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SIERRA CLUB

March 4, 2016

Independent Regulatory Review Commission
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Via Electronic Mail

Re: IRRC Consideration of Regulation #7-485: Additional RACT Requirements for Major Sources of NOx and VOCs

Dear members of the Independent Regulatory Review Commission,

The Sierra Club has significant concerns regarding Regulation #7-485: Additional RACT Requirements for Major Sources of NOx and VOCs (the "RACT Proposal"), as it neither comports with the requirements of the Clean Air Act nor is approvable by EPA. As Sierra Club and others have been saying to DEP for over two years, NOx Reasonably Available Control Technology, or RACT, for coal-fired boilers is selective catalytic reduction ("SCR"), with short-term NOx emission limits of 0.07 lbs/MMbtu. Nearly all remaining coal-fired units in Pennsylvania already have SCR, and have historically achieved even lower NOx emission rates—in fact, the only large coal plant in the state that lacks post-combustion controls is Brunner Island. But because the proposed regulation pending before the IRRC does not set a category-consistent RACT proposal, and instead merely requires facilities to run whatever controls they already have (and even then, not run them particularly well), it rewards facilities for dragging their feet on control installation, and will subject Pennsylvania and downwind states to vastly more ozone-forming NOx pollution than allowed under the Clean Air Act.

Indeed, the Citizens Advisory Council, in reviewing DEP's RACT Proposal, raised this same concern, warning that it had "serious reservations concerning the precedent being set" by "defining sources of RACT analysis . . . based upon whether those sources have or have not already installed particular emission control technology."[1] The Council stated that instead, sources claiming inability to meet a presumptive source category-wide RACT should "proceed

[1] Citizens Advisory Council Report to Sec. John Quigley (Sept. 21, 2015) at 1, attached hereto as Attachment A.

through case-by-case analysis . . . subject to public scrutiny and potential review by the Environmental Hearing Board."[2]

The IRRC should reject the RACT Proposal, and direct DEP to correct the deficiencies in the proposed regulation discussed in more detail below and in the attached materials already provided to DEP.

REGULATORY AND LEGAL BACKGROUND

In 2008, EPA revised the 1997 ozone NAAQS to 75 parts per billion with an 8-hour averaging period.[3] In 2012, EPA finalized designations, including nonattainment designations, under this 2008 NAAQS, adding to unresolved nonattainment designations in Pennsylvania under the preexisting 1997 NAAQS.

Seventeen counties centered around Pittsburgh and Philadelphia are designated nonattainment under the 2008 ozone NAAQS.[4] These seventeen counties contain over 8 million residents, or roughly two-thirds of Pennsylvania's total population.[5]

Because of these nonattainment designations, and because Pennsylvania is part of the Ozone Transport Region, DEP must require RACT for major stationary sources of the ozone precursor pollutants NOx and VOCs in Pennsylvania. *See* 42 U.S.C. § 7502(c)(1).

In Pennsylvania, coal-fired electrical generating units ("EGUs") are the largest single source of NOx, comprising 25 percent of all NOx emissions in the state.

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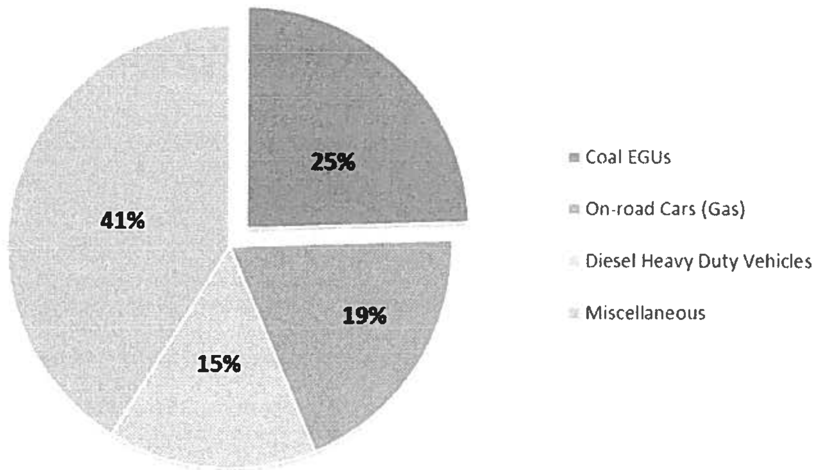
[2] *Id.*

[3] 73 Fed. Reg. 16,483 (March 27, 2008).

[4] These seventeen counties are Allegheny, Armstrong, Beaver, Berks, Bucks, Butler, Carbon, Chester, Delaware, Fayette, Lancaster, Lehigh, Montgomery, Northampton, Philadelphia, Washington and Westmoreland. *See* U.S. EPA Current Nonattainment Counties for All Criteria Pollutants, *available at* http://www3.epa.gov/airquality/greenbook/ancl.html.

[5] To be precise, 8,071,358 out of 12,764,475 Pennsylvanians (US Census Bureau 2012) live in ozone nonattainment areas.

Figure 1: Sources of NOx Pollution in Pennsylvania[6]



RACT determinations and RACT-based emission limits are required by the Clean Air Act for areas failing to attain National Ambient Air Quality Standards ("NAAQS"). *See* 42 U.S.C. § 7502(c)(1). RACT is a technology-forcing standard intended to ensure that polluting sources are controlled consistent with available methods for reducing pollution. As a result, RACT is a stringent standard, designed to induce and require improvements in control technology and reductions in pollutant emissions. Indeed, EPA has long maintained that "RACT should represent the toughest controls considering technological and economic feasibility that can be applied to a specific situation" and that "[a]nything less than this is by definition less than RACT."[7]

RACT is defined as "the lowest emissions limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility."[8] The RACT definition comprises two parts: technological feasibility and economic feasibility. The technological feasibility of applying an emission reduction method to a particular source should consider the source's process and operating procedures, raw materials, physical plant layout, and any other environmental impacts such as water pollution, waste disposal, and energy requirements."[9] As EPA has explained, "[e]conomic feasibility considers the cost of reducing emissions and the difference in costs between the particular source and other similar sources that have implemented emission reduction."[10] Specifically,

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[6] Data from the National Emissions Inventory 2011.
[7] Memorandum from Roger Strelow, Assistant Administrator for Air and Waste Management, U.S. EPA, to Regional Administrators, Regions I - X (Dec. 9, 1976), at 2 (hereinafter "Strelow Memo").
[8] COMAR 26.11.01.01.B(40); *accord* U.S. EPA, State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, 57 Fed. Reg. 55,620, 55,624 (Nov. 25, 1992).
[9] U.S. EPA, State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental, 57 Fed. Reg. 18,070, 18,074 (Apr. 28, 1992).
[10] 57 Fed. Reg. at 18,074.

> EPA presumes that it is reasonable for similar sources to bear similar costs of emission reductions. **Economic feasibility rests very little on the ability of a particular source to 'afford' to reduce emissions to the level of similar sources. Less efficient sources would be rewarded by having to bear lower emission reduction costs if affordability were given high consideration. Rather, economic feasibility for RACT purposes is largely determined by evidence that other sources in a source category have in fact applied the control technology in question.**[11]

Further, EPA has explained that RACT is not intended to enshrine existing installed control technologies, but rather is technology-forcing.[12] Thus, "[i]n determining RACT for an individual source or group of sources, the control agency, using the available guidance, should select the best available controls, *deviating from those controls only where local conditions are such that they cannot be applied there* and imposing even tougher controls where conditions allow."[13] Accordingly, given the widespread application of SCR, a less effective technology could only be chosen for a specific source if SCR physically could not be applied at that specific source.

DEP's current RACT Proposal does not set emission limits for coal-fired units consistent with the requirements of RACT. Instead, it sets a variety of different emission limits and control practice requirements for sources based on what level of post-combustion controls those units already have. Specifically, units equipped with SCR would be required to achieve an emission limit of 0.12 lbs. per million Btu of heat input when operating above 600 degrees (*see* RACT Proposal § 129.97(l)(viii)), while units equipped with SNCR would be required to operate their SNCR when input temperatures exceed 1600 degrees (*see* § 129.97(l)(ix)). A facility without controls, however, does not have to meet these limits; instead, different limits are imposed based on boiler design. For circulating fluidized bed boilers, this limit is 0.16 lbs/MMbtu. *Id.* at § 129.97(l)(vi)(A). But, a tangentially-fired boiler need only meet a limit of 0.35 lbs. of NOx per million Btu of heat input. *Id.* at § 129.97(l)(vi)(B).

SUBSTANTIVE COMMENTS

The current RACT Proposal is essentially a requirement that coal-fired facilities with post-combustion NOx controls operate those controls—albeit with significant exceptions—and that facilities without post-combustion controls, such as the massive Brunner Island coal-fired power plant, need not reduce their emissions.[14] As Sierra Club and others have repeatedly pointed out to DEP for over two years now, this approach is fundamentally inconsistent with RACT. RACT requires application of technology-forcing emission limits keyed to what can be achieved by

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[11] 57 Fed. Reg. at 18,074 (emphasis added).
[12] Strelow Memo at 2.
[13] Strelow Memo at 2 (emphasis added).
[14] While the RACT Proposal would set a NOx emission limit of 0.35 lbs/MMbtu on a 30-day average for uncontrolled coal facilities like Brunner Island, Brunner Island only averaged a NOx emission rate of 0.34 lbs/MMbtu in 2015, according to emissions data from EPA's Air Markets Program Data database, *available at* https://ampd.epa.gov/ampd/.

technology—such as SCR—that is technically and economically available to an emission source category. Here, for a largely SCR-controlled fleet such as that of Pennsylvania, fleetwide application of 0.07 lbs NOx/MMbtu emission rates on a short-term averaging period is what the Clean Air Act requires. Sierra Club and others have been presenting comments explaining as much to DEP since the beginning of 2014.

On January 17, 2014, Sierra Club and Clean Air Council ("CAC") sent a letter to DEP, alerting the agency to problems with the predecessor to the current RACT Proposal. A copy of this letter attached hereto as Attachment B. Specifically, the letter pointed out that most of the Pennsylvania coal fleet was already equipped with SCR (*see* Attachment A at 3-4) and that the SCR-equipped units demonstrated that reasonably available control technology in the form of SCR was not only capable of achieving very low NOx emission rates but that it *actually had* historically achieved such rates at facilities in Pennsylvania. Attachment A at 6. Indeed, as Sierra Club and CAC pointed out, large plants such as Montour and Keystone and have achieved NOx emission rates as low as 0.05 or even 0.04 lbs/MMbtu historically, even though they have in recent years emitted NOx at far greater levels. *Id.*

On June 30, 2014, Sierra Club, CAC, Environmental Integrity Project ("EIP") and Group Against Smog and Pollution ("GASP") submitted comments on the then-pending version of DEP's proposed RACT revisions. A copy of these comments and all exhibits cited therein is attached hereto as Attachment C. In these comments, Sierra Club, CAC, EIP, and GASP presented the following pieces of information and arguments:

- RACT is a technology-forcing standard that requires limits consistent with the highest level of control technology that is technically and economically available (Attachment C at 7-8)
- Over half the large coal units in the nation already have SCR, demonstrating technical and economic availability (*id.* at 8-9)
- The great majority of coal units in Pennsylvania also already have SCR, again demonstrating technical and economic availability (*id.* at 9)
- Pennsylvania SCR-equipped coal units have achieved NOx emission rates below 0.07 lbs/MMbtu for 30 day periods over 150 times in recent years (*id.* at 9-12)
- DEP itself has stated that SCR-equipped coal units can achieve NOx emission rates as low as 0.04 lbs/MMbtu or lower (*id.* at 12)

Sierra Club, CAC, EIP, and GASP reiterated that RACT applies source category-wide, and that DEP's approach of setting different emission limits based on what controls facilities already had was incompatible with RACT or the Clean Air Act.

Subsequently, DEP revised its RACT proposal, resulting in the form now pending before the IRRC. This form, as discussed above, still retains the incorrect fundamental approach of setting emission limits based on what controls are in place, instead of setting limits based on what controls are reasonably available. This new proposal exacerbated an existing problem: uncontrolled facilities—even ones such as the Brunner Island facility that are massive emitters of NOx—are effectively given a free pass.

On May 13, 2015, Sierra Club sent correspondence to DEP identifying problems with the revised/current RACT Proposal. A copy of this correspondence is attached hereto as Attachment D. Looming large among these concerns was a loophole in the Proposal: large facilities like Brunner Island lacking NOx controls would not be subjected to emission limitations that would actually limit emissions. In summary, the correspondence noted that:

- The proposal's interpretation of RACT as being based on what controls facilities have, as opposed to whether controls are reasonably available to facilities, is contrary to law, and creates problems like the Brunner Island loophole;
- Brunner Island is a massive source of NOx pollution that will under the Proposal go unregulated, thus threatening human health and jeopardizing Pennsylvania's ability to ultimately attain ozone standards;
- Exempting large sources like Brunner Island on the basis of its failure to install controls installed by its competitors creates perverse incentives, by rewarding delays in pollution abatement; and,
- Other states that send ozone-precursor pollution into Pennsylvania will be doing their own RACT determinations, and they likely will not limit their uncontrolled emitters if Pennsylvania does not.

Attachment D at 2. The correspondence also noted that the operation temperature exemptions to the limits in the RACT Proposal for SCR- or SNCR-equipped units were enormously problematic, unenforceable, and unnecessarily weakened the Proposal given that the Proposal already included 30-day averaging for emissions.

Although DEP has never provided any cost efficacy analysis indicating that SCR is neither technically nor economically available at facilities, like Brunner Island, Sierra Club has undertaken such an analysis, based on EPA-approved methodology, and has determined that Brunner Island could install and operate SCR, and remove NOx emissions sufficiently to hit a 0.07 lbs/MMbtu emission rate, for roughly $3,000 per ton.[15] A copy of this analysis is attached hereto as Attachment E. This cost is well-below the cost-efficacy thresholds considered by many states and EPA in considering RACT proposals.[16]

On August 7, 2015, Sierra Club conveyed to DEP a copy of a report prepared by Sonoma Technology, Inc., identifying the impacts of NOx emissions from Brunner Island on ozone formation in parts of Pennsylvania and in neighboring states. A copy of the letter to DEP and the enclosed Sonoma Report is attached hereto as Attachment G. Specifically, the Sonoma

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[15] Notably, the Comment Response document prepared by DEP only responded to comments on the original proposed RACT regulation changes, not the significantly different version before the IRRC now. Thus, much of the material submitted by Sierra Club and other entities addressing the changes in DEP's RACT approach between Spring of 2014 and 2015 were ignored by DEP in its Comment Response.

[16] DEP has also approved installation of gas-firing capacity at Brunner Island, in a plan approval attached hereto as Attachment F. By burning gas instead of coal, Brunner Island could likely dramatically reduce NOx emissions at zero or even negative cost, underscoring the impropriety of effectively exempting the facility from regulation in the RACT Proposal.

modeling found that emissions from Brunner Island—because of the large amount of NOx the facility emits—were responsible for impacts of up to 10 parts per billion in portions of Pennsylvania (compared to the 75 parts per billion ozone standard), and that significant ozone impacts traceable to Brunner Island were found in states from North Carolina all the way to the Canadian border.

DEP has subsequently proposed to set an annual NOx emission cap for Brunner Island of 14,254 tons of NOx per year; however, not only is this proposal completely inconsistent with RACT (if Brunner were to emit at a rate reflective of SCR operation, it would emit roughly 2,000 tons of NOx per year, not over 14,000 tons per year), it would also "cap" Brunner's emissions at a level thousands of tons per year greater than what Brunner Island actually emits. A copy of Sierra Club's comments on this proposal, sent to DEP on February 15, 2016, is attached hereto as Attachment H.

CONCLUSION

For the foregoing reasons, the IRRC should reject the RACT Proposal, and direct DEP to revise it to include SCR-consistent NOx emission rates for the entire coal-fired emission source category in the state.

Sincerely,

/s/

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Citizens Advisory Council

to the Department of Environmental Protection
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September 21, 2015

The Honorable John Quigley
Secretary
PA Department of Environmental Protection
Rachel Carson State Office Building
Harrisburg, PA 17105-2063

Dear Secretary Quigley:

Pursuant to the requirements of Section 7.6 of the Air Pollution Control Act, on September 15, 2015, staff from the Department of Environmental Protection (Department) provided a presentation to members of the Citizens Advisory Council (CAC) on the draft final rulemaking "Additional RACT Requirements for Major Sources of NOx and VOC emissions". The rulemaking amends 25 Pa Code Chapters 121 and 129 to adopt presumptive RACT requirements and RACT emission limitations for certain major stationary sources of NOx and VOC emissions. The CAC understands the adoption and implementation of RACT regulations in Pennsylvania is federally required and that DEP will submit the rulemaking, upon its final-form publication, to the Environmental Protection Agency (EPA) for approval as a revision to the Commonwealth's State Implementation Plan (SIP).

At the CAC's September 15, 2015, meeting, Council unanimously voted to concur with advancing the above referenced draft final regulations to the Environmental Quality Board for action. The CAC in general supports the adoption of the proposed RACT II regulations as an appropriate step forward in relation to the control of ozone precursor (nitrogen oxide and volatile organic compound) emissions, subject to the following concerns and recommendations:

1. The CAC has serious reservations concerning the precedent being set in the regulations of defining sources of RACT analysis (in this case, coal fired electric generation plants) based upon whether those sources have or have not already installed particular emission control technology (e.g., selective catalytic reduction technology for NOx control). The CAC believes it would be preferable in instances where it may not be feasible or cost-effective for particular facilities to meet presumptive RACT limits applied to all other sources in the same general category that such facilities proceed through case-by-case analysis as otherwise provided in the RACT rules, whereby such analysis is subject to public scrutiny and potential review by the Environmental Hearing Board.

2. The CAC believes the definition of $Ei_{allowable}$ in Section 129.98(e) of the draft final rulemaking is vague and warrants amendment. The term as it is currently defined references that an allowable NOx mass emissions rate may be computed by using the more stringent applicable allowable emission rate limitation imposed

on an air contamination source. However, no specifications are included in the definition to clarify what applicable emission rate limitations can be used in the calculation. In order to define the term with more specificity, the CAC recommends the definition of $Ei_{allowable}$ be modified to clarify that the more stringent numerical emission rate to be used in calculating the alternative facility-wide or system-wide NOx RACT emissions limitation shall be based on the emissions limit established in regulation, an existing permit, a consent decree or a Department order.

3. The CAC recommends that the Department seek further clarification from EPA in order to amend Section 129.98(a) of the rulemaking to permit averaging across ozone non-attainment areas under circumstances where sources within the more serious non-attainment area undertakes over-control (meeting more stringent limitations), to be averaged with sources in less serious non-attainment areas. This would promote NOx and VOC emission reductions closer to the areas where those reductions would provide the most benefit in terms of ozone reduction.

The CAC appreciates the Department's cooperation in providing detailed information on this rulemaking to Council, including the presentation it provided to the CAC on September 15, 2015.

If you have any questions regarding Council's action on the above-referenced regulation, please contact me at 717.787.8171 or by email at mtate@pa.gov.

Sincerely,

Michele L. Tate

Michele L. Tate
Executive Director
Citizens Advisory Council

cc: Joyce Epps, Director, DEP, Bureau of Air Quality
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January 17, 2014

VIA ELECTRONIC MAIL AND U.S. MAIL

Re: Proposed RACT Rulemaking

Dear Stationary Sources Chief Randy Bordner and Assistant Counsel Robert Reiley,

Clean Air Council ("CAC") and the Sierra Club have reviewed the proposed rulemaking Pennsylvania Environmental Quality Board ("EQB") is preparing concerning reasonably available control technology ("RACT") requirements and emission limits for emissions of nitrogen oxides ("NOx") and volatile organic compounds ("VOCs") from certain major stationary sources, and applaud the decision to revise RACT requirements in Pennsylvania.

However, the proposed rulemaking suffers from two large problems. First, it fails to set sufficiently stringent NOx emission limits for coal-fired boilers, and moreover proposes RACT technology that is actually inferior to what is already in place in the majority of coal-fired electric generating units ("EGUs") in Pennsylvania. Second, the contemplated alternative compliance mechanisms would make it very unlikely that significant ozone reduction would be achieved, as their long-term averaging periods and bubbling of emissions across multiple sources would allow potentially extreme spatial and temporal hot spots of NOx and VOCs.

For those reasons, as more thoroughly explained below, EQB should revise the proposed RACT rulemaking to incorporate more stringent NOx emission limits and to close the loopholes in the contemplated alternative compliance mechanisms.

Regulatory Background

RACT determinations and RACT-based emission limits are required by the Clean Air Act for areas failing to attain National Ambient Air Quality Standards ("NAAQS"). *See* 42 U.S.C. § 7502(c)(1). RACT is defined as the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. *See, e.g.*, 57 Fed. Reg. 55,620, 55,624 (Nov. 25, 1992). Accordingly, RACT determinations must set limits as rigorous as could be met through use of feasible control technology.

In 2008, EPA revised the 1997 ozone NAAQS to 75 parts per billion with an 8-hour averaging period. 73 Fed. Reg 16,483 (March 27, 2008). In 2012, EPA finalized designations, including nonattainment designations, under this 2008 NAAQS, adding to unresolved nonattainment designations in Pennsylvania under the preexisting 1997 NAAQS. Because of these nonattainment designations, and because Pennsylvania is part of the Ozone Transport Region, RACT must be set for major stationary sources of the ozone precursor pollutants NOx and VOCs in Pennsylvania.

EQB has accordingly begun the process of proposing a rulemaking to revise RACT standards in Pennsylvania for these pollutants.

The RACT Proposals for Coal-Fired Combustion Are Far Too Lax

Under the contemplated rulemaking, the presumptive RACT NOx emission limit for a coal-fired boiler would be an extremely permissive range of between 0.45 lbs/MMBtu and 0.20 lbs/MMBtu. *See* Proposed 25 Pa. Code § 121.97(g)(1)(v)-(iv) (setting limits of 0.45 lbs/MMBtu for coal combustion units with heat inputs between 50 MMBtu/hour and 250 MMBtu per hour, and limits of 0.20 lbs/MMBtu, 0.35 lbs/MMBtu, and 0.40 lbs/MMBtu for larger units using circulating fluidized bed technology, tangentially fired technology, or other boiler technology, respectively). This is, according to EQB, reflective of RACT of low NOx burners ("LNB"). *See* Regulatory Analysis Form at 13.

Such a RACT limit is not only based on technology inferior to that *already in place* at nearly all coal-fired EGUs in Pennsylvania, but is also significantly more permissive than what those facilities are already and demonstrably capable of achieving, contrary to the requirements for RACT. Further, these limits are much more lax than what other, similarly-situated mid-

Atlantic states are proposing and implementing as RACT for NOx. Finally, tighter NOx limits at coal-fired units could readily be achieved at *below* the cost threshold of $2,500 EQB employed to justify the presumptive RACT.

1. *The Majority of Coal-Fired EGUs in Pennsylvania Already Have Controls Better than the Proposed RACT*

Although the proposed rulemaking contemplates low NOx burners as RACT, the majority of coal-fired electric-generating boilers in Pennsylvania are already equipped with better NOx controls. In fact, only a handful of small boilers lack low NOx burners; by contrast, *every single other coal-fired EGU boiler has controls that exceed the RACT as proposed in the rulemaking. See* Table 1, *infra.*

This disparity is particularly stark when viewed in terms of nameplate capacity: over 85% of the EGU coal fleet in terms of capacity already has controls or will shortly have controls[1] surpassing the RACT contemplated in the proposed rulemaking.

Table 1: Pennsylvania Coal-Fired EGU Boilers and Current NOx Controls[2]

Plant Name	Unit ID	Nameplate Capacity (MW)	NOx Controls
AES Beaver Valley *(Cogen)*	GEN 3	114	LNBO, SNCR
Bruce Mansfield	1	914	LNBO, SCR
Bruce Mansfield	2	914	LNBO, SCR
Bruce Mansfield	3	914	LNBO, SCR
Cambria *(Cogen)*	GEN1	98	SNCR
Cheswick Power Plant	1	637	LNC3, SCR
Colver Power Project *(Waste Coal)*	COLV	118	SNCR
Conemaugh	1	936	LNC3, SCR 2014
Conemaugh	2	936	LNC3, SCR 2014
Ebensburg Power	GEN1	58	None
Foster Wheeler *(Cogen)*	SG-101	47.3	FBC
Homer City Station	1	660	LNBO, SCR
Homer City Station	2	660	LNBO, SCR
Homer City Station	3	692	LNBO, SCR
John B Rich Memorial *(Waste Coal)*	GEN1	88	FBC, OV

[1] Conemaugh will be installing SCR on its two coal-fired boilers this year.
[2] All of the information displayed in Table 1 was retrieved from EPA's Air Market Program Database (see http://ampd.epa.gov/ampd/) or Title V air permits for the respective facilities. Table 1 employs the following acronyms: **LNBO**: Low NOx Burners; **LNC3**: Low NOx Coal and Air Nozzles with Close Coupled & Separated Overfire Air; **FBC**: Fluidized Bed Combuster; **OV**: Overfire Air.

Keystone	1	936	LNC3, SCR
Keystone	2	936	LNC3, SCR
Kline *(Cogen)*	GEN1	57.5	FBC
Northampton *(Waste Coal)*	GEN1	114	SNCR
Panther Creek *(Waste Coal)*	GEN1	94	SNCR
PPL Brunner Island	1	363	LNC3
PPL Brunner Island	2	405	LNC3
PPL Brunner Island	3	790	LNC3
PPL Montour	1	806	LNC3, SCR
PPL Montour	2	819	LNC3, SCR
Scrubgrass *(Waste Coal)*	GEN1	95	SNCR
Seward *(Waste Coal)*	FB1	585	SNCR
St Nicholas *(Cogen)*	SNCP	99	FBC
Westwood Generating Station	GEN1	36	None
Wheelabrator Frackville Energy	GEN1	48	FBC, Other

As a result, the RACT proposal would affect only seven units (highlighted in Table 1), or merely 3% (433.8 megawatts out of the total 13,970 megawatts) of coal-fired EGU capacity in Pennsylvania. Effectively, the proposed rulemaking contemplates RACT that lags immensely behind what is overwhelmingly already in place in Pennsylvania.

2. *When Coal-Fired EGUs in Pennsylvania Run Their Existing Controls, They Emit Much Less NOx than the RACT Limits Contemplate*

The actual historical performance of the Pennsylvania coal-fired EGU fleet demonstrates that the NOx emission rates for coal-fired combustion units in Pennsylvania's RACT proposal are far too lax. Based on the 2012 data available in EPA's Clean Air Markets Program Database, all of the coal combustion units 60 megawatts or larger in Pennsylvania are already in compliance with the proposed NOx emission rates. Indeed, many of these units achieved much lower NOx emission rates in 2012, such as Bruce Mansfield, the largest coal-fired power plant in Pennsylvania. Bruce Mansfield Units 1-3 emitted average NOx rates of 0.1 lbs/MMBtu, 0.11 lbs/MMBtu, and 0.11 lbs/MMBtu respectively, which are all substantially lower than the 0.40 lbs/MMBtu emission rate proposed as RACT for this plant. *See* Table 2, *infra*.

Moreover, a number of the plants equipped with highly effective NOx emission controls such as Selective Catalytic Reduction ("SCR") have demonstrated that they can achieve very low emission rates for at least 60 consecutive days:

Table 2: Pennsylvania Coal-Fired EGU Boilers and Historical NOx Emission Rates[3]

Plant Name	Unit ID	Name-plate Capacity (MW)	Pro-posed RACT	2012 Avg NOx Rate (lbs/ MMBtu)	2012 Avg O3 Season NOx Rate (lbs/ MMbtu)	Lowest 60 Day Avg NOx Rate (lbs/ MMBtu)	Lowest 60 Day Dates
AES Beaver Valley *(Cogen)*	GEN 2	35	N/A	N/A	N/A	N/A	N/A
AES Beaver Valley *(Cogen)*	GEN 3	114	N/A	N/A	N/A	N/A	N/A
Bruce Mansfield	1	914	0.40	0.100	0.110	0.060	5/7-9/30/03
Bruce Mansfield	2	914	0.40	0.110	0.123	0.064	6/1-8/31/03
Bruce Mansfield	3	914	0.40	0.110	0.108	0.066	5/1-6/30/05
Cambria *(Cogen)*	GEN1	98	N/A	N/A	N/A	N/A	N/A
Cheswick	1	637	0.35	0.310	0.310	0.077	5/1-6/30/03
Colver Power *(Cogen)*	COLV	118	N/A	N/A	N/A	N/A	N/A
Conemaugh[4]	1	936	0.35	0.315	0.319	0.28	5/21-7/21/00
Conemaugh	2	936	0.35	0.303	0.299	0.25	5/16-7/16/00
Ebensburg Power *(Waste Coal)*	GEN1	58	0.40	N/A	N/A	N/A	N/A
Homer City	1	660	0.40	0.178	0.170	0.061	6/9-9/23/05
Homer City	2	660	0.40	0.233	0.220	0.088	7/27-9/27/05
Homer City	3	692	0.40	0.198	0.207	0.070	6/14-8/10/05
John B Rich *(Cogen)*	GEN1	88	0.20	N/A	N/A	N/A	N/A
Keystone	1	936	0.40	0.355	0.361	0.047	7/8-9/4/09
Keystone	2	936	0.40	0.350	0.340	0.042	7/7-9/30/08
Northampton *(Waste Coal)*	GEN1	114	0.20	N/A	N/A	N/A	N/A
Panther Creek	GEN1	94	N/A	N/A	N/A	N/A	

[3] All of the information displayed in Table 2 was retrieved from EPA's Air Market Program Database (*see* http://ampd.epa.gov/ampd/) or Title V air permits for the respective facilities. "N/A" corresponds to entries for small sources for which the Air Market Program Database data was not available.

[4] As noted above, Conemaugh will be installing SCR on its two coal-fired boilers later this year. If the controls are operated, Conemaugh's ability to lower NOx emissions is thus likely to decrease significantly.

(Waste Coal)							N/A
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PPL Brunner Island	2	405	0.40	0.379	0.378	0.28	7/7-9/7/05
PPL Brunner Island	3	790	0.40	0.340	0.331	0.24	7/14-9/14/05
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PPL Montour	2	819	0.40	0.390	0.414	0.058	11/16/10-1/17/11
PPL Montour	11	17	0.40	N/A	N/A	N/A	N/A
Scrubgrass *(Waste Coal)*	GEN1	95	N/A	N/A	N/A	N/A	N/A
Seward *(Waste Coal)*	FB1 Unit 1	585	0.20	0.088	0.082	0.082	5/16-7/16/07
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Wheelabrator Frackville Energy	GEN1	48	0.20	N/A	N/A	N/A	N/A

For example, while PPL Montour Units 1 and 2 each had 2012 annual NOx emission rates of 0.39 lbs/MMBtu, Unit 1 achieved 0.07 lbs/MMBtu (June 3 to August 5, 2008) and Unit 2 achieved 0.05 lbs/MMBtu (November 16, 2010 to January 17, 2011). Similarly, while Keystone Units 1 and 2 emitted NOx at an average annual rate of 0.35 lbs/MMBtu in 2012, even though both units can achieve 0.04 lbs/MMBtu for at least 60 days (July 8 to September 4, 2009, and July 7 to September 30, 2008, respectively.)

Plainly, all of Pennsylvania's significantly sized coal-fired EGUs are capable of complying with much more rigorous standards than those EQB is contemplating with the technology currently in place. This RACT proposal is accordingly insufficient as it suggests a standard below what is actually available and currently in practice—in effect, the proposed rulemaking would confer *no benefits* in terms of emissions reductions from these facilities. Ignoring the emission levels actually achieved and achievable by facilities employing controls already in place is thoroughly inconsistent with a proper RACT determination; the limits contemplated by EQB here are a far cry from the lowest emission limitation capable of being met by available control technology.

3. *The RACT Limits in the Proposed Rulemaking Fall Far Short of Those In Other States*

The RACT limits for coal-fired boilers contemplated in the proposed rulemaking are significantly out of step with those of nearby states. Maryland, for example, is proposing RACT limits for nearly every single one of its coal-fired EGUs of 0.11 lbs/MMBtu or less on a 24-hour averaging period; for some units, Maryland is proposing limits as low as 0.06 lbs/MMBtu.[5]

New York has implemented similarly stringent NOx limits as part of its RACT determination. There, RACT for coal-fired boilers is 0.20 lbs/MMBtu for wet-bottom coal cyclone boilers, 0.12 lbs/MMBtu for tangential and wall coal-fired boilers, and 0.08 lbs/MMBtu for fluidized bed coal-fired boilers:

Table 3: New York RACT Determination NOx Emission Limits (lbs/MMBtu)[6]

Fuel Type	Tangential	Wall	Cyclone	Fluidized Bed
Gas Only	0.08	0.08	na	na
Gas/Oil	0.15	0.15	0.20	na
Coal Wet Bottom	0.12	0.12	0.20	na
Coal Dry Bottom	0.12	0.12	na	0.08

Likewise, Delaware has adopted regulations restricting NOx emissions much more stringently than Pennsylvania is contemplating in the proposed rulemaking. For coal-fired units larger than 25 megawatts, Delaware sets a NOx emission limit of 0.125 lb/MMBtu, demonstrated on a rolling 24-hour average basis. *See* 7 Del. Admin. Code § 1146-4.3.

As such, Pennsylvania's contemplated RACT emission limits are multiple times higher than those being set or already set by neighboring states. Again, this is inconsistent with a proper RACT determination.

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4. *Failing to Impose RACT Limits in Line with the Controls Currently on Pennsylvania Coal-Fired EGUs Places Greater Burdens on Other Sources*

As noted above, a RACT determination of low NOx burners and emission limits ranging from 0.20-0.45 lbs/MMBtu, as the proposed rulemaking contemplates, is inconsistent with the stronger controls and higher reduction capabilities of the coal-fired EGU fleet in Pennsylvania. This is particularly problematic given EQB's own calculations concerning cost-effective RACT—by failing to require coal-fired EGUs to achieve low-cost reductions and operate already-installed controls, a greater and more expensive share of the overall NOx reductions Pennsylvania seeks to achieve falls on other NOx sources.

Pennsylvania determined that a reasonable cost per ton of NOx reduction is \$2,500. *See* Regulatory Analysis Form at 12. While the proposed rulemaking would set RACT for coal-combusting units at a cost of only \$849 per ton of NOx, it sets control requirements for nearly every other source category consistent with much more costly reductions: in excess of \$2,400 per ton for natural gas boilers, No. 2 fuel oil boilers, lean burn engines, and natural gas turbines. *Id.* at 13. Yet, further reductions in NOx emissions can readily be achieved by coal-fired combustion units at prices less than those contemplated in determining RACT controls for other sources—particularly where, as here *nearly every large coal-fired EGU already has those controls installed.*

Operation of SCR and SNCR technology at Pennsylvania's coal-fired EGU fleet would be dramatically cheaper than the presumptive reasonable cost of \$2,500 per ton of NOx reduced, as the capital costs of installation have already been incurred. Further, even for those few boilers that lack controls superior to the contemplated RACT of low NOx burners, installation and operation of SNCR would achieve reductions of NOx at significantly less than \$2,500 per ton.

Essentially, by only requiring coal-fired units to operate inexpensive and relatively ineffective controls, the proposed rulemaking shifts the burden of NOx reductions to other sources, which can have a detrimental effect on Pennsylvania's economic competitiveness. Again, any RACT determination for NOx in Pennsylvania should incorporate the controls already in place and the reduction levels already achievable by coal-fired EGUs.

The Alternative Compliance Mechanisms in the Proposed Rulemaking Severely Undercut Any Ozone Reduction Benefits the RACT Standard Would Engender

As currently written, the proposed rulemaking contains two large loopholes to the emission limits contemplated for all sources: 30-day rolling averaging, and the ability to bubble emissions systemwide. *See* Proposed 25 Pa. Code § 129.98(a). Both of these alternative compliance mechanisms would severely undercut the proposed rulemaking's ability to deliver necessary reductions in ozone.

First, 30-day rolling averages are entirely inconsistent with the short-term standards in the ozone NAAQS. The 2008 ozone NAAQS is an 8-hour standard, recognizing the strong variability in ozone concentrations and the significant impacts to human health that come from even relatively short-term exposure to ozone. By proposing to afford NOx and VOCs emitters the ability to average potentially weeks of high emissions against shorter periods of low or no emissions, the contemplated rulemaking would permit large swings in NOx and VOCs emissions, and accordingly in concentrations of ozone.

Second, the problem identified above is only exacerbated by allowing bubbling of emissions not only among multiple sources at a single facility, but system-wide across sources owned by a single operator. Failing to require reductions at all sources, and instead allowing some sources to over-reduce to allow others to go on polluting at heightened levels, would allow the creation of ozone hot spots. Furthermore, given the reality that many large sources of NOx—such as the coal-fired EGUs discussed above—already have pollution controls superior to what the proposed rulemaking contemplates as RACT, this provision would allow the continuation of a situation in which the operator of one facility could simply run its pollution controls so that the remaining sources owned by that operator need not run controls at all. Effectively, the combination of lax limits for sources such as coal-fired EGUs and the bubbling provision could ensure that very few, if any, large coal-fired sources of ozone-causing pollution reduce emissions at all. Such a result is entirely inappropriate. Accordingly, the alternative compliance mechanisms should be tightened to remove long-term 30-day averaging periods and to disallow bubbling of emissions across potentially geographically far-flung systems of facilities.

Conclusion

As explained above, the proposed rulemaking to set RACT for Pennsylvania would incorporate improperly permissive NOx emission limits for coal-fired EGUs, and would involve a technological standard *inferior* to what is in place for the vast majority of Pennsylvanian coal-fired EGUs. Before EQB releases the draft regulations for notice and comment, it should revise them to correct these deficiencies.

Additionally, the alternative compliance mechanisms in the proposed rulemaking should be altered to reflect the short-term nature of the ozone NAAQS, and should not allow bubbling emissions across fleets that may be spread out far across the state.

We would be happy to meet with you to discuss Pennsylvania's development of a revised ozone RACT, or to provide any additional information you may find useful.

Sincerely,

____/s/________________________

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EXHIBIT 1

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January 17, 2014

VIA ELECTRONIC MAIL AND U.S. MAIL

Re: Proposed RACT Rulemaking

Dear Stationary Sources Chief Randy Bordner and Assistant Counsel Robert Reiley,

Clean Air Council ("CAC") and the Sierra Club have reviewed the proposed rulemaking Pennsylvania Environmental Quality Board ("EQB") is preparing concerning reasonably available control technology ("RACT") requirements and emission limits for emissions of nitrogen oxides ("NOx") and volatile organic compounds ("VOCs") from certain major stationary sources, and applaud the decision to revise RACT requirements in Pennsylvania.

However, the proposed rulemaking suffers from two large problems. First, it fails to set sufficiently stringent NOx emission limits for coal-fired boilers, and moreover proposes RACT technology that is actually inferior to what is already in place in the majority of coal-fired electric generating units ("EGUs") in Pennsylvania. Second, the contemplated alternative compliance mechanisms would make it very unlikely that significant ozone reduction would be achieved, as their long-term averaging periods and bubbling of emissions across multiple sources would allow potentially extreme spatial and temporal hot spots of NOx and VOCs.

For those reasons, as more thoroughly explained below, EQB should revise the proposed RACT rulemaking to incorporate more stringent NOx emission limits and to close the loopholes in the contemplated alternative compliance mechanisms.

