

## Testimony of James M. Van Nostrand

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### “Regional Impacts of EPA Carbon Regulations: The Case of West Virginia”

My name is James M. Van Nostrand. I am an Associate Professor of Law and Director of the Center for Energy and Sustainable Development at the WVU College of Law. The Center is an energy and environmental research organization founded in 2011. The Center focuses on promoting practices that will balance the continuing demand for energy resources—and the associated economic benefits—alongside the need to reduce the environmental impacts of developing the nation’s natural resources. I appreciate the opportunity to provide testimony at this field hearing regarding the regional impacts of carbon regulations proposed by the U.S. Environmental Protection Agency (EPA).

We have been following closely the actions of the EPA in regulating greenhouse gas (GHG) emissions from power plants. The Center’s third annual national energy conference, held in February 2014, focused on the then-anticipated proposed rules under 111(d) of the Clean Air Act. The conference, titled “Regulation of CO<sub>2</sub> Emissions from Power Plants: Flexibility and the Path Forward for Coal Dependent States,” brought together representatives from government, industry, labor, academia, and the environmental community for a day-long discussion about challenges and opportunities for coal dependent states. In June, the Center announced its “Carbon Dioxide Emission Reduction Opportunities for the West Virginia Power Sector” project. The project is part of a broader Center initiative to support constructive dialogue around energy policy choices in West Virginia that would enhance economic opportunity, reduce the environmental impacts of energy development, and put West Virginia on track to meet its CO<sub>2</sub> emission reduction obligations under the proposed rule.

In October 2014, the Center, in conjunction with Downstream Strategies and with funding provided by the Appalachian Stewardship Foundation, released a discussion paper (*Center Discussion Paper*) previewing a preliminary analysis of one potential Compliance Scenario for West Virginia under the proposed Clean Power Plan.<sup>1</sup> My testimony draws from the analysis in the *Center Discussion Paper*, and also identifies important challenges and opportunities facing West Virginia with respect to compliance with the proposed rule. My testimony also reviews important economic drivers in West Virginia that will be affected by the

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<sup>1</sup> *Carbon Dioxide Emission Reduction Opportunities for the West Virginia Power Sector*, **CENTER FOR ENERGY & SUSTAINABLE DEVELOPMENT** (Oct. 2014) [hereinafter **CENTER DISCUSSION PAPER**] available at <http://energy.law.wvu.edu/r/download/201008>.

rule, as well as some of the key emission reduction measures that could put West Virginia on track to meet its goals as proposed by the rule.

### **Climate Change and the Regulation of Greenhouse Gases under the Clean Air Act**

Climate change, largely attributable to increasing concentrations of GHGs in the atmosphere, is the most serious threat facing the planet. The National Climate Assessment, for example, presents compelling evidence of long-term climate trends, and the likely future for the remainder of the 21<sup>st</sup> century, if we fail to take action to reduce GHG emissions. Within the state of West Virginia, we are already seeing some of the impacts of climate change, as discussed last June at a conference presented by the Friends of Blackwater. In my view, doing nothing to address this urgent problem is not an option.

At the same time, the Clean Air Act is a blunt instrument with which to regulate GHG emissions from power plants. The tools available to the EPA under the Clean Air Act to regulate GHGs do not provide a great fit for dealing with climate change; the regulation of GHGs would be better addressed through comprehensive energy and climate legislation, given the broad and disparate impacts on the economy and the ability through the legislative process to craft a solution that addresses the disparate impacts. Coal producing states like West Virginia will be especially hard hit, and the EPA lacks the statutory authority and financial resources to help the disproportionately impacted regions to attract new investments, or diversify their economy to minimize the economic and social impacts of the decline in demand for coal. In contrast, the comprehensive legislation passed by the U.S. House of Representatives in June 2009, while flawed in many respects, would have provided resources to address the disproportionate impacts felt across the country. For example, that legislation would have increased funding for the Energy Worker Training Program, which was created as part of the 2007 energy bill. Workers displaced due to new emission regulations would have been entitled to 156 weeks of income supplement (70 percent of their average weekly wages), 80 percent of their monthly health-care premium, up to \$1,500 for job-search assistance, and up to \$1,500 for moving assistance. Grants were authorized for colleges and universities to develop programs of study that prepare students for careers in renewable energy and energy efficiency.

