



**Environmental
Protection Agency**

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nelly, Director

DEC 13 2013

Ms. Susan Hedman
Regional Administrator
U.S. EPA, Region 5
77 West Jackson Blvd.
Chicago, Illinois 60604

Re: Ohio's Recommended Nonattainment Areas for the 2012 Annual PM2.5 Standard

Dear Administrator Hedman:

I am writing to submit Ohio's recommendations for nonattainment areas within Ohio for the revised 2012 annual PM2.5 standard. Preliminary ambient data for the period 2011 to 2013 have been evaluated to determine which areas within the State are not attaining the revised standard.

The designation recommendations are based on the most current preliminary PM2.5 monitoring data along with U.S. EPA's guidance "Initial Area Designations for the 2012 Revised Primary Annual Fine Particle National Ambient Air Quality Standard" (April, 16, 2013). This guidance recommends states use the five-factor analysis for designations taking into consideration the Core Based Statistical Area (CBSA) or Combined Statistical Area (which includes two or more adjacent CBSA's) associated with the violating monitor(s). Under this guidance, these areas would serve as the starting point or "presumptive" boundary for evaluating each nonattainment area. Ohio EPA is using this approach in our recommendations. We believe that the attached documentation, including emission and air quality data, population density and degree of urbanization, traffic and commuting patterns, and growth rates and patterns, supports the recommended status for each particular area.

Ohio is evaluating nonattainment status based upon preliminary, incomplete 2011 to 2013 ambient data. 2013 data is complete through the 3rd quarter. Ohio EPA does not believe the data will change significantly enough to affect Ohio's recommendations. However, in the event final certified data does indicate other areas necessitate nonattainment recommendations, Ohio EPA will be submitting a revised

recommendation to U.S. EPA prior to U.S. EPA making proposed recommendations of your own.

Several counties within and adjacent to previous nonattainment boundaries were evaluated to determine what, if any, adjustments needed to be made to the recommendations. Below are the historical nonattainment areas for PM2.5 and the identification of the specific counties which should be included in the area designations under this newly revised annual PM2.5 standard:

Designation Area	Historical Annual PM_{2.5} Nonattainment Designation Counties	Ohio EPA Recommended Nonattainment Counties
(1) Canton-Massillon, OH	Stark	Stark
(2) Cincinnati-Hamilton, OH-KY-IN	Butler Clermont Hamilton Warren	Butler Clermont Hamilton
(3) Cleveland-Akron-Lorain, OH	Cuyahoga Lake Lorain Medina Portage Summit Ashtabula (P)	Cuyahoga
(4) Columbus, OH	Delaware Fairfield Franklin Licking Coshocton (P)	
(5) Dayton-Springfield, OH	Clark Greene Montgomery	
(6) Huntington-Ashland, WV-KY-OH	Lawrence Scioto Adams (P) Gallia (P)	
(7) Parkersburg-Marietta, WV-OH	Washington	

(8) Steubenville-Weirton, OH-WV	Jefferson	
(9) Toledo, OH		
(10) Wheeling, WV-OH	Belmont	
(11) Youngstown-Warren-Sharon, OH-PA		

Ohio EPA held public hearings on these recommendations on December 4 and December 5, 2013. Comments were received and testimony was provided at one of the hearings. Ohio EPA has included the comments/testimony and Ohio's responses in this package.

I appreciate the opportunity to provide these initial recommendations and will work cooperatively with U.S. EPA Region 5 staff as we both review new ambient data and U.S. EPA prepares their comments which are due 120 days prior to promulgation of the actual designations. If you have any questions concerning this submittal, please feel free to contact Jennifer Van Vlerah of the Division of Air Pollution Control at (614) 644-3696.

Please call if you have any questions.

Sincerely,



Scott Nally
Director

Enclosures

Xc: Jennifer Van Vlerah, DAPC



**Environmental
Protection Agency**

State of Ohio Environmental Protection Agency
Division of Air Pollution Control

**Ohio's
Recommended Designations for the
2012 Annual PM_{2.5}
Standard**

Prepared by:
The Ohio Environmental Protection Agency
Division of Air Pollution Control

December 2013



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List of Appendices

- A.** Ohio's Core Based Statistical Areas
- B.** AQS Data Sheets
- C.** SLAMS 2012 PM_{2.5} Certification
- D.** Public Notice and Comments

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(8) Steubenville-Weirton, OH-WV	Jefferson	
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(11) Youngstown-Warren-Sharon, OH-PA		

Background

On December 14, 2012, U.S. EPA strengthened the 1997 primary annual PM_{2.5} standard, lowering it from 15.0 µg/m³ to 12.0 µg/m³, and retained the existing 2006 24-hour PM_{2.5} standard of 35 µg/m³ (78 FR 30860).

Under Clean Air Act (CAA) Section 107(d), U.S. EPA is required to make designations after a State submits recommendations. This document is Ohio's recommendations for designations of the 2012 annual PM_{2.5} standard. These recommendations are due to U.S. EPA by December 13, 2013 and use the three-most recent years of air quality data available at the time, 2010 to 2012. Following this recommendation, U.S. EPA intends to notify States (via a "120-day letter") by August 14, 2014 and to finalize designations, after a public comment period, by December 12, 2014.

Based on the air quality data, and the five-factor analysis discussed below, Ohio is recommending designations of unclassifiable/attainment and nonattainment. The remainder of this document discusses the method used for Ohio's recommendations for nonattainment areas and the resulting analysis. Ohio is recommending all other counties in the State be designated as unclassifiable/attainment. U.S. EPA has historically used the "unclassifiable/attainment" category for areas that monitor attainment and for areas that do not have monitors and there is no reason to believe they are not attainment or are contributing to nearby violations.

An Explanation of Ohio EPA's Five-Factor Analysis for Nonattainment Recommendations

U.S. EPA's guidance "Initial Area Designations for the 2012 Revised Primary Annual Fine Particle National Ambient Air Quality Standard" (April, 16, 2013) (herein referred to as "Designation Guidance") states that each area evaluated for nonattainment should be assessed on a case-by-case basis considering the specific facts and circumstances unique to the area. A nonattainment area must include not only the area that is violating the standard but also nearby areas that contribute to the violation. This area of analysis begins with an evaluation of the entire urbanized area, starting with the 2012 Core Based Statistical Area/Combined Statistical Area (CBSA/CSA) that contains the violating monitor(s). Ohio's CBSA/CSA's are show in Appendix A. Boundary recommendations should be based on an evaluation of the five factors discussed in the Designation Guidance, as well as any other relevant factors or circumstances specific to a particular area.

The five designation factors used to determine nearby areas of influence are:

1. Air quality data
2. Emissions and emissions-related data
3. Meteorology
4. Geography/topography, and
5. Jurisdictional boundaries

The analyses methods for each factor are described below and the actual analysis for each nonattainment area is provided in the section entitled “Recommendations for Nonattainment.”

Factor 1: Air quality data

The annual revised standard is 12.0 $\mu\text{g}/\text{m}^3$. Ohio EPA operates a large network of Federal Reference Method (FRM) PM_{2.5} monitors, primarily located in the expected high PM_{2.5} concentration areas with additional attention to more highly populated areas as well. Included in the FRM network is a subset of monitor sites which also monitor PM_{2.5} species (sulfate, nitrate, organic carbon, elemental carbon and ‘crustal’ or ‘other’). Many of Ohio’s speciation monitors are co-located monitors to target the highest reading FRM monitors in the area. In some cases, though, the co-located speciation monitor is located in a more rural or less industrialized area.

The air quality analysis begins by looking at the design value of each monitoring site. The design value is the 3-year average of the annual mean concentrations. Other air quality analyses that can help determine appropriate boundaries include:

- The amount by which monitored levels exceed the standard may indicate the magnitude of emissions contributing to the exceedance and whether there may be influences from surrounding areas.
- Trends in monitoring values (and design values) in the area.
- The magnitude of quarterly, or even daily, average PM_{2.5} concentrations over the course of each year may provide clues regarding contributing sources.
- Monthly and seasonal profiles of daily average PM_{2.5} concentrations may provide an indication of whether seasonal conditions exist.
- Identifying the chemical components of PM_{2.5} mass (speciation) may give insight into the types of emission sources that are contributing to exceedances, and therefore, the extent of a nonattainment boundary. Speciated data can be synthesized using an urban increment analysis, emissions data analysis and meteorological analysis.¹ PM_{2.5} mass concentrations are generally higher in urban areas, due to locally generated and directly emitted PM_{2.5}, and are often referred to as the “urban increment” or “urban excess.” An urban increment analysis can also be designed to differentiate local contributions from regional contributions and intra-urban differences.

All air monitoring data is retrieved from the U.S. EPA’s Air Quality System (AQS) at <http://www.epa.gov/ttn/airs/airsaqs/> and is presented in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) in all tables. The three-year averages for monitors that are

¹ Any analysis of speciation data follows the procedures outlined in the Designation Guidance and was adjusted using U.S. EPA’s “SANDWICH” procedure.

violating the standard are highlighted with red. Monitoring sites that have less than 75 percent capture in at least one quarter are highlighted with green. Ohio EPA will be using preliminary 2011 to 2013 design values to inform our recommendations for nonattainment. These design values are based upon 2013 data in Ohio that is complete through September 2013. AQS data retrieval sheets are provided in Appendix B. The state and local air monitoring stations (SLAMS) data certification report for calendar year 2012 is provided in Appendix C. SLAMS data certification for 2013 will be completed in early 2014, prior to U.S.EPA's proposal of recommended nonattainment areas. Ohio EPA will be preparing a revised recommendation to U.S. EPA in the event any of Ohio's areas that are recommended as attainment/unclassifiable in this document based upon incomplete 2013 air quality data, later show nonattainment upon certification.

Data included in factor 2 are also provided by:

<http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2>

This Web site provides access to a wide variety of data resources, including:




- Summary of 2010-2012 PM2.5 Design Values (also contains 2009-2011 PM2.5 Design Values and Urban Increments) (excel spreadsheet)
- CSN speciation data (SANDWICHED) (excel spreadsheet)
- IMPROVE speciation data (SANDWICHED) (excel spreadsheet)

The following table summarizes all the air quality data for Ohio monitors from 2006 to 2013. In some case, this table will contain more monitor locations than those identified in the nonattainment area analysis because of the historical nature of the data. Monitors included in the nonattainment area analysis include only those operational during the 2011 to 2013 design value period.

Table 1: Ohio's Average Annual PM2.5 Concentrations and 3-Year Averages

Site	County	Year								Average					
		2006	2007	2008	2009	2010	2011	2012	2013	'06-'08	'07-'09	'08-'10	'09-'11	'10-'12	'11-'13
39-003-0009	Allen					10.9	10.8	10.0	10.7					10.6	10.5
39-009-0003	Athens	11.8	13.0	10.6	9.1	9.2	8.7	8.7	8.8	11.8	10.9	9.6	9.0	8.9	8.7
39-017-0003	Butler	14.0	15.4	13.8	12.8	13.6	12.7	11.2	10.9	14.4	14.0	13.4	13.0	12.5	11.6
39-017-0016		14.0	14.9	13.8	13.1	13.5	12.4	10.8	10.5	14.2	13.9	13.5	13.0	12.2	11.2
39-017-0019							12.7	11.4	10.8						11.6
39-017-0020							13.6	13.9	13.2						13.6
39-017-1004		13.4	14.6												
39-023-0005	Clark	13.1	14.6	12.7	12.4	13.1	12.3	10.4	10.0	13.5	13.2	12.7	12.6	11.9	11.1
39-025-0022	Clermont	12.7	14.0	11.7	11.0	12.0	11.0			12.8	12.2	11.6	11.3	11.5	10.9
39-035-0027	Cuyahoga	13.0	14.5	13.2	10.6					13.6	12.8				
39-035-0034		11.5	13.6	10.9	10.2	10.9	10.0	9.3	9.8	12.0	11.6	10.7	10.4	10.1	9.7
39-035-0038		14.9	16.2	14.1	12.8	14.0	12.6	12.3	12.5	15.1	14.4	13.6	13.1	13.0	12.5
39-035-0045		14.1	15.3	13.7	11.8	13.3	11.9	11.4	11.6	14.4	13.6	12.9	12.3	12.2	11.6
39-035-0060		15.0	15.9	14.1	12.3	13.7	12.5	13.2	12.8	15.0	14.1	13.4	12.8	13.1	12.7
39-035-0065		13.1	15.8	14.6	12.4	13.2	12.6	12.3	11.7	14.5	14.3	13.4	12.7	12.7	12.2
39-035-1002		11.6	13.4	12.0	10.9	11.3	10.4	9.7	9.6	12.3	12.1	11.4	10.9	10.5	9.9
39-049-0024	Franklin	13.6	14.6	12.8	11.5	13.1	11.9	10.7	10.3	13.7	13.0	12.5	12.2	11.9	11.0
39-049-0025		13.6	14.7	12.4	11.5	12.6	11.5	10.7	10.4	13.6	12.9	12.2	11.9	11.6	10.9
39-049-0029						12.6	11.9	9.9						11.5	10.9
39-049-0081		12.9	13.1	11.1	10.8	11.9	10.9	10.1	10.0	12.4	11.7	11.3	11.2	11.0	10.3
39-057-0005	Greene	11.9	13.3	11.6	11.5	13.2	11.3	9.6	9.5	12.3	12.1	12.1	12.0	11.4	10.1
39-061-0006	Hamilton	13.3	14.6	12.5	12.1	12.7	11.7	10.3	10.0	13.5	13.1	12.4	12.2	11.6	10.7
39-061-0010							11.8	10.6	10.5						10.9
39-061-0014		15.5	16.6	15.1	13.4	14.8	13.2	12.1	11.5	15.7	15.0	14.4	13.8	13.4	12.3
39-061-0040		13.6	15.1	12.6	12.7	13.3	12.4	12.6	11.4	13.8	13.5	12.9	12.8	12.8	12.1
39-061-0042		14.9	15.9	14.4	13.7	14.5	13.3	11.7	11.5	15.1	14.7	14.2	13.8	13.2	12.2
39-061-0043		14.5	14.8	13.3						14.2					
39-061-7001		14.4	15.1	13.7	13.0	14.1				14.4	13.9	13.6			
39-061-8001		15.9	16.1	14.4	13.4	17.6				15.5	14.6				
39-081-0017	Jefferson	13.8	16.2	14.3	12.1	12.7	12.6	11.3	11.5	14.8	14.2	13.0	12.5	12.2	11.8

Site	County	Year								Average					
		2006	2007	2008	2009	2010	2011	2012	2013	'06-'08	'07-'09	'08-'10	'09-'11	'10-'12	'11-'13
39-081-1001		14.6	15.6	14.1	11.2	12.7	11.3	10.0	11.0	14.8	13.6	12.7	11.7	11.3	10.8
39-085-0007	Lake				10.4	10.4	9.4	9.0	8.9				10.1	9.6	9.1
39-085-3002		11.5	13.9	11.5						12.3					
39-087-0010	Lawrence	14.4	15.0	10.8						13.4					
39-087-0012				13.1	11.3	12.1	10.8	10.9	9.8			12.2	11.4	11.3	10.5
39-093-0016	Lorain	11.5	10.1												
39-093-3002		11.4	12.9	11.4	9.9	10.4	9.4	9.5	9.0	11.9	11.4	10.6	9.9	9.8	9.3
39-095-0024	Lucas	12.7	14.8	11.9	11.4	11.2	10.6	10.0	9.7	13.1			11.1	10.6	10.1
39-095-0025		11.9	14.2	12.3						12.8					
39-095-0026		12.6	14.3	12.3	10.9	11.4	10.7	9.9	9.8	13.1		11.5	11.0	10.7	10.1
39-095-0028					11.4	11.4	11.4	10.0	9.6	12.6		11.7	11.4	10.9	10.3
39-099-0005	Mahoning	12.9	14.2	13.2	11.3	12.4	10.6	10.6	11.8	13.4	12.9	12.3	11.4	11.2	11.0
39-099-0014		13.5	14.1	13.1	11.7	12.4	11.3	10.1	10.1	13.6	13.0	12.4	11.8	11.3	10.5
39-103-0003	Medina	11.9	12.7	11.8	10.8	10.8				12.1	11.8	11.1			
39-103-0004							10.8	9.3	9.6				10.8	10.3	9.9
39-113-0031	Montgomery	13.1													
39-113-0032		13.6	15.6	13.2	12.4	14.0	12.1	10.7	10.4	14.1	13.7	13.2	12.8	12.3	11.1
39-133-0002	Portage	12.0	13.7	12.1	11.1	11.2	10.5	9.3	9.4	12.6	12.3	11.5	10.9	10.3	9.7
39-135-1001	Preble	12.5	13.6	12.0	11.1	12.0	10.9	9.3	9.5	12.7	12.2	11.7	11.3	10.7	9.9
39-145-0013	Scioto	14.3	14.0	12.2	10.9	11.8	10.2	9.8	9.5	13.5	12.4	11.6	11.0	10.6	9.8
39-151-0017	Stark	14.6	15.9	13.9	13.1	14.4	12.8	11.9	12.2	14.8	14.3	13.8	13.4	13.0	12.3
39-151-0020		11.9	14.4	12.4	11.9	13.8	11.3	10.4	11.2	12.9	12.9	12.7	12.3	11.8	11.0
39-153-0017	Summit	13.5	14.8	13.8	12.6	13.4	11.8	10.8	10.8	14.0	13.7	13.3	12.6	12.0	11.1
39-153-0023		12.8	13.7	12.9	11.4	12.5	11.1	10.0	10.3	13.1	12.7	12.3	11.7	11.2	10.5
39-155-0005	Trumbull					11.9	10.6	9.3	10.2					10.6	10.0
39-155-0007		12.9	14.2	12.8						13.3					
39-165-0007	Warren		14.0	11.9	11.7	11.9	11.0				12.1	11.6	11.5		

 Combined data from two adjacent sites
 Insufficient data
 Violating monitor

Factor 2: Emissions and emissions-related data

The analysis for factor 2 looks at PM_{2.5}-related emissions from areas nearby to an exceeding monitor to determine their contribution. Emissions data are derived from the 2008 and 2011 NEI data². Emissions reductions that may occur beyond those in these inventories that are due to permanent and enforceable emissions controls that will be in place in time for attainment are also discussed.

This analysis looks at emissions of identified sources, and their magnitude, of direct PM_{2.5}, the major components of direct PM_{2.5} (organic carbon, elemental carbon, crustal material (and/or individual trace metal compounds)), primary nitrate and primary sulfate, and precursor gaseous pollutants (e.g., SO₂, NO_x, total VOC and NH₃).

Analyzing the magnitude and special extent of emissions can further inform the urban/rural air monitoring analysis. Furthermore, combining these analyses with meteorological analysis can further inform the degree of contribution from nearby areas.

Also included in this analysis are current population and population growth, population density and degree of urbanization along with traffic and commuting patterns. Local trends in population growth and patterns may indicate the probable location and magnitude of emissions sources that contribute to nonattainment. The 2011 NEI includes emissions for smaller stationary area and mobile source emissions. Analyzing population density, degree of urbanization, and transportation arteries may provide an indication of the spatial extent emissions from area and mobile sources. Analyzing traffic and commuting patterns, such as analyzing the number and percent of total commuters in each county commuting to counties with violating monitors and analyzing the total vehicle miles traveled (VMT), may help assess the influence of mobile source emissions in an area.

The population data for Ohio counties are provided by the Ohio Department of Development, Office of Strategic Research
<http://www.odod.state.oh.us/research/>.

Point Source emissions for 2011 are provided by the 2011 NEI:
<http://www.epa.gov/ttnchie1/net/2011inventory.html#below>

Data included in factor 2 are also provided by:
<http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2>

This Web site provides access to a wide variety of data resources, including:

- NEI emissions summaries (excel spreadsheet)
- Vehicle miles traveled (excel spreadsheet)

² <http://www.epa.gov/ttnchie1/net/2011inventory.html>

Factor 3: Meteorology

The meteorology review looks at wind data gathered at stations in and near Ohio by the National Weather Service (NWS). Figures presented for factor 3 indicate the annual average winds by for each NWS site. These data may also suggest that emissions in some directions relative to the violation may be more prone to contribute than emissions in other directions.

Wind rose meteorology data included in factor 2 are provided by U.S. EPA's PM2.5 Designations Mapping Tool:

http://geoplatform2.epa.gov/PM_MAP/index.html

Factor 4: Geography/topography

The geography and topography analysis looks at physical features that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. Ohio does not have significant topographic features that significantly influence the regional transport of pollutants within the multi-county study areas.

Factor 5: Jurisdictional boundaries

The analysis of jurisdictional boundaries looks at the planning and organizational structure of an area to determine if the implementation of controls in a potential nonattainment area can be carried out in the cohesive manner.

Recommendations for Nonattainment Areas

Canton-Massillon, OH

Figure 1: Canton-Massillon, OH Recommended Nonattainment Area

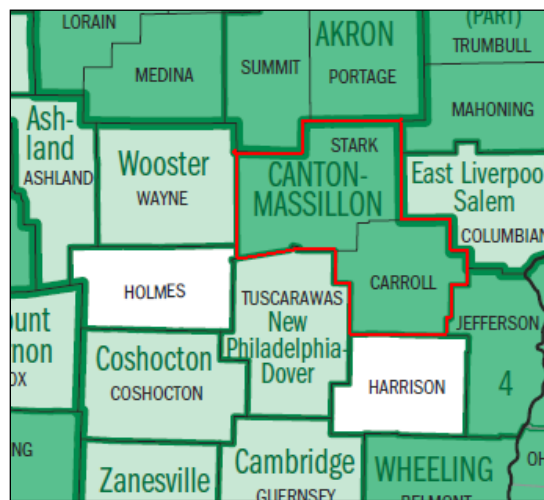


Discussion

There is one county in this historic PM_{2.5} nonattainment area, Stark County. Ohio EPA recommends designating Stark County as nonattainment for the Canton-Massillon area. After considering the five factors, Ohio EPA does not recommend adding any contributing counties to this area.

Stark County contains two monitors, one of which is violating the annual revised standard (site 39-151-0017). Stark County is part of the Canton-Massillon MSA along with Carroll County.

Figure 2: Canton-Massillon MSA



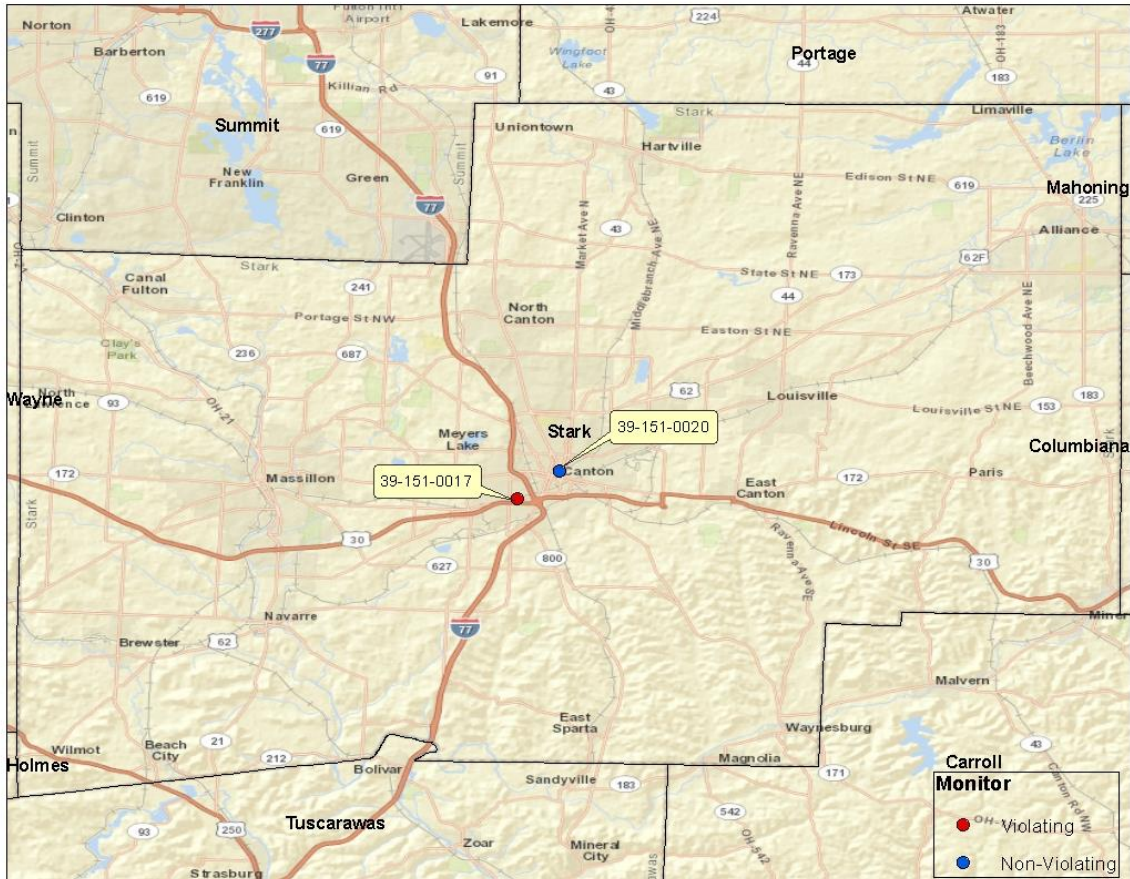
Source: U.S. Department of Commerce Economics and Statistics Administrations, U.S. Census Bureau, 2002 Economic Census

There are nine counties that are adjacent to the Canton-Massillon MSA; Wayne, Holmes, Tuscarawas, Harrison, Jefferson, Columbiana, Mahoning, Portage and Summit Counties. Portage and Summit Counties are discussed in the Cleveland-Akron-Lorain area analysis. Jefferson County is part of the historical Steubenville-Weirton PM_{2.5} nonattainment area which is attaining the newly revised standard.

Factor 1: Air quality data

There are two monitors in this area.

Figure 3: Stark County Air Quality Monitors



Monitor 39-151-0017 is violating the standard based on preliminary 2011 to 2013 air quality data. The design value for the area is $12.3 \mu\text{g}/\text{m}^3$. As can be seen from Table 1, air quality trends have declined historically in this area.

Table 2 : Annual Average ($\mu\text{g}/\text{m}^3$)

Site	County	Year				Average	
		2010	2011	2012	2013	'10-'12	'11-'13
39-151-0017	Stark	14.4	12.8	11.9	13.0	13.0	12.3
39-151-0020		13.8	11.3	10.4	11.8	11.8	11.0

Combined data from two adjacent sites

Insufficient data

Violating monitor

Source: U.S. EPA AQS

There is one speciation monitor in this area. It is co-located with the violating monitor.

Table 3: Stark County Speciation Monitors

		Speciation Monitor SANDWICH Mass					FRM Monitor
		Sulfate	Nitrate	Organic Carbon	Elemental Carbon	Crustal	
Stark 39-151-0017	2009	4.7	1.4	4.3	0.6	0.6	13.1
	2010	4.5	2.2	4.4	0.9	1.4	14.4
	2011	4.0	1.4	3.9	0.7	0.8	12.8
	2009-2011 Average	4.4	1.7	4.2	0.8	0.9	13.4

Source: CSN speciation data (SANDWICHED) from <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F1>

Organic carbon and sulfate tends to dominate at this monitor.

The 2010 to 2011 urban increments (UI) have also been calculated for this monitor.

Table 4: Stark County Urban Increments

2010-2011 Averages		PM2.5 Total	PM2.5 Total UI	Organic Carbon	Organic Carbon UI	Elemental Carbon	Elemental Carbon UI	Nitrates	Nitrates UI	Sulfates	Sulfates UI	Crustal	Crustal UI
Stark 39-151-0017	Quarter 1	15.4	5.3	4.7	2.8	0.6	0.0	5.4	2.5	4.1	0.0	0.6	0.0
	Quarter 2	11.8	1.6	4.2	0.8	0.9	0.3	0.2	0.1	5.0	0.0	1.5	0.5
	Quarter 3	14.3	3.1	6.4	2.5	0.9	0.2	0.0	0.0	5.8	0.0	1.2	0.3
	Quarter 4	12.7	2.5	5.2	1.3	0.9	0.0	2.3	1.1	3.2	0.0	1.1	0.1
	Annual	13.5	3.1	5.1	1.8	0.8	0.1	2.0	0.9	4.5	0.0	1.1	0.2

Source: U.S. EPA Designations Guidance and Data: <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2>

Quarter 1 and quarter 3 tend to have higher total PM2.5 and the urban increment seems to be dominated during those periods with organic carbon. Nitrates also appear to dominate in quarter 1.

Factor 2: Emissions and emissions related data

Emission trends

Overall, the most significant emissions in the analysis area emanate from Stark County. Considering all the counties in this analysis area, Stark County accounts for 46% of PM_{2.5}, 43% of NO_x, 36% of VOC, 22% of NH₃ and 4% of SO₂ emissions. Wayne County, located west of the violating monitor, also has higher emissions compared to other counties in the area and it has the highest emissions of SO₂ (83%) and NH₃ (38%). Columbiana and Mahoning Counties also have high emissions compared to other counties in the analysis area, but are located to the east of the violating monitor. There are two monitors located in Mahoning County, both of which meet the standard.

