AECOM Environment

Submitted to:
NRG Power Midwest LP
Avon Lake Generating Station

Submitted by:
AECOM
Chelmsford, MA
60433121.100
October 2016

1-Hour SO_2 NAAQS Compliance Modeling per the Data Requirements Rule for NRG Power Midwest LP Avon Lake Generating Station Ohio EPA Facility ID 02-47-03-0013 Revised Report No. 3

AECOM Environment

Submitted to:
NRG Power Midwest LP
Avon Lake Generating Station

Submitted by:
AECOM
Chelmsford, MA
60433121.100
October 2016

1-Hour SO_2 NAAQS Compliance Modeling per the Data Requirements Rule for NRG Power Midwest LP Avon Lake Generating Station Ohio EPA Facility ID 02-47-03-0013 Revised Report No. 3

Laura L. Warren

Prepared By: Laura Warren

Robert J. Paine

Reviewed By: Robert Paine

Melissa McLaughlin

Project Quality Representative Review By: Melissa McLaughlin

Contents

Cover Photo Credit: Cleveland.com

List of Appendices

List of Tables

List of Figures

1.0 Introduction

1.1 Project Overview

In August 2015, the U.S. Environmental Protection Agency (EPA) issued the SO_2 Data Requirements Rule[1] (DRR), which directs state and tribal air agencies in "an orderly process" to identify maximum ambient air 1-hour SO_2 concentrations in areas with large sources of SO_2 emissions. The purposes of the DRR are as follows:

- Identify target SO_2-emitting sources
  - Those with annual emissions > 2000 tons for the most recent year for which emissions data are available; and
  - Those that have not been previously captured as part of the
    - Initial SO_2 NAAQS non-attainment designations; or
    - March 2015 Consent Decree between the EPA and the Sierra Club and National Resources Defense Council.
- After consulting with the owners or operators of such sources,
  - Identify the means for determining whether the area surrounding the source is in attainment with the SO_2 NAAQS for attainment designations purposes by either
    - Installing and operating an ambient air monitoring network; or
    - Performing an air dispersion modeling study to characterize ambient air impacts; or
  - Modify the air operating permit prior to January 13, 2017 such that the source either
    - Limits annual SO_2 emissions < 2000 tons; or
    - Limits short-term (1-hour) and/or longer-term (up to 30-day average) SO_2 emissions that, based on the results of an air dispersion modeling study conducted in 2015-2016, demonstrate that the area surrounding the source is in attainment with the SO_2 NAAQS, allowing the state air agency to provide a recommendation for a designation of attainment with the NAAQS.

The Avon Lake Generating Station (Avon Lake) is owned and operated by NRG Power Midwest LP (NRG), and is a DRR-affected source. Based on discussions and communications among Ohio EPA, NRG and AECOM (NRG's contract air dispersion modeler) conducted in August and September 2015, NRG informed Ohio EPA of its interest to follow the path outlined in the last bulleted item above.

In summary,

1. NRG and AECOM will complete an air dispersion modeling study of the significant SO_2-emitting sources at Avon Lake, the results of which will identify the emission rates required to demonstrate compliance with the SO_2 NAAQS. The results of the study and the modeling fields will be forwarded to the Ohio EPA for their review, comment, and confirmatory modeling.

[1] Docket ID No. EPA–HQ–OAR–2013–0711, August 10, 2015. http://www.epa.gov/oaqps001/sulfurdioxide/pdfs/so2_drr__final_081215.pdf.

2. Following approval of the results of the modeling study, NRG will prepare and submit to the Ohio EPA an application to modify the air operating permit for Avon Lake.

This report presents the results of the air dispersion modeling study referenced in Task 1 above.

The initial modeling effort was performed in Q4 2015, the summary report and supporting modeling files were forwarded to the Ohio EPA in December 2015. The initial modeling effort was performed using the U.S. EPA-approved dispersion model for stationary point sources (AERMOD). In an attempt to generate results that were considered by NRG and AECOM to be the most representative of the potential ambient air impacts from the target Avon Lake emission sources, the initial modeling effort was performed using EPA's proposed low wind improvement ("LOWWIND3") beta option in AERMOD in lieu of the current AERMOD default options. In its July 2015 notice of proposed rulemaking (FR 80 (145) 07-29-2015, 45340), EPA proposed to approve use of this low wind improvement option (in addition to the ADJ_U* beta low wind improvement option) in the regulatory version of AERMOD. Additional support for this proposed action was provided at EPAs' 11th conference on air quality modeling conducted in August 2015 and subsequent publication of several peer-reviewed journal articles prepared by AECOM and others. Although EPA expects to finalize actions related to the proposed rulemaking later in 2016, in December 2015 EPA issued a clarification memo alerting the modeling community that use of the subject beta options in AERMOD would not be acceptable for compliance modeling purposes in the interim without accompanying site-specific support information (such information is currently not available for Avon Lake). Upon receipt of the initial modeling report and aforementioned EPA memo, Ohio EPA contacted NRG and AECOM in February 2016 to discuss and ultimately request a revised modeling run using the AERMOD default model options. The results from the revised model run were included in a previous version of the summary report (Revision No. 1), which was submitted to Ohio EPA on April 8, 2016.

Following receipt of the report (Revision No. 1), Ohio EPA contacted NRG and AECOM in April 2016 and requested changes to the proposed permit conditions as presented in Section 4.3 of the report. NRG believes that the revised proposed permit conditions presented in Section 4.3 of the revised report (Revision No. 2) address Ohio EPA's request. The revised report (Revision No. 2) was submitted to Ohio EPA on June 15, 2016.

Following receipt of the report (Revision No. 2), Ohio EPA contacted NRG and AECOM in October 2016 and requested a revised modeling study that includes the use of regional background concentrations as developed by Ohio EPA in lieu of the use of regional background concentrations used in the previous modeling studies. This summary report (Revision No. 3) presents the results from the revised model using the revised background concentrations as developed by Ohio EPA. A modeling archive of the revised modeling analysis was also submitted to Ohio EPA for review.

1.2 Report Organization

Section 2 of this report describes the emission sources of SO_2 at the Avon Lake Generating Station and provides actual emissions levels along with planned operations changes.

Section 3 describes the dispersion model approaches used in this study, using EPA's current default model options for AERMOD. This section also describes the source of regional monitoring data that is used to represent impacts from sources that were not explicitly included in the modeling effort.

Section 4 presents a load analysis for Avon Lake units to determine the most constraining case, which was then used to determine the critical emission value for the Avon Lake Generating Station. The modeling results and proposed permit condition are provided in this section.

2.0 Avon Lake Emission Sources

2.1 Description of Facility Sources

The station is located in the town of Avon Lake, OH along the Lake Erie coastline. Figure 2-1 shows a map of the source location and terrain in the vicinity. The area surrounding Avon Lake Generating Station can be characterized as mostly flat terrain. The Avon Lake Generating Station includes the licensed air emission sources listed in Table 2-1.

Table 2-1: SO_2 Emissions from Sources at Avon Lake Generating Station

Ohio EPA Emission Unit ID	Source Description (per Ohio EPA)	Annual SO_2 Emissions (tons)		
		2012	2013	2014
B010 Boiler No. 10	Coal-fired boiler for electric generation – tangentially-fired boiler nominally rated at 1131 MMBtu/hr (Unit #7);	1262.3	1561.7	1822.0
B012 Boiler No. 12	Coal-fired boiler for electric generation – wall-fired (cell burner) boiler nominally rated at 6040 MMBtu/hr (Unit #9)	37,045.2	39,561.5	33,113.1
B013 Combustion Turbine CT-10	Oil-fired combustion gas turbine for electric generation nominally rated at 468.9 MMBtu/hr, also called CT10	< 0.1	0.3	0.1
B015 Package Boiler 1	Nebraska Company Package Boiler nominally rated at 219.5 MMBtu/hr, fires either natural gas or fuel oil; used for start-up support or plant heat	< 0.1	< 0.1	< 0.1
B016 Package Boiler 2	Nebraska Company Package Boiler nominally rated at 219.5 MMBtu/hr, fires either natural gas or fuel oil; used for start-up support or plant heat; shares a stack with B015	< 0.1	< 0.1	< 0.1

Historic and projected SO_2 emissions from Emission Unit IDs B013, B015 and B016 are negligible. Consequently, and as discussed with the Ohio EPA, the air dispersion modeling study will evaluate the ambient air impacts from Boiler No. 10 (Unit 7) and Boiler No. 12 (Unit 9) only. To ensure compliance with the NAAQS in the unlikely event that the insignificant sources are in service when the main boilers are operating, Avon Lake Generating Station has agreed to a maximum total hourly emissions rate that includes all of the SO_2 sources listed above – see Section 4.3 of this report.

2.2 Future Utilization Changes

Effective April 16, 2016 and continuing until alternative fuels or emission controls are practically available, Boiler 10 ceased service as an electrical generator by disconnecting the electrical leads to its steam turbine-driven electric generator. Boiler 10 operations will be limited to providing steam to support Boiler 12 startup operations as well as intermittent space heating for the facility. The nominal maximum steam production needed to support startup operations is approximately 30 percent of rated capacity for Boiler 10. Steam from Boiler 10 will be required only during the initiation (startup) of Boiler 12 operations until Boiler 12 achieves a level approaching minimum sustainable load conditions. To facilitate non-EGU operations, Avon Lake submitted a permit application to Ohio EPA that will limit Boiler 10's annual heat input to 10% capacity factor. For this planned alternate operating scenario, Boiler 10 will meet the requirements of a Limited Use Boiler under 40 CFR §63.7575.

As noted earlier, the purpose of this modeling study is to establish an SO_2 emission limit for the Avon Lake Generating Station that will demonstrate compliance with the SO_2 NAAQS. As stated in the EPA's Data Requirements Rule[2],

> "…it is appropriate for the air agency to consult with the affected source(s) and take action to adopt enforceable emissions limitations as necessary prior to January 2017. As long as the emissions limitations are in place and enforceable by January 2017, the new allowable emission limit may be input into the model instead of the actual emissions of the most recent 3 years. The EPA expects that a number of emissions sources may be candidates for this optional approach. Many EGUs were subject to compliance deadlines for the MATS in April 2015 (or in some cases are subject to April 2016 deadlines), and the EPA expects that many will become subject to title V permits that require compliance with MATS SO_2 emission limits as the means of demonstrating compliance with the MATS requirements related to acid gas emissions. These EGUs may be able to adopt control technologies and enforceable emission limits to reduce emissions of SO_2, as well as mercury."

This modeling study includes the future boiler utilizations described above. In the Boiler 10 Auxiliary Boiler mode of operation, the total emissions of Boiler 10 plus Boiler 12 when both are operating in the startup mode will be less than Boiler 12 at maximum operation conditions.

2.3 Stack Parameters

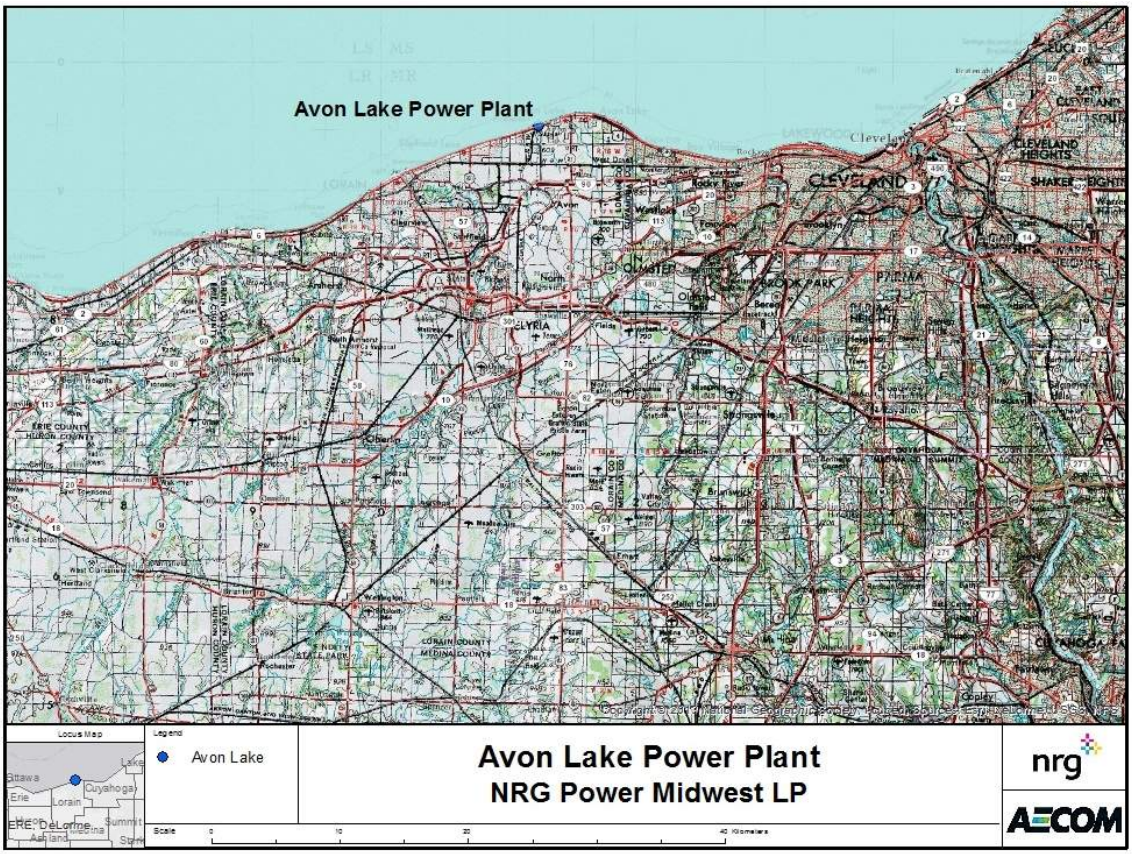
Table 2-2 summarizes the physical parameters associated with Boilers 10 and 12. The current permitted SO_2 emission limit is 4.65 lb/MMBtu for both boilers.