In many respects, the EPA's actions in regulating GHGs from new and existing power plants are a result of the failure of the legislative branch to develop any comprehensive strategy for addressing climate change. We are therefore left with the tools available under the Clean Air Act. There is no question that the EPA has the legal authority to regulate GHGs as a pollutant under the Clean Air Act, following the decision of the U.S. Supreme Court in *Massachusetts v. EPA* (2007) and the subsequent endangerment finding by the EPA in 2009. The proposed rules under 111(b) for new power plants and under 111(d) for existing power plants are the result of actions EPA was required to take under the Clean Air Act after *Massachusetts v. EPA*.

The practical effect of the proposed rules under 111(b) may preclude the construction of a new coal plant in the U.S., given that the target emission rates for coal-fired plants can be

achieved only with carbon capture and sequestration (CCS), which is a very costly process. The unlikelihood of new coal plant construction in the future has serious implications for the coal-producing regions of the country, including West Virginia. The future domestic demand for coal, simply stated, is being curtailed, thereby leading to the push for new coal export terminals on the coasts to serve foreign markets for U.S. coal. There is a legitimate question as to whether CCS technology is commercially available, and whether it is lawful for the EPA to effectively preclude a particular electric generation technology (i.e., coal) on the basis of an abatement technology that may not yet be readily deployable (or, alternatively, that is so expensive as to render coal uncompetitive with other fuels). The Kemper County Energy Facility in Mississippi, cited by the EPA as evidence that CCS is commercially available, has been plagued by cost overruns and schedule delays. Another project cited by EPA, the Boundary Dam project owned by Sask Power in Canada, captures 90% of its CO<sub>2</sub> emissions, but has the unusual feature of having opportunities for enhanced oil recovery located nearby.

At the same time, it is not clear that the EPA proposed rule under 111(b) is the major deterrent for new coal plants in the U.S. If industry and EPA estimates of the regulatory impact of the proposed rule are true, no new coal-fired plants would have been built anyway, given the significant cost advantage that natural gas has over coal, both currently and based on long-term projections. The experience of the Longview plant north of Morgantown—the cleanest and most efficient coal plant at the time it was built—demonstrates the challenges of coal plants competing against natural gas-fired generation in the wholesale power markets. Cheap natural gas has driven down wholesale power prices to the extent that, while the Longview plant may still be competitive in the wholesale power markets, the margins it makes on each sale are so low as to threaten its financial viability.

### **Impact of EPA Carbon Regulations on Energy Production**

Coal fired power plants generated 39% of U.S. electricity in 2013, down from over 50% in 2005.<sup>2</sup> West Virginia generated approximately 96% of its electricity from 16 major coal fired power plants in 2012, with the remaining 4% coming (largely) from hydropower and wind.<sup>3</sup> Across the U.S., over 60 gigawatts of coal fired power plant capacity is scheduled to retire by 2016.<sup>4</sup> In West Virginia, 6 of the 16 coal plants operating in 2012, representing approximately 17% of the state's generating capacity, have either deactivated or are scheduled to deactivate by 2015.<sup>5</sup> At the time of deactivation, those plants will be on average over 60 years old. The national trend away from coal fired generation, and production declines in the Appalachian coal

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<sup>2</sup> In 2013, coal provided 39% of U.S. electric generation, natural gas 27%, nuclear 19%, hydropower 7%, other renewable 6%, petroleum 1%, other gases <1%. *Frequently Asked Questions, What is U.S. Electricity Generation by Fuel Source?*, **U.S. ENERGY INFORMATION ADMINISTRATION**, <http://www.eia.gov/tools/faqs/faq.cfm?id=427&t=3>

<sup>3</sup> *State Electricity Profiles, West Virginia Electricity Profile 2012*, **U.S. ENERGY INFORMATION ADMINISTRATION**, <http://www.eia.gov/electricity/state/westvirginia>.

<sup>4</sup> *AEO2014 Projects more Coal-Fired Power Plant Retirements by 2016 than have been Scheduled*, **U.S. ENERGY INFORMATION ADMINISTRATION**, Feb. 14, 2014, <http://www.eia.gov/todayinenergy/detail.cfm?id=15031>.

<sup>5</sup> CENTER DISCUSSION PAPER, *supra* note 1 at 4.

mining industry over the long-term, suggest that the broader socio-economic challenge for coal producing states is to prepare for a future that is less dependent upon coal—irrespective of the impact of more stringent environmental regulation. And while coal mining will continue to be an important part of West Virginia’s economy for the foreseeable future, the state must look for additional drivers of economic development to mitigate the impacts of the decades-long decline in the coal industry. Efforts such as the Shaping Our Appalachian Region (SOAR) initiative that are underway in Kentucky provide a model for the kind of discussions and leadership from all levels of government that are needed to mitigate the long-term impacts of declining coal production and its associated socio-economic impacts in West Virginia.

