References

Arrow K. D., M. L. Cropper, G. C. Eads, R. W. Hahn, L. B. Lave, R. G. Noll, P. R. Portney, M. Russell, R. Schmalensee, V. K, Smith, and R. N. Stavins. 1996. "Is There a Role for Benefit-Cost Analysis in Environmental, Health and Safety Regulation?" *Science*. Vol. 272, pp. 221-222.

EPA. 2011a. *Regulatory Impact Analysis of the Proposed Toxics Rule: Final Report.* March. Available at http://www.epa.gov/ttnecas1/regdata/RIAs/ToxicsRuleRIA.pdf.

EPA. 2011b. *Regulatory Impact Analysis of the Final Transport Rule.* June. Available at http://www.epa.gov/airtransport/pdfs/FinalRIA.pdf.

EPA. 2011c. *Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards.* EPA-452/R-11-011. December. Available at http://www.epa.gov/ttnecas1/regdata/RIAs/matsriafinal.pdf.

EPA. 2010a. *Policy Assessment for the Review of the Particulate Matter National Ambient Air Quality Standards.* EPA-452/R-11-003. Office of Air Quality Planning and Standards, Research Triangle Park, N.C. April. Available at: http://www.epa.gov/ttnnaaqs/standards/pm/data/20110419pmpafinal.pdf.

EPA. 2010b. *Quantitative Health Risk Assessment for Particulate Matter.* EPA-452/R-10-005. Office of Air Quality Planning and Standards, Research Triangle Park, N.C. June. Available at: http://www.epa.gov/ttn/naaqs/standards/pm/data/PM_RA_FINAL_June_2010.pdf.

Executive Order 12291. 1981. "Federal Regulation." 46 *Fed. Reg.* 13193, February 17. Available at: http://www.archives.gov/federal-register/codification/executive-order/12291.html.

Executive Order 12866. 1993. "Regulatory Planning and Review." 58 *Fed. Reg.* 51735, October 4. Available at: www.whitehouse.gov/omb/inforeg/eo12866.pdf.

Executive Order 13563. 2011. "Improving Regulation and Regulatory Review." 76 *Fed. Reg.* 3821, January 18. Available at: http://www.regulations.gov/exchange/sites/default/files/doc_files/President%27s%20Executive%20Order%2013563_0.pdf.

Hahn R. W. and P. M. Dudley. 2007. "How Well Does the US Government Do Benefit-Cost Analysis?" *Review of Environmental Economics and Policy.* Vol. 1(2), pp. 192-211.

Harrington, W., L. Heinzerling, and R. D. Morgenstern (eds.) 2009. *Reforming Regulatory Impact Analysis.* Resources for the Future, Washington DC. April.

Krewski D., R. T. Burnett, M. Goldberg, K. Hoover, J. Siemiatycki, M. Jerrett, M. Abrahamowicz, and W. H. White. 2000. *Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality.* Special Report. Health Effects Institute, Cambridge, Massachusetts. July.

Krewski D., M. Jerrett, R. T. Burnett, R. Ma, E. Hughes, Y. Shi, Y, *et al.* 2009. *Extended Follow-Up and Spatial Analysis of the American Cancer Society Study Linking Particulate Air Pollution and Mortality.* HEI Research Report Number 140. Health Effects Institute, Boston, MA. May.

Laden, F., J. Schwartz, F. E. Speizer, and D. W. Dockery. 2006. "Reduction in Fine Particulate Air Pollution and Mortality." *American Journal of Respiratory and Critical Care Medicine.* Vol 173, pp. 667-672.

Morgenstern, R. D. (ed.) 1997. *Economic Analyses at EPA: Assessing Regulatory Impact.* Resources for the Future, Washington, DC.

OMB. 2003. *Circular A-4, Regulatory Analysis.* Available at: http:/www.whitehouse.gov/sites/default/files/omb/assets/regulatory_matters_pdf/a-4.pdf.

Pope, C. A., III, R. T. Burnett, M. J. Thun, E. E. Calle, D. Krewski, K. Ito, G. D. Thurston. 2002. "Lung Cancer, Cardiopulmonary Mortality, and Long-term Exposure to fine Particulate Air Pollution." *JAMA.* Vol. 287(9), pp. 11332-1141.

Smith, A. E. 2011. *Technical Comments on the Regulatory Impact Analysis Supporting EPA's Proposed Rule for Utility MACT and Revised NSPS (76 FR 24976).* Prepared for and submitted to EPA EGU MACT Docket by Utility Air Regulatory Group (Attachment 13 in Docket Reference EPA-HQ-OAR-2009-0234-17775). August 3. Available at: http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2009-0234-17775.

Appendix A.

Sources of Cost and Benefit Information on CAA RIAs since 1997 that Were Reviewed in this Study

Concluded Date	Year of Document Used	RIA Name	Target Pollutant	Document Type / Page References	URL
7/12/1997	1997	Ozone NAAQS *(To revise the 0.12 1hr standard to a 0.08 8hr standard)*	Ozone	Final RIA. See pp.13-2 for cost, pp. 12-64 for other co-benefits, pp. 12-1 for total benefits. Full attainment (F/A) numbers were estimated by scaling partial attainment (P/A) numbers for target benefits, PM co-benefits and PM mortality rates.	http://www.epa.gov/ttn/oarpg/naaqsfin/ria.html
7/16/1997	1997	$PM_{2.5}$ NAAQS *(To implement the first $PM_{2.5}$ standard at 15/65 annual/daily averages, supplementing the PM_{10} standard)*	$PM_{2.5}$	Final RIA. F/A numbers provided. Target benefit estimate comes from: low- 19.8-4.3 = 15.5; high-109.7-8.1 = 101.6. Cost: pp.13-2. Other co-benefits: pp.12-64. Total benefits: pp.13-2. Mortality rates: see pp.12-43 for P/A numbers. F/A estimated by 15.5/14.5 * 3300 = 3528 for low; 101.6/96.1 * 15,600 = 16493 for high.	http://www.epa.gov/ttn/oarpg/naaqsfin/ria.html
8/14/1997	1997	Hospital/ Medical/ Infectious Waste Incinerators NSPS and EG	Many pollutants	Final rule FR. See pp. 29 for cost and benefits. All quantified benefits are PM.	http://www.gpo.gov/fdsys/pkg/FR-1997-09-15/pdf/97-23835.pdf#page=1
9/22/1997	1997	Highway Heavy-Duty Engines and Diesel Engines	NO_x, HC	Final RIA. See pp. 97 for cost.	http://www.regulations.gov/#!searchResults;rpp=10;po=0;s=EPA-HQ-OAR-2003-0012-0949
10/27/1997	1997	Pulp & Paper NESHAP	HAPs, VOC, TRS	Final rule FR. See pp. 120 for cost, pp. 126 for benefits. Included air related numbers only. Identified negative co-benefits (due to SO_2, CO, PM, NO_x increases).	http://www.gpo.gov/fdsys/pkg/FR-1998-04-15/pdf/98-9613.pdf#page=1
12/16/1997	1997	Locomotive Emission Standards	NO_x, PM	1998 Regulatory support document. See pp. 120 for NPV (7% discount rate) of the total cost, no annualized figure provided.	http://www.regulations.gov/#!searchResults;rpp=10;po=0;s=EPA-R03-OAR-2009-0956-0038

Concluded Date	Year of Document Used	RIA Name	Target Pollutant	Document Type / Page References	URL
8/14/1998	1998	National VOC Standards for Architectural Coatings	VOC	Proposed rule and notice of public hearing FR. See pp. 6 for cost.	http://www.gpo.gov/fdsys/pkg/FR-1996-06-25/pdf/96-16009.pdf#page=1
8/27/1998	1998	Non-Road Diesel Engines	NO_x, HC	Final RIA. See pp. 72 for cost.	http://www.epa.gov/nonroaddiesel/frm1998/nr-ria.pdf
9/2/1998	1998	Revised NO_x Std: New Fossil-Fuel-Fired Steam Generating Units	NO_x	Insufficient information.	http://www.gpo.gov/fdsys/pkg/FR-1997-07-09/pdf/97-17950.pdf#page=1
9/23/1998	1998	NO_x SIP Call & Section 126 Petitions	NO_x	RIA. Ranges quoted are for low to high assumption sets. See pp. ES-3 for cost, pp. ES-6 for total benefits, pp. 4-50 for a breakdown of benefits, pp. 4-23 for mortality rates. All ozone related benefits are target benefits.	http://www.epa.gov/ttn/oarpg/otag/sipriav2.zip
3/1/1999	1999	Phase II Emission Stds for New Nonroad Spark-Ignition Non-Handheld Engines <19 kW	HC, NO_x	Final RIA. See pp. 7-15 for fuel savings (0.2 billion per year), pp. 7-13 for cost (0.132 billion) for a net cost savings of 0.0907.	http://www.epa.gov/otaq/equip-ld.htm
4/22/1999	1999	Regional Haze Rule	Visibility	RIA. See pp. 9-48 and 9-51 for benefits, pp. 10-20 for cost, pp. 9-55 and 9-61 for mortality rates. Reported 1.0 dv/10years levels, ranges quoted for benefits and mortality rates are the low and high ends across Case A and Case B. Total benefit is calculated accordingly.	http://www.epa.gov/ttnecas1/regdata/RIAs/rhria.zip
4/30/1999	1999	Final Section 126 Petition Rule	NO_x	RIA. See pp. ES-3 for cost, pp. ES-11 for benefits, pp. ES-7 for mortality rates.	http://www.epa.gov/ttnecas1/regdata/RIAs/126fn0.zip
12/21/1999	1999	Gasoline Sulfur Control Requirements	NO_x, PM	Final FR. See pp. 88 for benefits and mortality rate, pp. 86 for cost.	http://www.gpo.gov/fdsys/pkg/FR-2000-02-10/pdf/00-19.pdf#page=1

Concluded Date	Year of Document Used	RIA Name	Target Pollutant	Document Type / Page References	URL
3/1/2000	2000	Phase 2 Emission Stds for New Nonroad Small Spark Ignition Handheld Engines <19 kW	HC, NO_x	Final RIA. See pp. 110 for annualized cost (.234-.284) and fuel savings (0.094).	http://www.epa.gov/otaq/equip-ld.htm
7/28/2000	2000	Control of Emissions from 2004 and Later Model Year Highway Heavy-Duty Engines	Many pollutants	RIA. See pp. 89 and 106 for cost.	http://www.regulations.gov/#!searchResults;rpp=10;po=0;s=EPA-HQ-OAR-2003-0012-0950
10/19/2000	2000	Protection of Stratospheric Ozone Reductions	Stratospheric O_3	RIA. See pp. 4 for cost.	http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2008-0009-0012
12/21/2000	2000	Heavy-Duty Engine & Diesel Fuel Sulfur Control Reqm 2007	NO_x, PM	Final RIA. See pp. xvi for cost and benefits, pp. xvii for mortality rates.	http://www.epa.gov/oms/highway-diesel/regs/exec-sum.pdf
9/13/2002	2002	Emissions from Nonroad & Recreational Spark-Ignition Engines	NO_x, VOC, CO, PM	Insufficient Information.	http://www.gpo.gov/fdsys/pkg/FR-2001-10-05/pdf/01-23591.pdf#page=1
8/27/2003	2003	PSD & NSR: Routine Maintenance and Repair	all	Insufficient Information.	http://www.epa.gov/fedrgstr/EPA-AIR/2003/October/Day-27/a26320.htm
2/26/2004	2004	Stationary Reciprocating Internal Combustion Engine NESHAP	HAPs	RIA. See pp. ES-5 for cost, pp.8-40 for mortality rates (50% NO_x emission reduction), pp. 8-45 for benefits. Assuming the social cost of 0.255 on pp. ES-7 is a typo. Mortality rates are prorated assuming 25% NO_x emission reduction. Ozone and PM_{10} benefits are regarded as "other benefits".	http://www.epa.gov/ttnecas1/regdata/RIAs/RICERIA-finalrule.pdf
2/26/2004	2004	Plywood & Composite Wood Products NESHAP	organic HAPs	RIA. See pp. ES-1 for cost.	http://www.epa.gov/ttnecas1/regdata/RIAs/pcwp-finalruleRIA.pdf

Exhibit B
Comments of Steel Coalition of Arkansas

Concluded Date	Year of Document Used	RIA Name	Target Pollutant	Document Type / Page References	URL
2/26/2004	2004	Automobile & Light-Duty Vehicle Manufacturing NESHAP	HAPs	RIA. See pp. ES-5 for cost. Did mention ozone and PM co-benefits from VOC reduction, but did not quantify.	http://www.epa.gov/ttnecas1/regdata/RIAs/autolightdutyRIAfinaltotal.pdf
2/26/2004	2004	Industrial Boilers & Process Heaters NESHAP	HAPs, HCl, metals	RIA. See pp.ES-1 for cost, pp. 10-45 for mortality rates and benefits.	http://www.epa.gov/ttnecas1/regdata/RIAs/indboilprocheatfinalruleRIA.pdf
5/7/2004	2004	Non-Road Diesel Rule	PM, NO_x, HAPs	RIA. See pp.9-42 to 43 for mortality rates and benefits, pp. 9-52 for costs. Other co-benefits include 2.5-3.4 (pp. 9-27) reductions in unpleasant odors, and 2.15 PM welfare benefits.	http://www.epa.gov/nonroad-diesel/2004fr.htm#ria
3/10/2005	2005	Clean Air Interstate Rule	NO_x, SO_2 *(SO_2 as precursor of amb. $PM_{2.5}$)*	RIA. See pp. 1-2 for benefits and cost, pp. 1-4 for mortality rates.	http://www.epa.gov/cair/pdfs/finaltech08.pdf
3/15/2005	2005	Clean Air Mercury Rule	Hg	RIA. See pp. 11-14 for target benefits, pp.7-13 for cost, pp.12-8 for $PM_{2.5}$ co-benefits and mortality rates.	http://www.epa.gov/ttn/ecas/regdata/RIAs/mercury_ria_final.pdf
6/15/2005	2005	Clean Air Visibility Rule/BART Guidelines	Visibility	RIA. See pp. 1-3 for cost and benefits, pp. 1-5 for mortality rates.	http://www.epa.gov/oar/visibility/pdfs/bart_ria_2005_6_15.pdf
3/15/2006	2006	Inclusion of Delaware and New Jersey in CAIR	NO_x, SO_2 *(SO_2 as precursor of amb. $PM_{2.5}$)*	Insufficient Information.	http://www.gpo.gov/fdsys/pkg/FR-2005-05-12/pdf/05-5520.pdf#page=1
3/15/2006	2006	Sec. 126 from NC to Reduce Interstate Transport of PM & O3; FIPs to Reduce Interstate Transport of PM & O3; Revisions to CAIR; Revisions to Acid Rain Program	NO_x, SO_2 *(SO_2 as precursor of amb. $PM_{2.5}$)*	Insufficient Information.	http://www.gpo.gov/fdsys/pkg/FR-2005-08-24/pdf/05-15529.pdf#page=1

Concluded Date	Year of Document Used	RIA Name	Target Pollutant	Document Type / Page References	URL
6/28/2006	2006	Stationary Compression Ignition Internal Combustion Engine NSPS	many	RIA. See pp. 1-2 for cost, pp. 6-4 for benefits. Direct PM benefit is recorded as target benefit. Benefits from NO_x and SO_2 are recorded as PM co-benefits. Premature mortality prevention accounts for 90% of the total benefit, but cannot be quantified (pp.6-5). Benefits are quoted at 3% discount rate (pp.6-4).	http://www.epa.gov/ttnecas1/regdata/RIAs/ci_nsps_ria_reportfinal06.pdf
9/21/2006	2006	$PM_{2.5}$ NAAQS *(To revise from 15/65 annual/daily averages, to 15/35)*	$PM_{2.5}$	RIA. See pp. ES-9 to 10 for costs and benefits, pp. 5-100 for mortality rates.	http://www.epa.gov/ttnecas1/regdata/RIAs/Executive%20Summary.pdf http://www.epa.gov/ttnecas1/regdata/RIAs/Chapter%205--Benefits.pdf
2/8/2007	2007	Control of HAP from mobile sources	HAPs	Final RIA. See pp. 12-20 for mortality rate (Pope et al. only), pp. ES-10 for PM benefits, pp. ES-11 for cost.	http://www.epa.gov/otaq/regs/toxics/fr-ria-sections.htm
3/28/2007	2007	Clean Air Fine Particle Implementation Rule	$PM_{2.5}$	Insufficient Information.	http://www.gpo.gov/fdsys/pkg/FR-2005-11-01/pdf/05-20455.pdf#page=1
2/14/2008	2008	Control of Emissions form New Locomotives & Marine Diesel Engines <30 L per Cylinder	PM, NO_x	RIA. See pp. 6-52 for cost and benefits, pp. 6-44 for PM mortality, pp. 6-46 for a breakdown of benefits.	http://www.epa.gov/oms/regs/nonroad/420r08001a.pdf
3/12/2008	2008	Ozone NAAQS *(To revise the 0.08 8hr standard to 0.075 8hr standard)*	Ozone	RIA. See pp.ES-3 for cost and visibility benefits, pp. 6-62 for target benefits, pp. 6-48 for mortality rates, pp. 6-64 for PM co-benefits.	http://www.epa.gov/ttnecas1/regdata/RIAs/452_R_08_003.pdf

Concluded Date	Year of Document Used	RIA Name	Target Pollutant	Document Type / Page References	URL
8/18/2008	2008	Control of Emissions form Non-road Spark-Ignition Engines & Equipment	VOC, NO_x, PM,CO	Final rule FR. See pp. 122 for mortality rates, pp. 124 for a breakdown of benefits, pp. 128 for cost and total benefits. Target benefit is all PM; other benefits include visibility and ozone benefit.	http://www.gpo.gov/fdsys/pkg/FR-2008-10-08/pdf/E8-21093.pdf#page=1
10/15/2008	2008	Lead (Pb) NAAQS	Pb	RIA. See pp. ES-11 for cost and benefits.	http://www.epa.gov/ttnecas1/regdata/RIAs/finalpbria.pdf
12/10/2008	2008	Petroleum Refineries NSPS	SO_2, NO_x, PM, VOC	RIA. See pp. 7-6 for benefits, pp. 7-12 for cost. Direct benefit is PM benefit, PM 2.5 co-benefits include benefits from reductions in PM precursors.	http://www.epa.gov/ttnecas1/regdata/RIAs/finalpetroleumrefineriesnspsria43008.pdf
9/16/2009	2009	GHG Mandatory Reporting Rule	GHGs	Final rule FR. See pp. 105 for cost.	http://www.epa.gov/climatechange/emissions/notices.html
12/17/2009	2009	Control of Emissions from New Marine Compress'n-Ign Engines >30 L per Cylinder	NO_x	Final rule FR. See pp. 69 for benefits and cost, pp. 67 for PM and Ozone ("other") benefit, pp. 65 for mortality rates.	http://edocket.access.gpo.gov/2010/pdf/2010-2534.pdf
2/17/2010	2010	Reciprocating Internal Combustion Engines NESHAP - Compression Ignition	Organic, metal HAPs	RIA. See pp.1-1 for cost, pp.7-1 for $PM_{2.5}$ co-benefits, and pp.7-8 for mortality rates.	http://www.epa.gov/ttnecas1/regdata/RIAs/CIRICENESHAPRIA2-17-10cleanpublication.pdf
3/31/2010	2010	EPA/NHTSA Joint Light-Duty GHG Emission Stds & CAFES	GHGs	Final FR. See pp. 213 for benefits and cost, pp. 206 for PM benefits, pp. 205 for mortality rates,	http://www.gpo.gov/fdsys/pkg/FR-2010-05-07/pdf/2010-8159.pdf#page=1
5/12/2010	2010	Greenhouse Gases PSD and Tailoring Rule	GHGs	RIA. See pp.18 for cost. No benefits quantified.	http://www.epa.gov/ttnecas1/regdata/RIAs/riatailoring.pdf

