

US EPA ARCHIVE DOCUMENT

**State Innovation Grant Program:
Missouri Department of Natural Resource Project Narrative/Workplan**

Project Title: St. Louis Air Quality Management Plan

Applicant: Missouri Department of Natural Resources (MDNR)

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Abstract:

This document details a work plan for portions of MDNR's project "St. Louis Air Quality Management Plan" supported under EPA's State Innovation Grant program. This project is a component in the development of a new air quality management paradigm for the St. Louis area. For areas with more than one criteria pollutant, the existing pollutant-by-pollutant approach requires the submittal of many potentially duplicative technical and administrative products. This approach causes difficulties for each regulatory agency with respect to limited staff/financial resources and for the regulated community due to uncertain air emission control requirements. The new approach will include the evaluation of multiple pollutants, including air toxics, when State Implementation Plans are developed for criteria pollutants. This evaluation process will allow for prioritization of air quality problems and much more efficient development of SIPs for St. Louis. The overall AQMP project is one of three national pilot projects designed to understand the benefits and problems associated with a multi-pollutant approach and communicate those findings to other states. The components of the AQMP under this grant are designed to further the overall plan development and begin its implementation via technical product creation.

Project Background

In the summer of 2007 based on on-going recommendations from the Clean Air Act Advisory Committee, Air Quality Subcommittee, USEPA asked states to consider volunteering for a pilot program to evaluate the use of Air Quality Management Plans (AQMP). The Clean Air Act Advisory Committee recommended the use of a multi-pollutant planning approach for air quality management by states instead of the traditional single-pollutant approach. This is designed to ensure control strategies developed for each pollutant examine the effects on other pollutants, reduce duplication of technical efforts, and allow for development of overall air quality priorities for each state/community. The AQMP process is inherently designed to evaluate multiple pollutants collectively along with the incorporation of other ancillary issues associated with air quality planning (e.g. climate change, smart growth, transportation planning). Pursuant to this concept, USEPA hosted a kick-off meeting in Raleigh, North Carolina to communicate the benefits and requirements of the AQMP approach.

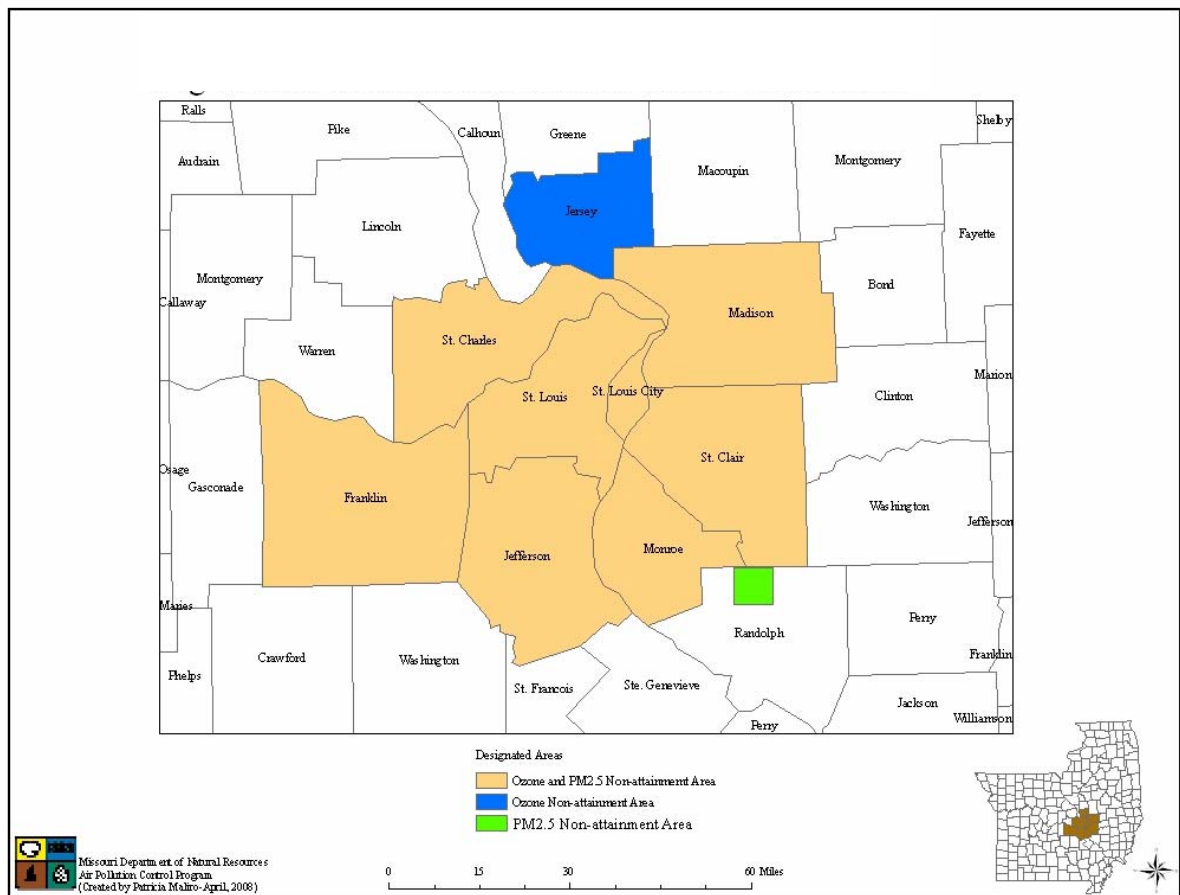
The state of Missouri indicated a desire to consider development of an AQMP for the St. Louis area. Due to the fact that St. Louis is a bi-state area, the state of Illinois is partnering with Missouri in the development of this plan. Ultimately, the two states will have complimentary AQMPs; one for each state's portion of the area. The St. Louis, Missouri AQMP is the focus of this grant, but the products being developed under the grant will be utilized by both states. Also, USEPA Regions V and VII are providing assistance and coordination for this effort along with personnel from the Office of Air Quality Planning and Standards. In addition, the local air quality agencies in St. Louis County and the City of St. Louis along with many other local stakeholders are cooperating with this effort. The AQMP effort in St. Louis is being designed with an emphasis on multi-pollutants (including air toxics) and prioritizing efforts that are of more importance in the St. Louis airshed.

