 2026/27 – Delivery Year 2034/35*, https://bit.ly/4dxOrKq.

[8] *Energy Transition in PJM: Resource Retirements, Replacements & Risks*, 1, 10, 16 (Feb. 24, 2023), https://bit.ly/3D0BRlP.

17. EPA likely projects that the Final Rule will not lead to early retirement of the coal-fired, baseload, dispatchable generation that is necessary to maintain the reliability and resilience of the electric power grid. While the EPA may have experience as an environmental regulator, it is not well versed in economic regulation of utilities and integrated resource planning. As a utility regulator, before approving major utility investments that may appear cost-effective, I must take the likelihood of compounding EPA required compliance costs in future years into consideration as the EPA constantly moves the goalposts. To prevent throwing good money after bad, economic regulators such as PSCWV must consider the historical and likely future accumulation of EPA's attacks on coal-fired and other fossil-fired generation resources when considering how to spend money on compliance.

18. If the Final Rule goes into effect, West Virginia will likely face the potential shutdown of 2,000 MW of utility-owned coal-fired power capacity, or, in the alternative commit to an estimated $300 to $400 million in compliance investment and approximately $40 million dollars per year in increased utility rates to cover costs to comply with the Rule.

19. The shutdown of even one large power plant will have a noticeable negative impact on West Virginia's economy and a much more noticeable and

debilitating negative impact on the communities near the plant and on coal mines that supply the fuel.

20. Moreover, to meet the needs of generation plants, coal mines supplying those plants must plan on huge capital expenditures to maintain existing production capability and open new mines. The supplying coal mines will take note of the possibility of premature closure of coal-fired power plants. Such closure will become a possible alternative as we consider the likely loss of value of current compliance expenditure to comply with the present Rule due to possible continued creep in EPA guidelines. Those coal mines will be disincentivized from maintaining and expanding their coal production capabilities if they believe that serious consideration of premature retirement is a viable Commission action.

21. I cannot overstate the problems that will accompany the loss of baseload, fuel-secure, dispatchable coal-fired power plants. Those problems, particularly with regard to reliability and resilience of power supply, are real and unmistakable. Wind and solar facilities require significant growth in capacity before they are able to replace these more reliable plants. Switching to them prematurely will significantly impact grid reliability and the provision of reliable electricity to the people of West Virginia and surrounding regions,

rendering the State and regional grid vulnerable to brownouts and blackouts it otherwise would not face.

22. The EPA seems to believe that more restrictions on coal-fired generation are fine due to its expectation that coal-fired generation is going the way of the dinosaurs with or without its heavy-handed and unjustified rules. The EPA report on the impact of its Rule states that it expects the U.S. electricity generation capacity in 2028 to be 1,282,700 MW, of which 394,100 MW, or 31 percent, are intermittent resources. It further projects that by 2035 the U.S. electricity generation capacity will be 1,592,400 MW, of which 698,500 MW, or 45 percent, are intermittent resources. Over the same period, EPA shows an expectation that the most fuel-reliable fossil-fuel generation resources, coal, will drop from 105,800 MW, or 8.2 percent of total capacity.[9]

23. While the EPA believes this reduced availability of baseload, dispatchable, fuel secure generation capacity is not related to its MATS Rule, I disagree. In West Virginia, we will be faced with a decision to either spend hundreds of millions of dollars on compliance investment, which will cost West Virginia customers nearly $40 million in added rates, or to simply throw in the towel and close plants prematurely. When coupled with other accumulated costs directly related to new EPA rules, preserving our reliable, resilient power

[9] EPA, *Regulatory Impact Analysis*, *supra* at n.1 3-18, Table 3-9.

supply to benefit not only West Virginia customers but customers in the surrounding states is becoming less and less a viable option. If compliance costs continue to mount, not only is the EPA projected future of dangerously increasing reliance on intermittent power supply likely, it is also likely that the retirements of coal-fired power plants will come sooner than expected.

24. This future is alarming considering the well-documented warnings coming from the Regional Power Market and Transmission Planners (PJM for West Virginia and twelve other Mid-Atlantic and Midwestern states plus the District of Columbia) and the North American Reliability Corporation (NERC). These organizations have recently issued reports that intermittent power supply resources such as wind and solar facilities cannot reliably replace dispatchable, baseload steam power plants.

