Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

October 29, 2020

Chad LaFontaine
Executive Director
Metro 4/SESARM
1252 W Government St Unit 1375
Brandon MS 39043-6054

Re: Response to VISTAS Request for Regional Haze Reasonable Progress Analyses for Ohio Sources Impacting VISTAS Class I Areas

Dear Mr. LaFontaine:

On June 22, 2020, the Visibility Improvement State and Tribal Association of the Southeast (VISTAS), on behalf of Alabama, Georgia, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia, requested that Ohio conduct a reasonable progress analysis for four Ohio sources that were identified by VISTAS to have an impact on visibility in Class I areas located in VISTAS' states: Kyger Creek Station, Cardinal Power Plant, General James M. Gavin Power Plant and Zimmer Power Station. In this letter, it was also requested that if it is determined that a four-factor analysis is not warranted for one or more of the identified sources, rationale for this determination be provided.

Ohio's analysis for each of the sources identified by VISTAS is provided in detail below. In summary:

- Kyger Creek Station – effectively controlled for SO_2 and NOx
- Cardinal Power Plant – effectively controlled for SO_2 and NOx
- Gavin Power Plant – four-factor analysis for SO_2 requested; effectively controlled for NOx
- Zimmer Power Station – recently announced a planned shut down in 2027; currently in discussions regarding an enforceable commitment for the shutdown such that a four-factor analysis is not warranted.

U.S. EPA's Regional Haze Guidance provides example scenarios for sources that would be considered "effectively controlled" in which U.S. EPA believes it may be reasonable for a state not to select a particular source for further analysis. One of the example scenarios provided by U.S. EPA which Ohio finds most pertinent is:

> "For the purposes of SO_2 and NOx control measures, a combustion source (e.g., an EGU or industrial boiler or process heater) that, during the first implementation period, installed a **FGD system that operates year-round with an effectiveness of at least 90 percent** or by the installation of a **selective catalytic reduction system that operates year-round with an overall effectiveness of at least 90 percent** (in both cases calculating the effectiveness as

> the total for the system, including any bypassed flue gas), on a pollutant-specific basis." A pair of footnotes add that "For purposes of this consideration, the first regional haze implementation period started when SIPs were due on December 17, 2007." and "While a 90 percent control effectiveness is used in this example, we expect that any FGD system installed to meet CAA requirements since 2007 would have an effectiveness of 95 percent or higher. This does not apply to a source that has recently achieved a higher level of control efficiency without the installation of a control system, for example if it has merely increased the flow rate of a reagent. In such a situation, the four factors should be fully considered. The outcome may still be that the current level of control is the measure that is necessary to make reasonable progress. (Emphasis added)

For ease of reference, this example will be referred to as "FGD/SCR with at least 90% effectiveness".

However, U.S. EPA's Regional Haze Guidance clearly indicates that the examples are meant to be illustrative but not exhaustive. Using the general principle established in the Regional Haze Guidance that a source may be excluded from four-factor analysis where it is "reasonable to assume for the purposes of efficiency and prioritization that a full four-factor analysis would likely result in the conclusion that no further controls are necessary", Ohio interprets the "FGD/SCR with at least 90% effectiveness" example slightly broader than written in the Regional Haze Guidance.

Specifically, although the example only references controls installed in the first implementation period (i.e. after December 17, 2007), Ohio does not believe the installation date is pertinent to whether the source is effectively controlled, so long as the device is getting sufficient removal. Ohio believes that conducting a four-factor analysis on a source with an FGD or SCR with 90% control efficiency, regardless of the date installed, would likely result in the conclusion that no further controls are necessary. Therefore, Ohio considered control devices installed prior to the first implementation period to meet our interpretation of this example.

<u>Kyger Creek Station</u>
Kyger Creek Station (Facility ID 0627000003) operates five coal-fired boilers (B001, B002, B003, B004 and B005), which are considered effectively controlled for SO_2 and NOx in accordance with the "FGD/SCR with at least 90% effectiveness" example in the Regional Haze Guidance.

FGDs with 98% control efficiency were installed March 19, 2012 on B001 and B002, and November 4, 2011 on B003, B004 and B005. Each of these controls operate year-round. Each of the five units have a federally enforceable SO_2 emissions limits of 1.2 lb/MMBtu based on a rolling, 30-day average (permit no. P0104412, effective 02/17/2011). As shown in Table 1, recent SO_2 emission rates are 0.16 lb/MMBtu or less.

