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Repeal of Regulations for the Control of Volatile Organic Compounds for Pulaski County Technical Support Document

I. Introduction

On [date], the Arkansas Pollution Control & Ecology Commission (APC&EC) initiated revisions to Arkansas's air quality regulations. For this revision, Arkansas Regulation Nos. 18, 19, 26, and 31 are proposed to be replaced by a new Regulation No. 35, which was developed to consolidate and streamline these air regulations. Some regulatory provisions contained in APC&EC Regulation Nos. 18, 19, 26, and 31 are not retained in the new Regulation No. 35 because the provisions are redundant, no longer apply, or do not provide meaningful air quality benefits. One of the regulatory provisions that the APC&EC has proposed not to retain is Chapter 10 of Regulation No. 19, "Regulations of the Arkansas Plan of Implementation for Air Pollution Control."

Regulation No. 19, Chapter 10, "The Regulations for the Control of Volatile Organic Compounds in Pulaski County," has been identified for removal because the control measures therein do not provide meaningful air quality benefits for Pulaski County. Specifically, the required controls are not necessary to ensure attainment and maintenance of the ozone national ambient air quality standard (NAAQS) in Pulaski County. The decision not to retain Regulation No. 19, Chapter 10 was based on several factors: Pulaski County has remained in attainment of the ozone NAAQS for more than three decades despite continued lowering of the standard over time; the vast majority, approximately sixty-one percent of volatile organic compound (VOC) emissions in Pulaski County are from biogenic (natural) sources rather than controllable anthropogenic sources; there are many federal rules in place to regulate VOC emissions from specific anthropogenic sources; and, the evidence suggests that VOC control is not an effective strategy for controlling ozone formation in Pulaski County.

This technical support document details the rationale and provides supporting evidence behind the proposal not to retain Regulation No. 19, Chapter 10, and to withdraw the requirements retained therein from the United States Environmental Protection Agency (EPA)-approved state implementation plan (SIP).

II. Background

Ozone forms in the lower atmosphere through a series of photochemical reactions involving oxides of nitrogen (NO_x) and VOCs. In 1978, Pulaski County, which includes Little Rock, was designated by the Environmental Protection Agency (EPA) as a nonattainment area for ozone in accordance with Section 107 of the Clean Air Act. (43 FR 8969, March 3, 1978). This

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designation was based on an ozone design value for Little Rock of 0.16 parts per million (ppm), which was 0.04 ppm higher than the NAAQS (0.12 ppm) at the time. The State opted to use the modified rollback model to determine the amount of additional VOC reductions required to bring the area back into attainment of NAAQS for ozone. The presumed VOC reduction necessary for Pulaski County to meet NAAQS was found to be twenty percent. A twenty percent reduction in VOC emissions was expected to produce a local reduction of ozone concentrations of 0.02 ppm. This reduction, in addition to 0.02 ppm reduction in transported ozone from upwind areas, would result in attainment of the ozone NAAQS.

The State developed a VOC control strategy to help bring the area back into attainment that was based on emission reductions achieved through the application of reasonably available control technology (RACT) to existing major stationary sources consistent with the Control Technique Guidelines (CTG) for RACT and the Federal Motor Vehicle Control Program (FMVCP). The State committed to adopt VOC control measures consistent with CTGs for major sources and adopted additional regulations for source categories not included on the CTG lists.

These control strategies were estimated in modeling analyses to reduce VOCs by 26.5% overall, with 4.7% due to CTGs and 21.9% due to FMVCP. VOC reductions greater than the estimated twenty percent necessary to attain the NAAQS were used to include a margin of safety and to allow for industrial growth in the area. Given the projected reduction in VOC emissions, Pulaski County was predicted to gain attainment for the ozone NAAQS by December 31 1982. Pulaski County had only four exceedances of the ozone NAAQS in 1980 and none in 1981 or 1982 and was redesignated to attainment status for ozone in 1984 (49 Fed. Reg. 37753, Sept. 26, 1984).

III. Modeling to Support Removal of VOC Regulations for Pulaski County

EPA's Office of Air Quality Planning and Standards, Air Modeling Group recently released modeling results of ozone sensitivity to nitrogen oxide (NOx) and VOC reductions as part of its Ozone Advance program guidance¹. CMAQv5.1 modeling was conducted using 2011 as a base year over a forty-eight-state domain at a grid resolution of twelve kilometers to examine the effect on peak eight-hour ozone concentrations of fifty percent VOC reductions and fifty percent NOx reductions nationwide. While the modeling did not use data specific to local areas, the results suggest that in most areas, ozone formation is much more sensitive to NOx reductions than to VOC reductions. Results also suggest that reductions in anthropogenic VOC emissions may be ineffective due to the overwhelming contribution to local VOC emissions by biogenic sources. Biogenic VOC emissions alone in Pulaski County are more than adequate to accommodate ozone formation reactions.

¹ EPA Office of Air Quality Planning and Standards, Air Quality Modeling Group (May 2017) "Supplemental Information for Ozone Advance Areas Based On Pre-Existing National Modeling Analyses"

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The modeling results suggest that almost all of Arkansas see no reduction in peak eight-hour ozone values with a nationwide reduction of VOC emissions. The exception is a very small part of northwest Arkansas that could see a modest (one to three parts per billion [ppb]) reduction. By contrast, almost the entire State of Arkansas would see a seven to nine ppb reduction in peak ozone concentrations with a fifty percent nationwide reduction in NO_x emissions, with the exception of a small part of eastern Arkansas near the Memphis metropolitan area for which a five to seven ppb reduction was modeled. The modeling results suggest a reduction in NO_x emissions is four to five times more effective at reducing ozone than an equivalent reduction in VOC emissions. The referenced guidance document is included as Appendix A to this technical support document.