Concluded Date	Year of Document Used	RIA Name	Target Pollutant	Document Type / Page References	URL
6/2/2010	2010	SO_2 NAAQS *(To set a 75 ppb 1-hr standard)*	SO_2	See pp. ES-9 for cost and benefits, pp. 5-30 for mortality rates. Negative cost indicates regulatory relief benefit. Numbers quoted are for Step 1, 25000 tpy.	http://www.epa.gov/ttnecas1/regdata/RIAs/fso2ria100602full.pdf
8/6/2010	2010	Portland Cement Manufacturing Industry NSPS & NESHAP Amendment	HC, HAPs, PM	RIA. See pp. 1-2 for cost, pp. 6-1 for $PM_{2.5}$ co-benefits, pp. 6-15 for mortality rates. All benefits of the rule are from NESHAP portion. NESHAP does not target $PM_{2.5}$ or PM_{10} mass, but all the benefits of the NESHAP (and of the NESHAP + NSPS) are $PM_{2.5}$ ambient concentration. Therefore, all are co-benefits.	http://www.epa.gov/ttnecas1/regdata/RIAs/portlandcementfinalria.pdf
8/10/2010	2010	Existing Stationary Compression Ignition Engines NESHAP	HAPs	Final RIA. See pp. 7-10 for mortality rates, pp. 7-9 for benefits, pp. 1-1 for costs.	http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2008-0708-0571
2/21/2011	2011	Industrial, Comm'l, and Institutional Boilers NESHAP	HAPs	Final FR. See pp. 27 for benefits and mortality rates, pp.29 for cost.	http://www.gpo.gov/fdsys/pkg/FR-2011-03-21/pdf/2011-4493.pdf#page=1
2/21/2011	2010	Indus'l, Comm'l, and Institutional Boilers & Process Heaters NESHAP	HAPs	RIA. See pp.1-1 for cost, pp.6-1 for $PM_{2.5}$ co-benefits pp. 6-8 for mortality rates.	http://www.epa.gov/airquality/combustion/docs/boilerria20100429.pdf
2/21/2011	2011	Comm'l & Indus'l Solid Waste Incineration Units NSPS and Emission Guidelines	CO, Pb, HAPs	RIA. See pp. 1-1 for cost, pp. 1-2 for benefits, pp. 5-10 for mortality rates.	http://www.epa.gov/ttnecas1/regdata/RIAs/CISWIRIAfinal110221_psq2.pdf
7/1/2011	2011	Cross State Air Pollution Rule (CSAPR)	NO_x, SO_2 *(SO_2 as precursor of amb. $PM_{2.5}$)*	RIA. See pp.1 for mortality rates, pp.2 for cost, table 1-3 on pp. 6 to 7 for benefits. Other co-benefits include visibility (4.1) + social cost of carbon (0.6) = 4.7. Sum up all the remaining items to get target benefits.	http://www.epa.gov/airtransport/pdfs/FinalRIA.pdf

Concluded Date	Year of Document Used	RIA Name	Target Pollutant	Document Type / Page References	URL
8/8/2011	2011	Control of GHG from Medium & Heavy-Duty Vehicles	GHGs	Final RIA. See pp. 9-45 for benefits and cost, net cost = 24.7 (technology cost) - 166.5 (fuel savings), pp. 8-86 for PM benefit and pp.8-81 for mortality rates. Benefit range is derived from different assumptions for social cost of carbon in 2012.	http://www.epa.gov/otaq/climate/documents/420r11901.pdf
9/6/2011	2010	Reconsideration of Ozone NAAQS	Ozone	RIA. F/A (75 ppb) numbers quoted. See pp. S1-4 for cost, pp.3-11 for mortality rates and benefits, pp.3-6 for visibility. Target benefit refers to ozone benefit here.	http://www.epa.gov/ttnecas1/regdata/RIAs/s1-supplemental_analysis_full.pdf
12/16/2011	2011	EGU MACT Rule	Hg, HAPs	RIA. See p. ES-2 for cost; pp. ES-6/7 for direct benefits, $PM_{2.5}$ co-benefits, & social cost of carbon. SCC is quoted at 3% discount rate. See p. ES-5 for mortality counts.	http://www.epa.gov/ttnecas1/regdata/RIAs/matsriafinal.pdf
N/A	2011	Mercury Cell Chlor Alkali Plant Mercury Emissions NESHAP	Hg	RIA. See pp.1-2 for cost and total benefit, pp. 5-1 for $PM_{2.5}$ co-benefits, pp. 5-11 for mortality rates, and pp. 5-16 for the social cost of carbon (other co-benefits).	http://www.epa.gov/ttnecas1/regdata/RIAs/mercurycell.pdf
N/A	2011	Oil and Natural Gas Industry NSPS & NESHAP Amendment	VOC, SO_2, HAPs, Methane	RIA. See pp.1-4 and pp. 1-6 for costs.	http://www.epa.gov/ttnecas1/regdata/RIAs/oilnaturalgasfinalria.pdf
N/A	2011	Sewage Sludge Incineration Units NSPS & Emission Guidelines	Hg	RIA. See pp. 3 for cost and benefit, pp. 5-11 for mortality rates.	http://www.epa.gov/ttnecas1/regdata/RIAs/ssiria110201.pdf

ADEQ

A R K A N S A S
Department of Environmental Quality

June 26, 2012

The Honorable Lisa Jackson, Administrator
U.S. Environmental Protection Agency
Mail Code 1101A
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

RE: White Paper: Implementation of the 2010 Primary 1-Hour SO_2 NAAQS, Docket ID No. EPA-HQ-OAR-2010-1059

Ms. Jackson:

The Arkansas Department of Environmental Quality (ADEQ) appreciates the effort that the U.S. Environmental Protection Agency (EPA) has undertaken to reconsider the position initially outlined in the March and September 2011 Draft Guidance documents in regard to designations and State Implementation Plan (SIP) planning for the SO_2 National Ambient Air Quality Standard (NAAQS). The draft White Paper on Implementation of the 2010 Primary 1-Hour SO_2 NAAQS indicates that the Agency has seriously considered comments and concerns it received in regard to the March and September 2011 draft guidance documents. Please accept this letter as submission of the ADEQ's comments regarding the questions and issues raised in the White Paper.

Overall, it is ADEQ's position that EPA should recognize that a "one size fits all" approach to implementation of the SO_2 NAAQS is not appropriate. Although the overall goal (protection of the NAAQS) is the same, various States have a variety of approaches for how they deal with air quality issues. EPA should incorporate the flexible use of a "tool box" of options that will best fit the regulatory and programmatic structure of the various jurisdictions.

Therefore, ADEQ recommends that the end result of this process be in the form of a performance-based regulation – not Agency guidance – and that the regulation clearly articulates that the choice and use of the available options are at the State's discretion so long as attainment demonstrations are technically sound. This mechanism would provide clear direction (requirements) to the States and others in regard to how SO_2 NAAQS implementation is to be carried out.

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Designations and Implementation Concepts

The White Paper discusses two conceptual approaches being considered for addressing the many "unclassifiable" areas expected from the initial designations for the 1-hour SO_2 NAAQS - Monitoring and Modeling. Further, the White Paper infers that a subsequent round of designations will be initiated once a new monitoring network/modeling system is established.

The 1-Hour SO2 NAAQS is stated at 40 CFR 50.17 as:

> "(a) The level of the national primary 1-hour annual ambient air quality standard for oxides of sulfur is 75 parts per billion (ppb, which is 1 part in 1,000,000,000), ***measured in the ambient air*** as sulfur dioxide (SO_2).
> (b) The 1-hour primary standard ***is met at an ambient air quality monitoring site*** when the three-year average of the annual (99th percentile) of the daily maximum 1-hour average concentrations is less than or equal to 75 ppb, as determined in accordance with appendix T of this part.
> (c) ***The level of the standard shall be measured by a reference method based on appendix A or A–1 of this part, or by a Federal Equivalent Method (FEM) designated in accordance with part 53 of this chapter.***"
> (emphasis added) [75 FR 35592, June 22, 2010]

It is ADEQ's position that, due to the specific language of the SO_2 NAAQS (above), that attainment designations *cannot be made using data derived from predictive modeling.* This is not intended to imply that the use of predictive modeling cannot or should not be used within the implementation scheme – simply that attainment designations cannot be based on data not derived from the specific standard as stated in the federal rule. That being said, ADEQ understands that the EPA has concerns about the adequacy of the monitoring network currently in place throughout the country for SO_2 and that due to those concerns the likely outcome would be that the majority of the country would be (initially) designated as Unclassifiable due to the lack of creditable data.

Designation of areas as Unclassifiable is not itself a major obstacle for regulatory agencies; in fact, large portions of the nation are designated as such for other Criteria Pollutants. States are obligated, pursuant to the Clean Air Act (CAA), to develop a Plan of Implementation whenever EPA promulgates or revises a NAAQS. This obviously is not a new requirement for States. ADEQ understands and accepts that, upon the promulgation or revision of a NAAQS, we are obligated to prepare and submit a revised SIP, which, in essence, describes how we will implement a program to assure that the NAAQS will be achieved. Additionally, for areas that are *shown to be violating* the NAAQS (through a legally appropriate designation process), a separate set of criteria (via a non-attainment SIP) must be employed to demonstrate how the air quality in the affected area will be brought back into compliance with the NAAQS.

Future designations for SO_2 would likewise be restricted to monitored data, unless the NAAQS were revised to include an alternative or hybrid method of utilizing modeling data in lieu of

monitored data. If EPA chooses to pursue a "hybrid" approach to area designations, then it is ADEQ's position that the next SO_2 NAAQS review/revision (currently scheduled to take place in 2016) would be the appropriate time for making that decision. By incorporating this "hybrid" approach into the NAAQS review/revision process, it provides EPA and all interested stakeholders ample time to assess the intended approach and positions it squarely within the statutory and regulatory process – not relegated to the less-than-certain area of Agency guidance. As the ramifications of non-attainment are huge, we all need the opportunity to review, comment and potentially appeal the criteria which will govern this decision.

Additionally, ADEQ would submit that the "monitoring versus modeling" issue neither unduly constrains EPA or the States in implementing the NAAQS as currently written nor inhibits the protection of the NAAQS at individual sources. The more pressing issue at hand is "*What are the content and scope of SIP requirements for Unclassifiable areas?*"

Implementation rules are needed for States that will have areas designated as non-attainment for the 1-hour SO_2 NAAQS. States need EPA to establish what an approvable non-attainment SIP will have to include. Historically, non-attainment SIPs have relied significantly on modeling to demonstrate how and when re-attainment will take place as well as other "tools" available to reach attainment. EPA regulations are needed to clearly specify what is to be utilized as part of the re-attainment demonstration. Technical rules (not Agency guidance) in this matter are especially needed for those areas that lack sufficient or adequately sited monitors by which the re-attainment demonstrations can be confirmed.

Unclassifiable Areas Should Not Be Treated As Non-Attainment

Traditionally, areas that have been designated as attainment or Unclassifiable have been addressed by means of an "Infrastructure SIP". These SIPs have not heretofore required that Unclassifiable areas be treated as or assumed to be "non-attainment" nor have they been required to contain *re-attainment demonstrations*. The September 2011 draft guidance did just that by including statements such as: "...how and when such [Unclassifiable] areas will re-attain ...." The approaches suggested in the current Draft White Paper for addressing Unclassifiable areas are, for the most part, more acceptable. However, ADEQ submits that there is no need or justification for requiring that States "demonstrate attainment" for Unclassifiable areas, since by its very nature such designations are applied because there is not sufficient data for a determination of attainment or non-attainment. To require re-attainment demonstrations where data does not exist to demonstrate an area is non-attainment would establish a dangerous precedent for subsequent NAAQS for other Criteria Pollutants. Such a demonstration in a SIP is unnecessary and a waste of states' very limited resources. If the intent is to provide assurances that specific sources that are creating emissions that may cause a violation of the NAAQS or interfere with the maintenance of the NAAQS are adequately addressed, then other tools can (and should) be applied, which would address the air quality issue more quickly and without the additional "baggage" of a non-attainment designation. For example, a facility that is emitting (or proposing to emit) pollutants that exceed any NAAQS can be required to reduce/control

emissions through the application of enforcement and/or permitting authorities. These actions are already contained in and routinely exercised through presently approved SIPs to be applied as necessary, in a much more timely fashion, without the need for a non-attainment designation and substantive re-attainment demonstration via a SIP revision. SIP revisions require States to expend an extraordinary amount of resources. In Arkansas, it may take 18 months or longer to complete all necessary steps to revise the SIP for submission to EPA for consideration of approval, even if the language is simple and noncontroversial. At a time when state budgets are stagnant or shrinking, States must carefully decide how to use dwindling resources.

SIP revision scope and content for the 1-hour SO_2 NAAQS for Unclassifiable areas should not deviate from that which is required for Unclassifiable areas for other Criteria Pollutants NAAQS.

Monitoring Network Enhancements

Given that EPA's assessment of the current SO_2 monitoring network is correct and (as EPA has indicated) the source-specific nature of SO_2, it is not feasible to monitor every single SO_2 source. Therefore, it is apparent that EPA must establish some new or revised criteria for a national minimum SO_2 network. ADEQ agrees that a more robust monitoring network is needed to better inform regulators and the general public about the air quality in relation to the new 1-hour SO_2 NAAQS. ADEQ believes that the best method to do that is with adequately and appropriately sited monitors and the posting of quality assured ambient air quality data for public review. Technical and fiscal constraints must be factored into the establishment of national minimum network requirements. ADEQ supports the concept addressed in the White Paper in regard to monitoring areas of greatest potential impact on public health and at the area of highest potential concentration. Determining the criteria requirements of an expanded network will take time (and rulemaking) to accomplish. In addition, a phase-in period is necessary and appropriate in order to properly site new or relocate existing monitors. This phase-in period should consider relocating existing or deployment of new monitors based on reasonable emission thresholds (based on actual emissions) and based on the need to cover an area's sensitive population. Flexibility should be provided to States in siting or relocating monitors, but EPA should provide criteria in regard to how such flexibility/scheduling can be exercised.

Funding Network Expansion

A valid concern has been raised about the significant expense to a State that would be necessary if the monitoring network were to be expanded. State resources are stretched very thin; however, ADEQ believes that options are available to expand the network. An adequate monitoring network is necessary in order to appropriately permit sources and therefore it is ADEQ's position that the use of Title V fee revenue is appropriate in this regard. States should be afforded flexibility in how they choose to fund an expanded monitoring network. These options could include use of federal grant funds, requiring a facility to pay for the cost of source-specific monitors as a condition to its Title V permit, the use of Title V fee revenue directly by the State for monitor procurement and operation/maintenance, agreements entered into with specific SO_2 sources to pay for the initial capital outlay and/or ongoing operation and maintenance and

agreements with sources to site and operate the monitors (with an established Quality Assurance Project Plan).

Modeling

There has been much discussion related to the uncertain performance of the existing modeling protocols in relation to the SO_2 1-hour standard and the need for revisions or updating of the existing rules to accommodate these uncertainties. Promulgation of regulations that address the existing uncertainties related to modeling the 1-hour SO_2 NAAQS must be completed prior to requiring States to utilize such tools in attainment demonstrations. If such rulemaking cannot be accomplished in a timely manner, EPA should grant States substantial leeway regarding how re-attainment demonstrations are prepared and justified.

ADEQ encourages EPA to continue on the path of approaching the implementation of the SO_2 NAAQS in a logical and practical fashion. Keeping in focus the overarching goal of protection of the NAAQS – using whatever regulatory tools are available in the least administratively burdensome form. In view of the long lasting negative effects of a non-attainment designation on an area and the potential unnecessary drain on resources of States (and industry), EPA should refrain from prioritizing the administrative matters of non-attainment over the practical capabilities of the state of the science and technical tools presently available.

ADEQ appreciates being afforded the opportunity to provide comments on this very important matter. Should any questions arise regarding these comments, please contact Mike Bates, Air Division Chief, ADEQ at 501-682-0750.

Sincerely,

Teresa Marks
Director

cc: Karen Bassett, Chief Deputy Director
Mike Bates, Chief, Air Division

Exhibit C
Comments of Steel Coalition of Arkansas

BEFORE THE ARKANSAS POLLUTION CONTROL AND ECOLOGY COMMISSION

In the Matter of Amendments to Regulation No. 19, Regulations of the Arkansas Plan of Implementation for Air Pollution Control	))))	DOCKET NO. 12-010-R

COMMENTS ON ADEQ'S PROPOSED REVISIONS TO REGULATION 19, REGULATIONS OF THE ARKANSAS PLAN OF IMPLEMENTATION FOR AIR POLLUTION CONTROL

The Arkansas Environmental Federation (AEF) and other undersigned signatories appreciate the opportunity to comment on these important regulatory changes. The AEF is a non-profit association with over 350 members, primarily Arkansas businesses and industries that manufacture products, provide services, and employ skilled workers in our state while also insuring that their operations comply with all federal and state environmental, safety and health regulations. Although the undersigned commenters are formally providing separate comments in each of the rulemaking dockets for Regulations 18, 19 and 26 (docket numbers 12-009-R, 12-010-R and 12-011-R, respectively), the content of comments on each of the proposed regulations is the same. However, as indicated herein, some of the comments that follow are specifically applicable to certain proposed revisions of the individual regulations.

General Comments Concerning NAAQS Sweep and Associated ADEQ Dispersion Modeling

1. The AEF generally supports the ADEQ incorporating the newer National Ambient Air Quality Standards (NAAQS), specifically for $PM_{2.5}$, SO_2 and NO_2, into the state air pollution control regulations. Updating the state's regulations to refer to these national standards is required in the normal course of federal-state regulatory affairs. However, the AEF is greatly concerned with the anticipated implementation of the new standards by the ADEQ and the resulting negative impact on industrial development and job creation. In short, there is the threat of a "train wreck" for the Arkansas air permitting program as a result of the EPA's newer NAAQS and the ADEQ's dispersion modeling practices. The newer NAAQS are very stringent by historical standards. The dispersion modeling software tends to be overly conservative by its intrinsic nature. The ADEQ's Modeling Protocol policy generally requires the modeling of NAAQS at the time of permitting for Title V facilities. This Modeling Protocol policy is more stringent than federal requirements. (Note the federal requirements generally only require NAAQS dispersion modeling exercises at the time of relatively rare PSD program permitting.) All of these factors add up to indicate that permitting will largely grind to a halt for a large percentage of Title V facilities in Arkansas if the situation continues on its current track. This result will place Arkansas industries at a significant economic disadvantage as compared to other states that do not have dispersion modeling requirements more stringent than federal requirements.

   Attachments 1 and 2 to this letter contain more detailed information on this topic. The AEF is making two requests in this area:

Exhibit D
Comments of Steel Coalition of Arkansas

a. The AEF respectfully requests that the **ADEQ reevaluate and significantly modify its modeling requirements (currently housed in the "Modeling Protocol")** in conjunction with this rulemaking. Such should be done simultaneously with the finalization of the rulemaking since the Modeling Protocol policy can be considered de facto regulation.

b. Additionally, if ADEQ proposes to continue using its Modeling Protocol policy after the new NAAQS are implemented into the state regulations, **then AEF requests that ADEQ perform an updated proper economic impact/environmental benefit analysis** concerning this issue. It is our understanding that since the state dispersion modeling requirements are more stringent than federal requirements, such an analysis is required by state law. The existing economic impact/environmental benefit analysis prepared by ADEQ in June 2012 for this rulemaking does not appear to adequately address the broad range of expected consequences associated with this rulemaking.

Comments on Specific Language in Regulations #18 and #19

2. **Reg. 18.301(B)(3) Permits – Special Applicability.** This section requires that sources that are subject 40 CFR Parts 60, 61, and 63 regulations as of a certain date (June 27, 2008) must obtain a permit regardless of emissions, unless specifically exempted in this section. By including the "as of" date in the regulation, ADEQ ensures that any Part 60, 61, or 63 rule promulgated after this date will not automatically require permitting. In addition, this section contains a list of Part 60, 61, and 63 rules that, although promulgated after the June 27, 2008, are specifically exempted from automatically requiring a permit. This list of exceptions is important since many of these rules apply to sources with very small emission rates (e.g., emergency generator engines, small metalworking and machine shop operations) and requiring permitting for these many small sources would not be an efficient use of Department resources.

(3) Any source subject to the requirements of a rule promulgated under 40 ~~CFR~~C.F.R. Part 60, Part 61, or Part 63 as of June 27, 2008, except for:

We have two proposed options concerning this paragraph (3):

Option 1: The simplest option is to eliminate this paragraph in its entirety. It can be argued that a facility with emissions rates below ADEQ permitting thresholds can accordingly be exempted from the obligation to obtain a permit, even if it is subject to a federal NSPS or NESHAP regulation. This is an extension of the current argument of ADEQ that only certain NSPS and NESHAP regulations should not automatically trigger permitting requirements, given that facility emissions are *de minimis*. [It is noted that Reg. 18.301(B)(1) already gives the ADEQ Director the authority to require that any individual source obtain a permit, including any source subject to a federal NSPS or NEHAP regulation, so the ADEQ would not be losing permitting authority over any individual facility.)

Option 2: If ADEQ elects to retain this section, we have two recommendations.

a. First, the term "stationary" should be inserted between "Any" and "source" to remain consistent with paragraphs (1) and (2) of Section 18.301(B).

b. Second, the addition of 40 CFR Part 63 Subpart XXXXXX (promulgated 7/23/2008), Subpart WWWWWW (promulgated 7/1/2008), and Subpart CCCCCCC (promulgated 12/3/2009) to the list of "exempted" rules is unnecessary since these rules were each effective after June 27, 2008, and could not trigger permitting under the current rule language. Note that the addition

of Subparts BBBBBB (promulgated 1/10/2008) and OOOOOO (promulgated 7/16/2007) is appropriate since both rules were issued as of June 27, 2008.