West Virginia is a leading energy state that is uniquely positioned to mitigate the impacts flowing from the proposed Clean Power Plan and stimulate new economic opportunity throughout the state. The EPA’s use of “building blocks” to calculate the Best System of Emissions Reduction (BSER) in each state as part of its 111(d) rulemaking process provides a roadmap of the tools available to each state to achieve compliance with the Clean Power Plan. As a practical matter, the process should stimulate comprehensive energy planning in West Virginia, and the cooperation across state agencies—the Public Service Commission (PSC) and the Division of Energy, along with the traditional environmental regulator in the state, the Department of Environmental Protection—to develop a cost-effective strategy for West Virginia to achieve compliance with the proposed rule. In developing this strategy, West Virginia is in an excellent position to adopt an “all of the above” approach to our energy future.

In addition to its coal resources, West Virginia sits atop abundant natural gas resources in the Marcellus shale, has significant renewable energy and biomass potential, and virtually untapped energy efficiency resources. Despite the significant challenges facing West Virginia, the Clean Power Plan provides a framework through which West Virginia can align its energy policies to meet the required carbon emission reductions. The proposed rule offers flexibility for developing state plan frameworks that allow states to, for instance, coordinate with neighboring states in order to maximize cost-effective emission reduction opportunities, and incorporate other strategies in order to achieve important public policy goals. Taking advantage of these opportunities will stimulate new economic activity in regions of the state hit hard by declining coal production and ensure that its utilities are making investments that provide consumers clean, reliable, and reasonably priced electricity.

### **Impact of EPA Carbon Regulations on Electricity Generation and Cost**

Utilities in West Virginia historically have not been required to prepare integrated resource plans (IRPs). This process, adopted in the vast majority of states, requires rigorous analysis of the various resource options available for utilities to meet the energy demands of their customers, and requires that supply-side and demand-side options be considered side-by-side, on a consistent and integrated approach. With the passage of a statute in the 2013 West Virginia legislative session requiring integrated resource planning,<sup>6</sup> the utilities in the state will soon be

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<sup>6</sup> HB 2803, codified at §24-2-19 of the West Virginia Code.

undertaking a more thorough energy planning process. In the short-term, however, the state is not well-positioned to cope with the consequences of the Clean Power Plan.

West Virginia's rate-regulated utilities have increased their dependence on coal-fired generation, by acquiring coal-fired generating facilities from affiliated companies during the past few years. Specifically, the West Virginia PSC has approved three transfers of coal-fired electric generating units into the regulated rate base in West Virginia (FirstEnergy's transfer of 80% of the Harrison generating plant to its regulated utility operating companies, AEP's transfer of the Amos Power Plant to its Appalachian Power affiliate, and AEP's transfer of a 50% interest in the Mitchell plant to its Wheeling Power affiliate). As a result of these investments, West Virginia ratepayers will likely bear higher compliance costs under the proposed Clean Power Plan, given the inability to avoid the costs of owning these plants while at the same time bearing the increased costs of pursuing opportunities under the third and fourth building blocks of the Clean Power Plan (*i.e.*, renewable energy and energy efficiency). In other words, when these power plants are "out of the market" in the competitive wholesale markets due to low wholesale power prices, any excess generating capacity freed up as a result of Clean Power Plan compliance strategies to expand energy efficiency programs and renewable energy resources will not likely produce wholesale revenues sufficient to offset the cost of ownership borne by ratepayers.

Developing a compliance strategy for the Clean Power Plan will require drawing upon all of West Virginia's energy resources, including natural gas, renewable energy, and energy efficiency, as discussed below. A comprehensive energy plan should build upon the state's coal resources—through co-firing natural gas with coal, building new natural gas combined cycle (NGCC) and combined heat and power (CHP, or cogeneration) capacity, for example—while stimulating investments in energy efficiency that will help West Virginians manage their energy costs and reduce CO<sub>2</sub> emissions.

