



Missouri Department of Natural Resources
Regulatory Impact Report
In Preparation For Proposing
New Rule 10 CSR 10-6.261

Applicability: Pursuant to Section 640.015 RSMo, “all rulemakings that prescribe environmental conditions or standards promulgated by the Department of Natural Resources...shall... be based on the regulatory impact report...” This requirement shall not apply to emergency rulemakings pursuant to section 536.025 or to rules of other applicable federal agencies adopted by the Department “without variance.”

Determination: The Missouri Department of Natural Resources has determined this rulemaking prescribes environmental conditions or standards and verifies that this rulemaking is not a simple unvarying adoption of rules from other federal agencies. Accordingly, the Department has produced this regulatory impact report which will be made publicly available for comment for a period of at least 60 days. Upon completion of the comment period, official responses will be developed and made available on the agency web page prior to filing the proposed rulemaking with the Secretary of State. Contact information is at the end of this regulatory impact report.

1. Describe the environmental conditions or standards being prescribed.

This new rule will set enforceable environmental conditions and emission limits necessary to address the U.S. Environmental Protection Agency’s (EPA’s) 1-hour sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS) of 75 parts per billion (ppb) [75 Federal Register (FR) 35520, June 22, 2010]. The rule is a core component of the Missouri State Implementation Plans (SIPs) for the Jackson and Jefferson County SO₂ nonattainment areas. In addition, this proposed rule incorporates all necessary existing provisions from 10 CSR 10-6.260 Restriction of Emission of Sulfur Compounds (i.e., provisions in place prior to the 1-hour SO₂ NAAQS) in order to consolidate SO₂ requirements and reduce confusion for Missouri’s SO₂ emission sources.

This proposed rule serves as the permanent and enforceable mechanism that will support attainment demonstration SIPs for the Jackson and Jefferson County SO₂ nonattainment areas. The SO₂ emission limits and unit-specific fuel requirements in Table I for Independence Power and Light’s Blue Valley power plant, Kansas City Power and Light’s Hawthorn and Sibley power plants, and Veolia Energy are set at the level needed to demonstrate attainment of the 1-hour SO₂ NAAQS within the Jackson County nonattainment area. In addition, the SO₂ emission limits in Table I for Ameren Missouri’s Labadie, Meramec, and Rush Island power plants ensure compliance at the Mott Street SO₂ monitor and support the attainment demonstration for the Jefferson County nonattainment area. All Table I emission limits and fuel requirements would become effective January 2017, consistent with EPA’s SO₂ nonattainment SIP guidance.

The primary SO₂ source contributing to the violating Troost monitor in Jackson County is still operating (Veolia Energy), and the control strategy for bringing this monitor into compliance will be implemented through this rulemaking. In Jefferson County, the approach is different because the main control strategy—the closure of the Doe Run Herculaneum lead smelter as required by federal consent decree—has already been implemented. After the smelter ceased operations at the end of 2013, SO₂ concentrations at the violating Mott Street monitor have dropped significantly. This monitor is expected to be in compliance with the 1-hour SO₂ NAAQS by the end of 2015, which is over two years earlier than the attainment date of October 2018.

In conjunction with this rulemaking, the Air Program is pursuing agreements with Ameren Missouri to install and operate new ambient SO₂ monitors and meteorological stations at their Rush Island and Labadie power plants beginning in 2015. Rush Island is located within the Jefferson County nonattainment area boundary, and Labadie (roughly 22 miles northwest of the nonattainment boundary) is the state's largest SO₂ emitter currently operating. The Rush Island agreement will also specify a process for evaluating the data collected at this plant and, if needed, establishing tighter SO₂ emission limits (compared to the limits in Table I of the proposed rule) in an expeditious timeframe using the data collected on-site. Any adjustments to the SO₂ emission limits in Table I would be completed via a future revision to these agreements and/or to 10 CSR 10-6.261.