3. Although the ADEQ is not proposing to amend the sections discussed below in this rulemaking, they are directly related to the NAAQS implementation and modeling concerns discussed in Comment #1 above. **The AEF recommends amending these paragraphs during this rulemaking** to reduce ongoing confusion and conflict concerning the proper role of dispersion modeling and NAAQS analyses during the routine (non-PSD) permitting process.

   Several sections of Regulations #18 and #19 can be, and have been, mistakenly construed by ADEQ to mean that the applicant and/or the ADEQ is required to perform dispersion modeling and NAAQS analyses as part of the permitting process. While this is generally true for rare and complex PSD permitting projects (as per federal requirements), such complex modeling analyses are not appropriate, or federally required, for routine non-PSD permitting projects. The AEF suspects that these provisions were originally intended to apply to only PSD-affected permitting projects in years past, but this original intent may have become clouded over time.

   Also see Regulation 19 Chapter 3 Protection of the [NAAQS.] Regulation Secs. 19.302 and 19.303 set out the requirements for ADEQ and a permittee to "meet and maintain" the NAAQS. Regulation 19.301 states that the purpose of Chapter 3 is to:

   *"**state the responsibilities of the Department and regulated sources in meeting and maintaining the NAAAQS contained in 40 CFR Part 50**. If any **area of the state** is determined to be violation of the NAAQS, all applicable requirements contained in the Clean Air Act, as amended, and all regulations promulgated thereto shall be met by the Department."* (Emphasis supplied.)

   "Area of the state" is defined in the Arkansas Water and Air Pollution Control Act at ACA 8-4-303(6) to mean "any city or county, or portion thereof, or other substantial geographic area of the state as may be designated by the Arkansas Pollution Control & Ecology Commission." This term is meant to encompass a substantial area of the state, such as a county, not individual sources' fence lines; also the Commission, not ADEQ through one individual source's permit, defines what constitutes "area of the state" for purposes of NAAQS maintenance.

   Regulation 19.303 sets out the permittee's responsibilities which include obtaining a permit prior to "construction" or "modification," and operating equipment pursuant to the permit, but nowhere in that Section is a permittee obligated to conduct computer modeling in order to meet the NAAQS. A permittee's compliance with Regulation 19.303 should be considered sufficient evidence that it is complying with its obligation to meet and maintain the NAAQS.

   Regulation 19.302(a) and (b) sets out ADEQ's responsibilities for conducting ambient air monitoring and computer modeling of federally regulated air pollutant emissions for any "area that can reasonably be expected to be in excess of the NAAQS." It is ADEQ's duty, not the permittee's, to conduct computer modeling, but only if there is a reasonable expectation of NAAQS exceedance in a large area of the state. This should not be interpreted by the state more stringently than by EPA.

   As such, **the AEF recommends updating the regulatory language as shown below.**

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Reg. 19.402 Approval Criteria

No permit shall be granted or modified under this chapter unless the owner/operator demonstrates to the reasonable satisfaction of the Department that the stationary source will be constructed or modified to operate without resulting in a violation of applicable portions of this regulation. ~~or without interfering with the attainment or maintenance of a national ambient air quality standard.~~

****

Reg. 19.405 Action on Application

(A) Technical Review

The Department will review the application submitted under this chapter in order to ensure to their reasonable satisfaction that:

~~(1) the stationary source will be constructed or modified to operate without interfering with attainment or maintenance of a national ambient air quality standard;~~

(2) ……..

****

Reg. 19.502 General Regulations

No person shall cause or permit the construction or modification of equipment which would cause or allow the following standards or limitations which are in effect as of the effective date of this regulation, to be exceeded:

~~(A) Any National Ambient Air Quality Standard or ambient air increment (as listed in 40 CFR 52.21).~~

(B) Any applicable emission limitation promulgated by the United States Environmental Protection Agency.

(C) Any applicable emission limitation promulgated by the Department in this regulation.

****

Reg. 18.305 Action on Application

(A) Technical Review

The Department will review the application submitted under this chapter in order to ensure to their reasonable satisfaction that:

~~(1) the stationary source will be constructed or modified to operate without interfering with attainment or maintenance of a National Ambient Air Quality Standard;~~

(2) .....

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Exhibit D
Comments of Steel Coalition of Arkansas

Comments on Reg. #19, Chapter 9

4. Chapter 9 involves the state incorporation of the federal PSD regulations. The ADEQ has proposed several revisions in this chapter. **The AEF is suggesting that it may be beneficial at this time for ADEQ to simply incorporate by reference the federal PSD regulations** as of date certain. This would eliminate the need to make the currently proposed extensive revisions to the definitions. Also, it would minimize potential conflicts between state and federal language and requirements, several of which have been discovered by AEF members.

   If ADEQ elects to retain the current format of Chapter 9, then the following comments are offered:

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   Reg. 19.903 Definitions. ADEQ is proposing to add a definition for "Regulated NSR Pollutant" to maintain consistency with the Federal NSR rule in 40 CFR Parts 51 and 52. The added definition is copied almost exactly from the definition in 40 CFR 52.21 (b)(50). However, ADEQ has failed to include a definition of "subject to regulation", an important term which appears in the definition of "Regulated NSR pollutant."

   " (4) Any pollutant that otherwise is subject to regulation under the Act on May 12, 2010."

   The Federal rules at 40 CFR 52.21(b)(49) provide a specific definition for "subject to regulation." Without this specificity in the Arkansas rules, we are concerned that the Arkansas rules could conflict and/or be more stringent than Federal rules.

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   Reg. 19.903(B). Through the incorporation of this definition, along with the proposed changes to Chapter 2 of Regulation 19, ADEQ is officially adopting $PM_{2.5}$ as a "Regulated NSR Pollutant" in Arkansas. However, ADEQ's proposal fails to adopt the necessary structural components of the PSD permitting program for $PM_{2.5}$. These structural components include the major source threshold, Significant Emission Rate (SER), Significant Impact Level (SIL), Significant Monitoring Concentration (SMC), and ambient air increment values for $PM_{2.5}$. In particular, the failure of ADEQ to adopt a SER for $PM_{2.5}$ results in a PSD permitting program that is significantly more stringent than that required by federal law. In the absence of a defined SER for $PM_{2.5}$, 40 CFR 52.21(b)(23)(ii), as adopted by ADEQ via §19.903(C), defines any net increase in $PM_{2.5}$ emissions as "significant", thus subjecting such an increase to all applicable requirements of the PSD permitting program.

   This problem arises due to ADEQ's Incorporation by Reference (IBR), in §19.903(C) and §19.904(A), of the majority of the Federal PSD program codified in 40 CFR §52.21 as of November 29, 2005. The structural components for $PM_{2.5}$ noted above were incorporated into §52.21 by the EPA via a final rule published in the Federal Register on May 16, 2008.[1] To address this issue, the AEF requests that ADEQ adopt the applicable provisions of 40 CFR §52.21 as of a date subsequent to May 16, 2008 or specifically incorporate into Regulation 19 Chapter 9 all provisions necessary to implement the PSD permitting program for $PM_{2.5}$. Revision of the IBR date found in §19.903(C) and §19.904(A) would seem to provide a more efficient way in which to adopt these key regulatory provisions and ADEQ is encouraged to take this approach.

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[1] See 73 FR 28321.

Reg. 19.903(B)(6). This paragraph officially begins the era of regulating condensable particulate matter (CPM) in Arkansas. Although some sources and permits (e.g., PSD permits) have addressed CPM (through the requirement for Method 202 testing), many permitted sources may not have considered CPM. We have several questions on how the transition from regulating only filterable particulate matter to regulating filterable plus CPM will be accomplished.

a. The reference to CPM only appears in Chapter 9, which could be interpreted to mean that only PSD sources must consider CPM. Is it ADEQ's intent that non-PSD Title V sources and minor sources also address CPM in their minor source and non-PSD Title V permits?

b. If a permittee is applying for an expedited permit modification for a particular project, such as a *de minimis* change or minor modification, will ADEQ require a facility wide re-assessment of $PM_{2.5}$ or CPM at that time, thus delaying issuance of the particular project permit approval?

c. Does ADEQ have a "deadline" in which all permittees will be expected to have updated their permits to explicitly consider $PM_{2.5}$ and/or CPM? For Title V sources, the permit renewal process provides a mechanism for this update.

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Reg. 19.904 Adoption of Regulations. This section incorporates by reference the Federal PSD rules in 40 CFR 52.21 as of November 29, 2005. By not updating this over 7-year old date, the Arkansas rules will be omitting important federal updates in addition to the provisions noted above in regards to $PM_{2.5}$. ADEQ's proposed definition of "Regulated NSR Pollutant" in Regulation 19.903 could be omitted if the IBR date in Regulation 19.904 is updated.

Additionally, ADEQ's proposed formal rejection of the federal definition of "subject to regulation" in the NAAQS sweep regulations circumvents EPA's interpretation of "subject to regulation" as set-forth in the Johnson Memo (and subsequently codified in the federal regulations at 40 CFR § 52.21(b)(49)). By using the term "subject to regulation" in the definition of "regulated NSR pollutant" and failing to incorporate the federal definition of "subject to regulation," ADEQ's definition of "Regulated NSR Pollutant" is broader than the federal definition and, consequently, encompasses pollutants that are subject to monitoring and reporting requirements under the Act, not just pollutants subject to control under the Act. Further, by formally rejecting EPA's definition of "subject to regulation," ADEQ's proposed regulations fail to incorporate Step 3 of EPA's Greenhouse Gas Tailoring Rule[2], thus causing some sources permitted as a minor source for PSD under federal regulations to be categorized as a major source under State regulations due solely to CO_2e emissions. Exclusion of Step 3 of the Tailoring Rule from Chapter 9 of Regulation 19 renders Arkansas' regulations more stringent than federal regulations. Updating the IBR date to incorporate the federal definitions for "Regulated NSR Pollutant" and "subject to regulation" would also ensure that all elements of the Tailoring Rule are properly reflected in the Arkansas' regulations.

In addition, the definition of "reasonable possibility" [in 52.21(r)(6)(vi)] is not incorporated into Arkansas' rules under the November 2005 reference date.[3] ADEQ is already establishing permit conditions based on the "reasonable possibility" provisions[4] and, without the current Federal definition, Arkansas' rules are more stringent than Federal rule. ADEQ should either update the IBR date or explain why it cannot be updated.

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[2] 77 Fed. Reg. 41051 (July 12, 2012).
[3] The "reasonable possibility" recordkeeping test was clarified in 72 FR 72607-72617, December 21, 2007.
[4] See ADEQ Permit #0271-AOP-R16, Specific Conditions 76-83, issued to Clearwater Paper Corporation, October 16, 2012.

Comments on Insignificant Activity Language in both Regulations #18 and Regulation #19

5. Although this rulemaking does not directly involve changes to the Insignificant Activities language in the regulations, AEF is offering suggestions on this subject area. The suggestions are contained in Attachment 3 to this letter.

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The AEF and undersigned organizations request that the Commission and ADEQ thoughtfully consider our comments and suggestions. We appreciate the opportunity to provide comments on these important regulatory changes.

Respectfully submitted,

Arkansas Environmental Federation

Randy Thurman, Executive Director

And

[INSERT ADDITIONAL SIGNATURE BLOCKS]

To illustrate the issues associated with dispersion modeling and the newer NAAQS standards, the following exercise was performed. The 24-hour NAAQS standard for $PM_{2.5}$ is 35 $\mu g/m^3$. An AERMOD dispersion model was run, assuming that one pound per hour of $PM_{2.5}$ is emitted near ground level (at a 5 foot height). Picture in your mind a person holding a one-pound container of baby powder, squeezing it intermittently so as to cause puffs of fine powder to be emitted over a one-hour period of time until the container is empty.

One would logically think that this would not realistically cause an air pollution issue for any significant distance. However, note that the dispersion model predicts a sizable $PM_{2.5}$ NAAQS exceedance footprint, extending some 200 – 400 meters away from the emission point.

This illustrates the dilemma posed by the stringent new NAAQS and dispersion modeling. In effect, emissions sources so small that ADEQ considers them insignificant can be shown to cause considerable NAAQS issues when modeled. When industrial facilities have emissions released at low levels, such as fugitive dusts from haul roads, it makes passing modeling at facility boundaries extremely difficult, if not impossible.
ADEQ's current practice of holding permit applications in limbo due to modeling issues has resulted in permitting gridlock for many facilities. The situation will become even worse once ADEQ begins modeling of the newer, more stringent NAAQS.

The AERMOD dispersion model screen shot on the following page shows the footprint of the area (shaded) estimated to be in excess of the 35 $\mu g/m^3$ NAAQS for PM2.5 (24-hr standard). Note the reach of the footprint varies from approximately 200 – 400 meters from the emission source (the emission source is located in center of graphic).

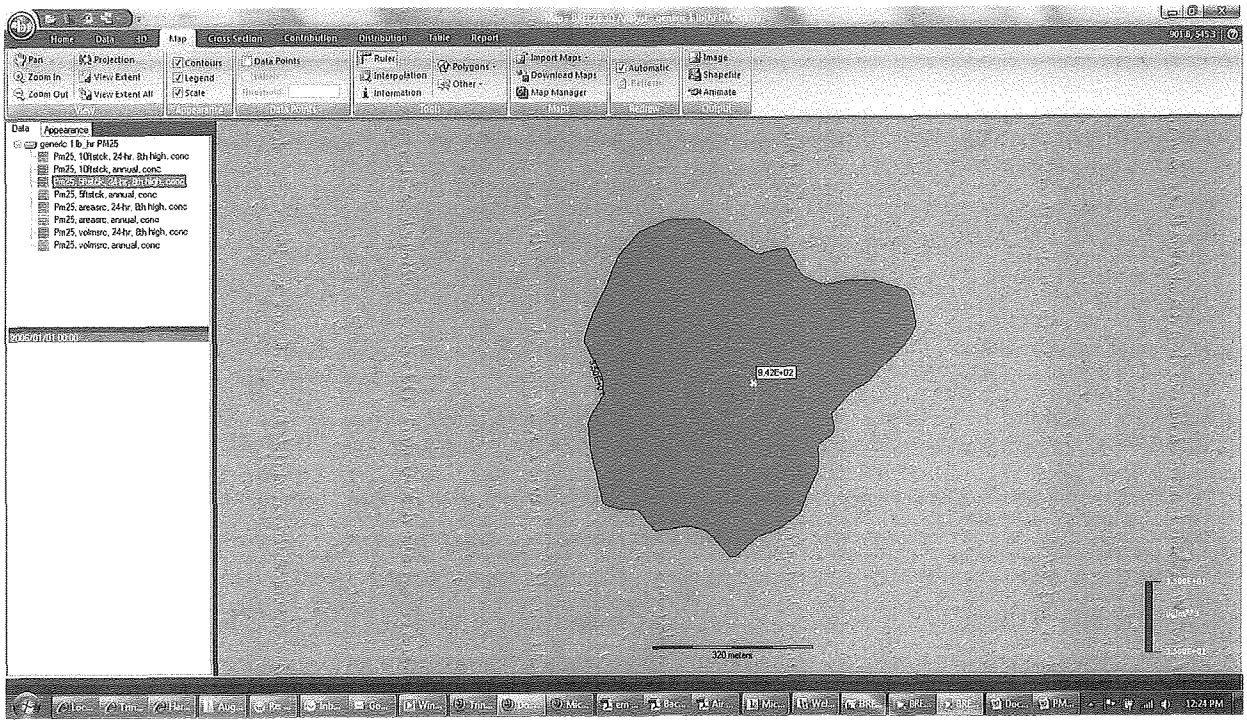

Exhibit D
Comments of Steel Coalition of Arkansas

Overview

As it stands today, ADEQ and the Arkansas regulated community disagree over the requirements and appropriateness of dispersion modeling during routine permitting actions. Note that the federal regulations generally only require modeling during major NSR/PSD permit actions and SIP corrective actions to address nonattainment areas, and not during frequent and routine non-major permitting actions (such as non-PSD construction permits, non-PSD Title V permit modifications, or Title V permit renewals). **We are incorporating by reference the comments on this rulemaking submitted by the Energy & Environmental Alliance of Arkansas (EEAA).** EEAA's comments include a detailed White Paper which describes why ADEQ's current practice is unnecessary and not supported by the Clean Air Act or even current ADPC&E air regulations.

With the impending incorporation of the latest NAAQS and no change in ADEQ's burdensome modeling policy, we are now faced with the specter of more costly and time-consuming permitting delays, at best, or more likely, a routine inability to satisfy ADEQ's modeling policy, resulting in few new Title V permits, permit renewals, or permit modifications.

Background

Our concerns stem from the way the NAAQS are used by ADEQ during the review of individual air permit actions. Although not clearly described in state regulations or in permit application instructions, it has been ADEQ's internal practice since at least the mid-1990's to perform computer-based dispersion modeling of permittee's air pollutant emissions to predict fence line pollutant concentrations, and then compare these predictions to the NAAQS during Title V (Regulation 26) permit issuances/modifications. Even facilities that have operated for decades with no measured air quality problems are subjected to this predictive modeling exercise. Because modeling utilizes multiple conservative assumptions (including that all emissions sources are emitting at maximum permitted hourly rates) and evaluates areas right up to the facility fence line, it can many times generate "phantom" concerns.

If ADEQ's screening modeling results predict concentrations over 50 percent of a NAAQS, ADEQ's internal "Modeling Protocol" instructions require that a refined analysis must be completed and "This is usually to be conducted by the permittee."[5] For the unfortunate permittees that are required to complete a refined analysis, the cost of a modeling study can exceed $10,000 and can cause many weeks of permitting delay while a satisfactory solution is devised. ADEQ rarely issues a final permit until a satisfactory model is produced.

Until the last 5 to 7 years, this internal practice caused permitting delays and extra cost for only an unfortunate few, as the combination of NAAQS levels and ADEQ's modeling methodology combined to make passing modeling relatively easy for almost all facilities. In more recent years, ADEQ has expanded the scope of modeling analyses to include additional emission source types, such as potential fugitive dust from facility roads and infrequently operated equipment

[5] The Screening Modeling Protocol is posted on ADEQ's website at http://www.adeq.state.ar.us/air/branch_permits/pdfs/screening_modeling_protocol.pdf.

(e.g., emergency generator engines). While not offered for public notice or comment, this expansion of ADEQ policy has made passing modeling much more difficult for many Title V facilities.

AERMOD, EPA's regulatory default[6] dispersion model for near-field applications[7],, is documented to frequently over predict ambient concentrations due to various factors, including low-level intermittent sources, such as emergency generator engine stacks, dust from unloading a grain truck, or road dust, especially for short-term averaging periods and at low wind speeds.[8,9] An additional complicating factor (from the ADEQ's Modeling Protocol) is that "background" concentrations, as determined from a possibly distant ambient air monitor, must be added to the modeled results for ultimate comparison with the NAAQS. This ADEQ requirement raises the issue of possible "double counting" of a facility's emissions impacts in the event that the monitor may already be sensing the existing emissions from that facility.

Combine this inherent modeling over prediction with the background concentration inclusion, and many permittees find that producing satisfactory results is typically an incredible and expensive challenge.

This situation has been a continuing source of disagreement between ADEQ and the Arkansas regulated community, as permits are effectively held in limbo until suspected modeling issues are resolved. In some cases, new projects are significantly delayed due to modeling issues. Frustratingly, even some projects involving the decrease of pollutants have been delayed. In our opinion, Arkansas unfortunately now has the reputation of being a difficult state, as far as air permitting for new or additional manufacturing investment is concerned. For multi-state corporations, this is a significant negative factor when choosing where to expand or locate new operations.

What Do ADEQ's Modeling Practices Have To Do With Simply Incorporating The Latest NAAQS?

The new NAAQS include annual and 24-hour standards for fine particulate matter[10] ($PM_{2.5}$), a 1-hour standard for NO_2, and a 1-hour standard for SO_2. These standards will add another layer of technical complexity and challenge with respect to satisfactory modeling demonstrations. Due to the limitations of model accuracy discussed herein, as well as the conservative assumptions required by current ADEQ (and EPA) modeling policy, if ADEQ's current permitting/modeling policies were to continue, very few permittees will be able to produce satisfactory model results. This will essentially result in a moratorium on new industrial construction activity in the state (at least for the Title V permitted sources, which are regularly modeled as part of routine air permitting). Discussion of the specific technical challenges of modeling against the new standards is presented below. This example focuses on $PM_{2.5}$, but similar difficulties may arise for sources in regards to the new 1-hour NO_2 and SO_2 standards.