Regulatory Background

RACT determinations and RACT-based emission limits are required by the Clean Air Act for areas failing to attain National Ambient Air Quality Standards ("NAAQS"). *See* 42 U.S.C. § 7502(c)(1). RACT is defined as the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. *See, e.g.*, 57 Fed. Reg. 55,620, 55,624 (Nov. 25, 1992). Accordingly, RACT determinations must set limits as rigorous as could be met through use of feasible control technology.

In 2008, EPA revised the 1997 ozone NAAQS to 75 parts per billion with an 8-hour averaging period. 73 Fed. Reg 16,483 (March 27, 2008). In 2012, EPA finalized designations, including nonattainment designations, under this 2008 NAAQS, adding to unresolved nonattainment designations in Pennsylvania under the preexisting 1997 NAAQS. Because of these nonattainment designations, and because Pennsylvania is part of the Ozone Transport Region, RACT must be set for major stationary sources of the ozone precursor pollutants NOx and VOCs in Pennsylvania.

EQB has accordingly begun the process of proposing a rulemaking to revise RACT standards in Pennsylvania for these pollutants.

The RACT Proposals for Coal-Fired Combustion Are Far Too Lax

Under the contemplated rulemaking, the presumptive RACT NOx emission limit for a coal-fired boiler would be an extremely permissive range of between 0.45 lbs/MMBtu and 0.20 lbs/MMBtu. *See* Proposed 25 Pa. Code § 121.97(g)(1)(v)-(iv) (setting limits of 0.45 lbs/MMBtu for coal combustion units with heat inputs between 50 MMBtu/hour and 250 MMBtu per hour, and limits of 0.20 lbs/MMBtu, 0.35 lbs/MMBtu, and 0.40 lbs/MMBtu for larger units using circulating fluidized bed technology, tangentially fired technology, or other boiler technology, respectively). This is, according to EQB, reflective of RACT of low NOx burners ("LNB"). *See* Regulatory Analysis Form at 13.

Such a RACT limit is not only based on technology inferior to that *already in place* at nearly all coal-fired EGUs in Pennsylvania, but is also significantly more permissive than what those facilities are already and demonstrably capable of achieving, contrary to the requirements for RACT. Further, these limits are much more lax than what other, similarly-situated mid-

Atlantic states are proposing and implementing as RACT for NOx. Finally, tighter NOx limits at coal-fired units could readily be achieved at *below* the cost threshold of $2,500 EQB employed to justify the presumptive RACT.

1. *The Majority of Coal-Fired EGUs in Pennsylvania Already Have Controls Better than the Proposed RACT*

Although the proposed rulemaking contemplates low NOx burners as RACT, the majority of coal-fired electric-generating boilers in Pennsylvania are already equipped with better NOx controls. In fact, only a handful of small boilers lack low NOx burners; by contrast, *every single other coal-fired EGU boiler has controls that exceed the RACT as proposed in the rulemaking. See* Table 1, *infra.*

This disparity is particularly stark when viewed in terms of nameplate capacity: over 85% of the EGU coal fleet in terms of capacity already has controls or will shortly have controls[1] surpassing the RACT contemplated in the proposed rulemaking.

Table 1: Pennsylvania Coal-Fired EGU Boilers and Current NOx Controls[2]

Plant Name	Unit ID	Nameplate Capacity (MW)	NOx Controls
AES Beaver Valley *(Cogen)*	GEN 3	114	LNBO, SNCR
Bruce Mansfield	1	914	LNBO, SCR
Bruce Mansfield	2	914	LNBO, SCR
Bruce Mansfield	3	914	LNBO, SCR
Cambria *(Cogen)*	GEN1	98	SNCR
Cheswick Power Plant	1	637	LNC3, SCR
Colver Power Project *(Waste Coal)*	COLV	118	SNCR
Conemaugh	1	936	LNC3, SCR 2014
Conemaugh	2	936	LNC3, SCR 2014
Ebensburg Power	GEN1	58	None
Foster Wheeler *(Cogen)*	SG-101	47.3	FBC
Homer City Station	1	660	LNBO, SCR
Homer City Station	2	660	LNBO, SCR
Homer City Station	3	692	LNBO, SCR
John B Rich Memorial *(Waste Coal)*	GEN1	88	FBC, OV

[1] Conemaugh will be installing SCR on its two coal-fired boilers this year.
[2] All of the information displayed in Table 1 was retrieved from EPA's Air Market Program Database (see http://ampd.epa.gov/ampd/) or Title V air permits for the respective facilities. Table 1 employs the following acronyms: **LNBO**: Low NOx Burners; **LNC3**: Low NOx Coal and Air Nozzles with Close Coupled & Separated Overfire Air; **FBC**: Fluidized Bed Combuster; **OV**: Overfire Air.

Keystone	1	936	LNC3, SCR
Keystone	2	936	LNC3, SCR
Kline *(Cogen)*	GEN1	57.5	FBC
Northampton *(Waste Coal)*	GEN1	114	SNCR
Panther Creek *(Waste Coal)*	GEN1	94	SNCR
PPL Brunner Island	1	363	LNC3
PPL Brunner Island	2	405	LNC3
PPL Brunner Island	3	790	LNC3
PPL Montour	1	806	LNC3, SCR
PPL Montour	2	819	LNC3, SCR
Scrubgrass *(Waste Coal)*	GEN1	95	SNCR
Seward *(Waste Coal)*	FB1	585	SNCR
St Nicholas *(Cogen)*	SNCP	99	FBC
Westwood Generating Station	GEN1	36	None
Wheelabrator Frackville Energy	GEN1	48	FBC, Other

As a result, the RACT proposal would affect only seven units (highlighted in Table 1), or merely 3% (433.8 megawatts out of the total 13,970 megawatts) of coal-fired EGU capacity in Pennsylvania. Effectively, the proposed rulemaking contemplates RACT that lags immensely behind what is overwhelmingly already in place in Pennsylvania.

2. *When Coal-Fired EGUs in Pennsylvania Run Their Existing Controls, They Emit Much Less NOx than the RACT Limits Contemplate*

The actual historical performance of the Pennsylvania coal-fired EGU fleet demonstrates that the NOx emission rates for coal-fired combustion units in Pennsylvania's RACT proposal are far too lax. Based on the 2012 data available in EPA's Clean Air Markets Program Database, all of the coal combustion units 60 megawatts or larger in Pennsylvania are already in compliance with the proposed NOx emission rates. Indeed, many of these units achieved much lower NOx emission rates in 2012, such as Bruce Mansfield, the largest coal-fired power plant in Pennsylvania. Bruce Mansfield Units 1-3 emitted average NOx rates of 0.1 lbs/MMBtu, 0.11 lbs/MMBtu, and 0.11 lbs/MMBtu respectively, which are all substantially lower than the 0.40 lbs/MMBtu emission rate proposed as RACT for this plant. *See* Table 2, *infra*.

Moreover, a number of the plants equipped with highly effective NOx emission controls such as Selective Catalytic Reduction ("SCR") have demonstrated that they can achieve very low emission rates for at least 60 consecutive days:

Table 2: Pennsylvania Coal-Fired EGU Boilers and Historical NOx Emission Rates[3]

Plant Name	Unit ID	Name-plate Capacity (MW)	Pro-posed RACT	2012 Avg NOx Rate (lbs/ MMBtu)	2012 Avg O3 Season NOx Rate (lbs/ MMbtu)	Lowest 60 Day Avg NOx Rate (lbs/ MMBtu)	Lowest 60 Day Dates
AES Beaver Valley *(Cogen)*	GEN 2	35	N/A	N/A	N/A	N/A	N/A
AES Beaver Valley *(Cogen)*	GEN 3	114	N/A	N/A	N/A	N/A	N/A
Bruce Mansfield	1	914	0.40	0.100	0.110	0.060	5/7-9/30/03
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Colver Power *(Cogen)*	COLV	118	N/A	N/A	N/A	N/A	N/A
Conemaugh[4]	1	936	0.35	0.315	0.319	0.28	5/21-7/21/00
Conemaugh	2	936	0.35	0.303	0.299	0.25	5/16-7/16/00
Ebensburg Power *(Waste Coal)*	GEN1	58	0.40	N/A	N/A	N/A	N/A
Homer City	1	660	0.40	0.178	0.170	0.061	6/9-9/23/05
Homer City	2	660	0.40	0.233	0.220	0.088	7/27-9/27/05
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As explained above, the proposed rulemaking to set RACT for Pennsylvania would incorporate improperly permissive NOx emission limits for coal-fired EGUs, and would involve a technological standard *inferior* to what is in place for the vast majority of Pennsylvanian coal-fired EGUs. Before EQB releases the draft regulations for notice and comment, it should revise them to correct these deficiencies.

Additionally, the alternative compliance mechanisms in the proposed rulemaking should be altered to reflect the short-term nature of the ozone NAAQS, and should not allow bubbling emissions across fleets that may be spread out far across the state.

We would be happy to meet with you to discuss Pennsylvania's development of a revised ozone RACT, or to provide any additional information you may find useful.

Sincerely,

/s/

Zachary M. Fabish
Staff Attorney
The Sierra Club
50 F Street NW, 8th Floor
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(202) 675-7917
zachary.fabish@sierraclub.org

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EXHIBIT 2

Pennsylvania Department of Environmental Protection
208 West Third Street, Suite 101
Williamsport, PA 17701-6448
June 20, 2000

Northcentral Regional Office

Fax 570-327-3420

Linda A. Boyer
Senior Environmental Compliance Engineer
PPL Electric Utilities Corporation
Two North Ninth Street
Allentown, PA 18101-1179

Re: Plan Approval Application #OP-47-0001D
Montour SES
Derry Township, Montour County

Dear Ms. Boyer:

As the Montour SES is a Title V facility, the enclosed notice must be published in a newspaper of general circulation in the Derry Township, Montour County area on at least three separate days. The publication of this notice is the responsibility of PPL and should be accomplished within 14 days of your receipt of this letter. Please do not modify the notice in any way without first obtaining Department approval to do so.

You are required to submit proof of publication of the respective notice to the Department.

Should you have any questions regarding this matter, I can be contacted at 570-327-3640.

Sincerely,

Richard L. Maxwell Jr.

Richard L. Maxwell, Jr.
Chief, Engineering Services
Air Quality Program

Enclosure

cc: File

RLM/bls

Notice

PPL Electric Utilities Corporation
Montour SES
Derry Township, Montour County

PPL Electric Utilities Corporation (2 North Ninth Street, Allentown, PA 18101-1179) has submitted an application (#OP-47-0001D) to the Department of Environmental Protection for plan approval to install two air cleaning devices, an electrostatic precipitator and a selective catalytic reduction system, on a 750 megawatt rated capacity bituminous coal-fired utility boiler (Unit #1) at the Montour SES located in Derry Township, Montour County. In accordance with 25 Pa. Code §§ 127.44(b) and 127.424(b), the Department of Environmental Protection intends to issue plan approval for the installation of the respective air cleaning devices should the Department's review of the respective application convince the Department that plan approval is warranted. The plan approval, if issued, will subsequently be incorporated into a Title V operating permit via administrative amendment in accordance with 25 Pa. Code § 127.450.

The Montour SES is a major facility for which a Title V operating permit application (#TVOP-47-00001) has been submitted but for which no Title V operating permit has yet been issued. The proposed electrostatic precipitator will control particulate matter emitted from Unit #1 and will replace the electrostatic precipitator currently used for that purpose. The resultant particulate matter emissions will be no greater than .1 pound per million BTU of heat input and may be less.

The proposed selective catalytic reduction system will control the nitrogen oxides emissions from Unit #1 and, when operating, will reduce the nitrogen oxides emissions by up to 90% from the level which currently exists. The resultant nitrogen oxides emission rate may be as low as .04 pounds per million BTU of heat input.

The plan approval, should the Department of Environmental Protection decide to issue one, and any subsequent administratively-amended Title V operating permit, will contain appropriate conditions pertaining to the operation of the electrostatic precipitator and the selective catalytic reduction system as well as appropriate recordkeeping and reporting conditions to ensure compliance.

A copy of the plan approval application is available for public inspection during normal business hours at the addressed listed below. Persons interested in inspecting the application should schedule an appointment in advance.

Any person wishing to protest the issuance of plan approval or provide the Department with additional information which he/she believes should be considered in the Department's review of the respective plan approval application may do so by submitting the protest or information in writing to the Department at the address listed below. Protests or comments must be received by the Department within 30 days from the last day of publication of this notice in order to be considered. Each protest or comment should include the following: name, address and telephone number of the person submitting the protest or comment and a concise statement explaining the relevancy of the protest or comment being presented to the Department.

A public hearing may be held if the Department, in its discretion, decides that such a hearing is warranted based on the information received. All persons submitting comments, protesting the issuance of plan approval or requesting a hearing will be notified of the decision to hold a hearing by publication in a newspaper of general circulation in the Derry Township area or by letter or telephone if the Department feels that such contact is adequate.

Written comments, protests or a request for a public hearing should be directed to David W. Aldenderfer, Environmental Program Manager, Air Quality Program, Department of Environmental Protection, 208 West Third Street, Suite 101, Williamsport, PA 17701-6448.

For additional information regarding the respective plan approval application, contact Richard L. Maxwell, Jr., Chief of Engineering Services, Air Quality Program, Department of Environmental Protection, 208 West Third Street, Suite 101, Williamsport, PA 17701-6448. Telephone 570-327-3745.

PA - SUMMARY OF LARGE

Plant	Unit	MW	Heat Rate (Btu/kWh)	HI (MMBtu/hr)	Cap. Factor [2]	Existing SCR	Suggested RACT Limit (30d) (lb/MMBtu)	Median 2011-2013 Actual 30d NOx Rate (lb/MMBtu)
Bruce Mansfield	1	914	9,884	9034	0.8	Y	**0.07**	0.127
Bruce Mansfield	2	914	9,884	9034	0.8	Y	**0.07**	0.119
Bruce Mansfield	3	914	9,884	9034	0.8	Y	**0.07**	0.128
Cheswick	1	637	10,488	6681	0.45	Y	**0.07**	0.341
Conemaugh	1	936	9,737	9114	0.75	Y	**0.07**	0.321
Conemaugh	2	936	9,737	9114	0.75	Y	**0.07**	0.321
Homer City	1	660	10,417	6875	0.6	Y	**0.07**	0.192
Homer City	2	660	10,417	6875	0.6	Y	**0.07**	0.243
Homer City	3	692	10,417	7209	0.6	Y	**0.07**	0.215
Keystone	1	936	9,630	9014	0.75	Y	**0.07**	0.372
Keystone	2	936	9,630	9014	0.75	Y	**0.07**	0.361
Montour	1	806	10,015	8072	0.65	Y	**0.07**	0.393
Montour	2	819	10,015	8202	0.65	Y	**0.07**	0.388

[1] Assumes $350/kW Capital Cost

[5] Assuming interest = 7% and 20 yr li

[2] Consistent with 2010-2012 performance

[3] At $0.35/MWh (consistent with EPA IPM, see http://www.epa.gov/airmarkt/progsregs/epa-ipm/docs/v410/Appendix52A.pdf, p. 6, "VOMW").

[4] Includes FOM and VOM per EPA IPM, see http://www.epa.gov/airmarkt/progsregs/epa-ipm/docs/v410/Appendix52A.pdf, p. 6.

[5] Assumes i=7% and N=20 years

[6] Since the RACT limits in DEP's proposal are greater in every instance than the actual Nox emissions, there is NO additional NOx reduction due to the proposed PA RACT

UNITS NOx RACT Analysis

SCR Cap Cost (MM)[1]	NOx Reduction with Ach. RACT Limit (tpy)	Catalyst Replacement Cost ([3] ($/yr)	Cat. Repl. Cost Effectiveness ($/ton)	Full SCR O/M Cost ($/yr) [4]	Full SCR O/M Cost Effectiveness ($/ton)	PA Proposed NOx Limit Rate (lb/MMBtu)
Sunk	1817	2241859	1234	4775906	2628	0.4
Sunk	1553	2241859	1444	4775906	3076	0.4
Sunk	1829	2241859	1226	4775906	2611	0.4
Sunk	3566	878869	246	2039496	572	0.35
Sunk	7515	2152332	286	4620283	615	0.35
Sunk	7521	2152332	286	4620283	614	0.35
Sunk	2202	1214136	551	2685514	1220	0.4
Sunk	3129	1214136	388	2685514	858	0.4
Sunk	2743	1273003	464	2815720	1027	0.4
Sunk	8933	2152332	241	4620283	517	0.4
Sunk	8623	2152332	250	4620283	536	0.4
Sunk	7431	1606277	216	3512580	473	0.4
Sunk	7424	1632185	220	3569235	481	0.4
fe	**64286**					

[6]

PA - ANNUAL NOx COMPARISONS UNDER DIFFERENT SCENARIOS								
Plant	Unit	Suggested RACT Limit (30d) (lb/MMBtu)	PA Proposed NOx RACT Limit (lb/MMBtu)	Avg. Heat Input 2010-2013 (MMBtu/yr)	Average Actual NOx 2010-2013 (tpy)	Annual NOx with Suggested RACT (tpy) [1]	Annual NOx with PA RACT (tpy) [2]	Suggested RACT NOx Minus Actual NOx (tpy)
Bruce Mansfield	1	**0.07**	0.4	58622584	3800	2052	11725	-1748
Bruce Mansfield	2	**0.07**	0.4	54295453	3223	1900	10859	-1322
Bruce Mansfield	3	**0.07**	0.4	60300137	4911	2111	12060	-2800
Brunner Island	1	**0.07**	0.4	16470958	2993	576	3294	-2416
Brunner Island	2	**0.07**	0.4	21186913	3797	742	4237	-3055
Brunner Island	3	**0.07**	0.4	40538087	7513	1419	8108	-6094
Cheswick	1	**0.07**	0.35	24923324	3908	872	4362	-3036
Conemaugh	1	**0.07**	0.35	56282597	9378	1970	9849	-7408
Conemaugh	2	**0.07**	0.35	53422898	8558	1870	9349	-6688
Homer City	1	**0.07**	0.4	32440378	3363	1135	6488	-2228
Homer City	2	**0.07**	0.4	33952540	4084	1188	6791	-2896
Homer City	3	**0.07**	0.4	35032020	3815	1226	7006	-2588
Keystone	1	**0.07**	0.4	56514972	7539	1978	11303	-5561
Keystone	2	**0.07**	0.4	57776656	7575	2022	11555	-5553
Montour	1	**0.07**	0.4	40130683	6147	1405	8026	-4742
Montour	2	**0.07**	0.4	38679999	5795	1354	7736	-4441
Seward	1	**0.07**	0.2	14205892	746	497	1421	-249
Seward	2	**0.07**	0.2	14493493	745	507	1449	-238
All Units Above					87888	24824	135618	**-63063**

[1] Suggested RACT Limits and Average Annual Heat Input 2010-2013.

[2] PA Proposed Nox RACT Rate and Average Annual Heat Input 2010-2013.

Data taken from U.S. EPA Air Markets Database

Suggested RACT NOx Minus PA RACT NOx (tpy)
-9673
-8959
-9950
-2718
-3496
-6689
-3489
-7880
-7479
-5353
-5602
-5780
-9325
-9533
-6622
-6382
-923
-942
-110794

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Environmental Quality Board
P. O. Box 8477
Harrisburg, Pennsylvania 17105-8477

June 30, 2014

<u>**SUBMITTED ELECTRONICALLY AND VIA U.S. MAIL**</u>

Re: Proposed Ozone RACT Rulemaking

Dear Division of Air Resources Chief Kirit Dalal, Stationary Sources Chief Randy Bordner, Assistant Counsel Robert Reiley, and the Environmental Quality Board,

The Sierra Club, Clean Air Council ("CAC"), Earthjustice, Environmental Integrity Project ("EIP"), American Lung Association in Pennsylvania, and Group Against Smog and Pollution ("GASP") (collectively, the "Commentors") hereby submit comments on Pennsylvania's proposed rulemaking concerning new Reasonably Available Control Technology ("RACT") requirements and emission limits for ozone precursor pollutants nitrogen oxides ("NOx") and volatile organic compounds ("VOCs") from certain major stationary sources (the "RACT Proposed Rule"). The RACT Proposed Rule is based on a woefully inadequate assessment of available control technology, favoring controls that are actually far inferior to the selective catalytic reduction technology ("SCR") already in place throughout Pennsylvania. Thus, for the single largest source category of NOx emitters in the state—coal-fired power plants—Pennsylvania is proposing limits so weak that they are actually *higher* than current actual emission levels. Pennsylvania Department of Environmental Protection ("DEP") compounds this failure by offering alternative compliance mechanisms that vitiate the limits proposed. In short, the proposed RACT determination fails to satisfy Pennsylvania's obligations under the Clean Air Act.[1]

Accordingly, Pennsylvania must prepare a new RACT Proposed Rule that sets proper limits, consistent with emissions reductions achievable through the use of SCR, and does not unlawfully undercut those limits through alternative compliance mechanisms.

I. Background

A. Ground-Level Ozone Is Dangerous to Human Health

Ozone exposure causes a number of significant health impacts, particularly for the respiratory system. Severe health impacts are experienced from both individual incidents of high-level exposure and chronic exposure over time; such negative health impacts of both short-term and long-term ozone exposure have been repeatedly demonstrated through numerous human exposure, epidemiologic, and toxicological studies.[2] These include demonstrated respiratory and cardiovascular morbidity, premature mortality, and perinatal and reproductive impacts, along with other suggested impacts such as to the central nervous system. The physiological impacts of ozone exposure are experienced even by healthy individuals and even at relatively low concentrations of ozone. Certain sensitive groups and individuals—such as children, asthmatics, and the elderly—however, are found to have significantly greater susceptibility to ozone-related health impacts. Moreover, while the impacts of acute ozone exposure are better understood, there is a growing body of scientific evidence showing that repeated exposure over time causes additional health impacts which may even be more severe and less reversible.

Exposure to ozone, in the short-term (acute) and repeat (chronic) exposure, is well understood to cause or exacerbate respiratory impacts such as breathing discomfort (e.g., coughing, wheezing, shortness of breath, pain upon inspiration), decreasing lung function and capacity, and lung inflammation and injury. Research on the relationship between ozone exposure and respiratory effects is well-documented, and indeed EPA's Integrated Science Assessment of 2013 made a conclusive determination that ozone is responsible adverse respiratory effects.[3]

Epidemiologic studies have demonstrated consistently that increasing concentrations of ozone are associated with lung function decrements, increases in respiratory symptoms,

[1] Sierra Club and CAC alerted Pennsylvania as to these failings over five months ago. *See* January 17, 2014 Correspondence to Randy Bordner and Robert Reiley, attached hereto as Exhibit 1.
[2] *See* U.S. Environmental Protection Agency (2013). Integrated Science Assessment for Ozone and Related Photochemical Oxidants (Final Report). EPA/600/R-10/076F, 2013, *available at* http://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=247492 [hereinafter, ISA (2013)].
[3] *See* note 2, *supra*.

pulmonary inflammation in children with asthma, increases in respiratory-related hospital admissions and emergency department visits, and increases in respiratory mortality.

During acute increases in ozone, more frequent emergency room visits and hospital admissions are associated with asthma exacerbations as well as other respiratory symptoms and diseases. In addition to acute ozone levels being linked to an increase in visits, there is also evidence for an association between asthma hospitalizations and long-term, chronic exposure to ozone.[4]

Ozone exposure has been linked to not only the exacerbation of asthma, but also to asthma induction and new development of the disease. For individuals already diagnosed with asthma, evidence shows that ozone exposure increases the likelihood of having an asthma attack.[5] Ozone exposure has been shown to have especially significant effects on asthma exacerbation among children.[6] Children living in areas with higher ambient ozone concentrations have been shown to be more likely to either have asthma or to experience asthma attacks compared with children living in areas having lower ambient ozone concentrations.[7]

Evidence also shows positive associations between long-term exposures to ozone and new-onset asthma. For adults, studies showing increased risks for developing asthma per 10 ppb increase in annual mean ozone or 8-hour average.[8]

Acute and chronic ozone exposure are both linked to premature mortality. Epidemiological and toxicological studies show a strong relationship between short-term ozone exposures and premature mortality.[9] The ISA describes how numerous studies across the U.S.,

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[4] *See, e.g.*, Moore et al. (2008), Ambient ozone concentrations cause increased hospitalizations for asthma in children: An 18-year study in Southern California, Environ. Health Perspect. 116:1063-1070; Meng et al (2010), Outdoor air pollution and uncontrolled asthma in the San Joaquin Valley, California, J. Epidemiol. Community Health 64:142-147, *available at* http://dx.doi.org/10.1136/jech.2008.083576; Meng, (2007), Traffic and outdoor air pollution levels near residences and poorly controlled asthma in adults, Ann. Allergy Asthma Immunol. 98:455-463, *available at* http://www.ncbi.nlm.nih.gov/pubmed/17521030; Künzli (2012), Is air pollution of the 20th century a cause of current asthma hospitalisations? [Editorial], Thorax 67:2-3, *available at* http://dx.doi.org/10.1136/thoraxjnl-2011-200919; Lin et al. (2008b), Chronic exposure to ambient ozone and asthma hospital admissions among children, Environ. Health Perspect. 116:1725-1730, *available at* http://dx.doi.org/10.1289/ehp.11184.

[5] *See, e.g.*, Franze et al. (2005), Protein nitration by polluted air, Enviro. Sci. Technol. 39:1673-1678, *available at* http://dx.doi.org/10.1021/es0488737; U.S. Environmental Protection Agency (2006), Air quality criteria for ozone and related photochemical oxidants [EPA Report], (EPA/600/R-05/004AF), Research Triangle Park, NC, *available at* http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=149923.

[6] *See, e.g.*, Youssef et al (2012), Air pollution indicators predict outbreaks of asthma exacerbations among elementary school children: integration of daily environmental and school health surveillance systems in Pennsylvania, J. Environ. Monit. Dec. 14(12):3202-10, *available at* http://www.ncbi.nlm.nih.gov/pubmed/23147442.

[7] Akinbami (2010), The association between childhood asthma prevalence and monitored air pollutants in metropolitan areas, United States, 2001-2004, Environ. Res. Apr. 110(3):294-301, *available at* http://dx.doi.org/10.1016/j.envres.2010.01.001.

[8] McDonnell et al. (1999), Long-term ambient ozone concentration and the incidence of asthma in nonsmoking adults: the Ahsmog study, Environ. Res. 80:110-121, *available at* http://www.ncbi.nlm.nih.gov/pubmed/10092402; Greer et al. (1993), Asthma related to occupational and ambient air pollutants in nonsmokers, J. Occup. Environ. Med. 35:909-915, *available at* http://www.ncbi.nlm.nih.gov/pubmed/8229343.

[9] *See generally* the ISA (2013) and U.S. Environmental Protection Agency (2013). *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards*, Second External Review Draft [hereinafter, Policy

Canada, and Europe—including multi-city, multi-continent, and single city studies—demonstrate positive links between ambient ozone concentrations and respiratory-related mortality. On the whole, ozone-induced premature mortality in these studies found to occur at mean 8-hour maximum concentrations of less than 63 ppb.[10] One important study examining 98 U.S. cities with mean long-term temperatures of 26.8 ppb found associations between ozone level and mortality. Across communities, a 10 ppb increase in the prior week's ozone level was associated with a 0.52% increase in mortality. Higher effect estimates were associated with factors such as race and socioeconomic status (e.g., including unemployment, public transportation use, and owning an air conditioner). In another a 14-year study of 95 U.S. cities found links between short-term increases in ozone and premature mortality, even when excluding days exceeding 60 ppb, finding that that "daily changes in ambient O3 exposure are linked to premature mortality, even at very low pollution levels."[11] Thus, the harmful effects of ozone air pollution are well-established in the medical literature and public record, underscoring the critical importance of meaningful RACT determinations to address ozone pollution sources.

B. Ozone National Ambient Air Quality Standards, Pennsylvania, and Pennsylvania's RACT Proposal

In 2008, EPA revised the 1997 ozone NAAQS to 75 parts per billion with an 8-hour averaging period.[12] In 2012, EPA finalized designations, including nonattainment designations, under this 2008 NAAQS, adding to unresolved nonattainment designations in Pennsylvania under the preexisting 1997 NAAQS.

Seventeen counties centered around Pittsburgh and Philadelphia are designated nonattainment under the 2008 ozone NAAQS.[13] These seventeen counties contain over 8 million residents, or roughly two-thirds of Pennsylvania's total population.[14]

Assessment (2014)]. Both conclude that there is a likely causal relationship between short-term ozone increases and total mortality.

[10] *See* ISA (2013) at 2-22 summarizing existing research.

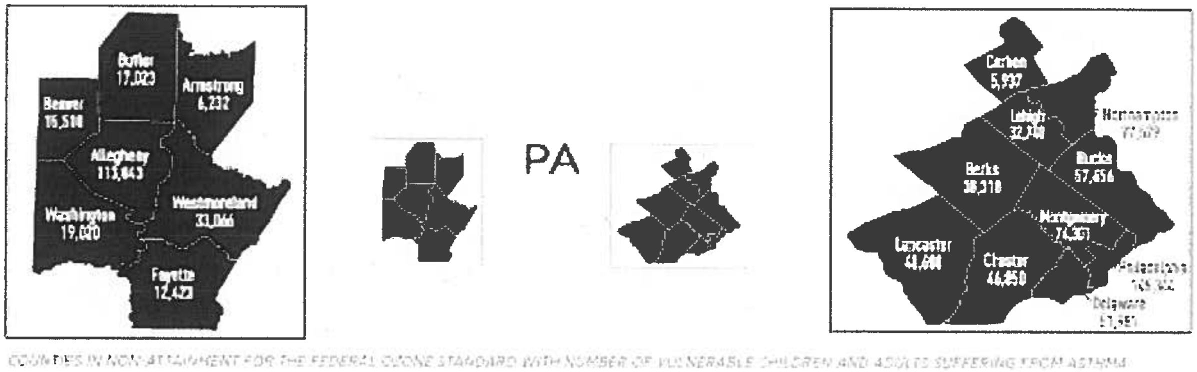
[11] Bell et al. (2006), The Exposure-Response Curve for Ozone and Risk of Mortality and Adequacy of Current Ozone Regulations, Environ Health Perspect. 114:532-536, *available at* http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1440776/.

[12] 73 Fed. Reg. 16,483 (March 27, 2008).

[13] These seventeen counties are Allegheny, Armstrong, Beaver, Berks, Bucks, Butler, Carbon, Chester, Delaware, Fayette, Lancaster, Lehigh, Montgomery, Northampton, Philadelphia, Washington and Westmoreland. *See* Pennsylvania DEP, Attainment Status by Principal Pollutants, *at* http://www.dep.state.pa.us/dep/deputate/airwaste/aq/attain/status.htm.

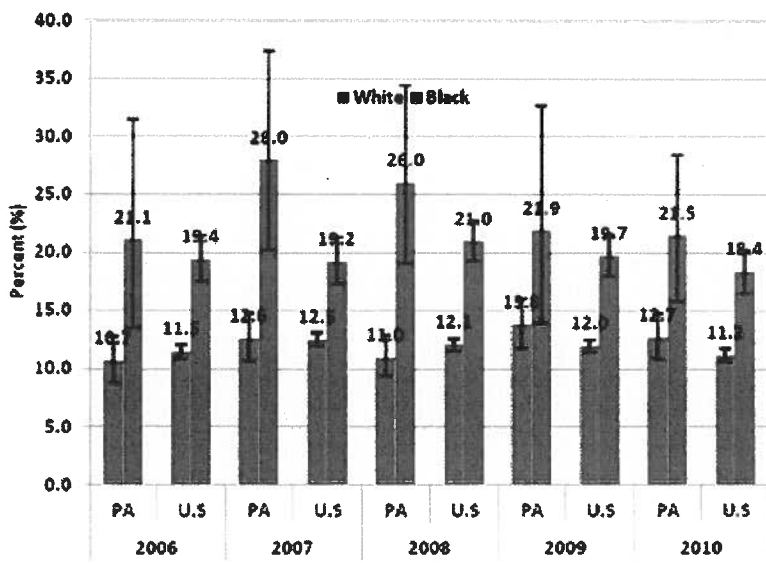
[14] To be precise, 8,071,358 out of 12,764,475 Pennsylvanians (US Census Bureau 2012) live in ozone nonattainment areas.

Figure 1: Pennsylvania Ozone Nonattainment Areas



Moreover, huge numbers of Pennsylvania residents are particularly susceptible to ozone pollution, including more than 1.2 million seniors, 1.7 million children, and nearly 750,000 asthma sufferers.[15] Additionally, minority groups in Pennsylvania tend to suffer disproportionately from asthma, with child lifetime asthma prevalence being roughly double the rate for African American Pennsylvanians as for White Pennsylvanians; similarly, African Americans and Hispanics in Pennsylvania have significantly higher asthma hospitalization rates than for White Pennsylvanians. *See* Figure 2 and Figure 3, below.

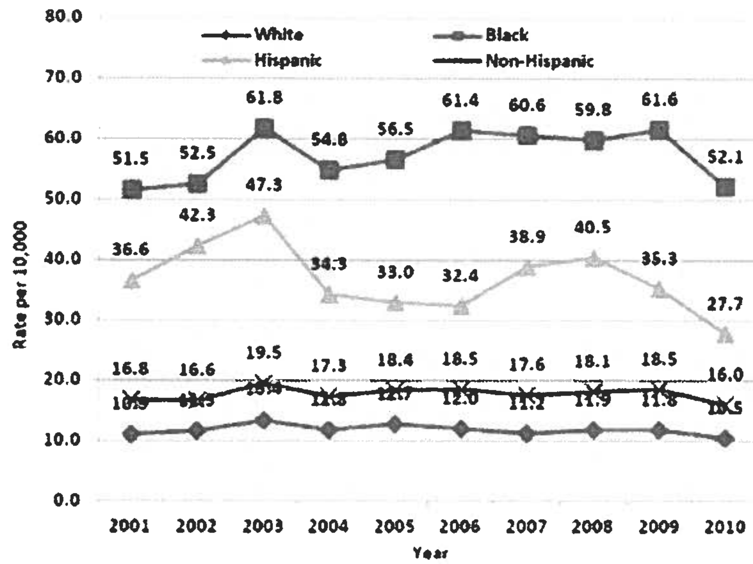
Figure 2: Child Lifetime Asthma Prevalence by Race, PA compared to the U.S., 2006-2010[16]



[15] *See* American Lung Association State of the Air 2013, *available at* http://www.stateoftheair.org/2013/states/pennsylvania/.

[16] Figures 2 and 3 taken from the 2012 Pennsylvania Dept. of Health Asthma Burden Report, *available at* http://www.portal.state.pa.us/portal/server.pt/document/1281643/2012_asthma_burden_report_pdf.

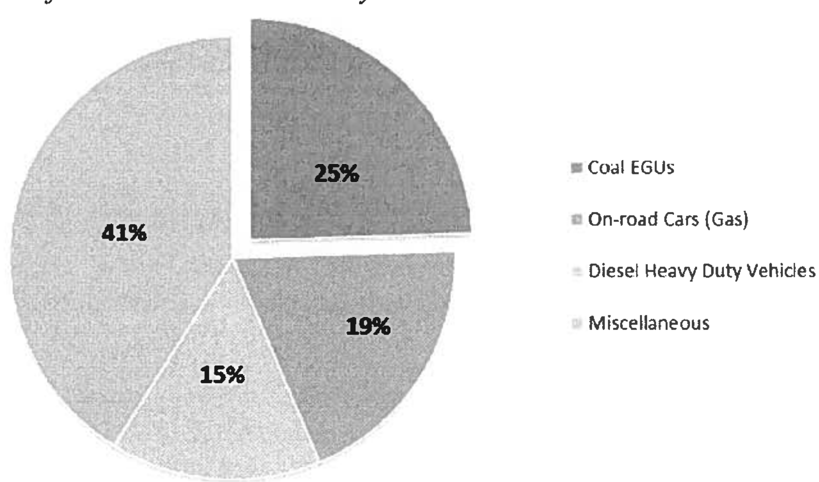
Figure 3: PA Inpatient Hospitalization with Asthma Rate by Race & Ethnicity, 2001-2010



Because of these nonattainment designations, and because Pennsylvania is part of the Ozone Transport Region, DEP must require RACT for major stationary sources of the ozone precursor pollutants NOx and VOCs in Pennsylvania. *See* 42 U.S.C. § 7502(c)(1).

In Pennsylvania, coal-fired electrical generating units ("EGUs"), are the largest single source of NOx, comprising 25 percent of all NOx emissions in the state.

Figure 4: Sources of NOx Pollution in Pennsylvania[17]



With its RACT Proposed Rule, Pennsylvania has proposed new RACT standards for a variety of source categories, including coal combustion. Under the proposal, the presumptive RACT NOx emission limit for a coal-fired boiler would be an extremely permissive range of

[17] Data from the National Emissions Inventory 2011.

between 0.45 lbs/MMBtu and 0.20 lbs/MMBtu. *See* Proposed 25 Pa. Code § 121.97(g)(1)(v)-(iv) (setting limits of 0.45 lbs/MMBtu for coal combustion units with heat inputs between 50 MMBtu/hour and 250 MMBtu per hour, and limits of 0.20 lbs/MMBtu, 0.35 lbs/MMBtu, and 0.40 lbs/MMBtu for larger units using circulating fluidized bed technology, tangentially fired technology, or other boiler technology, respectively). This is, according to EQB, reflective of RACT of low NOx burners ("LNB"). *See* Regulatory Analysis Form at 13.

II. SCR is RACT for Coal Combustion, and Pennsylvania's RACT Proposal Must Be Revised to Incorporate Limits Consistent with SCR Operation

Despite the fact that SCR is in widespread use across the country—and is in even *wider* use in Pennsylvania—DEP's RACT proposal is premised on the use of low-NOx burners: a technology that is surpassed by the actual controls in place on nearly every coal-fired EGU boiler in the commonwealth. This is unlawful; far from fulfilling the requirements of Section 172 of the Clean Air Act and imposing technology-derived emission limits to decrease ozone-causing pollution, Pennsylvania's proposal would incorporate RACT-based emission limits higher than actual plant emission levels. Consistent with determinations in neighboring states, national adoption of SCR technology, the use of SCR in Pennsylvania as well as historical emissions achievements and DEP's own statements concerning SCR, Pennsylvania must consider emission limits derived from SCR controls as RACT for coal combustion.

A. The Legal Standard for RACT

RACT determinations and RACT-based emission limits are required by the Clean Air Act for areas failing to attain National Ambient Air Quality Standards ("NAAQS"). *See* 42 U.S.C. § 7502(c)(1). RACT is a technology-forcing standard intended to ensure that polluting sources are controlled consistent with available methods for reducing pollution. As a result, RACT is a stringent standard, designed to induce and require improvements in control technology and reductions in pollutant emissions. Indeed, EPA has long maintained that "RACT should represent the toughest controls considering technological and economic feasibility that can be applied to a specific situation" and that "[a]nything less than this is by definition less than RACT."[18]

RACT is defined as "the lowest emissions limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility."[19] The RACT definition comprises two parts: (a) technological feasibility and (b) economic feasibility.

[18] Memorandum from Roger Strelow, Assistant Administrator for Air and Waste Management, U.S. EPA, to Regional Administrators, Regions I - X (Dec. 9, 1976), at 2 (hereinafter "Strelow Memo").

