

**COMMENTS AND RESPONSES ON**  
**AREA BOUNDARY RECOMMENDATIONS FOR THE**  
**2010 1-HOUR SULFUR DIOXIDE NATIONAL AMBIENT AIR QUALITY STANDARD**  
**JULY 2016 DESIGNATIONS**

The public comment period for the proposed options for area boundary recommendations for the July 2016 round of designations for the 2010 1-hour sulfur dioxide (SO<sub>2</sub>) standard opened on July 24, 2015 and closed on September 3, 2015.

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. All comments were related to the areas around the Ameren Labadie Energy Center and Kansas City Power & Light (KCPL) Sibley Generating Station; no comments were received on the areas surrounding the Sikeston Power Station and SO<sub>2</sub> monitor located in Iron County. The Air Program finalized the state's area boundary recommendation based on consideration of comments received.

**SUMMARY OF COMMENTS:** During the public comment period for the proposed boundary options, the Air Program received comments from the following sources: Ameren Missouri; AECOM, Zephyr Environmental Corporation and Development Strategies on behalf of Ameren Missouri; Associated Industries of Missouri (AIM); Regulatory Environmental Group for Missouri (REGFORM); State Senators Ed Emery, Mike Kehoe, Gary Romine and Dave Schatz; Washington University School of Law Interdisciplinary Environmental Clinic on behalf of Sierra Club (Washington University); Sierra Club; and 25 private citizens. Several of the commenters testified or were represented during the public hearing before the Missouri Air Conservation Commission (MACC) on August 27, 2015. In addition, the Sierra Club submitted signatures from about 100 citizens.

Due to the similarity in the following three comments, one response is presented.

**COMMENT #1:** Ameren commented that the current SO<sub>2</sub> ambient monitoring data in conjunction with historic monitoring data and dispersion modeling (both the old version of AERMOD corrected to address over-predictions and the new version using low wind option even without correcting for over prediction) provide compelling evidence to support a designation recommendation of attainment of the 2010 SO<sub>2</sub> NAAQS for the Labadie area. In the alternative, Ameren supports MDNR's proposed option 2 to recommend a designation of unclassifiable based on incomplete, current monitoring data.

**COMMENT #2:** AIM, REGFORM and State Senators Emery, Kehoe, Romine and Schatz commented in support of option 2, unclassifiable based on monitoring data.

**COMMENT #3:** AECOM submitted a modeling analysis of Labadie on behalf of Ameren (Attachment 2 of Ameren's comment letter). AECOM's report concludes that their modeling analysis, especially with the EPA-proposed improvements to AERMOD version 15181, supports

the designation of the area in the vicinity of the Labadie Energy Center as being either attainment or unclassifiable for the 1-hour SO<sub>2</sub> NAAQS.

RESPONSE: The accuracy of air dispersion modeling is dependent upon the accuracy of the input data (e.g., emissions and meteorological inputs, release point characteristics, chosen model options). The Air Program used the version of AERMOD (14134) that was available at the time this designation process began. EPA released a new regulatory version of AERMOD (15181), which replaced the previous version, just prior to the start of the public comment period. This new version addresses bug fixes to the model code, but also introduces new beta options that EPA is proposing for regulatory use. Since these beta options have not yet been approved for regulatory use, the Air Program has not relied on them in a modeling analysis. Instead, our modeling analysis adheres to modeling guidance, such as the AERMOD Implementation Guide and 40 CFR Part 51 Appendix W, and relies on a variety of default AERMOD 14134 options due to the lack of site-specific information for Labadie at this time.

AECOM's modeling evaluation differed from the Air Program's in several key ways. They relied on the recently updated version of EPA's dispersion model AERMOD (15181) along with proposed new beta options that address over prediction of ambient concentrations associated with low wind speeds. These low wind speed options are proposed at this time and require approval from the EPA Regional Office to use for any regulatory purpose until they are finalized (expected summer 2016). In addition, AECOM merged the emission releases from units 3 and 4 at Labadie, while the Air Program modeled them as individual release points. AECOM also used a different background concentration for the region along with varying release parameters (temperature and flow rate) that were not made available to the Air Program until this public comment period, which did not allow for us to review. AECOM's results show compliance with the 1-hour SO<sub>2</sub> NAAQS near the Labadie plant.

