

2017
West Virginia
Air Quality
Annual Update



2017 Air Quality Annual Update

West Virginia Department of Environmental Protection
Division of Air Quality

601 57th Street, S.E.
Charleston, WV 25304

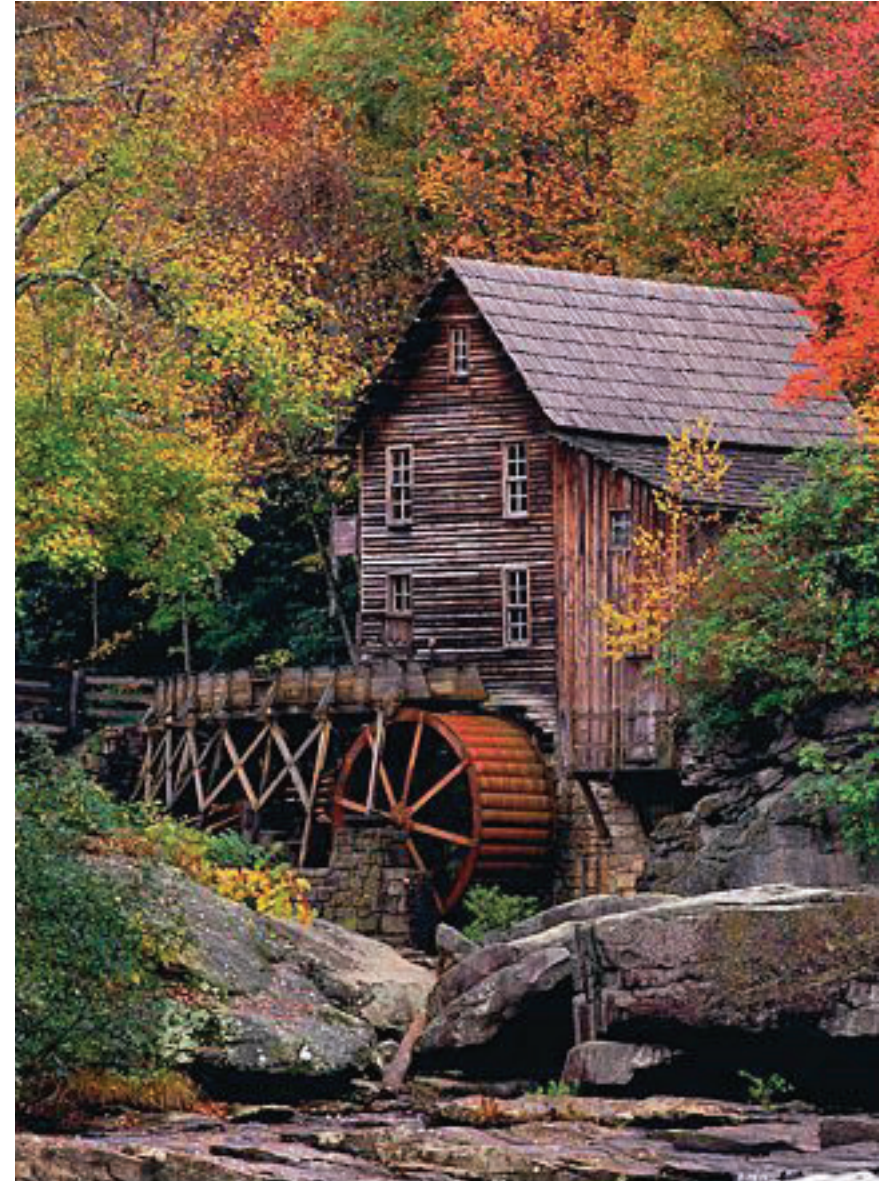
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Introduction

The 2017 *West Virginia Air Quality Annual Update* highlights the work of the Division of Air Quality (DAQ) for the calendar year 2017, and provides data on the air quality monitoring network, attainment status with the various National Ambient Air Quality Standards (NAAQS); summary data of permitting actions, compliance and enforcement actions, and small business assistance activities; emissions trends in air toxics; and highlights of outreach events. This document is intended to supplement the companion document, *Introduction to West Virginia Air Quality*, which was published last year, and provides an overview of the DAQ, its history and responsibilities; an overview and history of the NAAQS; and provides a basic explanation of air quality, air quality regulation, and the mission of the DAQ.

The DAQ intends to continue to provide annual updates, highlighting the work of the DAQ each year. We also intend to update *Introduction to West Virginia Air Quality* as needed. We hope you find the information contained in the 2017 *West Virginia Air Quality Annual Update*, and the *Introduction to West Virginia Air Quality* both informative and helpful.



Gristmill at Babcock State Park

2017 Highlights

Carbon Dioxide Standards for Power Plants

On March 28, 2017, President Trump signed the Executive Order on Energy Independence, calling for a review of the *Clean Power Plan*, which established emission guidelines for state plans to limit carbon dioxide (CO₂) emissions from existing fossil fuel-fired power plants. On April 3, 2017, the United States Environmental Protection Agency (EPA) withdrew the proposed rules to regulate CO₂ emissions from existing power plants.

On April 4, 2017, EPA announced it was reviewing the October 23, 2015 *Clean Power Plan*, and accompanying Legal Memorandum, and, if appropriate, would initiate proceedings to suspend, revise or rescind the rule. On October 10, 2017, the EPA proposed the repeal of the Clean Power Plan.

Ozone

On October 1, 2015, the EPA strengthened both the primary and secondary NAAQS for ground level ozone (O₃) from 75 parts per billion (ppb) to 70 ppb based on extensive scientific evidence about ozone's effects on public health and welfare. The updated standards are meant to improve public health protection, particularly for at-risk groups including children, older adults, people of all ages with lung diseases such as asthma, and people who are active outdoors, especially outdoor workers; as well as to improve the health of trees, plants, and ecosystems.

The EPA uses three years of air monitoring data to determine if an area meets the standards. An area meets the standards if the

fourth highest maximum daily eight-hour O₃ concentration each year, averaged over three years is 70 ppb or less. In September 2016, the DEP recommended that the EPA designate all areas of the state as attainment for the 2015 Ozone NAAQS based on 2013-2015 monitoring data. West Virginia (WV) continues to monitor attainment with the standard based on 2014-2016, and 2015-2017 monitoring data.

On November 16, 2017, the EPA designated 52 counties in WV as attainment with the 2015 O₃ NAAQS and deferred designations for the remaining 3 counties – Berkeley, Hampshire, and Jefferson. On December 20, 2017, the EPA notified WV that it intends to designate as attainment with the 2015 O₃ NAAQS all areas in the state not previously designated.

Sulfur Dioxide

In August 2013, the Cross Creek Tax District of Brooke County and the Clay, Franklin and Washington Tax Districts of Marshall County were designated nonattainment with the 2010 Sulfur Dioxide (SO₂) NAAQS of 75 ppb, based on 2009-2011 monitoring data.

In accordance with the 2015 SO₂ Data Requirements Rule (DRR), in January 2017, the DAQ submitted to the EPA:

- modeling analyses characterizing air quality based on actual SO₂ emissions for six sources;

2017 Highlights

- documentation of federally enforceable requirements to limit SO₂ emissions to under 2,000 tons per year (tpy) for one source; and
- documentation of the permanent shutdown of two sources.

Air quality in both Brooke County and Marshall County has continued to improve, and both areas are monitoring attainment with the standard, based on the 2013-2015, 2014-2016 and 2015-2017 design values. However, the EPA determined that monitoring data alone is not sufficient to demonstrate attainment. An air quality modeling demonstration of attainment is also required. The DAQ has worked with sources in both areas to develop modeled attainment demonstrations. For the Brooke County area, the DAQ submitted a modeled attainment demonstration to the EPA for approval in April 2016 and submitted a supplement to the attainment demonstration in November 2017. For the Marshall County area, the DAQ submitted an attainment demonstration to the EPA in March 2017.

Modeling

The modeling workload remained at a very high level with work continuing on the SO₂ DRR, major source Prevention of Significant Deterioration (PSD) permit applications, and State Implementation Plans (SIP) related to SO₂. A new modeling staff person was added to fill the vacancy left by the departure of a modeling staff person and the three in-house permit engineers with modeling duties continued to provide valuable contributions for modeling support. The DAQ

performed additional analyses for two SIPs, reviewed protocols for four PSD applications, completed review of results for three PSD applications, and submitted modeling results to EPA for six SO₂ DRR sources.

Emissions Inventory

In 2017, the DAQ finalized updating the State and Local Emissions Inventory System (SLEIS) emission inventory reporting software implementing minor revisions made by the vendor. Historically, the SLEIS software only managed the Major Title V permitted facilities emissions inventory. However, in 2017, internal staff enhanced the software to include emissions inventories for the permitted Title V Deferred facilities. This enhancement will reduce the paperwork that facilities have previously been required to complete and will improve efficiencies in the collection and processing of annual operating fees. Approximately 500 facility emission inventories now reside in SLEIS.

Improvements were made to the area source emission inventories. These improvements include reviewing the EPA developed emissions inventory tools, such as the Oil and Gas Tool; the Industrial, Commercial, and Institutional (ICI) Tool; the Solvent Tool; and the Residential Wood Combustion Tool, and updating the EPA's default input data where available with actual WV representative data. Using WV based input data more accurately estimates our actual annual air emissions.

2017 Highlights

New Source Review Permitting

In 2017, New Source Review (NSR) Permitting issued 485 total permitting actions; held one Public Meeting; worked through three different appeals; had six PSD applications under review; and issued two PSD permits. Rule 13 passed the WV Legislature and has an effective date of June 1, 2017. NSR Permitting continued the process of making all general permit applications available through the Electronic Submittal System (ESS), with all G70 General Permit application, Annual Certification and Alternate Operating Scenario forms in use through ESS by the end of the year.

Title V Permitting

In 2017, Title V Permitting issued 111 total permitting actions: 1 initial permit; 61 renewal permits; 8 significant modifications; 36 minor modifications; and 5 administrative amendments.

Education and Outreach

In 2017, the DAQ Outreach Team participated in 23 events across nine counties in WV where staff spoke with over 13,000 visitors. Sixteen of these events were geared toward elementary, middle, and high school students explaining and demonstrating control devices at air pollution sources, as well as energy efficiency and conservation. A new event was added, the Girl Scout Jamboree held at the Summit Bechtel Family National Scout Reserve in Fayette County. 700 Girl Scouts and 300 adult advisors from 24 states were in attendance for the 5-day event. Another new event for 2017 was the Grandview Water Festival at the New River Gorge

National River. 500 4th- and 5th-grade students participated in interactive learning stations and exhibits where they engaged in hands-on activities.

