west virginia department of environmental protection

Comments on the U.S. EPA's Proposed Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units

Docket No. EPA-HQ-OAR-2013-0602

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Promoting a healthy environment

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I. Executive Summary

The West Virginia Department of Environmental Protection (WVDEP) herein provides comments regarding the U.S. Environmental Protection Agency's (EPA) proposal to establish carbon dioxide emission guidelines for existing electric generating units under Clean Air Act section 111(d). These comments were prepared by the WVDEP as lead agency, with the extensive assistance of the West Virginia Division of Energy, with regard to renewable energy and energy efficiency, and in consultation with the senior staff of the West Virginia Public Service Commission (WVPSC). The WVPSC input is reflected in these comments, particularly with regard to the effects of the proposed guidelines on the extensive costs that would be incurred by the owners of the EGUs, the impact on retail ratepayers, the negative impacts on the economy of the State due to potential huge electricity rate increases to West Virginia industrial customers, and the negative impact on the reliability of the power grid.

EPA asserts that the emission guidelines are based on the best system of emission reduction (BSER), which the agency says is a combination of four "Building Blocks":

- Building Block 1 - Heat Rate improvements at existing coal units
- Building Block 2 - Redispatch of electricity generation via load shift from coal units to existing Natural Gas Combined Cycle (NGCC) units
- Building Block 3 - Increased generation from low/zero emitting sources (renewables and nuclear)
- Building Block 4 - Demand-side energy efficiency

In the proposed regulation, EPA sets state emission rate goals, which are expressed as pounds of carbon dioxide (CO_2) per megawatt-hour of electric generation, based on the application of agency's questionable assumptions of economical and achievable BSER under Clean Air Act (CAA) section 111(d).

With its far-reaching proposal, EPA plans to boldly venture into many roles that go well beyond its historic responsibility under the CAA of regulating emissions of air pollutants from sources. With the finesse of a bull in a china shop, EPA intends to assert itself broadly into new regulatory arenas that impact all areas of the nation's economy. Under the proposed rule, the agency will invade the province of the WVPSC and other state utility regulatory agencies, the Federal Energy Regulatory Commission (FERC), North American and regional reliability entities, regional power markets and regional transmission organizations, by directing fuel choices for electric generation and thereby affect dispatch of generation and the operation of the nation's electric grid. EPA will do this not based on the cornerstone criteria of reliability and cost, but instead upon the single-minded criterion of carbon intensity. As a result, electrical grid reliability will fall precipitously and costs will rise. Under the guise of regulating carbon emissions under the CAA, EPA will undertake regulation of sources of power generation which have no carbon emissions. It will similarly extend its reach to regulation of end-use consumers of

electric power, claiming CAA jurisdiction over the daily lives of all citizens and the entirety of the American economy with respect to the use of electricity. As a result, the economy and citizens will suffer. According to an analysis performed by the Marshall University Center for Business and Economic Research, West Virginia will lose over 4,000 jobs and hundreds of millions of dollars in wages.

All of this is patently illegal. The first stop on the regulatory odyssey upon which EPA intends to embark will most certainly be the courts. Almost all significant CAA rules are challenged and this proposed rule is historically consequential - it is destined for litigation. Foreshadowing how it might react to EPA's inventiveness in applying the CAA to carbon regulation in this proposed rule, the U.S. Supreme Court recently admonished EPA for its fanciful interpretation of the CAA in the case of EPA's tailoring rule for carbon emissions:

> When an agency claims to discover in a long-extant statute an unheralded power to regulate 'a significant portion of the American economy,' we typically greet its announcement with a measure of skepticism. We expect Congress to speak clearly if it wishes to assign to an agency decisions of vast 'economic and political significance.'

UARG v. EPA, 134 S.Ct. 2427, 2444 (2014) (internal citation omitted). Congress has not only declined to give EPA the authority it is seeking to seize, it has enacted laws which actually deny EPA this authority, including the very section of the CAA upon which EPA relies, section 111(d). Despite that good sense might favor the exercise of restraint, EPA can be expected to plunge forward, subjecting the country, its economy and people to several years of uncertainty before a skeptical Supreme Court may rule. It appears that EPA is more constrained by political goals than the actual text of the CAA, and the exercise of sound, sensible judgment.

Another general point that is worthy of mention before providing detailed comments on the proposed rule is that despite EPA's outreach to the public, stakeholders and its co-regulators (state agencies across the country), despite the flexible scheme CAA section 111(d) provides for states, and despite the "flexibility" EPA claims that the proposed rule provides, the emissions guidelines under the proposed rule are entirely unreasonable. Each of the components, or Building Blocks of the emissions goal set for West Virginia, considered individually, is unattainable. Yet, EPA expects states that fall short of complying with an individual Building Block to make up the deficiency by over-complying with the other Building Blocks. When all of the Building Blocks set unachievable goals, there is no flexibility. The "flexibility" EPA claims its proposed emissions guideline gives is only illusory. The proposal is fundamentally, and fatally, flawed. It suffers from many problems, which simply cannot be overcome. Here are but a few.

First, it is unlawful. Sources regulated under CAA section 112, as coal-fired power plants currently are, cannot be regulated under CAA section 111(d). Also, because the BSER EPA

proposes in its new source regulation under section 111(b), carbon capture and storage, is not adequately demonstrated, the section 111(b) new source regulation is unlawful. This effectively leaves EPA without the standard of performance for new sources that must be in place for this section 111(d) existing source rule to be valid. Further, 111(d) applies to sources, which in this case are individual EGUs. Because Building Blocks 2, 3, and 4 apply to facilities other than EGUs, they are beyond EPA's authority to consider as EGU BSER, and are therefore illegal. Even if the EPA could extend its reach beyond EGUs to direct use of Building Blocks 2, 3 or 4, these "BSER," as proposed, are not feasible, achievable or adequately demonstrated, and therefore cannot be BSER. The proposal does not comply with CAA Administrative procedures, it is not sufficiently defined, and it is arbitrary and capricious.

Second, the Building Block 1 heat rate improvements for existing coal-fired power plants at the level that EPA has proposed are not achievable. Heat rate varies widely, not only among different units, but also for the same unit under different operating characteristics. BSER should be a work practice standard as provided under section 111(h), not a performance standard. Heat rate is strongly dependent on load, such that the implementation of Building Blocks 2, 3 and 4 will adversely affect, and will likely overcome, any thermal efficiency gains that could be achieved from retrofits or operations changes attempted to satisfy Building Block 1.

Third, redispatch from coal to NGCC units is not available in West Virginia and several other states. Even if NGCC units are available, EPA's assumed 70 percent capacity factor is unreasonable. The agency also grossly underplays the needed infrastructure improvements required, as well as the related costs. For example, EPA's quoted cost for additional natural gas pipelines of $1 million per mile is not realistic. Recent announced projects are in the range of $10 million per mile.

Fourth, EPA's assumptions for renewable energy (RE) expansion in West Virginia are wildly optimistic and based upon a conceptually and mathematically flawed methodology. If the State were to attempt compliance by wind energy alone, it would require the construction, operation and connection of more than 2,000 two megawatt wind turbines. Their footprint would occupy about four percent of the total land mass of the eastern West Virginia counties that have sustained wind resources along mountain ridges. Limited to the land area along those mountain ridges, the footprint of 2,000 wind turbines would be even more concentrated and intrusive. EPA's assumptions for demand-side energy efficiency (EE) for West Virginia are likewise wildly optimistic and based on faulty assumptions.

Fifth, EPA asserts that states can convert its rate goals (pound per megawatt-hour) to a mass target (CO_2 tons or metric tons). This is a critical calculation that states need to help inform their comments and, ultimately, their compliance path. The agency declined to provide a definitive and consistent method to do so. Instead, EPA provides "illustrative examples" in an associated Technical Support Document (TSD). Then, with less than 30 days remaining in the comment period, the agency issued yet another TSD that "describes two illustrative calculation-based

approaches" to yield equivalent mass targets. This TSD uses different rate goals than the ones originally proposed, yielding more stringent targets

The problems with EPA's proposal are insurmountable. The agency should abandon its current attempts to regulate CO_2 emissions from existing electric generating units under CAA section 111(d). EPA should wholly abandon its efforts to regulate CO_2 emissions from both new and existing electric generating units under CAA section 111. At the very least, the EPA should abandon attempts at regulations aimed at existing EGUs, and it must rethink its efforts applicable to new EGUs.

II. Primary Legal Objections to the Proposed Regulation

A. CAA Section 111(d) Prohibits this Regulation - Sources Regulated under Section 112 Cannot be Regulated under Section 111(d)

The plain language of section 111(d), prohibits EPA from using it to regulate carbon emissions, or for that matter, any form of pollutant emissions from coal-fired power plants. Section 111(d) provides:

> The Administrator shall prescribe regulations . . . under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any air pollutant (i) . . . which is not . . . emitted from a source category which is regulated under section [112] of this title but (ii) to which a standard of performance would apply if such existing source were a new source . . .

42 U.S.C. § 7411(d). Both EPA and the Supreme Court have recognized that the language of this provision prohibits regulation of existing sources that are regulated under section 112 (42 U.S.C. § 7412). In its explanation of its 2005 decision to de-list coal- and oil-fired electric generating units from its section 112(c) list[1], with specific reference to the above quoted language, EPA said:

> We interpret this language to mean that EPA cannot establish a standard of performance under CAA section 111(d) for any "air pollutant" - including both HAP and non-HAP that is emitted from a particular source category regulated under section 112.

70 Fed.Reg. at 15994, 16031 (March 29, 2005). Again, in its Legal Memorandum in support of this rulemaking, EPA recognized, "a literal reading of that language would mean that the EPA

[1] This decision was vacated by the U.S. Court of Appeals for the D.C. Circuit. *New Jersey v. EPA*, 517 F.3d 574 (2008).

could not regulate any air pollutant from a source category regulated under section 112." Legal Memorandum, p. 26. In *American Electric Power, Inc. v. Connecticut*, the U.S. Supreme Court agreed with EPA's assessment:

> EPA may not employ [§111(d)] if existing stationary sources of the pollutant in question are regulated under the national ambient air quality standard program . . . or the "hazardous air pollutants" program, [§112]. *See* [§111(d)(1)].

131 S. Ct. 2527, 2537 n.7 (2011). In 2012, while EPA was contemplating the instant proposed regulation, it promulgated a rule regulating coal- and oil-fired electric generating units under section 112. 77 Fed.Reg. at 9304 (Feb. 16, 2012). Thus, the literal language of section 111(d) of the CAA, bars EPA from promulgating a regulation under section 111(d) regulating coal- and oil-fired electric generating units (EGUs). However, EPA hopes to make an end run around the effect of the clear language of section 111(d). To do this, it must capitalize on what it otherwise recognizes as a clerical error in the version of section 111(d) adopted by the Senate in 1990.

In 1990, Congress amended the CAA, including section 111(d). Two different versions of section 111(d) were adopted - one by the House and one by the Senate - that were not reconciled in conference. Public Law 101-549, §§108(g) and 302(a), respectively. The House version, which is quoted above, made substantive changes to section 111(d) and was codified. The change the Senate version of section 111(d) made was non-substantive and was thus labeled a "conforming" amendment. It merely changed section 111(d)'s reference to section 112 to conform to changes made in section 112. Notably, the Senate version of section 112 did not prevail. 70 Fed.Reg. at 15994, 16030 - 31 (March 29, 2005), citing *A Legislative History of the Clean Air Act Amendments of 1990*, Vol. I at 1451. The Senate version of section 111(d) was excluded from the U.S. Code because it "could not be executed." Notes to 42 U.S.C. § 7411. EPA recognizes that the Senate version of section 111(d) was a "drafting error":

> [W]e believe that the House amendment, as we have interpreted it, is wholly consistent with section 112(l) of the House bill, which the conference committee adopted as the provision governing Utility Units (section 112(n)(1)(A)). It is hard to conceive that Congress would have adopted section 112(n)(1)(A), yet retained the Senate amendment to section 111(d). While *it appears that the Senate amendment to section 111(d) is a drafting error and therefore should not be considered*, we must attempt to give effect to both the House and Senate amendments, as they are both part of the current law.

70 Fed.Reg. at 16031 (*emphasis supplied*). So, the validity of the entire regulation proposed by EPA rests on how EPA gives meaning to both the House versions of 111(d), which EPA acknowledges to be both consistent with the rest of the 1990 CAA amendments and bar the regulation it is attempting to promulgate, *id.*, and the Senate version, which EPA acknowledges to be an un-executable drafting error. 70 Fed.Reg. at 16031.

The House version of section 111(d) bars the requirement of performance standards for sources regulated under section 112. The Senate version bars the requirement of such standards for pollutants listed under section 112(b). EPA begins its discussion of how to reconcile the two versions of section 111(d) by observing that it knows of no canon of statutory construction that applies to a situation in which two differing versions of the same provision have been adopted. *Id*. EPA then undertakes to "harmonize" what it calls two conflicting versions of the same statutory provision in the same manner as the canons of construction would require two separate conflicting provisions of a statutory enactment to be reconciled. *Id.* EPA proposes to give "some" effect to both the House and Senate version of section 111(d). *Id.* Actually, however, EPA does violence to both versions. EPA's "harmonization" would rewrite them as follows:

> Where a source category is being regulated under section 112, a section 111(d) standard of performance cannot be established to address any HAP listed under section 112(b) that may be emitted from that particular source category.

70 Fed.Reg. at 16031; endorsed in the Legal Memorandum, pp. 26-27. Rather than the complete bar of 111(d) performance standards for sources regulated under section 112 the House version provides, EPA would only bar 111(d) performance standards for pollutants from such sources that are not listed under section 112(b). Instead of the complete bar of section 111(d) performance standards for pollutants listed under section 112(b) the Senate version provides, EPA would only bar such performance standards for section 112(b)-listed pollutants that are emitted from source categories that are actually regulated under section 112.

This proposed regulation marks at least the second time now in EPA's attempts to regulate carbon under the CAA that it has found the actual text of the CAA to be unsuitable for its purposes and undertaken to rewrite it. In the case of EPA's tailoring rule, the Supreme Court said:

> We conclude that EPA's rewriting of the statutory thresholds was impermissible. ... An agency has no power to "tailor" legislation to bureaucratic policy goals by rewriting unambiguous statutory terms. Agencies exercise discretion only in the interstices created by statutory silence or ambiguity; they must always 'give effect to the unambiguously expressed intent of Congress.' *National Assn. of Home Builders v. Defenders of Wildlife*, 551 U.S. 644, 665 (2007) (quoting Chevron, 467 U.S., at 843).

UARG v. EPA, 134 S.Ct. at 2445. EPA cannot rewrite either the House or the Senate version of section 111(d). The unambiguous text of the House version of section 111(d), as even EPA admits, bars it from regulating sources under section 111(d) that are already regulated under section 112. This bar extends to coal-fired power plants and other sources of electric generation that EPA proposes to regulate with the instant proposal. Instead of re-writing the law to suit its policy goals, EPA must apply it, as written. The EPA's rewrite of the statute ignores one of the

cardinal rules of statutory construction, which is to save and not destroy. *United States v. Menasche*, 348 U.S. 528, 75 S.Ct. 513 (1955). It also robs parts of both the House and Senate versions of effect. Another cardinal rule EPA ignores requires effect to be given "to every clause and word of a statute." *Duncan v. Walker*, 533 U.S. 167,174, 121 S.Ct. 2120, 2125 (2001), (quoting *United States v. Menasche*, 348 U.S. 528, 538-539, 75 S.Ct. 513, 99 L.Ed. 615 (1955) and *Montclair v. Ramsdell*, 107 U.S. 147, 152, 2 S.Ct. 391, 27 L.Ed. 431 (1883). This can be done by giving effect to both versions of section 111(d) as written. Following the rules of statutory construction, section 111(d) performance standards are barred both for pollutants listed under section 112(b) as the Senate version provides, and for sources regulated under section 112, as the House version provides. When properly applied, section 111(d) bars EPA from promulgating this regulation.

B. The Predicate for a Valid Section 111(d) Regulation, a Regulation Providing Standards of Performance for New EGUs, Cannot Be Met in the Case of the Proposed Regulation

Earlier, EPA published a proposed regulation establishing new source performance standards (NSPS) for new EGUs (those on which construction began after January 8, 2014). 79 Fed.Reg. 1430 (January 8, 2014). Then on June 18, 2014, EPA published two more proposed regulations, one establishing NSPS for modified and reconstructed EGUs and this proposed regulation establishing performance standards for existing EGUs. 79 Fed.Reg. 34960 and 79 Fed.Reg. 34830 (June 18, 2014), respectively. The regulations for new EGUs and modified and reconstructed EGUs are each proposed under section 111(b), which authorizes EPA to establish NSPS for new stationary sources of air pollution. Under section 111(a)(2), the definition of "new source" includes both new and modified stationary sources. However, this regulation for existing EGUs is proposed under section 111(d), which authorizes the establishment of performance standards for existing sources to which a standard of performance that has been promulgated under section 111 would apply if such existing sources were new. CAA section 111(d)(1)(A)(ii).

Under both sections 111(b) and (d), a "standard of performance" is:

> [A] standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.

CAA section 111(a)(1). Thus, a valid standard of performance must reflect "achievable" emissions limitations, take the cost of achieving the emissions reductions into account, and be based on a "best system of emissions reduction" that has been "adequately demonstrated." In addition, section 111(d) is written with the recognition that imposition of newly promulgated performance standards to existing major facilities that may have been in place for many years

can be problematic. For such sources, it further requires that, "among other factors, the remaining useful life of the existing source" be taken into consideration in applying performance standards. CAA section 111(d)(1)(B). As a result of this difference between performance standards under sections 111(b) and (d), the performance standards that have been historically applied to new sources under section 111(b), which can readily take new performance standards into account in their initial design, have been much more stringent than those imposed on existing sources under 111(d), which are already built, in operation, and have much less flexibility in the addition of new emissions controls.

For purposes of commenting on the section 111(d) proposal for existing EGUs, the WVDEP offers several initial observations about the relationship of all three of the section 111 proposals for EGUs:

> 1) Although EPA could have included modified (and reconstructed) EGUs in its initial section 111(b) proposal for new EGUs, it did not, and chose instead to propose a separate 111(b) regulation for modified EGUs;
>
> 2) Among the three proposals, the section 111(b) proposal for new EGUs, with its mandate for carbon capture and storage (CCS) as the best system of emissions reduction (BSER) for coal-fired EGUs, is the most stringent[2];
>
> 3) Contrary to the general difference in approach to 111(b) and (d) performance standards, the section 111(b) proposal for modified EGUs is less stringent than the 111(d) proposal for existing EGUs, making it the least stringent of the three[3]; and,
>
> 4) Modified EGUs do not benefit from the least stringent approach under EPA's plan, because EPA also intends to regulate them under both the 111(b) proposal written specifically for them and the 111(d) proposal for existing EGUs. 79 Fed.Reg. at 34903.

Even though a "modified" source is considered a "new" source under section 111's definitions, EPA has chosen to treat these two categories of "new" sources differently in its proposals. While EPA is permitted to do this under section 111(b)(2)[4], EPA's reason for doing so here

[2] Based on market factors, the impact of other EPA emission rules and the proposed section 111(b) rule for new coal-fired EGUs, EPA believes it has effectively banned the construction of new coal-fired EGUs: "few, if any, solid fossil fuel-fired EGUs will be built in the foreseeable future." 79 Fed.Reg. at 1433. In particular, EPA's proposed New Source Performance Standards rule, if finalized, will make the demise of new coal-fired units a near certainty by imposing technically infeasible control requirements, which even if possible, would add exorbitant costs.

[3] A comparison of the section 111(b) modified and reconstructed EGU proposal to the 111(d) existing EGU proposal shows that modified and reconstructed EGUs have a less stringent CO_2 standard than existing EGUs. EPA acknowledges this in its discussion in Section VIII.B(1)(g) Ongoing Applicability of CAA section 111(d) state plan, stating: "the source remains subject to the CAA section 111(d) plan, for two reasons. The EPA believes that many states will develop integrated plans that include all of their EGUs. . . .The second reason is to avoid creating incentives for sources to seek to avoid their obligations under a CAA section 111(d) plan by undertaking modifications." 79 Fed.Reg. at 34904. EPA could have avoided this convoluted reasoning by making the existing source performance standard less stringent than the modified/reconstructed proposal.

[4] "The Administrator may distinguish among classes, types, and sizes within categories of new sources . . .". Id.

appears to have little to do with legitimate distinctions between "new" new sources and "new" modified sources. As explained above, the emissions rate under a standard of performance must be "achievable" and also be based on a system of emissions reduction that has been "adequately demonstrated." CAA section 111(a)(1). EPA is very cognizant of a significant legal flaw with its proposed "new" new source regulation for EGUs. The system of emissions reduction upon which the "new" new source regulation for coal-fired EGUs is based, CCS, has not been demonstrated anywhere on the scale that would be necessary to support continuous operation of the large base-load coal-fired EGUs to which it would apply. Even those locations where CCS is planned for deployment are limited to those few areas where the captured carbon could be injected into a depleted oil field to facilitate what is called enhanced oil recovery (EOR) from such oil fields. The number of locations where EOR may be possible is extremely sparse in relation to the wide geographic distribution of existing coal-fired EGUs. Furthermore, nearly all if not all of the demonstration projects for different aspects of the CCS process have been funded by the federal Department of Energy under the Energy Policy Act of 2005, which prohibits technology funded through the programs it created from being considered in determining whether such technologies have been adequately demonstrated for purposes of section 111 of the CAA. 42 U.S.C. § 15962(i)(1). As a result, the legal challenges EPA's "new" new source regulation is certain to face have a high likelihood of success on the issues of whether emissions reductions from CCS are actually "achievable" and "adequately demonstrated." Because the EPA's authority to promulgate a regulation for existing EGUs under section 111(d) is predicated on the existence of a valid regulation for new EGUs under 111(b), section 111(d)(1)(A)(ii), the invalidation of the section 111(b) regulation for new EGUs by the courts would place EPA's section 111(d) regulation for existing EGUs in jeopardy. So, as a backstop against the possibility (or, indeed, the likelihood) that invalidation of its "new" new source regulation by the courts will leave it without the necessary "new source regulation" predicate for its section 111(d) regulation for existing EGUs, EPA is promulgating a separate "new source regulation" for modified EGUs.

