

RECOMMENDATION FOR ADOPTION

MISSOURI STATE IMPLEMENTATION PLAN REVISION –

REDESIGNATION REQUEST AND MAINTENANCE PLAN FOR THE 2010 SULFUR DIOXIDE STANDARD JEFFERSON COUNTY NONATTAINMENT AREA

On August 31, 2017, the Missouri Air Conservation Commission held a public hearing for the Missouri State Implementation Plan (SIP) revision entitled – Redesignation Request and Maintenance Plan for the 2010 Sulfur Dioxide Standard – Jefferson County Nonattainment Area. All comments received by the close of the public comment period, September 7, 2017, are posted online (in their entirety) at <http://dnr.mo.gov/env/apcp/stateplanrevisions.htm>. A summary of comments received and the air program’s corresponding responses are included on the same webpage. Revisions were made to the proposed plan as a result of comments received.

The revised plan has not been reprinted in the briefing document due to its volume. However, the Executive Summary is included for reference. The entire revised plan is available for review at the Missouri Department of Natural Resources’ Air Pollution Control Program, 1659 East Elm Street, Jefferson City, Missouri, 65101, (573)751-4817. It is also available online at <http://dnr.mo.gov/env/apcp/stateplanrevisions.htm>.

The air program recommends the commission adopt the plan as revised. If the commission adopts this plan, the department intends to submit it to the U.S. Environmental Protection Agency for inclusion in the Missouri State Implementation Plan.

Executive Summary

This plan demonstrates how the air program will maintain the 2010 1-hour sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS). This plan is referred to as a “maintenance plan” and specifically focuses on the Jefferson County SO₂ nonattainment area for the 10 year period ending in 2029.

On August 5, 2013, the EPA designated a portion of Jefferson County, Missouri as nonattainment based on air quality data from 2007-2009 that indicated a violation of the 2010 SO₂ NAAQS at the Herculaneum Mott Street monitor (78 FR 47191; August 5, 2013). Since then, ambient air monitoring data from 2013-2015 at the same monitor shows that the air quality in the area is now 12% below the standard. Additional monitors have been deployed in the area and data from these monitors have shown that the air quality is less than half of the standard to date. Based on this information, the air program is requesting EPA redesignate the area to attainment.

The Clean Air Act requires EPA approval of a state’s maintenance plan as meeting the minimum requirements set in the Clean Air Act (Section 175A) prior to redesignating any nonattainment area to attainment. As such the air program has developed this maintenance plan to address these minimum requirements. The plan identifies improvement in air quality as attributable to the permanent and enforceable emissions reductions at the Doe Run primary lead smelter in Herculaneum. The plan also provides for maintaining clean air in the area for at least 10 years after the redesignation, or the maintenance period. Contingency measures are included in the event that air quality issues arise.

The plan also includes strengthened stack emission limitations for three Ameren Missouri Energy Center facilities and information on the operation of an ambient SO₂ monitoring network for the Ameren Missouri Rush Island Energy Center, located within the Jefferson County SO₂ nonattainment area.

Since the Jefferson County nonattainment area is attaining the 2010 1-hour SO₂ standard, the air program is requesting EPA approve this plan and redesignate the area to attainment.

COMMENTS AND RESPONSES ON

MISSOURI STATE IMPLEMENTATION PLAN REVISION

REDESIGNATION REQUEST AND MAINTENANCE PLAN FOR THE
2010 SULFUR DIOXIDE STANDARD
JEFFERSON COUNTY NONATTAINMENT AREA

The public comment period for the proposed *Redesignation Request and Maintenance Plan for the 2010 Sulfur Dioxide Standard Jefferson County Nonattainment Area* opened on July 31, 2017 and closed on September 7, 2017. Revisions to the proposed plan were made as a result of comments.

The following is a summary of comments received and the Missouri Department of Natural Resources' Air Pollution Control Program's (air program's) corresponding responses. Any changes to the proposed plan are included in the response to comments.

SUMMARY OF COMMENTS: During the public comment period for the proposed plan, the air program received written comments from the following sources: the U.S. Environmental Protection Agency (EPA), Ameren Missouri (Ameren), Holcim Inc., REGFORM, and the Washington University School of Law Interdisciplinary Environmental Clinic on behalf of Sierra Club (Washington University). Ameren and Washington University also provided verbal testimony during the public hearing for the proposed plan.

