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Secretary

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August 8, 2016

Gina McCarthy, Administrator
United States Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Mail Code: 1101A
Washington, DC 20460

Dear Administrator McCarthy:

By this letter, the State of Delaware hereby petitions the Administrator of the Environmental Protection Agency (EPA) under §126(b) of the Clean Air Act (CAA) to find that the Harrison Power Station's electric generating units (EGUs), located near Haywood, Harrison County, West Virginia, are emitting air pollutants in violation of the provisions of Section 110(a)(2)(D)(i) of the CAA with respect to the 2008 0.075 ppm ozone NAAQS and the 2015 8-hour 0.070 ppm ozone NAAQS.

Section 110(a)(2)(D)(i) prohibits any source or other type of emissions activity within a State, "from emitting any air pollutant in amounts which will contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard." Section 126(b) of the CAA provides that, "[a]ny State or political subdivision may petition the Administrator for a finding that any major source or group of stationary sources emits or would emit any air pollutant in violation of the prohibition of Section 110(a)(2)(D)(ii) or this section."

CAA Section 126(b) requires that within 60 days after receipt of any petition and after public hearing, the Administrator shall make such a finding or deny the petition. We look forward to working with you and your staff during this period in which you make your finding regarding this petition and take the required actions to protect the health and welfare of

Delaware's citizens. Please do not hesitate to contact me if you have any questions or need additional information regarding this petition.

Sincerely,

David S. Small
Secretary

CC: Jack Markell, Governor,
State of Delaware

Ali Mirzakhalili, Director
Department of Natural Resources and Environmental Control

Administrator Shawn M. Garvin
US EPA Region III Office

William F. Durham, Director
West Virginia Department of Environmental Protection

Attachment 1

Delaware CAA 126 Petition

Harrison Power Station

The State of Delaware submits this petition for a finding under §126(b) of the Clean Air Act that the Harrison Power Station's electric generating units (EGUs), located near Haywood, Harrison County, West Virginia, significantly contribute to Delaware's non-attainment of the 2008 8-hour ozone national ambient air quality standard (NAAQS) of 0.075 ppm and the latest 8-hour ozone NAAQS of 0.070 ppm adopted by the United States Environmental Protection Agency (EPA) on October 26, 2015. (1)

Delaware has complied with the requirements of §110(a)(2)(D)(i)(I) of the CAA by adopting in-state control measures for the prevention of emissions that would significantly contribute to non-attainment, or interfere with maintenance, of the ozone National Ambient Air Quality Standard (NAAQS) in a downwind area. *(2)* However, Delaware's ability to achieve and maintain health-based air quality standards for its own residents is severely impacted by sources outside of the state of Delaware. This is due to the fact that more than 94% of the ozone levels in Delaware are created by the transport of air pollutants from upwind areas. Attainment and maintenance of the 2008 and 2015 8-hour ozone NAAQSs in Delaware is possible only through additional emission reductions in the upwind states that significantly contribute to non-attainment and maintenance in Delaware.

Section 126(b) of the CAA provides that, "[a]ny State or political subdivision may petition the Administrator for a finding that any major source or group of stationary sources emits or would emit any air pollutant in violation of the prohibition of Section 110(a)(2)(D)(i) or this section." In accordance with §126(b) of the Clean Air Act, the state of Delaware petitions the Administrator of the EPA establish a timely schedule for the above-referenced Harrison Power Station electric generating facility and the state of West Virginia to put those entities in compliance with §110(a)(2)(D)(i) of the Clean Air Act with respect to the 2008 8-hour 0.075 ppm ozone NAAQS and 2015 8-hour 0.070 ppm ozone NAAQS. *(3)*

Background

The EPA began to address air quality issues related to ambient ozone through establishment of a related National Ambient Air Quality Standard in 1971. In 1997 the EPA first established the 8-

hour ozone NAAQS to protect human health and welfare at a level of 0.08 ppm. The EPA subsequently lowered the 8-hour ozone NAAQS to 0.075 ppm in 2008. After further evaluation, the EPA further lowered the 8-hour ozone standard to 0.070 ppm on October 26, 2015. (1)

The establishment of the short term ozone standard (8-hour NAAQS) was necessary to address the potential health impact of short term exposure to high levels of ozone. Short term exposure to ozone can cause rapid, shallow breathing and related airway irritation, coughing, wheezing, shortness of breath, and exacerbation of asthma, particularly in sensitive individuals and asthmatic children. Short term exposure also suppresses the immune system, decreasing the effectiveness of bodily defenses against bacterial infections. Research studies indicate that markers of cell damage increase with ozone exposure. Some studies suggest that there is a link between ozone exposure and premature death of adults and infant death. Other studies indicate a link between ozone and premature birth and adverse birth outcome, cardiovascular defects, and adverse changes in lung structure development in children. Children, the elderly, those with chronic lung disease, and asthmatics are especially susceptible to the pulmonary effects of ozone exposure. Additionally, studies have shown that ozone can adversely affects trees and vegetation, can cause reduced crop yields, and can contribute to nitrification of bodies of water.

Atmospheric ground level ozone that is harmful to human health and welfare is formed primarily by the chemical reaction of nitrogen oxides (NOx) with volatile organic compounds (VOC's) in the presence of heat and sunlight. Dry, hot, sunny days are most conducive to the formation of ozone. Because ground level ozone concentrations are highest when sunlight is the most intense, in the eastern United States the warm summer months (May 1 through September 30) are referred to as the ozone season. Weather also affects ozone concentrations and how quickly it is transported and dispersed. Periods of light winds allow ozone and ozone precursor pollutants to build up in any particular area leading to greater concentrations. However, the wind can also be responsible for transporting the ozone and ozone precursors over long distances downwind. This downwind pollutant transport can then combine with more local emissions to contribute to exceeding the ozone NAAQS in any particular location.

Delaware has experienced a number of exceedances of the health based 8-hr ozone NAAQS. *(4)* The following table identifies the number of 8-hour ozone NAAQS exceedances experienced in Delaware during the ozone seasons for the years 2000 through 2015:

Table 1
Actual Delaware Ozone Exceedances – 8-Hour NAAQS

	New Castle County - No. of Days of Exceedance	Kent County - No. of Days of Exceedance	Sussex County - No. of Days of Exceedance	Total No. of Days of Exceedance
2016 Ozone Season * #	5	2	3	7
2015 Ozone Season**	2	0	0	2
2014 Ozone Season**	3	0	0	3
2013 Ozone Season**	1	0	1	2
2012 Ozone Season**	13	14	12	19
2011 Ozone Season**	11	3	6	15
2010 Ozone Season**	14	5	9	18
2009 Ozone Season**	3	0	0	3
2008 Ozone Season**	9	8	8	14
2007 Ozone Season***	5	0	0	5
2006 Ozone Season***	2	4	3	6
2005 Ozone Season***	8	2	8	16
2004 Ozone Season***	3	0	2	5
2003 Ozone Season***	5	3	5	7
2002 Ozone Season***	18	10	16	26
2001 Ozone Season***	18	8	10	21
2000 Ozone Season***	8	5	7	11

*= 0.70 ppm Standard **= 0.075 ppm Standard ***= 0.08 ppm Standard
#Partial 2016 Ozone Season May 1 though July 22 – Preliminary Data

On October 1, 2015, the EPA strengthened the 8-hour ozone NAAQS to 70 ppb based upon scientific evidence of ground level ozone's negative effect on public health and welfare. Relative to the 2008 8-hour ozone standard, the updated 8-hour ozone NAAQS is expected to further improve public health protection, particularly for at-risk groups, and also improve the health of trees, plants, and ecosystem. If the 2015 8-hour ozone standard of 70 ppb had been in effect for the past several years, based upon monitoring data, it is estimated that Delaware would have experienced a higher number of 8-hour ozone exceedances compared to the actual exceedances of the 2008 8-hour ozone standard of 75 ppb. The following table provides a comparison of the actual 8-hour ozone NAAQS exceedances and the estimated exceedance that would have occurred if the 70 ppb standard had been in effect:

Table 2
Comparison of Actual vs Estimated Days of Ozone Exceedance
2008 8-hour Ozone NAAQS vs 2015 8-hour Ozone NAAQS

Ozone Season	Actual Number of Days of 75 ppb Ozone Standard Exceedance	Actual Number of Monitor-Days of 75 ppb Ozone Standard Exceedance	Estimated Number of Days of Ozone Standard Exceedance Assuming 70 ppb Standard	Estimated Number of Monitor-Days of Ozone Standard Exceedance Assuming 70 ppb Standard
2010	18	28	36	91
2011	15	20	25	73
2012	19	39	28	107
2013	2	2	6	7
2014	3	3	8	17
2015	2	2	10	16

It can be seen in the above table that if the more stringent 2015 8-hour ozone NAAQS of 70 ppb were in effect during the 2010 through 2015 ozone seasons that Delaware would have exceeded that standard at a much higher rate than it experienced under the 2008 8-hour ozone NAAQS of 75 ppb. As shown in the above table, for the 2010 through 2015 ozone season, the number of 8-hour ozone NAAQS exceedance day would increase from 59 days under the 2008 NAAQS to 113 days under the 2015 NAAQS.

As discussed earlier, NOx is a precursor pollutant to the formation of atmospheric ozone. NO_X is a generic term for a group of reactive gasses that are composed of nitrogen and various amounts of oxygen (including nitrogen oxide and nitrogen dioxide). NO_X is formed in the combustion process as a result of high temperature chemical reactions of the nitrogen contained in the fuel and the nitrogen contained in the ambient combustion air along with oxygen in the combustion air. Fossil fuel-fired electric generating units are some of the largest emitters of NOx, with EGUs powered by coal-fired steam generators without NOx emissions controls exhibiting some of the highest NOx emission rates (in terms of lb/MMBTU).

Uncontrolled, higher nitrogen content fuels, such as coal and residual fuel oil, tend to result in higher NO_X emissions than lower nitrogen content fuels (such as natural gas). Various combustion configurations tend to result in varying NOx emission rates (in terms of pounds of NOx emitted per million BTU of fuel heat input (lb/MMBTU)) due to amounts of excess air required for combustion, rate of fuel combustion, combustor geometry, peak combustion temperatures, and duration of combustion gasses at peak temperatures, etc. Combustion controls, such as low NOx burners and overfire air, are commercially available NOx reduction technologies adaptable and applicable to most EGU combustion systems. Post combustion NOx controls, such as selective non-catalytic reduction (SNCR) and selective catalytic reduction (SCR), are commercially available highly effective NOx reduction technologies that are applicable to most EGU exhaust gas streams. These NOx controls are generally available for both new EGU installations and for retrofit on existing EGUs. Utilization of combustion controls and post combustion controls, singly or layered together for a single EGU, can result in significant reductions in the EGUs NOx emissions rate, greater than 90% reduction from uncontrolled levels for some EGUs.

To address the NOx emissions from EGU sources located in the state of Delaware, Delaware has promulgated a number of rules and regulations that effectively control the NOx emissions from these EGUs which also fulfils Delaware's obligation under §110(a)(2)(D)(i)(I) of the Clean Air Act. These rules and regulations have been previously submitted to the EPA in Delaware's June 2007 and subsequent state implementation plan (SIP) revisions, including the June 2012 revision. *(5)* The referenced rules and regulations include the following:

- 7 DE Admin Code 1112, Control of Nitrogen Oxide Emissions, which set RACT-based NOx emission rate standards for major stationary sources, including EGUs. *(6)*

- 7 DE Admin Code 1146, Electric Generating Unit (EGU) Multi-Pollutant Regulation, which included short term NOx emission rate limits (lb/MMBTU on rolling 24-hour average) and annual NOx mass emissions caps for coal-fired and residual oil-fired EGUs. *(7)*

- 7 DE Admin Code 1148. Control of Stationary Combustion Turbine Electric Generating Unit Emissions, which set NOx emission rate limits or approved NOx control technology requirements (such as water injection) for combustion turbines with a nameplate rating of 1 MW or greater that had not previously controlled their NOx emissions rate in accordance with the NOx RACT requirements of 7 DE Admin Code 1112. *(8)*

In addition to the NOx control regulations noted above, Delaware has participated in regional and federal initiatives, where applicable, that were designed to limit the NOx emissions from EGU sources whose NOx emissions may impact compliance with ozone standards in downwind states. These regional and federal initiatives include the following:

- The Ozone Transport Commission (OTC) NOx Budget Program. *(9)* In 1990, the OTC was created by amendments to the Clean Air Act. The OTC consisted of northeast and mid-Atlantic states with persistent summertime ozone problems. These OTC states include Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and portions of Virginia. The OTC was tasked with advising the EPA on ozone transport issues and for helping to develop and implement regional solutions to ozone problem experienced by the member states. Recognizing that the interstate transport of pollutants to downwind states contributed to summertime ozone problems in those downwind states, the OTC created and implemented its NOx Budget Program. The NOx Budget Program was a cap-and-trade program to limit the total regional emission of NOx from fossil-fueled electric generating units and large boilers located in OTC states, and became effective in 1999. Cap and trade programs effectively reduce the total amount of emissions, usually for a geographic area, by placing a cap on the total emissions occurring in that geographic area without setting unit by unit limits. For the OTC NOx Budget Program, affected states were allocated a NOx emissions cap for the subject NOx emitting sources in the respective state, and the subject units were required to hold and surrender a NOx allowance for each ton of NOx emitted in order to comply with program requirements. This program did not include any unit specific NOx emissions rate requirements. The OTC NOx Budget Program effectively ended when the EPA began administering the EPA's NOx Budget Trading Program.

- The EPA NOx State Implementation Plan (SIP) Rule. *(10)* In 2003 the EPA implemented its NOx State Implementation Plan (SIP) Rule utilizing the NOx Budget Trading Program, a NOx emissions cap and trade program similar to that used for the OTC NOx Budget Program. Relative to the OTC NOx Budget Program, the EPA's NOx Budget Trading Program was expanded to include additional states (for a total of 20 states and also the District of Columbia) and established more stringent NOx emissions allowance allocations. The EPA's NOx State Implementation Plan (SIP) Rule was intended to reduce the regional transport of ozone and ozone-forming pollutants in the Eastern United States. The NOx State Implementation Plan (SIP) Rule was in place until 2009, when it was replaced by the EPA's Clean Air Interstate Rule (CAIR).

- The EPA Clean Air Interstate Rule (CAIR). *(11)* In 2005, the EPA promulgated its CAIR program that required states to reduce the emissions of SO2 and NOx to help meet health based air quality standards for fine particulate matter and ozone. The EPA indicated in the proposal for the CAIR that NOx and SO2 emissions in 23 states and the District of Columbia contributed to unhealthy levels of fine particulate matter in downwind states, and that the NOx emissions from 25 states and the District of Columbia contributed to unhealthy levels of 8-hour ozone in downwind states. EPA indicated that the reduction of SO2 and NOx emissions from EGUs would serve to reduce the interstate transport of pollutants related to these emissions. CAIR established a cap-and-trade program covering EGUs to limit the emissions of SO2 and NOx from these sources as an option for compliance with the reduction requirements. (All states subject to the CAIR selected this compliance option.) SO2 and NOx emissions mass caps were established for individual states and allowances were issued by the EPA to cover those allowable emissions from subject sources. The cap-and-trade program was intended by the EPA to provide subject sources flexibility in meeting the mass emissions limitations through the installation of controls, fuel switching, or trading/purchase of excess allowances from other subject sources. The NOx emissions limitations of CAIR became effective in 2009, and the SO2 emissions limitation of CAIR became effective in 2010. The EPA made a number of changes to the CAIR subsequent to its original proposal, the most notable was the establishment of a process to provide for EPA to establish CAIR Federal Implementation Plans (FIPS) for states that failed to timely establish state plans for the implementation of CAIR. This ensured that the controls of the cap-and-trade program were uniformly established in all subject states on a timely basis.