[2] 80 FR 51077. (August 21, 2015).

Table 2-2: Avon Lake Stack Parameters

Parameter	**Boiler 10** (Unit 7)	**Boiler 12** (Unit 9)
Easting (m)	412080.9	411877.2
Northing (m)	4595403.7	4595233.2
Stack Height (m)	159.7	182.9
Diameter (m)	3.2	7.3
Base Elevation (m)	179.2	179.2
Maximum Heat Input Rate (MMBtu/hr)	1,131	6,040

Figure 2-1: Topographical Map Showing Modeled SO_2 Emission Source



3.0 Dispersion Modeling Approach

The suitability of an air quality dispersion model for a particular application is dependent upon several factors. The following selection criteria have been evaluated in selecting the model for this project:

- stack height relative to nearby structures;
- dispersion environment;
- local terrain; and
- representative meteorological data.

The EPA Guideline on Air Quality Models (Appendix W[3]) prescribes a set of approved models for regulatory applications for a wide range of source types and dispersion environments. Based on a review of the factors discussed below, the latest version of AERMOD (15181) was used to assess air quality impacts for the Avon Lake facility.

The dispersion modeling analysis was conducted using EPA's current default model options.

3.1 Good Engineering Practice Stack Height Analysis

Federal stack height regulations limit the stack height used in performing dispersion modeling to predict the air quality impact of a source seeking a new emission limit. For these modeling applications, sources must be modeled at the actual physical stack height unless that height exceeds the Good Engineering Practice (GEP) stack height. If the physical stack height is less than the formula GEP height, the potential for the source's plume to be affected by aerodynamic wakes created by the building(s) must be evaluated in the dispersion modeling analysis.

A GEP stack height analysis was performed for the Boiler 10 and 12 stacks in accordance with the EPA's Guideline for Determination of Good Engineering Practice Stack Height[4] using the latest version of EPA's Building Profile Input Program (BPIP), version 04274. The locations of the buildings/structures relative to the stack locations are shown in Figure 3-1.

A GEP stack height is defined as the greater of 65 meters (213 feet), measured from the ground elevation of the stack, or the formula height (H_g), as determined from the following equation:

$$H_g = H + 1.5\ L$$

where H is the height of the nearby structure which maximizes H_g, and L is the lesser dimension (height or projected width) of the building. Both the height and the width of the building are determined through a vertical cross-section perpendicular to the wind direction. In all instances, the GEP formula height is

[3] http://www.epa.gov/ttn/scram/guidance/guide/appw_05.pdf.

[4] US EPA 1985. Guideline for the Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) - Revised. EPA-450/4-80-023R, US EPA, Research Triangle Park, NC 27711.

based upon the highest value of H_g as determined from H and L over all nearby buildings over the entire range of possible wind directions. For the purposes of determining the GEP formula height, only buildings within 5L of the source of interest are considered.

Unit 9 stack was built prior to 1971. Therefore, it is not a subject to GEP regulations and as such, it was modeled at its actual height of 183 meters. Unit 7 stack was initially built in 1949 and later rebuilt in mid 1970s. Therefore, a GEP analysis to determine the creditable height for modeling was conducted for this study.

For the Avon Lake facility, the controlling structure for determining the GEP formula height for the Unit 7 stack is the 66-meter height Unit 9 boiler building. The resultant GEP formula stack height is 165.4 meters, which is higher than the actual stack of 160 meters. Accordingly, AERMOD modeling was conducted with the actual stack height of 160 meters.

3.2 Dispersion Environment

The application of AERMOD requires characterization of the local (within 3 kilometers) dispersion environment as either urban or rural, based on an EPA-recommended procedure that characterizes an area by prevalent land use. This land use approach classifies an area according to 12 land use types. In this scheme, areas of industrial, commercial, and compact residential land use are designated urban. According to EPA modeling guidelines, if more than 50% of an area within a 3-km radius of the facility is classified as rural, then rural dispersion coefficients are to be used in the dispersion modeling analysis. Conversely, if more than 50% of the area is urban, urban dispersion coefficients are used. As shown in Figure 3-2, the 3-km area surrounding each of the stations is rural. Therefore, rural dispersion characterization was used for this modeling effort.

3.3 Model Receptor Grid and Terrain

AERMAP (version 11103) was used to generate modeling receptors. A Cartesian receptor grid was generated as an input to AERMOD with the spacing intervals noted below. Additional receptors were included every 50 m along the fenceline.

- Up to 3 km with 100 meters spacing;
- 3 km to 5 km with 200 meters spacing;
- 5 km to 10 km with 500 meters spacing;
- 10 km to 30 km with 1,000 meters spacing;
- 30 km to 50 km with 2,000 meters spacing.

Terrain elevations from 30-meter National Elevation Data (NED) from USGS were processed with AERMAP to develop the receptor terrain elevations required by AERMOD. Figure 3-3 shows the receptor network used in the modeling.

3.4 Meteorological Data Processing

AECOM obtained AERMOD-ready meteorological data from the Ohio EPA website for the modeling years of 2012-2014. These AERMOD-ready meteorological data were processed by Ohio EPA using AERMET version 15181, AERMINUTE version 14337, and AERSURFACE version 13016, with a 0.5 m/s calm wind threshold. Additionally, monthly surface characteristics were determined for 12 sectors and Bowen ratios

were determined from the most recent 30-year precipitation normals for each surface station.[5] For the Avon Lake facility in Lorain County, the Ohio EPA assigned the Cleveland Hopkins International Airport as the surface station and the Buffalo Niagara International Airport as the upper air station. Figure 3-4 shows the locations of the meteorological stations mentioned above in relation to the modeled stations. Figure 3-5 shows the Cleveland Hopkins International Airport 3-year wind rose.

3.5 Regional Background

Consistent with EPA's proposed changes to Appendix W[6] concerning the determination of background concentration for isolated single source modeling studies,

> *"the EPA recommends use of the most recent quality assured air quality monitoring data collected in the vicinity of the source to determine the background concentration for the averaging times of concern. In most cases, the EPA recommends using data from the monitor closest to and upwind of the project area. If several monitors are available, preference should be given to the monitor with the most similar characteristics as the project area. If there are no monitors located in the vicinity of the new or modify source, a 'regional site' may be used to determine background concentrations. A regional site is one that is located away from the area of interest but is impacted by similar or adequately representative sources."*

In the EPA's Technical Support Document for the Area Designations for the 2010 Primary NAAQS, Avon Lake is shown as the western-most SO_2-emitting source along the lake shore provided here as Figure 3-6.[7] Per the EPA memo entitled Guidance for 1-hour SO_2 Nonattainment Area SIP Submissions states, "SO_2 concentrations result from direct emissions from combustion sources so that concentrations are highest relatively close to sources and are much lower at greater distances due to dispersion, i.e., a strong concentration gradient".[8] Based on SO_2 emissions data available from the Ohio EPA for calendar years 2012 through 2014[9], nearly all (≥ 99 percent) stationary source SO_2 emissions in Lorain County are attributable to Avon Lake, less than 414 tons SO_2 per year are attributable to all other reporting stationary sources (most of the remaining emissions are attributable to a source located in Oberlin, Ohio, located more than 20 km from Avon Lake). Consequently, NRG and AECOM expect that the background concentration for Lorain County (i.e., for areas not impacted by Avon Lake) should be very low.

There are no Ohio EPA-operated SO_2 ambient air monitoring sites in Lorain County. Four ambient air monitoring sites are located in Cleveland, Cuyahoga County, but all are impacted by several significant SO_2-emitting facilities. The current (2013-2015) design values applicable for comparison with the SO_2 NAAQS are 62 ppb for the St. Theo site, 22 ppb for the Fire Station #13 site, 61 ppb for the G.T. Craig site, and 55 ppb for the Harvard Yard site. Two ambient air monitoring sites are located in the Lake County, Ohio designated nonattainment area. Both Lake County monitoring sites are located adjacent

---

[5] http://epa.ohio.gov/dapc/model/modeling/metfiles.aspx.

[6] 80 FR 45373. (July 29, 2015).

[7] https://www.epa.gov/sites/production/files/2016-03/documents/oh-epa-tsd.pdf, Figure 1

[8] https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf, April 23, 2014, Appendix A, p. A-3.

[9] http://epa.ohio.gov/dapc/aqmp/eiu/eis.aspx#126013925-download-eis-data-and-reports.

to large SO_2-emitting facilities. The current design values applicable for comparison with the SO_2 NAAQS are 34 ppb for the Eastlake site (western-most SO_2 monitor in Lake County shown in Figure 3-6) and 93 ppb for the JFS Painesville site.[10] NRG and AECOM submit that use of monitoring data collected in calendar year 2015 and earlier at any of the six monitoring sites referenced above would result in a non-representative background concentration for use in this modeling study.

In an attempt to develop a representative background concentration for use in this modeling study, Ohio EPA requested NRG and AECOM to utilize the following protocol as developed by Ohio EPA. In summary, the background concentration data was developed by using ambient air monitoring data collected at the Eastlake site for the period April 16, 2015 through June 30, 2016. Immediately prior to this period, three significant SO_2-emttting sources at the facility located adjacent to the Eastlake site were retired. From this dataset, 99th percentile seasonal hour-of-day background concentrations were developed using the procedure defined in the EPA March 1, 2011 Memorandum.[11] Missing hourly concentrations in the monitoring data were calculated by averaging the concentrations from the valid hour before and after the missing hour. The resulting seasonal hour-of-day average concentrations are shown in Figure 3-7. Because the Eastlake monitoring site is located in the general downwind direction from several SO_2-emitting sources, NRG and AECOM submit that the Eastlake monitoring data would adequately represent impacts to the background concentration from these sources. Therefore, the modeling study evaluated impacts from the Avon Lake sources only. The total concentration for 1-hour SO_2 NAAQS compliance was computed by adding Avon Lake's predicted concentration to the resultant regional background concentration.

[10] http://epa.ohio.gov/Portals/27/ams/sites/2016/2016%20Ohio%20SO2%20Air%20Monitoring%20Network%20Map.pdf.

[11] http://www.epa.gov/scram001/guidance/clarification/Additional_Clarifications_AppendixW_Hourly-NO2-NAAQS_FINAL_03-01-2011.pdf.