There are both practical and legal problems with EPA's strategy. As a practical matter, the section 111(b) new source regulation for modified EGUs is a rather hollow gesture. EPA acknowledges that few, if any EGUs are likely to be covered by this regulation. 79 Fed.Reg. at 34963. According to EPA's plan, even those that will be subject to the section 111(b) regulation for "new" modified EGUs will also continue to be regulated under the section 111(d) regulation for existing EGUs. 79 Fed.Reg. at 34903. Because the proposed section 111(d) goals for existing EGUs that EPA intends to apply to modified EGUs are more stringent than those EPA proposes for modified EGUs under section 111(b), these modified EGUs will effectively be regulated only under the section 111(d) regulation for existing EGUs. This leaves the proposed section 111(b) regulation for modified EGUs with little or no substantive effect. The only real function it will serve will be to provide EPA with a nominal claim that it has provided the regulation of "new" (albeit modified) EGUs under section 111(b) that is necessary to support the section 111(d) existing EGU regulation in the likely event that the courts strike down the section 111(b) regulation for truly "new" EGUs. In essence, EPA's promulgation of the section 111(b)

regulation for modified EGUs according to its plan will amount to nothing more than bureaucratic sleight of hand to buttress its legal position on the section 111(d) regulation for existing EGUs. As a practical matter, the section 111(b) regulation EPA proposes for modified EGUs is too devoid of substance to provide this buttress.

There are two principal legal issues the WVDEP sees with EPA's strategy for a section 111(b) regulation for modified EGUs. First, a necessary predicate to the promulgation of a valid existing source regulation under section 111(d) is the existence of performance standards that "would apply if such existing source were a new source." CAA section 111(d)(1)(A)(ii). Although section 111 defines "new source" to include "modified" sources, CAA section 111(a)(2), in the case of EGUs, EPA has chosen to promulgate separate categories of section 111(b) regulations for "new" and "modified" EGUs. In this context, the section 111(d) language quoted above is clear. In the scenario of a court-invalidated section 111(b) regulation for "new" new sources, the surviving section 111(b) regulation that applies only to modified sources will not provide the necessary "new" source predicate section 111(d) requires for a valid existing source regulation. Second, EPA's plan to regulate modified EGUs under its proposed section 111(d) regulation for existing EGU's is illegal. Section 111(b) governs "new" sources, which by definition includes modified sources. CAA section 111(a)(2). Section 111(d) governs existing sources. By definition, this excludes new or modified sources: "[t]he term 'existing source' means any stationary source other than a new source." CAA section 111(a)(6). EPA cannot regulate section 111(b) modified sources under its section 111(d) regulation for existing sources, as it plans to do.

Where, as here, EPA has chosen to establish two separate categories of NSPS under section 111(b), one for truly new sources and one for modified sources, it cannot lawfully base the validity of a section 111(d) regulation for existing sources on the modified source regulation. Should the new source regulation in this scenario fail against legal challenge, so too must the section 111(d) regulation under the plain language of section 111(d). This legal result is further supported by the practical reality that, as the three regulations for EGUs have been proposed by EPA, the section 111(b) regulation for existing EGUs has virtually no real world effect. Neither does EPA's plan to concurrently regulate modified EGUs as existing EGUs under its section 111(d) regulation pass legal muster. As a result, EPA's section 111(d) regulation will be left without the necessary section 111(b) regulation controlling "new" sources and this section 111(d) regulation will be invalid. EPA should abandon this rulemaking.

C. EPA's Proposed Regulation Violates the State Prerogative under Section 111(d) to Establish Standards of Performance

Section 111(d) is one of the CAA's brightest beacons of federalism. It establishes a specific division of responsibility between EPA and the states. EPA is authorized to promulgate procedural regulations, similar to the state implementation plan process under the CAA's section 110, for submission of state plans to EPA for a determination of whether they are satisfactory. Section 111(d)(1); *see*, section 111(d)(2). Section 111(d) gives states, not EPA, the right to

establish standards of performance for existing sources in these plans. EPA's procedural regulations are required to permit states to take into consideration in establishing standards of performance, "among other things, the remaining useful life of the existing source to which such standard applies." Section 111(d)(1). The definition of "standard of performance" requires such a standard to "reflect the degree of emission limitation achievable through the application of the best system of emission reduction" that has been "adequately demonstrated" and reserves to EPA the authority to determine whether such a system has been adequately demonstrated. Section 111(a)(1). The implementing regulations EPA promulgated for section 111(d) go beyond merely establishing a procedure for submission of state plans; EPA authorizes itself to establish an "emissions guideline" for states, 40 C.F.R. § 60.22, and prescribes required content for state plans under section 111(d). 40 C.F.R. §§ 60.24-26. However, the regulations do afford states some flexibility to "provide for the application of less stringent emissions standards or longer compliance schedules than those otherwise required . . ." 40 C.F.R. § 60.24(f).

Under EPA's proposed regulation, all of the flexibility that should come with the authority the statute provides to establish standards of performance becomes illusory. Through the extension of EPA's BSER beyond the existing sources being regulated to reach other producers and all consumers of electricity, EPA establishes emission rates that are unrealistic and unachievable. Each of the Building Blocks that comprise this system set forth mandatory goals that are impossible to meet on an individual basis. Although EPA claims these Building Blocks are severable, 79 Fed.Reg. at 34892, it provides that the goals they establish are cumulative. 79 Fed.Reg. at 34893. EPA expressly states that any inability to comply with the goals set under one Building Block is expected to be made up by over-complying with the goals set under the other Building Blocks[5]. *Id.* Further, EPA intends that the states' only opportunity to adjust the goals EPA has established through the proposed regulation will be through state comments on it. Once EPA publishes a final regulation, it expects that state goals will become "binding." 34 Fed.Reg. at 34892. Because of EPA's treatment of individual Building Block goals as cumulative, a state seeking flexibility from EPA cannot obtain relief by simply demonstrating that the goal for one Building Block is too restrictive. Instead, the state must make that demonstration as to all of the goals. 79 Fed.Reg. at 34893. As discussed below, interim goals that supply the "glide path" to the proposed regulation's final goals are actually even more stringent than the final goals. Instead of allowing states any freedom in implementing standards, EPA would make states subject to rigorous reporting obligations to EPA. EPA further contemplates requiring state plans to include extensive evaluation requirements to evaluate performance in relation to interim goals with "corrective measures" to further tighten the interim goals in the event of deviation from the prescribed glide path.

[5] "EPA expects that, for any particular state, even if the application of the measures in one building block to that state would not produce the level of emission reductions reflected in the EPA's quantification for that state, the state will be able to reasonably implement measures in other of the building blocks more stringently." 79 Fed.Reg. at 34893.

The proposed regulation robs section 111(d) of the federalism its language provides. Despite EPA's thinly veiled assertions that it is merely providing "guidelines" which states have great flexibility in meeting, the reality is that EPA is dictating the substantive aspects of the standards of performance to the states in mandatory, binding goals. The rightful role of the states under section 111 is to be able to prescribe performance standards that reflect the unique needs, circumstances and policy judgments of each state as applied to sources therein. Section 111(d) is supposed to provide this. The heavy hand of EPA, through this proposal, denies it.

The EPA has gone through a tortuous academic exercise in an attempt to meet its obligation for demonstrating that there is BSER to support its binding goals. The CO_2 reductions estimated by the EPA Building Blocks are unachievable, and more modest reductions that might be achievable would come at prohibitive costs and with unacceptable degradation of the reliability of the power grid. Unless the EPA recognizes this and provides support for its goals that are achievable and do represent BSER, states will be put in the untenable position of attempting to develop state plans to achieve the EPA goals when there is no BSER available at reasonable costs for achieving the binding goals.

D. EPA's Building Blocks 2, 3 and 4 Are Illegal Because Section 111's "Standards of Performance" Apply Only To Sources, Not the Entirety of the Electric Grid and the American Economy

Throughout the history of the CAA, EPA and its state counterparts have used their CAA jurisdiction to regulate emissions of air pollutants from the sources of those emissions. This historic approach would support an achievable version of EPA's Building Block 1, measures to reduce emissions by increasing heat efficiency at the sources, electric generating units themselves. Under section 111, such measures have been called "inside the fence" measures for a source. With its Building Blocks 2, 3 and 4, EPA is leaping outside the fence to control the dispatch of electricity on the grid and mandate EE measures for consumers.

After many years of applying the law inside the fence, EPA claims to have discovered a "gap" in the coverage of the CAA. According to EPA, nothing in the CAA addresses whether it has authority to establish a national energy policy to its own liking by re-structuring power markets and dictating EE measures to consumers, if in doing so, emissions of air pollutants at a source can be affected:

> However, the terms of CAA section 111(d)(1) do not explicitly address whether, in addition to emission limits on affected EGUs, state plans may include other measures for achieving the emission performance level. Nor do they address whether entities other than affected EGUs may be subject to requirements that contribute to reducing EGU emissions.

79 Fed.Reg. at 34902. Therefore, EPA reads *Chevron v. NRDC*, 467 U.S. 837 (1984), to provide it with authority to step in and, in the vacuum of this alleged "gap" in the CAA, interpret it to allow EPA to dictate energy policy to the country.

Section 111(d) authorizes establishment of "standards of performance for any existing source." Section 111(d)(A). Although "standards" for a "source" would seem to mean a set of requirements "for" the source to meet, EPA now claims "for" should be given a new, more "capacious" meaning. 79 Fed.Reg. at 34903. This capacious meaning would accommodate EPA's imposition of requirements on the operators of the nation's electric grid for use of power from RE producers in order to reduce the demand for electricity (and thereby, emissions) from higher carbon emitting sources. It would also allow for demand and emissions reduction for such sources through imposition of EE standards to reduce the use of electricity by consumers. EPA attempts to buttress its position by pointing out that a "standard of performance must reflect the degree of emission limitation achievable through the best system of emission reduction." 42 U.S.C. § 7411(a)(1), and by citing a definition of "system" that includes, "[a] set of things working together as parts of a mechanism or interconnecting network." 79 Fed.Reg. at 34885. In EPA's reasoning, this definition is broad enough to encompass the outside the fence measures of Building Blocks 2, 3, and 4.

Regardless of whether a "system" of emissions reduction extends EPA's CAA jurisdiction beyond the fence, and regardless of whether a standard of performance "for" a source is a set of requirements that apply at a source or something more capacious, the rest of the statute provides some assistance in determining the extent of CAA jurisdiction these terms confer. First, not only does section 111(d) authorize standards of performance "for" existing sources, it goes further to specify that the existing source for which such standards are developed must be one "to which a standard of performance under this section would apply if such source were a new source." Subsection 111(d)(a)(1)(ii). A standard which applies "to" a source would seem to be one that regulates the source and not things outside of it. Second, section 111, in general, only authorizes standards to be set for facilities that are within EPA-listed source categories. Third, section 111(h)(1) provides some context on the meaning and application of "standards of performance" that is useful. Where EPA determines it is not feasible to prescribe or enforce a standard of performance, section 111(h)(1) allows EPA, in the alternative, to promulgate a "design, equipment, work practice, or operational standard, or combination thereof" as a substitute for a standard of performance. Section 111(h)(1). Each of these alternative measures is something that could only be applied "inside the fence" at a source. Of course, none of these measures could substitute for the type of outside the fence measures EPA is proposing as Building Blocks 2, 3, and 4. "Standard of performance" should not be given a broader application than is possible for the measures the law authorizes to be substituted for it. Fourth, section 111(h)(2) defines "not feasible to prescribe or enforce a standard of performance" for purposes of section 111(h)(1) in a manner that leaves little doubt that a standard of performance is something that is intended to

apply inside the fence. To be "not feasible to prescribe or enforce a standard of performance," there must be a determination that:

- A pollutant or pollutants cannot be emitted through a conveyance designed and constructed to emit or capture such pollutant, or
- Any requirement for, or use of, such a conveyance would be inconsistent with any Federal, State, or local law, or
- The application of measurement technology to a particular class of sources is not practical due to technological or economic limitations.

Section 111(h)(2). Each of these three scenarios under which EPA may deem a standard of performance to be infeasible requires evaluation of circumstances that only exist inside the fence, at a source. If the only way to determine feasibility of a standard of performance, by law, is to look at what is feasible inside the fence, the only place such a standard could possibly be applied is inside the fence. Fifth, section 302(l) of the CAA also contains another inside the fence-oriented definition of "standard of performance":

> The term 'standard of performance' means a requirement of continuous emission reduction, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction.

Sixth, the EPA's implementing regulations in 40 C.F.R. Part 60, Subpart B are clearly written to reflect EPA's historic interpretation that section 111 standards of performance apply strictly to, and at, sources. 40 C.F.R. §§60.20 to 60.29. Seventh, both of EPA's "new source" section 111(b) proposals for EGUs clearly limit the emission reductions to measures which can be applied within the fence line.

As with the Tailoring Rule and the bar of section 111(d) standards for sources regulated under section 112, EPA's attempt to extend its jurisdiction beyond actual sources of emissions with Building Blocks 2, 3, and 4 is only possible if the agency is allowed to rewrite the CAA to suit its purposes. Congress authorized EPA to regulate sources of air pollution, not the entire electric grid, all power generation and all consumers of electricity. EPA would extend its jurisdiction to everyone who has ever flipped a light switch and beyond, if allowed. Building Blocks 2, 3, and 4 are unlawful. Similarly, if these areas are not valid subjects for EPA jurisdiction under the CAA, neither can EPA gain such jurisdiction through the back door by forcing state clean air agencies to adopt federally enforceable state plans regulating in these areas that are *ultra vires* for EPA itself under the CAA.

E. Building Blocks 2, 3, and 4 Usurp Authority Reserved to the States under the Federal Power Act

The allocation of jurisdiction over the generation, transmission, and sale of power between federal and state regulators is governed by the Federal Power Act. 16 U.S.C. §824. The federal

government exercises jurisdiction over the interstate transmission of electricity and wholesale power sales. 16 U.S.C. § 824(a). All states have jurisdiction over their electric utilities as set forth by state statutes. In West Virginia, which has not implemented power supply deregulation, the WVPSC has jurisdiction and control over approval of construction and retirement of generating facilities, approval for major modifications to generating facilities, setting retail rates that include a power supply cost component, and considering electric utility plans to meet reasonable reliability standards[6]. *See,* e.g., W.V. Code §§ 24-1-1(a)(2) - (4) and 24-2-1(c). The Federal Power Act explicitly carves out wholesale, but not retail, electric rates for federal jurisdiction and otherwise limits federal jurisdiction "only to those matters which are not subject to regulation by the States" and excludes "jurisdiction . . . over facilities used for the generation of electric energy." 16 U.S.C. §§ 824(a) and 824(b)(1). The ultimate authority for determining the adequacy of their power generation resources resides with the individual states. In determining the adequacy and reliability of its electric generation system, a state must balance various public interest concerns and technical considerations to maintain sufficient and efficient service at just and reasonable rates. An integral part of these considerations is the appropriate generation mix to be employed by utilities. Building Blocks 2, 3, and 4 of EPA's supposed BSER unlawfully intrude upon the authority Congress expressly reserves to the states to make such determinations.

Through the proposed Building Blocks, EPA is broadly asserting jurisdiction over the production and dispatch of electricity in the states by requiring reduced generation from coal-fired power plants, increased use of gas-fired combined cycle generation and renewable generation, and demand side management EE, thus usurping state authority to establish energy policy. Through its capacious interpretation of the words, "for" and "system," the EPA is claiming CAA jurisdiction that Congress expressly denied to federal regulators when Congress was speaking directly to the manner in which jurisdiction over the electric power generation industry should be divided between federal and state authorities. In determining the limits of federal jurisdiction, Congress left states with jurisdiction over their mix of electric generation and with jurisdiction over the interaction of electric utilities and retail customers. However, the dictates of EPA's emission guidelines leave the states with no option other than to significantly change the electric generation mix and the actions of retail customers. EPA makes no attempt to reconcile its assertion of jurisdiction over generation mix and retail customer energy usage with the current authority of state public service commissions. Without a more explicit statement indicating such intent, Congress could not have intended to give EPA, through the CAA, authority to commandeer control of state generation resources and retail customer energy usage. This is especially so in light of Congress' denial of the same authority to the Federal Energy Regulatory

[6] The WVPSC is the regulatory agency that is responsible for the regulation of all public utilities in West Virginia, including the electric utilities that own the majority of the existing EGUs in the state. Unlike many states, West Virginia has not restructured its electric utility industry and deregulated the power supply portion of electric service. The WVPSC has retail ratemaking jurisdiction, including the rate component for the power supply costs from the utility owned EGUs. The WVPSC also has regulatory authority over major additions, investment in retrofits, and retirements for those EGUs. From that perspective, the WVPSC staff provided valuable input into these comments.

Commission under the Federal Power Act. Building Blocks 2, 3, and 4 are beyond the authority of EPA. Even if EPA had the legal authority under the CAA to promulgate CO_2 emission limits for EGUs, it has not proposed a BSER that can economically achieve its proposed limits from an existing emitting source.

F. Principles of Federalism Embodied in the Constitution Preclude EPA from Using Building Blocks 2, 3, and 4 as Part of a Best System of Emission Reduction

As recently as June of this year, the U.S. Supreme Court provided the federal government with a reminder that the Constitution provides some protections against federal intrusion into areas that have historically been the regulatory province of the states. *Bond v. U.S.*, 134 S.Ct. 2077 (2014). There is a presumption that federal statutes do not preempt state law. *Id*., *citing Rice v. Santa Fe Elevator Corporation*, 331 U.S. 218, 67 S.Ct. 1146, 91 L.Ed. 1447 (1947). Congress must be "reasonably explicit" when it intends to readjust the balance of federal and state authority. *Bond*, 134 S.Ct.at 2089. Although *Bond* was a criminal case, its principals apply more broadly. The explicit statement from Congress that it intended to authorize EPA, through the CAA, to intrude upon the historic authority of the states to establish energy policy at the state level[7] is blatantly absent. State policies establishing RE portfolio standards are prime matters for states to enact, or to choose not to enact, under this authority. Absent a "reasonably explicit" statement from Congress, the CAA does not provide EPA with a license to federalize[8] what it views as the best elements of these state programs or to otherwise intrude in the determination of a state's energy mix or demand side EE programs.

Other aspects of the proposed rule may face constitutional problems. For example, the federal government may not commandeer a state's legislative processes. *Maryland v. EPA*, 530 F.2d 215 (4th Cir. 1975), *vacated on other grounds*, *Brown v. EPA*, 431 U.S. 99, 97 S.Ct. 1635 (1977) (*per curiam*). In practical reality, the proposed rule does just that. State environmental statutes, like the CAA, as a general matter give state-level clean air regulatory agencies the authority to regulate emissions of air pollutants from sources. This means, like EPA, a state lacks the authority to take its regulatory effort outside the fence, unless additional legislation authorizing this is enacted. While EPA may claim that its emissions guideline merely establishes the emissions rate states must achieve and that states are not bound by the Building Blocks and have "flexibility" to tailor their standards of performance to meet EPA's emissions rate in a myriad of ways, this is disingenuous. The reality is that the target emissions rate EPA has established is demonstrably lower than any coal-fired source can meet. To achieve the target rate, states like West Virginia will have to employ the techniques of all of EPA's Building Blocks, and then

[7] The Federal Power Act merely reaffirmed existing state authority in the jurisdictional territory it reserved to the states.

[8] If a state renewable energy portfolio standard is incorporated into an approved state plan under section 111(d), the state standard becomes federally enforceable. Section 111(d)(2)(B).

some, to have any hope of complying. Thus, the proposed rule functions as a command from EPA to state legislatures to adopt legislation that expands the reach of state air pollution laws into areas the states never previously contemplated in order to implement the Building Blocks. EPA clearly anticipates adoption of:

- Legislation directing state executive branch agencies or independent state authorities to follow through on obligations under a state plan; and

- Such legislation might provide independent legal authority under state law to compel executive branch actions, or actions by independent state authorities under the plan, if obligations are not met. Depending on the form of legislation, this could also provide citizens with the ability to compel state action under state law, if obligations are not met under a state plan.

EPA State Plan Considerations TSD, p.17. This command for action by state legislatures likely runs afoul of the Tenth Amendment of the Constitution. The problem it poses is exacerbated by the short time frame in which EPA expects state legislatures to act (*see,* discussion of Timing in the comments below). EPA not only expects state legislatures to act in response to its call, it expects this response to be immediate.

Neither can the federal government regulate the states as states. *See, Hodel v.Virginia Surface Mining and Reclamation Association*, 452 U.S. 264, 101 S.Ct. 2352 (1981). The proposed regulation contemplates just that. EPA follows the passage quoted in the paragraph above with the following observation: "[w]e note that under the CAA, measures included in an approved 111(d) state plan would be federally enforceable by EPA. . . ." *Id*., footnote 17. With this proposed regulation, the federal-state relationship under the CAA will be altered. States will no longer merely be co-regulators with EPA, subject to its oversight. Instead, states will become regulated entities, subject to federal enforcement by EPA. If federal commands to states requiring the adoption of legislation offend the Constitution, a command that goes the additional step of establishing the state as an entity subject to regulation by the federal government must be doubly offensive.

