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**COMMENTS OF THE PENNSYLVANIA COAL ALLIANCE ON THE
PROPOSED PERFORMANCE STANDARDS FOR THE EMISSION OF CARBON
DIOXIDE FROM EXISTING FOSSIL FUEL-FIRED ELECTRIC GENERATING UNITS**

The Pennsylvania Coal Alliance (PCA) appreciates the opportunity to provide comments on the U.S. Environmental Protection Agency’s proposed “Clean Power Plan” (CPP) to limit carbon dioxide CO₂ emissions from existing fossil fuel-fired electric generating units (EGUs). PCA is the principal trade organization representing underground and surface bituminous coal operators in Pennsylvania, as well as other associated companies whose businesses rely on coal mining and a strong coal economy. PCA member companies produce almost 90 percent of the bituminous coal mined annually in Pennsylvania, which totaled nearly 66 million tons in 2013, making the Commonwealth the fourth largest coal producing state.

Coal mining helps drive the Pennsylvania economy, supporting nearly 37,000 jobs, contributing \$4.1billion annually to the state’s economy, and serving as the financial cornerstone for economic development for many of Pennsylvania’s coalfield communities since the mid-18th century.

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The steam coal market represents the largest market by far for Pennsylvania-mined coal. Accordingly, PCA's members have an immediate and significant interest in EPA's proposed CPP. The PCA believes that the CPP represents a dramatic overstepping of EPA's legal authority under the Clean Air Act (CAA), and will exact dire economic consequences on state, regional, and the national economies if it is enacted.

The Importance of Coal

As the number one source of fuel for domestic electricity generation both nationally and in Pennsylvania,¹ the coal industry is the most significant energy-related sector in the United States. Its importance reaches well beyond the power grid. Across the country, nearly 100,000 people are employed directly in coal mining operations,² and 2.1 million are employed in positions tied to the coal industry.³ Comprising a large portion of the domestic energy market, the coal industry accounts for nearly a \$250 billion impact to the US economy.⁴

Coal has long been among the cheapest and most abundant sources of energy, giving consumers access to reliable, affordable electricity at a time when other energy sources have increased, or will likely dramatically increase, in price. Further, the coal industry and its utility customers have been actively developing advancements in generation efficiencies and pollution

¹ US Dept. of Energy (DOE) Energy Information Administration. *Annual Energy Outlook 2013* at 71. April 2013, available at <http://www.eia.gov/forecasts/aeo/pdf/0383%282013%29.pdf>.

² DOE Energy Information Administration. *Annual Coal Report* at 27. December 12, 2013, available at <http://www.eia.gov/coal/annual/pdf/table18.pdf>.

³ National Mining Association. *The Economic Contributions of U.S. Mining* (2011) at E-1. September 2013, available at http://www.nma.org/pdf/economic_contributions.pdf.

⁴ *Id.*

reductions, particularly with the development of state-of-the-art clean coal technologies in recent years.

In short, not only has the coal industry been the historic backbone of American energy, it is now a cutting-edge pioneer that can power America into the future.

Background of Proactive Carbon-Reduction Efforts Already Taken in Pennsylvania

According to the Pennsylvania Department of Environmental Protection (DEP), CO₂ emissions from Pennsylvania's electric generating fleet declined by 12 percent from 2005-2012.⁵

These reductions have been accomplished while Pennsylvania has maintained a stable and reliable supply of electricity at competitively-priced rates, not only lower than the national average but lowest among its northeastern neighboring states. This can be attributed to the fact that about 95 percent of its generation mix comes from lower cost and indigenous energy sources – coal, natural gas and nuclear power.⁶ Moreover, Pennsylvania also has an energy portfolio law on the books⁷ and a law that requires its electric distribution companies to adopt plans to reduce energy demand and consumption within their service territories.⁸

Despite having in place a true “all-of-the-above” energy portfolio that is tailored to take advantage of sources endemic to the state and is resulting in measurable emission reductions of

⁵ Testimony of John Pippy, Pennsylvania Coal Alliance, before the Pennsylvania Senate Environmental Resources and Energy Committee, Public Hearing: Energy Effects of EPA's Clean Power Plan June 27, 2014. See also Pennsylvania Climate Change Action Plan Update, Pennsylvania DEP, December 2013 at pg. 6.

⁶ See Pennsylvania, State Profile and Energy Estimates: Energy Production Estimates, 2012, U.S. Energy Information Administration, U.S Department of Energy, available at <http://www.eia.gov/state/?sid=PA#tabs-3>.

⁷ See Alternative Energy Portfolio Standards Act, 73 P.S. Sections 1648.1 – 1648.8.

⁸ See Act 129 of 2008, 66 Pa. C.S. 2806.1 *et seq.*

regulated pollutants, this portfolio would be dramatically and unwisely altered against the interests of ratepayers if the EPA plan is adopted.

Given this background, particularly the fact that Pennsylvania has reduced greenhouse gas (GHG) emission by 12 percent between 2005-2012, we have asked EPA for clarification on how its plan credits states like Pennsylvania that have made cuts to carbon emissions before 2012. The proposed rule does not adequately address how or if these actual emissions reductions will count towards the mandate goal of EPA's plan.

States should not be punished for taking the lead in developing long-term and sustainable energy programs that include a true all-of-the-above strategy and promote growth in newer energy sources while maintaining access to reliable and low cost sources of baseload energy such as coal, nuclear and natural gas.

Overview of Arguments

The PCA believes that the CPP represents a fundamentally impermissible attempt to legislate the composition and structure of the power grid. At the expense of the hundreds of thousands of employees working in positions associated with the coal industry and the hundreds of millions of consumers who rely on reliable and affordable sources of electricity, EPA has grossly overstepped its regulatory authority under the CAA. In particular, the CPP's requirement for state plans to implement "outside the fence" measures, including redispatching energy generation from coal-fired EGUs to NGCC and renewable energy sources, not only reflects an *ultra vires* encroachment by EPA into the inner-workings of the power grid, but also poses

severe threats to the reliability of electricity supply, carrying the potential for severe adverse impacts to countless businesses and the overall national economy.

That EPA cannot, and should not, attempt to choose who gets to contribute to the power grid and the means by which they do so, is plainly stated in the CAA, which unambiguously indicates Congress' intent to prevent EPA from engaging in rulemaking with such far-reaching and dire implications. Not only does the legislative history of Section 111 of the CAA establish that Congress intended to allow EPA to promulgate standards of performance based only on measures that could be implemented within an affected facility, but in light of EPA's onerous restrictions on coal-based energy generation under Section 112, EPA is clearly barred from simultaneously regulating such coal-based sources under Section 111(d).

In addition to these legal, economic and practical infirmities, the CPP follows a flawed methodology in determining the magnitude of reductions in carbon dioxide emissions achievable from coal-fired EGUs. Specifically, EPA has failed to appreciate the immense variety of factors that can cause fluctuation in heat rates at a given facility, as well as the numerous types of EGUs at which installation of certain equipment upgrades would not be cost-effective or even technically feasible. Even more concerning, the CPP erroneously assumes that an appreciable number of NGCC units are capable of displacing coal-based power generation. In actuality, only a small fraction of NGCC units have sufficient actual capacity to approach the amount of generation from coal and an even smaller fraction of NGCC units have ever achieved utilization rates necessary to substitute for coal-fired EGUs. Finally, the CPP operates under a “one size fits all” presumption that renewable energy-based power generation can be equally deployed in all states within a given region, even despite significant geographic and infrastructural differences

among such states. As a result, such an approach dramatically overstates renewable energy generation potential in several states, including Pennsylvania.

Because the CPP fundamentally reflects an attempt by EPA to establish an energy policy that defines the components of the power grid, relies upon several methodological flaws, and fails to adequately consider the magnitude of adverse economic effects to the national economy and the hundreds of thousands of employees affiliated with the coal industry, PCA requests that the CPP be withdrawn.