IV. Emissions Inventory Data for Pulaski County

A. Pulaski County Volatile Organic Compound Emission Inventory

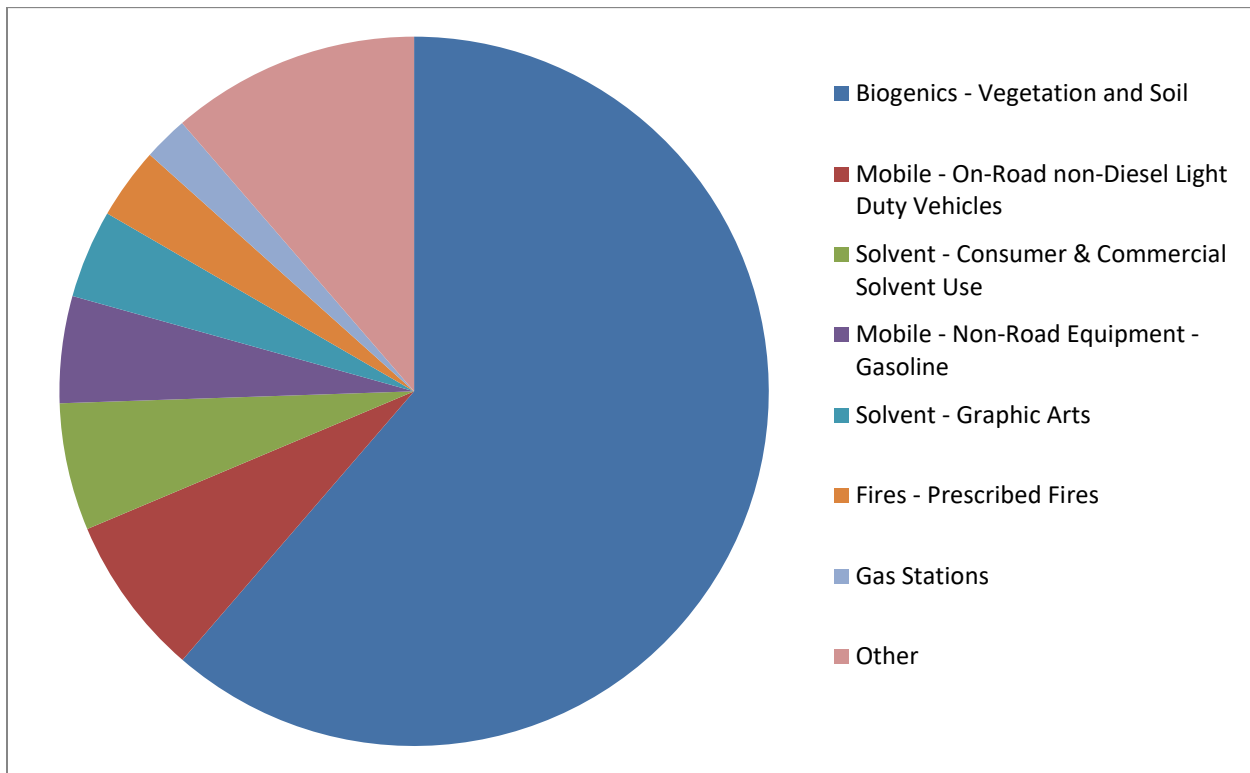
The highest contributor of VOC emissions in Arkansas comes from natural (biogenic) sources.² Like the rest of Arkansas, the highest contributor to the VOC emission inventory in Pulaski County is biogenics.³ Biogenics comprise sixty-one percent of the VOC emission inventory in Pulaski County. Pulaski County, which is more urban than Arkansas in general, has a larger non-biogenic emission inventory than other areas of the State (thirty-nine percent versus ten percent). The largest non-biogenic contributor to the Pulaski County VOC emission inventory—non-diesel light-duty on-road vehicles—comprises approximately seven percent of the VOC inventory. Point sources contribute two percent to the VOC inventory in Pulaski County. Figure 1 breaks down the relative contribution of various sectors to the VOC inventory in Pulaski County.

² 2014 National Emissions Inventory version 1

³ Id.

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Figure 1 Pulaski County 2014 VOC Emission Inventory



Regulation No. 19, Chapter 10, "Regulations for the Control of Volatile Organic Compounds in Pulaski County," included requirements for new major sources, RACT, emission offsets, and controls for the following processes:

- Gasoline storage and marketing
- Petroleum storage
- Cutback asphalt
- Gasoline tank trucks and vapor collection systems
- Surface coating of metal parts and products
- External floating roofs

The source classification codes associated with the processes listed above and the relative contribution to the Pulaski County VOC inventory are included in Table 1. Please note that these are total emissions by source classification code (SCC) that may be associated with the processes that were regulated by Reg. 19.1005 and includes emissions from other processes associated with each SCC code that were not specifically regulated under Reg. 19.1005. The sum of emissions

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from each of these SCC codes was 1587 tons in 2014—approximately four percent of the Pulaski County VOC emission inventory.

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Table 1 Relative Contribution to total Pulaski County VOC inventory of Reg. 19.1005 Regulated Processes by SCC Code

SCC	SCC Level-1	SCC Level-2	SCC Level-3	SCC Level-4	VOC Emissions	Percent of VOC inventory
3050 0206	Industrial Processes	Mineral Products	Asphalt Concrete	Asphalt Heater: Natural Gas	2.444	0%
4040 0113	Chemical Evaporation	Petroleum Storage (non-Refinery)	Liquids Bulk Terminals	Gasoline RVP 13: Breathing Loss (250000 Bbl Cap.) - Floating Roof Tank	33.4119	0%
4040 0130	Chemical Evaporation	Petroleum Storage (non-Refinery)	Liquids Bulk Terminals	Other Liquids: Breathing Loss - External Floating Roof w/ Primary Seal	1.7045	0%
4040 0150	Chemical Evaporation	Petroleum Storage (non-Refinery)	Liquids Bulk Terminals	Miscellaneous Loading Racks	Losses/Leaks: 27.2628	0%
4040 0151	Chemical Evaporation	Petroleum Storage (non-Refinery)	Liquids Bulk Terminals	Valves, Flanges, and Pumps	1.07	0%
4040 0199	Chemical Evaporation	Petroleum Storage (non-Refinery)	Liquids Bulk Terminals	Other Not Classified	4.52	0%
4040 0302	Chemical Evaporation	Petroleum Storage (non-Refinery)	Liquids Oil and Gas Field Storage and Working	Fixed Roof Tank: Working Loss	0.115225	0%

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		Tanks					
4040	Chemical	Petroleum	Liquids	Petroleum Products - Jet Kerosene: Working Loss	0.2	0%	
0412	Evaporati on	Storage (non-Refinery)	Underground Tanks				
4068	Chemical	Transportation	and	Fugitive Emissions	0.02	0%	
8801	Evaporati on	Marketing of Petroleum Products		General			
2267	Mobile	LPG		Construction and Pavers	0.0099	0%	
0020	Sources			Mining Equipment	67		
03							
2267	Mobile	LPG		Construction and Paving Equipment	0.0052	0%	
0020	Sources			Mining Equipment	84		
21							
2267	Mobile	LPG		Construction and Surfacing Equipment	0.0014	0%	
0020	Sources			Mining Equipment	85		
24							
2401	Solvent	Surface Coating		Architectural	Total: All Solvent Types	458.09	1%
0010	Utilization			Coatings		7	
00							
2401	Solvent	Surface Coating		Auto Refinishing:	Total: All Solvent Types	127.75	0%
0050	Utilization			SIC 7532		95	
00							
2401	Solvent	Surface Coating		Machinery and	Total: All Solvent Types	12.359	0%

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055000	Utilization		Equipment: SIC 35		6	
2401065000	Solvent Utilization	Surface Coating	Electronic and Other Electrical: SIC 36 - 363	Total: All Solvent Types	0.0652	0%
2401070000	Solvent Utilization	Surface Coating	Motor Vehicles: SIC 371	Total: All Solvent Types	8.9564	0%
2401075000	Solvent Utilization	Surface Coating	Aircraft: SIC 372	Total: All Solvent Types	13.308	0%
2401080000	Solvent Utilization	Surface Coating	Marine: SIC 373	Total: All Solvent Types	6.1015	0%
2401090000	Solvent Utilization	Surface Coating	Miscellaneous Manufacturing	Total: All Solvent Types	10.998	0%
2401100000	Solvent Utilization	Surface Coating	Industrial Maintenance Coatings	Total: All Solvent Types	118.07	0%
2401200000	Solvent Utilization	Surface Coating	Other Special Purpose Coatings	Total: All Solvent Types	1.1746	0%