Table 5: Canton-Massillon Analysis Area Emissions (tpy)

STARK	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	833.2	n/a	n/a	2,023.0	n/a	376.0	n/a	145.1	901.2	n/a
Point - 2008	1,475.3	166.8	115.8	1,418.6	10.7	544.2	217.9	21.3	919.3	1,430.1
Nonpoint	1,907.0	672.3	72.6	1,614.2	3.5	454.5	29.0	1,787.4	8,957.9	2,213.8
Nonroad	197.9	60.6	96.5	2,291.3	0.3	39.4	0.9	2.5	2,515.6	39.6
Onroad	294.2	97.5	135.5	7,837.1	0.4	36.5	2.4	148.7	4,594.7	58.5
Fire	9.8	4.9	1.1	2.9	0.1	1.2	0.0	1.7	24.3	3.7
Total - 2008	3,884.3	1,002.2	421.4	13,164.0	15.0	1,075.7	250.1	1,961.6	17,011.7	3,745.8

<i>Carroll</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	86.7	n/a	n/a	675.9	n/a	6.5	n/a	0.0	32.8	n/a
Point - 2008	11.3	3.6	5.8	601.8	0.3	7.2	1.2	-	31.2	3.8
Nonpoint	326.5	113.1	21.0	224.4	0.9	60.8	5.5	373.7	3,640.5	455.2
Nonroad	17.7	5.5	8.5	155.1	0.0	2.6	0.1	0.2	284.8	3.6
Onroad	18.8	6.3	9.1	569.8	0.0	2.2	0.1	10.7	306.4	3.2
Fire	29.4	14.8	3.2	3.0	0.3	2.1	0.1	5.8	43.6	11.0
Total - 2008	403.8	143.2	47.7	1,554.1	1.6	74.9	7.0	390.4	4,306.4	476.8

<i>Wayne</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	962.4	n/a	n/a	2,832.8	n/a	17,904.5	n/a	0.6	300.1	n/a
Point - 2008	1,163.6	49.9	46.5	2,989.4	1.3	21,655.5	126.3	0.1	175.2	1,029.7
Nonpoint	1,600.5	475.7	90.4	1,169.4	4.0	201.6	24.0	3,392.8	4,913.0	2,383.6
Nonroad	67.8	17.0	41.3	857.1	0.1	14.8	0.3	0.8	677.0	9.1
Onroad	105.7	33.8	53.2	3,004.4	0.1	12.2	0.7	52.3	1,511.4	17.8
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	2,937.6	576.4	231.4	8,020.3	5.5	21,884.1	151.4	3,446.0	7,276.6	3,440.2

<i>Holmes</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	29.9	n/a	n/a	347.2	n/a	5.7	n/a	3.9	226.8	n/a
Point - 2008	4.9	2.0	3.3	302.5	0.2	0.3	0.7	0.0	17.4	2.2
Nonpoint	590.0	188.2	36.5	387.9	1.7	85.5	9.8	2,211.5	3,867.2	895.1
Nonroad	30.0	8.2	16.7	319.4	0.0	5.4	0.1	0.3	358.0	4.9
Onroad	26.6	8.6	13.5	790.6	0.0	3.2	0.2	14.4	406.2	4.3
Fire	7.8	3.9	0.8	1.6	0.1	0.8	0.0	1.4	20.4	2.9
Total - 2008	659.2	211.0	70.8	1,802.1	2.0	95.1	10.8	2,227.7	4,669.2	909.4

<i>Tuscarawas</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	196.2	n/a	n/a	528.6	n/a	2,355.6	n/a	1.6	407.3	n/a
Point - 2008	105.4	18.0	27.0	759.5	2.0	2,182.4	9.7	1.4	351.0	64.3
Nonpoint	875.4	316.8	56.3	543.0	2.5	153.2	15.4	990.7	6,352.8	1,182.7
NonRoad	33.1	9.0	18.7	432.6	0.1	6.9	0.2	0.4	406.0	5.2
Onroad	114.4	34.5	62.0	3,283.0	0.1	11.9	0.7	50.3	1,389.7	17.0
Fire	12.5	6.3	1.4	2.3	0.1	1.2	0.0	2.3	33.5	4.7
Total - 2008	1,140.7	384.5	165.3	5,020.5	4.8	2,355.6	26.1	1,045.2	8,533.0	1,274.0

<i>Harrison</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	12.3	n/a	n/a	6.4	n/a	21.2	n/a	-	1.4	n/a
Point - 2008	0.1	0.0	0.1	0.4	0.0	0.1	0.0	-	0.8	0.0
Nonpoint	256.7	66.1	13.4	194.7	0.6	41.4	3.4	190.2	3,657.8	392.3
Nonroad	17.2	5.4	8.0	128.1	0.0	2.3	0.0	0.2	318.5	3.7
Onroad	16.0	5.2	8.0	484.9	0.0	1.8	0.1	8.9	252.4	2.6
Fire	15.4	7.7	1.7	2.8	0.2	1.4	0.1	2.9	41.3	5.8
Total - 2008	305.4	84.5	31.2	810.9	0.8	47.0	3.6	202.1	4,270.8	404.3

<i>Columbiana</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	56.3	n/a	n/a	208.3	n/a	4.2	n/a	0.0	141.1	n/a
Point - 2008	29.9	3.4	1.5	165.6	0.3	3.8	2.2	0.0	113.9	36.1
Nonpoint	1,014.2	358.8	74.9	1,084.5	2.8	194.3	16.3	1,002.0	5,103.6	1,314.6
Nonroad	45.0	14.3	20.9	429.1	0.1	7.1	0.2	0.5	834.2	9.6
Onroad	78.5	25.6	37.8	2,224.5	0.1	9.8	0.6	41.6	1,228.7	14.4
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	1,167.5	402.1	135.0	3,903.8	3.2	215.0	19.2	1,044.0	7,280.4	1,374.6

<i>Mahoning</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	189.2	n/a	n/a	652.0	n/a	1,341.5	n/a	0.7	317.6	n/a
Point - 2008	230.2	30.0	27.8	531.3	1.8	1,252.2	20.9	0.1	298.1	243.9
Nonpoint	1,210.9	430.8	53.9	1,327.5	2.2	247.6	15.1	567.8	6,080.3	1,321.3
Nonroad	80.5	22.3	44.4	972.1	0.1	18.2	0.3	1.1	997.7	13.4
Onroad	235.3	72.3	119.2	6,589.2	0.3	28.6	1.7	115.2	3,189.9	41.8
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	1,756.9	555.4	245.3	9,420.1	4.5	1,546.7	38.1	684.2	10,566.1	1,620.4

<i>2008 Total By County</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
STARK	3,884.3	1,002.2	421.4	13,164.0	15.0	1,075.7	250.1	1,961.6	17,011.7	3,745.8
Carroll	403.8	143.2	47.7	1,554.1	1.6	74.9	7.0	390.4	4,306.4	476.8
Wayne	2,937.6	576.4	231.4	8,020.3	5.5	21,884.1	151.4	3,446.0	7,276.6	3,440.2
Holmes	659.2	211.0	70.8	1,802.1	2.0	95.1	10.8	2,227.7	4,669.2	909.4
Tuscarawas	1,140.7	384.5	165.3	5,020.5	4.8	2,355.6	26.1	1,045.2	8,533.0	1,274.0
Harrison	305.4	84.5	31.2	810.9	0.8	47.0	3.6	202.1	4,270.8	404.3
Columbiana	1,167.5	402.1	135.0	3,903.8	3.2	215.0	19.2	1,044.0	7,280.4	1,374.6
Mahoning	1,756.9	555.4	245.3	9,420.1	4.5	1,546.7	38.1	684.2	10,566.1	1,620.4
Total - 2008	8,371.0	2,357.1	926.6	30,531.7	22.4	26,218.5	256.2	9,039.6	46,902.5	9,499.7

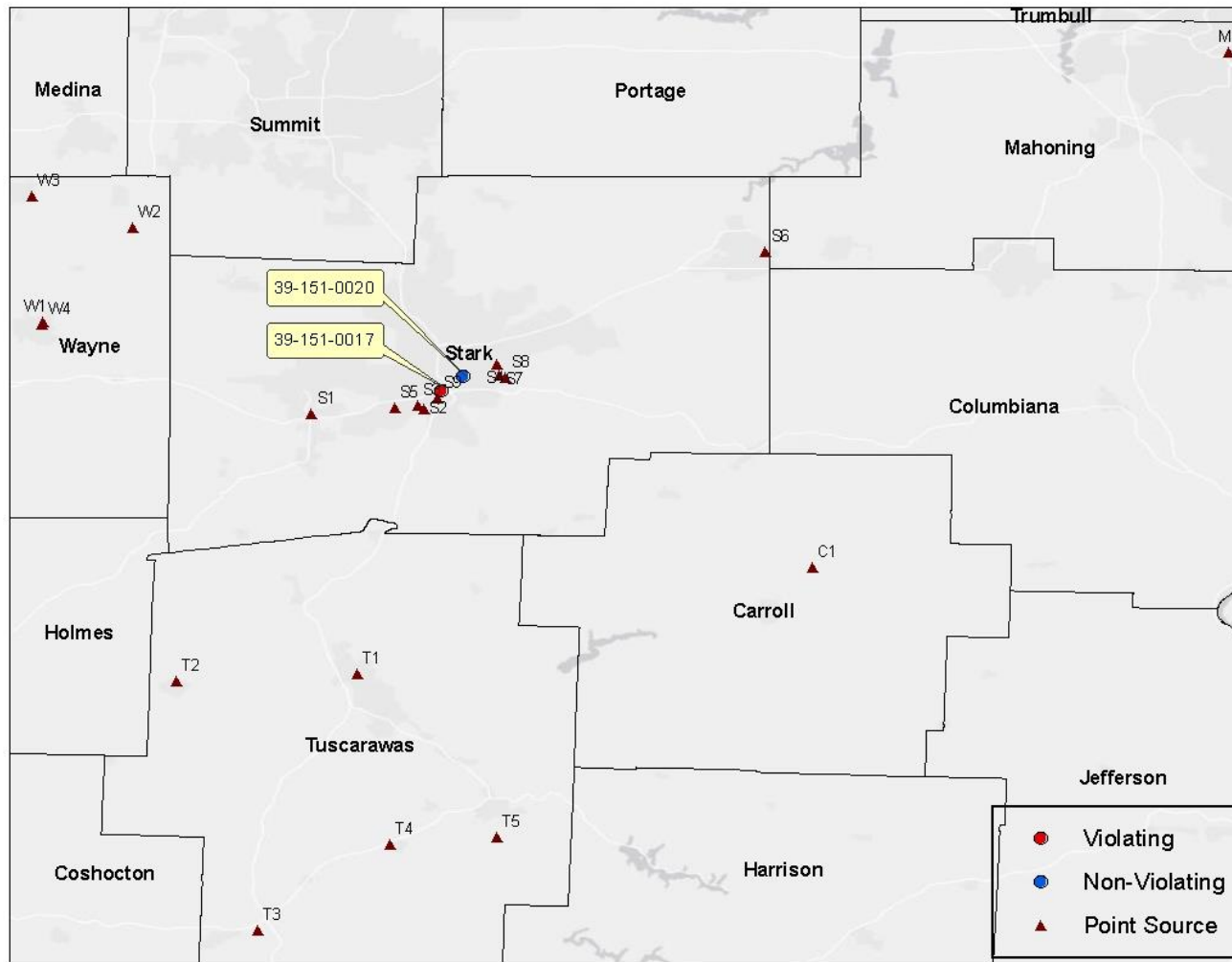
Source: 2008 and 2011 NEI

As seen in Table 6 below, the most significant point emissions of PM2.5, NOx and SO2 in 2011 were from the Orrville Public Utility plant located in Wayne County. Orrville is located approximately 20 miles west-northwest of the violating monitor.

As seen in Figure 4 below, there is a group of four sources (S2, S3, S5 and S9) just southwest of the violating monitor. Included in this group is the Marathon Refinery, a higher emitting PM2.5 and NOx source. The other sources in this group are emitters of VOC and NH3. Just northeast of the monitor is a group of three sources (S4, S7 and S8). Included in this group is Republic Engineered Products, also a higher emitting PM2.5 and NOx source. The other sources in this group are emitters of VOC and NH3.

The following figure³ and table shows the higher emitting point sources located in the area.

Figure 4: Location of Canton-Massillon Analysis Area Emissions Point Sources



Source: 2008 and 2011 NEI

³ The table can be used to correlate the location of each point source with the letter (first letter of county) and number next to the symbol on the map in the figure.

**Table 6: Canton-Massillon Analysis Area Emissions Point Sources for 2011
(tpy)**

PM2.5		
Wayne	W1-Department of Public Utilities, City of Orrville, Ohio (0285010188)	744.5
Stark	S6-Alliance Casting Co. LLC (1576010014)	215.5
Stark	S3-Marathon Petroleum Company LP - Canton Refinery (1576002006)	188.4
Stark	S7-Republic Engineered Products, Inc. (1576050694)	174.3
Wayne	W4-The Quality Castings Company (0285010001)	129.2
Tuscarawas	T5-IMCO Recycling of Ohio LLC (0679030152)	104.0

NOx		
Wayne	W1-Department of Public Utilities, City of Orrville, Ohio (0285010188)	1,901.7
Carroll	C1-Tennessee Gas Pipeline- Station 214 (0210000046)	662.1
Wayne	W2-East Ohio Gas - Chippewa Station (0285000366)	653.9
Stark	S6-Alliance Casting Co. LLC (1576010014)	613.5
Stark	S3-Marathon Petroleum Company LP - Canton Refinery (1576002006)	284.5
Tuscarawas	T1-Dover Municipal Light Plant (0679010146)	277.6
Stark	S7-Republic Engineered Products, Inc. (1576050694)	224.1

SO2		
Wayne	W1-Department of Public Utilities, City of Orrville, Ohio (0285010188)	13,038.0
Wayne	W3-Morton Salt, Inc. (0285020059)	4,434.0
Tuscarawas	T1-Dover Municipal Light Plant (0679010146)	1,396.0
Mahoning	M1-Youngstown Thermal (0250110024)	1,063.3
Tuscarawas	T2-The Belden Brick Company (0679000118)	956.6

NH3		
Stark	S1-A.R.E. Accessories, LLC (1576131793)	103.2
Stark	S2-Marathon Petroleum Company LLC Canton Refinery (1576000301)	7.9
Stark	S3-Marathon Petroleum Company LP - Canton Refinery (1576002006)	7.8
Stark	S4-FRESH MARK CANTON	6.7
Stark	S5-Superior Dairy	6.5

VOC		
Stark	S3-Marathon Petroleum Company LP - Canton Refinery (1576002006)	223.8
Wayne	W4-The Quality Castings Company (0285010001)	103.2
Stark	S9-Harrison Steel (1576222002)	82.3
Stark	S8-Republic Storage Systems LLC (1576050866)	86.7
Tuscarawas	T3-31 Inc. (0679000284)	79.5
Tuscarawas	T4-Plymouth Foam Inc (0679000327)	76.5

Source: 2008 and 2011 NEI

Level of control of emission sources

In Stark County, the emission reduction programs which have had or will have the greatest potential impact on PM_{2.5} concentrations are:

- on-road and off-road diesel control programs in conjunction with ultra-low sulfur diesel fuel requirements
- NO_x trading program
- Clean Air Interstate Rule (CAIR)
- Ohio Clean Diesel Initiatives
- Mercury and Air Toxics Standards (MATS)

CAIR and MATS regulate electric generating units (EGUs, or power plants). CAIR is the program which will bring about largest reductions in precursor or primary emissions of any of the PM_{2.5} species (sulfates, nitrates, organic carbon, elemental carbon and crustal). Compliance with the MATS rule will also lead to additional reductions in precursor species, in particular, sulfates.

Urbanization, population and commuting trends

The following table provides a summary of 2010 population and vehicle miles traveled (VMT) for each of the counties that are discussed in this section.

Table 7: Canton-Massillon Analysis Area County Level VMT, Population, Land Area and Population Density

2010	VMT	Population	Land Area (Sq. Miles)	Population Density (1,000 per Sq. Miles)
STARK	3,078,116,937	375,586	576	0.65
<i>Carroll</i>	208,161,599	28,836	395	0.07
CBSA/CSA	3,286,278,536	404,201	970	0.42
<i>Wayne</i>	1,086,668,001	114,520	555	0.21
<i>Holmes</i>	304,673,244	42,366	423	0.10
<i>Tuscarawas</i>	1,022,612,446	92,582	568	0.16
<i>Harrison</i>	173,483,382	15,864	404	0.04
<i>Columbiana</i>	869,606,918	107,841	532	0.20
<i>Mahoning</i>	2,392,059,141	238,823	415	0.58
Total for Counties	9,135,381,668	1,016,418	3,868	

Source: Office of Strategic Research, Ohio Department of Development (Ohio Populations Only)
 U.S. EPA Designations Guidance and Data:
<http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2>

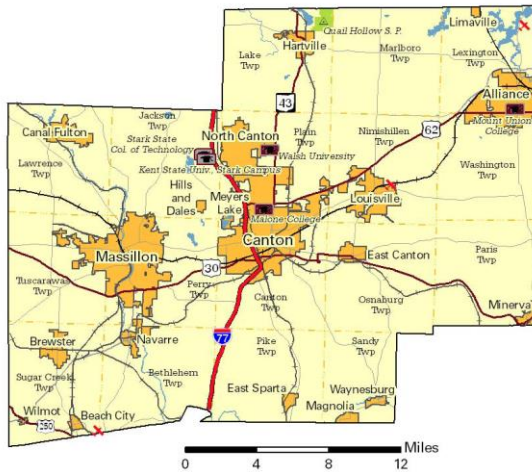
Degree of urbanization and population trends

As seen in Table 7 above, the majority of the population for this analysis area resides in Stark and Mahoning Counties, and to a lesser extent Wayne and Tuscarawas Counties. However, as seen in Figure 5 below, the population in each of these counties is expected to continue declining.

The most urbanized areas are within Stark and Mahoning Counties. Their population and population densities are significantly higher than other areas indicating that population-related emissions in these areas may be high. This is supported by Table 5 above, which indicates these two counties have the highest nonpoint and roadway emissions compared to the others.

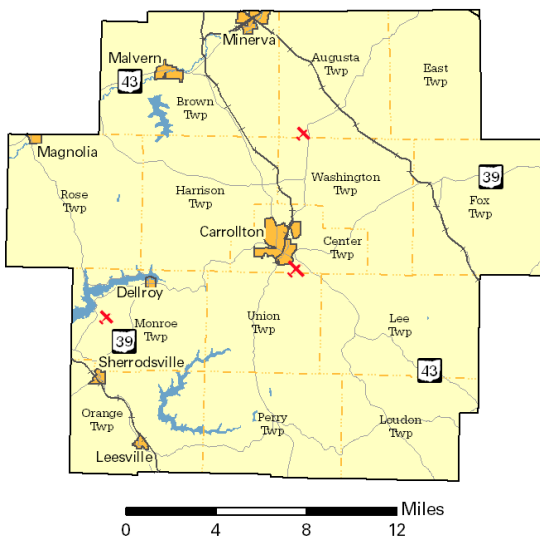
Figure 5: Canton-Massillon Analysis Area County Profiles

Stark County



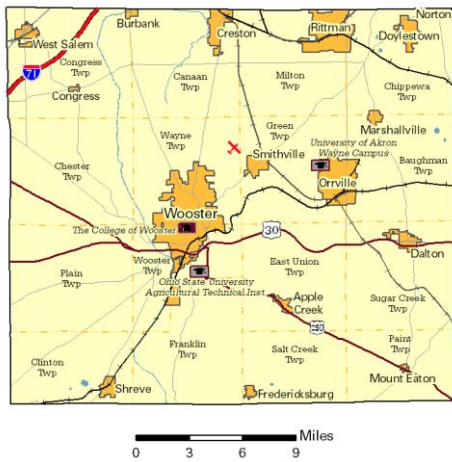
Stark County is 39% forest, 26% cropland, and 22% urban. Massillon and Canton (location of the violating air monitor) are the major urban areas. The 2010 population was 375,586 while it declined to 374,868 in 2012. Population is expected to continue declining in the future to a level of 368,210 by 2020.

Carroll County



Carroll County is 67% forest, 19% cropland, and only 1% urban. Carrollton is the major urban area. The 2010 population was 28,836 while it grew to 28,587 in 2012. Population is expected to minimally grow in the future to a level of 28,770 by 2020.

Wayne County



Wayne County is 23% forest, 60% cropland, and only 5% urban. Wooster is the major urban area. The 2010 population was 114,520 while it grew to 114,848 in 2012. Population is expected to slightly decline in the future to a level of 114,390 by 2020.

Holmes County



Holmes County is 29% forest, 51% cropland, and less than 1% urban. Millersburg is the major urban area. The 2010 population was 42,366 while it grew to 43,025 in 2012. Population is expected to increase in the future to a level of 44,620 by 2020.

Tuscarawas County



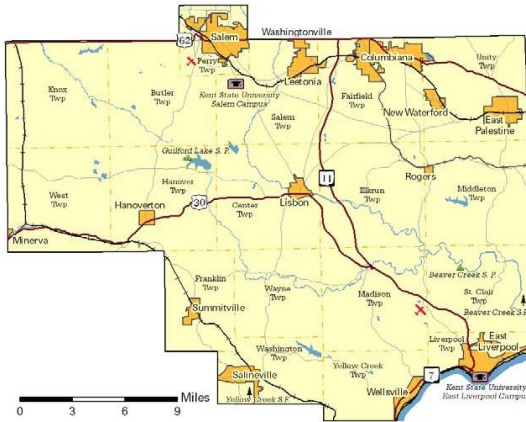
Tuscarawas County is 63% forest, 20% cropland, and 5% urban. Dover/New Philadelphia is the major urban area. The 2010 population was 92,582 while it declined to 92,392 in 2012. Population is expected to slightly decrease in the future to a level of 92,310 by 2020.

Harrison County



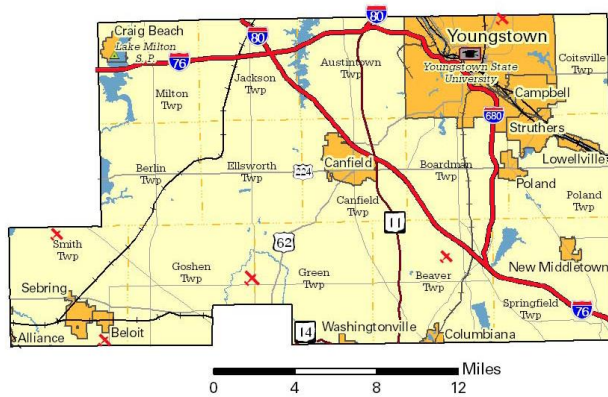
Harrison County is 14% pasture, 71% cropland, and less than 1% urban. Cadiz is the largest major urban area. The 2010 population was 15,864 while it declined to 15,714 in 2012. Population is expected to continue to decline in the future to a level of 15,300 by 2020.

Columbiana County



Columbiana County is 25% forest, 56% cropland, and 6% urban. Salem, East Liverpool and Columbiana are the largest major urban areas. The 2010 population was 107,841 while it declined to 106,507 in 2012. Population is expected to continue to decline in the future to a level of 105,380 by 2020.

Mahoning County



Mahoning County is 41% forest, 23% cropland, and 23% urban. The Youngstown area is the largest major urban areas. The 2010 population was 238,832 while it declined to 235,145 in 2012. Population is expected to continue to decline in the future to a level of 224,680 by 2020.

Source: Ohio Department of Development. Ohio County Profiles: http://development.ohio.gov/reports/reports_countytrends_map.htm

Commuting trends

As can be seen in Table 7, the majority of VMT occurs in Stark and Mahoning Counties, and to a lesser extent Wayne, Tuscarawas and Columbiana Counties. Just over 23% of Stark County’s working residents commute to counties outside of Stark County. In turn, just over 20% of Stark County’s workforce commutes from other counties into Stark County. Of the Stark County residents that commute to other counties, the majority commute north (over 16%) (Summit, Cuyahoga, Portage, and Medina Counties). To a much lesser extent, some commute to counties in the south, and even to a lesser extent the east and west. Of the non-residents that commute into Stark County, a significant portion also commutes from the same counties to the north (over 7%). However, over twice as many workers are commuting out of Stark County and to the north than commuting in from the north. These counties to the north are a part of the discussion under the Cleveland–Akron–Lorain section. Over 6% of Stark County non-resident workers also commute in from counties to the south (Tuscarawas and Carroll Counties). There are fewer non-residents commuting in from the east and west. As can be seen in Table 8 below, very little commuter travel occurs between Stark and Mahoning Counties, the two counties with the highest VMT. And Figure 1 shows there are no major highways running between these two counties. Overall, there is not a significant amount of commuting in or out of Stark County from the south, east or west.

Table 8: Commuter Travel In and Out of Stark County

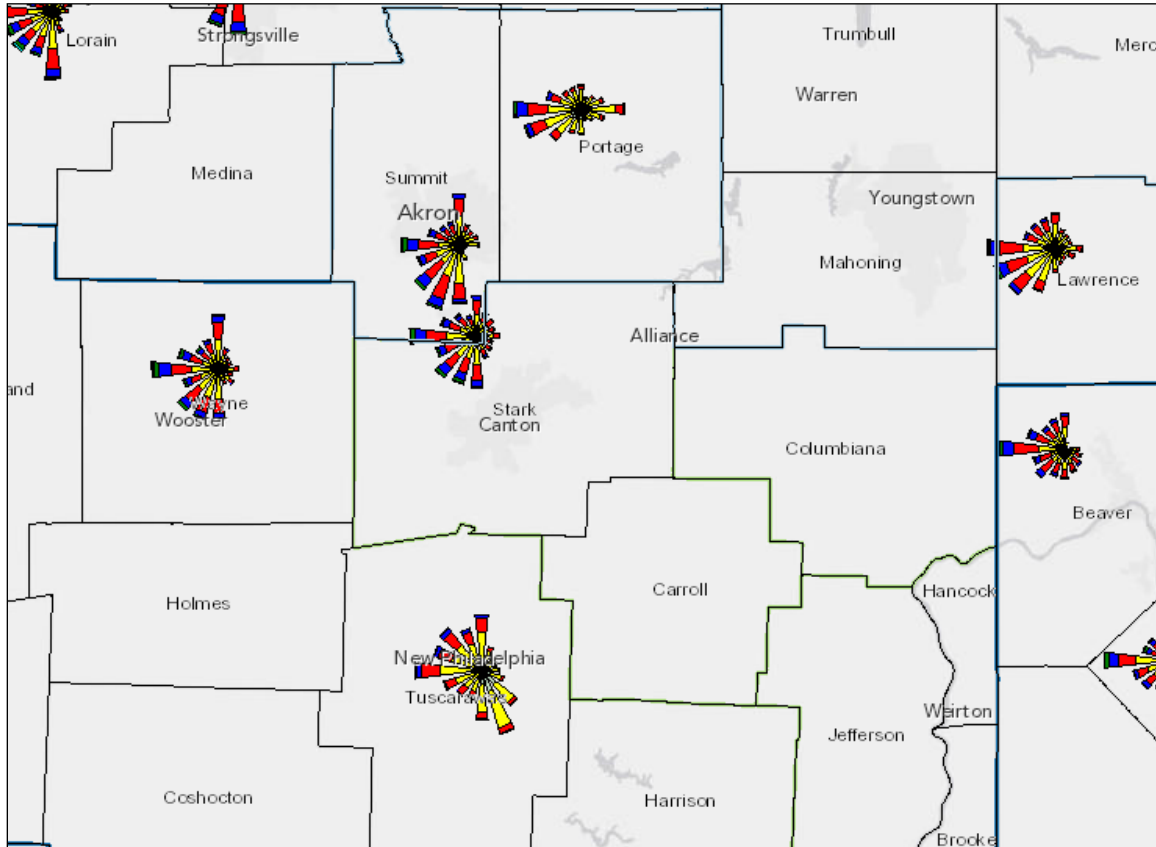
Stark			Percent of workers that work outside the county		23.2%
			Percent of workers that live outside the county		20.3%
Number of workers living in Stark County			177,234		
Commute Out To	Number	Percent			
Summit Co. OH	22,673	12.8%			
Cuyahoga Co. OH	3,043	1.7%			
Wayne Co. OH	2,478	1.4%			
Tuscarawas Co. OH	2,119	1.2%			
Portage Co. OH	1,892	1.1%			
Mahoning Co. OH	1,071	0.6%			
Columbiana Co. OH	991	0.6%			
Carroll Co. OH	940	0.5%			
Medina Co. OH	874	0.5%			
Holmes Co. OH	332	0.2%			
			Number of workers working in Stark County		
			165,038		
			Commute In From	Number	Percent
			Summit Co. OH	9,158	5.5%
			Tuscarawas Co. OH	5,824	3.5%
			Carroll Co. OH	4,959	3.0%
			Columbiana Co. OH	3,358	2.0%
			Mahoning Co. OH	2,263	1.4%
			Wayne Co. OH	2,100	1.3%
			Portage Co. OH	1,831	1.1%
			Cuyahoga Co. OH	764	0.5%
			Medina Co. OH	513	0.3%
			Holmes Co. OH	325	0.2%
Percent is of workers living in county.			Percent is of workers working in county.		

Source: U.S. EPA Designations Guidance and Data: <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2>

Factor 3: Meteorology

The following wind roses represent this area.

Figure 6: 2009 to 2012 Wind Roses for the Canton-Massillon Analysis Area



Source: U.S. EPA's PM_{2.5} Designations Mapping Tool: http://geoplatform2.epa.gov/PM_MAP/index.html

Winds from the south-southwest and west-southwest (collectively, the southwest quadrant) are prevalent in near the Stark County monitors. This indicates sources of emissions from the southwest quadrant may be contributing to violations at the Stark County monitor.

Factor 4: Geography/topography

This analysis area does not have any geographical or topographical barriers significantly affecting air pollution transport. Therefore, this factor does not play a role in the analysis of this area.

Factor 5: Jurisdictional boundaries

Stark County was designated as a nonattainment county for 1997 and 2006 PM_{2.5} standards as part of the Canton-Massillon nonattainment area. Mahoning and Columbiana Counties were designated as nonattainment under the 1997

ozone standard as part of the Youngstown-Warren-Sharon OH-PA nonattainment area. Both of these areas have been redesignated to attainment. No other counties a part of this analysis area have been designated nonattainment for PM2.5 or other urban-scale pollutants.

The Canton-Massillon MSA includes Stark and Carroll Counties and the principal cities of Canton and Massillon. The Youngstown-Warren-Boardman, OH-PA MSA includes: Mahoning and Trumbull Counties and Mercer County, PA. The principal cities are Youngstown, Warren and Boardman in Ohio.

The Stark County Transportation Study (SCATS) is the planning agency designated as the Metropolitan Planning Organization (MPO) for Stark County. The SCATS region is composed of Stark County. The Eastgate regional Council of Governments (Eastgate) is the planning agency designated as the Metropolitan Planning Organization for the greater Youngstown area. The Eastgate region is composed of three counties in two states: Mahoning and Trumbull Counties in Ohio and Mercer County in Pennsylvania.

The surrounding counties; Wayne, Holmes, Tuscarawas, Harrison and Carroll are not part of an MPO.

Conclusion

The Canton-Massillon MSA includes Stark and Carroll Counties. There are nine counties that are adjacent to the Canton-Massillon MSA; Wayne, Holmes, Tuscarawas, Harrison, Jefferson, Columbiana, Mahoning, Portage and Summit Counties. Portage and Summit Counties are discussed in the Cleveland-Akron-Lorain area analysis. Jefferson County is discussed in the Steubenville-Weirton area analysis. These are distinct, separate metropolitan areas that are treated separately.

Overall, Stark County's emissions, VMT, population and population density are the most significant of all counties in this analysis area.

Although the most significant emissions of SO₂ and NH₃ are from Wayne County, it his highly unlikely these are impacting the Stark County violating monitor. The higher emissions of NH₃ are likely due to the large percentage of cropland in Wayne County while the higher emissions of SO₂ are a result of the Orrville Public Utility plant. As can be seen from Figure 4 above, Orville is located to the northwest of the violating monitor while winds are predominantly from the southwest quadrant (see Figure 6). Orrville does not appear to a be a source contributing to the violating monitor. There is also very little commuter travel between Stark and Wayne Counties.

Columbiana and Mahoning Counties also have high emissions compared to other counties in the analysis area but they have historically been analyzed as part of the Youngstown-Warren OH-PA area. There are two monitors located in Mahoning County (see Table 1) and both indicate attainment of the standard.

Both counties are located to the east of Stark County, and based on meteorology alone, it is unlikely emissions from Columbiana and Mahoning Counties are impacting the Stark County monitor.

Holmes, Tuscarawas, and Harrison Counties have significantly lower emissions, VMT and commuter travel and are likely not a significant impact on the violating monitor.

Carroll County, located to the southeast of Stark County, is also a part of the Canton-Massillon MSA. However, emissions, VMT, and commuter travel from Carroll County are very low.

Ohio EPA recommends only Stark County be designated nonattainment. No other factors warrant inclusion of any of the other counties included in the analysis of this area, except Stark County.

