

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
AMENDMENTS TO 35 ILL. ADM. CODE) R15-21
PART 214, SULFUR LIMITATIONS, PART) (Rulemaking-Air)
217, NITROGEN OXIDES EMISSIONS,)
AND PART 225, CONTROL OF EMISSIONS)
FROM LARGE COMBUSTION SOURCES)

NOTICE

To: John Therriault, Assistant Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, Illinois 60601-3218

PLEASE TAKE NOTICE that I have today filed with the Office of the Pollution Control Board the Illinois Environmental Protection Agency's Responses to the Board's Second Set of Pre-filed Questions, a copy of which is herewith served upon you.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: /s/ Dana Vetterhoffer
Assistant Counsel

DATED: July 23, 2015
1021 N. Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276
(217) 782-5544

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**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY'S RESPONSES TO
BOARD'S SECOND SET OF PRE-FILED QUESTIONS**

The Illinois Environmental Protection Agency ("Illinois EPA" or "Agency"), by its attorney, offers the following responses to the "Board Staff Questions for Second Hearing," dated July 16, 2015.

40. In response to Question 1(e) regarding annual SO₂ reductions anticipated under the proposed fuel standards, IEPA states, "it should be noted that this proposed rulemaking addresses the hourly SO₂ standard, and as such, annual emissions are not the focus." IEPA Response at 2-3. IEPA explains that the proposed sulfur content limitations applied to "fuel combustion emission units impacting the Lemont and Pekin non-attainment areas is needed to address the CAA requirements" for the SO₂ non-attainment areas. Statement of Reasons (SR) at 6-7. In light of this, explain if IEPA reconciled the annual allowable emissions for fuel oils listed in Table 1 (Technical Support Document (TSD) at 13) to the "hourly" SO₂ standards to demonstrate attainment or whether the Agency used a different method. Since Table 1 is for point sources in Illinois generally, also comment on whether IEPA differentiated the sources impacting the non-attainment areas in the attainment demonstration.

Response: The Agency modeled allowable emissions from point sources in the nonattainment area modeling domains by assuming that a given unit would burn the maximum amount of fuel possible, and that the fuel used would be fuel oil meeting the sulfur content limits in the proposed rule amendments. So, the Agency has modeled attainment with the NAAQS by using emission rates consistent with 15 ppm diesel fuel. This was applied to all applicable stationary sources in the NAA modeling domain, except for those sources that explicitly have exceptions to those limits in the proposed rule amendments.

41. In response to Question 2, the Agency states, "[d]ata in Table 5 of the TSD was taken from the cited EIA website. The most recent data available from EIA is from 2013." Further regarding the feasibility of proposed liquid fuel standards, the Agency

asserts that the data in Table 5 shows steady increase in the use of fuel oils that are complaint with the proposed standards in commercial and industrial sectors. TSD at 19. The EIA website cited by IEPA indicates that the farm sector accounts for a significant portion of the distillate fuel sales in Illinois, however, the EIA data does not differentiate sulfur levels of distillate fuel for the farm sector.

- a. Comment on whether the distillate fuel oil use in the farm sector includes combustion sources that meet the applicability criteria of Section 214.121(b)(2). If so, are such sources subject to the proposed state-wide liquid fuel standards?

Response: New nonroad engines and equipment used on farms would be subject to this Section, but these types of units have been meeting the proposed distillate fuel limit since 2010 based on USEPA fuel standards.

- b. Does the list of potentially affected sources in Appendix A of the TSD include affected sources located on farms?

Response: No, the list in Appendix A does not contain any sources located on farms since most farm equipment is exempt from permitting under 35 Ill. Adm. Code 201.146(e).

42. In response to Question 11 regarding an estimate of the overall annual reduction of SO₂ under the proposed Subpart AA limits, the Agency states that the focus of this rulemaking is hourly not annual emissions and that “such estimates, if calculated would not be useful, since the reductions in allowable emissions would be quite large and would not represent a meaningful effect of the proposed rule amendments.” IEPA Response at 8. Comment on the broader perspective of SO₂ emissions controls from the existing regulations pertaining to SO₂ emission rates in terms of lb/mmBtu and the newly proposed SO₂ emission rates in terms of lb/hr for the SO₂ State Implementation Plan (SIP) submittal. Comment the effect of the SO₂ emission rates in terms of lb/mmBtu in limiting annual emissions based on a facility’s rated heat input and the effect of the SO₂ emission rates in terms of lb/hr limiting short term emissions. Comment on how both types of limits are used in Illinois’ SIP demonstration to attain and maintain the NAAQS.

Response: The unit of measurement in which a limit is expressed can often be converted to a different unit of measurement if certain factors about the emission unit are known. For instance, in this rulemaking, if a given emission unit had a permitted limit in lb/mmBtu, then that limit could be converted to a lb/hr limit by determining its maximum heat input capacity (in mmBtu/hr). For the purposes of modeling for an hourly standard such as the one addressed by this rulemaking, limits expressed in lb/hr are more useful (and are the model input) for a unit. A measurement in lb/mmBtu is often more useful as a measure of how well-controlled an emission unit or process may be, or how efficient that unit or process is in terms of pollutant emitted per measure of fuel used. Generally, a reduction in the allowable limit in one of these units of measurement would result in a reduction in

the other unit of measurement, unless a unit's operational capacity was limited in order to comply. For the purposes of the 1-hour SO₂ NAAQS, limits in terms of lb/hr are more appropriate because the capacity of the unit does not need to be considered to protect the standard. For purposes of demonstrating attainment of the standard based upon modeling, the Agency must use an emission rate in lb/hr (or a metric equivalent).