Due to the similar nature of the first four comments, one response is provided for all four comments

COMMENT #1: EPA commented that the Clean Data Determination for the Jefferson County 2010 sulfur dioxide (SO₂) nonattainment area was signed on August 24, 2017, which indicates that current air quality in the area is in compliance with the 2010 SO₂ National Ambient Air Quality Standard (NAAQS). They state that they are encouraged by the improvement in air quality in the nonattainment area and that they are committed to working with the state to redesignate the area to attainment.

COMMENT #2: Ameren commented that the state's attainment plan for the area has achieved and ensured attainment of the 2010 SO₂ NAAQS in the Jefferson County nonattainment area, and they expressed their support of the proposed redesignation request and maintenance plan.

COMMENT #3: Holcim Inc. commented that they are a member of REGFORM and that they support the comments submitted by REGFORM which support adoption of the redesignation request and maintenance plan without revision.

COMMENT #4: REGFORM commented to urge the Missouri Air Conservation Commission to adopt the redesignation request and maintenance plan without revision and to submit the plan to

EPA for inclusion in the Missouri State Implementation Plan. They state that SO₂ concentrations from 2013-2015 at the violating Mott street monitor are 12% below the level of the 2010 SO₂ NAAQS. They state that the proposed maintenance plan was developed in accordance with the Clean Air Act. They state that the plan acknowledges the permanent and enforceable emission reductions at the Doe Run primary lead smelter in Herculaneum, the stack emission limits at three Ameren facilities, the requirement for continued monitoring of SO₂ concentrations near the Rush Island facility, and the inclusion of contingency measures that will be taken if air quality issues arise in the future.

RESPONSE: The air program acknowledges the comments in support of the SIP revision for the Jefferson County SO₂ nonattainment area. The air program agrees the proposed maintenance plan was developed in accordance with the Clean Air Act and appreciates the support. No changes to the plan were made as a result of these comments.

Due to the similar nature of the following six comments, one response is provided for all six comments.

COMMENT #5: EPA commented that Section 107(d)(3)(E) of the Clean Air Act states that an area may be redesignated if EPA has determined that improvement in air quality is due to permanent and enforceable reductions in emissions resulting from the SIP, federal regulations and other permanent and enforceable reductions. They further note that their understanding of the proposed plan is that the state is relying, in part, on a 9,000 tons/year reduction in SO₂ emissions from Ameren's Rush Island facility to attain and maintain compliance with the 2010 SO₂ NAAQS. EPA states that if this reduction in emissions is needed to show attainment and maintenance of the NAAQS, then the state must explain how these reductions are permanent and enforceable in light of the fact that the Ameren Consent Agreement relied upon in the plan allows for emissions from this facility that are higher than both the attainment year and future year emission inventories included in the plan. EPA acknowledges that the plan also notes that the Rush Island facility is required to comply with federal regulations such as the Mercury and Air Toxics Standards and the New Source Performance Standards; however, EPA says that reliance upon these measures would require a demonstration as to how these regulations reduce SO₂ emissions in a permanent and enforceable manner.

COMMENT #6: Washington University commented that the emission reductions relied upon to achieve attainment are not entirely due to permanent and enforceable emission reductions. They state that the shutdown of the primary lead smelter in Herculaneum is permanent and enforceable, but because the Rush Island facility is emitting well below its required limits, the limits for that facility are not responsible for any emission reductions contributing to attainment of the NAAQS.

COMMENT #7: Washington University commented that the maintenance plan is based on unrealistic assumptions about future year emissions from the Rush Island facility and that the maintenance demonstration should assume that sources are operating at permitted levels (or historic peak levels) unless evidence is presented that such an assumption is unrealistic. They claim that the enforceable limits in place are insufficient to ensure that current air quality conditions will be maintained in the future.

COMMENT #8: Ameren commented that they have voluntarily agreed to a limit under their Title V operating permit to only fire natural gas at their Meramec Units 1 and 2. They also noted that since 1990 SO₂ emissions at their facilities have reduced by 86% and since 2005 they have reduced by 63%, and that these reductions have occurred while electric generation has increased to meet growth in electricity demand. They note that the SO₂ limits in the consent agreement are 50% lower than the previous limits that were in place and that actual SO₂ emissions from the Rush Island facility this year are 70% below the new lower emission limit contained in the consent agreement.