The state of Missouri has completed dozens of State Implementation Plan (SIP) submittals since the Clean Air Act was passed. Each submittal requires a series of technical steps including the study of previous meteorological events that cause nonattainment in a given area, the development of emission inventory for all relevant sources in the area and beyond, the consideration of regional and local controls that help the area demonstrate compliance with the applicable air quality standard, and the evaluation of ambient air quality monitoring/modeling data to ensure continued compliance with the standard(s). These submittals have required years and years of effort for plans in the St. Louis area and the development of this AQMP approach will allow for more efficient submittal of SIPs. In addition, all these previous planning exercises that included multiple air quality modeling and monitoring data evaluations provide a substantial amount of background data and experience that will be utilized during AQMP development and implementation.

St. Louis is a bi-state nonattainment area for ozone (O₃) and fine particulate matter (PM_{2.5}). The annual PM_{2.5} area includes the following counties in Missouri and Illinois: (1) Franklin County, MO; (2) Jefferson County, MO; (3) St. Charles County,

MO; (4) St. Louis County, MO; (5) St. Louis City, MO; (6) Madison County, IL; (7) Monroe County, IL; (8) St. Clair County, IL; and (9) a portion of Randolph County, IL (Baldwin Village). The current 8-hour ozone area includes all the previous counties and Jersey County, IL, but excludes the portion of Randolph County, IL in the annual PM_{2.5} area. Figure 1 includes a map of the St. Louis nonattainment areas.

Figure 1 – Nonattainment Area for 1997 8-hour Ozone and Annual PM 2.5



Air quality planning efforts for ozone began in the 1980s and have continued with the area attaining the 1-hour standard in 2000. The Missouri SIP for the 1997 ozone 8-hour ozone standard was submitted in June 2007. These efforts have included the use of reformulated gasoline, vehicle inspection and maintenance programs, and a Stage II vapor recovery program (in Missouri) along with numerous, local point source controls for VOC and NO_x. The PM_{2.5} planning efforts are currently underway and will include SO₂ and NO_x RACT controls in Missouri and Illinois. Missouri is currently developing the PM_{2.5} SIP for St. Louis and Illinois is working on a local-scale modeling evaluation for the area around the only monitor above the standard.

In general, the development of SIPs for the St. Louis area follows a very rigorous and technically advanced planning exercise that could be expedited with the inclusion of more than one pollutant during development. Also, the lack of a consistent methodology to conduct public outreach is an on-going problem that will be evaluated and addressed by this new plan. In addition, the use of a consistent and comprehensive AQMP will allow for all stakeholders to be involved at every point in the process including the EPA Regional Offices. Currently, it is believed that the AMQP process will assist or be the mechanism used in the next generation of SIP submittals for St. Louis (2013-14 timeframe) and include ozone, fine particulates, lead, and air toxics.

During 2004-05, the St. Louis academic and environmental community in conjunction with the state of Missouri conducted a monitoring study for air toxics. This group produced a report titled "St. Louis Community Air Project Air Toxics Risk Characterization". This report was a direct result of the region's attempt to address environmental concerns expressed by residents, workers, and business owners in St. Louis. Specific air toxics of concern to the community cited in the report included: acetaldehyde, arsenic compounds, benzene, chromium compounds, formaldehyde, and diesel particulate matter.

The overall goal of this AQMP project is to provide a new mechanism to accomplish air quality planning in St. Louis and generate air quality improvements in a more efficient, expeditious, transparent, and cost-effective manner. The lessons learned during the development of this plan and its implementation will allow the state of Missouri to communicate the problems, solutions, and outcomes of this process to other states and EPA for their use.