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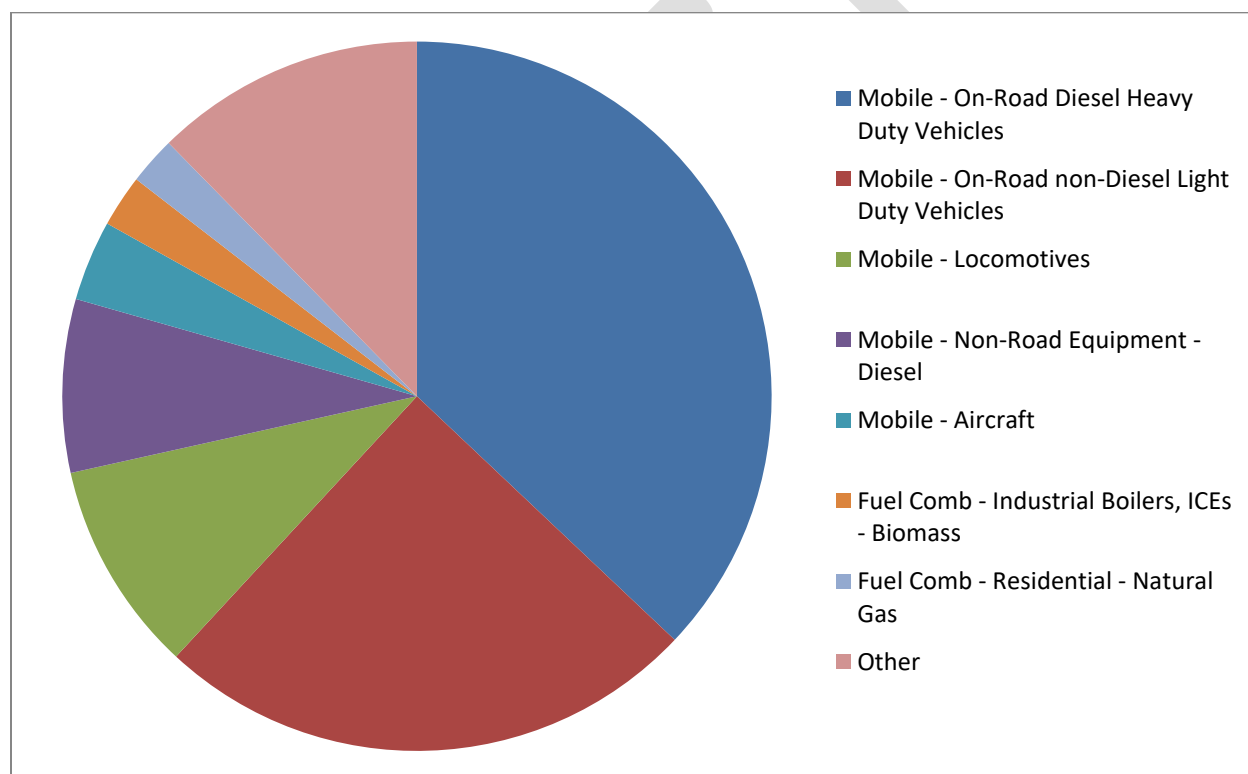
2501	Storage	Petroleum	and	Bulk Terminals: All	Gasoline		287.33	1%
0501	and	Petroleum	Product	Evaporative Losses			7	
20	Transport	Storage						
2501	Storage	Petroleum	and	Bulk Plants: All	Gasoline		94.778	0%
0551	and	Petroleum	Product	Evaporative Losses			4	
20	Transport	Storage						
2501	Storage	Petroleum	and	Gasoline	Service	Stage 1: Submerged Filling	0	0%
0600	and	Petroleum	Product	Stations				
51	Transport	Storage						
2501	Storage	Petroleum	and	Gasoline	Service	Stage 1: Splash Filling	150.47	0%
0600	and	Petroleum	Product	Stations			4	
52	Transport	Storage						
2501	Storage	Petroleum	and	Gasoline	Service	Stage 1: Balanced Submerged	107.54	0%
0600	and	Petroleum	Product	Stations		Filling	9	
53	Transport	Storage						
2501	Storage	Petroleum	and	Gasoline	Service	Underground Tank: Breathing and	112.02	0%
0602	and	Petroleum	Product	Stations		Emptying	1	
01	Transport	Storage						
2505	Storage	Petroleum	and	Truck		Gasoline	7.3261	0%
0301	and	Petroleum	Product				8	
20	Transport	Transport						

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B. Pulaski County Nitrogen Oxides Emission Inventory

Eighty-nine percent of NO_x emissions in Pulaski County come from mobile sources, including both on-road and non-road sources.⁴ Point sources contribute approximately nine percent of emissions to the total Pulaski County NO_x emission inventory. The largest contributing sector to the Pulaski County NO_x emission inventory is on-road diesel heavy duty vehicles—which contribute approximately thirty-seven percent of Pulaski County’s NO_x emissions—and on-road non-diesel light duty vehicles—which contribute approximately twenty-five percent of Pulaski County’s NO_x emissions. Figure 2 breaks down the relative contribution of various sectors to the NO_x inventory in Pulaski County.

Figure 2 Pulaski County 2014 NO_x Emission Inventory



Regulation No. 19, Chapter 10, “Regulations for the Control of Volatile Organic Compounds in Pulaski County,” did not include requirements associated with the control of NO_x emissions in Pulaski County.

⁴ 2014 National Emissions Inventory version 1

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C. Trends in Ozone Precursor Emissions and Monitored Ozone Concentrations in Pulaski County