On a parallel path, the Air Program is proceeding with a "clean data finding" (determination that the area is attaining the 1-hour SO₂ NAAQS) for Jefferson County, once the three-year period demonstrates compliance with the monitor at the end of 2015. This clean data finding, subject to EPA approval, would suspend certain nonattainment SIP requirements for Jefferson County. Note that this approach for the unique situation in the Jefferson County nonattainment area is based on our current thinking. We are still evaluating SIP options, and this is subject to change.

Details associated with the air quality modeling demonstrations and other supporting information for the Table I SO₂ 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).

Regarding the aspect of this rulemaking that streamlines and consolidates existing SO₂ requirements from 10 CSR 10-6.260, obsolete provisions are being eliminated and provisions that cannot be replaced with (existing) equivalent or more stringent SO₂ requirements are being carried forward into the proposed new rule. The main 10 CSR 10-6.260 provisions being eliminated include the following:

- Distinction between indirect and direct heating sources;
- Sulfuric acid and sulfur trioxide limits of 35 and 70 micrograms per cubic meter (µg/m³);
- SO₂ concentration limits of 2,000 and 500 parts per million by volume (ppmv); and

- SO₂ emission limits for named sources that no longer operate or are covered by another enforceable mechanism.

10 CSR 10-6.260 provisions being retained in the new rule include:

- Exemption for small sources;
- Exemption for units subject to an applicable SO₂ emission limit under 10 CSR 10-6.070 New Source Performance Regulations;
- Exemption from SO₂ emission limits for units using natural gas and LPG;
- SO₂ emission limits for named sources not contributing to the Jackson and Jefferson County SO₂ nonattainment areas (listed in Table II of 10 CSR 10-6.261);
- St. Louis and outstate SO₂ emission limits of 2.3 pounds per million British thermal units (lbs/MMBtu) and 8.0 lbs/MMBtu; and
- 2% and 4% sulfur content limits for coal and fuel oil in the St. Louis area.

While the requirements being carried forward from 10 CSR 10-6.260 are not necessarily reflective of the 1-hour SO₂ NAAQS, they are needed to maintain the existing level of SO₂ emissions control in portions of the state outside the SO₂ nonattainment areas. The technical support document accompanying this proposed rule (“Anti-Backsliding Demonstration for the Consolidation of 10 CSR 10-6.260 Restriction of Emission of Sulfur Compounds with New Rule 10 CSR 10-6.261 Control of Sulfur Dioxide Emissions”) further details which 10 CSR 10-6.260 provisions are being eliminated and which are being retained. The technical support document also demonstrates that omitting the obsolete 10 CSR 10-6.260 provisions from 10 CSR 10-6.261 will not have an adverse impact on air quality.

The existing rule, 10 CSR 10-6.260, is being rescinded in a separate rulemaking. The intent is for 10 CSR 10-6.261 to serve as the state’s SO₂ rule that will be amended as needed over time to comply with future implementation phases of the 1-hour SO₂ NAAQS.

2. A report on the peer-reviewed scientific data used to commence the rulemaking process.

EPA changed the primary NAAQS for SO₂ in June 2010 based on the most recent health studies. The 1-hour SO₂ NAAQS sets the national level for acceptable concentrations of SO₂ in the ambient air. EPA's decisions and their rationale for those changes can be found in the June 22, 2010 Federal Register Notice, 75 FR 35520.

The Air Program used available EPA non-binding guidance in determining and setting the SO₂ emission limits and conditions for the Jackson and Jefferson County SO₂ nonattainment areas. The pertinent EPA guidance documents include Guidance for 1-hour SO₂ Nonattainment Area Submissions (April 2014), SO₂ NAAQS Designations Modeling Technical Assistance Document (December 2013), and SO₂ NAAQS Designations Source-Oriented Monitoring Technical Assistance Document (December 2013). In addition, the Air Program referenced EPA's proposed Data Requirements Rule

(79 FR 27446, May 13, 2014). These documents can be accessed at EPA's Sulfur Dioxide webpage: <http://www.epa.gov/airquality/sulfurdioxide/index.html>.