Cincinnati-Hamilton, OH-KY-IN

Figure 7: Cincinnati-Hamilton, OH-KY-IN Recommended Nonattainment Area – Ohio Portion Only

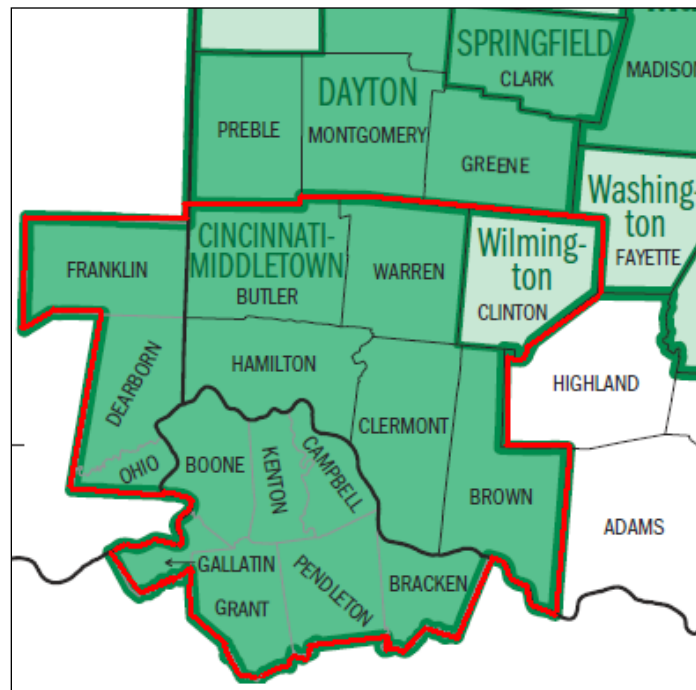


Discussion

There are four Ohio counties in this historic PM_{2.5} nonattainment area: Butler, Clermont, Hamilton, and Warren Counties. In addition to Ohio counties, Boone, Kenton and Campbell Counties in Kentucky, and partial Dearborn County in Indiana were a part of this historic PM_{2.5} nonattainment area. Ohio EPA recommends designating Butler, Clermont, and Hamilton Counties as nonattainment for the Ohio portion of the Cincinnati-Hamilton area. After considering the five factors, Ohio EPA does not recommend adding any additional contributing Ohio counties to this area.

There is one violating monitor in Butler County and three violating monitors in Hamilton County. Butler and Hamilton County are part of the Cincinnati-Middletown-Wilmington CSA. This CSA includes the following additional counties: Warren, Clinton, Clermont and Brown in Ohio; Kenton, Boone, Campbell, Grant, Pendleton, Bracken and Gallatin Counties in Kentucky; and Dearborn, Franklin and Ohio Counties in Indiana.

Figure 8: Middletown-Wilmington CSA



Source: U.S. Department of Commerce Economics and Statistics Administrations, U.S. Census Bureau, 2002 Economic Census

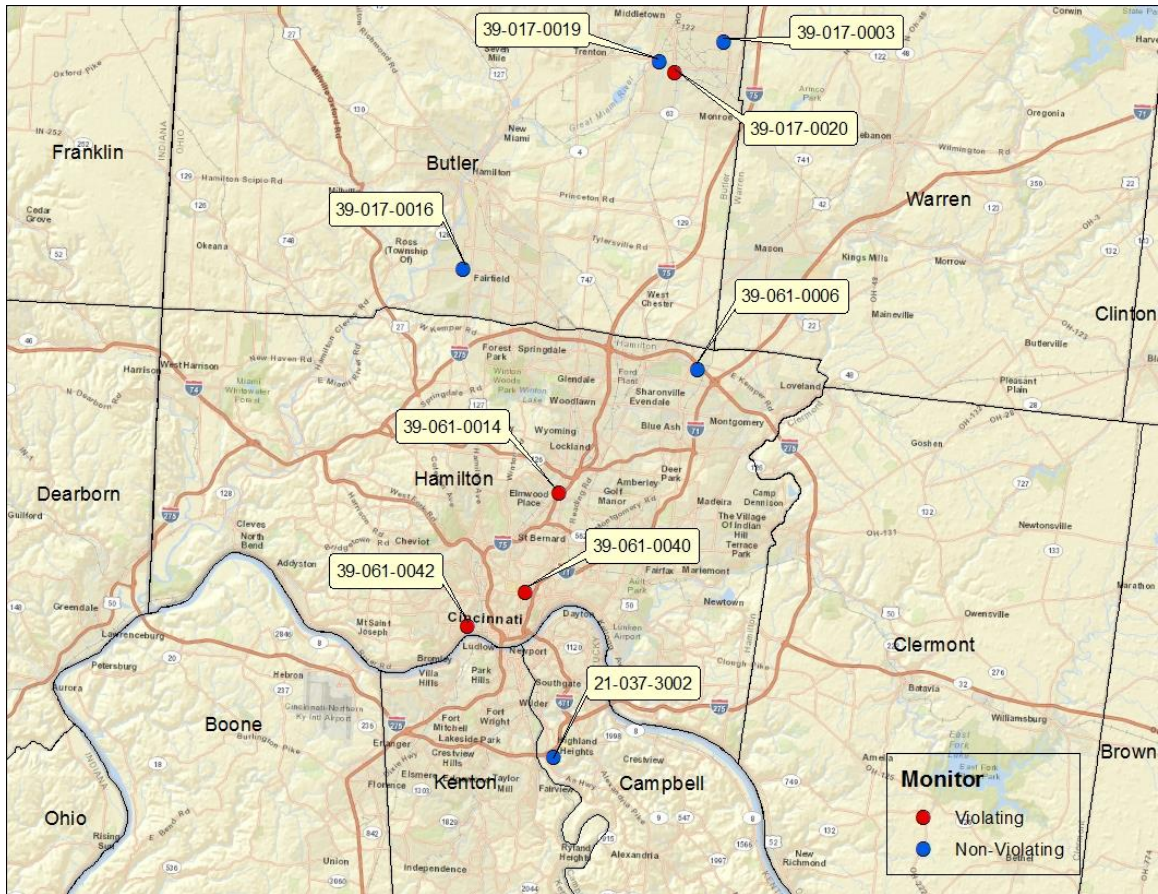
Ohio EPA will not be analyzing any additional adjacent counties adjacent to the CSA counties. Counties to the north are part of the historical Dayton-Springfield PM_{2.5} nonattainment area which is attaining the newly revised standard. Those to the east of Brown and Clinton Counties will not be analyzed because historically Brown and Clinton Counties have been excluded from the nonattainment area and counties east of them have also been excluded. Ohio

EPA will analyze Brown and Clinton Counties with respect to this newer standard.

Factor 1: Air quality

There are seven monitors in this area.

Figure 9: Cincinnati-Hamilton Area Air Quality Monitors




In Butler County, OH, monitor 39-017-0020, and in Hamilton County, monitors 39-061-0014, 39-061-0040, and 39-061-0042 are violating the standard based on preliminary 2011 to 2013 air quality data. The design value for the area is 13.6 $\mu\text{g}/\text{m}^3$. As can be seen from Table 1, air quality trends have declined historically in this area.

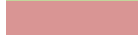
Table 9: Annual Average ($\mu\text{g}/\text{m}^3$) for Ohio Monitors

Site	County	Year				Average	
		2010	2011	2012	2013	'10-'12	'11-'13
39-017-0003	Butler	13.6	12.7	11.2	10.9	12.5	11.6
39-017-0016		13.5	12.4	10.8	10.5	12.2	11.2
39-017-0019			12.7	11.4	10.8		11.6
39-017-0020			13.6	13.9	13.2		13.6
39-061-0006	Hamilton	12.7	11.7	10.3	10.0	11.6	10.7

Site	County	Year				Average	
		2010	2011	2012	2013	'10-'12	'11-'13
39-061-0014		14.8	13.2	12.1	11.5	13.4	12.3
39-061-0040		13.3	12.4	12.6	11.4	12.8	12.1
39-061-0042		14.5	13.3	11.7	11.5	13.2	12.2

 Combined data from two adjacent sites


 Insufficient data


 Violating monitor


Source: U.S. EPA AQS

Table 10: Annual Average ($\mu\text{g}/\text{m}^3$) for Kentucky Monitors

Site	County	Year				Average	
		2010	2011	2012	2013	'10-'12	'11-'13
21-037-3002	Campbell	11.8	10.3	9.7	9.9	10.6	10.0

 Combined data from two adjacent sites

 Insufficient data

 Violating monitor

Source: U.S. EPA AQS

There are two speciation monitors in this area. The Hamilton County speciation monitor is co-located with the violating monitor.

Table 11: Cincinnati-Hamilton Area Speciation Monitors

		Speciation Monitor SANDWICH Mass					FRM Monitor
		Sulfate	Nitrate	Organic Carbon	Elemental Carbon	Crustal	
Hamilton	2009	5.6	1.0	4.4	0.7	0.4	12.7
	2010	5.4	1.7	4.5	0.7	0.4	13.3
39-061-0040	2011	4.9	1.3	4.5	0.6	0.4	12.4
	2009-2011 Average	5.3	1.3	4.5	0.7	0.4	12.8
Kenton, KY	2009	5.6	1.2	2.5	0.6	0.4	-
	2010	5.1	2.7	2.1	0.7	0.5	-
21-117-0007 ⁴	2011	-	-	-	-	-	-
	2009-2011 Average	3.6	1.3	1.6	0.4	0.3	-

Source: CSN speciation data (SANDWICHED) from <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F1>

Organic carbon and sulfate tends to dominate at both monitors although there is a more significant presence of sulfate and less significant presence of organic carbon at the Kenton County, KY monitor.

⁴ This monitor was discontinued after 2010 and is therefore, not included in the annual average table for determining compliance with the standard.

The 2010 to 2011 urban increments (UI) have also been calculated for violating monitors (based on 2010 to 2012 data) in this area.

Table 12: Cincinnati-Hamilton Area Urban Increments

2010-2011 Averages		PM2.5 Total	PM2.5 Total UI	Organic Carbon	Organic Carbon UI	Elemental Carbon	Elemental Carbon UI	Nitrates	Nitrates UI	Sulfates	Sulfates UI	Crustal	Crustal UI
Hamilton 39-061-0014	Quarter 1	15.3	3.8	5.1	2.2	0.5	0.0	4.6	1.6	4.8	0.0	0.3	0.0
	Quarter 2	12.3	2.1	4.3	0.0	2.0	1.4	0.2	0.1	5.3	0.5	0.6	0.1
	Quarter 3	15.4	2.0	6.4	0.8	0.8	0.2	0.0	0.0	7.8	1.1	0.5	0.0
	Quarter 4	13.0	3.6	6.5	3.0	1.0	0.3	1.5	0.2	3.6	0.0	0.4	0.0
	Annual	14.0	2.9	5.6	1.5	1.1	0.5	1.6	0.5	5.4	0.4	0.4	0.0
Hamilton 39-061-0040	Quarter 1	14.0	2.5	3.8	0.9	0.5	0.0	4.6	1.6	4.8	0.0	0.3	0.0
	Quarter 2	11.7	1.6	5.1	0.9	0.6	0.0	0.2	0.1	5.3	0.5	0.6	0.1
	Quarter 3	15.4	2.0	6.4	0.8	0.8	0.2	0.0	0.0	7.8	1.1	0.5	0.0
	Quarter 4	10.9	1.5	4.6	1.2	0.8	0.1	1.5	0.2	3.6	0.0	0.4	0.0
	Annual	13.0	1.9	5.0	0.9	0.7	0.1	1.6	0.5	5.4	0.4	0.4	0.0
Hamilton 39-061-0042	Quarter 1	15.0	3.5	4.8	1.9	0.5	0.0	4.6	1.6	4.8	0.0	0.3	0.0
	Quarter 2	12.4	2.3	4.3	0.0	2.2	1.6	0.2	0.1	5.3	0.5	0.6	0.1
	Quarter 3	15.9	2.5	6.7	1.1	0.9	0.3	0.0	0.0	7.8	1.1	0.5	0.0
	Quarter 4	12.3	2.9	5.9	2.4	0.9	0.2	1.5	0.2	3.6	0.0	0.4	0.0
	Annual	13.9	2.8	5.4	1.4	1.1	0.5	1.6	0.5	5.4	0.4	0.4	0.0
Butler 39-017-0003	Quarter 1	15.1	3.6	4.9	2.0	0.5	0.0	4.6	1.6	4.8	0.0	0.3	0.0
	Quarter 2	11.5	1.3	4.3	0.0	1.3	0.7	0.2	0.1	5.3	0.5	0.6	0.1
	Quarter 3	15.4	2.0	6.4	0.8	0.8	0.2	0.0	0.0	7.8	1.1	0.5	0.0
	Quarter 4	11.4	2.0	5.1	1.6	0.8	0.2	1.5	0.2	3.6	0.0	0.4	0.0
	Annual	13.4	2.2	5.1	1.1	0.9	0.3	1.6	0.5	5.4	0.4	0.4	0.0
Butler 39-017-0016	Quarter 1	14.8	3.3	4.6	1.7	0.5	0.0	4.6	1.6	4.8	0.0	0.3	0.0
	Quarter 2	11.0	0.9	4.3	0.0	0.8	0.2	0.2	0.1	5.3	0.5	0.6	0.1
	Quarter 3	15.4	2.0	6.4	0.8	0.8	0.2	0.0	0.0	7.8	1.1	0.5	0.0
	Quarter 4	11.6	2.2	5.3	1.8	0.9	0.2	1.5	0.2	3.6	0.0	0.4	0.0
	Annual	13.2	2.1	5.1	1.1	0.7	0.1	1.6	0.5	5.4	0.4	0.4	0.0

Source: U.S. EPA Designations Guidance and Data: <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2>

Quarter 1 and quarter 3 tend to have higher total PM2.5 for all violating monitors.

There is a higher sulfate UI at all violating monitors during quarter 2, and especially, quarter 3. There is also higher nitrate UI at all monitors during quarter 1.

For organic carbon UI, all monitors exhibit higher UIs for quarters 1 and 4 except for monitor 39-061-0040 which only shows a higher UI in quarter 4.

For elemental carbon UI, all monitors exhibit higher UIs for quarter 2 except for monitors 39-061-0040 and 39-017-0016.

Factor 2: Emissions and emissions related data

Emission trends

Overall, the most significant emissions in the analysis area emanate from Hamilton County, and then Butler County, Clermont County and Dearborn County, IN. Considering all the counties in this analysis area, these four counties account for 70% of PM2.5, 71% of NOx, 51% of VOC, 29% of NH3 and 96% of SO2 emissions.

Clinton and Warren Counties, located east and northeast of the violating monitors, have the highest emissions of NH3, likely due to their rural nature and large percentage of cropland.

Warren, Clinton and Brown Counties, Kenton and Campbell Counties, KY and Franklin County, IN have low emissions compared to the higher emitting counties and the majority of their emissions are related to nonpoint sources. Boone and Pendleton Counties in Kentucky also have lower emissions compared to the higher emitting counties but their emissions are related to a presence of both point sources and nonpoint sources.

Ohio County, IN, Gallatin, Bracken, and Grant Counties, KY all have very low (insignificant) emissions.

Table 13: Cincinnati-Hamilton Analysis Area Emissions (tpy)

HAMILTON	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	2,434.7	n/a	n/a	37,941.6	n/a	31,210.1	n/a	56.9	978.5	n/a
Point - 2008	6,708.1	241.2	326.2	15,747.3	8.0	31,252.2	710.0	41.6	1,023.4	5,756.9
Nonpoint	3,017.1	1,199.4	139.1	4,120.8	5.3	874.8	56.5	401.2	15,944.0	3,221.7
Nonroad	291.8	79.4	163.8	3,995.1	0.5	70.3	1.5	4.1	3,168.4	46.6
Onroad	699.3	213.3	346.9	15,588.2	0.9	91.4	5.5	353.2	7,763.2	132.6
Fire	27.0	13.5	2.9	5.1	0.3	2.6	0.1	5.0	72.1	10.1
Total - 2008	10,743.3	1,746.9	979.0	39,456.5	15.1	32,291.1	773.6	805.2	27,971.2	9,167.9

BUTLER	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	1,129.0	n/a	n/a	3,989.3	n/a	5,613.9	n/a	57.6	1,146.6	n/a
Point - 2008	1,564.5	330.8	222.4	4,905.0	13.9	7,627.3	367.7	29.9	1,003.8	1,251.4
Nonpoint	1,488.1	485.4	64.9	1,752.0	2.6	405.6	22.6	457.6	8,072.1	1,823.6
Nonroad	149.7	38.2	89.6	1,947.6	0.2	37.9	0.6	2.0	1,238.9	21.1
Onroad	230.7	71.2	113.4	5,176.1	0.3	30.2	1.8	118.0	2,601.2	43.9
Fire	4.3	2.1	0.5	1.2	0.0	0.5	0.0	0.7	10.6	1.6
Total - 2008	3,437.3	927.9	490.7	13,781.9	17.1	8,101.6	392.7	608.3	12,926.5	3,141.6

<i>Warren</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	36.9	n/a	n/a	571.4	n/a	19.1	n/a	0.9	262.5	n/a
Point - 2008	37.4	16.8	13.5	1,044.7	0.7	3.8	3.0	0.7	285.5	23.7
Nonpoint	1,348.3	506.6	89.4	798.7	3.8	235.0	24.2	744.4	5,306.4	1,776.9
Nonroad	114.8	28.7	70.1	1,475.1	0.2	30.0	0.4	1.5	933.6	15.4
Onroad	155.1	45.4	82.1	3,788.6	0.2	19.9	1.1	74.0	1,708.9	26.3
Fire	1.4	0.7	0.2	0.4	0.0	0.2	0.0	0.2	3.5	0.5
Total - 2008	1,657.0	598.1	255.3	7,107.5	4.9	288.9	28.7	820.8	8,238.0	1,842.8

<i>Clermont</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	6,069.8	n/a	n/a	16,030.0	n/a	108,884.4	n/a	5.3	182.1	n/a
Point - 2008	2,576.3	99.7	133.0	24,278.0	1.8	43,034.5	314.9	3.4	153.2	2,563.5
Nonpoint	1,280.6	516.7	91.9	599.1	3.9	200.6	23.5	124.4	6,958.3	1,599.8
Nonroad	85.4	22.7	49.1	1,019.9	0.1	20.3	0.3	1.1	818.8	13.2
Onroad	134.3	40.8	68.2	3,121.4	0.2	17.4	1.0	69.7	1,493.1	24.1
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	4,076.6	680.0	342.1	29,018.4	6.0	43,272.8	339.8	198.6	9,423.5	4,200.5

<i>Clinton</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	1.8	n/a	n/a	1.6	n/a	0.3	n/a	-	3.0	n/a
Point - 2008	14.3	2.6	10.8	485.7	0.0	49.0	0.0	-	123.6	0.8
Nonpoint	851.5	180.6	27.7	503.0	1.7	84.0	8.3	1,099.5	3,076.9	1,396.1
NonRoad	44.7	10.4	28.9	495.5	0.1	9.1	0.2	0.4	351.8	5.1
Onroad	77.9	22.8	43.8	2,294.6	0.1	7.9	0.5	33.5	899.9	10.8
Fire	1.9	1.0	0.2	0.5	0.0	0.2	0.0	0.3	5.0	0.7
Total - 2008	990.2	217.4	111.4	3,779.2	1.9	150.3	9.0	1,133.8	4,457.2	1,413.5

<i>Brown</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	4.3	n/a	n/a	4.4	n/a	1.6	n/a	8.1	28.9	n/a
Point - 2008	3.6	0.9	0.8	2.8	0.0	0.9	0.4	4.9	18.9	3.7
Nonpoint	834.2	209.3	42.5	476.1	2.0	57.2	9.6	499.6	5,246.0	1,319.3
Nonroad	25.2	5.1	18.0	287.2	0.0	5.8	0.1	0.3	131.0	2.0
Onroad	38.5	12.4	19.5	1,190.9	0.1	4.5	0.3	22.0	635.2	6.3
Fire	4.8	2.4	0.5	1.3	0.1	0.6	0.0	0.8	12.1	1.8
Total - 2008	906.3	230.1	81.4	1,958.2	2.2	69.0	10.3	527.6	6,043.2	1,333.2

<i>Kenton, KY</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	24.5	n/a	n/a	147.2	n/a	1.0	n/a	0.0	232.9	n/a
Point - 2008	44.6	10.6	4.3	140.9	0.2	17.3	6.1	0.0	286.3	40.5
Nonpoint	464.9	135.4	24.4	742.6	0.8	31.0	5.7	105.7	3,276.4	576.3
Nonroad	51.9	13.4	30.7	608.0	0.1	11.2	0.2	0.7	478.7	7.5
Onroad	158.3	42.8	87.4	3,735.8	0.2	19.1	1.2	71.5	1,487.0	26.7
Fire	33.5	16.8	3.7	6.6	0.4	3.3	0.1	6.2	89.0	12.5
Total - 2008	753.2	219.0	150.5	5,233.8	1.7	81.9	13.3	184.1	5,617.5	663.6

<i>Boone, KY</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	202.9	n/a	n/a	3,569.2	n/a	2,126.6	n/a	27.9	1,019.0	n/a
Point - 2008	583.8	41.5	54.9	5,491.8	1.3	2,823.7	90.1	28.0	945.1	808.5
Nonpoint	533.3	202.3	42.6	379.7	1.6	23.5	9.1	139.4	3,430.4	697.3
Nonroad	77.5	23.4	38.6	808.8	0.1	13.8	0.3	0.9	1,067.3	15.2
Onroad	108.3	28.9	62.4	2,759.5	0.1	12.4	0.7	47.6	945.9	16.2
Fire	2.8	1.4	0.3	0.8	0.0	0.3	0.0	0.5	7.0	1.1
Total - 2008	1,305.7	297.4	198.7	9,440.5	3.2	2,873.8	100.2	216.5	6,395.8	1,538.3

<i>Campbell, KY</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	52.8	n/a	n/a	83.0	n/a	1.0	n/a	-	160.6	n/a
Point - 2008	107.8	17.1	21.3	99.5	1.3	2.3	23.8	-	172.5	103.3
Nonpoint	308.6	82.3	12.2	369.9	0.5	19.1	3.9	86.3	3,023.1	416.1
Nonroad	23.3	6.1	13.5	286.5	0.0	5.0	0.1	0.3	307.7	3.5
Onroad	92.5	25.0	51.2	2,212.6	0.1	11.3	0.7	42.9	887.4	15.5
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	532.2	130.6	98.3	2,968.6	2.0	37.7	28.5	129.6	4,390.7	538.4

<i>Grant, KY</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	2.3	n/a	n/a	13.0	n/a	2.8	n/a	-	79.8	n/a
Point - 2008	7.5	1.2	1.1	17.7	0.1	3.7	0.8	-	44.7	7.7
Nonpoint	197.5	67.4	22.2	529.6	0.6	17.4	3.2	121.1	3,257.3	263.3
Nonroad	14.4	4.6	6.6	108.0	0.0	2.0	0.0	0.1	256.0	3.1
Onroad	48.4	12.2	30.7	1,529.7	0.1	5.2	0.2	19.5	421.7	5.1
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	267.7	85.5	60.6	2,185.0	0.7	28.3	4.2	140.8	3,979.6	279.2

<i>Pendleton, KY</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	165.9	n/a	n/a	949.2	n/a	853.3	n/a	-	127.6	n/a
Point - 2008	367.6	29.4	4.4	656.1	0.4	760.1	28.7	-	135.7	489.4
Nonpoint	171.3	44.3	16.9	498.8	0.4	20.1	2.2	123.0	2,909.8	252.9
Nonroad	7.4	1.6	5.0	88.1	0.0	1.6	0.0	0.1	52.7	0.7
Onroad	14.3	3.9	8.3	445.5	0.0	2.0	0.1	7.7	183.7	2.0
Fire	15.5	7.8	1.7	2.8	0.2	1.5	0.1	2.9	41.5	5.8
Total - 2008	576.0	87.0	36.3	1,691.4	1.0	785.3	31.1	133.7	3,323.3	750.8

<i>Bracken, KY</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	6.6	n/a	n/a	3.7	n/a	0.0	n/a	-	13.4	n/a
Point - 2008	13.2	1.9	0.4	3.8	0.0	0.1	0.1	-	13.4	15.6
Nonpoint	76.7	25.6	8.6	270.8	0.2	4.7	1.3	100.7	2,556.0	103.4
Nonroad	7.0	1.8	4.1	76.5	0.0	1.4	0.0	0.1	118.6	1.0
Onroad	6.9	1.9	4.0	216.0	0.0	1.0	0.0	3.8	90.1	1.0
Fire	1.7	0.9	0.2	0.5	0.0	0.2	0.0	0.3	4.3	0.7
Total - 2008	105.6	32.1	17.2	567.6	0.3	7.4	1.4	104.9	2,782.5	121.6

<i>Gallatin, KY</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	177.2	n/a	n/a	609.8	n/a	74.5	n/a	-	87.4	n/a
Point - 2008	191.6	16.6	6.7	477.7	0.7	59.3	24.6	-	81.9	212.4
Nonpoint	84.1	29.0	7.3	144.9	0.2	3.9	1.4	112.8	1,806.6	117.1
Nonroad	4.1	1.3	1.9	42.9	0.0	0.7	0.0	0.1	114.4	0.9
Onroad	32.5	8.1	20.8	1,026.1	0.0	3.4	0.2	12.7	269.6	3.3
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	312.3	55.0	36.8	1,691.6	1.0	67.3	26.1	125.6	2,272.4	333.7

<i>Dearborn, IN</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	187.1	n/a	n/a	6,530.6	n/a	28,287.1	n/a	28.3	1,573.3	n/a
Point - 2008	1,125.7	46.7	61.7	9,514.7	1.5	28,447.4	187.7	6.2	1,400.0	995.8
Nonpoint	521.1	144.8	24.3	280.7	1.6	120.4	8.5	104.3	3,978.9	748.2
Nonroad	17.7	4.3	10.9	228.3	0.0	4.6	0.1	0.2	178.9	2.3
Onroad	83.0	22.3	47.9	2,441.6	0.1	10.7	0.5	39.3	954.8	12.2
Fire	15.6	7.8	1.7	2.9	0.2	1.5	0.1	2.9	41.9	5.8
Total - 2008	1,763.1	226.0	146.5	12,468.2	3.4	28,584.6	196.9	153.0	6,554.5	1,764.4

<i>Franklin, IN</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	0.0	n/a	n/a	0.0	n/a	0.0	n/a	-	0.0	n/a
Point - 2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Nonpoint	482.1	74.7	8.6	229.9	1.0	64.6	4.6	523.4	3,884.6	827.2
Nonroad	20.4	5.3	11.9	211.7	0.0	4.0	0.1	0.2	248.0	3.1
Onroad	27.0	7.4	15.6	821.8	0.0	3.5	0.2	13.6	325.2	3.7
Fire	388.8	195.1	42.5	73.0	4.2	37.0	1.3	72.4	1,040.7	145.7
Total - 2008	918.3	282.6	78.6	1,336.3	5.2	109.1	6.1	609.5	5,498.5	979.8

<i>Ohio, IN</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	0.0	n/a	n/a	0.0	n/a	0.0	n/a	-	0.0	n/a
Point - 2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Nonpoint	91.3	18.9	6.1	218.1	0.3	15.8	1.3	90.8	1,601.4	136.8
Nonroad	2.9	0.7	1.7	32.1	0.0	0.6	0.0	0.0	36.4	0.4
Onroad	4.6	1.3	2.6	147.5	0.0	0.7	0.0	2.7	63.8	0.7
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	98.8	21.0	10.4	397.8	0.3	17.1	1.3	93.5	1,701.6	137.9

<i>2008 Total By County</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
HAMILTON	10,743.3	1,746.9	979.0	39,456.5	15.1	32,291.1	773.6	805.2	27,971.2	9,167.9
BUTLER	3,437.3	927.9	490.7	13,781.9	17.1	8,101.6	392.7	608.3	12,926.5	3,141.6
Warren	1,657.0	598.1	255.3	7,107.5	4.9	288.9	28.7	820.8	8,238.0	1,842.8
Clermont	4,076.6	680.0	342.1	29,018.4	6.0	43,272.8	339.8	198.6	9,423.5	4,200.5
Clinton	990.2	217.4	111.4	3,779.2	1.9	150.3	9.0	1,133.8	4,457.2	1,413.5
Brown	906.3	230.1	81.4	1,958.2	2.2	69.0	10.3	527.6	6,043.2	1,333.2
Kenton, KY	753.2	219.0	150.5	5,233.8	1.7	81.9	13.3	184.1	5,617.5	663.6
Boone, KY	1,305.7	297.4	198.7	9,440.5	3.2	2,873.8	100.2	216.5	6,395.8	1,538.3
Campbell, KY	532.2	130.6	98.3	2,968.6	2.0	37.7	28.5	129.6	4,390.7	538.4
Grant, KY	267.7	85.5	60.6	2,185.0	0.7	28.3	4.2	140.8	3,979.6	279.2
Pendleton, KY	576.0	87.0	36.3	1,691.4	1.0	785.3	31.1	133.7	3,323.3	750.8
Bracken, KY	105.6	32.1	17.2	567.6	0.3	7.4	1.4	104.9	2,782.5	121.6
Gallatin, KY	312.3	55.0	36.8	1,691.6	1.0	67.3	26.1	125.6	2,272.4	333.7
Dearborn, IN	1,763.1	226.0	146.5	12,468.2	3.4	28,584.6	196.9	153.0	6,554.5	1,764.4
Franklin, IN	918.3	282.6	78.6	1,336.3	5.2	109.1	6.1	609.5	5,498.5	979.8
Ohio, IN	98.8	21.0	10.4	397.8	0.3	17.1	1.3	93.5	1,701.6	137.9
Total - 2008	28,443.8	5,836.5	3,093.8	133,082.5	65.8	116,766.2	1,963.3	5,985.4	111,575.8	28,207.3

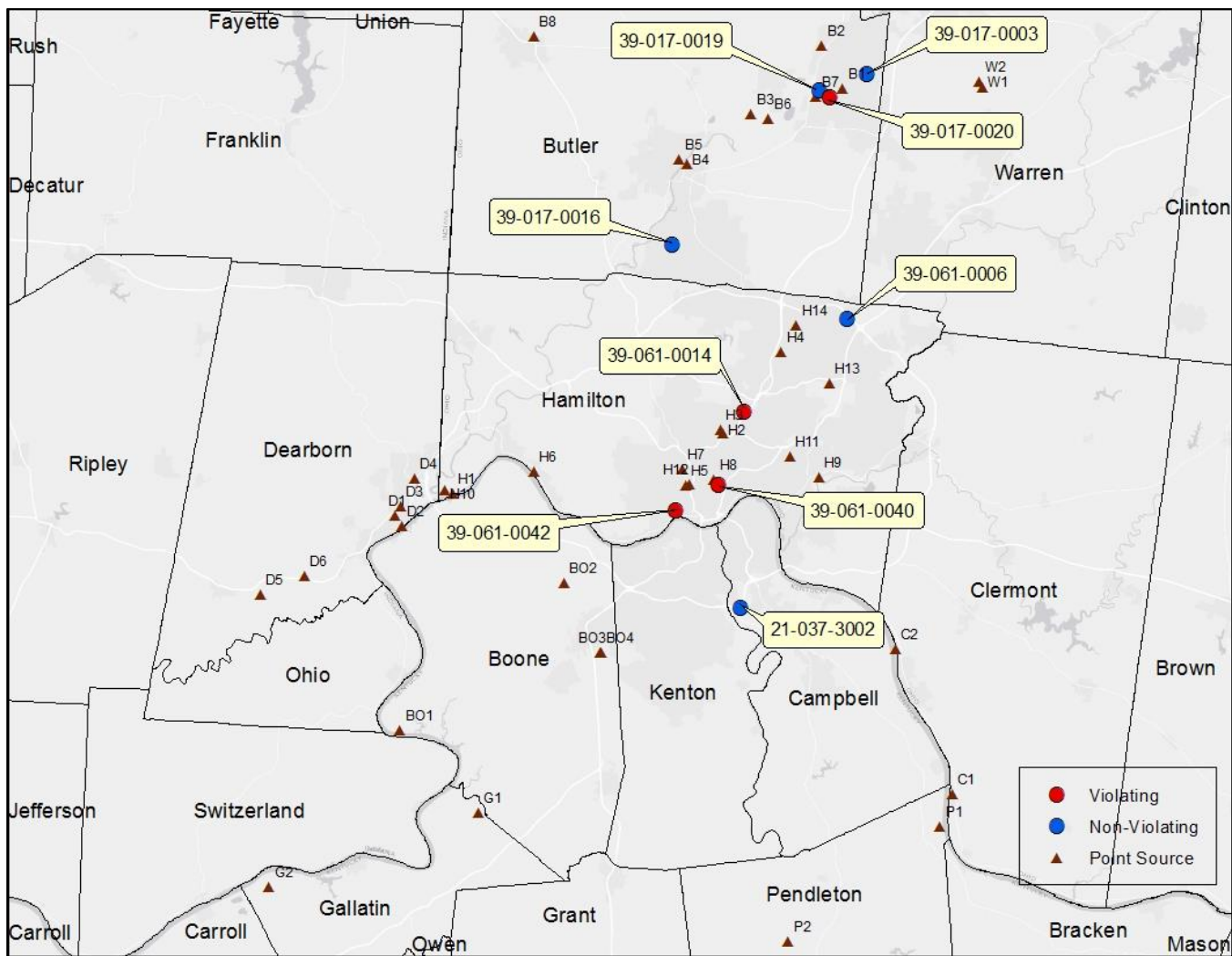
Source: 2008 and 2011 NEI

As seen in Table 14 below, the most significant point emissions of PM_{2.5} in 2011 were from the three Duke Energy facilities located in Hamilton (Miami Fort) and Clermont (Beckjord and Zimmer) Counties. These facilities also emitted the most NO_x and SO₂ along with AEP's Tanners Creek in Dearborn County, IN. Tanners Creek and Miami Fort are located west/southwest of the violating monitors while Beckjord and Zimmer are located east/southeast of the violating monitors.

