

EXHIBIT J

Questions Regarding the Implementation of Act 1302 of 2013 by the Arkansas Department of Environmental Quality

Act 1302 was passed with an emergency clause and became effective on April 18, 2013. In order to monitor the implementation of the Act by the Department, the Committee asks that the Department provide a written response to the following questions:

NAAQS STATE IMPLEMENTATION PLAN

The Act added a new definition at Arkansas Code § 8-4-303 (12),

NAAQS state implementation plan" means a state implementation plan that specifies measures to be used in the implementation of the state's duties under the Clean Air Act, 42 U.S.C. § 7401 et seq., for the attainment and maintenance of a specified National Ambient Air Quality Standard.

The Act added a new section directing the Department to prepare a NAAQS State Implementation Plan at Arkansas Code § 8-4-318 (a).

National Ambient Air Quality Standards implementation.

(a)(1) The Arkansas Department of Environmental Quality shall develop NAAQS state implementation plans.

(2) Each NAAQS state implementation plan shall include the measures necessary for the attainment and maintenance of the National Ambient Air Quality Standard in each air quality control region or portion of an air quality control region within the state.

Question 1: Has the Department developed a work plan for carrying out the requirement to develop a NAAQS state implementation plan for each of the six NAAQS criteria pollutants? If yes, please provide a copy of the work plan.

While there are six criteria pollutants - Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter (PM), Sulfur Dioxide (SO₂) - there are actually 11 NAAQS. The Department has developed a work plan for those NAAQS not yet adopted, but currently proposed for adoption in state regulations. Those NAAQS are the 2006 PM standards which include PM_{2.5} annual and 24-hour, the 2008 Pb standard, the 2010 NO₂ standards which include an annual and one hour standard, the SO₂ standards which include a one-hour and three-hour standard, and the 2008 O₃ standard. A list of NAAQS including those proposed for adoption is attached along with the work plan and timeline (Attachments A, B and C, respectively).

ADEQ believes it is necessary to prioritize NAAQS SIPs for these new or revised standards as it may be necessary for EPA to approve the federally required Infrastructure SIP (i-SIP) that will be submitted simultaneously. An i-SIP typically demonstrates that a state has adopted a NAAQS and has the legal authority to ensure its protection. Under the provisions of Act 1302, but for Prevention of Significant

Deterioration (PSD) permit applications, the legal structure for ensuring protection of the NAAQS in certain SIP covered permit application reviews have been removed from the permitting process and incorporated into implementation of a NAAQS SIP. This first NAAQS SIP will also address all current NAAQS that are not new or revised. For example, the CO NAAQS was not revised, however we will address it in the NAAQS SIP so that Arkansas has mechanisms in place to protect this NAAQS.

It should be noted that EPA finalized a revision in late 2012 to the PM_{2.5} NAAQS after Arkansas initiated the presently pending rules. Arkansas has an obligation under the Clean Air Act to address this latest NAAQS revision by the end of 2015 in an i-SIP submission. This will require additional rulemaking to adopt the standard into Arkansas regulations. This additional rulemaking to adopt the 2012 PM_{2.5} standard will be initiated as soon as the current NAAQS rulemaking is finalized. An option for NAAQS SIP development under consideration is delaying submittal of the first NAAQS SIP until the 2012 PM_{2.5} standard is adopted into the state regulations for inclusion in the first NAAQS SIP. Additionally, we will have to address, in a NAAQS SIP, any other NAAQS revisions as they are promulgated by EPA - such as the anticipated revisions of the O₃ standard in 2013/14. A schedule for development of NAAQS SIPs for future standards will be developed after EPA review and approval of the first NAAQS SIP.

Question 2: What is the timeline for completion of the NAAQS state implementation plan for each of the NAAQS criteria pollutants? Please include key milestone dates.

A preliminary timeframe has been prepared for development of the NAAQS SIPs discussed in response to question #1 (Attachment C). The tentative timeline currently lists a completion date (submittal to EPA) in March 2015. (The March 2015 submission date does not include addressing the 2012 PM_{2.5} standard, which has not yet been proposed for adoption at the state level.) The attached timeline displays quarterly "milestone" activities from the completion of the current NAAQS adoption rulemaking process, drafting of technical requirements, consideration of statutorily required factors (A.C.A. 8-4-312), control measure alternatives, etc., in addition to stakeholder interaction and required public participation processes.

Question 3: Please describe how the Department is staffing development of the NAAQS state implementation plans? What is the budget for development of these plans?

These activities are primarily performed in the Air Division's Planning Branch with assistance from the other Air Division Branches, as needed. There are currently 18 positions in this branch, with 1 current vacancy. Prior to the passage of Act 1302 and because of non-attainment concerns over the ozone and particulate matter NAAQS, ADEQ transferred a couple of positions to this branch and created a non-attainment section. ADEQ also utilizes contractor expertise (currently ICF) to augment staff resources for these activities. These NAAQS SIPs are only part of the workload for this branch which also performs federally required SIP development for program implementation changes and non-attainment areas, permit modeling support, air monitoring technical support and analysis, and regulatory development. The ICF contract costs for the emissions inventory and analysis task for the NAAQS currently proposed for adoption are \$145,000.

