Missouri
Department of
Natural Resources

April 7, 2015

Response to Comment(s)
On Rule in Development

Rule number: 10 CSR 10-6.261

Rule Title: Control of Sulfur Dioxide Emissions

Type of rulemaking: New Rule

Response to Comment(s) from Boeing.

Comment: Please consider the following Boeing comments regarding draft rule 6.261 Control of Sulfur Dioxide Emissions and RIR:

In the present rule 6.260, units that combust natural gas or LP gas exclusively are not subject to the rule. This is entirely appropriate, since combustion of natural gas or LP gas will always produce sulfur emissions lower than any of the sulfur emission limits in rule 6.260.

The draft revised rule at (1)(A) abandons the complete exemption of natural gas/LP gas units, and instead imposes "reporting and recordkeeping and test methods requirements in section (4) and (5) of this rule, excluding paragraph (4)(A)1, as well as the requirement to use natural gas or liquefied petroleum gas." [redundant]. As in the existing 6.260 rule, natural gas/LP gas inherently meets all of the sulfur limits given in Section (3)(A) and (3)(B). As drafted, Section (4)(C) is imposed on users of natural gas/LP gas, and requires "fuel supplier certification information to certify the fuel sulfur content by weight or parts per million sulfur of all fuel deliveries." The documentation list at (4)(C)1-5 appears to be based on an assumption the fuel being certified is coal or fuel oil, not natural gas/LP gas, but (4)(C) becomes a requirement because natural gas/LP users are "sources using fuel delivery records for compliance" [natural gas or LP purchase documents].

To avoid confusion and prevent owners of natural gas/LP gas combustion units from gathering irrelevant information and retaining it for 5 years, we suggest the following rewrite of Section (1)(A):

(1) Applicability. This rule applies to any source that emits sulfur dioxide (SO_2), except—(A) Units fueled exclusively with natural gas (as defined in 40 CFR 72.2) or liquefied petroleum gas as defined by ASTM International or any combination of these fuels as of December 31, 2016, including those units identified in Table 1 as such.

Response: The Missouri Department of Natural Resources' Air Pollution Control Program (Air Program) originally intended to require sources to demonstrate they are meeting the exception criteria using reporting and recordkeeping. However, after considering the comment we've determined this can be accomplished using language that sources must furnish the director

information to confirm they meet the exception criteria. We have changed section (1) and subsection (1)(A) as a result of this comment.

Response to Comment(s) from Ameren.

Comment:
1) Ameren commends the Air Program for taking the initiative to update Restriction of Emission of Sulfur Compounds (10 CSR 10-6.260) to be in alignment with current regulatory requirements. The suggested changes will make compliance with the Air Program Sulfur Dioxide (SO_2) (10 CSR 10-6.261) emission requirements more understandable and easier to implement. In addition, the revised SO_2 emission limits for the facilities listed in Table 1 of the proposed rule will help assure compliance with the revised SO_2 national ambient air quality standard.

Response: The Air Program's intent in combining the existing sulfur compound rule 10 CSR 10-6.260 with the proposed requirements for attaining the revised SO_2 national ambient air quality standard (NAAQS) is to streamline the regulations and reduce confusion. The proposed consolidated rule will have all SO_2 requirements in one place. This will reduce confusion for affected SO_2 sources, particularly over time as more sources are impacted by future implementation phases of the 1-hour SO_2 NAAQS.

2) The Ameren Missouri electrical generation facilities should be named as follows: Labadie Energy Center, Meramec Energy Center and Rush Island Energy Center.

Response: The Air Program will change the names of the Ameren facilities listed in the rule to match Ameren's names as described in the comment.

3) On page 2 of the "Regulatory Impact Report" the Air Program states "In conjunctions with this rulemaking, the Air Program is pursuing agreements with Ameren Missouri to install and operate new ambient SO_2 monitors and meteorological stations at their Rush Island and Labadie power plants beginning in 2015." While Ameren is committed to installing SO_2 ambient monitors and meteorological stations around the Labadie Energy Center, these monitors are not intended to aide in the determination of air quality in the Jefferson County SO_2 nonattainment area. Ameren's sole purpose for installing these monitors is to meet the monitoring requirements in US EPA's proposed "Data Requirements Rule". This proposed rule allows characterization of SO_2 air quality either by the use of air quality modeling (AERMOD) or installation of an ambient SO_2 monitoring system. Ameren has chosen to install an ambient air quality monitoring system to better characterize air quality with respect to SO_2 around the Labadie Energy Center. Ameren believes that the data collected will improve the characterization of SO_2 air quality over that of sole reliance on air quality modeling due to the vast uncertainty associated with modeling. Ameren is pursuing a formal agreement for ambient monitoring for the Rush Island Energy Center; however this agreement will not include the ambient SO_2 monitoring system for the Labadie Energy Center.

Response: This comment clarifies that the new SO_2 ambient monitors and meteorological stations around Ameren's Labadie Energy Center are intended to characterize actual air quality conditions in the vicinity of that plant. This data will help support air quality analyses of Labadie in future implementation phases of the 1-hour SO_2 NAAQS. A federal Consent Decree has been finalized that establishes different requirements for SO_2 sources whose emissions are over a certain threshold. Labadie Energy Center is such a source and subject to the designation process established in the federal SO_2 consent decree, which will be completed by EPA prior to the designation rounds in EPA's proposed data requirements rule.

4) Ameren concurs with the Air Program's summary on page 6 of the "Regulatory Impact Report" related to the usefulness of the ambient SO_2 air monitoring data over that of air quality modeling. Unless a good quality data set with representative SO_2 measurements and meteorological information is available, air quality modeling simulations are generally inaccurate and produce higher than actual air quality SO_2 levels. Any future emission limitations should be on solid defensible air quality characterizations. Appropriate and accurate ambient air quality monitoring for SO_2 is the best and most reliable indication of actual air quality.

Response: The collection of on-site meteorological and ambient SO_2 data at Ameren's Rush Island Energy Center will support a more representative dispersion modeling evaluation of this plant.

5) Based on 2014 SO_2 data from EPA's "Air Data" website for the Herculaneum, Mott Street SO_2 monitor the maximum concentration was 22 ppb with a 99 percentile of 18 ppb compared to the SO_2 standard of 75 ppb. In 2013 the maximum was 253 ppb with a 99 percentile of 143 ppb. It is evident that with the closing of the nearby lead processing facility in December of 2013 that the levels have dropped to less than 25% of the standard; just above background levels. Based on the 2014 SO_2 monitored data it is relatively clear that the exceedances of the SO_2 standard have been resolved and Ameren encourages the Air Program to pursue the Clean Data Policy.

Response: The Mott Street monitor shows a decrease in measured SO_2 levels as a result of the lead smelting facility closure. The Air Program intends to pursue the Clean Data Policy once the data is complete.

Response to Comment(s) from U.S. Environmental Protection Agency Region 7.

Comment:

1) Replacement of 500 and 2000 ppm SO_2 standards

As we understand the proposed rule, Missouri proposes to remove the 500 and 2000 parts per million (ppm) standards (currently required in 10 CSR 10 – 6.260) on the premise that use of ultra-low sulfur fleet fuels (e.g. Ultra-low-sulfur diesel or ULSD) produces SO_2 emissions below the 500 and 2,000 ppm levels. While Missouri's demonstration confirms that use of liquid fuels with a sulfur content less than 0.5% are protective of these standards, there is no requirement in the Missouri rules to limit the sulfur content of such fuels to less than 0.5%.

Since the 500 and 2,000 ppm standards apply to all equipment, and not only indirect heating and existing lead smelting and refining sources, it is possible that combustion sources such as oil fired turbines and internal combustion (IC) engines, of which there are many in the state, could use higher sulfur oils and emit higher amounts of SO_2 than they have in the past.

Missouri states on page 7 of the TSD that emission limitations historically reserved for indirect heating equipment would now apply to sources using higher levels of sulfur, including the 2.3 pound per one million British thermal units (lb/mmBtu) SO_2 emission limitation in the St. Louis area and 8.0 lb/mmBtu SO_2 limitation in the outstate area.

However, as the table below illustrates, new units emitting at these levels would have

stack emissions between 2.5 and 9 times higher (e.g. 8.0 lb/mmBtu – 4,500 ppm), on a ppm basis, than the associated 500 ppm limit which Missouri proposes to remove.

Further, any existing source using fuel with a sulfur content greater than 3.4% would emit above the current 2,000 ppm limit. This raises questions about the suitability of removing the existing ppm standards.

Stack Emissions

Sulfur in Fuel		Residual Oil		Distillate Oil	
%S	ppm S	# SO_2/mmBtu	ppm SO_2	# SO_2/mmBtu	ppm SO_2
0.0015	15	0.002	0.9	0.002	0.9
0.015	150	0.016	8.8	0.015	8.5
0.050	500	0.052	29.4	0.051	28.4
0.5	5,000	0.523	293.8	0.505	283.7
1.0	10,000	1.047	587.6	1.011	567.4
2.0	20,000	2.093	1,175.2	2.021	1,134.8
2.2	21,975	2.300	1,291.3	2.221	1,246.9
3.0	30,000	3.140	1,762.8	3.032	1,702.2
3.4	34,036	3.562	2,000.0	3.440	1,931.2
4.0	40,000	4.187	2,350.5	4.043	2,269.6
4.5	45,000	4.710	2,644.3	4.548	2,553.3
5.0	50,000	5.233	2,938.1	5.053	2,837.0
5.5	55,000	5.757	3,231.9	5.559	3,120.7
6.0	6-0,000	6.280	3,525.7	6.064	3,404.4
6.5	65,000	6.803	3,819.5	6.569	3,688.1
7.0	70,000	7.327	4,113.3	7.075	3,971.9
7.5	75,000	7.850	4,407.1	7.580	4,255.6
7.6	76,433	8.000	4,491.3	7.725	4,336.9

Based on AP-42 and the conversion methodologies in Reference Method 19, the table describes the relationship between the sulfur in fuel and SO_2 emissions in the stack from combustion equipment (e.g. boiler, IC engine, and turbine) burning residual and distillate oils. (Assumptions 3 % 0[2])

The TSD further assumes that all stationary sources, as well as fleet vehicles, will burn ultra-low sulfur fuels because of their widespread availability.

While ULSD may be used in practice, nothing in the current rules prevent stationary sources from using higher sulfur fuels, other than the 500 and 2,000 ppm limits in the current Missouri rules. Removal of these provisions removes limits for sulfur in fuels that are fired in regulated combustion sources, and could result in increased emissions of SO_2. For example, heating oils, while trending towards ultra-low sulfur content in recent years, have traditionally contained significant amounts of sulfur. The revised rule would continue to allow use of these fuels, unless the fuel sulfur content is otherwise restricted.

Many states in the Northeast have recognized the benefits of switching to lower-sulfur oils and are undertaking rulemaking to tighten their rules. Platts[1] notes that states like NY, RI, PA and ME have, or will, tighten their rules to require the use of ULSD in the future.

Information on DOE-EIA's website[2] shows that higher sulfur fuel oils continue to be sold in the US. Even though volumes have declined substantially since 1983 and not much of this oil is burned in Missouri, 3-4 million gallons are still burned every month in the US, indicating that such fuels continue to exist.

The EPA recommends that if Missouri intends that stationary sources use ULSD-like fuels, then the proposed rule should clearly specify the required use of such ultra-low sulfur fuels. Conversely, if Missouri opts not to require ULSD-like fuels, the EPA recommends that Missouri retain the existing 500 and 2,000 ppm limits for SO_2 for units other than indirect heating and lead smelting and refining.