43. In Table 4 of the TSD, IEPA lists the SO₂ emissions in terms of lb/mmBtu and tons per year for Midwest Generation units with and without the proposed amendments regarding the conversion of units to fuel other than coal. Explain the origin of the SO₂ emission rate (lb/mmBtu) of 0.0006 for Joliet 6, 7, and 8 and 0.0015 for Will County 3. Clarify where those rates are included in the proposed amendments.

Response: The emission rate of 0.0006 lb/mmBtu for the Joliet units is the SO₂ emission factor for natural gas combustion. The emission rate of 0.0015 for Will County 3 is the emission factor for the combustion of diesel fuel with a sulfur content of 15 ppm. While the Will County 3 unit may burn natural gas or diesel fuel, the Agency used the more conservative emission factor for that unit in the table. These rates are reflective of the proposed amendments that require the above units to permanently cease burning coal.

It should be noted that the rates in the table do not reflect the allowance in the proposed amendments for Midwest Generation units to burn 500 ppm distillate fuel until December 31, 2018. This would require assumptions about which units would be burning this existing fuel and the rate at which it was burned through. However, a lb/hr rate corresponding to 500 ppm fuel was used in the final modeling scenario showing attainment of the NAAQS.

44. In Table 3 of the TSD, IEPA lists the SO₂ "Current Allowable Emissions (lb/hr)" from the sources proposed to be include in 35 Ill. Adm. Code 214 Subpart AA. Identify the existing regulations from which the current allowable emissions are derived for each of these sources. If any of the sources in proposed Subpart AA are subject to Subpart D, comment on whether the following phrase should be added to Sections 214.161 or 216.162: "Except as otherwise provided in this Part . . ."

Response: The Agency has included the requested information in Table 3-B below. Note that the columns for "Current Allowable" refer to allowable emissions and regulations prior to this rulemaking. The Agency is unclear what the Board is asking in the last sentence of this question. Sources subject to Subpart AA may also be subject to Subpart D, but compliance with one of these Subparts does not eliminate the need to comply with the other, so the Agency advises against adding such a phrase.

Table 3-B

Facility Name	Unit Description	Current Allowable Emissions (lb/hr)	Regulation for Current Allowable
Aventine Renewable Energy	Boiler A	5.5 lb/mmBtu	214.141(b)
	Boiler B	5.5 lb/mmBtu	214.141(b)
	Boiler C	5.5 lb/mmBtu	214.141(b)
	Cyclone East controlling First Germ Drying System	66.40	214.301
	Cyclone West controlling First Germ Drying System	66.40	214.301
	Second Germ Drying System	110.69	214.301
	Gluten Dryer 4	7.20	214.301
	Gluten Dryer 9	1,893.18	214.301
	Germ Dryer 1	209.54	214.301
	Germ Dryer 3	274.05	214.301
	Yeast Dryer	8.19	214.301
	Scrubber controlling Steep Acid Tower	10.31	214.301
	Biogas Flare	0.010	
Illinois Power Holdings E.D. Edwards	Units 1 and 2 combined	31,970.23	214.561
	Unit 3	30,320.24	214.561
	Unit 3, if both Units 1 and 2 permanently shut down	30,320.24	214.561
Ingredion Bedford Park	Feed Transport System	242.80	214.301
	Wet Milling: Inside In-Process Tanks	195.04	214.301
	Wet Milling: Molten Sulfur Burner and Absorption System	70.12	214.301
	Wet Milling: Outside In-Process Tanks	26.95	214.301
	Germ Processing Facility Channel 1 System	267.22	214.301
	Germ Processing Facility Channel 2 System	141.48	214.301
	Germ Processing Facility Channel 3 System	141.48	214.301

	Germ Processing Facility Channel 4 System	141.48	214.301
Midwest Generation Joliet	Joliet 9: Unit 6	6,377.37	214.141
	Joliet 29: Unit 7	10,861.14	214.141
	Joliet 29: Unit 8	11,494.74	214.141
Midwest Generation Powerton	Boilers 51, 52 (Unit 5) and 61, 62 (Unit 6) combined	29,635.04	214.141
Midwest Generation Will County	Unit 3	4,876.17	214.141
	Unit 4	9,028.75	214.141
Owens Corning	Preheater Incinerator System 1, including emissions from: Storage Tanks 9, 9A, 10, 10A, 11, 17, 18, 19, 20, 40, 41, 42, and 43; Loading Racks 1, 2, & 9; and Convertors 10 & 11.	214.47	Permit Condition
	Preheater Incinerator System 3, including emissions from: Convertors 8, 9, 12, 13, 14, & 15; and Loading Racks 1, 2, & 9	11.44	Permit Condition
	Regenerative Thermal Oxidizer 3 controlling: Storage Tanks 27, 28, 31, 32, 33, 34, 35, & 36	220.14	Permit Condition
	Regenerative Thermal Oxidizer 4 controlling: Storage Tank 98; Loading Rack PV-1	8.90	Permit Condition
	Coating Operations combined	104	Permit Condition
Oxbow Midwest Calcining	All Calcining Units combined	2,278	MOA

45. Focusing on the reductions in the allowable hourly rates under Subpart AA, calculate the percent reduction from current to proposed allowable SO₂ emission rates (lb/hr) for each of the units listed in Table 3 of the TSD.