Question 4: What are the major obstacles to completion of the NAAQS state implementation plans in a timely manner? Does the Department have a strategy for overcoming these obstacles?

The initial obstacle is the lack of air quality monitoring data needed to identify potential poor air quality areas throughout the state. "Poor air quality areas" would include those areas that violate a NAAQS, are interfering with maintenance of a NAAQS, or are at or near non-attainment of a NAAQS. Federal monitoring requirements only target population densities of 30,000 or greater. Currently, federally required monitors are partially funded by federal grant dollars and these limited dollars are targeted to protection of population dense areas. Where monitoring data is not available, emissions inventory development and modeling of those emissions can be used to help provide better air quality information based on actual emission loads. ADEQ anticipates the need for temporary monitors to validate modeled "predicted exceedances or near exceedances" before control strategies are developed. As previously mentioned, ADEQ has utilized contract services to perform the emissions inventory and modeling analysis for certain NAAQS.

Once ADEQ has the emission analysis in-hand, we will be able to define air quality control regions that need an emission reduction strategy in addition to the federally required Metropolitan Statistical Area analysis that must accompany federally required monitors that are in areas near non-attainment or are in non-attainment.

Once areas of poor air quality are identified, another obstacle is the identification, consideration and cost of available control measures, particularly as they relate to non-traditional sectors (emission sources other than stationary sources typically regulated through existing permitting programs/regulations). In order for a control strategy to be acceptable, it must be enforceable. ADEQ anticipates extensive public/regulated community participation in the development of these control strategies and that legislative and/or regulatory action may be necessary for currently unregulated source categories.

Historically, Arkansas has had to deal with limited non-attainment or near-nonattainment issues. This historical trend was bound to change given the new, tighter NAAQS recently promulgated. ADEQ was already planning for the development of these federally required SIPs before the passage of Act 1302. Given the additional workload imposed by Act 1302, ADEQ may need additional resources in the form of additional staff and/or contracted services. Right now we are prioritizing NAAQS SIPs development for the proposed NAAQS and the federally required workload that already exists within the Planning Branch. We will be utilizing Title V fee funds to support these additional costs to the extent allowable under federal law.

Question 5: Has the Department briefed officials in the Air Quality Office of Region 6 of the United States Environmental Protection Agency regarding Act 1302 and the requirement for development of NAAQS state implementation plans? Has the Department shared the work plan with Region 6?

Yes, there has been some discussion with the Regional office in regard to the NAAQS SIP requirement in 1302. Tentative timelines have also been shared with Regional EPA staff. The Planning staff (ADEQ &

EPA Region 6) have monthly conference calls related to various activities involving rulemaking and SIP development and review. NAAQS SIP discussions are now included in these routine calls.

Question 6: Has EPA expressed any objections to the Act 1302 requirement to develop NAAQS state implementation plans?

EPA is unclear about the need for such a state implementation plan and how to process the State's submittal of such a plan, as all federal requirements for protection of the NAAQS are required to be included in Infrastructure, Non-attainment, and other SIPs (such as Regional Haze or transport SIPs that address our good neighbor obligations under the CAA) as outlined in the Clean Air Act. Additionally, the Agency is concerned that development of non-federally required SIPs could cause a delay in the state meeting Clean Air Act SIP obligations. It will be incumbent on Arkansas, through the combination of the federally-required SIPs and state-required NAAQS SIPs to clearly explain and legally support our ability to protect air quality as it relates to protection of NAAQS.

COMMUNICATION WITH PERMIT HOLDERS AND APPLICANTS

PART 1: The Act added a new section directing how NAAQS standards would be applied to stationary sources at Arkansas Code § 8-4-318 (b) (2).

(2) Except as required for the permitting of major source construction under Part C or D of Title I of the Clean Air Act, 42 U.S.C. § 34 7401 et seq., or otherwise voluntarily proposed and agreed to by the owner or operator of a stationary source, the Department shall not mandate for any stationary source measures for the attainment and maintenance of a National Ambient Air Quality Standard until such measures are included in the applicable NAAQS state implementation plan and the NAAQS state implementation plan has been submitted to the United States Environmental Protection Agency.

Question 1: Has the Department developed a communication plan to make stationary source permit holders aware that measures for attainment are not mandated until the corresponding NAAQS state implementation plan is submitted to EPA? If yes, please provide a copy of the communication plan.

The Department has developed several documents which have been distributed to facilities via emails, newsletters, ADEQ's website and revised permit application forms, including:

- An Interim and now a FINAL AIR PERMITTING PATH FORWARD REGARDING NAAQS REQUIREMENTS – this outlines the effect of Act 1302 on permit requirements and facility obligations in permitting (Attachment D); and
- Frequently Asked Questions (FAQs) Regarding Act 1302 Implementation – this supplements the previously referenced document with additional questions and answers (Attachment E).

Copies of the FAQs and Final Air Permitting Path Forward documents are attached.

In addition, the Department held an open meeting on June 7, 2013 at 1:00 p.m. in the Commission Room at ADEQ to discuss these interim procedures and reviewed them again at the Arkansas Environmental Federation Annual Convention in early October.

