ADEQ
ARKANSAS
Department of Environmental Quality

Developing the NAAQS SIP: A Look at Minor Stationary Source Permitting

Purpose

The Arkansas Department of Environmental Quality ("the Department") is charged with the duty to issue permits, through both federally-delegated and State programs, that help maintain and improve the air quality for all citizens in the State. Part of this duty is to ensure that construction of new stationary sources or modification of existing stationary sources, including construction or modification authorized via Minor new source review (NSR) permitting actions, do not cause or contribute to an exceedance of the national ambient air quality standards (NAAQS) or interfere with the maintenance of the NAAQS. To address the requisite level of analysis required for Minor NSR permitting actions, the Department has been engaged in a series of robust meetings with stakeholders to develop an approach which will adequately ensure that the NAAQS are protected and which complies with State statutes and federal requirements. The ultimate goal is to decide upon a policy, to be included in the NAAQS SIP, which will detail both the steps a permittee must undertake to reasonably satisfy the Department that the construction or modification will not interfere with attainment or maintenance of the NAAQS in the Minor NSR permitting process and the roles and obligations of the Department in implementing that process. The purpose of this document is not to propose a particular selection of approaches and measures, but rather to encapsulate and discuss the approaches and measures which have been identified through the stakeholder process, to solicit comment on the advantages or deficiencies of each approach and/or combination of approaches to ensure that minor source construction or modification activities do not cause or contribute to an exceedance or interfere with the maintenance of the NAAQS, and to solicit comment on any other alternative approaches not discussed in this document, as well as their advantages and deficiencies.

NAAQS Protection Levels

The Department examines protection of the NAAQS at two levels:

1) Attainment

Attainment is determined based on time-weighted average concentrations measured at monitors in the Arkansas Ambient Air Quality Monitoring Network (AAAQM Network). A map of the AAAQM Network can be found in Appendix A: Arkansas Ambient Air Monitoring Network.

2) Local Ambient Air Quality/Near-Field Receptors

The Department must ensure that people in all areas of the State, not just those locations with monitors, are protected from exposure to pollutant concentrations exceeding the NAAQS.

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Identified Potential Measures and Approaches

The Department is soliciting comments on what combination of measures and approaches could be implemented to create a strategy which adequately addresses the Minor NSR permitting aspect of protecting the NAAQS. Listed below are possible measures and approaches which have been identified through the stakeholder process. The Department reiterates that, at this time, it is not proposing a particular selection of measures and approaches; however, the Department solicits comment on the advantages or deficiencies of each approach and/or combination of approaches to ensure that new minor source permit activities do not cause or contribute to an exceedance or interfere with the maintenance of the NAAQS. The Department also solicits comment on other alternative approaches not listed below, as well as their advantages or deficiencies.

Enhanced Planning Measures and Approaches

1) Regional Modeling of Current Emissions and Projected Growth

The Department contracted regional scale modeling to evaluate future areas of concern for criteria pollutants throughout the State and examine expected changes in these pollutants between the base years (2005 and 2008) and a future year (2015). This modeling was conducted at a 4 km grid resolution and can be used for regional planning efforts to evaluate air quality in unmonitored areas and identify areas that may require additional monitoring. The Department is considering updating this modeling to evaluate future growth.

2) Identification of Sensitive Areas Using Regional Modeling

This approach would identify sensitive areas where increased emissions might result in future-year design values close to or exceeding the NAAQS.

The Department consulted its modeling contractor, ICF, to discuss the feasibility of this approach. ICF proposed tasks to use 2008 and 2015 regional scale modeling results for Arkansas to determine if concentrations of criteria pollutants are increasing and perform an emissions sensitivity analysis to determine whether increasing anthropogenic emissions in an Air Quality Control Region (AQCR) by 10% would result in future-year design values close to or greater than the NAAQS. This modeling effort could identify sensitive areas where a more robust NAAQS analysis, which may include dispersion modeling or monitoring, may be required. The emissions sensitivity analysis would be conducted at a 12 km grid resolution and therefore may not provide sufficient resolution to ensure against exceedances of the NAAQS at near-field receptors

3) Monitoring Network Review

Every year, the Department submits an Annual Network Review to notify EPA of any changes to the AAAQM Network. Every five years, the Department conducts a more extensive review to evaluate the AAAQM Network. The monitors in the AAAQM Network are used to determine attainment status.