Response: The Agency has included the requested information in Table 3-C below.

Table 3-C: Allowable Emission Rates of Affected Sources

Facility Name	Unit Description	Current Allowable Emissions (lb/hr)	Proposed Emission Limit (lb/hr)	Percent Reduction
Aventine Renewable Energy	Boiler A	5.5 lb/mmBtu	0.00	100
	Boiler B	5.5 lb/mmBtu	0.00	100
	Boiler C	5.5 lb/mmBtu	0.00	100
	Cyclone East controlling First Germ Drying System	66.40	0.27	99.5
	Cyclone West controlling First Germ Drying System	66.40	0.37	99.4
	Second Germ Drying System	110.69	0.01	99.99
	Gluten Dryer 4	7.20	3.12	56.7
	Gluten Dryer 9	1,893.18	10.50	99.4
	Germ Dryer 1	209.54	4.98	97.6
	Germ Dryer 3	274.05	4.26	98.4
	Yeast Dryer	8.19	1.50	81.7
	Scrubber controlling Steep Acid Tower	10.31	1.79	82.6
	Biogas Flare	0.010	0.001	90.0
Illinois Power Holdings E.D. Edwards	Units 1 and 2 combined	31,970.23	2,100	93.4
	Unit 3	30,320.24	2,756	90.9
	Unit 3, if both Units 1 and 2 permanently shut down	30,320.24	4,000	86.8
Ingredion Bedford Park	Feed Transport System	242.80	24.38	90.0
	Wet Milling: Inside In-Process Tanks	195.04	107.26	45.0
	Wet Milling: Molten Sulfur Burner and Absorption System	70.12	7.01	90.0
	Wet Milling: Outside In-Process Tanks	26.95	2.69	90.0
	Germ Processing Facility Channel 1 System	267.22	13.36	95.0
	Germ Processing Facility Channel 2 System	141.48	7.07	95.0
	Germ Processing Facility Channel 3 System	141.48	7.07	95.0
	Germ Processing Facility Channel 4 System	141.48	7.07	95.0
Midwest Generation Joliet	Joliet 9: Unit 6	6,377.37	189.82	97.0
	Joliet 29: Unit 7	10,861.14	323.29	97.0
	Joliet 29: Unit 8	11,494.74	342.15	97.0
Midwest Generation Powerton	Boilers 51, 52 (Unit 5) and 61, 62 (Unit 6) combined	29,635.04	3,452	88.4

Midwest Generation Will County	Unit 3	4,876.17	145.14	97.0
	Unit 4	9,028.75	6,520.65	27.8
Owens Corning	Preheater Incinerator System 1, including emissions from: Storage Tanks 9, 9A, 10, 10A, 11, 17, 18, 19, 20, 40, 41, 42, and 43; Loading Racks 1, 2, & 9; and Convertors 10 & 11.	214.47	44.69	79.2
	Preheater Incinerator System 3, including emissions from: Convertors 8, 9, 12, 13, 14, & 15; and Loading Racks 1, 2, & 9	11.44	27.23	-138.0*
	Regenerative Thermal Oxidizer 3 controlling: Storage Tanks 27, 28, 31, 32, 33, 34, 35, & 36	220.14	4.33	98.0
	Regenerative Thermal Oxidizer 4 controlling: Storage Tank 98; Loading Rack PV-1	8.90	6.38	28.3
	Coating Operations combined	104	0.15	99.9
Oxbow Midwest Calcining	All Calcining Units combined	2,278	187	91.8

*Units assigned to the various control devices at the Owens Corning facility have been reconfigured, and so previous allowable emissions may not correspond to the specific units listed. Units controlled by Preheater Incinerator System 3 may have previously been controlled by another listed system, thus explaining what *appears* to be an increase in allowable emissions.

46. Proposed section 214.603(b) provides SO₂ emission limits for E.D. Edwards in terms of lb/hr as 2,100 for Units 1 and 2 and 2,756 for Unit 3. Current section 214.561(c) provides SO₂ emission limits for E.D. Edwards Boiler Nos. 1, 2 and 3, as a group, of 34,613 lb/hr. IEPA lists the “Current Allowable Emissions (lb/hr) for E.D. Edwards as 31,970.23 for Units 1 and 2 and 30,320.24 for Unit 3. TSD at 15. Current section 214.561(c) is not included among the proposed revisions. Explain how the current section 214.561(c) and proposed section 214.603(b) would work together.

Response: Section 214.603(b) is more stringent than Section 214.561(c) and should therefore supersede Section 214.561(c). Section 214.561(c) was based on a variance granted to the previous owner under PCB 99-80, which was then incorporated into Part 214 under Board rule R2002-021 for a Site Specific Air Regulation.

47. IEPA explains that Joliet 6 will cease combusting coal and convert to natural gas or diesel fuel and that “Midwest Generation requested that this exception [for Joliet 6 under Section 225. 296 to install FGD or shutdown] be applied to the Will County 4 unit instead.” SR at 12, TSD at 11. Elaborate further on Midwest Generation’s reasoning for requesting the switch and not installing FGD on the Will County 4 unit.