Question 2: Has the Department revised internal procedures, protocols and permit reviews to comply with this new requirement? Please describe these revisions.

Yes, the documents mentioned above are also utilized by supervisors and staff to explain post-Act 1302 permit review procedures.

Permit documents forms, particularly the Statement of Basis template (Attachment F) for each permit drafted, have been updated to incorporate provisions of the Act.

Question 3: Has ADEQ staff been trained to follow these revisions? Please describe the training.

Permit staff meetings were used to explain permit application review process changes as well as supervisory review of staff work products, including notice of deficiency letters, draft permits, comment response documents, and final permits.

PART 2: The Act added a new section directing when computer air dispersion modeling would be considered in the permitting process for stationary sources at Arkansas Code § 8-4-318 (b) (3).

(3) Unless otherwise voluntarily proposed and agreed to by the owner or operator of a stationary source, the Department shall not require or consider air dispersion modeling of an air contaminant for which a National Ambient Air Quality Standard has been established in air permitting decisions for stationary sources ...

Question 1: Has the Department developed a communication plan to make stationary source permit holders aware that air dispersion modeling is not required for NAAQS pollutants? If yes, please provide a copy of the communication plan.

See the response to Part 1, Question 1 above.

Question 2: Has the Department revised internal procedures, protocols and permit reviews to comply with this new requirement? Please describe these revisions.

See the response to Part 1, Question 2 above

Question 3: Has ADEQ staff been trained to follow these revisions? Please describe the training.

See the response to Part 1, Question 3 above.

NATIONAL AMBIENT AIR QUALITY STANDARDS LIST

Pollutant	Final Rule Cite	Final Rule Date	Primary / Secondary	Averaging Time	Level	Form
Carbon Monoxide	76 FR 54294	August 31, 2011	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
				1-hour	35 ppm	
Lead	73 FR 66964	November 12, 2008	Primary and secondary	Rolling 3 month average	0.15 $\mu\text{g}/\text{m}^3$	Not to be exceeded.
Nitrogen Dioxide	75 FR 6474	February 9, 2010	Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
	61 FR 52852	October 8, 1996	Primary and secondary	Annual	53 ppb	Annual Mean
Ozone	73 FR 16436	March 27, 2008	Primary and secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution, $\text{PM}_{2.5}$	71 FR 61144,	October 17, 2006	Primary and secondary	Annual	15 $\mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years
				24-hour	35 $\mu\text{g}/\text{m}^3$	98th percentile, averaged over 3 years
Particle Pollution, PM_{10}	71 FR 61144,	October 17, 2006	Primary and secondary	24-hour	150 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide	75 FR 35520	June 22, 2010	Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	38 FR 25678	September 14, 1973	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Preliminary Analysis of the Impacts of Act 1302

Air Division

Prepared by Planning Branch,
Air Division, Arkansas
Department of Environmental
Quality, October 9, 2013

INTRODUCTION

This document was produced by the Planning Branch of the Air Division in response to Act 1302 of the 2013 Arkansas General Assembly. It is a preliminary analysis of what the Planning Branch will be required to accomplish in order to meet the main objective of protecting the National Ambient Air Quality Standards (NAAQS) in the State of Arkansas, as a result of the passage of Act 1302. There are four main categories of responsibilities related to the State Implementation Plan (SIP) process: monitoring, modeling, emission inventories and SIP development. This analysis will address each of these categories, including a tentative timeline and description of resources required to accomplish these new responsibilities. As a preliminary analysis, it is produced for internal discussion purposes and is subject to revision.

MONITORING

In the very short-term, the existing monitoring network would be sufficient to ensure monitoring compliance with current NAAQS. A map of the existing monitor network is included below as Attachment A. However, as the permitted facility landscape and economic conditions change, and as new NAAQS come on-line in the near future, the need for special purpose monitoring will increase. In order to determine if additional monitoring is required, appropriate air quality modeling must be accomplished. An alternative to modeling to site new special purpose monitors would be either educated "guess work" on the part of technical staff or an expanded network of special purpose monitors based on grids or other arbitrary criteria. Neither of these options is desirable or recommended.

The cost to set-up a multi-pollutant monitor is \$283,450. The details are as follows:

Item	Quantity	Unit Price	Total Price
Thermo CO Analyzer	1	11,000	11,000
Thermo NO-NO2-NOX Analyzer	1	13,000	13,000
Thermo SO2 Analyzer	1	11,000	11,000
Thermo Gas Calibrator	2	12,500	25,000
Thermo NO-DIF-NOY Analyzer	1	22,500	22,500
Friedrich AC Unit	2	700	1,400
Climatronics Met Box	1	2,000	2,000
Agilaire 8832 Data Logger	2	8,500	17,000
Thermo Zero Air Generator	1	6,500	6,500
Thermo O3 Analyzer	1	8,500	8,500
Thermo O3 Primary Standard	1	11,500	11,500
Thermo Trace SO2 Analyzer	1	12,500	12,500
Thermo Trace CO Analyzer	1	13,000	13,000
EKTO Building	2	12,000	24,000
TEOM	1	19,550	19,550
Thermo Sequential	4	15,000	60,000
Carbon Sampler	1	12,000	12,000
Met One Speciation Sampler	1	13,000	13,000

Total			\$283,450
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If trailers are used instead of the EKTO buildings, two trailers would be required at a cost of \$7,000 each. Additional costs for personal computers, phone lines and power supply are variable. A complete multi-pollutant set-up such as the above would not be required in every location identified by modeling as needing a monitor, but it provides some idea of the expense involved in additional monitoring.