- The EPA Cross-State Air Pollution Rule (CSAPR). *(12)* Subsequent to the promulgation of CAIR, legal actions lead the US Court of Appeals for the DC Circuit to make the decision in 2008 to remand the CAIR back to the EPA to make the rule more consistent with the requirements of the Clean Air Act. However, the courts left the requirements of CAIR in place until the EPA finalized a replacement rule. In response, the EPA promulgated its Cross-State Air Pollution Rule (CSAPR) in 2011. Additionally, in conjunction with the rule the EPA established federal implementation plans (FIPS) for each state subject to the CSAPR in order to implement the rule as rapidly as possible. In the rulemaking process the EPA identified for subject states what portions of each state's emissions significantly contributed to ozone or PM2.5 pollution in downwind states. The CSAPR established mass emissions limitations of SO2 and NOx from power plants in subject states to eliminate the portion of those emissions that are significant contributions to non-attainment or maintenance of fine particulate matter and ozone air quality standards in downwind states. The CSAPR established annual mass emissions limitations for SO2 and NOx and additional ozone season NOx mass emissions limitations for NOx. Between the original CSAPR and subsequent actions, there were 26 states subject to the ozone season NOx mass emissions limitations to address the 1997 Ozone NAAQS, 18 states were subject to annual SO2 and NOx mass emissions limitations of the rule to address the 1997 Annual PM2.5 NAAQS, and 21 states were subject to annual SO2 and NOx mass emissions limitations to address the 2006 24-hr PM2.5 NAAQS (a combined total of 23 states for addressing the two PM2.5 NAAQS). Relative to previous mass-based emissions rules, the CSAPR significantly restricted the trading of allowances that could be utilized for compliance purposes by establishing state variability limits that ensure that a state's actual mass emissions would fulfill its Clean Air Act "good neighbor" obligations. The EPA determined that Delaware was not required to participate in CSAPR.

- In 2012 the CSAPR was challenged in court, and the US Court of Appeals for the DC Circuit vacated the CSAPR and the implementing FIPs. The Court remanded the rule to the EPA to address the Courts findings, and directed the EPA to continue administering CAIR pending the promulgation of a valid rule to replace CAIR. As of this ruling, CAIR cap-and-trade programs for annual SO2, annual NOx, and ozone season NOx remained in place. *(12)*

- In April of 2014 the US Supreme Court reversed the DC Circuit court's opinion vacating CSAPR. In June of 2014 the EPA filed a motion with the U.S. Court of Appeals for the DC

Circuit to lift the stay of the CSAPR, and in October of 2014 the Court of Appeals for the DC Circuit granted the EPA's motion. In November of 2014 the EPA issued a ministerial rule that aligned the dates in the CSAPR rule text with the revised court-ordered schedule, including 2015 Phase 1 CSAPR implementation and 2017 Phase 2 CSAPR implementation. *(12)*

- In November of 2015 the EPA proposed an update to the CSAPR by issuing the proposed CSAPR Update Rule. *(13)* Starting in 2017, this proposal would reduce summertime nitrogen oxides (NO_X) emissions from power plants in 23 eastern states, by establishing NOx mass emission caps, in order to reduce the impact of those power plant emissions on downwind states. In its proposal, the EPA has requested comments regarding the potential application of short term NOx emission limits on these same power plants. The EPA determined that Delaware was not required to participate in the CSAPR Update.

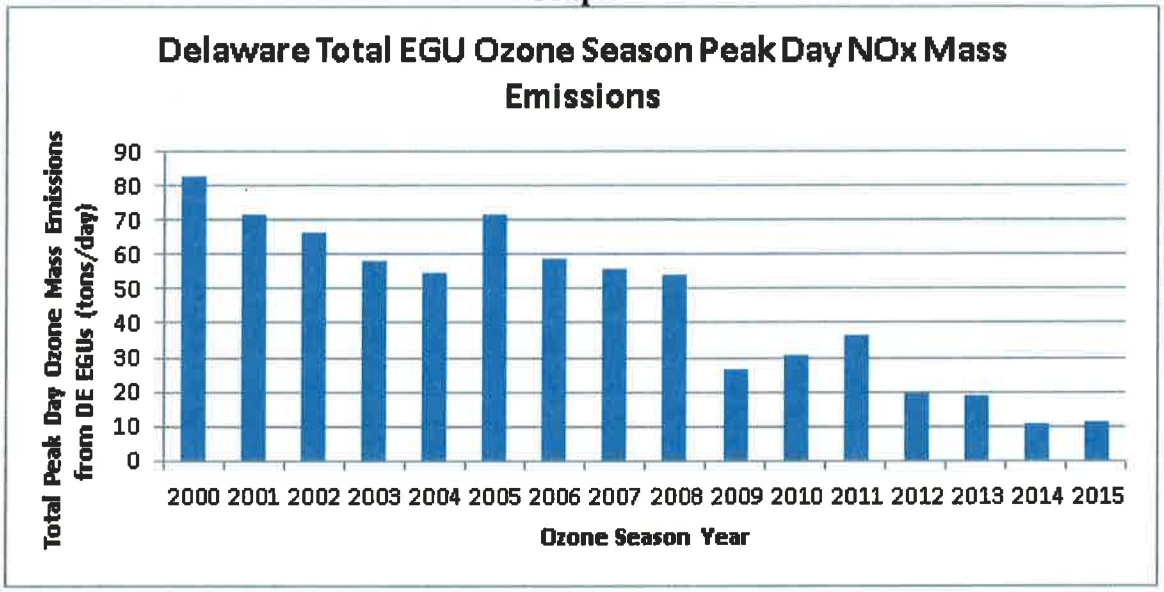
These State and regional NOx reduction efforts have resulted in significant NOx emissions reductions from EGUs located in the state of Delaware. These reductions have occurred both in terms of ozone season NOx mass emissions (tons) and also in average ozone season NOx emissions rates (lb/MMBTU). The following table was assembled with data extracted from the United States Environmental Protection Agency's Air Markets Program Data (EPA's AMPD). *(14)* The table shows the ozone season NOx mass emissions (tons) and average NOx emissions rate (lb/MMBTU) for the EGU fleet located in the state of Delaware:

Table 3
2000 – 2015 Ozone Seasons
State of Delaware
Total EGU NOx Mass Emissions and Average NOx Emission Rate

Year	Total EGU OS Nox Mass (tons)	Change in NOx Mass Emissions from 2000 (%)	Average NOx Emissions Rate (lb/MMBTU)	Change in Average NOx Emission Rate (%)
2000	4137	0.0	0.2784	0.0
2001	4777	15.5	0.2806	0.8
2002	4609	11.4	0.2415	-13.3
2003	3850	-6.9	0.2374	-14.7
2004	3659	-11.6	0.2449	-12.0
2005	5175	25.1	0.2818	1.2
2006	3567	-13.8	0.2582	-7.3
2007	4179	1.0	0.2398	-13.9
2008	3190	-22.9	0.2277	-18.2
2009	1280	-69.1	0.1695	-39.1
2010	2265	-45.3	0.1484	-46.7
2011	1879	-54.6	0.1250	-55.1
2012	1054	-74.5	0.0585	-79.0
2013	879	-78.7	0.0589	-78.9
2014	668	-83.9	0.0483	-82.7
2015	628	-84.8	0.0494	-82.3

However, relatively long term NOx mass emission caps (such as annual or seasonal caps) have limited impact on the short term NOx emissions (such a 24-hour period) from EGUs that have a more direct impact on compliance with short term air quality standards, such as the 8-hour ozone NAAQS. To address this issue, Delaware's air quality regulations have included short term NOx emission rate limits (with 24-hour averaging periods) that are protective of the short term ozone NAAQS. These short term NOx emission rate limits have helped Delaware achieve significant reductions in ozone season peak daily NOx mass emissions from Delaware's EGUs.