Technical Approach

Project Overview

The Department is focused on the overall goals necessary to utilize the AQMP process:

- 1) The completion of all required SIP submittals for compliance with the National Ambient Air Quality Standards (NAAQS) in St. Louis (ozone, fine particulates, and lead),
- 2) The inclusion of air toxics exposure as a metric for consideration of alternative control requirements for any and all applicable NAAQS,
- 3) The incorporation of extensive community involvement in the decision-making process including the regulated and environmental communities,
- 4) Consideration of other ancillary air quality issues in the development of SIP submittals including smart growth/transportation planning, environmental justice, and climate change.

Specific information about each goal is provided here to illustrate the requirements under the Clean Air Act along with other relevant information.

Goal 1 – Under the Clean Air Act, each state air quality agency is required to develop plans designed to meet air quality standards in areas where they are not met and submit them to USEPA for approval. Each plan has slightly different requirements specific to the level of pollution and pollutant(s) of interest. Both states in the St. Louis area have a long history of making these submittals, but this comprehensive multi-pollutant approach is new and innovative.

Goal 2 – The identification of hazardous air pollutants, or air toxics, is not directly accounted for in the SIP process. However, the St. Louis area has identified concerns about high air toxic levels through an ambient air monitoring program. Therefore, a portion of this grant is being used to fund work on the development of an air toxic inventory to be used in the air quality modeling exercises for the St. Louis area.

Goal 3 – The AQMP will include specific measures designed to identify community air pollution priorities. In addition, there will be on-going opportunities for stakeholder involvement in the SIP development process including policy and technical input. This goal is designed to be an enhancement of the Clean Air Act requirement for public comment and hearing on all SIPs to allow for community involvement.

Goal 4 – The lack of consideration of other issues during the SIP development process can lead to complications when the plan is implemented. This goal is designed to consider these other on-going issues within the construction of the regulatory SIP for the St. Louis area.

The implementation of the AQMP will lead to the ultimate goals of protecting/improving air quality in St. Louis and behavioral changes in the population for that purpose. Also,

the control strategy decision-making process will change for the SIP process (internal management) based on the collection and dissemination of the additional AQMP-related information. Further, the cooperation between staff from the Illinois EPA, EPA Regions V and VII, and the Department will continue to provide necessary information/expertise to the AQMP process. For example, the generation of air toxics inventory data from both states will be utilized by the contractor for this project to provide the necessary air toxics modeling assessments. The technical products from the AQMP will evaluate air quality in Missouri and Illinois to provide decision-makers in both states the necessary information to identify appropriate control strategies for each state.

Ultimately, the funding provided by the State Innovation Grant is not sufficient to accomplish all the necessary tasks to complete the AQMP and begin its implementation. Therefore, in this workplan, the Department will provide a task list that includes all major tasks for the AQMP, but will focus on tasks associated with this grant funding only. In addition, the logic model provided will include the overall goals and objectives discussed above, but it will focus on the tasks, outputs, and objectives that will drive the performance measures for this grant.

Proposed Project Work Plan

The project timeline for the overall AQMP began in October 2007 with the development of the overall work plan and will continue through the submittal of “next generation” of SIPs (approximately 2012-15, depending on pollutant). Additional effort has been expended on the AQMP by the Department outside the State Innovation Grant funding and will continue throughout the project period. The tasks being funded under this grant are designed to commence after grant acceptance and continue for a four year time period (approximately October 2008 – October 2012). This project’s major tasks and timetable are outlined in the table below. Tasks already completed or under current development by the AQMP team are denoted as such. Tasks being funded by this grant are also noted.

Note: information exchange between the states of Illinois and Missouri toward the development of the AQMP will be very similar to information exchange between the two states for the purpose of developing SIPs for the St. Louis area. This exchange has been on-going for two decades and will continue for the development of SIP with or without development of an AQMP. If necessary for timely project completion, the Department will use other scientifically-valid data sources for St. Louis and surrounding areas (e.g. national inventory information) to complete the technical product development supported by this grant.

Schedule of Major Project Tasks

	Task Name	Task Description	Outputs Expected	Start Date	End Date
1	AQMP Work Plan	Development of AQMP work plan including input from both states, Regional Offices, OAQPS, and stakeholders	Submit workplan to USEPA <i>(submitted on 1/15/08 - attached)</i>	10/07	1/08
2	Summary of Current Status	Development of AQMP document that provides the current status of St. Louis with respect to current air quality, planning activities, problems, outreach efforts, SIP history	Submit summary to USEPA <i>(final draft summary was submitted on 5/22/08 – attached)</i>	1/08	6/08
3	Conceptual Model	Development of AQMP document that provides the conceptual model for the project including discussion of individual pollutant formation, planning activities/outreach, and	Submit conceptual model to USEPA <i>(conference calls are on-going)</i>	5/08	9/08
3B1	Draft Quality Assurance Project Plan (QAPP)	Development and submittal of draft QAPP for creation and implementation of the St. Louis AQMP	Submittal of draft QAPP for the project to USEPA	10/08	1/09
3B2	Final QAPP	Development and submittal of final QAPP for creation and implementation of the St. Louis AQMP	Submittal of final QAPP for project to USEPA	1/09	2/09(?)
4	Additional Analyses for Efforts Affecting Air Quality	Development of the tools necessary to begin the AQMP technical work including air toxics inventory creation, quality assurance, and subsequent analyses, emission model training and construct/data transfer, and photochemical model training/transfer (including air toxics)	Detailed under each sub-task	7/08	10/12