As can be seen from Figure 10, the larger concentration of the larger point sources reside in Butler, Hamilton, Dearborn (IN), and Boone (KY) Counties.

The following figure⁵ and table shows the higher emitting point sources located in the area.

Figure 10: Location of Cincinnati-Hamilton Analysis Area Emissions Point Sources



Source: 2008 and 2011 NEI

⁵ The table can be used to correlate the location of each point source with the letter (first letter of county) and number next to the symbol on the map in the figure.

Table 14: Cincinnati-Hamilton Analysis Area Emissions Point Sources for 2011 (tpy)

PM2.5		
Clermont	C2-Duke Energy Ohio, W.C. Beckjord Station (1413100008)	5,297.1
Hamilton	H1-Duke Energy Ohio, Miami Fort Station (1431350093)	2,105.5
Clermont	C1-Duke Energy Ohio, Wm. H. Zimmer Station (1413090154)	767.3
Gallatin, KY	G2-Gallatin Steel Co	119.6
Hamilton	H2-DEGS of St. Bernard, LLC (1431394148)	114.1
Boone, KY	BO1-Duke Energy KY East Bend	99.3
Pendleton, KY	P1-Carmeuse Lime Inc	89.4
Dearborn, IN	D2-AMERICAN ELECTRIC POWER-TANNERS CREEK	67.0

NOx		
Clermont	C1-Duke Energy Ohio, Wm. H. Zimmer Station (1413090154)	8,459.9
Clermont	C2-Duke Energy Ohio, W.C. Beckjord Station (1413100008)	7,538.3
Hamilton	H1-Duke Energy Ohio, Miami Fort Station (1431350093)	6,490.5
Dearborn, IN	D2-AMERICAN ELECTRIC POWER-TANNERS CREEK	5,367.4
Boone, KY	BO1-Duke Energy KY East Bend	2,667.1
Butler	B1-AK Steel Corporation (1409010006)	2,276.2
Pendleton, KY	P1-Carmeuse Lime Inc	820.9
Boone, KY	BO2-Cincinnati/Northern Ken	740.5
Hamilton	H2-DEGS of St. Bernard, LLC (1431394148)	737.4
Hamilton	H3-Emery Oleochemicals LLC (1431074278)	646.7
Dearborn, IN	D3-Lawrenceburg Distillers Indiana, LLC	536.4
Butler	B2-Wausau Paper Towel & Tissue, LLC (1409010043)	426.0
Hamilton	H4-General Electric Aviation, Evendale Plant (1431150060)	401.9
Butler	B3-MillerCoors LLC (1409000353)	379.9
Gallatin, KY	G1-Mississippi Lime Co - Verona Plant	363.9
Warren	W1-Texas Eastern Transmission - Lebanon (1483060328)	355.4
Hamilton	H5-GESTSTREET	304.5
Dearborn, IN	D4-ANCHOR GLASS - LAWRENCEBURG	295.6
Butler	B4-City of Hamilton Department of Public Utilities (1409040243)	213.6
Gallatin, KY	G2-Gallatin Steel Co	196.6
Hamilton	H6-INEOS ABS (USA) Corporation (1431010054)	189.8
Hamilton	H7-QUEENSGATE	180.6
Dearborn, IN	D1-PSEG LAWRENCEBURG ENERGY COMPANY, INC.	169.2
Warren	W2-Lebanon Compressor Station (1483000144)	159.5
Dearborn, IN	D5-TEXAS GAS TRANSMISSION - DILLSBORO	158.4
Hamilton	H8-University of Cincinnati (1431070849)	148.9
Butler	B5-Smart Papers - Hamilton Mill (1409040212)	140.1

SO2		
Clermont	C2-Duke Energy Ohio, W.C. Beckjord Station (1413100008)	90,840.4
Dearborn, IN	D2-AMERICAN ELECTRIC POWER-TANNERS CREEK	27,331.5
Hamilton	H1-Duke Energy Ohio, Miami Fort Station (1431350093)	26,911.1
Clermont	C1-Duke Energy Ohio, Wm. H. Zimmer Station 1413090154)	18,042.2
Butler	B1-AK Steel Corporation (1409010006)	2,046.0
Hamilton	H2-DEGS of St. Bernard, LLC (1431394148)	2,033.1
Boone, KY	BO1-Duke Energy KY East Bend	1,999.7
Hamilton	H3-Emerly Oleochemicals LLC (1431074278)	887.7
Butler	B3-MillerCoors LLC (1409000353)	879.6
Dearborn, IN	D3-Lawrenceburg Distillers Indiana, LLC	784.6
Butler	B5-Smart Papers - Hamilton Mill (1409040212)	724.1
Pendleton, KY	P1-Carmeuse Lime Inc	698.7
Butler	B4-City of Hamilton Department of Public Utilities (1409040243)	576.6
Butler	B2-Wausau Paper Towel & Tissue, LLC (1409010043)	540.1
Butler	B7-SunCoke Energy Middletown Operations (1409011031)	475.8
Hamilton	H6-INEOS ABS (USA) Corporation (1431010054)	387.5
Butler	B8-Miami University (1409090081)	361.7
Hamilton	H10-E.I. Du Pont Fort Hill Plant (1431350817)	308.4
Hamilton	H11-Rock-Tenn Converting Company (1431070952)	217.8
Hamilton	H8-University of Cincinnati (1431070849)	193.5
Dearborn, IN	D4-ANCHOR GLASS - LAWRENCEBURG	162.1
Pendleton, KY	P2-Griffin Industries	121.3
Hamilton	H12-Kao USA Inc. (1431070624)	111.6

NH3		
Boone, KY	BO1-Duke Energy KY East Bend	27.9
Dearborn, IN	D1-PSEG LAWRENCEBURG ENERGY COMPANY, INC.	27.5
Hamilton	H9-Keebler Company (1431070662)	24.9
Butler	B5-Smart Papers - Hamilton Mill (1409040212)	23.7
Butler	B1-AK Steel Corporation (1409010006)	16.0
Butler	B6-Duke Energy Indiana, Madison Generating Station (1409000896)	10.0

VOC		
Dearborn, IN	D3-Lawrenceburg Distillers Indiana, LLC	961.2
Butler	B1-AK Steel Corporation (1409010006)	675.0
Dearborn, IN	D6-AURORA CASKET CO INC	496.5
Butler	B3-Miller Coors LLC (1409000353)	172.8
Hamilton	H13-Steelcraft Mfg. Co. (1431050879)	157.1
Boone, KY	BO2-Cincinnati/Northern Ken	151.2
Dearborn, IN	D2-AMERICAN ELECTRIC POWER-TANNERS CREEK	96.7
Hamilton	H1-Duke Energy Ohio, Miami Fort Station (1431350093)	96.2
Boone, KY	BO3-R R Donnelley - Nielsen Plant	89.9
Hamilton	H14-Ford Motor Company (1431140861)	79.5
Gallatin, KY	G2-Gallatin Steel Co	78.9
Pendleton, KY	P2-Griffin Industries	77.8
Boone, KY	BO4-Greif Industrial Packaging & Services LLC	74.6

Source: 2008 and 2011 NEI

Level of control of emission sources

In Cincinnati-Hamilton area, the emission reduction programs which have had or will have the greatest potential impact on PM_{2.5} concentrations are:

- on-road and off-road diesel control programs in conjunction with ultra-low sulfur diesel fuel requirements
- NO_x trading program
- Clean Air Interstate Rule (CAIR)
- Ohio Clean Diesel Initiatives
- Mercury and Air Toxics Standards (MATS)

CAIR and MATS regulate electric generating units (EGUs, or power plants). CAIR is the program which will bring about largest reductions in precursor or primary emissions of any of the PM_{2.5} species (sulfates, nitrates, organic carbon, elemental carbon and crustal). Compliance with the MATS rule will also lead to additional reductions in precursor species, in particular, sulfates.

With respect to the Ohio utilities, Miami Fort in Hamilton County is planning to permanently shut down a 163 MW unit by 2015. This facility will then have two 490 MW units which both have advanced NO_x and SO₂ controls. The entire Beckjord facility in Clermont County is planned for permanent shut down by 2015 while the Zimmer facility has advanced NO_x and SO₂ controls in place.

Urbanization, population and commuting trends

The following table provides a summary of 2010 population and VMT for each of the counties that are discussed in this section.

Table 15: Cincinnati-Hamilton Analysis Area County Level VMT, Population, Land Area and Population Density

2010	VMT	Population	Land Area (Sq. Miles)	Population Density (1,000 per Sq. Miles)
HAMILTON	7,610,354,368	802,374	407	2.08
BUTLER	2,548,325,755	368,130	467	0.71
<i>Warren</i>	1,693,703,439	212,693	400	0.40
<i>Clermont</i>	1,512,452,867	197,363	452	0.39
<i>Clinton</i>	674,377,449	42,040	411	0.10
<i>Brown</i>	429,866,405	44,846	492	0.09
<i>Kenton, KY</i>	1,784,771,009	151,464	162	0.94
<i>Boone, KY</i>	1,177,737,499	257,555	415	0.62
<i>Campbell, KY</i>	654,891,914	66,217	404	0.16
<i>Grant, KY</i>	475,911,092	22,384	260	0.09
<i>Pendleton, KY</i>	170,946,593	14,390	281	0.05
<i>Bracken, KY</i>	83,831,920	8,279	203	0.04
<i>Gallatin, KY</i>	311,378,017	7,870	99	0.08
<i>Dearborn, IN</i>	968,079,465	46,109	305	0.15
<i>Franklin, IN</i>	341,384,8995	22,151.0	386	0.06
<i>Ohio, IN</i>	69,210,955	5,623.0	87	0.06
CBSA/CSA	n/a	2,132,415	4,392	0.49
Total for Counties	20,507,223,646	2,269,488	5,230	

Source: Office of Strategic Research, Ohio Department of Development (Ohio Populations Only)
 U.S. EPA Designations Guidance and Data:
<http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2>

Degree of urbanization and population trends

As seen in Table 15 above, the majority of the population for this analysis area resides in Hamilton County. Greater populations are also noted in Butler County and Boone County, KY. However, as seen in Figure 11 below, the populations in Ohio's counties are expected to grow in the future except for Hamilton County. The populations in all counties located in Kentucky and Indiana that are a part of this analysis area are expected to increase through 2020⁶.

The most urbanized areas are within Hamilton County and Butler County. Their population and population densities are significantly higher than other areas indicating that population-related emissions in these areas may be high. This is supported by Table 13 above, which indicates these counties have the highest nonpoint and roadway emissions compared to others. Kenton County, KY and

⁶ <http://ksdc.louisville.edu/index.php/kentucky-demographic-data/projections;>
http://www.stats.indiana.edu/pop_proj/

Boone County, KY also have high population densities but their nonpoint and roadway emissions are not comparatively high. Warren and Clermont Counties, and to a lesser extent, Clinton and Brown Counties, also have relatively high nonpoint emissions compared to other counties in this analysis area. Clinton and Brown Counties have very low population densities while Warren and Clermont Counties have mid-range population densities.

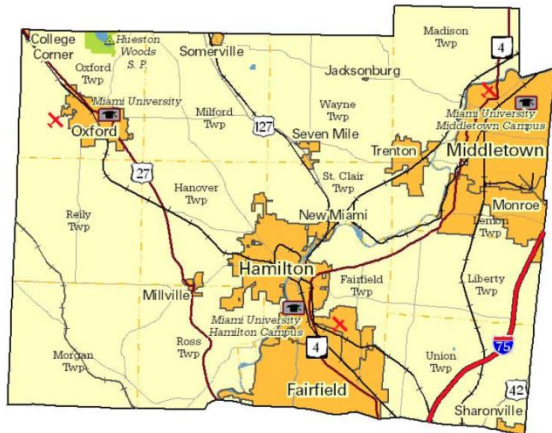
Figure 11: Cincinnati-Hamilton Analysis Area County Profiles

Hamilton County



Hamilton County is 46% forest, 10% cropland, and 41% urban. The greater Cincinnati area is the major urban area. The 2010 population was 802,374 while it declined to 802,038 in 2012. Population is expected to continue declining in the future to a level of 790,600 by 2020.

Butler County



Butler County is 23% forest, 51% cropland, and 13% urban. Hamilton, Fairfield (location of the violating air monitor 39-017-0016) and Middletown (location of the violating air monitor 39-017-0003) are the major urban areas. The 2010 population was 368,130 while it grew to 370,859 in 2012. Population is expected to continue growing in the future to a level of 390,110 by 2020.

Warren County



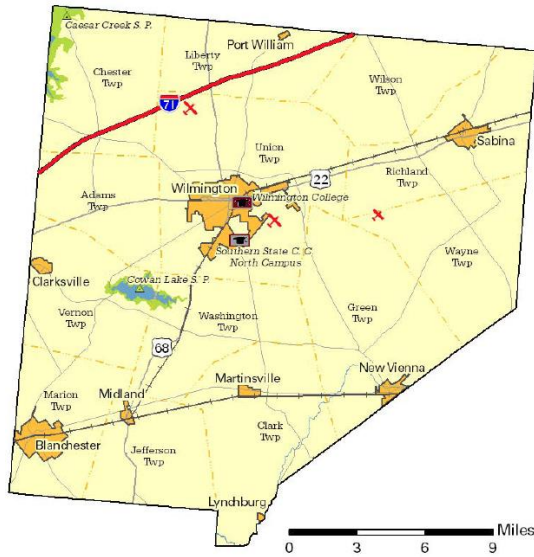
Warren County is 29% forest, 56% cropland, and 8% urban. Mason, Lebanon and Springboro are the major urban areas. The 2010 population was 121,693 while it grew to 217,241 in 2012. Population is expected to continue growing in the future to a level of 225,770 by 2020.

Clermont County



Clermont County is 49% forest, 29% cropland, and 11% urban. Union and Miami townships are the major urban areas. The 2010 population was 197,363 while it grew to 199,085 in 2012. Population is expected to continue growing in the future to a level of 208,330 by 2020.

Clinton County



Clinton County is 16% forest, 71% cropland, and 2% urban. Wilmington is the major urban area. The 2010 population was 42,040 while it declined to 41,866 in 2012. Population is expected to grow in the future to a level of 42,100 by 2020.

Brown County



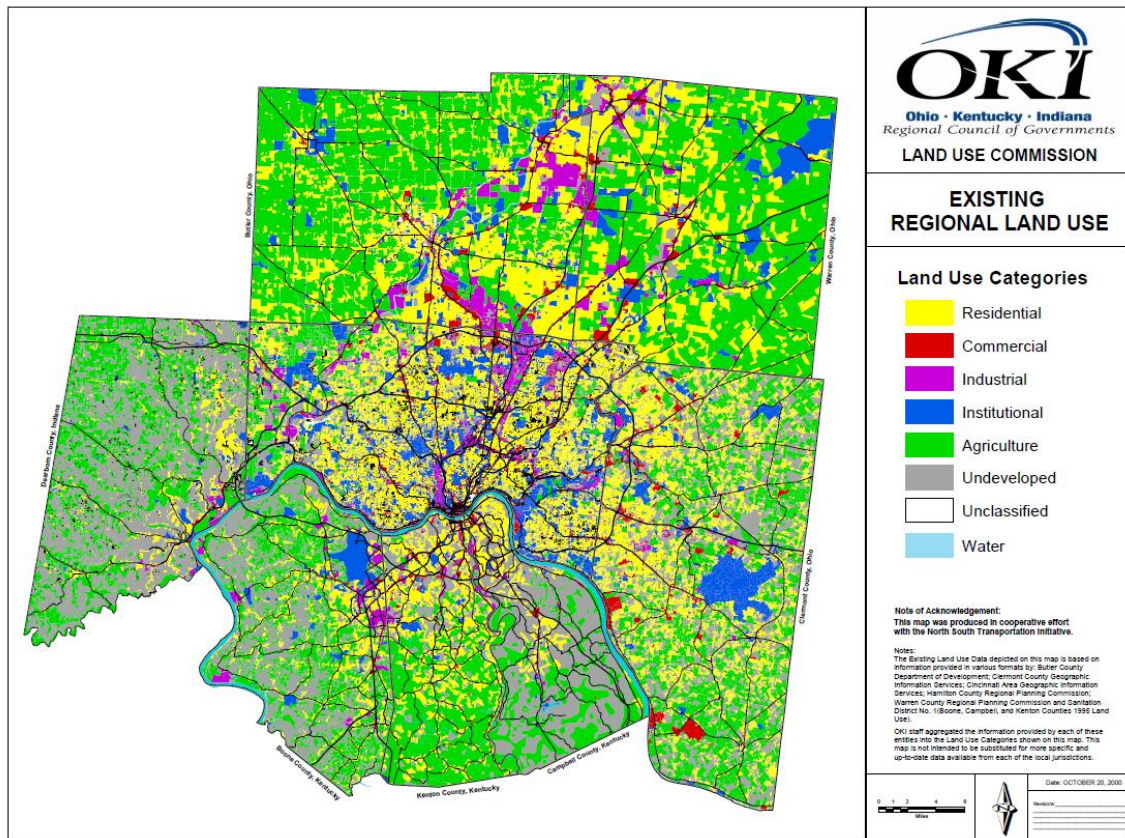
Brown County is 36% forest, 45% cropland, and 3% urban. Georgetown and Perry Township are the major urban areas. The 2010 population was 44,846 while it declined to 44,381 in 2012. Population is expected to grow in the future to a level of 45,850 by 2020.

Source: Ohio Department of Development. Ohio County Profiles:
http://development.ohio.gov/reports/reports_countytrends_map.htm

As can be seen from Figure 12 below, for those Indiana and Kentucky counties immediately surrounding the greater Cincinnati area, the majority of those

counties are undeveloped or agriculture lands. However there is a larger urban component concentrated near the Cincinnati area.

Figure 12: Cincinnati-Hamilton Analysis Area Regional Land Use



Source: [http://www.oki.org/mapsdata/WebContent/LandUse/Existing%20Land%20Use%20\(2000\).pdf](http://www.oki.org/mapsdata/WebContent/LandUse/Existing%20Land%20Use%20(2000).pdf)

Commuting trends

As can be seen in Table 15, the majority of VMT occurs in Hamilton County, and to a lesser extent Butler, Kenton (KY), Warren, Clermont and Boone (KY) Counties. Table 16 below looks at commuter travel in and out of the two counties in this analysis area with nonattainment monitors, Hamilton and Butler. Nearly 18% of Hamilton County's working residents commute to counties outside of Hamilton County while nearly 43% do the same in Butler County. In turn, nearly 40% of Hamilton County's workforce commutes from other counties into Hamilton County while 34% do the same in Butler County. Of the Hamilton County residents that commute to other counties, the greatest percentage commutes north to Butler County (5.5%). To a lesser extent, some commute to Warren County (3.1%), Kenton County, KY (2.2%), Clermont County (2.2%), and Boone County, KY (1.8%). Similarly, but to a greater extent, of the Butler County residents that commute to other counties, the greatest percentage commutes south to Hamilton County (12.2%). Of the non-residents that commute into Hamilton County, the most significant percentage comes from Butler County (9.2%) and then Clermont County (8.1%). Of the non-residents that commute into Butler County, the most significant percentage comes from Hamilton County

(4.2%) and then Warren County (2.1%). Overall, the most significant commuter travel in and out of these counties occurs between Hamilton and Butler Counties, the two counties with the highest VMT. Kenton (KY), Warren, Clermont and Boone (KY) Counties, also with higher VMT, also contribute to the commuter travel but to a lesser extent. Brown and Clinton Counties, and other counties in Kentucky and Indiana not noted above that are part of this analysis, do not significantly contribute to commuter travel in and out of these nonattainment counties.

Table 16: Commuter Travel In and Out of Hamilton and Butler Counties

Hamilton	Percent of workers living in county that work outside the county		17.7%
	Percent of workers that live outside the county		37.7%
Number of workers living in Hamilton County 377,348			
Number of workers working in Hamilton County 498,465			
Commute Out To	Number	Percent	Commute In From
Butler Co. OH	20,856	5.5%	Butler Co. OH
Warren Co. OH	11,619	3.1%	Clermont Co. OH
Kenton Co. KY	8,260	2.2%	Warren Co. OH
Clermont Co. OH	8,176	2.2%	Kenton Co. KY
Boone Co. KY	6,736	1.8%	Campbell Co. KY
Campbell Co. KY	3,333	0.9%	Boone Co. KY
Montgomery Co. OH	1,632	0.4%	Dearborn Co. IN
Dearborn Co. IN	1,312	0.3%	Montgomery Co. OH
Franklin Co. OH	524	0.1%	Brown Co. OH
Greene Co. OH	346	0.1%	Franklin Co. IN
Marion Co. IN	245	0.1%	Ripley Co. IN
Ripley Co. IN	208	0.1%	Clinton Co. OH
Percent is of workers living in county.			Percent is of workers working in county.

Butler	Percent of workers living in county that work outside the county		42.6%
	Percent of workers that live outside the county		34.0%
Number of workers living in Butler County 168,999			
Number of workers working in Butler County 147,004			
Commute Out To	Number	Percent	Commute In From
Hamilton Co. OH	45,965	12.2%	Hamilton Co. OH
Warren Co. OH	14,201	3.8%	Warren Co. OH
Montgomery Co. OH	4,537	1.2%	Montgomery Co. OH
Clermont Co. OH	1,314	0.3%	Clermont Co. OH
Kenton Co. KY	1,087	0.3%	Preble Co. OH
Boone Co. KY	732	0.2%	Union Co. IN

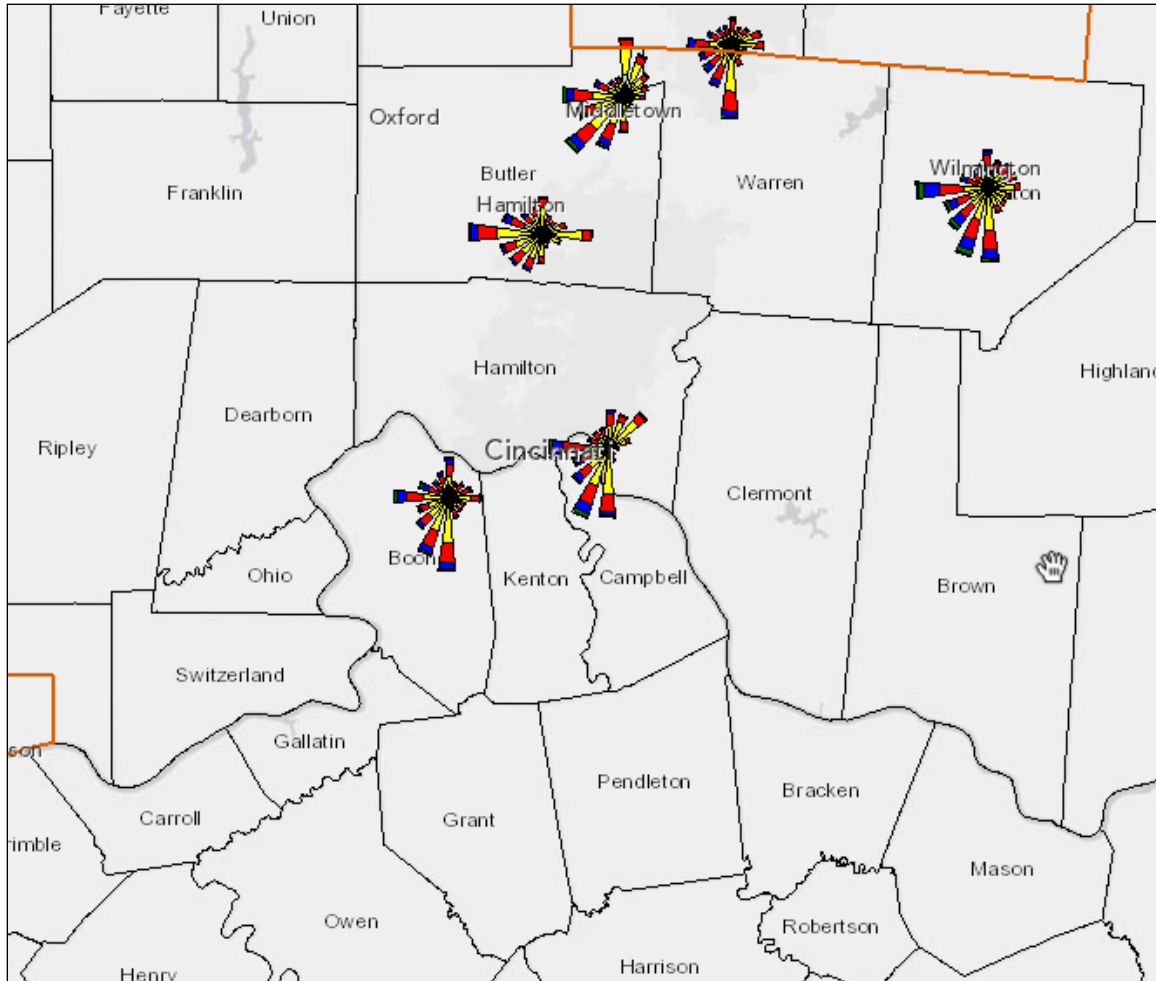
Greene Co. OH	595	0.2%	Boone Co. KY	860	0.2%
Franklin Co. OH	302	0.1%	Dearborn Co. IN	761	0.2%
Preble Co. OH	264	0.1%	Kenton Co. KY	754	0.2%
Dearborn Co. IN	164	0.0%	Campbell Co. KY	735	0.1%
Marion Co. IN	135	0.0%	Franklin Co. IN	692	0.1%
Ripley Co. IN	108	0.0%	Greene Co. OH	503	0.1%
Percent is of workers living in county.			Percent is of workers working in county.		

Source: U.S. EPA Designations Guidance and Data: <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2>

Factor 3: Meteorology

The following wind roses represent this area.

Figure 13: 2009 to 2012 Wind Roses for the Cincinnati-Hamilton Analysis Area



Source: http://geoplatform2.epa.gov/PM_MAP/index.html

Winds from the south, south-southwest and west-southwest (collectively, the southwest quadrant) are prevalent in this area. This indicates sources of

emissions from the southwest quadrant may be contributing to violations at the Hamilton County and Butler County monitors.

Factor 4: Geography/topography

This analysis area does not have any geographical or topographical barriers significantly affecting air pollution transport. Therefore, this factor does not play a role in the analysis of this area.

Factor 5: Jurisdictional boundaries

Butler, Warren, Clermont, Hamilton, Boone (KY), Kenton (KY), Campbell (KY), and partial Dearborn (IN) Counties were designated as a nonattainment counties for the 1997 PM_{2.5} standard as part of the Cincinnati-Hamilton OH-KY-IN nonattainment area. The same counties were designated as nonattainment under the 1997 ozone standard; however, under the 2008 ozone standard on partial areas of Boone (KY), Kenton (KY), Campbell (KY) Counties were designated nonattainment. This area been redesignated to attainment for the 1997 PM_{2.5} and ozone standards. No other counties a part of this analysis have been designated nonattainment for PM_{2.5} or other urban-scale pollutants.

The Cincinnati-Middletown, OH-KY-IN MSA includes the following counties in Indiana: Dearborn, Franklin and Ohio, in Kentucky: Boone, Bracken, Campbell, Gallatin, Grant, Kenton and Pendleton, and in Ohio: Brown, Butler, Clermont, Hamilton and Warren. The principal cities are Cincinnati and Middletown, Ohio.

The Wilmington OH-KY-IN CSA includes the above counties along with Clinton County.

The Ohio-Kentucky-Indiana regional Council of Governments (OKI) is the planning agency designated as the Metropolitan Planning Organization for the greater Cincinnati area. The OKI region is composed of eight counties in three states: Butler, Clermont, Hamilton and Warren Counties in Ohio; Boone, Campbell and Kenton Counties in Kentucky; and Dearborn County in Indiana. *Please note that the cities of Franklin and Carlisle in Warren County are part of the Miami Valley Regional Planning Commission (MVRPC) planning area.*

Conclusion

Butler, Warren, Clermont, and Hamilton Counties in Ohio have historically been a part of this nonattainment area. Warren and Clermont Counties have lower emissions than Hamilton and Butler Counties. Overall, the most significant emissions in the analysis area emanate from Hamilton County, and then Butler County, Clermont County and Dearborn County, IN. Considering all the counties in this analysis area, these four counties account for 70% of PM_{2.5}, 71% of NO_x and 96% of SO₂ emissions. Overall, the largest concentration of larger point sources reside in Butler, Hamilton, Dearborn (IN), and Boone (KY) Counties, as

can be seen by Figure 10. The most significant point emissions of PM_{2.5}, and NO_x in 2011 were from the three Duke Energy facilities located in Hamilton (Miami Fort) and Clermont (Beckjord and Zimmer) Counties. These facilities also emitted the most SO₂ along with AEP's Tanners Creek in Dearborn County, IN. All of the operating units at Ohio utilities in these counties will be fully controlled for NO_x and SO₂ by 2015.