MODELING

Modeling would be required to inform as to the siting of any new air quality monitors within the state to ensure compliance with existing NAAQS, ensure compliance with prospective NAAQS as they come on-line, and identify potential non-attainment areas. While the Planning Branch has one skilled and experienced modeler, this is not sufficient to accomplish the scope of work required. In addition, the computer hardware needs would be an expensive investment on the part of ADEQ. Considering these two main factors, staff contacted ICF International, a corporation skilled and experienced in air quality modeling, and with which ADEQ has an existing contract, to provide a scope of work of the type of modeling that will be required. The ICF/ADEQ Task Assignment and Agreement Form is included below as Attachment B. ICF provided a Scope of Work encompassing six sub-tasks: 1) extend 2005 CMAQ modeling inputs for full annual simulation, 2) prepare 2008 modeling inputs for Community Multiscale Air Quality (CMAQ) model, 3) conduct base-case modeling and model performance evaluation, 4) prepare annual modeling emission inventory for 2015, 5) conduct future-year baseline modeling for 2015, and 6) document the methods and results and present the results to ADEQ. Task 7 (optional) would provide additional sensitivity simulations. The work under this contract will take an estimated six months from the time of contracting, with a proposed cost of \$145,000. With the advent of new NAAQS for the various criteria pollutants, and the evolving nature of local and regional-scale air pollution, this type of work could be on-going. A new modeling exercise would be needed in 2014 for a future-year baseline beyond 2015. As mentioned above, the alternative to contracting this modeling is an investment in hiring new Planning Branch staff with skills and experience in regional air quality modeling. This type of experience is limited to few individuals in the region, principally employed by consultants and other state air quality agencies. Because of factors such as pay and relocation, these individuals are generally unavailable.

EMISSION INVENTORIES

Emission inventory work is broken down into five categories for purposes of the National Emission Inventory (NEI): point, nonpoint, on-road, non-road, events and biogenics. Below is a brief synopsis of what is included in each category and how we preliminarily anticipate improving the data collected for each category. Under existing EI procedures, most major sources are broken down into two categories: Type A sources which have the highest potential emissions report annually (approximately 65 facilities) and Type B sources which have lower potential emissions report triennially (approximately 105 facilities). Sources with the potential to emit ≥ 100 TPY of CO in Crittenden County (due to non-

attainment status) are also required to report triennially per 40 CFR 51.50. The emission inventory cycle (see below) takes approximately one year and six months to complete. Current procedures include:

1. ADEQ mails a letter to reporting facilities and generates reports in January of the year following the reporting year.
2. Facilities enter data into SLEIS (ADEQ still does some data entry for facilities and assists with this process) until approximately June.
3. QA/QC review of the reports continues until September/October when data is submitted to EPA NEI
4. EI Facility Master List is updated (with information from permitting entered into PDS) in November and December.
5. Corrections are made on information tagged by EPA in several time periods through the end of the following April.
6. EPA releases the first version of the emission inventory for agencies to review by approximately the following June and public release of the data takes place later.

Description of NEI Data Categories – Data that is included in the NEI and how it is currently obtained by ADEQ

The **NEI Point** data category contains emissions estimates for sources that are individually inventoried and usually located at a fixed, stationary location, although portable sources such as some asphalt or rock crushing operations may also be included. Point sources include large industrial facilities and electric power plants, but also increasingly include many smaller industrial and commercial facilities, such as dry cleaners and gas stations, which had traditionally been included in non-point sources. The choice of whether these smaller sources are estimated individually and included as point sources or inventoried as a non-point source county or tribal area aggregate is determined by the separate state, local, or tribal air agency. Arkansas collects information via SLEIS for mainly Title V facilities according to the source classifications outlined in 40 CFR 51.50 (Type A and B facilities). At this point in time, no smaller sources are included, any smaller sources are mainly included in the non-point category—the exception is that there are a few minor source facilities in the state that are required to report due to lead or ammonia levels, but these are not numerous in number like dry cleaners or gas stations.