G. The Emissions Reductions EPA Proposes are Not "Achievable", Nor is EPA's Best System of Emissions Reduction "Adequately Demonstrated"

The CAA defines "standard of performance" as:

> [A] standard for emissions of air pollutants which reflects the degree of emission limitation *achievable* through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any other nonair quality health and environmental impact and energy requirements) the Administrator determines has been *adequately demonstrated*.

Section 111(a)(1) (*emphasis supplied*). As explained below in the discussion of each of the elements of EPA's BSER, none of the individual Building Block goals set for West Virginia is "achievable." This, alone, should establish that the proposed system of emission reduction is not adequately demonstrated. In addition, the comments provided below also illustrate significant flaws with EPA's reasoning in establishing these Building Blocks and the associated goals, which preclude any conclusion that EPA's best system of emission reduction or any of its elements has been adequately demonstrated or that its emissions goals are achievable.

H. EPA's Proposed Rule Does Not Comply with the CAA's Version of the APA, Section 307

1. EPA's Proposal is Not Sufficiently Clearly Defined

A proposed rule must be sufficiently clear to allow meaningful public comment. "An agency's rule proposal must fairly apprise interested persons of the subjects and issues of the rulemaking." *American Iron & Steel Institute v. EPA*, 568 F.2d 284, 293 (3d Cir. 1977). "If a final rule deviates too sharply from the proposal, affected parties will be deprived of notice and an opportunity to respond to the proposal." *Small Refiner Lead-Phase Down Task Force v. EPA*, 705 F.2d 506, 547 (D.C. Cir. 1983). At some point, a rule that proposes multitudinous permutations must be deemed to be too loosely drawn and have too many alternatives and contingencies to fairly and sufficiently apprise interested parties who wish to comment. An agency that proposes a rule should have more than a "fuzzy idea" of what it is pursuing before it goes to publication. In this case, EPA has proposed four Building Blocks, each of which has a goal, an alternate goal, an interim goal and an alternate interim goal. The preamble for the proposed rule contains over 130 separate solicitations of comment. This does not include issues that might be raised in over 1,000 pages of various TSDs EPA has authored to accompany the proposed rule. Nor does it include issues newly raised in the Notice of Data Availability (NODA) or the Rate to Mass Conversion TSD EPA published within little more than a month before comments are due. 79 Fed.Reg. 64543 (October 30, 2014) and 79 Fed.Reg. 67406 (November 13, 2014), respectively. This is not the way to start the kind of reasoned decision-making process that section 307(d) of the CAA envisions. EPA has failed to put forward a reasonably concise idea of the subject of its rulemaking for public comment.

2. The Proposed Rule, as Written, is Arbitrary and Capricious

Section 307(d)(9)(A) of the CAA allows a court to reverse a rulemaking by EPA that is found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." The proposed rule is riddled with contradictions and inconsistencies. Therefore, as proposed, it is arbitrary and capricious. Numerous examples are provided throughout these comments. Some examples are listed below:

- Even if it is assumed that EPA does have the authority it claims to force EE goals on states, in so doing it should not arbitrarily discriminate between states. Under its

proposed regulation, states like West Virginia that export power are expected to meet one hundred percent of the EE goal EPA sets for it while states that import all of their power have no EE goals. States that produce only a portion of their power have EE goals that are scaled down, based on the amount of power they import. A state's ability, or lack thereof, to produce its own power has no relationship to its ability to implement EE measures, yet this is a criterion EPA uses to limit or entirely do away with EE goals.

- The regulation would make arbitrary distinctions. States like West Virginia that produce enough inexpensive coal-fired power to export some of it to other states will be responsible for reducing carbon emissions from all of this coal-fired power, regardless of where it is sold. However, the regulation gives the sales location of renewable power controlling weight. Other states, where the more expensive renewable power produced in West Virginia is sold, will be allowed to utilize this renewable power in meeting EPA's goals.

- Instead of providing a smooth "glide path" from the current situation toward meeting EPA's final goals for the state, EPA's interim goals are actually more stringent than its final goals and would require immediate, disruptive, sharp reductions, 47 percent of West Virginia's final goal, before the 2020 to 2029 "glide path" even begins. *See*, discussion below.

- The time frame the proposed regulation would provide from its predicted finalization in June 2015 to implementation of the "glide path" in 2020 is far too small for the necessary:

  1) State outreach to stakeholders;

  2) State outreach to other states for exploration of and negotiation of any potential multi-state or regional plan;

  3) Meeting any requisites for proposing legislation that may exist under state law;

  4) Adoption of enabling state legislation;

  5) Adoption of state regulations implementing state legislation;

  6) Development of a state (or regional) section 111(d) plan;

  7) Obtain Congressional approval of a multistate compact, as required by the Compact Clause of the Constitution, for an enforceable multi-state plan.

8) Approval of fifty or more state section 111(d) plans by EPA, which is already well behind in approving state SIPs under CAA section 110;

9) Commitment of capital by the electric generation industry and others that would be regulated by the proposed rule to fund the work that will be necessary to achieve its mandates;

10) Commitment of capital for new electric transmission lines and gas pipelines;

11) Acquisition of property rights for construction or other work that may be necessary;

12) Regulatory approvals and permits from FERC, utility commissions, environmental regulators and others, including any required reviews under the National Environmental Policy Act, the Endangered Species Act, and the National Historic Preservation Act;

13) Completion of construction or other work to enable compliance that can only begin after regulatory approvals are obtained; and

14) Trouble-shooting and adjustment of new equipment, systems or devices to assure performance as intended.

The fact that each of these steps is necessary to implement a plan to fundamentally restructure the way in which the U.S. meets its energy needs will make accomplishing them more difficult than would otherwise be the case.

- EPA's use of a study of measures that had been employed by power plants to improve heat efficiency as a basis for establishing its goal of a six percent improvement in heat efficiency is arbitrary and capricious because:

  1) The study is five years old and looks backward at measures that had been previously employed, and thereby necessarily does not consider improvements in process and new emission control devices installed at these plants more recently to meet more contemporary EPA requirements such as the Clean Air Interstate Rule (CAIR), Prevention of Significant Deterioration (PSD), Cross-State Air Pollution Rule (CSAPR), and the Mercury Air Toxics Standards (MATS);

  2) In the time since the study was published, operators of these plants have necessarily been required to examine and maximize heat efficiency as part of their strategy for meeting these other emission control requirements;

3) EPA has erroneously concluded that the heat efficiency gains from implementing different measures is cumulative, when it is not, and derived its goal, in part, by simply adding the projected percentages of the different heat efficiency improvements; and,

4) EPA employed a statistical overlay in its calculations to conclude that the heat efficiency goal should be a six percent improvement. However, this statistically-derived result is not supported by real life data or examples. None of the case studies of real life situations found an improvement in heat rate of greater than four percent.

- EPA's use of a five year old, backward looking study is also arbitrary and capricious, because it ignores that the utilities that operate most of these plants are both publically traded companies and regulated by state public service or public utility commissions and have always been under obligations to both their shareholders and these regulators to achieve any economically achievable efficiencies.

- EPA's decision in the proposed regulation to apply the heat efficiency improvement goal to coal-fired power plants on a net basis is arbitrary and capricious, because it doubly penalizes coal-fired power plants. These plants have recently installed new equipment and revised systems to comply with EPA's other recent emission control initiatives directed at such plants, all of which have negatively affected heat rates. The controls impose a parasitic load on the plant that degrades net output.

- EPA is arbitrarily focusing on heat rate improvements at coal-fired power plants to the exclusion of consideration of such improvements at other carbon-emitting generators of electricity.

- EPA arbitrarily concluded that the RE capacity of some states can be used to set RE goals for other states, which have different resources and economic circumstances. The states cannot be compared in the way EPA has done.

- EPA's expectation that West Virginia could achieve a 700 percent increase in RE is beyond arbitrary and capricious.

- EPA's expectation that West Virginia could achieve an equally staggering increase in EE is arbitrary and capricious.

Below, WVDEP comments on specific aspects of EPA's section 111(d) proposal. These comments further support WVDEP's contentions that this proposal is arbitrary and capricious or otherwise unlawful.

III. Building Block 1 - CO_2 Reductions via Heat Rate Improvements

A coal-fired EGU's CO_2 emissions are driven by many factors, including the type and amount of fuel consumed; the efficiency with which the plant converts heat energy to electricity; and the operation time. There is a direct correlation between potential heat rate improvements and reductions of the carbon intensity of generation at individual EGUs. Reductions in CO_2 emission rates are commensurate with improvements in heat rate for these sources. Heat rate improvements increase the efficiency with which an EGU converts fuel energy to electric energy, which in turn reduces the amount of fuel required to produce the same amount of electricity, lowers operating costs, and reduces the amount of CO_2 produced. EPA's proposed rule has identified heat rate improvements as the first category of Building Blocks intended to reduce CO_2 emissions from coal-fired EGUs. However, for manifold reasons, a coal-fired EGU's heat rate is highly variable, and some causes of heat rate variability are beyond the ability of the operators to mitigate.

EPA has proposed a fleet average six percent reduction in the CO_2 emission rate of coal-fired EGUs, as a reasonable estimate of the amount of heat rate improvement that can be implemented at a reasonable cost. EPA's analysis centers around two methods of heat rate improvement: 1) utilizing best practices of operation and maintenance to reduce heat rate variability, and 2) additional reductions in heat rate via equipment upgrades. EPA's "reasonable estimate" of a six percent reduction in heat rate is derived from a four percent reduction from the former, plus a two percent reduction from the latter.

Importantly, EPA's projected reductions in heat rate variability are based on a statistical study that is not supported by any actual case studies of base-load EGUs that already employ best practices of operation and maintenance. Nor did EPA consider the performance of West Virginia's base-load EGUs that comply with other emission limitation requirements, including those of the ARP, CAIR, PSD, CSAPR, and the MATS. EPA's projected four percent reduction in heat rate variability from implementation of best practices of operation and maintenance includes reductions that, if at all possible, have already been largely realized for the base-load units in West Virginia. These units are already implementing best practices of operation and maintenance to offset heat rate degradation from the installation of emission control devices. EPA's goal of a specific percentage CO_2 improvement for states is not a reasonable standard given the reality of the variable CO_2 emissions that can be expected from modern coal-fired EGUs.

With respect to available equipment upgrades, most EGUs in West Virginia have already achieved the majority of heat rate improvements outlined by the 2009 Sargent & Lundy study concurrent with the installation of emission control devices (and associated equipment upgrades) to comply with the ARP, CAIR, CSAPR, and the MATS. Significant improvements in heat rate

from turbine overhauls have also been realized, as all turbines at West Virginia utility-owned EGUs are subject to strict periodic maintenance to assure efficiency and reliability.

Because EPA has neither performed nor identified any case studies on base-load EGUs that comply with the ARP, CAIR, CSAPR, and MATS, and instead relied on unsubstantiated statistical exercises and an outdated study, states are presented with a capricious and technically infeasible Building Block 1 requirement to reduce the average heat rate by six percent. West Virginia EGUs cannot meet this mark, as they have already minimized heat rate variation and operate at high boiler efficiencies. To limit heat rate variability and consequent CO_2 emissions from coal-fired EGUs, BSER should be limited to best practices of operation and maintenance. The study upon which EPA bases its Building Block 1 goal, Sargent & Lundy, recommends performing a site-specific power plant energy audit that would identify cost-effective equipment upgrades that result in significant heat rate improvements. Then, implementation of audit recommendations that are cost-effective for each EGU on a case-by-case basis would assure that each EGU is achieving the best heat rate that is practicable, economical, and achievable for that unit. For some EGUs, the result may be greater than EPA's six percent standard. For others, it may be less. But in either event, EPA could be assured that each EGU is operating at maximum practical efficiency using the legally required BSER standard that takes both cost and energy requirements into consideration. EPA failed to follow the recommendation made by the study upon which it bases its calculations of its proposed Building Block 1 goal.

A. Reducing Heat Rate Variability

EPA used national hourly coal-fired EGU heat input and generation data from 2002 to 2012 to determine the potential of heat rate improvement from best practices of operation and maintenance. EPA suggests such best practices include turning off unneeded pumps at reduced loads, installation of digital control systems, and more frequent tuning of existing control systems. The agency's statistical study was controlled to eliminate variations due to hourly changes in ambient temperature and load. EPA's assessment questionably indicated that heat rate improvements ranging from 1.3 to 6.7 percent could be achieved. EPA then excluded 30 percent of the variability not attributable to hourly temperature and load variation, and subsequently determined that coal-fired EGUs can achieve a four percent improvement in heat rate through adoption of operation and maintenance best practices.

However, EPA's purely statistical approach is not validated with actual case studies of base-load EGUs that already employ such best practices to reduce heat rate variability. Without any real-world validation, EPA's statistical approach cannot be considered to be "adequately demonstrated." From 2015 on, all remaining coal-fired units in West Virginia will be base-load units, as all load-following units will have been retired. These EGUs minimize heat rate variation due to changes in load, because they are designed as base-load units, and therefore are operating at design load with peak efficiencies on a nearly constant basis.

Many improvements in the performance of West Virginia's base-load EGUs have come since publication of the 2009 S&L study. All units that will remain in operation have been modified to satisfy the requirements of the ARP, CAIR, PSD, CSAPR, and the MATS. Because the installation of emission control devices typically increases heat rate, operators have already taken great pains to reduce heat rate variability to offset this increase. The EGUs subject to New Source Review (NSR) enforcement consent decrees are already required to implement certain controls and process improvements that limit heat rate variability. As a result of obligations imposed by the WVPSC, operators are already obligated to undertake best practices of operation and maintenance to achieve peak boiler efficiency and maintain the best heat rate practicable. In addition, companies have an obligation to their stockholders to be profitable. Operators, therefore, employ fundamental, market-driven business practices (including best practices of operation and maintenance that improve heat rate) that lower fuel costs. As a result, West Virginia EGUs have the second best 2012 coal-fired CO_2 emission rate in the country, 2,056 lbs CO_2/net electricity MWh. If shutdowns in 2013 and those anticipated for 2015 are considered, West Virginia's CO_2 emission rate would improve only slightly, because those plants did not have a high capacity factor in 2012. However, in 2016, West Virginia's remaining EGUs would have the lowest CO_2 emission rate in the country, 2,048 lbs CO_2/net electricity MWh.

To further illustrate the top performance of West Virginia's coal-fired generation fleet, consider the following analogy: if EPA had analyzed EGU performance as if setting a Maximum Achievable Control Technology (MACT) floor, 11 of 17 West Virginia EGUs would fall within the top 12 percent best performing units in the nation with respect to 2012 CO_2 emission rate. As the MACT is one of EPA's most stringent limits, this illustration supports WVDEP's assertion that EPA's expectation of an additional four percent heat rate improvement due to improvements in operation and maintenance for the West Virginia coal-fired EGU fleet is unreasonable. West Virginia's EGUs are already setting the standard for the rest of the nation.

Even though a coal-fired EGU may supply electricity for base-load demand, its heat rate will still vary and certainly not be static over time. This variability is due not only to load or hourly temperature, but also the equipment condition and physical design of the EGU's systems. Even well-controlled units that already employ best practices of operation and maintenance to improve heat rate demonstrate significant, variable fluctuations that cannot be directly correlated to the best practices. It follows, therefore, that EPA should not set a specific CO_2 emission rate for states because a static limit is not a reasonable standard in the case of unavoidably variable CO_2 emissions from coal-fired EGUs.

B. Reducing Heat Rate via Equipment Upgrade

In the proposed rule, EPA evaluated potential opportunities to improve EGU heat rates through specific equipment upgrades identified in a 2009 Sargent & Lundy (S&L) study. The study identified a number of equipment upgrades that could be undertaken at existing coal-fired EGUs, and determined a potential heat rate improvement range for each of the identified equipment upgrades based on a literature review. The study also included three case studies and projected the heat rate improvement that could be achieved in each case. They include:

- 250 MW pulverized coal power plant with electrostatic precipitator (ESP),
- 850 MW pulverized coal power plant with flue gas desulfurization (FGD) and baghouse, and
- 550 MW coal-fired power plant with ESP, evaluated replacing centrifugal fans with axial fans.

The study determined that a heat rate improvement of 424, 154 and 6 Btu/kWh, respectively, was possible for each case study. None of the case studies involved a typical modern West Virginia base-load EGU, with requisite emission control equipment and associated equipment upgrades.

Based on the average of the study's ranges of potential heat rate improvements from equipment upgrades, EPA supposedly determined that half of the equipment upgrade opportunities outlined in the study remains for existing units. EPA then proposed that the technical potential for heat rate improvements which could be achieved from equipment upgrades are on the average of two percent. The agency's appraisal of technical potential for heat rate improvements is based upon outdated information from a backward-looking study from 2009 that does not reflect the characteristics of EGUs with remaining useful life after installation of the emissions control equipment necessary to meet more recent EPA mandates. Therefore, the two percent heat rate improvement via equipment upgrade in the proposed rule is arbitrary and capricious.

The 2009 S&L study, while a straightforward study of methods that may decrease the heat rate of existing EGUs, is at this point an outdated one. Also, EPA has been busy in the meantime. The S&L study predated and could not have considered the impact of EPA's newer regulations on EGU operation. This is true because most EGUs in West Virginia (and many other states) not scheduled for permanent shutdown have already achieved the majority of heat rate improvements outlined by S&L via the installation of emission control devices (and associated equipment upgrades) to comply with the ARP, CAIR, CSAPR, and the MATS. Below are comments on significant sections of the study.

1. Boiler Overhaul - S&L identifies boiler overhaul with a new heat transfer surface as a possible method to decrease a power plant's heat rate. However, S&L warns that such extensive overhauls are fraught with potential design problems that may actually increase the heat rate. Because of this, the study ironically advises EGU owners that a better approach would

be to construct a new power plant. Such a solution would then make the unit subject to CAA section 111(b). This portion of the study also suggests that EGUs with Selective Catalytic Reduction (SCR) have already upgraded the economizer in order to lower the exit gas temperature and that a 50-100 BTU/kWh reduction in heat rate is possible with such an upgrade. All but one EGU in West Virginia not slated to permanently shut down has installed SCR (Fort Martin utilizes selective non-catalytic reduction). Therefore, any reduction in heat rate from upgrading the economizer is generally not feasible for West Virginia EGUs because the available reduction has already been achieved.

2. Neural Network - S&L indicates that EGUs can improve boiler efficiency from 0-1.5 percent by installing hardware and software that models and predicts EGU performance. The study notes that for larger EGUs, the potential heat rate reduction by installing a neural network is only 0-50 BTU/kWh, which translates to a maximum of only 0.48 percent decrease in heat rate. Most large EGUs in West Virginia have already installed such hardware and software during the installation of SCR and FGD devices, or to comply with the MATS. Therefore, any future reduction in heat rate with respect to installation of a neural network is generally not achievable for West Virginia EGUs.

3. Intelligent Sootblowers (ISB) - S&L reports that ISB systems may improve boiler efficiency by 0.3-0.9 percent. However, the study notes that heat rate reductions from neural networks and ISB are not necessarily cumulative. Because ISB systems are used primarily with lower rank sub-bituminous coal, such as Wyoming Powder River Basin (PRB) coal, and lignite fuels, ISBs are not applicable to the boilers that combust pulverized bituminous coal in West Virginia. Therefore, any future reduction in heat rate with respect to the installation of ISB systems is not achievable for West Virginia EGUs.

4. Air Pre-Heaters - S&L reports that regenerative air pre-heaters that receive improvements to seals may decrease heat rate by 10-40 BTU/kWh, which translates to a maximum 0.38 percent improvement in boiler efficiency. The study also suggests that controlling acid dew point may improve heat rate by 50-120 BTU/kWh, which equals a maximum of 1.15 percent increase in boiler efficiency. Most EGUs in West Virginia have upgraded or replaced regenerative air pre-heaters during recent installation of pollution control devices. Similarly, because West Virginia EGUs have ammonia injection systems through the installation of SCR, these sources also control the acid dew point. Therefore, EGUs in West Virginia have already achieved available increases in boiler efficiency from these heat rate reduction methods.

5. Turbine Overhaul - S&L indicates that 30 year old, degraded turbines that are upgraded with improved components can increase power generation by two to three percent and decrease heat rate by 10-300 BTU/kWh, which equals a significant 2.89 percent increase in boiler efficiency. Most EGUs in West Virginia that are not scheduled to permanently shut down have, through scheduled overhauls, already replaced or upgraded their turbines with improved

components. Therefore, any substantial future reduction in heat rate with respect to upgraded turbines is generally not achievable for West Virginia EGUs.

6. Feedwater Heaters - The S&L study indicates that increasing feedwater heating surface area in feedwater heaters can improve boiler efficiency. The study also notes that such modifications are cost-prohibitive.

7. Condenser - The S&L study notes that effective operation of a steam surface condenser can provide a significant decrease in heat rate, and regular cleaning of the condenser can reduce the heat rate by 30-70 BTU/kWh, which translates to a maximum boiler efficiency increase of 0.67 percent. Diligent maintenance programs already in place measure condenser backpressure, and such programs ensure that all West Virginia EGUs adhere to a regular condenser cleaning schedule. Therefore, this method of heat rate reduction would not improve the heat rate for existing EGUs.