3. A description of the persons who will most likely be affected by the proposed rule, including persons that will bear the costs of the proposed rule and persons that will benefit from the proposed rule.

Missouri SO₂ emission sources subject to the proposed rule will bear the costs of compliance. This includes the following sources affected by the SO₂ emission limits and conditions necessary to address the 1-hour SO₂ NAAQS in Table I of the proposed rule: Independence Power and Light's Blue Valley power plant, Kansas City Power and Light's Hawthorn and Sibley power plants, Veolia Energy, and Ameren Missouri's Labadie, Meramec, and Rush Island power plants.

In addition to the facilities listed in Table I, the proposed rule affects SO₂ sources subject to the provisions carried forward from 10 CSR 10-6.260. This includes sources that emit SO₂ from fuel combustion and industrial processes. Since these provisions are already in place in 10 CSR 10-6.260, the proposed rule is not expected to impose additional compliance costs on these sources.

The citizens of Missouri will benefit from the SO₂ emission reductions and public health protections resulting from the proposed rule. According to EPA, children, the elderly, and asthmatics are the most sensitive to SO₂ exposure. For these populations, SO₂ exposure can result in decreased lung function, increased respiratory symptoms, and more hospital admissions and emergency room visits.

4. A description of the environmental and economic costs and benefits of the proposed rule.

EPA estimates that the 1-hour SO₂ NAAQS will yield health benefits valued between \$13 billion and \$33 billion nationally, including reduced: hospital admissions, emergency room visits, work days lost due to illness, and cases of aggravated asthma and chronic bronchitis, among other benefits. Sources in Table I of the proposed rule will be required to limit their emissions to address the 1-hour SO₂ NAAQS, which will result in achieving these important public health benefits. The state public health benefits are expected to be consistent with EPA's estimated national benefits.

In addition to the environmental and public health benefits associated with addressing the 1-hour SO₂ NAAQS, carrying forward the necessary provisions from 10 CSR 10-6.260 maintains the existing level of SO₂ control throughout the rest of the state (i.e., areas outside the Jackson and Jefferson County SO₂ nonattainment areas).

There are no known environmental costs associated with this proposed rule.

The economic costs of the proposed rule are assumed to be minimal for several reasons. First, the emission units and sources listed in Table I of this proposed rule are also affected by one or more federal regulations, including the Mercury and Air Toxics

Standards (MATS), the Clean Air Interstate Rule (CAIR) and Cross State Air Pollution Rule (CSAPR), and the industrial boiler Maximum Achievable Control Technology (MACT). Compliance with these federal regulations through actions such as switching to natural gas or taking emission limits likely will result in impacted sources not having to take additional action to satisfy 1-hour SO₂ requirements in Table I of this proposed rule. In addition, SO₂ sources not listed in Table I will need to continue complying with the existing provisions from 10 CSR 10-6.260 that are being carried forward into this new proposed rule. Since these sources are not subject to additional requirements, compliance costs are expected to be insignificant. The fiscal notes for this proposed rule will contain detailed information and assumptions associated with economic cost estimates. Note that costs associated with new ambient SO₂ monitors and meteorological stations required by the separate agreements with Ameren Missouri are not directly linked with this rulemaking and will not be included in the rule's fiscal notes.

Economic benefits associated with the proposed rule result from consolidating existing and new SO₂ requirements into a single rule. This consolidation removes obsolete provisions and clarifies and streamlines the state's SO₂ rule requirements, reducing confusion for affected sources and making it easier for them to comply.

5. The probable costs to the agency and to any other agency of the implementation and enforcement of the proposed rule and any anticipated effect on state revenue.

The Air Program does not expect the department or any other public agency will incur additional costs to implement and enforce this proposed rule. Implementation and compliance/enforcement tasks would be performed by existing staff as part of routine duties and the department will incur no additional costs. Other public agencies (such as municipalities) and state institutions (such as universities) are not likely to incur additional costs associated with the proposed rule. The public entity fiscal note for the proposed rule will contain additional information and cost assumptions. This proposed rule is not expected to affect state revenue.