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[6] See Appendix W to 40 CFR Part 51

[7] AERMOD is approved for use by EPA for distances up to 50 km from the emission source.

[8] See presentation titled "AERMOD Low Wind Speed Evaluation Study" presented by Bob Paine at the 10th Modeling Conference (http://www.epa.gov/ttn/scram/10thmodconfpres.htm).

[9] Due to these difficulties, states such as Texas, Louisiana, and Oklahoma do not include road emissions in modeling (and Louisiana excludes dust from storage piles) or at least excludes them from short-term (24-hr) modeling analyses.

[10] Particulate matter with an aerodynamic diameter of less than 2.5 microns.

$PM_{2.5}$ is a new form of particulate pollution that has never before been regulated in Arkansas. Even though ambient standards for $PM_{2.5}$ were first promulgated in 1997, technical tools, information, and guidance related to $PM_{2.5}$ emissions are incomplete. As a result, EPA issued a PM_{10} Surrogate Policy in 1997 that allowed sources to satisfy permitting requirements for $PM_{2.5}$ by meeting the requirements for PM_{10} as a surrogate approach.[11] Even though EPA officially ended the Surrogate Policy in May 2011, very few $PM_{2.5}$ emission factors have been published by EPA and very few permittees can accurately quantify $PM_{2.5}$ emissions. In addition, EPA has not yet developed a stack testing method to allow for measurement of $PM_{2.5}$ emissions for sources with high levels of stack moisture, such as those utilizing a wet scrubber for emission control. EPA has also failed to develop permit modeling guidance for $PM_{2.5}$. As a result, permittees and ADEQ will often make an initial, conservative assumption that $PM_{2.5}$ emissions are equal to PM_{10} emissions. Given that the 24-hour $PM_{2.5}$ NAAQS is only 23 percent of the 24-hour PM_{10} NAAQS; this emission rate assumption will virtually guarantee $PM_{2.5}$ model results well above the NAAQS in most circumstances. The only remedy for many permittees will be costly and disruptive stack testing to more accurately quantify $PM_{2.5}$ emissions.

Attachment 1 contains a simple modeling study for a 1 pound per hour (lb/hr) $PM_{2.5}$ emission rate from a low stack height. As shown in Attachment 1, a single source of $PM_{2.5}$ emissions with a short stack produces modeled impacts in excess of the 24-hour NAAQS for up to 400 meters from the source location (and this is without any "background" added).

The measured background concentrations of $PM_{2.5}$ (in Arkansas and around the country) are consistently much closer to the NAAQS than any other pollutant. Table 1 compares the 35 $\mu g/m^3$ $PM_{2.5}$ 24-hour NAAQS to the 98th percentile of 24-hour $PM_{2.5}$ "design values" based on monitor measurements from 2009-2011 from around the state.[12]

Table 1. 2009-2011 24-Hour $PM_{2.5}$ Design Values (98th Percentile)[13]

Monitor Location (County)	Background: 24-Hr Measured Average, 98th Percentile ($\mu g/m^3$)	Percent of NAAQS	Standard Minus Background ($\mu g/m^3$)
Washington	23	66	12
Pope	23	66	12
Pulaski	25	71	10
Jackson	22	63	13
Crittenden	22	63	13
Union	22	63	13

Since ADEQ's current practice is to require addition of a background concentration to modeled results, the maximum model-predicted impact from a facility's emissions must be less than the

[11] "Interim Implementation for the New Source Review Requirements for $PM_{2.5}$ ", John Seitz, US EPA OAQPS, October 23, 1997.

[12] Although not presented here, the annual average concentrations of $PM_{2.5}$ measured at monitors around the state in 2009-2011 were also a significant percentage (60 to 80 percent) of the annual $PM_{2.5}$ NAAQS of 15 $\mu g/m^3$. EPA has recently proposed to lower the annual NAAQS down to 12 or 13 $\mu g/m^3$.

[13] County-level design values from US EPA, $PM_{2.5}$ detailed information (http://www.epa.gov/airtrends/values.html)

NAAQS, minus the applicable background concentration. To provide for a point of comparison, the current particulate matter NAAQS implemented by ADEQ is for PM_{10}. For PM_{10}, background concentrations in Arkansas are in the range of 40 $\mu g/m^3$ in comparison to the NAAQS level of 150 $\mu g/m^3$ (24-hour average). Thus model-predicted ambient concentrations of PM_{10} must be less than approximately 110 $\mu g/m^3$ (150 – 40) in order to demonstrate a "passing" model. For $PM_{2.5}$, model-predicted impacts must be less than 10 - 13 $\mu g/m^3$ in order to provide the same demonstration. As noted above, many sources will be forced to assume that their $PM_{2.5}$ emission rates are equal to their PM_{10} emission rates. As a result, many facilities will be modeling the same emission rates for $PM_{2.5}$ as for PM_{10}, which will result in equivalent model-predicted ambient concentrations. However, these predicted concentrations will now be compared to a "target" concentration that is approximately $1/10^{th}$ of before.

Needless to say, numerous existing particulate matter sources in Arkansas will struggle to satisfy this $PM_{2.5}$ modeling demonstration in accordance with ADEQ's current policies. Given the uncertainty of $PM_{2.5}$ emission estimates, the demonstrated conservatism of AERMOD predictions, and the low level release heights for some $PM_{2.5}$ – emitting equipment, demonstrating a satisfactory modeled impact will be a rare feat indeed.

The form and short-term averaging period for the new 1-hour NO_2 and SO_2 NAAQS also make accurate modeling difficult. The *Guideline on Air Quality Models* acknowledges the difficulty in predicting short-term (such as 1-hour) concentrations.

> *Models are more reliable for estimating longer time-averaged concentrations than for estimating short-term concentrations at specific locations...*[14]

In addition, discussions during recent conferences such as EPA's 10th Modeling Conference, Regional/State/Local modeling meetings, and modeling stakeholder meetings as well as specialty sessions at national conferences of the Air & Waste Management Association (A&WMA) and the Council of Industrial Boiler Owners (CIBO), and other supported research by the Electric Power Research Institute (EPRI) and the American Petroleum Institute (API) imply that current regulatory models warrant some critical scrutiny. A summary of modeling issues and limitations of AERMOD is discussed in a technical paper[15] prepared by Trinity Consultants. The conclusion of the paper's authors mirrors our concerns:

> *Couple all of these apparent conservative performance issues (i.e., the model over predicts due to each one of these items) with the form and level of the new 1-hour SO2 and NO2 NAAQS, and modeling compliant scenarios for existing sources as well as new or modified sources becomes extremely difficult.*

To further complicate the modeling process, there are often variables outside of an applicant's control which can significantly impact model-predicted concentrations. These variables include changes to ADEQ or EPA modeling policies, normal annual variability in meteorological conditions, and changes to the model itself. These changes often occur without notice and

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[14] 40 CFR 51, Appendix W, *Guideline on Air Quality Models*, Section 9.1.2.

[15] *Meeting Stringent SO2 and NO2 NAAQS - Practical Measures to Achieve Compliance with the 1-Hour Averaging Period*, Trinity Consultants, Environmental Quarterly, Fall 2012. Available at http://www.trinityconsultants.com/Templates/TrinityConsultants/News/Article.aspx?id=4623.

ADEQ historically has moved quickly to adopt changes made by EPA[16]. These factors often thwart a well-intentioned applicant's best efforts to satisfy ADEQ's modeling policies. For example, an applicant may agree to make changes at a facility in order to achieve a passing model, only to have ADEQ or EPA subsequently change a model input parameter or the model itself. This can result in the expenditure of significant sums of money by an applicant[17], only to find that the modeling target has been "moved" by ADEQ or EPA, and the frustrating process must begin anew.

[16] For example, EPA added a new pre-processor for meteorological data (AERMINUTE) in February of 2011. The use of this pre-processor was not mandatory, yet ADEQ moved to require its use within months. This created costly and wholly unexpected permitting delays for several facilities with permit applications under review by ADEQ at the time.

[17] Costs for such changes at a major facility can easily exceed $1,000,000.

Appendix A to both Regulations 18 and 19 contains an "Insignificant Activities List". This list is essentially identical in both regulations and outlines a series of air emission activities which are exempt from the requirement to obtain an air permit. The introductory paragraph of this list, in both Regulations 18 and 19, contains the following clause:

> *Any activity for which a state or federal applicable requirement applies (such as NSPS, National Emission Standards for Hazardous Air Pollutants [NESHAP], or Maximum Achievable Control Technology [MACT]) is not insignificant, even if this activity meets the criteria below.*

Over time, EPA has significantly expanded the regulatory "reach" of these programs, particularly the NESHAP program. As a result, many sources, such as emergency generator engines, which have historically been considered to be insignificant in Arkansas, no longer qualify as such under Appendix A of Regulations 18 and 19. This creates an unnecessary permitting burden which expends both applicant and ADEQ resources to modify existing permits to address sources with very low emission rates.

ADEQ has addressed the expansion of these regulatory programs in part via the language regarding "special applicability" found in §18.301(B)(3) of Regulation 18. The language of §18.301(B)(3) allows that, for certain source categories (those listed and those for which a standard was promulgated by EPA after June 27, 2008), no air permit is required by ADEQ solely due to the applicability of a Federal NSPS, NESHAP, or MACT standard. Through this existing provision of Regulation 18, ADEQ is implicitly acknowledging that it is not necessary to impose air permitting requirements for each and every source subject to a Federal NSPS, NESHAP, or MACT standard.

The AEF requests that ADEQ update the language of Appendix A to both Regulations 18 and 19 to adopt this same approach. This change would create consistency between the permit applicability criteria of §18.301 and the Insignificant Activity criteria of Regulations 18 and 19. The following language is proposed for the last sentence of the introductory paragraph of Appendix A to both Regulations 18 and 19.

> *Any activity for which a state or federal applicable requirement applies (such as NSPS, National Emission Standards for Hazardous Air Pollutants [NESHAP], or Maximum Achievable Control Technology [MACT]), provided such applicable requirement is subject to Special Applicability under the provisions of §18.301(B)(3) of ADEQ Regulation 18, is not insignificant, even if this activity meets the criteria below.*

AEF Questions related to Upcoming Regulation Changes

July 30, 2012

The Clean Air Act (CAA), which was last amended in 1990, requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. *See* 40 C.F.R. Part 50. The CAA identifies two types of NAAQS. The primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. The secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

EPA is required under the federal CAA to review the NAAQS every five years. When a NAAQS is revised, EPA bases the new standard on the most recent available scientific data. As more information becomes known about the health effects of these pollutants, EPA adjusts the NAAQS accordingly. These revisions are then codified into federal regulations and if challenged, are appealable at the federal level to the United States Court of Appeals for the District of Columbia. However, it is important to note that unless they are stayed, appealed changes to any NAAQS become effective immediately at the federal level. Since Arkansas, by constitution, cannot engage in "prospective rulemaking", ADEQ must follow an EPA rulemaking action with a state rulemaking action in order to formally adopt and make enforceable at the state level, any changes to the NAAQS.

EPA has established NAAQS for six principal pollutants, which are called "criteria" pollutants. These six criteria pollutants are carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), particle pollution ($PM_{2.5}$ and PM_{10}), ozone (O_3), and sulfur dioxide (SO_2). All NAAQS are expressed in terms of three elements: level (concentration), form and averaging time.

Protection of the NAAQS is an overarching responsibility of all States under the Clean Air Act. Therefore, when NAAQS are revised, the Commission's air regulations (Regulations 18, 19 and 26) are amended, as necessary, to adopt EPA's revised standards. The regulations are part of the state implementation plan (SIP) ADEQ administers to ensure, among other things, that the NAAQS are attained (as determined by air monitors located around the state). These regulations govern ADEQ's air permit programs.

ADEQ administers permit programs that regulate sources emitting criteria air pollutants. The permit ADEQ issues to these regulated facilities are based on the information contained in the permit applications submitted by the applicant. A facility has the flexibility to select what it determines is the best approach to demonstrate that its operations will not cause violations of the NAAQS.

Applicants are not required to use predictive computer modeling to satisfy their regulatory obligation to demonstrate that their emissions will be compliant with the NAAQS. Computer modeling seems to be the preferred method by many applicants and/or their consultants. In those areas where ADEQ identifies the need to perform a confirmatory analysis, we do anticipate using computer modeling. When computer modeling is used, such modeling must be performed using EPA-approved models, and using averaging times commensurate with averaging times stated in the NAAQS. Further, computer models are run using input parameters, many of which are based on how the applicant has described its operation of emission-generating units at its facility in the permit application. For instance, if a facility states in its application that a certain piece of equipment will only run for 1,000 hours per year, this limited operating time frame will be used to predict that facility's emissions. Although ADEQ works with applicants during the permitting process to obtain all information needed to make permit decisions, if a facility believes ADEQ errs in reaching any final permit decision, the permit may be appealed to the Commission.

1. **How are the "new" NAAQS different than the existing "NAAQS"?**

Please refer to attached table showing current federal NAAQS and the NAAQS as previously adopted in state regulation (references as "SAAQS" in attached Table).

In general, EPA's revised NAAQS have included lower levels. For example, in recent years, the level of the primary ozone standard was lowered and the averaging time was simultaneously increased from 1-hr to 8-hrs in order to address health effects occurring at lower concentrations over longer periods. With regard to both NO_2 and SO_2, new 1-hour standards have been established in order to address health effects that occur over shorter durations than were specified for previous versions of the NAAQS. There have also been recent revisions to the Pb NAAQS for similar reasons. A new particulate standard for very small size particles ($PM_{2.5}$, less than 2.5 microns in size) has also been established.

2. **Are the new standards more or less difficult to meet than the existing standards?**

There is no "one size fits all" answer to this question. Rather, this analysis would need to be done on a facility-by-facility basis. We do know that the new 1-hour standards will be more difficult to meet in some situations, particularly where a facility's normal emission rates vary from hour to hour, as this standard has a much abbreviated averaging time for compliance determinations. As a general rule, the revised NAAQS are lower, therefore creating less "buffer" between ambient conditions and a facility's ability to emit without causing a violation of the standard.

Since EPA has consistently continued to either maintain existing standards or ratchet down on the stringency of all NAAQS as new health and secondary effects information is

reviewed, it is logical to infer that newly revised standards will present more of a challenge with which to comply. The degree of difficulty a facility will face in meeting the new standards will vary widely based on a number of factors, including but not limited to the following: the nature of the technology the facility is currently using; the flexibility the facility may have in establishing new operational parameters; the cost of additional engineering controls at the facility, if the facility determines such control are needed; the amount of room the facility has to lower their "potential to emit" levels without any other facility changes; and a number of other measures that can be utilized by the impacted facilities in order to continue operations while lessening their impact to air quality.

3. **Are there any areas in the state, or does ADEQ foresee any areas, being "nonattainment" for existing or new NAAQS?**

Presently the only criteria pollutant for which monitoring stations indicate a NAAQS exceedance is Ozone. Crittenden County has been determined to be non-attainment for the 2008 Ozone standard. Air monitors in Pulaski County indicate that the 2008 O_3 standard is being exceeded this year. A non-attainment designation review will occur after ADEQ has submitted the 2012 quality assured/quality controlled data to EPA.

It is uncertain at this time the manner in which EPA will implement the attainment/non-attainment designation process for SO_2. There is currently no monitoring data that would indicate a SO_2 NAAQS exceedance; however, if EPA determines that modeling must be utilized – ADEQ will have to re-evaluate.

Our ambient air monitoring network is currently showing background levels of PM which range from 52-81% of the NAAQS. Background levels are well below the standard for lead, CO and NO_2. Additionally, several criteria pollutants are a precursor for another criteria pollutant and need to be reviewed from this perspective as well. Several Arkansas sources will be required to reduce NO_2 emissions, as they have been found to be a significant contributor to non-attaining ozone monitors in other states due to interstate transport issues.

4. **What data is used to determine if an area is attainment or nonattainment with the NAAQS?**

ADEQ maintains a formal ambient air quality monitoring network (see attached map which shows the location of these monitors as well as permitted air sources) that is used to collect data for comparison against the NAAQS for each pollutant for official federal attainment or non-attainment designation purposes. The type and location of these monitors is reviewed and approved by EPA on an annual basis. Each time EPA changes a NAAQS, it issues a

companion "monitoring rule" which establishes criteria for the location and placement of new or additional monitors.

Historically, EPA has solely relied on data from the approved ambient air quality monitoring network in making its attainment/non-attainment designations. Recently however, EPA has required targeted monitors for certain lead emitting facilities and has expressed in its SO2 monitoring rule its intention to use both ambient monitoring network data and air quality modeling for the purpose of making its attainment/non-attainment designations. EPA is currently in the process of reviewing the modeling approach before promulgating designations and/or implementing rules based on this approach. EPA's proposed use of point source modeling is to address the rising cost of ambient monitoring vs. shrinking state and federal funding and the scarcity of existing SO2 monitors across the country.

5. **How are the NAAQS used in the process of permitting new industrial plants or expansion of existing plants?**

The response to this question has been broken down by regulation. These requirements have been in place in these regulations and in our EPA approved Infrastructure SIP since the 1970's.

APC&EC Regulation18 Arkansas Air Pollution Control Code

APC&EC Reg. 18.302 states that "No permit shall be granted or modified under this chapter unless the owner/operator demonstrates to the reasonable satisfaction of the Department that the stationary source will be constructed or modified to operate without resulting in a violation of applicable portions of this regulation and without causing air pollution."

"Air pollution" is defined in APC&EC Reg.18 as "the presence in the outdoor atmosphere of one (1) or more air contaminants in quantities, of characteristics, and of a duration that are materially injurious or can be reasonably expected to become materially injurious to human, plant, or animal life or to property, or that unreasonably interfere with enjoyment of life or use of property throughout the state or throughout the area of the state as shall be affected thereby."

For the six criteria pollutants addressed in the NAAQS, ADEQ relies on federally established standards to define levels, above which, will be deemed air pollution for the purpose of permit decisions under APC&EC Reg.18. ADEQ is proposing an update to the definition of "National Ambient Air Quality Standards" in the APC&EC Reg. 18 in order to maintain consistency with the federal standards. Historically, evaluation of APC&EC Reg. 18 sources against the NAAQS has not generated issues, as the emissions thresholds for APC&EC Reg. 18 sources is fairly low, and thus, unlikely to cause a violation of a NAAQS.

APC&EC Regulation 19 - Regulations of the Arkansas Plan of Implementation for Air Pollution Control

APC&EC Reg. 19.302 states "The Department shall be responsible for taking the following precautions to prevent the NAAQS from being exceeded:

> (A) Ambient air monitoring in any area that can reasonably be expected to be in excess of the NAAQS.
> (B) Computer modeling of regulated air pollutant emissions for any area that can reasonably be expected to be in excess of the NAAQS, and review of the ambient air impacts of any new or modified source of federally regulated air emission that is the subject of the requirements of this Plan. All computer modeling shall be performed using EPA-approved models, and using averaging times commensurate with averaging times stated in the NAAQS."

It should be noted that the above responsibility does not limit the evaluation of criteria pollution emissions to an attainment or non-attainment designation; rather, it tasks ADEQ with ensuring that the NAAQs are not exceeded at compliance points established under EPA-approved models.

APC&EC Reg. 19.402 Approval Criteria states that "No permit shall be granted or modified under this chapter unless the owner/operator demonstrates to the reasonable satisfaction of the Department that the stationary source will be constructed or modified to operate without resulting in a violation of applicable portions of this regulation ***or*** (emphasis added) without interfering with the attainment or maintenance of a national ambient air quality standard."

This permit approval criteria addresses both the requirement to ensure that the NAAQSs are not violated, as well as a requirement to ensure that official attainment or maintenance of the NAAQs are not interfered with. The second criteria could result in more stringent permit or pollution control requirements than the first.

Regulation 26 – Regulations of the Arkansas Air Permitting Program

Reg 26.701 Standard Permit Requirements states "Each permit issued under this program shall include the following elements:

> (A) Emission limitations and standards, including those operation requirements and limitations that assure compliance with all applicable requirements at the time of permit issuance."

Regulation 19 established NAAQS as "applicable requirements".

A facility's compliance with the NAAQS is a permitting obligation. There is no current mechanism under either state or federal law that allows for a facility to exceed the standards based on a cost benefit analysis. However, when a facility is in the stage of making decisions on how to craft its permit application in a matter that demonstrates compliance, it has the flexibility to pick the most cost-effective approach. .