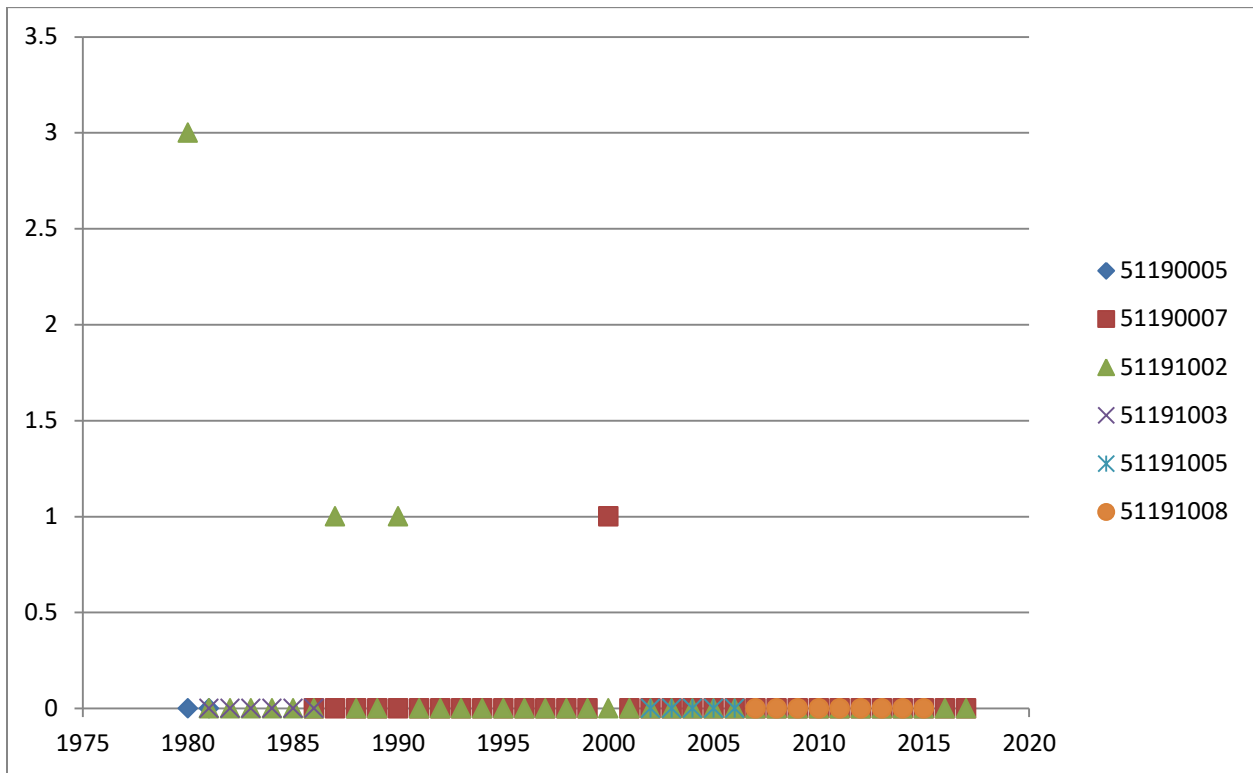
An examination of emissions of ozone precursors and monitored ozone concentrations in Pulaski County indicate that ozone concentrations in Pulaski County are not dependent upon VOC emissions. Ozone concentrations in Pulaski County have decreased markedly from 1980. A comparison of recent emission inventory data and ozone concentrations in Pulaski County indicates that ozone concentrations have decreased even as VOC concentrations in the county have increased.

Between 1980 and 2017, the ozone national ambient air quality standard was revised three times. In 1979, EPA promulgated a one-hour standard of 0.12 ppm with attainment defined as the expected number of calendar days per calendar year, with the maximum hourly average concentration greater than 0.12 ppm, equal to or less than one. In 1997, EPA revised both the level and form of the standard to 0.08 ppm based on the annual fourth highest daily eight-hour maximum concentration averaged over three years. EPA subsequently revised the level, but retained the form of the standard, in 2008 and 2015. The level of the current standard is 0.07 ppm. To determine attainment status, a design value is computed based on time-weighted averages of the criteria pollutant in the air and the form of the standard. This design value is then compared to the standard.

Because the standard has been revised multiple times, including the form and averaging period, over the period between the initial nonattainment designation for Pulaski County and the present, the figures below illustrate annual trends in time-weighted average concentrations rather than design values. Figure 3 illustrates the number of daily one-hour exceedances of the 1980 0.12 ppm standard per year. Figure 4 illustrates the trend in the fourth highest daily maximum eight-hour concentration.

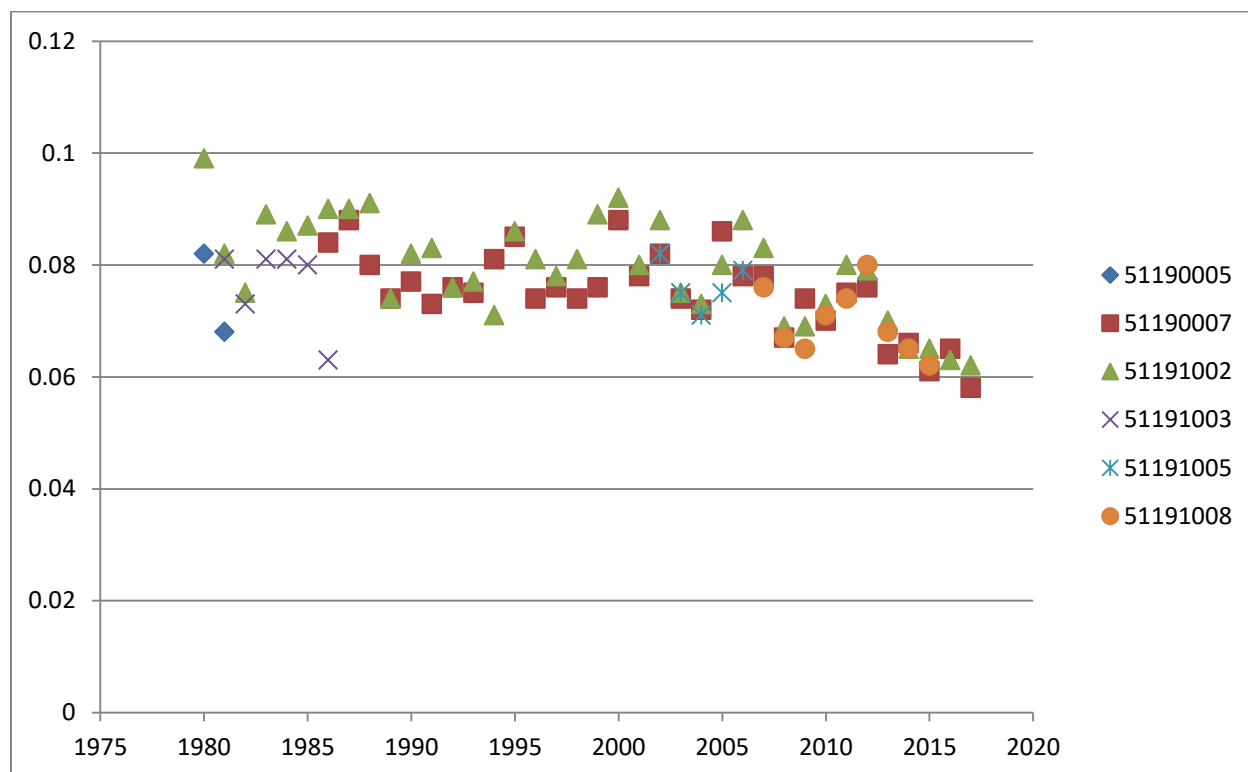
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Figure 3 Pulaski County Monitored Daily One-Hour Exceedances of 0.12 ppm



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Figure 4 Pulaski County Monitored Fourth Highest Daily Maximum Eight-Hour Concentration



Although, ADEQ does not have comprehensive emission inventory data spanning back to the 1980s, ADEQ has compared recent trends in emission inventory with recent trends in ozone concentrations. Between 2002 and 2014, the eight-hour ozone design value for Pulaski County decreased by seventeen percent. During this same period, VOC emissions in Pulaski County increased by fifty-five percent and NO_x emissions decreased by twenty-eight percent. This evidence suggests that ozone concentrations in Pulaski County are not dependent upon changes in VOC concentration. Table 2 compares Pulaski County NO_x and VOC emissions for each National Emission Inventory year from 2002–2014 to the three-year eight-hour ozone design value for Pulaski County for each corresponding year.