On behalf of Sierra Club, Washington University submitted a modeling analysis of the Labadie plant performed by Wingra Engineering. Wingra Engineering's analysis was consistent with the Air Program's in many ways, the primary difference being reliance on meteorological data from the Spirit of St. Louis Airport rather than data from Jefferson City, which is what was utilized in the Air Program's modeling. Wingra Engineering's results show violations of the 1-hour SO<sub>2</sub> NAAQS around Labadie of nearly the same magnitude as the violations in the Air Program's analysis. However, the spatial pattern of the violating receptors in Wingra's analysis differs from the Air Program's results.

In addition to these modeling evaluations of Labadie, preliminary data from new ambient SO<sub>2</sub> monitors near the plant is available. Since the start of operation in April 2015, these monitors have been measuring SO<sub>2</sub> concentrations below the 1-hour SO<sub>2</sub> standard of 75 ppb. A new state statute, Section 643.650, RSMo, (SB 445 and HB 92 from the 2015 legislative session), became effective August 28, 2015. Section 643.650, RSMo, directs the department to consider SO<sub>2</sub> monitoring data for sources that choose to monitor to characterize their air quality. Though the dataset from Labadie's new SO<sub>2</sub> monitors is limited, we must consider it, consistent with state law.

As stated in EPA's March 20, 2015 "Updated Guidance for the 2010 Primary Sulfur Dioxide National Ambient Air Quality Standard," an unclassifiable designation is for areas "where the EPA

cannot determine based on available information whether the area is or is not meeting the 2010 SO<sub>2</sub> NAAQS...” The varying modeling results show both violations and no violations of the SO<sub>2</sub> standard around Labadie, depending on the options and inputs chosen. In addition, the current monitoring data, which Missouri law directs us to consider, is well below the 1-hour SO<sub>2</sub> standard. Because it cannot be determined based on available information whether the area is or is not meeting the 1-hour SO<sub>2</sub> standard, the Air Program recommends an unclassifiable designation for the area near Labadie. As further support of this unclassifiable designation, the Air Program will include the modeling analyses from AECOM and Wingra Engineering as appendices to the final recommendation package submitted to the U.S. Environmental Protection Agency (EPA) in September 2015.

The Air Program also notes that collecting more accurate input data would help improve the performance and reduce uncertainties associated with the modeling analysis. The new SO<sub>2</sub> monitors and meteorological station near the Labadie plant will serve this purpose as more data is collected over time.

Due to the similarity in the following two comments, one response is presented.

COMMENT #4: Washington University, the Sierra Club and 25 citizens urged the commission to support option 1, nonattainment based on modeling data, for the area surrounding the Labadie Energy Center. In addition, the Sierra Club provided 100 signatures in support of a nonattainment recommendation from citizens living in the area near the Labadie plant.

COMMENT #5: Washington University commented that the modeling-based option 1 of nonattainment for Labadie is the only legitimate option because a full three years of quality-assured monitoring data are needed to rely on for designation purposes; three months of preliminary data from the new Labadie monitors are not sufficient. They commented that the unclassifiable designation applies only in the absence of information clearly demonstrating a designation of “attainment” or “nonattainment.” Because DNR’s modeling demonstrates violations near Labadie, the unclassifiable option is inapplicable and inappropriate. They stated that Ameren’s modeling actually shows violations near Labadie when appropriate inputs are used. In addition, they included modeling performed by Wingra Engineering showing violations around the Labadie plant and suggested an alternative nonattainment area boundary based on this modeling.

RESPONSE: As discussed in the response to comments #1 through 3, different modeling evaluations using different inputs and options yield different results. Section 643.650, RSMo, directs the department to consider any SO<sub>2</sub> monitoring data for sources that choose to monitor to characterize their air quality. The current monitoring data, even if limited at this point in time, is below the 1-hour SO<sub>2</sub> NAAQS. These varying datasets raise questions about whether the SO<sub>2</sub> concentrations in the vicinity of Labadie are in fact at a level that violates the 1-hour SO<sub>2</sub> NAAQS. For these reasons, the Air Program recommends an unclassifiable designation for the area near Labadie.