6. **Approximately how many or what percentage of permitted facilities will be adversely impacted by this rulemaking?**

The intent of this rulemaking is to amend the regulations to be consistent with federal requirements. In adopting EPA's criteria, only the largest emitters of SO_2 are likely to be affected by the new SO_2 standards. It is estimated that approximately 10-15 permitted facilities will require some detailed evaluation, typically by conducting computer modeling of anticipated emissions for the facility, with only some of those requiring actual emission reductions or facility changes. Several of these facilities may need only to reduce their permitted "potential to emit" levels, as their actual emissions are well below their permitted levels and should be below levels of concern for the new NAAQS. For NO_2, a larger number of facilities may be affected because more facilities emit NO_2 in large quantities. At this time, our best estimates are that up to 100 facilities will likely need to be evaluated. The impact of the other NAAQS changes is uncertain and much harder to generically predict.

EPA has recognized that some sources, such as emergency generators, will have issues meeting the 1-hour NO_2 standard and has issued the following guidance:

> EPA recommends that compliance demonstrations for the 1-hour NO2 NAAQS address emission scenarios that can logically be assumed to be relatively continuous or which occur frequently enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations based on existing modeling guidelines, which provide sufficient discretion for reviewing authorities to not include intermittent emissions from emergency generators or startup/shutdown operations from compliance demonstrations for the 1-hour NO2 standard under appropriate circumstances.

It is our understanding that EPA is also evaluating the need to issue similar guidance for modeling intermittent sources against the 1-hour SO_2 standard.

Prudent facility operators have already looked at these new standards, as many of them have been in place at the federal level for several years. Some facilities, such as electric generating units, will be making reductions in criteria pollutants due to other applicable federal regulations.

7. **Will the NAAQS Rulemaking create any new permitting obstacles for existing or new permittees?**

This rulemaking adopts EPA's NAAQS, which already are requirements that have to be met under federal law. Consequently, this rulemaking is not expected to create new permitting obstacles. Review of proposed emissions against the NAAQS for criteria pollutants has been a core part of the air permitting process in Arkansas for decades. The lowering of these standards will trigger the need for more facilities to evaluate whether or not they will potentially violate the new standard, and a subset of those facilities will be required to address emissions of concern.

8. **Will this rulemaking or implementing policies have additional costs to permittees?**

As one would expect, costs are likely to increase with the adoption and implementation of a lower standard. The cost impact, in a general sense, cannot be determined at this time. Rather, the impact of the revised NAAQS, if any, will vary widely among facilities and emission scenarios.

9. **Will this rulemaking delay issuance of permits?**

There should be little effect on permitting timelines due to this rulemaking, as prudent facility operators should be performing an analysis of their emissions and determining the need for any changes necessary to their operations before they submit a permit application or triggering modification. ADEQ's review of several more expanded permit applications a year should not be a significant workload issue.

As with all permit applications reviewed by ADEQ, the better the application, the faster the permit gets issued.

10. **Will ADEQ use computer predictions to estimate permittees ambient impacts for comparison against these standards?**

Applicants are not required to use predictive computer modeling to satisfy their regulatory obligation to demonstrate that their emissions will be compliant with the NAAQS; however, history has shown that this is the method of choice by applicants and/or their consultants. In those areas where ADEQ identifies the need to perform a confirmatory analysis, we do anticipate using computer modeling. When computer modeling is performed, Regulation 19 requires such modeling to be performed using EPA-approved models, and using averaging times commensurate with averaging times stated in the NAAQS.

Additionally, computer models are run using input parameters, many of which are based on how the applicant has described its operation of emission-generating units at its facility in the permit application. For instance, if a facility states in its application that a certain piece of equipment will only be run for 1,000 hours per year, this limited operating timeframe will be used to predict that facility's emissions.

11. If so, will the analysis occur for all permitting actions? Or only under certain circumstances?

Once these new NAAQS become state requirements, review of new permit applications as well as modifications or renewals of existing permits may trigger the need for a facility to reduce emissions. ADEQ has worked, and will continue to work , with permit applicants on the best way to schedule this work, i.e. through the current application review process or through a compliance schedule in the issued permit. ADEQ permit staff will continue to utilize an emission screening modeling approach for applications to validate an applicant's demonstration of no violation of the NAAQS. Typically this is done only for major sources.

12. Will these computer analyses be applied equally to all permittees, big and small?

See response to Question #11. Typically small sources (minor sources) do not warrant the analysis due to the relatively small emission levels.

13. Will non-industrial sources of air pollution, such as transportation/trucking, agriculture, forestry, dust from public and private roads also be included in these computer predictions to determine their impact on ambient air quality?

The contribution of pollutants from non-industrial sources of pollution on ambient air quality is factored into the overall evaluation of air quality as part of the State Implementation Plan (SIP) preparation and planning process. From a permitting standpoint, these non-industrial sources' contribution of pollutants to ambient conditions is evaluated as part of the background air quality. When evaluating proposed emissions or emission increases, background is used in the analysis to determine how much more of a particular pollutant can be emitted without causing a NAAQS violation. Additionally, any "non-industrial" sources that directly relate to an industrial facility (such as on-site haul-roads) are required to be evaluated as part of the Title V permitting process.

14. If these computer simulations predict exceedance of the ambient standards, will ADEQ rely on the results of these simulations to require equipment shutdowns, curtailment of plant operations, changes in fuels, and/or investments in air pollution control equipment from permittees? When and under what circumstances?

In circumstances where technically adequate modeling indicates that proposed emissions from a source would cause a violation of a NAAQS or interfere with attainment or maintenance of a NAAQS, ADEQ would work with the permittee to request information or further analysis that would address the issue. This may include refined modeling, reduced potential to emit rates or any number of plant modifications. This is done as a matter of practice now and will continue into the future. There are numerous options that a permittee can implement that may reduce a source's ability to maintain compliance with a NAAQS without unduly curtailing industrial operations. ADEQ will maintain a flexible approach when situations of this nature arise.

15. Under what circumstances does Federal regulation require ADEQ to evaluate the ambient impact of individual permittees?

Any permit issued by ADEQ must comply with all applicable Federal regulations, including the NAAQS. The Arkansas SIP (which is federally enforceable) mandates that *"No permit shall be granted or modified under this chapter unless the owner/operator demonstrates to the reasonable satisfaction of the Department that the stationary source will be constructed or modified to operate without resulting in a violation of applicable portions of this regulation or without interfering with the attainment or maintenance of a notional ambient air quality standard."* [APC&EC Reg. 19.402] *See also* 42 U.S.C. 7410(a)(2).

16. Under Federal regulation, how small does an emissions change have to be to not require an ambient impact analysis?

Federal regulations do not establish a quantitative emission threshold that requires (or does not require) an ambient air impact analysis. The "threshold" established within the federally enforceable SIP relates to facilities that are subject to permitting (see above).

17. Under Arkansas regulation or ADEQ policy, how small does an emissions change have to be to not require an ambient impact analysis?

Like EPA, Arkansas does not have a minimum threshold value for emission increases that require a more detailed analysis. As is our current practice, prior permits will be evaluated in order to determine how much "breathing room" exists between a facility's current permitted emissions levels and background. The closer a facility is to causing a violation of the NAAQS, the more likely it is that the need for a review will be triggered.

18. And finally, is Arkansas regulation or policy in these areas more stringent, less stringent, or equal to Federal regulation?

Protection of the NAAQS is an overarching responsibility of all States under the Clean Air Act. The method that a state selects to carry out this responsibility is, to some degree, an option of the State and what is included in the State Implementation Plan and ultimately

approved by EPA. If a SIP fails to meet federal requirements, EPA can issue a SIP call and put a FIP in place to regulate air emissions until the state addresses EPA's concern. Once a SIP has been approved by EPA, it becomes "federal law" within the state. Thus, Arkansas regulation in these areas is consistent with federal law.

	NAAQS				SAAQS			
Pollutant	**Primary**	**Averaging Time**	**Secondary**	**Averaging Time**	**Primary**	**Averaging Time**	**Secondary**	**Averaging Time**
Ozone	0.075 ppm	8-hour rolling Annual 4th highest daily, Averaged over 3 years	0.075 ppm	8-hour Annual 4th highest daily, Averaged over 3 years	0.08 ppm	8-hour Annual 4th highest daily, Averaged over 3 years	0.08 ppm	8-hour Annual 4th highest daily, Averaged over 3 years
	73 FR 16436, Mar 27, 2008				62 FR 38856, Jul 18, 1997			
$PM_{2.5}$	15 $\mu g/m^3$	Annual Averaged over 3 years	15 $\mu g/m^3$	Annual Averaged over 3 years	15 $\mu g/m^3$	Annual Averaged over 3 years	15 $\mu g/m^3$	Annual Averaged over 3 years
	35 $\mu g/m^3$	24-hour 98th percentile Averaged over 3 years	35 $\mu g/m^3$	24-hour 98th percentile Averaged over 3 years	65 $\mu g/m^3$	24-hour 98th percentile, averaged over 3 years	65 $\mu g/m^3$	24-hour 98th percentile, averaged over 3 years
	71 FR 61144, Oct 17, 2006				62 FR 38652, Jul 18, 1997			
PM_{10}	150 $\mu g/m^3$	24-hour	150 $\mu g/m^3$	24-hour Not to be exceeded more than once per year on average over a 3-year period	150 $\mu g/m^3$	24-hour Not to be exceeded more than once per year on average over a 3-year period	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over a 3-year period
					50 $\mu g/m^3$	Annual Averaged over 3 years	50 $\mu g/m^3$	Annual Averaged over 3 years
	71 FR 61144, Oct 17, 2006				62 FR 38652, Jul 18, 1997			
NO_2	100 ppb	1-hour 98th percentile, Averaged over 3 years	NA	NA	53 ppb	Annual Average	53 ppb	Annual Average
	53 ppb	Annual	53 ppb	Annual				
	75 FR 6474, Feb 9, 2010 61 FR 52852, Oct 8, 1996 (Primary Annual)				36 FR 8186, Apr 30, 1971 (Primary and Secondary Established) 50 FR 25532, Jun 19, 1985 (Primary and Seondary Retained) 61 FR 52852, Oct 8, 1996 (Primary and Secondary Retained)			
SO_2	75 ppb	1-hour 99th percentile, averaged over 3 years	0.5 ppm	3-hour Not to be exceeded more than once per year	0.14 ppm	24-hour Not to be exceeded more than once per year	0.5 ppm	3-hour Not to be exceeded more than once per year
	75 FR 35520, Jun 22, 2010 38 FR 25678, Sep 14, 1973				36 FR 8186, Apr 30, 1971 (Primary and Secondary) 38 FR 25678, Sept 14, 1973 (Secondary Retained) 61 FR 25566, May 22, 1996 (Primary Retained)			
CO	9 ppm	8-hour Not to be exceeded more than once per year	NA	NA	9 ppm	8-hour, Not to be exceeded more than once per year	NA	NA
	35 ppm	1-hour Not to be exceeded more than once per year	NA	NA	35 ppm	1-hour, Not to be exceeded more than once per year	NA	NA
	76 FR 54294, Aug 31, 2011				36 FR 8186 , Apr 30, 1971 (Primary and Secondary Established) 50 FR 37484, Sept 13, 1985 (Primary Retained, Secondary Revoked) 59 FR 38906 , Aug 1, 1994 (Primary Retained)			
Pb	0.15 $\mu g/m^3$	3 months rolling Not to be exceeded	0.15 $\mu g/m^3$	3 months rolling Not to be exceeded	1.5 $\mu g/m^3$	Calendar Quarter Not to be exceeded	1.5 $\mu g/m^3$	Calendar Quarter Not to be exceeded
	73 FR 66964, Nov 12, 2008				43 FR 46246, Oct 5, 1978			

Exhibit E
Comments of Steel Coalition of Arkansas

Proper Implementation of the National Ambient Air Quality Standards Through the State Implementation Plan Process

Congress designed the Clean Air Act (CAA or Act) with two principal mechanisms for assuring the quality of air across our nation: first, a system of "cooperative federalism" in which states develop and implement plans to meet health and welfare-based air quality standards established by the Environmental Protection Agency (EPA), and second, a series of programs providing minimum federal requirements for large facilities and hazardous pollutants. The Arkansas Pollution Control & Ecology Commission (APC&EC), in turn, implements the CAA and the Arkansas Water & Air Pollution Control Act by regulation, including Regulation 18 (the "Arkansas Air Pollution Control Code"), Regulation 19 (the "Regulations of the Arkansas Plan of Implementation for Air Pollution Control") and Regulation 26 ("Regulations of the Arkansas Operating Air Permit Program"). Based on the structure, language, history, and interpretation of the CAA and relevant EPA and APC&EC regulations the following are clear:

- National Ambient Air Quality Standards (NAAQS) are meant to be implemented by states through state implementation plans (SIPs), based on the consideration of a broad range of factors and tools identified by Congress and EPA.

- NAAQS are not directly applicable to individual facilities. They are neither "emissions standards or limitations" generally, nor are they "applicable requirements" specifically under the Title V program.

- Routine NAAQS modeling at the facility level is neither required by federal or state law nor sensible. Modeling is required for certain large new facilities and modifications, and any broader requirement would exceed federal standards.

- Arkansas can best achieve and maintain the most recent EPA NAAQS through the SIP development process, not *per se* application of the NAAQS to individual facilities.

Arkansans deserve the highest air quality, and the APC&EC should ensure that the burdens of achieving and maintaining that quality are fairly distributed and that all relevant factors and tools have been adequately considered through the SIP development process.

I. The Role of NAAQS in the CAA

The Clean Air Act of 1970 (1970 CAA)[1] established the modern framework for air pollution control in the United States. The centerpiece of the law was the creation of a system whereby EPA establishes the NAAQS, which serve as nationwide benchmarks for clean air, and states develop SIPs, which must be reviewed and approved by EPA, in order to achieve and maintain the NAAQS.[2] Under this framework, EPA is responsible for setting national air quality goals, while states have "the primary responsibility for assuring air quality" within their borders through their SIPs.[3]

Under CAA Section 109, EPA is charged with promulgating "primary" and "secondary" NAAQS for pollutants which, in the judgment of the EPA Administrator, "cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare."[4] The primary standards are set at levels requisite to protect public health "with an adequate margin of safety," while the secondary standards are set at levels protective of public welfare, which includes considerations such as visibility and effects on soils, crops, wildlife and buildings.[5] The NAAQS are required to undergo scientific review every five years, and the Administrator must revise the existing standards or issue new ones as appropriate based on that review.[6]

The primary NAAQS are set at inherently conservative levels. They must protect the health of any "sensitive group" in the population, such as persons with preexisting respiratory illness, children, and the elderly.[7] Further, the statutory requirement that the primary standards include an "adequate margin of safety" is intended to address uncertainties associated with inconclusive scientific and technical information available at the time of standard setting, and to provide a reasonable degree of protection against hazards that research has not yet identified.[8]

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[1] Pub. L. No. 91-604 (1970).

[2] *See* 42 U.S.C. §§ 7409-7410.

[3] *Id.* § 7407.

[4] *Id.* §§ 7408, 7409. Pollutants that meet these requirements (*i.e.* for which EPA has set a NAAQS) are often referred to as "criteria pollutants."

[5] *Id.* §§ 7409(b), 7602(h).

[6] *Id.* § 7409(d).

[7] *See, e.g.*, Primary National Ambient Air Quality Standards for Nitrogen Dioxide; Final Rule, 75 Fed. Reg. 6474, 6475, 6480 (Feb. 9, 2010).

[8] *Id.* at 6475-76 (citing *Lead Indus. Ass'n v. EPA*, 647 F.2d 1130, 1154 (D.C. Cir. 1980); *Am. Petroleum Inst. v. Costle*, 665 F.2d 1176, 1186 (D.C. Cir. 1981)).

EPA has set primary NAAQS for six pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$) and sulfur dioxide (SO_2). It has set secondary NAAQS for SO_2 and NO_2.[9] New or revised NAAQS are implemented in two basic steps. First, EPA designates areas as "attainment" (meeting the standard), "nonattainment" (not meeting the standard), or "unclassifiable" (cannot be determined based on available information).[10] Second, each state must adopt and submit SIPs to EPA which provide for the implementation, achievement, and maintenance of the NAAQS at issue within the state.[11]

In addition to the NAAQS/SIP process, two other major programs were added to the CAA in 1970. Section 111 established the New Source Performance Standards (NSPS) program, under which new sources of pollution in designated industrial categories are assigned technology-based emissions standards developed by EPA.[12] Section 112 established the national emission standards for hazardous air pollutants (NESHAPs), under which EPA develops emission limits applicable to stationary sources for pollutants that cause irreversible or incapacitating illness at low concentrations.[13] Finally, these two source-focused programs were augmented in 1977 by the addition of the Prevention of Significant Deterioration (PSD) and nonattainment new source review (NNSR) programs.[14] These programs also apply directly to sources, depending on the pollutants at issue and their attainment status at the source location, through case-by-case application of best available technology or lowest achievable emission rates.

Thus, overall, the CAA contains a four-pronged approach to the protection of air quality. Three of those prongs—the NSPS, NESHAP, and PSD/NNSR programs—regulate *sources* of air pollution.[15] The NAAQS/SIP prong, in contrast, creates obligations for *states*, which are charged with implementing control measures designed to attain the NAAQS, as discussed in more detail below.

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[9] *See* 40 C.F.R. Part 50 (National Primary & Secondary Ambient Air Quality Standards).

[10] 42 U.S.C. § 7407(d)(1). Unclassifiable areas are effectively treated as being in attainment in most instances.

[11] *Id.* §§ 7410(a)(2) (required elements of infrastructure SIPs), 7502(c) (required elements of nonattainment SIPs).

[12] *See* 42 U.S.C. § 7411.

[13] *See id.* § 7412.

[14] Pub. L. No. 95-95 (1977); CAA Subchapter I, Parts C & D.

[15] The Title V operating permit program, discussed further below, also applies to sources but does not impose new substantive requirements on such sources. Several other programs (*e.g.*, the acid rain and stratospheric ozone programs) are not relevant to this paper.

II. States Are Responsible for Implementing NAAQS Through SIPs

Once EPA establishes a new or revised NAAQS, the SIP development process is set in motion in each state. The legislative history of the 1970 CAA demonstrates the importance that Congress ascribed to the SIP development process:

> The establishment alone of ambient air quality standards has little effect on air quality. Standards are only the reference point for the analysis of the factors contributing to air pollution and the imposition of control strategy and tactics. This program is an implementation plan.... [T]he implementation plan is the principal component of control efforts for pollution agents for which national standards are established.... The Committee expects that appropriate Federal, State, and local officials, citizens and affected industry groups will consider the development of the implementation plan the central element of this aspect of the legislation.[16]

The CAA prescribes an implementation timeline for the attainment of new or revised NAAQS of up to approximately five years, total. As an initial matter, EPA has two years under Section 107 to make its designations (attainment, nonattainment, or unclassifiable) for the areas within each of the states.[17] The designations are based on recommendations by each state's governor for areas within that state; if EPA disagrees with a recommendation, it is required to notify the state of any intended modifications prior to EPA's promulgation of the final designation.[18]

EPA makes attainment and nonattainment decisions on a NAAQS-by-NAAQS basis using a combination of regulatory criteria and guidance.[19] A measured or modeled exceedance of a NAAQS at any given location, such as an individual facility, does *not* equate with "nonattainment." Rather, EPA typically

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[16] S. Rep. No. 91-1196, at 10-11 (1970).

[17] 42 U.S.C. § 7407(d)(1)(B)(i). The deadline may be extended for up to one additional year if the Administrator has insufficient information to promulgate the designations. *Id.*

[18] *Id.* §§ 7607(d)(1)(A) & (B)(ii) Areas of the country currently designated as nonattainment are listed at www.epa.gov/airquality/greenbook/astate.html. Arkansas has only one county, Crittenden, which is in marginal nonattainment for the 8-hour ozone standard. *Id.* That county did not actually exceed the NAAQS; rather, EPA believed it was contributing to an exceedance in neighboring Shelby County, Tennessee, due to meteorological conditions and ozone precursor emissions from mobile sources and small ("area") sources. www.epa.gov/ozonedesignations/2008standards/documents/R46_Memphis_TSD_Final.pdf.

[19] Because NAAQS are not emissions standards, limitations, or applicable requirements, they are not "violated" but rather "exceeded." *See, e.g.*, 40 C.F.R. § 50.1(l) (definition of "exceedance" with respect to NAAQS).

looks at *average* values over a multi-year period at an EPA-compliant monitoring location to determine compliance with annual NAAQS standards, and it typically excludes a certain number of high data points when determining compliance with short-term NAAQS, such as 1-, 8-, and 24-hour standards.[20] This approach makes sense given the conservative nature of the NAAQS themselves, as discussed above.