4) Emissions Inventory Improvements

Currently, the Department collects emissions inventory data from larger point sources. Type A facilities; which are those facilities permitted to emit 2500 tons per year (tpy) or more of SOx, NOx, or CO or 250 tpy or more of VOCs, PM_{10}, $PM_{2.5}$,or NH_3; are required to report emissions to the Department every year. Type B facilities; which include facilities permitted to emit 1000 tpy or more of CO, facilities permitted to emit 100 tpy or more of SOx, NOx, VOCs, PM_{10}, $PM_{2.5}$, or NH_3, and facilities with actual lead (Pb) emissions of 0.5 tpy or more; are required to report emissions to the Department every three years. The Department uses EPA emissions estimates for nonpoint, onroad, nonroad, and event sources (i.e. wildfires, wild land fire use, prescribed burns).

Future considerations for emissions inventory improvements may include collection of local data inputs for onroad and nonroad sources; collection of local data and emissions estimates for nonpoint and minor sources; collection, analysis, and submittal of prescribed and wildfire occurrence data to EPA for use in emissions modeling; and conducting surveys of agricultural burning practices to verify EPA inputs for emissions modeling.

5) Periodic Multi-Source Modeling for Near-Field Receptor Impacts

Under this approach, the Department would periodically perform air dispersion modeling of multiple sources within an area to examine impacts at near-field receptors. If near NAAQS concentrations or NAAQS exceedances are identified based on the multi-source modeling, the Department would re-evaluate the level of NAAQS analysis required by permit actions in that area and potentially locate a temporary monitor to verify modeled results.

6) Risk-Based Monitoring

This measure would utilize temporary monitors installed, as needed, in areas identified as at risk of exceeding the NAAQS. This measure could be done in conjunction with regional-scale modeling, multi-source modeling, or as a stand-alone task.

7) NAAQS SIP Updates

The NAAQS SIP will be reviewed regularly to re-evaluate attainment status issues due to growth of emissions in the State and revisions, if any, to the NAAQS. The SIP will be updated, as needed to ensure protection from exceedances of the NAAQS. The Department will continue to solicit public input on any future NAAQS SIP Updates

Minor NSR NAAQS Evaluation Flowchart

The Department has created a flowchart to assist in the decision of what level of analysis would be acceptable for a Minor NSR permitting action to ensure that the NAAQS are not exceeded. If such a flowchart were ultimately included in the NAAQS SIP, the Department would develop guidance on good dispersion practices, whether there is sufficient historical modeling data available to identify possible issues with maintaining the NAAQS, and whether any identified issues can be resolved by incorporating

standard conditions or control strategies in the permit. The current draft of the Minor NSR NAAQS Evaluation Flowchart can be found in Appendix B: Minor NSR NAAQS Evaluation Flowchart.

Approaches to Assess Cumulative Impact

1) Development of a Growth Allocation Based on Regional Modeling

This stakeholder-proposed approach involves the creation of growth allowances—based on predictive modeling of hypothetical sources—which could be consumed by new projects without causing concentrations of a criteria pollutant to exceed the NAAQS in the AQCR. Emissions increase allowances would be based on the potential-to-emit (PTE).

The Department consulted ICF to discuss the feasibility of this approach. ICF indicated that the regional scale modeling platform has neither sufficient resolution nor appropriately refined inputs to provide for a growth allocation which is protective of local impacts. The primary usefulness of this approach is in regional planning.

2) Emissions-Distance Threshold

This approach would look at the cumulative PTE of all facilities within close proximity of a new minor source or minor modification. If the cumulative emissions within a defined distance exceeded a threshold value, a more robust analysis, such as dispersion modeling, would be required. Examining the cumulative emissions of sources has been used by other states as part of their Minor NSR NAAQS evaluation program. The appropriate distance and threshold value would need to be determined and supported by evidence from a technical analysis.