Graph 1



It can be seen in the above Graph 1 that between the 2000 and 2015 ozone seasons, the Delaware's EGUs have achieved a NOx mass emissions reduction (for ozone season peak NOs mass emissions days) in excess of 80% reduction. This reduction in peak ozone season day NOx mass emissions provides benefit in attaining compliance with the 8-hour ozone NAAQS for both Delaware's citizens and downwind populations.

Even though Delaware has significantly reduced the NOx emissions from EGUs located in Delaware, as discussed above, Delaware continues to experience exceedances of the 8-hour ozone NAAQS. Pollutants transported from facilities in upwind states are significant contributors to Delaware's continuing issues in meeting the 8-hour ozone NAAQS.

Modeling Identifies Impact of Upwind NOx Emissions Impacting Delaware's 8-hour Ozone NAAQS Compliance

The US EPA performed modeling as part of the development of its Cross-State Air Pollution Rule in order to help determine the impact of transported pollutants on downwind states and those states' ability to attain and maintain the then current 2008 ozone NAAQS of 75ppb. Some results of the modeling that identify state contributions to ozone at individual monitoring locations can be found on the spreadsheet titled "Contributions of 8-hour ozone, annual PM2.5, and 24-hour PM2.5 from each state to each monitoring site" located in the "Technical Information and Support Documents" section of the US EPS's Cross-State Air Pollution Rule (CSAPR) website. *(15)*

The US EPA's modeling identified 13 individual states (in addition to Delaware itself) whose NOx emissions significantly impact the ability of Delaware to attain and maintain the then current 8-hr ozone standard of 75 ppb. *(16)* (A state significantly impacts another state if it impacts that state's air quality by 1% or more of the applicable air quality standard. For the then current 8-hr ozone standard of 75 ppb, a significant contribution was 0.75 ppb or greater.) The states identified by the US EPA as significantly impacting Delaware's air quality, and the modeling results quantifying each state's impact, are shown in the following table:

Table 4
States Significantly Impacting Compliance with the 8-hour Ozone Standard in Delaware and the Magnitude of that Impact

State	Maximum Contribution (ppb)
CT	1.008
DE	6.256
IL	1.445
IN	1.737
KY	3.208
MD	23.951
MI	2.207
NJ	13.034
NY	9.092
OH	3.987
PA	13.344
TN	1.932
VA	6.039
WV	3.142

The EPA's modeling results, summarized in the above table, indicate that four states (Maryland, New Jersey, New York, and Pennsylvania) have greater impact on compliance of the 8-hour ozone standard in Delaware than the impact of Delaware itself. The EPA's modeling results summarized in the above table also indicate that three states (Kentucky, Ohio, and West Virginia) individually have an impact on compliance of the 8-hour ozone standard in Delaware of 50% of the impact that Delaware impacts itself. These modeling results tend to confirm that pollutant transport is a significant issue for the state of Delaware, and they also help explain Delaware's ongoing difficulties with the 8-hour ozone standard despite the significant actions Delaware has implemented to reduce NOx and VOC emissions in Delaware.

Harrison Power Station's Impact on Delaware's 8-hour Ozone NAAQS Compliance

As noted in Table 4 above, the EPA's modeling indicated that the State of West Virginia significantly impacts Delaware's compliance with the 8-hour ozone NAAQS. Because of the magnitude of West Virginia's impact on Delaware's compliance with the 8-hour ozone standard, and the potential contribution to this impact by EGUs located in West Virginia, further modeling was performed to determine if individual West Virginia EGU facilities individually have a significant impact on Delaware's compliance with the 8-hour ozone standard.

In order to help Delaware assess the impact of upwind EGU facility NOx emissions on Delaware's 8-hour average ozone exceedances in 2011, Sonoma Technologies Inc. (STI) conducted air quality modeling using the Comprehensive Air Quality Model with extensions (CAMx) Ozone Source Apportionment Technology (OSAT) *(17)*. The 2011 ozone season modeling was performed to determine 8-hour average ozone apportionments from individual upwind EGU facilities and upwind groups of EGU facilities. The modeling identified that the Harrison Power Station located in the state of West Virginia individually had significantly impacted Delaware's compliance with the 8-hour ozone NAAQS.

Because of the magnitude of its impact on Delaware's ambient ozone, the Harrison Power Station is being individually addressed in this petition for a finding under §126(b) of the Clean Air Act.

The STI modeling results indicated that the Harrison Power Station, located in Harrison County, West Virginia, emitted NOx during the 2011 ozone season at levels to individually have a significant impact on Delaware's air quality as measured by Delaware's ambient ozone monitors. The following table shows the days of the 2011 ozone season that the STI modeling estimated that the Harrison Power Station's NOx emissions impacted Delaware's ambient ozone at significant levels:

Table 5
Harrison Power Station NOx Emissions
STI Modeling Estimated Impact on Delaware Air Monitors
2011 Ozone Season

Month	Day	Year	STI Estimated 8-Hour Avg Ozone Impact (ppb)	AMPD Daily NOx Mass Emissions (tons)
6	18	2011	0.71	35.634
8	10	2011	0.84	61.588

As shown in the above Table 5, the STI modeling estimated that during the 2011 ozone season the Harrison Power Station's NOx emissions had a significant impact on Delaware's ambient ozone on two days relative to the 2015 8-hour ozone NAAQS of 0.070 ppm, and one day of significant impact relative to the 2008 8-hour ozone NAAQS of 0.075 ppm. As shown in the table, the highest estimated impact occurred August 10, 2011 with a modeled impact value of 0.84 ppb.

Harrison Power Station

The Harrison Power Station is located near Haywood, Harrison County, West Virginia. The Energy Information Administration (EIA) database indicates that the Harrison Power Station includes three coal fired steam electric generating units that incorporate Foster Wheeler supercritical steam generators. *(18)* The following table provides some technical information regarding the Harrison Power Station's coal-fired electric generating units:

Table 6
Harrison Power Station Electric Generating Units

Unit	Generator Prime Mover	EIA Nameplate Rating (MW)	EIA Summer Capacity (MW)	EIA Primary Fuel	EIA Commercial Operation Year	Permit Heat Input Capacity (MMBTU/hr)	AMPD Heat Inut Capacity (MMBTU/hr)	AMPD Reported NOx Controls
1	Steam Turbine	684	652	Bit Coal	1972	6325	7583	LNB & SCR
2	Steam Turbine	684	651	Bit Coal	1973	6325	7500	LNB & SCR
3	Steam Turbine	684	651	Bit Coal	1974	6325	7700	LNB & SCR

The Harrison Power Station is currently owned and operated by Monongahela Power Company. The facility is located within the PJM RTO and the facility and its electric generating units operate as independent power producers. These units would be expected to typically operate as dispatched by PJM for reliability and economic purposes to support the electric grid. EIA data indicates that the three Harrison Power Station coal-fired EGUs predominately fire bituminous coal from the state of West Virginia as their primary fuel.

As shown in Table 6, there is a significant difference in the heat input capacity rating for the three Harrison Power Station coal-fired EGUs listed in the station's permit and the heat input rating for those same EGUs listed in the AMPD. The difference in these values is significant, and can have an impact when estimating unit capacity factors and performing pollutant potential to emit (PTE) calculations. A review of the hourly heat input data in the AMPD indicates many hours for each unit with heat inputs well in excess of the permit values for heat input capacity. Therefore, it is assumed that the actual heat input capacity for the three Harrison Power Station coal-fired EGUs is more accurately represented by the heat input capacity values identified in the AMPD.