Schedule of Major Project Tasks

	Task Name	Task Description	Outputs Expected	Start Date	End Date
4.1	Air Toxics Inventory	Obtain and process for use air toxics inventory information from Missouri/Illinois sources along with EPA National Toxics Inventory database for point, area, and mobile sources as a template for AQMP use	Template to develop air toxics inventory for use in photochemical modeling and inventory analyses	7/08	10/09
4.1.1	Emission Model Construct Transfer/Training*	EPA-OAQPS has developed an emission modeling construct to process air toxics inventory information from a wide variety of sources that is critical for use in this project; transfer of this construct from OAQPS along with guidance and support for its use in St. Louis	Transfer of information from EPA-OAQPS and trained technical staff (with guidance from EPA)	7-8/08	1-3/09
4.1.2	Upgrade Missouri Inventory System for Air Toxics**	Change in coding necessary to support air toxics inventory improvement for stationary sources in Missouri's current Emission Inventory System (MoEIS); will require contract (\$10,000); output will be a modified system that will track VOC, HAPs, and PM emission units independently instead of VOC/HAP and PM/HAP as currently done	Improved inventory system for ease of facility entry of emission information, improved quality assurance of plant-provided toxic data, and data analyses/storage capability	10/08	10/09
4.2	Photochemical Modeling Transfer/Training**	EPA-OAQPS has developed (is developing) an air quality (photochemical) model to evaluate ozone, PM, and air toxics using the same model/inputs; transfer of this model to allow for a comprehensive evaluation of all relevant pollutants in St. Louis	Transfer of information from EPA-OAQPS and trained technical staff (with EPA guidance)	10/08	4-6/09

* Portion of task funded by SIG

** All task funded by SIG

Schedule of Major Project Tasks

	Task Name	Task Description	Outputs Expected	Start Date	End Date
5	Creation of AQMP*	Development of the plan entails considerable public outreach, incorporation of technical information, policy discussions between the relevant agencies and stakeholders, and ultimately decisions about what are air quality priorities in St. Louis (how can we reach them)	The AQMP submitted to USEPA	12/07	12/09
5.1	Public Outreach/Education*	Meetings with local community to begin the education process about AQMPs; meetings with AQMP team, stakeholders and internal management to discuss technical policy issues related to the AQMP; formal public comments/hearing on the plan	Several meetings have been conducted to inform the community about the AQMP; meeting summaries; documented revisions to the AQMP; Missouri Air Conservation Commission adoption of the AQMP	12/07	12/09
5.2	Incorporation of Technical Information**	Incorporate experience with model constructs and processes from Task 4 into the AQMP structure	Discussion within the AQMP about problems/solutions, concepts to be included, start of documentation regarding transfer of data to others	4-6/09	10/09
5.3	Prioritization of Air Quality Issues in St. Louis**	Decisions by the agencies with substantive stakeholder input regarding the prioritization of air quality problems within the area, resource allocation, staffing, etc.	Discussion within the AQMP about resources, air quality priorities, funding issues, etc.	8/09	10/09

* Portion of task funded by SIG

** All task funded by SIG

Schedule of Major Project Tasks

	Task Name	Task Description	Outputs Expected	Start Date	End Date
6	Development of Technical Analysis Tools*	The AQMP will dictate that the area will continue to address air quality problems and the methodology utilized for environmental control decisions (including technical products that will be considered)	Technical outcomes (reports, memoranda, etc.) designed to inform decision-making on environmental controls in St. Louis	12/08	10/12
6.1	Development of "Next Generation" Emission Inventory and Modeling Database*	After the modeling constructs are implemented, the next step is the generation of new SIP technical products including criteria pollutant and toxics inventory creation, processing of emissions and other input data for use in the air quality modeling system (meteorological, air quality, etc.)	Detailed in each subtask	12/08	10/12
6.1.1	Development of Request for Proposal (RFP) for Air Quality Modeling Contract**	After the "new" modeling constructs have been transferred, an RFP will be created for assistance in the development of the emission inventory and modeling databases for the AQMP process; the contract will be for \$100,000 (this amount will not fund the whole effort; assistance only)	Completed RFP for modeling assistance	12/08	3-5/09
6.1.2	Selection of Contractor/Contract Agreement**	Evaluation of the RFP and completion of the contractor selection culminating in the negotiation and finalization of the contract	Documentation of contract process and selection of contractor for this project and final contract for use	7/09	9/09