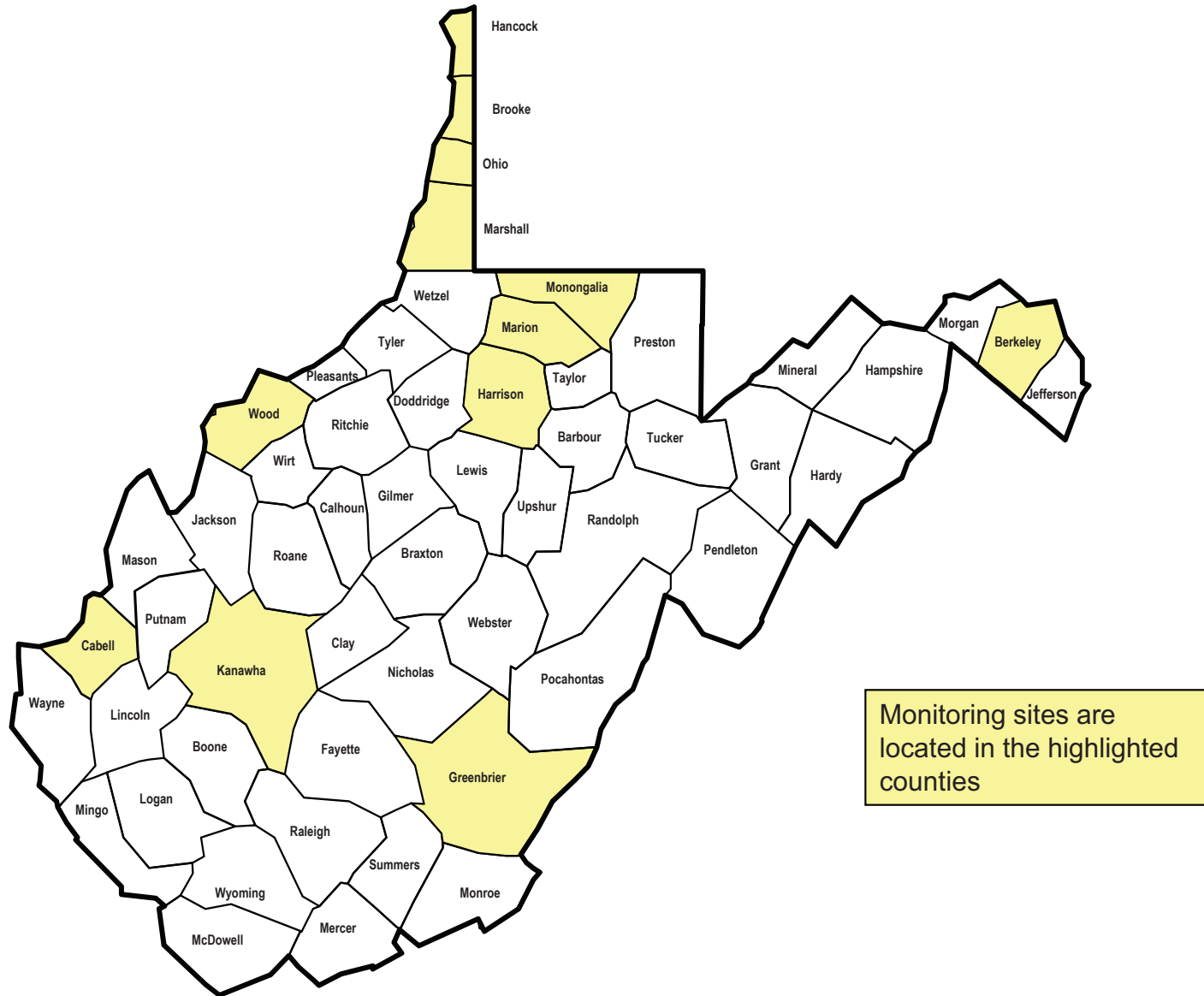
In July 2017, the DAQ Outreach Team received the West Virginia Department of Environmental Protection's (DEP) Rewards and Recognition Employee Award for producing work-related service above and beyond what is expected; promoting harmony with co-workers; maintaining exemplary work standards; promoting a positive image of DEP; presenting a helpful and cooperative attitude; and promoting the spirit of the agency.

DAQ staff conducted one public meeting on a proposed air pollution permit in Monongalia County, a public hearing on DAQ rules at DEP Headquarters in Kanawha County, and electronic permitting training for the natural gas industry, also at DEP Headquarters in Kanawha County.

Air Monitoring Network Plan

The DAQ is required by the EPA to post its ambient air monitoring *Annual Network Plan* (ANP) on our web site for public comment and submit it to the EPA by July 1 every year. The 2017 ANP was posted on May 7, 2017 for 30 days. We did not receive any comments. The plan may be found at www.dep.wv.gov/daq/air-monitoring/pages/default.aspx.

Air Monitoring Network



Air Monitoring Network

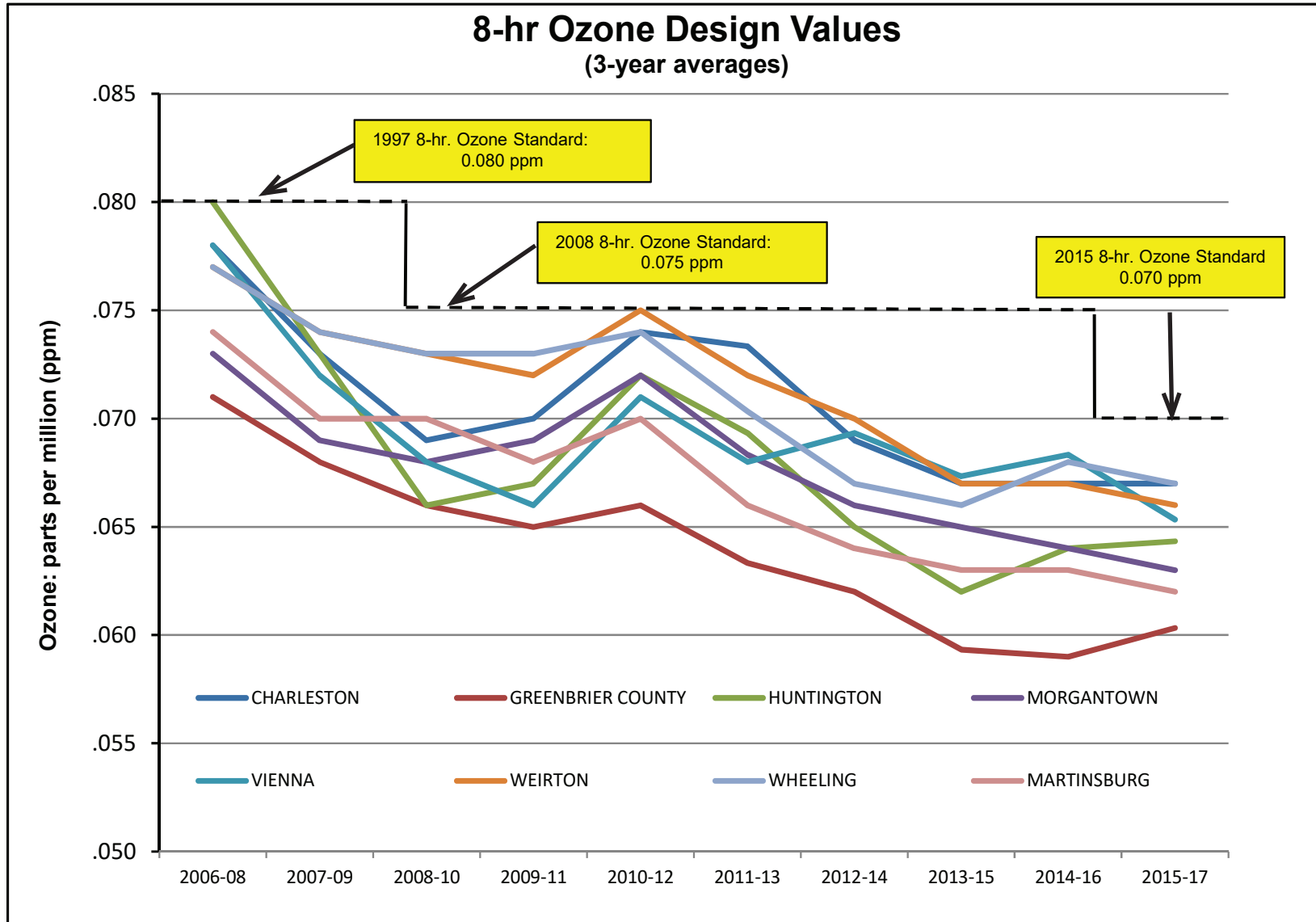
West Virginia Division of Air Quality - Monitoring Network

COUNTY	PM ₁₀	PM _{2.5}	CO	SO ₂	O ₃	Meteorological	PM _{2.5} SPECIATION	AIR TOXICS
Berkeley		1			1			
Brooke	1	2		3				
Cabell		1			1			
Greenbrier					1			
Hancock	1	1		3		1		
Harrison		1						
Kanawha		2	1	1	1	1	1	1
Marion		1						
Marshall		1		1			1	
Monongalia		1		1	1			
Ohio		1			1			1
Wood		1		1	1			
Total Sites	2	13	1	10	7	2	2	2

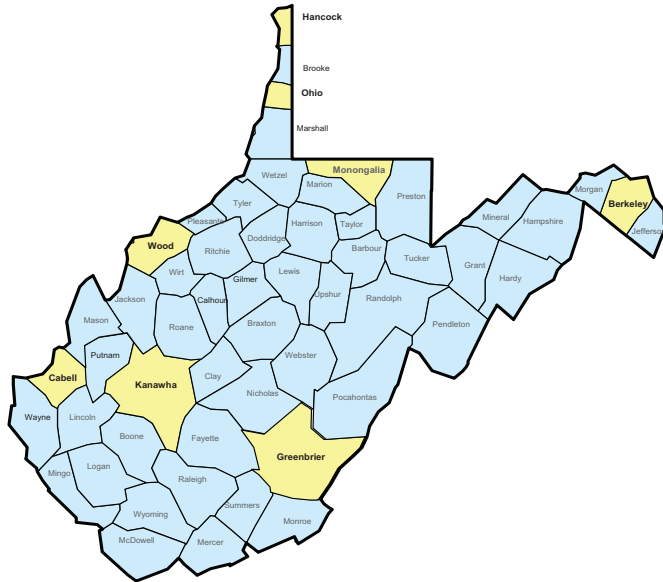
Air Quality Index

County	2017 - Days in each category:				Highest Value AQI
	Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy	
Berkley	253	32	0	0	74
Brooke	323	42	0	0	95
Cabell	251	30	2	0	101
Greenbrier	227	12	0	0	84
Hancock	324	41	0	0	87
Harrison	109	11	0	0	67
Kanawha	301	62	1	0	105
Marion	100	12	0	0	71
Marshall	220	145	0	0	83
Monongalia	336	26	0	0	90
Ohio	240	43	0	0	87
Wood	327	30	0	0	84

Criteria Pollutants - Ozone Summary



Criteria Pollutants - Ozone Summary



Criteria Pollutant Summary Report - 2017

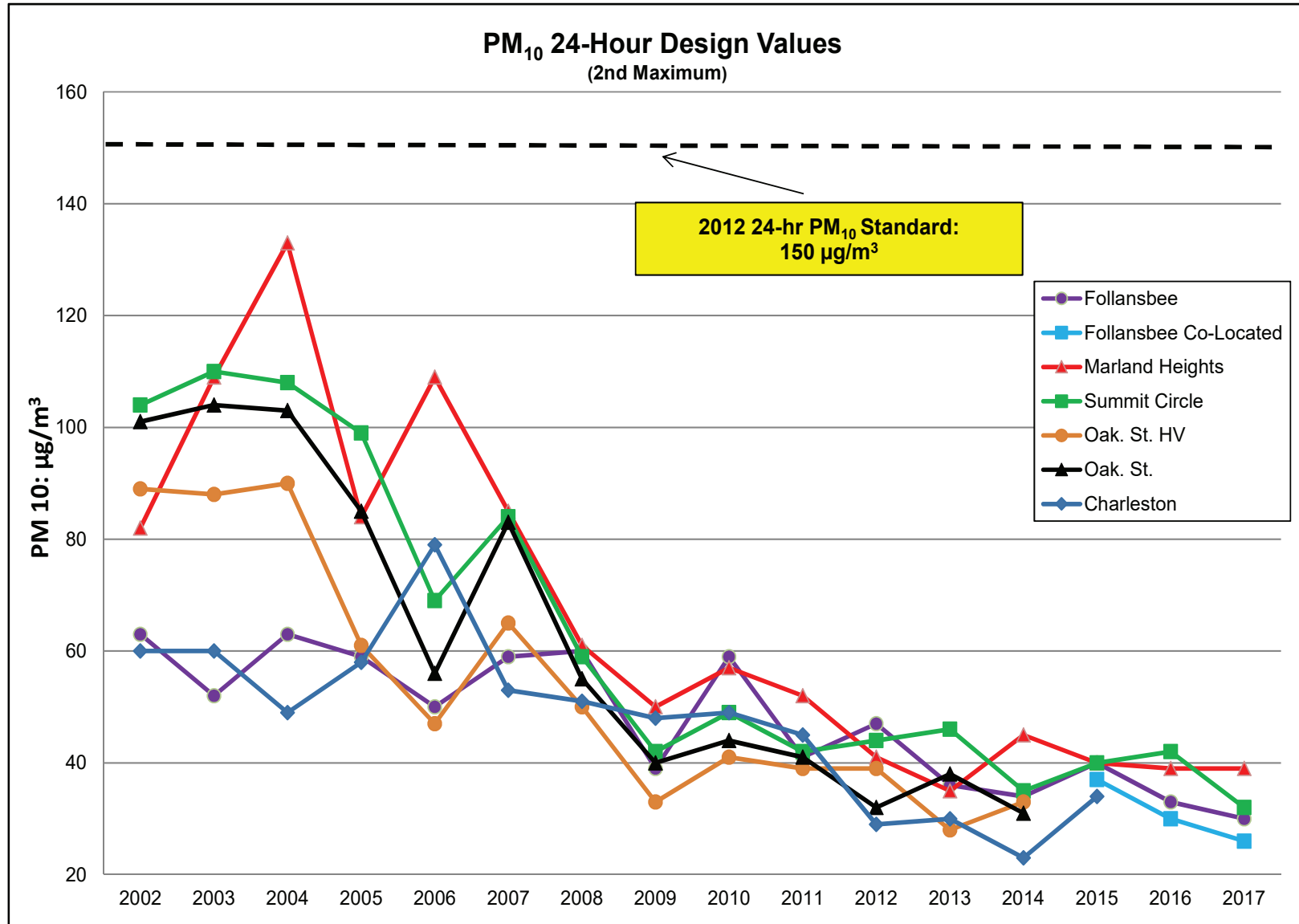
Pollutant: Ozone
 Monitoring Season: March 1 - October 31
 Data Interval: Hourly
 Units: Parts-per-million (PPM)