COMMENT #6: A citizen commented that SO<sub>2</sub> emissions at the Labadie Energy Center have decreased due to burning ultra-low sulfur coal at this plant. This commenter stated that there is

nothing that ensures Ameren will continue to burn this coal and suggested installation of a scrubber is a better option.

RESPONSE: The Labadie Energy Center is subject to multiple federal and state requirements targeting SO<sub>2</sub> emissions. The federal Cross State Air Pollution Rule, a new SO<sub>2</sub> emission limit established in 10 CSR 10-6.261 *Control of Sulfur Dioxide Emissions* and the 1-hour SO<sub>2</sub> NAAQS all ensure Ameren will continue to burn ultra-low sulfur coal at this plant.

COMMENT #7: Zephyr Environmental Corporation provided a toxicologist's perspective on SO<sub>2</sub> health effects, concluding that SO<sub>2</sub> emissions from coal-fired power plants are not a driver of adverse health impacts.

RESPONSE: The toxicological information related to SO<sub>2</sub> exposure is beyond the scope of the boundary designation process. The purpose of this action is to provide input to EPA on appropriate designations (attainment, nonattainment, unclassifiable) and boundaries for the 1-hour SO<sub>2</sub> standard based on an evaluation of emissions, monitoring, modeling meteorology and other technical data.

COMMENT #8: Development Strategies provided an analysis of the direct and indirect economic impacts of Ameren Missouri's Labadie Energy Center on the economies of Missouri and Franklin County, as well as its economic multi-county region.

RESPONSE: The economic impact analysis is beyond the scope of the boundary designation process. The purpose of this action is to provide input to EPA on appropriate designations (attainment, nonattainment, unclassifiable) and boundaries for the 1-hour SO<sub>2</sub> standard based on an evaluation of emissions, monitoring, modeling meteorology and other technical data.

COMMENT #9: On behalf of Sierra Club, Washington University submitted a modeling analysis of KCPL's Sibley Generating Station performed by Wingra Engineering. Based on this analysis, Washington University commented that the area around Sibley should be designated nonattainment.

RESPONSE: Wingra Engineering's evaluation report included modeling results based on two scenarios: 1) sources at their allowable or permitted emissions rates, and 2) sources at recent actual emission rates (hourly emission rates, when available). Because EPA's guidance (Modeling Technical Assistance Document) indicates that the use of actual emission rates is appropriate for designation purposes under this 1-hour SO<sub>2</sub> standard, the analysis based on allowable emissions is beyond the scope of this designation process.

Wingra Engineering's evaluation of Sibley based on actual emission rates is similar to the Air Program's analysis. Although we were not able to fully review their analysis because the modeling files themselves were not included with the evaluation report, the information in the report appears to support the Air Program's assessment that the area immediately surrounding the Sibley Generating Station is in compliance with the 1-hour SO<sub>2</sub> standard.

Wingra Engineering's analysis based on actual emissions also shows violating receptors, but these modeled violations are attributed to the Veolia Energy steam plant located in the portion of Jackson County that is already designated nonattainment. These violating receptors are beyond the scope of this designation process because they have already been addressed through a separate State Implementation Plan (SIP) action adopted by the commission on July 30, 2015. Through the Jackson County SO<sub>2</sub> nonattainment area SIP and associated rule, 10 CSR 10-6.261 *Control of Sulfur Dioxide Emissions*, Veolia Energy and other contributing sources are expected to reduce their SO<sub>2</sub> emissions and bring the entire nonattainment area into compliance with the 1-hour SO<sub>2</sub> standard.

As further support of the Air Program's recommendation of attainment for the area around Sibley, the Air Program will include the modeling analysis from Wingra Engineering as an appendix to the final recommendation package submitted to the EPA in September 2015.