SCRs with 90% control efficiency were installed October 1, 2002 on B001, December 1, 2002 on B002, February 1, 2003 on B003, April 1, 2003 on B004 and June 1, 2003 on B005. Each of these controls operate year-round. As shown in Table 1, recent NOx emission rates are 0.24 lb/MMBtu or less.

Table 1. Kyger Creek B001, B002, B003, B004 and B005 emissions (2016 to 2019)

Unit ID	Year	SO_2 (tons)	SO_2 rate (lb/MMBtu)	NOx (tons)	NOx Rate (lb/MMBtu)	PM25-PRI (tons)	NH3 (tons)
B001	2016	755	0.14	1,197	0.22	112	0
	2017	1,025	0.15	970	0.15	141	0
	2018	1,157	0.16	1,385	0.20	144	1
	2019	675	0.12	997	0.19	112	0
B002	2016	700	0.14	1,109	0.24	104	0
	2017	844	0.15	687	0.13	113	0
	2018	1,144	0.16	1,404	0.20	142	0
	2019	718	0.11	1,245	0.20	128	0
B003	2016	853	0.15	1,848	0.23	120	0
	2017	867	0.15	729	0.13	127	0
	2018	914	0.15	1,100	0.18	129	0
	2019	744	0.13	1,043	0.18	127	0
B004	2016	828	0.16	1,793	0.22	117	0
	2017	982	0.15	968	0.15	144	0
	2018	880	0.15	1,102	0.19	124	0
	2019	823	0.13	1,086	0.17	140	0
B005	2016	845	0.15	1,831	0.22	120	0
	2017	964	0.15	885	0.14	142	0
	2018	876	0.15	1,001	0.18	125	0
	2019	787	0.13	1,003	0.17	130	0

None of the units are significant sources of $PM_{2.5}$ or ammonia.

Cardinal Power Plant

Cardinal Power Plant (Facility ID 0641050002) operates three coal-fired boilers (B001, B002 and B009), each of which is considered effectively controlled for SO_2 and NOx in accordance with the "FGD/SCR with at least 90% effectiveness" example in the Regional Haze Guidance.

FGDs with 95% control efficiency were installed March 1, 2008 on B001, December 1, 2007 on B002, and December 30, 2011 on B009. The FGDs must be continuously operated on and after December 31, 2008 for B001 and B002, and December 31, 2012 for B009, in accordance with the requirements of a federal Consent Decree in *United States, et al. v. American Electric Power Service Corp.*, et al., Civil Action Nos. C2-99-1182 and C2-99-1250 and *United States, et al. v. American Electric Power Service Corp., et al.*, Civil Action Nos. C2-04-1098 and C2-05-360 (Consent Decree).

B001 and B002 each have federally enforceable SO_2 emissions limits of 1.056 lb/MMBtu based on a rolling, 30-day average (permit no. P0104412, effective February 17, 2011). B003 has a federally enforceable SO_2 emissions limit of 0.66 lb/MMBtu based on a rolling, 30-day average (permit no. P0104411, effective February 17, 2011). As shown in Table 2, recent SO_2 emission rates are 0.27 lb/MMBtu or less.

SCRs with 90% control efficiency were installed June 1, 2003 on B001, and May 1, 2003 on B002 and B009. The SCRs must be continuously operated on and after January 1, 2009 in accordance with the requirements of the Consent Decree. As shown in Table 2, recent NOx emission rates are below 0.1 lb/MMBtu.

Table 2. Cardinal Power Plant B001, B002 and B009 emissions (2016 to 2019)

Unit ID	Year	SO_2 (tons)	SO_2 rate (lb/MMBtu)	NOx (tons)	NOx Rate (lb/MMBtu)	PM25-PRI (tons)	NH3 (tons)
B001	2016	3,885	0.22	1,497	0.09	54	1
	2017	3,796	0.24	1,166	0.08	50	1
	2018	3,794	0.22	1,348	0.08	74	1
	2019	3,685	0.18	1,479	0.08	92	1
B002	2016	3,986	0.27	1,146	0.08	73	1
	2017	5,205	0.25	1,446	0.07	247	0
	2018	3,103	0.22	1,024	0.08	38	1
	2019	3,714	0.23	1,242	0.08	43	1
B009	2016	1,325	0.10	1,112	0.09	969	1
	2017	2,256	0.13	1,272	0.08	88	1
	2018	2,807	0.14	1,468	0.08	166	1
	2019	2,053	0.15	1,157	0.09	118	1

B001 and B002 are not significant sources of $PM_{2.5}$. Although B009 is reported to have emitted 969 tons of $PM_{2.5}$ in 2016, emissions have dropped substantially in more recent years. This decrease may likely be due in part to more recent stack testing, along with new requirements for condensable stack testing under U.S. EPA's Method 202 established in March 2016[1], which forms the basis of the emissions estimates for the condensable fraction of PM. Further, B009 is equipped with an Electrostatic Precipitator (ESP) with 99.5% control efficiency installed September 1, 1977.