8. Boiler Feed Pumps - The S&L study notes that boiler feed pumps require rigorous maintenance and consume significant auxiliary power. The rebuild of a boiler feed pump can decrease heat rate by 25-50 BTU/kWh, which translates to a maximum boiler efficiency increase of 0.48 percent. Similar to our comment above regarding condenser cleaning, all EGUs must generally adhere to regular feed pump maintenance. Therefore, methods of heat rate reduction which involve regular scheduled maintenance would not significantly improve heat rate for existing EGUs.

9. ID Fans - S&L notes that SCR and FGD installations increase the pressure drop across the flue gas system and that old centrifugal fans can be replaced by newer axial fans for a heat rate reduction of 10-50 BTU/kWh during installation of new emission control equipment. This heat rate reduction equals a maximum of 0.48 percent increase in boiler efficiency. The study also identifies variable inlet vanes, variable speed control, two speed motors, and variable pitch blades as methods to control fan motor speed, which in turn will increase efficiency. Because SCR and FGD devices require redesign of the ductwork at an EGU, older centrifugal fans have been replaced (and upgraded) as part of the pollution control device installation at West Virginia's remaining EGUs. Therefore, in as much as West Virginia's EGUs have already installed axial fans with these controls, no further reduction in heat rate can be achieved in this manner.

10. Fan Variable Frequency Drives (VFD) - The S&L study notes that many EGUs no longer operate at base-load capacity, and fan VFDs can improve efficiency at off-peak loads. WVDEP refers EPA to our previous comments regarding ID fans, and notes that VFDs have already been installed with recent emission control devices. All EGUs in West Virginia that remain after 2015 will operate at base-load capacity, and therefore cannot realize the projected heat input reduction of 20-100 BTU/kWh S&L associates with VFDs.

11. Removal of FGD Venturi Throat - S&L indicates that old FGD controls that incorporate a venturi design can be replaced by a co-current spray tower quencher to reduce pressure drop across the flue gas system. Such an upgrade can halve the pressure drop across the FGD and somewhat reduce the auxiliary power required by the ID fans. All EGUs in West Virginia already incorporate improved design scrubbers in engineered redesigns of flue gas systems due to recent installations of emission control devices. Therefore, removal of FGD venturi throats is very unlikely to significantly decrease heat input rate on for existing EGUs.

12. Turning Vanes & Perforated Gas Plates - S&L indicates improvements to FGD gas flow distribution can increase FGD performance. Turning vanes installed in the ductwork and perforated gas plates in the inlet duct accomplish this in older FGD installations. As noted above, all or most EGUs in West Virginia already incorporate improved design scrubbers in engineered redesigns of flue gas systems due to recent installations of emission control devices. Turning vanes and perforated gas plates are inherent components of the improved and redesigned gas flow distribution and cannot be considered as remaining measures to decrease heat rate for existing EGUs.

13. Shutoff Spray Level - The S&L study notes that multiple sprays in FGD systems can be cut back to decrease auxiliary power requirements for slurry pump operation, if the source is meeting its permit limits for SO_2. This is already a well-established practice in the operation of West Virginia EGUs, and, thus cannot be considered for additional improvements in heat rate.

14. Slurry Variable Frequency Drives - The S&L study notes that VFDs on FGD slurry pump operation can accommodate reduced pump loads due to spray cutbacks and provide a minor decrease in heat rate. As noted above, most - if not all - EGUs in West Virginia already incorporate recent, engineered scrubber systems, which include VFDs for reduced slurry pump loads. Because of this, VFDs for slurry pump operation cannot be considered for added improvements in heat rate.

In an October 15, 2014 letter to the National Rural Electric Cooperative Association[9], Sargent & Lundy provided key clarifications regarding their previous study. These explanations by the study's own authors undercut the validity of the goals EPA set purportedly based on the S&L study, support the equipment upgrade comments WVDEP made above, and are hereby incorporated in our comments:

- Sargent & Lundy's 2009 Report does not conclude that any individual coal-fired EGU or any aggregation of coal-fired EGUs can achieve 6 percent HRI [heat rate improvement] or any broad target, as estimated by the EPA.
- The results in the 2009 Report were mostly based on publicly available data, data from original equipment manufacturers, and Sargent & Lundy's power

[9] Letter from Raj Gaikwad, Ph.D, Vice President Advanced Fossil Technologies, Sargent & Lundy, LLC to Mr. Rae Cronmiller, Senior Principal Environmental Counsel, National Rural Electric Association.

plant experience. Furthermore, the case studies showed that not all of the examined alternatives were feasible to apply to an individual generating unit due to a number of factors, including plant design, previous equipment upgrades, and each plant's operational restrictions.

- Various limitations exist for applying each heat rate improvement strategy, and these limitations depend on the unit type, fuel type, and many other site-specific conditions. Therefore, the ability to apply each strategy and the amount of heat rate reduction that can be achieved by each strategy is site-specific and must be evaluated on a case-by-case basis.
- It appears as though the EPA assumed that heat rate improvements cited in our 2009 Report were additive and applicable to all coal-fired units. Heat rate improvement ranges described in the 2009 Report case studies were estimated at a conceptual level, and were not based on detailed site-specific analyses. Verification of actual heat rate improvements was not made to determine whether any of the strategies were implemented and what actual heat rate improvements were realized based on site-specific design.
- Combinations of strategies to achieve heat rate improvements do not always provide heat rate improvement reductions equal to the sum of each individual strategy's heat rate improvement because many of the technologies affect, or are dependent upon, plant operating variables that are inter-related. Therefore, case-by-case analyses should be conducted to determine whether the incremental heat rate improvement through the application of multiple strategies is economically justified.
- The performance of some of the evaluated heat rate improvement strategies degrades over time, even with best maintenance practices. Therefore, depending on the strategy employed or the technology installed to reduce heat rate at an existing coal-fired EGU, the unit heat rate initially obtained may increase over time.
- Heat rate is increased when plants operate at lower loads, and the benefit of a heat rate improvement strategy is reduced at lower loads. Therefore, if an existing EGU is currently base-loaded and shifts to a load-cycling operating profile in the future, that unit's annual average heat rate will increase, and the heat rate reduction strategy (or strategies) implemented will not lower the annual average heat rate as much as compared to base-load operation. In some cases any HRI improvements achieved by undertaking the relevant options described in S&L's 2009 Report could, in some cases, be negated by HRI losses associated with load-cycling.
- The installation of additional pollution controls such as that required by regulations including BART, MATS, etc. will decrease the heat rate efficiency of any unit as compared to its heat rate efficiency before the installation.

- Many of the options for HRI listed in our 2009 Report have triggered New Source Review actions by EPA and others.
- Based on the case studies performed by S&L, it appears that most of the utilities are employing best operational and maintenance practices. In light of this observation, it appears that significant further reduction in heat rate, such as that assumed by the EPA, may not be feasible.
- Sargent & Lundy concludes that the only technically appropriate method to properly evaluate potential HRI is to conduct a unit-by-unit evaluation.

Through the clarifications of the study's authors, it is quite apparent that EPA has misused the 2009 Sargent & Lundy study to justify goals that are either based on infeasible reductions in heat rate, or on reductions that have already been realized by coal-fired EGUs with remaining useful life.

C. Building Block 1 Heat Rate Improvement Summary

While EPA acknowledged that it "recognize[s] that individual EGUs would only be able to implement the best practices or upgrades that were applicable to their specific designs or fuel types and that had not already been implemented," it is clear that the agency did not consider this admission in setting its proposed six percent CO_2 emission rate reduction in Building Block 1. 79 Fed.Reg. at 34859. As S&L stated above in its letter to the National Rural Electric Cooperative Association, "the only technically appropriate method to properly evaluate potential HRI is to conduct a unit-by-unit evaluation."[10]

The case-by-case evaluation or energy audit S&L recommends is a common sense approach EPA ignored when setting a national six percent heat rate reduction requirement in Building Block 1. Many EGUs are designed and operated as base load units and simply cannot achieve it. West Virginia base load EGUs cannot meet the six percent mark, as they have already minimized heat rate variation and operate at high boiler efficiencies.[11] This assertion is bolstered by the fact that based upon 2012 Clean Air Markets Division (CAMD) data, West Virginia's coal-fired EGUs have the lowest average heat rate (9294 BTU/kWh-gross) of any state in the nation. This is true because the base-load EGUs in West Virginia have already achieved the possible boiler efficiency improvements outlined in S&L. It is disingenuous for EPA to insist that existing EGUs that comply with the ARP, CAIR, CSAPR, and MATS can significantly improve heat

[10] Letter from Raj Gaikwad, Ph.D, Vice President Advanced Fossil Technologies, Sargent & Lundy, LLC to Mr. Rae Cronmiller, Senior Principal Environmental Counsel, National Rural Electric Association.

[11] The concerns expressed by West Virginia are supported by the NERC report issued November, 2014: "Potential Reliability Impacts of EPA's Proposed Clean Power Plan." NERC stated: "Overall, improving the existing U.S. coal fleet's average heat rate by 6 percent may be difficult to achieve. Possible options and considerations for attaining a portion of this target may include the following: Site-specific engineering analyses are required to determine if there are remaining opportunities for heat rate improvement measures through implementation of operational best practices or capital investments. If the U.S. coal fleet does not achieve target heat rates, more CO2 reductions would be required from other CPP Building Block measures. This can result in some coal-fired power plants retiring earlier than anticipated, which creates additional uncertainty in future generation resources."

rate, because these units have already done so. Clearly the sources EPA identified in its data analysis have already achieved significant heat rate improvement, and the majority of those opportunities for improvement outlined in the proposed rule would no longer be available to them.

D. Work Practice or Operational Standard

Building Block 1 heat rate improvement inside the fence is the only potential approach for reducing carbon emissions from EGUs that is consistent with section 111(d)'s application to sources (ignoring the other legal issues that bar application of section 111(d) to EGUs). For each existing EGU, the determination of possible heat rate improvements is dependent on the site-specific design and control configuration, practices of operation and maintenance, and availability of cost-effective equipment upgrades. Rather than a fixed average CO_2 emission limit rate for each state, BSER for existing coal-fired EGUs should be limited to possible heat rate improvements, determined on a case-by-case basis and considering the statutory requirements of cost, remaining useful life, and impact on energy reliability. EPA's indefensible attempt to define a specific limit as BSER fails to account for the recommendation by Sargent & Lundy to provide flexibility by performing power plant energy audits to determine the availability of cost-effective equipment upgrades and commensurate improvements in heat rate. This approach would mean that all practicable improvements are achieved at each EGU, whether this is a one percent, four percent, six percent or some greater improvement in heat rate.

EPA's theoretical approach to limit CO_2 emissions under section 111(d) is fundamentally flawed. Because there are no adequately demonstrated devices that capture CO_2 emitted from existing coal-fired EGUs, *See*, CAA section 111(h)(2), it is therefore not feasible to prescribe or enforce a standard of performance under section 111(d) of the CAA. In this situation, section 111(h) of the CAA applies, and only a work practice or operational standard can be promulgated for existing EGUs, instead of a fixed average CO_2 emission limit performance standard that states must meet in a section 111(d) plan.

In light of the fact that there is no adequately demonstrated control technology for the control of CO_2 from existing EGUs, it would be more appropriate to establish a work practice, or operational standard under section 111(h) of the CAA that reflects the best technological system of continuous emission reduction (BTSCER). BTSCER is a technological process of operation that is inherently low-polluting. In the case of coal-fired EGUs, BTSCER would be a requirement that sources must employ best practices of operation and maintenance to minimize heat rate variability and to periodically review available equipment upgrades to determine whether such upgrades would cost effectively improve heat rate and boiler efficiency.

CAA section 111(h) states:

> (1) For purposes of this section, if in the judgment of the Administrator, it is not feasible to prescribe or enforce a standard of performance, he may instead promulgate a design, equipment, work practice, or operational standard, or combination thereof, which reflects the best technological system of continuous emission reduction which (taking into account the cost of achieving such emission reduction, and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated. In the event the Administrator promulgates a design or equipment standard under this subsection, he shall include as part of such standard such requirements as will assure the proper operation and maintenance of any such element of design or equipment.
>
> (2) For the purpose of this subsection, the phrase "not feasible to prescribe or enforce a standard of performance" means any situation in which the Administrator determines that (A) a pollutant or pollutants cannot be emitted through a conveyance designed and constructed to emit or capture such pollutant, or that any requirement for, or use of, such a conveyance would be inconsistent with any Federal, State or local law, or (B) the application of measurement methodology to a particular class of sources is not practicable due to technological or economic limitations ...

It is apparent that, in CAA section 111(h), Congress envisioned a situation in which there is no demonstrated control technology for a particular pollutant that EPA determines a need to regulate. Consequently, BTSCER is the feasible remedy lawmakers prescribed for this particular situation. Because there is no adequately demonstrated control technology with respect to reducing CO_2 emissions from existing coal-fired EGUs, BTSCER should be developed and proposed under section 111(h) of the Act, rather than EPA's proposed emission guidelines (and unwieldy, multi-faceted, and legally-challenged BSER) under section 111(d). Limiting CO_2 emissions from existing coal-fired EGUs via BTSCER under section 111(h) is the better application of the Act, and to this end, the most defensible mechanism for regulation of carbon emissions under section 111.

Established, onsite work practice or operational standards alone are sufficient for certain subcategories within sectors. Recent examples in which work practice or operational standards measures have been incorporated into work practices include the Coal- and Oil-fired Electric Utility Steam Generating Units at 40 CFR 63, Subpart UUUUU (Utility MACT).[12]

[12] Reference: EPA Fact Sheet on December 16, 2011 final rule, MERCURY AND AIR TOXICS STANDARDS FOR POWER PLANTS, http://www.epa.gov/mats/pdfs/20111221MATSsummaryfs.pdf

EPA's own Utility MACT establishes work practices based on energy efficiency to reduce dioxin/furan emissions. The standards set work practices, instead of numerical limits, to reduce emissions of organic air toxics, including dioxin/furans, from existing and new coal- and oil-fired power plants. Because dioxins and furans form as a result of inefficient combustion, the work practice standards require an annual performance test program for each unit that includes inspection, adjustment, and/or maintenance and repairs to ensure optimal combustion. A similar approach to heat rate improvement would make better sense than EPA's current proposal.

E. Other Comments Regarding Building Block 1

1. Remaining Useful Life - In the proposed rule, EPA has constructed emission guidelines and established BSER for coal-fired EGUs in the absence of consideration of remaining useful life. EPA defers this important consideration to states for inclusion in their plans under 111(d). This presents a significant problem, as the agency's proposed CO_2 emission rate goals for states do not consider the billions of dollars that companies have already invested in West Virginia's remaining base-load EGUs to meet WVPSC, ARP, CAIR, CSAPR, and MATS requirements and consent decrees. Such investments will not be recovered within the timeframe of the proposed rule. After shutdowns in 2013 and 2015 of load-following units, the remaining base-load EGUs in West Virginia will have considerable remaining useful life. The CAA allows states to consider this factor in setting emission standards. But if EPA establishes in a final rule goals that are so stringent as to prevent states from giving adequate consideration to remaining useful life of existing EGUs, companies will be faced with the untenable situation of stranded assets that section 111(d) seeks to avoid. Ignoring remaining useful life of existing EGUs in a final carbon rule will force premature shutdowns and further jeopardize reliability of the electrical grid. Failure to consider this fundamental element of section 111(d) is arbitrary and capricious.

2. Focus on Coal-Fired EGUs is Arbitrary and Capricious - EPA claims that although heat rate improvements have the potential to reduce CO_2 emissions from all types of affected EGUs, the potential is significantly greater for coal-fired steam EGUs. Therefore, "EPA is conservatively proposing to base its estimate of CO_2 emission reductions from heat rate improvements on coal-fired steam EGUs only." 79 Fed.Reg. at 34859. EPA does not provide any data to support its bald assertion that the potential for heat rate improvements is significantly greater for coal-fired steam EGUs than others. Instead, EPA provides only a cursory justification for not providing a detailed assessment of this potential, which is contained in the Appendix to the GHG Abatement Measures TSD. Efficiency improvements should have been considered for all carbon-emitting EGUs - natural gas, oil, and coal-fired. This singular focus on coal-fired EGUs is clearly arbitrary and capricious.

3. BSER for Coal-Fired EGUs Should Not Include CCS, Natural Gas Conversion or Co-Firing - WVDEP agrees with EPA's finding that natural gas conversion or co-firing should not be considered part of BSER. 79 Fed.Reg. at 34875-76. WVDEP also agrees with EPA's

finding that Carbon Capture and Sequestration (CCS) should not be considered as part of BSER for coal-fired EGUs. 79 Fed.Reg. at 34876. CCS has not been adequately demonstrated, as we outlined in our comments on *Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units: Proposed Rule*, which are herein incorporated by reference. WVDEP agrees with EPA's finding that using expanded amounts of new NGCC capacity to provide replacement generation should not be considered part of BSER. 79 Fed.Reg. at 34876-77.

4. WVDEP notes that utilities are required by the WVPSC to have a certain amount of excess capacity for accommodating expected demand growth over specific periods to facilitate grid reliability in the event of unplanned outages. The utilities must be allowed to recover the costs of this generation, so there should be a component of BSER that accounts for demand growth, even with the use of coal-fired units.

5. It is WVDEP's position that, as to inside the fence versus outside the fence application of section 111(d), EPA is legally constrained to its alternative interpretation of CAA 111(d):

> CAA section 111(d)(1) must be read as precluding a state plan from including measures that are neither standards of performance nor measures for the implementation or enforcement of such standards; an interpretation that the state's obligation to set performance standards 'for' existing sources means that the standards must apply to affected EGUs and not to other entities; and an interpretation that measures 'for the implementation and enforcement of such performance standards' do not include measures that are not intended or designed to assist affected EGUs in meeting the performance standards.

79 Fed.Reg. at 34903. As stated above, states are constrained by the language of CAA section 111(d) to establish standards of performance or measures for the implementation or enforcement of such standards only at a source. Therefore, the proposed re-dispatch of generation from coal-fired EGUs to NGCC units (Building Block 2), the incorporation of Renewable Energy (Building Block 3) and Energy Efficiency (Building Block 4) requirements cannot be considered as a component of BSER. However, if EPA proceeds with its ill-conceived proposal to incorporate Building Blocks 2, 3, and 4, West Virginia offers the following comments on the remaining Building Blocks.

IV. Building Block 2 - CO_2 Emissions Reductions via Generation Redispatch

As the second proposed element of BSER, EPA identified possible reductions in CO_2 mass emissions from redispatch of electricity generation from higher carbon-intensive coal-fired EGUs to less carbon-intensive EGUs, such as existing Natural Gas-Fired Combined Cycle

(NGCC) units. Although this would result in higher mass emissions from the NGCC units, EPA intends to effect a reduction in total CO_2 emissions due to the lower emission rates of NGCC units in comparison to the coal-fired EGUs whose generation would be displaced.

As of 2012, seven U.S. states did not have any NGCC capacity - Hawaii, Kansas, Kentucky, Montana, North Dakota, West Virginia, and Wyoming. In West Virginia, there are no NGCC units in existence or under construction. Neither are oil- or gas-fired steam EGUs in existence or under construction. Therefore, no Building Block 2 CO_2 reductions are possible in West Virginia. All affected EGUs within the state are existing coal-fired steam EGUs, or simple cycle natural gas-fired "peaker" units that are not defined as "affected sources" under the proposed rule.

West Virginia, therefore, cannot utilize Building Block 2 reductions in a state plan, even if EPA's proposed Building Block 2 strategy is found to be lawful under the CAA. It is WVDEP's firm position that EPA's proposed Building Block 2 strategy is unlawful for the reasons discussed previously in these comments.

A. EPA Has No Authority to Redispatch Generation to NGCC Units

As discussed above, EPA does not have the legal authority to control dispatch of electricity to the grid. Neither do states exercise day-to-day jurisdiction over the dispatch of power plants on the interstate grid. States have only limited certification and economic jurisdiction of the state utility EGUs located in another state. Accordingly, it is not reasonable to consider regional scenarios when establishing goals for state plans. Changing economic dispatch to environmental dispatch of specific EGUs, which is integral to the EPA's unique attempt to move outside the fence to effect CO_2 reductions, is an extreme and unwise move away from the existing dispatch scenario. Such a massive change to the grid reliability/economic dispatch model is difficult to envision on an individual state basis, and even more difficult to envision on a regional level.

B. A New Source is not an Existing Source

As discussed in the legal objections above, CAA section 111(d) does not apply to new sources. Congress chose to give new and existing sources separate treatment in the CAA, and again, EPA has no authority to rewrite the CAA to suit its purposes.

Therefore, EPA's contention that "CAA section 111(d) is silent on whether requirements imposed under a CAA section 111(d) plan continue for a source that ceases to be an existing source because it modifies or reconstructs" is, to say the least, inaccurate. CAA section 111(d) clearly governs "existing sources," which by definition excludes "new sources." When a source is modified, by definition it ceases to be an "existing" source and becomes a "new" source. In the structure of section 111, upon modification, a source ceases to be subject to section 111(d) and becomes subject to section 111(b). It then follows that EPA's proposal to include new NGCC units under 111(d) is not permissible under the CAA.