Our Comments are organized according to the following outline:

- I. Enactment of the CPP will significantly harm the coal industry, the communities that depend on coal, and the national economy.
- II. The CPP Exceeds EPA's Authority Under the CAA
 - A. Building Blocks 2-4 do not represent a "system of emissions reduction" since they cannot be implemented "inside the fence" of a regulated facility.
 1. Congress intended that a "system of emission reduction" refer only to "inside the fence" emission controls.
 2. EPA's current reading of "system of emission reduction" to include "beyond the fence" measures is unprecedented and plainly inconsistent with its prior interpretations.
 3. Section 111(d) cannot be read to allow for the CPP's massive scope of regulation of the entire energy sector and the national economy.
 - B. EPA Lacks Authority to Regulate Carbon Emissions Under Section 111(d) from Coal-Fired EGUs Since EGUs are Already Regulated Under Section 112.
 1. The legislative history behind Section 111(d) unambiguously establishes that EPA cannot regulate sources that are otherwise regulated under Section 112.
 2. Past interpretations of the 1990 Amendments to Section 111(d) by EPA and the courts further establish that sources subject to Section 112 regulations cannot simultaneously be regulated under Section 111(d).

3. The 1990 Senate Amendments to Section 111(d) have repeatedly been recognized as a clear drafting error and consequently is superseded by the House Amendments.

C. The CPP must be withdrawn because its authority derives from the NSPS proposed rule which itself is contrary to the CAA.

III. Technical Issues With the BSER Building Blocks

A. EPA's 6% heat rate improvement within Building Block 1 of the CPP for all coal-fired power plants is flawed.

1. The methodology used by EPA in determining the amount of heat rate improvement from operating and maintenance optimization is flawed.
2. A 2% heat rate reduction from equipment upgrades is not feasible for many plants, nor is the cost justifiable in light of the degree of heat rate reductions.

B. Implementation of Building Blocks 2 and 3 of the CPP would severely reduce electricity generation and threaten the supply and reliability of the power grid.

1. BSER Building Block 2's reliance on redispatching generation to NGCC to a capacity factor of 70% is not adequately demonstrated.
2. EPA's reliance upon renewable energy generation on a regional basis in Building Block 3 is fundamentally flawed.

I. Enactment of the CPP will significantly harm the coal industry, the communities that depend on coal, and the national economy.

As will be discussed in greater detail in subsequent sections, the CPP would have the effect of significantly reducing power generation from coal-fired EGUs, which would immediately threaten the supply of power available for distribution to consumers. Enactment of the CPP would present equally dire consequences for the coal-based power generation industry, forcing the retirement of hundreds of power plants. These retirements would have grave ripple

effects that will reverberate well beyond a plant's fence line. The families of hundreds of thousands of coal miners and supporting employees facing layoffs due to the decrease in coal demand would bear the brunt of EPA's overreaching regulations. States dependent on their once-proud coal mining industries would be left with dramatic increases in unemployment and significant economic decline. Due to the significance and size of the coal industry, enactment of the CPP would push the national economy along a similar trajectory as the coal industry itself.

Despite these grim implications, EPA devotes only a single paragraph to the employment impacts of the CPP, summarily concluding that it "may lead to fewer jobs in the coal and natural gas extraction sectors, as well as in EGU construction and operation than would otherwise have been expected," and that "employment gains and losses that might be attributable to this rule would be expected to affect different sets of people."⁹ These naïve statements fail to appreciate the sheer magnitude of adverse effects that would be imposed on the coal industry and coal communities if the CPP is promulgated.

For example, coal has long been the lifeblood of south western Pennsylvania's economy, generating \$3.7 billion per year in direct and indirect benefits. In addition, the industry accounts for 25 percent of the employment and in some areas, up to 40 percent of the local tax base. Any person drawing a paycheck from this industry or whose business is dependent on a robust coal economy will be victimized by any dramatic shift away from the use of this energy source. Considering that EPA is required to weigh the "cost, energy and environmental impacts in the broadest sense at the national and regional levels...over time,"¹⁰ including an analysis of social

⁹ 79 F.R. 34935

¹⁰ *Sierra Club v. Costle*, 657 F.2d 298, 384 (D.C. Cir. 1981).

and economic impacts to local communities, such a comprehensive assessment of these impacts would demonstrate the need to withdraw the CPP.

In response to the exorbitant costs imposed by numerous regulations that EPA has enacted that apply to the coal-based power generation industry, base load coal power plant retirements are projected to rise sharply upon enactment of the CPP. By 2030, some 114 GW of existing capacity will be removed from the grid due to closures of coal-fired EGUs.¹¹ Already, several operators have been forced to make the difficult decision to close their power plants because of the cumulative effect of EPA's regulations on coal-fired power plants. These occurrences will only become more frequent, particularly considering that current operators are essentially foreclosed from constructing new coal-fired EGUs with unprecedented efficiencies and heat rates due to EPA's NSPS rule proposed earlier this year, which requires installation of unproven and astronomically costly CCS technology. Due to the consequent reduction in demand for coal, the number of coal mine employees has dropped by ten percent between 2012 and 2013, with nearly a 20% decrease in the Central Appalachian region.¹² These figures represent just the tip of the iceberg if the CPP is enacted. The Plan is projected to result in a peak loss of 442,000 jobs occurring in 2022, amounting to a decline of nearly \$104 billion to the US GDP.¹³

¹¹ U.S. Chamber of Commerce, "Assessing the Impact of Potential New Carbon Regulations in the United States" (hereinafter "Chamber of Commerce Report") at pg. 3. 2014. Available at <http://www.energyxxi.org/epa-regs-report>.

¹² See T. Kuykendall and N. Powell, "U.S. Coal Sustains Employment Free Fall," *Coal Age*, June 17, 2014 (available at <http://www.coalage.com/departments/market-watch/3681-u-s-coal-sustains-employment-free-fall.html#.VD7OABaiIuh>).

¹³ Chamber of Commerce Report, *supra* note 11 at pgs. 45-46.

It is particularly important to note that these losses will not be equally borne by every state or region. Pennsylvania and West Virginia are expected to experience among the highest decreases in GDP and employment. The US Chamber of Commerce projects that these states will experience annual reductions of 7.5 to 10.5% in GDP and annual losses of between 13,000 and 60,000 jobs between 2015 and 2030, with peak losses occurring during 2022-2024.¹⁴ Moreover, these projections are supported by closures of coal-fired power plants and mines that are already occurring today. In Pennsylvania alone, at least eight power plants (Hatfield's Ferry, Mitchell, Elrama, Armstrong, New Castle, Portland, Titus and Shawville) have already been deactivated or designated for retirement because of pending air quality rules. These units total over 5,000MW of electricity or about ten percent of Pennsylvania's currently-installed electric capacity. The impacts of these closures are and will be felt by local communities and electric ratepayers while undermining the stability of the electric grid. As we discussed in our comments to EPA's NSPS GHG rule for EGUs earlier this year, several communities across Pennsylvania, West Virginia and Kentucky have struggled to cope with surging unemployment and significant losses in property tax revenues due to recent closures of large coal-fired power plants or coal mines.¹⁵

Though states such as Pennsylvania will be hit hardest by the CPP, significant adverse economic impacts are predicted on a regional and even nationwide scale. Most analysts predict that the cost of electricity will increase significantly, amounting to an aggregate increase of

¹⁴ *Id.* at 43.