Response: The Air Program originally intended to remove the 500 and 2,000 ppmv SO_2 concentration limits as we understood them to not be part of the state implementation plan (SIP). The origin of these concentration limits is uncertain and pre-dates the Clean Air Act. Because today's fuels have such low sulfur content compared to fuels used when these limits originated, these concentration limits do not serve to directly limit any sources' SO_2 emissions to our knowledge. However, we are now leaving those limits in the proposed rule because EPA maintains they are necessary as a backstop in the event there are sources burning liquid fuels with a higher sulfur content than required by 40 CFR 80, Subpart I. We will convert the concentration limits to the more recognizable units of parts per million sulfur to make compliance determinations more clear and straightforward. Since this change merely consists of a unit conversion, it does not alter the limit in any way. Units of ppm by weight is a more common form of describing the fuel sulfur content and is consistent with how sulfur content is listed on bills of lading. A bill of lading is one method to demonstrate compliance with the regulation. These limits apply to all sources not considered to be indirect heating sources or listed in Table I or II of the rule.

2) **Removing distinction between indirect and "direct" heating equipment**

On pages 3-4 of the TSD, Missouri explains the distinction between emissions

[1] http://blogs.platts.com/2014/05/07/heating-oil-new-york-sulfur/

[2] http://www.eia.gov/dnav/pet/pet_cons_refres_d_nus_VTR_mgalpd_m.htm
http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=A323600001&f=M

limitations established for indirect heating equipment in (3)(B) and the general ppm SO_2 standards in (3)(A). Missouri further explains that:

> *"Research into other states' (and federal) sulfur dioxide regulations verifies that contemporary SO_2 regulatory requirements are not typically predicated on "direct" versus "indirect" heating source status. Rather, the fact that a source emits SO_2 is the basis for determining whether regulatory requirements should apply that limit such emissions, particularly when necessary to demonstrate SO_2 NAAQS compliance as new regulatory requirements are introduced for current and future rounds of nonattainment per the 1-hour SO_2 NAAQS (as well as future SO_2 NAAQS)."*

The EPA appreciates and understands that Missouri is attempting to streamline and clarify rules and replace existing limits with sulfur-in-fuel specifications that accomplish similar or better control of SO_2. However, the EPA does not agree with the rationale or arguments made by Missouri in support of eliminating the current applicable ppm standards. The plain text of the MO rule applies the SO_2 ppm standards in (3)(A) to all equipment other than indirect heating and lead smelting and refining. The rules do not define the term "direct" heating equipment. If a unit is not an indirect heater or a specified lead operation, then it is subject to the requirements in (3)(A).

In addition to the EPA's recommendation in number 1 above, if Missouri removes the distinction between indirect and direct heating sources, the EPA recommends that Missouri include sulfur-in-fuel specifications, such as requiring the use of ULSD, as part of the rule.

Response: The Air Program originally intended to remove the distinction between indirect and other heating sources since this distinction can be difficult to consistently determine and because the 500 and 2,000 ppm SO_2 standards were to be removed from the rule. The 500 and 2,000 ppm standards only apply to sources other than indirect heating sources or listed in Table I or II of the rule. Per 10 CSR 10-6.020 *Definitions and Common Reference Tables*, an indirect heating source is defined as "A source operation in which fuel is burned for the primary purpose of producing steam, hot water, or hot air, or other indirect heating of liquids, gases, or solids where, in the course of doing so, the products of combustion do not come into direct contact with process materials." Though there is no explicit definition of direct heating source in 6.020, the converse dictates that a direct heating source is implicitly defined as a heating source that does not satisfy the definition of an indirect heating source or a heating source where the products of combustion do come into direct contact with process materials. These definitions are complicated by operations that involve both direct and indirect components/processes during the facility operating/manufacturing process or by operations that do not clearly/fully satisfy the definition of either a direct or indirect heating source. As a result, any uncertainty in assessing the direct/indirect status of a facility or operation could introduce unintended inconsistencies when such assessments are subject to interpretation or other evaluation factors that may not be clearly defined to determine applicability of specific regulatory requirements. However as discussed in the response to the previous comment, after reviewing the comment and further discussions with EPA, we are now leaving the indirect heating source limits in the proposed rule (though converted to more familiar units of fuel sulfur content in parts per million). The indirect heating source standard language in the new rule will now be consistent with the language in the present rule (10 CSR 10-6.260).

3) <u>1-Hour SO_2 Limits for EGUs in Kansas City and eastern Missouri</u>

Missouri, in its "Regulatory Impact Report", notes that:

> *"Details associated with the air quality modeling demonstrations and other supporting information for the Table I SO_2 emission limits and fuel requirements will be provided with the attainment demonstration SIPs for both Jackson and Jefferson Counties. Both of these SIPs will be made available for public review and comment separate from this rulemaking (estimated in the spring/summer 2015 timeframe)* ".

As Missouri indicates, the modeling demonstrations and other supporting information for the 1-hour SO_2 limitations for the stationary sources in 10 CSR 10-2.261(3)(A) Table I will not be available until the attainment demonstration State Implementation Plans (SIP) for Jackson and Jefferson Counties are proposed. As such, the EPA cannot comment on the adequacy of the proposed limits in Table I, as well as whether the limits provide for attainment of the 2010 SO_2 NAAQS. As a result, MDNR may be required to revise the limits, identified in Table I, following EPA's review of the attainment demonstration(s) (including source specific dispersion modeling) for sources operating in Jefferson and Jackson Counties.

Response: The Air Program will provide the Jackson and Jefferson County attainment demonstration SIPs, including all technical supporting information, for public review and comment later this spring/early summer.

4) <u>Reporting and Recordkeeping</u>

Section (4)(C) of the proposed rule requires sources with limits in Table 2 of (3)(A) to maintain certain types of fuel-related records. Subsections (4)(C) 2., and 3. focus only on coal, but could apply to all other sulfur-containing solid and liquid fuels burned in the unit. For example, combustion turbines and IC engines may use fuel oil and it would be important to know what type of oil is being burned (e.g. No. 2, No. 4, and No. 6). The EPA recommends that Missouri revise this section to make it fuel neutral.

Response: The department's Air Pollution Control Program is changing the reporting and recordkeeping requirements to make this language fuel neutral. By keeping the language fuel neutral the subsection will apply to either solid or liquid fuels. Subsection (4)(C) allows fuel delivery records to be used to demonstrate compliance with the rule.

<u>Response to Comment(s) from the Interdisciplinary Environmental Clinic, Washington University St. Louis School of Law, on behalf of the Sierra Club.</u>

Comment:
On behalf of the Sierra Club, we submit the following comments on the Missouri Department of Natural Resources' ("DNR") drafts of new rule 10 CSR 10-6.261 and the associated Regulatory Impact Report ("RIR"). These comments focus on DNR's improper approach in the draft rule and RIR to the preparation of a nonattainment State Implementation Plan ("SIP") for the Jefferson County sulfur dioxide ("SO_2") nonattainment area ("NAA"). DNR's current approach ignores the impacts of the largest SO_2 sources in and affecting the NAA by excluding the vast majority of the NAA from the department's attainment demonstration modeling. This modeling only attempts to demonstrate attainment in 1.6 km^2 (0.4%) of the NAA, in violation of the Clean

Air Act, and fails even to achieve that exceedingly-limited, unlawful goal. Additionally, the RIR indicates DNR's tentative intent to apply to EPA for a clean data determination. Because the Jefferson County NAA is not currently in attainment, a clean data finding is inappropriate and should not be pursued.[3]

Response: As a preliminary matter, the Department must point out that the Regulatory Impact Report and associated draft rule text were provided for public review and comment during this 60-day comment period. The attainment demonstration SIP for the Jefferson County Nonattainment Area has been provided for public review and comment separately. The Department intends to address Sierra Club's comments, but some comments are outside the scope of the Regulatory Impact Report and the draft rule. We encourage the Sierra Club to submit relevant comments during the pertinent comment periods.

This new rule includes SO_2 emission limits for the Ameren Missouri facilities that focus on the impact from the facilities at the violating Mott Street monitor in the Jefferson County nonattainment area. As noted above, the emission limits in the rule are one part of the overall attainment approach in Jefferson County. Although the Jefferson County nonattainment area is not currently in attainment based on the 3-year design value for 2012-2014, the 1-hour SO_2 NAAQS violations at the Herculaneum Mott Street monitor were predominantly attributable to the Doe Run Herculaneum primary lead smelter. In December 2013, the smelter ceased operations, and since then monitored values recorded at the Mott Street monitor have been dramatically lower. Specifically, for calendar year 2014 at the Mott Street monitor, the highest concentration recorded is 23 parts per billion (ppb) and the fourth highest concentration (99th percentile) recorded is 18 ppb, which is near background levels. For comparison, the highest hourly concentration recorded for calendar year 2014 at the SO_2 monitor located in Mark Twain State Park is 13 ppb. The three-year design value for the Mott Street monitor is projected to be below 75 ppb [2010 1-Hour SO_2 NAAQS] by the end of 2015.

I. DNR's Approach Jeopardizes Public Health in Jefferson County.

Comment:
DNR's approach would deprive Jefferson County residents of the central protection promised by the Clean Air Act since 1970 – the right to breathe air that meets the National Ambient Air Quality Standards ("NAAQS") and therefore does not pose a threat to public health. In order to "protect public health with an adequate margin of safety," EPA revised the SO_2 primary NAAQS in 2010 to replace the 24-hour and annual standards with a short-term, 1-hour standard.[4] In an exposure analysis focused on at-risk populations in St. Louis, EPA determined that SO_2 exposure for as short as 5-10 minutes can cause adverse health effects to asthmatics.[5] EPA established the short-term, 1-hour standard for the SO_2 primary NAAQS in order to protect public health and limit adverse respiratory effects on at-risk populations, including children, the elderly, and asthmatics.[6]

Short-term SO_2 exposure is associated with a variety of negative health effects:

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[3] We note with disappointment that DNR will not submit the SO_2 nonattainment SIPs for Jackson and Jefferson Counties by the statutory deadline of April 6, 2015.
[4] EPA, Primary National Ambient Air Quality Standard for Sulfur Dioxide; Final Rule, 75 Fed. Reg. 35520, 35521 (June 22, 2010).
[5] *Id.* at 35536.
[6] *Id.* at 35550.

- Current scientific evidence links health effects with short-term exposure to SO_2 ranging from 5-minutes to 24-hours. Adverse respiratory effects include narrowing of the airways which can cause difficulty breathing (bronchoconstriction) and increased asthma symptoms. These effects are particularly important for asthmatics during periods of faster or deeper breathing (e.g., while exercising or playing). [7]

- Studies also show an association between short-term SO_2 exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses - particularly in at-risk populations including children, the elderly and asthmatics.[8]

DNR's RIR recognizes the dangers of exposure to SO_2 concentrations exceeding the NAAQS:

- According to EPA, children, the elderly, and asthmatics are the most sensitive to SO_2 exposure. For these populations, SO_2 exposure can result in decreased lung function, increased respiratory symptoms, and more hospital admissions and emergency room visits.[9]

Additionally, SO_2 emissions contribute to the creation of fine particulate matter ($PM_{2.5}$), exposure to which is linked to numerous serious health effects and premature death.[10] The public health threats posed by $PM_{2.5}$ pollution include aggravated asthma, heart attacks, difficulty breathing, coughing, and decreased lung function.[11] According to EPA, "evidence is sufficient to conclude that the relationship between long-term $PM_{2.5}$ exposure and mortality is causal, specifically infants/children and older adults are most at risk."[12]

An estimated 17,418 adults and 5,434 children in Jefferson County suffer from asthma.[13] Because the Doe Run Company – pursuant to an agreement with DNR – has acquired nearly all of the residences surrounding the Herculaneum lead smelter, nearly all of Jefferson County's asthmatics live outside of the 1.6 km^2 area around the Mott Street monitor that is the focus of DNR's attainment demonstration modeling. Figure 1 (see next page) shows the DNR "attainment" area and the Doe Run Herculaneum buyout zone, which encompasses a significant portion of the area. This indicates that all or nearly all of Jefferson County's asthmatics live within the 99.6% of the NAA that DNR's modeling ignores. While recognizing the risks posed by exposure to SO_2 at levels above the NAAQS, DNR's draft rule and SIP approach described in the RIR fail to protect this vulnerable population.