[19] COMAR 26.11.01.01.B(40); *accord* U.S. EPA, State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, 57 Fed. Reg. 55,620, 55,624 (Nov. 25, 1992).

(a) Technological Feasibility

"The technological feasibility of applying an emission reduction method to a particular source should consider the source's process and operating procedures, raw materials, physical plant layout, and any other environmental impacts such as water pollution, waste disposal, and energy requirements."[20]

There is no dispute that installation of SCR would be technologically feasible at Pennsylvania coal plants. SCR is a mature technology that is, as described more fully below, installed on half the U.S. coal fleet, and on four-fifths of Pennsylvania's own coal EGU fleet.

(b) Economic Feasibility

As EPA has explained, "[e]conomic feasibility considers the cost of reducing emissions and the difference in costs between the particular source and other similar sources that have implemented emission reduction."[21] Specifically,

> EPA presumes that it is reasonable for similar sources to bear similar costs of emission reductions. **Economic feasibility rests very little on the ability of a particular source to 'afford' to reduce emissions to the level of similar sources. Less efficient sources would be rewarded by having to bear lower emission reduction costs if affordability were given high consideration. Rather, economic feasibility for RACT purposes is largely determined by evidence that other sources in a source category have in fact applied the control technology in question.**[22]

Further, EPA has explained that RACT is not intended to enshrine existing installed control technologies, but rather is technology-forcing.[23] Thus, "[i]n determining RACT for an individual source or group of sources, the control agency, using the available guidance, should select the best available controls, *deviating from those controls only where local conditions are such that they cannot be applied there* and imposing even tougher controls where conditions allow."[24] Accordingly, given the widespread application of SCR, a less effective technology could only be chosen for a specific source if SCR physically could not be applied at that specific source

B. <u>SCR is Widely Available, and SCR-Equipped Facilities Are Readily Capable of Achieving Emission Rates as Low as 0.07 lbs NOx/MMbtu or Lower</u>

SCR is far more than reasonably available—it is *actually* available and in operation on half of the country's mid-size to large coal-fired EGUs. Specifically, fully 47 percent of the

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[20] U.S. EPA, State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental, 57 Fed. Reg. 18,070, 18,074 (Apr. 28, 1992).
[21] 57 Fed. Reg. at 18,074.
[22] 57 Fed. Reg. at 18,074 (emphasis added).
[23] Strelow Memo at 2.
[24] Strelow Memo at 2 (emphasis added).

nation's active coal units larger than 150 MW are equipped with SCR. When units that have announced an intention to retire are excluded from this list, the percentage of units over 150 MW with SCR or with plans to install SCR rises to nearly 52 percent. Indeed, SCR is actually *the most prevalent* NOx control for coal combustion in the United States.

SCR is even more prevalent in the Mid-Atlantic. In Delaware and New Jersey, every single coal unit sized 125 MW or larger is equipped with SCR. In Pennsylvania itself, 78% of the coal units 125 MW or larger have installed or announced plans to install SCR.

SCR is capable of high rates of NOx removal. SCR systems maintained consistent with good operating procedures can regularly ensure NOx emission reductions of 90% or more. This translates to emission limits as low as 0.05 lbs/MMBtu or lower, such that a 0.07 lbs/MMBtu rate is consistently achievable on 30-day averages. Nor are such emission reductions theoretical: the actual historical experience of the Pennsylvania coal fleet has been that, when the Pennsylvania facilities run their SCR systems, they have achieved very high rates of NOx removal.

Table 1: Historically Achieved Low NOx Emission Rates from Large SCR-Equipped Pennsylvania Coal EGUs[25]

Facility Name	Unit ID	Associated Stacks	Year	Month	Avg. NOx Rate (lb/MMBtu)	NOx (tons)	Heat Input (MMBtu)	Operating Time	Gross Load (MW-h)
Montour	2		2003	7	0.030	67.1	4439436.4	744	536857
Cheswick	1		2012	5	0.032	0.588	35245.188	101.18	36
Montour	2		2003	9	0.038	76.344	4123397.3	720	499275
Keystone	2		2007	7	0.040	112.732	5665959.7	744	640802
Keystone	1		2003	5	0.040	118.068	5859460.6	744	646929
Keystone	2		2004	5	0.040	114.972	5703423.8	744	660861
Keystone	1		2003	8	0.040	118.286	5865375	744	645819
Keystone	2		2007	5	0.040	116.926	5791947.1	744	644098
Keystone	2		2007	8	0.040	115.714	5726245.2	744	652474
Keystone	1		2005	9	0.041	113.99	5636526.6	720	625140
Keystone	1		2006	9	0.041	115.749	5707471.6	720	613484
Keystone	2		2010	8	0.041	124.326	6126809.2	744	674539
Keystone	1		2003	9	0.041	113.58	5592747.1	720	619893
Keystone	2		2008	9	0.041	115.562	5650612.5	720	625472
Montour	2		2004	8	0.041	88.05	4407282.1	744	512416
Keystone	1		2006	5	0.042	121.882	5873818.6	744	646370
Montour	2		2004	7	0.042	92.634	4531632.4	744	524862
Keystone	2		2008	6	0.042	116.154	5595462	720	630999
Keystone	2		2005	7	0.042	117.264	5638788.3	744	646167
Keystone	2		2003	7	0.042	102.321	5161755.284	655.54	575235
Montour	2		2006	6	0.042	85.84	4210710	720	500644
Keystone	1		2006	8	0.042	114	5660406.822	702.13	617690
Montour	1		2005	8	0.042	98.216	4692243.3	744	548099
Montour	2		2004	6	0.042	87.029	4185072	720	482174
Keystone	1		2003	7	0.043	120.762	5800313.2	744	645725
Keystone	2		2010	9	0.043	124.082	5791138.9	720	643614
Montour	1		2003	5	0.043	86.214	4172669.3	744	488193
Montour	1		2003	7	0.043	97.155	4579253.7	744	526681
Montour	1		2004	8	0.043	92.851	4388824.7	744	499426
Montour	2		2007	8	0.043	100.713	4715245.9	744	564056
Keystone	1		2005	6	0.043	117.118	5583698.5	720	609977

[25] Data taken from U.S. EPA's Air Markets Database, *available at* http://ampd.epa.gov/ampd/.

Keystone	1	2004	5	0.043	111.845	5392678.613	694.97	606445
Keystone	1	2005	8	0.043	124.287	5924907.2	744	649394
Cheswick	1	2003	8	0.044	66.075	3064135.7	744	376917
Keystone	2	2008	5	0.044	120.629	5583061.9	744	630889
Keystone	2	2009	2	0.044	114.36	5243190.4	672	596584
Keystone	2	2010	5	0.044	127.333	5824804.1	744	651472
Keystone	1	2005	7	0.044	119.069	5513428.04	697.1	600535
Keystone	2	2008	8	0.044	121.724	5818626.565	732.02	635635
Keystone	2	2003	9	0.044	123.735	5594491	720	623178
Keystone	2	2010	10	0.044	134.278	6036814.9	744	655498
Montour	2	2005	8	0.044	104.979	4750366.6	744	554523
Montour	1	2003	9	0.045	96.161	4402838.5	720	500590
Montour	2	2000	8	0.045	102.498	4597455.5	744	527334
Keystone	2	2010	6	0.045	122.603	5667520.546	715.73	634835
Montour	1	2008	8	0.045	15.817	704049.22	106.8	77906
Keystone	2	2010	4	0.045	125.975	5691292.1	720	642937
Keystone	2	2009	3	0.045	130.202	5780320.6	744	656156
Montour	1	2003	8	0.045	98.488	4534403.9	744	515840
Keystone	2	2010	1	0.046	127.776	5738525.8	744	666152
Keystone	1	2006	7	0.046	123.511	5515930.472	700.16	607318
Keystone	1	2006	6	0.046	124.226	5498493.328	708.8	602567
Keystone	2	2008	7	0.046	130.683	5932011.6	744	647563
Montour	1	2005	7	0.046	103.265	4600618.2	744	539606
Montour	1	2003	6	0.047	86.746	3914353.4	720	450434
Montour	1	2006	6	0.047	96.12	4171816.3	720	502086
Montour	2	2006	7	0.047	91.26	4091489.974	683.41	484712
Cheswick	1	2003	9	0.047	58.531	2694701.412	697.23	330643
Montour	2	2005	9	0.047	105.137	4464323.4	720	524176
Montour	1	2004	7	0.048	104.511	4434905.9	744	505947
Keystone	1	2009	8	0.048	133.631	5603868.2	744	645152
Montour	1	2005	9	0.048	106.054	4470857	720	521034
Keystone	2	2004	6	0.048	124.727	5429282.6	720	617362
Keystone	1	2003	6	0.048	111.497	4864688.19	642.3	537339
Montour	1	2004	9	0.049	99.722	4103421.6	720	478214
Montour	2	2003	6	0.049	74.863	3345036.754	647.34	403755
Keystone	2	2005	6	0.049	97.685	4347359.412	598.93	496629
Montour	1	2006	8	0.049	106.304	4311772.008	738.33	531098
Keystone	2	2003	6	0.049	128.762	5528386.09	719.9	608507
Keystone	1	2007	8	0.050	133.845	5503301.8	744	653050
Montour	1	2006	7	0.050	105.205	4397388	744	528127
Keystone	1	2005	5	0.050	126.863	5429174.66	699.82	588554
Keystone	1	2010	6	0.050	144.737	5780176.2	720	641856
Keystone	2	2005	5	0.050	128.387	5477229	744	630823
Montour	1	2007	8	0.050	114.684	4581728.1	744	533517
Keystone	2	2003	5	0.050	100.231	4268130.166	563.32	474305
Montour	2	2007	9	0.050	112.935	4507820.8	720	536571
Montour	1	2006	5	0.050	106.735	4310819.7	744	519205
Keystone	1	2007	5	0.051	145.762	5712706.8	744	650215
Keystone	1	2009	7	0.051	113.213	4737472.379	651.76	541948
Keystone	1	2010	8	0.051	152.639	5990596.6	744	669599
Keystone	1	2010	9	0.052	146.121	5674395.1	720	639307
Keystone	2	2009	1	0.052	139.232	5750126	744	649321
Keystone	1	2010	5	0.052	148.113	5791544.8	744	644327
Keystone	1	2009	12	0.052	152.335	5854402.1	744	672058
Keystone	2	2007	9	0.053	119.857	4684463.18	622.64	530819
Keystone	2	2009	7	0.053	127.679	5162814.304	690.83	564361
Keystone	2	2003	8	0.053	120.464	4937351.476	642.03	551836
Montour	1	2005	6	0.054	114.326	4338969.4	720	508440
Keystone	2	2007	6	0.054	103.178	4340638.132	591.56	483415
Montour	1	2007	7	0.054	122.431	4572721.6	744	523045
Montour	1	2009	3	0.054	121.922	4540397.3	744	523361
Keystone	1	2009	6	0.054	117.05	4566425.597	623.69	524741
Keystone	1	2010	10	0.055	147.988	5601051.18	739.9	634498
Cheswick	1	2003	7	0.055	68.347	2778570.434	698.08	328214

Montour	2		2003	8	0.055	96.629	3642299.201	699.88	447330
Bruce Mansfield	1	MS1A, MS1B	2003	6	0.056	126.544	4563727.9	720	574675
Keystone	2		2006	5	0.056	139.477	5395247.14	735.52	623124
Keystone	1		2010	7	0.056	168.277	6034383.8	744	660722
Keystone	1		2004	6	0.057	107.733	4315921.66	569.26	477163
Bruce Mansfield	3	MS3A, MS3B	2005	5	0.057	150.553	5292144.7	744	641675
Keystone	1		2010	1	0.057	163.683	5895917.4	744	672754
Keystone	1		2010	4	0.057	156.169	5654026.3	720	634793
Montour	1		2009	7	0.057	137.654	4926893.1	744	521721
Montour	2		2005	7	0.057	108.57	4068449.3	744	459714
Montour	2		2010	12	0.057	128.541	4499373.4	744	555083
Keystone	1		2010	2	0.057	138.747	5008294.24	625.1	566803
Keystone	2		2010	7	0.057	122.096	4459914.556	585.14	495821
Montour	2		2004	5	0.057	111.611	4161139.228	677.44	470150
Montour	1		2009	2	0.058	117.562	4100018.2	672	477837
Cheswick	1		2003	6	0.058	94.561	3372816.3	720	357948
Montour	2		2006	5	0.058	101.767	3811081.603	664.95	452392
Montour	1		2004	6	0.058	113.071	4017715.2	709.48	458048
Keystone	2		2004	7	0.059	143.343	5028431.47	668.22	571750
Montour	2		2006	9	0.059	125.415	4259988	720	504968
Montour	1		2007	9	0.060	101.639	3644159.541	652.5	446656
Keystone	2		2009	6	0.060	119.418	4282524.051	572.84	469497
Homer City	1		2006	9	0.061	119.361	3947780.2	720	444131
Homer City	1		2005	7	0.061	132.522	4380951.4	744	481003
Homer City	1		2005	8	0.062	136.908	4438118.5	744	485917
Montour	2		2004	9	0.063	129.886	4240015.3	720	500903
Homer City	1		2006	6	0.063	126.702	3983712.7	720	451522
Keystone	1		2007	9	0.064	170.901	5345386.9	720	632436
Homer City	2		2006	7	0.064	130.854	4056510.6	744	447616
Bruce Mansfield	2	MS2A, MS2B	2005	5	0.065	168.187	5207301.4	744	621467
Keystone	1		2009	10	0.065	104.135	3451199.249	456.27	391201
Bruce Mansfield	1	MS1A, MS1B	2012	2	0.065	142.759	4372958.3	696	491167
Montour	2		2001	5	0.066	155.928	4737194.8	744	527504
Montour	2		2003	5	0.066	115.101	3632931.472	668.53	442468
Homer City	1		2005	9	0.066	135.781	4157677	720	466586
Montour	2		2001	8	0.066	156.025	4759565.7	744	524923
Keystone	2		2009	8	0.066	190.941	5741709.6	744	637227
Homer City	1		2006	7	0.067	136.98	4113099.7	744	462874
Bruce Mansfield	1	MS1A, MS1B	2005	5	0.067	151.791	4850905.825	737.5	590200
Montour	2		2007	7	0.067	128.34	4159041.928	670.26	491905
Montour	1		2008	6	0.067	130.214	4238735.25	714.5	486000
Montour	1		2009	4	0.068	121.22	3743460.243	637.85	413289
Bruce Mansfield	1	MS1A, MS1B	2007	9	0.068	174.528	5161775	720	607226
Homer City	1		2006	5	0.068	147.544	4301079.2	744	479114
Montour	2		2001	6	0.069	144.912	4199958.5	720	476719
Bruce Mansfield	2	MS2A, MS2B	2003	7	0.069	169.455	5092103.375	709.25	573960
Homer City	2		2006	9	0.069	113.652	3442640.383	673.35	385976
Keystone	2		2009	4	0.069	195.181	5606989.5	720	630282
Bruce Mansfield	1	MS1A, MS1B	2008	7	0.069	198.379	5749920.8	744	644504
Bruce	1	MS1A,	2004	6	0.070	176.7	5021082.3	720	570982

Mansfield		MS1B							
Cheswick	1		2004	8	0.070	100.668	3254830.324	701.22	322538
Cheswick	1		2004	9	0.070	101.226	3133899.647	705.25	330034
Bruce Mansfield	1	MS1A, MS1B	2008	9	0.070	188.69	5396446.1	720	628014
Montour	1		2009	6	0.070	136.068	4090406.03	651.01	432885
Keystone	1		2008	5	0.070	205.1	5870815.6	744	634256

Table 1 above demonstrates this. As the shaded column records, Pennsylvania coal plants equipped with SCR have historically achieved 30-day periods with average NOx emission rates lower than 0.07 lbs/MMBtu; many, in fact, have emitted at even *lower* rates—as low as 0.04 or even 0.03 lbs/MMBtu. Plainly, the actual experience of SCR in Pennsylvania is that, when facilities operate the controls, very low levels of NOx emissions are the result.

Indeed, Pennsylvania itself has recognized that coal-fired EGUs equipped with SCR are capable of dramatic reductions in NOx. For example, in 2000, Pennsylvania DEP stated in a public notice that operation of SCR controls at a coal-fired EGU

> [W]ill control the nitrogen oxides emissions from Unit #1 and, when operating, will reduce the nitrogen oxides emissions by up to 90% from the level which currently exists. The resultant nitrogen oxides emission rate may be as low as .04 pounds per million BTU of heat input.[26]

Pennsylvania has thus long-acknowledged that SCR-equipped facilities can achieve very low rates of NOx emissions. Moreover, DEP's assessment of the reduction rate for the SCR controls referenced in the public notice proved accurate: while operating its SCR, the plant in question—Montour—has achieved extremely high rates of NOx removal, with emissions in the 0.04 lbs/MMbtu range for multiple months in 2003, 2004, 2005, and 2008. *See* Table 1, *supra*. Accordingly, a RACT/RACM determination of 0.07 lbs/MMbtu is well-supported by this and other Pennsylvania facilities' actual historical experience.

Such rates of NOx removal can be achieved at very low cost, moreover. Particularly for the vast majority of units in Pennsylvania that are *already* equipped with SCR, the cost of operating their controls is quite modest:

[26] June 20, 2000 Correspondence from DEP to Linda A. Boyer, PPL Electric Utilities Corporation Re: Plan Approval Application #OP-47-0001D, at 2 (attached hereto as Exhibit 2).

Table 2: Calculated NOx Cost-per-Ton Removal Rates for SCR-Equipped PA Coal EGUs[27]

Plant	Unit	MW	Proper RACT Limit (30d) (lb/MMBtu)	Median 2011-2013 Actual 30d NOx Rate (lb/MMBtu)	NOx Reduction with Proper. RACT Limit (tpy)	Catalyst Replacement Cost ($/yr)	Cat. Repl. Cost Effectiveness ($/ton)	Full SCR O/M Cost Effectiveness ($/ton)
Bruce Mansfield	1	914	**0.07**	0.127	1817	2241859	1234	2628
Bruce Mansfield	2	914	**0.07**	0.119	1553	2241859	1444	3076
Bruce Mansfield	3	914	**0.07**	0.128	1829	2241859	1226	2611
Cheswick	1	637	**0.07**	0.341	3566	878869	246	572
Conemaugh	1	936	**0.07**	0.321	7515	2152332	286	615
Conemaugh[28]	2	936	**0.07**	0.321	7521	2152332	286	614
Homer City	1	660	**0.07**	0.192	2202	1214136	551	1220
Homer City	2	660	**0.07**	0.243	3129	1214136	388	858
Homer City	3	692	**0.07**	0.215	2743	1273003	464	1027
Keystone	1	936	**0.07**	0.372	8933	2152332	241	517
Keystone	2	936	**0.07**	0.361	8623	2152332	250	536
Montour	1	806	**0.07**	0.393	7431	1606277	216	473
Montour	2	819	**0.07**	0.388	7424	1632185	220	481

The full operation and maintenance costs for SCR on these units averages less than $1200 per ton when hitting an emission rate of 0.07 lbs/MMBtu—less expensive than the presumptive reduction costs DEP has calculated for nearly every source category covered in the RACT Proposed Rule.[29] *See* Regulatory Analysis Form. Thus, in addition to being technologically feasible, emission limits consistent with SCR operation are also quite economically feasible. *Compare* Montour cost-per-ton *with* Pennsylvania proposed presumptive cost-efficacy threshold of $2,500 per ton.

Indeed, these cost-per-ton analyses are consistent with EPA's own assessment of the cost figures for SCR operation. For example, EPA calculates that SCR controls can eliminate NOx emissions at a cost of between $1,550 and $2,066 per ton.[30] Similar assessments exist for specific facilities: a removal rate of $1,583 to $2,297 per ton for the Gerard Gentleman facility in Nebraska,[31] $1,504 per ton for the Big Stone Generating Station in South Dakota,[32] $1,738 per ton for the Jeffrey Energy Center in Kansas, $2,240 per ton for the Navajo facility in Arizona,[33] and $2,405 per ton for Arizona's Coronado facility.[34] As such, both the widespread application of SCR and the cost of NOx removal through SCR demonstrate that SCR is RACT, even when using Pennsylvania's own assumed cost-efficacy threshold of $2,500 per ton.

However, this threshold is itself inappropriate. First, Pennsylvania's arbitrary $2,500 per ton limit is out of step with cost-efficacy determinations in other states. For example, New

[27] Table 2 is a summary of the data and calculations in the spreadsheet Pennsylvania – Summary of Large Units NOx RACT Analysis, attached hereto as Exhibit 3.

[28] Conemaugh is in the process of installing SCR on its coal-fired units, and thus would not be installing SCR as part of compliance with any new RACT limits Pennsylvania imposes—the controls would already be in place.

[29] Notably, the cost per ton *drops* if a higher rate of NOx removal consistent with a limit of 0.05 lbs/MMBtu is used.

[30] U.S. EPA, Menu of Control Measures, *available at* http://www.epa.gov/air/criteria.html.

[31] *See* 77 Fed. Reg. 40,151 (July 6, 2012); 77 Fed. Reg. 12,770 (March 2, 2012).

[32] *See* 76 Fed. Reg. 80,754 (Dec. 27, 2011); 76 Fed. Reg. 52,604 (Aug. 23, 2011).

[33] *See* 78 Fed. Reg. 8,273 (Feb. 5, 2013).

[34] *See* 77 Fed. Reg. 72,511 (Dec. 5, 2012); 77 Fed. Reg. 42,834 (July 20, 2012).

York's 2013 Economic and Technical Analysis for RACT Networks establishes a cost per ton threshold of $5,000/ton for NOx RACT. *See* New York State Dep't of Envtl. Conservation, DAR-20: Economic and Technical Analysis for Reasonably Available Control Technology Networks (Aug. 8, 2013), at 1-2 (adjusting to 2012 dollars the $3,000/ton cost threshold for NOx established by DEC in 1994). Second, while Pennsylvania proposes a $2,500/ton cost threshold for NOx, it proposes a $5,000/ton threshold for VOCs. Given that NOx is actually the more significant ozone precursor in the Northeast U.S., especially considering sources such as coal-fired power plants located in Pennsylvania and other upwind states, the NOx cost-effectiveness threshold should be as high, if not higher, than the VOC cost effectiveness threshold. Using a properly higher cost efficacy threshold for NOx would, of course, demonstrate even further the cost efficacy of SCR as RACT for coal combustion.

C. Pennsylvania's Proposed RACT Limits for Coal Combustion Are Woefully Inadequate

Despite the fact that SCR is RACT, and that SCR-equipped units can readily achieve a 0.07 lbs/MMBtu NOx emission rate, DEP now proposes that the far inferior control technology of low NOx burners should be considered RACT. Not only is this inconsistent with the suite of controls presently available nationwide, it is completely out of step with the level of controls already present in Pennsylvania's coal fleet: the majority of coal-fired electric-generating boilers in Pennsylvania are already equipped with far better NOx controls than the low NOx burners Pennsylvania is proposing as RACT. In fact, only a handful of small boilers lack low NOx burners; by contrast, *every single other coal-fired EGU boiler has controls that exceed the RACT as proposed in the rulemaking. See* Table 3, *infra.*

This disparity is particularly stark when viewed in terms of nameplate capacity: over 85% of the EGU coal fleet in terms of capacity already has controls or will shortly have controls[35] surpassing the RACT proposal Pennsylvania makes now.

Table 3: Pennsylvania Coal-Fired EGU Boilers and Current NOx Controls[36]

Plant Name	Unit ID	Nameplate Capacity (MW)	NOx Controls
AES Beaver Valley *(Cogen)*	GEN 3	114	LNBO, SNCR
Bruce Mansfield	1	914	LNBO, SCR
Bruce Mansfield	2	914	LNBO, SCR
Bruce Mansfield	3	914	LNBO, SCR
Cambria *(Cogen)*	GEN1	98	SNCR
Cheswick Power Plant	1	637	LNC3, SCR
Colver Power Project *(Waste Coal)*	COLV	118	SNCR

[35] Conemaugh is in the process of installing SCR on its two coal-fired boilers this year.

[36] All of the information displayed in Table 1 was retrieved from U.S. EPA's Air Market Program's Database or Title V air permits for the respective facilities. Table 1 employs the following acronyms: **LNBO**: Low NOx Burners; **LNC3**: Low NOx Coal and Air Nozzles with Close Coupled & Separated Overfire Air; **FBC**: Fluidized Bed Combuster; **OV**: Overfire Air.

Conemaugh	1	936	LNC3, SCR 2014
Conemaugh	2	936	LNC3, SCR 2014
Ebensburg Power	GEN1	58	None
Foster Wheeler *(Cogen)*	SG-101	47.3	FBC
Homer City Station	1	660	LNBO, SCR
Homer City Station	2	660	LNBO, SCR
Homer City Station	3	692	LNBO, SCR
John B Rich Memorial *(Waste Coal)*	GEN1	88	FBC, OV
Keystone	1	936	LNC3, SCR
Keystone	2	936	LNC3, SCR
Kline *(Cogen)*	GEN1	57.5	FBC
Northampton *(Waste Coal)*	GEN1	114	SNCR
Panther Creek *(Waste Coal)*	GEN1	94	SNCR
PPL Brunner Island	1	363	LNC3
PPL Brunner Island	2	405	LNC3
PPL Brunner Island	3	790	LNC3
PPL Montour	1	806	LNC3, SCR
PPL Montour	2	819	LNC3, SCR
Scrubgrass *(Waste Coal)*	GEN1	95	SNCR
Seward *(Waste Coal)*	FB1	585	SNCR
St Nicholas *(Cogen)*	SNCP	99	FBC
Westwood Generating Station	GEN1	36	None
Wheelabrator Frackville Energy	GEN1	48	FBC, Other

As a result, the RACT proposal would affect only seven units (highlighted in Table 3), or merely 3% (433.8 megawatts out of the total 13,970 megawatts) of coal-fired EGU capacity in Pennsylvania. Effectively, the proposed rulemaking contemplates RACT that lags immensely behind what is overwhelmingly already in place in Pennsylvania.

Thus, Pennsylvania's coal fleet is already emitting at lower rates than would be required by Pennsylvania's proposed RACT limits. *See* Table 4, *infra*; *see also* Figure 5, *infra*. Based on the 2012 data available in EPA's Clean Air Markets Program Database, all of the coal combustion units 60 megawatts or larger in Pennsylvania are effectively already in compliance with the proposed NOx emission rates. Indeed, many of these units achieved much lower NOx emission rates in 2012, such as Bruce Mansfield, the largest coal-fired power plant in Pennsylvania. Bruce Mansfield Units 1-3 emitted average NOx rates of 0.1 lbs/MMBtu, 0.11 lbs/MMBtu, and 0.11 lbs/MMBtu respectively, which are all substantially lower than the 0.40 lbs/MMBtu emission rate proposed as RACT for this plant.

Table 4: Pennsylvania Coal-Fired EGU Boilers and 2012 NOx Emission Rates[37]

Plant Name	Unit ID	Name-plate Capacity (MW)	Pro-posed RACT	2012 Avg NOx Rate (lbs/ MMBtu)	2012 Avg O3 Season NOx Rate (lbs/ MMbtu)	Lowest 60 Day Avg NOx Rate (lbs/ MMBtu)	Lowest 60 Day Dates
AES Beaver Valley *(Cogen)*	GEN 2	35	N/A	0.398	0.423	0.394	3/1-4/30/12
AES Beaver Valley *(Cogen)*	GEN 3	114	N/A	0.497	0.503	0.468	2/1-3/31/12
Bruce Mansfield	1	914	0.40	0.100	0.110	0.060	5/7-9/30/03
Bruce Mansfield	2	914	0.40	0.110	0.123	0.064	6/1-8/31/03
Bruce Mansfield	3	914	0.40	0.110	0.108	0.066	5/1-6/30/05
Cambria *(Cogen)*	GEN1	98	N/A	0.21	0.199	0.094	5/1-6/30/09
Cheswick	1	637	0.35	0.310	0.310	0.077	5/1-6/30/03
Colver Power *(Cogen)*	COLV	118	0.20	0.170	0.159	0.120	5/1-6/30/11
Conemaugh	1	936	0.35	0.315	0.319	N/A	N/A
Conemaugh	2	936	0.35	0.303	0.299	N/A	N/A
Ebensburg Power *(Waste Coal)*	GEN1	58	0.40	0.100	0.088	N/A	
Homer City	1	660	0.40	0.178	0.170	0.061	6/9-9/23/05
Homer City	2	660	0.40	0.233	0.220	0.088	7/27-9/27/05
Homer City	3	692	0.40	0.198	0.207	0.070	6/14-8/10/05
John B Rich *(Cogen)*	GEN1	88	0.20	0.050	0.044	N/A	
Keystone	1	936	0.40	0.355	0.361	0.047	7/8-9/4/09
Keystone	2	936	0.40	0.350	0.340	0.042	7/7-9/30/08
Northampton *(Waste Coal)*	GEN1	114	0.20	0.080	N/A	0.074	11/1-12/31/12
Panther Creek *(Waste Coal)*	GEN1	94	N/A	0.130	N/A	0.123	6/1-7/31/12
PPL Brunner Island	1	363	0.40	0.378	0.360	N/A	N/A
PPL Brunner Island	2	405	0.40	0.379	0.378	N/A	N/A
PPL Brunner Island	3	790	0.40	0.340	0.331	N/A	N/A
PPL Montour	1	806	0.40	0.390	0.399	0.071	6/3-8/5/08
PPL Montour	2	819	0.40	0.390	0.414	0.058	11/16-1/17/11
PPL Montour	11	17	0.40	N/A	N/A	N/A	N/A
Scrubgrass *(Waste Coal)*	GEN1	95	N/A	0.350	N/A	0.120	6/1-7/31/11
Seward *(Waste Coal)*	FB1	585	0.20	0.088	0.082	N/A	N/A

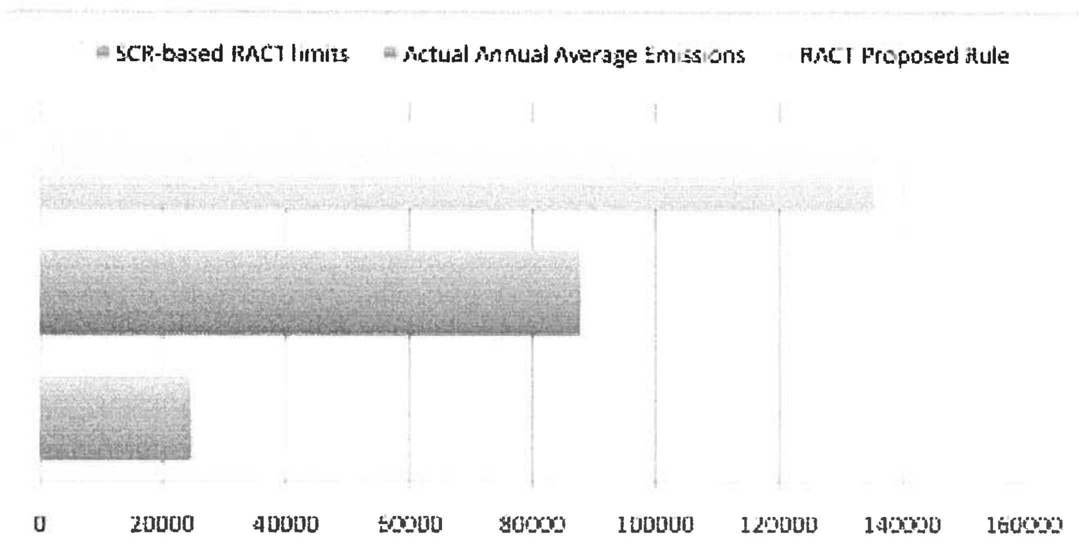
[37] All of the information displayed in Table 2 was retrieved from U.S. EPA's Air Market Program's Database or Title V air permits for the respective facilities. "N/A" corresponds to entries for small sources for which the Air Market Program Database data was not available.

			0.20	0.086	0.074	0.066	5/26-7/26/12
St Nicholas *(Cogen)*	SNCP	99	0.20	0.040	0.043	N/A	N/A
Wheelabrator Frackville Energy	GEN1	48	0.20	0.180	0.164	N/A	N/A

This 2012 data also demonstrates that SCR-equipped facilities are capable of achieving emission rates in the 0.05-0.07 lbs/MMBtu range discussed above as appropriate for RACT. For example, while PPL Montour Units 1 and 2 each had 2012 annual NOx emission rates of 0.39 lbs/MMBtu, they each experienced 60-day periods of much lower emissions: Unit 1 achieved 0.07 lbs/MMBtu (June 3 to August 5, 2008) and Unit 2 achieved 0.05 lbs/MMBtu (November 16, 2010 to January 17, 2011). Similarly, while Keystone Units 1 and 2 emitted NOx at an average annual rate of 0.35 lbs/MMBtu in 2012, both units achieved 0.04 lbs/MMBtu for at least 60 days (July 8 to September 4, 2009, and July 7 to September 30, 2008, respectively). *See also* Table 1, *supra.*

This effect is readily apparent when comparing the aggregate emissions that the eight largest coal plants in Pennsylvania would generate if limited appropriately consistent with SCR operation, with actual emissions, and emissions consistent with Pennsylvania's proposed RACT standard, based on recent capacity factor data.

Figure 5: Comparison of Annual Average NOx Emissions in Tons per Year from Pennsylvania's Eight Largest Coal Plants, with SCR-Based RACT Limits, Actual Historical Emissions, and Pennsylvania's RACT Proposed Rule Emission Limits [38]



[38] Data is based on the actual emissions and heat inputs of the Bruce Mansfield, Brunner Island, Cheswick, Conemaugh, Homer City, Keystone, Montour, and Seward facilities, taken from the data in U.S. EPA's Air Markets Database, for the years 2010-2013. *See* Exhibit 4.

If the eight largest coal plants in Pennsylvania were required to abide by RACT limits consistent with SCR operation, they would (based on historical levels of operation) emit less than 25,000 tons of NOx per year; by comparison, these facilities have averaged emissions of nearly 88,000 tons per year, and would emit nearly 136,000 tons per year under the limits DEP's RACT Proposed Rule (again, based on historical levels of plant operation).[39]

In other words, the emission limits in the current, inadequate proposal would actually set ostensibly RACT-based limits *higher* than what Pennsylvania's coal fleet is currently emitting, and over five times higher than what would be achieved with a RACT proposal based on use of SCR. Plainly, all of Pennsylvania's significantly sized coal-fired EGUs are capable of complying with much more rigorous standards with the technology currently in place. This RACT Proposed Rule is insufficient as it suggests a standard below what is actually available and currently in practice—in effect, the proposed rulemaking would confer *no benefits* in terms of emissions reductions from these facilities. Ignoring the emission levels actually achieved and achievable by facilities employing controls already in place is thoroughly inconsistent with a proper RACT determination; the limits contemplated by Pennsylvania here are a far cry from the lowest emission limitation capable of being met by available control technology.

The emission limits for coal-fired boilers contemplated in the RACT Proposed Rule are not just inconsistent with the actual prevalence of SCR in Pennsylvania, they are also significantly weaker than those of nearby states, including Ozone Transport Region states. Maryland, for example, is proposing RACT limits for nearly every single one of its coal-fired EGUs of 0.11 lbs/MMBtu or less on a 24-hour averaging period; for some units, Maryland is proposing limits as low as 0.06 lbs/MMBtu.[40]

Also, New York has implemented similarly stringent NOx limits as part of its RACT determination. There, RACT for coal-fired boilers is 0.20 lbs/MMBtu for wet-bottom coal cyclone boilers, 0.12 lbs/MMBtu for tangential and wall coal-fired boilers, and 0.08 lbs/MMBtu for fluidized bed coal-fired boilers.

Table 6: New York RACT Determination NOx Emission Limits (lbs/MMBtu)[41]

Fuel Type	Tangential	Wall	Cyclone	Fluidized Bed
Gas Only	0.08	0.08	na	na
Gas/Oil	0.15	0.15	0.20	na
Coal Wet Bottom	0.12	0.12	0.20	na
Coal Dry Bottom	0.12	0.12	na	0.08

[39] *See id.*
[40] *See* Maryland RACT Proposal at .03 General Requirements, *available at* http://www.mde.state.md.us/programs/regulations/air/Documents/Draft_COMAR_26.11.38_12_11_13.pdf .
[41] *See* 6 NYCRR § 227-2.4(a)(1)(ii).

Likewise, Delaware has adopted regulations restricting NOx emissions much more stringently than Pennsylvania is contemplating in the proposed rulemaking. For coal-fired units larger than 25 megawatts, Delaware sets a NOx emission limit of 0.125 lb/MMBtu, demonstrated on a rolling 24-hour average basis. *See* 7 Del. Admin. Code § 1146-4.3.

As such, Pennsylvania's contemplated RACT emission limits are multiple times higher than those being set or already set by neighboring states. Again, this is inconsistent with a proper RACT determination.

III. The Proposed Alternative Compliance Measures are Impermissible Loopholes

As currently written, the proposed rulemaking contains two impermissible loopholes to the emission limits contemplated for all sources: system-wide emissions averaging or "bubbling," and emissions averaging over rolling, 30-day periods.[42] Both of these alternative compliance mechanisms would severely undercut the proposed rulemaking's ability to deliver meaningful reductions in ozone concentrations.

A. System-Wide Averaging Will Lead to the Creation of NOx Hotspots

States such as Pennsylvania that contain ozone nonattainment areas and are within the ozone transport region must set emission limits that drive "reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of [RACT] . . ."[43] As stated previously, RACT is defined as "the lowest emissions limit that *a particular source* is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility."[44] Thus, RACT must be viewed as a measure intended to reduce transported pollutants as well as to improve local air quality.[45]

Under the RACT Proposed Rule, DEP would require sources to submit an operating permit modification for averaging NOx emissions on either a facility-wide or system-wide basis, using a 30-day rolling average.[46] The permit modification would be required, according to the Proposed Rule, to demonstrate that the aggregate NOx emissions emitted by the sources included in the facility-wide or system-wide NOx emissions averaging plan are not greater than ninety percent of the sum of the NOx emissions that would be emitted by the group of included sources if each source complied with the applicable NOx RACT requirement or NOx RACT emission limitation (*see* Section 129.97) on a source-specific basis.[47] However, simply allowing sources to move high and low NOx emissions from source to source does not sufficiently limit NOx emissions *at each source*. A given facility or system would be still be able to emit to disparately high levels of NOx pollution at the discretion of the owner or operator.

[42] Proposed 25 Pa. Code § 129.98(a).
[43] Section 172(c)(1) of the CAA, 42 U.S.C.A. § 7502(c)(1).
[44] *See* U.S. EPA, State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, 57 Fed. Reg. 55,260, 55,624 (Nov. 25, 1992).
[45] *See* U.S. EPA, State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental, 57 Fed. Reg. 18,070, 18,074 (Apr. 28 1992).
[46] Proposed Pa. Code § 129.98(b).
[47] Proposed Pa. Code § 129.98(d).

Failing to require reductions at all sources, and instead allowing some sources to compensate to allow others to pollute at heightened levels, would lead to the creation of NOx hotspots, and by extension, ozone hotspots. Each plant affected by the proposed rulemaking must be required to reduce emissions locally, and should not be permitted to "trade" reductions in other areas to justify high emissions by less-controlled plants.