COMMENT #9: Ameren commented that they voluntarily entered into the consent agreement and that the consent agreement recognized that the Ameren facilities were not the cause of nonattainment. They noted that since the Doe Run primary lead smelter in Herculaneum, MO ceased smelting operations in December 2013, the SO₂ concentrations at the violating Mott Street monitor quickly lowered to near-background levels. Because the Rush Island facility and two other Ameren facilities within the vicinity of the nonattainment area (Meramec and Labadie) were operating during the 2014-2016 time period, this provides evidence that the Doe Run smelter, not Ameren's facilities, were the cause of the nonattainment area.

They stated that the voluntary agreement for lower SO₂ limits at Rush Island, Meramec, and Labadie, as well as the installation of the ambient air quality monitoring system around the Rush Island facility, do provide additional benefits to air quality in the area. The primary "major control strategy" relied on by the air program to achieve the permanent and enforceable emissions reductions necessary to bring the Jefferson County nonattainment area into attainment was the shutdown of the Doe Run primary lead smelter.

COMMENT #10: In support of the redesignation request and maintenance plan, Ameren provided the comments that they submitted to EPA during the public comment period for the Clean Data Determination for the area. In those comments, Ameren provided three new modeling analyses in addition to the modeling analysis the air program submitted in support of the Clean Data Determination. Ameren performed two of the three analyses utilizing more recent versions of modeling software and modeling input options unavailable when the air program performed its modeling analysis. The final analysis Ameren performed included constant, unrealistically high emission rates (99th percentile of actuals) from all of the Ameren facilities located within or in the vicinity of the nonattainment area, and that modeling analysis still provided for attainment of the NAAQS throughout the nonattainment area.

RESPONSE AND EXPLANATION OF CHANGE: The air program is revising the plan to clarify that the limits, along with the monitoring requirements, that were placed on the Ameren facilities within and near the nonattainment area through the consent agreement were not intended to drive emission reductions at these facilities. Rather, they are intended to act as a backstop to prevent large emission increases from occurring at these facilities. The plan does not rely on any emission reductions from these facilities, as reductions from these facilities are not necessary to demonstrate attainment. Furthermore, while the emissions at the Rush Island facility have coincidentally reduced by approximately 9,000 tons/year from 2011 to 2014, the

state does not rely on these reductions to continue throughout the 10-year maintenance period in order to ensure compliance with the 2010 SO₂ NAAQS will be maintained throughout the area.

The air program believes that the method of projecting emissions for the Rush Island facility in the proposed plan is both reasonable and conservative based on historical emission trends observed at the site. Historically, SO₂ emissions at this facility have consistently trended downward for decades. Therefore, the future year emissions inventory in the plan is conservatively holding emissions at this facility steady; although, based on historical trends, it would be reasonable to project that even further emission reductions will occur at the facility throughout the ten-year maintenance period.

Both the proposed redesignation demonstration and the maintenance plan, however, did rely upon emission inventory demonstrations. The proposed redesignation demonstration compared violating year emissions to attainment year emissions in order to demonstrate that attainment/improvement in air quality was achieved as a result of permanent and enforceable emission reductions. Similarly, the proposed maintenance plan compared projected future year emissions with attainment year emissions in order to demonstrate that compliance with the NAAQS would be maintained throughout the ten-year period. In light of these six comments listed above, and to further support the fact that the state's plan does not rely upon reductions from the Ameren facilities to achieve attainment nor does the plan rely upon coincidental, unenforceable emission reductions to continue, a new chapter (Chapter 6) has been added to the final plan.