National Ambient Air Quality Standards (NAAQS)

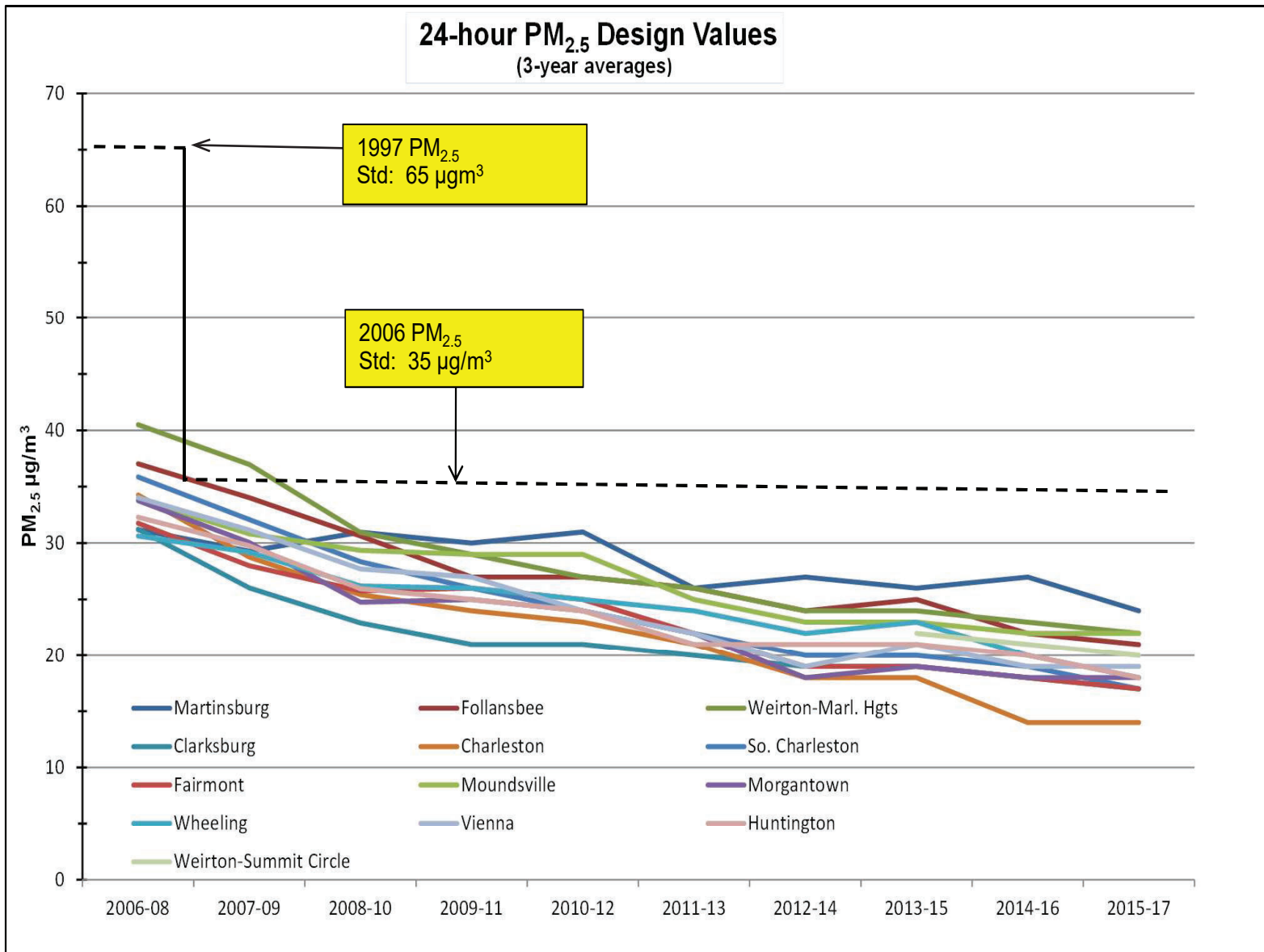
Primary NAAQS: 8-Hour (3-year average of 4th max.) 0.070 PPM
 Secondary NAAQS: Same as Primary Standard

County	Site	EPA-ID	# Valid Days	8-Hour Averages PPM					
				Obs >0.070	1st Max	2nd Max	3rd Max	4th Max	'15-'17 4th Max Avg
Berkeley	Martinsburg	54-003-0003	242	0	.060	.060	.058	.057	.062
Cabell	Huntington	54-011-0006	241	2	.071	.071	.068	.062	.064
Greenbrier	Sam Black Church	54-025-0003	236	0	.065	.064	.064	.062	.060
Hancock	Weirton	54-029-0009	243	0	.066	.065	.064	.062	.066
Kanawha	Charleston	54-039-0020	348	2	.072	.070	.068	.067	.067
Monongalia	Morgantown	54-061-0003	240	0	.067	.064	.062	.061	.063
Ohio	Wheeling	54-069-0010	244	0	.066	.066	.065	.065	.067
Wood	Vienna	54-107-1002	214	0	.065	.062	.060	.058	.065