¹⁵ See Kris Maher and Tom McGinty, "Coal's Decline Hits Hardest in the Mines of Kentucky." Wall Street Journal, November 26, 2013; Niedbala, Bob. "End is near for Mitchell, Hatfield's power plants." Observer-Reporter, October 12, 2013; "Community braces for Big Sandy plant closure," Associated Press, November 3, 2013; Mckelway, Doug. "Coal industry threatened by stringent new EPA standards." Fox News, July 26, 2013 (available at <http://www.foxnews.com/politics/2013/07/26/coal-industry-threatened-by-stringent-new-epa-standards/>).

nearly \$300 billion by 2030.¹⁶ When factoring these expenses along with job losses and other cost increases passed onto consumers, it is estimated that a typical household could lose several thousands of dollars in real disposable income over the period of implementation of the CPP.¹⁷ In cases of power shortages, which are a distinct possibility due to increased reliance on re-dispatch to NGCC, price spikes in excess of 10 times the average rate are likely.¹⁸ Such an amount is particularly significant for lower-income households, which the CPP is expected to disproportionately impact.¹⁹

EPA has disregarded the CAA's requirement to properly consider the magnitude of damage that will be done to the communities and states that have long depended on the coal industry by enacting the proposed rule. Because a more comprehensive analysis of these impacts would demonstrate the destructive effect of the CPP, EPA must withdraw it.

II. The CPP Exceeds EPA's Authority Under the CAA

¹⁶ Chamber of Commerce Report, *supra* note 11 at pg. 5.

¹⁷ *Id.* at 7.

¹⁸ Testimony of Michael Catanzaro, FTI Consulting, before the Pennsylvania Senate Environmental Resources and Energy Committee, August 22, 2014; see also the concerns of the Jacksonville Electric Authority, reported by N. Monroe, "JEA: Obama's pollution reduction plan 'most disruptive energy policy in modern times,'" Florida Times-Union, September 14, 2014 (available at <http://members.jacksonville.com/news/2014-09-14/story/jea-obamas-pollution-reduction-plan-most-disruptive-energy-policy-modern-times>).

¹⁹ Chamber of Commerce Report, *supra* note 11 at pg. 7; Testimony of Thomas Easterly, Commissioner of Indiana Department of Environmental Management, before the United States House Energy and Commerce Committee, Energy and Power Subcommittee, September 9, 2014.

A. Building Blocks 2-4 do not represent a “system of emissions reduction” since they cannot be implemented “inside the fence” of a regulated facility.

Enactment of the CPP would create enforceable carbon dioxide emission reduction requirements that vary among the states. Pursuant to Section 111(d) of the CAA, each state must submit a plan that “establishes standards of performance” for “existing sources.” Such standards of performance must reflect the degree of limitation achievable through the application of the “best system of emission reduction . . . that the Administrator has determined to be adequately demonstrated.”²⁰ The CPP describes four “building blocks” which purportedly constitute the “best system of emission reduction.” Three of these building blocks involve increasing energy generation from NGCC and renewable energy sources, and decreasing overall energy demands by consumers through state-based energy efficiency programs. The state-specific carbon emission reduction requirements are to be achieved by implementing some or all of these measures.

The CPP’s reliance on these building blocks is contrary to Section 111 of the CAA since they do not represent a “system of emission reduction.” In particular, these building blocks represent state- or grid-wide energy policy measures, as opposed to a discrete “system” which can be installed, controlled or implemented by existing sources to reduce emissions. Absent from EPA’s legal memorandum in support of its proposal is a single past example where it considered measures not implementable “inside the fence” of a facility to constitute a “system of emission reduction.” The reason for this absence is Congress’, EPA’s and the courts’ consistent

²⁰ 42 U.S.C. Section 111(a)(1).

view that such broad-based measures are not considered a valid “system” for purposes of Section 111. As a result, EPA must withdraw the proposed rule.

1. *Congress intended that a “system of emission reduction” refer only to “inside the fence” emission controls.*

Congressional documents associated with the passage of the CAA strongly indicate that Congress intended standards of performance and the “best system of emission reduction” (BSER) to achieve such standards must consist of emission control methods that are implementable “inside the fence” of an individual regulated facility. In the Senate Report associated with the original passage of the CAA in 1970, the term “standards of performance” is defined to refer to the “degree of emission control which can be achieved through process changes, operation changes, direct emission control, or other methods” (emphasis added).²¹ Further, the congressional intent behind enactment of “standards of performance” was premised on the fundamental principle that “major new facilities...must be controlled to the maximum practicable degree regardless of their location and industrial operations” (emphasis added).²² In other words, emission reduction methods must directly “control” emissions at the facility itself. The combination of these provisions establishes that the scope of achievable emission control through which performance standards are determined must be based on methods that are implementable by facilities themselves.

This reading of the legislative intent behind “standards of performance” is further supported by discussion in the House Report associated with the 1970 CAA. In particular, the

²¹ S. Rep. 91-1196, Senate Committee on Public Works, 91st Cong., 2d Sess. (1970) at 16.

²² *Id.*

Report stated that as a result of a standard of performance, “industrial firms would be required to...insure that new plants and equipment perform in accordance with the promises and commitments made by plant designers and equipment builders” (emphasis added).²³ From this, Congress undoubtedly intended the “performance” necessary to achieve the emission standards be taken at the “plant” level. Moreover, multiple Congressional Research Service reports characterize the standards of performance as “requir[ing] major new sources constructed after their promulgation to install” the BSER.²⁴ Instead, the CPP supplants this intent by setting standards that EPA has determined to be achievable based on nebulous and unguaranteed measures that must be performed by entities outside the EGU facility.

Therefore, control methods within a BSER must be able to be “installed” by a regulated source. Building blocks 2-4 of the CPP clearly cannot be installed by an individual source, as they require grid-wide redistribution of power generation and state-wide incentives for promoting energy-efficient practices by consumers. In short, the legislative history firmly indicates that the CPP’s reliance on these building blocks is contrary to the congressional intent behind CAA Section 111.

2. *EPA’s current reading of “system of emission reduction” to include “beyond the fenceline” measures is unprecedented and plainly inconsistent with its prior interpretations.*

The CPP is also contrary to EPA’s own past recognition of Congress’ intent when enacting Section 111. In a legal memorandum dated September 28, 1973, EPA considered

²³ H. Rep. 91-1146, House Committee on Interstate and Foreign Commerce, 91st Cong. 2d Sess. (1970) at 17.

²⁴ L. Parker and J. Blodgett, “Air Quality and Electricity: Enforcing New Source Review,” Congressional Research Service, Resources, Science and Industry Division, January 31, 2000 at pg. 22; L. Parker, “Clean Air: New Source Review Policies and Proposals,” Congressional Research Service, Resources, Science, and Industry Division, February 25, 2003 at pg. 23.

whether a SO₂ standard for copper smelters could properly be founded on a BSER that would effectively prevent use of reverberatory furnace processes.²⁵ Reiterating the above definition of “standards of performance,” EPA reasoned that the phrase “best system of emission reduction” referred not only to “emission control hardware,” but also to utilization of new processes at the facility, depending on the technical and economic feasibility of the substitute process. In particular, EPA stated that “the different processes utilized in the production activity in which the source is engaged figure importantly in emissions levels of the source and/or the technology which may be employed to control the emissions” (emphasis added).²⁶

Applying these principles, EPA concluded that a performance standard based on use of a new process implementable within a facility would be permissible. In the preamble to its eventual rule for the SO₂ standard, EPA stated that “Section 111 authorizes the promulgation of one standard applicable to all processes used by a class of sources, in order that the standard may reflect the maximum feasible control for that class” (emphasis added).²⁷ In other words, EPA has operated under the position that performance standards must be based on emission controls that can be applied directly to the source. This position is consistent with the legislative provisions discussed above. Process or technological changes upon which a performance standard is based must be implementable “inside the fence” of an individual source.