Table 2 Comparison of 2002–2014 VOC and NO_x Emissions to Ozone Eight-hour Design Values

	NO_x Emissions	VOC Emissions	Ozone Design Value
	(Tons)	(Tons)	(Parts Per Million)
2002	20,074	23,471.3	0.086

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2005	18,337.46	21,712.18	0.077
2008	18,737.1	36,401.16	0.08
2011	17,998.51	37,895.49	0.074
2014	14,451.2	36,410.76	0.071

V. **Specific Provisions of VOC Control Regulations for Pulaski County and Applicable Federal Standards**

Specific provisions of the Pulaski County VOC control regulations were based on CTGs developed by EPA to define RACT for specific source categories in nonattainment areas. Most of the sources covered by the Pulaski County VOC regulation provisions are now covered by updated federal emissions standards. Repeal of the VOC regulations for Pulaski County is not anticipated to result in significant increases of VOC emissions.

A. Gasoline Storage and Marketing

Provisions in Regulation No. 19, Chapter 10 called for specific VOC control and reporting requirements for gasoline dispensing facilities. These requirements are redundant with National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 63 Subparts CCCCCC, BBBBBB, and R.

B. Petroleum Liquid Storage

Provisions of Regulation No. 19, Chapter 10 related to petroleum liquid storage were based on various CTGs pertaining to petroleum storage vessels.

Standards of performance for new and existing sources of VOCs at petroleum storage facilities are currently regulated by 40 CFR 60 Subpart K, 40 CFR 60 Subpart Ka, and 40 CFR 60 Subpart Kb.

C. Cutback Asphalt

Regulation No. 19, Chapter 10 restricted the application of cutback asphalt, except when used as a penetrating prime coat only, or to application when the ambient temperature is below fifteen degrees Celsius (fifty-nine degrees Fahrenheit). This restriction has historically created a conflict with practices of the Arkansas Department of Transportation. CTGs do not specify a temperature range at which cutback asphalt may or may not be used. Decisions about the use of cutback asphalt are left to the states and are made on a case-by-case basis. VOC emissions from asphalt

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application in Pulaski County account for far less than one percent of the VOC emission inventory. Repealing the temperature requirement for cutback asphalt application in Pulaski County is not expected to lead to a significant increase in VOC emissions.

The EPA publication, Control of Volatile Organic Compounds From Use of Cutback Asphalt. EPA-450/2-77-037 December 1977 (OAQPS NO. 1.2-090) describes RACT for the use of cutback asphalt in ozone non-attainment areas.

D. Gasoline Tank Trucks and Vapor Collection Systems

Gasoline Tank Truck and Vapor Collection System provisions included in Regulation No. 19, Chapter 10 were based on the CTG “Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems” (EPA-450/2-78-051). These sources are now regulated by Gasoline Distribution MACT and GACT: NESHAP 40 CFR Part 63 Subparts R, BBBB & CCCCC.

E. Surface Coating of Metal Parts and Products

The metal surface coating VOC provisions in Regulation No. 19 Chapter 10 were based on the CTG *Control of Volatile Organic Emissions from Stationary Sources - Volume VI: Surface Coating of Miscellaneous Metal Parts and Products* EPA-450/2-78-015 (OAQPS No. 1.2-101) June 1978.

These processes are now regulated by numerous new source performance standards (NSPS) codified at 40 CFR Part 60 and NESHAP codified at 40 CFR Part 63. The relevant NESHAPs include “Surface Coating of Metal Cans: National Emission Standards for Hazardous Air Pollutants,” 40 CFR Part 63 Subpart KKKK; “Surface Coating of Metal Coil: National Emission Standards for Hazardous Air Pollutants,” 40 CFR Part 63 Subpart SSSS; “Metal Fabrication and Finishing Source Categories: National Emission Standards for Hazardous Air Pollutants Area Source Standards,” 40 CFR Part 63 Subpart XXXXXX; and “Surface Coating of Metal Furniture: National Emission Standards for Hazardous Air Pollutants ,” 40 CFR Part 63 Subpart RRRR. The relevant NSPS are “Metal Coil Surface Coating: New Source Performance Standards,” 40 CFR Part 60 Subpart TT; and “Surface Coating of Metal Furniture New Source Performance Standards,” 40 CFR Part 60 Subpart EE.

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F. External Floating Roof

The floating roof VOC provision in Regulation No. 19, Chapter 10 was based on the CTG “Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks”⁵

Standards of performance for new and existing sources of VOCs at petroleum storage facilities are currently regulated by 40 CFR 60 Subpart K, 40 CFR 60 Subpart Ka, and 40 CFR 60 Subpart Kb.

VI. Federal Regulations to Reduce VOC and NOx Emissions Since 1979

Table 3 below lists specific federal regulations to reduce VOC and NOx emissions that have been promulgated or amended since 1979. Each of these rules has helped reduce emissions of VOC and/or NOx nationwide.

Table 3 Existing Federal Regulations to Reduce VOC and NOx Emissions

Rule	CFR Location	Promulgated	Amended
“National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants; Final Rule”	40 CFR Part 60 Subpart F	1971	1974, 1977, 1988, 2010, 2013, 2015
“Nitric Acid Plants: New Source Performance Standards”	40 CFR Part 60 Subparts G & Ga	1971	1974, 2012
“Hot Mix Asphalt Facilities: New Source Performance Standards”	40 CFR Part 60 Subpart I	1974	1975, 1977, 1986
“Ferroalloy Production Facilities: New Source Performance Standards”	40 CFR Part 60 Subpart Z	1976	
“Electric Utility Steam Generating Units	40 CFR Part	1979	1998, 2006,

⁵ Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks” EPA-450/2-78-047 OAQPS No. 1.2-116 December 1978

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(Boilers): New Source Performance Standards”	60 Subpart Da		2007, 2012,
“Stationary Gas and Combustion Turbines: New Source Performance Standards”	40 CFR Part 60 Subparts GG & KKKK	1979	1982, 2003, 2004, 2006
“Stationary Gas and Combustion Turbines: New Source Performance Standards”	40 CFR Part60 Subparts GG & KKKK	1979	1982, 1987, 2003, 2004, 2006, 2009
“Glass Manufacturing Plants New Source Performance Standards”	40 CFR Part 60Subpart CC	1980	1989
“Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978”	40 CFR Part 60 Subpart K	1980	
“Automobile and Light-Duty Truck Surface Coating Operations: New Source Performance Standards”	40 CFR Part 60 Subpart MM	1980	1990, 1994
“Surface Coating of Metal Furniture: New Source Performance Standards”	40 CFR Part 60 Subpart EE	1982	1985, 1990, 2000
“Publication Rotogravure Printing (Graphic Arts Industry): New Source Performance Standards”	40 CFR Part 60 Subpart QQ	1982	2000
“Large Appliances (Industrial Surface Coating): New Source Performance Standards”	40 CFR Part 60 Subpart SS	1982	
“Metal Coil Surface Coating: New Source Performance Standards”	40 CFR Part 60 Subpart TT	1982	1990, 2000
“Asphalt Processing and Asphalt Roofing Manufacture: New Source Performance	40 CFR Part 60 Subpart UU	1982	