C. Redispatch Degrades Base-Load Heat Rates

As discussed in previous comments on heat rate improvement, heat rates at coal-fired EGUs are affected by a number of different factors, including the mode of operation. Base load units have better heat rates than load-following units, or peaking units. Part of the reason that a unit is a base-load unit is its inherent low heat rate, and conversely, part of the reason it has a low heat rate is because it is a steadily operating base-load unit. Under a Building Block 2 scenario, the redispatch of coal-fired generation to NGCC generation will necessarily reduce base-load coal-fired EGUs to load-following EGUs, resulting in significant degradation of heat rate at the coal-fired units. The degradation of heat rate caused by requiring a coal-fired EGU that is designed to operate as a base-load unit to continually scale generation up and down as redispatch to NGCC units occurs will necessarily decrease thermal efficiency and increase the CO_2 emission rate of the formerly base-loaded EGU. This will offset all or part of the lower CO_2 emission rate of the NGCC unit. Such degradation in heat rate at coal-fired EGUs could also offset any potential heat rate improvements due to equipment upgrades or changes in operation and maintenance practices set forth in Building Block 1, and would impact the economic viability of such upgrades and changes.

D. Proposed NGCC Unit 70 Percent Capacity Factor is Unreasonable

The annual capacity factor of an electric generating unit is the ratio of its actual output in megawatt-hours (MWh) over the year to its potential output if the unit had operated at its full nameplate capacity for the full year (8784 hours in 2012).[13] EPA has proposed that it is reasonable to assume the fleet of existing and under construction NGCC units will operate at an annual capacity factor of 70 percent. This would require not only that every existing and under construction NGCC unit operate 70 percent of the time, but also that every NGCC unit operate at its full nameplate capacity 70 percent of the time. EPA has determined that is a reasonable expectation, even though U.S. Energy Information Administration (EIA) in *Table 6.7.A - Capacity Factors for Utility Scale Generators Primarily Using Fossil Fuels, January 2008 - May 2014* - in the June 2014 issue of *Electric Power Monthly*[14] reported the capacity factors of generators by fuel type by year, for NGCC units the capacity factors by year were: 2008-40.1 percent, 2009-39.8 percent, 2010-43.8 percent, 2011-43.6 percent, 2012-51.1 percent and 2013-46.5 percent. To achieve the proposed 70 percent capacity factor for the national fleet of existing NGCC units would require a 75.9 percent increase over the 2009 capacity factor (the lowest reported) and a 37 percent increase over the 2012 capacity factor (the highest reported). Due to technical constraints, as well as natural gas supply and storage problems and aging pipeline infrastructure, a 70 percent capacity factor for NGCC units is an unreasonable expectation.

[13] U.S. Energy Information Administration. http://www.eia.gov/tools/faqs/faq.cfm?id=187&t=3
[14] U.S. Energy Information Administration, Electric Power Monthly.
http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_6_07_a

As part of the Goal Computation TSD,[15] EPA included the state level NGCC capacity factors. Not a single state had a 70 percent capacity factor for NGCC generation. In fact, the highest state NGCC capacity factor was 63 percent for Connecticut. Only 10 states had capacity factors of 50 percent or greater (Florida, Georgia and New York-51 percent, Indiana and New Hampshire-53 percent, Ohio-55 percent, Alabama and Pennsylvania-59 percent, Virginia-60 percent and Conneticut-63 percent). The NGCC historical capacity factors demonstrate that EPA's proposed 70 percent capacity factor is not achievable, is not demonstrated, and in fact, is arbitrary and capricious. There is no rational way to conclude that Building Block 2 is adequately demonstrated.

E. Fuel Supply and Delivery

During the winter "polar vortex" in January 2014, NGCC units were unable to come online due to the cold temperatures and natural gas curtailments. According to PJM, "Among the challenges for PJM and its members in maintaining grid reliability during the month were unplanned generator shutdowns from the cold and the stress of extended run times, natural gas curtailments and fuel-oil delivery problems."[16]

The North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to ensure the reliability of the bulk power system in North America. NERC is subject to oversight by FERC and governmental authorities in Canada. In Chapter 3 of its *Polar Vortex Review, September 2014* NERC states:

> Increased reliance on natural gas during the polar vortex exposed the industry to various challenges with fuel supply and delivery. This increased reliance, compounded by generation outages during the extreme conditions, increased the risks to the reliable operation of the BPS (bulk power system).
>
> As the industry relies more on natural-gas-fired capacity to meet electricity needs, it is important to examine potential risks associated with increased dependence on a single fuel type. The extent of these concerns varies from Region to Region; however, they are most acute in areas where power generators rely on interruptible natural gas pipeline transportation.[17]

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[15] U.S. EPA, Office of Air and Radiation, *Goal Computation Technical Support Document*, June 2014. http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-goal-computation

[16] PJM Newsroom. *PJM Grid Meets Month Long Challenges of Cold January*. 01.31.2014 News Release http://www.pjm.com/about-pjm/newsroom.aspx

[17] North American Electric Reliability Corporation, *Polar Vortex Review*, September 2014, p. 17. http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CCAQFjAA&url=http percent3A percent2F percent2Fwww.nerc.com percent2Fpa percent2Frrm percent2FJanuary percent25202014 percent2520Polar percent2520Vortex percent2520Review percent2FPolar_Vortex_Review_29_Sept_2014_Final.pdf&ei=ZftYVO6TF6-BsQTSr4JA&usg=AFQjCNHdHHqYeZbspSB1CVXFIAcljj15jA&bvm=bv.78677474,d.cWc

More recently, and specifically in reference to the proposed EPA 111(d) rules, NERC stated: "Upon reviewing the EPA's Building Block 2 assumptions, NERC found a number of reliability concerns regarding increased reliance on natural-gas-fired generation that should be evaluated." NERC "Potential Reliability Impacts of EPA's Proposed Clean Power Plan," November, 2014.

Unlike coal and fuel oil, natural gas typically cannot be stored on site at an EGU. As a result, natural gas is limited to real-time delivery through a network of pipelines and bulk gas storage. A continuous supply is critical to support electric generators. However, natural gas is widely used outside the power sector, and the demand from other sectors, particularly coincident end-user gas peak demand during cold weather, critically affects gas providers' ability to deliver interruptible transportation service in the power sector. In addition, demand for natural gas is expected to grow in other sectors (e.g., transportation, exports, and manufacturing), further affecting its availability for EGUs. An additional problem is that existing natural gas pipeline infrastructure is old and not designed to transport the volume of gas required by NGCC plants operating at a 70 percent capacity factor. Transportation of larger quantities of natural gas at higher pressure through an aged infrastructure may cause public safety issues that EPA is not appropriately considering.

F. Aged Pipeline Infrastructure

The United States uses a nationwide system of pipelines to transport nearly 100 percent of the natural gas, and about 71 percent of the oil and refined petroleum products consumed in the country. Hazardous liquid pipeline operators, gas transmission line operators, and gas distribution utilities are the three industry sectors involved in transporting these materials. The first two- hazardous liquid pipeline operators and natural gas transmission line operators - transport materials from producers, refiners, and processors to industrial and commercial end users, in addition to terminals and local gas distribution utilities. Local gas utilities distribute natural gas to residential customers and smaller commercial users. There are approximately 229,000 miles of onshore gas transmission pipelines and 171,000 miles of onshore hazardous liquid pipelines moving natural gas, crude oil, and petroleum products. In addition to the transmission network, there is an even larger distribution network. The distribution network is made up of more than 2.1 million miles of small diameter lines.

According to the U.S. Department of Transportation's *The State of the National Pipeline Infrastructure* report:

> Over 50 percent of the nation's pipelines were constructed in the 1950's and 1960's during the creation of the interstate pipeline network built in response to the huge demand for energy in the thriving post-World War II economy. Some pipelines were built even earlier. Approximately 3 percent of our gas distribution mains are made of cast or wrought iron and were built in the first half of the 20th century. Over 12 percent of the nation's cross country gas transmission and

hazardous liquid pipelines were built prior to the 1950's. Each of these types of pipelines has its own unique age (and even material) distribution. Figure 5 below depict the percentage of pipelines constructed by decade (50's=1950's) for each of the three types of regulated pipelines.[18]

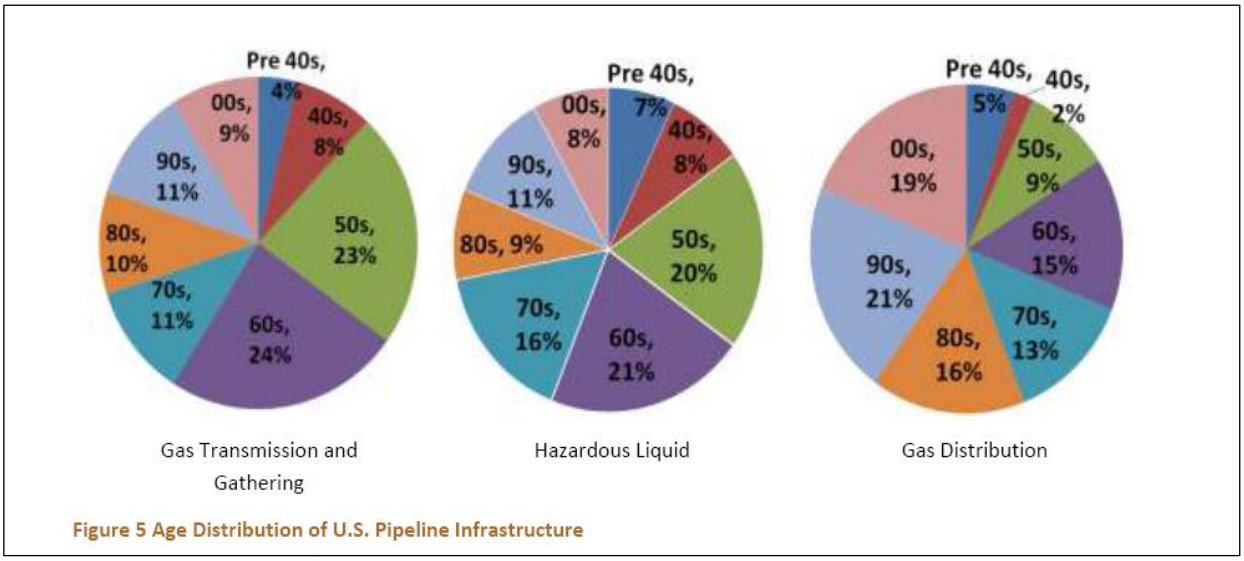


Figure 5 Age Distribution of U.S. Pipeline Infrastructure

Source: US DOT: The State of the National Pipeline Infrastructure

West Virginia is a crossroad of natural gas pipelines. Natural gas travels through West Virginia's transmission pipelines for delivery to states in the Northeast. The aging natural gas infrastructure is a major concern for the state. West Virginia has 3,903 miles of existing natural gas transmissions lines, 418 miles of natural gas gathering lines and an additional 10,644 miles of natural gas distribution lines.[19] EPA must consider the real-world hazards posed by aging pipeline infrastructure, as illustrated in the following excerpt from a recent National Transportation Safety Board (NTSB) report:

> On December 11, 2012, at 12:41 p.m. eastern standard time, a buried 20-inch-diameter interstate natural gas transmission pipeline (Line SM-80), owned and operated by Columbia Gas Transmission Corporation, ruptured in a sparsely populated area, about 106 feet west of Interstate 77 (I-77) near Route 21 and Derricks Creek Road, in Sissonville, West Virginia. The pipeline was operating at about 929 pounds per square inch, gauge (psig), just before the rupture. About 20 feet of pipe was separated and ejected from the underground pipeline and landed more than 40 feet away . . .

[18] US Department of Transportation, The State of the National Pipeline Infrastructure, A Preliminary Report, pp. 4-5. http://search.usa.gov/search?utf8= percentE2 percent9C percent93&affiliate=usdot&query=the+state percent20+of+the+national+pipeline+infrastructure&commit=Search

[19] US Department of Transportation: West Virginia Incident and Mileage Overview. http://primis.phmsa.dot.gov/comm/reports/safety/WV_detail1.html

> The escaping high-pressure natural gas ignited immediately. An area of fire damage about 820 feet wide extended nearly 1,100 feet along the pipeline right-of-way. Three houses were destroyed by the fire, and several other houses were damaged. There were no fatalities or serious injuries. The asphalt pavement of the northbound and southbound lanes of I-77 was heavily damaged by the intense fire. Work crews repaired and reopened all four lanes of the highway about 18 hours later. About 76 million standard cubic feet of natural gas was released and burned. Columbia Gas reported the cost of pipeline repair was $2.9 million, the cost of system upgrades to accommodate in-line inspection (ILI) was $5.5 million, and the cost of gas loss was $285,000.[20]

According to the NTSB report, Line SM-80 is 29.6 miles long and was originally installed in the early 1950s as an uncoated steel pipe, with a 717-foot segment replaced in 1967 during the construction of I-77. In 1992 segments of Line SM-80 were replaced both upstream and downstream of the 1967 replacement, and 654 feet of the 1967 pipe remained. It is not clear from the report how many of the original 1950's segments remain.

For these reasons, the WVDEP has very serious questions about whether the state's and nation's aged pipeline infrastructure can support a 70 percent capacity factor for new NGCC units, or even the 65 percent alternative proposed by EPA. Critical issues include reliability problems for the electricity grid; delivery problems for residential, commercial and industrial customers during periods of extreme cold; public safety problems from the explosive nature of compressed natural gas; and the environmental hazard from uncontrolled releases of methane.

G. Cost of Additional Natural Gas Pipelines

In the preamble to the proposed rule, EPA states: "For plants that require additional pipeline capacity, the capital costs of constructing new pipeline laterals is approximately $1 million per mile of pipeline built." 79 Fed.Reg. at 34875. Yet Columbia Pipeline Group just announced plans for the construction of a 160 mile natural gas pipeline to transport natural gas from the Marcellus and Utica production areas in Ohio and West Virginia to North Carolina, at a cost of $1.75 billion. The cost for this planned pipeline is $10.9 million per mile, more than an order of magnitude above the $1 million/mile cost that EPA estimated.[21]

Atlantic Coast Pipeline, LLC, a partnership of Dominion, Duke Energy, Piedmont Natural Gas and AGL Resources, has proposed a 550-mile "Atlantic Coast Pipeline" that will run from

[20] National Transportation Safety Board. 2014. *Columbia Gas Transmission Corporation Pipeline Rupture, Sissonville, West Virginia*, December 11, 2012. Pipeline Accident Report. NTSB/PAR-14/01. Washington, DC. Pgs. 1-3. https://www.ntsb.gov/investigations/summary/PAR1401.html

[21] Columbia Pipeline Group. *Columbia Pipeline Group Announces $1.75 Billion in New Investments to Serve Appalachian Supply Basins*, August 12, 2014. https://www.columbiapipelinegroup.com/about-us/news-room/2014/08/12/columbia-pipeline-group-announces-$1.75-billion-in-new-investments-to-serve-appalachian-supply-basins

Harrison County, West Virginia, southeast through Virginia with an extension to Chesapeake, Virginia, then south through North Carolina to Robeson County.[22,23,24] The project is expected to cost $5 billion to build, or $9.1 million per mile, almost an order of magnitude above the $1 million per mile cost that EPA estimated. The proposed pipeline still requires FERC approval.

V. Building Block 3 - Renewable Energy

Building Blocks 3 and 4 of EPA's proposed regulation focus on RE and demand-side EE, respectively. Active participation by the West Virginia Division of Energy (WVDOE) in development of RE and EE as economic development opportunities is the basis for WVDEP's comments on the RE and EE goals assigned to West Virginia in the proposed regulation.

The level of renewable energy assumed by the EPA's Building Block 3 goal cannot be achieved. Significant levels of increased renewable energy could only come at a high cost that will have a serious effect on electric rates. Low income residential customers will be particularly hard hit due to the relatively high percentage of income dedicated to paying for electricity. Industrial rates could also be disproportionately impacted by higher energy costs because of the higher energy to peak demand ratios (load factors) most industrial customers have. Finally, reliability issues have not been adequately vetted by the EPA. System reliability is impacted by higher reliance on the most likely renewable resources, wind and solar. This reliability concern is consistent with the recent NERC evaluation of EPA's proposed regulation.[25]

A. West Virginia's Renewable Energy Resources

Historically, hydropower has been West Virginia's primary renewable resource for electric generation. West Virginia has utilized hydropower to generate electricity since the early 1900s. The current hydro-based electric generating capacity in West Virginia is 286.7 MW. In the past decade, the state has seen significant growth in its wind-based generating capacity, largely due to the federal production tax credit that was made available for generation of wind-based electricity. West Virginia's current wind-based generating capacity is 583.3 MW. These two renewable resources, wind and hydro, account for nearly four percent of West Virginia's total electricity production. The state also has one landfill methane electric generating facility, which has a capacity of 2.2 MW. Currently, there are no photovoltaic power stations or biomass-based

[22] Dominion. *Dominion, Duke Energy, Piedmont Natural Gas and AGL Resources Form Joint Venture to Own Proposed Atlantic Coast Pipeline*, Sep 2, 2014. http://dom.mediaroom.com/index.php?s=26677&item=136935
[23] Duke Energy. *Duke Energy, Piedmont Natural Gas select Dominion to build 550-mile 'Atlantic Coast Pipeline' to transport natural gas from West Virginia to eastern North Carolina,* Sept. 2, 2014. http://www.duke-energy.com/news/releases/2014090201.asp
[24] Piedmont Natural Gas. *Duke Energy, Piedmont Natural Gas select Dominion to build 550-mile 'Atlantic Coast Pipeline' to transport natural gas from West Virginia to eastern North Carolina*, 09/02/2014. http://www.piedmontng.com/about/aboutpng/pressrelease.aspx?id=103
[25] EPA's analysis relies on resource projections that may overestimate reasonably achievable expansion levels exceed NERC and industry plans and do not fully reflect the reliability consequences of renewable resources.

generating units within West Virginia's borders, although a small number of individual photovoltaic power production facilities at various customer locations do exist.

B. EPA's Renewable Energy Generation Goal is Unrealistic

EPA has tasked West Virginia with an unrealistic RE goal of 14 percent increase based on the 2012 total state renewable electric generation - a total of 10,273,036 MWh from new low- and zero-carbon generating capacity by 2030. Excluding 2012 renewable electric generation from hydropower, as the proposed rule directs, this amounts to nearly an 800 percent increase (792.3 percent) over the 1,296,563 MWh produced through these sources in the base year for West Virginia.

This RE goal was developed using an arbitrary methodology that did not take into account the realistic potential of renewable resources available. Creating state-specific goals from neighboring states' renewable portfolio standards is completely misguided. Also, as discussed previously, a RE portfolio standard is a matter of state-level energy policy that EPA and the federal government have no authority to dictate to states.

C. Wind Generation Potential

Roughly four percent of the State's total electric generation comes from wind and hydro power. The wind component is derived from five wind farms with total installed capacity of 583.3 MW. Wind development in West Virginia began with the commissioning of Florida Power and Light's 66 MW Mountaineer project in Tucker County in 2002. NedPower, the 264 MW Grant County facility established by Dominion and Shell, is the largest wind project east of Indiana, covering 12 miles of ridgeline. It became operational in 2008. U.S. Windforce operates a 55 MW facility in Mineral County. Most recently, the Beech Ridge wind project expanded to 100.5 MW. Both the Beech Ridge and Laurel Mountain (100MW) projects support battery storage projects to facilitate power regulation.

While there are no active wind projects currently in development within West Virginia, two projects that have been licensed are currently stalled. The WVPSC has issued an exempt wholesale generator (EWG) license for the 160 MW AES New Creek project in Grant County. No development work has transpired due to permit issues with the Federal Aviation Administration. The U.S. Wind Force 150 MW project in Grant County has a WVPSC EWG permit but does not have a power purchase agreement for the electricity. WVDOE is cautiously optimistic that the 310 MW of potential wind capacity addressed above will come to fruition. Using the average capacity factor for wind-based generating units of 25.2 percent, these two wind farms could contribute 6.7 percent to the state's RE goal as advanced by the proposed regulation. These two projects totaling 310 MW represent the only wind projects in West Virginia with any near-term development potential.

Recent studies by National Renewable Energy Laboratory (NREL) and others highlight the wind potential identified by wind potential modeling services. There is much more to a wind project than access to favorable wind speeds. To draw an erroneous conclusion from wind maps that West Virginia is deficient in wind development does not consider development issues confronted by the wind industry. The state's mountainous terrain with steep hillsides presents significant competitive challenges. The fact that existing wind projects take advantage of formerly surface-mined lands speaks to the development costs of leveling land and putting in new roads to allow for ongoing maintenance.

Wind development remains a contentious energy source in West Virginia. While national environmental groups such as the Sierra Club and the Union of Concerned Scientists support wind development, local environmental groups such as the West Virginia Highlands Conservancy and Friends of Blackwater are opposed. View shed intrusion, noise levels and concerns about impact on endangered bird and bat species have been contentious issues in siting wind farms along the Allegheny mountain ridges in West Virginia. One wind project was required by a federal court ruling to eliminate part of its planned capacity and to curtail operations during periods of bat migration. West Virginia encourages environmentally responsible wind projects, but history teaches us that there will be significant opposition to the expansive level of development that would be needed to meet the EPA Building Block 3 goal using wind generation.

Based upon the existing capacity factor (25.2 percent), West Virginia would need a wind capacity of 4,654 MW to generate the target goal of 10,273,036 MWh. This would require an additional 4,070 MW of wind capacity to be installed from 2020 to 2030 in West Virginia. This is nearly seven times the state's current capacity. Windustry estimates that in 2012, a utility-scale wind turbine costs $1.3 million to $2.2 million per MW of nameplate capacity installed. Given the state's mountainous terrain, we believe that the cost in West Virginia would be at the high end of that range, or an overall $9 billion investment to support the EPA goal.