Response: As acknowledged in the Regulatory Impact Report, the Department expects both short-term and long-term health benefits to result from limiting the public's SO_2 exposure. The

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[7] EPA, Fact Sheet: Revisions to the Primary National Ambient Air Quality Standard, Monitoring Network, and Data Reporting Requirements for Sulfur Dioxide, available at http://www.epa.gov/airquality/sulfurdioxide/pdfs/20100602fs.pdf (last visited February 3, 2015).

[8] *Id.*

[9] DNR, Regulatory Impact Report In Preparation For Proposing New Rule 10 CSR 10-6.261 ("RIR"), §3.

[10] DNR notes in the RIR that reducing SO_2 emissions "may have the important co-benefit of reducing the formation of fine sulfate particles, which pose significant public health threats." RIR, §10.

[11] EPA, Health information on Particulate Matter, available at http://www.epa.gov/pm/health.html (last visited February 3, 2015).

[12] EPA, Integrated Science Assessment for Particulate Matter, EPA/600/R-08/139F (Dec. 2009), at 7-96, available at http://www.epa.gov/ncea/pdfs/partmatt/Dec2009/PM_ISA_full.pdf (last visited February 3, 2015).

[13] American Lung Association, Estimated Prevalence and Incidence of Lung Disease (May 2014) at 33, available at http://www.lung.org/finding-cures/our-research/trend-reports/estimated-prevalence.pdf (last visited February 10, 2015).

Department's attainment approach protects the health of citizens throughout the Jefferson County nonattainment area. At the time of the nonattainment area designation, the primary SO_2 source contributing to the violating monitor in Jefferson County was the Doe Run Herculaneum primary lead smelter. After the smelter ceased operations at the end of 2013 as required by federal consent decree, SO_2 concentrations at the violating Mott Street monitor dropped significantly, from the second highest SO_2 readings in the country to nearly background levels of SO_2. This monitor is expected to be in compliance with the health-based 1-hour SO_2 NAAQS by the end of 2015, which is over two years earlier than the attainment date of October 2018. The closure of the smelter protects the public in the Herculaneum area from health impacts associated with short-term SO_2 exposure. However, in addition to bringing the monitor into compliance, the Air Program must demonstrate that air quality throughout the nonattainment area attains and maintains the standard. The SO_2 emission limits for the Ameren power plants in the rule are intended to support continued attainment of the 1-hour SO_2 standard at the monitor, but the rule is just one piece of the state's attainment approach. The Department's overall SIP approach will protect the health of those living in the Jefferson County Nonattainment area by providing an accurate demonstration of current conditions in the area. The Department expects results from both existing and any new monitors in the nonattainment area to demonstrate attainment with the 1-hour SO_2 NAAQS, but if they do not, the Department has the ability to take necessary regulatory action based on accurate data.

II. DNR's SIP Approach for the Jefferson County Nonattainment Area, as Described in the Regulatory Impact Report and Reflected in the Draft Rule's Emission Limits, is Unlawful.

Comment:

The emission limits in the draft rule are designed solely to demonstrate attainment at the Mott Street monitor, and are woefully inadequate to demonstrate attainment throughout the NAA. With the rule serving as the vehicle for permanent, enforceable emissions limits for the Jefferson County nonattainment SIP, the SIP will not comply with the Clean Air Act. Furthermore, the limits do not even support DNR's uber-modest goal of demonstrating attainment solely at the Mott Street monitor. DNR must substantially tighten the emission limits in the draft rule and possibly add limits for additional sources in order to submit an acceptable SIP that demonstrates attainment throughout the NAA.

A. The Emission Limits in the Rule Must Be Sufficient to Support an Attainment Demonstration for the Entire Nonattainment Area, Not Just at the Violating Monitor.

The RIR states, "[t]he SO_2 emission limits in Table I for Ameren Missouri's Labadie, Meramec, and Rush Island power plants ensure compliance *at the Mott Street SO_2 monitor* and support the attainment demonstration for the Jefferson County nonattainment area."[14] To determine the emission limits in Table I, DNR performed air dispersion modeling focused on a 1.25 x 1.25 kilometer area roughly centered on the Mott Street monitor. DNR used allowable emissions for sources within the boundaries of the NAA and for nearby sources located in Illinois, and actual emissions for nearby sources located in Missouri but outside the boundaries of the NAA. DNR then iteratively adjusted the emission rates for Ameren Missouri's Labadie, Meramec, and Rush Island power plants while keeping emission rates for all other sources fixed until the model predicted no exceedances of the SO_2 NAAQS within the modeled 1.6 km^2 area around the Mott Street monitor. Reductions from current allowable hourly emission rates of approximately 63%,

[14] RIR, §1 (emphasis added).

54%, and 46% were required for Labadie, Meramec, and Rush Island, respectively, in order to model compliance with the NAAQS within this area. The emission limits in Table I of the draft rule reflect DNR's modeled hourly emission rates adjusted downward to 24-hour average limits as allowed by EPA.

Figure 1. Much of DNR's 1.6 km^2 "attainment" area is the largely-uninhabited Doe Run Herculaneum buyout zone.

DNR's approach to the Jefferson County NAA is unlawful under the Clean Air Act, which requires that attainment be demonstrated throughout the NAA, not just at the violating monitor. After EPA revises a NAAQS, each state must propose to EPA the boundaries of nonattainment areas – *i.e.*, areas within the state that contain ambient air concentrations exceeding the revised NAAQS.[15] EPA then reviews the state's proposal and makes nonattainment area designations.[16] Those designations remain in effect until the area is formally redesignated pursuant to the Clean Air Act.[17] States must prepare SIPs showing how each nonattainment area will achieve the NAAQS by the relevant deadline.[18] The SIP must include, among other provisions, "[E]nforceable emission limitations, and such other control measures … as may be necessary or appropriate to provide for attainment of such standard *in such [nonattainment] area* by the applicable attainment date specified in this part."[19]

EPA's SO_2 nonattainment SIP guidance emphasizes the Clean Air Act's requirement that a nonattainment SIP provide for attainment throughout the designated nonattainment area:

- The attainment demonstration should also ensure that the area will attain the 2010 SO_2 NAAQS with a 3 year design value of no greater than 75 ppb *throughout the entire nonattainment area* by the statutory attainment date, through the adoption and implementation, at a minimum, of emission control measures representing RACM/RACT.[20]

- [F]or attainment demonstrations for the 2010 SO_2 NAAQS, the air agency should demonstrate future attainment and maintenance of the NAAQS *in the entire area designated as nonattainment (i.e., not just at the violating monitor)* by using air quality dispersion modeling to show that the mix of sources and enforceable emission rates in an identified area will not lead to a violation of the SO_2 NAAQS.[21]

- The modeling for the attainment demonstration should include results for a suitable network of receptors representing *the entire nonattainment area*, and should exhibit modeling showing attainment of the NAAQS *for the entire area* by the statutory deadline.[22]

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[15] CAA § 107(d)(1)(A)(i), 42 U.S.C. § 7407(d)(1)(A)(i).
[16] CAA § 107(d)(1)(B)(i), 42 U.S.C. § 7407(d)(1)(B)(i).
[17] CAA § 107(d)(1)(B)(iv), 42 U.S.C. § 7407(d)(1)(B)(iv).
[18] CAA § 110(a), 42 U.S.C. § 7410(a); CAA § 172(c), 42 U.S.C. § 7502(c); and CAA §§ 191-192, 42 U.S.C. §§ 7514-7514a.

[19] CAA § 172(c)(6), 42 U.S.C. § 7502(c)(6)(emphasis added).
[20] EPA, Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions (Apr. 2014) at 10 (emphasis added).
[21] *Id*. at 11-12 (emphasis added).
[22] *Id.* at 12 (emphasis added).

Pursuant to the Clean Air Act, DNR proposed the boundaries of the Jefferson County NAA,[23] and EPA approved the boundaries as proposed by DNR. The Act now requires DNR to submit a SIP that provides for nonattainment throughout the NAA.[24]

Unfortunately, DNR's draft rule and supporting RIR aim for attainment only at the Mott Street monitor. The RIR language highlights DNR's clear choice to deviate from the Clean Air Act's requirement to demonstrate attainment throughout the NAA. DNR first describes its approach to the nonattainment SIP for Jackson County, the state's other NAA, in terms consistent with Clean Air Act requirements: "The SO_2 emission limits and unit-specific fuel requirements in Table I … are set at the level needed to demonstrate attainment of the 1-hour SO_2 NAAQS *within the Jackson County nonattainment area*."[25] DNR then uses different language – inconsistent with the Act's requirements – to discuss its approach to Jefferson County: "[T]he SO_2 emission limits in Table 1 … *ensure compliance at the Mott Street monitor* and support the attainment demonstration for the Jefferson County nonattainment area."[26]

In focusing on the area immediately surrounding the Mott Street monitor, DNR is ignoring large swaths of the NAA where the emission limits in the draft rule do not support an attainment demonstration. Figure 2 (see next page) shows the size of the 1.25 x 1.25 kilometer area DNR modeled to determine the limits in Table I of the draft rule relative to the size of the NAA. The modeled area encompasses 1.6 km^2, just 0.4% of the 382.9 km^2 NAA.

When DNR's attainment demonstration modeling is expanded from the tiny area around the Mott Street monitor to the entire NAA as required by the Clean Air Act, it predicts widespread NAAQS violations both north and south of the monitor, near Ameren Missouri's Meramec and Rush Island power plants. Figure 3 (see page 8) shows the results of DNR's model for a 250-meter receptor grid covering the entire NAA instead of the 1.6 km^2, monitor-focused receptor grid used by DNR. The shaded areas, which encompass approximately 40% of the NAA, exceed the NAAQS, and *the peak concentration is 1425.6 ug/m*^{3}, over seven times the NAAQS.

In order for DNR to demonstrate attainment throughout the NAA as required by the Clean Air Act, it must substantially tighten the emission limits in the draft rule for Ameren Missouri's Labadie, Meramec, and Rush Island power plants and possibly add limits for additional sources as well. Only then will DNR be able to submit an acceptable SIP that demonstrates attainment throughout the NAA and not just in the largely-uninhabited area surrounding the Mott Street monitor.

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[23] DNR, 2010 1-Hour Sulfur Dioxide Boundary Recommendation and Technical Support Document for Recommendation of Nonattainment and Unclassifiable Boundaries in Missouri for the 2010 SO_2 National Ambient Air Quality Standard (June 30, 2011), submitted to EPA July 19, 2011.
[24] EPA, Air Quality Designations for the 2010 Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard, 78 Fed. Reg. 47191 (Aug. 5, 2013).
[25] RIR, §1 (emphasis added).
[26] *Id*. (emphasis added).