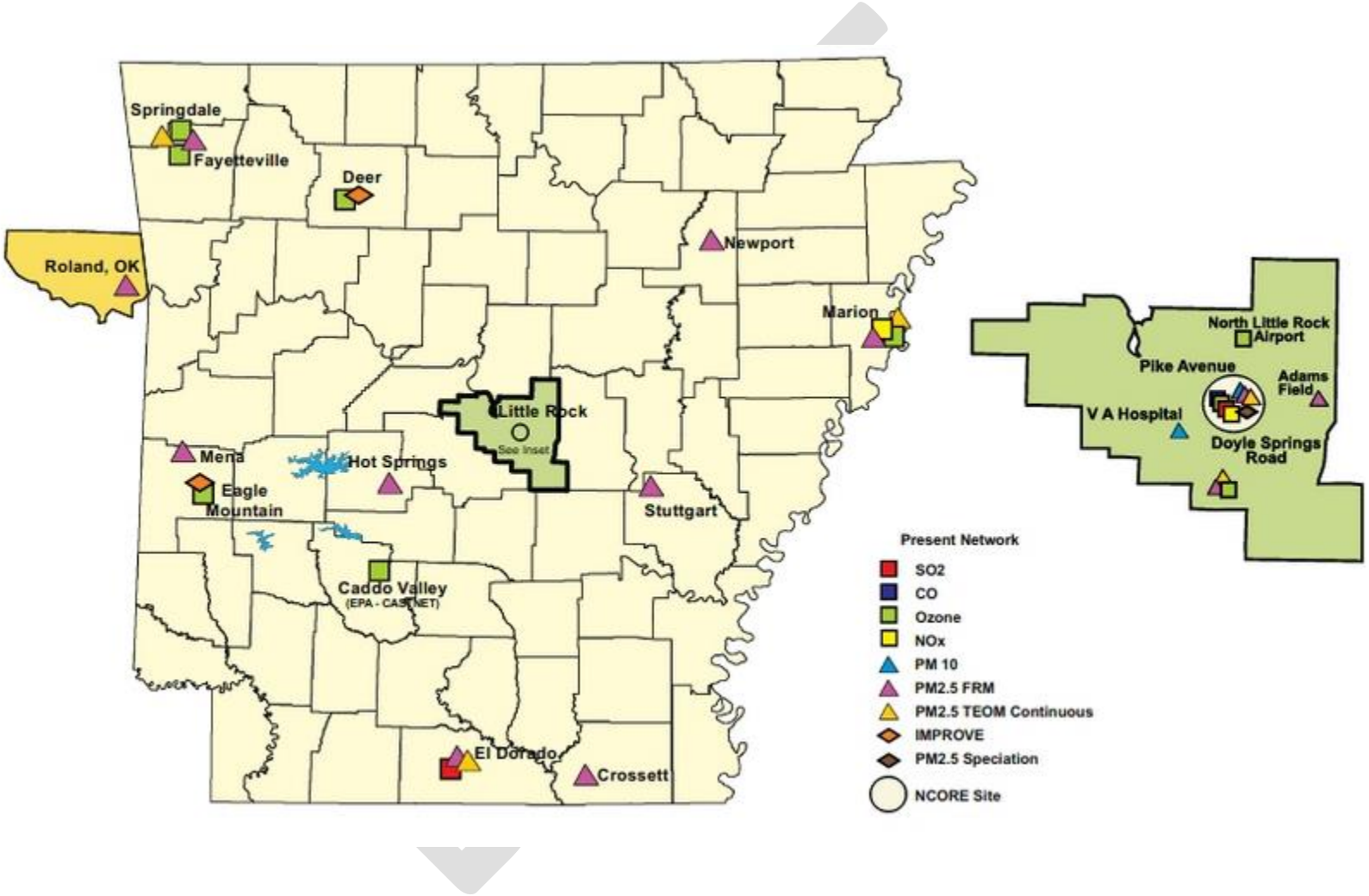
To facilitate this approach, the Department could develop a GIS-based tool that would allow a facility interested in locating a new minor source or minor modification to quickly receive information about the cumulative emissions of their proposed new facility and all existing sources in a particular area.

Conclusion

The Department solicits comment on the adequacy or deficiencies of the measures and approaches described above in addressing requirements for NAAQS evaluations for the Minor NSR permitting program. The Department also solicits comment on other measures and approaches not identified above. The Department intends to use feedback received in response to this document to develop a policy, to be included in the NAAQS SIP, which will detail both the steps a permittee must undertake to demonstrate protection of the NAAQS in the Minor NSR permitting process and the roles and obligations of the Department in implementing that process.

Please submit your feedback on the proposed guidance document to Tricia Jackson at: jacksonp@adeq.state.ar.us **by July 2, 2015**.

Appendix A: Arkansas Ambient Air Monitoring Network



Appendix B: Minor NSR NAAQS Evaluation Flowchart