This new chapter in the plan includes a highly conservative modeling demonstration, which is very similar to one of the modeling demonstrations that Ameren submitted to EPA in support of the Clean Data Determination for the area. The air program reviewed Ameren's modeling demonstration, verified all of the inputs, and reran the model to check the modeling results. In this new analysis included in Chapter 6 of the plan, emissions at the Rush Island facility (within the nonattainment area) and the Labadie facility (located west but in the vicinity of the nonattainment area) were held constant at their 99th percentile highest observed emission rate during the 4-year period from 2013-2016. The emissions at Units 3 and 4 of the Meramec facility (located north but in the vicinity of the nonattainment area) were also held constant at their 99th percentile highest observed emission rate during the 4-year period from 2013-2016. Units 1 and 2 at the Meramec facility were modeled at their current emission limit for natural gas to reflect the enforceable switch through their operating permit to fire natural gas, not coal, at these two units.

These conservative and unrealistically high emission rates at the three facilities are above the level the air program considers permanent and enforceable for purposes of the Clean Air Act. Missouri participates in the federal cross-state air pollution rule (CSAPR) SO₂ Group 1 Trading Program. This is an emissions cap and trade program that requires power plants in the states covered by the rule to surrender one emission allowance for every ton of SO₂ emissions they emit during the year. Each power plant is given a budget of emission allowances each year that can be used for compliance, banked for use in a future year, traded, or sold to other power plants that are subject to the rule. In order to guard against excessive trading or the excessive use of banked allowances during any given year, CSAPR includes assurance levels which are set 18%

higher than the annual allowance budget. If a group of power plants under the same owner exceed their assurance level and the state as a whole exceeds its assurance level, then allowance penalties are assessed at a 3-to-1 rate for every ton of emissions over the assurance level. This means that if a utility exceeds its assurance level, not only will the power plant have to purchase (or use previously banked) allowances to cover all emissions above their annual budget up to their assurance level, they will also potentially be subject to this 3-to-1 penalty for any emissions over their assurance level. This penalty provision makes it extremely risky and potentially very costly for any group of power plants under common ownership to exceed their assurance level in any given year. Therefore, the assurance level of CSAPR acts as an enforceable cap on emissions in any given year.

Over 99% of Ameren's total annual budget of SO₂ allowances in Missouri for the CSAPR SO₂ Group 1 Trading Program comes from four facilities including Meramec, Labadie, Rush Island, and Sioux. The total budget of CSAPR SO₂ allowances for these four facilities is 82,683 tons/year. Increasing the budget by 18% provides a total assurance level for these four facilities at 97,566 tons/year. Total annual SO₂ emissions from these four facilities would equal 104,946 tons/year if we added the following emission figures together:

- The average actual emissions from the Sioux facility, which operates a highly efficient wet scrubber that allows it to control SO₂ emissions well below its annual CSAPR budget, from 2015-2016 (the first two years that CSAPR was in effect)
- The annual emissions calculated by holding the 99th highest actual percentile emissions for Meramec (Units 3 and 4), Labadie (Units 1-4), and Rush Island (Units 1 and 2) constant, as described in the approach used in the conservative modeling demonstration.
- The annual emissions calculated for Meramec Units 1 and 2 based on the peak natural gas-fired emission rate for SO₂.

If total emissions from these four facilities equal 104,946 tons in any year, it would exceed Ameren's aggregate assurance level for these four facilities by 7,380 tons. Therefore, this level of emissions is beyond the level of emissions that the air program would consider enforceable based on the assurance provision penalties in CSAPR. In fact, the calculated annual SO₂ emissions using the 99th percentile approach for Rush Island is 30,375 tons/year. This level of annual emissions is higher than any amount of annual SO₂ emissions measured by this facility since 1995, which illustrates the very conservative nature of this analysis. Despite the fact that this scenario models emission levels above what the air program would consider enforceable according to the Clean Air Act, and the levels for the facility located in the nonattainment area are higher than levels that have been recorded ever since 1995, the analysis still demonstrates attainment of the NAAQS throughout the entire nonattainment area. This demonstrates clearly that the coincidental reductions that occurred at the Rush Island facility from 2011 to 2014 were not necessary to achieve attainment of the NAAQS, and that the federally enforceable limits that apply to the Ameren facilities are more than adequate to demonstrate that attainment of the NAAQS will continue throughout the ten-year maintenance period included in the plan

Due to the similar nature of the following four comments, one response is provided for all four comments.

COMMENT #11: Washington University commented that the ambient SO₂ monitors in the network surrounding the Rush Island facility are not located in areas where peak SO₂ concentrations are expected and cannot be relied upon to verify future NAAQS compliance or to trigger contingency measures.