B. The Proposed Rule Implicates Serious Environmental Justice Concerns

By permitting system-wide averaging as an alternative method of compliance with the proposed rulemaking, DEP also runs the risk of exposing certain Pennsylvanians, including those living in environmental justice communities, to a disproportionate amount of ozone pollution. In accordance with recommendations from the Environmental Justice Workgroup ("EJWG"), DEP identifies environmental justice areas of concern as any census tract where twenty percent or more of the area population lives in poverty.[48] The EJWG also recommended that DEP "seek to improve the condition of environmentally burdened communities by establishing benchmarks for improvement, assessing DEP programs for effectively improving conditions of [identified environmental justice areas of concern], and developing plans to improve conditions."[49] In furtherance of the EJWG's proposals, the Pennsylvania Environmental Justice Advisory Board ("EJAB") was created to review and make recommendations to DEP management on existing and proposed regulations that impact the environmental health of affected communities.[50] The EJAB is to, among other its objectives, "eliminate any existing environmental disparities in minority and low-income communities."[51]

Concurrently, EPA is required to "make achieving environmental justice part of its mission by identifying and addressing . . . disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories . . ."[52] EPA defines environmental justice concerns as "disproportionate impacts on minority, low-income, or indigenous populations" that exist prior to or may result from official decision or action.[53] When assessing environmental justice concerns, EPA places emphasis on the public health of and environmental conditions affecting minority, low-income, and indigenous populations because of historical exposure to physical, chemical, biological, social, and cultural factors that have imposed greater environmental burdens on these populations than those placed on the general population.[54] EPA encourages state agencies to consider these assessments when developing and implementing environmental regulations.[55]

As noted above, the proposed alternative compliance mechanism of bubbling emissions across fleets of NOx sources poses the severe risk of creating hotspots of high levels of ozone

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[48] DEP Policy Office, Environmental Justice Public Participation Policy (2004). Document ID 012-0501-002.
[49] *Id.*
[50] http://www.portal.state.pa.us/portal/server.pt/community/environmental_justice_advisory_board/14051.
[51] *Id.*
[52] Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 11, 1994).
[53] *Id.*
[54] U.S. EPA, EPA's Action Development Process: Interim Guidance on Considering the Development of an Action (2010).
[55] *Id.*

pollution; this risk can be seen plainly be examining one of the largest fleets of coal-fired power plants in Pennsylvania. NRG Energy, Inc. (formerly Reliant Energy and RRI Energy, and now including GenOn, Inc., after the 2012 GenOn-NRG merger) fully owns and operates five coal-fired EGUs in Pennsylvania, and has ownership stakes in two other facilities.[56] All seven facilities are in areas where thirty percent or greater of the surrounding population is below the poverty line. Two facilities, Keystone and Cheswick, utilize SCR to control emissions of NOx.[57] Conemaugh utilizes LNBs (although is installing SCR), and Seward utilizes SNCR.[58] Under the proposal, in order to maximize cost savings, NRG could potentially operate controls at its SCR-equipped units[59] and avoid having to operate or install more effective controls at its other units. Alternately, SCR controls could be operated only intermittently to hit a fleetwide average, increasing emissions in local areas.

This outcome would be potentially disastrous for low-income Pennsylvanians living in close proximity to these facilities and is clearly out of step with the recommendations of the EJWG. By allowing system-wide averaging, DEP is ignoring EPA mandates on environmental justice concerns and the responsibilities of the EJAB.

C. Emissions Averaging Over Lengthy Time Periods Is Inconsistent with the Attainment and Maintenance of the Ozone NAAQS

Thirty-day rolling averages are inconsistent with the short-term standard established in the ozone NAAQS. The 2008 ozone NAAQS is an 8-hour standard, allowing for variability in concentrations of ozone while concurrently addressing impacts to human health that result from exposure to ozone, even over short periods of time. By averaging, an owner or operator of a NOx major source is given the option to intermittently emit high volumes of NOx and still remain in compliance with the proposed rulemaking. As with system-wide averaging, these thirty-day averaging periods can potentially lead to disproportionate levels of NOx and thereby, disproportionate concentrations of ozone.[60]

If DEP intends to allow longer averaging periods for facilities, it must demonstrate that real reductions in actual emissions will be achieved.[61] In particular, and according to EPA guidance regarding alternative compliance mechanisms, DEP must prohibit emission reductions created outside the ozone season from being used during the ozone season.[62] Further, DEP must

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[56] These facilities are Cheswick, New Castle, Portland, Seward, and Shawville. NRG also operates and has 20% ownership stakes in the Conemaugh and Keystone facilities. *See* http://www.nrgenergy.com/about/assets.html; *see also* http://www.epa.gov/reg3artd/globclimate/r3pplants.html. At present, New Castle, Shawville, and Portland are slated for retirement.
[57] *See* http://www.epa.gov/reg3artd/globclimate/r3pplants.html.
[58] *Id.*
[59] Albeit not very rigorously, given the extremely permissive limits Pennsylvania is proposing as RACT.
[60] In previous instances, DEP has limited averaging times for criteria pollutants at certain facilities to meet the applicable NAAQS. *Sierra Club v. Pa. Dept. of Environmental Protection and Homer City OL1-OL8, LLC, and EME Homer City Gen. LLP* (EHB Docket No. 2012-093-L) (DEP agreed to match 1-hour sulfur dioxide emission limits to the corresponding 1-hour standard).
[61] U.S. EPA, Improving Air Quality with Economic Incentive Plans (2001). EPA-452/R-01-001.
[62] *Id. See also* Memorandum from O'Connor, J.R., U.S. EPA, OAQPS, to Regional Air Division Directors, "Averaging Times for Compliance with VOC Emission Limits – SIP Revisions Policy," January 20, 1994; Technical Support Document from Aburano, Douglas, U.S. EPA, Region 5, "Approval of Wisconsin Nitrogen

also demonstrate that long-term averaging will not jeopardize attainment and maintenance of the ozone NAAQS.[63]

However, DEP has failed to make any such demonstration or representation in the proposed rulemaking or supporting documentation for the proposed rule. Instead, DEP made only a cursory reference to attainment of the ozone NAAQs and asserted that "by providing flexibility in compliance through emissions averaging and case-specific options, the owners and operators of affected facilities would be able to achieve compliance in the most cost-effective manner."[64] As stated above, DEP's requirements in proposed § 129.98(d) for sources wishing to use 30-day averaging encourage owners or operators of affected sources to maximize cost savings by using more expensive controls less efficiently. This will lead to higher NOx emissions and ozone concentrations in certain affected areas than in others.

Further, there are no ozone season restrictions in the proposed rule nor are such restrictions mentioned in the supporting documentation for the proposed rule. EPA guidance and recent NOx RACT plan approvals have dictated the inclusion of ozone season restrictions as part of the requisite demonstration that alternative compliance mechanisms for NOx RACT—such as 30-day averaging—will not contribute to nonattainment of the ozone NAAQS.[65] The proposed rule also fails to disallow the use of excess NOx emission reductions created outside of the ozone season during the ozone season, which is also noted in the aforementioned EPA guidance and RACT plan approvals.[66]

IV. Conclusion

As explained above, the proposed Pennsylvania RACT Determination would incorporate improperly permissive NOx emission limits for coal-fired EGUs, and would involve a technological standard *inferior* to what is in place for the vast majority of Pennsylvanian's coal-fired fleet. The RACT Determination must be revised before finalization to correct these deficiencies. Additionally, the alternative compliance mechanisms in the proposed rulemaking should be altered to reflect the short-term nature of the ozone NAAQS, and to prevent concentration of harmful emissions near one or more large sources of ozone precursor pollution.

Sincerely,

/s/

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Oxides (NOx) Reasonably Available Control Technology (RACT) and Additions and Amendments to Other Non-RACT NOx Rules," January 25, 2009. EPA-R05-OAR-2007-0587-0003.

[63] *Id.*

[64] Regulatory Analysis Form at 10.

[65] *See* note 54, *supra*.

[66] *Id.*

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May 13, 2015

Via Electronic Mail

Re: Pennsylvania's Ozone RACT Proposal

Dear Secretary Hanger and Acting Secretary Quigley,

Thank you for taking the time to meet with us. We wished to give you some more information about, as well as a recommended solution to, a problem we see in the latest version of Pennsylvania's ozone Reasonably Available Control Technology ("RACT") proposal. As we discussed, while the current proposal is an improvement over the proposal put forward in early 2014, it suffers from some drawbacks: the limits for nitrogen oxides ("NOx") emissions for large coal-fired emitters which already have controls are significantly more permissive than what is readily achievable with those controls, the contemplated 30-day averaging periods for emission limits are much longer than necessary, and the temperature-linked limits pose difficulties for evaluating compliance. However, our chief concern is with the proposal's de facto exemption for a single large NOx polluter: the Brunner Island coal-fired power plant. Closing this loophole would result in greatly improving the overall proposal, enabling Sierra Club to support it.

Because the proposal seeks to address RACT by requiring facilities to operate the controls that they already have, rather than by setting emission limits based on what controls are economically and technologically available to those facilities, facilities that have not yet installed NOx pollution controls are effectively given a free pass on emissions. Nearly the entire Pennsylvania coal fleet is already equipped with selective catalytic reduction ("SCR") or selective non-catalytic reduction ("SNCR") technology. However, the 1,428 megawatt Brunner Island facility is the *only* large coal-fired power plant in the state that lacks any controls for NOx. Thus, under the proposal, not only would it be exempted from the emission limits applied to the controlled remainder of the fleet, it would be the *only* coal plant that would have effectively no reduction in NOx emissions limits. Effectively, the proposal says that *no level of NOx controls* is reasonably available for large plants like Brunner that have failed to already install controls.

This is problematic for multiple reasons:

- The proposal's interpretation of RACT as being based on what controls facilities have, as opposed to whether controls are reasonably available to facilities, is contrary to law, and creates problems like the Brunner Island loophole.
- Brunner Island is a massive source of NOx pollution (see Figure 1 below), and will go unregulated, thus threatening human health and jeopardizing Pennsylvania's ability to ultimately attain ozone standards.
- Exempting large sources like Brunner Island on the basis of its failure to install controls installed by its competitors creates perverse incentives, by rewarding delays in pollution abatement.
- Other states that send ozone-precursor pollution into Pennsylvania will be doing their own RACT determinations, and they likely will not limit their uncontrolled emitters if Pennsylvania does not.

Accordingly, and for the reasons explained in more detail below, we strongly recommend that the proposal be mildly revised to include a term requiring that all large uncontrolled coal boilers be required to achieve an emission limit of 0.12 lbs of NOx per million Btu of heat input after a three-year compliance period.

A. RACT Is Technology-Forcing

The central responsibility of an agency undertaking a RACT determination is to assess what level of control technology is reasonably available for a source category as a whole, and then to apply that in crafting emission limits. This means an examination of what controls are technologically and economically available. Technological feasibility is readily established here, as there is no dispute that controls like SCR are technologically feasible at Pennsylvania's large coal plants, such as Brunner Island. Economic feasibility for SCR for Pennsylvanian coal boilers is likewise established: as EPA has explained, "[e]conomic feasibility considers the cost of reducing emissions and the difference in costs between the particular source and other similar sources that have implemented emission reduction."[1] Specifically,

> EPA presumes that it is reasonable for similar sources to bear similar costs of emission reductions. **Economic feasibility rests very little on the ability of a particular source to 'afford' to reduce emissions to the level of similar sources. Less efficient sources would be rewarded by having to bear lower emission reduction costs if affordability were given high consideration. Rather, economic feasibility for RACT purposes is largely determined by evidence that other sources in a source category have in fact applied the control technology in question.**[2]

Simply put, since the great majority of large coal boilers in Pennsylvania currently operate with SCR, limits consistent with SCR operation are RACT. Accordingly, while requiring facilities to actually run the controls they already have is an important step in addressing RACT requirements, it is only a first step: DEP must apply limits consistent with control operation to the uncontrolled fleet as well.

Indeed, emission limitations consistent with control operation are regularly imposed on even those facilities that have not yet installed controls as part of the RACT process.[3] The situation in Pennsylvania should be no different.

B. The Current Proposal and the Brunner Island Loophole

Under the current proposal, units equipped with SCR would be required to achieve an emission limit of 0.12 lbs. per million Btu of heat input when operating above 600 degrees (*see* Proposed § 129.97(l)(viii)), while units equipped with SNCR would be required to operate their SNCR when input temperatures exceed 1600 degrees (*see* § 129.97(l)(ix)). A facility without controls, however, does not have to meet these limits; instead, different limits are imposed based on boiler design. For circulating fluidized bed boilers, this limit is 0.16 lbs/MMbtu. *Id.* at § 129.97(l)(vi)(A). But, a tangentially-fired boiler (like the three units at Brunner Island) need only meet a limit of 0.35 lbs. of NOx per million Btu of heat input. *Id.* at § 129.97(l)(vi)(B).

In combination these regulations build a loophole through which only Brunner Island falls. Brunner Island is the only large uncontrolled facility in Pennsylvania that

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[1] U.S. EPA, State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental, 57 Fed. Reg. 18,070, 18,074 (Apr. 28, 1992).

[2] *Id.*

[3] *See, e.g.*, New York Department of Environmental Conservation, Cayuga Operating Company LLC Title V Permit, ID No. 7-5032-00019/00016, at 86, Item 82.2 (requiring that the facility "install a Selective Catalytic Reduction (SCR) system") *available at* http://www.dec.ny.gov/dardata/boss/afs/permits/750320001900016_r2.pdf; *see also id.* at 64-65 (referencing NOx emission requirements flowing from New York's RACT compliance plan).

has—unrelated to the RACT proposal—not already announced plans to retire or convert completely to natural gas[4]. In fact, it is the only remaining uncontrolled facility with tangentially-fired coal boilers in the state. Thus, unlike all other coal-fired boilers in Pennsylvania, it would, under the current proposal, receive a limit of only 0.35 lbs NOx/MMbtu, nearly triple the rate for controlled facilities.

To resolve this, we suggest adding a single new subsection (subsection § 129.97(l)(x)) to the proposal, requiring that units currently lacking either SNCR or SCR be subject to the same limits as SCR-equipped units after a three-year compliance period:

> § 129.97(l)(x): For a coal-fired combustion unit with a rated heat input equal to or greater than 1000 million Btu/hour that lacks either a selective catalytic reduction system or a selective non-catalytic reduction system as of the effective date of this provision, by three years after the effective date of this provision, 0.12 lb NOx/million Btu heat input.

This provision would close the Brunner Island loophole, thereby ensuring that no large coal-fired boiler in Pennsylvania is exempted from NOx emission reductions.

C. <u>Brunner Island Is a Massive NOx Polluter</u>

PPL's Brunner Island is a very large coal-fired power plant in southeastern Pennsylvania. It has three boilers with nameplate capacities of 313 MW, 373 MW, and 742 MW, for a total of 1.43 GW of capacity. Each of its boilers are tangentially-fired, and collectively emitted a colossal 11,000 tons of NOx in 2014.

As Table 1 demonstrates, there will not be a single coal-fired power plant larger than 100 MW in size that lacks any controls for NOx aside from Brunner Island. In fact, all the other uncontrolled units are circulating fluidized bed boilers that would be held to the lower standard of 0.16 lbs. NOx/MMBtu under the proposal.

<u>Table 1: Pennsylvania Coal Plants Lacking SCR</u>

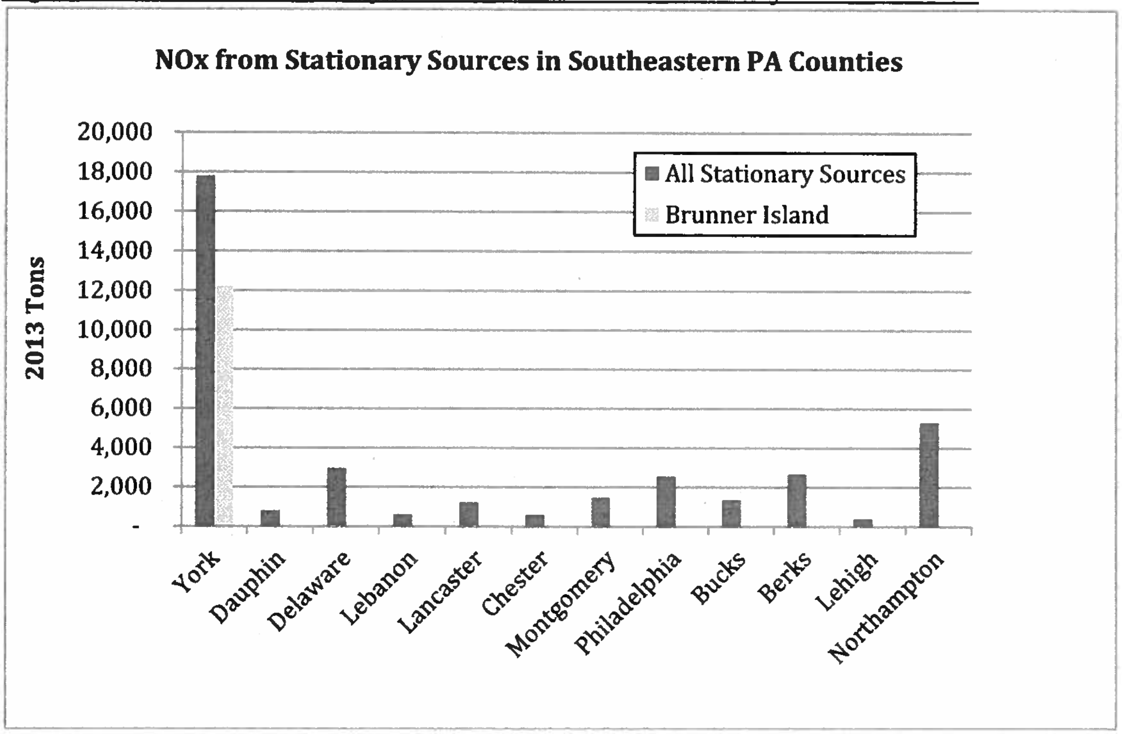
Plant Name	Megawattage	NOx Controls	Waste Coal?	Cogen?
Westwood	36		Y	
Foster Wheeler	47.3		Y	Y
Wheelabrator	48		Y	
Kline	57.5		Y	Y
Ebensburg	58		Y	
John B. Rich	88		Y	

[4] In fact, some coal-fired facilities that have announced that they are retiring or switching to gas, such as Shawville and New Castle, already have SNCR.

Panther Creek	94	SNCR	Y	
Scrubgrass	95	SNCR	Y	
Cambria	98	SNCR	Y	Y
St. Nicholas	99		Y	Y
Northampton	114	SNCR	Y	
Colver	118	SNCR	Y	
Beaver Valley	149	SNCR		Y
Seward	585	SNCR	Y	
Brunner Island	1428			

Accordingly, and as demonstrated in Figure 1, Brunner Island is by far the largest stationary source of NOx pollution in Southeast Pennsylvania.

Figure 1: NOx from Stationary Sources in Southeastern Pennsylvania Counties



Notably, Figure 1 lists emissions in 2013. Under the current RACT proposal, other stationary sources would be reducing their NOx emissions, while Brunner Island's would remain essentially unchanged.[5]

[5] Under the proposal, Brunner Island would be subject to a limit of 0.35 lbs. NOx/MMbtu (*see* Proposed § 129.97(l)(vi)(B)), while the facility's emission rate in 2014 was less than

D. Exempting Brunner Island Creates Perverse Incentives

Under the current proposal, Brunner Island would be exempted from reducing its NOx emissions simply because it has failed to install the same sort of NOx controls installed on nearly every other coal boiler in Pennsylvania's fleet. This would effectively reward PPL for dragging its feet in controlling harmful emissions, and would act as a disincentive to other operators contemplating whether or not to install controls for other pollutants.

Indeed, Brunner Island, unburdened by a requirement to reduce its emissions, would likely increase its dispatch compared with other coal-fired power plants in the state, given the competitive marketplace for power in Pennsylvania and PJM. Thus, while other facilities would be working to decrease their NOx emissions rates, total NOx emissions from Brunner Island may actually increase.

E. States that Send Their NOx Pollution to Pennsylvania Will Likely Exempt Their Own Plants, if Pennsylvania Exempts Brunner Island

While Pennsylvania is developing its RACT determination under the 2008 ozone standard now, other upwind states will be doing so in the near future. Many states, like Ohio and Kentucky, will imminently have their ozone nonattainment areas "bumped up" because they failed to attain the standard, and accordingly will be required to do RACT. As Pennsylvania is well-aware, much of Pennsylvania's ozone problems flow from emissions from such upwind states.[6] It is thus entirely in Pennsylvania's interest to ensure that the precedent is set that RACT does not exempt coal-fired power plants simply because they have failed to install controls previously.[7]

Although in Pennsylvania there is only one large coal plant lacking NOx controls, there are a great deal more in upwind states. By failing to close the Brunner Island loophole, Pennsylvania risks establishing a precedent under which those upwind facilities would likewise not need to reduce NOx emissions, and those emissions will continue to flow into Pennsylvania, frustrating the state's attempts to attain the ozone standard.

While Pennsylvania is absolutely right in its RACT proposal that facilities that already have NOx controls—but are not achieving significant NOx reductions—should

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0.37 lbs. NOx/MMbtu. Particularly given the averaging, bubbling, and other flexibility provisions in the proposal, this would likely mean no real change in emissions or operations at Brunner Island.

[6] Indeed, this is why Pennsylvania joined other Mid-Atlantic states in petitioning EPA to expand the Ozone Transport Region to include these Midwest states.

[7] For example, based on 2014 ozone monitor data, it is likely that the Lake, Hamilton, and Clermont ozone nonattainment areas in Ohio will be reclassified from marginal to moderate nonattainment, and accordingly Ohio will have to perform a RACT analysis for its large sources of NOx.

be required to run those controls and limit their pollution immediately, Pennsylvania should also ensure that, where a plant has failed to install NOx controls, it would be placed on a swift timeline to reduce emissions. This will enable Pennsylvania to ensure that its neighbors do so as well.

F. Even with Limits, Brunner Island Has Multiple Paths to Compliance

Although an emission limit of 0.12 lbs. NOx/MMBtu would represent a significant improvement in emissions from Brunner Island, and would be in step with what the proposed regulation contemplates for SCR-equipped facilities, the proposal's flexibility elements would ensure that Brunner Island would have many options for compliance. First and foremost, Brunner Island could install SCR, like every other large conventional coal boiler in Pennsylvania. Brunner Island, under the current proposal, could also bubble emissions with PPL's nearby Montour coal-fired power plant; since Montour is equipped with SCR,[8] the two facilities together have significant flexibility in achieving a combined low average NOx emission rate. Similarly, since Brunner Island is in the process of adding gas-firing capability, Brunner may be able to lower its overall NOx emissions through that mechanism as well.[9]

Accordingly, for the reasons laid out above, we strongly recommend that DEP close the Brunner Island loophole, thereby protecting public health, speeding Pennsylvania along the path to attaining the ozone NAAQS, and setting a precedent that will help protect Pennsylvanians from pollution transported in from upwind states beginning to turn to their own RACT determinations. The proposal, currently being refined and vetted by DEP and the multiple advisory committees in public meetings without the benefit of a comment response document, should be further improved as described herein. DEP continues to receive input and letters from stakeholders and other states, and thus is presented with a unique opportunity to correct its proposal, protect Pennsylvanians, and provide leadership to improve air quality region-wide.

Sincerely,

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[8] As explained in more detail in our June 2014 comments, Montour not only has historically achieved NOx emission rates of less than half the currently proposed limit for long stretches of time, but DEP itself, in permitting Montour to install SCR, noted that Montour would be able to hit an emission limit of 0.04 lbs. NOx/MMbtu. Plainly, there is significant room for further emissions reductions by more fully using Montour's controls.

[9] The proposed RACT regulation also includes additional flexibility petition provisions (*see* Proposed § 129.97(k), allowing entities to petition for different compliance schedules, and Proposed § 129.99, allowing entities to petition for source-specific requirements). The current Brunner Island loophole precludes those provisions, effectively granting a waiver to one large source without the benefit (or burden of proof) from the petition process.

/s/

Thomas Schuster
Senior Campaign Representative
Sierra Club
PO Box 51
Windber, PA 15963
(814) 467-2614 (office)
(575) 642-7156 (cell)
tom.schuster@sierraclub.org

Cc:
Joyce Epps
Krishnan Ramamurthy
Kathleen McGinty

SCR Cost and Cost-Effectiveness Worksheet				
Variable	**Designation**	**Units**	**Calculation**	**Notes**
Plant Name			Brunner Island	
Unit			1	
Unit Size	A	MW	363	
Gross Heat Rate	C	Btu/kWhr	10023	[NEEDS v 5.13]
NOx Rate	D	lb/MMBtu	0.37	[NEEDS v 5.13]
CF	J	CF	0.8	[Assume]
Type of Coal	F		BIT	[NEEDS v 5.13]
Coal Factor	G		1.05	Bit=1; PRB=1.05; Lig=1.07
Retrofit Factor	B		1.25	1 = typical retrofit
HR Factor	H		1.0023	C/10000
Heat Input	I	Btu/hr	3.64E+09	A*C*1000
CF	J		0.8	[Assume]
NOx Removal Eff	K	%	90.0%	[Assume]
NOx Removal factor	L		1.13	equals K/80%
NOx Removed	M	lb/hr	1.21E+03	D*I/10^6*K
Urea rate (100%)	N	lb/hr	846	M*0.525*60/46*1.01/.99
Steam Required	O	lb/hr	956	N*1.13
Aux. Power	P	%	0.57	0.56*(G*H)^0.43
Urea Cost (50% sol)	R	$/ton	400	Default
Catalyst Cost	S	$/m3	8000	Default
Aux Power Cost	T	$/kwh	0.06	Default
Steam Cost	U	$/Klb	4	Default
Operating Labor Rate	V	$/hr	60	Default
Capital Cost Calculation				
BMR ($) =	SCR		54,693,937	
BMF ($) =	base reagent preparation cost		2,418,917	
BMA ($) =	APH (SO2> 3lb/MMBtu)			
BMB ($) =	fans/aux power		5,769,962	
BM ($) =	Total base cost		62,882,816	
BM ($/KW) =			173	
Total Project Cost				
A1 = 10% of BM ($) =	Eng. and Construction management		6,288,282	
A2 = 10% of BM ($) =	Labor adjustment		6,288,282	
A3 = 10% of BM ($) =	Contractor profit/fees		6,288,282	
CECC ($) =	Cap., Eng. and management		81,747,661	
CECC ($/kw) =			225	

B1 = 5% of CECC	owners cost		-	
B2 = 6% of CECC + B1	AFUDC (2yr cycle)		-	
TPC ($) =	**Total project cost**		81,747,661	
TPC ($/kw) =			225	
Fixed O&M Cost				
FOMO ($/kw-yr) =	fixed O&M - additional labor cost		0.2	
FOMM ($/kw-yr) =	fixed O&M - additional maintenace, mtl and labor cost		0.8	
FOM ($/kw-yr) =	**Total Fixed O&M Cost**		1.00	
Variable O&M Cost				
VOMR ($/MWhr) =	Variable O&M - urea		0.93	
VOMW ($/MWhr) =	Variable O&M - catalyst disposal		0.43	
VOMP ($/MWhr)=	Variable O&M Power		0.34	
VOMM ($/MWhr) =	Variable O&M - steam		0.011	
VOM ($/MWhr) =	**Total Variable O&M Cost**		1.72	
CR =			9.44%	[See below]
Property Taxes and Insurance			1.50%	[Assume]
Total Charge Rate			10.94%	
Cost of control - $/Ton				
CF			80%	
Control Efficiency			90%	
Uncontrolled Rate				
NOx Rate (lb/hr)			1346	
NOx Rate (lb/MMBtu)			0.370	
NOx (TPY)			4717	
Controlled Rate				
NOx Rate (lb/hr)			134.6	
NOx Rate (lb/MMBtu)			0.04	
NOx (TPY)			472	
Tons/Year Removed			**4245**	
Total Cost/year			$13,669,408	
$/Ton			$3,220	

CRF Calculation			
Annual Interest Rate, i			0.07
# of Years, N			20
Intermediate Calc			0.2709

Intermediate Calc			2.870
CRF			**0.0944**

SCR Cost and Cost-Effectiveness Worksheet			
Variable	**Designation**	**Units**	**Calculation**
Plant			Brunner Island
Unit			2
Unit Size	A	MW	405
Gross Heat Rate	C	Btu/kWhr	9695
NOx Rate	D	lb/MMBtu	0.36
CF	J	CF	0.8
Type of Coal	F		BIT
Coal Factor	G		1.05
Retrofit Factor	B		1.25
HR Factor	H		0.9695
Heat Input	I	Btu/hr	3.93E+09
CF	J		0.8
NOx Removal Eff	K	%	90.0%
NOx Removal factor	L		1.13
NOx Removed	M	lb/hr	1.27E+03
Urea rate (100%)	N	lb/hr	889
Steam Required	O	lb/hr	1004
Aux. Power	P	%	0.56
Urea Cost (50% sol)	R	$/ton	400
Catalyst Cost	S	$/m3	8000
Aux Power Cost	T	$/kwh	0.06
Steam Cost	U	$/Klb	4
Operating Labor Rate	V	$/hr	60
Capital Cost Calculation			
BMR ($) =	SCR		58,666,447
BMF ($) =	base reagent preparation cost		2,448,617
BMA ($) =	APH (SO2> 3lb/MMBtu)		
BMB ($) =	fans/aux power		5,957,641
BM ($) =	Total base cost		67,072,705
BM ($/KW) =			166
Total Project Cost			
A1 = 10% of BM ($) =	Eng. and Construction management		6,707,270
A2 = 10% of BM ($) =	Labor adjustment		6,707,270
A3 = 10% of BM ($) =	Contractor profit/fees		6,707,270
CECC ($) =	Cap., Eng. and management		87,194,516
CECC ($/kw) =			215

B1 = 5% of CECC	owners cost		-
B2 = 6% of CECC + B1	AFUDC (2yr cycle)		-
TPC ($) =	**Total project cost**		87,194,516
TPC ($/kw) =			215
Fixed O&M Cost			
FOMO ($/kw-yr) =	fixed O&M - additional labor cost		0.2
FOMM ($/kw-yr) =	fixed O&M - additional maintenace, mtl and labor cost		0.7
FOM ($/kw-yr) =	**Total Fixed O&M Cost**		0.89
Variable O&M Cost			
VOMR ($/MWhr) =	Variable O&M - urea		0.88
VOMW ($/MWhr) =	Variable O&M - catalyst disposal		0.43
VOMP ($/MWhr)=	Variable O&M Power		0.34
VOMM ($/MWhr) =	Variable O&M - steam		0.010
VOM ($/MWhr) =	**Total Variable O&M Cost**		1.66
CR =			9.44%
Property Taxes and Insurance			1.50%
Total Charge Rate			10.94%
Cost of control - $/Ton			
CF			80%
Control Efficiency			90%
Uncontrolled Rate			
NOx Rate (lb/hr)			1414
NOx Rate (lb/MMBtu)			0.360
NOx (TPY)			4953
Controlled Rate			
NOx Rate (lb/hr)			141.4
NOx Rate (lb/MMBtu)			0.04
NOx (TPY)			495
Tons/Year Removed			**4458**
Total Cost/year			$14,599,400
$/Ton			$3,275

Notes
[NEEDS v 5.13]
[NEEDS v 5.13]
[Assume]
[NEEDS v 5.13]
Bit=1; PRB=1.05; Lig=1.07
1 = typical retrofit
C/10000
A*C*1000
[Assume]
[Assume]
equals K/80%
D*I/10^6*K
M*0.525*60/46*1.01/.99
N*1.13
0.56*(G*H)^0.43
Default
Default
Default
Default
Default

[See Unit 1 spreadsheet]
[Assume]

SCR Cost and Cost-Effectiveness Worksheet			
Variable	**Designation**	**Units**	**Calculation**
Plant			Brunner Island
Unit			3
Unit Size	A	MW	790
Gross Heat Rate	C	Btu/kWhr	9502
NOx Rate	D	lb/MMBtu	0.38
CF	J	CF	0.8
Type of Coal	F		BIT
Coal Factor	G		1.05
Retrofit Factor	B		1.25
HR Factor	H		0.9502
Heat Input	I	Btu/hr	7.51E+09
CF	J		0.8
NOx Removal Eff	K	%	90.0%
NOx Removal factor	L		1.13
NOx Removed	M	lb/hr	2.57E+03
Urea rate (100%)	N	lb/hr	1794
Steam Required	O	lb/hr	2027
Aux. Power	P	%	0.56
Urea Cost (50% sol)	R	$/ton	400
Catalyst Cost	S	$/m3	8000
Aux Power Cost	T	$/kwh	0.06
Steam Cost	U	$/Klb	4
Operating Labor Rate	V	$/hr	60
Capital Cost Calculation			
BMR ($) =	SCR		106,491,250
BMF ($) =	base reagent preparation cost		2,918,441
BMA ($) =	APH (SO2> 3lb/MMBtu)		
BMB ($) =	fans/aux power		7,821,297
BM ($) =	Total base cost		117,230,989
BM ($/KW) =			148
Total Project Cost			
A1 = 10% of BM ($) =	Eng. and Construction management		11,723,099
A2 = 10% of BM ($) =	Labor adjustment		11,723,099
A3 = 10% of BM ($) =	Contractor profit/fees		11,723,099
CECC ($) =	Cap., Eng. and management		152,400,285
CECC ($/kw) =			193

B1 = 5% of CECC	owners cost		-
B2 = 6% of CECC + B1	AFUDC (2yr cycle)		-
TPC ($) =	**Total project cost**		152,400,285
TPC ($/kw) =			193
Fixed O&M Cost			
FOMO ($/kw-yr) =	fixed O&M - additional labor cost		0.1
FOMM ($/kw-yr) =	fixed O&M - additional maintenace, mtl and labor cost		0.4
FOM ($/kw-yr) =	**Total Fixed O&M Cost**		0.46
Variable O&M Cost			
VOMR ($/MWhr) =	Variable O&M - urea		0.91
VOMW ($/MWhr) =	Variable O&M - catalyst disposal		0.43
VOMP ($/MWhr)=	Variable O&M Power		0.34
VOMM ($/MWhr) =	Variable O&M - steam		0.010
VOM ($/MWhr) =	**Total Variable O&M Cost**		1.68
CR =			9.44%
Property Taxes and Insurance			1.50%
Total Charge Rate			10.94%
Cost of control - $/Ton			
CF			80%
Control Efficiency			90%
Uncontrolled Rate			
NOx Rate (lb/hr)			2853
NOx Rate (lb/MMBtu)			0.380
NOx (TPY)			9995
Controlled Rate			
NOx Rate (lb/hr)			285.3
NOx Rate (lb/MMBtu)			0.04
NOx (TPY)			1000
Tons/Year Removed			**8996**
Total Cost/year			$26,352,462
$/Ton			$2,929

Notes
[NEEDS v 5.13]
[NEEDS v 5.13]
[Assume]
[NEEDS v 5.13]
Bit=1; PRB=1.05; Lig=1.07
1 = typical retrofit
C/10000
A*C*1000
[Assume]
[Assume]
equals K/80%
D*I/10^6*K
M*0.525*60/46*1.01/.99
N*1.13
0.56*(G*H)^0.43
Default
Default
Default
Default
Default

[See Unit 1 spreadsheet]
[Assume]

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
AIR QUALITY PROGRAM

PLAN APPROVAL

Issue Date:	October 27, 2014	Effective Date:	October 27, 2014
Expiration Date:	March 31, 2016		

In accordance with the provisions of the Air Pollution Control Act, the Act of January 8, 1960, P.L. 2119, as amended, and 25 Pa. Code Chapter 127, the Owner, [and Operator if noted] (hereinafter referred to as permittee) identified below is authorized by the Department of Environmental Protection (Department) to construct, install, modify or reactivate the air emission source(s) more fully described in the site inventory list. This Facility is subject to all terms and conditions specified in this plan approval. Nothing in this plan approval relieves the permittee from its obligations to comply with all applicable Federal, State and Local laws and regulations.

The regulatory or statutory authority for each plan approval condition is set forth in brackets. All terms and conditions in this permit are federally enforceable unless otherwise designated as "State-Only" requirements.

Plan Approval No. 67-05005H

Federal Tax Id - Plant Code: 23-3022596-5

Owner Information

Name: PPL BRUNNER ISLAND, LLC
Mailing Address: 2 N 9TH ST
ALLENTOWN, PA 18101-1179

Plant Information

Plant: PPL BRUNNER ISLAND LLC/BRUNNER ISLAND
Location: 67 York County 67917 East Manchester Township
SIC Code: 4911 Trans. & Utilities - Electric Services

Responsible Official

Name: DENNIS J MURPHY
Title: VICE PRESIDENT
Phone (610) 774 - 4316

Plan Approval Contact Person

Name: EDWARD J WERKHEISER
Title: SH&E COMPLIANCE MGR
Phone: (610) 774 - 5410

[Signature] ______________________________
WILLIAM R. WEAVER, SOUTHCENTRAL REGION AIR PROGRAM MANAGER

Plan Approval Description

This plan approval authorizes the following activity at the Brunner Island Steam Electric Station located in East Manchester Township, York County:

1. The combustion of natural gas fuel by Unit Nos. 1 (Source ID 031A), 2 (Source ID 032) and 3 (Source ID 033A).

2. The construction and subsequent temporary operation of two (2) natural gas-fired natural gas pipeline heaters (Source ID 050).

