



**Statement of Michael Catanzaro**  
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**Listening Session on EPA's Proposed Section 111(d) Clean Power Plan**  
**Pennsylvania Department of Environmental Protection**  
**September 25, 2014**

Deputy Secretary Brisini, DEP staff, thank you for the opportunity to testify this morning on EPA's proposed Section 111(d) Clean Power Plan. My name is Michael Catanzaro, and I'm Managing Director of the Energy and Natural Resources practice with FTI Consulting, Inc. Before joining FTI Consulting, I spent several years in public service, including as Senior Energy Advisor to the Speaker of the U.S. House of Representatives and Associate Deputy Administrator of the Environmental Protection Agency, where I worked on, among other things, implementation and enforcement of the Clean Air Act.

FTI Consulting is a global business advisory firm dedicated to helping organizations protect and enhance enterprise value in complex legal, regulatory and economic environments. FTI has been helping several coops and merchant plants, such as the Homer City Generating Station in Indiana County, assess possible impacts of EPA's proposed Clean Power Rule to implement section 111(d) of the Clean Air Act<sup>1</sup>.

I want to recognize the Deputy Secretary and his staff at the outset for DEP's White Paper, released in April, outlining a recommended state framework for compliance with EPA's Clean Power Plan. The white paper delineates a number of sound principles that EPA should follow to provide states with true, meaningful compliance flexibility. It also includes alternative proposals that, among other things, provide a more realistic baseline emissions profile for the Commonwealth and remove regulatory obstacles that discourage plant efficiency improvements. I will comment on those proposals in more detail later in my testimony.

### **Homer City Generating Station**

Today I am speaking on behalf of Homer City Generating Station. Homer City is a 1,884-MW coal-fired electric generating facility that provides enough electricity to power 2 million homes. The facility has and continues to be a good citizen for the local community and the Commonwealth as a whole: Homer City has about 260 full-time employees, 75 percent of whom are unionized; supports thousands of additional local jobs; and purchases 100 percent of its coal from Pennsylvania coal producers. It also pays \$2.9 million annually in state and local taxes.

In addition to its many economic benefits, Homer City is committed to environmental stewardship. The facility is undergoing an \$800 million renovation project to install state-of-the-art pollution control equipment. As the Pennsylvania DEP stated in 2012, "The controls are expected to remove approximately 100,000 tons of actual sulfur dioxide emissions annually. Secondary control of particulate matter (PM/PM10/PM2.5), mercury, lead, sulfuric acid mist, hydrogen chloride, fluorides, and volatile organic compounds (VOCs) is also expected." When completed, this project will make Homer City one of the cleanest burning coal-fired power plants in the U.S.

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<sup>1</sup> 42 U.S.C. § 7411(d).

Homer City is a so-called “merchant” power plant, meaning it sells power into wholesale, competitive electricity markets, has no way to pass on its environmental costs directly to rate payers, and gets dispatched based on variable costs. For purposes of reducing carbon dioxide emissions, this point is significant. Merchant plants are different than integrated utilities, which can obtain a regulated rate of return from state officials. Moreover, unlike other electric generators in the Commonwealth, which have a diversified fleet consisting of gas-fired plants and renewables, Homer City is a stand-alone power generation facility. As a result, because no cost-effective, commercially available technology exists to control carbon dioxide emissions, Homer City’s only option to comply with the proposed rule would be to purchase credits from lower emitting entities (in the event Pennsylvania adopts or joins an emissions trading regime) or curtail operations.

Both of these options would cause Homer City to operate less frequently, and as a result would impair its ability to recover its \$800 million investment, which was made to bring the facility into compliance with EPA’s recent regulations, including the Cross State Air Pollution Rule and the Mercury Air Toxics Standards finalized in 2012,<sup>2</sup> and to repay its bondholders and investors. This outcome threatens the continued operation of the plant, the jobs both at the plant and throughout the Commonwealth, affordable electricity, and economic opportunities the station provides the local community.

But you don’t have to take my word for it. Under EPA’s “Option 1,” described as the “State” approach, EPA’s IPM model forecasts Homer City’s Unit 1 retiring in 2020 and Unit 2 in 2025. That puts not only Homer City’s investors in jeopardy, but also the community that relies on Homer City for jobs, affordable power and economic development.