COMMENT #12: Ameren commented that the three ambient monitors installed around the Rush Island facility were approved by EPA as part of the MDNR's 2016 Monitoring Network Plan as industrial monitors, meaning that the monitors are properly sited for NAAQS compliance monitoring of actual ambient conditions.

COMMENT #13: Ameren commented that during evaluation of the monitoring sites at the Rush Island facility back in 2015, the air program concluded that the locations of the Weaver site (area 2) to the northwest, the Natchez site (area 1) to the southwest, and the Fults site (area 3) to the northeast "are the best options to represent Rush Island Energy Center's SO₂ air quality impacts." They noted that the air program's review also evaluated two other sites, including a site to the south (area 4) and a site to the southeast (area 5). They also noted the several statements made by the air program during the evaluation of the Rush island monitoring sites including:

1. The area to the Southwest (Natchez site) has a higher number of receptors with high concentrations than the area directly to the South of the facility (area 4), which supports placement of a monitor at the Natchez site in the southwest area over area 4 to the south.
2. The predominant wind direction in the area also supported the monitor being placed in southwest area rather than the area directly to the south.
3. The area located south of Rush Island Energy Center (area 4), mainly consisted of private industrial property occupied by Holcim Inc.

COMMENT #14: Ameren commented that the EPA relied in part on the monitoring data collected at the Rush island monitors, which was submitted by the air program along with a modeling analysis in order to support the Clean Data Determination for the area. Ameren states that no objections to the air program's submission and EPA's reliance, in part, on this monitoring data were submitted to EPA in response to EPA's June 23, 2017, proposed determination of attainment rule for the area. As such, Ameren stated that it is inappropriate at this time to challenge the sufficiency of the monitoring locations because both the air program and EPA have already approved the monitoring locations and relied in part on the data collected by those monitors in support of the Clean Data Determination for the area.

RESPONSE: The air program notes that the SO₂ monitors located around Rush Island have a state approved Quality Assurance Project Plan and information on these monitors, including the siting analysis for the placement of these monitors, was included in the 2015 and 2016 monitoring network plans.

The air program followed the design criteria for ambient air monitoring found in federal regulation 40 C.F.R § 58. Specifically, Appendix E to Part 58 establishes the specific requirements for monitor/probe siting to ensure the ambient data represents the stated objectives and spatial scale. In addition, the air program used the February 2016 EPA document titled "SO₂ NAAQS Designations Source-Oriented Monitoring Technical Assistance Document"

(monitoring TAD) for guidance on determining an appropriate monitoring location to capture air quality of ambient air. Ambient air is defined in 40 C.F.R § 50.1, as that portion of the atmosphere, external to buildings, to which the general public has access.

The area to the south, where peak SO₂ concentrations are modeled, is located within the property boundary of another air emission source. This area does not meet the definition of ambient air because the fenced property boundary precludes general public access. Therefore, this is not an appropriate site for an ambient SO₂ monitoring station. In fact, removing areas not considered ambient from consideration in the model leaves the area surrounding the Fults monitor as the area of maximum concentration, thus addressing one commenters concern that the monitors are not located in areas where peak SO₂ concentrations are expected.

In addition, consistent with the monitoring TAD, the air program determined the number and location of monitoring sites for the Rush Island Energy Center using a case-by-case technical evaluation. Information on these monitors, including the siting analysis for the placement of these monitors, was included in the 2015 and 2016 monitoring network plans, and these plans were posted for public comment on the air program's website. Characteristics and complexity of the surrounding area indicates multiple monitoring sites are appropriate for additional spatial coverage, as suggested in the EPA Monitoring TAD Page A-10:

Even in situations where the measured concentrations at any given monitor are not the peak values that would be driving the design values in the area, the characterization of SO₂ concentrations around the SO₂ source are enhanced, furthering the understanding of exposures and dispersion in that area. This data will allow for a more complete understanding of the likely SO₂ concentration gradients in an area, increased understanding of the frequency at which certain locations see SO₂ concentration maxima, and increased detail and confidence in any NAAQS determination activity.

No changes to the plan were made as a result of these comments.

Due to the similar nature of the following two comments, one response is provided for both comments.