On other occasions, EPA has stated that as a routine part of its determination of the BSER benchmark for a proposed performance standard, it will “find what [it] consider[s] well-

²⁵ Memorandum of Law: General Counsel Opinion, “Authority to Proscribe Processes,” US EPA, September 28, 1973 (available at “A Collection of Legal Opinions,” vol. 1, December 1970 to December 1973, US EPA Office of General Counsel).

²⁶ *Id.*

²⁷ 41 F.R. 2333 (1976).

controlled facilities, and where [it] can, [it will] go out and actually measure what is coming out of those well-controlled facilities.”²⁸ Such a practice is plainly rooted in the premise that control measures under a BSER determination must be limited to measures that can be implementable within a regulated facility. In fact, in each of its prior 111(d) rulemakings, EPA had established standards of performance based on a BSER only consisting of “inside the fence” control methods.²⁹ Therefore, since the CPP relies on several measures which cannot be achieved “inside the fence,” it is contrary to both congressional intent and EPA’s own past interpretation of CAA Section 111 and must be withdrawn.

3. Section 111(d) cannot be read to allow for the CPP’s massive scope of regulation of the entire energy sector and the national economy.

In its recent *UARG v. EPA* opinion,³⁰ the U.S. Supreme Court considered EPA’s broad interpretation of the phrase “air pollutant” under the Title V and PSD permitting provisions of the CAA to include CO₂. In particular, the Court stated:

“[I]t is plain as day that the [CAA] does not envision an elaborate, burdensome permitting process for major emitters of steam, oxygen, or other harmless air

²⁸Testimony of Dr. Bernard J. Steigerwald, Director, Office of Air Quality Planning and Standards, EPA before the House Permanent Select Committee on Small Business, Subcommittee on Environmental Problems Affecting Small Business, October 1, 1973.

²⁹ See, e.g., Clean Air Mercury Rule, “Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units,” 70 F.R. 28606 (2005) (determining that use of PM controls and flue gas desulfurization systems constituted the BSER); “Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units, Final Rule,” 65 F.R. 75338 (2000) (determining that use of wet scrubbers constituted the MACT floor for solid waste incinerators); “Standards of Performance for New Stationary Sources and Guidelines for Control of Existing Sources: Municipal Solid Waste Landfills, Final Rule,” 61 F.R. 9905 (1996) (determining that use of gas collection systems and nonmethane organic compound control devices constituted the best demonstrated technology).

³⁰ *United Air Regulatory Group v. EPA*, 573 U.S. ____ (2014).

borne substances. It takes some cheek for EPA to insist that it cannot possibly give ‘air pollutant’ a reasonable, context-appropriate meaning...”³¹

Operating under the fundamental principle that “agencies must operate within the bounds of reasonable interpretation,” the Court rejected EPA’s interpretation of “air pollutant” to include CO₂ under these permitting provisions, finding that such an expansive reading “would bring about an enormous and transformative expansion in EPA’s regulatory authority” that is “incompatible with the substance of Congress’ regulatory scheme.”³² In particular, the Court noted its great hesitancy with acknowledging “an agency[‘s] claims to...unheralded power to regulate a significant portion of the American economy” in concluding that Congress could not have intended such a result without a clear grant of such power.³³

The CPP is undoubtedly the most expansive and profound regulatory initiative ever taken by EPA. It is an environmental regulation that by its consequences set comprehensive energy policy. As explained above, the CPP does not simply prescribe the installation of emission controls or implementation of facility work practice standards for individual sources. Instead, it seeks to regulate the composition and structure of the entire power grid, requiring states (or, if necessary, EPA itself) to adopt enforceable plans specifying the quantity of power that may be distributed, from which particular sources it may be generated, and the amount of utilization of such sources. To this end, the CPP has the effect of restricting the contribution of coal-based power generation to the grid. Even more, the CPP attempts to regulate consumer behavior by requiring implementation of demand-side energy efficiency (EE) programs. While EPA appears

³¹*Id.* at pg. 12.

³²*Id.* at pg. 19.

³³ *Id.* (citing *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 159 (2000)).

to cloak these effects by characterizing these measures as part of state plans, the reality is that such state plans will be required to abide by EPA's dictates in order to meet the state-wide emission thresholds set forth in the CPP. Authority for such a far-reaching proposal cannot be found within the text of Section 111(d).

While Congress clearly intended to delegate to EPA limited power to regulate certain air pollutants through standards of performance under Section 111, nowhere has it expressed an intention to delegate wholesale authority to determine the components of the power grid through imposition of sweeping "outside the fence" measures. Instead, the CPP reflects virtually the same erroneous interpretation by EPA of its authority that was rejected in *UARG*. It is an unprecedented attempt to enormously expand regulatory authority over a significant portion of the American economy without Congressional authorization. As a result, the CPP must be withdrawn.

B. EPA Lacks Authority to Regulate Carbon Emissions Under Section 111(d) from Coal-Fired EGUs Since EGUs are Already Regulated Under Section 112.

CAA Section 111(d) expressly limits EPA's authority to require states to establish performance standards for existing sources. Section 111(d)(1) states:

"The Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section [110] of this title 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) for which air quality criteria have not been issued...or emitted from a source category which is regulated under section [112] of this title..."³⁴

³⁴42 U.S.C. Section 111(d).

The underlined text above unambiguously establishes that any source category which is subject to regulations promulgated under CAA Section 112 cannot simultaneously be subject to Section 111(d) performance standards. Since existing coal-fired EGUs are currently subject to the Mercury and Air Toxics Standards (MATS) rule pursuant to Section 112,³⁵ they therefore are exempt from regulation under Section 111. As a result, the CPP’s proposed regulation of these sources exceeds EPA’s statutory authority under the CAA.

1. *The legislative history behind Section 111(d) unambiguously establishes that EPA cannot regulate sources that are otherwise regulated under Section 112.*

Courts have long used “all traditional tools of statutory interpretation, including text, structure, purpose and legislative history, to ascertain Congress’ intent at *Chevron* step one” in determining if Congress has unambiguously expressed its intent.³⁶ The unambiguous intent of Congress with respect to Section 111(d) is fully apparent particularly when considering its legislative history. Prior to the 1990 Amendments to the CAA, Section 111(d) had clearly stated that only pollutants regulated under Section 112 could not also be regulated under the ESPS framework. This previous version of Section 111(d) read:

- (1) The Administrator shall... establish a procedure similar to that provided by section 110 under which each State shall submit... a plan which
 - ^(A) Establishes emission standards for any existing source for any air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under section 108(a) or 112 section (b)(1)(A).³⁷

³⁵“National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial Commercial-Institutional Steam Generating Units: Final Rule,” 77 F.R. 9304 (2012); see also Reconsideration Rule, 78 F.R. 24073 (2014).

³⁶ *Nat’l Cable & Telecomms. Ass’n v. FCC*, 567 F.3d 659, 663 (D.C. Cir. 2009).

³⁷ P.L. 91-604, 84 Stat. 1684, 91st Cong., December 31, 1970.

The emphasized references above to the pollutant-specific provision of Section 112(b)(1)(A) (containing a list of HAPs) undoubtedly indicates that Congress had initially intended to prevent simultaneous regulation under 112 and 111 only of pollutants, not sources. However, Congress revised Section 111(d) via the Clean Air Act Amendments of 1990, purposefully amending the language above with the clear intent of preventing double-regulation of not only pollutants but also sources under both Section 112 and 111(d). In particular, the amendments to Section 111(d) enacted by the House of Representatives, and concurred in by the Senate, read:

- (1) The Administrator shall prescribe regulations...under which each State shall submit...a plan which
 - ^(A) Establishes standards of performance for any existing source for any air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under Section 108(a) or emitted from a source category which is regulated under Section 112.³⁸

The emphasized language above plainly establishes that any source category which is “regulated” under Section 112 is exempt from simultaneous regulations under Section 111(d), particularly when considered alongside the pre-1990 version. Moreover, the Amendment’s inclusion of sources “regulated under Section 112,” in contrast with the original framework of “list[ed]” in Section 112, establishes that the promulgation of substantive regulations under the authority of Section 112, such as source-specific National Emission Standards for Hazardous Air Pollutants (NESHAPS), triggers the preclusion of regulation under Section 111(d). The CPP therefore improperly attempts to regulate a source category that is clearly already regulated under Section 112 – the very situation that is unambiguously proscribed as per the effective 1990 Amendments to the CAA.