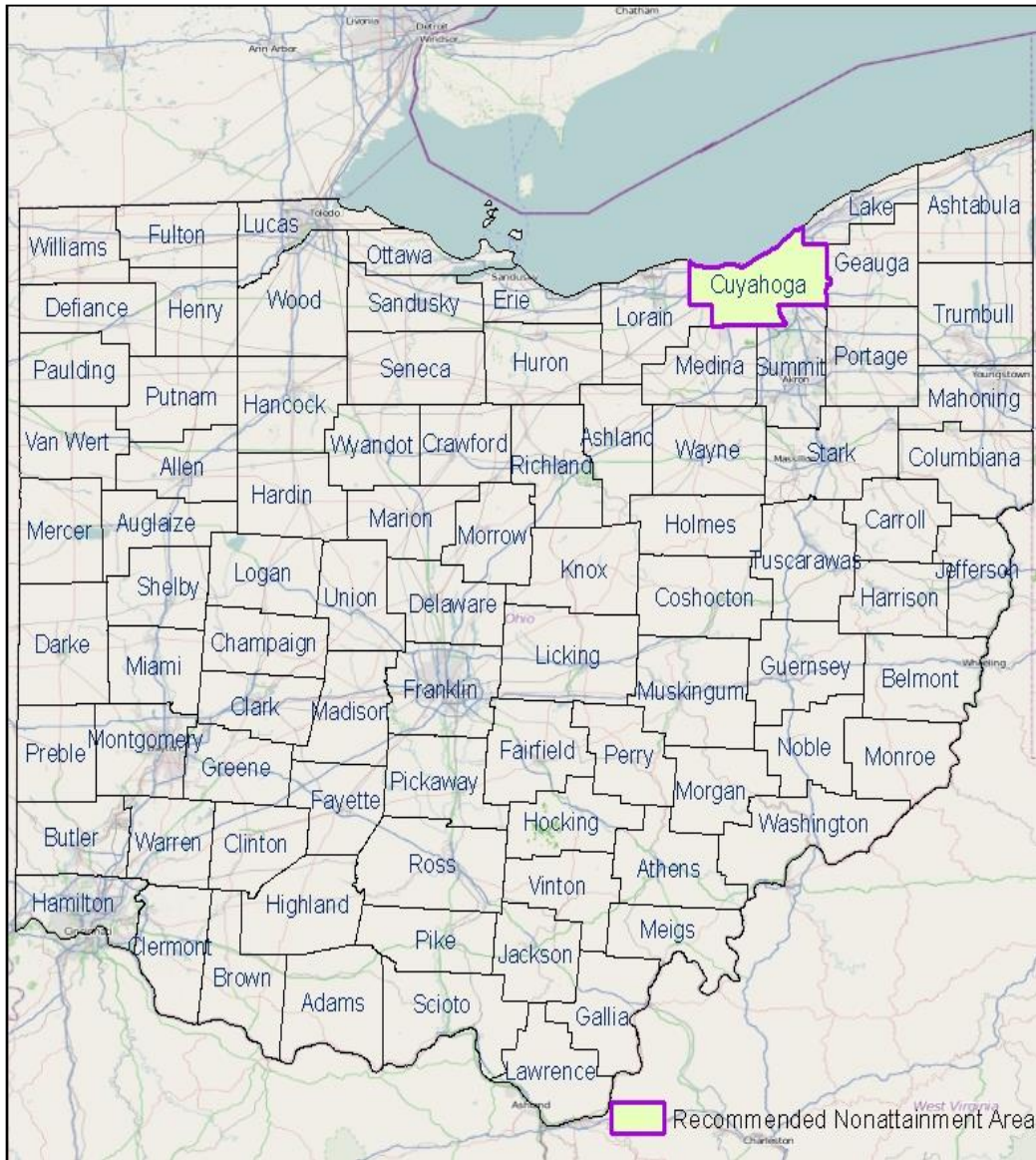
Warren County accounts for 6% of PM_{2.5}, 5% of NO_x and 2% of SO₂ emission of all counties in this analysis area. There are only two larger point sources of NO_x emissions in Warren County, and they are east and northeast of any of the violating monitors. The majority of Warren County's emissions are from nonpoint and roadway emissions. While Warren County does have a moderate population compared to the more rural counties in this analysis area and there is moderate commuting between Warren County and the counties with violating monitors, Ohio EPA does not believe those factors alone warrant including Warren County in the nonattainment designations. SO₂ emissions, sulfate at the violating monitors, and the sulfate UI are dominant in this area. Warren County contributes very little SO₂ emissions. Historically there was a monitor in the Warren County area (39-165-0007) which was attaining the revised standard for the 2008 to 2010 and the 2009 to 2012 periods.

With respect to the remaining Ohio counties in this analysis area, none of the factors support including Clinton County or Brown County. These counties have very low emissions, low populations, low population densities, low VMT and low commuting patterns with the counties with violating monitors.

Ohio EPA recommends Hamilton, Butler and Clermont Counties be designated nonattainment.

Cleveland-Akron-Lorain, OH

Figure 14: Cleveland-Akron-Lorain, OH Recommended Nonattainment Area

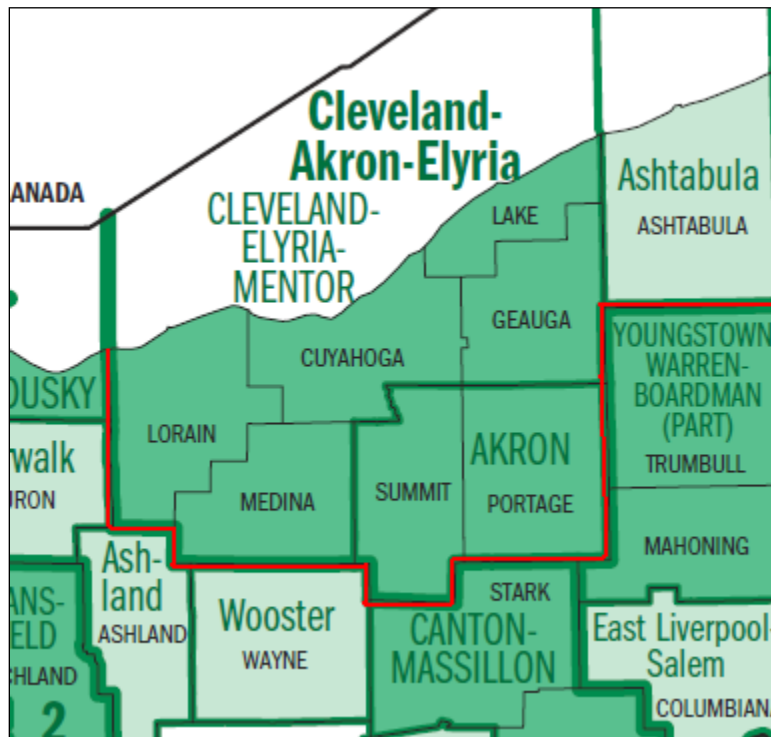


Discussion:

There are six to seven counties in the historic PM_{2.5} nonattainment areas: Ashtabula (partial, only for the 1997 annual standard), Cuyahoga, Lake, Lorain, Medina, Portage, and Summit Counties. Ohio EPA recommends designating Cuyahoga County as nonattainment. After considering the five factors, Ohio EPA does not recommend including any other contributing counties in this area.

There are eleven monitors in this area of which six are in Cuyahoga County. Three of the Cuyahoga County monitors are violating the annual revised standard (sites 39-035-0038, -0060 and -0065). Cuyahoga County is part of the Cleveland-Akron-Elyria CSA which is comprised of the Cleveland-Elyria-Mentor MSA (Cuyahoga, Lake, Lorain, Medina and Geauga Counties) and the Akron MSA (Summit and Portage Counties) and Ashtabula County.

Figure 15: Cleveland-Akron-Elyria CSA



Source: U.S. Department of Commerce Economics and Statistics Administrations, U.S. Census Bureau, 2002 Economic Census

There are seven counties that are adjacent to the Cleveland-Akron-Elyria CSA; Erie, Huron, Ashland, Wayne, Stark, Mahoning and Trumbull Counties. Stark County is discussed in the Canton-Massillon area.

Factor 1: Air quality data

There are eleven monitors in this area.

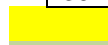


Figure 16: Cleveland-Akron-Lorain Area Air Quality Monitors



Monitors 39-035-0038, -0060 and -0065 are violating the standard based on preliminary 2011 to 2013 air quality data. These three monitors are located in Cuyahoga County in the central Cleveland area, an industrialized area. The design value for the area is 12.7 $\mu\text{g}/\text{m}^3$. As can be seen from Table 1, air quality trends have declined historically in this area.

Table 17: Annual Average ($\mu\text{g}/\text{m}^3$)

Site	County	Year				Average	
		2010	2011	2012	2013	'10-'12	'11-'13
39-035-0034	Cuyahoga	10.9	10.0	9.3	9.8	10.1	9.7
39-035-0038		14.0	12.6	12.3	12.5	13.0	12.5
39-035-0045		13.3	11.9	11.4	11.6	12.2	11.6
39-035-0060		13.7	12.5	13.2	12.8	13.1	12.7
39-035-0065		13.2	12.6	12.3	11.7	12.7	12.2
39-035-1002		11.3	10.4	9.7	9.6	10.5	9.9
39-085-0007	Lake	10.4	9.4	9.0	8.9	9.6	9.1
39-093-3002	Lorain	10.4	9.4	9.5	9.0	9.8	9.3
39-133-0002	Portage	11.2	10.5	9.3	9.4	10.3	9.7
39-153-0017	Summit	13.4	11.8	10.8	10.8	12.0	11.1
39-153-0023		12.5	11.1	10.0	10.3	11.2	10.5

 Combined data from two adjacent sites
 Insufficient data
 Violating monitor
 Source: U.S. EPA AQS

There are four speciation monitors in this area. Two of them are co-located with the two highest violating monitors while the other two are co-located with non-violating monitors.

Table 18: Cleveland-Akron-Lorain Area Speciation Monitors

		Speciation Monitor SANDWICH Mass					FRM Monitor
		Sulfate	Nitrate	Organic Carbon	Elemental Carbon	Crustal	
Cuyahoga	2009	4.5	1.6	4.1	0.8	0.9	12.8
	2010	4.3	2.8	4.2	1.0	1.2	14.0
39-035-0038	2011	4.2	1.2	3.9	0.7	1.1	12.6
	2009-2011 Average	4.4	1.9	4.1	0.9	1.1	13.1
Cuyahoga	2009	4.8	2.1	3.5	0.8	0.8	12.3
	2010	5.3	1.7	3.1	1.2	1.5	13.7
39-035-0060	2011	4.8	1.3	3.5	1.1	1.4	12.5
	2009-2011 Average	4.9	1.7	3.4	1.0	1.2	12.8
Lorain	2009	3.8	1.7	2.6	0.5	0.5	9.9
	2010	3.9	1.5	3.2	0.6	0.6	10.4
39-093-3002	2011	4.1	0.8	3.5	0.5	0.5	9.4

		Speciation Monitor SANDWICH Mass					FRM Monitor
		Sulfate	Nitrate	Organic Carbon	Elemental Carbon	Crustal	
	2009-2011 Average	3.9	1.3	3.1	0.6	0.5	9.9
Summit	2009	4.7	1.6	3.4	0.5	0.3	11.4
	2010	4.9	1.8	4.6	0.6	0.4	12.5
39-153-0023	2011	5.5	1.8	2.7	0.6	0.3	11.1
	2009-2011 Average	5.0	1.8	3.6	0.6	0.4	11.7

Source: CSN speciation data (SANDWICHED) from <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F1>

Organic carbon and sulfate tends to dominate at these monitors. The violating monitors in the Cleveland area have a higher fraction of elemental carbon and crustal material than the non-violating monitors.

The 2010 to 2011 urban increments (UI) have also been calculated for the three violating monitors and one additional monitor that was violating during the 2010 to 2012 period.

Table 19: Cleveland-Akron-Lorain Area Urban Increments

2010-2011 Averages		PM2.5 Total	PM2.5 Total UI	Organic Carbon	Organic Carbon UI	Elemental Carbon	Elemental Carbon UI	Nitrates	Nitrates UI	Sulfates	Sulfates UI	Crustal	Crustal UI
Cuyahoga 39-035-0038	Quarter 1	15.6	5.0	3.5	1.6	1.2	0.7	4.9	1.3	4.8	0.8	1.1	0.5
	Quarter 2	11.7	2.0	3.6	0.3	1.1	0.6	0.3	0.1	5.4	0.4	1.4	0.6
	Quarter 3	14.2	3.3	4.5	0.8	2.0	1.3	0.0	0.0	6.6	0.6	1.2	0.5
	Quarter 4	12.6	3.8	4.4	1.1	1.4	0.7	1.0	0.1	3.9	0.8	1.8	1.1
	Annual	13.5	3.5	4.0	1.0	1.4	0.9	1.6	0.4	5.2	0.6	1.4	0.7
Cuyahoga 39-035-0045	Quarter 1	15.2	4.6	3.4	1.4	1.1	0.6	4.9	1.3	4.7	0.8	1.0	0.5
	Quarter 2	11.6	1.9	3.6	0.4	1.1	0.6	0.3	0.1	5.4	0.4	1.4	0.6
	Quarter 3	13.6	2.6	4.3	0.6	1.6	0.9	0.0	0.0	6.6	0.5	1.2	0.5
	Quarter 4	12.5	3.7	4.4	1.1	1.4	0.7	1.1	0.1	3.9	0.7	1.8	1.0
	Annual	13.2	3.2	3.9	0.9	1.3	0.7	1.6	0.4	5.1	0.6	1.3	0.7
Cuyahoga 39-035-0060	Quarter 1	15.3	4.7	3.3	1.4	1.1	0.6	5.0	1.3	4.9	0.9	1.1	0.5
	Quarter 2	11.9	2.0	3.6	0.3	1.1	0.6	0.3	0.1	5.4	0.4	1.4	0.6
	Quarter 3	14.0	3.1	4.8	1.2	1.4	0.8	0.0	0.0	6.6	0.6	1.3	0.6
	Quarter 4	12.9	4.0	4.5	1.1	1.5	0.8	1.0	0.1	3.9	0.8	2.0	1.2
	Annual	13.5	3.5	4.0	1.0	1.3	0.7	1.6	0.4	5.2	0.6	1.5	0.7
Cuyahoga 39-035-0065	Quarter 1	14.4	3.9	3.0	1.1	0.9	0.4	4.9	1.2	4.6	0.7	1.0	0.4
	Quarter 2	12.1	2.5	3.8	0.6	1.4	0.9	0.2	0.1	5.3	0.4	1.3	0.5
	Quarter 3	13.9	2.9	4.5	0.8	1.7	1.1	0.0	0.0	6.6	0.5	1.1	0.5
	Quarter 4	12.3	3.5	4.3	1.0	1.3	0.6	1.1	0.2	3.8	0.7	1.6	0.9
	Annual	13.2	3.2	3.9	0.9	1.3	0.8	1.6	0.4	5.1	0.6	1.2	0.6

Source: U.S. EPA Designations Guidance and Data: <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2>

Quarter 1 and quarter 4 tend to have higher total PM2.5 for all violating monitors.

There is a slightly higher sulfate UI at all violating monitors during quarter 1 and quarter 4, higher nitrate UI at all monitors during quarter 1, and higher crustal UI at all monitors during quarter 4.

For organic carbon UI, all monitor exhibit higher UIs for quarters 1 and 4 but it is less distinct at monitors 39-035-0060 and 39-035-0065.

For elemental carbon UI, all monitors exhibit slightly higher UIs for quarter 3, especially at monitor 39-035-0038.

Factor 2: Emissions and emissions related data

Emission trends

Overall, the most significant emissions in the analysis area emanate from Cuyahoga County. Considering all the counties in this analysis area, Cuyahoga County accounts for 19% of PM_{2.5}, 25% of NO_x, 24% of VOC, 11% of NH₃ and 8% of SO₂ emissions. With respect to the counties that were a part of the historical nonattainment areas, the most significant emissions come from Cuyahoga, Lorain, Lake and Summit Counties. These counties account for 51% of PM_{2.5}, 58% of NO_x, 49% of VOC, and 68% of SO₂ emissions for all counties in this analysis area. Or if you compare the emissions to only those counties in the historic nonattainment area, these four counties account for: 79% of PM_{2.5}, 81% of NO_x, 73% of VOC, and 95% of SO₂. Medina, Portage, Geauga and Ashtabula Counties do not have significant emissions in comparison to the above counties. And as seen before, the more rural counties tend to have higher NH₃ emissions. Wayne County, located west of the violating monitor, also has higher emissions compared to some counties due to Orrville. Trumbull County also has high emissions compared to some other counties in the analysis area, but it is located to the east of the violating monitor. There is one monitor located in Trumbull County, which meets the standard.

As can be seen from Figure 17, the larger concentration of the larger point sources reside in Cuyahoga County with many of them located in close proximity to the violating monitors in the industrialized area of Cleveland. Two larger emitting steel plants, Arcelor Mittal and Charter, are located just southwest of the violating monitors. There are also larger concentrations, but to a lesser extent, of larger point sources in Lorain County.

Table 20: Cleveland-Akron-Lorain Analysis Area Emissions (tpy)

CUYAHOGA	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	1,111.9	n/a	n/a	4,193.1	n/a	6,492.5	n/a	89.8	1,173.1	n/a
Point - 2008	1,503.2	299.1	277.6	5,837.4	20.0	9,487.7	267.6	18.4	1,006.7	1,380.7
Nonpoint	4,037.1	1,746.2	239.4	8,053.4	7.5	1,731.1	91.4	796.8	20,858.3	3,751.4
Nonroad	546.6	173.4	253.5	7,238.5	0.9	116.2	2.3	8.5	9,977.9	116.6
Onroad	971.5	302.5	472.8	21,318.4	1.3	124.9	7.8	454.1	11,049.6	187.2
Fire	2.8	1.4	0.3	0.8	0.0	0.3	0.0	0.5	7.0	1.1
Total - 2008	7,061.2	2,522.6	1,243.7	42,448.5	29.6	11,460.3	369.1	1,278.3	42,899.5	5,436.9

<i>Lorain</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	730.5	n/a	n/a	5,389.8	n/a	32,418.3	n/a	6.5	955.6	n/a
Point - 2008	1,562.0	163.2	74.4	6,361.0	5.7	23,087.0	264.8	2.7	810.0	1,638.5
Nonpoint	1,388.4	412.1	73.2	2,491.3	2.4	291.7	18.1	445.7	7,205.1	1,775.9
Nonroad	180.2	55.7	86.6	2,316.6	0.3	39.3	0.7	2.6	3,628.5	36.9
Onroad	226.0	72.0	108.6	4,994.6	0.3	28.6	1.8	113.0	2,497.9	43.2
Fire	2.8	1.4	0.3	0.8	0.0	0.3	0.0	0.5	7.0	1.1
Total - 2008	3,359.3	704.6	343.1	16,164.2	8.7	23,447.0	285.3	564.5	14,148.5	3,495.6

<i>Lake</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	4,227.3	n/a	n/a	9,667.4	n/a	51,964.8	n/a	2.7	262.5	n/a
Point - 2008	3,987.1	344.2	195.9	11,078.2	7.3	58,673.6	261.8	2.6	288.4	3,431.9
Nonpoint	930.6	323.8	61.5	2,840.9	1.6	702.9	35.5	117.6	5,646.2	1,016.0
Nonroad	124.7	42.0	52.6	1,845.0	0.2	27.0	0.5	2.1	3,528.5	29.4
Onroad	206.3	63.6	102.9	4,655.7	0.3	25.8	1.6	94.8	2,256.8	38.0
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	5,248.8	773.5	413.0	20,419.8	9.3	59,429.3	299.4	217.2	11,719.9	4,515.3

<i>Medina</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	55.3	n/a	n/a	74.7	n/a	78.8	n/a	0.2	228.8	n/a
Point - 2008	61.9	41.7	4.0	103.6	0.1	75.2	0.6	0.3	221.1	49.8
Nonpoint	1,297.3	507.7	102.5	1,066.9	4.0	176.9	24.1	296.3	5,355.5	1,700.1
Nonroad	98.7	28.2	52.5	1,087.0	0.1	21.5	0.3	1.2	1,215.5	17.5
Onroad	159.9	46.9	87.3	3,985.7	0.2	18.4	1.0	69.7	1,567.9	24.5
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	1,617.9	624.5	246.4	6,243.3	4.4	291.9	26.1	367.6	8,359.9	1,791.9

<i>Summit</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	87.2	n/a	n/a	709.5	n/a	4,134.3	n/a	3.3	481.4	n/a
Point - 2008	148.5	13.5	12.1	793.9	1.6	4,571.8	14.2	4.0	327.8	141.6
Nonpoint	2,009.4	908.9	107.3	2,850.9	3.9	595.6	32.6	295.0	11,143.6	1,742.8
NonRoad	194.2	56.6	100.9	2,404.1	0.3	42.6	0.9	2.6	2,583.0	35.5
Onroad	538.9	172.2	257.4	11,704.7	0.7	67.4	4.3	262.7	5,834.8	104.3
Fire	1.4	0.7	0.2	0.4	0.0	0.2	0.0	0.2	3.5	0.5
Total - 2008	2,892.5	1,151.9	477.9	17,754.0	6.5	5,277.5	52.0	564.5	19,892.7	2,024.8

<i>Portage</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	57.7	n/a	n/a	101.1	n/a	14.7	n/a	5.2	336.3	n/a
Point - 2008	36.5	12.0	10.0	84.9	0.6	13.2	2.5	0.3	245.2	32.2
Nonpoint	1,299.0	535.5	114.6	1,421.4	4.0	241.1	24.4	365.5	5,386.6	1,574.2
Nonroad	101.0	32.3	46.3	988.3	0.1	18.3	0.3	1.2	1,669.7	21.9
Onroad	179.0	53.8	96.1	4,326.5	0.2	19.7	1.2	79.9	1,657.5	27.8
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	1,615.5	633.6	266.9	6,821.0	4.9	292.3	28.4	446.9	8,959.0	1,656.1

<i>Geauga</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	7.0	n/a	n/a	9.2	n/a	4.6	n/a	0.1	14.1	n/a
Point - 2008	0.1	0.0	0.1	0.5	0.0	0.1	0.0	-	0.9	0.0
Nonpoint	953.9	392.9	79.6	454.6	3.3	247.9	21.9	303.6	4,761.0	1,298.6
Nonroad	68.7	23.8	27.7	648.0	0.1	10.9	0.2	0.8	1,170.7	17.0
Onroad	63.6	19.7	32.7	1,590.5	0.1	8.3	0.4	32.8	750.4	10.7
Fire	8.3	4.2	0.9	1.6	0.1	0.8	0.0	1.5	22.2	3.1
Total - 2008	1,094.7	440.6	141.0	2,695.2	3.6	268.0	22.6	338.8	6,705.2	1,329.4

<i>Ashtabula</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	411.3	n/a	n/a	1,423.5	n/a	3,480.0	n/a	2.9	2,603.0	n/a
Point - 2008	499.6	41.2	52.0	1,729.5	2.4	3,881.8	53.8	2.5	4,295.4	488.1
Nonpoint	1,076.3	369.6	112.6	3,389.1	2.8	778.8	41.6	587.4	6,549.0	1,276.5
Nonroad	100.5	35.0	39.9	1,021.3	0.1	16.6	0.3	1.3	2,873.6	25.2
Onroad	118.4	36.7	62.4	3,339.4	0.2	12.3	0.8	52.4	1,473.2	18.3
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	1,794.9	482.5	267.0	9,479.4	5.5	4,689.6	96.4	643.7	15,191.1	1,808.1

<i>Trumbull</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	532.0	n/a	n/a	2,098.5	n/a	7,194.3	n/a	16.0	2,306.1	n/a
Point - 2008	834.0	128.4	90.2	5,082.6	5.8	16,572.0	132.2	25.3	2,153.2	841.5
Nonpoint	1,680.1	719.7	134.4	1,317.9	5.0	330.3	32.6	419.6	7,746.5	1,998.2
Nonroad	69.5	18.3	40.4	1,001.6	0.1	16.7	0.4	0.9	809.5	10.3
Onroad	208.8	65.6	102.6	5,839.1	0.3	26.6	1.6	108.5	3,039.8	38.8
Fire	1.4	0.7	0.2	0.4	0.0	0.2	0.0	0.2	3.4	0.5
Total - 2008	2,793.8	932.7	367.7	13,241.6	11.3	16,945.8	166.9	554.5	13,752.4	2,889.3

<i>Mahoning</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	189.2	n/a	n/a	652.0	n/a	1,341.5	n/a	0.7	317.6	n/a
Point - 2008	230.2	30.0	27.8	531.3	1.8	1,252.2	20.9	0.1	298.1	243.9
Nonpoint	1,210.9	430.8	53.9	1,327.5	2.2	247.6	15.1	567.8	6,080.3	1,321.3
Nonroad	80.5	22.3	44.4	972.1	0.1	18.2	0.3	1.1	997.7	13.4
Onroad	235.3	72.3	119.2	6,589.2	0.3	28.6	1.7	115.2	3,189.9	41.8
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	1,756.9	555.4	245.3	9,420.1	4.5	1,546.7	38.1	684.2	10,566.1	1,620.4

<i>Wayne</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	962.4	n/a	n/a	2,832.8	n/a	17,904.5	n/a	0.6	300.1	n/a
Point - 2008	1,163.6	49.9	46.5	2,989.4	1.3	21,655.5	126.3	0.1	175.2	1,029.7
Nonpoint	1,600.5	475.7	90.4	1,169.4	4.0	201.6	24.0	3,392.8	4,913.0	2,383.6
Nonroad	67.8	17.0	41.3	857.1	0.1	14.8	0.3	0.8	677.0	9.1
Onroad	105.7	33.8	53.2	3,004.4	0.1	12.2	0.7	52.3	1,511.4	17.8
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	2,937.6	576.4	231.4	8,020.3	5.5	21,884.1	151.4	3,446.0	7,276.6	3,440.2

<i>Ashland</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	37.6	n/a	n/a	18.8	n/a	2.6	n/a	-	23.4	n/a
Point - 2008	18.5	4.4	6.8	25.5	0.4	1.3	1.5	0.5	12.0	11.2
Nonpoint	1,034.8	230.3	42.8	699.3	2.1	83.1	10.2	1,159.4	4,393.7	1,666.6
Nonroad	162.4	66.2	43.6	871.2	0.2	12.5	0.3	1.8	3,025.4	52.2
Onroad	76.2	23.1	41.4	2,187.2	0.1	7.7	0.5	32.8	904.4	11.1
Fire	-	-	-	-	-	-	-	-	-	-
Total - 2008	1,291.9	323.9	134.6	3,783.1	2.7	104.6	12.5	1,194.6	8,335.6	1,741.0

<i>Huron</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	122.6	n/a	n/a	540.9	n/a	5.5	n/a	0.6	1,239.5	n/a
Point - 2008	36.3	4.3	12.2	542.7	0.1	4.6	4.5	0.6	1,478.2	24.3
Nonpoint	1,288.3	267.8	62.8	1,492.0	2.5	109.3	13.0	1,571.6	4,170.3	2,083.4
Nonroad	48.8	12.4	29.3	546.8	0.1	9.5	0.2	0.5	548.8	6.8
Onroad	43.9	14.2	21.4	1,242.5	0.1	5.4	0.3	22.9	678.2	7.9
Fire	3.4	1.7	0.4	0.9	0.0	0.4	0.0	0.6	8.5	1.3
Total - 2008	1,420.6	300.4	126.1	3,824.8	2.7	129.2	18.0	1,596.2	6,884.0	2,123.6

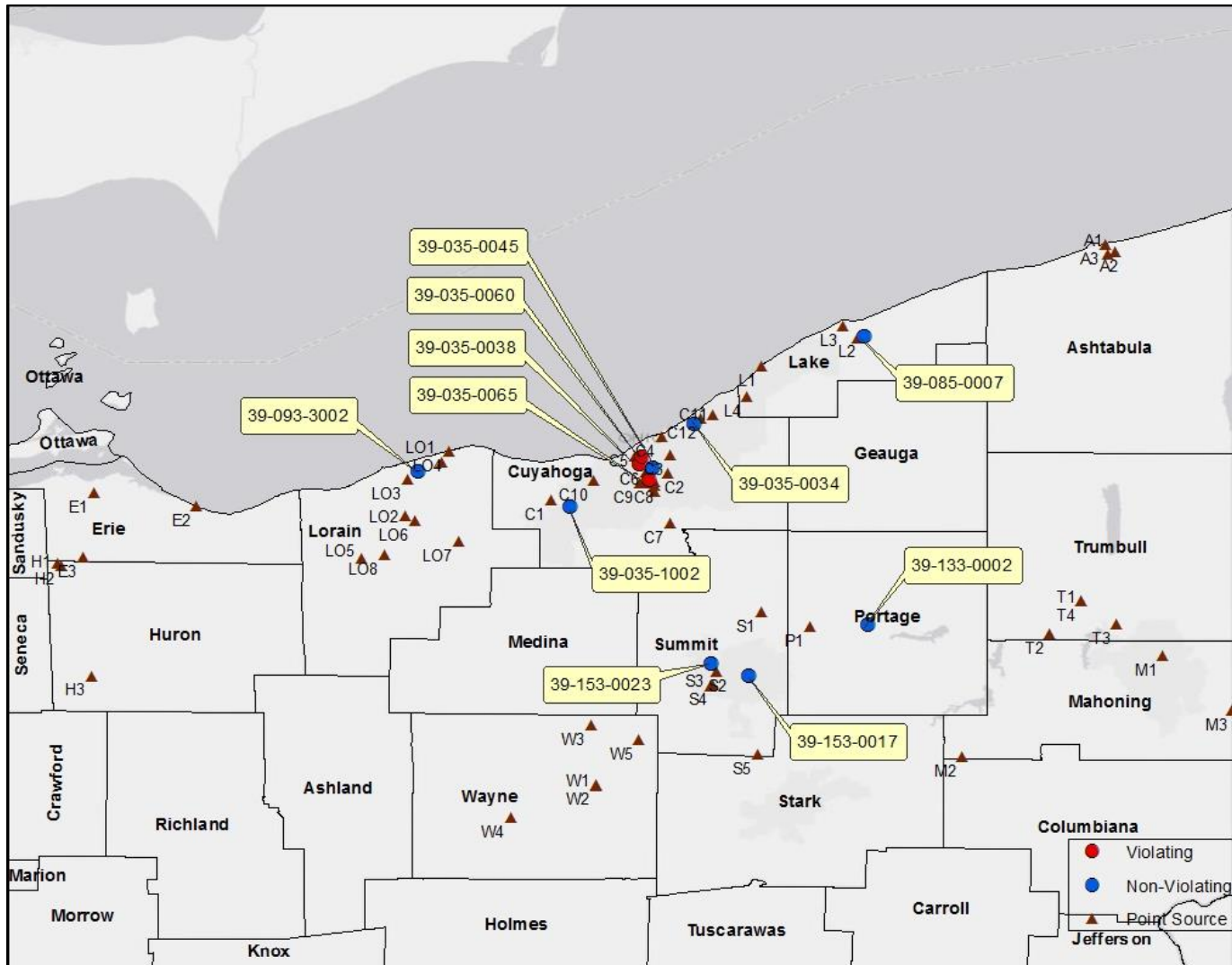
<i>Erie</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point - 2011	426.4	n/a	n/a	661.3	n/a	51.2	n/a	0.4	297.3	n/a
Point - 2008	421.9	56.4	17.8	673.2	1.8	146.9	113.2	0.5	245.6	297.5
Nonpoint	818.2	232.1	74.2	2,086.6	1.7	178.6	10.6	220.7	2,854.5	1,091.2
Nonroad	83.4	29.6	31.9	1,081.2	0.1	15.6	0.2	1.4	2,676.9	21.6
Onroad	126.1	35.4	74.2	3,744.8	0.2	12.1	0.7	51.0	1,248.8	15.6
Fire	1.4	0.7	0.2	0.4	0.0	0.2	0.0	0.2	3.5	0.5
Total - 2008	1,451.1	354.2	198.3	7,586.1	3.8	353.4	124.7	273.8	7,029.3	1,426.5

<i>2008 Total By County</i>	PM2.5	OC	EC	NOX	Nitrate	SO2	Sulfate	NH3	VOC	Other
CUYAHOGA	7,061.2	2,522.6	1,243.7	42,448.5	29.6	11,460.3	369.1	1,278.3	42,899.5	5,436.9
<i>Lorain</i>	3,359.3	704.6	343.1	16,164.2	8.7	23,447.0	285.3	564.5	14,148.5	3,495.6
<i>Lake</i>	5,248.8	773.5	413.0	20,419.8	9.3	59,429.3	299.4	217.2	11,719.9	4,515.3
<i>Medina</i>	1,617.9	624.5	246.4	6,243.3	4.4	291.9	26.1	367.6	8,359.9	1,791.9
<i>Summit</i>	2,892.5	1,151.9	477.9	17,754.0	6.5	5,277.5	52.0	564.5	19,892.7	2,024.8
<i>Portage</i>	1,615.5	633.6	266.9	6,821.0	4.9	292.3	28.4	446.9	8,959.0	1,656.1
<i>Geauga</i>	1,094.7	440.6	141.0	2,695.2	3.6	268.0	22.6	338.8	6,705.2	1,329.4
<i>Ashtabula</i>	1,794.9	482.5	267.0	9,479.4	5.5	4,689.6	96.4	643.7	15,191.1	1,808.1
<i>Trumbull</i>	2,793.8	932.7	367.7	13,241.6	11.3	16,945.8	166.9	554.5	13,752.4	2,889.3
<i>Mahoning</i>	1,756.9	555.4	245.3	9,420.1	4.5	1,546.7	38.1	684.2	10,566.1	1,620.4
<i>Wayne</i>	2,937.6	576.4	231.4	8,020.3	5.5	21,884.1	151.4	3,446.0	7,276.6	3,440.2
<i>Ashland</i>	1,291.9	323.9	134.6	3,783.1	2.7	104.6	12.5	1,194.6	8,335.6	1,741.0
<i>Huron</i>	1,420.6	300.4	126.1	3,824.8	2.7	129.2	18.0	1,596.2	6,884.0	2,123.6
<i>Erie</i>	1,451.1	354.2	198.3	7,586.1	3.8	353.4	124.7	273.8	7,029.3	1,426.5
Total - 2008	36,336.8	10,376.8	4,702.2	167,901.6	103.0	146,119.7	1,690.8	12,170.8	181,719.9	35,299.0

Source: 2008 and 2011 NEI

The following figure⁷ and table shows the higher emitting point sources located in the area.