None of the units are significant sources of ammonia.

General James M. Gavin Power Plant

General James M. Gavin Power Plant (Facility ID 0627010056) operates two coal-fired boilers (B003 and B004).

FGDs with 95% control efficiency were installed December 1, 1994 on B003 and March 1, 1995 on B004. The FGDs must be continuously operated in accordance with the requirements of a federal Consent Decree in *United States of America and the State of New York, et. al and Ohio Citizen Action et al. v. American Electric Power Service Corp. et al*, (S.D. Ohio Case No. 2:99-CV-01182), lodged on October 9, 2007 and entered on December 10, 2007, as amended on April 5, 2010, December 28, 2010, May 14, 2013, and January 23, 2017 (hereinafter "Consent Decree").

[1] https://www.epa.gov/emc/method-202-condensable-particulate-matter

B003 and B004 each have federally enforceable SO_2 emissions limits of 7.41 lb/MMBtu (permit no. P0089258, effective April 15, 2020). As shown in Table 3, recent SO_2 emissions rates are 0.39 lb/MMBtu or less. Although the FGDs operate year-round with a 95% control efficiency, Ohio has requested a four-factor analysis with respect to SO_2.

B003 and B004 are considered effectively controlled for NOx in accordance with the with the "FGD/SCR with at least 90% effectiveness" example in the Regional Haze Guidance. SCRs with 90% control efficiency were installed May 1, 2001 on B003 and B004. The SCRs must be continuously operated in accordance with the requirements of the Consent Decree. As shown in Table 3, recent NOx emission rates are 0.11 lb/MMBtu or less.

Table 3. Gavin Power Plant B003 and B004 emissions (2016 to 2019)

Unit ID	Year	SO_2 (tons)	SO_2 rate (lb/MMBtu)	NOx (tons)	NOx Rate (lb/MMBtu)	PM25-PRI (tons)	NH3 (tons)
B003	2016	9,039	0.27	3,572	0.11	608	1
	2017	13,785	0.32	4,441	0.10	650	1
	2018	13,172	0.38	3,495	0.10	567	1
	2019	12,161	0.37	3,485	0.11	219	1
B004	2016	10,990	0.29	3,757	0.10	1,007	1
	2017	11,640	0.36	3,382	0.11	518	1
	2018	14,420	0.34	4,553	0.11	644	1
	2019	14,313	0.39	3,857	0.11	403	1

Although B003 and B004 are reported to have emitted higher emissions of $PM_{2.5}$ in 2016, as shown in Table 3, emissions have dropped substantially in more recent years. These differences are due to updated stack testing in 2017 which forms the basis of the emissions estimates for the condensable fraction of PM[2]. Thus, the recent emissions based on more recent data are expected to more accurately reflect current conditions. Ohio EPA does not consider B003 or B004 to be a significant source of $PM_{2.5}$ based on recent reported emissions.

In addition, B003 and B004 each are equipped with an Electrostatic Precipitator (ESP) for particulate control with greater than 99% control efficiency of particulates. B003 and B004 each have federally enforceable particulate emissions limits of 0.1 lb/MMBtu (permit no. P0089258, effective 04/15/2020).

Neither unit is a significant source of ammonia.

Zimmer Power Station

Zimmer Power Station (1413090154) operates one coal-fired boiler (B006). Zimmer recently announced a planned shut down in 2027. Ohio and Zimmer are currently in discussions regarding an enforceable commitment for the shutdown such that a four-factor analysis is not warranted.

[2] The 2016 and 2017 emissions are based on stack testing conducted 02/26/09, whereas the 2018 and 2019 emissions are based on a stack test conducted on 08/23/2017.

If you have questions, please contact Jennifer Van Vlerah in our Division of Air Pollution Control at (614) 644-3696.

Sincerely,

Robert F. Hodanbosi
Chief, Division of Air Pollution Control, Ohio EPA