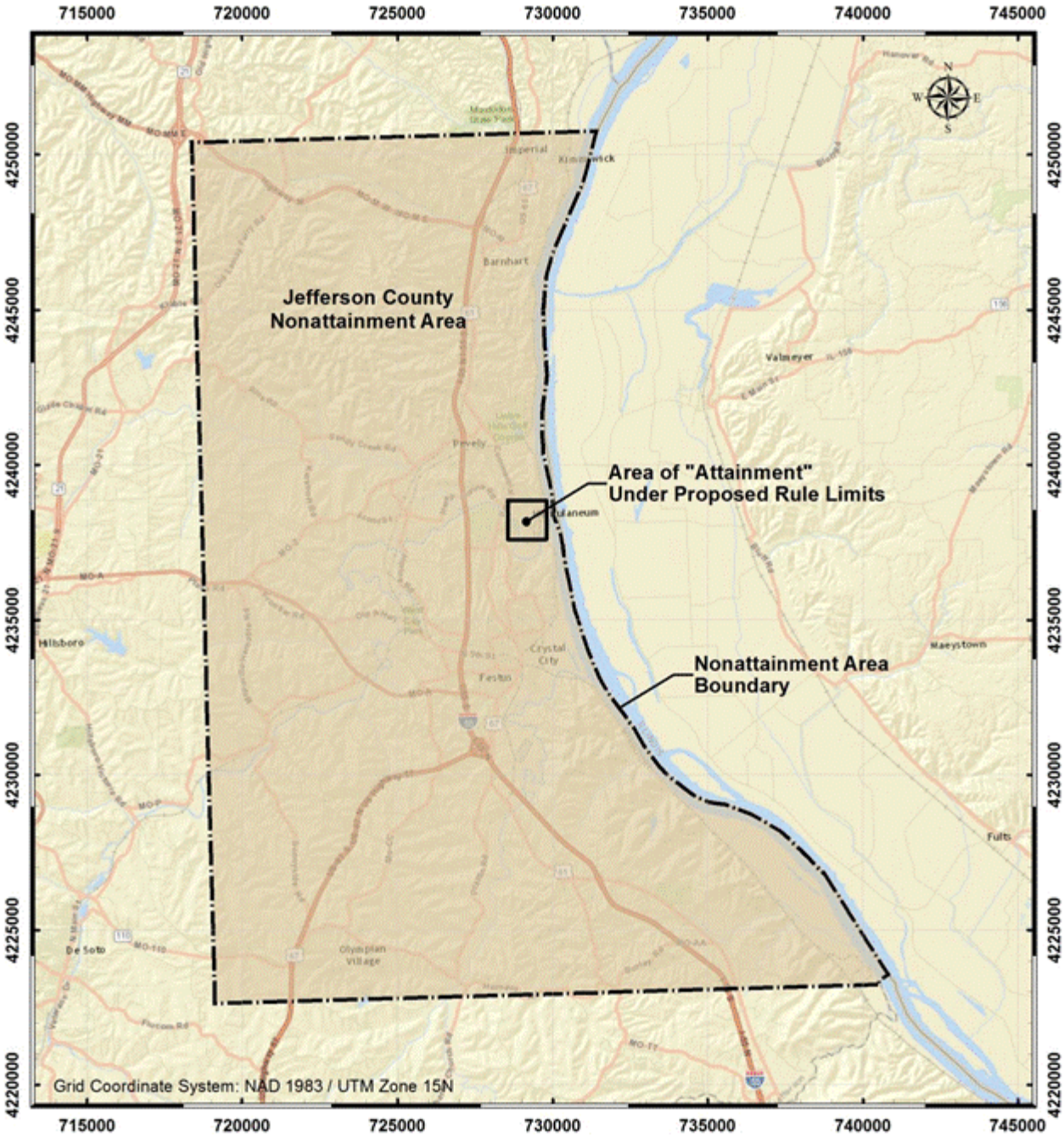

Figure 2: Size of DNR's 1.6 km^2 "attainment" area relative to the size of the Jefferson County NAA. The "attainment" area encompasses just 0.4% of the NAA.

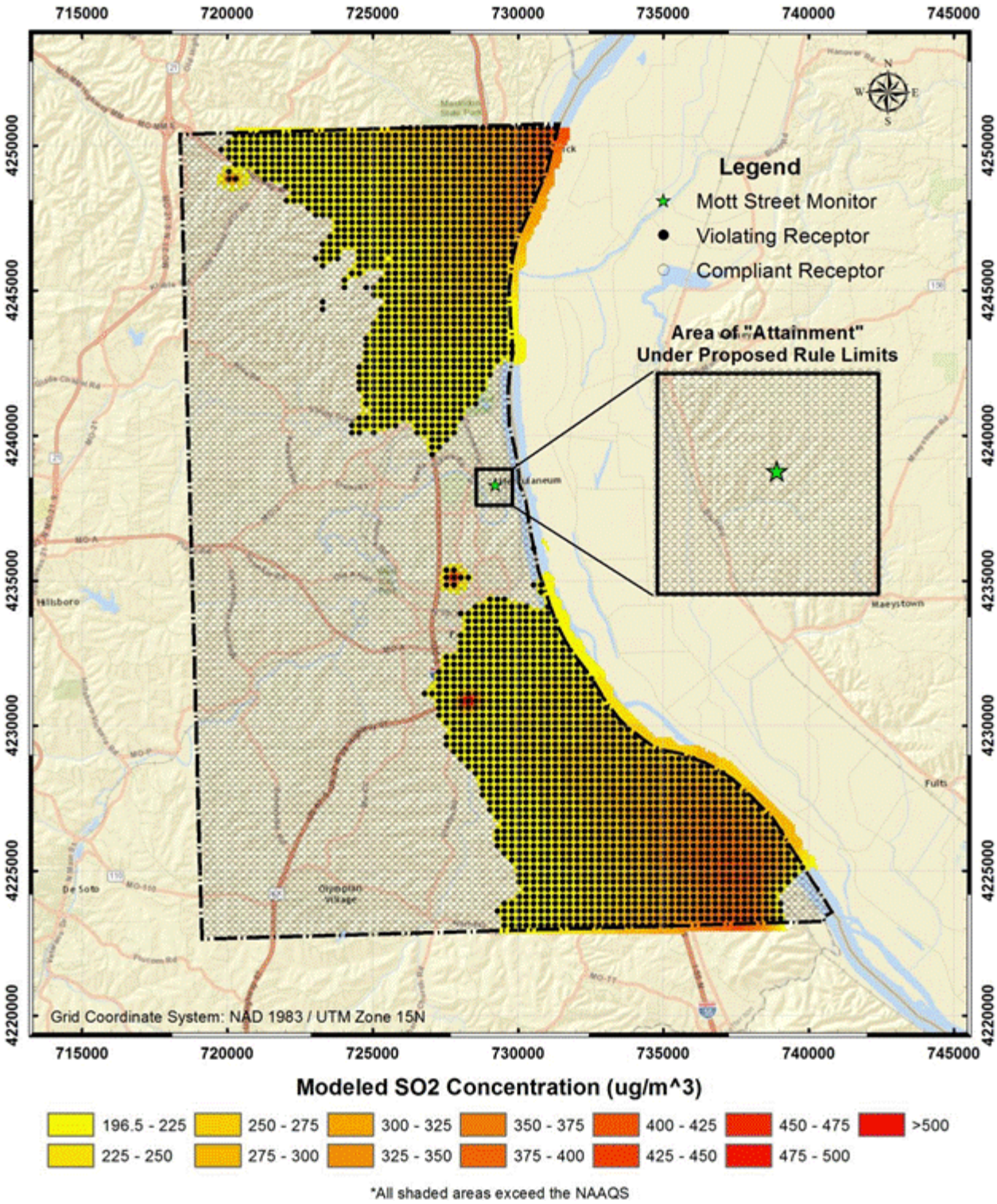

Figure 3: Results of DNR's attainment demonstration model for a 250-meter receptor grid covering the entire NAA instead of the 1.6 km^2, monitor-focused receptor grid used by DNR.

Response:
As the Sierra Club notes, the Clean Air Act requires a state to submit a plan demonstrating attainment for SO_2 nonattainment areas. EPA issues guidance through which it interprets this Clean Air Act requirement. EPA has recognized the non-binding nature of its guidance and that each nonattainment area "may pose unique case-specific questions relating to factors such as the characteristics of the contributing sources, meteorology, jurisdictional factors, etc." [27]

The SO_2 emission limits for the Ameren plants in Table 1 of the proposed rule are intended to prevent an exceedance of the SO_2 NAAQS at the Mott Street monitor, located in the Jefferson County nonattainment area. The Mott St monitor is expected to have a 3-year design value that attains the NAAQS by the end of 2015, prior to the attainment date required by the Clean Air Act.

The Department's 1-hour SO_2 NAAQS modeling results are based on current actual emissions and show no violations of the standard throughout the nonattainment area. The Department recognizes that the Ameren Rush Island facility has substantial levels of SO_2 emissions. There is enough evidence to support the need for additional on-site monitoring to true-up modeling results farther away from the Mott St. monitor based on actual conditions around the Ameren Rush Island Energy Center. Therefore, the Department is taking additional measures to protect the public health around this source through a Consent Agreement which is currently on public notice.

B. The Emission Limits in the Draft Rule Do Not Even Demonstrate Attainment in the Tiny Area Around the Mott Street Monitor.

Comment:
Pursuant to the requirements of the Clean Air Act, EPA recommends that modeling to demonstrate future attainment of the SO_2 NAAQS in designated nonattainment areas follow its *Guideline on Air Quality Models* (Appendix W to 40 CFR 51), which provides recommendations and guidance on modeling techniques used to assess control strategies and determine emission limits.[28] The *Guideline* requires using maximum allowable emissions or federally enforceable permit limits as model input data for stationary sources – including nearby sources – for purposes of evaluating compliance with ambient standards.[29] EPA's SO_2 nonattainment SIP guidance emphasizes that allowable emissions should be used in dispersion modeling for SIP development purposes for all contributing sources not accounted for in background:

- The attainment plan for the affected area should also demonstrate, through the use of air quality dispersion modeling, *using allowable emissions* and supplemental analyses as appropriate, that the area will attain the standard by its attainment date.[30]

- For a short term (i.e., 1-hour) standard, the EPA believes that dispersion modeling, *using allowable emissions* and addressing stationary sources in the affected area (and in some cases those sources located outside the nonattainment area which may affect attainment in the area) is technically appropriate, efficient and effective in demonstrating attainment in nonattainment areas because it takes into consideration combinations of meteorological and emission source operating conditions that can contribute to peak ground-level

[27] EPA, *Guidance for the 1-Hour SO_2 Nonattainment Area SIP Submissions* (April 2014) at ii-iii.
[28] EPA, Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions (Apr. 2014) at 13.
[29] 40 CRF 51 Appendix W, Table 8-1.
[30] EPA, Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions (Apr. 2014) at 9-10 (emphasis added).

concentrations of SO_2.[31]

- Consistent with past SO_2 modeling guidance … and regulatory modeling for other programs … dispersion modeling for the purposes of SIP development should be based on the use of *maximum allowable emissions*.[32]

DNR's own modeling protocol states that model inputs will be based upon the criteria outlined in 40 CFR Appendix W and that allowable emissions will be used for all sources included in its model:

- The base run model analysis will reflect current, *permanent and enforceable allowable emissions* for each SO_2 source to be included in the model.[33]

- The emission rates input into the air quality model will reflect current *permanent and enforceable emissions* for each SO_2 source to be included in the model.[34]

However, instead of using allowable emissions for all sources included in its model, DNR used allowable emissions for sources within the boundaries of the NAA and for nearby sources located in Illinois, and actual emissions for nearby sources located in Missouri but outside the boundaries of the NAA. There is no rational basis for using allowable emissions for some nearby sources and actual emissions for others, particularly in light of the fact that the nearby Illinois sources DNR included in its model are located farther outside the boundaries of the NAA than the nearby Missouri sources it included. Additionally, EPA guidance and DNR's own modeling protocol require the use of allowable emissions for all explicitly modeled sources.