6. A comparison of the probable costs and benefits of the proposed rule to the probable costs and benefits of inaction, which includes both economic and environmental costs and benefits.

Not taking action, i.e., not submitting SIPs for the Jackson and Jefferson County SO₂ nonattainment areas, has consequences for the state. EPA requires states to submit SIPs for these initial SO₂ nonattainment areas by April 2015 (i.e., 18 months after the nonattainment area effective date of October 2013). If the Air Program fails to submit these SIPs, EPA may make a finding of failure to submit. Such a finding would start a 24-month "clock" for the Air Program to submit a SIP and EPA to approve it. If the Air Program does not submit a SIP and EPA does not approve the submitted SIP during these 24 months, EPA must impose a Federal Implementation Plan (FIP) on the SO₂ nonattainment areas. A FIP would likely be less flexible and more costly for affected sources compared to a SIP. EPA also has the authority to apply costly sanctions such as withholding federal highway funding and requiring new sources to offset their emissions

obtained from other sources' reductions in the area

7. A determination of whether there are less costly or less intrusive methods for achieving the proposed rule.

The Air Program considered costs in the development of the proposed rule and is not aware of less costly or less intrusive methods. Table I of the proposed rule establishes SO₂ emission limits for sources without prescribing a particular control or technology to achieve the limit. This approach gives the affected sources the flexibility to choose the least-cost strategy. In addition, the proposed rule recognizes the advantage of co-benefits from other federal regulations (MATS, CAIR/CSAPR, boiler MACT, etc.) that affect these sources. Compliance with these federal regulations through actions such as switching to natural gas or taking emission limits likely will result in affected sources not having to take additional action to meet this proposed rule.

8. A description of any alternative method for achieving the purpose of the proposed rule that were seriously considered by the department and the reasons why they were rejected in favor of the proposed rule.

The Air Program considered other methods for the Jefferson County attainment demonstration SIP. We considered an approach that strictly adheres to recent interpretations of EPA's SO₂ nonattainment SIP guidance in that it would rely exclusively on allowable/potential emissions. This potentially could have resulted in lower SO₂ emission limits for Ameren's power plants in Table I of this proposed rule. We rejected this method because the substantial SO₂ emission reductions that have already resulted from the Doe Run lead smelter shut down will likely bring the Mott Street monitor into compliance by the end of 2015, over two years earlier than the October 2018 attainment date. The proposed approach establishes new SO₂ emission limits at Ameren's power plants that ensure attainment of the 1-hour SO₂ NAAQS at the Mott Street monitor, while adding ambient SO₂ 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 SO₂ NAAQS at their power plants or establish technically defensible SO₂ emission limits, dependent on recorded monitoring data and subject to Air Program approval. To the extent that any new SO₂ 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 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. See the discussion of uncertainties associated with air quality modeling in the response to question 12.

Another approach considered would have made the proposed Table I SO₂ emission limits for Ameren Missouri's power plants conditional. These proposed limits would have become effective January 2017 only if their new ambient SO₂ monitors were out of compliance with the 1-hour SO₂ NAAQS (if Ameren's SO₂ monitors were in compliance, the existing SO₂ emission limits from 10 CSR 10-6.260 would have remained in place for

these plants). The Air Program rejected this approach because conditional limits would not be considered permanent, which is a requirement for SIPs intended to attain and maintain NAAQS compliance.

The Air Program is still evaluating SIP options to address the unique situation in the Jefferson County nonattainment area.

The Air Program also considered developing a separate new rule for 1-hour SO₂ NAAQS requirements and retaining the existing rule, 10 CSR 10-6.260, rather than consolidating all SO₂ requirements into a single rule. This was rejected in favor of the proposed consolidated rule because having all SO₂ requirements in one place will reduce confusion for affected SO₂ sources, particularly over time as more sources are impacted by future implementation phases of the 1-hour SO₂ NAAQS.