The **NEI Non-Point** data category contains emissions estimates for sources which individually are too small in magnitude or too numerous to inventory as individual point sources, and which can often be estimated more accurately as a single aggregate source for a county or tribal area. Examples are residential heating and consumer solvent use. Arkansas currently accepts EPA estimates/modeling for these values. A temporal allocation approach is used by EPA to estimate residential wood combustion, agricultural ammonia, fugitive dust, agricultural burning, all other, including non-EGU point sources, nonpoint, rail, C1 and C2 marine

The **NEI On-Road and Non-Road** data categories contain mobile sources which are estimated by EPA for the 2008 NEI v3 via the MOVES2010b and NONROAD models, respectively. NONROAD was run within the National Mobile Inventory Model (NMIM). Note that emissions data for aircraft, locomotives, and

commercial marine vessels are NOT included in the Non-Road data category starting with the 2008 NEI. Aircraft engine emissions occurring during landing and takeoff operations and the ground support equipment and auxiliary power units associated with the aircraft are now included in the point data category at individual airports in the 2008 NEI. Emissions from locomotives that occur at rail yards are also included in the point data category. In-flight aircraft emissions, locomotive emissions outside of the rail yards, and commercial marine vessel emissions (both underway and port emissions) are included in the Non-Point data category. Arkansas currently accepts EPA estimates/modeling for these values, although on-road emissions have either been modeled within ADEQ or have been contracted out in the past.

On-road mobile – EPA estimates use MOVES/SMOKE modeling that uses gridded hourly meteorology and state supplied inputs and VMT.

Non-road mobile – EPA estimates use the National Mobile Inventory Model that includes monthly non-road equipment emissions and applies day-of-the-week and hour-of-day adjustments.

Electric Generating Utilities – Hourly CEM data is used to temporarily allocate NEI emissions

Events – The **Events** data category includes wildfires, wild land fire use and prescribed burns. Wild land fire use has been included in the "Fires - Wildfires" sector. Emissions for these are presented as county totals. Arkansas currently accepts EPA estimates/modeling for these values. A SMARTFIRE-based approach to estimate daily emissions for fires is used at point source locations.

Biogenics – Arkansas currently accepts EPA estimates/modeling for these values. The BEIS3.14 model is used to create 12-km gridded hourly emissions that are used in modeling.

It is the opinion of staff that improvements to the emissions inventory, through the collection of additional information and/or estimates and modeling, is possible, but for the time and expense involved would provide negligible additional benefit. It is possible that after this effort has begun, when potential non-attainment counties/areas are identified, emission inventory staff can determine if there is some additional information that can be obtained.

SIP DEVELOPMENT

The federal Clean Air Act mandates that states evaluate the air quality in the State when new or revised NAAQS are promulgated. Act 1302 does not alter our obligations in this regard; however, the Act does establish a new kind of state implementation plan—NAAQS SIP—that directs the Department to “establish measures for the attainment and maintenance of the NAAQS” and specifically prohibits the use or consideration of air dispersion modeling in certain permitting decisions unless authorized by the source owner/operator until such provisions are incorporated into a revised SIP submitted to EPA. This prohibition significantly alters the methodology contained in the currently approved SIP in that the primary “NAAQS protection” obligation is addressed by means of the pre-construction permit requirements of the state regulations.

Regardless of the new requirements for NAAQS SIPs under Act 1302; a “modernization” of the way ADEQ has historically developed SIPs for areas of the state that were not designated as Non-Attainment is in order. Much of the reasoning for this is based on the lower concentration and shorter averaging times of some the new or revised standards and the current values for some pollutants at existing monitoring stations. The development of SIPs will place greater emphasis for potential control measures in areas of the State that are near the NAAQS. The overall goal, as always, is to protect the NAAQS and maintain healthy air for the citizens and visitors of the State. In areas that are designated as Non-Attainment for a pollutant, the goal will be to return the area to Attainment within the specified timeframes.

The Department is in the process of evaluating how we can comply with the restrictions put in place by Act 1302 and maintain compliance with the obligations contained within the federal Clean Air Act and federal regulations. We do see this as a balancing act of sorts and will work with local governments, industry, EPA and other stakeholders to achieve an appropriate balance.

Below find a timeline of the planning process, with a rationale for each step.

Timeline narrative/rationale:

Recent revisions to Arkansas (“State”) statute (Act 1302 of 2013, herein “Act 1302,”) require the Arkansas Department of Environmental Quality (“ADEQ” or “Department”) to shift resources in order to adhere to state law during air permitting decisions and SIP development for the NAAQS while maintaining the State’s obligations under federal law. Two primary Branches of the Air Division (“Division”) are affected by the change: Permits and Planning. Both technical and administrative policy revisions will be necessary to achieve the Department’s objective within the confines of the law. ADEQ can no longer make evident to the Environmental Protection Agency (“EPA”) that permittees regulated by the State air program will not interfere with the maintenance and protection of the NAAQS by providing data obtained during modeling required for permitting decisions (except as outlined in Act 1302). The obligation now lies with the Division to produce data sufficient to demonstrate compliance with the Clean Air Act (“C.A.A.”). The task requires the Division to undertake new modeling and monitoring processes to develop an approvable State Implementation Plan (“SIP”).

Action Step 1: Emissions Inventory

Data and modeling results will be used to develop an emissions inventory which will index, by source, the amount of air pollutants emitted into an area during a given time period.

Action Step 2: Modeling/Monitoring and Sources

Scientifically sound modeling results will provide the Department with reliable predictions of ambient concentrations of air pollution and areas where additional monitoring may be needed. To begin modeling, the Division must first establish several sets of baseline data. A facility mix determination must be made based on current permit holders in operation in the State and the relative pollution types for each industry or emissions source, and emissions data for those sources. Meteorological data must

also be gathered for input (and must be detailed enough to separate into smaller “critical areas”). “Critical areas” within the state will be determined through the modeling process, and the Department will site air quality monitors in coinciding locations.