Figure 17: Location of Cleveland-Akron-Lorain Analysis Area Emissions Point Sources



Source: 2008 and 2011 NEI

⁷ The table can be used to correlate the location of each point source with the letter (first letter of county) and number next to the symbol on the map in the figure.

**Table 21: Cleveland-Akron-Lorain Analysis Area Emissions Point Sources
for 2011 (tpy)**

PM2.5		
Lake	L1-CLEVELAND ELECTRIC ILLUMINATING CO., EASTLAKE PLANT (0243160009)	4,023.0
Wayne	W2-Department of Public Utilities, City of Orrville, Ohio (0285010188)	744.5
Cuyahoga	C6-ArcelorMittal Cleveland Inc. (1318001613)	553.2
Lake	LO4-Avon Lake Power Plant (0247030013)	394.2
Erie	E2-Huron Lime, Inc. (0322010062)	320.5
Ashtabula	A3-FirstEnergy Generation Corp., Ashtabula Plant (0204010000)	317.2
Trumbull	T1-Severstal Warren (0278000463)	262.9
Lake	L2-PAINESVILLE MUNICIPAL ELECTRIC PLANT (0243110008)	150.3
Cuyahoga	C8-Charter Steel - Cleveland Inc (1318171623)	138.4
Wayne	W1-The Quality Castings Company (0285010001)	129.2
Lorain	LO6-Elyria Foundry (0247040014)	115.9
Trumbull	T4-ArcelorMittal Warren Inc. (0278000648)	115.6
Huron	H1-Solae LLC (0339010005)	102.4

NOx		
Lake	L1-CLEVELAND ELECTRIC ILLUMINATING CO., EASTLAKE PLANT (0243160009)	8445.9
Lorain	LO4-Avon Lake Power Plant (0247030013)	4659.4
Wayne	W2-Department of Public Utilities, City of Orrville, Ohio (0285010188)	1901.7
Cuyahoga	C6-ArcelorMittal Cleveland Inc. (1318001613)	1164.9
Ashtabula	A3-FirstEnergy Generation Corp., Ashtabula Plant (0204010000)	1148.0
Trumbull	T3-Niles Plant (0278060023)	895.1
Cuyahoga	C4-Cleveland Electric Illuminating Co., Lake Shore Plant (1318000245)	771.3
Trumbull	T4-ArcelorMittal Warren Inc. (0278000648)	665.8
Wayne	W5-East Ohio Gas - Chippewa Station (0285000366)	653.9
Cuyahoga	C1-Cleveland-Hopkins Intl	599.3
Lake	L3-Carmeuse Lime, Inc - Grand River Operations (0243030257)	520.1
Lake	L2-PAINESVILLE MUNICIPAL ELECTRIC PLANT (0243110008)	509.0
Erie	E2-Huron Lime, Inc. (0322010062)	305.2
Huron	H2-BELLEVUE	281.5
Summit	S2-City of Akron Steam Generating (1677010757)	253.7
Cuyahoga	C5-Cleveland Thermal LLC (1318000246)	252.1
Trumbull	T1-Severstal Warren (0278000463)	238.2
Erie	E3-BELLEVUE	215.9
Cuyahoga	C3-The Medical Center Company (1318003059)	204.1
Wayne	W3-Morton Salt, Inc. (0285020059)	194.7
Ashtabula	A1-Millennium Inorganic Chemicals, Inc. - Plant 2 (0204010193)	192.9
Mahoning	M2-Carbon Limestone Landfill Gas Power Station (0250050996)	178.1
Huron	H3-WILLARD	172.8

Lorain	L07-Ross Incineration Services, Inc. (0247050278)	162.3
Cuyahoga	C12-COLLINWOOD	159.0
Cuyahoga	C13-FERRO CORPORATION - CLEVELAND FRIT PLANT (1318170235)	148.9
Lorain	L08-Lorain County LFG Power Station (0247100968)	146.4
Cuyahoga	C14-MARCY	143.3
Trumbull	T2-General Motors LLC - Lordstown Complex (0278000199)	142.7
Summit	S3-Cargill, Incorporated - Salt Division (Akron, OH) (1677010027)	140.1
Cuyahoga	C15-Southerly Wastewater Treatment Center (1318172479)	131.8
Lake	L4-The Lubrizol Corporation - Wickliffe Facility (0243150025)	123.7
Mahoning	M1-Youngstown Thermal (0250110024)	122.5
Summit	S5-Akron-Canton Regional	117.5
Summit	S4-Emerald Performance Materials, LLC (1677010029)	115.3
Cuyahoga	C8-Charter Steel - Cleveland Inc (1318171623)	110.9
Lorain	L03-Lorain Tubular Company LLC (0247080961)	102.1

SO2		
Lake	L1-CLEVELAND ELECTRIC ILLUMINATING CO., EASTLAKE PLANT (0243160009)	48300.3
Lorain	L04-Avon Lake Power Plant (0247030013)	32041.4
Wayne	W2-Department of Public Utilities, City of Orrville, Ohio (0285010188)	13038.0
Trumbull	T3-Niles Plant (0278060023)	4857.8
Wayne	W3-Morton Salt, Inc. (0285020059)	4434.0
Ashtabula	A3-FirstEnergy Generation Corp., Ashtabula Plant (0204010000)	3454.0
Lake	L2-PAINESVILLE MUNICIPAL ELECTRIC PLANT (0243110008)	2745.2
Cuyahoga	C3-The Medical Center Company (1318003059)	2133.1
Cuyahoga	C4-Cleveland Electric Illuminating Co., Lake Shore Plant (1318000245)	1942.0
Trumbull	T1-Severstal Warren (0278000463)	1918.0
Summit	S2-City of Akron Steam Generating (1677010757)	1728.9
Summit	S3-Cargill, Incorporated - Salt Division (Akron, OH) (1677010027)	1516.3
Mahoning	M1-Youngstown Thermal (0250110024)	1063.3
Cuyahoga	C5-Cleveland Thermal LLC (1318000246)	930.2
Lake	L3-Carmeuse Lime, Inc - Grand River Operations (0243030257)	890.6
Summit	S4-Emerald Performance Materials, LLC (1677010029)	869.0
Cuyahoga	C6-ArcelorMittal Cleveland Inc. (1318001613)	722.5
Cuyahoga	C7-DiGeronimo Aggregates LLC (1318270383)	523.9
Wayne	W4-College of Wooster (0285030180)	405.4
Trumbull	T4-ArcelorMittal Warren Inc. (0278000648)	386.5
Lorain	L05-OBERLIN COLLEGE (0247100408)	325.3
Mahoning	M2-Whitacre-Greer (0250000005)	144.0

NH3		
Cuyahoga	C9-Alumitech Of Cleveland	25.1
Cuyahoga	C10-Walker Heat Treating	24.5
Cuyahoga	C11-GE Tungsten Prods Plant	21.6

Trumbull	T4-ArcelorMittal Warren Inc. (0278000648)	12.0
Cuyahoga	C6-ArcelorMittal Cleveland Inc. (1318001613)	11.0

VOC		
Ashtabula	A1-Millennium Inorganic Chemicals, Inc. - Plant 2 (0204010193)	1697.2
Trumbull	T1-Severstal Warren (0278000463)	1682.4
Huron	H1-Solae LLC (0339010005)	1053.1
Ashtabula	A2-Millennium Inorganic Chemicals, Inc. Plant #I (0204010200)	732.6
Lorain	LO1-Ford Motor Company - Ohio Assembly Plant (0247030471)	440.3
Trumbull	T2-General Motors LLC - Lordstown Complex (0278000199)	334.2
Lorain	LO2-3M Elyria (0247040822)	172.7
Portage	P1-Smithers-Oasis U.S.A. (1667040037)	167.7
Cuyahoga	C1-Cleveland-Hopkins Intl	136.9
Lorain	LO3-Lorain Tubular Company LLC (0247080961)	124.8
Summit	S1-Morgan Adhesives Company (MACtac) (1677110026)	124.4
Cuyahoga	C2-North Coast Container Corp. (1318000399)	113.5
Erie	E1-Automotive Components Holdings, LLC - Sandusky Plastics (0322020042)	112.0
Wayne	W1-The Quality Castings Company (0285010001)	103.2
Lake	L1-CLEVELAND ELECTRIC ILLUMINATING CO., EASTLAKE PLANT (0243160009)	102.6

Source: 2008 and 2011 NEI

Level of control of emission sources

In the Cleveland-Akron-Lorain area, the emission reduction programs which have had or will have the greatest potential impact on PM_{2.5} concentrations are:

- on-road and off-road diesel control programs in conjunction with ultra-low sulfur diesel fuel requirements
- NO_x trading program
- Clean Air Interstate Rule (CAIR)
- Ohio Clean Diesel Initiatives
- Mercury and Air Toxics Standards (MATS)

CAIR and MATS regulate electric generating units (EGUs, or power plants). CAIR is the program which will bring about largest reductions in precursor or primary emissions of any of the PM_{2.5} species (sulfates, nitrates, organic carbon, elemental carbon and crustal). Compliance with the MATS rule will also lead to additional reductions in precursor species, in particular, sulfates.

With respect to the Ohio utilities, Avon Lake in Lorain County is planning to convert their 101 MW and 671 MW units to natural gas in the near future. As can be seen in Table 21 above, Avon Lake had some of the most significant emissions of NO_x, SO₂ and PM_{2.5} in the entire analysis area. Avon Lake's emissions accounted for 99% of SO₂, 86% of NO_x and 54% of PM_{2.5} point source emissions in 2011 in Lorain County.

Eastlake in Lake County announced plans in June of 2013 to convert their 240 MW and 497 MW units to reactive power in the near future. These units are currently in cold storage. Eastlake also has three 132 MW units, currently only used for emergency power since 2011, that will either be permanently shut down or also converted to reactive power by 2015. As can be seen in Table 21 above, Eastlake had the most significant emissions of NOx, SO2 and PM2.5 in the entire analysis area. Eastlake's emissions accounted for 93% of SO2, 87% of NOx and 95% of PM2.5 point source emissions in 2011 in Lake County.

Lake Shore in Cuyahoga County is planned for permanent shut down by the middle of 2015.

Urbanization, population and commuting trends

The following table provides a summary of 2010 population and VMT for each of the counties that are discussed in this section.

Table 22: Cleveland-Akron-Lorain Analysis Area County Level VMT, Population, Land Area and Population Density

2010	VMT	Population	Land Area (Sq. Miles)	Population Density (1,000 per Sq. Miles)
CUYAHOGA	10,441,337,655	1,280,122	458	2.79
<i>Lorain</i>	2,435,782,506	301,356	493	0.61
<i>Lake</i>	2,172,294,290	230,041	228	1.01
<i>Medina</i>	1,580,013,546	172,332	422	0.41
<i>Summit</i>	5,636,455,011	541,781	413	1.31
<i>Portage</i>	1,703,175,680	161,419	492	0.33
<i>Geauga</i>	765,557,120	93,389	404	0.23
<i>Ashtabula</i>	1,071,810,361	101,497	702	0.14
CBSA/CSA	25,806,426,171	2,881,937	3,612	0.80
<i>Trumbull</i>	2,280,643,181	210,312	616	0.34
<i>Mahoning</i>	2,392,059,141	238,823	415	0.58
<i>Wayne</i>	1,086,668,001	114,520	555	0.21
<i>Ashland</i>	668,271,617	53,139	424	0.13
<i>Huron</i>	479,690,473	59,626	493	0.12
<i>Erie</i>	1,032,011,123	77,079	255	0.30
Total for Counties	33,745,769,707	3,635,436	6,371	

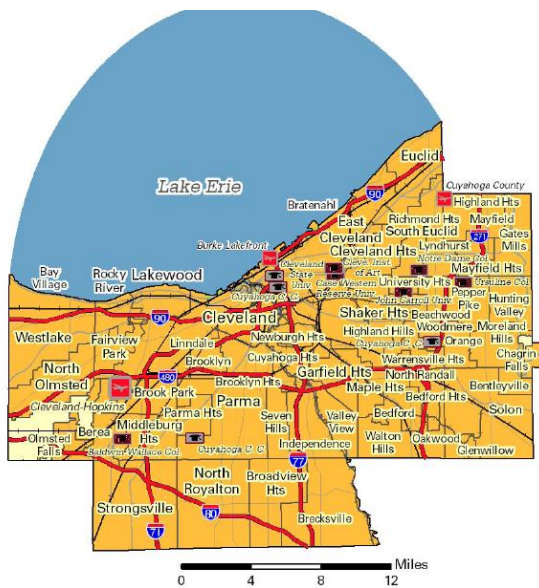
Source: Office of Strategic Research, Ohio Department of Development (Ohio Populations Only)
 U.S. EPA Designations Guidance and Data:
<http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2>

Degree of urbanization and population trends

As seen in Table 22 above, the majority of the population for this analysis area resides in Cuyahoga County, and to a lesser extent, Summit County. Other more populated counties include Lorain, Lake, Trumbull and Mahoning Counties. Cuyahoga County also has a very high population density; therefore, population-related emissions are expected to be high. Lake and Summit Counties also have higher population densities. This is supported by Table 20 above, which indicates Cuyahoga and Summit Counties have the highest nonpoint and roadway emissions. However, Lake County does not have comparatively high population related emissions.

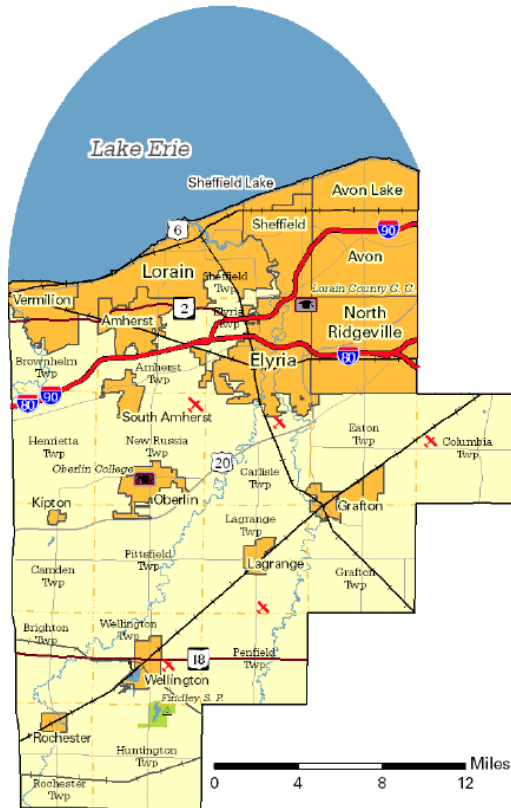
Figure 18: Cleveland-Akron-Lorain Analysis Area County Profiles

Cuyahoga County



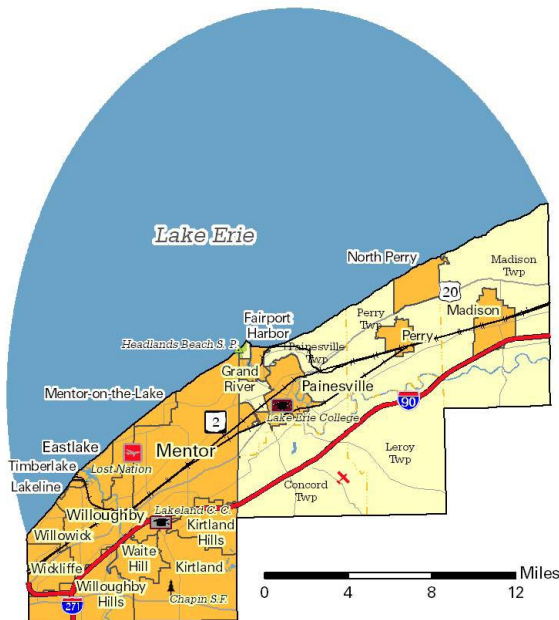
Cuyahoga County is 31% forest and 67% urban. Cleveland, the location of the violating monitors, is the major urban area. The 2010 population was 1,280,122 while it declined to 1,265,111 in 2012. Population is expected to continue declining in the future to a level of 1,209,550 by 2020.

Lorain County



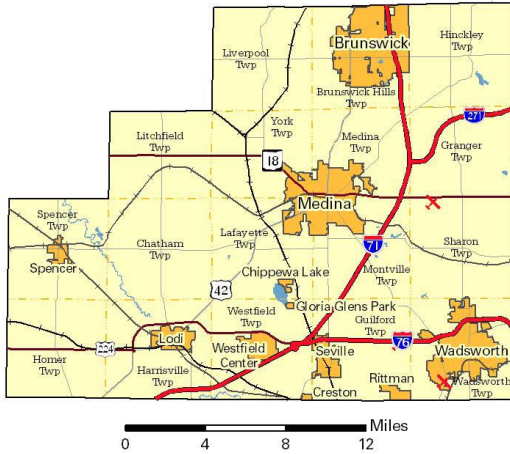
Lorain County is 23% forest, 38% cropland, and 27% urban. Lorain and Elyria are the major urban areas. The 2010 population was 301,356 while it grew to 301,478 in 2012. Population is expected to continue growing in the future to a level of 310,230 by 2020.

Lake County



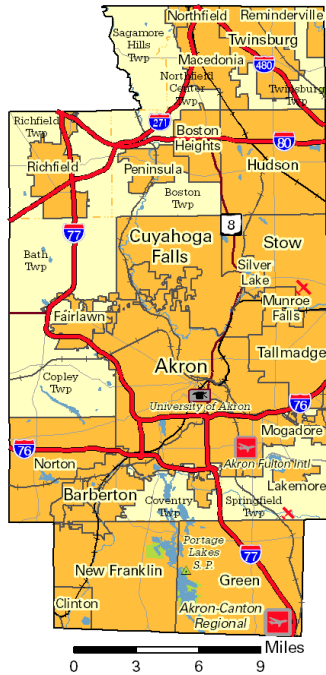
Lake County is 49% forest, 14% cropland, and 32% urban. Mentor is the major urban area. The 2010 population was 230,041 while it declined to 229,582 in 2012. Population is expected to continue declining in the future to a level of 228,600 by 2020.

Medina County



Medina County is 35% forest, 38% cropland, and 14% urban. Brunswick and Medina are the major urban areas. The 2010 population was 172,332 while it grew to 173,684 in 2012. Population is expected to continue growing in the future to a level of 184,670 by 2020.

Summit County



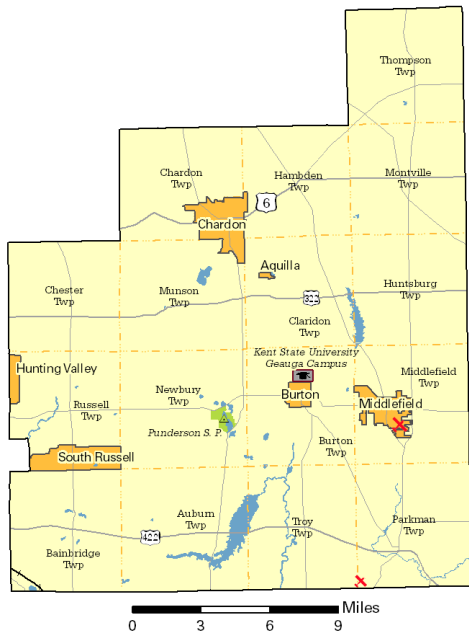
Summit County is 41% forest, 5% cropland, and 47% urban. Akron is the major urban area. The 2010 population was 541,781 while it declined to 540,811 in 2012. Population is expected to continue declining in the future to a level of 534,150 by 2020.

Portage County



Portage County is 46% forest, 23% cropland, and 13% urban. Kent is the major urban area. The 2010 population was 161,419 while it slightly grew to 161,451 in 2012. Population is expected to slightly decline in the future to a level of 161,410 by 2020.

Geauga County



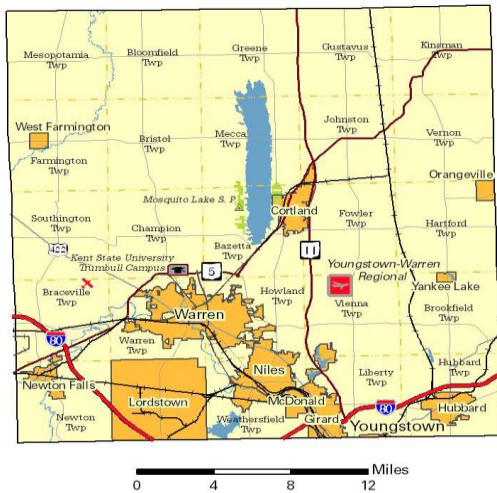
Geauga County is 60% forest, 21% cropland, and 11% urban. Bainbridge and Chester are the major urban areas. The 2010 population was 93,389 while it grew to 93,680 in 2012. Population is expected to slightly decline in the future to a level of 93,510 by 2020.

Ashtabula County



Ashtabula County is 39% forest, 32% cropland, and 7% urban. Ashtabula and Conneaut are the major urban areas. The 2010 population was 101,497 while it declined to 100,389 in 2012. Population is expected to continue growing in the future to a level of 101,230 by 2020.

Trumbull County



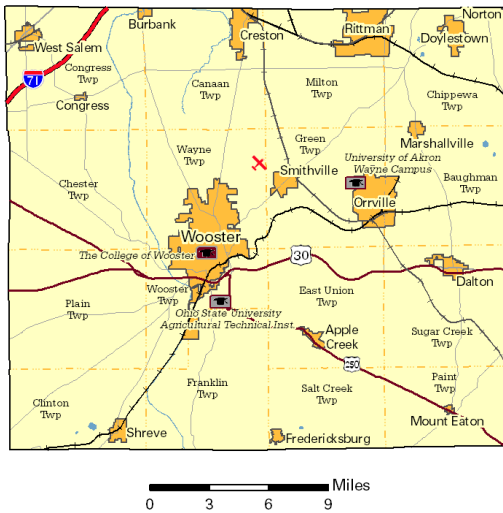
Trumbull County is 42% forest, 28% cropland, and 16% urban. Warren is the major urban area. The 2010 population was 210,312 while it declined to 207,406 in 2012. Population is expected to continue declining in the future to a level of 200,840 by 2020.

Mahoning County



Mahoning County is 41% forest, 23% cropland, and 23% urban. The Youngstown area is the largest major urban areas. The 2010 population was 238,823 while it declined to 235,145 in 2012. Population is expected to continue to decline in the future to a level of 224,680 by 2020.

Wayne County



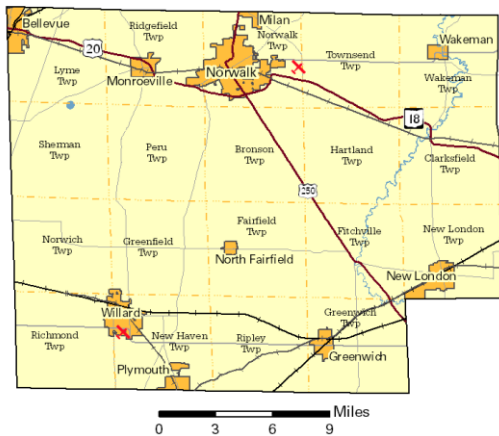
Wayne County is 23% forest, 60% cropland, and 5% urban. Wooster is the major urban area. The 2010 population was 114,520 while it grew to 114,848 in 2012. Population is expected to slightly decline in the future to a level of 114,390 by 2020.

Ashland County



Ashland County is 37% forest, 48% cropland, and 2% urban. Ashland is the major urban area. The 2010 population was 53,139 while it declined to 52,962 in 2012. Population is expected to grow in the future to a level of 53,980 by 2020.

Huron County



Huron County is 16% forest, 71% cropland, and 4% urban. Norwalk is the major urban area. The 2010 population was 59,626 while it declined to 59,280 in 2012. Population is expected to continue declining in the future to a level of 58,740 by 2020.

Erie County



Erie County is 16% forest, 53% cropland, and 13% urban. Sandusky is the major urban area. The 2010 population was 77,079 while it declined to 76,398 in 2012. Population is expected to continue declining in the future to a level of 72,900 by 2020.

Source: Ohio Department of Development. Ohio County Profiles:
http://development.ohio.gov/reports/reports_countytrends_map.htm

Commuting trends

As can be seen in Table 22, the majority of VMT occurs in Cuyahoga County and then Summit County, and then to a lesser extent Lorain, Lake, Trumbull and Mahoning Counties. Table 23 below looks at commuter travel in and out of the county, Cuyahoga, in this analysis area with nonattainment monitors. Only 10% of Cuyahoga County's working residents commute to counties outside of Cuyahoga County. In turn, over 27% of Cuyahoga County's workforce commutes from other counties into Cuyahoga County. Of the Cuyahoga County residents that commute to other counties, the greatest percentage commutes south to Summit County (2.8%), northeast to Lake County (2.3%), and west to Lorain County (1.8%). To a lesser extent, some commute to Medina, Portage

and Geauga Counties (1.9% combined). Of the non-residents that commute into Cuyahoga County, the majority comes from Lake County (5.2%) and Summit County (5.0%). Overall, the most significant commuter travel in and out of these counties occurs between Cuyahoga, Lake and Summit Counties.

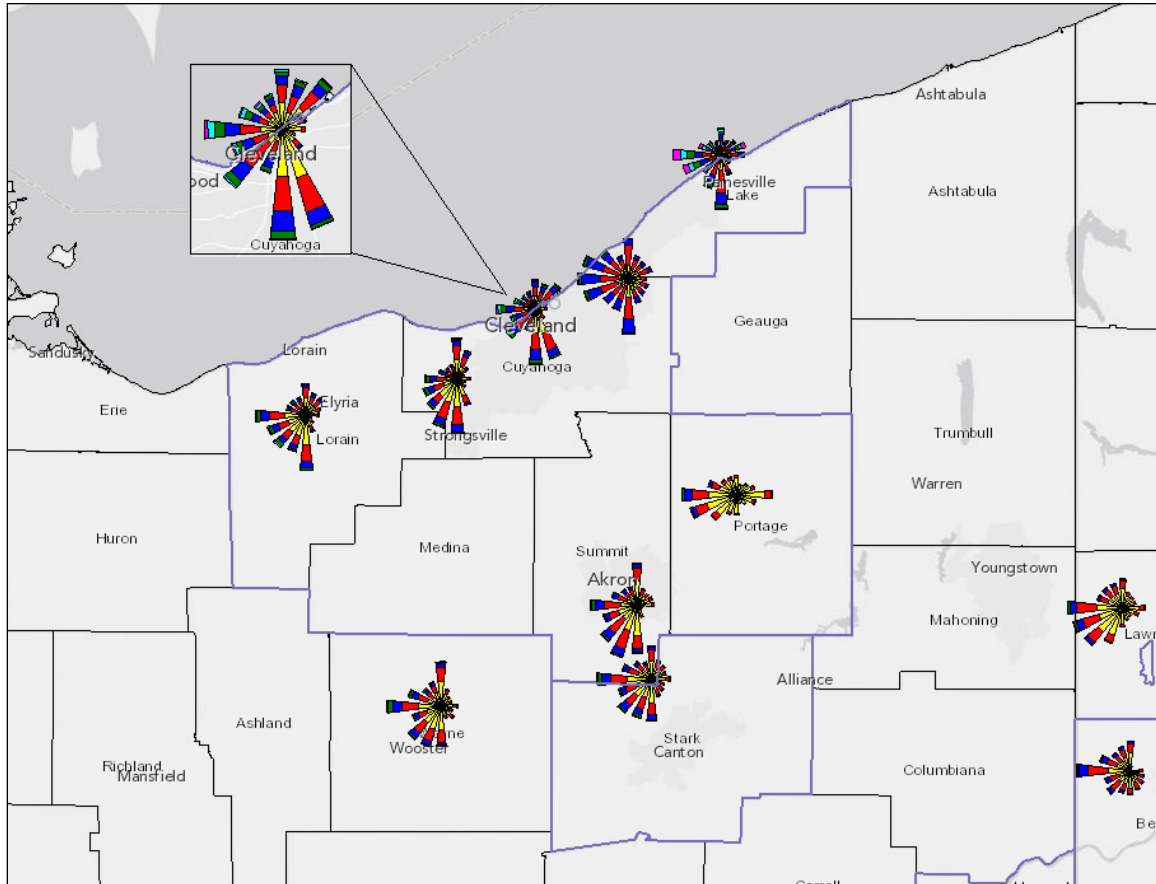
Table 23: Commuter Travel In and Out of Cuyahoga County

Cuyahoga	Percent of workers living in county that work outside the county		10.2%
	Percent of workers that live outside the county		27.3%
Number of workers living in Cuyahoga County 579,485			
Number of workers working in Cuyahoga County 715,297			
Commute Out To	Number	Percent	Commute In From
Summit Co. OH	15,992	2.8%	Lorain Co. OH
Lake Co. OH	13,334	2.3%	Lake Co. OH
Lorain Co. OH	10,475	1.8%	Summit Co. OH
Medina Co. OH	5,383	0.9%	Medina Co. OH
Portage Co. OH	2,969	0.5%	Gauga Co. OH
Gauga Co. OH	2,830	0.5%	Portage Co. OH
Stark Co. OH	764	0.1%	Ashtabula Co. OH
Franklin Co. OH	589	0.1%	Trumbull Co. OH
Erie Co. OH	318	0.1%	Erie Co. OH
Trumbull Co. OH	316	0.1%	Mahoning Co. OH
Percent is of workers living in county.			Percent is of workers working in county.