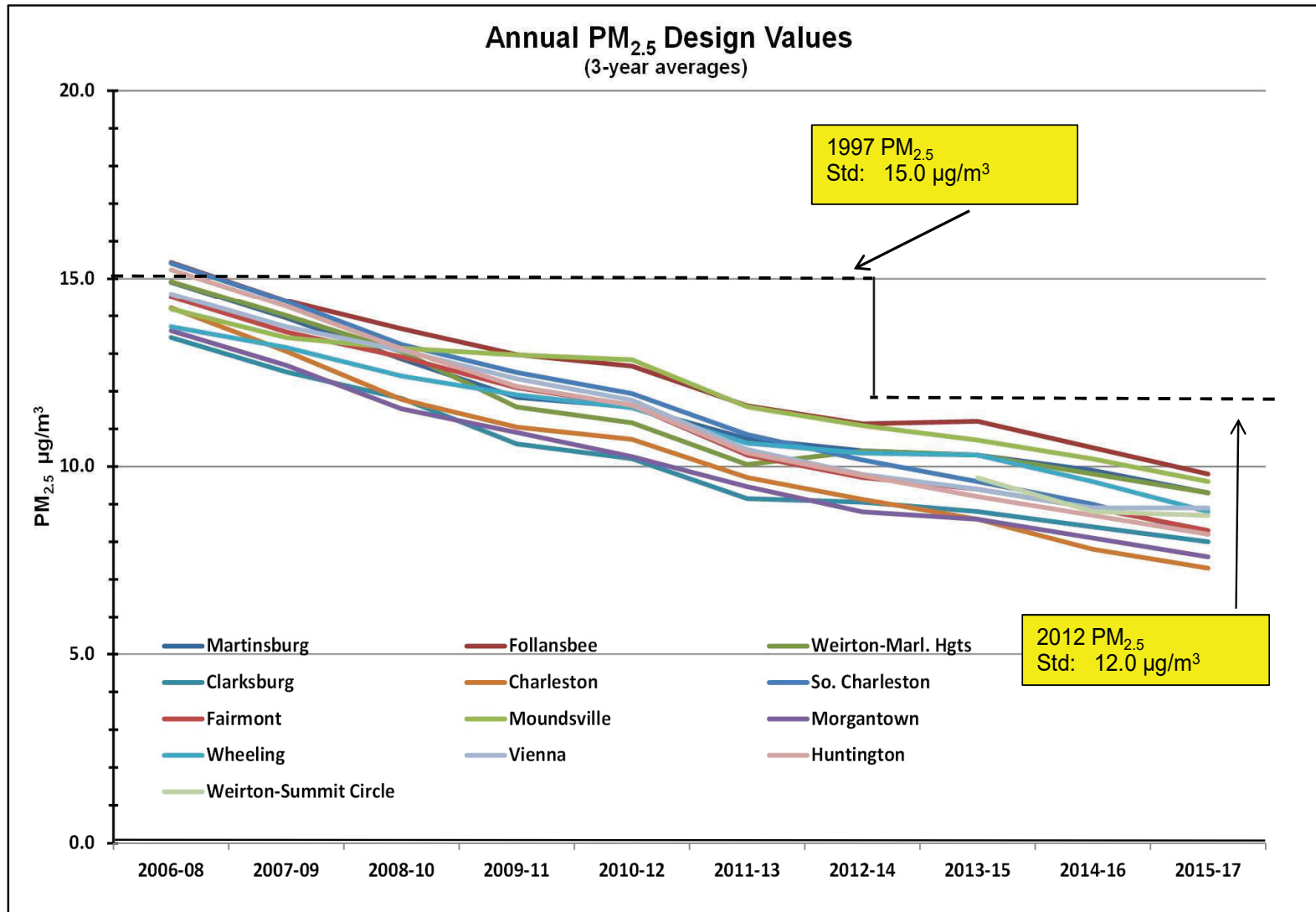
Criteria Pollutants - PM₁₀ Summary



Criteria Pollutants - PM_{2.5} Summary



Criteria Pollutants - PM_{2.5} Summary



Criteria Pollutants - PM_{2.5} Summary

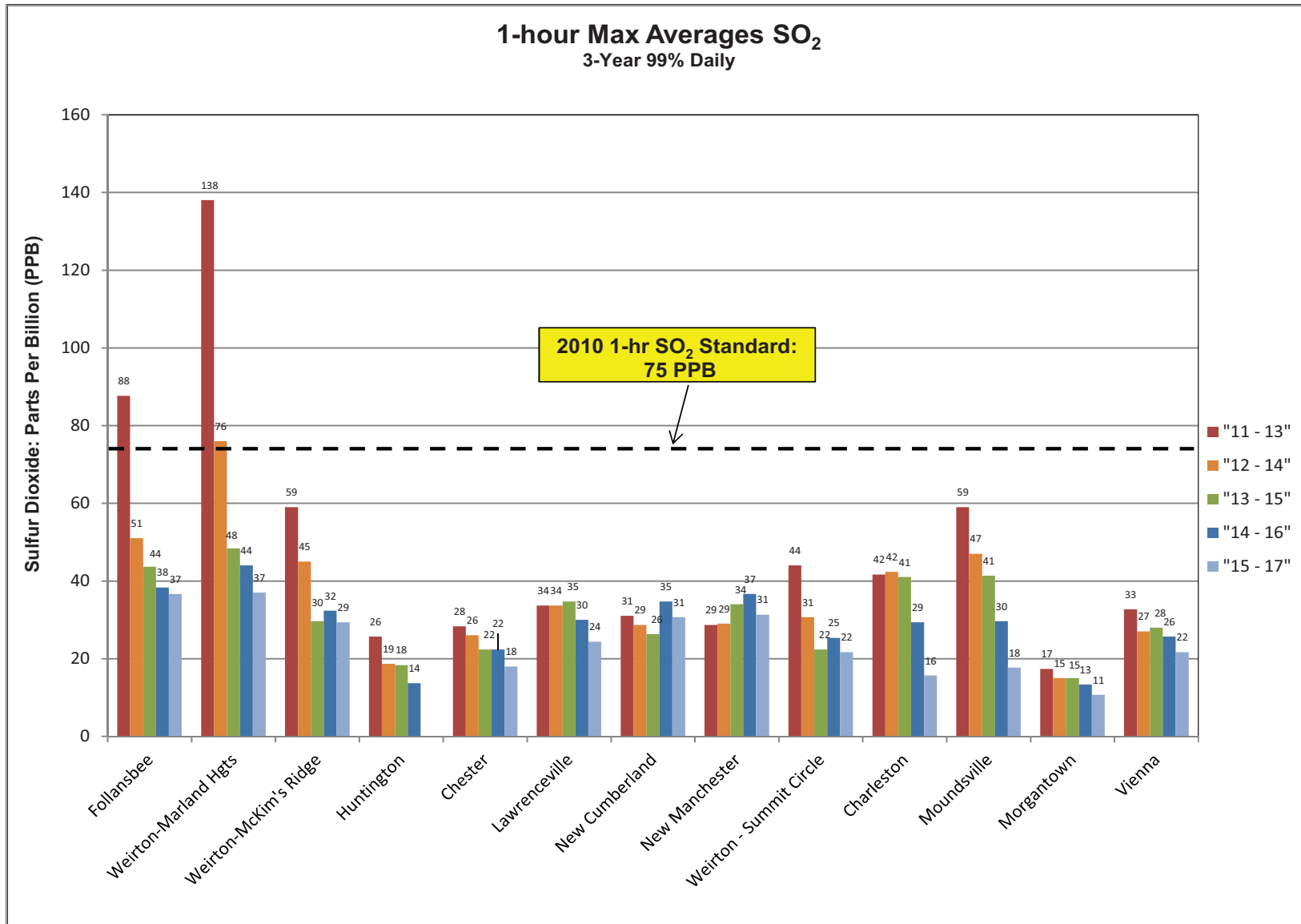


Criteria Pollutant Summary Report - 2017

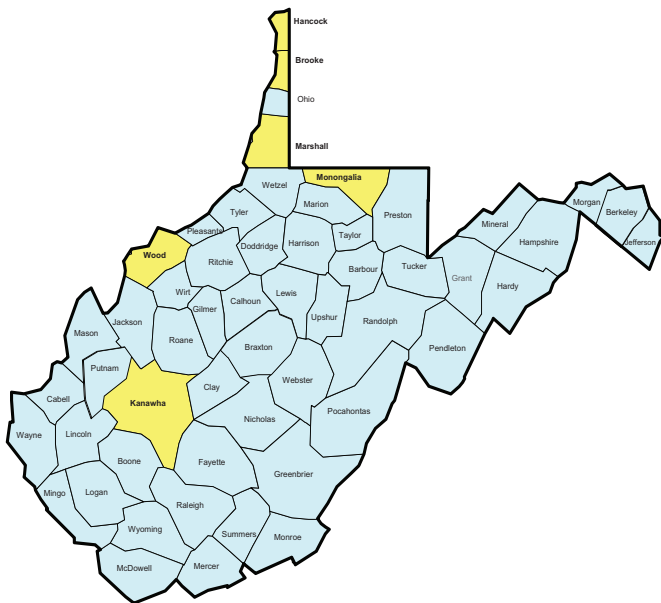
Pollutant: Particulate Matter PM_{2.5}
 Monitoring Season: January 1 - December 31
 Data Interval: 24-Hour
 Units: Micro-grams per cubic meter (µg/m³)
National Ambient Air Quality Standards (NAAQS)
 Primary NAAQS: Annual Arithmetic Mean (3-year average) 15.0 µg/m³
 24-Hour Average (3-year average 98th percentile) 35 µg/m³
 Secondary NAAQS: Same as Primary Standard

County	Site	EPA-ID	# Obs	Annual Mean	24-Hour Average				3 Year Average	
					Obs > 35	98%	1st Max	2nd Max	Annual	24-Hr 98%
Berkeley	Martinsburg	54-003-0003	120	8.5	0	21.0	22.8	21.7	9.3	24
Brooke	Follansbee	54-009-0005	120	9.1	0	19.0	19.9	19.9	9.8	21
Brooke	Weirton	54-009-0011	120	9.2	0	20.0	21.2	21.0	9.3	22
Cabell	Huntington	54-011-0006	119	7.8	0	15.0	17.3	15.9	8.2	18
Hancock	Weirton	54-029-0009	120	8.4	0	18.0	21.9	19.1	8.7	20
Harrison	Clarksburg	54-033-0003	120	7.6	0	15.0	19.6	16.0	8.0	17
Kanawha	Charleston	54-039-0020	112	7.0	0	13.0	14.3	13.5	7.3	14
Kanawha	South Charleston	54-039-1005	119	7.6	0	15.0	21.1	15.5	8.2	17
Marion	Fairmont	54-049-0006	112	7.8	0	15.0	21.7	16.2	8.3	17
Marshall	Moundsville	54-051-1002	121	9.3	0	21.0	25.5	23.4	9.6	22
Monongalia	Morgantown	54-061-0003	117	7.3	0	18.0	23.4	20.5	7.6	18
Ohio	Wheeling	54-069-0010	120	7.9	0	16.0	23.2	18.5	8.8	18
Wood	Vienna	54-107-1002	114	8.2	0	18.0	24.0	22.1	8.5	19

Criteria Pollutants - SO₂ Summary



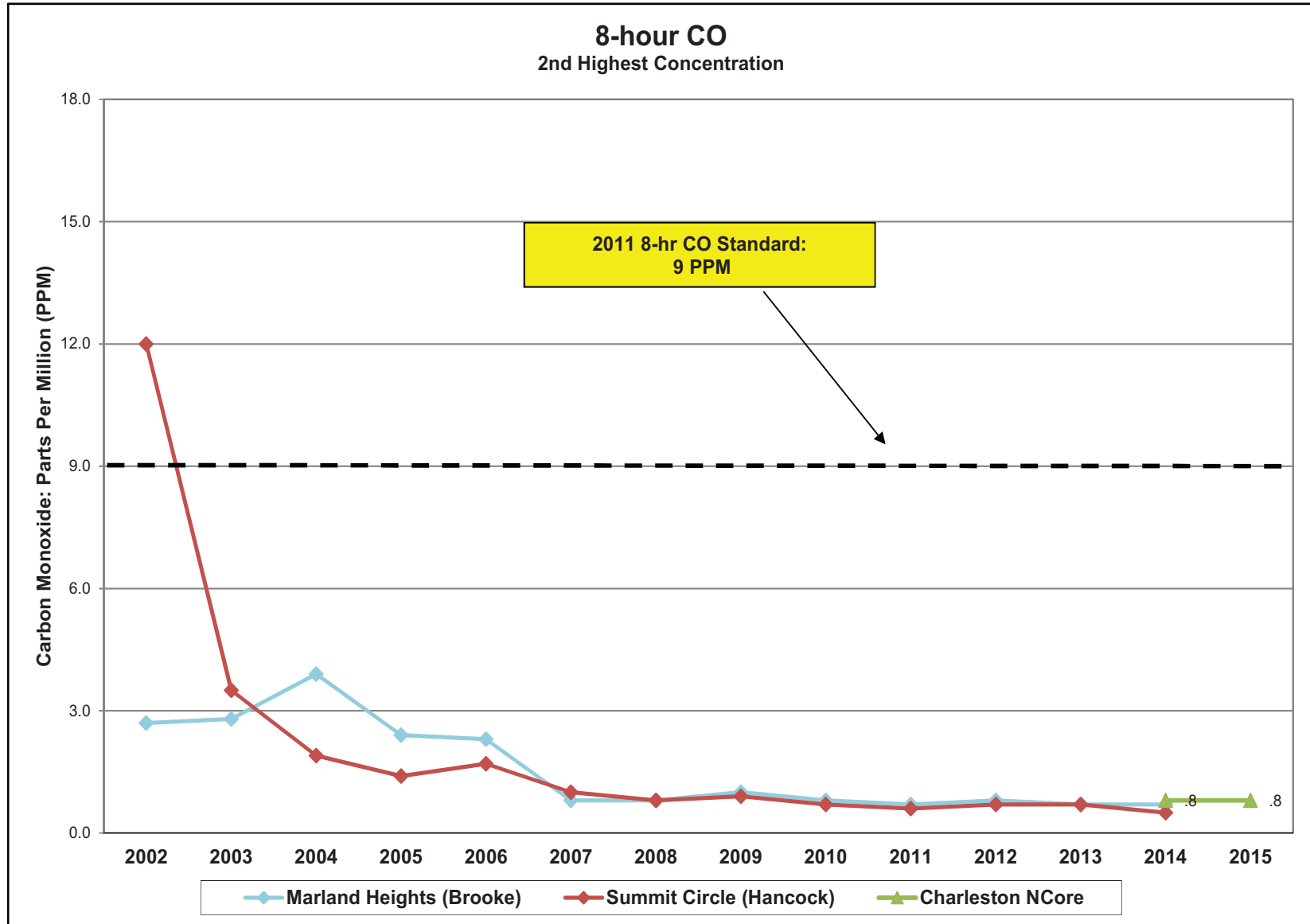
Criteria Pollutants - SO₂ Summary



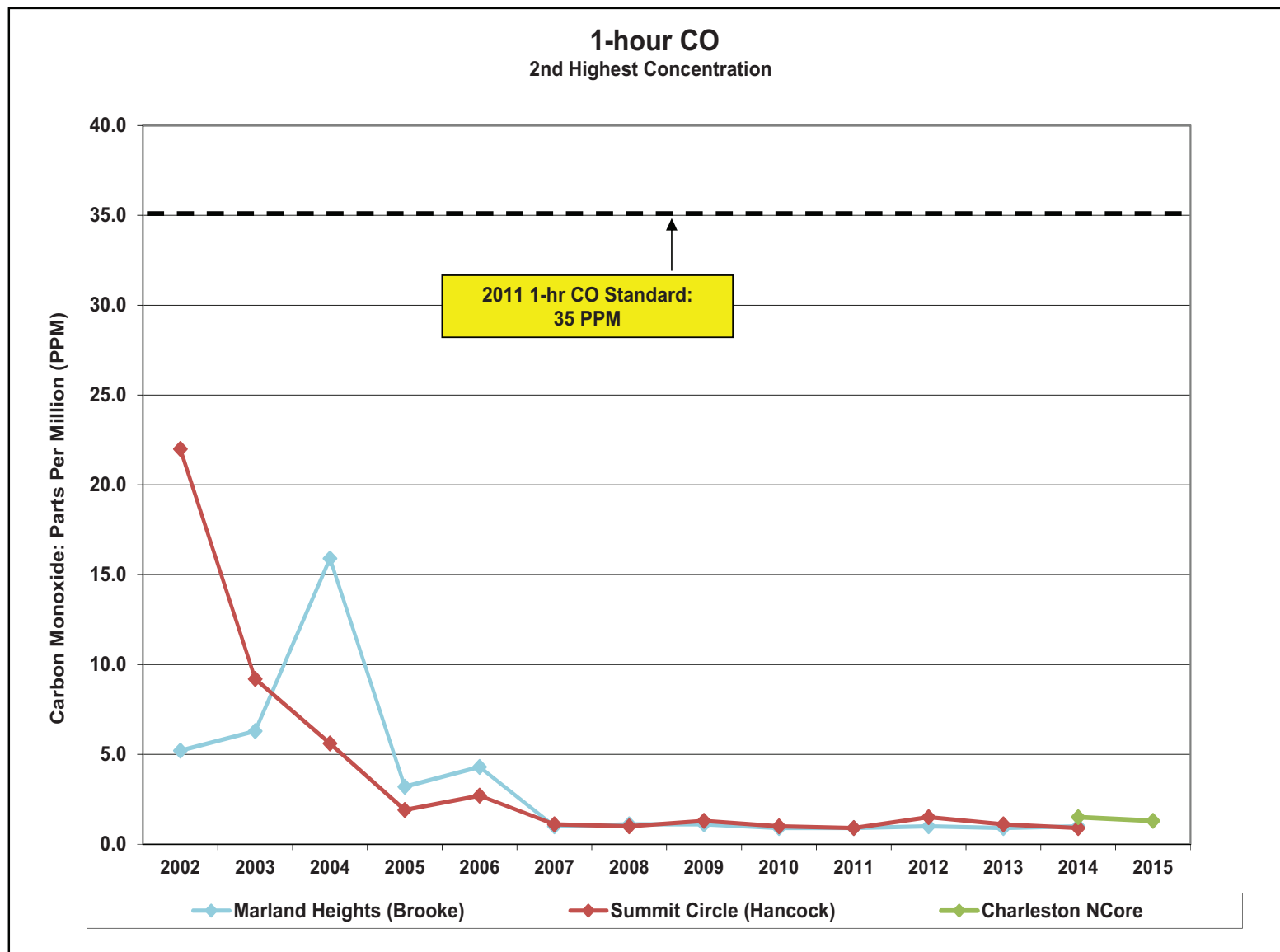
Criteria Pollutant Summary Report - 2017		
Pollutant:	Sulfur Dioxide	
Monitoring Season:	January 1 - December 31	
Data Interval:	Hourly	
Units:	Parts-per-billion (PPB)	
<u>National Ambient Air Quality Standards (NAAQS)</u>		
Primary NAAQS:	1-Hour Daily Max 3 Year 99% Average	75 PPB
Secondary NAAQS:	3-Hour Average	500 PPB