³⁸ P.L. 101-549, 104 Stat. 2467, Sec. 108(g), 101st Cong., Nov. 15, 1990.

2. *Past interpretations of the 1990 Amendments to Section 111(d) by EPA and the courts further establish that sources subject to Section 112 regulations cannot simultaneously be regulated under Section 111(d).*

The interpretation of the current version of Section 111(d) above has been recognized by EPA, which has stated that this revision has the unambiguous effect of “substantively amend[ing] section 111(d),” thereby preventing the regulation of any pollutant, HAP or non-HAP, “emitted from a source category regulated under section 112.”³⁹ In fact, in responding to comments on its “Delisting Rule” (discussed below), EPA particularly rejected the position that under “the House amendment...EPA cannot regulate under section 111(d) [only] any HAP that is emitted from a source category regulated under Section 112,” concluding that such a reading would “modify the plain language of section 111(d)...in significant respects.”⁴⁰ EPA instead adopted the interpretation that “if source category X is a ‘source category’ regulated under section 112, EPA could not regulate HAP and non-HAP from that source category under section 111(d).”⁴¹ Considering that EPA has “regulated” fossil fuel-fired EGUs “under section 112” through the MATS rule, EPA’s prior interpretation clearly bars regulation of such EGUs under section 111(d).

In addition to the EPA, courts have repeatedly construed this amended language to mean that the regulation of any source under Section 112 precludes simultaneous regulation of such

³⁹ Revision of December 2000 Regulatory Finding on the Emissions of Hazardous Air Pollutants From Electric Utility Steam Generating Units and the Removal of Coal- and Oil-Fired Electric Utility Steam Generating Units From the Section 112(c) List: Final Rule,” 70 F.R. 16031 (2005).

⁴⁰ *Id.*

⁴¹ *Id.*

sources under Section 111(d). For instance, in *New Jersey v. EPA*,⁴² EPA had attempted to regulate under Section 111 mercury emissions from coal-fired EGUs that were listed under Section 112. Recognizing that it would be necessary to remove coal-fired EGUs from Section 112 to allow for subsequent regulation under Section 111(d), EPA attempted to delist coal-fired EGUs from Section 112(c)(1) through the rulemaking referenced above. After vacating the Delisting Rule, the D.C. Circuit held that since “coal-fired EGUs are listed sources under section 112, regulation of existing coal-fired EGUs’ mercury emissions under section 111 is prohibited.”⁴³ As a result, the court also vacated Section 111(d) rulemaking containing performance standards for coal-fired EGUs due to their continued listing and regulation under Section 112, recognizing that EPA itself had conceded that simultaneous regulation of a source category under both Section 111(d) and 112 was impermissible.

More recently, in *American Electric Power Co. v. Connecticut*,⁴⁴ the Supreme Court held that Sections 111 and 112 of the CAA displaced any federal common law rights to limit carbon dioxide emissions from fossil fuel-fired EGUs. In concluding Congress had directly addressed the issue of carbon dioxide, the court recognized that while EPA is ordinarily required to promulgate NSPS’ for source categories listed under Section 111(b)(1)(A), “EPA may not employ [Section 111(d)] if existing stationary sources of the pollutant in question are regulated under the national ambient air quality standards program, [Sections 108-110] or the “hazardous air pollutants” program, [Section 112].”⁴⁵

⁴² 517 F.3d 574 (D.C. Cir. 2008).

⁴³ *Id.* at 578.

⁴⁴ 131 S. Ct. 2527 (2011)

⁴⁵ *Id.* at 2537, n. 7.

The court in *New Jersey* did not apply *Chevron* deference to EPA's interpretation. The absence of assignment of deference firmly establishes that Section 111(d) is unambiguous, such that Congress spoke to the precise issue that a source cannot be subject to both Section 112 and Section 111(d) standards at the same time. The Supreme Court's unequivocal rejection of such simultaneous regulation under the HAP program and Section 111(d) further establishes the impropriety of the CPP when considered against the MATS rule. As a result, the CPP must be withdrawn as it exceeds the scope of EPA's authority under Section 111(d).

3. *The 1990 Senate Amendments to Section 111(d) have repeatedly been recognized as a clear drafting error and consequently is superseded by the House Amendments.*

In its Legal Memorandum accompanying the CPP, EPA states that the Congress "left [CAA Section 111(d)] ambiguous with respect to its applicability to the air pollutant emitted from the sources at issue" in the CPP. In particular, EPA claims that ambiguities arise because "two different amendments to section 111(d) were enacted in the 1990 CAA Amendments," and that the text of the US Code, which follows the language of the House version above, is not controlling.⁴⁶ This reasoning is erroneous, as it fails to give any effect to the intent of Congress when entering the 1990 Amendments.

During the House-Senate Conference Committee's efforts to file its Conference Report, the Senate version of its Amendments erroneously contained language different from the House version. Such variation in the text of the Senate's version was plainly a "drafting error," particularly in light of the Senate's express intention to "recede from its disagreement to the amendment of the House to the text of the bill and agree to the same with [the House]

⁴⁶ "Legal Memorandum for Proposed Carbon Pollution Emission Guidelines for Existing Electric Utility Generating Units," at pgs. 21-22, EPA Docket No. EPA-HQ-OAR-2013-0602.

amendment.”⁴⁷ As discussed above, the 1990 House Amendments to Section 111(d) unambiguously prohibit regulation of a source category simultaneously under Sections 112 and 111(d). The Senate version, although intended to achieve the same substantive revision to the pre-1990 version of the CAA, erroneously provided for replacing the reference to the pollutant-specific list at Section 112(b)(1)(A) with Section 112(b).⁴⁸ But because the Senate had expressly stated its intent to agree with the House Amendments, the Senate Amendments have been repeatedly called a “drafting error” by numerous commentators and EPA itself, including in this rulemaking.⁴⁹

Interpretation of a statutory provision is fundamentally guided by consideration of its purpose and legislative history in addition to the plain text.⁵⁰ Apparent “drafting errors” cannot “creat[e] an ambiguity” where the intent of Congress is otherwise clear.⁵¹ Because the legislative history clearly establishes that the Senate Amendments were intended to conform to the House version, the House Amendments’ unambiguous proscription against regulating a source category simultaneously under both Sections 111(d) and Section 112 must control. The

⁴⁷ Conference Report on S. 1630, Clean Air Act Amendments of 1990, 136 Cong Rec H 13101; H. Rep. 101-952 at pg. 1, 101st Cong., October 26, 1990.

⁴⁸ P.L. 101-549, 104 Stat. 2574, Sec. 302(a) 101st Cong., November 15, 1990.

⁴⁹ See, e.g., Delisting Rule, *supra* note 39, 70 F.R. 16031; R. Nordhaus and I. Gutherz, “Regulation of CO₂ Emissions From Existing Power Plants Under Section 111(d) of the Clean Air Act: Program Design and Statutory Authority,” Environmental Law Institute, May 2014 at 44 ELR 10376; “Legal Memorandum for Proposed Carbon Pollution Emission Guidelines for Existing Electric Utility Generating Units,” EPA Docket No. EPA-HQ-OAR-2013-0602.