3. The construction and subsequent temporary operation of a natural gas pipeline (Source ID 301).

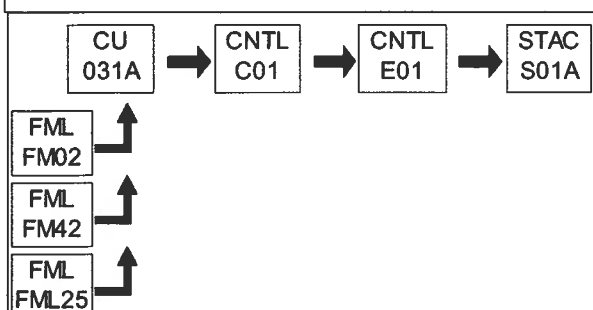
SECTION A. Table of Contents

SECTION A. Table of Contents

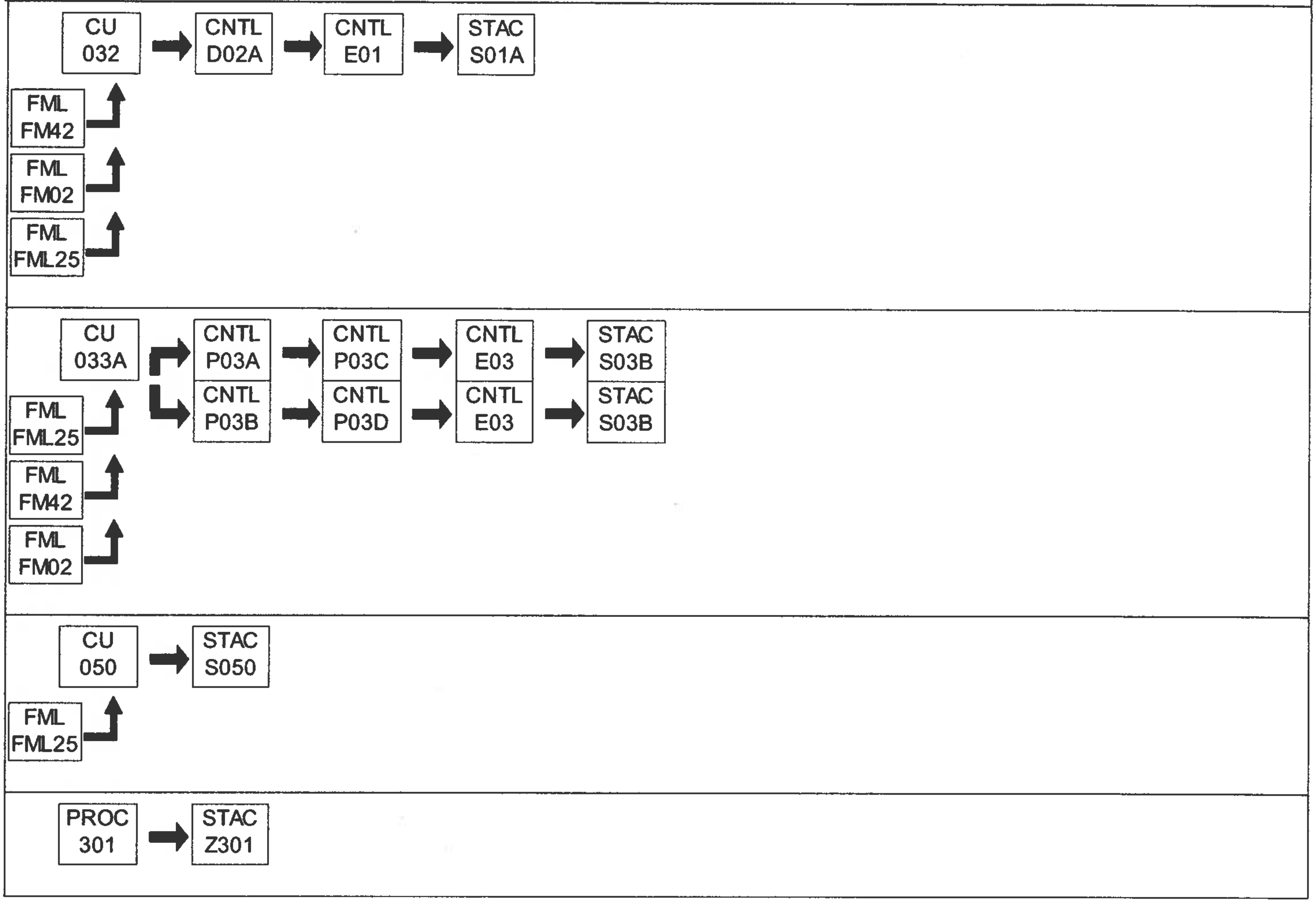
SECTION A. Plan Approval Inventory List

Source ID	Source Name	Capacity/Throughput		Fuel/Material
031A	BRUNNER ISLAND UNIT 1	3,345.000	MMBTU/HR	
		134.000	Tons/HR	Bituminous
		4,960.000	Gal/HR	#2 Oil
		3,345.000	MCF/HR	Natural Gas
032	BRUNNER ISLAND UNIT 2	3,800.000	MMBTU/HR	
		152.000	Tons/HR	Bituminous
		5,760.000	Gal/HR	#2 Oil
		3,800.000	MCF/HR	Natural Gas
033A	BRUNNER ISLAND UNIT 3	7,329.000	MMBTU/HR	
		289.600	Tons/HR	Bituminous
		8,600.000	Gal/HR	#2 Oil
		7,329.000	MCF/HR	Natural Gas
050	NATURAL GAS PIPELINE HEATERS	19.800	MMBTU/HR	
		19.800	MCF/HR	Natural Gas
301	NATURAL GAS PIPELINE (PROCESS)		N/A	Natural Gas
C01	UNIT 1 CARBORUNDUM BAGHOUSE			
D02A	UNIT 2 HAMON RESEARCH COTTRELL ESP			
E01	FGD SCRUBBER 1			
E03	FGD SCRUBBER 2			
P03A	UNIT #3 HRC ESP (3A)			
P03B	UNIT #3 HRC ESP (3B)			
P03C	UNIT #3 LODGE-COTTRELL ESP (3C)			
P03D	UNIT #3 LODGE-COTTRELL ESP (3D)			
FM02	NO. 2 FUEL OIL SUPPLY			
FM42	BITUMINOUS COAL SUPPLY			
FML25	NATURAL GAS PIPELINE (FML)			
S01A	UNIT 1/2 FGD SCRUBBER EXHAUST			
S03B	UNIT 3 FGD SCRUBBER EXHAUST			
S050	SOURCE 050 STACKS			
Z301	SOURCE 301 FUGITIVE EMISSIONS			

PERMIT MAPS



PERMIT MAPS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CNTL D02A
CNTL E01
STAC S01A
FML FM42
FML FM02
FML FML25
CU 033A
CNTL P03A
CNTL P03C
CNTL E03
STAC S03B
CNTL P03B
CNTL P03D
CNTL E03
STAC S03B
FML FML25
FML FM42
FML FM02
CU 050
STAC S050
FML FML25
PROC 301
STAC Z301

SECTION B. General Plan Approval Requirements

#001 [25 Pa. Code § 121.1]

Definitions

Words and terms that are not otherwise defined in this plan approval shall have the meanings set forth in Section 3 of the Air Pollution Control Act (35 P.S. § 4003) and 25 Pa. Code § 121.1.

#002 [25 Pa. Code § 127.12b (a) (b)]

Future Adoption of Requirements

The issuance of this plan approval does not prevent the future adoption by the Department of any rules, regulations or standards, or the issuance of orders necessary to comply with the requirements of the Federal Clean Air Act or the Pennsylvania Air Pollution Control Act, or to achieve or maintain ambient air quality standards. The issuance of this plan approval shall not be construed to limit the Department's enforcement authority.

#003 [25 Pa. Code § 127.12b]

Plan Approval Temporary Operation

This plan approval authorizes temporary operation of the source(s) covered by this plan approval provided the following conditions are met.

(a) When construction, installation, modification, or reactivation is being conducted, the permittee shall provide written notice to the Department of the completion of the activity approved by this plan approval and the permittee's intent to commence operation at least five (5) working days prior to the completion of said activity. The notice shall state when the activity will be completed and when the permittee expects to commence operation. When the activity involves multiple sources on different time schedules, notice is required for the commencement of operation of each source.

(b) Pursuant to 25 Pa. Code § 127.12b (d), temporary operation of the source(s) is authorized to facilitate the shakedown of sources and air cleaning devices, to permit operations pending the issuance of a permit under 25 Pa. Code Chapter 127, Subchapter F (relating to operating permits) or Subchapter G (relating to Title V operating permits) or to permit the evaluation of the air contaminant aspects of the source.

(c) This plan approval authorizes a temporary operation period not to exceed 180 days from the date of commencement of operation, provided the Department receives notice from the permittee pursuant to paragraph (a), above.

(d) The permittee may request an extension of the 180-day shakedown period if further evaluation of the air contamination aspects of the source(s) is necessary. The request for an extension shall be submitted, in writing, to the Department at least 15 days prior to the end of the initial 180-day shakedown period and shall provide a description of the compliance status of the source, a detailed schedule for establishing compliance, and the reasons compliance has not been established. This temporary operation period will be valid for a limited time and may be extended for additional limited periods, each not to exceed 180 days.

(e) The notice submitted by the permittee pursuant to subpart (a) above, prior to the expiration of the plan approval, shall modify the plan approval expiration date on Page 1 of this plan approval. The new plan approval expiration date shall be 180 days from the date of commencement of operation.

#004 [25 Pa. Code § 127.12(a) (10)]

Content of Applications

The permittee shall maintain and operate the sources and associated air cleaning devices in accordance with good engineering practice as described in the plan approval application submitted to the Department.

#005 [25 Pa. Code §§ 127.12(c) and (d) & 35 P.S. § 4013.2]

Public Records and Confidential Information

(a) The records, reports or information obtained by the Department or referred to at public hearings shall be available to the public, except as provided in paragraph (b) of this condition.

(b) Upon cause shown by the permittee that the records, reports or information, or a particular portion thereof, but not emission data, to which the Department has access under the act, if made public, would divulge production or sales figures or methods, processes or production unique to that person or would otherwise tend to affect adversely the competitive position of that person by revealing trade secrets, including intellectual property rights, the Department will consider the record, report or information, or particular portion thereof confidential in the administration of the act. The Department will implement this section consistent with sections 112(d) and 114(c) of the Clean Air Act (42 U.S.C.A. § § 7412(d) and 7414(c)). Nothing in this section prevents disclosure of the report, record or information to Federal, State or local representatives as necessary for purposes of administration of Federal, State or local air pollution control laws, or when relevant in a proceeding under the act.

#006 [25 Pa. Code § 127.12b]

Plan Approval terms and conditions.

[Additional authority for this condition is derived from 25 Pa. Code Section 127.13]

(a) This plan approval will be valid for a limited time, as specified by the expiration date contained on Page 1 of this plan approval. Except as provided in § § 127.11a and 127.215 (relating to reactivation of sources; and reactivation), at the end of the time, if the construction, modification, reactivation or installation has not been completed, a new plan approval application or an extension of the previous approval will be required.

(b) If construction has commenced, but cannot be completed before the expiration of this plan approval, an extension of the plan approval must be obtained to continue construction. To allow adequate time for departmental action, a request for the extension shall be postmarked at least thirty (30) days prior to the expiration date. The request for an extension shall include the following:

(i) A justification for the extension,
(ii) A schedule for the completion of the construction

If construction has not commenced before the expiration of this plan approval, then a new plan approval application must be submitted and approval obtained before construction can commence.

(c) If the construction, modification or installation is not commenced within 18 months of the issuance of this plan approval or if there is more than an 18-month lapse in construction, modification or installation, a new plan approval application that meets the requirements of 25 Pa. Code Chapter 127, Subchapter B (related to plan approval requirements), Subchapter D (related to prevention of significant deterioration of air quality), and Subchapter E (related to new source review) shall be submitted. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified.

#007 [25 Pa. Code § 127.32]

Transfer of Plan Approvals

(a) This plan approval may not be transferred from one person to another except when a change of ownership is demonstrated to the satisfaction of the Department and the Department approves the transfer of the plan approval in writing.

(b) Section 127.12a (relating to compliance review) applies to a request for transfer of a plan approval. A compliance review form shall accompany the request.

(c) This plan approval is valid only for the specific source and the specific location of the source as described in the application.

#008 [25 Pa. Code § 127.12(4) & 35 P.S. § 4008 & § 114 of the CAA]

Inspection and Entry

(a) Pursuant to 35 P.S. § 4008, no person shall hinder, obstruct, prevent or interfere with the Department or its personnel in the performance of any duty authorized under the Air Pollution Control Act.

(b) The permittee shall also allow the Department to have access at reasonable times to said sources and associated air cleaning devices with such measuring and recording equipment, including equipment recording visual observations, as the Department deems necessary and proper for performing its duties and for the effective enforcement of the Air Pollution Control Act and regulations adopted under the act.

SECTION B. General Plan Approval Requirements

(c) Nothing in this plan approval condition shall limit the ability of the Environmental Protection Agency to inspect or enter the premises of the permittee in accordance with Section 114 or other applicable provisions of the Clean Air Act.

#009 [25 Pa. Code 127.13a]

Plan Approval Changes for Cause

This plan approval may be terminated, modified, suspended or revoked and reissued if one or more of the following applies:

(a) The permittee constructs or operates the source subject to the plan approval in violation of the act, the Clean Air Act, the regulations promulgated under the act or the Clean Air Act, a plan approval or permit or in a manner that causes air pollution.

(b) The permittee fails to properly or adequately maintain or repair an air pollution control device or equipment attached to or otherwise made a part of the source.

(c) The permittee fails to submit a report required by this plan approval.

(d) The Environmental Protection Agency determines that this plan approval is not in compliance with the Clean Air Act or the regulations thereunder.

#010 [25 Pa. Code §§ 121.9 & 127.216]

Circumvention

(a) The permittee, or any other person, may not circumvent the new source review requirements of 25 Pa. Code Chapter 127, Subchapter E by causing or allowing a pattern of ownership or development, including the phasing, staging, delaying or engaging in incremental construction, over a geographic area of a facility which, except for the pattern of ownership or development, would otherwise require a permit or submission of a plan approval application.

(b) No person may permit the use of a device, stack height which exceeds good engineering practice stack height, dispersion technique or other technique which, without resulting in reduction of the total amount of air contaminants emitted, conceals or dilutes an emission of air contaminants which would otherwise be in violation of this plan approval, the Air Pollution Control Act or the regulations promulgated thereunder, except that with prior approval of the Department, the device or technique may be used for control of malodors.

#011 [25 Pa. Code § 127.12c]

Submissions

Reports, test data, monitoring data, notifications shall be submitted to the:

Regional Air Program Manager
PA Department of Environmental Protection
(At the address given on the plan approval transmittal letter or otherwise notified)

#012 [25 Pa. Code § 127.12(9) & 40 CFR Part 68]

Risk Management

(a) If required by Section 112(r) of the Clean Air Act, the permittee shall develop and implement an accidental release program consistent with requirements of the Clean Air Act, 40 CFR Part 68 (relating to chemical accident prevention provisions) and the Federal Chemical Safety Information, Site Security and Fuels Regulatory Relief Act (P.L. 106-40).

(b) The permittee shall prepare and implement a Risk Management Plan (RMP) which meets the requirements of Section 112(r) of the Clean Air Act, 40 CFR Part 68 and the Federal Chemical Safety Information, Site Security and Fuels Regulatory Relief Act when a regulated substance listed in 40 CFR § 68.130 is present in a process in more than the listed threshold quantity at the facility. The permittee shall submit the RMP to the Environmental Protection Agency according to the following schedule and requirements:

(1) The permittee shall submit the first RMP to a central point specified by the Environmental Protection Agency no later than the latest of the following:

SECTION B. General Plan Approval Requirements

(i) Three years after the date on which a regulated substance is first listed under § 68.130; or,
(ii) The date on which a regulated substance is first present above a threshold quantity in a process.

(2) The permittee shall submit any additional relevant information requested by the Department or the Environmental Protection Agency concerning the RMP and shall make subsequent submissions of RMPs in accordance with 40 CFR § 68.190.

(3) The permittee shall certify that the RMP is accurate and complete in accordance with the requirements of 40 CFR Part 68, including a checklist addressing the required elements of a complete RMP.

(c) As used in this plan approval condition, the term "process" shall be as defined in 40 CFR § 68.3. The term "process" means any activity involving a regulated substance including any use, storage, manufacturing, handling, or on-site movement of such substances or any combination of these activities. For purposes of this definition, any group of vessels that are interconnected, or separate vessels that are located such that a regulated substance could be involved in a potential release, shall be considered a single process.

#013 [25 Pa. Code § 127.25]

Compliance Requirement

A person may not cause or permit the operation of a source subject to § 127.11 (relating to plan approval requirements), unless the source and air cleaning devices identified in the application for the plan approval and the plan approval issued to the source, are operated and maintained in accordance with specifications in the application and conditions in the plan approval issued by the Department. A person may not cause or permit the operation of an air contamination source subject to this chapter in a manner inconsistent with good operating practices.

SECTION C. Site Level Plan Approval Requirements

I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

V. REPORTING REQUIREMENTS.

 # 001 [25 Pa. Code §127.12b]
Plan approval terms and conditions.

(a) The permittee shall submit semiannual reports to the Department regarding the project that is the subject of this plan approval. The reports shall be due on January 31 and July 31 of each year. The permittee shall continue submitting these reports until either:

(1) the first plan approval extension application for the project has been submitted; or

(2) the operating permit administrative amendment application has been submitted for the project; or

(3) an operating permit initial or renewal application addressing the inclusion of this plan approval has been submitted for the facility.

(b) The semiannual reports shall contain the following:

(1) a brief summary of the status of the project, including any key construction milestones during the relevant semiannual period.

(2) a statement of whether the equipment that is the subject of the plan approval has begun operating for any purpose, and what was the date that such operation began.

(3) a statement of whether a plan approval extension is expected to be needed during the upcoming semiannual period, and if so, when the permittee anticipates submitting the application for such an extension.

(c) The semiannual reports shall be sent to: Air Quality Program Manager, Department of Environmental Protection, Southcentral Regional Office, 909 Elmerton Avenue, Harrisburg, PA 17110-8200.

(d) Within 60 days of the Department's written request to do so, the permittee shall submit either:

(1) an initial state-only or Title V operating permit application for this facility, or

(2) an administrative amendment application to incorporate the provisions of this plan approval into an existing state-only or Title V operating permit.

SECTION C. Site Level Plan Approval Requirements

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

VII. ADDITIONAL REQUIREMENTS.

 # 002 [25 Pa. Code §127.12b]
Plan approval terms and conditions.
All conditions contained in Title V Operating Permit No. 67-05005 remain in effect unless superseded or amended by conditions contained in this plan approval (No. 67-05005H). If there is a conflict between a condition contained in this plan approval and a condition contained in Title V Operating Permit No. 67-05005, the permittee shall comply with the condition contained in this plan approval.

VIII. COMPLIANCE CERTIFICATION.

No additional compliance certifications exist except as provided in other sections of this plan approval including Section B (relating to Plan Approval General Requirements).

IX. COMPLIANCE SCHEDULE.

No compliance milestones exist.

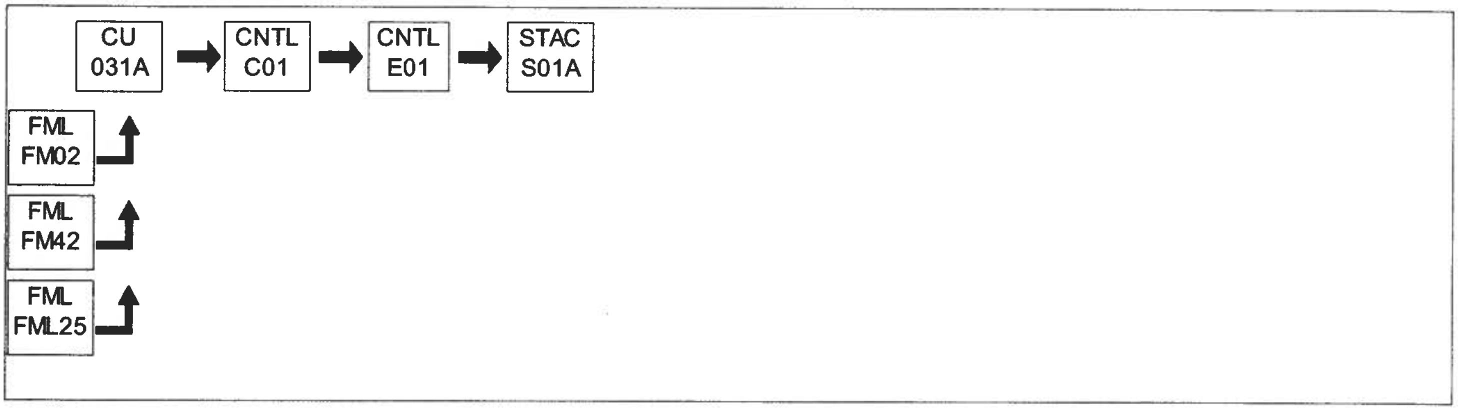
SECTION D. Source Level Plan Approval Requirements

Source ID: 031A Source Name: BRUNNER ISLAND UNIT 1

Source Capacity/Throughput:

3,345.000	MMBTU/HR	
134.000	Tons/HR	Bituminous
4,960.000	Gal/HR	#2 Oil
3,345.000	MCF/HR	Natural Gas

Conditions for this source occur in the following groups: 001
002



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Plan Approval Requirements

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

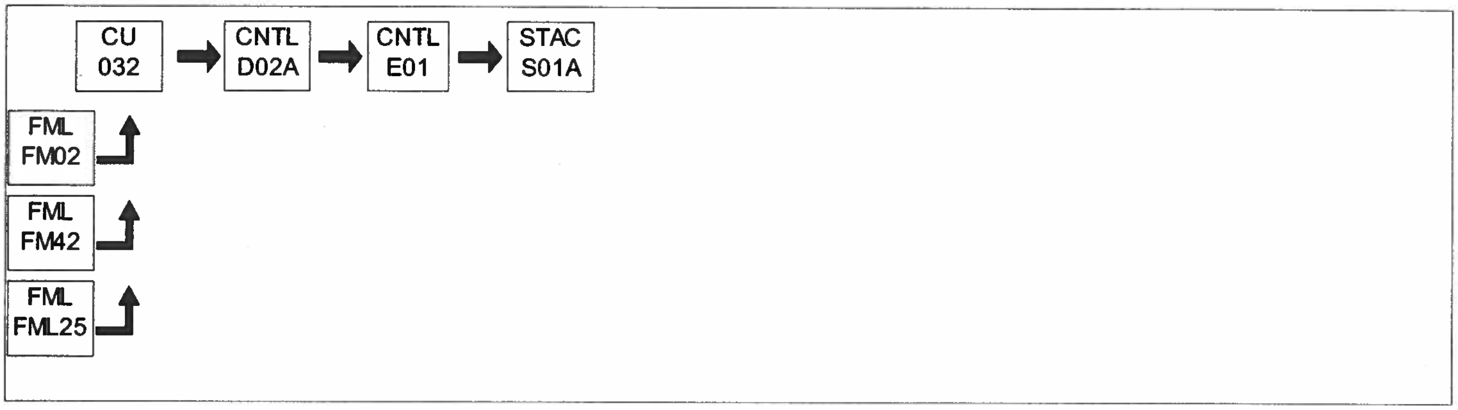
SECTION D. Source Level Plan Approval Requirements

Source ID: 032 Source Name: BRUNNER ISLAND UNIT 2

Source Capacity/Throughput:

3,800.000	MMBTU/HR	
152.000	Tons/HR	Bituminous
5,760.000	Gal/HR	#2 Oil
3,800.000	MCF/HR	Natural Gas

Conditions for this source occur in the following groups: 001
002



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Plan Approval Requirements

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

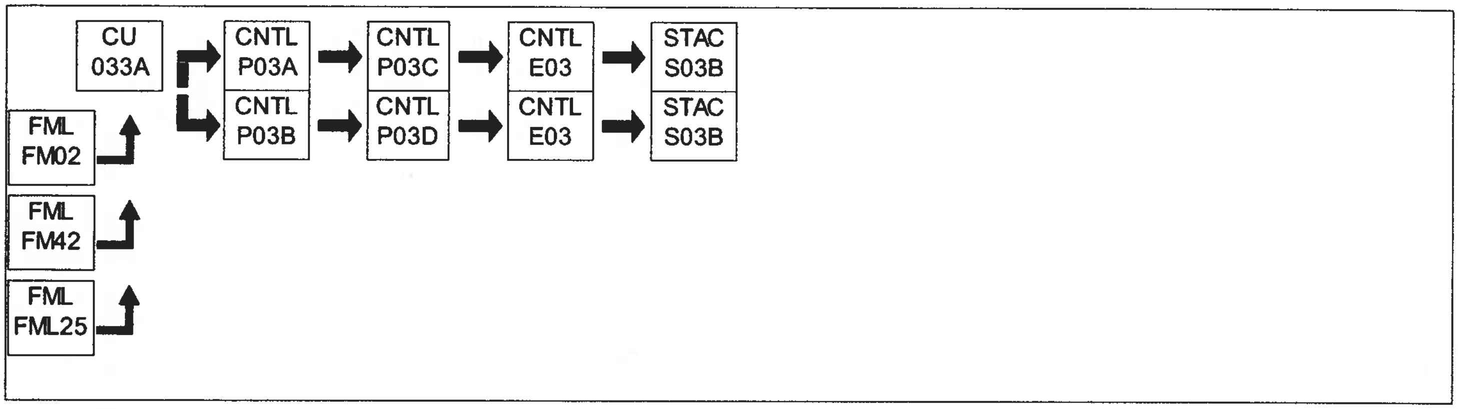
SECTION D. Source Level Plan Approval Requirements

Source ID: 033A Source Name: BRUNNER ISLAND UNIT 3

Source Capacity/Throughput:

7,329.000	MMBTU/HR	
289.600	Tons/HR	Bituminous
8,600.000	Gal/HR	#2 Oil
7,329.000	MCF/HR	Natural Gas

Conditions for this source occur in the following groups: 001
002



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Plan Approval Requirements

VII. ADDITIONAL REQUIREMENTS.

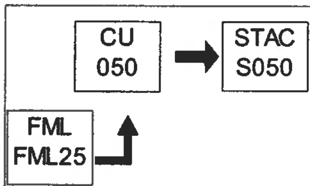
No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Plan Approval Requirements

Source ID: 050 Source Name: NATURAL GAS PIPELINE HEATERS

Source Capacity/Throughput: 19.800 MMBTU/HR
19.800 MCF/HR Natural Gas

Conditions for this source occur in the following groups: 002
003



I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §123.11]
Combustion units

The permittee shall not allow the emission of particulate matter into the outdoor atmosphere from each Source ID 050 heater in excess of 0.4 pound per million BTU of heat input.

 # 002 [25 Pa. Code §123.22]
Combustion units

The permittee shall not allow the emission into the outdoor atmosphere of sulfur oxides, expressed as SO2, from each Source ID 050 heater in excess of four (4) pounds per million BTU of heat input over any one (1) hour period.

[Compliance with the requirement(s) specified in this streamlined permit condition assures compliance with the SIP-approved sulfur dioxide emission limit specified in 40 CFR 52.2020(c)(1)]

Fuel Restriction(s).

 # 003 [25 Pa. Code §127.12b]
Plan approval terms and conditions.

The permittee shall operate each Source ID 050 heater using natural gas fuel only.

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Plan Approval Requirements

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

 # 004 [25 Pa. Code §127.444]
Compliance requirements.
The permittee shall operate and maintain each Source ID 050 heater in accordance with the manufacturer's specifications.

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Plan Approval Requirements

Source ID: 301 Source Name: NATURAL GAS PIPELINE (PROCESS)

Source Capacity/Throughput: N/A Natural Gas

Conditions for this source occur in the following groups: 002

PROC 301 → STAC Z301

I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements) and/or Section E (Source Group Restrictions).

SECTION E. Source Group Plan Approval Restrictions.

Group Name: 001

Group Description: THREE UTILITY BOILERS

Sources included in this group

ID	Name
031A	BRUNNER ISLAND UNIT 1
032	BRUNNER ISLAND UNIT 2
033A	BRUNNER ISLAND UNIT 3

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.12b]

Plan approval terms and conditions.

The permittee shall operate each Group 001 boiler (and associated coal mill heaters) using either bituminous coal, No. 2 fuel oil, or natural gas fuel only. The bituminous coal may be treated with materials of which the Department has approved in writing. This plan approval condition shall supersede Condition #005 in Group 001 in Section E of Title V Operating Permit No. 67-05005.

II. TESTING REQUIREMENTS.

 # 002 [25 Pa. Code §127.12b]

Plan approval terms and conditions.

(a) Pursuant to 25 Pa. Code §139.3, at least 30 calendar days prior to commencing an emissions testing program, a test protocol shall be submitted to the Department for review and approval. The test protocol shall meet all applicable requirements specified in the most current version of the Department's Source Testing Manual.

(b) Pursuant to 25 Pa. Code §139.3, at least 15 calendar days prior to commencing an emissions testing program, notification as to the date and time of testing shall be given to the Southcentral Regional Office. Notification shall also be sent to the Bureau of Air Quality's Division of Source Testing and Monitoring. Notification shall not be made without prior receipt of a protocol acceptance letter from the Department.

(c) Pursuant to 25 Pa. Code §139.53(a)(3), within 15 calendar days after completion of the on-site testing portion of an emissions test program, if a complete test report has not yet been submitted, an electronic mail notification shall be sent to the Department's Bureau of Air Quality's Division of Source Testing and Monitoring and the Southcentral Regional Office indicating the completion date of the on-site testing.

(d) Pursuant to 25 Pa. Code §139.3, a complete test report shall be submitted to the Department no later than 60 calendar days after completion of the on-site testing portion of an emissions test program.

(e) Pursuant to 25 Pa. Code §139.53(b), a complete test report shall include a summary of the emissions results on the first page of the report indicating if each pollutant measured is within permitted limits and a statement of compliance or non-compliance with all applicable plan approval/operating permit conditions. The summary results will include, at a minimum, the following information:

(1) A statement that the owner or operator has reviewed the report from the emissions testing body and agrees with the findings.
(2) Plan approval/operating permit number(s) and condition(s) which are the basis for the evaluation.
(3) Summary of results with respect to each applicable plan approval/operating permit condition.
(4) Statement of compliance or non-compliance with each applicable plan approval/operating permit condition.

(f) Pursuant to 25 Pa. Code §139.3, all submittals shall meet all applicable requirements specified in the most current version of the Department's Source Testing Manual.

(g) All testing shall be performed in accordance with the provisions of Chapter 139 of the Rules and Regulations of the Department.

(h) Pursuant to 25 Pa. Code §§139.53(a)(1) and 139.53(a)(3), all submittals, besides notifications, shall be accomplished

SECTION E. Source Group Plan Approval Restrictions.

through PSIMS*Online available through https://www.depgreenport.state.pa.us/ecomm/Login.jsp. If internet submittal can not be accomplished, three (3) copies of the submittal shall be sent to the Southcentral Regional Office at the following address, with deadlines verified through document postmarks:

PA DEP
Southcentral Regional Office
Air Quality Program
909 Elmerton Avenue
Harrisburg, PA 17110-8200

(i) The permittee shall ensure all federal reporting requirements contained in any applicable federal subpart are followed, including timelines more stringent than those contained herein. In the event of an inconsistency or any conflicting state and federal requirements, the most stringent provision, term, condition, method or rule shall be used by default.

 # 003 [25 Pa. Code §127.12b]
Plan approval terms and conditions.

(a) Within 180 days after all three (3) Group 001 boilers are capable of firing natural gas, unless approved otherwise in writing by the Department, the permittee shall conduct three (3) runs, while firing natural gas fuel, of the following emissions tests of each Group 001 boiler pursuant to Chapter 139 of the rules and regulations of the Department:

(1) EPA Reference Method 10 or another Method approved by the Department - CO emissions; report CO emissions in units of lb/hr and lb/mmBTU.

(2) EPA Reference Method 18, 25, 25A, or another Method approved by the Department - VOC emissions; report VOC emissions in units of lb/hr and lb/mmBTU; VOC emissions shall be reported in terms of hexane.

(b) The emissions tests referenced in (a), above, shall be performed while each Group 001 boiler is operating within 5.0% of its maximum rated power output capacity or within 5.0% of its maximum natural gas combustion capacity, unless approved otherwise in writing by the Department.

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

SECTION E. Source Group Plan Approval Restrictions.

Group Name: 002

Group Description: AFFECTED AIR EMISSION SOURCES

Sources included in this group

ID	Name
031A	BRUNNER ISLAND UNIT 1
032	BRUNNER ISLAND UNIT 2
033A	BRUNNER ISLAND UNIT 3
050	NATURAL GAS PIPELINE HEATERS
301	NATURAL GAS PIPELINE (PROCESS)

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.12b]

Plan approval terms and conditions.

(a) The permittee shall comply with a VOC emission cap of 64.71 tons during any consecutive 12-month period for the Group 002 sources. The VOC emission cap for the Group 002 sources is a compliance cap, imposed for Prevention of Significant Deterioration (PSD) applicability purposes. This VOC emission cap shall not provide any relief from PSD applicability determinations for any future physical change or change in the method of operation of the Group 002 sources at the facility. The Group 002 sources covered under the aforementioned VOC emission cap shall be considered as one emissions unit, as defined in 25 Pa. Code Section 121.1 (relating to definitions), for PSD applicability purposes. Any future PSD applicability determinations must consider the baseline actual VOC emissions of all of the Group 002 sources as one emissions unit and not the VOC emission cap. In the event that PSD applicability is triggered for any of the Group 002 sources covered by the VOC emission cap, BACT shall apply to all of the Group 002 sources. If the permittee finds it necessary to relax the VOC emission cap at some future date, the source obligation requirements of 40 CFR §52.21(r)(4) shall apply.

(b) The provisions of part (a), above, do not preclude the permittee from seeking and procuring a plant-wide applicability limit (PAL) pursuant to 40 CFR §52.21(aa).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

IV. RECORDKEEPING REQUIREMENTS.

 # 002 [25 Pa. Code §127.12b]

Plan approval terms and conditions.

(a) The permittee shall calculate the monthly VOC emissions from the Group 002 sources using AP-42 emission factors, manufacturer-supplied emission factors, material balance, performance (stack) test data, CEMS data, or other method(s) acceptable to the Department. The permittee shall maintain records of the monthly VOC emissions.

(b) The permittee shall calculate the cumulative VOC emissions from the Group 002 sources for each consecutive 12-month period. The permittee shall maintain records of the cumulative VOC emissions from the Group 002 sources for each consecutive 12-month period in order to demonstrate compliance with Condition #001, above.

(c) The permittee shall retain these records for a minimum of five (5) years. The records shall be made available to the Department upon its request.

SECTION E. Source Group Plan Approval Restrictions.

V. REPORTING REQUIREMENTS.

 # 003 [25 Pa. Code §127.12b]
Plan approval terms and conditions.

(a) An annual Group 002 VOC emissions report for a given calendar year is due within 60 days after the end of each calendar year, and shall be submitted to the Air Quality District Supervisor, at the following address, unless otherwise specified:

PA DEP
York District Office
Air Quality Program
150 Roosevelt Avenue
York, PA 17401

(b) The monthly VOC emissions from the Group 002 sources including the calculation methodology referenced in Condition #002(a), above, shall be included in the annual VOC emissions report.

(c) The cumulative VOC emissions from the Group 002 sources for each consecutive 12-month period referenced in Condition #002(b), above, shall be included in the annual VOC emissions report.

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

SECTION E. Source Group Plan Approval Restrictions.

Group Name: 003

Group Description: SOURCE SUBJECT TO MACT SUBPART DDDDD

Sources included in this group

ID	Name
050	NATURAL GAS PIPELINE HEATERS

I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this plan approval including Section B (Plan Approval General Requirements).

VII. ADDITIONAL REQUIREMENTS.

 # 001 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.7485]
Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters.
Am I subject to this subpart?

§63.7480 What is the purpose of this subpart?

This subpart establishes national emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAP. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and work practice standards.

§63.7485 Am I subject to this subpart?

You are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler or process heater as defined in §63.7575 that is located at, or is part of, a major source of HAP, except as specified in §63.7491. For purposes of this subpart, a major source of HAP is as defined in §63.2, except that for oil and natural gas production facilities, a major source of HAP is as defined in §63.7575.

[78 FR 7162, Jan. 31, 2013]

§63.7490 What is the affected source of this subpart?

SECTION E. Source Group Plan Approval Restrictions.

(a) This subpart applies to new, reconstructed, and existing affected sources as described in paragraphs (a)(1) and (2) of this section.

(1) The affected source of this subpart is the collection at a major source of all existing industrial, commercial, and institutional boilers and process heaters within a subcategory as defined in §63.7575.

(2) The affected source of this subpart is each new or reconstructed industrial, commercial, or institutional boiler or process heater, as defined in §63.7575, located at a major source.

(b) A boiler or process heater is new if you commence construction of the boiler or process heater after June 4, 2010, and you meet the applicability criteria at the time you commence construction.

(c) A boiler or process heater is reconstructed if you meet the reconstruction criteria as defined in §63.2, you commence reconstruction after June 4, 2010, and you meet the applicability criteria at the time you commence reconstruction.

(d) A boiler or process heater is existing if it is not new or reconstructed.

(e) An existing electric utility steam generating unit (EGU) that meets the applicability requirements of this subpart after the effective date of this final rule due to a change (e.g., fuel switch) is considered to be an existing source under this subpart.

[76 FR 15664, Mar. 21, 2011, as amended at 78 FR 7162, Jan. 31, 2013]

§63.7491 Are any boilers or process heaters not subject to this subpart?

The types of boilers and process heaters listed in paragraphs (a) through (n) of this section are not subject to this subpart. [NA – NO EXEMPTIONS APPLY]

(a) [NA – NOT SUBJECT TO 5U]

(b) [NA – NOT SUBJECT TO MM]

(c) [NA – NO R&D UNITS]

(d) [NA – NOT HOT WATER HEATERS]

(e) [NA – NO REFINING KETTLES]

(f) [NA – NOT SUBJECT TO YY]

(g) [NA – NO BLAST FURNACE STOVES]

(h) [NA – NO UNITS PART OF SOURCES SUBJECT TO OTHER PART 63 SUBPART, SUCH AS JJJ, OOO, PPP, U]

(i) [NA – NO UNITS USED AS CONTROL DEVICES

(j) [NA – NO UNITS DEFINED AS TEMPORARY]

(k) [NA – NO UNITS FIRE BLAST FURNACE GAS]

(l) [NA – NO CAA SECTION 129 UNITS]

(m) [NA – NOT SUBJECT TO EEE]

[76 FR 15664, Mar. 21, 2011, as amended at 78 FR 7162, Jan. 31, 2013]

§63.7495 When do I have to comply with this subpart?

SECTION E. Source Group Plan Approval Restrictions.

(a) If you have a new or reconstructed boiler or process heater, you must comply with this subpart by January 31, 2013, or upon startup of your boiler or process heater, whichever is later.

(b) If you have an existing boiler or process heater, you must comply with this subpart no later than January 31, 2016, except as provided in §63.6(i).

(c) If you have an area source that increases its emissions or its potential to emit such that it becomes a major source of HAP, paragraphs (c)(1) and (2) of this section apply to you.

(1) Any new or reconstructed boiler or process heater at the existing source must be in compliance with this subpart upon startup.

(2) Any existing boiler or process heater at the existing source must be in compliance with this subpart within 3 years after the source becomes a major source.

(d) You must meet the notification requirements in §63.7545 according to the schedule in §63.7545 and in subpart A of this part. Some of the notifications must be submitted before you are required to comply with the emission limits and work practice standards in this subpart.

(e) If you own or operate an industrial, commercial, or institutional boiler or process heater and would be subject to this subpart except for the exemption in §63.7491(l) for commercial and industrial solid waste incineration units covered by part 60, subpart CCCC or subpart DDDD, and you cease combusting solid waste, you must be in compliance with this subpart on the effective date of the switch from waste to fuel.

(f) If you own or operate an existing EGU that becomes subject to this subpart after January 31, 2013, you must be in compliance with the applicable existing source provisions of this subpart on the effective date such unit becomes subject to this subpart.

(g) If you own or operate an existing industrial, commercial, or institutional boiler or process heater and would be subject to this subpart except for a exemption in §63.7491(i) that becomes subject to this subpart after January 31, 2013, you must be in compliance with the applicable existing source provisions of this subpart within 3 years after such unit becomes subject to this subpart.

[76 FR 15664, Mar. 21, 2011, as amended at 78 FR 7162, Jan. 31, 2013]

EDITORIAL NOTE: At 78 FR 7162, Jan. 31, 2013, §63.7495 was amended by adding paragraph (e). However, there is already a paragraph (e).

 # 002 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.7485]
Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters.
Am I subject to this subpart?

Emission Limitations and Work Practice Standards

§63.7499 What are the subcategories of boilers and process heaters?

The subcategories of boilers and process heaters, as defined in §63.7575 are:

(a) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT FIRED WITH PULVERIZED COAL]

(b) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT STOKERS DESIGNED TO BURN COAL/SOLID FOSSIL FUEL]

(c) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT FIRED WITH FLUIDIZED BED COAL]

(d) – (j) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT FIRED WITH BIOMASS]

(k) [N/A - UNITS ARE NOT NON-CONTINENTAL].