Harrison Power Station NOx Emissions Limitations and Performance

As noted in Table 6 above, the Harrison Power Station Units 1, 2, and 3 are currently equipped with low NOx burners (LNBs) and selective catalytic reduction systems (SCR) for control of NOx emissions. AMPD data indicates that the SCR for Unit 1 was installed in 2001, and the SCRs for Units 2 and 3 were installed in 2003. The SCRs were installed to assist in compliance with the requirements of the EPA's NOx State Implementation Plan (SIP) Rule and facilitate participation in the NOx Budget Program.

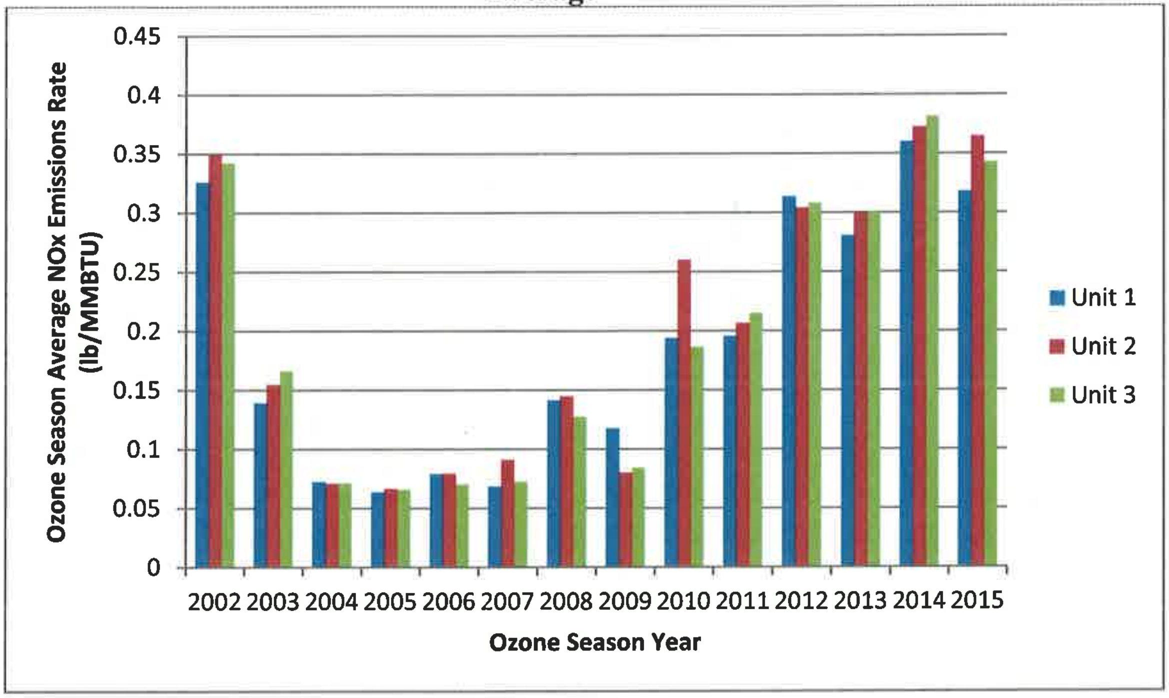
The Harrison Power Station coal-fired Units 1, 2, and 3 are also subject to operating permit NOx emission rate limits. The Harrison Power Station permit indicates that the NOx emission rate limits are those prescribed in the Harrison Power Station's Acid Rain Program (ARP). The ARP NOx emission rate limits for each of the three coal-fired units is 0.42 lb/MMBTU, annual average. *(19)* Data from the AMPD appears to indicate that the Harrison Power Station coal-fired EGUs have consistently been in compliance with these ARP NOx emission rate limits.

Monongahela Power Company has submitted a permit amendment to install and operate a refined coal facility at the Harrison Power Station. The refined coal process is intended to produce a lower emitting coal-fuel for combustion in the Harrison Power Station's coal fired EGU steam generators. In the proposed permit amendment, a provision has been proposed to include ozone season NOx emission rate limits of 0.20 lb/MMBTU, 30-day average, for each of the three coal-fired EGUs. As of the preparation of this petition, this permit amendment has not been approved and is therefore not yet in force. More discussion of the proposed ozone season 0.20 lb/MMBTU NOx emission rate limitation is provided below in this petition.

Harrison Power Station Units 1, 2, and 3 have also all been subject to various NOx emissions cap and trade programs. Beginning with the 2003 ozone season through the 2008 ozone season, Harrison Power Station Units 1, 2, and 3 participated in the EPA's NOx Budget Program. Beginning with the 2009 ozone season through the 2014 ozone season, Harrison Power Station Units 1, 2, and 3 participated in the EPA's Clean Air Interstate Rule ozone season trading program. And beginning with the 2015 ozone season, Harrison Power Station Units 1, 2, and 3 participated in the Transport Rule ozone season NOx trading program. While these various trading programs effectively put a seasonal NOx emissions mass cap on the fleet of subject units, it did not require the subject units to limit their NOx emissions over any particular portion of the ozone season as long as the EGU was able to obtain sufficient NOx allowances to balance that unit's actual ozone season NOx mass emissions.

The following graph shows the ozone season average NOx emission rate values for Harrison Power Station 1, 2, and 3 for the ozone season of 2002 through 2015.

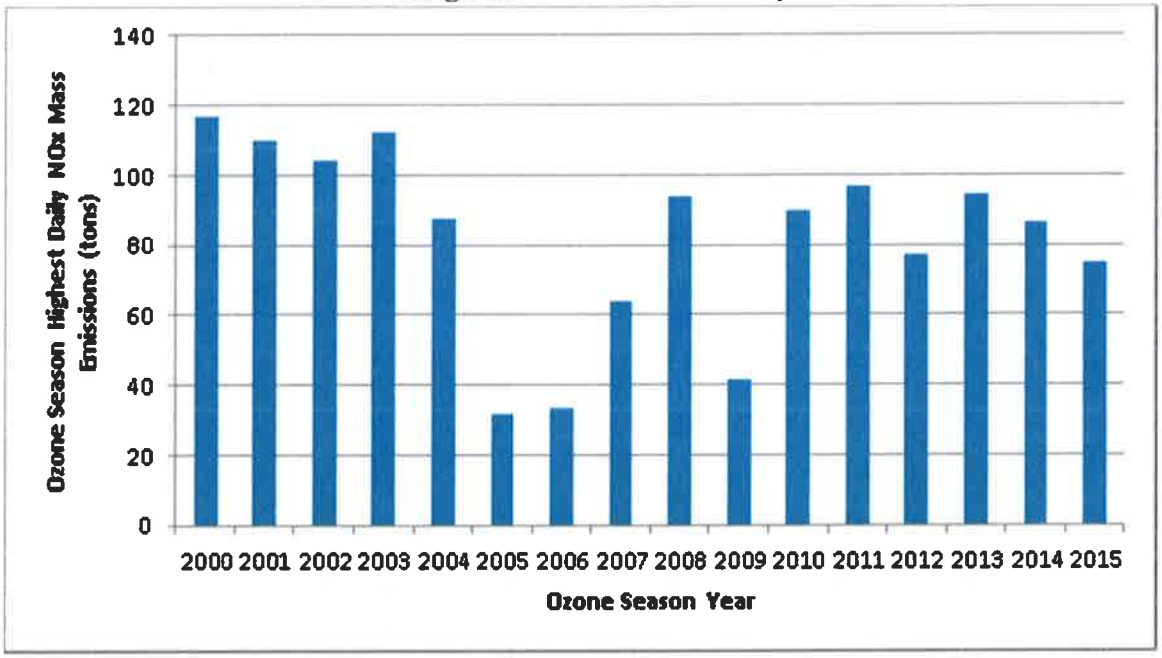
Graph 2
Harrison Power Station Electric Generating Units
Ozone Season Average NOx Emissions Rate