Factor 3: Meteorology

The following wind roses represent this area.

Figure 19: 2009 to 2012 Wind Roses for the Cleveland-Akron-Lorain Analysis Area



Source: U.S. EPA's PM_{2.5} Designations Mapping Tool: http://geoplatform2.epa.gov/PM_MAP/index.html

Winds from the south-southwest and west-southwest (collectively, the southwest quadrant) are prevalent in this analysis area. However, lake effect winds can produce more of a variety of wind direction frequencies near the lake and especially near the nonattainment monitors located within Cleveland.

Factor 4: Geography/topography

This analysis area does not have any geographical or topographical barriers significantly affecting air pollution transport. Therefore, this factor does not play a role in the analysis of this area.

Factor 5: Jurisdictional boundaries

Lake, Lorain, Cuyahoga, Medina, Summit, and Portage Counties were designated as nonattainment counties for the 2006 PM_{2.5} standard as part of the Cleveland-Akron-Lorain nonattainment area. The same counties and a partial area of Ashtabula County were designated as nonattainment under the 1997 PM_{2.5} standard. With respect to the 1997 and 2008 ozone standards, the same counties were designated as nonattainment, and in addition all of Ashtabula and Geauga Counties were included in the area. Mahoning County was designated as nonattainment under the 1997 ozone standard as part of the Youngstown-Warren-Sharon OH-PA nonattainment area. These areas have been redesignated to attainment for the 1997 and 2006 PM_{2.5} standards and 1997 ozone standards. No other counties a part of this analysis have been designated nonattainment for PM_{2.5} or other urban-scale pollutants.

Cuyahoga County is part of the Cleveland-Akron-Elyria CSA which is comprised of the Cleveland-Elyria-Mentor MSA (Cuyahoga, Lake, Lorain, Medina and Geauga Counties) and the Akron MSA (Summit and Portage Counties) and Ashtabula County.

The Northeast Ohio Areawide coordinating Agency (NOACA) is the planning agency designated as the Metropolitan Planning Organization for the greater Cleveland area. The NOACA region is composed of five counties: Cuyahoga, Geauga, Lake, Lorain and Medina.

The Akron Metropolitan Area Transportation Study (AMATS) is the planning agency designated as the MPO for the Akron area. The AMATS region is composed of two counties: Summit and Portage.

Conclusion

Ashtabula (partial, only for the 1997 annual standard), Cuyahoga, Lake, Lorain, Medina, Portage, and Summit Counties have historically been a part of this nonattainment area.

Ashtabula County was a part of the designations of nonattainment under the 1997 PM_{2.5} standard but not the 2006 standard. On December 9, 2008, Ohio EPA submitted additional information regarding the First Energy power plant in Ashtabula County in support of excluding it from nonattainment designations under the 2006 standard. This information remains applicable. Furthermore, emissions in Ashtabula County continue to be dominated by nonpoint emissions and point emissions (including First Energy) continue to decline from 2008 to 2011.

As was the case with the 1997 and 2006 standards, Geauga County continues to have very low emissions and little to no population or commuter travel with Cuyahoga County. There are also no larger point sources in Geauga County.

Comparatively, Wayne County has moderately high SO₂ and PM_{2.5} emissions, due to Orrville. However, Wayne County, not a part of this metropolitan area, is significantly south of the violating monitors. Wayne would more likely impact the monitors in Medina or Summit Counties, both of which are attaining the standard. There is also negligible commuting between Wayne and Cuyahoga Counties.

Although Trumbull and Mahoning Counties, a part of a different metropolitan area, have relatively high emissions for some pollutants, they are a significant distance to the east of the violating monitors. They also have monitors demonstrating attainment of the standard, as do Portage and Lake Counties which are closer to Trumbull County. Trumbull and Mahoning Counties emissions are also dominated by local nonpoint emissions. There is also negligible commuting between these counties and Cuyahoga County.

Ashland, Huron and Erie Counties have very low emissions and little to no commuter travel with Cuyahoga County.

The remaining counties include Cuyahoga (three violating monitors in Cleveland), Lorain (non-violating monitor), Lake (non-violating monitor), Medina (historic and recent monitoring indicates attainment), Summit (two non-violating monitors) and Portage (non-violating monitor) Counties. These counties were designated as nonattainment as part of the 2006 PM_{2.5} standard. On February 13, 2009, Ohio EPA submitted additional information and comments requesting these counties be designated as attainment/unclassifiable for the 2006 PM_{2.5} standard. These comments still apply considering the latest available data and information.

Just as in 2009, only Cuyahoga County is not attaining the revised standard. As identified in Figure 16 above, these monitors are all located geographically in the heart of the Cleveland metropolitan/industrial area. Figure 17 demonstrates the significant amount of point source emissions condensed nearby the violating monitors. Cuyahoga County has by far the highest population in the area, although it is projected to steadily decline in the future, and VMT.

It is Ohio's belief that violations at these monitors can be attributed to local industrial sources and nearby on-road and off-road emissions. The monitors are positioned in close proximity to one of the largest steel producing facilities in the country.

Although some of the counties in the metropolitan area have emissions comparable to Cuyahoga County, some of those emissions can be attributed to utilities which will see significant reductions needed in time for attainment of this standard. As discussed above, the two largest coal burning utilities in the area (in Lake and Lorain Counties) will be converting to reactive power and natural gas in the near future. In addition, the lone utility in Cuyahoga County, will be permanently shutting down operations. This will bring about significant reductions in PM_{2.5} and its precursors.

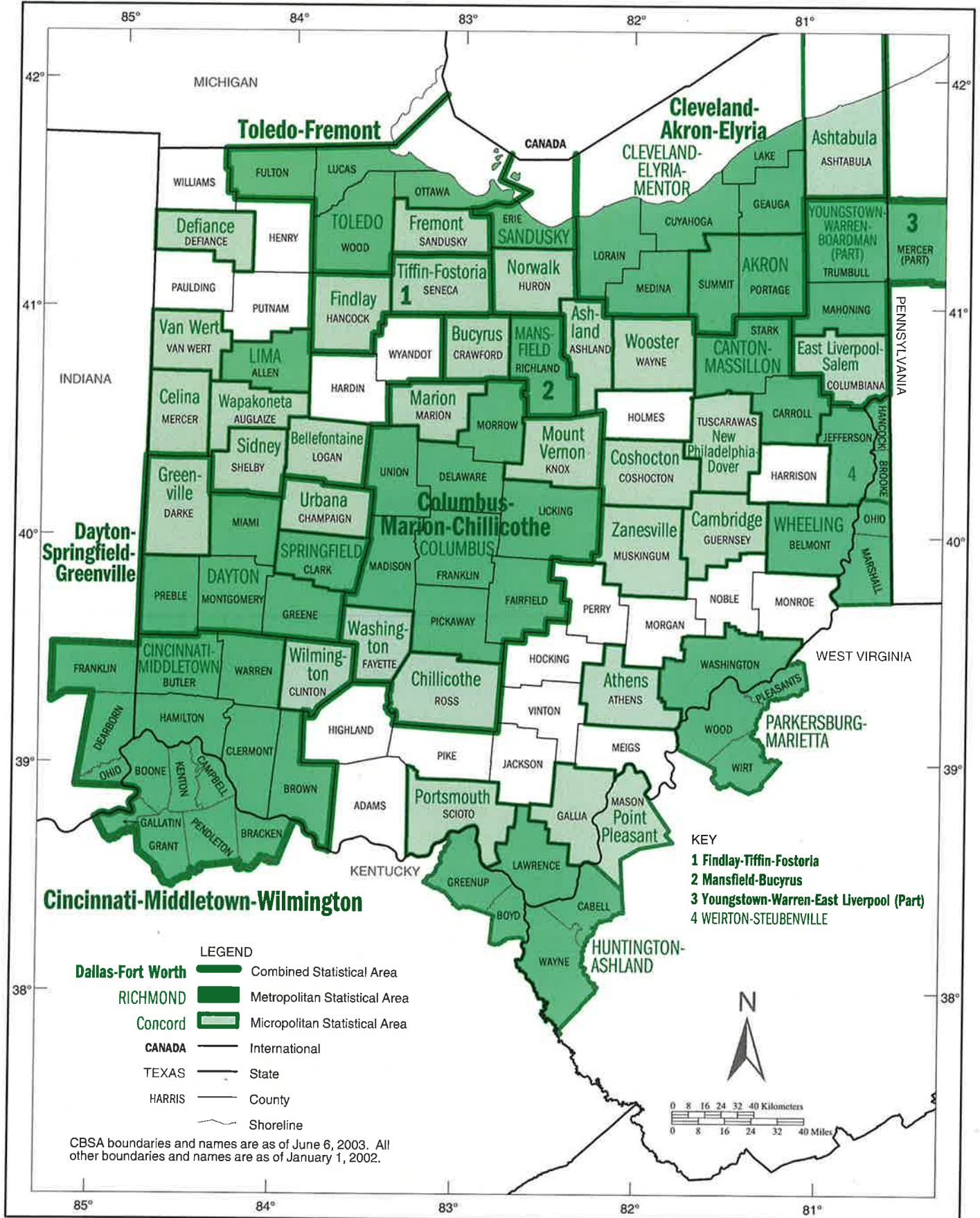
The speciation data for these monitors indicates a large sulfate and organic carbon component. Sulfate is often attributed to coal burning utilities while organic carbon tends to be from local sources.

Although there is some commuter travel between Cuyahoga County and these counties, the majority comes into Cuyahoga County from Lake, Lorain, Summit and Medina Counties. Portage County has very little commuter travel with Cuyahoga County and has low emissions, and mostly nonpoint local emissions. Medina County also has low emissions, mostly attributed to local nonpoint sources.

With the changes at the utilities in Lorain and Lake County, emissions will drop significantly to comparable emissions of counties historically excluded from this nonattainment area. The majority of Summit County's emissions are local nonpoint emissions and point source emissions (to a lesser extent). However, as noted above, these counties all have monitors showing attainment. Ohio EPA does not believe the sole reason for inclusion of some of these counties should be based upon limited commuter travel.

Ohio EPA continues to believe the PM_{2.5} nonattainment area should be limited to Cuyahoga County.

OHIO - Core Based Statistical Areas and Counties



User ID: GYE

DESIGN VALUE REPORT

Report Request ID: 1156539

Report Code: AMP480

Dec. 11, 2013

GEOGRAPHIC SELECTIONS															
Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region	Method	Duration	Begin Date	End Date

39

PROTOCOL SELECTIONS			
Parameter Classification	Parameter	Method	Duration

DESIGN VALUE 88101

SELECTED OPTIONS	
Option Type	Option Value

SINGLE EVENT PROCESSING	EXCLUDE REGIONALLY CONCURRED EVENTS
MERGE PDF FILES	YES
USER SITE METADATA	COUNTY NAME
QUARTERLY DATA IN WORKFILE	NO
WORKFILE DELIMITER	,

GLOBAL DATES	
Start Date	End Date

2012 2013

APPLICABLE STANDARDS
Standard Description

PM25 24-hour 2006
PM25 Annual 2006

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

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 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2012
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State Name: Ohio

Site ID / COUNTY NAME	2012					2011					2010					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-003-0009 Allen	60	4	20.7	10.0	Y	42	2	28.0*	10.8*		39	2	35.2*	10.9*		28	N	10.6	N
39-009-0003 Athens	55	4	15.6	8.7	Y	57	4	18.5	8.7		54	3	17.1*	9.2*		17	N	8.9	N
39-017-0003 Butler	120	4	20.2	11.2	Y	119	4	28.8	12.7		121	4	31.7	13.6		27	Y	12.5	Y
39-017-0016 Butler	118	4	23.2	10.8	Y	116	4	26.8	12.4		114	4	32.1	13.5		27	Y	12.2	Y
39-017-0019 Butler	119	4	22.8	11.4	Y	69	3	28.4*	12.7*						*	26	N	12.1	N
39-017-0020 Butler	118	4	27.5	13.9	Y	57	2	28.3*	13.6*						*	28	N	13.8	N
39-023-0005 Clark	120	4	22.3	10.4	Y	121	4	28.0	12.3		122	4	29.5	13.1		27	Y	11.9	Y
39-025-0022 Clermont					*	61	4	30.2	11.0		114	4	27.7	12.0		29	N	11.5	N
39-035-0034 Cuyahoga	117	4	19.5	9.3	Y	117	4	22.6	10.0		112	4	26.8	10.9		23	Y	10.1	Y
39-035-0038 Cuyahoga	362	4	28.8	12.3	Y	349	4	28.2	12.6		114	4	30.5	14.0		29	Y	13.0	Y
39-035-0045 Cuyahoga	115	4	24.5	11.4	Y	119	4	25.2	11.9		119	4	32.7	13.3		27	Y	12.2	Y

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39-035-0060 Cuyahoga	100	3	33.5*	12.8*	Y	117	4	26.5	12.5		114	4	30.9	13.7		30	N	13.0	N
39-035-0065 Cuyahoga	117	4	23.3	12.3	Y	115	4	27.0	12.6		110	3	27.3*	13.2*		26	N	12.7	N
39-035-1002 Cuyahoga	113	4	19.9	9.7	Y	117	4	23.9	10.4		108	4	26.5	11.3		23	Y	10.5	Y
39-049-0024 Franklin	111	4	22.0	10.7	Y	113	4	23.6	11.9		118	4	30.9	13.1		26	Y	11.9	Y
39-049-0025 Franklin	119	4	22.0	10.7	Y	118	4	23.6	11.5		121	4	33.5	12.6		26	Y	11.6	Y
39-049-0081 Franklin	118	4	20.7	10.1	Y	115	4	21.4	10.9		120	4	29.1	11.9		24	Y	11.0	Y
39-057-0005 Greene	118	4	20.2	9.6	Y	117	4	26.4	11.3		104	3	27.6*	13.2*		25	N	11.4	N
39-061-0006 Hamilton	116	4	21.7	10.3	Y	114	4	25.7	11.7		109	3	29.0*	12.7*		25	N	11.6	N
39-061-0010 Hamilton	96	2	21.7*	10.6*	Y	52	2	26.2*	11.8*					*		24	N	11.2	N
39-061-0014 Hamilton	119	4	25.2	12.1	Y	118	4	28.2	13.2		352	4	32.3	14.8		29	Y	13.4	Y
39-061-0040 Hamilton	354	4	24.3	12.6	Y	233	4	29.7	12.4		110	4	28.7	13.3		28	Y	12.8	Y

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39-061-0042 Hamilton	121	4	23.3	11.7	Y	119	4	30.2	13.3		121	4	35.0	14.5		30	Y	13.2	Y
39-061-7001 Hamilton					*					*	117	4	32.5	14.1		33	N	14.1	N
39-061-8001 Hamilton					*					*	11	1	33.3*	17.6*		33	N	17.6	N
39-081-0017 Jefferson	348	4	22.7	11.3	Y	297	3	29.9*	12.6*		108	4	29.8	12.7		27	N	12.2	N
39-081-1001 Jefferson	59	4	21.0	10.0	Y	59	4	24.9	11.3		58	4	25.1	12.7		24	Y	11.4	Y
39-085-0007 Lake	115	4	19.4	9.0	Y	119	4	23.3	9.4		121	4	26.9	10.4		23	Y	9.6	Y
39-087-0012 Lawrence	115	4	21.3	10.9	Y	111	4	22.9	10.8		117	4	25.1	12.1		23	Y	11.3	Y
39-093-3002 Lorain	119	4	22.0	9.5	Y	119	4	23.1	9.4		120	4	24.4	10.4		23	Y	9.7	Y
39-095-0024 Lucas	117	4	21.3	10.0	Y	112	4	26.4	10.6		116	4	26.6	11.2		25	Y	10.6	Y
39-095-0026 Lucas	119	4	21.5	9.9	Y	113	4	23.5	10.7		113	4	30.0	11.4		25	Y	10.7	Y
39-095-0028 Lucas	115	4	24.7	10.0	Y	115	4	25.5	11.4		111	4	28.2	11.4		26	Y	11.0	Y

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	Days	Qtrts	Perctil	Mean	Eval	Days	Qtrts	Perctil	Mean	Eval	Days	Qtrts	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-099-0005 Mahoning	59	4	23.2	10.6	Y	61	4	25.0	10.6		61	4	33.4	12.4		27	Y	11.2	Y
39-099-0014 Mahoning	115	4	20.7	10.1	Y	118	4	24.8	11.3		121	4	29.0	12.4		25	Y	11.3	Y
39-103-0003 Medina					*					*	116	4	28.8	10.8		29	N	10.8	N
39-103-0004 Medina	107	0	19.1*	9.3*	Y	112	4	25.0	10.8					*		22	N	10.0	N
39-113-0032 Montgomery	118	4	21.9	10.7	Y	119	4	28.5	12.1		120	4	30.4	14.0		27	Y	12.3	Y
39-133-0002 Portage	120	4	18.2	9.3	Y	116	4	23.2	10.5		115	4	31.9	11.2		24	Y	10.3	Y
39-135-1001 Preble	115	4	19.5	9.3	Y	116	4	24.9	10.9		120	4	30.2	12.0		25	Y	10.7	Y
39-145-0013 Scioto	116	4	18.8	9.8	Y	117	4	21.2	10.2		116	4	24.4	11.8		21	Y	10.6	Y
39-151-0017 Stark	350	4	25.4	11.9	Y	336	4	28.1	12.8		332	4	33.0	14.4		29	Y	13.0	Y
39-151-0020 Stark	116	4	22.7	10.4	Y	114	4	23.1	11.3		112	4	32.2	13.8		26	Y	11.8	Y
39-153-0017 Summit	121	4	20.3	10.8	Y	193	4	26.4	11.8		364	4	32.7	13.4		26	Y	12.0	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk (*).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
 Standard Units: Micrograms/cubic meter (LC) (105)
 NAAQS Standard: PM25 24-hour 2006 / PM25 Annual 2006
 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2012
 REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / COUNTY NAME	2012					2011					2010					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-153-0023 Summit	118	4	19.8	10.0	Y	116	4	24.8	11.1		110	4	30.2	12.5		25	Y	11.2	Y
39-155-0005 Trumbull	114	4	19.3	9.3	Y	119	4	24.9	10.6		119	4	31.0	11.9		25	Y	10.6	Y
39-165-0007 Warren					*	59	4	28.4	11.0		118	4	27.0	11.9		28	N	11.5	N

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
 Standard Units: Micrograms/cubic meter (LC) (105)
 NAAQS Standard: PM25 24-hour 2006 / PM25 Annual 2006
 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2013

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / COUNTY NAME	2013					2012					2011					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-003-0009 Allen	34	2	19.0*	10.7*		60	4	20.7	10.0	Y	42	2	28.0*	10.8*		23	N	10.5	N
39-009-0003 Athens	41	3	18.6*	8.8*		55	4	15.6	8.7	Y	57	4	18.5	8.7		18	N	8.7	N
39-017-0003 Butler	100	3	27.9*	10.9*		120	4	20.2	11.2	Y	119	4	28.8	12.7		26	N	11.6	N
39-017-0016 Butler	98	3	23.3*	10.5*		118	4	23.2	10.8	Y	116	4	26.8	12.4		24	N	11.2	N
39-017-0019 Butler	101	3	25.0*	10.8*		119	4	22.8	11.4	Y	69	3	28.4*	12.7*		25	N	11.6	N
39-017-0020 Butler	99	3	26.4*	13.2*		118	4	27.5	13.9	Y	57	2	28.3*	13.6*		27	N	13.6	N
39-023-0005 Clark	92	3	24.4*	10.0*		120	4	22.3	10.4	Y	121	4	28.0	12.3		25	N	10.9	N
39-025-0022 Clermont					*					*	61	4	30.2	11.0		30	N	11.0	N
39-035-0034 Cuyahoga	83	3	24.3*	9.8*		117	4	19.5	9.3	Y	117	4	22.6	10.0		22	N	9.7	N
39-035-0038 Cuyahoga	83	2	24.3*	12.5*		362	4	28.8	12.3	Y	349	4	28.2	12.6		27	N	12.5	N
39-035-0045 Cuyahoga	84	3	25.2*	11.6*		115	4	24.5	11.4	Y	119	4	25.2	11.9		25	N	11.6	N

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
 Standard Units: Micrograms/cubic meter (LC) (105)
 NAAQS Standard: PM25 24-hour 2006 / PM25 Annual 2006
 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2013

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / COUNTY NAME	2013					2012					2011					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qrtrs	Perctil	Mean	Eval	Days	Qrtrs	Perctil	Mean	Eval	Days	Qrtrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-035-0060 Cuyahoga	90	3	27.3*	12.8*		100	3	33.5*	12.8*	Y	117	4	26.5	12.5		29	N	12.7	N
39-035-0065 Cuyahoga	88	3	23.7*	11.7*		117	4	23.3	12.3	Y	115	4	27.0	12.6		25	N	12.2	N
39-035-1002 Cuyahoga	84	3	22.7*	9.6*		113	4	19.9	9.7	Y	117	4	23.9	10.4		22	N	9.9	N
39-049-0024 Franklin	88	3	23.8*	10.3*		111	4	22.0	10.7	Y	113	4	23.6	11.9		23	N	11.0	N
39-049-0025 Franklin	91	3	24.3*	10.4*		119	4	22.0	10.7	Y	118	4	23.6	11.5		23	N	10.9	N
39-049-0081 Franklin	90	3	23.6*	10.0*		118	4	20.7	10.1	Y	115	4	21.4	10.9		22	N	10.3	N
39-057-0005 Greene	99	3	19.0*	9.5*		118	4	20.2	9.6	Y	117	4	26.4	11.3		22	N	10.1	N
39-061-0006 Hamilton	99	3	23.2*	10.0*		116	4	21.7	10.3	Y	114	4	25.7	11.7		24	N	10.7	N
39-061-0010 Hamilton	101	3	22.3*	10.5*		96	2	21.7*	10.6*	Y	52	2	26.2*	11.8*		23	N	10.9	N
39-061-0014 Hamilton	99	3	24.1*	11.5*		119	4	25.2	12.1	Y	118	4	28.2	13.2		26	N	12.3	N
39-061-0040 Hamilton	296	3	24.0*	11.4*		354	4	24.3	12.6	Y	233	4	29.7	12.4		26	N	12.1	N

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
 Standard Units: Micrograms/cubic meter (LC) (105)
 NAAQS Standard: PM25 24-hour 2006 / PM25 Annual 2006
 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2013

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / COUNTY NAME	2013					2012					2011					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-061-0042 Hamilton	97	3	26.4*	11.5*		121	4	23.3	11.7	Y	119	4	30.2	13.3		27	N	12.2	N
39-081-0017 Jefferson	126	3	25.9*	11.5*		348	4	22.7	11.3	Y	297	3	29.9*	12.6*		26	N	11.8	N
39-081-1001 Jefferson	32	0	19.7*	11.0*		59	4	21.0	10.0	Y	59	4	24.9	11.3		22	N	10.8	N
39-085-0007 Lake	91	3	21.4*	8.9*		115	4	19.4	9.0	Y	119	4	23.3	9.4		21	N	9.1	N
39-087-0012 Lawrence	88	3	19.1*	9.8*		115	4	21.3	10.9	Y	111	4	22.9	10.8		21	N	10.5	N
39-093-3002 Lorain	89	3	21.4*	9.0*		119	4	22.0	9.5	Y	119	4	23.1	9.4		22	N	9.3	N
39-095-0024 Lucas	89	3	21.5*	9.7*		117	4	21.3	10.0	Y	112	4	26.4	10.6		23	N	10.1	N
39-095-0026 Lucas	88	3	21.6*	9.8*		119	4	21.5	9.9	Y	113	4	23.5	10.7		22	N	10.1	N
39-095-0028 Lucas	91	3	20.1*	9.6*		115	4	24.7	10.0	Y	115	4	25.5	11.4		23	N	10.3	N
39-099-0005 Mahoning	45	3	23.3*	11.8*		59	4	23.2	10.6	Y	61	4	25.0	10.6		24	N	11.0	N
39-099-0014 Mahoning	80	3	21.9*	10.1*		115	4	20.7	10.1	Y	118	4	24.8	11.3		22	N	10.5	N

- Notes:**
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
 Standard Units: Micrograms/cubic meter (LC) (105)
 NAAQS Standard: PM25 24-hour 2006 / PM25 Annual 2006
 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2013
 REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Ohio

Site ID / COUNTY NAME	2013					2012					2011					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qrtrs	Perctil	Mean	Eval	Days	Qrtrs	Perctil	Mean	Eval	Days	Qrtrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
39-103-0004 Medina	80	3	23.0*	9.6*		107	0	19.1*	9.3 *	Y	112	4	25.0	10.8		22	N	9.9	N
39-113-0032 Montgomery	98	3	23.6*	10.4*		118	4	21.9	10.7	Y	119	4	28.5	12.1		25	N	11.1	N
39-133-0002 Portage	74	2	23.3*	9.4*		120	4	18.2	9.3	Y	116	4	23.2	10.5		22	N	9.7	N
39-135-1001 Preble	99	3	21.0*	9.5*		115	4	19.5	9.3	Y	116	4	24.9	10.9		22	N	9.9	N
39-145-0013 Scioto	89	3	19.0*	9.5*		116	4	18.8	9.8	Y	117	4	21.2	10.2		20	N	9.8	N
39-151-0017 Stark	148	3	27.8*	12.2*		350	4	25.4	11.9	Y	336	4	28.1	12.8		27	N	12.3	N
39-151-0020 Stark	88	3	24.3*	11.2*		116	4	22.7	10.4	Y	114	4	23.1	11.3		23	N	11.0	N
39-153-0017 Summit	90	3	24.9*	10.8*		121	4	20.3	10.8	Y	193	4	26.4	11.8		24	N	11.1	N
39-153-0023 Summit	88	3	24.0*	10.3*		118	4	19.8	10.0	Y	116	4	24.8	11.1		23	N	10.5	N
39-155-0005 Trumbull	84	3	27.0*	10.2*		114	4	19.3	9.3	Y	119	4	24.9	10.6		24	N	10.0	N
39-165-0007 Warren					*					*	59	4	28.4	11.0		28	N	11.0	N

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk (*).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

CERTIFICATION EVALUATION AND CONCURRENCE FLAG MEANINGS

FLAG	MEANING
M	The monitoring organization has revised data from this monitor since the most recent certification letter received from the state.
N	The certifying agency has submitted the certification letter and required summary reports, but the certifying agency and/or EPA has determined that issues regarding the quality of the ambient concentration data cannot be resolved due to data completeness, the lack of performed quality assurance checks or the results of uncertainty statistics shown in the AMP255 report or the certification and quality assurance report.
S	The certifying agency has submitted the certification letter and required summary reports. A value of "S" conveys no Regional assessment regarding data quality per se. This flag will remain until the Region provides an "N" or "Y" concurrence flag.
U	Uncertified. The certifying agency did not submit a required certification letter and summary reports for this monitor even though the due date has passed, or the state's certification letter specifically did not apply the certification to this monitor.
X	Certification is not required by 40 CFR 58.15 and no conditions apply to be the basis for assigning another flag value
Y	The certifying agency has submitted a certification letter, and EPA has no unresolved reservations about data quality (after reviewing the letter, the attached summary reports, the amount of quality assurance data submitted to AQS, the quality statistics, and the highest reported concentrations).

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

User ID: GYE

DESIGN VALUE REPORT

Report Request ID: 1156540

Report Code: AMP480

Dec. 11, 2013

GEOGRAPHIC SELECTIONS															
Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region	Method	Duration	Begin Date	End Date
	54	051													
	54	069													

PROTOCOL SELECTIONS			
Parameter Classification	Parameter	Method	Duration
DESIGN VALUE			88101

SELECTED OPTIONS	
Option Type	Option Value
SINGLE EVENT PROCESSING	EXCLUDE REGIONALLY CONCURRED EVENTS
MERGE PDF FILES	YES
USER SITE METADATA	COUNTY NAME
QUARTERLY DATA IN WORKFILE	NO
WORKFILE DELIMITER	/

GLOBAL DATES	
Start Date	End Date
2012	2013

APPLICABLE STANDARDS
Standard Description
PM25 24-hour 2006
PM25 Annual 2006

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM_{2.5} 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk (*).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
 Standard Units: Micrograms/cubic meter (LC) (105)
 NAAQS Standard: PM25 24-hour 2006 / PM25 Annual 2006
 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2012

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: West Virginia

Site ID / COUNTY NAME	2012					2011					2010					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
54-051-1002 Marshall	121	4	23.6	11.8		117	4	28.6	12.6		117	4	33.5	14.1		29	Y	12.8	Y
54-069-0010 Ohio	120	4	20.0	10.4		121	4	27.5	11.3		119	4	28.2	12.9		25	Y	11.6	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
 Standard Units: Micrograms/cubic meter (LC) (105)
 NAAQS Standard: PM25 24-hour 2006 / PM25 Annual 2006
 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2013

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: West Virginia

Site ID / COUNTY NAME	2013					2012					2011					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
54-051-1002 Marshall	87	3	25.0*	10.9*		121	4	23.6	11.8		117	4	28.6	12.6		26	N	11.8	N
54-069-0010 Ohio	90	3	28.0*	10.8*		120	4	20.0	10.4		121	4	27.5	11.3		25	N	10.8	N

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

CERTIFICATION EVALUATION AND CONCURRENCE FLAG MEANINGS

FLAG	MEANING
M	The monitoring organization has revised data from this monitor since the most recent certification letter received from the state.
N	The certifying agency has submitted the certification letter and required summary reports, but the certifying agency and/or EPA has determined that issues regarding the quality of the ambient concentration data cannot be resolved due to data completeness, the lack of performed quality assurance checks or the results of uncertainty statistics shown in the AMP255 report or the certification and quality assurance report.
S	The certifying agency has submitted the certification letter and required summary reports. A value of "S" conveys no Regional assessment regarding data quality per se. This flag will remain until the Region provides an "N" or "Y" concurrence flag.
U	Uncertified. The certifying agency did not submit a required certification letter and summary reports for this monitor even though the due date has passed, or the state's certification letter specifically did not apply the certification to this monitor.
X	Certification is not required by 40 CFR 59.15 and no conditions apply to be the basis for assigning another flag value
Y	The certifying agency has submitted a certification letter, and EPA has no unresolved reservations about data quality (after reviewing the letter, the attached summary reports, the amount of quality assurance data submitted to AQS, the quality statistics, and the highest reported concentrations).