When allowable emissions are used for all sources – including nearby sources in Missouri – in DNR's model, *it predicts NAAQS violations throughout the 1.6 km^2 area surrounding the Mott Street monitor and at the monitor itself. When taken one step further and expanded from the tiny area around the Mott Street monitor to the entire NAA as required by the Clean Air Act, it predicts NAAQS exceedances throughout the entire NAA.* Figure 4 (see next page) shows the results of DNR's model – using allowable emissions for all sources – for a 250-meter receptor grid covering the entire NAA instead of the 1.6 km^2, monitor-focused receptor grid used by DNR. The shaded areas exceed the NAAQS and cover 100% of the NAA.

Response: As mentioned in the response to the last comment, EPA's guidance "imposes no binding or enforceable requirements or obligations on any person."[35] The use of maximum allowable emissions is a conservative method of demonstrating that an area will attain the standard without monitoring data or on-site meteorological data. EPA has historically looked to monitoring data as more concrete evidence that an area is attaining the standard for all the criteria pollutants. For SO_2, EPA is using modeling as a surrogate for areas without a monitor to characterize the air quality. In this case, the Jefferson County nonattainment area has a monitor with concentrations that went from one of the highest in the nation to values hovering slightly above background concentrations due to the implementation of the main control strategy, the closure of the primary lead smelter. However, the Air Program recognizes that the Ameren Rush Island facility has

[31] *Id*. at 12 (emphasis added).
[32] *Id.* at A-10 (emphasis added).
[33] DNR, 2010 1-Hour Sulfur Dioxide National Ambient Air Quality Standard Modeling and Analysis Protocol for First Round Nonattainment Areas (June 30, 2014) at 3 (emphasis added).
[34] *Id*. at 4 (emphasis added).
[35] EPA, *Guidance for the 1-Hour SO_2 Nonattainment Area SIP Submissions* (April 2014) at ii-iii.

substantial levels of SO_2 emissions and is requiring the installation of SO_2 ambient air monitors at the plant through a Consent Agreement.

III. EPA's Clean Data Policy Does Not Apply to the Jefferson County Nonattainment Area.

Comment:

The RIR indicates that DNR is tentatively planning to apply to EPA for a clean data determination for the Jefferson County NAA. Because EPA's Clean Data Policy applies only when nonattainment areas have in fact attained the NAAQS prior to SIP submittal deadlines, it is inapplicable here.[36] We urge DNR to cease the considerable effort it appears to be expending to attempt to prepare a clean data submittal, and to focus instead on preparing a bona fide SIP designed to achieve the SO_2 NAAQS throughout the Jefferson County nonattainment area, as required by the Clean Air Act.

EPA created its Clean Data Policy as "an incentive for attaining the SO_2 NAAQS *prior to the statutory deadline* for submitting an attainment demonstration under CAA section 191(a)."[37] The incentive aspect of the Policy recognizes that air quality in nonattainment areas is unhealthy, and the Policy encourages such areas to come into attainment before the statutory deadline.[38] DNR will not be submitting its SIP before the statutory deadline of April 6, 2015, rendering the Clean Data Policy inapplicable from the outset.

[36] This comment addresses the inapplicability of the EPA's Clean Data Policy to the Jefferson County NAA without conceding that the Policy is lawful. Whereas the EPA has codified the Policy for ozone and fine particulate matter, the Policy remains solely a creature of guidance with respect to SO_2.

[37] EPA, Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions (Apr. 2014) at 51 (emphasis added).

[38] "Nonattainment areas … may be able to achieve emissions reductions … that may be sufficient to attain the SO_2 NAAQS before SIPs are due under section 191(a)." *Id.* See also EPA's $PM_{2.5}$ Clean Data Policy guidance: "Because $PM_{2.5}$ exposure is linked to significant health effects, EPA encourages States to achieve reductions in $PM_{2.5}$ and its precursor emissions as early as possible, especially in areas that are expected to be designated as nonattainment." EPA, Clean Data Policy for the Fine Particle National Ambient Air Quality Standards (Stephen D. Page Memorandum) (Dec. 14, 2004), p. 1.

EPA, Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions (Apr. 2014) at 51 (emphasis added).

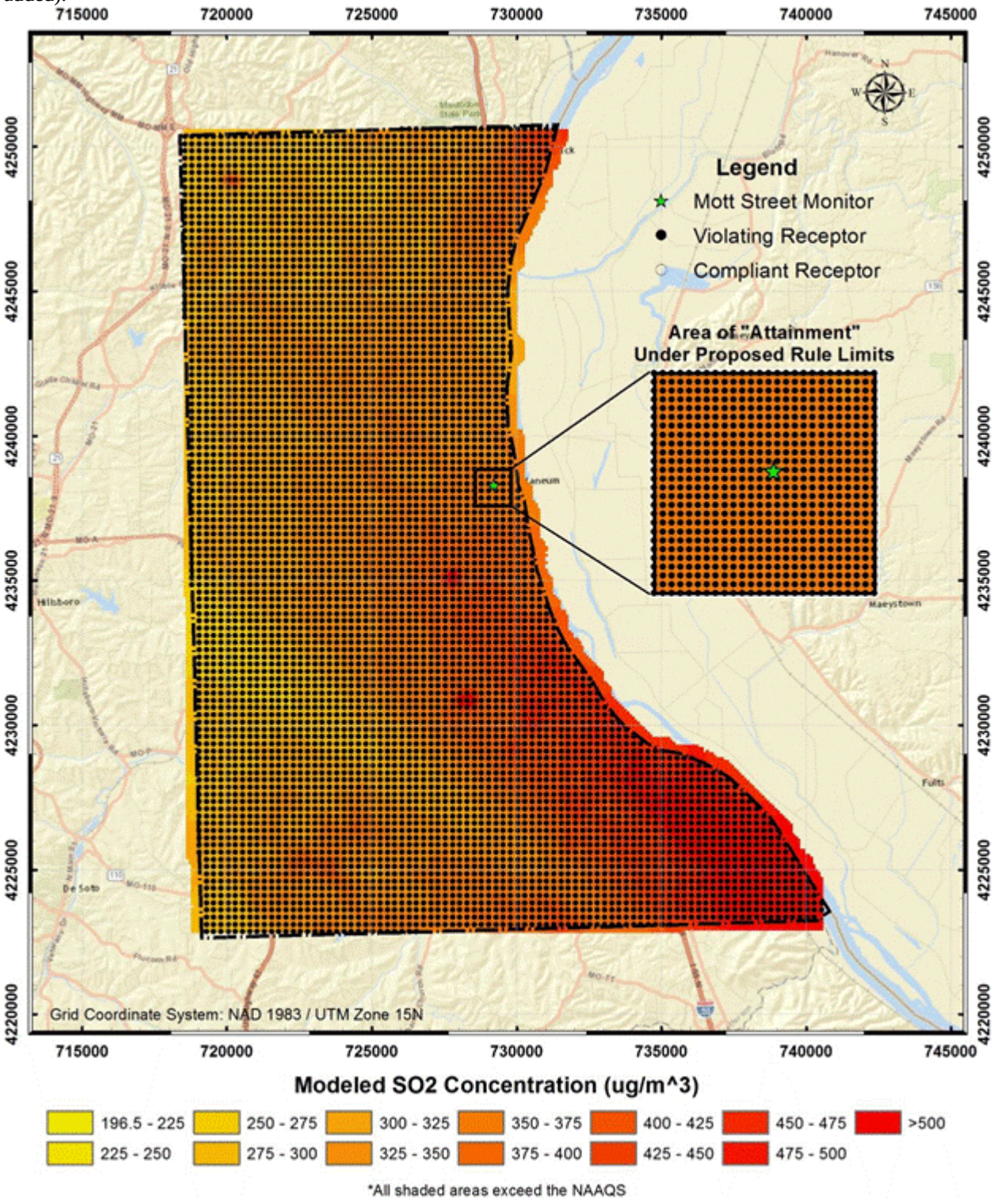

Figure 4: Model used by DNR to determine the emission limits in Table 1 of the draft rule run using allowable emissions for all sources and expanded to cover the entire NAA.

In addition, the purpose of the Clean Data Policy is to enable states to avoid preparing SIP submissions that are rendered superfluous when the nonattainment area actually achieves attainment in the absence of such submissions:

- [T]he EPA has issued "Clean Data" policy memoranda describing possible reduced regulatory requirements for *nonattainment areas that attain the NAAQS, but have not yet been designated as attainment*.[39]

- [W]e have explained our view that it is reasonable to interpret the CAA section 172 statutory provisions regarding "reasonable further progress" and attainment demonstrations, along with certain other related attainment planning provisions, as not requiring further submissions to achieve attainment for *so long as the area is in fact attaining the NAAQS*.[40]

- If *an area has attained the NAAQS*, there is no need to submit a plan demonstrating how the area will reach attainment.[41]

The Jefferson County NAA is doubly disqualified for this Policy.

First, an attainment demonstration for the Jefferson County NAA is far from superfluous. DNR is not even attempting to prepare a bona fide attainment demonstration for the Jefferson County NAA. The emission limits in the draft rule aim solely to support an "attainment demonstration" for a tiny area at the Mott Street Monitor (and do not even achieve that goal). DNR's earlier compliant modeling, which conformed with EPA's SIP guidance, indicated that Ameren's Rush Island, Meramec, and Labadie power plants would have to reduce their allowable emissions by 90%, 85%, and 75% respectively to support an area-wide attainment demonstration.[42,43] Yet the limits in the draft rule require reductions of only 46%, 54%, and 63% for Rush Island, Meramec, and Labadie, respectively. As demonstrated above, modeling based on the emission limits in the draft rule results in concentrations in excess of the NAAQS across some 40% of the nonattainment area in areas clearly influenced by emissions from the Rush Island and Meramec plants. And modeling conducted in accordance with EPA guidance and DNR's modeling protocol (*i.e.*, using allowable emissions for all modeled sources) shows *concentrations in excess of the NAAQS across the entire nonattainment area*.

Second, while recognizing that attainment demonstrations are based on allowable rather than actual emissions and that readings at the Mott Street Monitor are currently low, the nonattainment *area* is not, in fact, already in attainment. At the outset of its SIP development effort, DNR conducted modeling assessing the impact of individual sources' actual emissions on SO_2 concentrations, without regard to contributing impacts from other sources in the area. DNR found that actual emissions from Ameren's Rush Island and Meramec plants each individually caused SO_2 concentrations well in excess of the NAAQS.[44]

EPA's Clean Data Policy is designed to encourage states to achieve NAAQS ahead of the statutory

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[39] EPA, Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions (Apr. 2014) at 51 (emphasis added).
[40] *Id*. at 52 (emphasis added).
[41] *Id.* at 54 (emphasis added).
[42] DNR documentation of compliant modeling scenario, Draft 4-10-14 (submitted herewith as Exhibit A).
[43] DNR also determined that Anheuser-Busch and Mississippi Lime would have to reduce their allowable emissions by 95% and approx. 90%, respectively.