Response: Midwest Generation is contributing a great deal of SO₂ reductions (as well as reductions in other pollutants) for the area through its overall plan to switch

four units from burning coal to burning primarily natural gas. These changes include a unit that previously held an exception to the FGD requirement. Since Midwest Generation is going far beyond FGD in making these changes, and since the company is expending more resources than anticipated in doing so, Midwest Generation requested that the exception be changed to a different unit.

It should be noted that further controls at this unit are not necessary to reach attainment at this time.

48. IEPA states that under the proposed rules, Midwest Generation's "Will County 4 will continue to be subject to the limitations in the CPS [Combined Pollutant Standard] (or the conditions imposed by any variance to which the unit is subject) . . ." IEPA Response at 15 (Response to Board Question 27(b)). The Board granted Midwest Generation a variance from Section 225.295(b) of the CPS emission standards for SO₂ for 2015 and 2016, limiting the system-wide average annual SO₂ emission rate to 0.38 lb/mmBtu and the system-wide mass emissions of SO₂ to no more than 39,000 tons in 2015 and 37,000 tons in 2016. Midwest Generation, LLC v IEPA, PCB 13-24, slip op. at 81-85 (April 4, 2013). Is IEPA stating that Will County 4, as part of the CPS group, will continue to be subject to average annual SO₂ emission rates in 35 Ill. Adm. Code 225.295(b) starting January 2017?

Response: Yes, Will County 4 will continue to be subject to average annual SO₂ emission rates in 35 Ill. Adm. Code 225.295(b) starting in January 2017, since this unit will continue to burn coal and will be combined with the other coal-fired units under the CPS group.

49. IEPA estimates that SO₂ emissions from Will County 4 in 2019 will be 1,649 tons with or without the proposed rules. Technical Support Document (TSD) at 17. Current regulations require that Will County 4 will be shut down or controlled with flue gas desulfurization (FGD) equipment on or before December 31, 2018. 35 Ill. Adm. Code 225.296(b). As to Table 4 (TSD at 17), explain why, for Will County 4, SO₂ emissions are estimated at 1,649 tons under the column "Proposed Amendments 2019" where Will County would be exempt from the requirement at Section 225.296(b) and the column "CPS 2019 without Amendments" where Will County 4 would still be subject to Section 225.296(b).

Response: It would be difficult to determine the precise emission rate at Will County 4 without the Agency's proposed amendments. The Agency believes it unlikely that the unit would opt to shut down under the terms of Part 225.296(b), and therefore the unit's emissions would be regulated by the fleet-wide average 0.11 lb/mmBtu emission rate in 2019, regardless of whether the unit installs FGD equipment. So, the table reflects all of the currently operating units meeting the 0.11 lb/mmBtu emission rate, at the baseline heat input levels, to make an estimate of the 2019 emissions without proposed amendments.

50. Proposed Section 214.603(f) provides that Will County 3 and 4 will be subject to SO₂ limits of 145.14 and 6,520.65 lb/hr, respectively. The TSD explains these are the “maximum allowable hourly SO₂ emissions.” TSD at 14. Explain how the modeling demonstrates that these limits provide assurance that the 2010 one-hour SO₂ National Ambient Air Quality Standards (NAAQS) will be attained and maintained at the fence line.

Response: The modeling uses the maximum allowable hourly SO₂ emissions as the most conservative means of ensuring attainment. In this way, the model demonstrates that the 1-hour SO₂ NAAQS will be attained and maintained not only at the fenceline, but throughout the entire nonattainment area.

Specifically, for a given fenceline receptor, the fourth-highest modeled concentration for each year of meteorological data processed, when averaged, yielded a concentration that was at or below the 1-hour SO₂ design value of 196.32 µg/m³. The highest concentration at the receptors at Will County’s fenceline was approximately 110.5 µg/m³, well below the NAAQS limit.

51. In response to Board Question 18, IEPA states that compliance with an hourly limit is difficult for Midwest Generation’s Powerton facility because of “variation in emissions.” IEPA Response at 10. IEPA cites to reasons for such difficulties as explained in USEPA 2014 SO₂ SIP Guidance¹, but IEPA does not specifically identify which reasons apply to Powerton. IEPA Response at 10-11. In discussing longer averaging times for SO₂ emission limits, USEPA 2014 SO₂ SIP Guidance cites to “sources that have highly variable hourly emissions due to such factors as variable sulfur content in fuel, variable operating load, etc.” USEPA’s 2014 Guidance at 23.

- a. Submit a copy of USEPA 2014 SO₂ SIP Guidance for the record.

Response: The Agency attaches the Guidance as Exhibit A. It should be noted that Sections V(D)(2)(a) and (b), as well as Appendices B, C, and D, are relevant to the averaging discussion.

- b. Explain the circumstances when USEPA allows longer averaging periods.

Response: The Guidance does not specifically prescribe when longer averaging periods are allowed, but speaks of the reasoning behind industry commenters requesting that USEPA consider longer averaging times. These reasons include variability in sulfur content of fuel, variability in operating load, and use of pollution control equipment. Industry representatives also commented on the conservative nature of the modeling methodology, and the reasons why a longer

¹ USEPA. Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions. April 23, 2014.(USEPA 2014 SO₂ SIP Guidance).

<http://www.epa.gov/oaqps001/sulfurdioxide/pdfs/20140423guidance.pdf>

TSD at 9, 32, IEPA Response at 10-11

averaging time could be expected to be protective of the NAAQS. Ultimately, USEPA agreed in its Guidance that longer averaging times are acceptable if justified.