In can be seen in Graph 2 above that for a period of several years after installation of SCR NOx controls in 2003, the three Harrison Power Station coal-fired electric generating units exhibited ozone season average NOx emissions rates representative of operation of the SCRs with good pollution control practices. However, from the 2010 ozone season and beyond, the ozone season average NOx emission rates for each of the three Harrison Power Station coal-fired EGUs were well above what might be expected from coal-fired EGU's with operating SCRs. And as shown in Graph 2, the ozone season average NOx emission rates from the Harrison Power Station coal-fired EGUs for the 2014 and 2015 ozone seasons were as high as the pre-SCR installation ozone season year of 2002. This is an indication that existing NOx emission rate limits and seasonal NOx mass emissions regulatory requirements have not been sufficient to result in consistently low NOx emission rates from the Harrison Power Station EGUs.

The following graph shows the Harrison Power Station's highest daily ozone season NOx mass emissions for the 2000 through 2015 ozone seasons.

Graph 3
Harrison Power Station Highest Ozone Season Daily NOx Mass Emissions



The information in the above graph indicates that the existing NOx emission rate limits and seasonal NOx mass emissions regulatory requirements, in conjunction with the installation of SCR NOx emissions controls in 2003, have not been sufficient to result in consistently low peak ozone season daily NOx mass emissions from the Harrison Power Station EGUs

The information in the above graph also indicates that in the ozone seasons since SCRs were installed (2003) on the Harrison Power Station EGUs, ten of the thirteen years show a daily peak NOx mass emissions value in excess of the 61.588 ton/day NOx mass emissions associated with the STI modeling that estimated an impact of 0.84 ppb on Delaware's ambient ozone.

Emissions data in the AMPD for the Harrison Power Station indicates that daily ozone season NOx emissions from the Harrison Power Station are frequently greater than the 61.588 tons/day that STI modeling estimated had an impact of 0.84 ppb on Delaware's ambient ozone on August 10, 2011. The following table shows the number of days that the Harrison Power Station ozone season NOx mass emissions exceeded 61.588 tons/day during the 2002 through 2015 ozone seasons.

Table 7
Harrison Power Station
Ozone Season Days w/NOx Emissions Above STI Estimated Significant Delaware Impact

Ozone Season	O.S. Days w/NOx Mass Emissions Greater Than 61.588 Tons
2002	69
2003	5
2004	27
2005	0
2006	0
2007	1
2008	13
2009	0
2010	11
2011	6
2012	10
2013	50
2014	103
2015	24

It can be seen in the above table that in recent years the Harrison Power Station's daily ozone season NOx mass emissions have frequently exceeded the 61.588 ton/day value that STI modeling estimated had an impact of 0.84 ppb on Delaware's ambient ozone on August 10, 2011. There can be no doubt that operation of the Harrison Power Station's coal-fired EGUs with NOx emission rates well in excess of the rates achievable with the installed SCRs, as shown in Graph 2, contribute greatly to the frequency of ozone season high NOx mass emission days.

The contrast between operation of the Harrison Power Station EGUs with and without high levels of NOx control from the existing SCRs can be easily seen when comparing AMPD data for the 2005 and 2015 ozone seasons. During the 2005 ozone season, the AMPD data shown in Graph 2 indicates that the average ozone season NOx emission rate (in lb/MMBTU) for the facility was one of the lowest average values between the 2002 and the 2015 ozone seasons. The 2015 is the latest ozone season for which a full season of data was available. The following table compares the highest heat input days for the Harrison Power Facility for the 2005 and 2015 ozone seasons.

Table 8
Harrison Power Station 2005 and 2015 Ozone Season High Heat Input Days

Highest Ozone Season Heat Input Date	Facility Heat Input (MMBTU)	Facility NOx Mass Emissions (tons)	Facility Avg. NOx Emissions Rate (lb/MMBTU)
June 27, 2005	425666.2	11.466	0.0539
June 22, 2015	394072.5	65.118	0.3305

The data in Table 8 clearly shows that even though the Harrison Power Station heat input was higher on June 27, 2005 compared to June 22, 2015, the NOx mass emissions from the facility on June 27, 2005 were only a fraction of the facility's NOx mass emissions on June 22, 2015. The table shows that the difference in NOx mass emissions is primarily the result of a significantly lower NOx emission rate on June 27, 2005. This data clearly points out the impact of operation of SCR in accordance with good pollution control practices compared to just having the SCRs in place without adequate incentive to reduce NOx emissions.

The AMPD emissions data for the Harrison Power Station indicates that not only are there large changes in NOx emission control operations between ozone seasons, but there are also large swings in NOx emission control operations during a single ozone season. For example, the STI modeling estimated that Harrison Power Station NOx emissions had an impact of 0.71 ppb on Delaware's ambient ozone on June 18, 2011 and had an impact of 0.84 ppb on Delaware's ambient ozone on August 10, 2011. The following table shows some relevant operating data for the Harrison Power Station for June 18, 2011 and August 10, 2011.

Table 9
Harrison Power Station 2011 Ozone Season NOx Emissions Rate Comparison

Date	Units on Line	Facility Heat Input Capacity Factor (%)	Total NOx Mass Emissions (tons)	Facility Avg. NOx Emisisons Rate (lb/MMBTU)
June 18, 2011	3 of 3	93	35.634	0.1694
August 10, 2011	2 of 3	54	61.588	0.4237

It can be seen in the above table that the Harrison Power Station NOx mass emissions on August 10, 2011, with only two of three coal-fired EGUs on line, were significantly higher than on June 18, 2011 when all three coal-fired EGUs were on line an operating at high capacity factors. The unexpected increase in NOx mass emissions with the lower facility capacity factor is due to a significantly higher average daily NOx emission rate on August 10, 2011 when compared to the June 18, 2011 facility daily average NOx emissions rate. It can be seen in the table that the August 20, 2011 facility average NOx emissions rate is more than double than the June 18, 2011 facility average NOx emissions rate. The high August 10, 2011 facility daily average NOx emissions rate appears representative of operation with the SCRs totally out of service. The June 18, 2011 facility daily average NOx emission rate of 0.1694 lb/MMBTU appears to be representative of operation with the SCRs in service but being operated at reduced levels of effectiveness. This is an indication that decisions to operate the SCR NOX controls at the Harrison Power Station are not being made only on a seasonal basis, but perhaps also on a daily basis as a result of other EGU operating influences.

Peak NOx Mass Emissions Are Not Always Required to Significantly Impact Downwind NAAQS Compliance

While many evaluations for assessing downwind impact of upwind emissions are conducted for periods when the upwind emissions are at or near their peak, under some naturally occurring ambient conditions upwind NOx emissions, much lower than peak levels, can significantly impact downwind compliance with the 8-hour ozone NAAQS. This is a situation that can occur between the upwind Harrison Power Station's NOx emissions and the monitored ozone levels in Delaware.

The 2011 ozone season modeling performed by STI indicates that for the Harrison Power Station, it is not necessary for the facility to be operating near its maximum daily NOx mass emissions levels to significantly impact Delaware's compliance with the 2015 8-hour ozone NAAQS of 0.70 ppb. As shown in Table 5, the STI modeling estimated that on June 18, 2011, the Harrison Power Station NOx mass emissions of 35.634 tons had an impact of 0.71 ppb on Delaware's ambient ozone. This value of 35.634 tons/day is significantly lower that the Harrison Power Station's highest daily ozone season NOx mass emissions since installation of the SCRs, 96.965 tons/day recorded on August 13, 2011.