⁵⁰ See *General Dynamics Land Systems, Inc. v. Cline*, 540 U.S. 581, 600 (2004) (examining the “text, structure, purpose, and history” of a statute to interpret its meaning); *FAA v. Cooper*, 132 S. Ct. 1441, 1456 (2011).

⁵¹ *Am. Petroleum Inst. v. SEC*, 714 F.3d 1329, 1337 (D.C. Cir. 2013).

CPP therefore exceeds the scope of EPA’s authority under Section 111(d) and must be withdrawn.

C. The CPP must be withdrawn because its authority derives from the NSPS proposed rule which itself is contrary to the CAA.

Under Section 111(d)(1)(A)(ii), EPA is authorized to require the submission of state plans regulating existing sources only after the enactment of standards of performance for new sources in the same category. This provision therefore requires finalizing an NSPS prior to enacting an ESPS. In January 2014, EPA published proposed CO₂ standards of performance for new fossil fuel-fired EGUs. The Alliance submitted comments on the NSPS proposal in May 2014.⁵² For the reasons provided in the Alliance’s comments on that proposed rulemaking, the NSPS proposal is plainly violative of Section 111’s requirement that the BSER be “adequately demonstrated” prior to serving as the basis for a standard of performance. It is therefore likely that the NSPS, if promulgated in its current form, will be vacated on review by the D.C. Circuit Court of Appeals. If EPA nevertheless proceeds with finalizing the proposed ESPS, and the NSPS is vacated, the requisite predicate for the ESPS will no longer exist, thereby rendering the ESPS unlawful. Consequently, EPA should wait for the NSPS rule to be finalized and for any outstanding challenges to the rule to be adjudicated before proceeding with the ESPS.⁵³

⁵² Comments of the Pennsylvania Coal Alliance, submitted May 5, 2014, EPA Docket No. EPA-HQ-OAR 2013-0495.

⁵³ In addition, EPA’s proposed “Carbon Pollution Standards for Modified and Reconstructed Electric Utility Generating Units” will not cure deficiencies of the ESPS under Section 111(d)(1)(A)(ii). A “new source” is defined at Section 111(a)(2) to include “the construction or modification” of a stationary source (emphasis added). Therefore, EPA must demonstrate that its proposals for both new sources and modified or reconstructed sources are valid. Due to the clear shortcomings of the NSPS proposal, the ESPS cannot satisfy Section 111(d)(1)(a)(ii).

Accordingly, we urge EPA to withdraw the CPP to instead focus on recrafting an NSPS rule that is sound on both legal and policy bases.

III. Technical Issues With the BSER Building Blocks

A. EPA's 6% heat rate improvement within Building Block 1 of the CPP for all coal-fired power plants is flawed.

Under the CAA, performance standards must be “achievable” and reflective of technology that is “adequately demonstrated” to represent the BSER.⁵⁴ This requirement has been interpreted to mean that technology within a BSER must not be “purely theoretical or experimental...[or] exorbitantly costly in an economic or environmental way.”⁵⁵ As mentioned above, the CPP relies upon four “building blocks” to form its BSER determination in support of its state-specific performance standards. Of these, only the first building block, involving heat rate reductions, may constitute a “system of emission reduction” since it can be implemented “inside the fence” of a facility. Nonetheless, Building Block 1 follows a flawed methodology for calculating the amount of heat rate decreases that can theoretically be obtained among the entire fleet. As a result, the EPA dramatically overstates the magnitude of heat rate improvements that is achievable by affected facilities.

1. The methodology used by EPA in determining the amount of heat rate improvement from operating and maintenance optimization is flawed.

⁵⁴ 42 U.S.C. Section 7411(a)(1).

⁵⁵ *Essex Chemical Corp. v. Ruckelshaus*, 486 F.2d 427, 433–34 (D.C. Cir. 1973) (citing *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973)).

EPA states that “by applying best practices to their operating and maintenance procedures, owners and operators of EGUs could...improve the EGUs’ average heat rates” by an average magnitude of 4%.⁵⁶ In particular, EPA’s Heat Rate technical support document (TSD) assumes that observed variability in hourly heat rates is entirely the product of sub-optimal plant operating practices, ambient air temperature and load factor. Such an assumption is flawed as it fails to acknowledge that ambient conditions other than temperature and load factor are important determinants of heat rate. Moreover, EPA’s analysis presumes the perfect accuracy of all data used in its analysis, despite the fact that such data cannot accurately be measured on a consistent basis. Thus, EPA’s calculation of achievable heat rate improvements and its associated state goals are erroneous and must be withdrawn.

Ambient conditions have been well-demonstrated to influence a plant’s heat rate. For instance, increases in temperature of ambient air can increase the amount of back pressure on a steam turbine well above design values, which consequently reduces turbine efficiency and increases heat rate up to 5%.⁵⁷ The magnitude of back pressure generated in response to ambient conditions is largely based on the type of cooling system used. For plants using “once-through” water circulation processes, an increase in cooling water temperature can increase pressure within the condenser, in turn compromising turbine efficiency.⁵⁸ For such plants, however, ambient air temperature does not perfectly correlate with water temperature and can differ by

⁵⁶ 79 F.R. 34860.

⁵⁷ See N. Petchers, *Combined Heating, Cooling and Power Handbook: Technologies and Applications*, pg. 195. Fairmont Press (2003); E. Levy, “Reducing Heat Rates of Coal-Fired Power Plants,” *Lehigh Energy Update*, Vol. 27, No. 1, January 2009 (available at http://www.lehigh.edu/energy/leu/leu_61.pdf).

⁵⁸ *Id.* See also, M. Sanathara, R. Oza and R. Gupta, “Parametric Analysis of Surface Condenser For 120 MW Thermal Power Plant,” *International Journal of Engineering Research and Technology*, Vol. 2:3, March 2013.

several degrees.⁵⁹ Considering that differences of just a few degrees can result in a heat rate increase of 0.5-1%,⁶⁰ EPA's failure to consider cooling water temperature in its heat rate variability analysis reflects a flawed BSER determination.

Moreover, the type of coal used is also an important factor that affects heat rate. Even within a particular coal species, minor, inherent variations in the characteristics of the fuel can cumulatively produce appreciable variations in heat rate. For instance, moisture and ash content within coal can reduce heat transfer efficiency and produce latent heat losses.⁶¹ Yet, nowhere did EPA consider the possibility that slight deviations among these characteristics could produce heat rate variability.

A coal-fired power plant's operating load has perhaps an even larger impact on momentary heat rate at a given time point. In general, heat rate exponentially increases as a function of decreased operating load with respect to the plant's maximum continuous rating (MCR).⁶² Such efficiency losses are particularly steeper for conventional subcritical units, which constitute the vast majority of the coal-fired power plant fleet.⁶³ Despite the significant non-linear effect of capacity factor on heat rate, EPA's statistical analysis erroneously attempted to determine the amount of achievable efficiency improvements by analyzing changes in heat rate, capacity factor and temperature among discrete hourly average data. Specifically, EPA sorted

⁵⁹ See comments of Andover Technology Partners, submitted August 29, 2014 at pg. 4, available at http://andovertechnology.com/images/bb1-heat%20rate%20comment_20140829.pdf.

⁶⁰ International Energy Agency, "Power Generation from Coal: Measuring and Reporting Efficiency Performance and CO₂ Emissions," at pg. 24, October 2010.

⁶¹ *Id.* at pgs. 18-19.

⁶² *Id.* at 20.

⁶³ *Id.*

data based on average capacity factor over distinct hourly points into 168 “bins” based on corresponding hourly average heat rate and temperature data.⁶⁴ By using these discrete averages over disconnected hourly points, EPA's analysis fails to adequately account for dynamic trends in capacity factor that may account for the variability that EPA wrongly believes can be addressed through modifying operating practices.