- Capacity factors for Homer City by unit in IPM modeling under various scenarios:
  - Note that in all scenarios, including base case, IPM has Homer City co-firing biomass in all units and all years

	Option 1 - State			Option 1 - Regional			Option 2 - State			Option 2 - Regional		
	Unit1	Unit2	Unit3	Unit1	Unit2	Unit3	Unit1	Unit2	Unit3	Unit1	Unit2	Unit3
2016	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
2018	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
2020	83%	-	83%	83%	78%	83%	83%	83%	83%	83%	83%	83%
2025	-	-	73%	83%	-	73%	83%	73%	81%	83%	83%	83%
2030	-	-	60%	73%	-	73%	83%	73%	83%	83%	83%	83%
2040	-	-	48%	60%	-	60%	73%	73%	73%	83%	83%	83%
2050	-	-	26%	65%	-	60%	73%	73%	73%	83%	83%	83%

- Run Years to (Actual) Years Represented Conversion:

Run Year	Years Represented
2016	2016-2017
2018	2018
2020	2019-2022
2025	2023-2027
2030	2028-2033
2040	2034-2045
2050	2046-2054

†Homer City has wet scrubber equipment installed on Unit 3, and dry scrubber equipment is being installed on Units 1 & 2. IPM shows this equipment all installed and operating.  
 ‡IPM results found at EPA’s CPP page under Power Sector Modeling. Information from RPE file in IPM results.

Now some may conclude from EPA’s analysis that, under other options proposed by EPA, Homer City’s units run at relatively high capacity factors, and therefore would continue to profitably generate power and revenue. But this conclusion obscures an important underlying reality. As a

<sup>2</sup> 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, 77 Fed. Reg. 9,304 (Feb. 16, 2012)

merchant plant, and one that relies on a project finance model to pay for the plant's operations and investments (a point I will expand on below), Homer City must generate sufficient revenues to not only run the facility, which includes fixed, variable, and overhead costs, but also the interest and principal due to its investors and bondholders, not to mention a rate of return on equity capital. At 70 or 80 percent capacity factors, Homer City would soon fall short of these obligations. Thus EPA's IPM model results don't offer a realistic picture of Homer City's future, which, under the Clean Power Plan, no matter which option is chosen, would be clouded by a significant risk of default and bankruptcy.

### FTI's Analysis

In FTI's white paper<sup>3</sup> on 111(d) released earlier this year (copies of which I will make available to PADEP), we found that the costs of EPA's rulemaking will fall disproportionately on non-diversified coal-fired generators, such as Homer City.

We examined several cases of individual plants in different parts of the country, ranging from merchant and municipal coal units operating in organized, competitive markets to geographically remote rural coops. In each case examined, there is no feasible means of complying with EPA's proposal aside from carbon capture and storage technology, which has not been widely demonstrated at commercial scale, and is not yet cost-effective. These plants, then, under EPA's proposed regime, will be faced with some combination of increased costs and decreased revenues, which will likely produce one or a combination of the following outcomes:

- (1) Higher electricity costs borne by their customers, often with no material reduction in CO<sub>2</sub> emissions;
- (2) Failure to recover the investment of bondholders and other creditors in electric generation-backed securities; and
- (3) Reduced likelihood that investments in emission reduction technologies to comply with other EPA regulations would be recovered.

That last point is worth exploring in more detail, as some analysts, including those at EPA, have overlooked its significance. Some have assumed that investments in pollution control technology amount to "sunk costs"—in other words, a cost that has been incurred and cannot be recovered. But as we show in our paper, the capital spent installing pollution controls is far from sunk once the technology retrofit is in service. To the contrary, as I noted earlier, many of these plants, including Homer City, rely on a project financing model to raise funds needed for large-scale retrofits. This stands in contrast to entities with numerous assets that can use so-called balance sheet financing.

Simply put, with project finance, the project may be the only cash flow-producing asset an entity owns. In this case, the owner has no choice but to issue debt supported by the assets and cash flows of the project, or the revenues that can be collected from captive customers. Thus revenues from the facility must not only support material financing costs in the form of interest and principal payments over the life of the investment, but also provide an opportunity for recovery of, and return on, equity capital.

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<sup>3</sup> *The Impact of a Fleet Emission Rate Averaging and Trading CO<sub>2</sub> Reduction Regulation on Non-Diversified Coal Generation Entities*. Professor Bradford Cornell, FTI Consulting. (February 2014).