Action Step 3: Control and Regulatory Authority

Monitors will produce detailed air quality data from areas at risk for exceedance of the NAAQS and will allow the Division to ascertain whether an area exceeds the NAAQS or an established threshold related to each NAAQS (i.e. a percentage of the NAAQS approaching the standard). The threshold at which air pollution controls are needed would be established by the Director’s Office with input from stakeholders. To establish controls for the regulated community, the Department must be certain of the regulatory authority under which controls may be required.

Action Step 4: Control Strategies

If it is determined through monitoring data that an area’s air quality is compromised beyond a set threshold, the Department must prepare a cost-benefit analysis in order to reach cost-effective control strategies for the regulated community. ADEQ currently does not have in-house resources to conduct a thorough cost-benefit analysis of air quality control strategies for each criteria pollutant. A review of the classification and compensation plan shows that a position titled Research and Statistics Manager and graded C118 could require qualifications needed to develop a cost-benefit analysis. An individual working in such a position would need to work closely with Air Division Engineers who are familiar with air pollution control technologies and techniques. To hire a person full time at a grade C118 would cost between \$60,159 and \$110,503 annually including salary and fringe costs. Hiring an individual with the right skill set and experience may prove to be a challenge due to the factors listed in the modeling discussion. The cost and time needed to contract the cost-benefit analysis to a third party is unknown at this point and will require further research or soliciting bids for such work. As with the modeling, the need for a cost-benefit analysis would recur with each NAAQS SIP.

Action Step 5: Stakeholders

Once cost-effective control strategies are identified, the stakeholder process will begin so the regulated community and the public are afforded the opportunity to collaborate with the Department during the development of new permitting and modeling processes and control strategies.

Action Step 6: Plan → Regulation Revision

Each of the above tasks is necessary before beginning the policy development and regulation revision phase, which concludes with development and submission of an approvable SIP package to EPA.

TIMELINE

Please see Attachment C for the time requirements necessary for completion of the NAAQS SIP development and adoption process.

SUMMARY OF ADDITIONAL RESOURCES REQUIRED

The air quality modeling exercise as detailed in the "Modeling" section above and in the attached draft scope of work will cost an estimated \$140,000 and will need to be started immediately. A new modeling exercise will need to be undertaken in 2014 for a future-year baseline, with a cost estimated at about the same cost, and every two years thereafter. This work will be required to be done through a contractor, so no additional staff will be required.

Modeling will inform as to the additional monitoring required. However, assuming that additional special purpose monitors will be required, the estimated cost will be \$50,000 per monitor, with computer equipment, power supply and phone lines additional. The time required to order these monitors is variable, as each monitor is built by the supplier when requested. Average length of time between ordering and installing on-site would be up to six months.

No additional emission inventory staff or funding will be required.

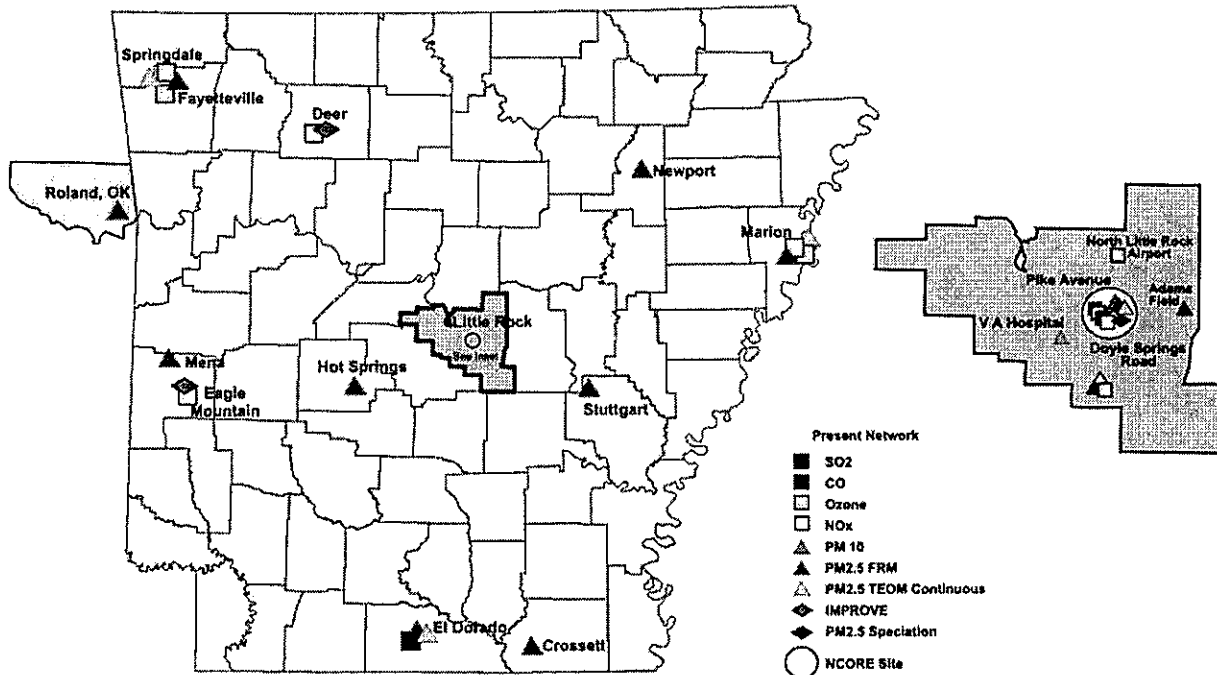
NEXT STEPS

The following steps will need to be completed to implement the recommendations in this preliminary analysis:

1. Extend the existing modeling contract with ICF International beyond the current October 2013 end date
2. Contract with ICF International in accordance with their proposed scope of work dated May 16, 2013
3. Develop monitoring plan/siting criteria per modeling work recommendations; coordinate with ADEQ Tech Services
4. Establish critical vs. non-critical emission categories and areas of the state per to-be-established criteria, as identified by modeling (initially) and monitoring (after monitors have been established and emission data obtained per acceptable standards)
5. Develop a plan of action to coordinate with other agencies to begin ongoing emission inventory activity for all emission sources, with focus on major in-state sources
6. Develop plan for emission inventory "demonstration" in a yet-to-be-identified county or Metropolitan Statistical Area (MSA)
7. Coordinate with the ADEQ Air Division Permits Branch to identify permit conditions that may require emission inventory improvement

ATTACHMENT A

Arkansas Ambient Air Monitoring Network



ATTACHMENT B**ICF/ADEQ Task Assignment and Agreement Form****Arkansas DEQ:**

Contract Number: SP-09-0022 (October 27, 2008 through October 6, 2013)

Name of Task: Criteria Pollutant Modeling Analysis for Arkansas

Task Number: Task 6

Date: 16 May 2013

Description of Services:

Under this task, ICF will conduct an air quality modeling exercise to examine simulated annual concentrations of sulfur dioxide (SO₂) and fine particulate matter (PM_{2.5}), and summer-season concentrations of ozone (O₃) for two base years (2005 and 2008) and a future year (2015). The modeling will be conducted to evaluate potential hot spots of these pollutants throughout the

state and to examine the expected changes between the base years and future year. The analysis would be used to inform ADEQ of areas within the state where additional air quality monitoring may be sited to ensure compliance with existing National Ambient Air Quality Standards (NAAQS).

The air quality modeling will be conducted using the Community Multiscale Air Quality (CMAQ) model and the meteorological and emissions inputs will be derived from EPA's 2002 and 2007/2008 national modeling platforms. CMAQ version 5.0 will be used for this study. The modeling domain will use the same grid structure as that used for the Task 5 EDZ modeling analysis and will consist of a 36-km resolution outer grid encompassing the U.S. (the CONUS grid), a 12-km resolution grid over the central states, and a high-resolution 4-km grid over the entire state of Arkansas, and parts of western Tennessee and northern Mississippi. A one-way nesting approach will be used. In the vertical dimension, the modeling domain will include 14 layers and the thickness of the layers will increase with height above ground. The future-year to be simulated (2015) is the same as that used for the Task 5 EDZ analysis modeling effort. The 2005 modeling database developed for ozone season modeling for the Task 5 EDZ analysis will be extended to cover the full year and annual simulation periods will be simulated for this analysis.

The proposed study includes the following subtasks:

- Extend 2005 CMAQ modeling inputs for full annual simulation
- Prepare 2008 CMAQ modeling inputs

- Conduct base-case modeling and model performance evaluation
- Prepare annual modeling emission inventory for 2015
- Conduct future-year baseline modeling for 2015
- Document the methods and results

A brief description of each subtask follows:

Extend 2005 CMAQ Modeling Inputs for Full Annual Simulation

The modeling conducted for 2005 supporting the EDZ analysis included the ozone season simulation period of May through September. In this task, CMAQ input files for the remainder of 2005 (January – April, October – December) will be prepared using the same methodologies as originally employed in the EDZ analysis.

Prepare 2008 Modeling Inputs for CMAQ

For this analysis, ICF will use 36- and 12-km resolution meteorological input files for the base year 2008 prepared by EPA using version 3.1 of the Weather Research and Forecasting Model (WRF). The WRF outputs were post-processed by EPA using the Meteorology-Chemistry Interface Processor (MCIP) version 3.6 program. The meteorological fields for the 12-km study domain will be extracted from a larger 12-km domain used by EPA for modeling the entire eastern U.S.

The 12-km meteorological inputs will also be used as the basis for the 4-km meteorological fields. Interpolation and reanalysis methods will be used to adapt the input files to the 4-km grid. The 12-km fields will be interpolated to the 4-km grid. For most parameters, objective analysis (based on bi-linear interpolation) will be used to combine the interpolated fields with available observations and thus adjust the 12-km fields to the 4-km grid. Certain parameters such as radiation, rainfall, and land-use-based quantities, which are not expected to exhibit smooth variations in space, will not be interpolated and the values used for the 4-km sub-cells will be the same as for the encompassing 12-km grid cell.