Next, within three years after the promulgation of a new or revised NAAQS, states must adopt and submit what is generally referred to as an "infrastructure SIP," which shows they have the basic air quality management program components in place to implement the specific NAAQS at issue—including ambient air quality monitoring and data systems, programs for enforcement of control measures, and adequate authority and resources to implement the plan.[21] EPA reviews the submitted SIP and proposes to approve or disapprove of all or part of it based on whether the minimal requirements are met.[22] Upon approval, the provisions in the SIP become federally enforceable.[23] If the SIP is disapproved, EPA must develop a federal implementation plan (FIP) to implement the NAAQS within two years, unless the state corrects the deficiency.[24]

Finally, within 18 months to three years after designations are made, states with nonattainment areas must submit SIPs outlining the specific strategies and emissions control measures that will be employed to attain the relevant NAAQS by a specified deadline no later than five years after the nonattainment designation.[25] Nonattainment SIPs must include several specific program requirements aimed at tracking and reducing the emissions of the nonattainment pollutant.[26]

Three important conclusions flow from the structure that Congress selected. First, Congress did not envision a "one-size-fits-all" strategy for attaining the NAAQS. Instead, it recognized that the strategies for attaining and maintaining the NAAQS would differ from state to state and for the various areas within the states. Second, the process of coming into attainment with

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[20] *See, e.g.*, 40 C.F.R. Part 50, Appendices H, I, K, N, & P (discussing criteria for nonattainment determinations). EPA can also designate an area in nonattainment regardless of the results of monitoring if the area "contributes" to nonattainment in another area. 42 U.S.C. § 7407(d)(1)(A)(i).

[21] 42 U.S.C. § 7410(a)(2).

[22] *Id.* § 7410(k).

[23] *See id.* § 7413(a)(1), (b)(1), (c)(1), (d)(1)(A).

[24] *Id.* § 7410(c).

[25] *Id.* § 7502.

[26] *Id.* § 7502(c).

the NAAQS, or providing for continued maintenance of the NAAQS, was not designed to occur instantly, but over a period of years. Congress did not intend or expect that emission reductions aimed at achieving the NAAQS would occur until this process played out. Finally, both Congress (in the CAA) and EPA (in its implementing regulations) provide for public notice and comment opportunities at numerous stages throughout the SIP development process.[27] This evidences a clear intent to allow for ample public input into the strategies used to achieve the NAAQS in each state.

EPA has emphasized that states should consider a wide range of options and their potential benefits while developing their SIPs. The development process is not intended to focus solely on large stationary sources, as those sources are already covered by the NSPS, NESHAP, and PSD/NNSR programs discussed above. Instead, relevant "control strategies" apply to all types of sources, stationary and mobile, and include but are not limited to:

- Economic incentive or disincentive programs;
- Scheduling, relocation, and closure programs;
- Mobile source inspection and maintenance programs;
- Fuel or fuel additive programs for mobile sources; and
- Emissions limitations on stationary sources.[28]

EPA furthermore stipulates that nothing in its regulations should be construed, among other things, "[t]o encourage a State to adopt any particular control strategy without taking into consideration the cost-effectiveness of such control strategy in relation to that of alternative control strategies," "[t]o encourage a State to prepare, adopt or submit a plan without taking into consideration the social and economic impact of the control strategy set forth in such plan," or "[t]o encourage a State to adopt a control strategy uniformly

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[27] *See, e.g.*, *id.* § 7409(a)(1)(B) (requiring EPA's promulgation of NAAQS to occur "after a reasonable time for interested persons to submit written comments thereon"); *id.* § 7410(a)(1) (requiring states' infrastructure SIP submittals to EPA to occur "after reasonable notice and public hearing"); *id.* § 7410(a)(2) (requiring states' adoption of infrastructure SIPs to occur "after reasonable notice and public hearing"); *id.* § 7502(b) (same for nonattainment SIPs); *id.* § 7410(l) (requiring each SIP revision to be adopted by states "after reasonable notice and public hearing"); 40 C.F.R. § 51.102 (requiring states to provide notice, opportunity to submit written comments, and opportunity for public hearing prior to adoption and submission to EPA of enumerated SIP materials); *see also* S. Rep. No. 91-1196, at 11 (1970) ("Any implementation plan could be developed by a region only after participation by the public. Public participation can only be meaningful if there is reasonable notice and full disclosure of information prior to public hearings.").

[28] 40 C.F.R. § 51.100(n); *see also* 42 U.S.C. § 7410(a)(2)(A), (F).

applicable throughout a region unless there is no satisfactory alternative way of providing for attainment and maintenance of a national standard throughout such region."[29]

III. EPA Does Not Require NAAQS Implementation at the Facility Level

While states are obligated to implement the NAAQS through SIP development in accordance with the multi-step process described above, the corollary is equally true: the NAAQS themselves do *not* impose any obligation upon individual sources of air pollution with respect to their emissions. Doing so in Arkansas would significantly exceed federal requirements, to the detriment of the SIP development process envisioned by Congress.

A. NAAQS Are Not "Emissions Standards or Limitations"

If Congress had intended to make the NAAQS directly applicable to sources, it could have done so using language similar to the explicit prohibition language it employed in the Section 111 NSPS program or the Section 112 NESHAP program.[30] Instead, it chose to make NAAQS attainment a *state* obligation to be addressed through the development of a SIP. As EPA has explained:

> *The NAAQS should not be confused with emission standards.* The latter standards apply to individual sources of air pollution or categories of industrial sources. The NAAQS, on the other hand, serve as benchmarks from which each state derives the total emission reductions necessary to be accomplished in a given area. The requisite total emission reductions are translated into specific emission limitations that sources must meet on a continuous basis. Consequently, EPA does not enforce the NAAQS *per se.* Instead, EPA enforces emission standards designed to contribute to achievement and maintenance of the NAAQS.[31]

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[29] 40 C.F.R. § 51.101. Arkansas law echoes these directives in Ark. Code Ann. § 8-4-312, which requires that in the discharge of their duties that the APC&EC and ADEQ consider a list of factors including economic and industrial development of the state, the social and economic value of emission sources, economic feasibility of pollution control, effect of controls on industrial efficiency, etc.

[30] Pub. L. No. 91-604, §§ 111(e) ("After the effective date of standards of performance promulgated under this section, it shall be unlawful for any owner or operator of any new source to operate such source in violation of any standard of performance applicable to such source"), 112(c) ("After the effective date of any emission standard under this section ... no air pollutant to which such standard applies may be emitted from any stationary source in violation of such standard...").

[31] Clean Air Act Compliance/Enforcement Guidance Manual (U.S. EPA, 1986), *available at* http://envinfo.com/caain/enforcement/caad131.html (emphasis added).

By the same token, "the overwhelming weight of case law" holds that the NAAQS themselves are not "emission standards or limitations" that are enforceable by citizen suit under CAA Section 304.[32] As one court noted, "[a] cornerstone of this Court's interpretation of the citizen suit provision is the principle that an air quality standard established under the Clean Air Act is not an 'emission standard or limitation'."[33] Instead, in order to maintain a citizen suit for violation of an emission standard or limitation (either by a regulated source or a governmental agency), a plaintiff must allege a violation of a specific provision in the SIP, and describe with some particularity the respects in which compliance with the provision is deficient, rather than alleging a violation of the NAAQS itself.[34]

B. NAAQS Are Not "Applicable Requirements"

EPA re-examined the issue of whether NAAQS are directly applicable to sources when it developed the Part 70 regulations to implement the Title V operating permitting program in accordance with the Clean Air Act Amendments of 1990.[35] Title V permits must include all pollution control obligations under the CAA that are applicable to a source under a SIP (or FIP), the acid rain program, the air toxics program, or other provisions of the Act and must assure compliance with each applicable standard, regulation or requirement.[36] EPA perceived a major benefit of the Title V permitting program to be the codification of all CAA requirements that apply to a source into a single document, thus enhancing compliance with the Act.[37]

EPA proposed to require states to issue Title V permits that include all "applicable requirements" of the Act or the state's SIP, and EPA envisioned objecting to permits that failed to assure compliance with the applicable requirements.[38] EPA interpreted "applicable requirements" to include "limitations, standards, and/or requirements directly applicable to sources."[39]

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[32] *Cate v. Transcontinental Gas Pipe Line Corp.*, 904 F. Supp. 526, 530-31 (W.D. Va. 1995) (citing *Coal. Against Columbus Ctr. v. New York*, 967 F.2d 764, 769 (2d Cir. 1992); *Atl. Terminal Urban Renewal Area Coal. v. N.Y. City Dep't of Envtl. Prot.*, 697 F. Supp. 157, 161 (S.D.N.Y. 1988); *Citizens for a Better Env't v. Deukmejian*, 731 F. Supp. 1448 (N.D. Cal. 1990), *modified*, 746 F. Supp. 976 (N.D. Cal. 1990); *League to Save Lake Tahoe, Inc. v. Trounday*, 427 F. Supp. 1350 (D. Nev. 1977), *aff'd* 598 F.2d 1164, 1173 (9th Cir. 1979)).

[33] *Coal. Against Columbus Ctr.*, 967 F.2d at 769.

[34] *E.g.*, *Wilder v. Thomas*, 854 F.2d 605, 610 (2d Cir. 1981); *Cate*, 904 F. Supp. at 531.

[35] *See* Pub. L. No. 101-549 (1990), CAA Subchapter V, 42 U.S.C. §§ 7601a-7601f.

[36] *See* 42 U.S.C. §§ 7661a(b)(5)(A), 7661c(a), 7661(b)(1).

[37] Operating Permit Program; Proposed Rule; Notice of Opportunity for Public Hearing, 56 Fed. Reg. 21,712, 21,713 (May 10, 1991).

[38] *Id.* at 21,738.

[39] *Id.*

NAAQS, EPA reasoned, do not fall into this category because they impose planning obligations on *states*, not on individual sources. Thus, EPA would not require Title V permits to assure attainment and maintenance of the NAAQS.[40] Nor would it object to a permit on the grounds that it does not assure attainment of the NAAQS: "It is the State's responsibility to decide what limits the SIP should impose on the various sources. ... EPA's review of individual permits will not be the appropriate forum for reviewing the adequacy of such planning decisions."[41]

EPA adopted this approach in the final Part 70 rules—for all but "temporary sources," whose permits are expressly required by CAA Section 504(e) to assure compliance with the NAAQS.[42] Some commenters argued that NAAQS should not be excluded from the "applicable requirements" in Title V permits for permanent facilities, because it would be "anomalous" for Congress to impose more comprehensive permit requirements for temporary sources than for permanent ones.[43] EPA rejected those comments. It reasoned that permits for temporary sources, unlike for permanent ones, must include the ambient standards as applicable requirements because states were unlikely to have performed attainment demonstrations on temporary sources as part of SIP development.[44] But to require ambient demonstrations with respect to the NAAQS (*i.e.*, air quality modeling) for all sources, it reasoned, would be overly burdensome and of little overall value:

> To require such demonstration ... on every permitted source would be unduly burdensome, and in the case of area-[w]ide pollutants like ozone where a single source's contribution to any NAAQS violation is extremely small, performing this demonstration would be meaningless. Under the Act, NAAQS implementation is a requirement imposed on States in the SIP; *it is not imposed directly on a source.*[45]

Thus, EPA's Part 70 rules define "applicable requirement" as including, *inter alia*, "[a]ny national ambient air quality standard or increment or visibility requirement under part C of title I of the Act, *but only as it would apply to*

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[40] *Id.*

[41] *Id.*

[42] Operating Permit Program; Final Rule, 57 Fed. Reg. 32,250, 32,276 (July 21, 1992); 42 U.S.C. § 7661c(e).

[43] 57 Fed. Reg. at 32,276. In any event, this logic is completely inconsistent with normal principles of statutory interpretation. Congress' decision to require NAAQS compliance at temporary sources is evidence that no such requirement was intended for other sources.

[44] *Id.*

[45] *Id.* (emphasis added).

temporary sources permitted pursuant to section 504(e) of the Act."[46] In sum, just as the NAAQS are not enforceable "emission standards or limitations" under the CAA, they are also not "applicable requirements" to permanent facilities under the CAA Title V permitting program, because the NAAQS are implemented at the state level through SIPs, not at the individual facility level.

Time and again, EPA has affirmed this principle in response to petitions to object to proposed Title V permits. For example, one petitioner argued that a Title V permit's failure to include enforceable heat input limits meant it would not ensure compliance with the NAAQS for SO_2. The Administrator refused to object to the permit on this ground, observing:

> [T]he NAAQS themselves are not 'applicable requirements,' rather, the measures contained in each state's EPA-approved SIP to achieve the NAAQS are applicable requirements. ... As EPA has explained in prior orders, a NAAQS by itself does not impose any obligation on sources. ... It is the EPA-approved measures contained in the Kentucky SIP that assure the attainment and maintenance of the NAAQS and that constitute the applicable requirements for purposes of Title V.[47]

Similarly, the Administrator refused to object to a Title V permit for a paper-waste recycling facility on the grounds that it did not assure compliance with the new NAAQS for $PM_{2.5}$, rejecting the petitioner's argument that the state must implement the $PM_{2.5}$ NAAQS with respect to the facility at issue for environmental justice reasons:

> EPA finds DEP's plan to act in accordance with federal requirements regarding $PM_{2.5}$ acceptable. EPA establishes [NAAQS] for certain pollutants, pursuant to section 109 of the CAA, 42 U.S.C. § 7409, and States are required to attain those standards. The SIP is the means by which States comply with CAA requirements to attain the NAAQS, pursuant to section 110(a) of the CAA... The national designations for the $PM_{2.5}$ NAAQS were published in the Federal Register on January 5, 2005. ... Under the Clean Air Act, New Jersey is required to submit its SIP for any area designated by EPA as non-attainment showing how it will attain the new $PM_{2.5}$ standard no later than three years from the effective date of the non-attainment designation (*i.e.* by April 5, 2008).

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[46] 40 C.F.R. § 70.2 (emphasis added); *see also* CAA section 504(e), 42 U.S.C. § 7661c(e).

[47] *In re E. Ky. Power Coop.*, Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit (Adm'r Dec. 14, 2009).

> The new $PM_{2.5}$ standard does not by itself impose any obligation on sources. *A source is not obligated to reduce emissions as a result of the standard until the State identifies a specific emission reduction measure needed for attainment (and applicable to the source), and that measure is incorporated into a SIP approved by EPA.*[48]

This opinion is particularly instructive because it demonstrates that EPA does not expect or anticipate that facilities should demonstrate NAAQS compliance or implement emissions reductions measures upon promulgation of a new or revised NAAQS. Rather, *facilities are not subjected to new obligations until the SIP-development process has played out in accordance with the CAA requirements.*

IV. Except for PSD Permits, the CAA Does Not Require Modeling of Ambient Air Quality Impacts to Ensure Attainment and Maintenance of the NAAQS

EPA has been very specific about what types of permits require modeling to determine potential impacts on attainment and maintenance of NAAQS: PSD permits require modeling, but no such requirement exists for other permits, including Title V and minor source permits.

A. Modeling Is Required for PSD Permits

In 1972, one court concluded that EPA, in exercising its SIP approval authority, had a duty to prevent the degradation of existing clean air in attainment areas.[49] In response to the court's preliminary injunction, EPA developed the first PSD regulations.[50] Not long thereafter, Congress formally adopted detailed "Prevention of Significant Deterioration of Air Quality" permitting requirements into the statute as part of the CAA Amendments of 1977.[51]

The PSD preconstruction permitting program is intended to ensure that large new facilities, or major modifications to existing large facilities, do not cause air quality to deteriorate beyond prescribed levels in areas that are in

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[48] *In re Marcal Paper Mills, Inc.*, Order Granting in Part & Denying in Part Petition for Objection to Permit (Adm'r Nov. 30, 2006) (emphasis added).

[49] *Sierra Club v. Ruckelshaus*, 344 F. Supp. 253, 256 (D.D.C. 1972), *aff'd per curiam*, 4 E.R.C. 1815 (D.C. Cir. 1972), *aff'd per curiam by an equally divided Court, sub nom. Fri v. Sierra Club*, 412 U.S. 541 (1973).

[50] *See* Approval and Promulgation of Implementation Plans; Prevention of Significant Air Quality Deterioration, 39 Fed. Reg. 42,510 (Dec. 5, 1974).

[51] Pub. L. No. 95-95 (1977), CAA sections 160-169, 42 U.S.C. §§ 7470-7479.

attainment with the NAAQS.[52] New and modified sources subject to PSD must demonstrate that construction will not cause air quality to degrade beyond specified "increments" above existing baseline concentrations of pollutants in attainment or unclassifiable areas.[53] The PSD "increments" for criteria pollutants represent the maximum allowable increases in pollutant concentrations over baseline levels—*i.e.*, the amount of pollution an area is allowed to increase up to the maximum levels, which are the NAAQS.[54] Permittees must also employ "best available control technology" to minimize air pollution.[55]

An applicant for a PSD permit is required to conduct an air quality modeling analysis of the ambient impacts associated with the construction and operation of the proposed new source or modification.[56] The main purpose of the air quality analysis is to demonstrate that new emissions emitted from the proposed new source or modification, in conjunction with other applicable emissions increases and decreases from existing sources, will not cause or contribute to a violation of any applicable NAAQS or PSD increment.[57] The modeling is generally required to be conducted in accordance with specifications set forth in EPA's *Guideline on Air Quality Models.*[58]

When it developed the first PSD regulations, EPA was confronted with the issue of which sources should be subject to PSD permitting requirements. From the outset, the agency recognized that it was "not possible" to conduct preconstruction review for each and every source.[59] Instead, the agency chose early on to "concentrate the effort on the important large sources," and thus confined the program requirements to certain "major" stationary sources.[60] In describing how large stationary sources would determine their incremental impact, EPA observed:

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[52] *See id.* The 1977 Amendments also established a detailed NNSR program for major sources located in nonattainment areas, but that program does not require modeling. *See* 42 U.S.C. §§ 7501-7509a.

[53] *Id.* § 7473, 7475.

[54] *Id.*

[55] *Id.* § 7475(a)(4).

[56] *Id.* § 7475(a)(3),

[57] *Id.*; 40 C.F.R. §§ 51.166(k), 52.21(k).

[58] *Id.* §§ 51.166(l), 52.21(l); *see also* 40 C.F.R. Part 51, Appendix W ("Guideline on Air Quality Models").

[59] Approval and Promulgation of Implementation Plans; Prevention of Significant Air Quality Deterioration; Proposed Rule, 39 Fed. Reg. 31,000, 31,003 (Aug. 27, 1974).

[60] *Id.*

> It should be noted that the impacts of sources which are not subject to the review procedures are not necessarily reviewed unless a major source proposes to locate in the area. This feature is necessary because the impact of the very large numbers of very small sources could only be assessed by either modeling or air quality measurement. *To model each individual source during an individual pre-construction review would be an extremely laborious task, and the end result would be of questionable accuracy.*[61]

Thus, EPA recognized from the beginning of the PSD program that it was necessary to set some sort of threshold for sources that would be subject to ambient impact assessment. The approach that ultimately prevailed, which Congress adopted in the 1977 CAA Amendments, was to apply the PSD permitting program to "major emitting facilities," which are defined by CAA section 169 as sources in any of 28 categories that have the potential to emit 100 tpy of any pollutant, or any other source with the potential to emit more than 250 tpy of any pollutant.[62] Accordingly, under EPA regulations, PSD requirements apply only to "new major stationary sources" and "major modifications" of existing major stationary sources.[63]

The PSD program represents the considered judgment of Congress and EPA regarding the measures that are necessary to preserve air quality in areas that are already in attainment with the NAAQS. Requiring routine air quality modeling for other types of permitting goes beyond what Congress envisioned and EPA requires in order to prevent air quality degradation in clean air areas.

B. Modeling Is Not Required by EPA for Other Permits

Since before the establishment of the PSD program, the CAA has required states to address minor sources (i.e., sources that are not "major" sources subject to PSD or NNSR permitting) through so-called "Minor NSR" programs in their SIPs.[64] Specifically, Section 110(a)(2)(C) requires each SIP to "include a program to provide for the ... regulation of the modification and construction of any stationary source within the areas covered by the plan as necessary to assure that the national ambient air quality standards are

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[61] *Id.* at 31,005.

[62] 42 U.S.C. § 7479(1).

[63] 40 C.F.R. §§ 51.166(a)(7); 52.21(a)(2).