Finally, EPA's analysis of hourly heat rate data assumes that facility reporting of power generation and fuel consumption is perfectly uniform and entirely accurate. In reality, significant variation exists among measurement and reporting procedures used by facilities. In particular, EPA itself acknowledged in its TSD that over one-third of EGUs studied reported heat rate data that showed year-to-year variability of over 8.5%, and that most of this variability was due to changes in reporting methods over its period of analysis, especially when cross-comparing between Methods 2, 2F, 2G, 2H and CTM-041.⁶⁵ Others have found that the data reported exhibit a high degree of noise that suggests a significant degree of error which has not been adequately taken into account by EPA.⁶⁶ Without properly adjusting for this potential error, EPA overstates the degree of heat rate improvements that can be obtained from operating and maintenance practices.

⁶⁴ “GHG Abatement Measures – Technical Support Document (TSD) for Carbon Pollution Guidelines for Existing Power Plants: Emission Guidelines for Greenhouse Gas Emissions from Existing Stationary Sources: Electric Utility Generating Units” EPA, Docket No. EPA-HQ-OAR-2013-0602, June 10, 2014 at pg. 2-30.

⁶⁵ *Id.* at pg. 2-29.

⁶⁶ See Andover Technology comments, *supra* note 59 at pg. 6.

2. *A 2% heat rate reduction from equipment upgrades is not feasible for many plants, nor is the cost justifiable in light of the degree of heat rate reductions.*

EPA's finding of an additional 2% improvement based on equipment modifications is also flawed. In particular, EPA relies heavily upon the Sargent & Lundy study,⁶⁷ which describes various retrofits that theoretically can improve heat rate, as applied at two case studies.

However, the study does not describe any hard data at these EGUs that suggest that its estimated improvements could be attained at a large portion of the existing fleet. Despite this limitation, EPA wrongly attempts to stretch the study's conclusions to fit the CPP. Instead, the types of equipment upgrades available to a particular EGU are far from uniform. A given upgrade may produce significant heat rate improvements in one facility, but may not produce any improvements in another, or may not even be able to be installed at some facilities.

For example, the Sargent & Lundy report recommended increasing the economizer heat transfer surface, predicted to reduce heat rate by an average of 50-100 Btu/kWh.⁶⁸ However, such an implementation is often not feasible for the EGUs that have installed Selective Catalytic Reductions Technologies (SCRs), particularly because such facilities have specially altered ductwork to facilitate SCR function that compromises the effectiveness of economizers and reduces the amount of heat rate improvements that are achievable with such an upgrade.⁶⁹ Therefore, EPA has inadequately taken into account the specific amount of heat rate improvements available to individual facilities through equipment upgrades. Its failure to do so

⁶⁷ "Coal-Fired Power Plant Heat Rate Reductions," Sargent & Lundy LLC, January 22, 2009.

⁶⁸ *Id.* at pg. 2-3.

⁶⁹ *Id.* See also Andover Technology comments, *supra* note 59 at pgs. 6-7.

has led to a significant overstatement of feasible heat rate improvements, requiring recalculation within BSER building block 1.

EPA also fails to appreciate the magnitude of upfront capital costs of retrofit equipment upon which EPA bases its 2% heat rate improvement figure. This oversight renders the CPP patently unreasonable and unattainable for older coal-fired EGUs that may be approaching retirement. According to the EIA, the average operating heat rate for coal-fired EGUs is approximately 10,500 Btu/kwh.⁷⁰ The CPP calls for a reduction of 2% (210 Btu/kWh) through equipment upgrades. Based on projections from the Sargent & Lundy study, the capital cost for the most cost-effective combination of upgrades to attain this reduction is over \$10 million, plus another \$200,000 in annual operating costs.⁷¹ EPA rationalizes these costs by maintaining that such upgrades will eventually pay for themselves through increases in power generation efficiency.

This argument, however, presupposes that such coal-fired EGUs will be able to be kept in operation long enough to reap these benefits. But when considered in conjunction with retrofit demands imposed by other EPA programs, including the onerous MATS regulations, the high upfront costs of installing heat rate improvement equipment are all-the-more unreasonable in a regulatory setting that is highly inhospitable for coal-fired EGUs. Specifically, due to EPA's repeated failure to acknowledge the continued viability of coal as a vital energy source for the

⁷⁰ “Electric Power Annual 2012,” US Energy Information Administration, December 2013 at Table 8.1.

⁷¹We calculate this figure by taking the average heat rate reduction and cost for boiler island-, turbine island-, water treatment-, and emissions control-based upgrades and determining which combination would attain 210 Btu/kWh at the lowest cost.

country, coal-fired power plant operators are unlikely to be able to shoulder such retrofit costs without affirmation that their investments will bear fruit over the long-term.

Finally, EPA's finding of a 2% heat improvement necessarily assumes that no coal-fired EGUs have already implemented certain equipment upgrades. In reality, many operators have already taken such steps in the interests of both improving generation efficiency and lowering emissions. For instance, EPA's TSD references several examples of plants which have made upgrades to turbines, condensers, and other equipment.⁷² These examples are just the tip of the iceberg – many energy trade groups have long touted the economic benefits of improving heat rate, and newer plants often have incorporated at least some of these features into their design.⁷³ EPA's assumption that no facility has exhausted these upgrades is itself contradictory with its own simplistic position on cost-effectiveness: if such upgrades indeed reflect low- or no-net cost improvements, virtually every facility would have already implemented them.

A more careful analysis of the availability of heat rate improvements suggests that applying a blanket average percentage is improper; instead, the amount of improvements available must be determined on a far more facility-specific basis. For those facilities for which equipment upgrades make economic sense, such facilities likely have already made such improvements, thereby reducing the amount of further heat rate reductions that can be attained. For other facilities, however, the same degree of equipment upgrades may not be technologically feasible or cost-effective. As a result, BSER building block 1 represents a flawed determination

⁷² GHG Technical Support Document, *supra* note 64 at pg. 2-32.

⁷³ See Electric Power Research Institute, "Range and Applicability of Heat Rate Improvements," April 30, 2014; "Energy Efficient Solutions for Thermal Power Plants: Energy Efficiency Technologies ANNEX III Technical Report," World Energy Council, March 2014.

of the magnitude of heat rate improvements that can be achieved by a substantial subset of the coal fleet.

B. Implementation of Building Blocks 2 and 3 of the CPP would severely reduce electricity generation and threaten the supply and reliability of the power grid.

Building block 2 of the CPP calls for reducing CO₂ emissions by redispatching power generation from coal-fired EGUs to NGCC units with supposedly lesser carbon emissions. In addition to this building block constituting an “outside the fence” measure that exceeds EPA’s regulatory authority under the CAA, such sources of generation are not “adequately demonstrated” to be able to replace the significant contribution of coal-based power generation to the grid, nor are they remotely sufficient to meet the nation’s energy demands. Due to the significant threats that implementation of building block 2 would pose to the reliability of the grid and the availability of power for consumer use, we urge EPA to withdraw the CPP.

1. BSER Building Block 2’s reliance on redispatching generation to NGCC to a capacity factor of 70% is not adequately demonstrated.

Building Block 2 of the CPP involves redispatching power generation to NGCC units and away from coal-fired EGUs. In particular, the Plan envisions a shift to NGCC units that would operate at a continuous utilization rate of at least 70%.⁷⁴ However, while such redispatching is a common practice on a limited scale to adjust to changes in electricity demand and other system constraints, there are insufficient data to establish that redispatching to NGCC in the magnitude specified in the CPP can be achieved on a continuous basis to reliably provide base-load power. As the CPP itself acknowledges, only a miniscule fraction of NGCC units have ever been

⁷⁴ 79 F.R. 34862-34863.

operated at a sustained utilization rate of 70% or higher.⁷⁵ Moreover, some of these units attain such capacity factors only through cyclical operating patterns, rather than over sustained periods that can occur during high demand seasons. On the other hand, coal-fired EGUs have long been demonstrated to be a highly reliable generation source at virtually all capacity factors and demand periods. EPA's efforts to supplant such a valuable asset to the power grid is therefore misguided and imprudent.