[44] DNR, First Round: 2010 1-hour SO_2 Nonattainment Area Modeling, Oct. 30, 2013 (submitted herewith as Exhibit B).

deadline, and thereby enables states that have actually achieved the NAAQS to avoid preparing plans rendered unnecessary because their goals have already been reached. The Policy does not apply here, where DNR is apparently attempting to avoid preparing a bona fide attainment demonstration and there is every reason to believe that the *area* has not attained the NAAQS.

Response: Significant early reductions of SO_2 in the Jefferson County nonattainment area have been achieved through the implementation of the main control strategy, the closure of the primary lead smelter. The monitor values when the lead smelter was operating were among the highest in the nation. The smelter's reported annual SO_2 emissions were as high as 19,853 tons in 2010, and its average annual SO_2 emissions over the 2012-2012 period were 17,660 tons. Since the ceasing of all lead smelting and sintering operations at the end of 2013, there have been no SO_2 emissions from this plant. This monumental decrease in SO_2 emissions is expected to bring the monitor into compliance and improve the real air quality for the many residents of the area. Modeling for the area shows that there are no other actual violations of the NAAQS in the nonattainment area. Additional ambient SO_2 monitors are being added to ensure that the standard is being met at locations farther away from the violating monitor.

EPA's intent behind their clean data policy is beyond the scope of this rulemaking and associated Regulatory Impact Report. Pursuit of a clean data determination is consistent with the Department's past practice for other NAAQS. The Air Program has consistently requested a clean data determination when the monitoring data supports the request even if an attainment demonstration has already been submitted to EPA. For example, for the 1997 ozone standard, the Air Program submitted an attainment demonstration to EPA prior to the monitor coming into compliance. Once NAAQS-compliant data was quality assured and certified, we requested a clean data determination. Similarly, we intend to submit a SIP to address air quality issues in the Jefferson County 1-hour SO_2 nonattainment area which includes installing SO_2 monitors to further demonstrate that the area is attaining the standard. When the monitoring network shows the area is attaining the standard, the Department plans to submit a request for a clean data determination from the EPA.

Although some of our preliminary modeling showed exceedances of the standard using actual emissions from Ameren's Rush Island and Meramec Energy Centers individually, this was based on the use of a static emission rate derived from the annual actual emissions and evenly distributed over each hour of the year. This method did not take into account the fluctuations of normal operations and eliminates peaks and valleys in the emission rate. Using hourly varying emissions is a better predictor of actual air quality and is likewise more representative. For both Rush Island and Meramec, modeling using the hourly varying emissions rates shows there are no actual violations of the standard.

IV. The Closure of the Doe Run Smelter Supports Neither DNR's Unlawful SIP Approach Nor its Inappropriate Intention to Invoke the Clean Data Policy.

Comment:

In the RIR, DNR describes the closure of the Doe Run Herculaneum smelter as the "main control strategy" for the Jefferson County NAA.[45] This is not credible. The Consent Decree requiring Doe Run to close by December 2013 was published in October 2010, before the Jefferson County NAA was even proposed.[46] Further, when DNR submitted its proposed nonattainment designation to EPA in 2011, it

[45] RIR, §1.

[46] *United States of America and State of Missouri v. The Doe Run Resources Corporation, et al.*,4:10-cv-01895-JCH (E.D.Mo.), Consent Decree published for public comment in October 2010, http://www2.epa.gov/enforcement/doe-run-resources-corporation-settlement, and ultimately filed with the Court December 2011, http://www.epa.gov/region7/cleanup/doe_run/pdf/consent_decree.pdf.

intentionally included Ameren's Rush Island plant within the nonattainment area. The Technical Support Document for the proposed boundary recommendation explains that the "boundaries of the recommended nonattainment area include both large sources in Jefferson County: the Doe Run lead smelter in Herculaneum and the Ameren Missouri – Rush Island Plant."[47] The Technical Support Document also indicates that SO_2 emissions from the Rush Island plant in 2009 (the year DNR used for its emission inventory) were, at 28,327 tons, significantly higher than Doe Run's emissions of 18,838 tons.[48] Indeed, Rush Island's annual SO_2 emissions exceeded Doe Run's in every year from 2009 through the smelter's closure at the end of 2013.[49] In the Technical Support Document's discussion of emission controls, DNR made no mention of the upcoming Doe Run closure.[50]

Furthermore, DNR proceeded to prepare a SIP by modeling the Ameren plants and other large sources in and near the Jefferson County NAA, without any consideration of contributions from soon-to-be-closed Doe Run. DNR modeled impacts of the three Ameren plants, using actual emissions, in October 2013 to identify the sources that might need to reduce emissions in order for the Jefferson County nonattainment area to achieve the SO_2 NAAQS. As noted above, DNR then prepared a compliant modeling scenario that required significant reductions in allowable emissions from the three Ameren plants – an exercise that would have been entirely unnecessary if the Doe Run closure, by itself, was deemed sufficient to attain the NAAQS across the nonattainment area. This compliant modeling scenario assumed that Doe Run was no longer a source of SO_2 emissions, yet substantial reductions were still required from the Ameren plants before DNR could demonstrate attainment throughout the NAA.

While the closure of the Doe Run smelter has certainly resulted in low SO_2 concentrations at the Mott Street monitor, it has not brought the entire Jefferson County *nonattainment area* – whose designation was proposed by DNR and approved by EPA – into attainment.

Response: The Air Program's recommendation for the 1-hour SO_2 NAAQS nonattainment area boundaries went through separate public processes, including opportunities for comment and public hearings. The specifics regarding the boundary designation process are beyond the scope of this 60-day comment period.

SO_2 emissions from the Doe Run lead smelter include both stack and fugitive emissions, while SO_2 emissions from the Ameren Rush Island Energy Center are released from stacks. By comparison, SO_2 emissions from the lead smelter had a considerably greater impact on public health due to the fugitive nature of these emissions that were generally emitted lower to the ground and more directly impacting people in the area. The impacts of these fugitive SO_2 emissions were most prevalent near the violating Mott Street monitor. Modeling, started prior to the shutdown, was conducted as an exercise in source apportionment and revealed that fugitive emissions dominated concentrations at the violating monitor. Once the smelter closure was complete, it became clear that surrounding sources in the area had little to no effect on the violating monitor and the main source of concern was indeed the Doe Run lead smelter. Several iterations of modeling were necessary to more accurately determine the actual conditions occurring in the NAA near and farther away from the monitor.

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[47] DNR, 2010 1-Hour Sulfur Dioxide Boundary Recommendation and Technical Support Document for Recommendation of Nonattainment and Unclassifiable Boundaries in Missouri for the 2010 SO_2 National Ambient Air Quality Standard (Adopted by Air Conservation Commission May 26, 2011), § 8.3, p. 23.
[48] *Id*., Appendix 1.
[49] See attached Exhibit C, Annual SO_2 Emissions Comparison Table prepared by the Clinic using data obtained from EPA and DNR.
[50] *Id*., § 4.2, p. 13.

Draft 4-10-14

V. Conclusion

Comment:

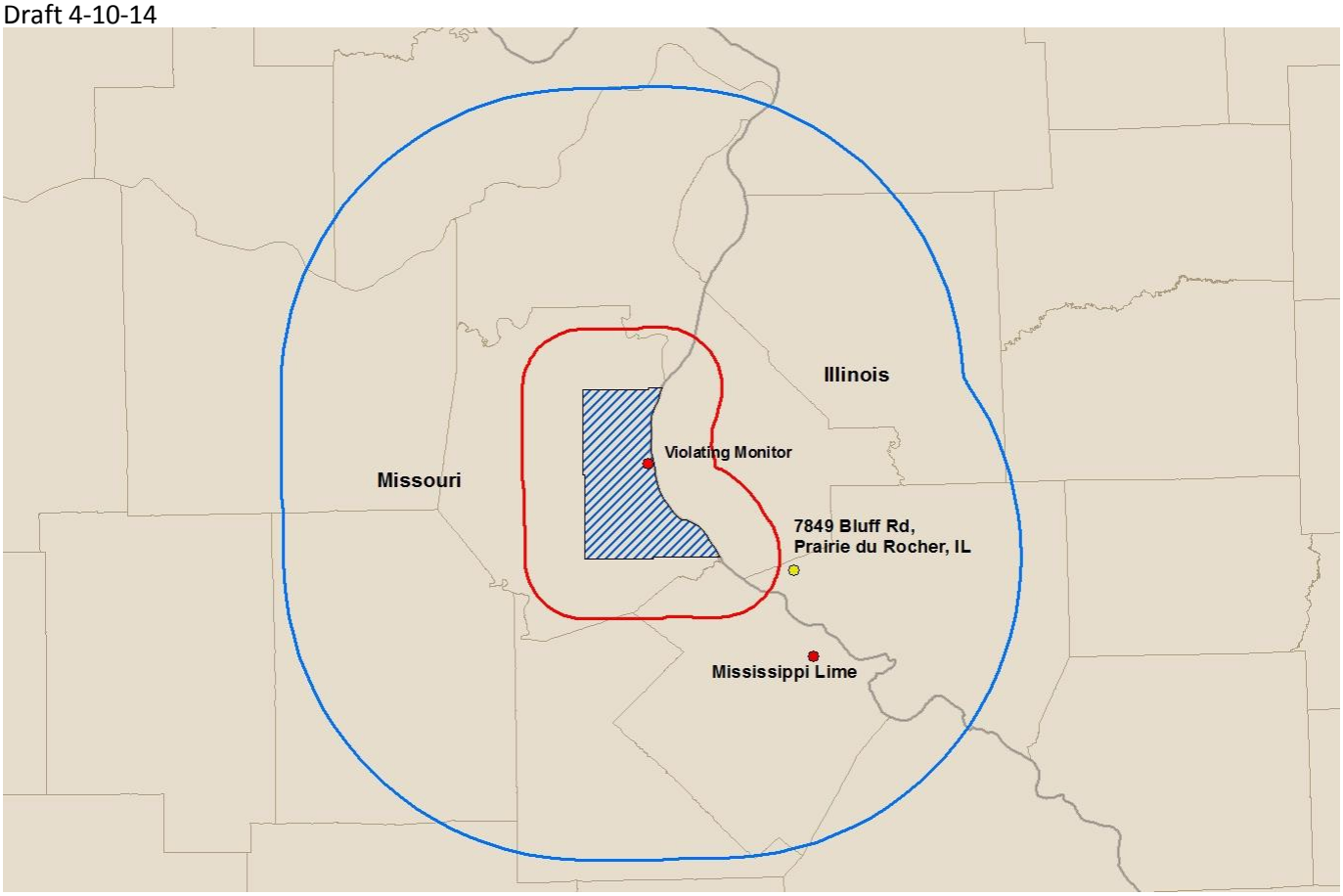
We urge DNR to revise the emission limits in Table I to reduce allowable emissions for sources in and contributing to the Jefferson County NAA in order to support an attainment demonstration for the entire nonattainment area. We also urge DNR not to expend public resources pursuing an inappropriate clean data finding that is neither justified nor protective of the Jefferson County residents at risk of breathing unhealthy air.