(l) Units designed to burn gas 1 fuels.

(m) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT FIRED WITH "GAS 2"]

(n) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT METAL PROCESS FURNACES]

(o) Limited-use boilers and process heaters.

(p) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT FIRED WITH SOLID FUEL]

(q) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT DESIGNED TO BURN LIQUID FUEL]

(r) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT FIRED WITH SOLID FUEL]

(s) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT FIRED WITH SOLID FUEL]

(t) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT DESIGNED TO BURN HEAVY LIQUID FUEL]

(u) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT DESIGNED TO BURN LIGHT LIQUID FUEL]

[76 FR 15664, Mar. 21, 2011, as amended at 78 FR 7163, Jan. 31, 2013]

§63.7500 What emission limitations, work practice standards, and operating limits must I meet?

(a) You must meet the requirements in paragraphs (a)(1) through (3) of this section, except as provided in paragraphs (b), through (e) of this section. You must meet these requirements at all times the affected unit is operating, except as provided in paragraph (f) of this section.

(1) You must meet each emission limit and work practice standard in Tables 1 through 3, and 11 through 13 [OF THESE TABLES, ONLY TABLE 3 APPLIES TO THE UNITS IN THIS SOURCE GROUP] to this subpart that applies to your boiler or process heater, for each boiler or process heater at your source, except as provided under §63.7522. The output-based emission limits, in units of pounds per million Btu of steam output, in Tables 1 or 2 to this subpart are an alternative applicable only to boilers and process heaters that generate steam. The output-based emission limits, in units of pounds per megawatt-hour, in Tables 1 or 2 to this subpart are an alternative applicable only to boilers that generate electricity. If you operate a new boiler or process heater, you can choose to comply with alternative limits as discussed in paragraphs (a)(1)(i) through (a)(1)(iii) of this section, but on or after January 31, 2016, you must comply with the emission limits in Table 1 to this subpart.

RELEVANT DEFINITION: Unit designed to burn gas 1 subcategory includes any boiler or process heater that burns only natural gas, refinery gas, and/or other gas 1 fuels. Gaseous fuel boilers and process heaters that burn liquid fuel for periodic testing of liquid fuel, maintenance, or operator training, not to exceed a combined total of 48 hours during any calendar year, are included in this definition. Gaseous fuel boilers and process heaters that burn liquid fuel during periods of gas curtailment or gas supply interruptions of any duration are also included in this definition.

TABLE 3 REQUIREMENTS

As stated in §63.7500, you must comply with the following applicable work practice standards:

1. [N/A - UNITS IN THIS SOURCE GROUP DO NOT HAVE A CONTINUOUS OXYGEN TRIM SYSTEM THAT MAINTAINS AN OPTIMUM AIR TO FUEL RATIO AND HAVE A HEAT INPUT CAPACITY OF GREATER THAN 5 MMBTU/HR]

2. If your unit is a new or existing boiler or process heater without a continuous oxygen trim system and with heat input capacity of less than 10 million Btu per hour in the unit designed to burn heavy liquid or unit designed to burn solid fuel subcategories; or a new or existing boiler or process heater with heat input capacity of less than 10 million Btu per hour, but greater than 5 million Btu per hour, in any of the following subcategories: unit designed to burn gas 1; unit designed to burn gas 2 (other); or unit designed to burn light liquid, you must meet the following: Conduct a tune-up of the boiler or process heater biennially as specified in §63.7540.

SECTION E. Source Group Plan Approval Restrictions.

3. [N/A - UNITS IN THIS SOURCE GROUP HAVE A HEAT INPUT CAPACITY OF LESS THAN 10 MMBTU/HR]

4. [N/A - UNITS IN THIS SOURCE GROUP ARE DEFINED AS NEW PROCESS HEATERS PURSUANT TO §63.7490(b)]

END OF TABLE 3 REQUIREMENTS

(a)(1)(i) – (iii) [NA – NO EMISSION STANDARDS]

(2) [NA – NO OPERATING LIMITS]

(3) At all times, you must operate and maintain any affected source (as defined in §63.7490), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

(b) As provided in §63.6(g), EPA may approve use of an alternative to the work practice standards in this section.

(c) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT DEFINED AS LIMITED-USE PROCESS HEATERS PURSUANT TO §63.7575]

(d) [N/A - UNITS IN THIS SOURCE GROUP HAVE A HEAT INPUT CAPACITY OF GREATER THAN 5 MMBTU/HR]

(e) Boilers and process heaters in the units designed to burn gas 1 fuels subcategory with a heat input capacity of less than or equal to 5 million Btu per hour must complete a tune-up every 5 years as specified in §63.7540. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory with a heat input capacity greater than 5 million Btu per hour and less than 10 million Btu per hour must complete a tune-up every 2 years as specified in §63.7540. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the emission limits in Tables 1 and 2 or 11 through 13 to this subpart, or the operating limits in Table 4 to this subpart.

(f) These standards apply at all times the affected unit is operating, except during periods of startup and shutdown during which time you must comply only with Table 3 to this subpart.

[76 FR 15664, Mar. 21, 2011, as amended at 78 FR 7163, Jan. 31, 2013]

§63.7501 Affirmative Defense for Violation of Emission Standards During Malfunction.

[NA – NO EMISSION STANDARDS]

General Compliance Requirements

§63.7505 What are my general requirements for complying with this subpart?

(a) You must be in compliance with the emission limits, work practice standards, and operating limits in this subpart. These limits apply to you at all times the affected unit is operating except for the periods noted in §63.7500(f).

(b) [Reserved]

(c) [NA – NO EMISSION STANDARDS]

(d) [NA – NO EMISSION STANDARDS]

 # 003 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.7485]
Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters.
Am I subject to this subpart?

SECTION E. Source Group Plan Approval Restrictions.

Testing, Fuel Analyses, and Initial Compliance Requirements

§63.7510 What are my initial compliance requirements and by what date must I conduct them?

(a) [NA – NO EMISSION STANDARDS]

(b) [NA – NO EMISSION STANDARDS]

(c) [NA – NO EMISSION STANDARDS]

(d) [NA – NO EMISSION STANDARDS]

(e) For existing affected sources (as defined in §63.7490), you must complete the initial compliance demonstration, as specified in paragraphs (a) through (d) of this section, no later than 180 days after the compliance date that is specified for your source in §63.7495 and according to the applicable provisions in §63.7(a)(2) as cited in Table 10 to this subpart, except as specified in paragraph (j) of this section. You must complete an initial tune-up by following the procedures described in §63.7540(a)(10)(i) through (vi) no later than the compliance date specified in §63.7495, except as specified in paragraph (j) of this section. You must complete the one-time energy assessment specified in Table 3 to this subpart no later than the compliance date specified in §63.7495, except as specified in paragraph (j) of this section.

(f) [NA – NO EMISSION STANDARDS]

(g) For new or reconstructed affected sources (as defined in §63.7490), you must demonstrate initial compliance with the applicable work practice standards in Table 3 to this subpart within the applicable annual, biennial, or 5-year schedule as specified in §63.7540(a) following the initial compliance date specified in §63.7495(a). Thereafter, you are required to complete the applicable annual, biennial, or 5-year tune-up as specified in §63.7540(a).

(h) [NA – SOURCES IN THIS GROUP HAVE NOT BURNED SOLID WASTE]

(i) [NA – NO EGU'S]

(j) For existing affected sources (as defined in §63.7490) that have not operated between the effective date of the rule and the compliance date that is specified for your source in §63.7495, you must complete the initial compliance demonstration, if subject to the emission limits in Table 2 to this subpart, as specified in paragraphs (a) through (d) of this section, no later than 180 days after the re-start of the affected source and according to the applicable provisions in §63.7(a)(2) as cited in Table 10 to this subpart. You must complete an initial tune-up by following the procedures described in §63.7540(a)(10)(i) through (vi) no later than 30 days after the re-start of the affected source and, if applicable, complete the one-time energy assessment specified in Table 3 to this subpart, no later than the compliance date specified in §63.7495.

[78 FR 7164, Jan. 31, 2013]

§63.7515 When must I conduct subsequent performance tests, fuel analyses, or tune-ups?

(a) [NA – PERFORMANCE TESTING NOT REQUIRED]

(b) [NA – PERFORMANCE TESTING NOT REQUIRED]

(c) [NA – PERFORMANCE TESTING NOT REQUIRED]

(d) If you are required to meet an applicable tune-up work practice standard, you must conduct an annual, biennial, or 5-year performance tune-up according to §63.7540(a)(10), (11), or (12), respectively. Each annual tune-up specified in §63.7540(a)(10) must be no more than 13 months after the previous tune-up. Each biennial tune-up specified in §63.7540(a)(11) must be conducted no more than 25 months after the previous tune-up. Each 5-year tune-up specified in §63.7540(a)(12) must be conducted no more than 61 months after the previous tune-up. For a new or reconstructed affected source (as defined in §63.7490), the first annual, biennial, or 5-year tune-up must be no later than 13 months, 25 months, or 61 months, respectively, after the initial startup of the new or reconstructed affected source.

SECTION E. Source Group Plan Approval Restrictions.

(e) [NA – FUEL ANALYSIS NOT REQUIRED]

(f) [NA – PERFORMANCE TESTING/FUEL ANALYSIS NOT REQUIRED]

(g) For affected sources (as defined in §63.7490) that have not operated since the previous compliance demonstration and more than one year has passed since the previous compliance demonstration, you must complete the subsequent compliance demonstration, if subject to the emission limits in Tables 1, 2, or 11 through 13 to this subpart, no later than 180 days after the re-start of the affected source and according to the applicable provisions in §63.7(a)(2) as cited in Table 10 to this subpart. You must complete a subsequent tune-up by following the procedures described in §63.7540(a)(10)(i) through (vi) and the schedule described in §63.7540(a)(13) for units that are not operating at the time of their scheduled tune-up.

(h) [NA – PERFORMANCE TESTING NOT REQUIRED]

(i) [NA – NO CO CEMS]

[78 FR 7165, Jan. 31, 2013]

§63.7520 What stack tests and procedures must I use?

(a) – (f) [NA – PERFORMANCE TESTING NOT REQUIRED]

§63.7521 What fuel analyses, fuel specification, and procedures must I use?

(a) – (i) [NA – FUEL ANALYSIS NOT REQUIRED SINCE NO EMISSION STANDARDS]

§63.7522 Can I use emissions averaging to comply with this subpart?

(a) – (k) [NA – NO EMISSION STANDARDS]

§63.7525 What are my monitoring, installation, operation, and maintenance requirements?

(a) [NA – NO EMISSION STANDARDS]

(b) [NA – NO EMISSION STANDARDS]

(c) [NA – NO EMISSION STANDARDS]

(d) [NA – NO CMS REQUIRED]

(e) [NA – NO FLOW MONITORING SYSTEM REQUIRED]

(f) [NA – NO PRESSURE MONITORING SYSTEM REQUIRED]

(g) [NA – NO PH MONITORING SYSTEM REQUIRED]

(h) [NA – NO ESP]

(i) [NA – NO SORBENT INJECTION RATE MONITORING SYSTEM]

(j) [NA – NO BLDS]

(k) [N/A - UNITS IN THIS SOURCE GROUP ARE NOT DEFINED AS LIMITED-USE PROCESS HEATERS PURSUANT TO §63.7575]

(l) [NA – NO EMISSION STANDARDS]

SECTION E. Source Group Plan Approval Restrictions.

(m) [NA – NO EMISSION STANDARDS]

§63.7530 How do I demonstrate initial compliance with the emission limitations, fuel specifications and work practice standards?

(a) [NA – NO EMISSION STANDARDS]

(b) [NA – NO EMISSION STANDARDS]

(c) [NA – NO EMISSION STANDARDS]

(d) If you own or operate an existing unit with a heat input capacity of less than 10 million Btu per hour or a unit in the unit designed to burn gas 1 subcategory, you must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted a tune-up of the unit.

(e) You must include with the Notification of Compliance Status a signed certification that the energy assessment was completed according to Table 3 to this subpart and is an accurate depiction of your facility at the time of the assessment.

(f) You must submit the Notification of Compliance Status containing the results of the initial compliance demonstration according to the requirements in §63.7545(e).

(g) [NA – UNITS TO NOT USE "OTHER GAS 1 FUEL"]

(h) [NA – NO EMISSION STANDARDS]

(i) [NA – NO EMISSION STANDARDS]

§63.7533 Can I use efficiency credits earned from implementation of energy conservation measures to comply with this subpart?

(a) – (g) [NA – NO EMISSION STANDARDS]

Continuous Compliance Requirements

§63.7535 Is there a minimum amount of monitoring data I must obtain?

(a) - (d) [NA – NO CMS REQUIRED]

§63.7540 How do I demonstrate continuous compliance with the emission limitations, fuel specifications and work practice standards?

(a) You must demonstrate continuous compliance with each emission limit in Tables 1 and 2 or 11 through 13 to this subpart, the work practice standards in Table 3 to this subpart, and the operating limits in Table 4 to this subpart that applies to you according to the methods specified in Table 8 to this subpart and paragraphs (a)(1) through (19) of this section.

(1) [NA – NO EMISSION STANDARDS]

(2) [NA – NO EMISSION STANDARDS]

(3) [NA – NO EMISSION STANDARDS]

(4) [NA – NO EMISSION STANDARDS]

(5) [NA – NO EMISSION STANDARDS]

(6) [NA – NO EMISSION STANDARDS]

(7) [NA – NO EMISSION STANDARDS]

(8) [NA – NO EMISSION STANDARDS]

(9) [NA – NO EMISSION STANDARDS]

(10) If your boiler or process heater has a heat input capacity of 10 million Btu per hour or greater, you must conduct an annual tune-up of the boiler or process heater to demonstrate continuous compliance as specified in paragraphs (a)(10)(i) through (vi) of this section. This frequency does not apply to limited-use boilers and process heaters, as defined in §63.7575, or units with continuous oxygen trim systems that maintain an optimum air to fuel ratio.

(i) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection. At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment;

(ii) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available;

(iii) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection;

(iv) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NOX requirement to which the unit is subject;

(v) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer; and

(vi) Maintain on-site and submit, if requested by the Administrator, an annual report containing the information in paragraphs (a)(10)(vi)(A) through (C) of this section,

(A) The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater;

(B) A description of any corrective actions taken as a part of the tune-up; and

(C) The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit.

(11) If your boiler or process heater has a heat input capacity of less than 10 million Btu per hour (except as specified in paragraph (a)(12) of this section), you must conduct a biennial tune-up of the boiler or process heater as specified in paragraphs (a)(10)(i) through (vi) of this section to demonstrate continuous compliance.

(12) If your boiler or process heater has a continuous oxygen trim system that maintains an optimum air to fuel ratio, or a heat input capacity of less than or equal to 5 million Btu per hour and the unit is in the units designed to burn gas 1; units designed to burn gas 2 (other); or units designed to burn light liquid subcategories, or meets the definition of limited-use boiler or process heater in §63.7575, you must conduct a tune-up of the boiler or process heater every 5 years as specified in paragraphs (a)(10)(i) through (vi) of this section to demonstrate continuous compliance. You may delay the burner inspection specified in paragraph (a)(10)(i) of this section until the next scheduled or unscheduled unit shutdown, but you must inspect each burner at least once every 72 months.

(13) If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

(14) [NA – NO EMISSION STANDARDS]

(15) [NA – NO EMISSION STANDARDS]

(16) [NA – NO EMISSION STANDARDS]

(17) [NA – NO EMISSION STANDARDS]

(18) [NA – NO EMISSION STANDARDS]

(19) [NA – NO EMISSION STANDARDS]

(b) You must report each instance in which you did not meet each emission limit and operating limit in Tables 1 through 4 or 11 through 13 to this subpart that apply to you. These instances are deviations from the emission limits or operating limits, respectively, in this subpart. These deviations must be reported according to the requirements in §63.7550.

(c) [NA – NO EMISSION STANDARDS]

(d) [NA – NO EMISSION STANDARDS]

[78 FR 7179, Jan. 31, 2013]

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§63.7541 How do I demonstrate continuous compliance under the emissions averaging provision?

(a) – (b) [NA – NO EMISSION STANDARDS]

 # 004 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.7485]
Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters.
Am I subject to this subpart?

Notification, Reports, and Records

§ 63.7545 What notifications must I submit and when?

(a) You must submit to the Administrator all of the notifications in §§63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply to you by the dates specified.

(b) [N/A - UNITS IN THIS SOURCE GROUP WILL HAVE A STARTUP DATE ON OR AFTER JANUARY 31, 2013]

(c) As specified in §63.9(b)(4) and (5), if you startup your new or reconstructed affected source on or after January 31, 2013, you must submit an Initial Notification not later than 15 days after the actual date of startup of the affected source.

(d) [NA – PERFORMANCE TESTING NOT REQUIRED]

(e) If you are required to conduct an initial compliance demonstration as specified in §63.7530, you must submit a Notification of Compliance Status according to §63.9(h)(2)(ii). For the initial compliance demonstration for each boiler or process heater, you must submit the Notification of Compliance Status, including all performance test results and fuel analyses, before the close of business on the 60th day following the completion of all performance test and/or other initial compliance demonstrations for all boiler or process heaters at the facility according to §63.10(d)(2). The Notification of Compliance Status report must contain all the information specified in paragraphs (e)(1) through (8), as applicable. If you are not required to conduct an initial compliance demonstration as specified in §63.7530(a), the Notification of Compliance Status must only contain the information specified in paragraphs (e)(1) and (8).

(1) A description of the affected unit(s) including identification of which subcategories the unit is in, the design heat input capacity of the unit, a description of the add-on controls used on the unit to comply with this subpart, description of the

SECTION E. Source Group Plan Approval Restrictions.

fuel(s) burned, including whether the fuel(s) were a secondary material determined by you or the EPA through a petition process to be a non-waste under §241.3 of this chapter, whether the fuel(s) were a secondary material processed from discarded non-hazardous secondary materials within the meaning of §241.3 of this chapter, and justification for the selection of fuel(s) burned during the compliance demonstration.

(2) [NA – NO EMISSION STANDARDS]

(3) [NA – NO EMISSION STANDARDS]

(4) [NA – NO EMISSION STANDARDS]

(5) [NA – NO EMISSION STANDARDS]

(6) A signed certification that you have met all applicable emission limits and work practice standards.

(7) If you had a deviation from any emission limit, work practice standard, or operating limit, you must also submit a description of the deviation, the duration of the deviation, and the corrective action taken in the Notification of Compliance Status report.

(8) In addition to the information required in §63.9(h)(2), your notification of compliance status must include the following certification(s) of compliance, as applicable, and signed by a responsible official:

(i) "This facility complies with the required initial tune-up according to the procedures in §63.7540(a)(10)(i) through (vi)."

(ii) "This facility has had an energy assessment performed according to §63.7530(e)."

(iii) [N/A - UNITS IN THIS SOURCE GROUP ONLY BURN NATURAL GAS]

(f) If you operate a unit designed to burn natural gas, refinery gas, or other gas 1 fuels that is subject to this subpart, and you intend to use a fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart of this part, part 60, 61, or 65, or other gas 1 fuel to fire the affected unit during a period of natural gas curtailment or supply interruption, as defined in §63.7575, you must submit a notification of alternative fuel use within 48 hours of the declaration of each period of natural gas curtailment or supply interruption, as defined in §63.7575. The notification must include the information specified in paragraphs (f)(1) through (5) of this section.

(g) [NA – UNITS IN THIS GROUP DO NOT BURN SOLID WASTE]

(h) If you have switched fuels or made a physical change to the boiler or process heater and the fuel switch or physical change resulted in the applicability of a different subcategory, you must provide notice of the date upon which you switched fuels or made the physical change within 30 days of the switch/change. The notification must identify:

(1) The name of the owner or operator of the affected source, as defined in §63.7490, the location of the source, the boiler(s) and process heater(s) that have switched fuels, were physically changed, and the date of the notice.

(2) The currently applicable subcategory under this subpart.

(3) The date upon which the fuel switch or physical change occurred.

[76 FR 15664, Mar. 21, 2011, as amended at 78 FR 7183, Jan. 31, 2013]

§ 63.7550 What reports must I submit and when?

(a) You must submit each report in Table 9 to this subpart that applies to you.

TABLE 9 REQUIREMENTS

As stated in §63.7550, you must comply with the following requirements for reports:

You must submit a compliance report. The report must contain

a. Information required in §63.7550(c)(1) through (5); and

b. If there are no deviations from any emission limitation (emission limit and operating limit) that applies to you and there are no deviations from the requirements for work practice standards in Table 3 to this subpart that apply to you, a statement that there were no deviations from the emission limitations and work practice standards during the reporting period. If there were no periods during which the CMSs, including continuous emissions monitoring system, continuous opacity monitoring system, and operating parameter monitoring systems, were out-of-control as specified in §63.8(c)(7), a statement that there were no periods during which the CMSs were out-of-control during the reporting period; and

c. If you have a deviation from any emission limitation (emission limit and operating limit) where you are not using a CMS to comply with that emission limit or operating limit, or a deviation from a work practice standard during the reporting period, the report must contain the information in §63.7550(d); and

d. [NA – NO EMISSION STANDARDS]

You must submit the report semiannually, annually, biennially, or every 5 years according to the requirements in §63.7550(b).

END OF TABLE 9 REQUIREMENTS

(b) Unless the EPA Administrator has approved a different schedule for submission of reports under §63.10(a), you must submit each report, according to paragraph (h) of this section, by the date in Table 9 to this subpart and according to the requirements in paragraphs (b)(1) through (4) of this section. For units that are subject only to a requirement to conduct an annual, biennial, or 5-year tune-up according to §63.7540(a)(10), (11), or (12), respectively, and not subject to emission limits or operating limits, you may submit only an annual, biennial, or 5-year compliance report, as applicable, as specified in paragraphs (b)(1) through (4) of this section, instead of a semi-annual compliance report.

(1) The first compliance report must cover the period beginning on the compliance date that is specified for each boiler or process heater in §63.7495 and ending on July 31 or January 31, whichever date is the first date that occurs at least 180 days (or 1, 2, or 5 years, as applicable, if submitting an annual, biennial, or 5-year compliance report) after the compliance date that is specified for your source in §63.7495.

(2) The first compliance report must be postmarked or submitted no later than July 31 or January 31, whichever date is the first date following the end of the first calendar half after the compliance date that is specified for each boiler or process heater in §63.7495. The first annual, biennial, or 5-year compliance report must be postmarked or submitted no later than January 31.

(3) Each subsequent compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31. Annual, biennial, and 5-year compliance reports must cover the applicable 1-, 2-, or 5-year periods from January 1 to December 31.

(4) Each subsequent compliance report must be postmarked or submitted no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period. Annual, biennial, and 5-year compliance reports must be postmarked or submitted no later than January 31.

(c) A compliance report must contain the following information depending on how the facility chooses to comply with the limits set in this rule.

(1) If the facility is subject to a the requirements of a tune up they must submit a compliance report with the information in paragraphs (c)(5)(i) through (iv) and (xiv) of this section.

(2) [NA – FUEL ANALYSES NOT REQUIRED]

(3) [NA – NO EMISSION STANDARDS]

(4) [NA – NO EMISSION STANDARDS]

(5)(i) Company and Facility name and address.

(ii) Process unit information, emissions limitations, and operating parameter limitations.

(iii) Date of report and beginning and ending dates of the reporting period.

(iv) The total operating time during the reporting period.

(v) – (xiii) [NA – NO EMISSION STANDARDS]

(xiv) Include the date of the most recent tune-up for each unit subject to only the requirement to conduct an annual, biennial, or 5-year tune-up according to §63.7540(a)(10), (11), or (12) respectively. Include the date of the most recent burner inspection if it was not done annually, biennially, or on a 5-year period and was delayed until the next scheduled or unscheduled unit shutdown.

(xv) – (xvi) [NA – NO EMISSION STANDARDS]

(xvii) Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.

(d) [NA – NO EMISSION STANDARDS]

(e) [NA – NO EMISSION STANDARDS]

(f)-(g) [Reserved]

(h) You must submit the reports according to the procedures specified in paragraphs (h)(1) through (3) of this section.

(1) [NA – NO EMISSION STANDARDS]

(2) [NA – NO EMISSION STANDARDS]

(3) You must submit all reports required by Table 9 of this subpart electronically using CEDRI that is accessed through the EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due the report you must submit the report to the Administrator at the appropriate address listed in §63.13. At the discretion of the Administrator, you must also submit these reports, to the Administrator in the format specified by the Administrator.

[78 FR 7183, Jan. 31, 2013]

§ 63.7555 What records must I keep?

(a) You must keep records according to paragraphs (a)(1) and (2) of this section.

(1) A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that you submitted, according to the requirements in §63.10(b)(2)(xiv).

(2) Records of performance tests, fuel analyses, or other compliance demonstrations and performance evaluations as required in §63.10(b)(2)(viii).

(b) [NA – NO EMISSION STANDARDS]

(c) [NA – NO EMISSION STANDARDS]

(d) [NA – NO EMISSION STANDARDS]

(e) [NA – NO EMISSION STANDARDS]

(f) [NA – NO EMISSION STANDARDS]

(g) [NA – NO EMISSION STANDARDS]

(h) If you operate a unit in the unit designed to burn gas 1 subcategory that is subject to this subpart, and you use an alternative fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart under this part, other gas 1 fuel, or gaseous fuel subject to another subpart of this part or part 60, 61, or 65, you must keep records of the total hours per calendar year that alternative fuel is burned and the total hours per calendar year that the unit operated during periods of gas curtailment or gas supply emergencies.

(i) You must maintain records of the calendar date, time, occurrence and duration of each startup and shutdown.

(j) [NA – NO EMISSION STANDARDS]

[76 FR 15664, Mar. 21, 2011, as amended at 78 FR 7185, Jan. 31, 2013]

§63.7560 In what form and how long must I keep my records?

(a) Your records must be in a form suitable and readily available for expeditious review, according to §63.10(b)(1).

(b) As specified in §63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

(c) You must keep each record on site, or they must be accessible from on site (for example, through a computer network), for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1). You can keep the records off site for the remaining 3 years.

Other Requirements and Information

§63.7565 What parts of the General Provisions apply to me?

Table 10 to this subpart shows which parts of the General Provisions in §§63.1 through 63.15 apply to you.

SECTION F. Alternative Operation Requirements.

No Alternative Operations exist for this Plan Approval facility.

SECTION G. Emission Restriction Summary.

No emission restrictions listed in this section of the permit.

SECTION H. Miscellaneous.

NOTE: The capacities/throughputs listed in Section A are for informational use only and should not be used as enforceable limitations.

Each utility boiler (Source IDs 031A, 032 and 033A) has two associated No. 2 fuel oil-fired coal mill heaters (i.e., duct burners) each having a maximum rated heat input capacity of 9.9 mmBTU/hr that supply hot air to dry the bituminous coal during its pulverization prior to its injection into the boilers. This plan approval authorizes the combustion of natural gas fuel by the coal mill heaters. The air emissions from the coal mill heaters are included with the three utility boilers (Source IDs 031A, 032 and 033A). The coal mill heaters are not subject to the MACT standards contained at 40 CFR Part 63, Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (MACT Subpart DDDDD).

****** End of Report ******

SIERRA CLUB
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August 7, 2015

Re: Pennsylvania Ozone RACT and Brunner Island

Dear Secretary Hanger and Secretary Quigley,

As detailed more thoroughly in our May 13, 2015 letter, the Sierra Club harbors grave concerns over the failure of Pennsylvania's currently pending ozone Reasonably Available Control Technology ("RACT") proposal to limit pollution from facilities that do not already have nitrogen oxide ("NOx") post-combustion controls. In particular, as laid out in our letter, while the proposal would set emission limits or control operation requirements for much of the coal fleet, it would allow the extremely large NOx-emitter Brunner Island to slip through without any real regulation.

The enclosed modeling report from Sonoma Technology, Inc., examining Brunner Island's impacts on ambient ozone levels during the 2011 ozone season, demonstrates the how severe this Brunner Island exemption is: Brunner Island's pollution alone contributes as much as **10 parts per billion** ("ppb") towards the 75 ppb ozone standard in Pennsylvania, and contributed 1% or more of the NAAQS to monitors in Pennsylvania on fully **100 out of 152 days** in the 2011 ozone season. Put simply, Brunner Island is one of the largest—if not *the largest*—sources of ozone pollution in Pennsylvania.

Further, impacts from Brunner extend well beyond Pennsylvania's borders, with NOx pollution from Brunner resulting in modeled peak contributions of ozone in Delaware, Maryland, New Jersey, and New York of **between 2 and nearly 5 ppb**. As the Sonoma modeling indicates *it is quite likely that a significant amount of the ozone nonattainment problem in Pennsylvania and in downwind states are traceable to Brunner Island.*

Please review the enclosed Sonoma Report. The Sierra Club strongly believes that it powerfully demonstrates the need to correct the exemption in the RACT proposal that would allow Brunner Island to continue emitting excessive NOx. As is stands, the proposal defines RACT at Brunner Island as no post-combustion controls at all, because the proposal improperly defines source category by what controls are already present, not by what sort of emitter the facility is. This problem can and should be easily corrected by defining source category by boiler type as is required for RACT. To do otherwise would mean that DEP is effectively doing source-specific RACT at Brunner Island without requiring operator Talen Energy to apply for and justify such a deviation. And, in fact, Brunner Island has multiple methods at its ready disposal to reduce NOx pollution: it could install controls (like the rest of the Pennsylvania fleet has already done), or it could be required to significantly reduce or eliminate coal burning while relying more on lower-emitting natural gas. But without a RACT-consistent lower NOx limit in place to drive these reductions, there is nothing to prevent the plant from continuing to burn coal during ozone season, thus perpetuating the problems highlighted in this report.

We would be happy to answer any questions you may have, or to provide any additional information that you may find useful. We would additionally request the opportunity to speak with you in person concerning the Sonoma Report and Pennsylvania's ozone RACT proposal generally.

Thank you,

Tom Schuster
Sr. Campaign Representative for PA & NJ
Sierra Club
P.O. Box 51
Windber, PA 15963
(814) 467-2614 (office)
(575) 642-7156 (cell)
tom.schuster@sierraclub.org

Cc:
Joyce Epps
Patrick McDonnell
Sam Robinson

Attachment: Report from Sonoma Technologies, Inc. on Brunner Island ozone impacts

Sonoma Technology, Inc.
Environmental Science and Innovative Solutions

Technical Memorandum

August 6, 2015 STI-915046-6329

To: Zachary Fabish, Josh Berman, and Josh Stebbins, Sierra Club

From: Kenneth J. Craig and Stephen B. Reid

Re: Ozone Impacts from Brunner Island Power Plant in 2011

Executive Summary

Sonoma Technology, Inc. (STI) performed source apportionment modeling to analyze impacts of emissions from the Brunner Island power plant in York County, Pennsylvania, in 2011 on air quality in Pennsylvania and neighboring states. The results of this analysis showed that emissions from Brunner Island contribute significantly to ozone formation in Pennsylvania during the modeled ozone season. Modeled 8-hr ozone impacts were as large as about 10 ppb in Pennsylvania. In addition, impacts considered significant (>1% of the current ozone National Ambient Air Quality Standards [NAAQS]) were modeled on as many as 50 days at a single Pennsylvania monitor during the single ozone season. Significant ozone impacts were modeled at one or more Pennsylvania monitors on 66% (100 out of 152) of modeled days during the entire ozone season, and almost every day (86%) during June, July, and August. Peak modeled 8-hr ozone impacts from Brunner Island, depicted in Figure 1, show large impacts in southeastern Pennsylvania near Brunner Island (star). Significant ozone impacts occur in several states from North Carolina to the Canadian border.

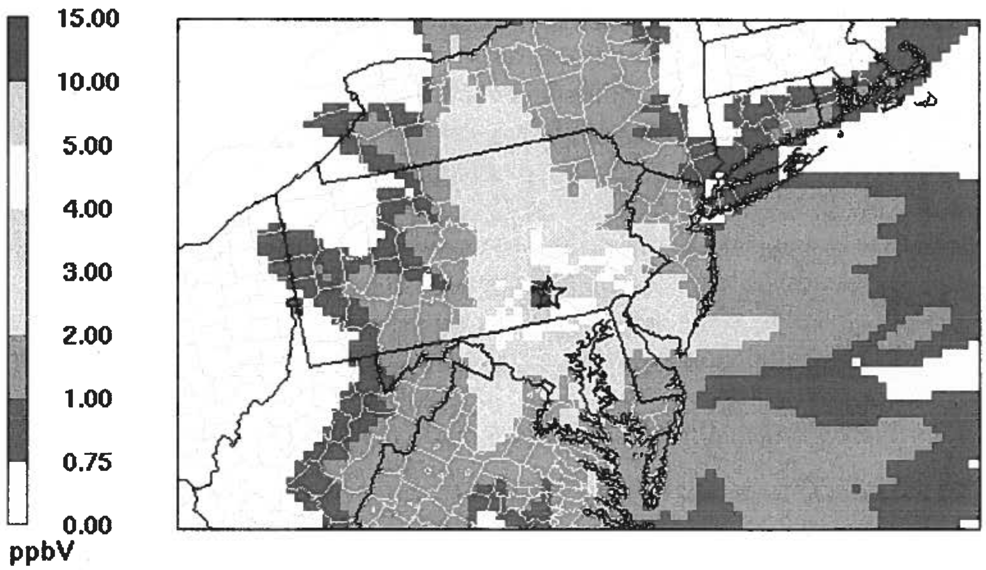

Figure 1. Peak modeled 8-hr ozone impacts from Brunner Island power plant.

Introduction

STI performed source apportionment modeling using the Comprehensive Air Quality Model with Extensions (CAMx) with Ozone Source Apportionment Technology (OSAT) to support the Sierra Club and state air agencies to evaluate ozone impacts from coal-fired power plants and other emission sources on downwind receptors in non-attainment areas. The source apportionment modeling was conducted for the 2011 ozone season (May to September) for a domain covering the continental United States at 12-km spatial resolution (Figure 2), and results were compiled into a series of databases that can be used for future data mining and analysis. Additional details on the models, data, and methods used can be found in Appendix A.

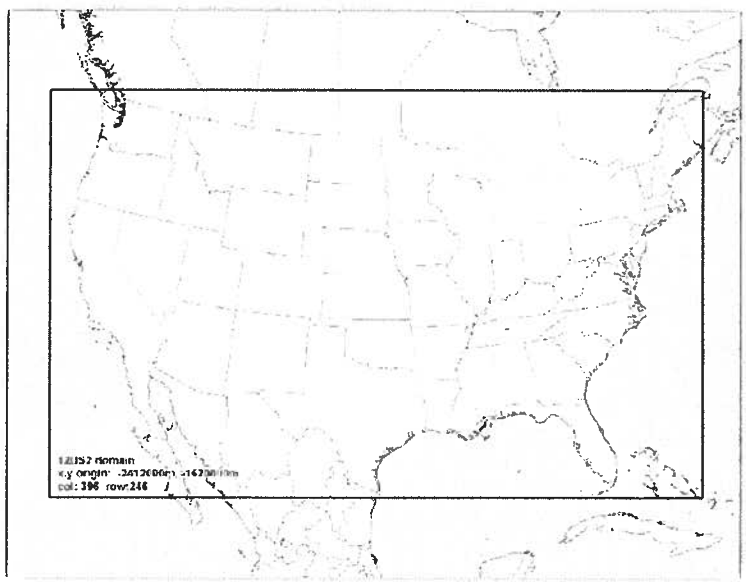

Figure 2. Modeling domain for the source apportionment model simulations. Source: U.S. Environmental Protection Agency (2015).

STI used the results from this source apportionment modeling to analyze impacts of emissions from the Brunner Island power plant (Brunner Island) in York County on air quality monitor locations in Pennsylvania and neighboring states. In summary, the modeling results showed that emissions from Brunner Island contribute significantly to ozone formation downwind in Pennsylvania during the 2011 ozone season. Modeled daily 8-hr average ozone impacts were as large as 10.58 ppb at Pennsylvania monitors, and were significant (>0.75 ppb) on as many as 50 days at a single Pennsylvania monitor. Significant ozone impacts were modeled at one or more Pennsylvania monitors on 66% of modeled days (100 out of 152) during the ozone season, where 86% (79 of 92) of those days occurred during the June–August summer season. On several days during the ozone season, significant ozone contributions from Brunner Island coincided with days when monitored ozone concentrations exceeded the current ozone National Ambient Air Quality Standards (NAAQS) (75 ppb).

Brunner Island Ozone Contributions in Pennsylvania

Brunner Island is a coal-fired electrical generating facility along the Susquehanna River in York County. The plant has three major boiler units, built in the 1960s, with approximately 1,500+ Megawatts of capacity.[1] In 2011, the total NO_x emissions from Brunner Island were about 16,800 tons, making Brunner Island the fourth highest NO_x emitter of all tagged power plants in the source apportionment modeling.

Figure 3 shows a map of Brunner Island's location (orange star), and nearby ozone monitoring stations (blue dots). The Sipe Avenue ozone monitoring station in the Harrisburg area is about 12 miles north of Brunner Island, while the Little Buffalo State Park (Little Buffalo SP) ozone monitor is further to the northwest, about 35 miles from Brunner Island. To the east in the Lancaster area, the Abraham Lincoln Junior High and Newport Road ozone monitoring stations are 22 and 31 miles from the Brunner Island, respectively. The Hill Street ozone monitor in York County is the nearest monitor to Brunner Island, about 9 miles south of the facility.

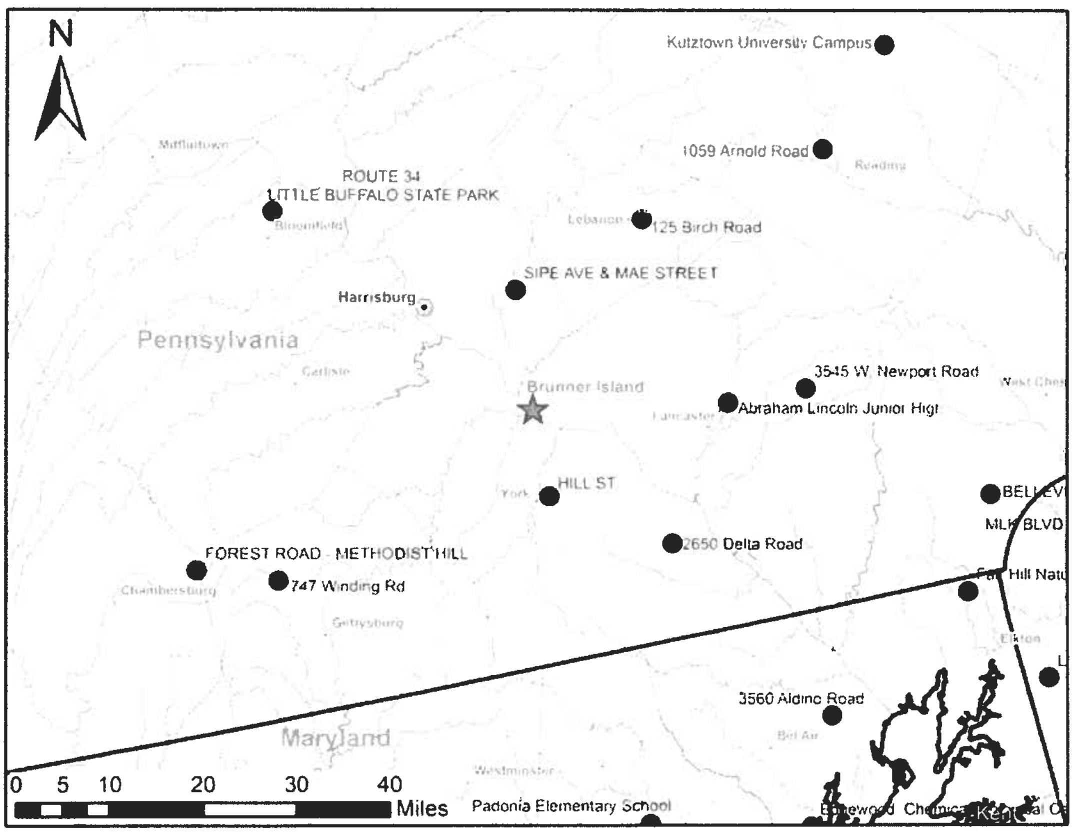

Figure 3. The Brunner Island power plant in York County and nearby air quality monitoring sites.