[64] *See* Clean Air Amendments of 1970, Pub. L. 91-604 at §§ 110(a)(2)(D), 110(a)(4) (requiring procedure for review of location of new source prior to construction or modification to ensure it will not prevent attainment or maintenance of the NAAQS).

achieved."[65] The basic requirements for Minor NSR programs are set forth in EPA regulations.[66]

Despite this longstanding requirement to consider the ambient air impacts of *all* new and modified stationery sources prior to construction, EPA has never interpreted the CAA as requiring air quality modeling for minor sources (meaning non-PSD sources). It is clear from the preamble to the 1978 PSD regulations that, while modeling is required for PSD permitting, EPA presumed that non-PSD sources do *not* require modeling:

> *The rulemaking allows States generally to exempt from air quality reviews those sources with minimal emissions.* Only those sources which would have allowable emissions equal to or greater than [PSD emissions thresholds], or would impact a class I area or an area where the increment is known to be violated, must receive an ambient review.[67]

This presumption remains true today, as recently illustrated by EPA's "Model Rule for Minor NSR Program"[68] which was released in 2012 as part of its "Tribal NSR Implementation Manual."[69] The model rule does not require routine modeling. Rather, it provides that the permitting authority *could* require an air quality impacts analysis from a minor source or modification only if it is "concerned" that the construction of the minor source or modification would cause or contribute to a NAAQS or PSD increment violation.[70]

The point is further echoed in the Title V context. As EPA recognized in its original Part 70 rulemaking to implement the Title V program, requiring modeling demonstrations for every permitted source would be "*unduly burdensome.*"[71] In that rulemaking, EPA also declined to require Title V permit applications to include ambient impact assessment information (*i.e.*, source-specific data necessary for input to air quality impact dispersion models, such

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[65] *Id.* § 7410(a)(2)(C).

[66] *See* 40 C.F.R. § 51.160.

[67] Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Prevention of Significant Air Quality Deterioration, 43 Fed. Reg. 26,380, 26,381 (June 19, 1978) (emphasis added).

[68] EPA, Model Rule for Minor New Source Review Program, *available at* http://www.epa.gov/air/tribal/pdfs/model_rule_for_minor_nsr_program.pdf (hereafter, "Model Minor NSR Rule").

[69] The entire Manual and appendices are available at http://www.epa.gov/air/tribal/tribalnsr.html.

[70] Model Minor NSR Rule at 9.

[71] 57 Fed. Reg. at 32,276 (emphasis added).

as stack parameters and building height).[72] EPA explained that, in addition to the NAAQS not being an applicable requirement, "[a]ir quality modeling is not typically required for individual sources by the Clean Air Act (*i.e., it is normally assumed that no individual source can affect attainment or maintenance of an ambient standard on an area-wide basis*)."[73]

Thus, under the federal CAA regulations, air quality modeling is not required for any type of permitting other than PSD permits. Under EPA's interpretation of the CAA and its regulations, PSD-triggering projects are the threshold at which ambient air quality modeling is presumed necessary, and thus required.

V. Nothing in the APC&EC Regulations Makes NAAQS Directly Applicable to Arkansas Facilities, Except through the PSD Program

The APC&EC regulatory provisions that have been SIP-approved by EPA are identified at 40 C.F.R. § 52.170. These include (but are not limited to) most provisions of Regulation 19 and parts of Regulation 26. Nothing in those SIP-approved provisions or any other APC&EC regulations requires NAAQS to be stated or enforced as permit limits in any state permit or to be modeled as part of the permitting process, except for PSD permits.[74]

A. Regulation 18

Regulation 18 is a state-only regulation; none of its provisions are part of any EPA-approved Arkansas SIP.[75] Thus, from a federal perspective, none of the provisions of Regulation 18 are requisite to satisfy Arkansas' obligation to achieve and maintain the NAAQS. Nothing in Regulation 18 imposes an obligation on ADEQ to evaluate whether a source will cause an exceedance of the NAAQS as part of the permitting process.

Regulation 18.302 provides as follows:

> No permit shall be granted or modified under this chapter unless the owner/operator demonstrates to the reasonable satisfaction of the Department that the stationary source will be constructed or

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[72] *Id.* at 32,273.

[73] *Id.* (emphasis added).

[74] As discuss below, only SIP-approved provisions that are specifically applicable to emissions units at sources subject to Title V permits are "applicable requirements." The mere fact that EPA has approved a state submission as part of the SIP does not automatically make that provision applicable to all sources.

[75] *See* 40 C.F.R. § 52.170.

> modified to operate without resulting in a violation of applicable portions of this regulation and without causing air pollution.

Further, "air pollution" is defined under Regulation 18 as:

> [T]he presence in the outdoor atmosphere of one (1) or more air contaminants in quantities, of characteristics, and of a duration that are materially injurious or can be reasonably expected to become materially injurious to human, plant, or animal life or to property, or that unreasonably interfere with enjoyment of life or use of property throughout the state or throughout the area of the state as shall be affected thereby.[76]

One might contend that, with respect to criteria pollutants, "air pollution" is determined by reference to the NAAQS (such that pollution levels that exceed the NAAQS are deemed to be "air pollution" for the purpose of permit decisions under Regulation 18.302).[77] This interpretation cannot be correct. First, the Regulation 18 definition of "air pollution" is identical to the statutory definition in the Arkansas Water & Air Pollution Control Act;[78] thus, its purpose is to implement the state statute, not the federal Clean Air Act. Second, such an interpretation ignores the fact that Regulation 18 separately defines "conditions of air pollution" as follows:

> "Conditions of air pollution" *as distinguished from "air pollution"* in a given area shall be deemed to exist when the Director finds that the National Ambient Air Quality Standards, as established from time to time by the EPA, have been exceeded in such area, or when the Director finds that extraordinary measures are necessary to prevent them from being exceeded.[79]

The term "condition of air pollution" is used in another Regulation18 definition: "air contamination" means "the presence in the outdoor atmosphere of one (1) or more air contaminants which contribute to a condition of air pollution."[80] Therefore, under Regulation 18, the term "air contamination," not "air pollution," is linked to an exceedance of a NAAQS. Regulation 18 only uses the term "air contamination" in one instance: in Chapter 13. In that chapter, the APC&EC established that ADEQ's authority to address areas "affected by levels of air contamination" (*i.e.* areas where the NAAQS are exceeded) is

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[76] APC&EC Reg. 18, Ch. 2.

[77] *Id.*

[78] Ark. Code Ann. § 8-4-303(5).

[79] APC&EC Reg. 18, Ch. 2 (emphasis added).

[80] *Id.*

limited to those that "constitute a *significant departure* from the [NAAQS]."[81] Thus, Regulation 18 has a wholly distinct set of terms for air quality that exceeds the NAAQS, which is purposefully distinguished from the definition of "air pollution." Interpreting the term "air pollution" as being equivalent to "conditions of air pollution" would vitiate the distinct meaning given to those terms by the APC&EC. Moreover, to the extent Regulation 18 addresses exceedances of the NAAQS, it limits the ADEQ's authority to instances of *significant* departures.

In sum, Regulation 18.302 does not obligate ADEQ to assess a stationary source's emissions against the NAAQS during routine permitting. Furthermore, nothing in Regulation 18 purports to impose modeling requirements on permittees.

B. Regulation 19

In general, Chapter 3 of Regulation 19 delineates the responsibilities of ADEQ and of regulated sources, respectively, in meeting and maintaining the NAAQS. Specifically, Regulation 19.303 provides that regulated sources must do three things to prevent any of the NAAQS from being exceeded: (i) obtain a permit from ADEQ prior to construction of a new source or modification of an existing source of federally regulated air pollutant emissions; (ii) operate equipment in accordance with applicable permit requirements and regulations, and (iii) repair malfunctioning equipment and pollution control equipment as quickly as possible, and if the malfunctioning equipment is causing or contributing to a violation of the NAAQS, cease operating the affected equipment until it is repaired.[82]

Notably, Regulation 19.303 does *not* include a general requirement for all regulated sources to demonstrate in routine permitting that the NAAQS will not be exceeded (much less a demonstration through modeling). The only specific modeling requirement applicable to sources is contained in Regulation 19, Chapter 9, the Arkansas PSD program. Arkansas incorporates by reference the federal PSD regulations in which air quality modeling requirements are limited to the permitting of major stationary sources and major modifications.[83]

Regulation 19.302 sets forth the "precautions" ADEQ is responsible for taking to prevent the NAAQS from being exceeded:

> (A) Ambient air monitoring in any area that can reasonably be expected to be in excess of the NAAQS.

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[81] APC&EC Reg. 18.1301 (emphasis added).

[82] APC&EC Reg. 19.303.

[83] APC&EC Reg. 19.904, incorporating by reference, *inter alia*, 40 C.F.R. § 52.21(k).

(B) Computer modeling of regulated air pollutant emissions for any area that can reasonably be expected to be in excess of the NAAQS, and review of the ambient air impacts of any new or modified source of federally regulated air emission that is the subject of the requirements of this Plan. All computer modeling shall be performed using EPA-approved models, and using averaging times commensurate with averaging times stated in the NAAQS.

This regulation does not obligate ADEQ to ensure that the NAAQS are met at every geographic point for every permit that it issues. The only "computer modeling" required by this provision is for "area[s] that can reasonably be expected to be in excess of the NAAQS." Where there is no such reasonable expectation, the provision does not compel ADEQ to perform modeling. The "review" required for new or modified sources is a separate obligation from the "computer modeling." As with the federal Minor NSR requirements, there is no reason to assume that this review should routinely include modeling.[84]

Nor does Regulation 19.402 (the "Approval Criteria") provide a basis for requiring modeling as a routine requirement for all permits. This provision states:

> No permit shall be granted or modified under this chapter unless the owner/operator demonstrates to the reasonable satisfaction of the Department that the stationary source will be constructed or modified to operate without resulting in a violation of applicable portions of this regulation or without interfering with the attainment or maintenance of a national ambient air quality standard.

First, this provision does not apply to major sources. It is part of Regulation 19, Chapter 4, which is titled "Minor Source Review." It is also SIP-approved to meet the federal Minor NSR requirements.[85] As described above in Section IV.B, above, EPA does not generally require modeling as a part of Minor NSR, and therefore SIP approval of this particular provision could not be construed as an EPA requirement to model.

Regulation 19.402 has existed in some form since before the federal PSD program was enacted—*i.e.*, before the federal regulations divided sources into "major" and "minor" categories such that construction of major sources and

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[84] *See generally* Section IV.B, *supra.*

[85] Approval and Promulgation of Implementation Plans; Arkansas; Regulation 19 and 26; Final Rule, 65 Fed. Reg. 61,103, 61,104 (Oct. 16, 2000).

major modifications required air quality impact analyses, but minor sources did not.[86] Subsequently, Arkansas divided and recodified its regulations such that Chapter 4 prescribed the permitting procedures for *minor sources*, and Chapters 9 and 11 prescribed the permitting requirements for *major sources*.[87] The fact that Arkansas chose to preserve this requirement only in the "Minor Source Review" section evidences the intention that it not apply to major sources. From the standpoint of the federal interpretation and enforceability of Chapter 4, EPA's understanding is that "[t]he provisions of Regulation 19, Chapter 4 *apply only to sources which are not 'major' under [the federal CAA] definition.*"[88]

In addition, Regulation 19.402 is further restricted by its plain language to apply only to permits to "construct" or "modify" a source. It does *not* apply to operating permits or renewals thereof. Moreover, Regulation 19's definition of "modification" is limited to a "physical change in, or change in the method of operation of, a stationary source which increases the emission rate of any federally regulated air pollutant over permitted rates or which results in the emission of a federally regulated air pollutant not previously emitted."[89] In addition to other explicit exceptions, it expressly *excludes* changes which meet the "*de minimis*" criteria set forth in Regulation 19.407(C).[90] Thus, the provision cannot apply to modifications whose associated emissions increases are reasonably expected to be relatively insignificant.[91]

Finally, Regulation 19.502 provides:

> No person shall cause or permit the construction or modification of equipment which would cause or allow the following standards or limitations which are in effect as of the effective date of this regulation, to be exceeded:

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[86] For example, an earlier version of the provision as published in the 1973 Arkansas Air Code applied to all permits, just as the CAA did not distinguish between "major" and "minor" sources for preconstruction review purposes prior to the 1977 Amendments. Ark. Air Pollution Control Code, As Amended (July 30, 1973), Section 3(f) (Section 3 applied to all "permits and registrations").

[87] Regulation 19, Chapter 9 is the PSD program; Chapter 11 provides that sources subject to the Arkansas operating permit program are required to have their permit applications processed in accordance with the procedures of Regulation 26, which it incorporates by reference.

[88] Approval and Promulgation of Implementation Plans; Arkansas; Regulation 19; Proposed Rule, 65 Fed. Reg. 26,792, 26,795-96 (May 9, 2000) (emphasis added).

[89] APC&EC Reg. 19, Ch. 2.

[90] *Id.*

[91] See APC&EC Reg. 19.407(C)

(A) Any National Ambient Air Quality Standard or ambient air increment (as listed in 40 CFR 52.21)....

Thus, like Regulation 19.402, this provision is limited only to permits to "construct" or "modify" and does not apply to routine permitting of sources with *de minimis* emissions, *i.e.*, emissions less than the threshold amounts set forth in Regulation 19.407(C)(2). These are essentially the same as the PSD Significant Emissions Rates (SERs), the threshold levels at which PSD requirements apply to new major sources or existing sources making modifications that result in significant (*i.e.* PSD-level) emission increases.[92] For all intents and purposes, non-PSD permits are excluded from the requirements of Regulation 19.502.

C. *Regulation 26*

Regulation 26 sets forth the requirements of the Arkansas Operating Air Permit Program. Regulation 26.304 requires operating permits to include all "applicable requirements" for all relevant emissions units in the source. The Regulation 26 definition of "applicable requirement" is virtually identical to EPA's definition of that term.[93] It includes, *inter alia*, "*[a]ny national ambient air quality standard* or increment or visibility requirement under part C of Title I of the Act, *but only as it would apply to temporary sources* permitted pursuant to section 504(e) of the Act."[94] Thus, the Arkansas operating permits program, like the federal Title V rules, expressly provides that the NAAQS do *not* impose direct regulatory obligations on any *non-temporary* stationary sources permitted under that program. To construe the NAAQS as "applicable requirements" to such sources would be squarely at odds with the state and federal regulatory definitions of that term, which explicitly exclude the NAAQS from direct application to non-temporary sources. It would also be in direct opposition to EPA's longstanding interpretation that the NAAQS are not "applicable requirements" for such sources.[95]

"Applicable requirements" also include "[a]ny standard[s] or other requirement[s]" provided for in the SIP that implement requirements of the CAA, "*as they apply to emissions units in a part 70 source.*"[96] Put simply, this means "all the requirements in the SIP *which are applicable to a particular*

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[92] *Compare* APC&EC Reg. 19.407(C)(2) *with* 40 C.F.R. § 52.21(b)(23)(i).

[93] The only material difference between the two definitions is that the EPA definition includes "[a]ny standard or other requirement under section 126(a)(1) and (c) of the Act," while the Arkansas definition does not. *Compare* APC&EC Reg. 26, Ch. 2 *with* 40 C.F.R. § 70.2.

[94] APC&EC Reg. 26, Chapter 2 (emphasis added).

[95] *See* Section III.B, *supra*.

[96] APC&EC Reg. 26, Chapter 2 (emphasis added).

source."[97] Thus, all Arkansas SIP provisions are not automatically imposed through the operating permits program as "applicable requirements" on all permit holders. Rather, only those SIP provisions that apply to a particular source are "applicable requirements" to that particular source.[98] SIP requirements that impose obligations on ADEQ, rather than on sources (such as Regulation 19.302), are not "applicable requirements" for *any* source. Any contrary interpretation would result in the absurdity that all SIP provisions would be applicable to all sources, simply because EPA had approved them. There is no support anywhere for that proposition. Moreover, as discussed above, Regulation 19 does not establish NAAQS compliance as a source-specific obligation for any type of source. Thus, NAAQS "compliance" is not an "applicable requirement" under Regulation 26 for any non-temporary sources.

The logical interpretation that flows from the language, organization, and history of Regulations 18, 19 and 26 is that no facilities in Arkansas are subject to NAAQS as emissions standards or limitations or applicable requirements, and no such facilities should routinely require modeling to analyze their effects on NAAQS attainment and maintenance, except where PSD requirements apply. Routine modeling for all permits would be just the type of exercise that EPA described as "unduly burdensome" and potentially "meaningless."[99]

VI. Conclusion

Congress envisioned that states, in the first instance, would determine both the amount of pollution control necessary to achieve and maintain NAAQS and the most appropriate control strategies, in light of the costs and benefits of each available tool in the broad toolkit available to the states. Neither Congress nor EPA—nor the APC&EC—require the application of NAAQS to individual stationary sources, except where PSD requirements are triggered.

Arkansans should be proud that their state is overwhelmingly in attainment with all NAAQS at almost all locations. To the extent the APC&EC and ADEQ are concerned with achieving or maintaining the NAAQS, they should follow the process envisioned by Congress. Air quality is impacted by

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[97] U.S. EPA, Office of Air Quality Planning & Standards, "White Paper for Streamlined Development of Part 70 Permit Applications" (1995).

[98] *See generally* EPA Region 9, "Title V Permit Review Guidelines" (draft), at III-7 (instructing Title V permit reviewers to identify "applicable requirements" by scanning the contents of an approved SIP, identifying each provision potentially related to the source at issue, and "determin[ing] if it is applicable to the source based on source size, fuel type, source construction or modification dates, or other criteria given in the rule."). *Available at* http://www.epa.gov/region9/air/ permit/titlev-public-part.html (*see* Chapter III, "Applicable Requirements").

[99] 57 Fed. Reg. at 32,276; *see also* 43 Fed. Reg. at 26,381.

many types of sources, mobile and stationary, from residential to industrial. All options should be explored, and a reasoned SIP should be developed as needed. It is equally clear that the state should *not* exceed the federal requirements for NAAQS by making those standards disproportionally applicable to certain stationary sources through routine modeling requirements or NAAQS permit limits.

Evaluation of The Arkansas Department of Environmental Quality's Economic Analysis of Regulations No. 18, 19 and 26

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Exhibit G
Comments of Steel Coalition of Arkansas

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Exhibit G
Comments of Steel Coalition of Arkansas

I. INTRODUCTION AND STATUTORY BACKGROUND

1. On September 14, 2012, the Arkansas Department of Environmental Quality ("ADEQ") proposed revisions to several Arkansas Codes and Regulations, including the Arkansas Air Pollution Control Code (Regulation No. 18), Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation No. 19), and Regulations of the Arkansas Operating Air Permit Program (Regulation No. 26). These revisions pertain to implementation of certain features of the U.S. Environmental Protection Agency's current National Ambient Air Quality Standards ("NAAQS") and permitting associated with those proposed implementations.

2. In the Rulemaking Packet for each revision, ADEQ submitted a Financial Impact Statement ("FIS") and an Economic Impact/Environmental Benefit Analysis ("EIEBA"). In addition, accompanying ADEQ's proposed revision to Regulation No. 19 was an Economic Impact Statement ("EIS") to the Arkansas Economic Development Commission concerning the impact on small business. These submissions purport to identify and quantify the financial and economic impacts and environmental benefits of the regulatory revisions.

3. It is understood that weighing such impacts and benefits of state environmental regulations, often referred to as "cost-benefit analysis," is consistent with requirements of Arkansas law. Specifically, the statute laying out the authority of the Arkansas Pollution Control and Ecology Commission ("PC&E Commission") states that "the commission shall duly consider the economic impact and the environmental benefit of such rule or regulation on the people of the State of Arkansas, including those entities that will be subject to the regulation,"[1] the commission will "initiate rulemaking proceedings to further implement the analysis required" under §8-1-203 (b)(1)(B)[2], the analysis will include a publicly available written report[3], and "the commission shall

[1] A.C.A. §8-1-203 (b)(1)(B).

[2] A.C.A. §8-1-203 (b)(1)(C).

[3] A.C.A. §8-1-203 (b)(1)(D).

compile a rulemaking record or response to comments demonstrating a reasoned evaluation of the relative impact and benefits of the more stringent regulation."[4] The Administrative Procedures of the PC&E Commission, Regulation No. 8, contains provisions regarding EIEBA requirements and conditions for exemption from the requirements.[5] Reg. 8.812 also states that "An economic impact and environmental benefit analysis shall be presumed to be adequate for purposes of initiating a rulemaking before the Commission if the analysis is prepared by completing the Economic Impact/Environmental Benefit Analysis form that is attached as Appendix 1 of Regulation No. 8."[6] Furthermore, Reg. 8.813 specifies that, after a public comment period, the PC&E Commission shall provide a "discussion demonstrating the reasoned evaluation of the relative impacts and benefits of the regulation."[7]

4. With respect to the duties of both the ADEQ and the PC&E Commission in connection with these regulations, Arkansas law further specifies that these agencies "shall take into account and give consideration of," among other factors:

- "The predominant character of development of the area of the state such as residential, highly developed industrial, commercial, or other characteristics;"[8]
- "Economic feasibility of air-cleaning devices;"[9]
- "Effect on normal human health of particular air contaminants;"[10]
- "Effect on efficiency of industrial operation resulting from use of air-cleaning devices;"[11]

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[4] A.C.A. §8-1-203 (b)(1)(E).