Response: The proposed approach establishes new SO_2 emission limits at Ameren's power plants that ensure attainment of the 1-hour SO_2 NAAQS at the Mott Street monitor, while adding ambient SO_2 monitors and meteorological stations at Ameren Missouri's power plants in order to more accurately characterize air quality. This allows Ameren to either demonstrate compliance with the 1-hour SO_2 NAAQS at their power plants or establish technically defensible SO_2 emission limits, dependent on recorded monitoring data and subject to Air Program approval. To the extent that any new SO_2 emission limits would require Ameren to install air pollution control equipment such as scrubbers, this approach ensures that these investments, which can range into the hundreds of millions of dollars, would be made based on technically defensible data. Collecting actual on-site data both protects public health and considers economic impacts to the citizens of Missouri.

Map of Jefferson County SO2 NAA with 10km and 50 km Buffer areas and Violating Monitor

EXHIBIT A

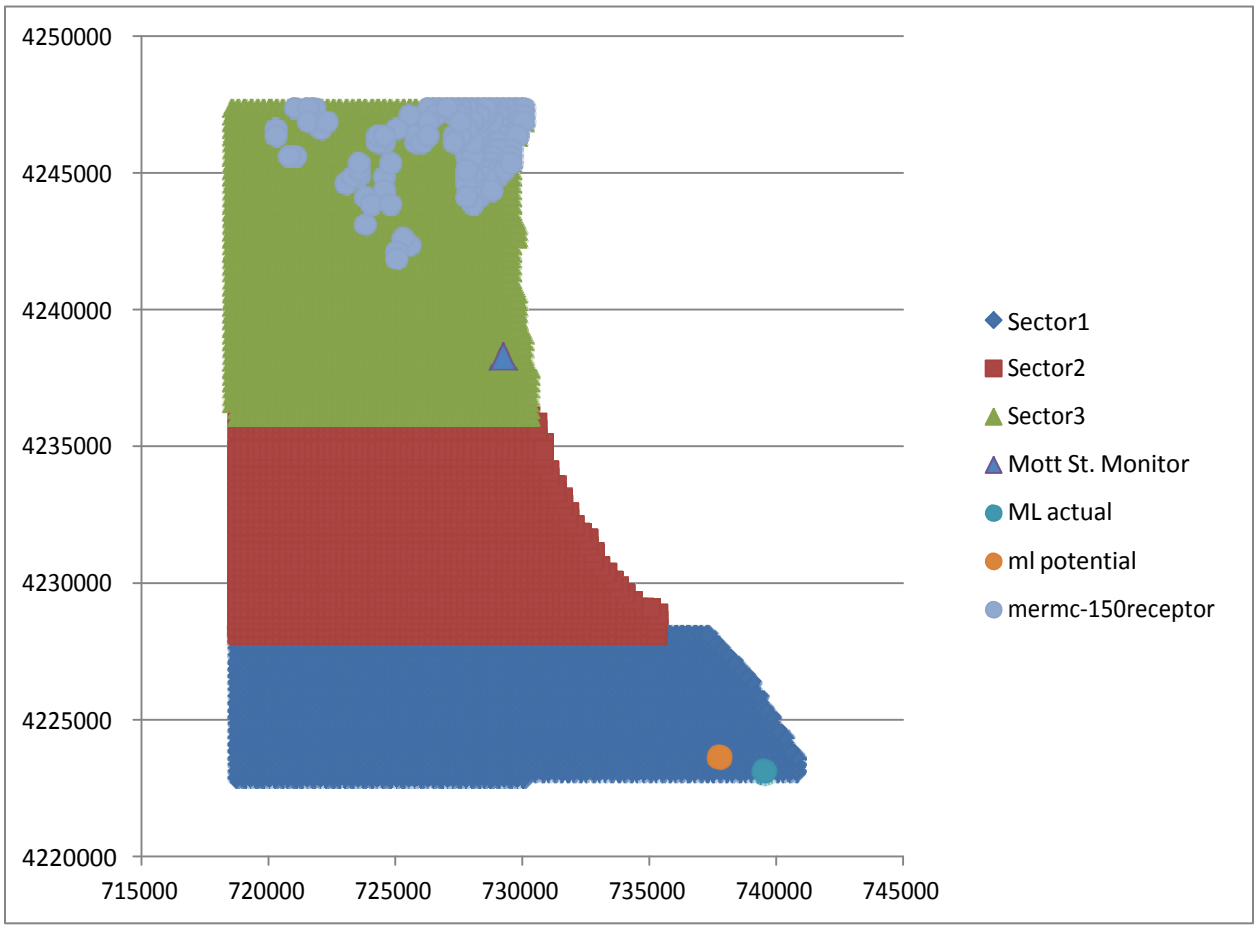
Draft 4-10-14



Distance from Mississippi Lime in Missouri to Violating Monitor in Jefferson County: 42.1 km
Distance from proposed Mississippi Lime in Illinois to Violating Monitor in Jefferson County: 29.9 km

Draft 4-10-14

****This is run3, where ML 5% above the actual Rush Island 90% reduction from PTE. Meramec 85% reduction from PTE**
****Labadie 75% reduction from PTE and AB 95% reduction from PTE. AA 4/14/14**
**** All NAA Sources incompliance with these reductions.**



<u>Input Data:</u>
<u>Rush</u>
* 90% control of potential emissions 1716.15 g/s
SO SRCPARAM RUSH1 171.61577 204.97 428.72 33.02 6.31
SO SRCPARAM RUSH2 171.61577 204.97 436.111 32.97 6.31
SO SRCPARAM RUSH3 0.882 84.58 577.594 10.06 1.52
<u>Mermec</u>
** 85% from poetential 453.82 g/s
SO SRCPARAM MERMC1 68.073 76.2 419.7055556 30.975808 3.3528
** 85% from poetential 453.82 g/s
SO SRCPARAM MERMC2 68.073 76.2 434.4833333 30.214316 3.3528
** 85% from poetential 919.23 g/s
SO SRCPARAM MERMC3 137.8845 106.68 462.0944444 41.270428 4.2672
** 85% from poetential 1096 g/s

Draft 4-10-14
SO SRCPARAM MERMC4 164.4 106.68 446.2055556 37.57676 4.8768
SO SRCPARAM MERMC6 0.33683433 9.7536 838.7055556 31.63824 3.6576
** 85% from poetential 42.3 g/s
SO SRCPARAM MERMC62 6.345 8.99 838.71 20.97 4.75

Labadie

** using 75 reduction % of PTE AA 4/1/14
SO SRCPARAM LABADIE1 934.85325 213.36 443.0648912 34.72064305 6.2484
SO SRCPARAM LABADIE2 934.85325 213.36 442.4920016 35.55833613 6.2484
SO SRCPARAM LABADIE3 923.362275 213.36 433.2043723 34.51691769 6.2484
SO SRCPARAM LABADIE4 923.362275 213.36 441.7078451 34.94594478 6.2484
SO SRCPARAM AB1 108.9947168 68.58 438.7055556 6.46684 3.048
SO SRCPARAM AB5C 100.1908579 68.58 460.9277778 5.842 3.048
SO SRCPARAM AB8B 39.44299794 68.58 449.8166667 5.62864 3.048
SO SRCPARAM AB9B 38.6865291 68.58 449.8166667 5.62864 3.048
SO SRCPARAM AB381 41.71814671 6.096 283.15 21.336 0.3048

October 30, 2013

First Round: 2010 1-hour SO_2 NAAQS Nonattainment Area Modeling

Summary

Staff has completed preliminary modeling for Missouri's two SO_2 nonattainment areas (NAA): Jefferson County and Jackson County. Based on the results from these models runs, staff has identified 12 sources with a contributing impact on the nonattainment area. It should be noted that two of the 12 sources are located in Kansas.

An individual email will be sent to each facility in Table 1 and Table 2 as an initial contact. The email will contain source information specific to each facility and will request confirmation of the information from the facility.

Table 1: Summary of facilities in the Jefferson County NAA with maximum impacts greater than the established background (based on actual emissions from 2012 EIQ)

Facility	**Max Impact ($\mu g/m^3$)**	**Anticipated Applicable Federal Regulations**
Ameren Meramec*	298.99	MATS
Ameren Rush Island*	255.17	MATS
River Cement **	108.5	Undetermined
Ameren Labadie*	67.057	MATS
Mississippi Lime	47.9	Boiler MACT
St. Gobain Containers	33.18	Boiler MACT
Established Background		*23.58* $\mu g/m^3$
2010 1-hour SO2 NAAQS	*(75 ppb)*	*Equivalent to 196.5* $\mu g/m^3$

* Continuous Emissions Monitoring data available for only certain individual emission units.

** Currently being reviewed for source parameter accuracy.

Table 2: Summary of facilities in the Jackson County NAA with maximum impacts greater than the established background (based on actual emissions from 2012 EIQ)

Facility	**Max Impact ($\mu g/m^3$)**	**Anticipated Applicable Federal Regulations**
Veolia Energy	392.97	Boiler MACT
KCPL Hawthorn*	75.47	MATS
IPL Blue Valley*	69.44	MATS
BPU Quindaro (KS)*	56.67	MATS
BPU Nearman (KS)*	36.17	MATS
KCPL Sibley*	35.24	MATS
Established Background		*34.06* $\mu g/m^3$
2010 1-hour SO2 NAAQS	*(75 ppb)*	*Equivalent to 196.5* $\mu g/m^3$

* Continuous Emissions Monitoring data available for only certain individual emission units.

Summary Details

A modeling protocol, describing the meteorological data used in the model and outlining the methodology used in our modeling approach, was prepared by staff and submitted to the EPA on Oct. 23, 2013 for review. AERMOD is the dispersion model used to determine compliance with the NAAQS. For this round of attainment demonstrations, compliance with the NAAQS was evaluated only in the nonattainment areas. As such, the receptor grid is contained exclusively within the NAA boundaries.

The impact of sources within the nonattainment area and within 50 km of the nonattainment area was evaluated. A buffered approach was developed to determine the source inventory for each nonattainment area. This approach (Table 3) used proximity to the nonattainment area, actual reported emissions, and calculated potential emissions as indicators for inclusion in the model inventory.

Table 3: Summary of buffered approach

Buffer level	Sources for inclusion in the inventory
Nonattainment Area	All SO2 sources
< 10 km from the NAA boundary	Sources with a PTE > 100 tpy
between 10 & 50 km from the NAA boundary	Sources with actual emissions > 100 tpy

Initial Base Run

In the initial run, sources were modeled using their annual reported emissions and release parameters, as reported in MOEIS. For Electric Generating Units (EGUs) that are required to use a Continuous Emissions Monitoring System (CEMS) and report those to the EPA's Clean Air Markets Division (CAMD) database, the CEMS data was used in lieu of actual reported MOEIS data. The 95th percentile of total emissions was chosen as the hourly emission rate in the model to exclude extreme anomalies that do not necessarily represent maximum emissions associated with peak loads at worst-case operating conditions.

A representative background concentration value [see value in Tables 1 & 2] was established for each area based on data obtained from area monitors. This background value accounts for any natural emissions as well as sources not explicitly included in the model inventory.