25. Indeed, PJM has recently warned in a February 2023 report on the risks relating to energy resource transitions that a movement away from baseload dispatchable generation will cause capacity deficiencies and reliability degradation as dispatchable thermal plants are retired prematurely. In that report, PJM stated:

> The composition of the PJM Interconnection Queue has evolved significantly in recent years, primarily increasing in the amount of renewables, storage, and hybrid resources and decreasing in the amount of natural gas-fired resources entering the queue…

> By the 2028/2029 Delivery Year and beyond, at Low New Entry scenario levels, projected reserve margins would be 8%, as projected demand response may be insufficient to cover peak demand expectations, unless new entry progresses at levels exhibited in the High New Entry scenario. This will require the ability to maintain needed existing resources, as well as quickly incentivize and integrate new entry[.] …
>
> Thermal generators are retiring at a rapid pace due to government and private sector policies as well as economics …
>
> PJM's interconnection queue is composed primarily of intermittent and limited-duration resources. Given the operating characteristics of these resources, we need multiple megawatts of these resources to replace 1 MW of thermal generation.[10]

26. The replacement of thermal generation with new generators that are not at the same locations as the prematurely retiring plants will require extensive costly transmission system modeling and ultimately billions of dollars of new transmission built in the PJM footprint alone. For example, the recent announcement of a shutdown of two relatively small generation plants in eastern PJM resulted in the need for a multi-billion-dollar upgrade of the transmission system that could not possibly be accomplished in the limited timeline for those plant shutdowns. PJM determined that reliability needs could not allow the shutdown and directed the plants to plan for being placed

[10] *Energy Transition*, *supra* at n.8.

into a "must-run" status. This micro-scenario of the problems with the shutdown of baseload dispatchable coal-fired generation plants will be played out at critical macro levels in the immediate future if the EPA coal-targeting MATS Final Rule is allowed to go into effect and more and more baseload, dispatchable generation announces that the cumulative EPA restrictions require premature retirement. PJM described the pervasive and severe reliability violations in Maryland and throughout the PJM network of a relatively small shutdown of dispatchable generation:

> [T]he retirement of the Brandon Shores and Wagner facilities introduces reliability concerns that are present even at today's load levels, let alone in 2025 or even 2028 when the system overall load is expected to grow by an additional 7,500 MW within the greater area of concern surrounding and including the BGE system. …
>
> The reliability violations are pervasive and severe in nature, which could lead to a potential voltage collapse in the entire BGE system as well as multiple overloads throughout the BGE system and the larger PJM network. The analysis also indicates that without a transmission solution, both Brandon Shores and Wagner will be required to maintain reliability prior to complete energization of the planned transmission reinforcements in the area.[11]

27. Decisions about whether plants can continue to operate efficiently or should shut down prematurely cannot be delayed. If the Final Rule is not stayed, the

[11] PJM, *BESS Technical Viability – Wagner and Brandon Shores Retirements PJM Transmission and Operations Planning*, May 3, 2024, https://bit.ly/3UUm8yu.

hope, or even expectation for a favorable future court ruling will not delay the need to begin planning for either compliance or premature retirements. Without a stay the installation of equipment and construction timelines require immediate decisions that will have long-term debilitating consequences for ratepayers even if the Rule is eventually overturned by the courts.

28. Alternative decisions to forgo the installation of equipment required to comply with the Final Rule will likewise have to be made quickly and once made will have long-term consequences that cannot be reversed. If the decision is made to retire the plants prematurely, generation owners must notify PJM of the planned retirement and plan for replacement capacity. Generators in PJM have already committed the generation units in a three-year forward capacity market. When PJM is notified of the pending retirement (presently only 90 days' notice) PJM will conduct a retirement study to determine whether transmission system upgrades will be needed due to the redistribution of electricity flows across the PJM system. If transmission upgrades are required, they could be very expensive and involve transmission construction in surrounding states.