Figure 3-1: Stacks and Buildings used in the GEP Analysis

Figure 3-2: Aerial View of Avon Lake within a 3-km Radius

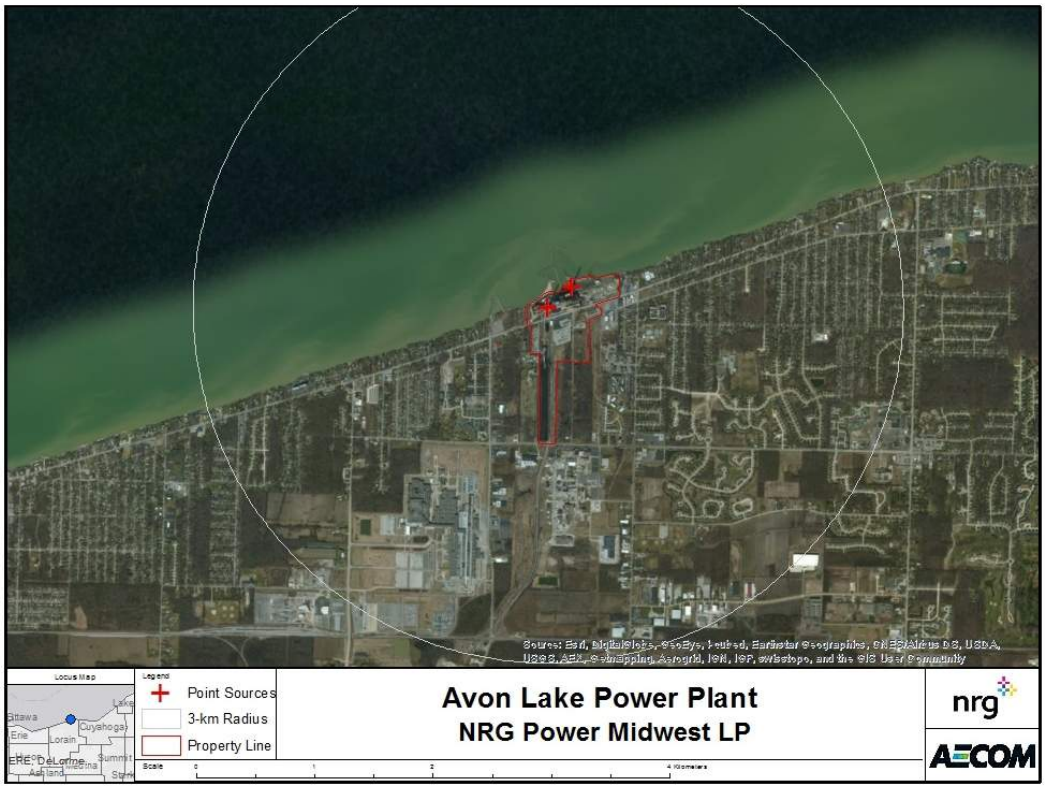


Figure 3-3: Modeling Receptor Grid

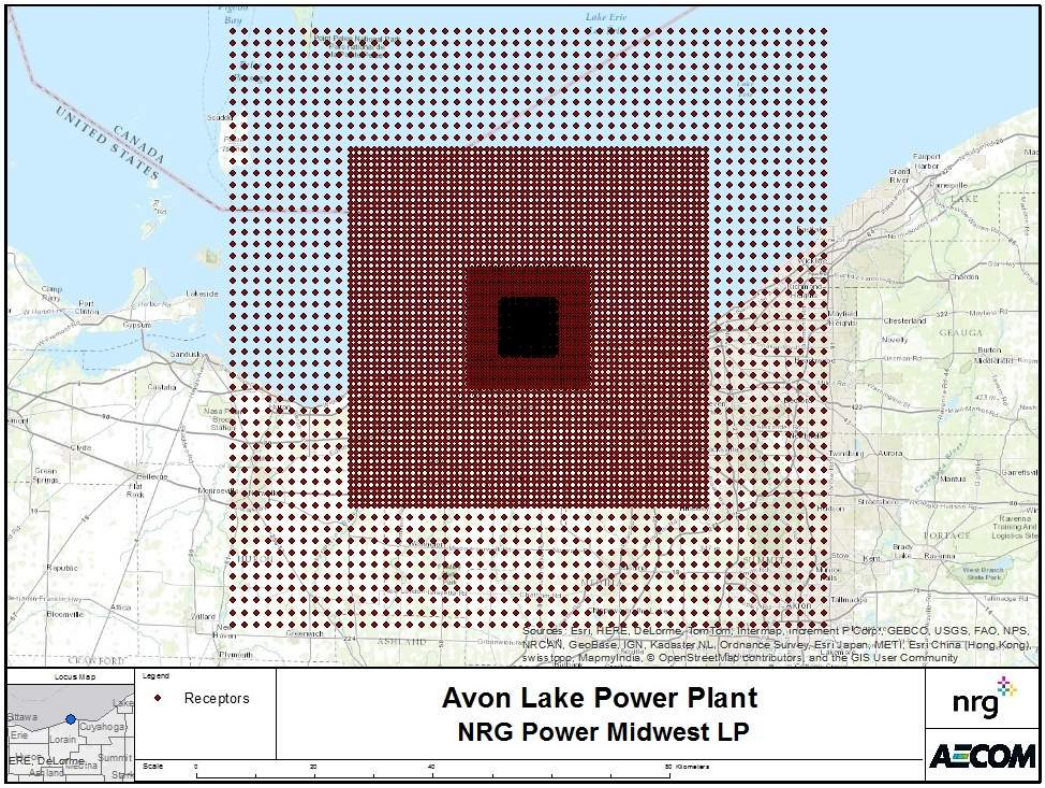


Figure 3-4: Location of Meteorological Stations Relative to the Modeled Sources

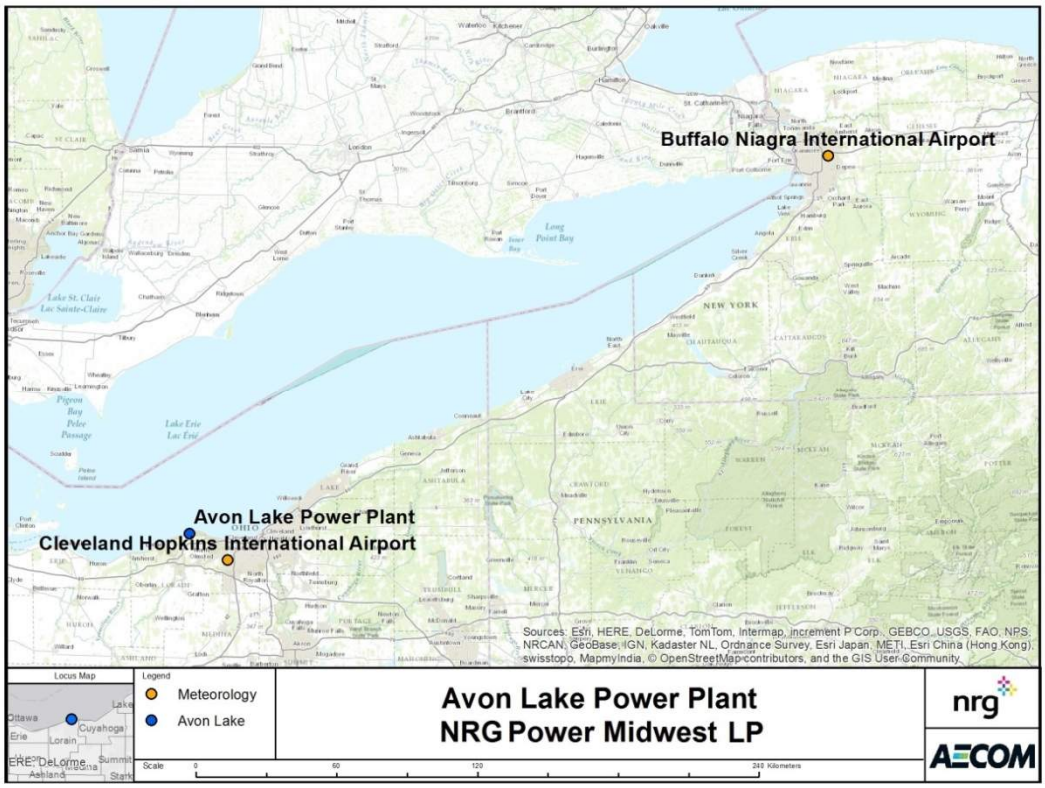


Figure 3-5: Cleveland Hopkins International Airport Wind Rose (2012-2014)

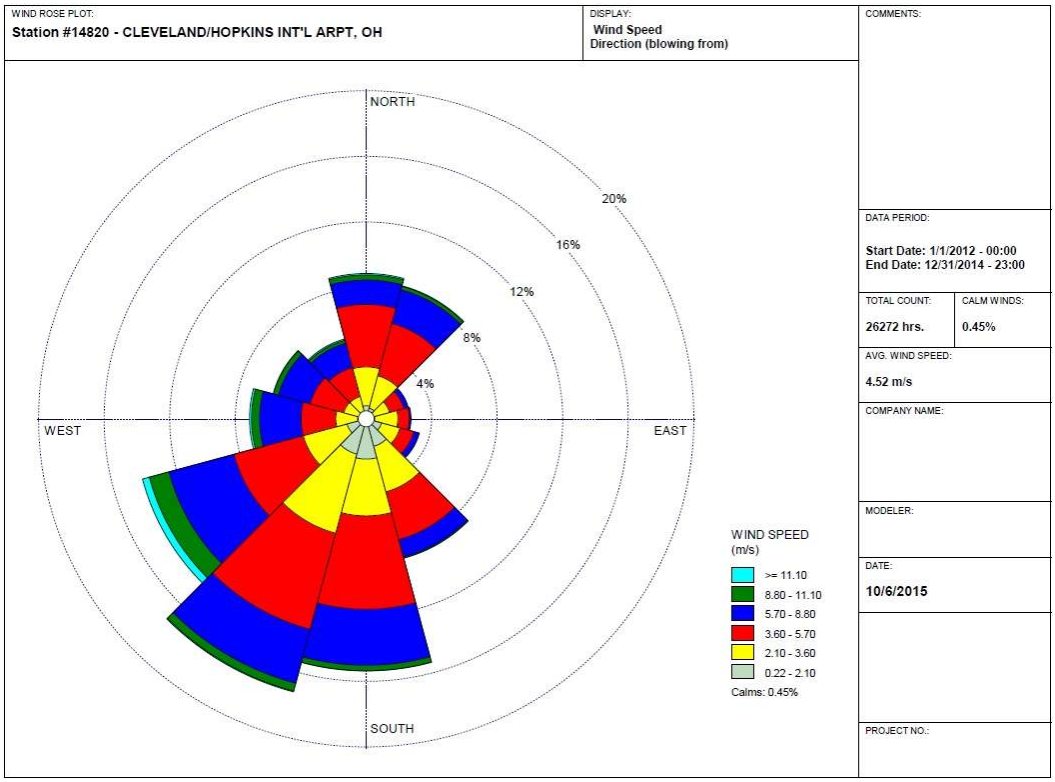


Figure 3-6: SO_2 Monitors Relative to SO_2-emitting Sources in the Vicinity of Avon Lake Generating Station

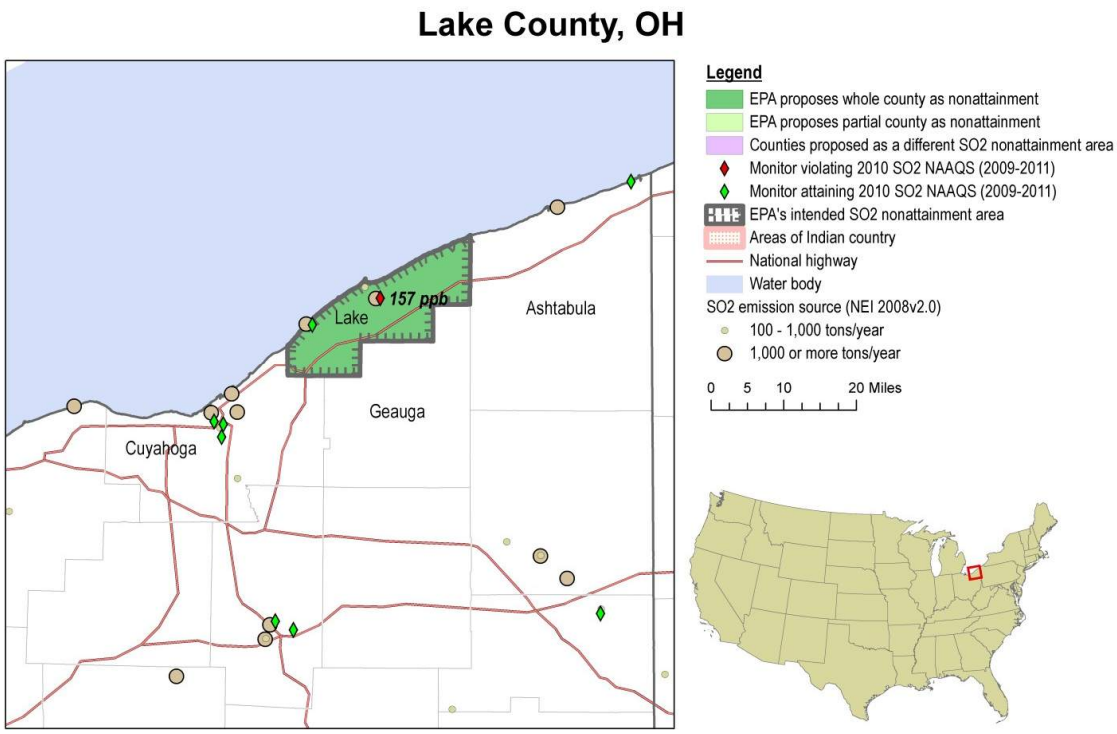
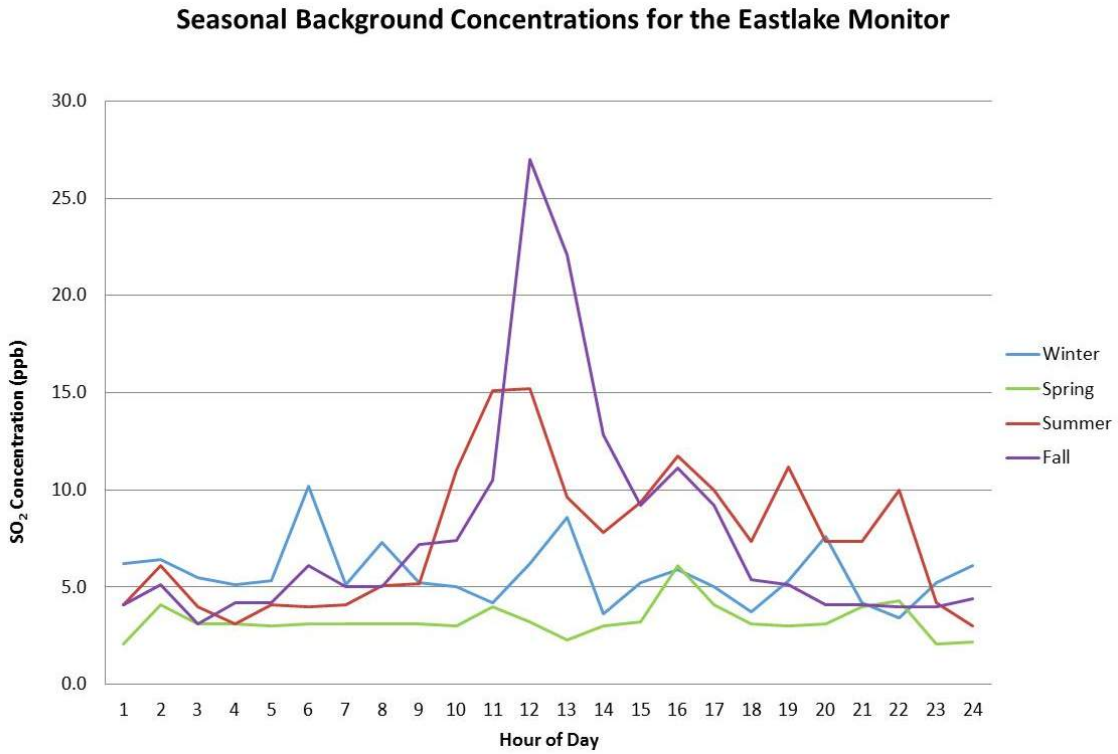


Figure 3-7: April 16, 2015 –June 30, 2016 Average 99th Percentile Concentration at the Eastlake SO_2 Monitor



4.0 AERMOD Modeling Results

4.1 Load Analysis

The determination of a 1-hour SO_2 emission limit that demonstrates compliance with the SO_2 NAAQS (i.e., the critical emissions value, or CEV) for Avon Lake Generating Station first required an analysis to identify which boiler load scenario causes the highest SO_2 impacts. The load scenarios that were evaluated are listed in Table 4-1.

Table 4-1: Description of Load Analysis Cases

Boiler Load Scenario No.	Boiler 10 Load	Boiler 12 Load
1: Boiler 12 minimum sustainable load *	Off	Minimum sustainable load *
2: Boiler 12 mid-load	Off	Mid-load
3: Boiler 12 full load	Off	Full-load
4: Boiler 12 start-up with Boiler 10	30% of normal maximum load to support start-up for Boiler 12	50% load

* Minimum sustainable with respect to steam turbine operation (electrical output ~ 350 MW gross, approximately 50% load)

Boiler Load Scenario No. 4 represents an overly-conservative situation because in actual operations, the steam provided by Boiler 10 to support Boiler 12 start-up operations decreases as Boiler 12 load increases (no supplemental steam is needed once Boiler 12 achieves minimum sustainable load).