County	Site	EPA-ID	# Obs	Annual Mean	1-Hr Average				3-Hr Average		
					1st Max	2nd Max	99%	15-17 99%	obs > 500	1st Max	2nd Max
Brooke	Follansbee	54-009-0005	8704	2.51	32	31	28	37	0	24	21
Brooke	Weirton/Mckims Ridge	54-009-0007	8083	2.88	59	38	23	29	0	32	22
Brooke	Weirton/Marland Heights	54-009-0011	8689	2.63	49	52	27	37	0	33	23
Hancock	New Manchester	54-029-0005	8679	2.19	25	21	18	31	0	13	11
Hancock	New Cumberland	54-029-0007	8681	1.97	25	22	17	31	0	14	10
Hancock	Chester	54-029-0008	8698	1.94	14	13	10	18	0	10	8
Hancock	Weirton	54-029-0009	8681	2.04	16	16	15	22	0	12	12
Hancock	Lawrenceville	54-029-0015	8676	2.27	30	18	17	24	0	21	12
Kanawha	Charleston	54-039-0020	3823	0.59	7	6	6	16	0	5	4
Marshall	Moundsville	54-051-1002	8706	1.57	10	8	7	18	0	7	6
Monongalia	Morgantown	54-061-0003	7803	0.50	9	7	7	11	0	6	6
Wood	Vienna	54-107-1002	8145	1.36	25	25	19	22	0	19	15

Criteria Pollutants - CO Summary



Criteria Pollutants - CO Summary



Criteria Pollutants - CO Summary



Criteria Pollutant Summary Report - 2017

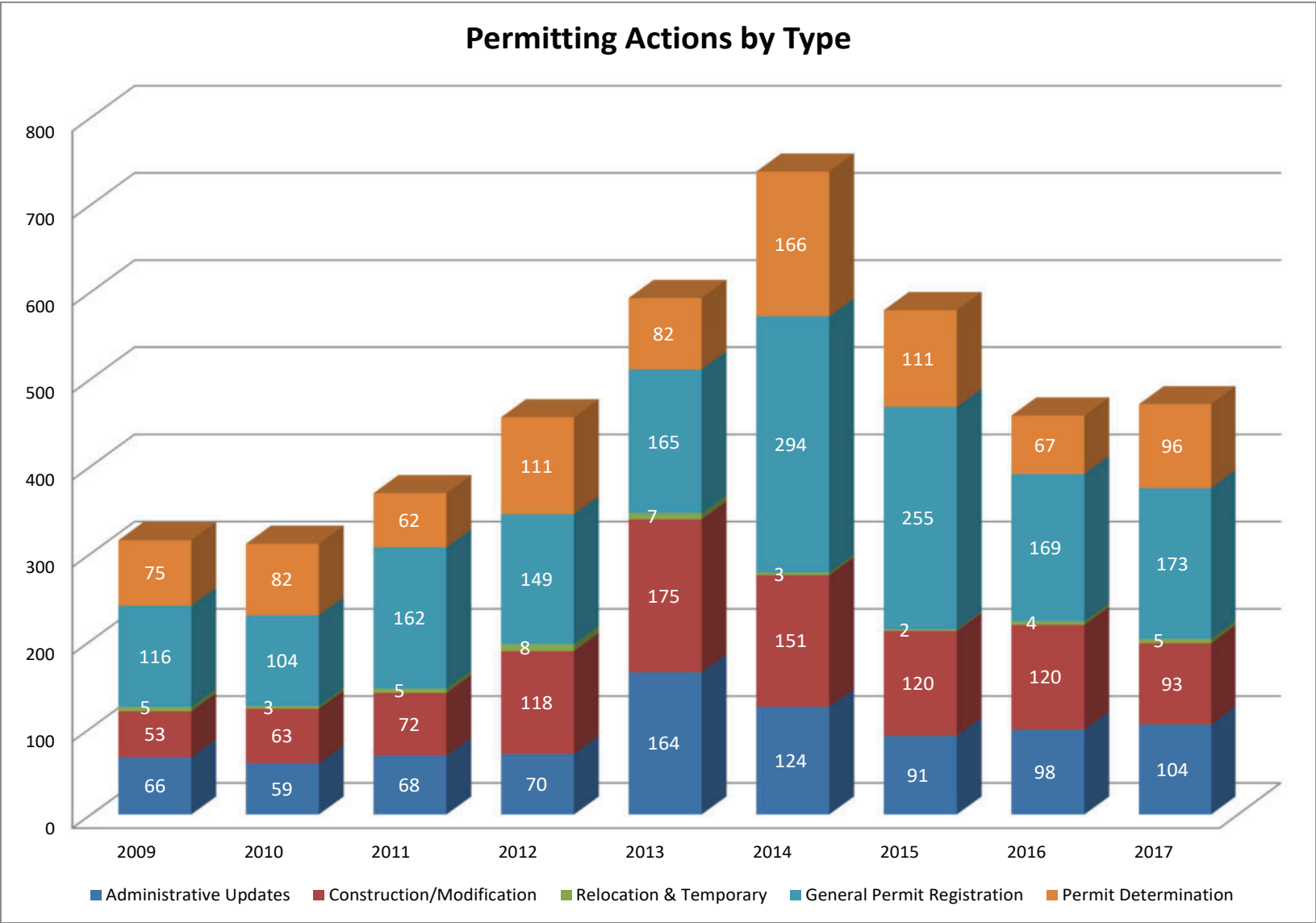
Pollutant: Carbon Monoxide
 Monitoring Season: January 1 - December 31
 Data Interval: Hourly
 Units: Parts-Per-Million (PPM)

National Ambient Air Quality Standards (NAAQS)

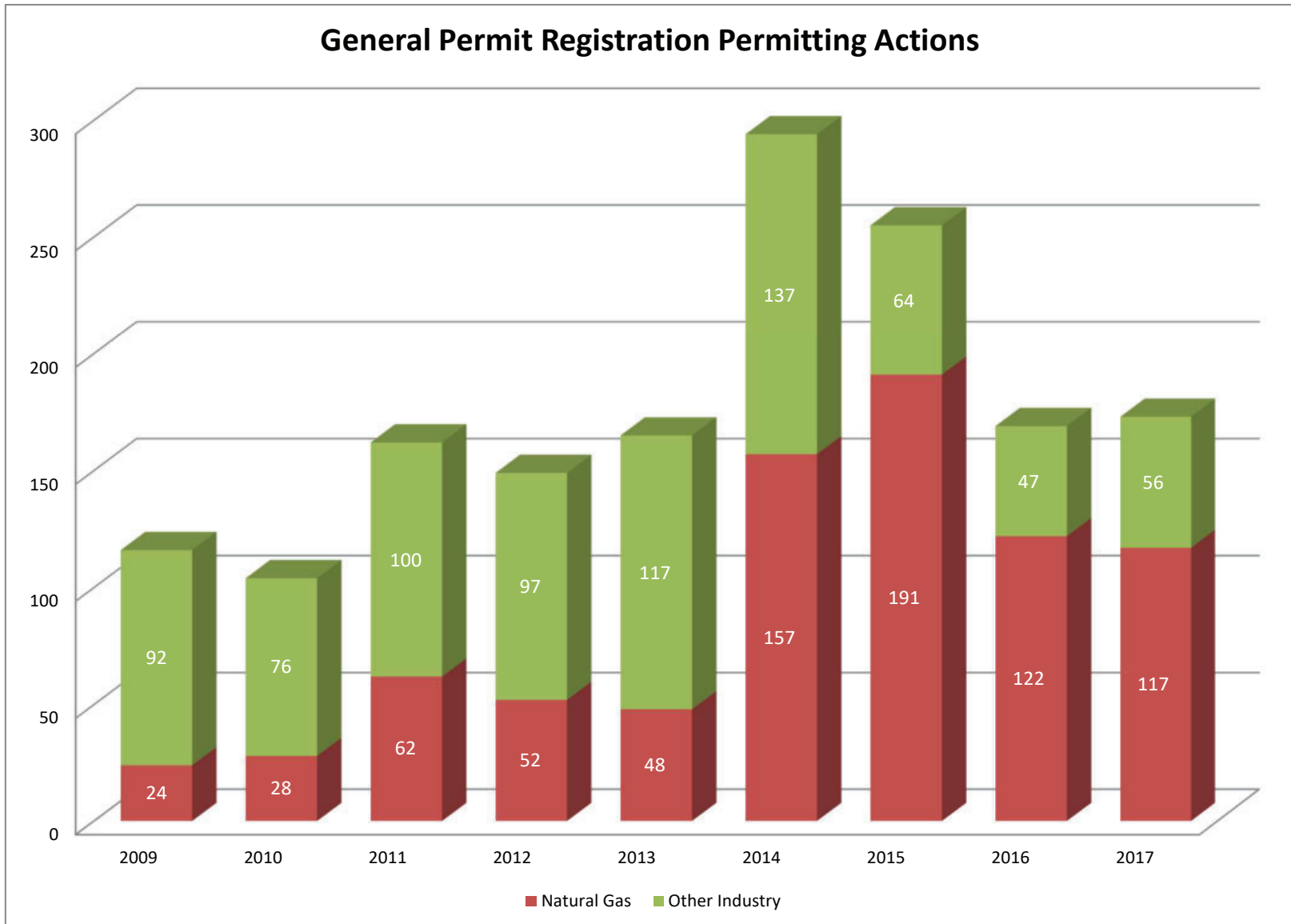
Primary NAAQS: 1-Hour Average 35 PPM
 8-Hour Average 9 PPM
 not to be exceeded more than once per year
 Secondary NAAQS: None

County	Site	EPA-ID	# Obs	1-Hr Average			8-Hr Average		
				Obs >35.0	1st Max	2nd Max	Obs >9.0	1st Max	2nd Max
Kanawha	Charleston NCore	54-039-0020	8475	0	1.5	1.3	0	.9	.8