- c. Explain why compliance with an hourly limit is difficult for Powerton and whether the reasons are consistent with circumstances for longer averaging periods cited in USEPA 2014 SO₂ SIP Guidance.

Response: The Powerton units burn fuel with varying sulfur content, and will be using pollution control equipment to meet the proposed rule amendments when effective in 2017. The Agency understands that dry sorbent injection systems (or dry scrubbers) will be installed. This type of equipment exhibited the greatest variability in emissions in USEPA's Guidance. Additional uncertainty regarding the variability in emissions from these units arises because the installation of all of the control equipment is not yet completed.

- d. Explain how the Powerton units differ from other units covered by proposed Section 214.603 not subject to a 30-day averaging period.

Response: The greatest difference is the dry scrubber control equipment that is expected to be used to comply with the proposed amendments, and the fact that it is not currently in use.

- e. At the July 8, 2015 hearing, a comment suggested that USEPA requires that longer term averaging limits be supported with additional justification. July 8, 2015 Hearing Transcript (Tr.) at 49. USEPA 2014 SO₂ SIP Guidance states, “[A]ir agencies that use longer term average limits should provide additional justification . . .”, and lists two factors. USEPA 2014 SO₂ SIP Guidance at 27-28. Address the factors USEPA considers for state agencies providing additional justification for longer term averaging limits.

Response: The factors referenced above are as follows:

“(1) whether the numerical value of the mass emissions limit averaged over a longer time is comparably stringent to a 1-hour limit at the critical emission value; and

(2) whether the longer term average limit, potentially in combination with other limits, can be expected to constrain emissions sufficiently so that any occasions of emissions above the critical emission value will be limited in frequency and magnitude and, if they occur, would not be expected to result in NAAQS violations.”

The first factor is addressed by following the Guidance to determine an appropriate equivalent limit for a longer averaging time. The limit proposed by the Agency, and the methodology that was used to determine it, have been submitted to the USEPA

for review, and the USEPA approved the choices that the Agency made in its determination.

The second factor is also addressed by issues covered by the Guidance. First, as stated above, the modeling is sufficiently conservative because it is unlikely that a short period of higher emissions would coincide with all other modeled units operating at their maximum allowable emission rates. Also, if that scenario were to occur, it is unlikely that that moment would also coincide with a period of meteorology that is conducive to an exceedance of the NAAQS. Further, because the unit will be required to meet an average emission rate that is 42% lower than the modeled emission rate, and because the unit will require pollution control equipment to achieve that average rate, all these factors would also need to coincide with a malfunction of the pollution control equipment. For these reasons, the Agency believes that the longer averaging time for the Powerton units is still protective of the NAAQS.

- f. Discuss the considerations that resulted in choosing the 30-day averaging period over a shorter alternative averaging period, such as 24 hours. Indicate what other options were considered.

Response: A 30-day averaging period was chosen in consultation with Midwest Generation in consideration of their plans to install dry sorbent injection as a control technology at the Powerton units, and in consideration that the variability of the emissions at the source after the installation are yet unknown. Midwest Generation requested that the Agency consider a 30-day average for the units and provided the proxy data sets that were subsequently approved by USEPA. Because this option and the justification were determined to be acceptable and appropriate by USEPA staff, and because the lower emission limit would result in lower overall allowable emissions from the units, other averaging periods were not calculated.

- g. Provide the analysis that resulted in choosing the 30-day averaging period. Describe what other options were considered.

Response: See response to Question 51(f) above.

52. IEPA states Powerton “is scheduled to install a trona injection dry FGD system for the control of SO₂ emissions before 2017.” TSD at 9. Will such FGD equipment installed prior to 2017 change the factors that currently make compliance with a 1-hour limitation difficult without FGD?

Response: No. The installation of the FGD equipment has already been anticipated in determining that the Powerton facility should be allowed to use a 30-day average.

53. Proposed Section 214.603(e) sets an emission limit of 3,452 lb/hr for Powerton 5 and 6 combined. IEPA explains that it relied on emission data submitted by Midwest Generation from the Potomac River Generating Station to develop this limit. TSD at 9.

IEPA used this data because Potomac River uses FGD equipment and Powerton will install such equipment before 2017 and because the Potomac River units are similar to the Powerton units. *Id.*

- a. It appears that Potomac River had three 110 MW generating units dating from the 1950s, whereas Powerton has two 890 MW units dating from 1972 and 1974. Also, Potomac River was closed in 2012, after using FGD equipment for only 3 years. Confirm whether this information is correct. Describe the units and control equipment at Potomac River during the 42 months used for emissions data. Compare the Potomac River facility to the Powerton facility as relevant to emission data.

Response: The Board's information regarding the Potomac River units appears to be correct. The similarity in the units in question is in regard to the fuel used and the pollution control equipment to be used. The Potomac River units that were selected as a proxy were baseload units operating using trona injection systems similar to those that will be installed at the Powerton units.

- b. Explain why IEPA believes that the emission data from Potomac River is an "appropriate proxy" for emissions from the Powerton units.

Response: The Agency believes that the data set used is an appropriate proxy because of the similarities described above, the Guidance regarding using such a proxy data set, and the evaluation by the USEPA of the Agency's use of the proxy data. The Guidance suggests the following:

"States that wish to set emission limits with averaging times longer than 1 hour are advised to consult with their respective EPA Regional Office to assure that the adjustments to the emission limits are appropriately justified and the frequency and magnitude of allowable occurrences of elevated emissions are sufficiently constrained before formally submitting NAA SIPs. The justification for use of the longer term average limits and the justification for the established limit will then provide the formal basis for the EPA's case-by-case review of whether the plan adequately provides for attainment of the standard."