9. An analysis of both short-term and long-term consequences of the proposed rule.

The short-term consequence of this proposed rule is the establishment of enforceable environmental conditions and emission limits on sources necessary to address the EPA's 1-hour SO₂ NAAQS and the reduction in SO₂ emissions. According to EPA, current scientific evidence links short-term exposures to SO₂, ranging from 5 minutes to 24 hours, with an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms. These effects are particularly important for asthmatics at elevated ventilation rates (e.g., while exercising or playing). Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly, and asthmatics. As a result of this proposed rule, the short-term risk to human health, public welfare and the environment will be reduced.

The long-term consequences of this proposed rule are less certain but are expected to yield increased health benefits. There are possible associations between long-term SO₂ exposure and mortality and morbidity (respiratory morbidity, carcinogenesis, adverse prenatal and neonatal outcomes). However, the Independent Scientific Assessment associated with the SO₂ NAAQS concluded that the evidence relating long-term (weeks to years) SO₂ exposure to adverse health effects was "inadequate to infer the presence or absence of a causal relationship."

10. An explanation of the risks to human health, public welfare or the environment addressed by the proposed rule.

In addition to the risks discussed above, emissions that lead to high concentrations of SO₂ generally also lead to the formation of other sulfur oxide (SO_x) compounds. Control measures that reduce SO₂ can generally be expected to reduce human exposure to all gaseous SO_x. This may have the important co-benefit of reducing the formation of fine sulfate particles, which pose significant public health threats. SO_x can react with other compounds in the atmosphere to form harmful small particles. These particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to

increased hospital admissions and premature death.

11. The identification of the sources of scientific information used in evaluating the risk and a summary of such information.

EPA changed the primary NAAQS for SO₂ in June 2010 based on the most recent health studies. The 1-hour SO₂ NAAQS sets the national level for acceptable concentrations of SO₂ in the ambient air. EPA's decisions and their rationale for those changes can be found in the June 22, 2010 Federal Register Notice, 75 FR 35520.

The Air Program used available EPA non-binding guidance in determining and setting the SO₂ emission limits and conditions for the Jackson and Jefferson County SO₂ nonattainment areas. The pertinent EPA guidance documents include Guidance for 1-hour SO₂ Nonattainment Area Submissions (April 2014), SO₂ NAAQS Designations Modeling Technical Assistance Document (December 2013) and SO₂ NAAQS Designations Source-Oriented Monitoring Technical Assistance Document (December 2013). In addition, the Air Program referenced EPA's proposed Data Requirements Rule [79 FR 27446, May 13, 2014]. These documents can be accessed at EPA's Sulfur Dioxide webpage: <http://www.epa.gov/airquality/sulfurdioxide/index.html>.

The Air Program followed EPA modeling guidance in 40 CFR Part 51 Appendix W in all of its air dispersion modeling evaluations.

12. A description and impact statement of any uncertainties and assumptions made in conducting the analysis on the resulting risk estimate.

Air dispersion models are used to predict air pollutant concentrations at downwind locations based on emissions and meteorological inputs. As with any predictive model, there are uncertainties associated with refined air dispersion modeling results. In general, inputs that most closely reflect actual weather conditions and operations at the source yield the most accurate modeling results.

The air dispersion modeling evaluations used to determine the proposed SO₂ emission limits for the Jackson and Jefferson County SO₂ nonattainment areas make assumptions consistent with 40 CFR Part 51 Appendix W. Uncertainties increase as data used in the model deviate from actual weather conditions and individual source operations. There is uncertainty associated with the proposed SO₂ emission limits in Table I of this proposed rule because they were established based on available non-site specific meteorological data and evaluation of multiple emission data sets.