A report from the NREL assesses the land-use requirements for modern wind power plants. Three wind farms in West Virginia were identified with an average total area per unit capacity of 14.05 hectares per MW. The wind farms in the state were built on previously surface-mined land. The 4,070 MW wind capacity West Virginia would need to satisfy its target goal would have a total area impact of 57,184 hectares, or 571.8 km^2. This represents one percent of the land within West Virginia's state boundaries.

The fact that over 80 percent of the surface area in the state is privately owned represents a significant barrier to additional wind power development because the State cannot force land owners to develop this potential resource. Considering that the practical locations for wind farms are along the front range of the Allegheny Mountains in the northern and central eastern counties

of the state,[26] the total area impact would be close to four percent of the total land within those areas of West Virginia. In 2010, NREL performed a study to determine the wind energy potential of each state at a height of 80 meters above ground. NREL excluded areas that were unlikely to be developed, such as wilderness areas, parks, urban areas and water features. NREL determined that the wind energy potential for West Virginia is only 1,883.3 MW of installed capacity. This is 1,300 MW of additional capacity that could potentially be developed. If wind resources in West Virginia were to be developed to NREL's estimated potential (an additional 2,869,776 MWh over currently operating wind projects at a 25.2 percent capacity factor)[27], the State would still require an additional 7,403,260 MWh of electric generation from another renewable resource to meet EPA's proposed goal.

Compared to other states, a considerable share of West Virginia's potential wind is already developed. The state has the second highest amount of potential wind capacity in place in the region. As shown in the following table, West Virginia's potential wind opportunities are few compared to the Great Lakes states such as Indiana and Illinois in particular, where less than two percent of potential capacity is developed and where higher shares of windy land area are available for development. Only 25 percent of windy area is considered available for development in West Virginia due to the exclusion of federal lands by NREL. The table below describes these factors, as estimated by AWS TruePower and the NREL.

Table: Installed and Potential Wind Resources for Regional States

State	Ratio Installed/ Potential MW	Installed MW	Potential MW	Windy Land Area (km^2)	Percent Windy Area Available	KW/km^2 windy area
Pennsylvania	40.5 percent	1340	3307	2124	31 percent	631.03
West Virginia	31.0 percent	583	1883	1,495	25 percent	389.91
Maryland	8.1 percent	120	1483	568	52 percent	211.27
Michigan	2.0 percent	1163	59,042	19,761	60 percent	58.85
Illinois	1.4 percent	3568	249,882	70,764	71 percent	50.42
Indiana	1.0 percent	1544	148,228	46,255	64 percent	33.38
Ohio	0.8 percent	432	54,920	17,190	64 percent	25.13
Virginia	0.0 percent	0	1793	1567	23 percent	0.00
Kentucky	0.0 percent	0	61	49	25 percent	0.00

SOURCE: AWS TruePower/NREL estimates for areas with ≥ 30 percent capacity factor at 80m. Installed MW from AWEA.

[26] For this calculation, we have assumed the vast majority of new wind units would be located in the counties of Greenbrier, Pocahontas, Randolph, Tucker, Preston, Pendleton, Grant, Hardy, Mineral and Hampshire.

[27] Again, the high percentage of private ownership of land in West Virginia combined with opposition from home-grown environmental groups is expected to pose a significant obstacle to further wind development.

D. Hydroelectric Generation Potential

West Virginia has hydroelectric generation capacity of 286.7 MW located at 11 dams ranging in capacity from 1.9 MW on the Potomac to 102 MW on the New River. The Ohio River has two hydroelectric projects totaling 77.72 MW. Hawks Nest Hydro on the New River at 102 MW is the only dam in West Virginia optimized for electric generation.

Hydro permit applications under review by FERC for new West Virginia facilities total 125.6 MW. Proposed facilities range from 49.5 MW at Pike Island on the Ohio River to 0.3 MW (300 KW) on the West Fork. A project recently removed from consideration was a 350 MW pump storage project in Grant County. While several hydro applications have been under review for years, the circumstances support a prediction that the additional available hydro potential is only 125.6 MW. This equates, at a capacity factor of 40 percent, to roughly 4.3 percent of EPA's RE goal for West Virginia.

EPA determined that it is feasible for West Virginia to produce 4,408,000 MWh of electric generation from hydropower by 2025. Compare this to 2012, when West Virginia only produced 1,431,440 MWh of electric generation from hydropower. Assuming the Clean Power Plan would take effect in 2017, West Virginia would have only ten years from now to more than triple its hydropower capacity. The development time allotted is unrealistic. Against the prediction that only 125.6 MWh of additional hydropower is available in West Virginia, EPA's presumption that West Virginia has this level of untapped hydro resources is wholly without merit.

E. Biomass an Eligible Fuel

West Virginia is the third most forested state in the lower 48 states, following Maine and New Hampshire, with a robust forest products industry. As in most forested states, West Virginia has two wood markets, one for saw logs (construction/furniture) and one for pulp, or small round wood. Demand for pulp wood comes from paper mills in Luke, Maryland, and Covington, Virginia. West Virginia's wood pallet manufacturers are also consumers of round wood. The Appalachian Hardwood Center at West Virginia University determined that remaining pulpwood from West Virginia timber harvesting could potentially support the hardwood needs of four 50 MW wood-fired power plants. At a 34 percent capacity factor, these four plants would collectively generate on an annual basis 595,680 MWh, or 5.8 percent of West Virginia's RE goal under the proposed regulation. Serious obstacles to development of West Virginia's first wood-fired power plants are their ability to produce competitive electric rates and the identification of combined heat and power (CHP) opportunities.

F. Solar Resources

As determined in a project conducted by West Virginia University for the EPA titled "*Sustainable Energy Parks on Mine-Scarred Lands in Appalachia*,"[28] West Virginia's best potential solar power resources are located in the southern part of the state, where former surface-mined lands exist that have few options for reuse. These lands would be the best potential locations for solar power development and have been explored for such development. However, the incentives which states that are heavy utilizers of solar power have in place, e.g. net electricity imports and high electricity prices, do not yet exist in West Virginia.

The report found that the best potential solar resources in West Virginia are near Welch and have a potential expected output of 4.72 kWh/m^2/day, as shown in the following table. The report also found that financing arrangements were critical to the payback period of a potential solar power project, including the ability to receive tax credits and solar renewable energy credits (SRECs). Without SRECs, the levelized cost of energy produced ranged from 21 to 27 cents/kWh, depending on ownership structure.

Table: Solar Insolation in Select Cities

Area	kWh/m^2/day		Area	kWh/m^2/day
Las Vegas, NV	6.31		Welch, WV	4.72
San Diego, CA	5.68		Charleston, WV	4.55
Austin, TX	5.24		Cleveland, OH	4.31
Atlanta, GA	5.03		Buffalo, NY	4.09
Philadelphia, PA	4.75		Seattle, WA	3.67

SOURCE: PVWatts/NREL (2012).

For net electricity importing states such as California and New Jersey, solar power often helps to avoid purchasing wholesale electricity at times when it is most expensive, such as during peak load hours in the late summer afternoons. For West Virginia, one of the largest power exporting states, the ability to avoid this type of cost does not exist. Furthermore, peak demand for electricity in West Virginia occurs in the winter, often at times of the day when potential solar power output is zero. As of October 2014, California had about 5,500 MW of utility solar power resources connected to the grid.[29] Total installed solar electric generating capacity in California is closer to 8,000 MW.[30] Any solar power installed in West Virginia would have to be accomplished without the benefit of avoided peak energy prices which has enabled solar power development in California, and without access to what California has - some of the best solar power resources in the nation.

In terms of peak capacity needed to serve load, solar power is unlikely to be able to contribute at all in West Virginia. While there would be energy savings associated with solar photovoltaic

[28] http://wvwri.org/wp-content/uploads/2013/05/SEP-FINAL-Report-Package-5.8.13.pdf
[29] http://www.caiso.com/Documents/CaliforniaISO-Challenging2014SummerButReliabilityHeldFirm.pdf
[30] http://www.seia.org/research-resources/solar-industry-data

(PV) investment in West Virginia, the total avoided costs are likely to be much lower than states such as California, Massachusetts and New Jersey where solar capacity is already in place. And while electricity prices are rising in West Virginia and solar power prices are falling, levelized solar energy costs are not forecast to be competitive with current generation before 2030.

"Solar grid parity" is a term used to illustrate the continuing decline in the cost of solar power produced electricity in comparison to generally increasing retail electricity prices. Solar grid parity at the state level is typically defined as average electricity rates minus the levelized cost of generating solar electricity. Solar grid parity by this definition is expected by some analysts to reach 36 states in 2016, if the 30 percent tax credit on system costs remains.[31] West Virginia is not one of those states, due to its comparatively low electricity rates, despite recent increases.

This definition of parity is incomplete because it compares the retail cost of electricity that includes the costs of transmission and distribution, costs that can't be avoided when integrating solar energy because the grid must still be maintained. States such as Arizona are deciding that distributed, net-metered solar PV owners must pay a fee to support the distribution grid.[32]

The EIA projects that solar PV costs will decline to 13 cents/kWh in 2019 for systems with a capacity factor of 25 percent.[33] Because solar insolation in West Virginia is lower, a capacity factor of only 13 to 15 percent is possible,[34] which results in higher costs per kWh.

In West Virginia, the costs of solar power generation would have to be passed on to ratepayers, many of whom are low-income. Nearly one quarter of West Virginia families have incomes of less than 150 percent of the poverty line ($35,325 for a family of four)[35] placing the State eighth in the nation and about five percent above the national average of 19.6 percent. Families in this situation spend a disproportionate nine to ten percent of their income on utilities, fuel and public services, whereas the average family pays a little over seven percent of their income on the same goods and services.[36] Rate increases would pose a particularly acute problem for low income households.

[31] http://www.bloomberg.com/news/2014-10-29/while-you-were-getting-worked-up-over-oil-prices-this-just-happened-to-solar.html
[32] http://www.pv-tech.org/news/arizona_sets_precedent_with_solar_net_metering_charge
[33] http://www.eia.gov/forecasts/aeo/electricity_generation.cfm
[34] National Renewable Energy Laboratory (2012). *System Advisor Model*.
[35] http://aspe.hhs.gov/poverty/13poverty.cfm
[36] http://www.bls.gov/cex/2013/combined/quintile.pdf

Table: Poverty Status for Select States - Percent of Families Below 150 Percent of Poverty Level in 2013

State	Rank in 2013	Percent Below 150 Percent of Poverty Level	State	Rank in 2013	Percent Below 150 Percent of Poverty Level
Mississippi	1	29.3	Louisiana	6	24.9
District of Columbia	2	29	North Carolina	7	24.7
Arizona	3	26.2	West Virginia	8	24.4
Arkansas	4	25.9	Nevada	9	23.9
New Mexico	5	25	Kentucky	10	23.6

Source: U.S. Census, Current Population Survey (2013).

G. Renewable Energy Summary

There are currently no utility-scale solar power installations in West Virginia. The state has one announced 35 MW solar power grid project in the permit stage. Based on the efforts of private developers to build wind, hydro and biomass generating capacity over the last decade, it is extremely unlikely that more than 1.8 million MWh of additional generation can be added to the West Virginia portfolio by 2030. This would leave the state 8.5 million MWh short of the EPA's goal of 10.3 million MWh of new renewable generation, which would only come from solar energy or purchased power. If all the energy were to come from in-state solar power, at a capacity factor of 15 percent, this equates to about 6,450 MW of installed solar PV.

The proposed regulation includes the option to purchase RE via a power purchase agreement (PPA). If the estimates of feasible RE additions shown in the following table are accurate, about 8.5 million MWh would need to be obtained either from installed solar power or energy purchased from other states via PPAs. At the current installed cost for utility solar power of $3 per watt,[37] the investment in 6,450 MW of solar PV would amount to $19 billion. As costs are projected to decline, costs would be somewhat lower when expenditures actually take place. The extension of the production tax credit and investment tax credit would also lower costs. It is still likely to be more expensive for West Virginia to develop in-state solar power resources to meet the goal, so it is assumed that the choice would have to be the purchase out-of-state wind energy.

[37] http://emp.lbl.gov/sites/all/files/LBNL_Utility-Scale_Solar_2013_report.pdf

Table: Estimates of Feasible Additions to Wind, Hydro and Biomass Energy & Net Needed

	Total EPA Goal	Feasible New Wind	Feasible New Biomass	Feasible New Hydro	Installed Solar or Purchased Wind to Meet Goal
2030 MWh	10,273,026	760,368	595,680	440,102	8,476,876
Percent of Goal	100 percent	7.4 percent	5.8 percent	4.3 percent	8.5 percent
Installed MW	6,983	310	200	123	650 (solar)
Capacity Factor		28 percent	34 percent	40 percent	15 percent (solar)

Wind PPAs are at all-time lows, especially for projects in the interior region. For the years 2011 to 2013, generation-weighted average, levelized wind PPA prices were $53/MWh for contracts in the Great Lakes region and about $58/MWh for the Northeast region.[38] Prices in both regions are higher than the national average and represent the relevant markets that would be available to West Virginia. If the production tax credit were to be removed, these prices would rise.

As shown above, the states of Illinois and Indiana have considerable amounts of untapped wind resources. However, purchasing wind power would result in uncertain avoidance of generating costs, because West Virginia is a net generator of electricity. States that are net importers of electricity have much more certain benefits, because they are able to avoid both the fuel (variable costs) and capacity (fixed costs) associated with the energy purchased.

VI. Building Block 4 - Energy Efficiency

West Virginia's two largest electric utilities, Appalachian Power and FirstEnergy (via its subsidiaries Monongahela Power and Potomac Edison), both offer EE programs to their customers. The utilities' programs saved a combined 77 GWh of electricity in 2013.[39] These programs are new to the West Virginia market and thus have the potential to increase savings. However, reaching the EPA proposed goal of 243 GWh of savings from new programs in 2020 and expanding to an average of 450 GWh saved per year from 2023 to 2030, would be quite challenging due to the lighting-centric nature of savings to date and to low participation rates in appliance rebate programs.

For the combined Appalachian Power programs, at least 85 percent of energy savings were from lighting measures. Of the 50.8 million net kWh Appalachian Power's programs saved in 2013,

[38] http://emp.lbl.gov/sites/all/files/2013_Wind_Technologies_Market_Report_Final3.pdf
[39] WVPSC reports.

27.9 million kWh came from the Smart Lighting program.[40] In addition, of the 27.3 million gross kWh saved through the Commercial & Industrial (C&I) Prescriptive program, approximately 72 percent was from lighting retrofits. Of the 357 projects completed in the C&I program, 309 were for lighting, even though average project incentives were larger for HVAC and variable-frequency drive projects than for lighting projects.[41] A portion of energy savings from the Residential HomeSMART and Weatherization programs was also from installation of compact fluorescent lights.

FirstEnergy offers two EE programs, Non-Residential High Efficiency Lighting and Residential Low Income. Although specific data is not available, the priority given to lighting as a strategy indicates a large majority of savings is also likely to have come from lighting retrofits.

The ability to continue savings through replacement of inefficient lighting is a concern due in part, to the Energy Independence & Security Act (EISA) of 2007, which established standards for light bulb sales. These standards reduce the ability to achieve future savings in the same way that the 2013 lighting savings were achieved. Future program savings will have to be achieved largely through entirely new initiatives. Additional savings could occur, but a higher cost portfolio approach may be needed that promotes a wider variety of bulbs tailored to specific consumer needs.[42]

For non-lighting initiatives, participation in West Virginia was lower than expected for 2013. For Appalachian Power's Residential HomeSMART program, out of 1,727 customers who received the in-home energy assessment, only 252 participants received rebates for implementing recommendations given to them during assessment.[43] This low participation rate raises concerns about the State's or utilities' ability to induce homeowners to invest in EE. This may be especially challenging for households near the poverty level when replacement of large, expensive appliances is needed.

Geography and demographics are severe constraints on West Virginia's ability to achieve additional demand-side reductions from EE. West Virginia is more rural than other Appalachian states, has the second lowest population density of the Appalachian states, and has smaller average household size. These characteristics make EE deployment more challenging in West Virginia than in other states, particularly for rural, low-income households. In summary, the EPA's goals for annual savings from new EE programs increase every year through 2023, when proposed savings amount to 450 GWh per year. Sustaining an average of 450 GWh in new

[40] M&V Reports for Appalachian Power Company and Wheeling Power Company (March 2014). *Evaluation of Residential SMART Lighting Program*, *Evaluation of Residential HomeSMART Program*, *Evaluation of Commercial and Industrial Prescriptive Program*, and *Residential Low Income Weatherization Evaluation Program*, ADM Associates.
[41] Ibid.
[42] http://www.energystar.gov/ia/partners/manuf_res/downloads/lighting/EPA_Report_on_NGL_Programs_for_508.pdf.
[43] M&V Reports for Appalachian Power (2014). ADM Associates.

savings from 2023 through 2030 is a very aggressive goal compared to the experience of the existing programs.

West Virginia is not alone in its concern about the level of energy efficiency assumed by the EPA. The costs of energy efficiency are grossly underestimated by the EPA, and there are significant reliability concerns regarding the extent to which energy efficiency is accompanied by retirement of base-load coal plants, expansion of natural gas generation, and expansion of variable energy resources. These concerns were also expressed in the NERC evaluation of the section 111(d) proposal.[44]

If Building Block 4 EE measures are finalized by EPA, there should be equitable requirements with respect to both energy-exporting and energy-importing states. The proposed method to adjust the EE requirements is not equitable. For example, a state that imports all its power would not be required to institute any EE measures, although EE measures in that state could reduce CO_2 emissions in another state. The exporting states are required to achieve the EE reductions for 100 percent of the power consumed in their states, while the importing states are only required to achieve the EE reductions for the power generated in-state, and not the imported generation they use. If EPA has authority to mandate EE, it should do so equitably.

VII. Implementation Process

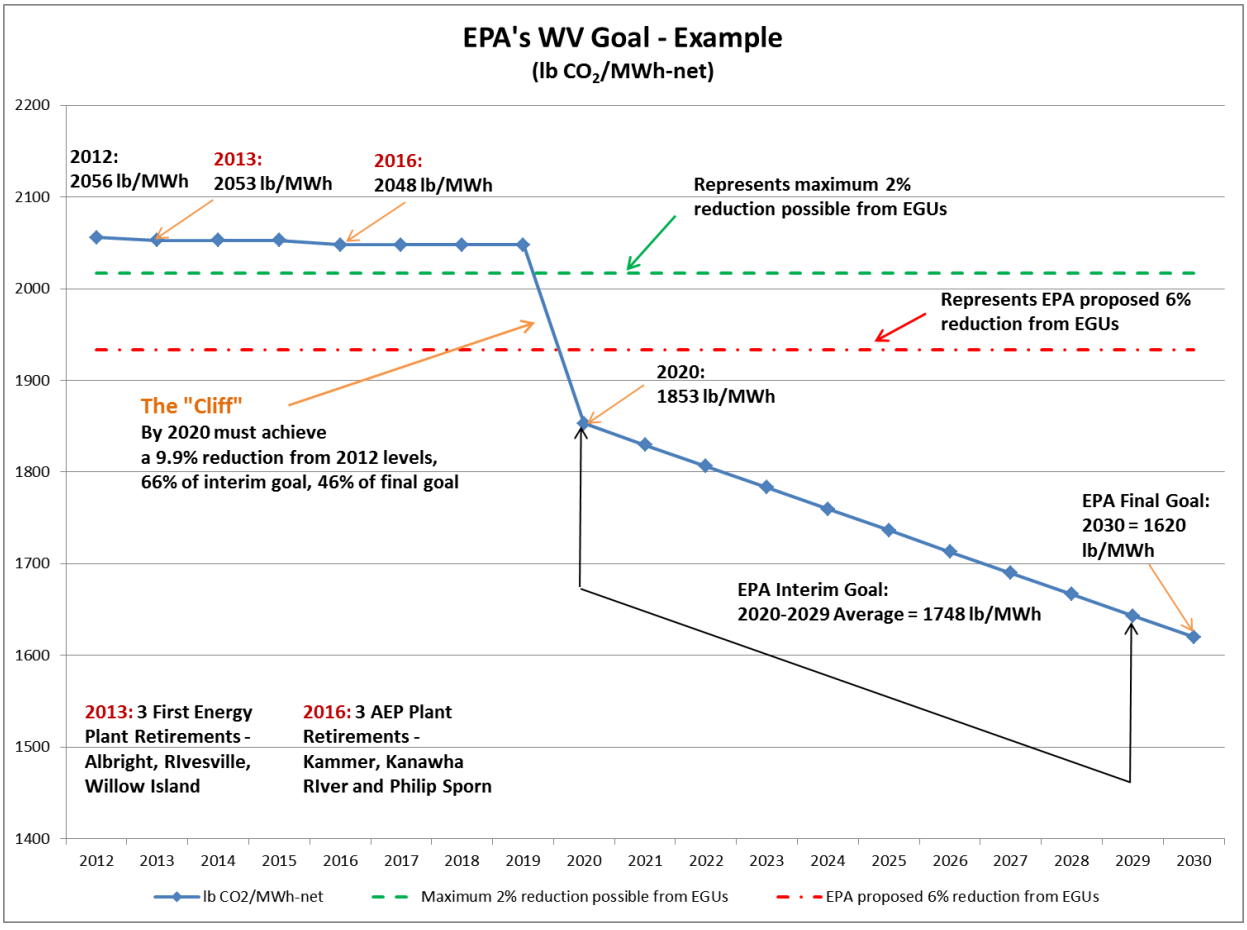
The implementation of EPA's proposed Clean Power Plan for existing EGUs is problematic - so much so that it will be literally impossible for states to execute. The agency has set unrealistic interim and final goals for most states and allowed entirely insufficient timelines for states to analyze the final rule: evaluate potential compliance strategies; coordinate actions of affected entities; enact state laws and implementing regulations; and provide for meaningful public participation. EPA's plan submittal timelines may give the appearance of adequacy. However, states are expected to develop and submit a plan that is substantively complete within one year after the final rule is published. The possibility of one and two year extensions (single and multiple-state plans, respectively) do not alter the fact that the State must submit this initial plan and it must meet all of the agency's requirements for approvability. In fact, EPA describes a dozen required state plan components. 79 Fed.Reg. at 34911-14. This section of our comments focuses on the tremendous obstacles that West Virginia would face if required to implement a state plan as EPA has proposed, including a presumption that significant reductions from Building Blocks 3 and 4 would be necessary.