The modeled emissions and exhaust parameters for the load analysis are shown in Table 4-2. For the load analysis, the full load mass emission rate (lb/hr) was derived based on the rated capacity of the boiler (MMBtu/hr) and a reference SO_2 emission rate of 1.0 lb/MMBtu. Mass emission rates at the lower loads were derived by scaling the mass emission rate at full-load by the ratio of either the representative (i) electrical power output at the lower load to the electrical power output at full-load (Boiler 12) or (ii) steam production rate at the lower load to the stream production rate at full-load (Boiler 10). Exit velocity and exit temperatures for each case were selected based on the median values of continuous emission monitor (CEM) data for each load scenario, provided by NRG (data presented in Appendix A).

The results of the load analyses, summarized in Table 4-3, show that the maximum ambient air impacts occur during Boiler Load Scenario No. 3, associated with Boiler 12 operated at full-load conditions, and Boiler 10 off-line. This boiler load scenario was then used to derive the CEV.

Table 4-2: Modeled Emissions and Exhaust Parameters for Load Analysis

Modeling Option	Boiler	Load Analysis - Based on the rated capacity of the boiler (MMBtu/hr) and a reference SO_2 emission rate of 1.0 lb/MMBtu			
		Full	**Mid**	**Minimum ***	**Startup for Unit 9**
SO_2 Emission Rate (lb/hr)	10	0	0	0	339.30
	12	6,040.00	4,595.26	3,150.52	3,020.00
SO_2 Emission Rate (g/s)	10	0	0	0	42.75
	12	761.03	578.99	396.96	380.51
Exit Velocity (m/s)	10	n/a	n/a	n/a	16.6
	12	22.6	17.5	13.1	13.1
Exit Temperature (K)	10	n/a	n/a	n/a	466.9
	12	420.0	407.5	401.5	401.5

* Minimum sustainable with respect to steam turbine operation

Table 4-3: AERMOD Modeled Design SO_2 Concentrations for Each Load Scenario

Modeling Option	Modeled Design Concentration[(1) (2)] ($\mu g/m^3$) - Relative impacts based on an SO_2 emission rate = 1.0 lb/MMBtu			
	Full Load	**Mid Load**	**Minimum Load**	**Startup Load**
AERMOD Default	111.9	101.1	82.1	93.3

(1) The "design concentration" is the 99th percentile peak daily 1-hour maximum concentration, averaged over the 3 years.

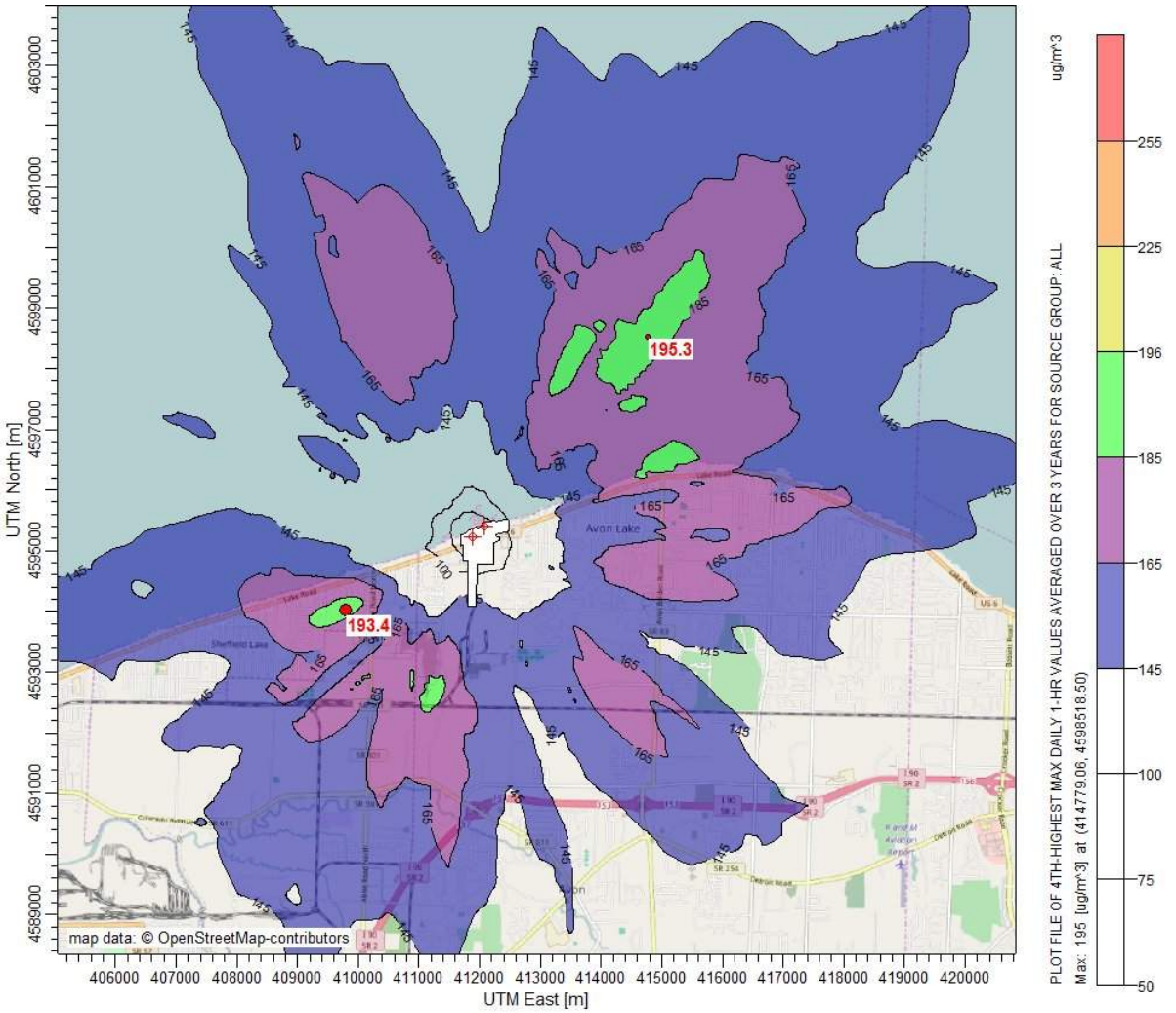
(2) Modeling does not include background concentrations.

4.2 Modeling Results to Determine Critical Emission Value

Modeling for the full-load case for Boiler 12 was conducted to determine the critical emission value that results in SO_2 NAAQS compliance. This modeling was conducted with the current default model options for AERMOD. The resulting SO_2 CEV was determined to be 9,600 lb/hr.

The isopleths for the design concentration are plotted in Figure 4-1. The figure indicates that the maximum predicted concentration, 195.3 $\mu g/m^3$, occurs northeast of Avon Lake, approximately 4,000 m offshore in Lake Erie to the northeast of the plant. This concentration included a plant contribution of 176.7 $\mu g/m^3$ and a background of 18.6 $\mu g/m^3$. The highest design concentration on land was predicted to be 193.4 $\mu g/m^3$, approximately 2,000 m to the southwest of the plant.

Figure 4-1: 99th Percentile 3-year Average 1-hour SO_2 Concentration Isopleths with Default Options Including Revised Background



4.3 Proposed Permit Conditions

Appropriate permit conditions for SO_2 emissions establish emissions limits that are based upon the worst-case operating scenario establishing the 1-hour emission limit ("critical emissions value") that would apply during all operating scenarios. The emission limit for the main boilers is proposed to be a 1-hour emission rate of 9,600 lb/hr.

NRG will submit a permit application to request the following permit condition. The emission limit, once established, will ensure that compliant emissions levels for Avon Lake are practically enforceable.

- Sulfur dioxide emissions from all SO_2-emitting sources [as identified in Table 2-1] combined shall not exceed 9,600 lb/hr (on a 1-hour average basis).

- In addition to the 1-hour limit, an additional emission condition is that the sulfur dioxide emission rate from B010 and B012 combined shall not exceed 1.59 lb/MMBtu, expressed on a rolling 30 boiler operating-day basis. A boiler operating day is one in which either B010 or B012, or both boilers, operates for at least part of a calendar day.

The SO_2 emission rates listed above were determined in consideration of the controlling boiler load scenario for the compliance model analysis (per Section 4.1 of this report) and the corresponding critical emission value, i.e., 9600 lb/hr / 6040 MMBtu/hr = 1.59 lb/MMBtu. A comparison of the current and proposed SO_2 emission limits is presented in Table 4-4.

Table 4-4: Avon Lake Current and Proposed Permit Limits

SO_2 Permit Limits	**Boiler 10** (Unit 7)	**Boiler 12** (Unit 9)	**Total of SO_2-emitting Sources in Table 2-1**
Current SO_2 Limit	4.65 lb/MMBtu, rolling 30-day average *	4.65 lb/MMBtu, rolling 30-day average *	n/a
Proposed SO_2 Limits	1.59 lb/MMBtu, rolling 30-day average ***		9,600 lb/hr, 1-hour average**

* Of the daily SO_2 emission rates per Condition A.V.3 of the current Title V operating permit for Boiler 10 and Boiler 12

** Clock-hour basis

*** For each rolling 30-boiler operating day period, the heat input-weighted SO_2 emission rate from B010 and B012 combined = mass SO_2 emitted from B010 and B012 combined (lb) / heat input to B010 and B012 combined (MMBtu)

Appendix A

Exhaust Parameters for Load Cases from CEM Data

Exhaust Parameters for Load Cases from CEM Data

Load analysis of the full load mass emission rate (lb/hr) was derived based on the rated capacity of the boiler (MMBtu/hr) and a reference SO_2 emission rate of 1.0 lb/MMBtu. Mass emission rates at the lower loads were derived by scaling the mass emission rate at full-load by the ratio of either the representative (i) electrical power output at the lower load to the electrical power output at full-load (Boiler 12) or (ii) steam production rate at the lower load to the stream production rate at full-load (Boiler 10). Exit velocity and exit temperatures for each case were selected based on the median values of continuous emission monitor (CEM) data for each load scenario, provided by NRG Energy.

Table 1: Boiler 10 (Unit 7) Load Analysis Provided by NRG Energy

		Minimum Sustainable	Mid-Range	Nominal Full-Load
Steam Load (klbs/hr)		350	700	1050
	Between 290 and 310	Between 350 and 385	Between 630 and 770	Between 893 and Maximum
Stack Temperature (deg F)				
Count	250	594	928	15
Minimum	284	302	339	375
Maximum	418	436	438	412
Average	378	387	399	391
Median	381	390	398	392
Stack Velocity (ft/sec)				
Count	250	594	928	15
Minimum	44.3	44.6	57.9	77.0
Maximum	60.7	61.6	84.0	84.9
Average	53.8	54.2	73.2	82.6
Median	54.4	54.4	74.2	83.8

Table 2: Boiler 12 (Unit 9) Load Analysis Provided by NRG Energy

	Minimum Sustainable	Mid-Range	Nominal Full-Load
Load (GMW)	350	511	671
	Between 350 and 385	Between 459 and 562	Between 637 and Maximum
Stack Temperature (deg F)			
Count	1699	2742	3453
Minimum	191	217	239
Maximum	309	319	332
Average	263	274	295
Median	263	274	296
Stack Velocity (ft/sec)			
Count	1699	2742	3453
Minimum	38.1	48.4	64.5
Maximum	63.1	83.1	84.4
Average	43.1	57.6	74.2
Median	42.8	57.4	74.2

Table 3: Modeling Parameters for Load Analysis

Load Analysis at 1.0 lb/MMBtu	Startup		Full Load		Mid-Range Load		Minimum Load	
	Boiler 10	Boiler 12	Boiler 10	Boiler 12	Boiler 10	Boiler 12	Boiler 10	Boiler 12
Emission Rate[1] (lb/hr)	339.30	3,020.00	0.00	6,040.00	0.00	4,595.26	0.00	3,150.52
Emission Rate (g/s)	42.75	380.51	0.00	761.03	0.00	578.99	0.00	396.96
Exit Temperature[2] (K)	466.9	401.5	400.0	420.0	400.0	407.5	400.0	401.5
Exit Velocity[2] (m/s)	16.6	13.1	15.0	22.6	15.0	17.5	15.0	13.1

[1] Emission rate for full load is based on the maximum heat input multiplied by the 1.0 lb/MMBtu. Mid-range and minimum loads were scaled down based Boiler 12 load. Startup is defined as 30% operation of Boiler 10 and 50% operation of Boiler 12.

[2] Median exit velocity and exit temperature were used per scenario. When Boiler 10 does not operate (emissions are 0), 400 K and 15 m/s defaults are used to suppress unnecessary AERMOD error messages.

Ohio Environmental Protection Agency

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

11/23/2016

Certified Mail

No	TOXIC REVIEW
No	PSD
No	SYNTHETIC MINOR TO AVOID MAJOR NSR
Yes	CEMS
Yes	MACT/GACT
No	NSPS
No	NESHAPS
No	NETTING
No	MAJOR NON-ATTAINMENT
No	MODELING SUBMITTED
No	MAJOR GHG
No	SYNTHETIC MINOR TO AVOID MAJOR GHG

Mr. Anthony Catanese
Avon Lake Power Plant
121 Champion Way, Suite 300
Canonsburg, PA 15317

RE: FINAL AIR POLLUTION PERMIT-TO-INSTALL
Facility ID: 0247030013
Permit Number: P0121748
Permit Type: Administrative Modification
County: Lorain

Dear Permit Holder:

Enclosed please find a final Ohio Environmental Protection Agency (EPA) Air Pollution Permit-to-Install (PTI) which will allow you to install or modify the described emissions unit(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, we urge you to read it carefully. Because this permit contains conditions and restrictions, please read it very carefully. In this letter you will find the information on the following topics:

- **How to appeal this permit**
- **How to save money, reduce pollution and reduce energy consumption**
- **How to give us feedback on your permitting experience**
- **How to get an electronic copy of your permit**
- **What should you do if you notice a spill or environmental emergency?**

How to appeal this permit

The issuance of this PTI is a final action of the Director and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of $70.00, made payable to "Ohio Treasurer Josh Mandel," which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
77 South High Street, 17th Floor
Columbus, OH 43215

How to save money, reduce pollution and reduce energy consumption

The Ohio EPA is encouraging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Compliance Assistance and Pollution Prevention at (614) 644-3469. Additionally, all or a portion of the capital expenditures related to installing air pollution control equipment under this permit may be eligible for financing and State tax exemptions through the Ohio Air Quality Development Authority (OAQDA) under Ohio Revised Code Section 3706. For more information, see the OAQDA website: www.ohioairquality.org/clean_air

How to give us feedback on your permitting experience

Please complete a survey at www.epa.ohio.gov/survey.aspx and give us feedback on your permitting experience. We value your opinion.