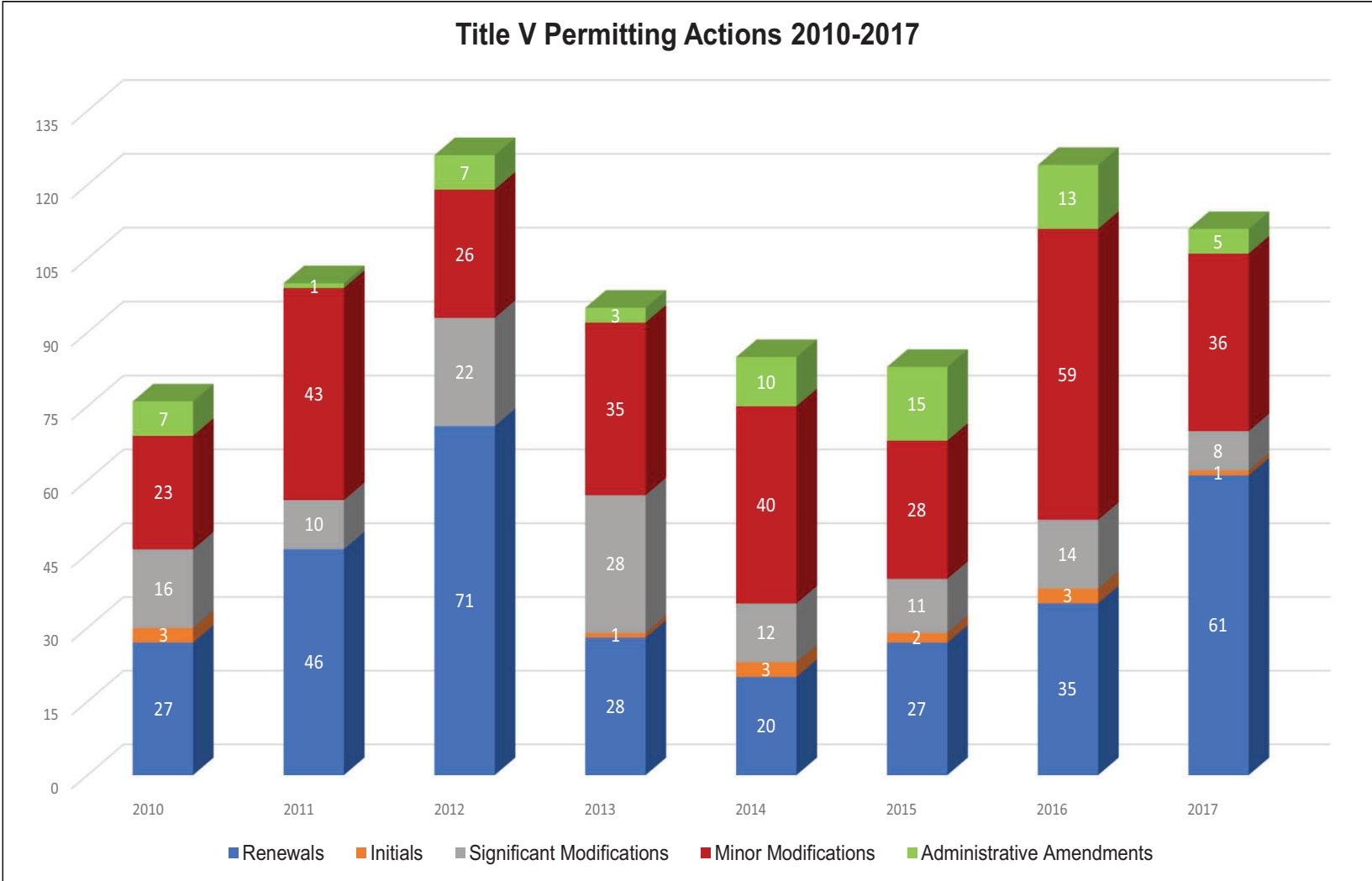
Permitting



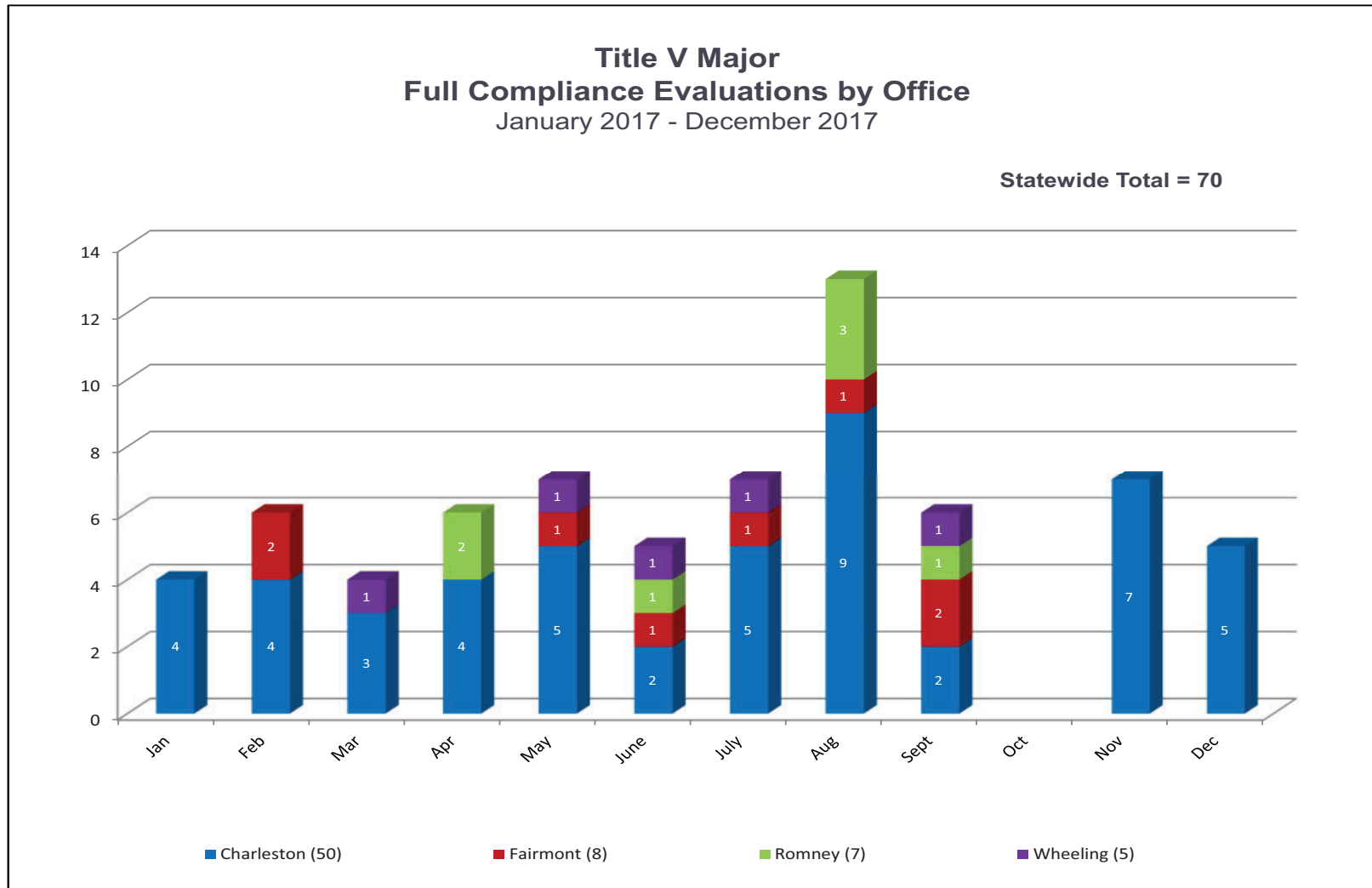
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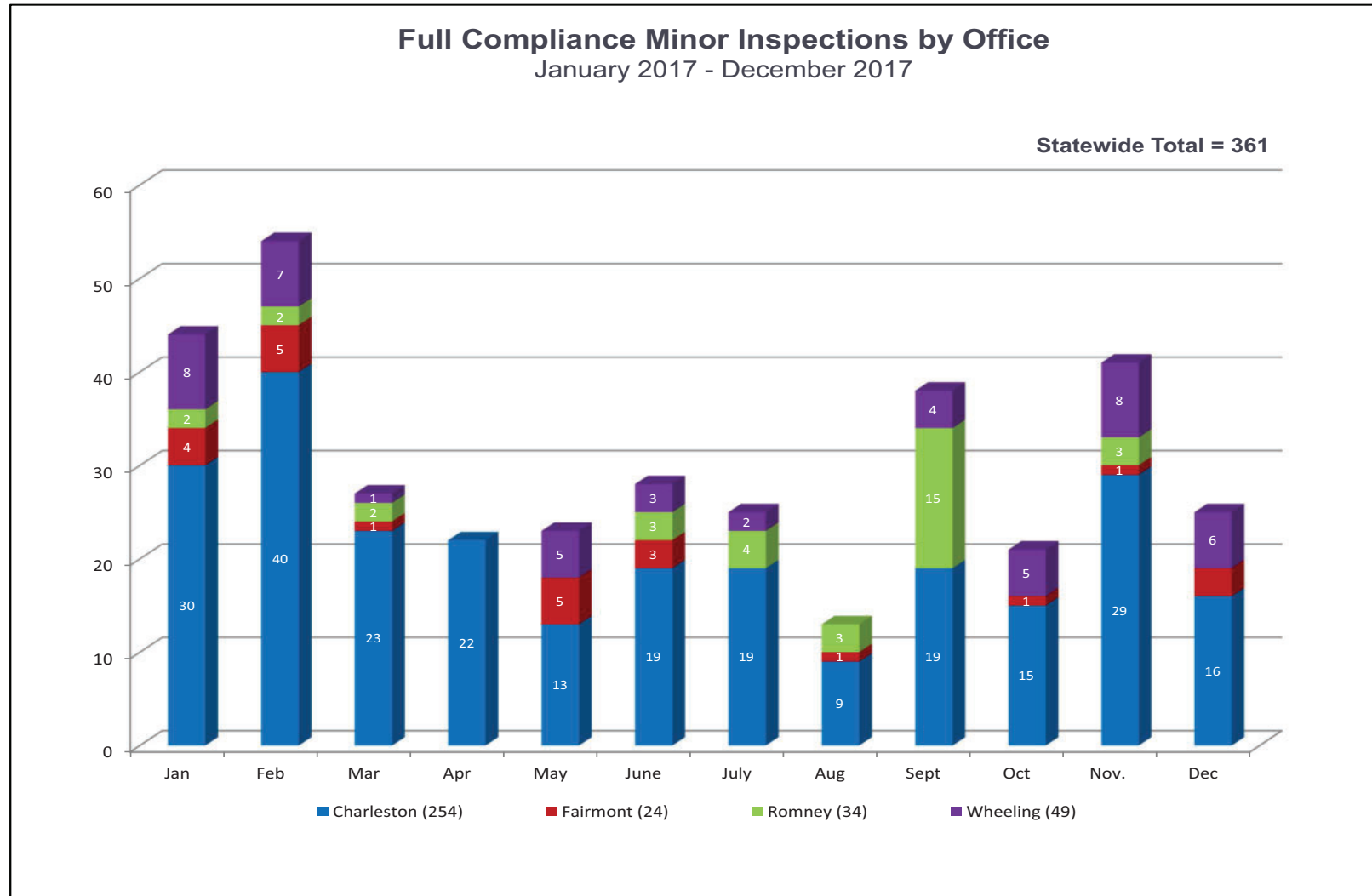
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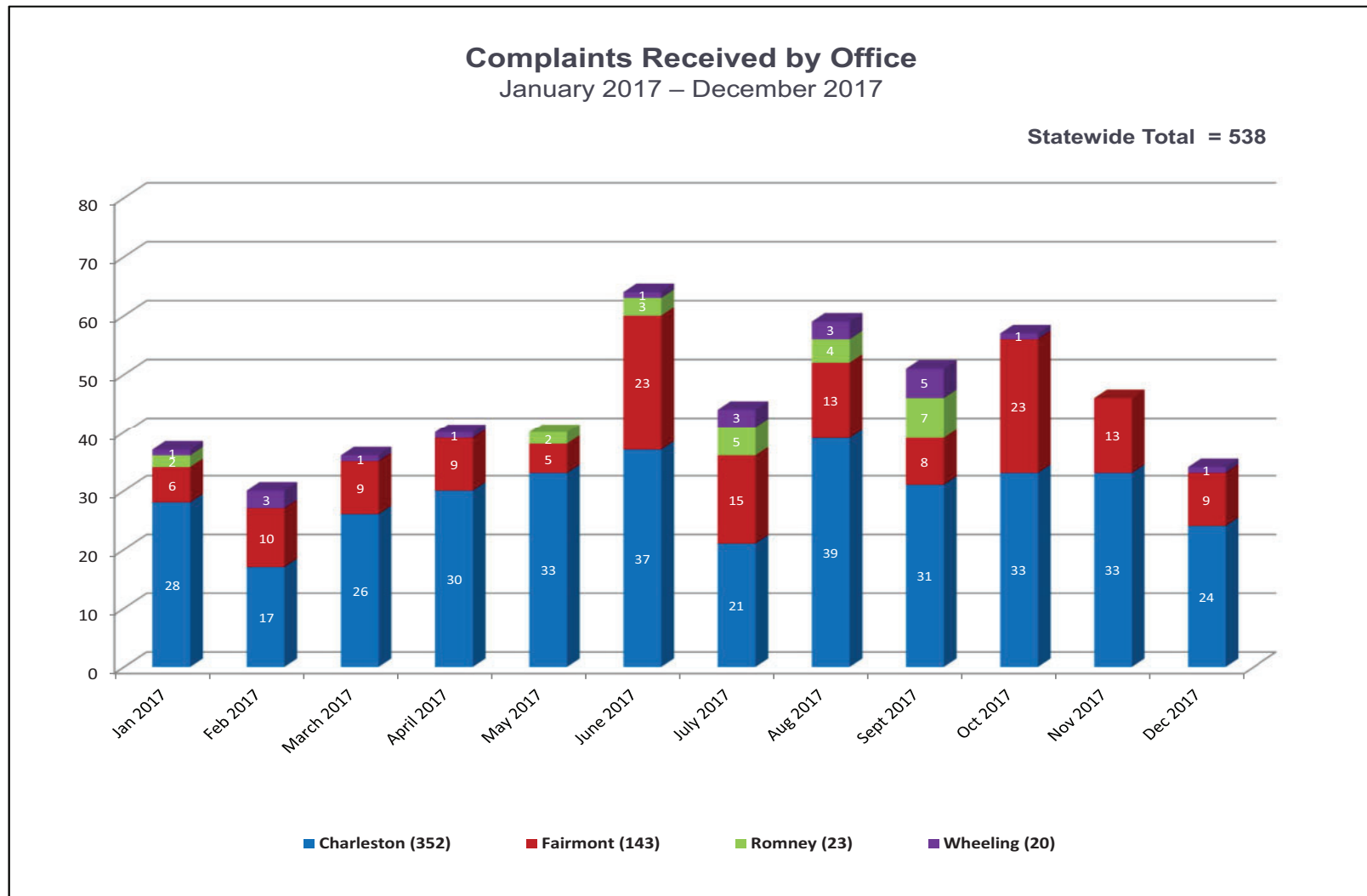
Compliance & Enforcement