[44] The EPA appears to overestimate the amount of energy efficiency expected … Substantial increases in energy efficiency programs exceed recent trends and projections… The CPP assumption appears to underestimate costs and may underestimate the capital investments that would be required by utilities to sustain energy efficiency performance through 2030…The offsetting requirements in more coal retirements, along with expansions in natural gas and VERs, in a constrained time period could potentially result in reliability or ERS [Essential Reliability Services] constraints.

A. Interim and Final Goals

EPA touts the flexibility afforded to states under the proposal, yet in order to meet the proposed interim goal (which is expressed as a 10-year average), states will have to achieve significant reductions even before 2020. States that do not achieve the majority of the required reductions by 2020 will have to achieve a lower emission rate than the 2030 final goal in the latter years of the 2020-2029 glide path, in order to meet the interim goal. The longer a state delays reductions, the greater the amount by which the 2020-2029 emission rate will have to be lower than the 2030 final goal in the latter years of this period in order to allow the state to demonstrate compliance with the 10-year average interim goal.

Below is a chart that illustrates the timing and rate of emissions reductions required for West Virginia by the interim and final goals under the proposed rule:



West Virginia starts with a 2012 emission rate of 2,056 lb CO_2/MWh-net. EPA proposed an interim goal of 1,748 lb CO_2/MWh-net, and a final goal of 1,620 lb CO_2/MWh-net. Assuming a consistent annual improvement in the emission rate, West Virginia's 2020 emission rate would have to be no higher than 1,853 lb/MWh-net in order to meet the interim goal of 1,748 lb

CO_2/MWh-net and the final emission rate goal of 1,620 lb CO_2/MWh-net in 2030. In other words, 47 percent of the required reduction would be required up front by 2020, clearly an impossible expectation. EPA's emission guidelines are so stringent that they effectively preclude a state from considering the remaining useful life of a source. *See,* section 111(d)(1)(B).

It is obvious that if existing coal-fired EGUs cannot achieve the majority of the required reductions by 2020, they will have to realize significantly greater reductions in their emission rate to meet the interim goal, far greater than required to meet the final goal in 2030. For West Virginia, which has no existing or under construction NGCC capacity, very little (0.17 percent) current EE reductions, and currently only two percent non-hydro RE, there is no scenario under which the interim goal can be met. The situation only gets worse when the State's inability to achieve a six percent decrease in the coal-fired EGU CO_2 emission rate as a result of heat rate improvements is considered (see discussion of Building Block 1 above).

B. Periodic Review of Section 111(d) Standards of Performance

EPA has proposed that a state must maintain the required level of performance and requests comment on an alternative of requiring continued improvement. EPA also notes that CAA section 111(b)(1)(B) calls for the EPA, at least every eight years, to review and, if appropriate, revise federal standards of performance for new sources. This requirement provides for regularly updating performance standards as technical advances provide technologies that are cleaner or less costly. The agency requested comment on the implications of this concept, if any, for CAA section 111(d). 79 Fed.Reg. at 34908.

While EPA review and revision of a new source performance standard is permissible for new sources under section 111(b), section 111(d) does not authorize EPA to review and lower existing source standards at intervals in the future. In eight years, existing sources (those in existence as of January 8, 2014) will face the same difficulty in making improvements to structures and processes that are already in place that they face now. Such sources will also face the same possibility that section 111(d) seeks to avoid - becoming stranded assets. EPA must operate within the authority section 111(d) gives it. This does not include expanding the authority EPA has under section 111(b) to "ratchet down" performance standards in the future.

C. Timing Considerations for Amendment to State Law and Development of Rules

The proposed rule provides woefully inadequate time for states to make crucial decisions and take actions of historic proportions. The submission deadline for a state plan is such that states do not have adequate time to amend state laws and to promulgate implementing state rules. Section 111(d) implementation will require state legislatures to enact legislation that establishes the institutional framework that allows state agencies to develop an integrated resource plan for CO_2. There are many fundamental issues and questions to be addressed, for example:

- What state agency or agencies will have authority over integrated resource planning for CO_2, the WVPSC, the WVDOE or the WVDEP?

- In regulated states, like West Virginia, with vertically integrated electric utilities, non-generating distributors (co-operatives and municipal utilities) will have to be included in the process.
- What part, if any, will the regional transmission organizations (RTOs) play in the plan?
- Will the state participate in a multi-state program? Which states should be included in a multi-state plan?
- Multi-state plans require interstate compacts, which require legislative approval and possibly Congressional approval to comply with the Compact Clause of the U.S. Constitution.
- What institutional framework is necessary among the regulatory agencies (WVPSC, WVDOE and WVDEP) in both a state statutory context and an administrative context? What regulatory structures must be in place to enforce CO_2 reductions?
- Is EPA casting its jurisdictional net even more broadly to assume an oversight role over functions a federally enforceable state plan would assign to the WVPSC or the WVDOE?

These issues and questions need to be decided and answered by the states, and among the states, to determine what legislation must be enacted to provide the necessary framework to allow for the development of approvable state or regional plans. This will require resolution of complex issues that are technical, political, logistical and jurisdictional in nature. Doing so will be extraordinarily difficult, if not impossible in the structure and timeframe that EPA has proposed.

States are understandably reluctant, or unable, to enact legislation in the absence of final EPA action. Therefore, enabling legislation would not be expected until after EPA finalizes the regulation, which EPA expects to do by June 2015. Most state legislative sessions, including West Virginia's, are conducted in the first half of the year. The first time enabling legislation could be realistically considered by the West Virginia Legislature would be in January 2016. Such legislation could not be expected to be adopted until April of 2016, if at all. Often legislation that is adopted differs significantly from that proposed. As EPA should be aware, similar to Congressional actions, state legislative actions take place on their own time schedule. The WVDEP has no control over how, when or even if, the Legislature will vote on changes to the West Virginia Code.

EPA's June 30, 2016 deadline for initial plan submittal would not allow time for any administrative rules necessary to implement legislation to even be written, much less be proposed and adopted in West Virginia. To be effective by June 30, 2017, any rules necessary to adopt a state plan must be initially proposed by May 2016. This would effectively require legislative rules to be written in the one month timeframe between adoption of enabling legislation in April 2016, and the State's codified deadline for proposing administrative rules in

May 2016. This is extremely unlikely to happen, especially since it would require the manifold rulemaking efforts of WVDEP, WVDOE, and/or WVPSC to be closely coordinated. The West Virginia Legislature would also have to adopt legislation approving these rules during its 2017 legislative session, and assuming gubernatorial approval, the earliest that coordinated agency rules could be finalized would be June 2017. Again, EPA should note that a state's legislature may not allow such rules to be promulgated, or a legislature may significantly amend the agency-approved rules, actions over which the WVDEP and other state agencies have no control. After the June 2017 final promulgation of the agencies' rules, a state plan would then have to be assembled. A proposed state plan would then require a 30-day public comment period and adequate time for response to comments before a final plan could be submitted to EPA for approval. The 30 day public notice is necessary because there are certain components of a state plan that would not be incorporated in an administrative rule.

Because of West Virginia's rulemaking requirements, WVDEP's best-case timeline for submittal of a state plan is at least a year and a half beyond the June 2016 deadline EPA has proposed. Furthermore, WVDEP would not be able to submit a committing plan of action by June 2016, because the state agency cannot obligate the Legislature or Governor to future action. For the same reason, WVDEP would not be able to submit a state plan by June 2017, if EPA chose to grant the State the extra year the proposed rule contemplates.

As described above, West Virginia's best-case (but rather precarious) state plan development scenario demonstrates that the submittal timeline in EPA's proposed rule is unworkably short, especially when compared to other submittal timelines under CAA sections 111(d) and 129. For example, the "procedure similar to that provided by section 7410" in section 111(d) refers to the submittal of State Implementation Plans (SIP), for which the CAA allows three full years. Because of the unprecedented complexity of EPA's proposed rule, development of an approvable state plan under 111(d) would be much, much more difficult than development of a SIP, at least by an order of magnitude.

D. Authority

Under the West Virginia Code, the WVDEP does not have the legal authority to regulate the "other entities" that EPA is proposing to make subject to the state plan. In fact, West Virginia law prohibits the WVDEP from developing a state plan that meets this section 111(d) regulation as proposed. West Virginia Code §22-5-20 significantly restricts WVDEP's ability to develop a state plan under the proposed rule. Among other things, the WVDEP is required to obtain CO_2 reductions that can "reasonably be achieved through measures undertaken at each coal-fired electric generating unit," but that do not require "switching from coal to other fuels or limiting the economic utilization of the unit." W. Va. Code § 22-5-20(b)(2) and (3). These State requirements explicitly preclude the application of Building Blocks 2, 3, and 4.

In effect, EPA has proposed a national energy policy to be adopted by the states. As discussed above, this is outside the scope of the authority granted to EPA under the CAA, and to the WVDEP under State law. In West Virginia, the WVDOE and WVPSC are the agencies with authority over statewide energy planning and regulation of electricity generation, transmission and distribution. The authority of the WVDEP is limited to the regulation of sources that emit pollutants. WVDEP does not have the authority to establish enforceable requirements for entities that do not emit pollutants, such as renewable (zero emitting) energy sources, or for consumers of electricity.

E. Enforceability

In the preamble to the proposed rule EPA questioned:

> whether it can reasonably interpret CAA section 111(d)(1) to allow states to adopt plans that require EGUs and other entities to be legally responsible for actions required under the plan that will, in aggregate, achieve the emission performance level.

State clean air agencies cannot enforce measures against entities over which they have no authority. The WVDEP does not have any mechanism through which to impose requirements on other "affected entities" as EPA has proposed.

The EPA has also requested comment on whether state plans should be considered "self-correcting," a plan that includes measures or actions (e.g., emission limits that apply to affected EGUs and ensure full plan performance) that take effect automatically if the plan's required emission performance level is not met by a specified milestone. The EPA alternatively requested comment on whether states should be required to create legal authority and/or adopt regulations providing for corrective measures in developing the state plan.

79 Fed.Reg. at 34907. If BSER is properly applied, only "achievable" emissions reductions can be a part of it. Accordingly, there should not be a need for the plan to include corrective measures that automatically take effect if a goal is not met. Failure of a source to meet BSER would be a violation and should be handled as an enforcement action. There is no authorization in section 111(d) to deviate from the CAA's enforcement scheme by providing anticipatory corrective measures in a state plan. Existing state enforcement mechanisms that EPA has recognized to be sufficient to support federal enforcement are already in place in most states to deal with non-compliance issues.

VIII. Other General Comments

A. Rate-to-Mass Conversion

EPA has not provided a transparent, replicable method to allow translation of the proposed rate-based goal to a mass-based goal, although EPA proposes that states may take either a rate-based or mass-based approach. The rate to mass conversion is a vital consideration in the development of a state or regional plan to comply with the proposed regulation. EPA's failure to timely provide a methodology by which to make this conversion prevents states, industry, and the public from adequately reviewing and commenting on the proposal. While it is appropriate for EPA to make co-proposals, or provide alternatives for comment, it is not appropriate for EPA to raise such a major issue without making any definite proposal. EPA cannot finalize a regulation providing a methodology for the rate-to-mass conversion on which states, industry, and the public have not had an explicit opportunity to comment. Accordingly, as previously explained, the 111(d) proposal should have been an Advance Notice of Proposed Rulemaking rather than a Notice of Proposed Rulemaking. States, industry, and the public have been deprived of an opportunity to comment on whatever rate to mass methodology EPA decides to finalize. Section 307 of the CAA does not allow EPA to include "surprises" in a final rule.

B. PSD Concerns

EPA has requested comment on whether a state plan could include a provision, based on underlying analyses documented in the record, stating that an affected source that complies with its applicable standard would be treated as not increasing its emissions, and if so, whether such a provision would mean that, as a matter of law, the source's actions to comply with its standard would not subject the source to NSR. EPA is also seeking comment on the level of analysis that would be required to support a state's determination that sources will not trigger NSR when complying with the standards of performance included in the state's section 111(d) plan and the type of plan requirements, if any, that would need to be included in the state's plan.

While in theory EPA's proposal to predetermine whether certain activities or business practices would trigger NSR permitting is possible, as a practical matter it is not feasible. By defining and documenting the scope of an activity or project to such a degree that NSR applicability is completely defined, much of the flexibility touted by this option is removed. Additionally, geographic considerations (such as NAAQS attainment status) may change over time and also be a factor in such NSR determinations. Further, site specific considerations may preclude usage or require adjustments to a list of pre-selected activities or business practices. The effort required to predetermine NSR applicability would outweigh the very small number of situations anticipated to be able to take advantage of this concept. An attempt to predefine NSR would also be subject to attack, on the basis that EPA is attempting to evade the requirements of the CAA by rewriting them in a regulation.

C. Cost/Benefit Analysis

EPA's proposed rule quantified the global climate benefits from reduced emission of CO_2 and the health co-benefits associated with reduced exposure to $PM_{2.5}$ and ozone. Both estimates grossly overstate the benefits of the proposal. By quantifying the co-benefits of criteria pollutants, EPA impermissibly calculated health benefits due to reductions in criteria pollutant concentrations to below the level of the NAAQS. These pollutants are more properly addressed in the context of a NAAQS review, not in emission guidelines for states to use in establishing performance standards for CO_2. Likewise, the agency dramatically skews the climate benefits by presenting global benefits rather than just U.S. benefits. This fact is nearly hidden in two footnotes. *See*, footnotes, 79 Fed.Reg. 34840, 34891. EPA's climate benefit estimate reflects a great expense by the United States to reduce CO_2 emissions, but the miniscule reduction (as compared to total global CO_2 emissions) is more than offset by likely increases in CO_2 emissions from other countries. So, EPA's claim of global benefits is false. EPA should not base this rule on emissions assumptions that are beyond the authority of EPA and the United States to regulate.

The Marshall University Center for Business and Economic Research has assessed potential costs and economic impacts of the proposed rule. Only direct impacts on coal production and associated employment, and direct impacts on coal-fired generation and associated employment are considered in the assessment. It does not include impacts to indirect employment for either case. While the assessment is based on EPA's data in the proposed rule's Regulatory Impact Analysis (RIA), it appears that agency's data may be greatly underestimated.

The decline in direct coal mining jobs within West Virginia associated with the EPA's projected decline in Appalachian coal used in the electric power sector is estimated to be between 3,624 and 3,920 as shown in the following table. EPA only projects decline in production for the year 2020, no additional declines are projected after 2020. Because miner productivity is a critical factor in making this calculation, the actual decline would be much higher, because less productive mines are closed first. [45]

EPA Projected Coal Production from Appalachia for Electric Power Sector and Projected Decline Due to the Clean Power Plan, Estimated in West Virginia, 2020

EPA Compliance Scenario	EPA Projected Appalachian Coal for Electric Power	
	Production 2020 (tons)	Decline (tons)
Base Case	140,000,000	
Option 1 Regional Approach	87,000,000	53,000,000
Option 1 State Only Approach	91,000,000	49,000,000

Source: Table 3-15 of the EPA RIA.

[45] This calculation assumes an overall mining productivity of 2.38 tons of production per employee hour, the reported overall level for 2012. As productivity is expected to decline over the next several years and as more inefficient mines would close first, it is possible that a lower level of productivity would apply. This could increase the number of affected jobs, depending on the actual productivity of the mines that would be subject to closure.

The following table shows estimates for West Virginia's share of EPA's projected decline in Appalachian coal production, as well as associated declines in the number of direct jobs and equivalent annual wages for 2013. In 2013, the average annual wage for a coal mining employee was $60,164, considerably higher than the average wage for the private sector as a whole ($39,514).[46]

Estimated Direct Impact on West Virginia Coal Production and Coal Mining Jobs, 2020				
EPA Compliance Scenario	**Estimated Share of Production Decline in WV (tons)**	**Equivalent Coal Mining Employ Hours in WV**	**Estimated Decline in WV Coal Mining Jobs**	**Equivalent Decline in WV Wages (2013)**
Option 1 Region	19,404,464	8,153,136	3,920	$235,843,293
Option 1 State	17,939,976	7,537,805	3,624	$218,034,718

Additionally, the estimated employment impact of closing between 1.3 and 2.3 GW of coal-fired generating capacity in West Virginia is shown in the following table. Between 250 and 422 more jobs will be lost, depending on the compliance scenario. These figures are based on historical rates of direct employment in fossil fuel electric power generation minus employment at natural gas plants.[47] Jobs in power generation also provide wages that are considerably above-average compared to the private sector as a whole. In 2013, the average annual wage in fossil fuel electric power generation was $90,054, compared to the private sector average of $39,514.[48]

Estimated Decline in Jobs in Coal-Fired Power Generation in West Virginia						
EPA Scenario	**Estimated Jobs Lost**			**Equivalent Lost Wages in 2013**		
	2020	**2025**	**2030**	**2020**	**2025**	**2030**
Option 1 Region	396	396	388	$35,677,660	$35,677,660	$34,902,059
Option 1 State	422	431	422	$38,004,464	$38,780,065	$38,004,464
Option 2 Region	258	250	n/a	$23,268,039	$22,492,438	n/a
Option 2 State	284	276	n/a	$25,594,843	$24,819,242	n/a

The combined direct job losses of reduced coal production and closure of coal electric generating capacity are shown below. The addition of jobs from new RE installations, as determined by the WVDOE to be feasible for development, is expected to total about 249, including new wind (19 jobs[49]-310 MW), new hydropower (59 jobs[50]-125.6 MW) and new biomass (103 plant jobs[51] and

[46] Workforce West Virginia, 2014.
[47] In 2007-2008 there were approximately 20 individuals employed at the three natural gas plants in WV. This is the same level of employment assumed for this analysis as electricity produced from natural gas in the state has not increased since 2007.
[48] Workforce West Virginia, 2014.
[49] Estimated using the JEDI model.
[50] Estimated based on Workforce West Virginia employment data for hydroelectric generation and EIA hydro capacity.

73 harvesting jobs-200 MW). While these 249 jobs could potentially make up for the loss of jobs at coal-fired power plants, they could not make up for the loss of coal mining jobs. In addition, it is not certain that this development could be attributed to the proposed regulation, because much of it is already under consideration.

Estimated Combined Direct Job Losses in West Virginia						
EPA Scenario	**Combined Direct Job Loss**			**Job Loss Net of New RE Jobs**		
	2020	**2025**	**2030**	**2020**	**2025**	**2030**
Option 1 Region	4.316	4.316	4.307	4.067	4.067	4.054
Option 1 State	4.046	4.055	4.046	3.797	3.806	3.797
Option 2 Region	4,178	4,170	n/a	3,929	3,921	n/a
Option 2 State	3,908	3,900	n/a	3,659	3,651	n/a

Again, it is important to note that indirect impacts are not included in this analysis. Both the coal and power generation industries in West Virginia have substantial indirect impacts from business spending and household income. Both power generation and coal mining jobs are high-paying jobs, which cause these wages to have above-average induced impacts on the economy per job. Any electricity price increases associated with the proposed regulation would also cause indirect job loss, as customers would have reduced disposable income.

IX. Notice of Data Availability

On October 28, 2014, EPA released the *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, Notice of Data Availability* (NODA), which was published in the Federal Register on October 30, 2014 (with little more than 30 days remaining in the comment period). 79 Fed.Reg. at 64543.

In the tardy NODA, EPA seeks comment on several ideas raised by multiple stakeholders during the comment period that go well beyond those for which the agency sought comment in the June 18, 2014 proposal. In the NODA, EPA asserts that it intends to ensure that other stakeholders have the opportunity to consider these ideas as they formulate their comments on the proposal. This assertion is unpersuasive. The true purpose of the NODA appears to be an effort by EPA to circumvent proper notice and comment procedures by *de facto* alteration of the original proposal, in violation of section 307 of the CAA.

[51] Estimated based on 3 biomass studies: http://massbrownfields.state.ma.us/eea/docs/doer/renewables/biomass/bio-eco-impact-biomass.pdf; https://www.burlingtonelectric.com/about-us/what-we-do/joseph-c-mcneil-generating-station; http://biomassmagazine.com/articles/7821/work-begins-on-50-mw-eastern-texas-biomass-plant.

The three topic areas are:

- The 2020 to 2029 glide path;
- Certain aspects of the Building Block methodology; and
- Implementation of the goal setting equation.

The fact that EPA felt compelled to issue the NODA, requesting comment on issues that go beyond the more than 130 requests for comment it made in the June proposal, again underscores the fact that its proposal is not sufficiently expressed. This scoping exercise should have been an Advance Notice of Proposed Rulemaking, rather than a Notice of Proposed Rulemaking. Even at the late date on which the NODA was issued, with just 31 days remaining in the comment period, EPA still failed to address the critical issue of the rate-to-mass conversion methodology. A well-defined and consistent methodology is crucial for states to formulate meaningful comments and evaluate compliance options. The poor trickle of critical information from EPA has left states, affected sources, and the public inadequate time for review and development of comments.