EPA's primary rationale in support of large-scale redispatch is its finding that NGCC units are merely "technically capable" of meeting the 70% utilization rate goal, relying on the purported nameplate capacities of such units.⁷⁶ Yet there is often significant discrepancy between the theoretical nameplate capacity and the actual, as-tested capacity of NGCC units. In particular, nameplate capacities are derived from electrical generator output rather than generator motor unit capacity, such as that of turbines. Because motor unit capacity is typically rated well below generator capacity, nameplate capacities can be a misleading representation of an NGCC unit's true capacity, particularly since motor unit capacity is the predominant limiting factor of generator output. Ambient conditions at an NGCC unit also affect the degree of reduction from the nameplate capacity that is observed when determining a unit's as-tested capacity.⁷⁷ In some cases, there can be as high as a 50% difference between an NGCC unit's nameplate capacity and its as-tested capacity rating. Below is a table comparing nameplate and as-testing capacity ratings for select NGCC units in Pennsylvania:

⁷⁵ *Id.*

⁷⁶ GHG Technical Support Document, *supra* note 64 at pg. 3-6.

⁷⁷ See, e.g., B. Horii, E. Cutter, "Energy Efficiency Avoided Costs 2011," Energy and Environmental Economics, Inc., December 19, 2011; Duke Energy, Glossary of Terms: Nameplate Rating ("Actual capability can vary from the nameplate rating due to age, wear, maintenance or ambient conditions");

Table 1: Nameplate and Actual Capacities of Selected Natural Gas-Fired EGUs in Pennsylvania⁷⁸

Name	Nameplate Capacity (MW)	Actual Capacity (MW)	Capacity Factor
Allegheny Energy, Allegheny Co.	556	509	0.0268
Ontelaunee Energy Center, Berks Co.	728	465.7	0.1266
PPL Ironwood LLC, Lebanon Co.	778	660.1	0.1068

These differences are particularly meaningful when considered in the context of achieving a continuous 70% utilization rate. To achieve the 70% capacity factor of the nameplate capacity that EPA uses for purposes of determining state goals, NGCC units would realistically have to operate well above a 70% utilization rate with respect to its true, as-tested capacity. These utilization rates are wholly unprecedented and untested for purposes of meeting wholesale power grid demands. Some facilities would be required to sustain actual utilization rates over 100% in order to functionally meet EPA’s 70% goal, which is obviously unattainable.

These unattainable figures are exacerbated when accounting for planned outages and maintenance periods, as well as any lag time in obtaining necessary permitting or other regulatory approvals for constructing supporting NGCC infrastructure, such as pipelines for feedstock systems or improvements to facilitate power transmission from new facilities.

⁷⁸ Data taken from 2012 Form EIA-860 Data – Schedule 3, ‘Generator Data,’ Energy Information Administration and from “Power Plants in the Mid-Atlantic Region,” EPA, available at <http://www.epa.gov/reg3artd/globclimate/r3plants.html>.

Therefore, EPA's use of nameplate capacities to support its conclusion of the achievability of 70% utilization rates for NGCC units is entirely misguided.

Grid operators witnessed historically unprecedented power demands during the severe winter season earlier this year. For instance, the PJM Interconnection grid, providing power to over 60 million consumers with a capacity of 142 GW, experienced demand of 141 GW on January 7, 2014 – over a 99% grid utilization rate.⁷⁹ System failure was avoided only through the sustained peak generation of several coal-fired power plants. Instead of substituting a method of power generation that is unproven at capacities needed to fulfill grid demands, EPA should recognize the already-proven reliability of coal-fired EGUs as the preferred method of power generation.

2. *EPA's reliance upon renewable energy generation on a regional basis in Building Block 3 is fundamentally flawed.*

Building Block 3 of the CPP in part involves increasing generation capacity from renewable energy sources in lieu of generation from coal-fired and other fossil fuel-fired EGUs. To factor renewable energy contribution targets into its calculation of state goals, EPA essentially applied the regional average for renewable energy generation to each state within the region.⁸⁰ Such a methodology is flawed as it incorrectly assumes that the opportunities for renewable energy generation are equivalent among each state within the region. In reality, there are several critical differences in the availability of renewable energy generation among states, even within the same region.

⁷⁹“Recent Weather Impacts on the Bulk Power System,” Federal Energy Regulatory Commission, January 16, 2014 at 10 (available at <http://www.ferc.gov/legal/staff-reports/2014/01-16-14-bulk-power.pdf>)

⁸⁰ 79 F.R. 34866-34867.

For instance, EPA’s East Central region for purposes of the CPP includes Pennsylvania, West Virginia, Ohio, Maryland, Delaware and Virginia. There are considerable meteorological and topographical differences among these states: coastal states such as Virginia and Maryland have much greater opportunities for wind and solar development as compared to Pennsylvania and West Virginia. While EPA claims that its geographic regions group states with “similar profiles of RE potential,”⁸¹ the document it cites in support of its position indicates the contrary. In particular, the National Renewable Energy Laboratory’s GIS-based analysis of state RE potentials shows significant differences in photovoltaic and both onshore and offshore wind-based generation potentials in Pennsylvania and West Virginia as compared to Virginia, Maryland and Ohio.⁸² Based on these significant differences in RE potential, EPA’s methodology in calculating RE targets on a regional basis is plainly unreasonable.

In addition, EPA’s selective consideration of renewable portfolio standard (RPS) targets within a given state as evidence of its RE potential is wholly misguided. In many cases, these targets are purely aspirational and are subject to periodic refinement. Moreover, RPS targets, if enforceable in a particular state, are typically qualified by many state-level exclusions, incentives and offset programs. As a result, a state meeting its RPS targets based on its own internal criteria does not necessarily mean that it would meet EPA’s RE generation target, due to the lack of similar exclusions and incentive programs in EPA’s target. Particularly troubling is EPA’s treatment of states that have enacted RPS targets lower than that set by the CPP, or that have decided to not enact RPS targets at all. For states that have determined that numerical RPS

⁸¹ GHG Technical Support Document, *supra* note 64 at pg. 4-12.

⁸² National Renewable Energy Laboratory, “U.S. Renewable Energy Technical Potentials: A GIS-Based Analysis,” July 2012 at pgs. 10-15.

targets are not feasible, such as West Virginia, EPA decided to supplant these state-level decisions with the uniform regional standard. This illustrates the inconsistency in EPA's approach: on one hand, EPA believes RPS standards provide evidence of RE generation potential, but on the other, EPA disregards state determinations against implementing RPS standards or in favor of RPS standards lower than what EPA prescribes in the CPP.

Therefore, instead of applying a uniform RE generation factor among all states in the region when calculating state goals, EPA should more carefully consider the actual RE potentials on a more state-specific basis, and should yield to state-level decisions on the feasibility of an RPS standard. Due to its fatal methodological flaws in determining the amount of CO₂ emissions reductions achievable from building blocks 1, 2 and 3, the CPP's calculation of state goals is unreasonable and must be withdrawn.

Conclusion

As the CPP represents EPA's attempt to regulate the entire energy industry, it far exceeds the scope of EPA's statutory authority under the CAA. In addition, the CPP is based upon numerous methodological deficiencies, and will impose extraordinary hardships on employees in the coal industry, consumers seeking a reliable supply of electricity, and the national economy. The PCA thus urges EPA to withdraw the CPP.

Thank you for the opportunity to offer these comments.

Sincerely,

George Ellis

George Ellis

President, Pennsylvania Coal Alliance