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Standards”			
“Pressure Sensitive Tape and Label Surface Coating Industry: New Source Performance Standards”	40 CFR Part 60 Subpart RR	1983	1990, 2000
“Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006”	40 CFR Part 60 Subpart VV-Vva	1983	
“Beverage Can Surface Coating Industry: New Source Performance Standards”	40 CFR Part 60 Subpart WW	1983	1990, 2000
“Flexible Vinyl and Urethane Coating and Printing: New Source Performance Standards”	40 CFR Part 60 Subpart FFF	1984	2000
“Equipment Leaks of Volatile Organic Compounds (VOC) in Petroleum Refineries: New Source Performance Standards”	40 CFR Part 60 Subparts GGG & GGGG	1984	2007, 2008
“Synthetic Fiber Production Facilities: New Source Performance Standards”	40 CFR Part 60 Subpart HHH	1984	2000
“Petroleum Dry Cleaners: New Source Performance Standards”	40 CFR Part 60 Subpart JJJ	1984	2000
“Equipment Leaks of Volatile Organic Compounds From Onshore Natural Gas Processing Plants for Which Construction, Reconstruction, or Modification Commenced After January 20, 1984, and on or Before August 23, 2011: New Source Performance Standards”	40 CFR Part 60 Subpart KKK	1985	2000, 2012
“Wool Fiberglass Insulation Manufacturing Plants: New Source Performance Standards”	40 CFR Part 60 Subpart	1985	

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	PPP		
“Standards of Performance for New Stationary Sources; Rubber Tire Manufacturing Industry”	40 CFR Part 60 Subpart BBB	1987	1989
“Industrial-Commercial-Institutional Steam Generating Units: New Source Standards of Performance”	40 CFR Part 60 Subparts Dd & Dc	1987	1989, 2006, 2009, 2012, 2014
“Volatile Organic Compounds (VOC) Emissions from Petroleum Refinery Wastewater Systems: New Source Performance Standards”	40 CFR Part 60 Subpart QQQ	1988	1995
“Magnetic Tape Manufacturing Industry: New Source Performance Standards”	40 CFR Part 60 Subpart SSS	1988	1988
“Surface Coating of Plastic Parts for Business Machines (Industrial Surface Coating): New Source Performance Standards”	40 CFR Part 60 Subpart TTT	1988	1989, 2000
“Polymeric Coating of Supporting Substrates Facilities: New Source Performance Standards”	40 CFR Part 60 Subpart VVV	1989	
“Polymer Manufacturing Industry: Standards of Performance for Volatile Organic Compound (VOC) Emissions”	40 CFR Part 60 Subpart DDD	1990	
“Standards of Performance for Volatile Organic Compound (VOC) Emissions From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes”	40 CFR Part 60 Subpart III	1990	
“Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations”	40 CFR Part 60 Subpart MMM	1990	

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“Benzene Transfer Operations: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart BB	1990	
“Benzene Waste Operations: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart FF	1990	2003
“Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes”	40 CFR Part 60 Subpart RRR	1993	
“Dry Cleaning Facilities: National Perchloroethylene Air Emission Standards”	40 CFR Part 63 Subpart M	1993	1996, 1999, 2003, 2006, 2008
“Halogenated Solvent Cleaning: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart I	1994	1998, 1999, 2000, 2007
“Synthetic Organic Chemical Manufacturing Industry: Organic National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subparts F, G, H, I	1994	1995, 1996, 1997, 1998, 2006
“Magnetic Tape Manufacturing Operations: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart EE	1994	1999, 2006
“Final Rule for Standards for Emissions From Natural Gas-Fueled, and Liquefied Petroleum Gas-Fueled Motor Vehicles and Motor Vehicle Engines, and Certification Procedures for Aftermarket Conversions”	40 CFR Parts 80, 85, 86, 88, 600	1994	
“Marine Vessel Loading Operations: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart Y	1995	2011

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“Shipbuilding and Ship Repair (Surface Coating): National Emission Standards for Hazardous Air Pollutant”	40 CFR Part 63 Subpart II	1995	1996, 2000, 2003, 2011
“Wood Furniture Manufacturing Operations: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart JJ	1995	1998, 2011
“Final Rule on Ozone Transport Commission; Low Emission Vehicle Program for the Northeast Ozone Transport Region”	40 CFR Parts 51, 52, and 85	1995	
“Final Rule for Control of Air Pollution; Emission Standards for New Nonroad Spark-Ignition Engines At or Below 19 Kilowatts”	40 CFR Parts 9 & 90	1995	
“Municipal Solid Waste Landfills: New Source Performance Standards (NSPS), Emission Guidelines (EG) and Compliance Times”	40 CFR Part 60 Subparts Cf, WWW, and XXX	1996	1998, 1999, 2000, 2016
“Off-Site Waste and Recovery Operations (OSWRO): National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart DD	1996	2001, 2015
“Group I Polymers and Resins: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart U	1996	1997, 2000, 2008, 2011
“The Printing and Publishing Industry: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart KK	1996	2006, 2011
“Final Rule for Gasoline Spark-Ignition Marine Engines; Exemptions for New Nonroad Compression-Ignition Engines at or Above 37 Kilowatts and New Nonroad Spark-Ignition Engines at or Below 19 Kilowatts”	40 CFR Parts 89, 90, & 91	1996	
“Final Rule for Revised Carbon Monoxide (CO) Standard for Class I and II Nonhandheld New	40 CFR Part	1996	

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Nonroad Phase 1 Small Spark-Ignition Engines”	90		
“Acid Rain Program”	40 CFR Part 72-78	1996	2000
“Final Rule for Control of Air Pollution From New Motor Vehicles and New Motor Vehicle Engines: Voluntary Standards for Light-Duty Vehicles”	40 CFR Parts 85 & 86	1997	
“Final Rule for Control of Emissions of Air Pollution From Highway Heavy-Duty Engines”	40 CFR Parts 9 & 86	1997	
“Direct Final Rule for Control of Air Pollution From Aircraft and Aircraft Engines; Emission Standards and Test Procedures”	40 CFR Part 87	1997	2005, 2012
“Final Rule for Amendment to Emission Requirements Applicable to New Gasoline Spark-Ignition Marine Engines”	40 CFR Part 91	1997	
“Flexible Polyurethane Foam Production: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart III	1998	2014
“Pharmaceuticals Production Industry: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart GGG	1998	2000, 2001, 2005, 2011
“Pulp and Paper Production (MACT I & III): National Emissions Standards for Hazardous Air Pollutants for Source Categories”	40 CFR Part 63 Subpart S	1998	1999, 2000, 2001, 2012
“Final Rule for Control of Air Pollution From New Motor Vehicles and New Motor Vehicle Engines: State Commitments to National Low Emission Vehicle Program”	40 CFR Parts 9, 85, & 86	1998	
“Final Rule for Control of Air Pollution From Motor Vehicles and New Motor Vehicle Engines;	40 CFR Part 86	1998	