A. The 2020-2029 Glide Path

The original proposed rule contains a requirement for a phased reduction (glide path) from 2020 to 2029 that is problematic for a number of reasons. While recognizing that there are significant differences between states, and that states should have flexibility to design their own rules to achieve the ultimate CO_2 goals by 2029, the proposed "glide-path" practically eliminated any flexibility that EPA claimed was in the proposed rule. More recently, in the NODA, the EPA has noted the problems with the strict phase-in targets and has expressed an interest in additional ideas regarding the "glide path" to ensure that the overall framework of its rules includes sufficient flexibility. WVDEP agrees that the originally proposed "glide-path" is a substantial, intractable problem. WVDEP does not agree that allowing a credit for early excess CO_2 emission reductions or a phase-in of Building Block 2 corrects the issues. Instead, EPA should eliminate the interim goals altogether and leave it up to the states to consider their own compliance plans, and allow states to establish state-specific phase-ins. EPA can consider the phase-in as part of its review of the state plan, but should not establish a set of unattainably harsh interim goals governing it.

The interim goals effectively remove all flexibility and limit the opportunity section 111(d) provides to take advantage of the remaining asset value of coal-fired generation. This problem is not limited to states for which Building Block 2 results in large amounts of CO_2 reduction. West Virginia's coal-fired EGUs with remaining useful life have already installed controls and undertaken work practices to meet the ARP, CAIR, CSAPR, and MATS. Compliance has come at a high capital cost, which can only be recovered if the units are allowed to operate at reasonable levels. For West Virginia to achieve the interim goal as EPA has outlined in the proposal, existing coal-fired EGUs would be have to achieve a six percent reduction in CO_2

emissions due to heat rate improvements; an 89 percent increase (an additional 1,154,643 MWh) in non-hydro RE generation from 2012 levels; and an 885 percent increase (from 0.18 percent to 1.77 percent cumulative annual savings) in avoided generation due to EE measures over 2012 levels. These reductions would all be required by 2020. This assumes that West Virginia could achieve all the reductions under Building Blocks at the rate that EPA has proposed, which the comments above demonstrate is clearly not possible.

EPA is seeking comment on the appropriateness of the phase-in of Building Block 1. 79 Fed.Reg. at 64548. The phase in of heat rate improvements at existing coal-fired units is not only appropriate, but necessary. If there are available equipment upgrades and changes in operation that will result in increased efficiency, these changes are likely to trigger permitting requirements. As EPA is aware, the permitting timelines for PSD and NSR are long and require the issuance of a permit prior to commencement of construction of any upgrades or implementation of any changes in operation. As a result, upgrades and changes are unlikely to be completed by 2020. Therefore, it is appropriate to phase-in Building Block 1. EPA should leave it up to the states to establish a logical phase-in for obtaining a reasonable and achievable final goal. EPA may consider the reasonableness of a state's proposed phase-in as part of its review of the state plan.[52]

EPA is also seeking comment on a more gradual phase-in of Building Block 2. 79 Fed.Reg. at 64548. EPA has identified two potential approaches to phase-in Building Block 2. First, the agency should consider whether additional infrastructure, such as natural gas pipelines or electric transmission line improvements, would be required to increase utilization of existing NGCC units and take into account a reasonable timeframe for completion of this infrastructure. Second, EPA should consider the book life of original generating units and any major upgrades when determining the glide path for re-dispatching to natural gas. Both of EPA's Building Block 2 Phase-in approaches require EPA to have authority that it does not possess. Under the first option identified, EPA has suggested, "to the extent that more infrastructure is needed, the methodology for Building Block 2 could be modified on the basis of how much utilization shift toward existing NGCC generation would be possible by 2020." 79 Fed.Reg. at 64548.

As stated above, EPA does not have the authority to prescribe energy policy for a state. Under the second option identified, EPA has indicated that it "believes that the proposal provides states the flexibility to specify appropriate requirements for individual EGUs, including coal-fired EGUs, taking into account the potential for stranded investments and other unit-specific factors." However, if the tools available to the states are "inadequate to address concerns regarding

[52] This entire issue could be avoided by EPA abandoning the infeasible requirement for a fixed percentage reduction from Building Block 1. As explained previously, it would be much more appropriate for EPA to establish a work practice or operational standard under section 111(h) of the CAA which reflects BTSCER. In the case of coal-fired EGUs, BTSCER would be a requirement that sources must employ best practices of operation and maintenance to minimize heat rate variability and to periodically review available equipment upgrades to determine whether such upgrades would cost effectively improve heat rate and boiler efficiency.

stranded investments, an additional way to address these concerns may be for the agency to take account of the book life of the original generation asset, as well as the book life of any major upgrades to the asset, such as major pollution control retrofits." 79 Fed.Reg. at 64548-49. EPA does not possess this authority; in West Virginia, this authority resides with the WVPSC. Also, "book" life is not the criteria section 111(d) authorizes states to consider. Instead, states may consider "remaining useful life" which is likely to be very different than "book" life, which depends on application of accounting principles and the Internal Revenue Code.

EPA should leave it up to the states to consider their own compliance plans, and establish a reasonable Building Block 1 phase-in to obtain a reasonable and achievable final goal. As stated previously, EPA does not have the authority under section 111(d) to consider re-dispatch as a component of BSER. However, if EPA includes re-dispatch in the final rule, a phase in of Building Block 2 is also necessary and appropriate to allow for necessary infrastructure upgrades to maintain grid reliability. Therefore, it would be appropriate to phase in Building Block 2. The EPA can consider the phase-in as part of its review of a state plan.

B. Certain Aspects of the Building Block Methodology

EPA described two concepts in response to concerns expressed by early commenters regarding Building Block 2. First, Building Block 2 methodologies could be modified to consider the comprehensive use of natural gas through fuel-switching, co-firing, and new NGCC generation, rather than focusing solely on the re-dispatch of generation to existing and under construction NGCC units. Second, Building Block 2 methodologies could be based on regional considerations or allocations.

Clearly, EPA is overreaching its authority in even suggesting that it can establish a minimum amount of natural gas to be burned in each state. EPA simply does not possess that authority. While it may be appropriate to allow a source to determine whether it is cost effective to co-fire natural gas, it is a compliance option that should remain up to the source. EPA can neither mandate nor preclude the use of fuel-switching or co-firing of natural gas as a means of compliance with a performance standard. It is not within EPA's authority to mandate the use of natural gas, through the required construction of new NGCC units, fuel switching or co-firing in the emissions guidelines, nor is it within the authority of state air pollution control agencies to include these requirements in setting a performance standard.

EPA identified a concern raised by some stakeholders regarding the Building Block 3 methodology. RE assumptions in the BSER proposal are based on in-state RE potential, but the proposal allows states to use out-of-state RE for compliance. In response to this concern, EPA provides a conceptual discussion of a third methodology for setting RE targets based on a regional approach. Under this regional approach, a state's goal would be informed by the opportunity to develop out-of-state RE resources as part of the state plan, which would better align the RE targets with the proposal to allow the use of out-of-state renewables for compliance.

This "conceptual discussion" represents an attempt to alter the original proposal, or at least, set the stage for EPA to adopt a final rule that departs significantly from the proposal without meeting proper notice and comment requirements.

There are many issues with EPA's proposed Building Block 3 approach, not the least of which is that it does not provide states, stakeholders or the public with any degree of specificity in order to allow the development of reasoned comments. The whole approach is so tenuous as to be almost nonexistent, as EPA does not provide any specifics upon which to comment.

As stated previously, EPA does not possess the authority to set RE standards, regionally or statewide, under the guise of establishing emission guidelines for states to follow in setting performance standards for the emission of CO_2 from existing EGUs.

C. Implementation of the Goal Setting Equation

EPA noted that stakeholders have raised concerns that the proposed numeric formula for calculating each state's goal is not consistent in its application of BSER for incremental generation from existing NGCC units under Building Block 2, as compared with incremental RE generation and EE generation avoidance under Building Blocks 3 and 4.

In response to these concerns EPA has offered two approaches for revising the state goal-setting formula:

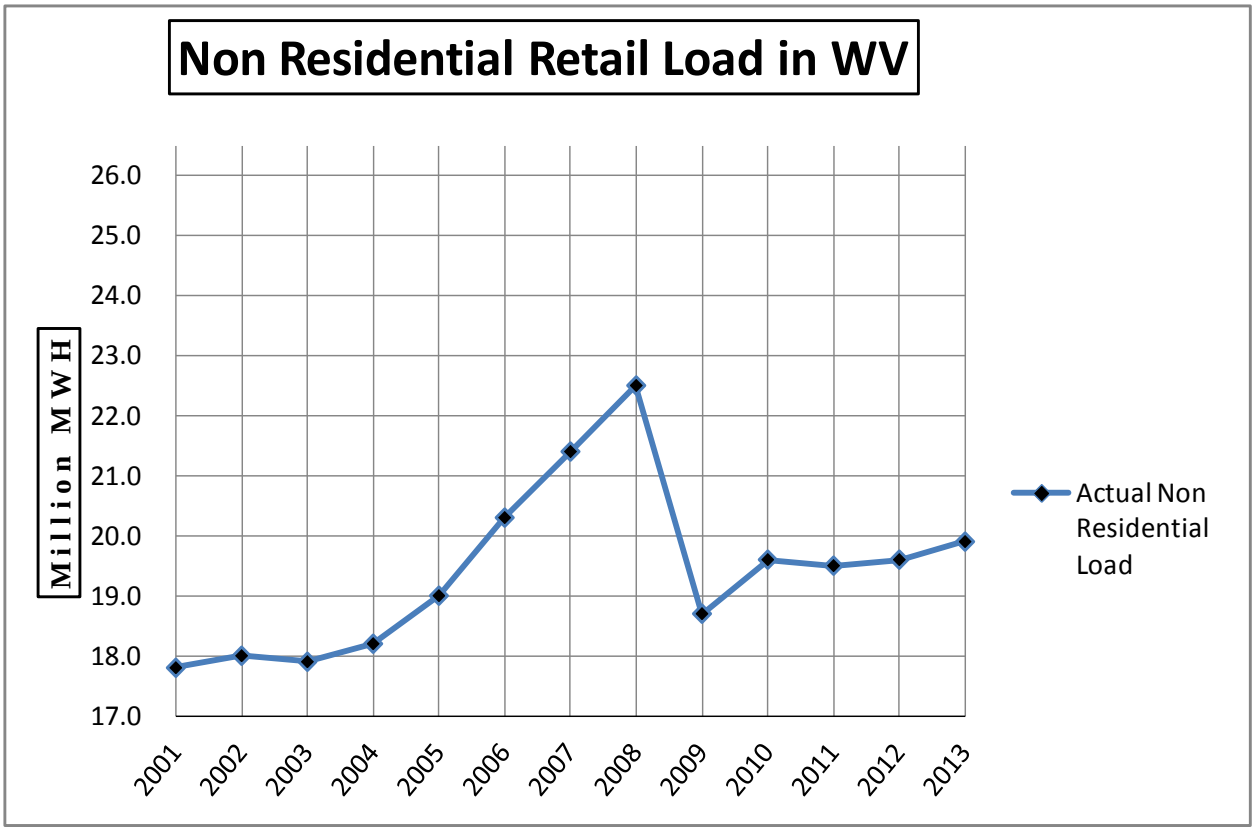
- Replace all historical fossil generation, or
- Prioritize replacement of historical fossil steam generation.

Both of these approaches represent a fundamental departure from EPA's original proposal, which West Virginia strongly opposes as a violation of section 307 of the CAA. EPA here finally drops its original pretense that coal generation is not targeted for replacement. The agency now expressly solicits comment on a method that effectively mandates the shutdown of an entire major coal-fired power plant in West Virginia by 2030. This is unacceptable and flies in the face of claimed flexibility.

EPA also noted that a number of stakeholders have expressed concern over the use of 2012 as the single data year for calculating interim and final goals, and the advisability of using another year or an average of multiple years. WVDEP supports the use of some base period other than 2012 and making some adjustments to reflect normalized U.S. economic activity. If the proposal is finalized, we would support use of an average of multiple years as a base period. The establishment of a target based solely on an unadjusted year, or even an average of unadjusted years, after 2008, is ill advised. Such a target will represent electric generation serving depressed economic activity. That cannot be in the best interest of the U.S. economy, and is particularly problematic for West Virginia.

The WVPSC staff advises that non-residential retail load, a good measure of economic activity in the State, dropped significantly in late 2008 and had not recovered by 2012 or even 2013. The WVPSC has further determined that the proposed section 111(d) guidelines will result in significant price increases and reduce the availability of economical and reliable power to West Virginia business customers.

The following chart shows the impact of the recession, which began in late 2008, on non-residential load in West Virginia.



From 2001 to 2008, non-residential retail load increased steadily from 18.0 million to 22.5 million MWh. In 2009, non-residential retail load dropped to 18.7 million MWh and has not recovered to anywhere near the 2008 level. Business customers, particularly larger industrial customers, evaluate many factors to decide where to locate their plants and where to increase production levels. Availability of reliable and economical electricity is an important factor in those decisions. By setting 2012 as the target from which emissions must be reduced, the EPA is effectively condemning West Virginia and the nation to an electricity generation starting point from which reductions must be measured that reflects power consumption during a severe economic recession and a low level of industrial activity in the State. All states may not have experienced West Virginia's slow recovery rate from the 2008 recession; however, this

economic malaise continued to affect other states to varying degrees. EPA's choice of 2012 as a base year cements this malaise for years to come.[53]

EPA's use of regional RE markets has several flaws. The most glaring mistake is to assume that one regional state's portfolio requirements reflect energy development opportunities in neighboring states. That defies logic. Such a portfolio recognizes unique state resources and the economics needed to competitively bring those resources to market. To imply that all regional states have homogeneity in their RE resources and market potential is false.

X. Translation of Rate-Based to Mass-Based CO_2 Goals TSD

On November 6, 2014, EPA released yet another Technical Support Document, titled *Translation of the Clean Power Plan Emission Rate-Based CO_2 Goals to Mass-Based Equivalents* (Rate-to-Mass Translation TSD), which was published in the Federal Register on November 13, with just 18 days remaining in the comment period for the proposed rule. 79 Fed.Reg. 67406. The release of the Rate-to-Mass Conversion TSD as a technical support document, not as a formal part of the proposed rule, does not address EPA's failure to propose a transparent, replicable methodology to allow the translation of the proposed rate-based goals to mass-based goals, as discussed previously in these comments. EPA has failed to propose any methodology. Instead, EPA's new TSD provides "two illustrative calculation-based approaches" for translating the rate-based goals to mass-based goals. EPA's late issue of critical information in the new TSD leaves states and sources with inadequate time for proper review. Moreover, as if to deliberately confound, the agency displays the mass as metric tons rather than conventional short tons.

The "illustrative" rate-to-mass translation approaches that EPA provided in the TSD do not follow the original proposal. The first "illustrative" approach more closely mirrors the approaches set forth in the tardy NODA, replacing historical fossil generation with EE and RE applied only to existing units, and does not account for demand growth. The second "illustrative" approach is similar to the first in that it calls for the replacement of fossil generation with RE and EE generation, but applied to existing and new units and providing for demand growth. Hence, EPA has essentially set conflicting goals for the states: rate-based goals in the original proposal and significantly more stringent mass-based goals later published in the November 6, 2014 TSD. 79 Fed.Reg. at 34957-34958. This represents still another instance of the agency's proposal being arbitrary and capricious. One of the more astounding aspects of EPA's unabashed arrogance is that the agency sets forth the former goals with an iron hand, admonishing states that any variance will be met with harsh skepticism. Then, with but little reference to comments

[53] WVDEP notes that another benefit to establishment of work practice standards as provided for under CAA section 111(h) rather than BSER under section 111(d) would be that selection of a base year would be unnecessary.

already received, the agency does an about-face and publishes an illustrative approach to calculating mass-based goals that varies significantly from its original proposal.

EPA did not provide any specifics regarding this goal translation in the June proposal. In the Goal Computation TSD, the agency did provide the data and calculations it used to determine the rate-based goal. The rate is the ratio of mass to electricity generation. In the calculation, EPA determined the mass (the numerator of the equation) and the generation (the denominator) in the equation. The original proposed goal-setting formula assumed a constant level of generation for total existing fossil generation (assumed under construction NGCC operated at a 55 percent capacity factor) greater than or equal to 2012 historical levels (reflecting no under construction NGCC units) in the denominator of the equation. Incremental EE and RE were then added to the denominator. The numerator was adjusted by changing the coal-fired emission rate to reflect a six percent heat rate improvement and a reallocation of the generation between coal and NGCC generation.

Although the original proposal is not sound or achievable, for consistency with the original proposal, EPA cannot set a mass-based goal that would be lower than the base year fossil fuel emissions (after the application of Building Block 1). The EPA cannot tinker around the edges of an unsound proposal to make it more to its liking. The entire original proposal should be set aside permanently, or at least until the EPA can come up with proposed guidelines that are consistent with its legal authority and that are feasible through real "achievable" and "adequately demonstrated" BSER rather than wishful thinking.

XI. Conclusion

EPA has embarked on an unprecedented attempt to regulate CO_2 emissions from coal-fired power plants. In so doing, the agency flagrantly tries to exert authority it simply does not possess, and thereby usurp the power of states, FERC, public service or utility commissions and other entities. Moreover, EPA attempts to force the states to take actions that the agency itself cannot.

As noted in the Executive Summary and Legal Objections sections of this document, EPA's proposal is blatantly unlawful. It is hard to imagine a scenario in which the agency's proposal can withstand legal challenge. Moreover, it is technically infeasible. Yet states and other stakeholders have already devoted tremendous resources in attempting to understand this complex and convoluted Gordian knot. They will undoubtedly devote even more time, energy and resources to the ultimately futile effort of developing state plans unless the courts can provide timely relief. Further, EPA, which is charged with stewardship of the environment, has diverted untold resources to developing, explaining and defending this fatally flawed proposal - one that will have negligible, if any, benefit to the climate. But it is one that would create serious adverse impacts on the economies of coal-intensive states such as West Virginia.

The problems with EPA's proposal are insurmountable. The agency should abandon its attempts to regulate carbon dioxide emissions from existing electric generating units under CAA section 111(d). Moreover, EPA should wholly abandon its efforts to regulate carbon dioxide emissions from electric generating units under CAA section 111.

Appendix - Acronyms

ANPR - Advanced Notice of Proposed Rulemaking

ARP - Acid Rain Program

BART - Best Available Retrofit Technology

BPS - Bulk Power System

BSER - Best System of Emission Reduction

BTSCER - Best Technological System of Continuous Emission Reduction

BTU - British Thermal Unit

C & I - Commercial and Industrial Prescriptive Program

CAA - Clean Air Act

CAIR - Clean Air Interstate Rule

CAMD - EPA Clean Air Markets Division

CCS - Carbon Capture and Storage

CHP - Combined Heat and Power

CO_2 - Carbon Dioxide

CPP - Clean Power Plan (Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units)

CPUC - California Public Utilities Commission

CFR - Code of Federal Regulations

CSR - Code of State Regulations

DSM - Demand-Side Management

EE - Energy Efficiency

EGU - Electric Generating Unit

EIA - Energy Information Administration

EISA - Energy Independence and Security Act

EM&V - Evaluation, Monitoring and Verification

EOR - Enhanced Oil Recovery

EPA - US Environmental Protection Agency

ESP - Electrostatic Precipitator

EWG - Exempt Wholesale Generator

FERC - Federal Energy Regulatory Commission

FGD - Flue Gas Desulfurization

GHG - Greenhouse Gas

GWh - Gigawatt Hour

HAP - Hazardous Air Pollutant

HRI - Heat Rate Improvement

HVAC - Heating, Ventilating and Air Conditioning

ID - Induced Draft

IDSM - Integrated Demand-Side Management

ILI - In Line Inspection

IRP - Integrated Resource Plan

ISB - Intelligent Soot Blower

ISO - International Organization for Standards

km - Kilometer

kWh - Kilowatt-hour

LLC - Limited Liability Corporation

MACT - Maximum Achievable Control Technology

MATS - Mercury Air Toxics Standards

MW - Megawatt

MWh - Megawatt-hour

NAAQS - National Ambient Air Quality Standard

NERC - National Energy Reliability Council

NGCC - Natural Gas Combined Cycle

NODA - Notice of Data Availability

NO_X - Nitrogen Oxides

NPR - Notice Proposed Rulemaking

NREL - National Renewable Energy Laboratory

NSCR - Non-Selective Catalytic Reduction

NSPS - New Source Performance Standard

NSR - New Source Review

NTSB - National Transportation Safety Board

PC - Pulverized Coal

PJM - Pennsylvania-Jersey-Maryland Power Pool

$PM_{2.5}$ - Particulate Matter 2.5 Micrometers

PPA - Power Purchase Agreement

PRB - Powder River Basin

PSD - Prevention of Significant Deterioration

PV - Photovoltaics

RE - Renewable Energy

RTO - Regional Transport Organization

S&L - Sargent & Lundy

SCR - Selective Catalytic Reduction

SIP - State Implementation Plan

SM-80 - Synthetic Minor 80%

SNCR - Select Non Catalytic Reduction

SO_2 - Sulfur dioxide

SREC - Solar Renewable Energy Credits

TSD - Technical Support Document

TWh - Terawatt-hour

U.S. - United States

USDOT - United States Department of Transportation

VFD - Variable Frequency Drive

VMT - Vehicle Miles Traveled

WVDEP - West Virginia Department of Environmental Protection

WVDOE - West Virginia Division of Energy

WVPSC - West Virginia Public Service Commission