29. The PSCWV and West Virginia electric generators will not have the luxury of waiting for future developments before making decisions that will lead to expensive construction of compliance equipment or the acquisition of

replacement capacity for a prematurely retired unit. Evaluation of alternatives, filings with the PSCWV, evidentiary proceedings and decisions by the PSCWV, and implementation of the selected compliance strategies will take time and cannot be delayed.

30. Further, the PSCWV's substantial expenditure of human and fiscal resources associated with implementing the Final Rule will immediately distract the PSCWV from serving its full regulatory mission, as directed by the West Virginia Legislature.

31. West Virginia has approved plans to allow utility-owned thermal resources to comply with other EPA rules in place prior to this Final Rule that, although expensive, were determined to be necessary to preserve the availability of baseload coal-fired thermal generation units which are the critically needed units that can provide electricity reliability and resilience with an onsite, multi-month fuel source. The Final Rule, if not stayed, could pull the rug out from under those efforts and render investments made to comply with other EPA rules related to coal-fired power plants as unnecessary white elephants burdening the ratepayers of West Virginia for no good reason other than the EPA being intent on shutting down coal-fired generation plants well in advance of the end of their useful, productive lives.

32. The effects of EPA's unjustified and excessively expensive MATS rule will be real and lasting. Its benefits are unjustified by its costs, which will disproportionately harm West Virginia's ratepayers, workers, tax revenues, education facilities dependent on those tax revenues, and government supplied infrastructure and services dependent on those tax revenues. It will hit households in a State with some of the lowest average incomes and most elderly populations in the United States. And the negative impact will not be limited to rate impact, negative employment impact, and negative impact on the general economy in West Virginia. We will also be facing degraded, unreliable electric service.

33. The Final Rule is inappropriate and would force retirement of the very resources needed for reliability in the face of accelerated growth in less reliable intermittent solar and wind resources.[12]

34. The mandates in the Final Rule frustrate the authority of the PSCWV and constrain its ability (and duty under West Virginia law) to serve the citizens of West Virginia. Unless a stay is immediately granted, the Final Rule will result in significant and irreparable harm to the State of West Virginia and its citizens through direct and immediate financial means and a loss of sovereign

[12] *See generally Energy Transition*, *supra* at n.8 (PJM report discussing the risks from the pace of additions intermittent resources and accelerated retirements of thermal resources).

authority—including that held by the PSCWV pursuant to West Virginia and federal law.

Executed in Charleston, West Virginia, on May 24, 2024.

Charlotte R. Lane

Charlotte R. Lane
Chairman
West Virginia Public Service Commission

GAVIN A. MCCOLLAM
DECLARATION OF HARM IN SUPPORT OF MOTION FOR A STAY PENDING REVIEW

1. My name is Gavin A. McCollam. I am the Senior Vice President and Chief Operating Officer of Basin Electric Power Cooperative ("Basin Electric"). I am over the age of 18 years, and I am competent to testify concerning the matters in this declaration. I have personal knowledge of the facts set forth in this declaration, and if called and sworn as a witness, could and would competently testify to them.

2. I have more than 35 years of experience in electricity generation. I have been employed at Basin Electric since 1989. I hold an associate's degree from Bismarck (North Dakota) State College, a bachelor's degree in mechanical engineering from North Dakota State University, and a master's degree in systems management from the University of Southern California. I am also a registered professional engineer. As the Senior Vice President and Chief Operating Officer at Basin Electric, my responsibilities include ensuring access to safe, reliable, affordable and sustainable electricity for Basin Electric's member-owner cooperatives. This includes oversight of Basin Electric's coal-fired electric generating units in North Dakota and Wyoming.

3. I am providing this Declaration in support of the motions to stay challenging the U.S. Environmental Protection Agency's ("EPA") National Emission Standards for Hazardous Air Pollutants: Coal and Oil-Fired Electric Utility Steam Generating Units Review of the Residual Risk and Technology Review, 89 Fed. Reg. 38508 (May 7, 2024), known as the Mercury and Air Toxics Standards Risk and Technology Review ("Final Rule" or "MATS RTR").