* Portions of the task funded by SIG

**All task funded by SIG

Schedule of Major Project Tasks

	Task Name	Task Description	Outputs Expected	Start Date	End Date
6.1.3	Selection of Modeling Database (year, domain, etc.)*	Selection of the new modeling inventory year and database including domain size(s) for evaluation of criteria pollutants and air toxics (the outcome of this task will drive the remainder of the process and will need to be thoroughly discussed with EPA OAQPS and the Regional Offices and will be based on available EPA guidance for the new NAAQS)	Technical document detailing decision and rationale	9-10/09	
6.1.4	Development of Baseyear Emission Inventory**	Obtain available emission inventory data from states, regional planning organizations, and EPA for criteria and air toxics pollutants (e.g. National Toxics Inventory); develop Missouri/St. Louis information then, process these data to develop the model-ready inventory database for this project (majority of contract funding will be expended here)	Model-ready emission inventory database	Early 2010	Mid-2011
6.1.5	Development of Other Baseyear Inputs	Development of air quality, meteorological, and other photochemical modeling inputs	Model-ready database	Early 2010	Mid-2011
6.1.6	Baseyear Air Quality Modeling*	Development of air quality model that sufficiently predicts the monitored concentrations to be used in control strategy development (iterative process with inventory and other input development)	Air quality model ready for consideration of control strategy development	Mid-2010	Mid-2011

* Portions of the task funded by SIG

**All task funded by SIG

Schedule of Major Project Tasks

	Task Name	Task Description	Outputs Expected	Start Date	End Date
6.1.7	Development of “Attainment” Year Emission Inventory	Obtain available growth and control projection information from sources in 6.1.4; develop Missouri/St. Louis information; process data for inclusion in photochemical model	Model-ready future year (base) emission inventory database	Mid-2011	Late 2011
6.1.8	Control Strategy Sensitivities*	Evaluate control strategies designed to achieve air quality goals in the photochemical model	Data used to support control decisions	Late 2011	10/12
6.1.9	Air Toxics Reporting**	Detailed evaluation of air toxics exposure to the citizens of the St. Louis area based on the findings of 6.1.7 and 6.1.8.	Separate technical memorandum evaluating air toxics exposure in St. Louis	Late 2011	10/12
6.2	Monitoring Data Evaluation	On-going evaluations of ambient monitoring data in the St. Louis area utilized to identify problems and potential source contributions for all pollutants, including air toxics in 6.1.9	Reports regarding monitoring data	10/08	10/12
7	Transfer of AQMP Data/Procedures to Other Agencies**	Task is designed to allow other regulatory agencies to evaluate the benefits/problems of the multi-pollutant AQMP approach through the plan itself and a narrative regarding issues associated with this approach compared to the current approach	Report on the efficacy of the project including problems and solutions	7/12	10/12
8	Project Reports	Task is designed to provide quarterly and project completion reporting	Quarterly status reports to Region VII and final report documenting activities supported under the grant	1/09	10/12

* Portions of the task funded by SIG

**All task funded by SIG

The following text expands on some of the tasks list above:

Task 4.1.1 - Emission Model Construct Transfer/Training. This task is designed to obtain modeling software, information, and scripts developed by USEPA to process air toxics emission inventory data for use in air quality models. This processing includes the temporalization, speciation, and geographic distribution of the inventory data for use in the air quality modeling. The model being utilized by USEPA to evaluate air toxics is very similar to the current SIP development model with additional information used to evaluate toxic concentrations. This construct (software/data) is not publicly available at this point and the Department needs USEPA assistance to test the new “system” for use in St. Louis and perform self-training on its new capabilities. The staff performing this modeling runs are already trained in the use of the current modeling tools, but will need additional assistance, supported by the grant, to perform the additional tasks with the new construct. The ability to implement air toxics evaluations within the modeling being developed for the St. Louis area is a critical component to AQMP implementation.

Task 4.2 - Photochemical Modeling Transfer/Training. This task is similar to Task 4.1.1 and will involve the transfer of the air quality model used to predict concentrations of criteria pollutants and air toxics. The model being utilized by USEPA to evaluate toxics is very similar to the current SIP development model and is currently being used by the Department for the development of the PM2.5 SIP submittal in St. Louis. As with the emission modeling tools, staff is already trained in their use but will need assistance, supported by the grant, to perform the additional modeling with the new modeling system.

Task 5.2 - Incorporation of Technical Information. This task is designed to take lessons learned from Tasks 4.1.1 and 4.2 and provide input into the AQMP development that will allow for the “new” modeling to be incorporated in the most efficient and accurate manner. It is important to know that the AQMP development process will include the information collected during the exercises discussed in 4.1.1 and 4.2. The final AQMPs will be used as a template for the development of future SIPs and as the air quality management tool in the St. Louis area. The implementation of the AQMP will, presumably, include the modeling constructs from the previous tasks (or an equivalent) to provide air toxics and criteria pollutant concentration data to decision-makers and the community.

Task 7 - Transfer of AQMP Data/Procedures to Other Agencies. This task is designed to provide documentation regarding the use of the AQMP as a management tool to other state/local agencies. The nature of the development of the plan and its implementation through extensive community involvement will necessitate the transfer of information throughout the process. In addition, to the final report denoted above, the Department will create a web-site to provide AQMP status, meeting summaries, updates to modeling activities, links to data acquisition, and other relevant links.