[1] http://www.sourcewatch.org/index.php/Brunner_Island_Power_Station

For this analysis, modeled 8-hr ozone impacts greater than 1% of the NAAQS are considered significant. For the current ozone NAAQS, this significance threshold is 0.75 ppb. This type of significance threshold is consistent with how the U.S. Environmental Protection Agency (EPA) has previously defined significant interstate contributions for ozone and $PM_{2.5}$.[2]

Starting with results at monitors relatively close to Brunner Island, for example, Figure 4 shows a time-series plot of the daily modeled 8-hr average ozone impacts from Brunner Island at two air quality monitoring sites near Harrisburg, Pennsylvania. The Sipe Avenue monitor (blue line) is closer to Brunner Island than Little Buffalo SP (red line); as a result, the modeled impacts were larger at Sipe Avenue on most days. Modeled impacts were significant (>0.75 ppb) on 34 days (22% of days modeled) at Sipe Avenue and on 12 days (8% of days modeled) at Little Buffalo SP, and exceeded 2 ppb on 14 days at Sipe Avenue and 2 days at Little Buffalo SP. The peak modeled ozone impacts were 6.70 ppb and 3.15 ppb at Sipe Avenue and Little Buffalo SP, respectively. The Harrisburg monitors are most impacted by Brunner Island emissions when winds are blowing from the south or southeast directions.

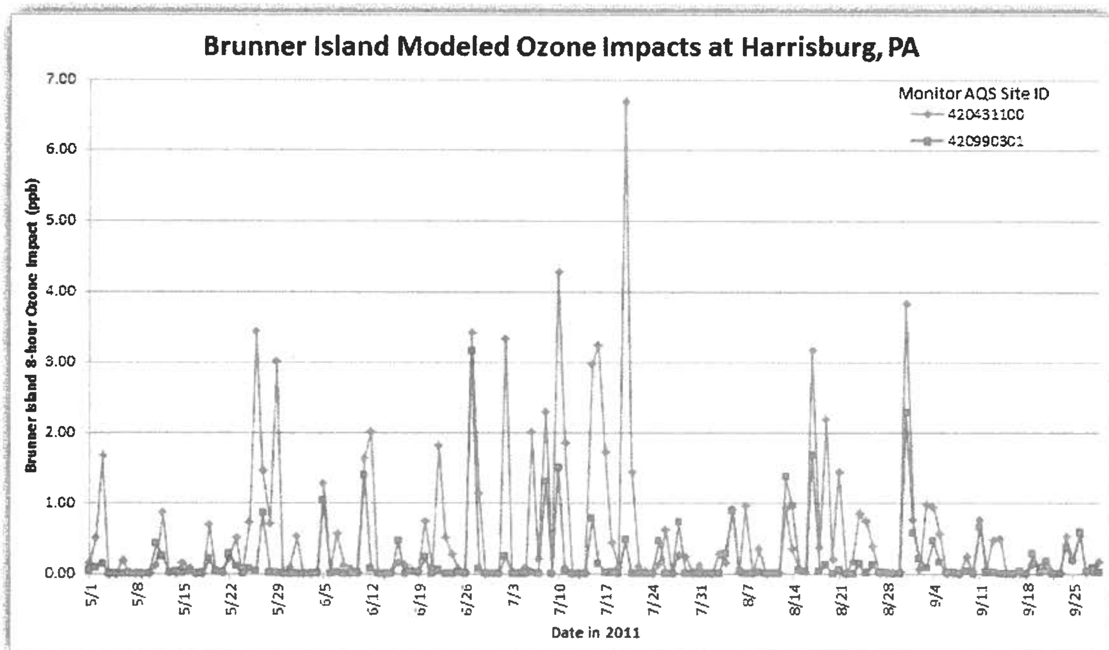

Figure 4. Time series of modeled daily 8-hr ozone impacts from Brunner Island at air quality monitors near Harrisburg.

[2] See 75 Federal Register (August 2, 2010) and 76 Federal Register (August 8, 2011), 40 CFR Parts 51, 52, 72, 78, and 97.

Figure 5 shows a time-series plot of the daily modeled 8-hr average ozone impacts from Brunner Island at two air quality monitoring sites near Lancaster, Pennsylvania. The monitoring site at Abraham Lincoln Junior High (blue line) is about 9 miles closer to Brunner Island than the Newport Road monitor (red line). As a result, the modeled impacts were generally larger at Abraham Lincoln Junior High than at Newport Road, although the reverse was true on a few days. Modeled impacts were significant on 36 days (24% of days modeled) at Abraham Lincoln Junior High, and 31 days (20% of days modeled) at Newport Road. Impacts exceeded 2 ppb on 19 days at Abraham Lincoln Junior High and 13 days at the Newport Road monitor. The peak modeled ozone impacts were 5.56 ppb and 5.17 ppb at Abraham Lincoln Junior High and Newport Road, respectively. The Lancaster monitors are most impacted by Brunner Island emissions when winds are blowing from the west.

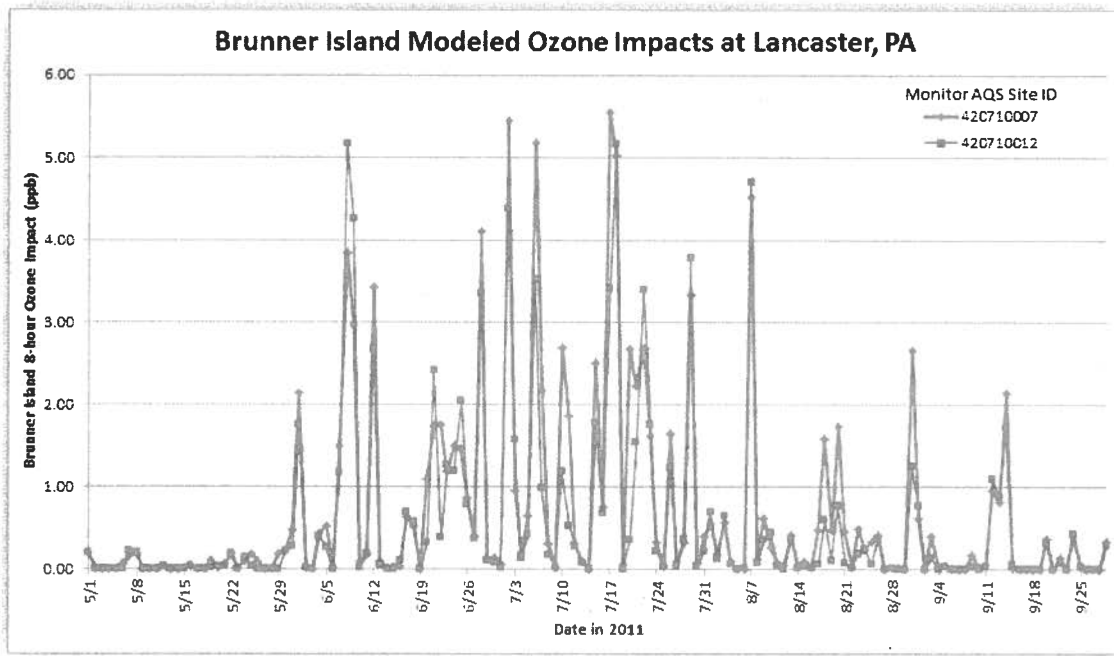

Figure 5. Time series of modeled 8-hour average ozone impacts from Brunner Island at air quality monitors in Lancaster.

Brunner Island ozone impacts from the CAMx OSAT modeling were analyzed at 53 air quality monitoring sites throughout Pennsylvania, including the four sites discussed above. Table 1 shows the highest significant (>0.75 ppb) modeled ozone contributions for the 2011 ozone season, as well as the number of days with significant modeled ozone impacts. The largest overall modeled ozone impact was 10.58 ppb at Hill Street in York, which is the closest monitor to Brunner Island. Significant impacts occurred on 33% (50 out of 152) of modeled days at that site. A significant contribution was modeled at least once during the ozone season at 75% (40 of 53) of Pennsylvania monitoring sites.

The largest impacts generally occurred at monitors closest to Brunner Island, particularly those in southeast Pennsylvania. However, monitors throughout Pennsylvania, including those in Pittsburgh and in counties bordering Ohio, were also significantly impacted on at least one day during the 2011 ozone season. The OSAT modeling predicted significant impacts from Brunner Island on multiple days as far away as Indiana, Pennsylvania (135 miles). Significant ozone impacts from Brunner Island were modeled at one or more Pennsylvania monitors on 66% of modeled days (100 out of 152) during the 2011 ozone season, and 86% (79 of 92) of days during June through August summer season.

The electronic attachment provided with this memorandum includes a full listing of days and monitors in Pennsylvania when modeled The 8-hr ozone impacts were greater than 1% of the ozone NAAQS.

Table 1. Peak modeled 8-hr average ozone impacts and number of days with significant (>0.75 ppb) modeled 8-hr average ozone impacts at Pennsylvania monitors due to Brunner Island emissions during the 2011 ozone season, ranked by peak modeled impact. Only monitors with a significant modeled impact are shown.

AQS Site ID	Monitor County	Core Based Statistical Area	Maximum Modeled Contribution (ppb)	Number of Significant Impact Days
421330008	York	York-Hanover, PA	10.58	50
420431100	Dauphin	Harrisburg-Carlisle, PA	6.70	31
420710007	Lancaster	Lancaster, PA	5.56	36
420710012	Lancaster	Lancaster, PA	5.17	31
420019991	Adams	Gettysburg, PA	5.01	14
420750100	Lebanon	Lebanon, PA	4.78	33
421330011	York	York-Hanover, PA	4.65	48
420110011	Berks	Reading, PA	3.93	22
420290100	Chester	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	3.85	26
420550001	Franklin	Chambersburg, PA	3.85	7
420450002	Delaware	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	3.74	14

AQS Site ID	Monitor County	Core Based Statistical Area	Maximum Modeled Contribution (ppb)	Number of Significant Impact Days
420910013	Montgomery	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	3.36	16
420990301	Perry	Harrisburg-Carlisle, PA	3.15	12
420810100	Lycoming	Williamsport, PA	2.82	9
420950025	Northampton	Allentown-Bethlehem-Easton, PA-NJ	2.46	12
420110006	Berks	Reading, PA	2.36	21
421010004	Philadelphia	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	2.25	8
421010048	Philadelphia	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	2.25	8
420770004	Lehigh	Allentown-Bethlehem-Easton, PA-NJ	1.99	13
421174000	Tioga	N/A	1.88	7
420958000	Northampton	Allentown-Bethlehem-Easton, PA-NJ	1.76	10
421011002	Philadelphia	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	1.75	10
421010024	Philadelphia	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	1.75	10
420690101	Lackawanna	Scranton--Wilkes-Barre, PA	1.62	8
420692006	Lackawanna	Scranton--Wilkes-Barre, PA	1.60	8
420279991	Centre	State College, PA	1.45	3
420170012	Bucks	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	1.41	9
420270100	Centre	State College, PA	1.40	3
420630004	Indiana	Indiana, PA	1.08	4
420210011	Cambria	Johnstown, PA	1.02	3
421290008	Westmoreland	Pittsburgh, PA	0.94	1
421290006	Westmoreland	Pittsburgh, PA	0.90	1
420730015	Lawrence	New Castle, PA	0.89	1
420850100	Mercer	Youngstown-Warren-Boardman, OH-PA	0.87	1
420031005	Allegheny	Pittsburgh, PA	0.85	1
420031008	Allegheny	Harrison Township	0.85	1
420070014	Beaver	Pittsburgh, PA	0.81	1
420030008	Allegheny	Pittsburgh, PA	0.77	1
420030010	Allegheny	Pittsburgh, PA	0.77	1

To illustrate how emissions from Brunner Island contribute to ozone concentrations throughout the region, Figure 6 shows a spatial plot of maximum modeled 8-hr ozone impacts from Brunner Island on July 20, 2011.[3] This day had the highest modeled ozone impact at monitors in Pennsylvania (10.58 ppb at York). Significant ozone impacts (>0.75 ppb) on this day extend from Scranton, Pennsylvania, to Washington, D.C. A wind shift that occurred on July 20 caused ozone contributions to extend in two different directions from Brunner Island on that day.

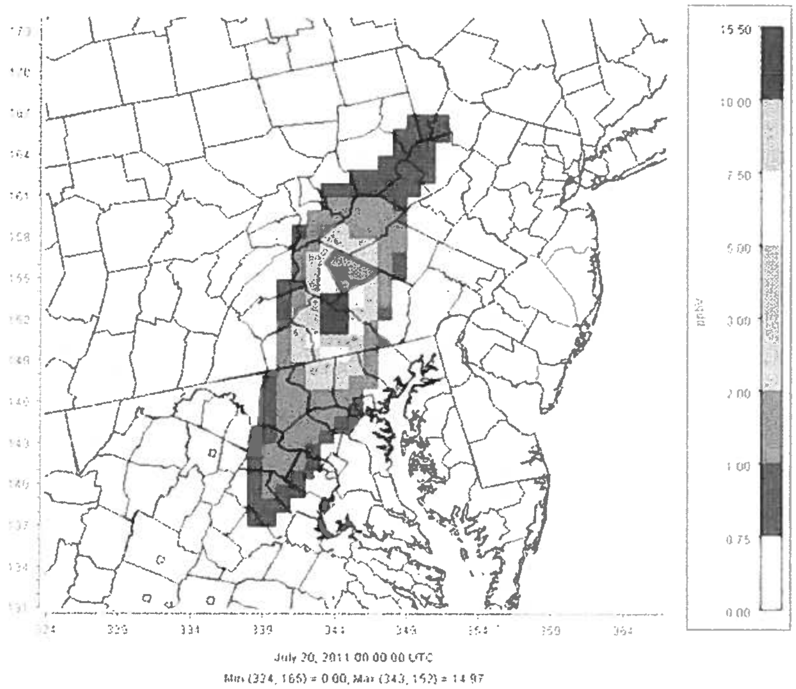

Figure 6. Spatial plot of maximum modeled 8-hr average ozone contribution from Brunner Island on July 20, 2011.

[3] This figure shows the *maximum* modeled 8-hr ozone contributions from Brunner Island, which were computed without regard to the time period when the maximum modeled 8-hr average ozone concentrations occurred. Therefore, the data represented in this figure may differ slightly from the corresponding data found in the Access databases provided to the Sierra Club.

We also analyzed days during the 2011 ozone season when significant (>0.75 ppb) modeled ozone impacts from Brunner Island coincided with days when the monitored maximum 8-hr average ozone concentration exceeded the current ozone NAAQS (>75 ppb). Figures 7 and 8 show these occurrences with incremental monitored concentrations above the current 8-hr ozone NAAQS at ozone monitors in Harrisburg and Lancaster, respectively. For example, at the Sipe Avenue monitor in Harrisburg on July 20 (Figure 7), the observed maximum 8-hr ozone concentration of 81 ppb exceeded the current ozone NAAQS by 6 ppb. The modeled 8-hr ozone impact from Brunner Island on this day was 6.70 ppb.

At the Sipe Avenue monitor in Harrisburg (Figure 7), significant modeled impacts from Brunner Island coincided with monitored NAAQS exceedances three times during the 2011 ozone season. On those days, monitored ozone concentrations ranged from 5 to 10 ppb over the NAAQS, and modeled ozone contributions from Brunner Island ranged from 1.44 to 6.70 ppb. In Lancaster (Figure 8), modeled impacts from Brunner Island were significant at the Abraham Lincoln Junior High monitor (blue bars) on five days, and the Newport Avenue monitor (red bars) on six days, when the NAAQS was exceeded at these monitors. On those days, monitored ozone concentrations exceeded the NAAQS by 1 to 15 ppb, and modeled ozone contributions from Brunner Island ranged from 1.00 to 5.45 ppb. The electronic attachment provided with this memorandum includes a full listing of days and monitors in Pennsylvania for which modeled 8-hr ozone impacts coincided with days when monitored ozone concentrations exceeded the current ozone NAAQS.

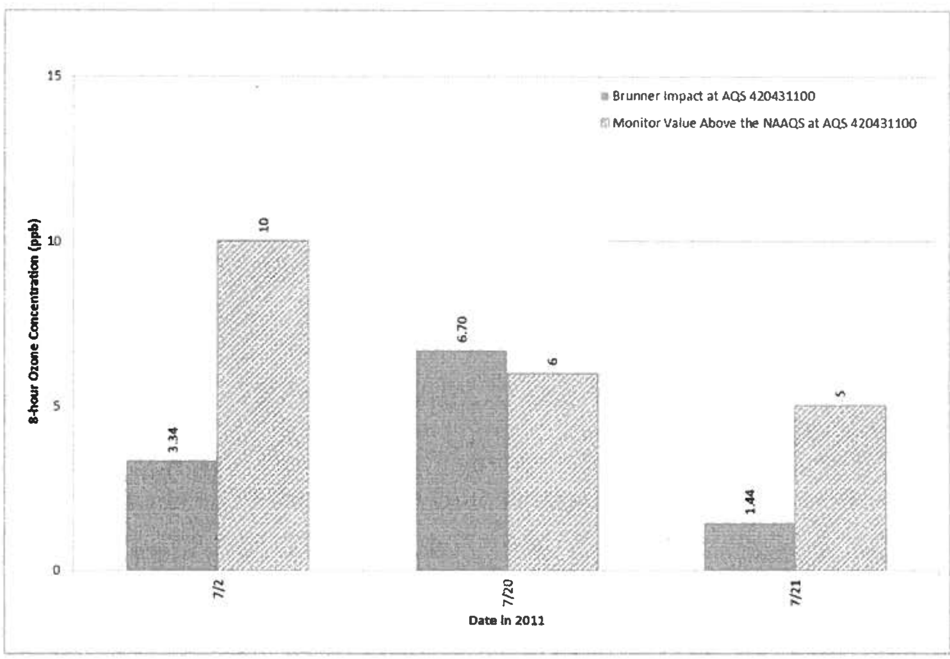

Figure 7. Modeled 8-hr ozone impacts from Brunner Island exceeding 1% of the ozone NAAQS, and incremental monitored ozone concentrations above the ozone NAAQS on days when the NAAQS was exceeded at the Sipe Avenue ozone monitor near Harrisburg.

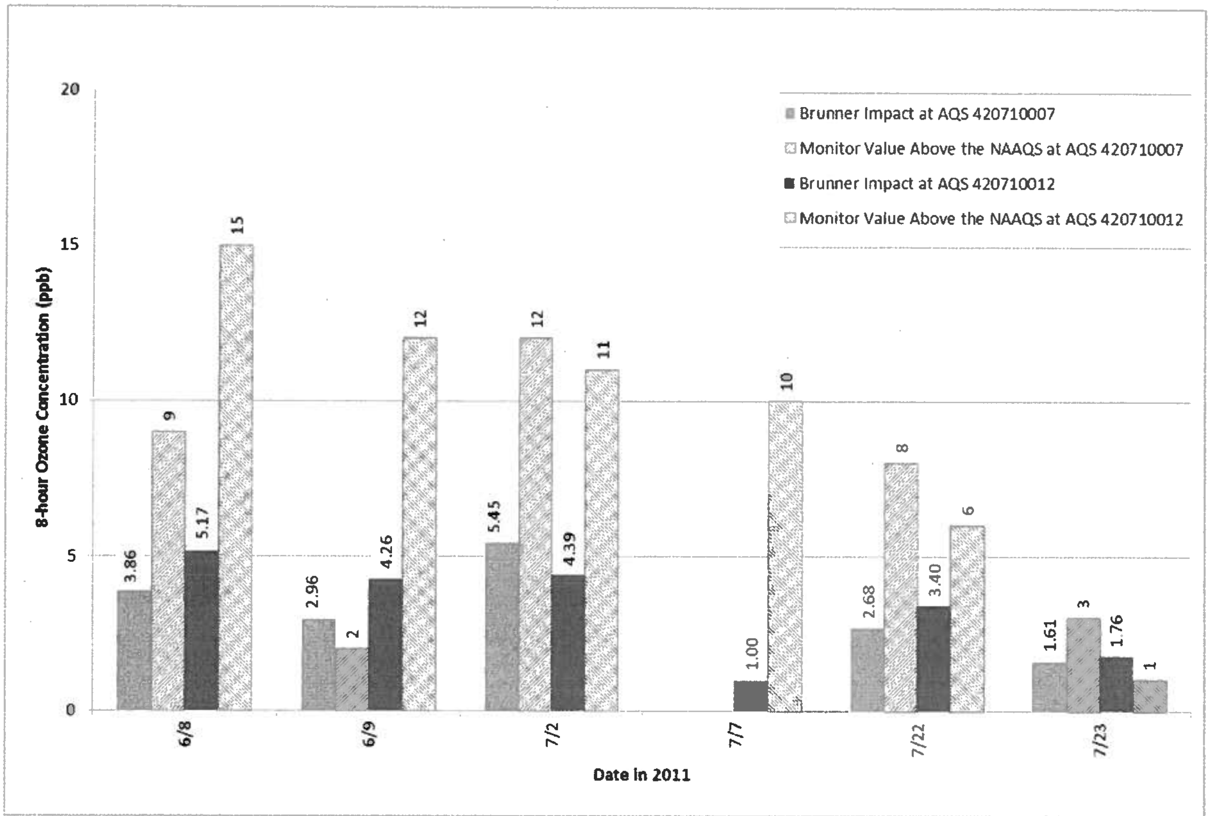

Figure 8. Modeled 8-hr ozone impacts from Brunner Island exceeding 1% of the ozone NAAQS, and incremental monitored ozone concentrations above the ozone NAAQS on days when the NAAQS was exceeded at air quality monitors near Lancaster.

Brunner Island Ozone Contributions on Neighboring States

In addition to analyzing the modeled ozone contributions due to Brunner Island emissions at receptors within Pennsylvania, we also analyzed contributions at air quality monitors in five neighboring downwind states: New York, New Jersey, Delaware, Maryland, and Connecticut.

Table 2 summarizes the number of times during the 2011 ozone season in which Brunner Island was a significant contributor to the total 8-hr ozone concentration at air quality monitors in each state. The table also includes the peak modeled contributions at monitors in each state, as well as the average and 75th percentile of *significant* modeled ozone contributions from Brunner Island at monitors in each state.

The electronic attachment provided with this memorandum includes a full listing of days when modeled ozone contributions from Brunner Island exceeded 1% of the ozone NAAQS (0.75 ppb) at monitors in all six states (PA, CT, DE, MD, NJ, and NY), along with the matching *monitored* maximum 8-hr ozone concentration on those days. Coincident occurrences of significant modeled ozone contributions from Brunner Island and high (>75 ppb) monitored maximum 8-hr average ozone concentrations at a monitor are highlighted and color-coded to indicate the attainment status of the monitor with respect to the 1997 and 2008 ozone NAAQS. The table is grouped by state (Pennsylvania first), and then sorted by the highest to lowest significant 8-hr ozone contribution from Brunner Island.

Table 2. Summary of significant (>0.75 ppb) modeled 8-hr ozone contributions from Brunner Island at monitoring stations in Pennsylvania and neighboring states. A "monitor-day" refers to one occurrence of a significant ozone contribution at one monitor. Peak modeled contributions at ozone monitors in each state, as well as the average and 75th percentile of significant contributions in each state, are also included.

State	Monitors with Significant Ozone Contributions	Maximum Number of Days any One Monitor had a Significant Ozone Contribution	Monitor-Days with Significant Ozone Contributions	Peak Ozone Contribution (ppb)	Average of Significant Ozone Contributions (ppb)	75th Percentile of Significant Ozone Contributions (ppb)
Pennsylvania	40	50	495	10.58	1.63	2.23
Connecticut	6	2	8	0.93	0.85	0.89
Delaware	7	28	118	4.83	1.69	2.10
Maryland	20	35	336	4.06	1.56	1.97
New Jersey	17	15	133	3.12	1.29	1.47
New York	16	6	45	2.31	1.00	1.02

Appendix A. Modeling Methods

Photochemical Grid Model and Source Apportionment

To quantify the ozone impacts due to precursor emissions from individual power plants and other source groups, STI performed CAMx OSAT source apportionment model simulations for the 2011 ozone season (May to September). The modeling domain and configurations used were based on those developed by EPA in recent ozone transport assessments using CAMx OSAT (U.S. Environmental Protection Agency, 2014a), and included the use of the carbon-bond 6 revision 2 gas phase chemistry mechanism.

The Comprehensive Air Quality Model with Extensions (CAMx version 6.1) (ENVIRON International Corporation, 2014) is a publically available, peer-reviewed, state-of-the-science three-dimensional grid-based (Eulerian) photochemical air quality model designed to simulate the emission, transport, diffusion, chemical transformation, and removal of gaseous and particle pollutants in the atmosphere over spatial scales ranging from continental to urban. CAMx was designed to approach air quality as a whole by including capabilities for modeling multiple air quality issues, including tropospheric ozone, fine particles, visibility degradation, acid deposition, air toxics, and mercury. The ability of photochemical grid models such as CAMx to treat a large number of sources and their chemical interactions makes them well suited for assessing the impacts of natural and anthropogenic emissions sources on air quality. CAMx is widely used to support regulatory air quality assessments and air quality management policy decisions in the United States In recent years, the EPA has used CAMx to support the NAAQS designation process (U.S. Environmental Protection Agency, 2014a) and evaluate interstate pollutant transport (U.S. Environmental Protection Agency, 2005).

CAMx also includes Ozone Source Apportionment Technology (OSAT), which can be used to estimate the contributions of individual sources, groups of sources, or source regions to ozone concentrations at a given receptor location (Yarwood et al., 1996). Source apportionment modeling is useful for understanding model performance, designing emission control strategies, and performing culpability assessments to identify emission sources that contribute significantly to pollution (ENVIRON International Corporation, 2010). The key precursor species for ozone production are volatile organic compounds (VOC) and oxides of nitrogen (NO_x). OSAT uses reactive tracers to track the fate of these precursor emissions and the ozone formation resulting from them within a CAMx simulation. The ozone and precursors are tracked and apportioned by OSAT without perturbing the host model chemistry; therefore the OSAT results are fully consistent with the host model results for total concentrations. OSAT can efficiently estimate source contributions from multiple emission sources within a single model simulation. Importantly, while source apportionment modeling can be used to estimate source contributions to ozone concentrations for a given set of emission inputs, sensitivity modeling approaches such as brute-force modeling[4] or the direct decoupled method (DDM)[5] are

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[4] The brute-force modeling method involves running the model both with and without emission controls applied to the source(s) of interest. The difference in pollutant concentrations between the two simulations yields the impact of the emission control scenario.
[5] DDM provides sensitivity coefficients that relate emissions changes to model outcomes. These sensitivity coefficients can be used to evaluate how pollutant concentrations would respond to a range of changes in emissions from a source or group of sources.

needed to quantify the effect of a given emission control scenario (e.g., 90% NO_x reduction at power plants) on ozone concentrations.

In this work, the Anthropogenic Precursor Culpability Assessment (APCA) extension of OSAT was used. APCA is based on OSAT, but calculates source contributions a little differently to recognize the fact that biogenic (or non-anthropogenic) emissions are not controllable. For example, when ozone is formed by reactions between biogenic VOC and anthropogenic NO_x, APCA apportions the ozone contribution entirely to the anthropogenic source. APCA only apportions ozone contributions to biogenic sources when both the VOC and NO_x precursors are from biogenic sources. APCA is useful for determining which source controls might have the greatest effect at reducing ozone concentrations.

2011 EPA Modeling Platform

The CAMx OSAT simulations were based on EPA's 2011 modeling platform. A modeling platform consists of a structured system of connected data and models that provide a consistent and transparent basis for assessing the air quality impact of anticipated changes in emissions. EPA develops and evaluates a new modeling platform each time the National Emissions Inventory (NEI) is updated (every three years). EPA has used the 2011 modeling platform to support development of revised ozone NAAQS (U.S. Environmental Protection Agency, 2014a) and to quantify future-year interstate contributions to ozone concentrations to help states address their obligations under the "Good Neighbor" provision of the Clean Air Act for the 2008 ozone NAAQS (U.S. Environmental Protection Agency, 2015).

The CAMx OSAT simulations relied on EPA's 2011v6.1 modeling platform, which was based on the 2011 NEI, Version 1 (2011NEIv1). The NEI is compiled by EPA on a triennial basis, primarily from data submitted by state, local, and tribal air agencies, and the 2011 NEI includes emissions from five source sectors: point sources, nonpoint (or area) sources, onroad mobile sources, nonroad mobile sources, and fire events.

For air quality modeling purposes, the 2011 NEI data was augmented by EPA to include biogenic emissions and data from Canadian and Mexican emissions inventories. In addition, the annualized point source data for electrical generating units (EGUs) in the 2011 NEI were replaced with hourly 2011 continuous emissions monitoring (CEMS) data for SO_2 and NO_x. Annual emissions for pollutants were converted to an hourly basis using CEMS input data (U.S. Environmental Protection Agency, 2011).

Source Apportionment Tagging

After obtaining the 2011 modeling platform from EPA, STI worked with the Sierra Club and state air agencies in Connecticut, Delaware, and Maryland to identify sources and source groups to be tagged for ozone attribution analysis. Tagged sources fell into one of the following general categories:

- Individual coal-fired power plants (in some cases, specific coal-fired EGUs within a single facility were tagged separately);
- Groups of coal-fired power plants within a state or sub-state region (e.g., downstate New York);
- Groups of other (non-EGU) point sources within a state or sub-state region; and
- Non-point source sectors (e.g., biogenic sources and onroad mobile sources) within a state, sub-state, or multi-state region (e.g., states in the Southeast States Air Resources Managers [SESARM] consortium).

A total of 52 EGUs were individually tagged, while several dozen additional EGUs were tagged within 61 state and sub-state regions. Point sources that were tagged individually were not included in any of the state- or sub-state-level tag groups. In addition, each non-point source sector was tagged within 15 state, sub-state, or multi-state regions. Because of the large number of tags modeled, the processing was divided in to three separate CAMx OSAT simulations. Brunner Island is represented by source tag I7 in Simulation 1. More detailed information on sources tagged in the CAMx OSAT simulations is provided in Appendix B.

Meteorology

Meteorological inputs for the CAMx-OSAT simulations were developed by EPA for the 2011 modeling platform using version 3.4 of the Weather Research and Forecasting (WRF) numerical weather prediction model (Skamarock et al., 2008). The meteorological outputs from WRF include hourly varying winds, temperature, moisture, vertical diffusion rates, clouds, and rainfall rates. Additional details about this WRF simulation and its performance evaluation can be found in U.S. Environmental Protection Agency (2014b).

Initial and Boundary Conditions

Initial and lateral boundary conditions were developed from three-dimensional global atmospheric chemistry simulations with GEOS-Chem standard version 8-03-02 with 8-02-01 chemistry (http://geos-chem.org) provided with the EPA 2011 platform. The GEOS-Chem predictions were translated into CAMx-ready initial and boundary conditions using code and procedures developed by Henderson et al. (2014), and modifications provided to STI by the Lake Michigan Air Directors Consortium (LADCO) to accommodate carbon-bond 6 chemistry species. OSAT tracks ozone transported through the boundaries, as well as ozone formation resulting from precursor emissions transported through the boundaries.

Post-Processing

The raw result from a CAMx OSAT simulation is hourly ozone contributions from each source tag at each grid cell in the modeling domain for the 2011 ozone season. These hourly contributions were extracted and post-processed for several hundred receptor sites, listed in the electronic attachment provided with this memorandum. The receptors correspond to quality monitoring sites across the eastern half of the United States, and include sites of specific interest to northeastern states, as well as monitors with current ozone design values exceeding 65 ppb. At each receptor and for each day, the 8-hr average ozone contribution was calculated for all source tags using the averaging period corresponding to the period of highest modeled 8-hr average concentration at the receptor location. Although this analysis approach may not capture the largest ozone contributions modeled during the day, it does reflect contributions during time periods when ozone concentrations are highest. This analysis approach also ensures that ozone contributions from all source tags[6] sum to total modeled 8-hr ozone concentration each day. The post-processed OSAT results were compiled into Microsoft Access databases to facilitate future data mining and analysis.

Model Performance Evaluation

EPA evaluated its 2011 modeling platform using statistical assessments of model predictions versus observations paired in time and space. Overall, the model performance statistics for ozone were within or close to the ranges found in other peer-reviewed applications (Simon et al., 2012) and were found to be suitable for use in a regulatory context (U.S. Environmental Protection Agency, 2014a).

As an example of how the 2011 modeling platform was performing in southeast Pennsylvania, Figure 9 shows a time-series comparison between modeled and monitored peak 8-hr ozone concentrations at the Sipe Avenue monitor in Harrisburg. The modeled ozone concentrations will not typically show perfect agreement with observed concentrations. For the Sipe Avenue monitor, the model performs well and captures observed ozone trends throughout the 2011 ozone season quite well, but tends to under-predict ozone concentrations when monitored concentrations are highest.

[6] Including a leftover residual contribution from all untagged sources calculated by CAMx.

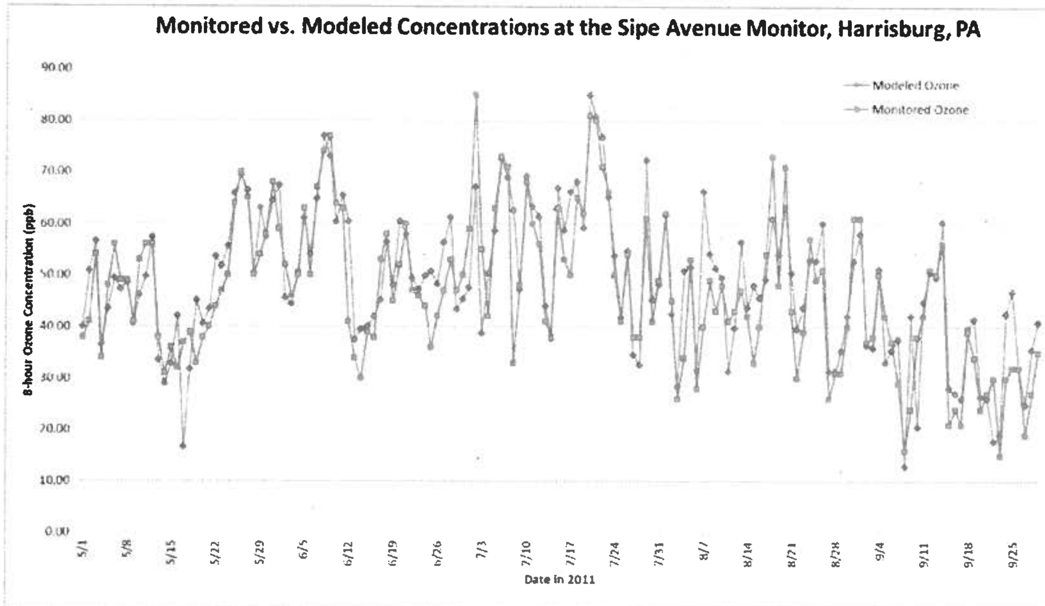

Figure 9. Monitored vs. modeled 8-hr ozone concentrations at the Sipe Avenue monitor near Harrisburg.

Appendix B. OSAT Source Tags

This information is also included in the Access database of OSAT results provided to the Sierra Club. Point source state groups (e.g., PA1, MDALL, and CTOTH) do not include point sources that were already tagged individually or point sources included in other state groupings from the same state.