### Natural Gas

The Clean Power Plan recognizes the emission benefits of natural gas relative to coal. West Virginia has significant natural gas resources in the Marcellus Shale. Developing West Virginia's natural gas resources and investing in natural gas-based electricity generation will help the state comply with the Clean Power plan and grow the state's energy economy. Natural gas prices have declined dramatically in recent years due to technological breakthroughs that have unleashed unprecedented development of the nation's vast shale gas resources. The Marcellus Shale is one of the most prolific shale plays in the country and accounts for nearly 40% of total U.S. shale gas production. Pennsylvania and West Virginia are the largest producers of Marcellus Shale natural gas, and West Virginia has enormous opportunity to capitalize on expanded use of its natural gas resources. The construction of new NGCC plants, co-firing existing coal plants with natural gas, and building new CHP facilities would stimulate demand for West Virginia-produced natural gas, deliver consumers low-cost natural gas-fired electric generation, and provide emission-reduction benefits under the Clean Power Plan.

While recent acquisitions by West Virginia utilities may represent a step backward for reducing the state's CO<sub>2</sub> emission intensity, natural gas fired generation can play an important role going forward. One NGCC plant—the Moundsville station—is anticipated to go into service in West Virginia as early as 2018 and would provide 525 MW of high-efficiency natural gas generation capacity. This additional capacity would stimulate additional demand for West Virginia natural gas, provide much needed resource diversity, and reduce the emission intensity of the state's power sector.

Other high efficiency uses of natural gas include CHP facilities, which currently provide 82,000 MW of generating capacity at over 3,700 industrial and commercial facilities across the country. In addition to providing on-site generation for large customers, CHP facilities achieve substantial improvement in energy efficiency by using the waste heat that would otherwise be released to the atmosphere to heat and cool buildings or to meet thermal needs of industrial processes. CHP installations can use a variety of fuels, but natural gas is the most common and accounts for 72% of installed CHP capacity.

West Virginia currently has 382 MW of installed CHP capacity and has significant potential for future growth. The American Council for an Energy Efficient Economy (ACEEE) estimates approximately 1,700 MW of remaining technical potential for CHP in West Virginia and that 588 MW of that is economically viable if utilities in the state are provided additional incentives. (Without those incentives, ACEEE estimates that only 71 MW of additional CHP capacity is economically viable in West Virginia.) Facilitating the addition of new CHP capacity improves grid reliability, provides numerous economic benefits, stimulates demand for West Virginia-produced natural gas, and reduces the emission intensity of the state's power sector.

### Renewable Energy

The Clean Power Plan recognizes the importance of renewable energy resources in reducing GHG emissions. Non-hydropower renewables—namely wind and solar—grew by nearly 300% nationally between 2005 and 2013 and have enormous potential for future growth. In EPA's calculation of BSER for West Virginia, it estimates that non-hydro renewable energy can produce 14% of West Virginia's total generation by 2030, contributing over 60% of the state's emission reduction goal. West Virginia generated approximately 4% of total electricity produced in the state from wind and hydropower in 2012, but has significant potential for new wind, solar, and biomass, and possibly some additional hydropower development by retrofitting existing locks and dams with turbine generators. Wind power currently accounts for approximately 2% of West Virginia's total generation and the Clean Power Plan proposes to count existing wind (and solar) energy toward compliance with a state's emission reduction goals. The Clean Power Plan proposes to allow states to take credit for renewable energy projects built either within their own state, or out of state, so long as those projects are built in response to a renewable energy policy in the state taking credit for that project. Developing West Virginia's renewable energy resources will contribute to the state's ability to comply with the Clean Power Plan, diversify the state's energy portfolio, grow the state economy, and create new jobs.

A study conducted by the Union of Concerned Scientists (UCS) concluded that the Clean Power Plan underestimates the potential for renewable energy to reduce power sector emissions on a national level, but that EPA projections for renewable growth within West Virginia may be higher than what is likely economically achievable by 2030.<sup>7</sup> Adopting the analysis conducted by UCS in the case of West Virginia, the Compliance Scenario presented in the *Center Discussion Paper* assumes that non-hydropower renewables grow to achieve 7% of West Virginia's total generation by 2030—half of the EPA goal—comprising 410 MW of new solar capacity and 2106 MW of new wind capacity by 2030.<sup>8</sup>

### Energy Efficiency

Coal has long been the state's near-exclusive source of electricity and historically, West Virginia's coal plants have provided West Virginia consumers some of the lowest electricity rates in the country. While our *rates* may be low, however, West Virginia is among the top ten states in the country with the highest residential electricity expenditures as a percent of median income; and it has the highest residential energy consumption per household among the thirteen Appalachian states.<sup>9</sup> In other states, energy efficiency programs offer consumers the tools to manage their energy *bills*, regardless of their utility *rates*. The energy efficiency programs currently offered by the FirstEnergy and American Electric Power subsidiaries operating in West Virginia, however, are minimal, compared to the programs offered by these same companies' subsidiaries in surrounding states.<sup>10</sup> West Virginia's utilities can do much better with respect to energy efficiency.