All of the boundary condition, land-use, photolysis rate, and chemistry related input files for the application of the CMAQ will be obtained from EPA, as used for their 2008 modeling platform.

ICF will also obtain the latest emission inventory data for the 2008 CMAQ modeling platform from EPA and will process these emissions for the modeling domain and annual simulation period. This inventory includes the latest emissions estimates available for 2008 for all source categories. The modeling inventories will be processed and prepared for CMAQ using EPA's Sparse-Matrix Operator Kernel Emissions (SMOKE) software (version 3.0).

Conduct Base-Case Modeling and Model Performance Evaluations

Standard model performance evaluations will be conducted for 2005 and 2008 to establish that the modeling system can be used reliably to predict the effects of changes in emissions on future-year air quality. The evaluation of model performance will include both qualitative and quantitative components as well as a variety of graphical and statistical analysis products. The performance evaluations will include ozone, SO₂, and PM_{2.5} using data collected at various monitors throughout the state.

Analysis of results for the outer (36 and 12-km resolution) domains will emphasize representation of the regional-scale concentration levels and patterns, as well as seasonal variations in regional-scale air quality. A more detailed analysis of the results will be performed for the innermost, high-resolution (4-km) grid. This will include the analysis of the magnitude and timing of site-specific concentrations and a more rigorous statistical evaluation (compared to the coarser grids). The analysis and integration of these results, relative to the objectives, will complete the evaluation of model performance.

Prepare Annual Modeling Emission Inventory for 2015

ICF will update the 2015 emission inventory prepared for the EDZ analysis to include the months not included in the EDZ modeling inventory, namely, January – April and October – December to prepare a full annual emission inventory. ICF will process these emissions for the modeling domain and simulation period using the SMOKE emissions processing tool. Two model-ready versions of the 2015 emission inventory will be prepared using biogenic emission from the 2005 and 2008 base years, respectively.

Conduct Future-Year Modeling

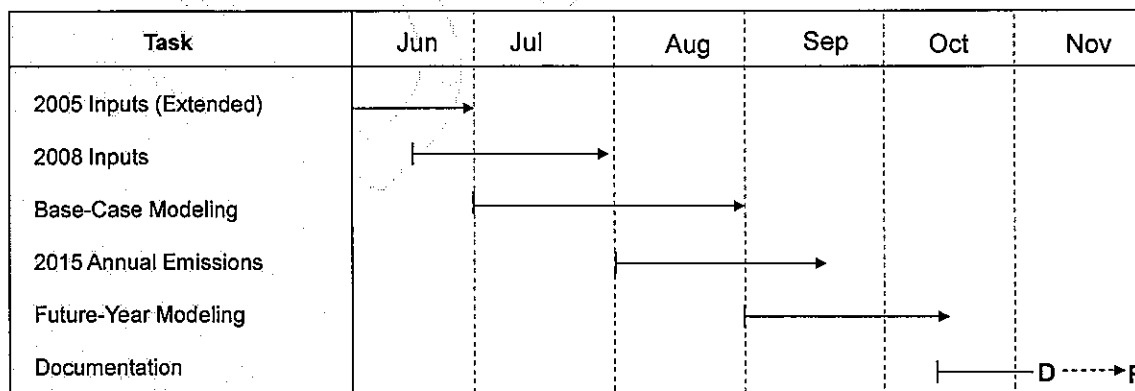
To establish future-year baseline concentrations, CMAQ will be applied for a full annual simulation for 2015 using the baseline emission inventory and other inputs for both the 2005 and 2008 annual periods. The results for 2015 and the differences between the base years will be examined and areas of persistent high pollutant concentrations within the State of Arkansas will be identified. As part of this task, we will use EPA’s MATS software to examine ozone and PM_{2.5} attainment for 2015 for both monitored and unmonitored areas throughout the state.

Prepare Documentation

Draft and final versions of a technical report that describes the modeling analysis inputs, methodologies, and results will be prepared. The final version of this report will address comments received from ADEQ.

Schedule and Deliverables:

The estimated schedule for each task is as follows:



D = Draft technical report
 F = Final report

Draft and final deliverables include:

- Draft technical memo summarizing modeling analysis
- Final technical memo (following receipt of comments from ADEQ)

The schedule for the deliverables is as follows:

- Draft technical memo summarizing modeling analysis (November 8, 2013)
- Final technical memo (November 26, 2013)

Assumptions: Start date of 3 June 2013; approximate 1 week review period for the draft technical memo.

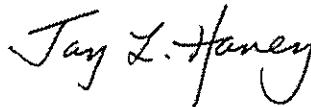
Contractor:

Short Description of Approach (if different than above): See above.

Schedule of Deliverables: See above.

Estimated Budget: The estimated price for this work is \$140,000. This budget does not include any cost estimates for travel for any meetings that may be required as part of the analysis.

Acceptance Signatures:



5/16/2013

Signature & Date

Signature & Date

Kelly Jobe

Jay L. Haney

ADEQ Project Manager

ICF Project Manager