Logic Model for the St. Louis Air Quality Management Plan

Resources	Activities	Outputs	Customer	Short Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
Missouri DNR Illinois EPA EPA Region V EPA Region VII EPA OAQPS	Task 4.1.1 Transfer of Air Toxics Emission Modeling Construct	Trained staff and transfer of emission modeling construct	MDNR/IEPA Citizens Regulated community	Increased staff knowledge to complete future emission processing with new construct Utilize air toxics information in the air quality modeling studies for the AQMP	Inform St. Louis stakeholders about the level of criteria pollutant and air toxics exposure and evaluate ways to help reduce it Change emission modeling procedure to include new construct for St. Louis	Reduce air toxic exposure in affected areas of the community Change SIP development process to include relevant information about air toxics exposure
Existing MoEIS system Contractor MDNR staff	Task 4.1.2 Upgrade Missouri Inventory System for Air Toxics	New system to allow for better collection and evaluation of facility air toxics inventory data More accurate air toxics data from facilities for use in air quality evaluations	MDNR Citizens Regulated community	Information for the regulated community to educate them about the use of the new system Improved Dept. knowledge of air toxic emission sources and improved accuracy of inputs to air quality model;	Change in method for facilities to input their air toxics info to the database Inform St. Louis stakeholders about the level of criteria pollutant and air toxics exposure and evaluate ways to help reduce it	Reduce air toxic exposure in affected areas of the community

Logic Model for the St. Louis Air Quality Management Plan

Resources	Activities	Outputs	Customer	Short Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
MDNR IEPA EPA Region V EPA Region VII EPA OAQPS Task 4.1 Outputs/Outcomes	Task 4.2 Transfer of Air Toxics Air Quality Modeling Construct	Trained staff and transfer of air quality modeling construct	MDNR/IEPA Citizens Regulated community	Increased staff knowledge to complete future photochemical modeling with new construct Air toxics information can be predicted and reported in air quality studies for the AQMP	Change emission modeling procedure to include new construct for St. Louis Behavioral changes in community to assist in reducing air pollutant exposure	Reduce air toxic exposure in affected areas of the community Change SIP development process to include relevant information about air toxics exposure
MDNR IEPA EPA Region V EPA Region VII EPA OAQPS Task 1,2,3,and 4 outcomes	Task 5.1 Outreach/Education about AQMP	Meeting summaries, on-going participation in the AQMP development, formal public comment and hearing on the AQMP Gain support for the AQMP and the process for improving air quality St. Louis	MDNR/IEPA Management Citizens Regulated community	Increased knowledge of air toxics issues, overall air quality problems in St. Louis, and the regulatory process Increased participation in St. Louis air quality regulatory processes	Change in behavior of all stakeholders (and decision-makers) to use the AQMP as a collaborative tool for St. Louis air quality management	Change SIP development process to include the AQMP as the mechanism for SIP development Improve St. Louis air quality

Logic Model for the St. Louis Air Quality Management Plan

Resources	Activities	Outputs	Customer	Short Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
MDNR IEPA EPA Region V EPA Region VII EPA OAQPS Task 4 Outcomes	Task 5.2 Incorporation of Technical Information	Portions of the AQMP (specifically air quality modeling procedures) to illustrate knowledge gained in Task 4	The AQMP MDNR/IEPA	The revised AQMP will compile the knowledge and beliefs from Task 4 and provide opportunity for stakeholder input at this point	The AQMP itself is a set of behavior and process changes and it will be revised to support the increased knowledge in STO	See IO
MDNR IEPA EPA Region V EPA Region VII EPA OAQPS Task 1,2,3,4, and 5.1/5.2 outcomes	Task 5.3 Prioritization of St. Louis Air Quality Issues	Decision from MDNR management with stakeholder/ staff input regarding the prioritization of air quality issues in St. Louis (e.g. is ozone more important to evaluate/control than PM or air toxic)	MDNR/IEPA Citizens Regulated community	Increase staff knowledge of priorities during AQMP implementation Increased Department knowledge about local St. Louis air priorities through enhanced community input Improve knowledge about the AQMP role in the air quality management process	Result in staff evaluating analysis techniques to address highest priority issues Potential change in internal management focus on a different important issue than currently considered (more staff, resources, etc)	Potential change in overall air quality management process to focus on most pressing air quality need first Improve “worst” air problems first (ozone, toxics, or PM)