Emissions data in the AMPD for the Harrison Power Station indicates that daily ozone season NOx emissions from the Harrison Power Station are frequently greater than the 35.634 tons/day that STI modeling estimated had an impact of 0.71 ppb on Delaware's ambient ozone on June 18, 2011. The following table shows the number of days that the Harrison Power Station ozone season NOx mass emissions exceeded 35.634 tons/day during the 2002 through 2015 ozone seasons.

Table 10
Harrison Power Station
Ozone Season Days w/NOx Emissions Above STI Estimated Significant Delaware Impact

Ozone Season	O.S. Days w/NOx Mass Emissions Greater Than 35.634 Tons
2002	140
2003	33
2004	29
2005	0
2006	0
2007	5
2008	30
2009	1
2010	75
2011	80
2012	126
2013	140
2014	150
2015	143

It can be seen in the above table that in recent years the Harrison Power Station's daily ozone season NOx mass emissions have frequently exceeded the 35.634 ton/day value that STI modeling estimated had an impact of 0.71 ppb on Delaware's ambient ozone on June 18, 2011. The data in the above table also indicates that frequency of ozone season daily NOx mass emissions at this level over the last several years is similar to the number of events during the 2002 ozone season, the last ozone season prior to installation of the SCRs. There can be no doubt that operation of the Harrison Power Station's coal-fired EGUs with NOx emission rates well in excess of the rates achievable with the installed SCRs, as shown in Graph 2, contribute greatly to the frequency of ozone season high NOx mass emission days.

As of the time of preparation of this petition, preliminary AMPD data was available for the Harrison Power Station for May and June of 2016, the first two months of the 2016 ozone season. The preliminary data for May and June 2016 indicates that Harrison Power Station had NOx mass emissions exceeding 35.634 tons/day on 14 days. The average NOx emission rates for the three Harrison Power Station coal-fired EGUs for the May and June 2016 period was 0.1008 lb/MMBTU for Unit 1, 0.2369 lb/MMBTU for Unit 2, and 0.1624 lb/MMBTU for Unit 3. The overall station NOx emission rate for the May through June 2016 period was 0.1590. The Harrison Power Station's overall heat input capacity factor (based on AMPD heat input capacity ratings) for these 14 days ranged from 68% to 87%. This preliminary data appears to indicate that the Harrison Power Station SCR NOx emission control devices are still not being consistently operated in manner representative of good pollution control practices.

Short Term NOx Emission Limits Are Required To Assist in Reducing the Downwind Impact of Harrison Power Station NOx Emissions

The information discussed above indicates that current and past EGU cap-and-trade NOx control programs, applicable to the Harrison Power Station, that were designed to limit annual and seasonal NOx emissions, along with the existing annual average NOx emissions rate limits, have not served to limit the Harrison Power Station's NOx emissions to levels such that those emissions do not significantly contribute to exceedances of short term air quality standards, thereby imperiling the public health and welfare in downwind states. The modeling performed by STI tends to support this conclusion by quantifying the impact of Harrison Power Station NOx emissions on ozone levels measured at Delaware's monitoring locations.

It is interesting to note that the EPA's EGU cap-and-trade NOx control programs resulted in the installation of SCR, the most effective commercially available NOx control technology, on the Harrison Power Station coal-fired EGUs. And the AMPD data indicates that in the early years of the cap-and-trade program, the Harrison Power Station effectively operated their SCR NOx controls for cap-and-trade program compliance purposes. However, changing conditions in the power generation industry have resulted in conditions where NOx cap-and-trade compliance allowances are available at prices that make it uneconomic to operate existing NOx controls, such as Harrison's SCRS, for cap-and-trade NOx control programs. Additional incentive is required to ensure that existing EGU NOx controls are consistently operated in accordance with good pollution control practices.

Delaware is concerned that the NOx mass emission limits associated with CSAPR and, when effective, the proposed CSAPR Update will also be ineffective in properly protecting the public health and welfare in downwind states at all times with regards to the 8-hour ozone NAAQS. It is recognized that the provisions of CSAPR and the proposed CSAPR Update provide for more restrictive annual and seasonal NOx mass emissions than previous rules, and that the CSAPR and proposed CSAPR update programs also provide significantly more restrictive allowance trading provisions than previous rules. However, the provisions of CSAPR and CSAPR Update do not provide any limitations on the Harrison Power Station's NOx mass emissions for any period shorter than seasonal (such as hourly or daily). The lack of sufficiently stringent short term NOx emission rates facilitates the continued operation of the Harrison Power Station EGUs with inadequate NOx emission control and resulting high NOx emissions over short periods of time. The lack of sufficiently stringent short term emissions limitations will therefore help facilitate the Harrison Power Station's NOx mass emissions at levels that will continue to support non-compliance with the 8-hour ozone NAAQS in Delaware, and thereby continue to impact the health and welfare of Delaware's citizens.

In order to be protective of short term air quality standards, such as the 8-hour ozone NAAQS, it is Delaware's opinion that it will be necessary to establish emissions limits with appropriate magnitudes and averaging periods at the Harrison Power Station that ensure that the NOx emissions are adequately controlled during any particular time period. It is Delaware's opinion that selection of a short term NOx emission rate limit averaging period of no greater than 24 hours is also appropriate to address the short term aspects of compliance with a short term NAAQS, such as the 8-hour ozone NAAQS.

Proposed Use of Clean Coal Process at the Harrison Power Station

Delaware is aware that Monongahela Power Company has applied to the West Virginia Department of Environmental Protection for a permit to install and operate a clean coal technology called Refined Coal at the Harrison Power Station. The proposed Refined Coal process for the Harrison Power Station will include the production of a refined coal using the Chem-Mod Process and the combustion of that refined coal in the station's power boilers. *(20)* The West Virginia Department of Environmental Protection has prepared an Engineering Evaluation/Fact Sheet that addresses the technical aspects of the proposed Refined Coal installation at Harrison Power Station. *(21)* The Engineering Evaluation/Fact Sheet indicates that the Refined Coal process installation at the Harrison Power Station is intended, in part, to reduce NOx emissions. The Refined Coal process will impact the coal fuel burned for all three Harrison Power Station coal-fired EGUs.

The West Virginia Engineering Evaluation/Fact Sheet indicates that in conjunction with the installation and operation of the Chem-Mod Refined Coal process at the Harrison Power Station, the operating permit will be revised for the coal fired units to include the following NOx emission rate limitations, including an ozone season NOx emission rate limitation:

> *4.1.13.a The NOx emission rate shall not exceed 0.25 lb/mmbtu on a 30 day rolling average; and*
>
> *4.1.13.b Beginning the 30 day period that commences May 1 and ends on May 30 and for each succeeding 30 day period through September 30, the NOx emission rate shall not exceed [(1)] 0.20 lb/mmbtu.*
>
> > *[(1)] But for the following one-time exception for Unit 2 boiler only, during the five (5) consecutive 30 day periods of May through September 2016, preceding and during a catalyst replacement: The NOx emission rate shall not exceed 0.28 lb/mmbtu on a 30 day rolling average.*

The ozone season NOx emission rate limitation of 0.20 lb/MMBTU, 30-day period average, does not provide the level of control necessary to ensure that the Harrison Power Station does not significantly impact Delaware's ambient ozone. As discussed earlier, and shown in Table 5, the STI modeling estimated that the Harrison Power Station's NOx emissions of 35.634 tons on June 18, 2011 had an impact of 0.71 ppb on Delaware's ambient ozone. This level of NOx mass emissions from the Harrison Power Station can be easily exceeded if the three Harrison Power Station coal-fired steam generators are operated at full capacity, as shown in the following table.