I should note that our white paper, completed prior to the release of EPA's proposal, examined the impacts stemming from an emissions averaging and trading regime on these particular entities. Though EPA's proposal does not specifically require averaging or trading, but instead allows states to use those mechanisms to comply with the rule, our analysis and central conclusion still holds: *EPA's proposal sets unrealistic requirements and timetables that will leave coal-dominated, non-diversified entities without meaningful, cost-effective compliance options to remain in operation.*

Homer City illustrates our conclusion. Again, Homer City's only options are purchasing credits from other lower emitting entities or to run less often. In either case, the plant's revenues will decline, and therefore its financial ability to recoup its \$800 million investment in pollution controls will be significantly impaired.

### **Background on the Clean Power Plan**

Before I proceed further, I think it's important to provide some background on the Clean Power Plan. EPA published its proposed rule in the Federal Register on June 18, 2014<sup>4</sup>. FTI has been analyzing the rule over the last several months. Because of its scope and reach, the proposed rule has sparked considerable debate among stakeholders, policymakers, and the general public.

The Clean Power Plan was developed pursuant to President Obama's "Climate Action Plan," released on June 25, 2013.<sup>5</sup> Among other things, the Climate Action Plan renewed the President's pledge to "reduce greenhouse gas emissions in the range of 17 percent below 2005 levels." To help accomplish this goal, the President simultaneously issued a Presidential memorandum<sup>6</sup>, which directed EPA "to work expeditiously to complete carbon pollution standards for both new and existing power plants." The focus of today's hearing is on standards being developed for existing power plants.

The President's memorandum instructed EPA to do several things, including:

- Issue proposed regulations for existing power plants by no later than June 1, 2014;
- Issue final standards for existing power plants by no later than June 1, 2015; and
- Require states to submit to EPA so-called state implementation plans required under Section 111(d) by no later than June 30, 2016.

Importantly, President Obama ordered EPA to abide by several criteria in meeting these goals. The criteria include directly engaging states, given their "central role in establishing and implementing standards for existing power plants," as well as the public and leaders of affected stakeholder groups; "tailoring" regulations and guidelines to reduce costs, consistent with other rules and regulations affecting the power sector; developing approaches that allow for "regulatory flexibilities"; and ensuring that the standards are "developed and implemented in a manner consistent with the continued provision of reliable and affordable electric power for consumers and businesses."

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<sup>4</sup> Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830 (June 18, 2014)

<sup>5</sup> The President's Climate Action Plan, [www.whitehouse.gov](http://www.whitehouse.gov) (June 2013.)

<sup>6</sup> Presidential Memorandum -- Power Sector Carbon Pollutions Standards, [www.whitehouse.gov](http://www.whitehouse.gov) (June 25, 2013)

Consistent with the President's plan, EPA's proposal is designed to reduce power plant carbon dioxide emissions 30 percent below 2005 levels. For purposes of regulatory compliance, however, emissions and generation data from 2012 were chosen to determine each state's mandatory, enforceable emissions rate, expressed in pounds of CO<sub>2</sub> per megawatt hour of fossil-based electric generation. The program will commence in 2020, and EPA has established an interim emissions rate requirement in 2029 (based on the average of annual emissions rates from 2020 to 2029), with a final standard slated for 2030, which will thereafter be measured according to a rolling, three-year average of emission rates.

State emission rates were established according to EPA's application of four so-called "building blocks." The four building blocks are: 1) heat rate improvements of 6 percent (relative to 2012 average rates) at existing coal-fired steam EGUs; 2) re-dispatching natural gas combined cycle power plants to a 70 percent capacity factor; 3) maintaining financially at-risk nuclear units and increasing electric generation from non-hydro renewable resources; and 4) increasing demand-side energy efficiency.

These building blocks comprise EPA's determination of what constitutes the "best system of emission reduction," or BSER, under Section 111(d)<sup>7</sup>. Before I move on, some background on BSER and what the CAA requires under 111(d) is in order.

### **BSER, 111(d) and the Clean Air Act**

Section 111 of the Clean Air Act covers categories of stationary sources that may, in the EPA Administrator's judgment, cause, or contribute significantly to, air pollution "which may reasonably be anticipated to endanger public health or welfare."<sup>8</sup> Section 111(d) covers *existing* sources—in this case, *existing fossil fuel-fired electric generating units*.