Logic Model for the St. Louis Air Quality Management Plan

Resources	Activities	Outputs	Customer	Short Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
MDNR IEPA EPA Region V EPA Region VII EPA OAQPS Task 4/5 Outputs and Outcomes	Task 6.1.1 and 6.1.2 Modeling Assistance	RFP for Contract Documentation of contractor selection and contract Contract to assist in development of technical products necessary for AQMP implementation including model-ready air toxics inventory	MDNR	Knowledge gained from questions received from contractors evaluating RFP Improved capabilities and knowledge from contractor toward air toxics inventory data creation	Staff using different air quality modeling process for air quality management via AQMP	First step in overall AQMP technical analyses implementation (change in SIP development process)
MDNR IEPA EPA Region V EPA Region VII EPA OAQPS Contractor from Task 6.1.2 Existing regulatory framework	Task 6.1.3 Selection of Baseyear / Modeling Configuration	Decision and documentation giving rationale for choice of configuration	MDNR IEPA EPA	Increased knowledge about pollution episodes in St. Louis (including toxics) Increased staff knowledge about new modeling configuration to be used in SIP development	Staff using different air quality modeling configuration (different than previous configurations)	Next step in overall AQMP technical analyses implementation (change in SIP development process)

Logic Model for the St. Louis Air Quality Management Plan

Resources	Activities	Outputs	Customer	Short Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
MDNR IEPA EPA Region V EPA Region VII EPA OAQPS Task 4 Outcome Task 6.1.3 Outcome	Task 6.1.4 and 6.1.6 Development of Baseyear Inventory and Air Quality Modeling	Quality assured emission inventory database and a “performing” baseyear modeling platform Documentation regarding the “ancillary” air quality issues (smart growth, EJ, climate change) and impacts from these on the modeling/planning process	MDNR IEPA EPA Regulated community Citizens	Knowledge and experience for staff solving problems with air toxics/criteria pollutant modeling Increased agency and public confidence in the modeling outputs through education (Task 5.1) and in the subsequent control strategy decisions Specific, new information about air toxics concentration in the St. Louis area Knowledge about how the ancillary issues and corresponding programs impact the air quality studies	Modeling staff procedural/ behavior change due to new modeling techniques for air toxics	Continued change in SIP development procedures with the generation of air toxic concentration data for the St. Louis area

Logic Model for the St. Louis Air Quality Management Plan

Resources	Activities	Outputs	Customer	Short Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
MDNR IEPA EPA Region V EPA Region VII EPA OAQPS Tasks 6.1.4-6.1.7 Task 6.2	Task 6.1.8 Control Strategy Sensitivities and 6.1.9 Air Toxics Reporting	Modeling outputs for attainment demonstration development (criteria pollutants) that evaluate air toxics and appropriate criteria pollutants Documentation of air toxics exposure using emissions data, air quality modeling and monitoring Ancillary issues (see Task 6.1.4)	MDNR IEPA EPA Regulated Community Citizens	Knowledge about air toxics exposure and human health impacts Knowledge about potential sources for control Inform St. Louis stakeholders about the level of air toxics exposure and the toxic exposure benefits of certain control programs	Diminish behaviors (personal or industrial) that lead to increased air toxics exposure	Reduce air toxic emissions and exposure in St. Louis Final step in the AQMP process to develop emission reductions/controls for criteria pollutants and air toxics
MDNR IEPA AQMP Outcomes	Task 7 Transfer of AQMP Process Information to Other Agencies	The St. Louis AQMP and documentation giving problems/solutions, benefits to the AQMP process	EPA Other state agencies	Knowledge about technical and policy related issues with AQMP development implementation	Other states changing to AQMP process	Improving air quality and efficiency of air quality management in multiple regions through the use of AQMP

Logic Model for the St. Louis Air Quality Management Plan

Resources	Activities	Outputs	Customer	Short Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
MDNR All previous tasks IEPA	Task 8	Quarterly progress reports and final report on the AQMP development and implementation	EPA	Increased knowledge about the AQMP process for EPA to make decisions about the viability of AQMPs when compared to the pollutant-by-pollutant approach	EPA behavior change to prioritize the AQMP approach (encouraging other states to utilize multi-pollutant AQMP)	Possible CAA change or policy change by EPA to reflect new AQMP paradigm

External Influences

Availability of funding (EPA or state) may cause project delays

Leadership changes at appointed level may cause shift in priorities to other environmental problems

Missouri §643.055 dictates that the Air Program can not be more strict or sooner in developing regulations than EPA (only outside nonattainment areas)

Public interest and support in the AQMP may not be sufficient to realize some of the project outcomes

Program Benefits and Outcomes

The AQMP project will provide substantially more information regarding air toxics exposure in St. Louis to its citizens and other stakeholders. It will provide the opportunity for public interaction at each point in the regulatory process for all stakeholders. It will provide the state agencies opportunities for substantial efficiency improvements in the future with respect to overall air quality planning efforts in the St. Louis area. The AQMP will provide more information regarding the interaction between criteria and air toxic pollutants when control strategy decisions are made. In addition, co-benefits to control for air toxics or one of the criteria pollutants can be more readily evaluated using the new approach. Also, the impacts of smart growth/transportation planning, environmental justice, and climate change initiatives will be evaluated in conjunction with the technical analyses conducted to support SIP development.

The development and implementation of the AQMP project will be used to provide other state agencies the benefit of the Department's experience through project reports and responding to questions about the AQMP.