Table 11
Harrison Power Station
NOx Potential To Emit with Refined Coal Project Proposed NOx Rate Limit

Unit	Permit Heat Input Rating (MMBTU/hr)	Estimated NOx Daily Potential to Emit at Permit Heat Imput Rating and 0.20 lb/MMBTU NOx Rate (tons/day)	AMPD Heat Input Rating (MMBTU/hr)	Estimated NOx Daily Potential to Emit at AMPD Heat Imput Rating and 0.20 lb/MMBTU NOx Rate (tons/day)
1	6325	15.2	7583	18.2
2	6325	15.2	7500	18.0
3	6325	15.2	7700	18.5
Total	18975	45.5	22783	54.7

As shown in the above Table 11, it is not necessary for the Harrison Power Station coal-fired EGUs to be operating at full load, 24-hours per day, for the facility's NOx emissions to exceed the 35.634 tons per day value estimated by STI to have significant impact on Delaware's ambient ozone. As discussed earlier, AMPD data for the three Harrison Power Station coal-fired EGUs lists many hours with the heat inputs well in excess of the permit heat input rating values and close to the AMPD heat input rating values. Therefore, it is assumed that the estimated daily NOx potential to emit values for the Harrison Power Station in the above Table 11 are more accurately represented by the values estimated using the AMPD heat input ratings.

It can be seen in the above Table 11 that even if the NOx emissions rate limit associated with the Harrison Power Station's Refined Coal application (0.20 lb/MMBTU, 30-day average) was met on a daily basis, the Harrison Power Station has a NOx mass emissions potential to emit well in excess of the 35.634 tons/day value estimated by STI to have a significant impact on Delaware's ambient ozone. Using the 35.634 ton/day NOx mass emissions value and a daily average NOx emissions rate of 0.20 lb/MMBTU, it is estimated that the Harrison Power Station would reach the daily 35.634 ton NOx mass emissions with a daily heat input of 356,340 MMBTU. Using the AMPD heat input rating for the three Harrison Power Station's coal-fired EGUs, the 356,340 MMBTU daily heat input value represents an approximate 65% daily heat input capacity factor.

During recent ozone seasons, the Harrison Power Station has exceeded the 356,340 MMBTU daily heat input value numerous times, as documented in the AMPD. The following table lists the number of ozone season days that the Harrison Power Station has exceeded a daily heat input value of 356,340 MMBTU in recent years.

Table 12
Harrison Power Station
Number of Ozone Season Days 356,340 MMBTU Daily Heat Input

Ozone Season Year	Number of Ozone Season Days Harrion Power Station Exceeded 356,340 MMBTU
2011	16
2012	26
2013	34
2014	41
2015	39
2016*	48

*2016 Partial Ozone Season Data – May 1 through June 30 Only

It can be seen in Table 12 above that over the last five ozone seasons (and a partial 2016 ozone season, as of the preparation of this petition) there have been many days where the Harrison Power Station daily heat input exceeds the 356,340 MMBTU value, which, when combined with a 0.20 lb/MMBTU NOx emissions rate limit, would produce an estimated 35.630 ton/day of NOx mass emissions. The 35.630 ton/day NOx emissions value from the Harrison Power Station is that which STI estimated to have a 0.71 ppb impact on Delaware's ambient ozone on June 18, 2011.

It should be noted that the proposed 0.20 lb/MMBTU emission rate limits for the Harrison Power Station coal-fired EGUs are based on 30-day averaging periods. A 30-day averaging period provides an emitting facility the flexibility to have some extended periods operating with emission rates in excess of the numerical limit while still attaining the 30-day average emissions limitation. There is no means of ensuring that such a period of operation with the NOx emissions rate in excess of the 30-day numerical limit does not occur during a period where ambient conditions are favorable for impacting downwind ozone. As discussed earlier, it is Delaware's opinion that in order to be protective of short term air quality standards, such as the 8-hour ozone NAAQS, it is necessary to establish emissions limits with appropriate magnitudes and averaging periods to ensure that the NOx emissions are adequately controlled during any particular time period during the ozone season.

It is Delaware's opinion that the proposed NOx emission rate limitation of 0.20 lb/MMBTU, 30-day average during the ozone season, for the Harrison Power Station will not be sufficient to ensure that the Harrison Power Station does not significantly impact Delaware's ambient ozone. It is Delaware's opinion that adoption of a short term NOx emission rate limit of 0.125 lb/MMBTU, and a NOx emission rate limit averaging period of no greater than 24 hours, will be required to ensure that the Harrison Power Station does not significantly impact Delaware's with the 8-hour ozone NAAQS.

Requested EPA Action

Even with extensive reduction of NOx emissions from EGU sources located in the state of Delaware, Delaware continues to experience exceedances of the 8-hour ozone NAAQS. Modeling conducted by the EPA indicates that emissions from EGUs in upwind states are major contributors to Delaware's ongoing 8-hour ozone NAAQS compliance issues. Modeling performed for Delaware by Sonoma technologies Inc, (STI) indicates that the Harrison Power Station, located in the upwind state of West Virginia, itself significantly impacts the level of ozone in Delaware's ambient air. The modeling has shown that not only can the Harrison Power Station significantly impact Delaware's 8-hour ozone NAAQS compliance when the facility is operating with high NOx mass emission rates, but can also significant impact Delaware's 8-hour ozone compliance when the facility is operating at greatly reduced NOx mass emission rates. The historic variability in Harrison Power Station's daily NOx mass emissions can be due to variability in operating capacity of the three coal-fired EGUs, variability in the operation of the coal-fired EGU's SCR NOx controls, or a combination of both. The compliance flexibility of applicable NOx cap-and-trade programs and relatively high, long term NOx emission rate limitations permit the Harrison Power Station owner/operator to make decisions concerning whether to operate SCR controls or not for any given ozone season or part of an ozone season.

The Harrison Power Station's impact on Delaware's 8-hour ozone NAAQS compliance has continued even though the Harrison Power Station is equipped with some of the most effective NOx emission controls (SCR) and has been in compliance with its permit NOx emissions rate limits and applicable cap-and-trade NOx emissions control programs. These permit NOx emission rate limits and long term (annual, seasonal) cap-and-trade NOx control programs have not provided the level of short term NOx emission limits necessary to be supportive of the short term, 8-hour ozone NAAQS. Because the CSAPR, and proposed CSAPR Update, will continue to attempt to control NOx mass emissions on an annual and seasonal basis, these programs are also expected to permit an EGU facility such as the Harrison Power Station to emit NOx at high levels over any given short term basis while allowing a subject EGU facility to remain in compliance overall with the annual and seasonal programs.

A facility modification for the Harrison Power Station has been proposed to install and operate a refined coal process to provide lower-emitting coal for combustion in the Harrison Power Station's coal-fired steam generators. As part of the refined coal proposal, a permit modification has been proposed to apply ozone season NOx emission rate limits of 0.20 lb/MMBTU, 30-day average, for the three Harrison Power Station coal-fired EGUs. As discussed earlier, these proposed limits, if adopted, will still provide the Harrison Power Station the flexibility to emit NOx mass emission during an ozone season at levels that STI modeling has estimated to significantly impact Delaware's ambient ozone.

In order to be protective of short term air quality standards, such as the 8-hour ozone NAAQS, it is Delaware's opinion that it will be necessary to establish NOx emissions limits with appropriate magnitudes and averaging periods that ensure that the NOx emissions are adequately controlled during any particular time period. Therefore, Delaware is hereby petitioning the EPA under §126(b) of the Clean Air Act to make a finding within 60 days of EPA's receipt of this petition that the Harrison Power Station, located in West Virginia, emits or would emit air pollutants in violation of the prohibition of §110(a)(2)(D)(i) or §126 of the Clean Air Act, and to order the Harrison Power Station to either comply with short term NOx emissions limitations sufficient to protect Delaware or to cease operating within 3 months thereafter.

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