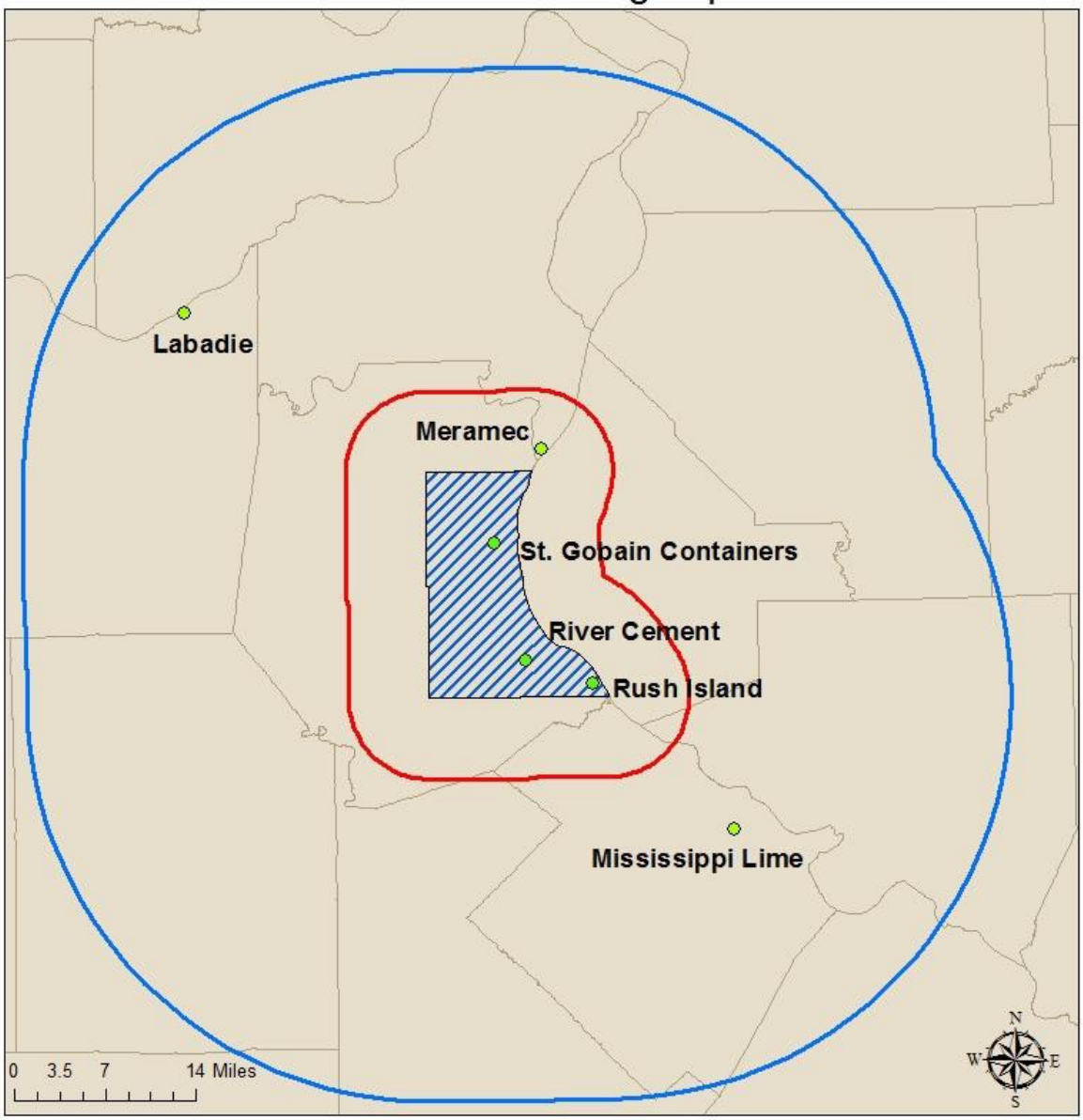
Results from the initial model run were analyzed to determine which facilities had a contributing impact within the nonattainment area. For this initial analysis, contributing impact is defined as having an impact greater than the established background concentration.

Future Considerations

Federal regulations such as the Mercury and Air Toxics Standards (MATS) MACT and the Boiler MACT may provide SO_2 emission reductions that could be applied in the attainment demonstrations. The MATS MACT includes an alternative SO_2 limit in place of the Hydrogen Chloride (HCl) limits for qualifying EGUs. The Boiler MACT allows the use of SO_2 CEMS for demonstrating compliance with HCl emission limits, with special conditions. Co-benefits for potential SO_2 emission reductions associated with controlling Hazardous Air Pollutant (HAP) emissions, specifically acid gas HAPs, are expected from units subject to the Boiler MACT. Certain provisions of both the MATS [40 CFR 63 Subpart 5U] and the Boiler MACT [40 CFR 63 Subpart 5D] are currently being reconsidered or proposed for amendment.

October 30, 2013

Jefferson County NAA with Buffers and Initial Model Run Contributing Impact Sources



MISSOURI
DEPARTMENT OF NATURAL RESOURCES

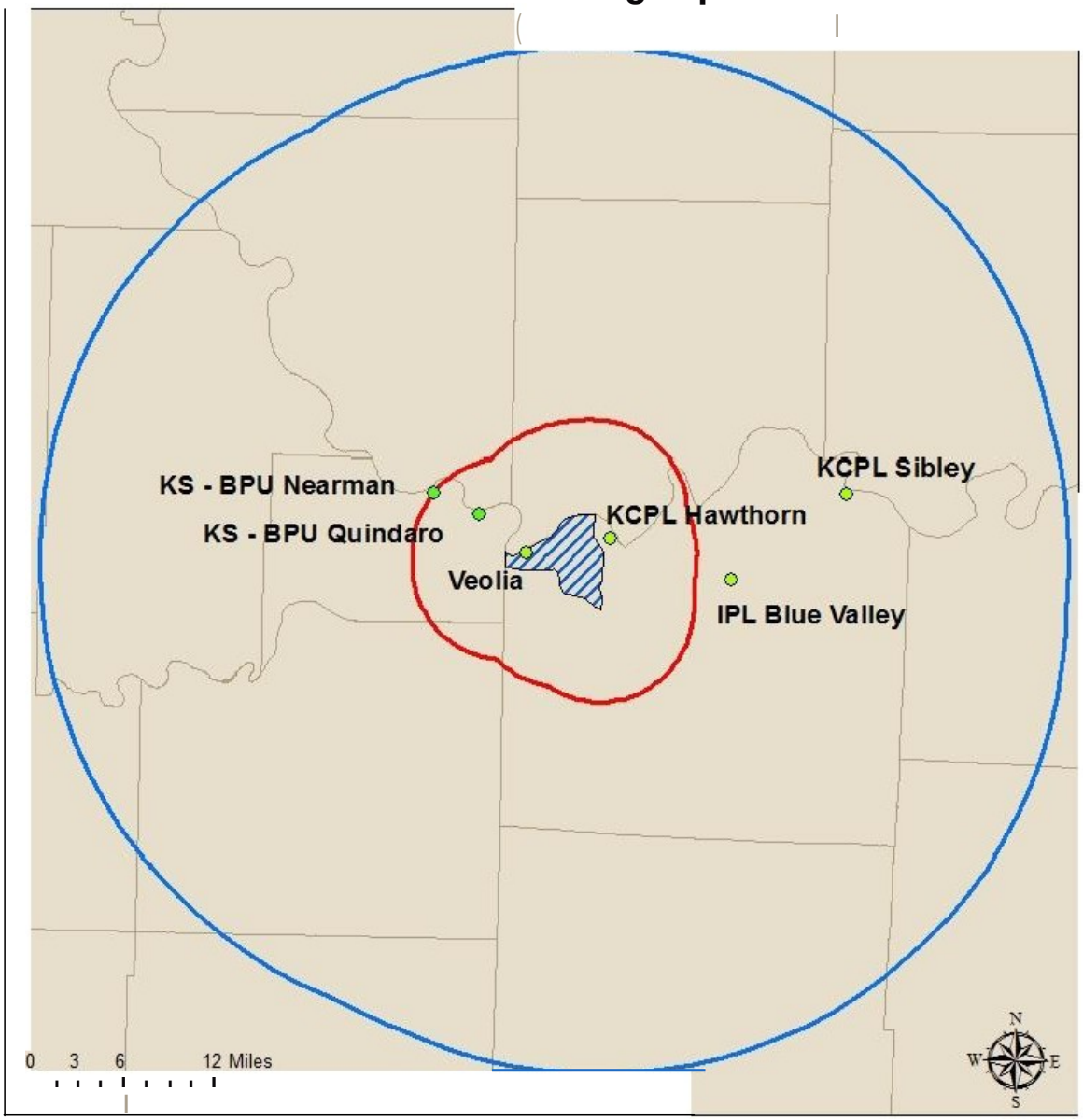
Division of Environmental Quality
Air Pollution Control Program
Prepared: October 29, 2013

Legend

- Impacting Sources (As shown in List)
- Jefferson 10 km Buffer
- Jefferson 50 km Buffer
- Jefferson County NAA

October 30, 2013

Jackson County NAA with Buffers and Initial Model Run Contributing Impact Sources



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DEPARTMENT OF NATURAL RESOURCES

Division of Environmental Quality
Air Pollution Control Program
Prepared: October 29, 2013

Legend

o Impacting Sources (As shown in list)
CJ Jackson 10 km Buffer
CJ Jackson 50 km Buffer
Jackson County NAA

ANNUAL SO2 EMISSIONS COMPARISON TABLE

	Doe Run	Data Source	Meramec Plant	Data Source	Rush Island Plant	Data Source
2000	28833.4	2	17929.7	1	26899.3	1
2001	26639.7	2	22635.4	1	19874.6	1
2002	15223.4	2	16446.5	1	23255.5	1
2003	14866.3	2	15450.9	1	24993.2	1
2004	16679.7	2	29685.6	1	22917.8	1
2005	41845.2	2	18013.4	1	28385.1	1
2006	44306.6	2	20661.5	1	28674.5	1
2007	32904	3	22767.3	1	22461.7	1
2008	35998	3	20828.5	1	29594.3	1
2009	18842	3	16855.7	1	28326.8	1
2010	19847	4	17074.9	1	26066.1	1
2011	15229	4	15282.5	1	28036	1
2012	17889	4	9532.7	1	20422.8	1
2013	11462	5	5962.4	1	19587.2	1

Data Sources

1 EPA Air Markets Program Data
2 Facility Title V Permit
3 SO2 Boundary Recommendation for Missouri
4 DNR SO2 Planning Data Spreadsheet (MoEIS)
5 DNR Modeling Input

Response to Comment(s) from Empire District Electric Company.

Comment:
The Empire District Electric Company (EDE) submits the following comments regarding the Missouri Department of Natural Resources (MDNR) Air Program's proposed rule to establish requirements for emission units emitting sulfur dioxide (SO_2). The proposed requirements are necessary to comply with the one (1)-hour SO_2 National Ambient Air Quality Standards (NAAQS) and to maintain existing SO_2 regulatory requirements previously found in 10 CSR 10-6.260 that were in place prior to the establishment of the (1)-hour SO_2 NAAQS.

The proposed rule, 10 CSR 10-6.261, section (1)(C) is not clear regarding its intent to exclude certain emission sources from the rule. The proposed language reads: "This rule applies to any source that emits sulfur dioxide (SO_2) except- Units subject to a more restrictive SO_2 emission limit or fuel sulfur content limit under 10 CSR 10-6.070 or any federally enforceable permit."

It is unclear if the (1)(C) exemption applies to an SO_2 emission unit that has a "more restrictive" fuel sulfur content limit under 10 CSR 10-6.070 or just any fuel sulfur content limit under 10 CSR 10-6.070 that applies.

Also, it is unclear if the (1)(C) exemption applies to an SO_2 emission unit that has a "more restrictive" federally enforceable permit or simply "any" federally enforceable permit.

Please provide clarity to language of section (1)(C) to make more understandable.

Response: The department's Air Pollution Control Program has reworked the wording in subsection (1)(C) to make the exception criteria more clear. The intent of the wording is to except from the rule those sources or units that are subject to a stricter SO_2 emission limit or fuel sulfur content as a result of another rule or federally enforceable permit.