Energy efficiency is a low-risk, low-cost energy resource that provides direct savings to consumers, encourages investment across other sectors of the economy, displaces the need for costly investments in new energy supply infrastructure, creates new employment opportunities, and reduces emissions of CO<sub>2</sub> and other harmful pollutants. States are increasingly recognizing the value of energy efficiency as an energy resource and adopting policies to facilitate its deployment. In 2013, eight of the top 10 states identified by ACEEE in its 2013 State Energy Efficiency Scorecard had adopted binding energy efficiency resource standards. West Virginia does not have an energy efficiency resource standard and ranked #46 in the Scorecard.

West Virginia utilities currently offer consumers very few energy efficiency programs compared to those offered by the same utilities operating in other states. For instance, in 2009, the West Virginia PSC approved the FirstEnergy subsidiaries' plan to achieve a cumulative

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<sup>7</sup> Strengthening the EPA's Clean Power Plan, UNION OF CONCERNED SCIENTISTS (Oct. 2014) available at <http://www.ucsusa.org/sites/default/files/attach/2014/10/Strengthening-the-EPA-Clean-Power-Plan.pdf>.

<sup>8</sup> CENTER DISCUSSION PAPER, *supra* note 1 at 6.

<sup>9</sup> *Id.* at 4.

<sup>10</sup> *E.g.*, FirstEnergy subsidiaries Metropolitan Edison Co., Pennsylvania Electric Co., Pennsylvania Power Co., and West Penn Power achieved over 4% cumulative energy efficiency savings in their Pennsylvania service territories over a 5 year period running from June 2009 to May 2014 pursuant to Pennsylvania's Act 129. See FirstEnergy Corp, Pennsylvania Tariffs, [https://www.firstenergycorp.com/customer\\_choice/pennsylvania/pennsylvania\\_tariffs.html](https://www.firstenergycorp.com/customer_choice/pennsylvania/pennsylvania_tariffs.html).

energy efficiency savings of 0.5% over five years, or 0.1% per year. FirstEnergy subsidiaries in neighboring Pennsylvania are achieving much higher levels of savings, at 1% per year.

The Clean Power Plan recognizes the potential for energy efficiency to provide significant GHG emission reductions from the power sector. As applied to West Virginia, the BSER assumes West Virginia can avoid 10.71% of in-state electricity consumption by 2030 through energy efficiency. Under this scenario, energy efficiency would contribute 17% of the state's emission reduction goal. Based on energy efficiency savings that utilities operating in West Virginia are achieving in surrounding states, in conjunction with estimates provided by ACEEE, the Compliance Scenario presented in the *Center Discussion Paper* assumes that West Virginia's could achieve cost-effective energy efficiency savings of up to 18% by 2030. Tapping into West Virginia's vast energy efficiency potential will be central to West Virginia's ability to meet the proposed emission reduction targets, provide West Virginia residents and businesses more control over their energy consumption, will lower their electric bills, and will make West Virginia a more attractive state for business to locate.

## **Conclusion**

Achieving compliance with the Clean Power Plan would present significant challenges for West Virginia. Given the state's heavy reliance on coal-fired electric generation and the portion of the state's economy that depends on the coal extraction industry, West Virginia may bear a heavy burden associated with implementation of the Clean Power Plan, depending upon the extent to which the flexibility allowed under the Clean Power Plan is exercised. In order to minimize the impact of the proposed rule on the state, policymakers will need to take advantage of that flexibility to shape a strategy for West Virginia that reflects its unique circumstances and leverages its strengths. West Virginia is fortunate in that it has tremendous energy resources in addition to coal, and these other resources—including natural gas, renewable energy (wind, solar, hydropower), and energy efficiency—are relatively untapped. Developing a compliance strategy for the Clean Power Plan will require tapping into these other energy resources and crafting a comprehensive energy plan that will build upon the state's coal resources—through co-firing natural gas with coal, for example—while stimulating investments in energy efficiency that will help West Virginians manage their energy costs in addition to reducing CO<sub>2</sub> emissions.