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Modification of Federal Onboard Diagnostic Regulations for Light-Duty Vehicles and Light-Duty Trucks; Extension of Acceptance of California OBD”			
“Final Rule for Control of Air Pollution From Motor Vehicles and New Motor Vehicle Engines; Increase of the Vehicle Mass for 3-Wheeled Motorcycles”	40 CFR Part 86	1998	
“Final Rule for Emission Standards for Locomotives and Locomotive Engines”	40 CFR Parts 85 ,89, & 92	1998	
“Final Rule for Control of Emissions of Air Pollution From Nonroad Diesel Engines”	40 CFR Parts 9, 86, 89	1998	
“Natural Gas Transmission and Storage Facilities: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart HHH	1999	2012
“Oil and Natural Gas Production Facilities: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart HH	1999	2007, 2012
“Pesticide Active Ingredient Production Industry: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart MMM	1999	2001, 2002,
“Polyether Polyols Production: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart PPP	1999	2014
“Publicly Owned Treatment Works (POTW): National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart VVV	1999	2001, 2002, 2017
“Final Rule for Control of Emissions of Air Pollution From New Marine Compression Ignition Engines at or Above 37 kW”	40 CFR Parts 89, 92, & 94	1999	
“Final Rule for Phase 2 Emission Standards for New Nonroad Spark-Ignition Nonhandheld	40 CFR Part 90	1999	

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Engines At or Below 19 Kilowatts”			
“Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984”	40 CFR Part 60 Subpart Ka	2000	
“Manufacture of Amino/Phenolic Resins: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart OOO	2000	2014
“Final Rule for Control of Air Pollution From New Motor Vehicles: Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements”	40 CFR Parts 80, 85, & 86	2000	
“Final Rule for Control of Emissions of Air Pollution from 2004 and Later Model Year Heavy-Duty Highway Engines and Vehicles; Revision of Light-Duty On-Board Diagnostics Requirements”	40 CFR Part 85 & 86	2000	
“Final Rule for Phase 2 Emission Standards for New Nonroad Spark-Ignition Handheld Engines At or Below 19 Kilowatts and Minor Amendments to Emission Requirements Applicable to Small Spark-Ignition Engines and Marine Spark-Ignition Engines”	40 CFR Parts 90 & 91	2000	
“NOx Budget Trading Program”	40 CFR Part 97	2000	
“Boat Manufacturing: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart VVVV	2001	
“Kraft, Soda, Sulfite, and Stand-Alone Semicemical Pulp Mills (MACT II): National Emission Standards for Hazardous Air Pollutants for Chemical Recovery Combustion Sources”	40 CFR Part 63 Subpart MM	2001	2003, 2004, 2017

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“Solvent Extraction for Vegetable Oil Production: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart GGGG	2001	2002, 2004
“Final Rule for Control of Emissions of Hazardous Air Pollutants From Mobile Sources”	40 CFR Parts 80 & 86	2001	
“Surface Coating of Large Appliances: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart NNNN	2002	
“Leather Finishing Operations: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart TTTT	2002	2005
“Surface Coating of Metal Coil: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart SSSS	2002	2003
“Paper and Other Web Coating: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart JJJJ	2002	2006
“Petroleum Refineries (Catalytic Cracking, Catalytic Reforming and Sulfur Recovery Units): National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart UUU	2002	2005
“Refractory Products Manufacturing: National Emissions Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart SSSSS	2002	
“Rubber Tire Manufacturing: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart XXXX	2002	2003
“Final Rule for Control of Emissions From Nonroad Large Spark-Ignition Engines, and Recreational Engines (Marine and Land-Based)”	40 CFR Parts 1048, 1051, 1065, 1068	2002	
“Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction,	40 CFR Part 60 Subpart Kb	2003	

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Reconstruction, or Modification Commenced After July 23, 1984”			
“Asphalt Processing and Asphalt Roofing Manufacturing: National Emission Standards for Hazardous Air Pollutants for Major Sources”	40 CFR Part 63 Subpart LLLLL	2003	2005
“Printing, Coating, and Dyeing of Fabrics and Other Textiles: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart OOOO	2003	
“Integrated Iron and Steel Manufacturing: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart FFFFF	2003	2006
“Surface Coating of Metal Cans: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart KKKK	2003	
“Surface Coating of Metal Furniture: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart RRRR	2003	
“Miscellaneous Organic Chemical Manufacturing: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart FFFF	2003	2006
“Municipal Solid Waste Landfills: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart AAAA	2003	
“Semiconductor Manufacturing: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart BBBBB	2003	2008
“Surface Coating of Wood Building Products: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart QQQQ	2003	
“Final Rule for Control of Emissions From New Marine Compression-Ignition Engines at or Above 2.5 Liters Per Cylinder”	40 CFR Parts 9 & 94	2003	

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“Surface Coating of Automobiles and Light-Duty Trucks: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart III	2004	2006, 2007
“Industrial, Commercial, and Institutional Boilers and Process Heaters: National Emission Standards for Hazardous Air Pollutants for Major Sources”	40 CFR Part 63 Subpart DDDDD	2004	2005, 2006, 2011, 2013, 2015
“Iron and Steel Foundries: National Emissions Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart EEEEE	2004	2005, 2008
“Organic Liquids Distribution: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart EEEE	2004	2006, 2008
“Surface Coating of Plastic Parts and Products: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart PPPP	2004	2006, 2007
“Plywood and Composite Wood Products Manufacture: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart DDDD	2004	2006, 2007
“National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines”	40 CFR Part 63 Subpart ZZZZ	2004	2008, 2010, 2013, 2014
“Stationary Combustion Turbines: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart YYYY	2004	
“Final Rule for Control of Emissions From Highway Motorcycles”	40 CFR Parts 9, 86, 90, 1051	2004	
“Final Rule for Control of Emissions of Air Pollution From Nonroad Diesel Engines and Fuel”	40 CFR Parts 9, 69, 80, 86, 94, 1039, 1048, 1051,	2004	

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	1065, 1068		
“Direct Final Rule for Amendments to the Phase 2 Requirements for Spark-Ignition Nonroad Engines at or Below 19 Kilowatts”	40 CFR Part 90	2004	
“Final Rule for Control of Emissions of Hazardous Air Pollutants From Mobile Sources: Default Baseline Revision”	40 CFR Part 80	2005	
“Final Rule for Modification of Federal Onboard Diagnostic Regulations for: LD Vehicles, LD Trucks, MD Passenger Vehicles, Complete HD Vehicles and Engines Intended for Use in HD Vehicles Weighing 14,000 Pounds GVWR or Less”	40 CFR Part 85	2005	
“Final Rule for Control of Emissions of Air Pollution From New Motor Vehicles: In-Use Testing for Heavy-Duty Diesel Engines and Vehicles”	40 CFR Part 9 & 86	2005	
“Direct Final Rule for Control of Air Pollution From New Motor Vehicles; Revisions to Motor Vehicle Diesel Fuel Sulfur Transition Provisions; and Technical Amendments to the Highway Diesel, Nonroad Diesel, and Tier 2 Gasoline Programs”	40 CFR Part 80	2005	
“Final Rule for Procedures for Testing Highway and Nonroad Engines and Omnibus Technical Amendments”	40 CFR Parts 85, 86, 89, 90, 91, 92, 94, 1039, 1048, 1051, 1065, 1068	2005	
“Clean Air Interstate Rule” (CAIR)	40 CFR Part 52	2005	Stayed 2009
“New Source Performance Standards for Stationary Compression Ignition Internal	40 CFR Part 60 Subpart III	2006	2011