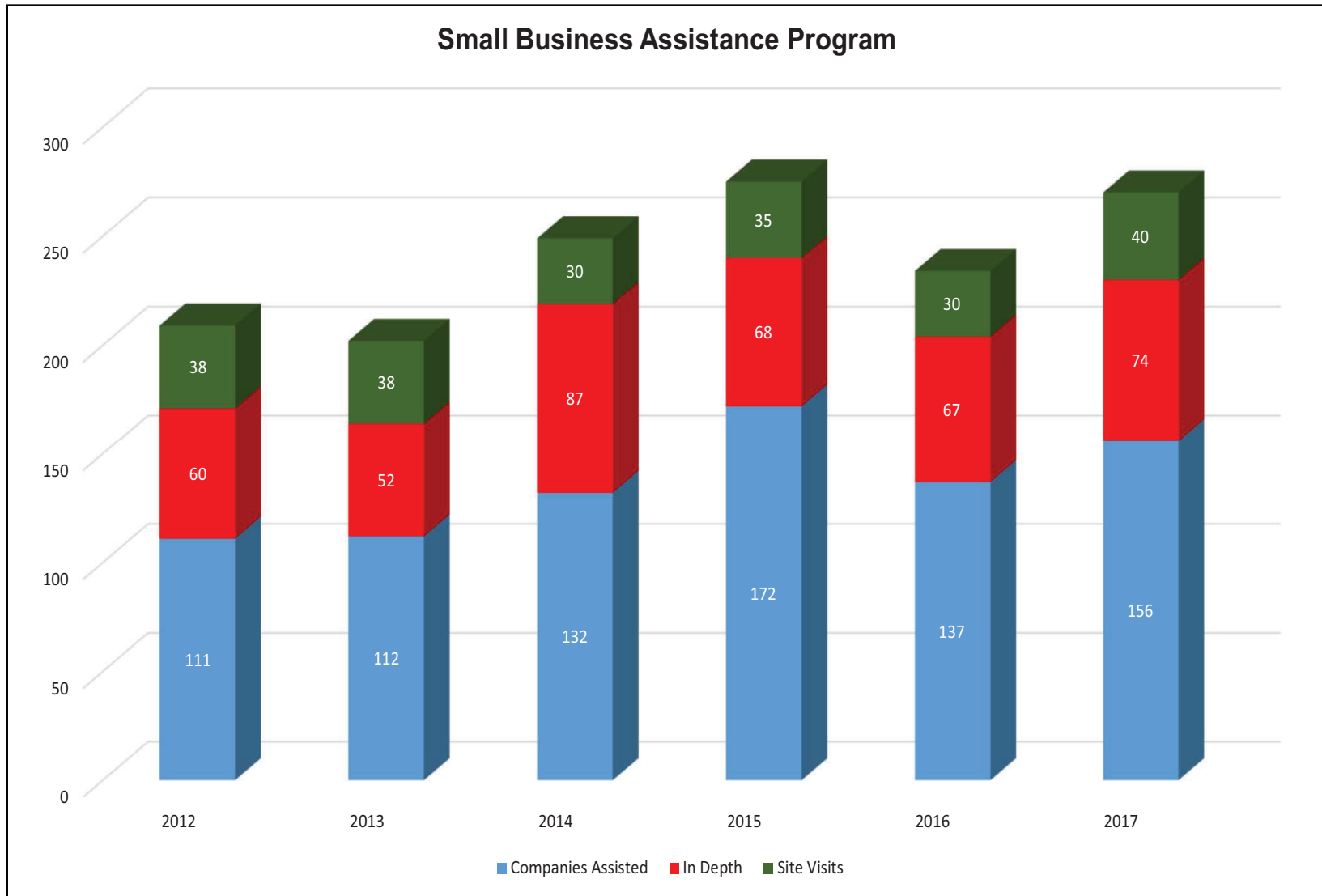
Compliance & Enforcement



Compliance & Enforcement

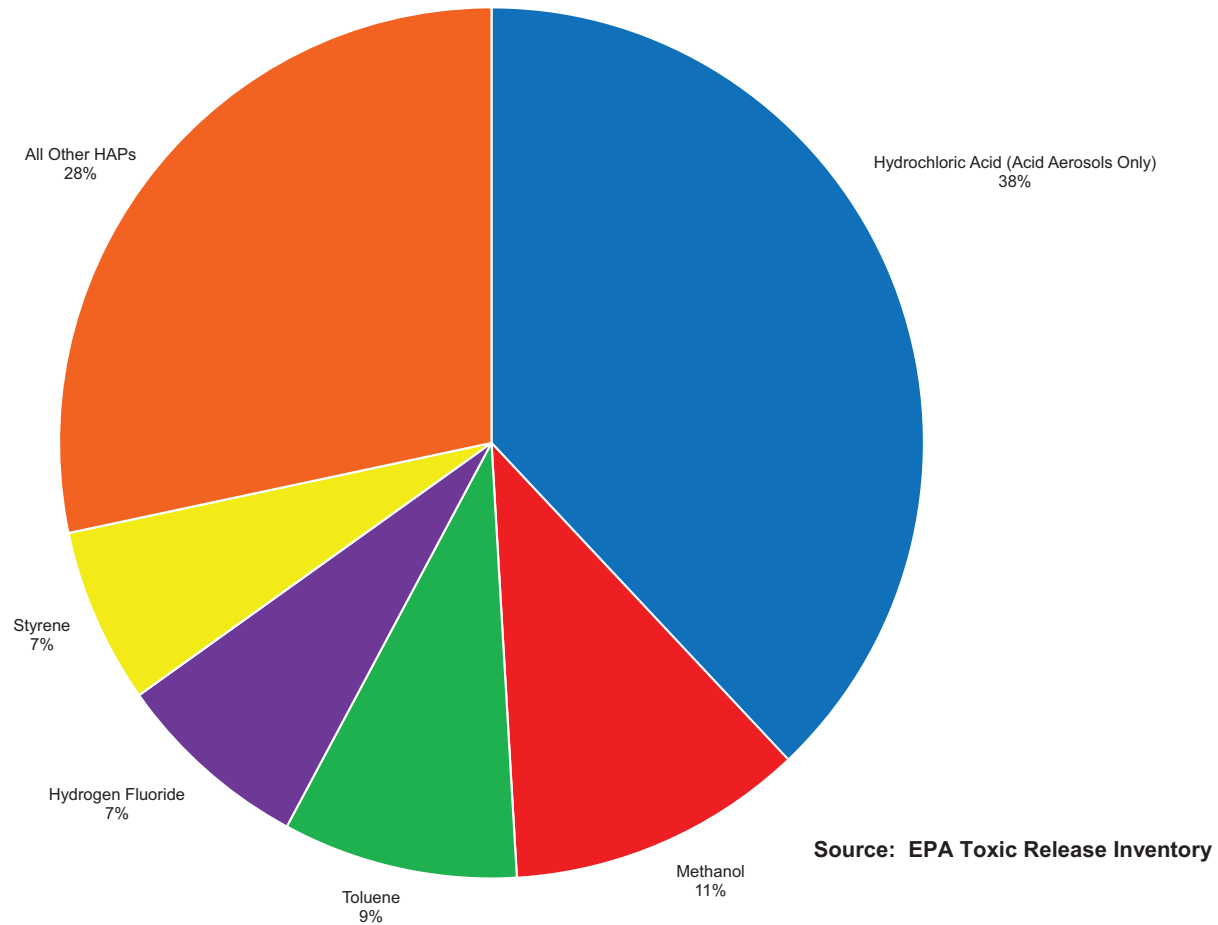


Small Business Assistance



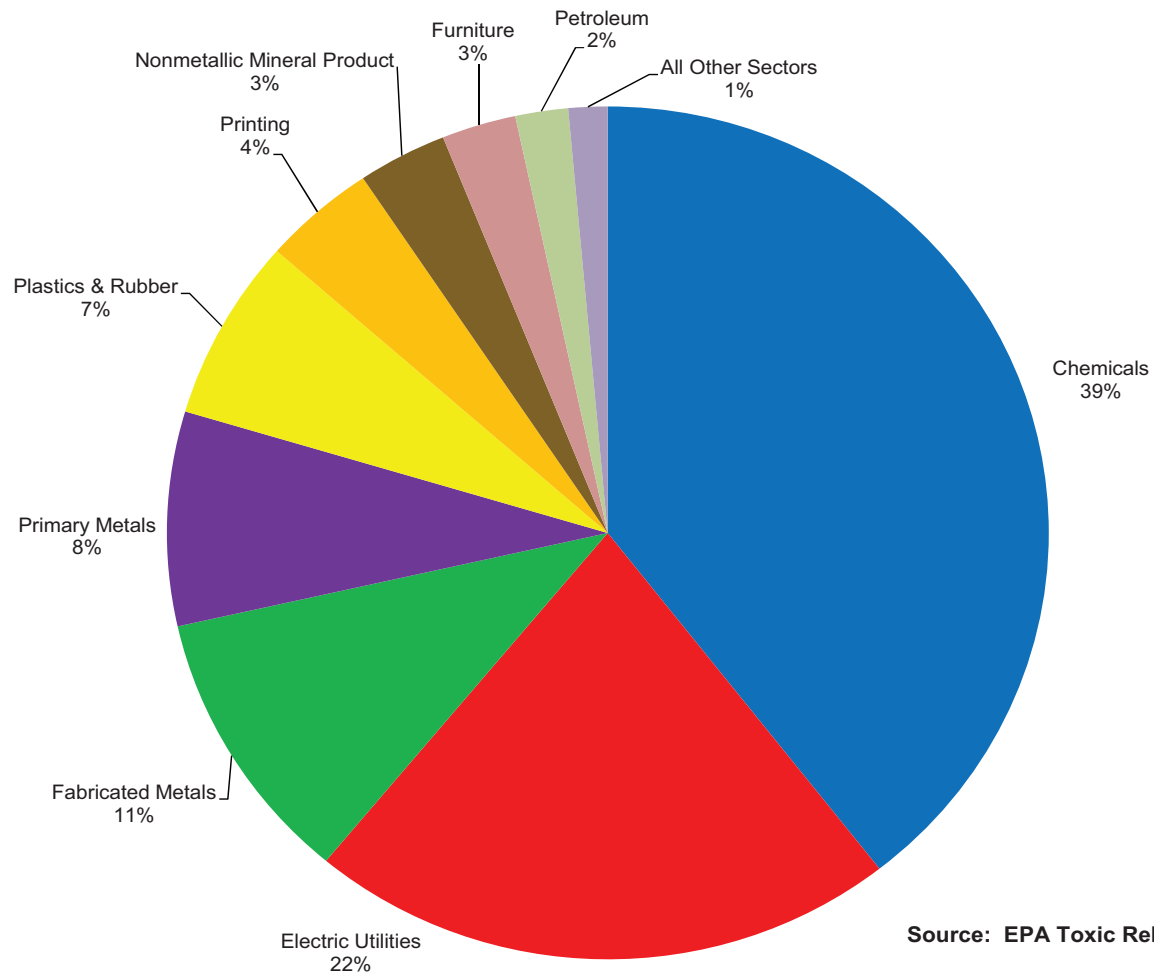
Air Toxics

2016 Top 5 Hazardous Air Pollutants Emitted to Air in West Virginia
(1,770 tons)

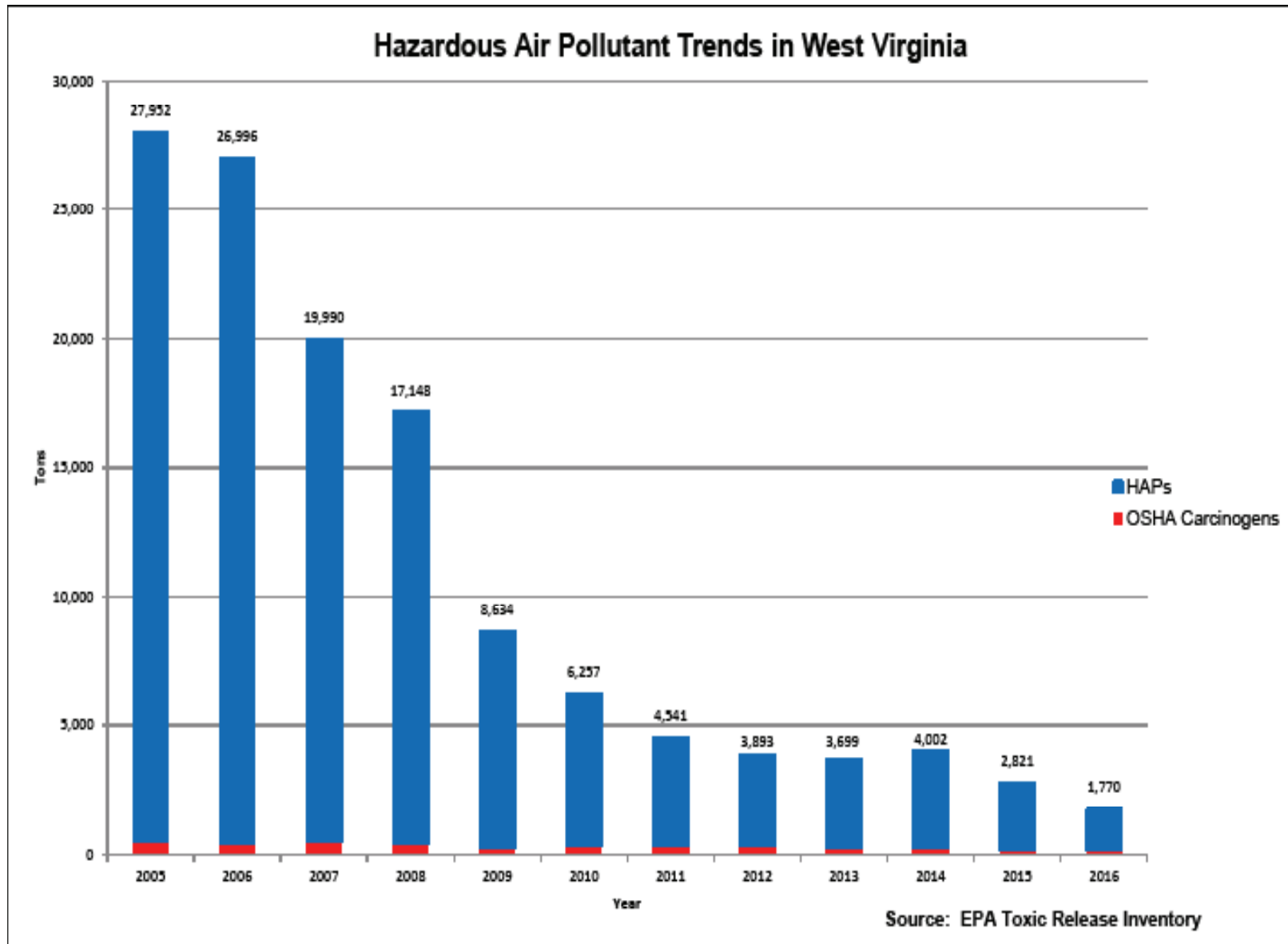


Air Toxics

**2016 Hazardous Air Pollutant Emissions by Industry Sector in West Virginia
(1,770 tons)**



Air Toxics



A wide-angle photograph of a field of white flowers, likely a species of Aster or similar, in full bloom. The field stretches to the horizon under a dramatic sunset sky. The sun is low on the horizon, casting a warm orange glow that transitions into a deep blue and purple twilight. The clouds are scattered and catch the light of the setting sun. The overall mood is serene and natural.

Definitions & Contact Information

Definitions

Acid precipitation or acid rain

Water falling in drops condensed from vapor in the atmosphere with acidic qualities. Principal components typically include nitric and sulfuric acid with water vapor.

Air pollutants

Solids, liquids, or gases which, if discharged into the air, may result in statutory air pollution.

Air pollution

Statutory air pollution has the meaning ascribed to it in West Virginia Code §22-5-2.

Air toxics

Term generally referring to hazardous air pollutants and used in the context of implementation of a program to address such emissions and their impacts.

Ambient air

Generally, the atmosphere; outdoors.

Annual arithmetic mean

The numerical average of the data for the year.

AQI

Air Quality Index.

Attainment

EPA designation that an area meets the National Ambient Air Quality Standards.

24-hour average

The average concentration for a 24-hour period.

CAA

Clean Air Act.

CO

Carbon monoxide.

CO₂

Carbon dioxide.

Criteria pollutant

An air pollutant for which certain levels of exposure have been determined to injure health, harm the environment and cause property damage. EPA-developed National Ambient Air Quality Standards, using science-based guidelines as the basis for setting acceptable levels.

DAQ

Division of Air Quality. Department of Environmental Protection office that administers West Virginia's air quality management program for the protection of public health, welfare, and the environment.

DEP

Department of Environmental Protection. West Virginia's regulatory agency charged with protecting and promoting a healthy environment.

De minimis

Refers to a level which is considered to be insignificant.

DRR

Data Requirements Rule

ESS

Electronic Submittal System.

Elements

Chemicals, such as hydrogen, iron, sodium, carbon, nitrogen, or oxygen, whose distinctly different atoms serve as the basic building blocks of all matter. There are 92 naturally-occurring elements. Another 15 have been made in laboratories.

Emissions

Air pollutants exhausted from a unit or source into the atmosphere.

Exceedance

An incident occurring when the concentration of a pollutant in the ambient air is higher than the National Ambient Air Quality Standards.

EPA or United States EPA

Environmental Protection Agency. Federal agency that oversees the protection of the environment.

Fossil fuels

Natural gas, petroleum, coal or any form of solid, liquid or gaseous fuel derived from such material.

Greenhouse gas

The gaseous compounds: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF₆). These gases absorb infrared radiation and trap heat in the atmosphere.

HAP

Hazardous Air Pollutant. Defined at Section 112(b) of the 1990 CAA

MET

Meteorological

MSA

Metropolitan Statistical Area

NAAQS

National Ambient Air Quality Standards. Set by EPA to protect human health and welfare.

Definitions