4. Basin Electric is a not-for-profit generation and transmission cooperative incorporated in 1961 to provide supplemental power to a consortium of rural electric cooperatives. Those member cooperatives—140 of them—are Basin Electric's owners. Through them, Basin Electric serves approximately three million consumer members in an area that covers roughly 500,000 square miles across nine states: Colorado, Iowa, Minnesota, Montana, Nebraska, New Mexico, North Dakota, South Dakota, and Wyoming. Basin Electric's end-use consumer members across these nine states include residential, farm, commercial, industrial, and irrigation electric consumers. As of the end of 2023, Basin Electric had an asset base of $8 billion and operated 5,219 megawatts ("MW") of wholesale electric generating capability and had 8,112 MW of generating

capacity within its portfolio. Those owned electric generation facilities are located in the states of Iowa, Montana, North Dakota, South Dakota, and Wyoming. Three of Basin's electric generation facilities are expected to be significantly impacted by the MATS RTR: Antelope Valley Station, Leland Olds Station, and Laramie River Station.

5. Basin Electric is one of the few utilities that supplies electricity on both sides of the national electric system separation. In the Eastern Interconnection, Basin Electric's system is part of two assessment areas overseen by two System Operators: the Southwest Power Pool ("SPP") and the Midcontinent Independent System Operator ("MISO"). In the Western Interconnection, Basin Electric's system is overseen by the Northwest Power Pool ("NWPP") and the Rocky Mountain Reserve Group ("RMRG"). These System Operators regulate the multiple energy and capacity markets that exist within each regional grid. They also require utilities like Basin Electric to maintain a certain amount of capacity to ensure reliability during periods of high demand.

6. Basin Electric, which has two North Dakota facilities that are fueled by lignite coal, is a member of the Lignite Energy Council ("LEC"). LEC represents the regional lignite industry in North Dakota, an $18

billion industry critical to the economy of the Upper Midwest and the reliability of its electrical grid. The primary objective of LEC is to maintain a viable lignite coal industry and enhance development of the region's lignite resources. Members of LEC include mining companies, utilities that use lignite to generate electricity, synthetic natural gas, and other valuable byproducts, and businesses that provide goods and services to the lignite industry. LEC has advocated for its members since 1974 to protect, maintain, and enhance development of our region's abundant lignite resources. LEC is committed to environmental stewardship and understands the importance of protecting North Dakota's natural beauty.

7. Basin Electric is also member of the National Rural Electric Cooperative Association ("NRECA"). NRECA represents the interests of rural electric cooperatives across the country.

8. Lignite is frequently utilized at mine-mouth power generation facilities, which are coal-fired power plants built near a coal mine that use coal from that mine as fuel.

9. The MATS RTR threatens the viability of lignite-powered plants. It also threatens the reliability of the entire grid across the region,

places burdens on the power sector as a whole, and causes harm to industries dependent on a reliable electric grid.

ANTELOPE VALLEY STATION

10. Basin Electric is the operator and part owner of the Antelope Valley Station ("Antelope Valley"), a two-unit power plant located in Mercer County, North Dakota. Each EGU is rated at 450 MW. Antelope Valley began commercial operation in 1984. Antelope Valley Station is fueled by lignite coal from the nearby Freedom Mine.

11. At Antelope Valley, sulfur dioxide ("SO2") emissions from the Combustion Engineering tangentially fired boiler are controlled by a dry scrubber. Nitrogen oxide ("NOx") emissions were originally controlled by low NOx burners and close-coupled-over-fired air. Then, in spring 2016, an additional separated over fired air system was installed and reduced NOx emissions lower. Other pollution control equipment installed at Antelope Valley includes a fabric-filter system for particulate control and sorbent injection for mercury control.

LELAND OLDS STATION

12. Basin Electric is the operator and owner of the Leland Olds Station ("Leland Olds"), a two-unit power plant located in Mercer County,

North Dakota. The two units together generate 660 MW. Unit 1 began commercial operation in 1966 and Unit 2 began commercial operation in 1975. Leland Olds is fueled by lignite coal delivered by rail from the Freedom Mine.

13. At Leland Olds Unit 1, SO2 emissions from the Babcock & Wilcox wall-fired boiler are controlled by a wet scrubber. NOx emissions were originally controlled by low NOx burners. Then, in spring 2017, a selective non-catalytic reduction ("SNCR") system was installed and reduced NOx emissions lower. Other pollution control equipment installed at Unit 1 includes an electrostatic precipitator ("ESP") system for particulate control and activated carbon (sorbent) injection for mercury control.