Detailed Performance Measures

The list of outcomes, below, was taken from the logic model included above. For each of the anticipated outcomes, we anticipate measuring results using the means shown in underlined italic. It is important to note that not all outcomes can or will be measured, but only the critical and important outcomes will be tracked and measured.

Anticipated short-term outcomes:

AQMP Development

Increased staff knowledge in use of new EPA-OAQPS modeling constructs (emissions and photochemical) via assisted self-training from OAQPS. (Tasks 4.1.1 and 4.2) – Measured via staff survey

Increased knowledge of regulated community about the new MoEIS update to enhance air toxics emission inventory collection and accuracy (Task 4.1.2) – Measure via survey of MoEIS facilities

Increased participation in St. Louis air quality regulatory process (Task 5.1) – Measure via meeting attendance and number of public comments received on St. Louis AQMP (positive vs. negative)

The AQMP and corresponding increase in knowledge through the development process for the Department including prioritization of air quality issues (Tasks 1-5) – Measured by on-going quarterly updates to the AQMP provided to USEPA

AQMP Implementation

Improved capabilities and knowledge from contractor toward air toxics inventory creation (Task 6.1.1 and 6.1.2) – Measured by final RFP, final contract, and air toxics inventory creation from the contract

Increased knowledge about pollution episodes in St. Louis (including toxics) and selection of modeling configuration for future SIP development – Measured by documentation of episode selection and final modeling configuration selected for St. Louis (modeling protocol or technical memorandum to USEPA)

Knowledge and experience for staff solving problems with air toxics/criteria pollutant modeling (Task 6.1.4 and 6.1.6) – Measured by creation of the emission and air quality modeling documentation and final technical products and staff survey

Knowledge about ancillary issues and corresponding programs impact the air quality studies in St. Louis (Tasks 6.1.4 and 6.1.6) – Measured by reporting of findings in the air quality modeling and emission inventory technical documents on these ancillary issues (smart growth, climate change, and environmental justice)

Knowledge about air toxics exposure and human health impacts (Tasks 6.1.8 and 6.1.9) – Measured by reporting of the findings regarding human health and air toxics exposure in technical memoranda to USEPA and the St. Louis community stakeholders

Increase public knowledge about air toxics and overall St. Louis air quality (various tasks) – Measured by public survey, participation in meetings, and public comments received

Knowledge about technical and policy-related issues with AQMP development/implementation for other agencies (Task 7) – Measured by creation of AQMP documentation for USEPA, including final report on AQMP efforts

Knowledge about the AQMP process for EPA (Task 8) – Measured by submittal of quarterly reports and final report on AQMP efforts

Anticipated Intermediate-term Outcomes:

Change in modeling procedures for emissions and photochemical modeling including air toxics (Task 4.1.1 and 4.2) – Measured by procedures developed and documented for new tasks using air toxics construct

Change in method for facilities to input their air toxics information to the MoEIS database (Task 4.1.2) – Measured by documentation of change and procedures for utilizing the new method

The AQMP-imposed process and behavioral changes (Task 5.2) – Measured by documentation of changes to the process (technical memoranda and procedural changes)

Diminish behaviors (personal or industrial) that lead to increased air toxics exposure (Task 6.1.8 and 6.1.9) – Measured by reduction in specific air toxics emissions and exposure (from air quality analyses) via SIP documentation (likely outside the time of the grant reporting requirements)

Other states changing to the AQMP process (Task 7) – Measured by number of states using the AQMP process to develop SIPs (likely outside the time of the grant reporting requirements)

Anticipated Long-term Outcomes:

Change in overall SIP development/submittal process to incorporate the AQMP approach for St. Louis including multiple pollutants and increased community involvement (overall) – Measured by SIP submittals to USEPA using the St. Louis AQMP

Reduction in overall SIP development/submittal timeframes (overall) – Measured by documentation of time necessary to create SIP submittals for “next generation” of SIPs after AQMP adoption compared to previous SIP submittals (likely outside the time of the grant reporting requirements)

Reduction in air toxics emissions and exposure (overall) – Measured by reduction in specific air toxic emissions in the St. Louis area (likely outside the time of the grant reporting requirements)

Attainment of the criteria pollutants standards (overall) – Measured by monitored concentration data in the St. Louis area (trend analysis will include time outside the grant reporting requirements)

Transferability and Reporting

Quarterly reports, and a full project report, including environmental outcomes to date, will be prepared and submitted to EPA, as required. The quarterly and full project report will be posted on the Department’s St. Louis AQMP web-site. The outcomes of the St. Louis AQMP will be shared with other state agencies and will include the problems and solutions with the AQMP process. This will allow other states’ to determine the advantages/disadvantages of using the AQMP approach. The quarterly, and final, reports will include:

- Short summary of the work complete in the reporting period
- Deliverables, outputs, outcomes, etc. completed in the reporting period
- Description of progress on completing individual tasks and milestones reached

Any changes to the planned project schedule based on events
Summary of changes to the project work plan or the QA Plan
Reporting of information contained in the QA Plan
Summary of information of grant fund expenditures, by budget category

BUDGET

See attached spreadsheet file.