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Combustion Engines”			
“Final Rule for Emission Durability Procedures for New Light-Duty Vehicles, Light-Duty Trucks and Heavy-Duty Vehicles”	40 CFR Part 86	2006	
“Direct Final Rule for Amendments to Regulations for Heavy-Duty Diesel Engines”	40 CFR Parts 9 & 86	2006	
“Carbon Black Production Area Sources: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart MMMMMM	2007	2008
“Final Rule for Control of Hazardous Air Pollutants From Mobile Sources”	40 CFR Parts 59, 80, 85, & 86	2007	
“New Source Performance Standards for Stationary Spark Ignition Internal Combustion Engines”	40 CFR Part 60 Subpart JJJJ	2008	
“Gasoline Distribution MACT and GACT: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subparts R,BBBBBB & CCCCCC	2008	2011
“Paint Stripping and Miscellaneous Surface Coating Operations: National Emission Standards for Hazardous Air Pollutants for Area Sources”	40 CFR Part 63 Subpart HHHHHH	2008	
“Final Rule for Control of Emissions From Nonroad Spark-Ignition Engines and Equipment”	40 CFR Parts 9, 60, 80, 85, 86, 89, 90, 91, 92, 94, 1027, 1033, 1039, 1042, 1045, 1048, 1051, 1054, 1060, 1065, 1068, 1074	2008	

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“Final Rule for Control of Emissions of Air Pollution From Locomotive Engines and Marine Compression-Ignition Engines Less Than 30 Liters per Cylinder”	40 CFR Parts 9, 85, 86, 89, 92, 94, 1033, 1039, 1042, 1065, 1068	2008	
“Direct Final Rule for Exhaust Emission Standards for 2012 and Later Model Year Snowmobiles”	40 CFR Part 1051	2008	
“Asphalt Processing and Asphalt Roofing Manufacturing: National Emission Standards for Hazardous Air Pollutants for Area Sources”	40 CFR Part 63 Subpart AAAAAAA	2009	2010
“Chemical Manufacturing Area Sources: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart VVVVVV	2009	2011, 2012
“Paints and Allied Products Manufacturing: National Emission Standards for Hazardous Air Pollutants for Area Sources”	40 CFR Part 63 Subpart CCCCCC	2009	2010
“Final Rule for Control of Air Pollution From New Motor Vehicles and New Motor Vehicle Engines; Regulations Requiring Onboard Diagnostic Systems on 2010 and Later Heavy-Duty Engines Used in Highway Applications Over 14,000 Pounds”	40 CFR Parts 86, 89, 90, 1027, 1033, 1042, 1048, 1054, 1060, 1065, & 1068	2009	
“Direct Final Rule for Revisions to In-Use Testing for Heavy-Duty Diesel Engines and Vehicles; Emissions Measurement and Instrumentation; Not-to-Exceed Emission Standards; and Technical Amendments for Off-Highway Engines”	40 CFR Parts 89, 1033, 1039, 1042, 1045, 1054, 1065	2010	
“Direct Final Rule for Technical Amendments for Marine Spark-Ignition Engines and Vessels”	40 CFR Part 1060	2010	
“Final Rule for Control of Emissions From New Marine Compression-Ignition Engines at or	40 CFR Parts 80, 85, 86, 94, 1027, 1033,	2010	

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Above 30 Liters per Cylinder”	1039, 1042, 1043, 1045, 1048, 1051, 1054, 1060, 1065, 1068		
“Industrial, Commercial, and Institutional Area Source Boilers: National Emission Standards for Hazardous Air Pollutants”	40 CFR Part 63 Subpart JJJJJ	2011	2013, 2016
“Final Rule for Clean Alternative Fuel Vehicle and Engine Conversions”	40 CFR Parts 85 & 86	2011	
“Cross-State Air Pollution Rule” (CSAPR)	40 CFR Parts 52 & 97	2011	2016
“Crude Oil and Natural Gas Production, Transmission and Distribution for Which Construction, Modification, or Reconstruction Commenced after August 23, 2011 and on or before September 18, 2015: New Source Performance Standards”	40 CFR Part 60 Subpart OOOO	2012	2013, 2014, 2015, 2016
“Direct Final Rule for Heavy-Duty Highway Program: Revisions for Emergency Vehicles”	40 CFR Parts 85, 86, & 1039	2012	
“Direct Final Rule for Great Lakes Steamship Repower Incentive Program”	40 CFR Part 1043	2012	
“Final Rule for Clean Alternative Fuel Vehicle and Engine Conversions”	40 CFR Parts 79, 80, 85, 86, 600, 1036, 1037, 1039, 1042, 1048, 1054, 1065, & 1066	2014	
“Final Rule for Emergency Vehicle Rule - Selective Catalytic Reduction (SCR) Maintenance and Regulatory Flexibility for Nonroad Equipment”	40 CFR Part 86 & 1039	2014	

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“Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards”	40 CFR Part 60 Subparts J & Ja and 40 CFR Part 63 Subparts CC & UUU	2015	2016
“Amendments Related to Tier 3 Motor Vehicle Emission and Fuel Standards, Nonroad Engine and Equipment Programs, and MARPOL Annex VI Implementation”	40 CFR Parts 59, 80, 85, 86, 600, 1037, 1043, 1051, 1054, 1060, 1065, 1066	2015	
“Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone” (NOx SIP Call)	40 CFR Parts 51, 72, 75, 95	1998	

VII. Conclusion

Regulations for the control of volatile organic compounds in Pulaski County contained in Regulation No. 19, Chapter 10 were enacted in response to Pulaski County being designated as non-attainment for ozone in 1978. The requirements adopted into Regulation No. 19, Chapter 10 were meant to apply specifically in non-attainment areas but have remained in place despite Pulaski County having been redesignated to attainment status in 1984. As part of the Air Integrated Regulation regulatory streamlining project, a decision was made to remove the outdated VOC provisions.

Several factors provide justification for repeal of the VOC regulations for Pulaski County. Pulaski County has remained in attainment of the ozone NAAQS for more than thirty years even as the ozone NAAQS has become more stringent over time. In addition, VOC emissions in Pulaski County increased between 2002 and 2014, but ozone concentrations in Pulaski County continued to decrease during the same period. EPA modeling results indicate that reductions in VOC emissions are not effective in reducing ozone concentrations in most areas of the United States, including Arkansas, and that much greater benefits are seen due to reductions of NOx emissions. The vast majority of VOC emissions in Arkansas, including Pulaski County are biogenic in nature and therefore not subject to control. Information contained in this technical support document demonstrates that no air quality benefit would be gained by retaining VOC

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regulations specific to Pulaski County and that their repeal will not interfere with continued attainment and maintenance of the ozone NAAQS in Pulaski County.

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