How to get an electronic copy of your permit

This permit can be accessed electronically via the eBusiness Center: Air Services in Microsoft Word format or in Adobe PDF on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab.

What should you do if you notice a spill or environmental emergency?

Any spill or environmental emergency which may endanger human health or the environment should be reported to the Emergency Response 24-HOUR EMERGENCY SPILL HOTLINE toll-free at (800) 282-9378. Report non-emergency complaints to the appropriate district office or local air agency.

If you have any questions regarding your permit, please contact Ohio EPA DAPC, Northeast District Office at (330)963-1200 or the Office of Compliance Assistance and Pollution Prevention at (614) 644-3469.

Sincerely,

Michael E. Hopkins, P.E.
Assistant Chief, Permitting Section, DAPC

Cc: U.S. EPA
Ohio EPA-NEDO; Canada

FINAL

Division of Air Pollution Control
Permit-to-Install
for
Avon Lake Power Plant

Facility ID:	0247030013
Permit Number:	P0121748
Permit Type:	Administrative Modification
Issued:	11/23/2016
Effective:	11/23/2016

Ohio Environmental Protection Agency

Division of Air Pollution Control
Permit-to-Install
for
Avon Lake Power Plant

Table of Contents

Authorization

Facility ID:	0247030013
Facility Description:	Electric Utiiity Generating Station
Application Number(s):	A0056999
Permit Number:	P0121748
Permit Description:	Administrative modification to establish federally-enforceable SO2 emission limitations for emissions units B010, B012, B013, B015, and B016 to satisfy the 1-hour SO2 NAAQS per the federal Data Requirements Rule.
Permit Type:	Administrative Modification
Permit Fee:	$7,500.00
Issue Date:	11/23/2016
Effective Date:	11/23/2016

This document constitutes issuance to:

Avon Lake Power Plant
33570 Lake Road
Avon Lake, OH 44012-0000

of a Permit-to-Install for the emissions unit(s) identified on the following page.

Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Ohio EPA DAPC, Northeast District Office
2110 East Aurora Road
Twinsburg, OH 44087
(330)963-1200

The above named entity is hereby granted a Permit-to-Install for the emissions unit(s) listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Craig W. Butler
Director

Authorization (continued)

Permit Number: P0121748
Permit Description: Administrative modification to establish federally-enforceable SO2 emission limitations for emissions units B010, B012, B013, B015, and B016 to satisfy the 1-hour SO2 NAAQS per the federal Data Requirements Rule.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Emissions Unit ID:	**B010**
Company Equipment ID:	Boiler #10
Superseded Permit Number:	P0120245
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**B012**
Company Equipment ID:	Boiler #12
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable

A. Standard Terms and Conditions

1. Federally Enforceable Standard Terms and Conditions

a) All Standard Terms and Conditions are federally enforceable, with the exception of those listed below which are enforceable under State law only:

(1) Standard Term and Condition A.2.a), Severability Clause

(2) Standard Term and Condition A.3.c) through A. 3.e) General Requirements

(3) Standard Term and Condition A.6.c) and A. 6.d), Compliance Requirements

(4) Standard Term and Condition A.9., Reporting Requirements

(5) Standard Term and Condition A.10., Applicability

(6) Standard Term and Condition A.11.b) through A.11.e), Construction of New Source(s) and Authorization to Install

(7) Standard Term and Condition A.14., Public Disclosure

(8) Standard Term and Condition A.15., Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

(9) Standard Term and Condition A.16., Fees

(10) Standard Term and Condition A.17., Permit Transfers

2. Severability Clause

a) A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.

b) All terms and conditions designated in parts B and C of this permit are federally enforceable as a practical matter, if they are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA and the State and by citizens (to the extent allowed by section 304 of the Act) under the Act. Terms and conditions in parts B and C of this permit shall not be federally enforceable and shall be enforceable under State law only, only if specifically identified in this permit as such.

3. General Requirements

a) Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and re-issuance, or modification.

b) It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.

c) This permit may be modified, revoked, or revoked and reissued, for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.

d) This permit does not convey any property rights of any sort, or any exclusive privilege.

e) The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

4. Monitoring and Related Record Keeping and Reporting Requirements

a) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:

(1) The date, place (as defined in the permit), and time of sampling or measurements.

(2) The date(s) analyses were performed.

(3) The company or entity that performed the analyses.

(4) The analytical techniques or methods used.

(5) The results of such analyses.

(6) The operating conditions existing at the time of sampling or measurement.

b) Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.

c) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall submit required reports in the following manner:

(1) Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the Ohio EPA DAPC, Northeast District Office.

(2) Quarterly written reports of (i) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations, excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the Ohio EPA DAPC, Northeast District Office. The written reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See A.15. below if no deviations occurred during the quarter.

(3) Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, and reporting requirements contained in this permit shall be submitted to the Ohio EPA DAPC, Northeast District Office every six months, by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.

(4) This permit is for an emissions unit located at a Title V facility. Each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

d) The permittee shall report actual emissions pursuant to OAC Chapter 3745-78 for the purpose of collecting Air Pollution Control Fees.

5. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to the Ohio EPA DAPC, Northeast District Office in accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06.

Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

6. Compliance Requirements

a) All applications, notifications or reports required by terms and conditions in this permit to be submitted or "reported in writing" are to be submitted to Ohio EPA through the Ohio EPA's eBusiness Center: Air Services web service ("Air Services"). Ohio EPA will accept hard copy submittals on an as-needed basis if the permittee cannot submit the required documents through the Ohio EPA eBusiness Center. In the event of an alternative hard copy submission in lieu of the eBusiness Center, the post-marked date or the date the document is delivered in person will be recognized as the date submitted. Electronic submission of applications, notifications or reports required to be submitted to Ohio EPA fulfills the requirement to submit the required information to the Director, the appropriate Ohio EPA District Office or contracted

local air agency, and/or any other individual or organization specifically identified as an additional recipient identified in this permit unless otherwise specified. Consistent with OAC rule 3745-15-03, the electronic signature date shall constitute the date that the required application, notification or report is considered to be "submitted". Any document requiring signature may be represented by entry of the personal identification number (PIN) by responsible official as part of the electronic submission process or by the scanned attestation document signed by the Authorized Representative that is attached to the electronically submitted written report.

Any document (including reports) required to be submitted and required by a federally applicable requirement in this permit shall include a certification by a Responsible Official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.

b) Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:

(1) At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with ORC section 3704.08.

(3) Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.

(4) As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.

c) The permittee shall submit progress reports to the Ohio EPA DAPC, Northeast District Office concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:

(1) Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.

(2) An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

7. Best Available Technology

As specified in OAC Rule 3745-31-05, new sources that must employ Best Available Technology (BAT) shall comply with the Applicable Emission Limitations/Control Measures identified as BAT for each subject emissions unit.

8. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

9. Reporting Requirements

The permittee shall submit required reports in the following manner:

a) Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the Ohio EPA DAPC, Northeast District Office.

b) Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the Ohio EPA DAPC, Northeast District Office. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

10. Applicability

This Permit-to-Install is applicable only to the emissions unit(s) identified in the Permit-to-Install. Separate application must be made to the Director for the installation or modification of any other emissions unit(s) not exempt from the requirement to obtain a Permit-to-Install.

11. Construction of New Sources(s) and Authorization to Install

a) This permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. This permit does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the application and terms and conditions of this permit. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of this permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Issuance of this permit is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

b) If applicable, authorization to install any new emissions unit included in this permit shall terminate within eighteen months of the effective date of the permit if the owner or operator has not undertaken a continuing program of installation or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation. This deadline may be extended by up to 12 months if application is made to the

Director within a reasonable time before the termination date and the permittee shows good cause for any such extension.

c) The permittee may notify Ohio EPA of any emissions unit that is permanently shut down (i.e., the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31) by submitting a certification from the authorized official that identifies the date on which the emissions unit was permanently shut down. Authorization to operate the affected emissions unit shall cease upon the date certified by the authorized official that the emissions unit was permanently shut down. At a minimum, notification of permanent shut down shall be made or confirmed by marking the affected emissions unit(s) as "permanently shut down" in "Air Services" along with the date the emissions unit(s) was permanently removed and/or disabled. Submitting the facility profile update electronically will constitute notifying the Director of the permanent shutdown of the affected emissions unit(s).

d) The provisions of this permit shall cease to be enforceable for each affected emissions unit after the date on which an emissions unit is permanently shut down (i.e., emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31). All records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, must be maintained in accordance with law. All reports required by this permit must be submitted for any period an affected emissions unit operated prior to permanent shut down. At a minimum, the permit requirements must be evaluated as part of the reporting requirements identified in this permit covering the last period the emissions unit operated.

Unless otherwise exempted, no emissions unit certified by the responsible official as being permanently shut down may resume operation without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31 and OAC Chapter 3745-77 if the restarted operation is subject to one or more applicable requirements.

e) The permittee shall comply with any residual requirements related to this permit, such as the requirement to submit a deviation report, air fee emission report, or other any reporting required by this permit for the period the operating provisions of this permit were enforceable, or as required by regulation or law. All reports shall be submitted in a form and manner prescribed by the Director. All records relating to this permit must be maintained in accordance with law.

12. Permit-To-Operate Application

The permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77. The permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if operation of the proposed new or modified source(s) as authorized by this permit would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d) must be obtained before operating the source in a manner that would violate the existing Title V permit requirements.

13. Construction Compliance Certification

The applicant shall identify the following dates in the "Air Services" facility profile for each new emissions unit identified in this permit.

a) Completion of initial installation date shall be entered upon completion of construction and prior to start-up.

b) Commence operation after installation or latest modification date shall be entered within 90 days after commencing operation of the applicable emissions unit.

14. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

15. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

16. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable permit-to-install fees within 30 days after the issuance of any permit-to-install. The permittee shall pay all applicable permit-to-operate fees within thirty days of the issuance of the invoice.

17. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The new owner must update and submit the ownership information via the "Owner/Contact Change" functionality in "Air Services" once the transfer is legally completed. The change must be submitted through "Air Services" within thirty days of the ownership transfer date.

18. Risk Management Plans

If the permittee is required to develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. ("Act"), the permittee shall comply with the requirement to register such a plan.

19. Title IV Provisions

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.

B. Facility-Wide Terms and Conditions

1. All the following facility-wide terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:

   a) None.

2. The permittee shall ensure that any emissions unit(s) subject to the Cross State Air Pollution Rule (CSAPR) complies/comply with the requirements of the Ohio Administrative Code (OAC) Chapter 3745-109, which includes submitting timely permit applications.

3. Acid Rain Permits and Compliance – OAC chapter 3745-103

   The permittee shall ensure that any affected unit complies with the requirements of OAC Chapter 3745-103, which includes submitting timely permit applications. Emissions exceeding any allowances that are lawfully held pursuant to this rule are prohibited. The requirements of this rule will be specified in the Title V permit issued to this facility.

4. All asbestos renovation and demolition activities conducted at this facility shall be performed in accordance with the applicable requirements specified in 40 CFR Part 61, Subpart M.

5. The facility is subject to the applicable requirements specified in OAC Chapter 3745-25. In accordance with Ohio EPA Engineering Guide #64, the emission control action programs, as specified in OAC rule 3745-25-03, shall be developed and submitted within 60 days after receiving notification from the Ohio EPA.

6. When operating emissions unit B010 (boiler #10) as an auxiliary boiler, the permittee shall comply with the applicable provisions of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, as promulgated by the United States Environmental Protection Agency under 40 CFR Part 63, Subpart DDDDD. The final rules found in 40 CFR Part 63, Subpart DDDDD establish national emission standards for hazardous air pollutants (NESHAP), operational limits, work practice standards, and compliance requirements for industrial, commercial, and institutional boilers located at a major source of hazardous air pollutants (HAP).

7. Applicable Emissions Limitations and/or Control Requirements shall be effective beginning January 13, 2017:

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D) (for purposes of establishing federally-enforceable SO2 emission limitations to satisfy the 1-hour SO2 NAAQS per the Data Requirement Rule)	Sulfur dioxide (SO_2) emissions from all SO_2-emitting sources at the facility (i.e., emissions units B010, B012, B013, B015, and B016, combined) shall not exceed 9,600 lbs/hr[a] (1-hour average basis). SO_2 emissions from emissions units B010 and B012, combined, shall not exceed 1.59 lb/mmBtu[b] (as a rolling, 30-day average).

[a]Clock-hour basis

[b]For each rolling, 30-boiler operating day period, the heat input-weighted SO_2 emission rate from emissions units B010 and B012, combined = mass SO_2 emitted from emissions units B010 and B012, combined (in pounds) divided by the total heat input to emissions units B010 and B012, combined (mmBtu). A boiler operating day is one in which either emissions unit B010 or B012, or both, operates for at least part of a calendar day.