ug/m³

Micrograms per cubic meter.

NCORE

National Core Network. A multi-pollutant network that integrates several advanced measurement systems for particles, pollutant gases and meteorology.

Nonattainment

EPA designation that an area does not meet the National Ambient Air Quality Standards.

NO_x

Nitrogen oxides

NSR

New Source Review

O₃

Ozone

OSHA Carcinogen

A chemical that is a known or suspected carcinogen by the Occupational Safety and Health Administration by virtue of appearing in one of three sources: 1. National Toxicology Program (NTP), "Annual Report on Carcinogens" (Latest Editions); 2. International Agency for Research on Cancer (IARC) "Monographs" (Latest Editions); or 3. 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.

Ozone season

Varies geographically but for West Virginia it is the period beginning March 1 and ending on October 31 of the same year.

Pb

Lead.

PM

Particulate Matter.

PM_{2.5}

Particles that are 2.5 micrometers or less in size. These fine particles can be easily inhaled deep into the lungs where they can accumulate, react, be cleared or absorbed. These particles are about 30 times smaller than the diameter of a human hair.

PM₁₀

Particles that are 10 micrometers in size or less. This includes both fine particles (2.5 micrometers or less) and inhalable coarse particles having diameters larger than 2.5 micrometers and smaller than 10 micrometers.

Particulate Matter

Any material, except uncombined water, that exists in a finely divided form as a liquid or solid.

PPB

Parts per billion by volume.

PPM

Parts per million by volume.

Precursor

A substance that is the source of, or aids in the formation of, another substance.

Regulated air pollutant

Generally, any air pollutant subject to a standard or other requirement promulgated under sections 111 or 112 of the Clean Air Act, or any air pollutant for which a National Ambient Air Quality Standard has been promulgated including particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone and lead or lead compounds.

SIP

State Implementation Plan. Plan to attain and maintain the National Ambient Air Quality Standards for criteria pollutants.

SLEIS

State and Local Emissions Inventory System.

SO₂

Sulfur dioxide.

Source or stationary source

Any governmental, institutional, commercial or industrial structure, installation, plant, building or facility that emits or has the potential to emit any regulated air pollutant under the Clean Air Act.

Statutory air pollution

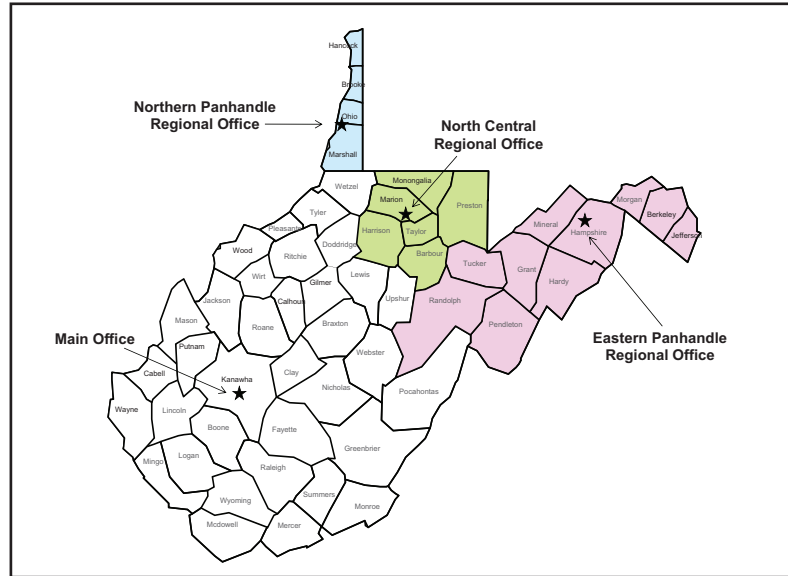
The discharge into the air by the act of man, of substances (liquid, solid, gaseous, organic or inorganic) in a locality, manner and amount as to be injurious to human health or welfare, animal or plant life, or property, or which would interfere with the enjoyment of life or property.

VOC

Volatile organic compound.

Contact Information

DEP - Division of Air Quality Offices



Charleston Office:

601 57th Street, SE
Charleston, WV 25304
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Eastern Panhandle Regional Office:

22288 Northwestern Pike
Romney, WV 26757-8005
Telephone: (304) 822-7266
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North Central Regional Office:

2031 Pleasant Valley Road
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Fairmont, WV 26554
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Northern Panhandle Regional Office:

131A Peninsula Street
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Telephone: (304) 238-1220
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Guthrie Lab:

367 Gus R. Douglass Lane
Charleston, WV 25312
Telephone: (304) 558-4323
Fax: (304) 558-1192

Small Business Assistance Program:

Telephone: (866) 568-6649, ext. 1245