The Agency followed this guidance and consulted with USEPA. USEPA responded that the Agency's calculations were fully acceptable, and that the proxy data set was reasonable.

54. IEPA states the SO₂ hourly emission limit for Powerton 5 and 6 without a 30-day averaging period would be 6,000 lb/hr based on the modeling to demonstrate attainment. TSD at 9, Table 7. IEPA explains how it applied Potomac River data to the 6,000 lb/hr critical emission value to calculate the 3,452 lb/hr limit by using a ratio based on Potomac River 1-hour and 30-day average emission values. TSD at 9-10. IEPA states that Powerton "will have to maintain an emissions average that is well below the hourly

emissions that were modeled to determine that this rulemaking would result in the area attaining the SO₂ standard.” IEPA Response at 11. USEPA 2014 SO₂ SIP Guidance states, “any emission limits based on averaging periods longer than 1 hour should be designed to have comparable stringency to a 1-hour average limit at the critical emission value.” USEPA 2014 SO₂ SIP Guidance at 24.

- a. Clarify if the 6,000 lb/hr critical emission value at Powerton was modeled and demonstrated it would provide assurance that the NAAQS will be attained and maintained at the fence line.

Response: Yes, the NAAQS will be attained and maintained not only at the fenceline, but throughout the nonattainment area. The highest concentration at the receptors at Powerton’s fenceline was approximately 127 µg/m³, well below the 1-hour SO₂ NAAQS limit of 196.32 µg/m³.

- b. Clarify how the use of the 30-day 3,452 lb/hr limit is designed to have comparable stringency to a 1-hour modeled critical emission value of 6,000 lb/hr,, and how it compensates for occasions when emissions exceed the critical emission value.

Response: As explained above in response to Question 51, a number of worst-case assumptions would need to coincide for an exceedance to result in a violation of the NAAQS. The significantly lower limit for the longer averaging period will require pollution control equipment to comply. This adds an additional factor reducing the likelihood of a NAAQS violation. This limit will also result in a reduction in overall emissions from the units. Further, the proposed limit was “adjusted downward” to ensure comparable stringency in accordance with USEPA’s Guidance.

- c. Clarify if periods of hourly emissions could occur above the critical emission value and if those occurrences at the source would be rare.

Response: The occurrence of emissions above the critical emission value should be rare given that the units will be using pollution control equipment to maintain an average emission rate below 3,452 lb/hr.

- d. Clarify if such periods when hourly emissions occur above the critical emission value would be unlikely to have a significant impact on air quality since they would be unlikely to occur repeatedly at times when the meteorology is conducive for high ambient concentrations of SO₂.

Response: Yes, such periods would be unlikely to have a significant impact on air quality since they would be unlikely to occur repeatedly at times when the meteorology is conducive for high ambient concentrations of SO₂. To help quantify just how unlikely this would be, the Agency undertook an analysis of modeled concentrations and associated meteorological data for the Hollis Township receptor having the second highest overall design value (195.6456 ug/m³). Based upon an

upper limit windspeed of 3.12 meters per second (~7 miles per hour), approximately 3% of the hourly meteorological data would represent meteorology “conducive for high ambient concentrations of SO₂.” When emissions data for the stack servicing the Powerton boilers is evaluated with projected SO₂ emission controls in place, it is highly unlikely (far less than 1% chance) that there would be a significant exceedance of the critical value coinciding with meteorological conditions conducive for high ambient SO₂ concentrations.

Furthermore, these periods are unlikely to occur when other sources in the area are also emitting the maximum amount of SO₂ at the same time. The model assumes that every source is emitting SO₂ at its maximum allowable rate at all times; this is clearly not the case in actuality, and thus provides a large buffer between what is theoretically possible and what is actually emitted into the air.

- e. Clarify if the 30-day average limit will provide sufficient constraint on the frequency and magnitude of occurrences of elevated emissions described above such that the limit would reasonably provide for attainment.

Response: Yes, the 30-day average limit will provide sufficient constraint on the frequency and magnitude of occurrences of elevated emissions, such that the limit reasonably provides for attainment. USEPA made such a determination prior to providing averaging as an option for states and sources.

- f. Does IEPA anticipate that the 1-hour SO₂ NAAQS of 75 ppb (35 Ill. Adm. Code 243.122(c)) will be exceeded in the vicinity of the Powerton facility under the proposed rules? If so, how often?

Response: No, the Illinois EPA does not anticipate that the 1-hour SO₂ NAAQS will be exceeded in the vicinity of the Powerton facility – or anywhere else in the nonattainment areas – under the proposed rules. The Agency ensured its proposed limitations were protective of the NAAQS prior to filing with the Board.

- g. Clarify if an hour where emissions are above the critical value means that a NAAQS exceedance is occurring in that hour given the likeliness of the meteorology being conducive for high ambient concentrations of SO₂.

Response: No, a period where emissions from the Powerton units theoretically exceed the critical value does not mean that a NAAQS exceedance would occur. As noted above, it would take an exceedingly unlikely combination of a significant exceedance of the critical value, specific meteorological conditions, and maximum potential SO₂ emissions from other contributing sources in the area – all at the same time.