Simulation 1

Tag Name	State	Tag Description
IC	N/A	Initial Conditions
BC	N/A	Boundary Conditions
biog	N/A	Biogenics
I2	CT	Bridgeport Station
I5	PA	Conemaugh
I6	PA	Homer City Station
I7	PA	PPL Brunner Island
I10	PA	Bruce Mansfield
I11	PA	Keystone
I12	PA	PPL Montour
I17	VA	Chesterfield
I19	WV	Pleasants Power Station
I23	IL	E D Edwards
I28	WV	Harrison Power Station
I30	WV	Fort Martin Power Station
I32	WV	John E Amos
I33	MI	St Clair
I34	MI	Trenton Channel
I35	IN	Clifty Creek
I36	IL	Wood River
I37	IL	Waukegan
I38	OH	Kyger Creek
I39	IL	Will County
I40	OH	Cardinal
I41	MI	J H Campbell
I43	OH	General James M Gavin
I44	OH	W H Sammis
I45	IL	Powerton
I46	MI	River Rouge

Tag Name	State	Tag Description
I49	PA	Cheswick Power Plant
IL1	IL	Illinois point group 1
IL2	IL	Illinois point group 2
IN1	IN	Indiana point group 1
IN2	IN	Indiana point group 2
MD	MD	Maryland point group
MI	MI	Michigan point group
NJ1	NJ	Illinois point group 1
NJ2	NJ	Illinois point group 2
NY	NY	New York point group
OH1	OH	Ohio point group 1
OH2	OH	Ohio point group 2
PA1	PA	Pennsylvania point group 1
PA2	PA	Pennsylvania point group 2
VA1	VA	Virginia point group 1
VA2	VA	Virginia point group 2
WV	WV	West Virginia point group
NYEGU	NY	New York EGUs not individually tagged
NYUOTH	NY	Non-EGU point sources in upstate New York
NYDCMB	NY	New York "downstate" combustion sources
NYDOTH	NY	New York "downstate" point sources
PAEGU	PA	Pennsylvania EGUs not individually tagged
PAOTH	PA	Other Pennsylvania sources
NJCMB	NJ	New Jersey CMB sources
NJOTH	NJ	Other New Jersey point sources
CTCMB	CT	Connecticut combustion sources
CTOTH	CT	Other Connecticut point sources
MDALL	MD	Other Maryland point sources
VAALL	VA	Other Virginia point sources
OHALL	OH	Other Ohio point sources
INALL	IN	Other Indiana point sources
OTHER	N/A	CAMx "residual" contribution
total	N/A	Total ozone concentration

Simulation 2

Tag Name	Tag Description
IC	Initial conditions
BC	Boundary conditions
biog_oth	Biogenic emissions from states not included in tagging
biog_CT	Connecticut biogenics
biog_DC	Washington D. C. biogenics
biog_IL	Illinois biogenics
biog_IN	Indiana biogenics
biog_MD	Maryland biogenics
biog_MI	Michigan biogenics
biog_NJ	New Jersey biogenics
biog_NYD	New York "downstate" biogenics
biog_NYU	New York "update" biogenics
biog_OH	Ohio biogenics
biog_PA	Pennsylvania biogenics
biog_SESARM	Biogenics from SESARM states
biog_VA	Virginia biogenics
biog_WV	West Virginia biogenics
biog_DE	Delaware biogenics
nonr_oth	Non-road emissions from states not included in tagging
nonr_CT	Connecticut non-road
nonr_DC	Washington D. C. non-road
nonr_IL	Illinois non-road
nonr_IN	Indiana non-road
nonr_MD	Maryland non-road
nonr_MI	Michigan non-road
nonr_NJ	New Jersey non-road
nonr_NYD	New York "downstate" non-road
nonr_NYU	New York "update" non-road
nonr_OH	Ohio non-road
nonr_PA	Pennsylvania non-road
nonr_SESARM	non-road from SESARM states
nonr_VA	Virginia non-road
nonr_WV	West Virginia non-road
nonr_DE	Delaware non-road

Tag Name	Tag Description
onr_oth	Onroad emissions from states not included in tagging
onr_CT	Connecticut onroad
onr_DC	Washington D. C. onroad
onr_IL	Illinois onroad
onr_IN	Indiana onroad
onr_MD	Maryland onroad
onr_MI	Michigan onroad
onr_NJ	New Jersey onroad
onr_NYD	New York "downstate" onroad
onr_NYU	New York "update" onroad
onr_OH	Ohio onroad
onr_PA	Pennsylvania onroad
onr_SESARM	onroad from SESARM states
onr_VA	Virginia onroad
onr_WV	West Virginia onroad
onr_DE	Delaware onroad
othr_oth	Other emissions (not addressed by the onroad, non-road, and biogenic tags) from states not included in tagging
othr_CT	Other emissions from Connecticut
othr_DC	Other emissions from Washington, DC
othr_IL	Other emissions from Illinois
othr_IN	Other emissions from Indiana
othr_MD	Other emissions from Maryland
othr_MI	Other emissions from Michigan
othr_NJ	Other emissions from New Jersey
othr_NYD	Other emissions from downstate New York
othr_NYU	Other emissions from upstate New York
othr_OH	Other emissions from Ohio
othr_PA	Other emissions from Pennsylvania
othr_SESARM	Other emissions from SESARM states
othr_VA	Other emissions from Virginia
othr_WV	Other emissions from West Virginia
othr_DE	Other emissions from Delaware
total_icbc	Total initial and boundary conditions
total_biog	Total biogenic emissions
total_nonr	Total nonroad emissions

Tag Name	Tag Description
total_onr	Total onroad emissions
total_othr	Total other emissions
total	Total ozone concentration

Simulation 3

Tag Name	State	Plant Name
IC	N/A	Initial conditions
BC	N/A	Boundary conditions
biog	N/A	Biogenics
OTHER	N/A	CAMx "residual" contribution
total	N/A	Total ozone concentration
I1	DE	Indian River Generating Station
I3	AR	White Bluff
I4	AR	Independence
I6	TX	Big Brown
I8	GA	Hammond
I9	KS	Tecumseh Energy Center
I13	TX	W A Parish
I14	TX	Coleto Creek
I15	TX	Monticello
I16	TX	Fayette Power Project (a.k.a. Sam Seymour)
I18	TX	Martin Lake
I20	TX	Pirkey
I21	TN	Kingston
I22	KY	Kenneth C Coleman
I24	TN	Gallatin
I25	KY	Elmer Smith
I26	KY	E W Brown
I27	KY	Shawnee
I29	MO	Thomas Hill
I31	MO	Sioux
I42	NC	G G Allen
I47	GA	Scherer
I48	NC	Marshall
I50	OK	Muskogee

Tag Name	State	Plant Name
I51	OK	GRDA
AL1	AL	Alabama point group 1
AL2	AL	Alabama point group 2
AR	AR	Arkansas point group
FL1	FL	Florida point group 1
FL2	FL	Florida point group 2
GA	GA	Georgia point group
IA1	IA	Iowa point group 1
IA2	IA	Iowa point group 2
KS	KS	Kansas point group
KY1	KY	Kentucky point group 1
KY2	KY	Kentucky point group 2
LA	LA	Louisiana point group
MA	MA	Massachusetts point group
MN1	MN	Minnesota point group 1
MN2	MN	Minnesota point group 2
MO	MO	Missouri point group
MS1	MS	Mississippi point group 1
MS2	MS	Mississippi point group 2
NC	NC	North Carolina group
NE1	NE	Nebraska group
NH	NH	New Hampshire point group
OK1	OK	Oklahoma point group 1
OK2	OK	Oklahoma point group 2
SC1	SC	South Carolina point group 1
SC2	SC	South Carolina point group 2
TN1	TN	Tennessee point group 1
TN2	TN	Tennessee point group 2
TX1	TX	Texas point group 1
TX2	TX	Texas point group 2
WI1	WI	Wisconsin point group 1
WI2	WI	Wisconsin point group 2

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Addendum: Aggregate Ozone Contributions from Pennsylvania Coal-Fired Power Plants

In addition to analyzing the modeled ozone contributions due to Brunner Island emissions, we also analyzed aggregate ozone contributions due to emissions from the 21 Pennsylvania coal-fired power plants listed in Table 3. In 2011, the combined NO_x emissions from these power plants were about 100,000 tons, with over 75% of these NO_x emissions coming from five power plants: Keystone, Conemaugh, Brunner Island, Bruce Mansfield, and Montour. The Keystone, Conemaugh, and Brunner Island power plants are the second, third, and fourth highest NO_x emitters of all tagged power plants in the source apportionment modeling.

Table 3. Pennsylvania coal-fired power plants included in the aggregate ozone impact analysis, with 2011 NO_x emissions (tons).

Tag Name	Plant Name	2011 NO_x Emissions (tons)
I5	Conemaugh	17,553
I6	Homer City Station	9,022
I7	PPL Brunner Island	16,887
I10	Bruce Mansfield	11,550
I11	Keystone	20,759
I12	PPL Montour	12,714
I49	Cheswick Power Plant	3,293
PA1	Cambria Cogen Colver Power Project Ebensburg Power Foster Wheeler Mt. Carmel Cogen G F Weaton Power Station John B. Rich Memorial Power Station Kline Township Cogen Facility Northampton Generating Company LP Panther Creek Energy Facility Scrubgrass Generating Company LP Seward St. Nicholas Cogen Project Wheelabrator Frackville Energy WPS Westwood Generation LLC	7,397

The modeled 8-hr ozone contribution from each Pennsylvania power plant in Table 3 was summed at each ozone monitor in Pennsylvania and its neighboring states. Emissions from these Pennsylvania coal-fired power plants contribute significantly to ozone formation in Pennsylvania and neighboring states during the modeled ozone season. Modeled 8-hr ozone impacts were as large as 18 ppb in Pennsylvania (Strongstown monitor in Indiana County), and as large as about 4 to 9 ppb in neighboring states. Impacts considered significant (>1% of the current ozone NAAQS) were modeled on as many as 108 days at a single Pennsylvania monitor during the single ozone season. Significant ozone impacts were modeled at one or more Pennsylvania monitors on almost every modeled day (144 out of 152) during the ozone season.

Table 4 summarizes the number of times during the 2011 ozone season that the combined emissions from Pennsylvania coal-fired power plants were a significant contributor to the total 8-hr ozone concentration at air quality monitors in Pennsylvania and five neighboring states. The table also includes the peak modeled contributions at monitors in each state, as well as the average and 75th percentile of *significant* modeled ozone contributions from the power plants at monitors in each state.

Table 4. Summary of significant (>0.75 ppb) modeled 8-hr ozone contributions from Pennsylvania coal-fired power plants at monitoring stations in Pennsylvania and neighboring states. A "monitor-day" refers to one occurrence of a significant ozone contribution at one monitor. Peak modeled contributions at ozone monitors in each state, as well as the average and 75th percentile of significant contributions in each state, are also included.

State	Monitors with Significant Ozone Contributions	Maximum Number of Days any One Monitor had a Significant Ozone Contribution	Monitor-Days with Significant Ozone Contributions	Peak Ozone Contribution (ppb)	Average of Significant Ozone Contributions (ppb)	75th Percentile of Significant Ozone Contributions (ppb)
Pennsylvania	53	108	2940	18.32	2.57	3.29
Connecticut	12	22	169	3.86	1.46	1.81
Delaware	7	63	345	8.79	1.95	2.38
Maryland	20	71	1097	8.32	1.99	2.52
New Jersey	17	43	535	7.01	2.00	2.61
New York	28	40	555	6.23	1.72	2.17

SIERRA CLUB

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February 15, 2016

Via Electronic Mail

Re: Brunner Island, LLC Proposed Plan Approval 67-05005J

David Gher,

The Sierra Club submits the following comments concerning the proposed Plan Approval, No. 67-05005J, for the Brunner Island coal-fired power plant in York County, Pennsylvania. The proposed plan approval does nothing to end the special treatment DEP affords Brunner Island as the only remaining large coal-fired power plant in Pennsylvania that lacks post-combustion controls for nitrogen oxide ("NOx") emissions. As explained in more detail below, the proposed annual "limits" on NOx from the facility are actually *higher* than Brunner Island's historical emissions; moreover, the proposed limits are in no way an adequate replacement for a proper reasonably available control technology ("RACT").

Instead, DEP should require at the very least that Brunner Island meet and abide by the same post-combustion control emission limits that DEP is proposing under RACT for the other large coal-fired power plants in Pennsylvania.

Substantive Comments

A. The Proposed NOx Limits for Brunner Island Actually Exceed Historical Emissions, and Thus Are Effectively No Limits at All

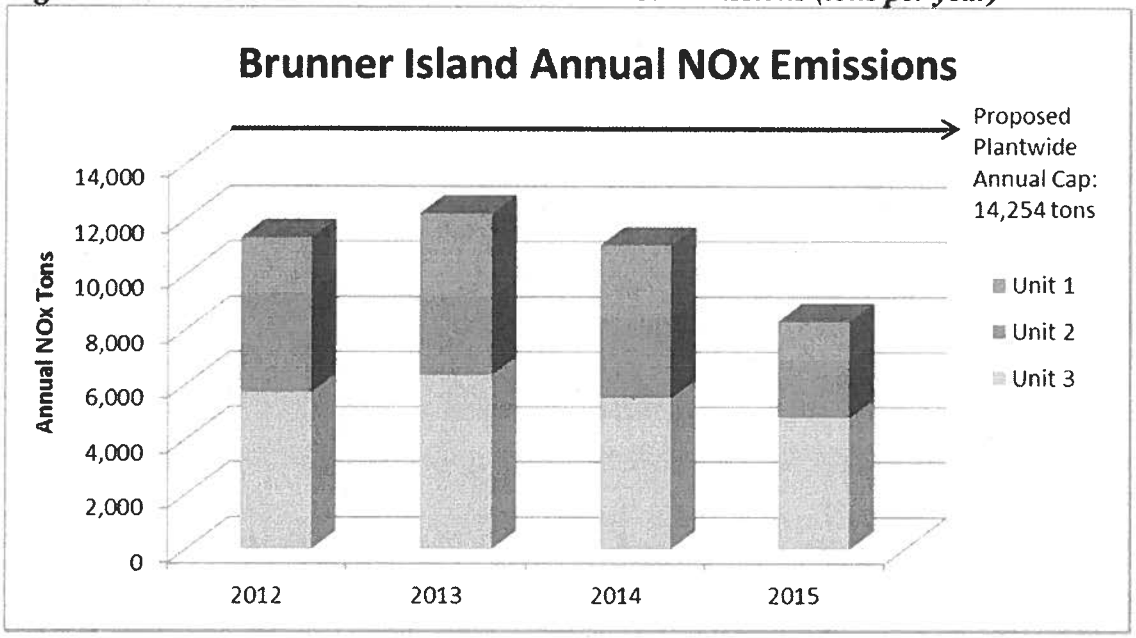
The proposed plan approval contemplates the following tons per year ("tpy") NOx emission limits for Brunner Island, on a twelve consecutive month rolling basis:

(a) Facility = 14,254 tpy
(b) Unit No. 1 = 3,751 tpy
(c) Unit No. 2 = 4,261 tpy

(d) Unit No. 3 = 8,186 tpy

However, these limits are greatly in excess of actual emissions from Brunner Island, as Figure 1 demonstrates:

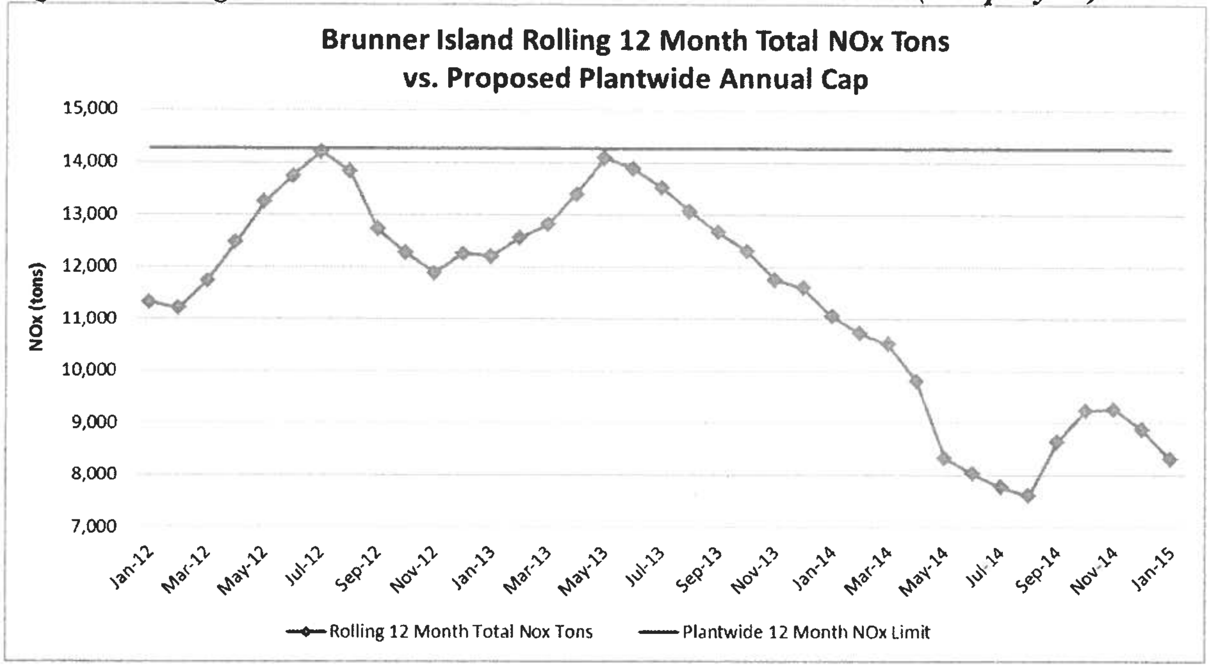
Figure 1: Historical Brunner Island Plantwide NOx Emissions (tons per year)[1]



The proposed emission limits thus would do really nothing to actually constrain emissions from Brunner Island at all. This is plain when viewing even historical twelve-month rolling emissions from the facility:

[1] Data taken from EPA's air markets program data database, at http://ampd.epa.gov/ampd/.

Figure 2: Rolling Historical Brunner Island Plantwide NOx Emissions (tons per year)[2]

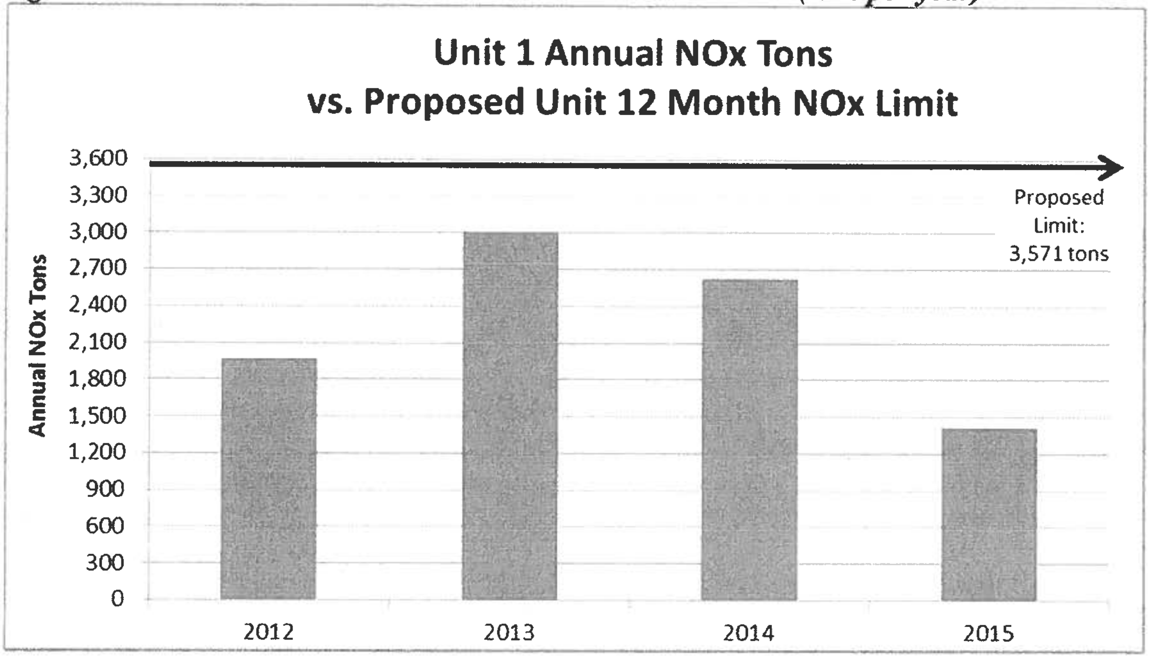


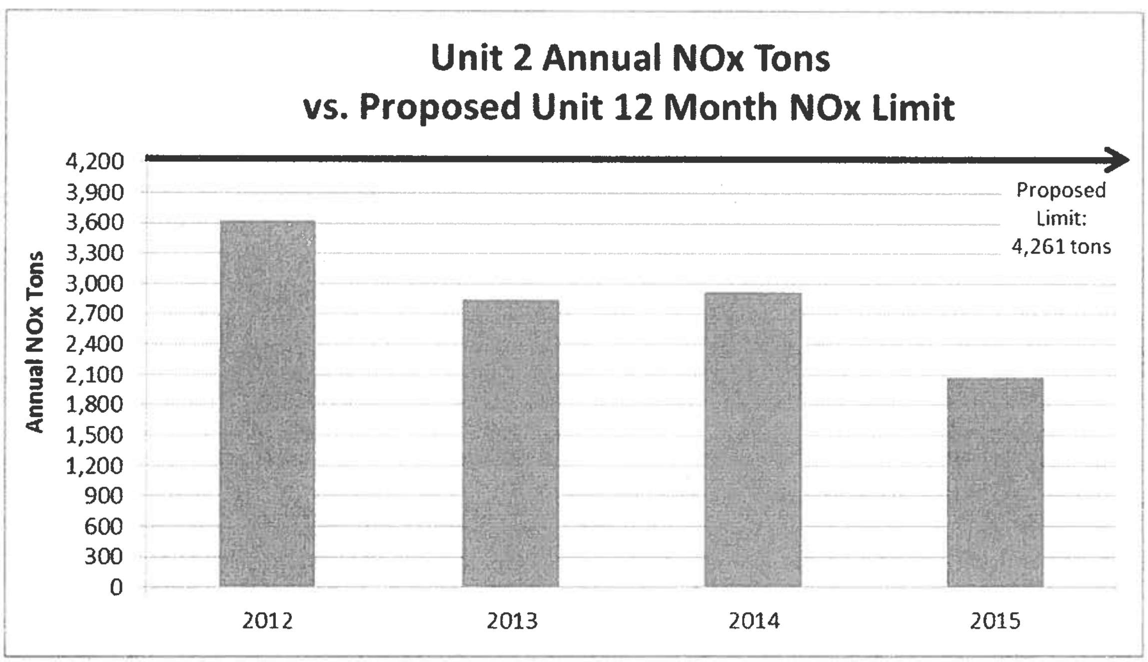
The proposed plan approval's plantwide emission limit would thus fail to appreciably (or at all) drive reductions in actual emissions of pollutants from Brunner Island.

The contemplated limits for the individual units (which collectively sum to 16,198 tons per year, or nearly two thousand tons more than the plantwide limit) likewise would not impact Brunner Island's actual emissions, as demonstrated from historical emissions data:

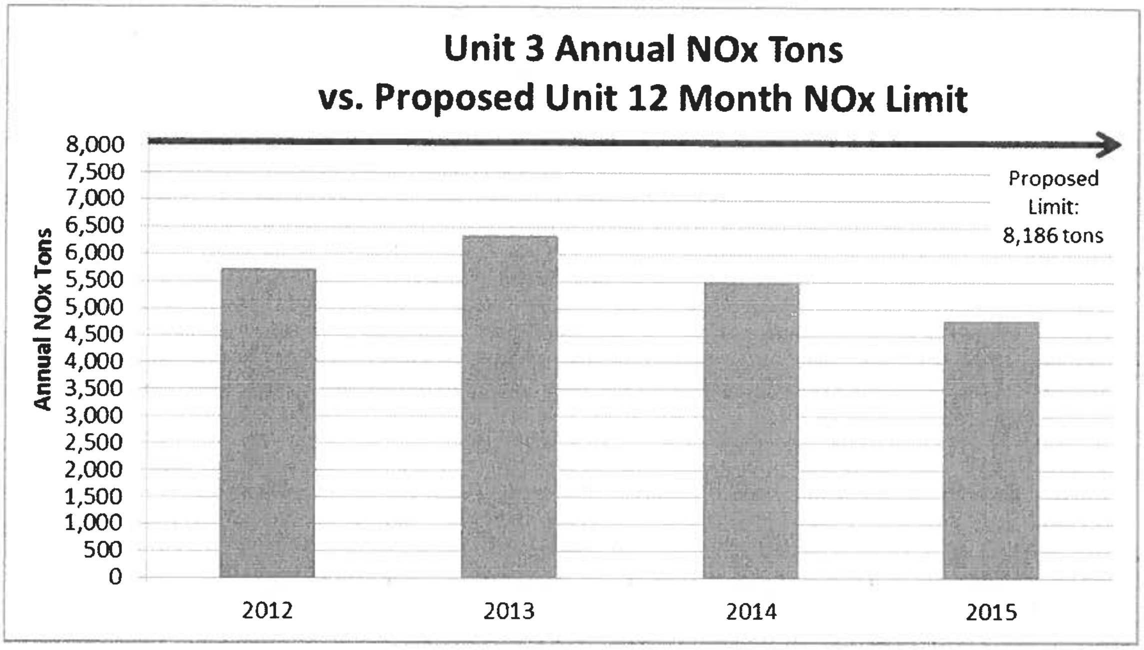
[2] *Id.*

Figure 3: Historical Brunner Island Units 1-3 NOx Emissions (tons per year)[3]





[3] *Id.*



This failure of the proposed emission limits to actually limit emissions is all the more stark in face of the fact that DEP has approved installation of gas-burning capability at Brunner Island.[4] Gas combustion at EGUs results in greatly decreased NOx emissions versus coal-firing. Indeed, Brunner Island could readily decrease its NOx emissions at low cost—likely even *negative* cost, given current and projected coal and gas prices[5]—and yet the contemplated plan approval ignores this to "cap" annual emissions at levels higher than what the facility actually emits.

B. <u>The Proposed Plan Approval Fails to Comply with RACT, and Instead Gives Brunner Island Unfairly Preferential Treatment, at Great Expense to Air Quality</u>

Brunner Island is the only large coal plant in Pennsylvania that lacks post-combustion controls—such as selective catalytic conversion, or SCR—for NOx. It is thus also the only large coal plant in Pennsylvania that is this effectively unaffected by the pending ozone Reasonably Available Control Technology ("RACT") proposal before the Pennsylvania Independent Regulatory Review Commission ("IRRC").[6] The proposed plan approval does nothing to rectify this situation. The plan approval would not, as noted above, actually require Brunner Island to reduce its emissions; nor would it set requirements consistent with either RACT or Pennsylvania's proposed control requirements for all other coal-fired power plants; nor would it be federally enforceable. Thus, the proposed plan approval fails to discharge Pennsylvania's obligations under RACT.

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[4] *See* Pennsylvania Plan Approval Plan Approval No. 67-05005H, at 2 (authorizing the "combustion of natural gas fuel," the "construction and subsequent . . . operation of" natural gas pipeline heaters, and the "construction and subsequent . . . operation of a natural gas pipeline" at Brunner Island).

[5] *See* U.S. Energy Information Agency, Electricity Monthly Update – Fossil Fuel Prices (Jan. 26, 2016), *available at* https://www.eia.gov/electricity/monthly/update/resource_use.cfm#tabs_spot-2 (showing Henry Hub gas prices to be significantly less than Central Appalachian coal prices on a dollars-per-megawatt-hour basis).

[6] *See* Independent Regulatory Review Commission, Regulation #7-485: Additional RACT Requirements for Major Sources of NOx and VOCs, *at* http://www.irrc.state.pa.us/regulations/RegSrchRslts.cfm?ID=3062.

1. *Pennsylvania, Ozone RACT, and the Current RACT Proposal*

In 2008, EPA revised the 1997 ozone NAAQS to 75 parts per billion with an 8-hour averaging period.[7] In 2012, EPA finalized designations, including nonattainment designations, under this 2008 NAAQS, adding to unresolved nonattainment designations in Pennsylvania under the preexisting 1997 NAAQS. Seventeen counties centered around Pittsburgh and Philadelphia are designated nonattainment under the 2008 ozone NAAQS.[8] These seventeen counties contain over 8 million residents, or roughly two-thirds of Pennsylvania's total population.[9]

RACT determinations and RACT-based emission limits are required by the Clean Air Act for areas failing to attain National Ambient Air Quality Standards ("NAAQS"). *See* 42 U.S.C. § 7502(c)(1). RACT is a technology-forcing standard intended to ensure that polluting sources are controlled consistent with available methods for reducing pollution. As a result, RACT is a stringent standard, designed to induce and require improvements in control technology and reductions in pollutant emissions. Indeed, EPA has long maintained that "RACT should represent the toughest controls considering technological and economic feasibility that can be applied to a specific situation" and that "[a]nything less than this is by definition less than RACT."[10]

RACT is defined as "the lowest emissions limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility."[11] The RACT definition comprises two parts: (a) technological feasibility and (b) economic feasibility.

Technological feasibility is straightforward: "[t]he technological feasibility of applying an emission reduction method to a particular source should consider the source's process and operating procedures, raw materials, physical plant layout, and any other environmental impacts such as water pollution, waste disposal, and energy requirements."[12] Economic feasibility is likewise a clear analysis: whether other sources in the source category in question have installed and employed the considered control technology. As EPA has explained, "[e]conomic feasibility considers the cost of reducing emissions and the difference in costs between the particular source and other similar sources that have implemented emission reduction."[13] Specifically,

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[7] 73 Fed. Reg. 16,483 (March 27, 2008).

[8] These seventeen counties are Allegheny, Armstrong, Beaver, Berks, Bucks, Butler, Carbon, Chester, Delaware, Fayette, Lancaster, Lehigh, Montgomery, Northampton, Philadelphia, Washington and Westmoreland. *See* Pennsylvania DEP, Attainment Status by Principal Pollutants, *at* http://www.dep.state.pa.us/dep/deputate/airwaste/aq/attain/status.htm.

[9] To be precise, 8,071,358 out of 12,764,475 Pennsylvanians (US Census Bureau 2012) live in ozone nonattainment areas.

[10] Memorandum from Roger Strelow, Assistant Administrator for Air and Waste Management, U.S. EPA, to Regional Administrators, Regions I - X (Dec. 9, 1976), at 2 (hereinafter "Strelow Memo").

[11] COMAR 26.11.01.01.B(40); *accord* U.S. EPA, State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, 57 Fed. Reg. 55,620, 55,624 (Nov. 25, 1992).

[12] U.S. EPA, State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental, 57 Fed. Reg. 18,070, 18,074 (Apr. 28, 1992).

[13] 57 Fed. Reg. at 18,074.

> EPA presumes that it is reasonable for similar sources to bear similar costs of emission reductions. **Economic feasibility rests very little on the ability of a particular source to 'afford' to reduce emissions to the level of similar sources. Less efficient sources would be rewarded by having to bear lower emission reduction costs if affordability were given high consideration. Rather, economic feasibility for RACT purposes is largely determined by evidence that other sources in a source category have in fact applied the control technology in question.**[14]

Further, EPA has explained that RACT is not intended to enshrine existing installed control technologies, but rather is technology-forcing.[15] Thus, "[i]n determining RACT for an individual source or group of sources, the control agency, using the available guidance, should select the best available controls, *deviating from those controls only where local conditions are such that they cannot be applied there* and imposing even tougher controls where conditions allow."[16] Accordingly, given the widespread application of SCR, a less effective technology could only be chosen for a specific source if SCR physically could not be applied at that specific source.

Currently before the IRRC is a RACT proposal that would require coal units with post-combustion controls, such as SCR or selective non-catalytic reduction or SNCR, to simply operate those controls. Specifically, SCR-equipped units would be required to achieve a 0.12 lbs/MMBtu NOx emission rate, and SNCR-equipped units, although not required to hit a specific emission limit, would be required to operate their SNCR. Brunner Island, unlike its similarly-situated coal-fired brethren in the state, has failed to install post-combustion controls, and would not receive control-based emission limits, and would thus be allowed to emit vastly more NOx than their competitors under Pennsylvania's RACT proposal.

2. *The Proposed Plan Approval Fails to Address Brunner Island's Improper Privileged Status under the RACT Proposal*

Every other conventional coal-fired unit in Pennsylvania is already equipped with either SNCR, or, more frequently, SCR. It is incontrovertible that such SCR is both technologically and economically feasible under RACT for Pennsylvanian coal units; yet Brunner Island would be granted an effective exemption from limiting emissions consistent with such controls, and the contemplated plan approval would not rectify this improper privileged status.

As Table 1 makes clear, nearly every coal unit—and certainly every non-Brunner large coal unit—in Pennsylvania already has SCR.

[14] *Id.* (emphasis added).
[15] Strelow Memo at 2.
[16] *Id.* (emphasis added).

Table 1: Pennsylvania Coal-Fired EGU Boilers and Current NOx Controls[17]

Plant Name	Unit ID	Nameplate Capacity (MW)	NOx Controls
Bruce Mansfield	1	914	LNBO, SCR
Bruce Mansfield	2	914	LNBO, SCR
Bruce Mansfield	3	914	LNBO, SCR
Cambria *(Cogen)*	GEN1	98	SNCR
Cheswick Power Plant	1	637	LNC3, SCR
Colver Power Project *(Waste Coal)*	COLV	118	SNCR
Conemaugh	1	936	LNC3, SCR
Conemaugh	2	936	LNC3, SCR
Ebensburg Power	GEN1	58	None
Foster Wheeler *(Cogen)*	SG-101	47.3	FBC
Homer City Station	1	660	LNBO, SCR
Homer City Station	2	660	LNBO, SCR
Homer City Station	3	692	LNBO, SCR
John B Rich Memorial *(Waste Coal)*	GEN1	88	FBC, OV
Keystone	1	936	LNC3, SCR
Keystone	2	936	LNC3, SCR
Kline *(Cogen)*	GEN1	57.5	FBC
Northampton *(Waste Coal)*	GEN1	114	SNCR
Panther Creek *(Waste Coal)*	GEN1	94	SNCR
PPL Brunner Island	1	363	LNC3
PPL Brunner Island	2	405	LNC3
PPL Brunner Island	3	790	LNC3
PPL Montour	1	806	LNC3, SCR
PPL Montour	2	819	LNC3, SCR
Scrubgrass *(Waste Coal)*	GEN1	95	SNCR
Seward *(Waste Coal)*	FB1	585	SNCR
St Nicholas *(Cogen)*	SNCP	99	FBC
Westwood Generating Station	GEN1	36	None
Wheelabrator Frackville Energy	GEN1	48	FBC, Other

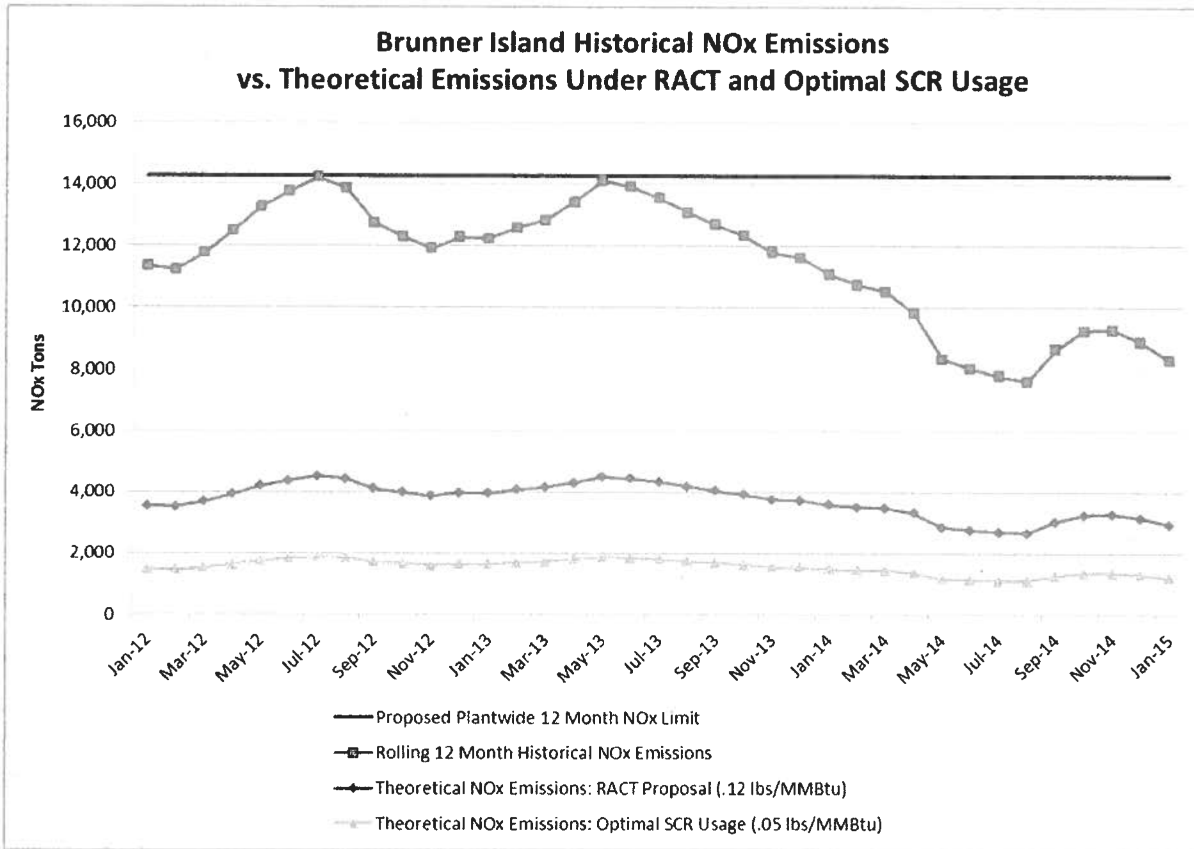
Under the pending RACT proposal, these units would have to hit a NOx emission rate of 0.12 lbs/MMbtu, yet Brunner would be free to emit up to 14,254 tons per year of NOx under the contemplated plan approval.[18] Indeed, as noted above, the proposed plan approval would not

[17] All of the information displayed in Table 1 was retrieved from U.S. EPA's Air Market Program's Database or Title V air permits for the respective facilities. Table 1 employs the following acronyms: **LNBO**: Low NOx Burners; **LNC3**: Low NOx Coal and Air Nozzles with Close Coupled & Separated Overfire Air; **FBC**: Fluidized Bed Combuster; **OV**: Overfire Air.

[18] Sierra Club and others have commented multiple times on Pennsylvania's RACT proposal, noting among other things its improper failure to address Brunner Island's NOx emissions. In these comments, Sierra Club has likewise

require Brunner Island to actually decrease its emissions, as the annual limits are set significantly above the facility's historical emission levels. As Figure 4 below makes clear, the result is that Brunner Island would, even under the proposed plan approval, be allowed to emit vastly more NOx than it would if it were required to abide by the same emission limits every other large coal unit in Pennsylvania would comply with under the RACT proposal.

Figure 4: Brunner Island Historical NOx Emissions and Emissions with Calculated RACT- and SCR-Consistent Emission Rates[19]



Under the proposed plan approval, Brunner Island would be permitted to emit some 10,000 tons more NOx per year than would be emitted if Brunner Island were required to achieve the 0.12 lbs/MMbtu emission rate applicable to SCR-equipped units under the RACT proposal (based on historical Brunner Island heat outputs). But even this vast gulf understates the situation: SCR-equipped units can readily achieve far better emission rates, as low as 0.05 lbs/MMbtu or lower.

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noted numerous problems with the proposed RACT limits for controlled units, such as: 0.12 lbs/MMbtu being a much higher emission rate than is consistent with SCR operation, effective emissions exemptions for startup and shutdown being improper, and the entire approach of categorizing sources by their controls instead of controlling emitters by their source category being wrongheaded and in contravention of RACT requirements. Sierra Club reiterates those comments here, but notes specifically that, while Pennsylvania's RACT proposal is severely problematic, the proposed plan approval for Brunner Island falls much farther short of achieving RACT than does the RACT proposal. Indeed, being predicated on an annual limit, the contemplated plan approval does nothing to address ozone season emissions.

[19] Data taken from EPA's air markets program data database, at http://ampd.epa.gov/ampd/.

A proper RACT determination would require Brunner Island to consistently achieve such an emission rate, resulting in a roughly 12,000 ton per year reduction in emissions, as compared with what the contemplated plan approval would allow. Thus, the proposed plan approval utterly fails to reduce emissions from Brunner Island in a manner consistent with the requirements of RACT.

This is on top of the fact that, while RACT is a federal requirement, and RACT proposals are ultimately incorporated into state implementation plans subject to EPA oversight, approval, and thus *federal enforceability*, the plan approval would not necessarily be federally enforceable at all. Accordingly, the plan approval is inconsistent with RACT, would preserve Brunner Island's unique status as an unfairly high-emitting NOx source, and would lack the basic enforceability elements of a proper RACT determination.[20]

The proposed plan approval should be revised to limit emissions from Brunner Island to either be consistent with continuous operation of SCR—i.e., a 0.05 lbs/MMbtu NOx emission rate—or consistent with cessation of coal-firing at Brunner Island in place of the gas-firing capability DEP has already granted the facility.

CONCLUSION

As described above, the proposed plan approval is both woefully inadequate to actually reduce NOx pollution from Brunner Island, and is entirely incompatible with a legally-cognizable RACT determination. Instead, it enshrines Brunner Island's bizarre RACT-exempt status as the only large coal plant in Pennsylvania not required to lower its emissions consistent with post-combustion control operation. This grants Brunner Island an unfair advantage over its competitors in the electricity market, and needlessly subjects the people of Pennsylvania and downwind states to the health hazards of ozone pollution directly attributable to Brunner Island's extremely high NOx emissions.

Any final plan approval that issues should actually limit NOx emissions from Brunner Island; better still, Brunner Island should be required to hit emission limits consistent with RACT.

Sincerely,

/s/

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[20] There is moreover certainly nothing in the proposed plan approval, nor in the application for the plan approval, anywhere near approaching the analysis required for a unit-specific RACT determination.

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