8. Monitoring and/or Recordkeeping Requirements

a) For emissions unit B013, the permittee shall maintain records of the oil burned in this emissions unit in accordance with either Alternative 1 or Alternative 2 described below:

(1) Alternative 1:

For each shipment of oil received for burning in this emissions unit, the permittee shall collect or require the oil supplier to collect a representative grab sample of oil and maintain records of the total quantity of oil received, the permittee's or oil supplier's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in lbs/MMBtu). The sulfur dioxide emission rate shall be calculated in accordance with the formula specified in OAC rule 3745-18-04(F). A shipment may be comprised of multiple tank truck loads from the same supplier's batch, or may be represented by single or multiple pipeline deliveries from the same supplier's batch, and the quality of the oil for those loads or pipeline deliveries may be represented by a single batch analysis from the supplier.

(2) Alternative 2:

The permittee shall collect a representative grab sample of oil that is burned in this emissions unit for each day when the emissions unit is in operation. If additional fuel oil is added to the tank serving this emissions unit on a day when the emissions unit is in operation, the permittee shall collect a sufficient number of grab samples to develop a composite sample representative of the fuel oil burned in this emissions unit. A representative grab sample of oil does not need to be collected on days when this emissions unit is only operated for the purpose of "test-firing." The permittee shall maintain records of the total quantity of oil burned each day, except for the purpose of test-firing, the permittee's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate [in lbs/MMBtu and in lbs/hr (hourly average)]. The sulfur dioxide emission rate shall be calculated in accordance with the formula specified in OAC rule 3745-18-04(F).

The permittee shall perform or require the supplier to perform the analyses for sulfur content and heat content in accordance with 40 CFR Part 60, Appendix A, Method 19, or the appropriate ASTM methods, such as ASTM methods D240 Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter and D4294, Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectrometry, or equivalent methods as approved by the Director.

b) For emissions units B015 and B016, for each shipment of ‘very low sulfur oil’ received for burning in these emissions units, the permittee shall maintain records of the total quantity of oil received, the permittee's or oil supplier's analyses for sulfur content and heat content, and the

calculated sulfur dioxide emission rate [in lbs/MMBtu and in lbs/hr (hourly average)]. The sulfur dioxide emission rate shall be calculated in accordance with the formula specified in OAC rule 3745-18-04(F). A shipment may be comprised of multiple tank truck loads from the same supplier's batch, or may be represented by single or multiple pipeline deliveries from the same supplier's batch, and the quality of the oil for those loads or pipeline deliveries may be represented by a single batch analysis from the supplier.

The permittee shall perform or require the supplier to perform the analyses for sulfur content and heat content in accordance with 40 CFR Part 60, Appendix A, Method 19, or the appropriate ASTM methods, such as D240 Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter and D4294, Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectrometry, or equivalent methods as approved by the Director.

c) The permittee shall maintain daily records of the following information for emissions units B010 and B012, combined:

(1) The daily SO2 emissions (in pounds/day) [calculated based on the record keeping requirements in d)(5) for emissions unit B010 and d)(4) for emissions unit B012];

(2) The daily heat input rate (in mmBtu/day) [calculated based on the record keeping requirements in d)(5) for emissions units B010 and d)(4) for emissions unit B012];

(3) The rolling, 30-day SO2 emission rate (in pounds) [calculated from a) above];

(4) The rolling, 30-day heat input rate (in mmBtu) [calculated from b) above];

(5) The SO_2 emission rate, in lbs/mmBtu, as a rolling, 30-day average [calculated by dividing (3) by (4) above].

d) The permittee shall maintain records for the hourly SO2 emissions rate [lbs/hr (1-hour average basis)] for emissions unit B010 [calculated based on the record keeping requirements in d)(5) for emissions unit B010].

e) The permittee shall maintain records for the hourly SO2 emissions rate [lbs/hr (1-hour average basis)] for emissions unit B012 [calculated based on the record keeping requirements in d)(4) for emissions unit B012].

f) The permittee shall maintain hourly records of the following information for emissions unit B013:

(1) The number of gallons of oil burned;

(2) The calculated hourly SO_2 emission rate [lbs/hr (1-hour average basis)] [calculated based on f)(1) above and the information contained in B.8.a)]

g) The permittee shall maintain hourly records of the following information for emissions units B015 and B016, combined:

(1) The number of gallons of oil burned; and

(2) The calculated hourly SO_2 emission rate [lbs/hr (1-hour average basis)] [calculated based on g)(1)) above and the information contained in B.8.b)].

h) The permittee shall calculate and maintain hourly SO_2 emission rates [lbs/hr (1-hour average basis)] for emissions units B010, B012, B013, B015, and B016, combined [calculated by summing the hourly SO2 emission rates from d), e), f)(2), and g)(2) above].

9. Reporting Requirements

a) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

(1) all exceedances of the SO2 emission limitation [from all SO2-emitting sources at the facility (i.e., emissions units B010, B012, B013, B015, and B016, combined)] of 9,600 lbs/hr; and

(2) all exceedances of the SO2 emission limitation [from emissions units B010 and B012, combined] of 1.59 lb/mmBtu.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

10. Testing Requirements

a) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

(1) <u>Emission Limitation(s):</u>

SO_2 emissions from all SO_2-emitting sources (i.e., emissions units B010, B012, B013, B015, B016, combined) shall not exceed 9,600 lbs/hr (on a 1-hour average basis).

SO_2 emissions from emissions units B010 and B012, combined, shall not exceed 1.59 lb/mmBtu (as a rolling, 30-day average).

<u>Applicable Compliance Method</u>:

Compliance with the lbs SO_2/hr emission limitation shall be demonstrated in accordance with the Monitoring and Recordkeeping requirements in B.8.h) above.

Compliance with the lb SO_2/mmBtu emission limitation shall be demonstrated in accordance with the Monitoring and Recordkeeping requirements in B.8.c) above.

If required, compliance with the SO_2 emission limitations above shall be demonstrated in accordance with Methods 1-4 and 6c of 40 CFR Part 60, Appendix A.

C. Emissions Unit Terms and Conditions

1. B010, Boiler #10

Operations, Property and/or Equipment Description:

Coal-fired boiler for electric generation - 1131 mmBtu/hr

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D) (Capacity factor restriction to qualify as a coal-fired "limited use boiler" per 40 CFR Part 63, Subpart DDDDD)	See c)(1) and c)(2).
b	OAC rule 3745-31-05(D) (for purposes of establishing federally-enforceable SO2 emission limitations to satisfy the 1-hour SO2 NAAQS per the Data Requirement Rule)	Sulfur dioxide (SO_2) emissions from all SO_2-emitting sources at the facility (i.e., emissions units B010, B012, B013, B015, and B016, combined) shall not exceed 9,600 lbs/hr[a] (1-hour average basis). SO_2 emissions from emissions units B010 and B012, combined, shall not exceed 1.59 lb/mmBtu[b] (as a rolling, 30-day average). See d)(6), e)(5), and f)(2).
c.	OAC rule 3745-17-10(C)	Particulate emissions (PE) shall not exceed 0.1 lb/mmBtu of actual heat input.
d.	OAC rule 3745-17-07(A)(1)	Visible PE from any stack shall not exceed 20% opacity, as a 6-minute average, except as provided by the rule.
e.	OAC rule 3745-18-53(B)(2)	The SO_2 emissions limitation specified by this rule is less stringent than the SO_2 emission limitation established in under OAC rule 3745-31-05(D) above.
f.	40 CFR Part 63, Subpart UUUUU - National Emission Standards for	See b)(2)f. & h.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units	
g.	40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 63.7575) [In accordance with 40 CFR 63.7500(c) this emissions unit is a limited use boiler subject to the tune-up requirements specified in this section.]	Tune-up requirements specified in Table 3 (40 CFR 63.7540). See b)(2)f. & g.
h.	40 CFR 63.1 – 63.16 (40 CFR 63.7565)	Table 10 to Subpart DDDDD of 40 CFR Part 63 – Applicability of General Provisions to Subpart DDDDD shows which parts of the General Provisions in 40 CFR 63.1 – 63.16 apply.

[a]Clock-hour basis

[b]For each rolling, 30-boiler operating day period, the heat input-weighted SO_2 emission rate from emissions units B010 and B012, combined = mass SO_2 emitted from emissions units B010 and B012, combined (in pounds) divided by the total heat input to emissions units B010 and B012, combined (mmBtu). A boiler operating day is one in which either emissions unit B010 or B012, or both, operate for at least part of a calendar day.

(2) (2) Additional Terms and Conditions

a. This emissions unit is not subject to the requirements of 40 CFR Part 60, Subpart D (Standards of Performance for Fossil Fuel Fired Generators) or 40 CFR Part 60, Subpart Da (Standards of Performance for Electric Utility Steam Generating Units).

b. The permittee shall maintain a written quality assurance/quality control plan for the continuous opacity monitoring system, designed to ensure continuous valid and representative readings of opacity and compliance with 40 CFR Part 60, Appendix B, Performance Specification 1. The plan shall include, at a minimum, procedures for conducting and recording daily automatic zero/span checks, provisions for conducting a quarterly audit of the continuous opacity monitoring system, and a description of preventive maintenance activities. The plan shall describe step by step procedures for ensuring accurate operation of the continuous opacity monitoring system on a continuous basis. The quality assurance/quality control plan and a logbook dedicated to the continuous emissions monitoring system must be kept on site and available for inspection during regular office hours.

c. The continuous opacity monitoring system consists of all the equipment used to acquire data and record opacity.

d. The permittee shall maintain a written quality assurance/quality control plan for the continuous SO_2 monitoring system, designed to ensure continuous valid and representative readings of SO_2 emissions in units of the applicable standard(s). Except as allowed below, the plan shall follow the requirements of 40 CFR Part 60, Appendix F and 40 CFR Part 75, Appendix B. The quality assurance/quality control plan and a logbook dedicated to the continuous emissions monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct relative accuracy test audits for the continuous SO_2 monitoring system in accordance with the frequencies required pursuant to 40 CFR Part 60 and 40 CFR Part 75; or may follow relative accuracy test audit frequency requirements for monitoring systems subject to 40 CFR 75, Appendix B, in lieu of frequencies required in 40 CFR Part 60. In either case, results shall be recorded and reported in units of the applicable standard(s) in accordance with 40 CFR Part 60.

The plan shall include the requirement to conduct linearity checks pursuant to 40 CFR Part 75.

e. The continuous emission monitoring system consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.

f. The following conditions apply to emissions unit B010 only when the emissions unit is operating as an industrial boiler subject to 40 CFR Part 63, subpart DDDDD. In addition, those conditions do not apply to the emissions unit during periods of operation as an Electric Generating Unit (EGU). Any electric utility steam generating unit that has the capability of combusting more than 25 MW of coal or oil but did not fire coal or oil for more than 10.0 percent of the average annual heat input during any 3 calendar years or for more than 15.0 percent of the annual heat input during any calendar year is not subject to 40 CFR Part 63, Subpart UUUUU.

i. This emissions unit is identified as a limited-use boiler and is not subject to the emission limits in Table 2 of the subpart, the operating limits in Table 4 of the subpart, or the energy assessment requirements in Table 3 of the subpart.

ii. The limited-use boiler is subject to 5-year tune-up requirements, conducted in accordance with 40 CFR 63.7540(a)(10)(i) through (vi) and Table 3 to the subpart: Each limited-use boiler identified above shall have a federally enforceable average annual capacity factor of no more than 10%.

iii. The permittee shall comply with the tune-up requirements specified in 40 CFR Part 63.7540(a)(10)(i) through (vi).

g. An initial tune-up must be completed for emissions unit B010 no later than the compliance date specified in 40 CFR 63.7495, except as specified in paragraph (j) of 40 CFR 63.7510 section. Following the initial compliance date, tune-ups must be conducted for each boiler within the applicable 5-year schedule as specified in 40 CFR 63.7500(a)-(c), 40 CFR 63.7540(a)(10) through (13), and Table 3 to the subpart, unless alternative work practice standards are approved pursuant to 40 CFR 63.6(g). Each subsequent tune-up must occur no more than 61 months after the previous tune-up. If the boiler is not in operation at the time of its scheduled tune-up, the permittee is not required to perform the tune-up at that time but must complete the tune-up within 30 days after the re-start of the boiler. Units that produce electricity for sale may delay the inspection until the first outage, but may not exceed 36 months from the previous inspection. The frequency of tune-ups shall be based on the frequency identified in Table 3 to the subpart.

Each tune-up conducted to demonstrate compliance with the requirements of Part 63 Subpart DDDDD shall include the following elements as applicable:

i. inspection of the burner(s) (and requirement to clean or replace any necessary components);

ii. inspection of the flame pattern and requirement to adjust the burner as necessary to optimize the flame pattern, consistent with the manufacturer's specifications if applicable;

iii. inspect the air-to-fuel ratio control system to ensure it is correctly calibrated and functioning properly;

iv. optimize total emissions of CO, in correlation with any applicable NO_x standards, consistent with the manufacturer's specification if applicable;

v. measure the concentration of CO (in ppm, by volume) and oxygen (in volume percent) in the effluent gas stream, at the high-fire or typical operating load, and both before and after any adjustments (measurements can be make using a portable CO analyzer);

vi. maintain records of the tune-up, inspection, and any corrective actions taken; and

vii. where more than one type of fuel is used, records of the type and amount of each fuel type burned over the 12 months prior to the tune-up.

h. On September 5, 2013, the permittee received a Mercury and Air Toxics Standards (MATS) Extension which extends the compliance date of 40 CFR Part 63, Subpart UUUUU to April 16, 2016. Since being subject to 40 CFR Part 63, Subpart UUUUU excludes one from being subject to 40 CFR Part 63, Subpart DDDDD, the permittee shall comply with the requirements and limits of 40 CFR

Part 63, Subpart DDDDD for emissions unit B010 and shall be in compliance with this NESHAP no later than April 16, 2016, at the conclusion of the compliance extension for 40 CFR Part 63, Subpart UUUUU.

i. The above applicable requirements in C.1.b)(1) and C.1.b)(2) are applicable when operating the emissions unit as an auxiliary boiler.

c) Operational Restrictions

(1) When operating emissions unit B010 as an auxiliary boiler:

a. The maximum annual heat input for this emissions unit shall not exceed 990,756 mmBtu, based upon a rolling, 12-month summation of the monthly heat input values. The permittee has sufficient records to demonstrate compliance with the annual heat input limitation upon permit issuance in order to qualify as a "limited-use boiler" per 40 CFR Part 63, Subpart DDDDD.

b. The permittee shall perform all maintenance activities as specified per the manufacturer's recommendations. To the extent practicable, the permittee shall maintain and operate the boiler, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall maintain monthly records of heat input utilizing one of the following procedures:

a. Coal burn derived heat input:

i. the fuel usage of coal for emissions unit B010, in pounds;

ii. the heat input rate for emissions unit B010, in mmBtu (calculated by multiplying d)(1)a by the coal heating value); and

iii. the rolling, 12-month summation of the monthly heat input rate, in mmBtu.

b. CEMS heat input:

i. Heat input from a certified CEMS will be used for the 12-month summation of the monthly heat input rate.