Under Section 111(d), the EPA Administrator is required to:

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 which is not included on a list published under section 108(a)...but (ii) to which a standard of performance under this section would apply if such existing source were a new source...Regulations...under this paragraph shall permit the State in applying a standard of performance to any particular source...to take into consideration, among other factors, the remaining useful life of the existing source to which such standard applies.

The CAA defines the term "standard of performance" as a "standard [that] 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 non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated."

EPA has elected to look "beyond the fence line" of individual EGUs to other components of the electricity system. It is my understanding that this is the first time that EPA has taken this

<sup>7</sup> See 42 U.S.C. §7411(a) and (d).

<sup>8</sup> CAA § 111(b); 42 U.S.C. §7411(b).

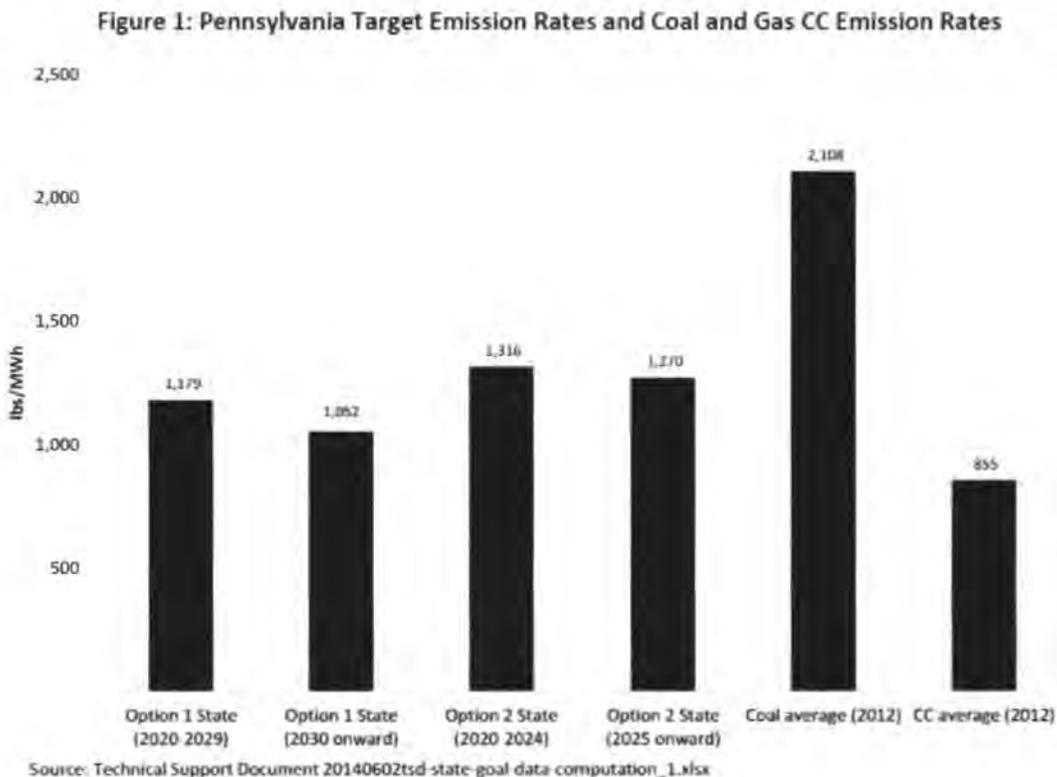
approach to establish performance standards. Apparently, requiring only unit-level reductions would not achieve the President's more ambitious emissions goals. To get more reductions, EPA has developed a "systems-based" approach that treats the entirety of the electric grid as the source category. Hence EPA's determination that BSER constitutes elements stretching from the generating plant all the way to the end-use consumer of electricity.

As noted above, under EPA's proposal, states are required to submit plans to EPA that demonstrate compliance with their assigned emission rates. In the preamble to the proposed rule, EPA notes that states have the flexibility to adopt any one, or all, of the four building blocks in developing compliance plans. EPA also noted that states are free to adopt other measures as appropriate, that is, beyond what EPA has defined as BSER, "provided that the state's plan achieves the required level of emission performance for affected sources."