- h. Clarify whether the 30-day averaging for Powerton will still provide assurance that the NAAQS will be attained and maintained.

Response: Yes, the 30-day averaging for Powerton provides assurance that the NAAQS will be attained and maintained. This method has been approved by USEPA for just such a purpose.

55. IEPA explains, “[t]he SIP submittal [to USEPA] will include detailed discussions of the methods used in modeling simulations for the two Illinois [non-attainment areas]. For the purposes of this rulemaking, an overview of the modeling methods is included in this section.” TSD at 24. IEPA goes on to state, “complete modeling input files were provided to affected sources and interest groups that requested them.” TSD at 27. During the July 8, 2015 hearing, a comment referred to “Column O of the Pekin spreadsheet.” Tr. at 51. Submit the modeling input files that IEPA provided to affected sources and interest groups into the rulemaking record.

Response: Due to the size of the modeling input files, the Agency has provided such files to the Board on an external hard drive.

56. IEPA states that the modeling approach for attainment demonstration “ensures that the NAAQS will be attained at all points within the modeling domain, with an appropriate margin of safety Model output was generated for all nonattainment area receptors.” TSD at 24-25.

- a. Clarify if “points” and “receptors” are the same.

Response: Yes, the terms are synonymous with respect to the nonattainment areas. “Point” is simply a non-technical manner of saying “receptor.”

- b. Indicate the location of the modeling points/receptors near the Powerton and Will County facilities.

Response: The Agency attaches images indicating the location of the modeling receptors near the Powerton and Will County facilities as Exhibits B and C, respectively.

- c. Describe the “appropriate margin of safety” (TSD at 24-25).

Response: There is an inherent margin of safety built into the 1-hour SO₂ standard by USEPA. Additionally, the Agency included a margin of safety in its modeling approach by including intermittent sources, which USEPA’s modeling guidance excluded, and by including small sources, whether or not they cause a “significant concentration gradient” under federal regulations governing modeling.

57. Throughout the TSD, IEPA uses allowable emissions for modeling analysis. For example, IEPA states “all sources were initially modeled at the allowable limit specified by rule or by construction/operating permit, whichever was more restrictive.” TSD at 28, 30. Later modeling runs appear to have incorporated enforceable restrictions proposed in

this rulemaking. Under the modeling methodology, IEPA explains, “[a] culpability analysis was conducted for these violating receptors to determine which sources in the modeling domain were primary contributors to the modeled exceedances.” TSD at 26.

- a. Explain IEPA’s legal basis for using allowable emissions in attainment modeling for this rulemaking rather than actual emissions.

Response: Section 110(a)(2) of the Clean Air Act requires that each state’s implementation plan provide for the performance of such air quality modeling as USEPA prescribes “for the purpose of predicting the effect on ambient air quality of any emissions of any air pollutant” that is subject to a NAAQS. 42 U.S.C. § 7410(a)(2)(K). Federal regulations in turn provide, “In stationary point source applications for compliance with short term ambient standards, SIP control strategies should be tested using the emission input shown on Table 8-1,” which requires the use of maximum allowable emissions. 40 CFR 51.Appendix W.Table 8-1.

- b. Explain IEPA’s statement that it also considered “emission reductions linked . . . to existing market conditions.” TSD at 28.

Response: The Agency’s statement was in reference to the market availability of 15 ppm distillate fuel oil and 1000 ppm residual fuel oil.

- c. Clarify whether using actual emissions in the culpability analysis would have altered the reductions required by various sources to ensure attainment and maintenance of the 1-hour SO₂ NAAQS. If so, explain why IEPA did not use this approach.

Response: It is possible that using actual emissions in the culpability analysis would have altered the reductions required by various sources, but the likelihood of such an outcome is unknown. The Agency did not use actual emissions, as doing so does not adhere to federal regulations and modeling guidance. With that being said, even with the use of allowable emissions as the starting point, emissions for many sources were ultimately reduced to emissions that were closer to actual. During the culpability analysis, the Agency made great efforts to ensure that reductions in potential emissions that did not require the installation of add-on controls were the first reductions analyzed. This was done using information within the Agency’s emissions database and through discussions with affected sources.

58. IEPA proposes that compliance with the proposed fuel sulfur content limits will be demonstrated with records such as records from a fuel supplier (35 Ill. Adm. Code 214.121(b)(2)(C)(i)). During the July 8, 2015 hearing, IEPA stated, “[t]he recordkeeping requirement begins January 1, 2107, so it’s not clear to me that should an inspector visit such a source, they would even necessarily look at the older [purchasing records], but if it [fuel] were new, then the inspector would look at that and, you know, base their

compliance determination on the available records.” July 8, 2015 Hearing Transcript at 16.

- a. Assuming that a regulated source has maintained such records of purchasing compliant fuel, does IEPA recommend any other steps for a regulated source to demonstrate compliance?

Response: No.

- b. If a regulated source previously placed fuel exceeding the proposed sulfur content limit in a storage tank, but switches to purchasing ultra-low sulfur diesel fuel prior to January 1, 2017, does IEPA recommend any steps to demonstrate compliance in addition to maintaining records from the fuel supplier? Is the source required to empty the tank? Is the source required to determine the sulfur content of the combined fuel in the tank for purposes of demonstrating compliance with proposed Section 214.121(b)(2)(A) and (B)?