(2) The permittee shall maintain on-site, the document of certification received from the U.S. EPA or the Ohio EPA's Central Office verifying that the continuous opacity monitoring system has been certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specification 1. The letter/document of certification shall be made available to the Director (the appropriate Ohio EPA's Northeast District Office) upon request.

Each continuous monitoring system consists of all the equipment used to acquire and record data in units of all applicable standard(s), and includes the sample extraction and

transport hardware, sample conditioning hardware, analyzers, and data processing hardware and software.

(3) The permittee shall operate and maintain the continuous opacity monitoring system to continuously monitor and record the opacity of the particulate emissions from this emissions unit. The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of data obtained by the continuous opacity monitoring system including, but not limited to:

a. percent opacity on an instantaneous (one-minute) and 6-minute block average basis;

b. results of daily zero/span calibration checks;

c. hours of operation of the emissions unit, continuous opacity monitoring system, and control equipment;

d. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous opacity monitoring system;

e. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous opacity monitoring system; as well as,

f. the reason (if known) and the corrective actions taken (if any) for each such event in (d) and (e).

(4) The permittee shall maintain on-site, the document(s) of certification received from the U.S. EPA or the Ohio EPA's Central Office documenting that the continuous SO_2 monitoring system has been certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2 and 6; and has been certified by U.S. EPA or recommended for certification by Ohio EPA to U.S. EPA under 40 CFR Part 75. The letter(s)/document(s) of certification under Part 60 and certification or recommendation for certification under Part 75 shall be made available to the Director (the appropriate Ohio EPA's Northeast District Office) upon request.

(5) The permittee shall operate and maintain equipment to continuously monitor and record SO_2 emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60 and/or 40 CFR Part 75, where applicable.

The permittee shall maintain records of all data obtained by the continuous SO_2 monitoring system including, but not limited to:

a. emissions of SO_2 in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;

b. emissions of SO_2 in pounds per hour, pounds per day, and in units of the applicable standard(s) in the appropriate averaging period;

c. results of quarterly cylinder gas audits or linearity checks;

d. results of daily zero/span calibration checks;

e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);

f. hours of operation of the emissions unit, continuous SO_2 monitoring system, and control equipment;

g. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous SO_2 monitoring system;

h. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous SO_2 monitoring system; as well as,

i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

(6) See Facility Terms and Conditions –Section B.8.

e) Reporting Requirements

(1) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

a. all exceedances of the rolling, 12-month heat input limitation for emissions unit B010 when operating the emissions unit as an auxiliary boiler.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(2) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous opacity monitoring system:

a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR Parts 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA's Northeast District Office, documenting all instances of opacity values in excess of any limitation specified in this permit, 40 CFR Part 60, OAC rule 3745-17-07, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude (percent opacity) of each 6-minute block average exceeding the applicable opacity limitation(s), as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance.

b. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:

i. the facility name and address;

ii. the manufacturer and model number of the continuous opacity monitor;

iii. a description of any change in the equipment that comprises the continuous opacity monitoring system (COMS), including any change to the hardware, changes to the software that may affect COMS readings, and/or changes in the location of the COMS sample probe;

iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;

v. the total operating time (hours) of the emissions unit;

vi. the total operating time of the continuous opacity monitoring system while the emissions unit was in operation;

vii. the date, time, and duration of any/each malfunction** of the continuous opacity monitoring system, emissions unit, and/or control equipment;

viii. the date, time, and duration of any downtime** of the continuous opacity monitoring system and/or control equipment while the emissions unit was in operation; and

ix. the reason (if known) and the corrective actions taken (if any) for each event in (b)(vii) and (viii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no exceedance of the opacity limit has occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the quarterly EER report

** each downtime and malfunction event shall be reported regardless of whether there is an exceedance of the opacity limit

(3) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous SO_2 monitoring system:

a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR Parts 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA's Northeast District Office, documenting all instances of SO_2 emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, 40 CFR Part 75, OAC Chapter 3745-18, and any other applicable rules or regulations. The report shall document the date, commencement and completion times,

duration, and magnitude of each exceedance, as well as the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

b. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:

i. the facility name and address;

ii. the manufacturer and model number of the continuous SO_2 and other associated monitors;

iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;

iv. the excess emissions report (EER)*, i.e., a summary of any exeedances during the calendar quarter, as specified above;

v. the total SO_2 emissions for the calendar quarter (tons);

vi. the total operating time (hours) of the emissions unit;

vii. the total operating time of the continuous SO_2 monitoring system while the emissions unit was in operation;

viii. results and dates of quarterly cylinder gas audits or linearity checks;

ix. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));

x. unless previously submitted, the results of any relative accuracy test audit showing the continuous SO_2 monitor out-of-control and the compliant results following any corrective actions;

xi. the date, time, and duration of any/each malfunction** of the continuous SO_2 monitoring system, emissions unit, and/or control equipment;

xii. the date, time, and duration of any downtime** of the continuous SO_2 monitoring system and/or control equipment while the emissions unit was in operation; and

xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter. Data substitution procedures from 40 CFR 75 are not to be used for showing compliance with the short term OAC 3745-31-05(A)(3) rule-based or NSPS-based limitation(s) in this permit.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless of whether there is an exceedance of any applicable limit

(4) The permittee shall collect, record, and maintain measurements, data, records, and reports required per 40 CFR Part 75; and shall submit certification, recertification, notifications, applications, monitoring plans, petitions for alternative monitoring systems, electronic quarterly reports, and any other pertinent record and/or report to the Administrator (U.S. EPA), as required by this Part.

(5) See Facility Terms and Conditions – Section B.9.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

Visible PE from any stack shall not exceed 20% opacity as a 6-minute average, except as provided by the rule.

Applicable Compliance Method:

Ongoing compliance with the opacity limitation contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.

If required, compliance with visible PE limitation above shall be demonstrated in accordance with Method 9 of 40 CFR Part 60, Appendix A.

b. Emission Limitation:

PE shall not exceed 0.1 lb/mmBtu of actual heat input.

Applicable Compliance Method:

Compliance with the PE limitation above shall be demonstrated based on the results of stack testing as required in f)(2).

(2) See Facility Term and Conditions- Section B.10.

(3) As long as emissions unit B010 is designated as a limited-use boiler per 40 CFR Part 63, Subpart DDDDD, the permittee shall conduct, or have conducted, particulate

emission testing to demonstrate compliance with the allowable particulate emission rate in section b)(1)b above in accordance with the following requirements:

a. The testing of emissions unit B010 as a limited-use boiler shall be conducted on 5 year intervals with the next required test to be performed no later than February 28, 2020.

b. Compliance with the allowable mass emission rate for particulate emissions shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5 and the procedures in OAC rule 3745-17-03(B)(9).

c. The test(s) shall be conducted while the emissions unit is operating at or near its maximum capacity.

d. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission test(s).

   Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

e. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

g) Miscellaneous Requirements

(1) None.

2. B012, Boiler #12

Operations, Property and/or Equipment Description:

Coal-fired boiler for electric generation - 6040 mmBtu/hr

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D) (for purposes of establishing federally-enforceable SO2 emission limitations to satisfy the 1-hour SO2 NAAQS per the Data Requirement Rule)	Sulfur dioxide (SO_2) emissions from all SO_2-emitting sources at the facility (i.e., emissions units B010, B012, B013, B015, and B016, combined) shall not exceed 9,600 lbs/hr[a] (1-hour average basis). SO_2 emissions from emissions units B010 and B012, combined, shall not exceed 1.59 lb/mmBtu[b] (as a rolling, 30-day average). See d)(10), e)(8), and f)(2).
b.	OAC rule 3745-17-07(A)	Visible particulate emissions from any stack shall not exceed 20% opacity, as a 6-minute average, except as provided by the rule.
c.	OAC rule 3745-17-10(C)	PE shall not exceed 0.1 lb/mmBtu of actual heat input.
d.	OAC rule 3745-18-53(B)(2)	The SO_2 emissions limitation specified by this rule is less stringent than the SO_2 emissions limitation established under OAC rule 3745-31-05(D) above.
e	40 CFR Part 63.1-15 [40 CFR 63.10040]	Table 9 to 40 CFR Part 63, Subpart UUUUU – Applicability of General Provisions (Subpart A) to Subpart UUUUU shows which parts of the General Provisions in 40 CFR Part 63.1-15 apply.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
f.	40 CFR Part 63, Subpart UUUUU [40 CFR 63.9980-10042] National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-fired Electric Utility Steam Generating Units [In accordance with 40 CFR 63.9980 to 63.9982 and the definitions in 63.10042, this emissions unit is an existing coal-fired electric utility steam generating unit (EGU), constructed prior to 5/3/11.]	The permittee shall comply with the following emission limitations as specified in 40 CFR 63.9991 and Table 2: Mercury (Hg) 1.2E0 lb/TBtu or 1.3E-2 lb/GWh. Comply with either limit: Hydrogen chloride (HCl) 2.0E-3 lb/MMBtu or 2.0E-2 lb/MWh; *OR* Sulfur dioxide (SO_2) 2.0E-1 lb/MMBtu or 1.5E0 lb/MWh. Comply with one of the following limits: 1) 0.03 lb/MMBtu PE or 0.30 lb/MWh PE; *OR* 2) 5.0E-5 lb/MMBtu or 5.0E-1 lb/GWh of Total non-Hg HAP metals; *OR* 3) each Individual HAP metal as follows: Antimony (Sb) 8.0E-1 lb/TBtu or 8.0E-3 lb/GWh; Arsenic (As) 1.1E0 lb/TBtu or 2.0 E-2 lb/GWh; Beryllium (Be) 2.0E-1 lb/TBtu or 2.0E-3 lb/GWh; Cadmium (Cd) 3.0E-1 lb/TBtu or 3.0E-3 lb/GWh; Chromium (Cr) 2.8E0 lb/TBtu or 3.0E-2 lb/GWh; Cobalt (Co) 8.0E-1 lb/TBtu or 8.0E-3 lb/GWh; Lead (Pb) 1.2E0 lb/TBtu or 2.0E-2 lb/GWh; Manganese (Mn) 4.0E0 lb/TBtu or 5.0E-2 lb/GWh; Nickel (Ni) 3.5E0 lb/TBtu or 4.0E-2 lb/GWh; and

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		Selenium (Se) 5.0E lb/TBtu or 6.0E-2 lb/GWh. See c)(1).

[a]Clock-hour basis

[b]For each rolling, 30-boiler operating day period, the heat input-weighted SO_2 emission rate from emissions units B010 and B012, combined = mass SO_2 emitted from emissions units B010 and B012, combined (in pounds) divided by the total heat input to emissions units B010 and B012, combined (mmBtu). A boiler operating day is one in which either emissions unit B010 or B012, or both, operate for at least part of a calendar day.

(2) Additional Terms and Conditions

a. This emissions unit is not subject to the requirements of 40 CFR Part 60, Subpart D (Standards of Performance for Fossil Fuel Fired Generators) or 40 CFR Part 60, Subpart Da (Standards of Performance for Electric Utility Steam Generating Units).

b. The permittee shall maintain a written quality assurance/quality control plan for the continuous opacity monitoring system, designed to ensure continuous valid and representative readings of opacity and compliance with 40 CFR Part 60, Appendix B, Performance Specification 1. The plan shall include, at a minimum, procedures for conducting and recording daily automatic zero/span checks, provisions for conducting a quarterly audit of the continuous opacity monitoring system, and a description of preventive maintenance activities. The plan shall describe step by step procedures for ensuring accurate operation of the continuous opacity monitoring system on a continuous basis. The quality assurance/quality control plan and a logbook dedicated to the continuous emissions monitoring system must be kept on site and available for inspection during regular office hours.

c. The continuous opacity monitoring system consists of all the equipment used to acquire data and record opacity.

d. The permittee shall maintain a written quality assurance/quality control plan for the continuous SO_2 monitoring system, designed to ensure continuous valid and representative readings of SO_2 emissions in units of the applicable standard(s). Except as allowed below, the plan shall follow the requirements of 40 CFR Part 60, Appendix F and 40 CFR Part 75, Appendix B. The quality assurance/quality control plan and a logbook dedicated to the continuous emissions monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct relative accuracy test audits for the continuous SO_2 monitoring system in accordance with the frequencies required pursuant to 40 CFR Part 60 and 40 CFR Part 75; or may follow relative

accuracy test audit frequency requirements for monitoring systems subject to 40 CFR 75, Appendix B, in lieu of frequencies required in 40 CFR Part 60. In either case, results shall be recorded and reported in units of the applicable standard(s) in accordance with 40 CFR Part 60.

The plan shall include the requirement to conduct linearity checks pursuant to 40 CFR Part 75.