[5] Regulation No. 8 – Administrative Procedures, Reg. 8.812 "Economic Impact and Environmental Benefit Analysis Requirements."

[6] Reg. 8.812(D).

[7] Reg. 8.813 "Evaluation of Economic Impact/Environmental Benefit."

[8] A.C.A. §8-4-312 (6).

[9] A.C.A. §8-4-312 (8).

[10] A.C.A. §8-4-312 (9).

- "The extent of danger to property in the area reasonably to be expected from any particular air contaminant;"[12]
- "Interference with reasonable enjoyment of life by persons in the area and conduct of established enterprise that can reasonably be expected from air contaminants;"[13] and
- "The economic and industrial development of the state and the social and economic value of the air contamination sources."[14]

Thus it may be expected that the FIS, EIS and EIEBA would include discussion and analysis of these factors as part of the rulemaking process.

II. ECONOMIC APPROACHES TO COST-BENEFIT ANALYSIS

5. Cost-benefit analysis (CBA) is an analytical approach that systematically compares the expected benefits achieved by a course of action with its expected costs.[15] A typical economic decision rule is that a proposed course of action would not be pursued unless the expected net benefits, which equal expected total benefits less expected total costs, exceed zero.[16] If an individual agent is considering whether to pursue a course of action, that agent may evaluate and weigh only its own costs and benefits, which economists refer to as "private costs" and "private benefits." When CBA is used to evaluate public policy choices, however, the benefits and costs considered are often all costs and benefits, which are the costs and benefits that accrue to all agents in society. Economists thus refer to these as "social costs" and "social benefits." The boundaries within which social impact is quantified by CBA may include, for example, a municipality, a region, a state, or a nation, as dictated by statute, regulation or other authority. In addition, policy objectives may dictate analyzing the burden on or benefits

[11] A.C.A. §8-4-312 (10).

[12] A.C.A. §8-4-312 (11).

[13] A.C.A. §8-4-312 (12).

[14] A.C.A. §8-4-312 (14).

[15] See, for example, Boardman A., D. Greenberg, A. Vining, and D. Weimer, 2001. *Cost-Benefit Analysis: Concepts and Practice* (Second Edition), Prentice Hall, Upper Saddle River, New Jersey.

[16] Assuming risk neutrality.

to individual parties or segments of society, such as residents, small business, disadvantaged communities, certain commercial sectors or state agencies.

6. Consequently, CBA involves several tasks: defining the universe, geographical or otherwise, for the CBA; identifying the potential costs and benefits attributable to the proposed course of action; measurement of those costs and benefits; monetizing or valuing the costs and benefits; and, for uncertain outcomes, determining the probabilities associated with those outcomes. For costs and benefits that are incurred over time, it is further necessary to determine an appropriate factor to discount future costs and benefits to their present value. The information requirements of an adequate and meaningful CBA can be substantial, and even then there may be uncertainty about the degree of accuracy in the measurement of costs and benefits. Costs and benefits are often estimated, rather than known with certainty, and these estimations are commonly performed under specific assumptions. The analyst may therefore undertake sensitivity testing to understand how changes in certain assumptions and in the probabilities assigned to specific outcomes affect the results of the CBA. Because the CBA's policy implications are potentially sensitive to the assumptions underlying the analysis, transparency about the assumptions and information sources, and thus the ability to gauge how realistic and reasonable those assumptions are, are critical to evaluating the validity or usefulness of the CBA.

A. Determination of Expected Net Benefits

7. With respect to CBA of proposed implementation of air quality standards, there are several categories of costs and benefits to consider when determining expected net benefits of the regulation. For a manufacturer that seeks to comply, direct costs include, at a minimum, the physical and engineering costs to install devices and/or re-engineer the manufacturing process to reduce emissions to regulated levels. Additional costs may include changes in variable costs such as labor costs, material expenses, services, electricity, water and other utilities required to operate the facility. Potential responses to the additional regulations by operators of affected facilities are reducing output, cancelling production shifts, eliminating workforce, or reducing investment, the latter

of which is understood to adversely affect labor productivity. At an extreme, a manufacturer may terminate operations and shutter the affected facility if production in that location is no longer economically viable. Loss of economic viability would stem from increases in costs that diminish the competitiveness of that particular facility, leading the operator to close the Arkansas facility, or relocate it to another state or even country with a more favorable commercial environment. In these situations, the costs of the regulation include lost revenues and profits associated with the foregone output; efficiency losses; lost wage earnings by terminated employees (and the consequences of the potential additional unemployed residents to the budgets of state welfare agencies); lost sales of material, utility and service inputs; and lost state tax revenue due to a reduction in the tax base.

8. CBA weighs these expected costs, monetized and discounted, against the likely expected benefits of the proposed regulation. The first step is establishing a causal link between the proposed policy change and the realization of these benefits, which are appropriately measured as incremental over the status quo. Improvement in quality of life may be one such benefit. Additional air quality regulations may impart incremental health benefits to individuals and improve or prevent deterioration of environmental quality in particular areas affected by the policy change. Such incremental health benefits may include actual reduction in the risk of certain ailments from the status quo, and therefore reductions in expected health expenditures, lost workdays and/or lost earnings associated with those ailments. Environmental benefits may include the preservation of asset value and the value of preserving natural resources for agricultural, recreational, tourism, energy, industrial or other economic uses. Thus the benefits of the proposed regulation include avoided costs.

9. Once the types of potential costs and benefits that accrue from a policy initiative are identified, it is necessary to quantify, measure, and value or monetize those costs and benefits. Within the context of environmental regulation, some costs, such as equipment and engineering costs, and perhaps some benefits, may be measured with reasonable certainty. It is likely, however, that other costs and benefits may be uncertain, and that implementing a policy change may engender some probability,

between zero and 100 percent, of an affected party incurring a given cost or receiving a given benefit. Measurement of health benefits, such as the change in the incidence of respiratory ailments among a specific population attributable to the regulation, likely requires meta-analysis of the results of existing experiments or even pursuit of original scientific studies. In situations when components of costs and benefits are probabilistic, or when outcomes themselves are uncertain, the CBA may require sensitivity testing of assumptions about probabilities and therefore expected costs and expected benefits, and therefore expected net benefits. Monetizing costs and benefits may pose a challenge in some cases. To take two examples, improvement in one's quality of life due to cleaner air and deterioration in quality of life due to unemployment are not directly measured. An analyst may need to rely on scholarly research by economists studying the economic value of quality of life or the costs of specific ailments to assign monetary values to some costs and benefits.

B. Identifying Stakeholders

10. Whether or not the expected net benefits to society of a regulation are calculated as positive, public policy objectives (and the desire to perform a complete inquiry into regulatory impacts) may require determining which costs and benefits fall on which stakeholders: identifying the "winners" and the "losers."

11. Among the potential stakeholders are private businesses, such as manufacturers, distributors, retailers, and service providers. These may include, for example, businesses whose emissions are restricted; the companies which supply materials, utilities and services to source facilities; downstream firms that distribute, add value to, or utilize output or services produced by the source facility; companies that provide compliance equipment and services; businesses that engage in competing uses of the natural resources, like farms, fisheries, and providers of recreational services; and competitors of any of the above. Public policy may dictate that regulatory impact be analyzed for all businesses as a whole, for businesses of a particular size, and/or for businesses within a certain sector.

12. Another potential stakeholder group is residents and employees whose employment, health and/or enjoyment of certain natural resources are affected by the regulated emissions. State landowners may also have an economic interest in the outcome of the regulatory process, if the regulation affects the economic value of that property. For some landowners, the value may decline with regulation, if the regulations have the effect of limiting viable uses. For other landowners, such as those seeking to use the land for residential or recreational purposes, regulation may enhance the value of the land.

13. Government agencies, and taxpayers, are also a stakeholder. If regulations contribute to reduced operations or even a plant closure, for example, the associated job losses may impact the budgets of taxpayer-funded state agencies that administer unemployment benefits. Regulations that enhance enjoyment of government-owned natural resources, on the other hand, may result in increased revenues from recreational use and permit fees.

III. ASSESSMENT OF ADEQ'S COST-BENEFIT ANALYSIS

14. The regulations that ADEQ has proposed to revise pertain to emissions and permitting of air pollutants in Arkansas. The proposed substantive revisions to Regulation No. 18 are intended to implement the EPA's NAAQS for $PM_{2.5}$, PM_{10}, ozone, lead, carbon monoxide, nitrogen dioxide, and sulfur dioxide by, for example, adding a definition and effective date for $PM_{2.5}$, adding permitting thresholds for $PM_{2.5}$, providing for a *de minimus* permit change with respect to $PM_{2.5}$ emissions, and incorporating the most recent EPA NAAQS as of July 27, 2012.[17] Similar substantive modifications to Regulation No. 19 include revised definitions of "Particulate Matter Emissions," "$PM_{2.5}$," "PM_{10}," "Volatile Organic Compounds" and "Regulated NSR Pollutant"; a new definition for "$PM_{2.5}$ Emissions"; the addition of a permitting threshold for $PM_{2.5}$, the provision for a *de minimus* permit change for $PM_{2.5}$ emissions, and incorporation of

[17] *ADEQ Memorandum*, from Mike Bates to Charles Moulton, September 14, 2012, regarding "Proposed Revisions to Regulation No. 18, Air Pollution Control Code," p. 1.

the EPA NAAQS as of July 27, 2012.[18] The main proposed revision to Regulation No. 26, regarding the Arkansas Operating Air Permit Program, is a change in the minor permit modification threshold to 10 tons per year (tpy) of $PM_{2.5}$.[19]

15. In terms of professionally accepted standards for economic analysis of costs and benefits, the Financial Impact Statements, Economic Impact/Environmental Benefit Analyses and Economic Impact Statement that ADEQ submitted with its proposals for Regulations No. 18, 19 and 26 fall short of an analysis that a competent economist would rely on or that is useful for evaluating the costs and the benefits of the proposed changes. The ADEQ's responses in these documents fail to address the economic factors that are laid out in Arkansas statute as described above. None of the documents discuss the predominant character of development of the affected area of the state. None mention, much less address, the economic feasibility of air-cleaning devices. None contain more than vague language regarding the health effects of particular air contaminants. None reference the economic and industrial development of the state, nor the social and economic value of air contamination sources. The FIS, EIEBA and EIS are vague and contain little information, reflect minimal data collection, are based on (at best) incomplete analysis, are internally inconsistent, and thus appear speculative.

A. Financial Impact Statements

16. The Financial Impact Statements in the Rulemaking Packets for Regulations No. 18, 19 and 26 are highly uninformative of the expected financial impacts of the proposed regulations. Even worse, they are internally inconsistent. All three, for example, flatly claim that the proposed rule changes have no financial impact (in response to Question 1) and do not affect small businesses (Question 2 response). Yet, the ADEQ characterized as "Unknown" "the total estimated cost by fiscal year to any party subject to the proposed...rule" for the next fiscal year and stated that facilities with emissions

[18] *ADEQ Memorandum*, from Mike Bates to Charles Moulton, September 14, 2012, regarding "Proposed Revisions to Regulation No. 19, Regulations of the Arkansas Plan of Implementation for Air Pollution Control."

[19] *ADEQ Memorandum*, from Mike Bates to Charles Moulton, September 14, 2012, regarding "Proposed Revisions to Regulation No. 26, Regulations of the Arkansas Operating Air Permit Program."

of certain pollutants exceeding specified levels will be subject to the respective proposed rule (Question 5 response). In the FIS for Regulation No. 19, ADEQ's claim of no financial impact in Question 1 is explicitly contradicted by its statement, "It is reasonable to anticipate some increase in costs associated with compliance and permitting with revised National Ambient Air Quality Standards and PM2.5/PSD implementation" in its response to Question 5. Furthermore, for all three proposed regulations, the answer to Question 5 of the FIS contradicts the ADEQ's answers in the EIEBA.

B. Economic Impact/Environmental Benefit Analysis

17. The EIEBAs of the three proposed regulations pose more specific questions about the economic impacts and environmental benefits of proposed regulations. With respect to economic impacts, the EIEBA asks, for example, who will be economically impacted by the proposed regulation, including "the specific public and/or private entities affected" and whether the economic effect is expected to be positive or negative for each category; what are its economic effects; and whether there any "less costly, non-regulatory, or less intrusive methods" that would achieve its same purpose. With respect to environmental benefits, the EIEBA includes questions about how the proposed regulation benefits Arkansans; about the adverse effects to the environment, public health, and public safety if the proposed regulation were not implemented; and about the risks (and reduction in risk) that the proposed regulation addresses or is expected to address.

18. The EIEBAs for Regulations No. 18, 19 and 26 do not adequately address either economic impacts or environmental benefits. They do not specify the affected entities, instead listing several industrial sectors that are possibly affected. The only costs discussed are permitting costs and costs of monitoring, recordkeeping and reporting, but the EIEBAs do not attempt to quantify those costs. There is no discussion and no effort to monetize and value the compliance costs, which might include installation of air-cleaning equipment and technology; potential re-engineering of the source's

industrial process; output reductions (should compliance require reduced hours of operation); or efficiency or other losses to affected sources and other stakeholders.

1. Regulation No. 18

19. The Economic Impacts section of the EIEBA is an opportunity for ADEQ to present information and analysis regarding the identity and number of parties affected by the proposed regulation and how they are affected; economic effects, including implementation costs; and the availability of cost-effective alternatives. However, ADEQ gives no consideration to the physical capital or engineering costs to comply, and, as described above, focused only on permitting, monitoring, recordkeeping and reporting costs. It does not acknowledge the possibility of output or efficiency losses, and the economic consequences of those losses for the facility, its employees, its suppliers and its customers and users. The ADEQ claims, without explanation, elaboration or justification, that "the total estimated cost for sources to implement the rule is unknown" and that "it is unlikely that affected sources will experience large cost increases to comply with the rule." ADEQ has not provided any basis or data for this statement. It makes no attempt to discuss, even qualitatively, the economic effects, the cost impacts on affected facilities, or total implementation costs. When asked whether there are cost-effective alternative methods to achieve the same outcome, ADEQ's response was a terse, "No." It offered no discussion of alternative measures or approaches and reasons why any such potential alternative measures were inadequate.

20. With respect to environmental benefits, ADEQ's CBA also falls short of the prescriptions of Arkansas statutes and professional standards. Specifically, ADEQ offers no discussion of the environmental issues addressed by the proposal; it merely provides a cursory listing of the pollutants whose emissions are affected by the regulation. In response to the question about how the regulation provides the environmental benefits, ADEQ provides not an analytical response, but a literal answer that the rule provides benefits by requiring emissions to be permitted. It does not discuss whether the regulation is expected to lead to a reduction in emissions, and if so, by how much, and how any reduction in emissions would enhance the well-being of

and health and environmental outcomes for residents of Arkansas. Likewise, ADEQ claims that a detrimental effect of not implementing the proposed regulation is under-regulation of the NAAQS pollutants and exposure of residents to "unpermitted levels of $PM_{2.5}$," with no explanation or quantification of the consequences of exposure to those unpermitted levels. With respect to the more specific question about risks addressed by Regulation No. 18, ADEQ does not quantify what the prevailing current risks are, nor whether or by how much the regulation changes those risks. And ADEQ makes no mention of how those changed risks are expected to affect the incidence of ailments or any costs associated with those ailments.

2. Regulation No. 19

21. Many of ADEQ's responses in the EIEBA for Regulation No. 19 are substantially similar to those for Regulation No. 18, and the weaknesses described above apply here as well. Again, ADEQ fails to account for compliance costs by affected parties and indirect effects on other parties, nor does ADEQ connect the policy action of permitting of emissions to any reduction of those emissions and the health and environmental effects of any reduction of emissions on surrounding areas. Again, ADEQ does not consider the level of economic development of the affected area nor its population density, which is a significant factor in determining the magnitude of any potential health benefits.

3. Regulation No. 26

22. Beyond the weaknesses of the EIEBAs for Regulations No. 18 and 19, the EIEBA for Regulation No. 26 is internally contradictory. On the one hand, it claims that the minor permit modification procedure proposed for Regulation No. 26 will reduce the need for "an extensive and potentially costly major permit modification process" and therefore have a favorable economic impact on affected parties. ADEQ claims that "this rulemaking will have a positive economic effect for [emitting] sources and facilities" and will offer "economic relief" and "economic benefit" to subject parties and facilities making minor modifications by virtue of the rule's more streamlined permitting process. In assessing permitting costs, ADEQ also states that it used PM_{10} as a

"surrogate" for $PM_{2.5}$ and thus permitting costs for $PM_{2.5}$ would be "minimal." ADEQ does not report on the compliance costs that source facilities would incur if $PM_{2.5}$ emissions become regulated. Yet, in response to questions about environmental and health benefits of the proposed regulation, ADEQ claims that, in the absence of the proposed change in regulation, "$PM_{2.5}$ would remain unregulated and expose people and the environment to unpermitted levels of $PM_{2.5}$ emissions" as "$PM_{2.5}$ is not currently explicitly subject to permit limits." Thus ADEQ claims economic impacts based on a regulation that changes permitting procedures, but claims benefits based on new regulation of a pollutant. This is an inconsistency that is not adequately explained in the EIEBA.

C. Economic Impact Statement

23. As required by Act 143 of 2007, ADEQ submitted an Economic Impact Statement with the Rulemaking Packet for Regulation No. 19 regarding impacts on small businesses (no more than 100 employees). Similar to the EIEBA, the EIS enables the sponsor of a regulation to outline the motivation for and top three benefits of the proposed regulation, any consequences of inaction, the state's bureaucratic costs associated with implementation, impact on businesses or entities of different sizes, among other information and analyses. Rather than discuss the factors set forth in A.C.A. §8-4-312, ADEQ offered as its justification for Regulation No. 19 the desire to comply with the current NAAQS. Indeed, in identifying the top three benefits of the proposed regulation, ADEQ listed: (1) compliance with the federal Clean Air Act; (2) alignment of Arkansas regulations with current federal rules and facilitation of the permitting process in Arkansas; and (3) retention of federal program approval. In short, in ADEQ's stated view, the primary benefit of the proposed regulation was to comply with EPA's regulation. There is no discussion of the health benefits, effect on quality of life, and preservation of natural resources associated with the proposed regulation that a proper economic impact analysis or CBA would consider. The EIS contains no analysis of the expected compliance costs and efficiency implications facing small businesses, does not consider the economic feasibility of compliance technologies, and fails to analyze potential barriers to entry for small businesses imposed by the proposed

regulation. The EIS further neglects to consider indirect impacts on small businesses, such as potentially higher utility costs, that the regulation could impose.

D. Data Sources and Available Information

24. While CBA may have significant data requirements, the ADEQ had access to sufficient information to perform more thorough and detailed analyses of economic and financial impact and environmental benefits than it did. One data source that ADEQ identified in its EIEBAs is the 2008 National Emissions Inventory (NEI) data, which was collected by state environmental agencies and compiled, reported and published by the EPA.[20] The 2008 NEI, the most recent NEI data available when ADEQ was preparing the EIEBAs, contains total emissions estimates by pollutant for individual facilities, including details about each facility: its name; the address, zip code, county, FIPS code and geographic coordinates of its location; the NAICS code of the facility's industry; and a description of the type of facility (such as steel mill, landfill, pipeline compressor station, to name a few). ADEQ uses the 2008 NEI only to estimate the number of facilities that it expects to be economically impacted by Regulations No. 18 and 19 and describe the industry of the likely affected parties. However, if used in conjunction with other data sources, ADEQ might be better able to analyze the statutory factors in A.C.A. §8-4-312 to inform its rulemaking.

IV. CONCLUSION

25. CBA is a commonly used technique by economists to determine the desirability of a particular course of action. Arkansas statutes acknowledge the relevance of CBA to environmental policymaking, and identify specific factors of interest. The CBAs that ADEQ performed for Regulations No. 18, 19 and 26 fall short of basic professional standards, do not address numerous statutory factors, are inadequate for policymakers, members of the public, and the regulated community to evaluate the likely costs and benefits of the proposed rule changes, and are simply speculative. Given the potential

[20] http://www.epa.gov/ttnchie1/net/2008inventory.html, last accessed December 4, 2012. Because ADEQ collected emissions inventory data for the 2011 National Emissions Inventory during 2012, the 2011 data were not yet available when ADEQ prepared these EIEBAs.

implications of environmental policy changes and the sensitivity of CBA to the underlying assumptions and data sources, informed rulemaking would benefit from a more complete analysis of the economic impacts of the proposed rule changes, detailing the assumptions, sources and analyses, and determining how those results change when those assumptions are modified.