14. At Leland Olds Unit 2, NOx emissions from the boiler are controlled by low-NOx burners, separated over-fired air, and SNCR. A wet scrubber is used to control SO2 emissions and an ESP is used for control of particulate matter ("PM") emissions. An activated carbon injection system is used to control mercury emissions.

LARAMIE RIVER STATION

15. Basin Electric is the operator and a minority co-owner of the Laramie River Station ("Laramie River"), a three-unit power plant located in Wheatland, Wyoming. The three units together generate approximately 1,700 MW, of which Basin Electric owns about 42%, for a total of roughly 714 MW. Unit 1 began commercial operation in 1980, Unit 2 began commercial operation in 1981, and Unit 3 began commercial operation in 1982. Laramie River is fueled by subbituminous coal from the Powder River Basin in Wyoming.

16. At Laramie River Unit 1, the NOx emissions from the boiler are controlled by low-NOx burners and separated over-fired air. A wet scrubber is used to control SO2 emissions and an ESP is used for control of PM emissions. An activated carbon injection system is used to control mercury emissions.

17. At Laramie River Unit 2, the NOx emissions from the boiler are controlled by low-NOx burners and separated over-fired air. In 2019, Unit 2 began operation of a SNCR. A wet scrubber is used to control SO2 emissions and an ESP is used for control of PM emissions. An activated carbon injection system is used to control mercury emissions.

18. At Laramie River Unit 3, the NOx emissions from the boiler are controlled by low-NOx burners and separated over-fired air. A dry scrubber is used to control SO2 emissions and an ESP is used for control of PM emissions. An activated carbon injection system is used to control mercury emissions.

MATS RTR RULE REVISIONS

19. The MATS RTR eliminates the low rank coal subcategory for lignite-powered facilities and changes the limit for mercury from lignite-fired power plants from 4.0 lb/TBtu to 1.2 lb/TBtu (the "New Mercury Limitation").

20. The MATS RTR decreases the limit for filterable particulate matter ("fPM") to 0.010 lbs/MMBtu (the "New fPM Limitation").

21. Compliance with the New Mercury and New fPM Limitations is required on or before three years after the Final Rule's effective date.

22. The MATS RTR provides that Continuous Emission Monitoring Systems ("CEMS") are the only method to demonstrate compliance with the fPM limit.

LIGNITE COMBUSTION

23. It is well-known and consistent with Basin Electric's experience that lignite deposits vary significantly in quality, including fuel combustion performance and mineral content. Mercury content in the lignite varies because different seams within the mine yield lignite with diverse attributes (including mercury) on a day-to-day basis. A compliance margin is critical to allow for continuous compliance with the Final Rule especially considering coal quality variability.

24. Lignite varies in composition and the distribution of mercury within individual coal samples is not uniform, unlike other types of coals. The amount of mercury within one seam of coal can vary drastically, not to mention mercury content fluctuations between seams at the same mine.

25. An important difference between mine-mouth coal plants and typical coal-fired power plants is the control over fuel composition. Non-mine-mouth facilities purchase coal of a specified quality to be delivered to the facility. Unlike other types of facilities that may be able to blend coals to achieve greater consistency in the character of their fuel, many North Dakota lignite units are located at mine-mouth facilities without

access to other coal types. Antelope Valley cannot use bituminous coal or other types of coal because the boilers were designed specifically for burning high moisture coal such as lignite. If Antelope Valley were to burn coal with lower moisture content, it would cause severe maintenance issues with heat transfer to the rear pendants and could result in a loss of produced electricity. Because Antelope Valley is a mine-mouth facility, having to rail in coal would significantly change the fuel cost and therefore significantly increase the cost that Basin Electric bids Antelope Valley into the market.

26. Leland Olds uses lignite coal from the nearby Freedom Mine, which is loaded at Antelope Valley and delivered via rail. If Leland Olds were to change coal types, it would need to be transported much further and would not be cost effective.

27. When high mercury batches of coal are combusted, the original MATS mercury emission limitation from 2012 provided lignite power plants enough leeway to account for higher mercury emissions due to the mercury content in the coal.