The continuous emission monitoring system consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.

c) Operational Restrictions

(1) The permittee shall comply with the applicable operational restrictions required under 40 CFR Part 63, Subpart UUUUU, including the following sections:

63.9991, 63.10000(a), Tables 3 and 4	Work practice standards and operating limits
63.10000(b)	General duty to minimize emissions
63.10001	Malfunctions
63.10005(j) and Table 3	Startup and shutdown requirements
63.10021(e)	Periodic tune-up requirements

(2) The emissions from the silos of the pollution control equipment (ACI and DSI systems) for this emissions unit shall be vented to the bin vent filters at all times while the emissions unit is in operation.

a. the collection efficiency shall be sufficient to minimize or eliminate visible emissions of fugitive dust at the point(s) of capture to the extent possible with good engineering design.

(3) The emissions unit and its associated air pollution control system(s) shall be maintained in accordance with good engineering practices and the recommendations of the respective manufacturers in order to minimize air contaminant emissions.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall maintain on-site, the document of certification received from the U.S. EPA or the Ohio EPA's Central Office verifying that the continuous opacity monitoring system has been certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specification 1. The letter/document of certification shall be made

available to the Director (the appropriate Ohio EPA's Northeast District Office) upon request.

Each continuous monitoring system consists of all the equipment used to acquire and record data in units of all applicable standard(s), and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data processing hardware and software.

(2) The permittee shall operate and maintain the continuous opacity monitoring system to continuously monitor and record the opacity of the particulate emissions from this emissions unit. The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of data obtained by the continuous opacity monitoring system including, but not limited to:

a. percent opacity on an instantaneous (one-minute) and 6-minute block average basis;

b. results of daily zero/span calibration checks;

c. hours of operation of the emissions unit, continuous opacity monitoring system, and control equipment;

d. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous opacity monitoring system;

e. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous opacity monitoring system; as well as,

f. the reason (if known) and the corrective actions taken (if any) for each such event in (d) and (e).

(3) The permittee shall maintain on-site, the document(s) of certification received from the U.S. EPA or the Ohio EPA's Central Office documenting that the continuous SO_2 monitoring system has been certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2 and 6; and has been certified by U.S. EPA or recommended for certification by Ohio EPA to U.S. EPA under 40 CFR Part 75. The letter(s)/document(s) of certification under Part 60 and certification or recommendation for certification under Part 75 shall be made available to the Director (the appropriate Ohio EPA's Northeast District Office) upon request.

(4) The permittee shall operate and maintain equipment to continuously monitor and record SO_2 emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60 and/or 40 CFR Part 75, where applicable.

The permittee shall maintain records of all data obtained by the continuous SO_2 monitoring system including, but not limited to:

a. emissions of SO_2 in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;

b. emissions of SO_2 in pounds per hour, pounds per day, and in units of the applicable standard(s) in the appropriate averaging period;

c. results of quarterly cylinder gas audits or linearity checks;

d. results of daily zero/span calibration checks;

e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);

f. hours of operation of the emissions unit, continuous SO_2 monitoring system, and control equipment;

g. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous SO_2 monitoring system;

h. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous SO_2 monitoring system; as well as,

i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

(5) The permittee shall comply with the applicable monitoring and recordkeeping requirements required under 40 CFR Part 63, Subpart UUUUU, including the following sections:

63.10000(d)	Site-specific monitoring plan requirements
63.10005(d)	Continuous monitoring system requirements
63.10005(j), 63.10021(h), and Table 3	Startup and shutdown monitoring and record keeping requirements
63.10010(a)-(j)	Monitoring, installation, operation and maintenance requirements
63.10020(a)-(d)	Continuous monitoring and data collection requirements
63.10021(a)-(c)	Continuous compliance demonstration requirements
63.10023	PM CPMS requirements

63.10032(a)-(i)	Required overall records to be maintained
63.10033(a)-(c)	Format and retention of records

(6) The permittee shall properly install, operate, and maintain equipment to continuously monitor the pressure drop, in inches of water, across the bin vent filters for the ACI and DSI systems when the controlled emissions unit(s) is in operation, including periods of startup and shutdown. The permittee shall record the pressure drop across the bin vent filters on daily basis. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s), with any modifications deemed necessary by the permittee. The acceptable pressure drop shall be based upon the manufacturer's specifications.

Whenever the monitored value for the pressure drop deviates from the limit or range specified by the manufacturer, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

a. the date and time the deviation began;

b. the magnitude of the deviation at that time;

c. the date the investigation was conducted;

d. the name(s) of the personnel who conducted the investigation; and

e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable range specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

f. a description of the corrective action;

g. the date corrective action was completed;

h. the date and time the deviation ended;

i. the total period of time (in minutes) during which there was a deviation;

j. the pressure drop readings immediately after the corrective action was implemented; and

k. the name(s) of the personnel who performed the work.

Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

(7) The bin vent filters shall be equipped with alarms indicating when the pressure drop is outside of the manufacturer's recommended differential pressure range, thus prompting a filter change and/or repair of the controls.

(8) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stack and for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;

b. whether the emissions are representative of normal operations;

c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

d. the total duration of any visible emissions incident; and

e. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emissions incident has occurred. The observer does not have to document the exact start and end times for the visible emissions incident under item (d) above or continue the check until the incident has ended. The observer may indicate that the visible emissions incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

(9) Notwithstanding the frequency of the monitoring and record keeping requirements specified in section d)(13) and d)(15), the permittee may reduce the visual observations from daily readings to weekly readings if the following conditions are met:

a. for 1 full quarter the facility's daily visual observations indicate no abnormal visible emissions; and

b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section d)(15), on a weekly basis.

The permittee shall revert to daily readings if any abnormal visible emissions are observed. The daily readings shall continue for one full quarter. If abnormal visible emissions are observed during this time, the permittee shall continue daily readings until

such time that no abnormal visible emissions have been observed for a period of three consecutive months.

(10) See Facility Term and Conditions- Section B.8.

e) Reporting Requirements

(1) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous opacity monitoring system:

a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR Parts 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA's Northeast District Office, documenting all instances of opacity values in excess of any limitation specified in this permit, 40 CFR Part 60, OAC rule 3745-17-07, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude (percent opacity) of each 6-minute block average exceeding the applicable opacity limitation(s), as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance.

b. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:

i. the facility name and address;

ii. the manufacturer and model number of the continuous opacity monitor;

iii. a description of any change in the equipment that comprises the continuous opacity monitoring system (COMS), including any change to the hardware, changes to the software that may affect COMS readings, and/or changes in the location of the COMS sample probe;

iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;

v. the total operating time (hours) of the emissions unit;

vi. the total operating time of the continuous opacity monitoring system while the emissions unit was in operation;

vii. the date, time, and duration of any/each malfunction** of the continuous opacity monitoring system, emissions unit, and/or control equipment;

viii. the date, time, and duration of any downtime** of the continuous opacity monitoring system and/or control equipment while the emissions unit was in operation; and

ix. the reason (if known) and the corrective actions taken (if any) for each event in (b)(vii) and (viii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no exceedance of the opacity limit has occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the quarterly EER report

** each downtime and malfunction event shall be reported regardless of whether there is an exceedance of the opacity limit

(2) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous SO_2 monitoring system:

a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR Parts 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA's Northeast District Office, documenting all instances of SO_2 emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, 40 CFR Part 75, OAC Chapter 3745-18, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

b. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:

i. the facility name and address;

ii. the manufacturer and model number of the continuous SO_2 and other associated monitors;

iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;

iv. the excess emissions report (EER)*, i.e., a summary of any exeedances during the calendar quarter, as specified above;

v. the total SO_2 emissions for the calendar quarter (tons);

vi. the total operating time (hours) of the emissions unit;

vii. the total operating time of the continuous SO_2 monitoring system while the emissions unit was in operation;

viii. results and dates of quarterly cylinder gas audits or linearity checks;

ix. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));

x. unless previously submitted, the results of any relative accuracy test audit showing the continuous SO_2 monitor out-of-control and the compliant results following any corrective actions;

xi. the date, time, and duration of any/each malfunction** of the continuous SO_2 monitoring system, emissions unit, and/or control equipment;

xii. the date, time, and duration of any downtime** of the continuous SO_2 monitoring system and/or control equipment while the emissions unit was in operation; and

xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter. Data substitution procedures from 40 CFR 75 are not to be used for showing compliance with the short term OAC 3745-31-05(A)(3) rule-based or NSPS-based limitation(s) in this permit.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless of whether there is an exceedance of any applicable limit

(3) The permittee shall collect, record, and maintain measurements, data, records, and reports required per 40 CFR Part 75; and shall submit certification, recertification, notifications, applications, monitoring plans, petitions for alternative monitoring systems, electronic quarterly reports, and any other pertinent record and/or report to the Administrator (U.S. EPA), as required by this Part.

(4) The permittee shall submit quarterly reports that document the following for each day in the calendar quarter:

a. the 30-boiler operating day average SO_2 emission rate.

These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the information required by 40 CFR Part 60.49Da including 60.51Da(b) and 60.51Da(c). The quarterly report may satisfy the semi-annual reporting requirements of 60.51Da(j) if all information required under 60.51Da is included.

(5) The permittee shall comply with the applicable reporting requirements required under 40 CFR Part 63, Subpart UUUUU, including the following sections:

63.10030(a)	Overall notification reporting requirements
63.10030(b)	Initial notification reports
63.10030(d)	Notification of intent to test
63.10030(e)	Notification of compliance status
63.10031(a)-(b) and Table 8	Reporting requirements and due dates
63.10031(c)-(d) and (g)	Compliance report content
63.10031(e)	Title V monitoring report allowance
63.10031(f)	Reporting requirements for EPA's WebFIRE database
63.10031(g)	Malfunction reporting requirements

(6) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

a. each period of time (start time and date, and end time and date) when the pressure drop across the bin vent filters was outside of the appropriate range or limit specified by the manufacturer and outside of the acceptable range following any required compliance demonstration;

b. any period of time (start time and date, and end time and date) when the emissions unit(s) was/were in operation and the process emissions were not vented to the bin vent filters;

c. each incident of deviation described in "a" or "b" (above) where a prompt investigation was not conducted;

d. each incident of deviation described in "a" or "b" where prompt corrective action, that would bring the pressure drop into compliance with the acceptable range, was determined to be necessary and was not taken; and

e. each incident of deviation described in "a" or "b" where proper records were not maintained for the investigation and/or the corrective action(s), as identified in the monitoring and record keeping requirements of this permit.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(7) The permittee shall submit semiannual written reports that identify:

a. all days during which any visible particulate emissions were observed from the stack serving this emissions unit;

b. all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, etc.) serving this emissions unit; and

c. any corrective actions taken to minimize or eliminate the visible particulate emissions from the stack and/or visible emissions of fugitive dust.

These reports shall be submitted to the Director Ohio EPA's Northeast District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

(8) See Facility Term and Conditions- Section B.9.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

Visible PE shall not exceed 20% opacity, as a 6-minute average, except as provided by rule.

Applicable Compliance Method:

Ongoing compliance with the opacity limitation contained in this permit, 40 CFR Part 60, and any other applicable standard(s) may be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.

If required, compliance shall be demonstrated through visible PE observations performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 9 and OAC rule 3745-17-03(B)(1).

b. Emission Limitations:

Mercury (Hg) 1.2E0 lb/TBtu or 1.3E-2 lb/GWh.

Comply with either limit:

Hydrogen chloride (HCl) 2.0E-3 lb/MMBtu or 2.0E-2 lb/MWh; ***OR*** Sulfur dioxide (SO_2) 2.0E-1 lb/MMBtu or 1.5E0 lb/MWh.

Comply with one of the following limits:

1) 0.03 lb/MMBtu PE or 0.30 lb/MWh PE; ***OR***

2) 5.0E-5 lb/MMBtu or 5.0E-1 lb/GWh of Total non-Hg HAP metals; *OR*

3) each Individual HAP metal as follows:

Antimony (Sb) 8.0E-1 lb/TBtu or 8.0E-3 lb/GWh;

Arsenic (As) 1.1E0 lb/TBtu or 2.0 E-2 lb/GWh;

Beryllium (Be) 2.0E-1 lb/TBtu or 2.0E-3 lb/GWh;

Cadmium (Cd) 3.0E-1 lb/TBtu or 3.0E-3 lb/GWh;

Chromium (Cr) 2.8E0 lb/TBtu or 3.0E-2 lb/GWh;

Cobalt (Co) 8.0E-1 lb/TBtu or 8.0E-3 lb/GWh;

Lead (Pb) 1.2E0 lb/TBtu or 2.0E-2 lb/GWh;

Manganese (Mn) 4.0E0 lb/TBtu or 5.0E-2 lb/GWh;

Nickel (Ni) 3.5E0 lb/TBtu or 4.0E-2 lb/GWh; and

Selenium (Se) 5.0E lb/TBtu or 6.0E-2 lb/GWh.

Applicable Compliance Method:

Compliance with the applicable limit(s) shall be demonstrated in accordance with the requirements of 40 CFR Part 63, Subpart UUUUU, in f)(4) below.

c. Emission Limitation:

PE shall not exceed 0.1 lb/mmBtu of actual heat input.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Methods 1 through 5 and OAC rule 3745-17-03(B)(10).

(2) See Facility Term and Conditions- Section B.10.

(3) The permittee shall comply with the applicable performance testing and compliance requirements required under 40 CFR Part 63, Subpart UUUUU, including the following sections:

63.10000(c)	Initial performance testing
63.10000(c)(1)(i) and (iii), and 63.10005(h)	Low emitting EGU (LEE) qualifications and performance testing requirements

63.10000(c)(1)(vi) and Appendix A	Initial compliance requirements for Hg – sorbent trap monitoring system (non-LEE)
63.10005(a)-(d) and 63.10011	Initial compliance requirements
63.10005(e) and (f) and 63.10011	Initial compliance requirements for work practice standards
63.10006	Subsequent performance test requirements
63.10007(a)-(f) and Table 5	Performance test requirements and test methods
63.10021(a) and (d)	Continuous compliance demonstration requirements

g) Miscellaneous Requirements

(1) None.