Response: The Agency is unaware of any sources to which this hypothetical situation applies, other than those that are listed in the rule as having been given exemptions to the 15 ppm limit; the Agency believes that noncompliant fuel has not been easily available in Illinois for quite a while. If such a source does exist, and it has been obtaining fuel that does not comply with the 15 ppm limit, it would be up to the source to determine its best method for compliance.

- c. Clarify whether the compliance determination under proposed Section 214.121(b)(2)(C)(i) would be based solely on the fuel purchasing records dated January 1, 2017 or later.

Response: On and after January 1, 2017, the Agency expects sources to maintain records that demonstrate compliance with the proposed fuel sulfur content limitations.

- d. The current regulations at Section 214.161(a) tie the burning of liquid fuel to the emission of sulfur dioxide in terms of kg SO₂/MW-hr or lbs/mmBtu. The proposed revisions at Sections 214.161(b) and (c) tie the use or purchase of liquid fuel to the sulfur content of the fuel in terms of ppm. Explain if there are comparable values in lbs/mmBtu for the values provided in ppm: 15, 500, and 1000 ppm.

Response: Yes, and these values coincidentally are easily converted by a factor of 10,000. So, 15 ppm corresponds to an emission rate of 0.0015 lb/mmBtu, 500 ppm corresponds to a value of 0.05 lb/mmBtu, and 1000 ppm corresponds to a value of 0.1 lb/mmBtu.

59. In the TSD, IEPA stated that coal fired units in the CPS group will still be required to meet the fleet-wide average limit for SO₂ in Section 225.295(b) without the units

converting to natural gas being used in the averaging calculation to demonstrate compliance with the limit. TSD at 11. The proposed amendment to 225.295(b) sets forth that CPS group for purpose of subsection (b) includes only those specified Electric Generating Units (EGUs) that combust coal.

a. Explain IEPA's reason for excluding these units.

Response: The units converting to natural gas will be emitting essentially no SO₂. As such, it does not make sense to average them with the coal-fired units, as it would lead to the coal-fired units possibly being able to emit greater amounts of SO₂ and offsetting the benefits of the natural gas units.

b. Section 225.295(d), which includes an equation for calculating the CPS group average annual SO₂ emission rate uses a term for the "actual annual SO₂ lbs of each EGU in the CPS group" without limiting the CPS group to those that combust coal. Would it be acceptable to IEPA to include a cross-reference to Section 225.295(b) as follows:

225.295(b) Emission Standards for SO₂. Beginning in calendar year 2013 and continuing in each calendar year thereafter, the CPS group must comply with the applicable CPS group average annual SO₂ emissions rate listed as follows. For purposes of this subsection (b) and (d) only, the CPS group includes only those specified EGUs that combust coal:

SO_{2i} = actual annual SO₂ lbstøns of each EGU in the CPS group as set forth in subsection (b)

Response: The Agency agrees that the Board's changes above clarify that the "CPS group" includes only those specified EGUs that combust coal for purposes of subsection (b), and for purposes of the equation in subsection (d).

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: /s/ Dana Vetterhoffer
Assistant Counsel

DATED: July 23, 2015
1021 N. Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276
(217) 782-5544

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
) R15-21
AMENDMENTS TO 35 ILL. ADM. CODE) (Rulemaking-Air)
PART 214, SULFUR LIMITATIONS, PART)
217, NITROGEN OXIDES EMISSIONS,)
AND PART 225, CONTROL OF EMISSIONS)
FROM LARGE COMBUSTION SOURCES)

CERTIFICATE OF SERVICE

I, the undersigned, an attorney, affirm that I have served the attached Illinois Environmental Protection Agency's Responses to the Board's Second Set of Pre-filed Questions upon the following person(s) by e-mailing it to the e-mail address(es) indicated below:

Daniel Robertson, Hearing Officer
Illinois Pollution Control Board
daniel.robertson@illinois.gov

I affirm that my e-mail address is dana.vetterhoffer@illinois.gov; the number of pages in the e-mail transmission is 141; and the e-mail transmission took place today before 5:00 p.m.

I also affirm that I am mailing the attached by first-class mail from Springfield, Illinois, with sufficient postage affixed, to the following persons:

SEE ATTACHED SERVICE LIST

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: /s/ Dana Vetterhoffer
Assistant Counsel

DATED: July 23, 2015

1021 N. Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276
(217) 782-5544

Service List R15-21

Office of Legal Services
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702

Faith Bugel
Sierra Club
1004 Mohawk
Wilmette, IL 60091

Matthew Dunn, Chief
Environmental Enforcement/Asbestos
Litigation Division
Office of the Illinois Attorney General
500 South Second Street
Springfield, IL 62706

Greg Wannier
Kristin Henry
Sierra Club
85 Second Street, Second Floor
San Francisco, CA 94105

Angad Nagra
Assistant Attorney General
Environmental Bureau
Office of the Illinois Attorney General
69 West Washington Street, Suite 1800
Chicago, IL 60602

Stephen J. Bonebrake
Schiff Hardin, LLP
233 South Wacker Drive, Suite 6600
Chicago, IL 60606-6473

Andrew N. Sawula
Schiff Hardin, LLP
One Westminster Place
Lake Forest, IL 60045

Abby L. Allgire
Illinois Environmental Regulatory Group
215 East Adams Street
Springfield, IL 62701

Keith I. Harley
Chicago Legal Clinic, Inc.
211 West Wacker Drive, Suite 750
Chicago, IL 60606