13. A description of any significant countervailing risks that may be caused by the proposed rule.

The proposed approach for Jefferson County may not fully conform to EPA's non-binding SO₂ nonattainment SIP guidance, depending on overlapping requirements contained therein. This guidance indicates that SO₂ attainment demonstration modeling should be based on maximum allowable emissions, but it is not clear which sources must

use allowable/potential emissions. The proposed approach for Jefferson County will likely rely on multiple modeling scenarios and a mix of allowable and actual emissions. There is some risk that EPA may not approve the SIP if they disagree with this approach. However, ultimately this approach focuses on specific source impacts from the closed Doe Run lead smelter, while protecting public health in surrounding areas by requiring Ameren to monitor ambient air impacts and reduce emissions further if they violate the 1-hour SO₂ NAAQS.

Without an approved SIP, EPA must impose a FIP on the Jefferson County SO₂ nonattainment area. EPA also has the authority to apply costly sanctions to the area such as withholding federal highway funding and requiring new sources to offset their emissions obtained from other sources' reductions in the area.

If EPA grants a "clean data finding" for the Jefferson County SO₂ nonattainment area, the attainment demonstration requirement would be suspended. For previous NAAQS (ozone and fine particulate matter in particular), EPA's clean data policy specified that three consecutive years of air monitoring data showing attainment of the standard was sufficient for EPA to make a clean data finding. EPA's non-binding SO₂ nonattainment SIP guidance indicates that monitoring data alone may not be adequate to support such a finding for the 1-hour SO₂ NAAQS. According to this guidance, EPA would make a clean data finding based on monitoring data alone if the SO₂ monitor is located in the "area of maximum concentration." Otherwise, an air quality dispersion modeling demonstration based on actual emissions is needed. EPA's clean data policy has not yet been applied for the 1-hour SO₂ NAAQS, and the meaning of "area of maximum concentration" is not clear. The Mott Street monitor was located in Jefferson County's "area of maximum concentration" when the nonattainment area designation was made, and we have the technical justification that supports the monitor is still located in the area of maximum concentration for the clean data timeframe. However, EPA may not agree. If modeling based on actual emissions indicates attainment throughout the nonattainment area, then justification of the "area of maximum concentration" with respect to the Mott Street monitor location may not be required.

It is important to note that this discussion of risks applies only to the Jefferson County SO₂ nonattainment area.

14. The identification of at least one, if any, alternative regulatory approaches that will produce comparable human health, public welfare or environmental outcomes.

One alternative regulatory approach would be to develop an attainment demonstration for Jefferson County that is fully consistent with recent interpretations of EPA's SO₂ nonattainment SIP guidance and rely exclusively on allowable/potential emissions. The Air Program believes the Program's proposed approach provides greater air quality benefits. This approach recognizes the substantial SO₂ emission reductions that have already occurred after the Doe Run lead smelter ceased operations at the end of 2013. It establishes new SO₂ emission limits at Ameren's power plants in Table I of this proposed rule and adds ambient SO₂ monitors via separate agreements in order to more accurately characterize air quality at these plants. This allows Ameren to either demonstrate

compliance with the 1-hour SO₂ NAAQS at their power plants or establish technically defensible SO₂ emission limits, dependent on recorded monitoring data and subject to Air Program approval. To the extent that any new SO₂ 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 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. See the discussion of uncertainties associated with air quality modeling in the response to question 12.

There are no known alternative regulatory approaches that will produce comparable human health, public welfare or environmental outcomes for the Jackson County nonattainment area.

15. Provide information on how to provide comments on the Regulatory Impact Report during the 60-day period before the proposed rule is filed with the Secretary of State.

Formal comments can be provided on either the Regulatory Impact Report or the draft rule text by sending them to the contact listed in question 16.

16. Provide information on how to request a copy of comments or the web information where the comments will be located.

Chief, Air Quality Planning Section
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P.O. Box 176
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or

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Copies of formal comments made on either the Regulatory Impact Report or the draft rule text may be obtained by request from the contact listed above or by accessing the Rules In Development section at web site www.dnr.mo.gov/env/apcp/RulesDev.htm for this particular rulemaking.