COMMENT #15: EPA commented that the plan indicates the state's commitment to continue monitoring at the design value monitor and the industrial source monitors surrounding the Rush Island facility to provide continued verification of attainment and trigger contingency measures during the 10-year maintenance period. EPA requests the state to provide more information on how its proposed commitment to operate the industrial monitors relates to Ameren's monitoring obligations in the Ameren Consent Agreement.

COMMENT #16: Washington University commented that the maintenance plan lacks a 10-year commitment to conduct ambient SO₂ monitoring in order to verify continued attainment throughout the 10-year maintenance period.

RESPONSE: The requirements for the monitors located around Rush Island are separate from the Jefferson County SO₂ maintenance demonstration, and therefore, the comments on the monitoring requirements are beyond the scope of the maintenance plan. In response to

comments #15 and #16, the air program directs the commenters to the revised Jefferson County SO₂ maintenance demonstration. The maintenance demonstration was revised (in response to comments #6 through #10) to further clarify which requirements are necessary to achieve and to demonstrate attainment in the area throughout the ten-year maintenance period. No changes were made to the plan as a result of these comments.

The following two comments were comments that Ameren provided to EPA during the federal public comment period for the Clean Data Determination for the area. Ameren provided a copy of these comments to the air program in support of the redesignation request and maintenance plan.

COMMENT #17: Ameren commented that the air program's modeling analysis submitted to EPA in support of the Clean Data Determination for the area was highly conservative because it included a background concentration of 9 parts per million (ppm) SO₂ to account for sources that were not captured in the inventory and explicitly modeled. They state, however, that the interactive source inventory utilized by the air program was very complete, so the high background concentration likely double-counts emissions, making it a very conservative method.

RESPONSE: The air program acknowledges the completeness of the Jefferson County SO₂ interactive source inventory submitted in support of the area's recent Clean Data Determination. No changes to the plan were made as a result of this comment.

COMMENT #18: Ameren commented that their modeling analyses, combined with actual SO₂ monitoring data, supports a conclusion that dispersion modeling generally overstates actual pollution concentration impacts. They also state that the modeled actual SO₂ emissions from 2016 significantly over-predicted ambient concentrations in the area surrounding the Rush Island facility when compared to actual concentrations recorded by the monitors.

RESPONSE: Under the requirements of the consent agreement with Ameren, both the air program and Ameren have the opportunity to conduct a model performance evaluation, which combined with analyses of recorded SO₂ monitoring data, will ascertain if the dispersion model is representative of actual SO₂ concentrations within the Jefferson County SO₂ nonattainment area. No changes to the plan were made as a result of this comment.

COMMENT #19: Washington University commented that the maintenance plan lacks an adequate contingency plan with clearly identified measures to take in the event that future air quality issues arise.

RESPONSE: The air program maintains that the contingency plan included in the maintenance plan adequately fulfills the contingency measure requirements specific to the 1-hour SO₂ standard, as well as the contingency provision requirements of Section 175A of the Clean Air Act. Section 175A(d) requires contingency provisions to promptly correct any violation of the 1-hour SO₂ NAAQS that occur after redesignation. Unlike Section 172(c)(9), Section 175A does not explicitly require contingency measures take effect without further action by the state. Rather the maintenance plan should ensure contingency measures are adopted and implemented as expeditiously as practicable once they are triggered. The plan should clearly identify the

measures to be adopted, provide a schedule and associated procedures for adoption and implementation, and provide a specific time limit for action.

The General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990 and the SO₂ nonattainment area SIP guidance, provides further discussion on contingency measures specifically for SO₂. *See* 57 Fed. Reg. 13498 (April 16, 1992) and *Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions*, 41-42, (U.S. E.P.A. Apr. 23, 2014). In many cases, attainment revolves around compliance of a single source, or small set of sources, with emission limits shown to provide for attainment. In those cases, EPA interprets contingency measures to mean the state has a comprehensive program to identify sources of violations of the SO₂ NAAQS and to undertake aggressive follow-up for compliance and enforcement, including expedited procedures for establishing enforceable consent agreements pending the adoption of a revised SIP(s). 57 Fed. Reg. 13498, at 13547

No changes to the plan were made as a result of this comment.