### BSER and Pennsylvania

The legality and appropriateness of a systems-based approach under 111(d) is controversial, but that is not within the scope of my testimony today. I do want to comment on how EPA's approach applies to Pennsylvania, and what it portends for some electric generating facilities in the state.

After applying all four building blocks using 2012 emissions and generation data for Pennsylvania, EPA, under "Option 1-State," calculated an emissions rate for the state in 2030 of 1,052 lbs. CO<sub>2</sub> MWh.<sup>9</sup>



<sup>9</sup> U.S. EPA, Agency, Office of Air and Radiation, Technical Support Document for CAA Section 111(d) Emission Guidelines for Existing Power Plants, Docket ID No. EPA-HQ-OAR-2013-0602, Goal Computation Technical Support Document (June 2014).

The final goal, according to EPA, is equivalent to a 31 percent reduction in CO<sub>2</sub> emissions from the 2012 level. Moreover, according to testimony by Eugene Trisko before the Pennsylvania Senate Environmental Resources and Energy Committee on June 27, 2014, the relative contribution of each of the four building blocks to achieving Pennsylvania's final target in 2030 is as follows:

- Coal heat rate improvements: 11 percent;
- Natural gas re-dispatch from coal units: 11 percent;
- Nuclear energy: 7 percent;
- Renewable energy: 43 percent;
- Demand-side energy efficiency: 27 percent.

EPA's proposed emission rate for Pennsylvania is not achievable by any individual coal-fired unit. The only way for the Commonwealth to comply with the emission rate is to reduce coal generation and increase generation from other sources. According to EPA's calculations, the lion's share, or about 70 percent, of eventual compliance for Pennsylvania must come from building blocks 3 and 4. Given that the Commonwealth now generates 40 percent of its electricity from coal, and that its renewable energy potential is limited, achieving its emissions targets primarily with new renewable generation and demand-side energy efficiency will be extraordinarily difficult, and will have substantial costs ultimately borne by consumers and the state's economy.

Moreover, in calculating renewable energy potential, EPA assumes that states in a region can achieve the average of the state RPS requirements (with downward adjustments for regions that have high renewable targets). For Pennsylvania, EPA calculates a target RPS based on a simple average of the east central region states, which consists of eight states, two of which have no RPS (the EPA does not include those states in the renewable energy calculation). State renewable energy resource cost and performance options are also not considered in EPA's analysis. For example, Delaware, New Jersey and Maryland are coastal states that have excellent offshore wind potential and plan to exploit those resources. Pennsylvania, on the other hand, has limited renewable resources.

### **Path Forward**

Disproportionate economic impacts on these facilities can be alleviated in a number of ways. Some of them were outlined in the White Paper prepared by PADEP<sup>10</sup>. Based in part on our review of the PADEP White Paper, we see four prudent steps that EPA could take to improve the Clean Power Plan and mitigate the impacts on plants such as Homer City:

- 1) EPA should establish an emissions glide path that provides more time for entities to recoup investments in pollution control equipment installed to comply with other environmental regulations.
- 2) EPA should adopt reasonable changes to the Clean Air Act's New Source Review program, to prevent units that make efficiency improvements under the Clean Power Plan from triggering NSR.

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<sup>10</sup> Recommended Framework for the Section 111(d) Emissions Guidelines Addressing Carbon Dioxide Standards for Existing Fossil Fuel-Fired Power Plants. [www.depweb.state.pa.us](http://www.depweb.state.pa.us) (April 10, 2014).

3) EPA should allow states to utilize flexibility found in the Clean Air Act and in EPA's regulations implementing CAA section 111(d)(1). Those provisions allow states the option of adopting different standards and compliance schedules based on "remaining useful life" and other factors, such as recent investments in pollution controls. EPA's proposal needlessly eliminates this flexibility.

4) EPA should provide states with greater flexibility to use more representative baselines to establish mandatory emission rates, and allow credit for CO2 reductions that have already been achieved.

### **Conclusion**

Unless EPA adopts significant changes to its 111(d) proposal, and at the same time affords states the true flexibility that exists under the Clean Air Act and EPA's own regulations, a significant number of coal-fired power plants serving communities across the country, including Homer City, face the dire prospect of bankruptcy and retirement, threatening to disrupt the communities that rely on those plants.

Thank you for the opportunity to testify, and I look forward to the panel's questions.