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk (*).

User ID: GYE

DESIGN VALUE REPORT

Report Request ID: 1156541

Report Code: AMP480

Dec. 11, 2013

GEOGRAPHIC SELECTIONS															
Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region	Method	Duration	Begin Date	End Date
	54	009													
	54	029													
	18	029													
	21	015													
	21	037													
	21	117													

PROTOCOL SELECTIONS			
Parameter Classification	Parameter	Method	Duration
DESIGN VALUE	88101		

SELECTED OPTIONS	
Option Type	Option Value
SINGLE EVENT PROCESSING	EXCLUDE REGIONALLY CONCURRED EVENTS
MERGE PDF FILES	YES
USER SITE METADATA	COUNTY NAME
QUARTERLY DATA IN WORKFILE	NO
WORKFILE DELIMITER	,

GLOBAL DATES	
Start Date	End Date
2012	2013

APPLICABLE STANDARDS
Standard Description
PM25 24-hour 2006
PM25 Annual 2006

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk (*).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
 Standard Units: Micrograms/cubic meter (LC) (105)
 NAAQS Standard: PM25 24-hour 2006 / PM25 Annual 2006
 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2012

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / COUNTY NAME	2012					2011					2010					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qrtrs	Perctil	Mean	Eval	Days	Qrtrs	Perctil	Mean	Eval	Days	Qrtrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
21-037-3002 Campbell	113	4	20.7	9.7	Y	118	4	25.8	10.3		120	4	25.6	11.8		24	Y	10.6	Y
21-117-0007 Kenton					*					*	51	1	22.0*	12.1*		22	N	12.1	N

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
 Standard Units: Micrograms/cubic meter (LC) (105)
 NAAQS Standard: PM25 24-hour 2006 / PM25 Annual 2006
 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2013

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: Kentucky

Site ID / COUNTY NAME	2013					2012					2011					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
21-037-3002 Campbell	69	2	21.6*	9.9*		113	4	20.7	9.7	Y	118	4	25.8	10.3		23	N	10.0	N

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
 Standard Units: Micrograms/cubic meter (LC) (105)
 NAAQS Standard: PM25 24-hour 2006 / PM25 Annual 2006
 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2012

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: West Virginia

Site ID / COUNTY NAME	2012					2011					2010					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
54-009-0005 Brooke	121	4	22.4	11.2		118	4	27.4	12.6		122	4	29.8	14.1		27	Y	12.7	Y
54-009-0011 Brooke	117	4	21.9	10.6		75	2	28.5*	9.4 *		122	4	31.6	13.5		27	N	11.1	N
54-029-1004 Hancock	120	4	20.7	10.1		116	4	28.9	11.3		122	4	31.2	12.6		27	Y	11.3	Y

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk ('*').

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 AIR QUALITY SYSTEM
 PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

Pollutant: Site-Level PM2.5 - Local Conditions (88101)
 Standard Units: Micrograms/cubic meter (LC) (105)
 NAAQS Standard: PM25 24-hour 2006 / PM25 Annual 2006
 Statistic: Annual Weighted Mean Level: 15
 Statistic: Annual 98th Percentile Level: 35

Design Value Year: 2013

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State Name: West Virginia

Site ID / COUNTY NAME	2013					2012					2011					24-Hour		Annual	
	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Cred.	Comp.	98th	Wtd.	Cert&	Design	Valid	Design	Valid
	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Days	Qtrrs	Perctil	Mean	Eval	Value	Ind.	Value	Ind.
54-009-0005 Brooke	91	3	26.8*	11.7*		121	4	22.4	11.2		118	4	27.4	12.6		26	N	11.8	N
54-009-0011 Brooke	90	3	26.8*	10.7*		117	4	21.9	10.6		75	2	28.5*	9.4*		26	N	10.2	N
54-029-1004 Hancock	91	3	28.6*	10.8*		120	4	20.7	10.1		116	4	28.9	11.3		26	N	10.7	N

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk (*).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
PRELIMINARY DESIGN VALUE REPORT

Report Date: Dec. 11, 2013

CERTIFICATION EVALUATION AND CONCURRENCE FLAG MEANINGS

FLAG	MEANING
M	The monitoring organization has revised data from this monitor since the most recent certification letter received from the state.
N	The certifying agency has submitted the certification letter and required summary reports, but the certifying agency and/or EPA has determined that issues regarding the quality of the ambient concentration data cannot be resolved due to data completeness, the lack of performed quality assurance checks or the results of uncertainty statistics shown in the AMP255 report or the certification and quality assurance report.
S	The certifying agency has submitted the certification letter and required summary reports. A value of "S" conveys no Regional assessment regarding data quality per se. This flag will remain until the Region provides an "N" or "Y" concurrence flag.
U	Uncertified. The certifying agency did not submit a required certification letter and summary reports for this monitor even though the due date has passed, or the state's certification letter specifically did not apply the certification to this monitor.
X	Certification is not required by 40 CFR 58.15 and no conditions apply to be the basis for assigning another flag value
Y	The certifying agency has submitted a certification letter, and EPA has no unresolved reservations about data quality (after reviewing the letter, the attached summary reports, the amount of quality assurance data submitted to AQS, the quality statistics, and the highest reported concentrations).

- Notes:**
1. Computed design values are a snapshot of the data at the time the report was run (may not be all data for year).
 2. Some PM2.5 24-hour DVs for incomplete data that are marked invalid here may be marked valid in the Official report due to additional analysis.
 3. Annual Values not meeting completeness criteria are marked with an asterisk (*).



John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

CERTIFIED MAIL

April 25, 2013

George Czerniak, Director
Air and Radiation Division
U.S.EPA, Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

RE: 2012 SLAMS Data Certification

Dear Mr. Czerniak:

Please find enclosed our SLAMS Report (AMP-450, AMP-450NC and AMP-255) for calendar year 2012 as required in 40 CFR, Part 58, Section 58.15. The ambient concentration and the quality assurance data have been completely submitted to the AQS database.

I certify that the data in the report are accurate to the best of our knowledge taking into consideration the quality assurance findings and only to the extent of the activities performed by Ohio EPA.

There were no incidents of air pollution that reached or exceeded levels as specified by Section 51.151 which could cause significant harm to the health of persons.

Sincerely,

A handwritten signature in cursive script that reads 'Robert Hodanbosi'.

Robert Hodanbosi
Chief, Division of Air Pollution Control

Enclosure

Public Notice
Ohio Environmental Protection Agency
Recommended Designation of Nonattainment Area Boundaries for the 2012
Annual PM2.5 Standard

The Ohio Environmental Protection Agency (Ohio EPA) is soliciting comments regarding the extent of Ohio's nonattainment areas for the revised annual PM2.5 National Ambient Air Quality Standard (NAAQS) which lowered the 1997 annual standard from 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to 12.0 $\mu\text{g}/\text{m}^3$. The United States Environmental Protection Agency (U.S. EPA) adopted this revised annual PM2.5 standard effective on December 14, 2012. The comments received will be used to formulate the State's formal recommendation proposal to U.S. EPA. Ohio EPA's preliminary recommendations are for the following counties to be designated nonattainment for the revised annual PM2.5 standard: Cuyahoga, Stark, Jefferson, Butler, Clermont, and Hamilton. The remainder of the State is recommended as unclassifiable/attainment.

These actions must be noticed to allow public comment and to satisfy U.S. EPA requirements for public involvement in state implementation plan related activities. Comments should be submitted on or before December 5, 2013 at the following address:

E-mail: Jennifer.dines@epa.state.oh.us

Mailing address: Jennifer Van Vlerah
Ohio Environmental Protection Agency, DAPC
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049
Phone: (614) 644-3696

Pursuant to Section 119.03 of the Ohio Revised Code, public hearings on these recommendations will be conducted on:

December 4, 2013 at 1:00 PM, at the Stark County Library, Sandy Valley Branch, 9754 Cleveland Ave SE., Magnolia, Ohio, 44643; and

December 5, 2013 at 10:30 AM, at the Southwest Ohio Air Quality Agency, 250 William Howard Taft Road, Cincinnati, Ohio, 45219.

All interested persons are entitled to attend or be represented at the hearing and give written or oral comments on these recommendations. All oral comments presented at the hearing, and all written statements submitted at the hearing or to the above address by the close of business on December 5, 2013, will be considered by Ohio EPA prior to final action on these recommendations. Written statements submitted after December

5, 2013, may be considered as time and circumstances permit, but will not be part of the official record of the hearing.

The PM2.5 designation recommendation documentation is available on Ohio EPA DAPC's Web page for electronic downloading at:
<http://www.epa.ohio.gov/dapc/SIP/2013.aspx>. Questions regarding accessing the web site should be directed to Arunee Niamlarb at 614-728-1342; other questions or comments about this document should be directed to Jennifer Van Vlerah at (614) 644-3696, Jennifer.dines@epa.state.oh.us or mailed to Jennifer Van Vlerah at the above address.

Public Notice
Ohio Environmental Protection Agency
Amendment to Recommended Designation of Nonattainment Area Boundaries for
the 2012 Annual PM2.5 Standard

The Ohio Environmental Protection Agency (Ohio EPA) recently issued public notices soliciting comments regarding the extent of Ohio's nonattainment areas for the revised annual PM2.5 National Ambient Air Quality Standard (NAAQS) which lowered the 1997 annual standard from 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to 12.0 $\mu\text{g}/\text{m}^3$. The United States Environmental Protection Agency (U.S. EPA) adopted this revised annual PM2.5 standard effective on December 14, 2012. Since that time, Ohio EPA identified Montgomery County as an additional area that is not attaining the standard based on 2010 to 2012 air quality data. The 3-year design value for monitor 39-113-0031, located in Montgomery County, is 12.3 $\mu\text{g}/\text{m}^3$. Ohio EPA is now also soliciting comments regarding the addition of this county as a recommended nonattainment county. The comments received will be used to formulate the State's formal recommendation proposal to U.S. EPA. Ohio EPA's preliminary recommendations are for the following counties to be designated nonattainment for the revised annual PM2.5 standard: Montgomery, Cuyahoga, Stark, Jefferson, Butler, Clermont, and Hamilton. The remainder of the State is recommended as unclassifiable/attainment.

These actions must be noticed to allow public comment and to satisfy U.S. EPA requirements for public involvement in state implementation plan related activities. Comments should be submitted on or before December 5, 2013 at the following address:

E-mail: Jennifer.dines@epa.state.oh.us

Mailing address: Jennifer Van Vlerah
Ohio Environmental Protection Agency, DAPC
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049
Phone: (614) 644-3696

Pursuant to Section 119.03 of the Ohio Revised Code, public hearings on these recommendations will be conducted on:

December 4, 2013 at 1:00 PM, at the Stark County Library, Sandy Valley Branch, 9754 Cleveland Ave SE., Magnolia, Ohio, 44643; and

December 5, 2013 at 10:30 AM, at the Southwest Ohio Air Quality Agency, 250 William Howard Taft Road, Cincinnati, Ohio, 45219.

All interested persons are entitled to attend or be represented at the hearing and give written or oral comments on these recommendations. All oral comments presented at

the hearing, and all written statements submitted at the hearing or to the above address by the close of business on December 5, 2013, will be considered by Ohio EPA prior to final action on these recommendations. Written statements submitted after December 5, 2013, may be considered as time and circumstances permit, but will not be part of the official record of the hearing.

The PM2.5 designation recommendation documentation is available on Ohio EPA DAPC's Web page for electronic downloading at: <http://www.epa.ohio.gov/dapc/SIP/2013.aspx>. Questions regarding accessing the web site should be directed to Arunee Niamlarb at 614-728-1342; other questions or comments about this document should be directed to Jennifer Van Vlerah at (614) 644-3696, Jennifer.dines@epa.state.oh.us or mailed to Jennifer Van Vlerah at the above address.

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OHIO ENVIRONMENTAL PROTECTION AGENCY
PUBLIC HEARING

-- -- -- -- -- :
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In Re: :
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Ohio EPA Redesignation 24 hour :
particulate matter 2.5 :
Stark County :
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Transcript of proceedings before the Ohio
Environmental Protection Agency, taken at the
Stark County Library, Sandy Valley Branch, 9754
Cleveland Avenue, S.E., Magnolia, Ohio, 44643, on
Wednesday, December 4, 2013, commencing at
1:24 p.m.

APPEARANCES:

- Darla Peelle, Hearing Officer
- Erika Fetty, Ohio EPA
- Kaitlyn Ruza, Ohio EPA

1 HEARING OFFICER: As I said, my name is
2 Darla Peelle and I am a public information
3 officer in Ohio EPA's Public Interest Center.
4 I will be presiding over today's hearing.
5 Thank you for taking the time to attend the
6 hearing.

7 The purpose of today's hearing is to
8 obtain comments from any interested person
9 regarding Ohio EPA's proposed action. Based
10 on air quality monitoring data, Ohio EPA plans
11 to recommend that U.S. EPA designate seven
12 counties, Cuyahoga, Jefferson, Hamilton,
13 Butler, Clermont, Montgomery and Stark, as
14 non-attainment under the new federal annual
15 particulate matter standard.

16 Close the door. Thank you.

17 U.S. EPA adopted a new, more stringent
18 annual particulate matter standard on December
19 14th, 2012. States must submit the
20 recommended non-attainment areas to U.S. EPA
21 by December 14th, 2013. U.S. EPA will
22 finalize non-attainment designations by
23 December 13th, 2014.

24 After the designations are effective,
25 the states will have three years to develop

1 plans and implement air pollution control
2 strategies to bring these areas into
3 compliance with the standard.

4 All interested persons are entitled to
5 attend or be represented, and to present oral
6 and/or written comments concerning the
7 proposed action. Comments received as a part
8 of this will be considered by Ohio EPA before
9 it submits its final recommendation to U.S.
10 EPA.

11 Written comments on the proposed action
12 should be e-mailed to
13 Jennifer.dines@epa.ohio.gov, or mailed to
14 Jennifer VanVlerah, Ohio EPA, Division of Air
15 Pollution Control, P.O. Box 1049, Columbus,
16 Ohio, 43216-1049. I can supply that
17 information to you at the end of the hearing.

18 Written statements submitted after
19 December 5th may be considered as time and
20 circumstances permit, but will not be part of
21 the official record of the hearing.

22 If you wish to present oral testimony
23 at today's hearing and haven't already signed
24 the registration sheet, please do so. Persons
25 will be called in the order in which they are

1 registered.

2 There is no cross-examination of
3 speakers or of representatives of Ohio EPA in
4 public hearings such as this. Ohio EPA
5 hearings provide citizens the opportunity to
6 submit comments on the official record.
7 Therefore, we will not be able to answer
8 questions during the hearing. However, Ohio
9 EPA staff may ask clarifying questions of the
10 person testifying to ensure that the record is
11 as complete and accurate as possible.

12 I will now read the names of those who
13 have signed in. If you wish to provide
14 testimony, please state and spell your name
15 for the record. Dan Slicker?

16 MR. SLICKER: I don't have any
17 testimony.

18 HEARING OFFICER: All right. Linda
19 Morckel?

20 MS. MORCKEL: I have no testimony.

21 HEARING OFFICER: Okay. The time is
22 now 1:27 and we will go off record for 30
23 minutes. Okay? Thank you.

24 (Off the record at 1:27 o'clock p.m.)

25 HEARING OFFICER: All right. I will

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say the time is now 1:55. Seeing there are no requests to provide testimony, this meeting is adjourned. Thank you for coming.

(Hearing concluded at 1:55 p.m.)

- - -

1 State of Ohio,)
2 County of Portage.) SS:
3

4 C E R T I F I C A T E

5 This certifies that the foregoing is a true
6 and correct transcript of the proceedings had
7 before the State of Ohio, Environmental
8 Protection Agency, at the Stark County
9 Library, Sandy Valley Branch, 9754 Cleveland
10 Avenue, S.E., Magnolila, Ohio 44643, on
11 Wednesday, December 4, 2013, commencing at
12 1:24 p.m.

13 In Re:

14 Ohio EPA Redesignation 24 Hour
15 Particulate Matter
16 Stark County
17
18
19

20 _____
COURT REPORTER

21 FINCUN-MANCINI COURT REPORTERS
22 1801 East Ninth Street
23 Suite 1720
24 Cleveland, Ohio 44114
25 (216) 696-2272
(216) 696-2275 FAX

OHIO ENVIRONMENTAL PROTECTION AGENCY

PUBLIC HEARING

Public Meeting held at 250 William Howard Taft
 Road, Cincinnati, Ohio on Thursday, December 5th,
 2013 at 10:31 a.m. before Jamie S. Hurley, Court
 Reporter and Notary Public within and for the State
 of Ohio.

Present:

Ms. Heidi Griesmer

Ms. Erica Fetty

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1 MS. GRIESMER: Okay. We'll go
2 ahead and get started. Good morning. My name is
3 Heidi Griesmer. I am a public information officer
4 for Ohio EPA. I will be presiding over today's
5 public hearing. Thank you for taking the time to
6 attend this hearing before Ohio EPA. The purpose
7 of the hearing today is to obtain comments from any
8 interested person regarding Ohio EPA's proposed
9 action.

10 USEPA adopted a new, more
11 stringent annual particulate matter standard on
12 December 14th, 2012. States must submit
13 recommended nonattainment areas to USEPA by
14 December 14th, 2013. The State of Ohio plans to
15 ask USEPA to revise the current air quality
16 designation for seven counties in Ohio, including
17 Cuyahoga, Stark, Jefferson, Hamilton, Butler,
18 Clermont, and Montgomery Counties, as these
19 counties are in nonattainment with the new
20 particulate matter standard.

21 USEPA will finalize nonattainment
22 destinations by December 13th, 2014. After the
23 destinations are effective, the State will have
24 three years to develop plans and implement air
25 pollution control strategies to bring these areas

1 into compliance with the standard. Comments can be
2 submitted until the close of business today,
3 December 5th, 2013. You may e-mail comments to,
4 J-E-N-N-I-F-E-R.D-I-N-E-S, @ EPA.Ohio.gov or mail
5 them to Jennifer Van Vlerah, Ohio EPA, Division of
6 Air Pollution Control, P.O. Box 1049, Columbus,
7 Ohio 43216-1049.

8 All interested persons are
9 entitled to be represented and present oral and/or
10 written comments concerning the proposed action.
11 All written and oral comments received as part of
12 the official record will be considered by the
13 director of Ohio EPA before the final decision is
14 made. Statements submitted after the comment
15 period closes may be considered as time and
16 circumstances permit but will not be part of the
17 official record of the hearing.

18 If you wish to present oral
19 testimony at the hearing today and have not already
20 signed the registration sheet, please do so at this
21 time. The sheet is available at the registration
22 table in the back. Persons will be called in the
23 order in which they have registered to see if they
24 would like to submit testimony. There is no
25 cross-examination of speakers or representatives of

1 Ohio EPA in hearings such as this.

2 Ohio EPA hearings provide citizens
3 the opportunity to submit comments on the official
4 record. Therefore, we will not be able to answer
5 questions during the hearing. However, Ohio EPA
6 staff may ask clarifying questions of the person
7 testifying to ensure the record is as complete and
8 accurate as possible.

9 We will now receive testimony.
10 First person listed is Andy Roth. Would you like
11 to -- the second person listed is John Paul. Would
12 you like to testify?

13 MR. PAUL: Yes, I would.

14 MS. GRIESMER: Okay.

15 MR. PAUL: Do you mind if I just
16 stay here? Can you hear me fine?

17 MS. GRIESMER: Yes.

18 MR. PAUL: Good morning. My name
19 is John Paul, and I am the Administrator of the
20 Regional Air Pollution Control Agency, RAPCA, a six
21 county local agency centered in Dayton, Ohio.
22 RAPCA is part of Public Health, Dayton and
23 Montgomery County and contracts with the health
24 departments of our five additional counties. As
25 such, the protection of public health is our

1 primary objective.

2 I am here today to testify on Ohio
3 EPA's proposed recommendation to USEPA Region 5 for
4 designation of Montgomery County as nonattainment
5 of the annual National Ambient Air Quality Standard
6 for PM-2.5. My testimony is intended to alert all
7 interested parties, Ohio EPA, USEPA, and others to
8 the fact that whereas the 2010 through 2012 data
9 indicate nonattainment of the standard, the 2011
10 through 2013 data, once certified, will show
11 attainment. Thus, whereas we agree with the
12 proposed recommendation at this time, we want to
13 alert interested parties to the fact that once the
14 2013 data are certified, we will be recommending
15 that the nonattainment proposal not go final. We
16 believe current air quality meets the annual
17 standard for PM-2.5.

18 RAPCA's adopted mission statement
19 is as follows: The primary mission of the Regional
20 Air Pollution Control Agency is to protect the
21 citizens of the Miami Valley from the adverse
22 health and welfare impacts of air pollution. This
23 is accomplished through the enforcement of federal,
24 state, and local air pollution control regulations
25 and through implementation of the state's

1 industrial permit system. RAPCA strives for
2 technical credibility and accountability in all
3 actions.

4 Agency personnel are mindful of
5 the mission statement and emphasize its
6 accomplishment through all our actions. RAPCA
7 staff operates 32 air quality monitors at 11
8 monitoring stations in five of our six counties.
9 Because of their small size, approximately 1/30th
10 of the average width of a human hair, PM-2.5
11 particles can lodge deeply into the lungs. The
12 major health effects of fine particulate matter
13 include reduced lung function, cough, wheeze,
14 missed school days due to respiratory symptoms,
15 increased use of asthma medications, cardiac
16 arrhythmias, strokes, emergency room visits,
17 hospital admissions, lung cancer, and premature
18 death.

19 Roughly one out of every three
20 people in the United States is at a higher risk of
21 experiencing PM-2.5 related health effects. One
22 group at high risk is active children because they
23 often spend a lot of time playing outdoors and
24 their bodies are still developing. In addition,
25 oftentimes the elderly population are at risk.

1 People of all ages who are active outdoors are at
2 increased risk because, during physical activity,
3 PM2.5 penetrates deeper into the parts of the lungs
4 that are more vulnerable to injury. The PM2.5
5 national ambient air quality standard is important,
6 and we want to emphasize the significance of
7 meeting and maintaining air quality levels below
8 the standard.

9 Sources of fine particulates
10 include all types of combustion activities, motor
11 vehicles, power plants, wood burning, et cetera,
12 and certain industrial processes. Some
13 particulates are formed in the air from the
14 chemical change of gases. They are indirectly
15 formed when gases from burning fuels react with
16 sunlight and water vapor. These can result from
17 fuel combustion in motor vehicles, at power plants,
18 and in other industrial processes. These emissions
19 can be transported long distances and thus are
20 regional in nature. Emissions can originate in
21 Indiana, Kentucky or other states further upwind
22 and cause or contribute to measured concentrations
23 within the Dayton area.

24 RAPCA staff have prepared an
25 analysis of the air quality data and the emissions

1 inventory for our six counties over the past
2 several years and will work with Ohio EPA staff to
3 supplement these data as necessary. We also have
4 looked closely at national inventories of those
5 pollutants that are transported across regions.
6 Our analysis shows a steady decrease in emissions
7 and a corresponding steady increase or improvement
8 in air quality over the years.

9 In fact, the 2013 data will show
10 the cleanest air quality measured over our
11 monitoring history of more than 40 years. As
12 stated above, attainment and maintenance of the
13 National Ambient Air Quality Standard is important
14 to the agency. In order to assure continued
15 maintenance of the standards, it is important to
16 document the sources of emissions and to assure
17 that enforceable controls are in place to limit
18 those emissions to levels that correspond to
19 healthy air quality.

20 Given the sources of fine
21 particulates and their precursors, direct PM, SO₂,
22 and NO_x, and given the ability of these emissions
23 to be transported over long distances, we are
24 active supporters of national rules on major
25 sources.

1 In fact, we believe that the
2 following national rules must be upheld by USEPA:
3 The Clean Air Interstate Rule, CAIR, or the Cross
4 State Air Pollution Rule, CSAPR, or a replacement
5 transport rule. The Utility Maximum Achievable
6 Control Technology, MACT, rule for Electric
7 Generating Units, EGUs. The Portland Cement
8 Maximum Achievable Control Technology rule. The
9 Industrial Boiler Maximum Achievable Control
10 Technology rule, and the Tier 3 Tailpipe and
11 Evaporative Emission and Vehicle Fuel Standards.

12 Each of these rules are under
13 various legal attacks but must be preserved for
14 current air quality, both for PM2.5 and ozone, to
15 be maintained. We urge Ohio EPA's support of these
16 rules.

17 Additionally, we support the
18 measures adopted by the Ohio legislature in 2008
19 under Senate Bill 221 and oppose the currently
20 proposed Ohio Senate Bill 58, which would roll back
21 many of the measures adopted regarding alternative
22 energy portfolios and energy efficiency standards.
23 Thus, we also urge Ohio EPA's opposition to the
24 passage of Senate Bill 58. The progress made
25 toward healthy air quality within the RAPCA region

1 and throughout Ohio over the past several decades
2 is remarkable.

3 RAPCA staff believe much of this
4 progress is due to the current suite of national
5 controls, especially those controls on Electric
6 Generating Units and motor vehicles. We pledge our
7 continued support of these national rules and urge
8 that Ohio EPA actively and publicly join in this
9 support.

10 In conclusion, we recognize that
11 Ohio EPA is proposing a nonattainment designation
12 for Montgomery County for the annual PM-2.5
13 standard based on air quality data for the
14 three-year period of 2010 to 2012. However, we
15 submit for the record our belief that once the 2013
16 air quality monitoring data are quality assured and
17 certified, the three year period of 2011 through
18 2013 will demonstrate attainment of the standard.
19 Thus, we ask that those data be considered for the
20 final designation and that the area remain
21 designated as attainment.

22 We recognize that with this
23 attainment designation comes a responsibility for
24 RAPCA to take appropriate measures to assure this
25 attainment is maintained into the future, and we

1 stand ready to take those measures. Thank you for
2 this opportunity to provide testimony. I'd be
3 happy to address any questions you may have.

4 MS. GRIESMER: Thank you. Megan
5 Hummel, would you like to testify?

6 MS. HUMMEL: No, I'm sorry. I'm
7 the HR Coordinator here. I just signed in.

8 MS. GRIESMER: Seeing that there's
9 no one else who wishes to provide testimony at this
10 time, we will go off the record and take a short
11 break just to make sure that nobody comes late. At
12 this time, it is 10:43, and we will be off the
13 record.

14 (WHEREUPON, a recess was taken.)

15 MS. GRIESMER: We are now on the
16 record. Seeing no further requests for testimony,
17 I will remind you that written comments can be
18 submitted through 5 p.m. today, December 5th, 2013.
19 Thank you for attending. The time is now 11 a.m.,
20 and this hearing is adjourned.

21 * * * * *

22 (Meeting concluded at 11:00 a.m.)

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C E R T I F I C A T E

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I, Jamie S. Hurley, a Court Reporter
and Notary Public do hereby certify that the
foregoing is a full, true and correct transcript of
my notes taken in the above-styled case and
thereafter transcribed by me.

JAMIE S. HURLEY

Testimony of
John A. Paul, Administrator
of the
Regional Air Pollution Control Agency—Dayton, Ohio
on
Ohio EPA's Proposed Request to USEPA Region 5
for
Designation of Montgomery County as Non-Attainment
for
The Annual PM-2.5 National Ambient Air Quality Standard (NAAQS)

December 5, 2013

Good morning. My name is John Paul, and I am the Administrator of the Regional Air Pollution Control Agency (RAPCA), a six-county local agency centered in Dayton. RAPCA is part of Public Health—Dayton and Montgomery County and contracts with the health departments of our five additional counties. As such, the protection of public health is our primary objective. I am here today to testify on Ohio EPA's proposed recommendation to USEPA Region 5 for designation of Montgomery County as nonattainment of the annual NAAQS for PM-2.5. My testimony is intended to alert all interested parties—Ohio EPA, USEPA, and others to the fact that whereas the 2010 thru 2012 data indicate nonattainment of the standard, the 2011 thru 2013 data, once certified, will show attainment. Thus, whereas we agree with the proposed recommendation at this time, we want to alert interested parties to the fact that once the 2013 data are certified, we will be recommending that the nonattainment proposal not go final. We believe current air quality meets the annual standard for PM-2.5.

RAPCA's adopted mission statement is as follows: "the primary mission of the Regional Air Pollution Control Agency is to protect the citizens of the Miami Valley from the adverse health and welfare impacts of air pollution. This is accomplished through the enforcement of federal, state, and local air pollution control regulations, and through implementation of the state's industrial permit system. RAPCA strives for technical credibility and accountability in all actions." Agency personnel are mindful of the mission statement and emphasize its accomplishment through all our actions. RAPCA staff operate 32 air quality monitors at 11 monitoring locations in 5 of our six counties.

Because of their small size (approximately 1/30th the average width of a human hair), PM-2.5 particles can lodge deeply into the lungs. The major health effects of fine particulate matter include reduced lung function, cough, wheeze, missed school days due to respiratory symptoms, increased use of asthma medications, cardiac arrhythmias, strokes, emergency room visits, hospital admissions, lung cancer, and premature death.

Roughly one out of every three people in the United States is at a higher risk of experiencing PM-2.5 related health effects. One group at high risk is active children because they often spend a lot of time playing outdoors and their bodies are still developing. In addition, oftentimes the elderly population are at risk. People of all ages who are active outdoors are at increased risk because, during physical activity, PM-2.5 penetrates deeper into the parts of the lungs that are more vulnerable to injury. The PM-2.5 national ambient air quality standard is important and we want to emphasize the significance of meeting and maintaining air quality levels below the standard.

Sources of fine particles include all types of combustion activities (motor vehicles, power plants, wood burning, etc.) and certain industrial processes. Some particulates are formed in the air from the chemical change of gases. They are indirectly formed when gases from burning fuels react with sunlight and water vapor. These can result from fuel combustion in motor vehicles, at power plants, and in other industrial processes. These emissions can be transported long distances and thus are regional in nature. Emissions can originate in Indiana, Kentucky, or other states further upwind and cause or contribute to measured concentrations within the Dayton Area.

RAPCA staff have prepared an analysis of the air quality data and the emissions inventory for our six counties over the past several years and will work with Ohio EPA staff to supplement these data as necessary. We also have looked closely at national inventories of those pollutants that are transported across regions. Our analysis shows a steady decrease in emissions and a corresponding steady increase in air quality over the years. In fact, the 2013 data will show the cleanest air quality measured over our monitoring history of more than 40 years.

As stated above, attainment and maintenance of the NAAQS is important to the agency. In order to assure continued maintenance of the standards, it is important to document the sources of emissions and assure that enforceable controls are in place to limit those emissions to levels that correspond to healthy air quality. Given the sources of fine particulates and their precursors (direct PM, SO₂, and NO_x), and given the ability of these emissions to be transported over long distances, we are active supporters of national rules on major sources. In fact we believe that the following national rules must be upheld by USEPA:

- The Clean Air Interstate Rule (CAIR) or the Cross State Air Pollution Rule (CSAPR) or a replacement transport rule.
- The Utility Maximum Achievable Control Technology (MACT) rule for Electric Generating Units (EGUs).
- The Portland Cement MACT.
- The Industrial Boiler MACT.
- The Tier 3 Tailpipe and Evaporative Emission and Vehicle Fuel Standards.

Each of these rules are under various legal attacks, but must be preserved for current air quality (both for PM-2.5 and ozone) to be maintained. We urge Ohio EPA's support of these rules.

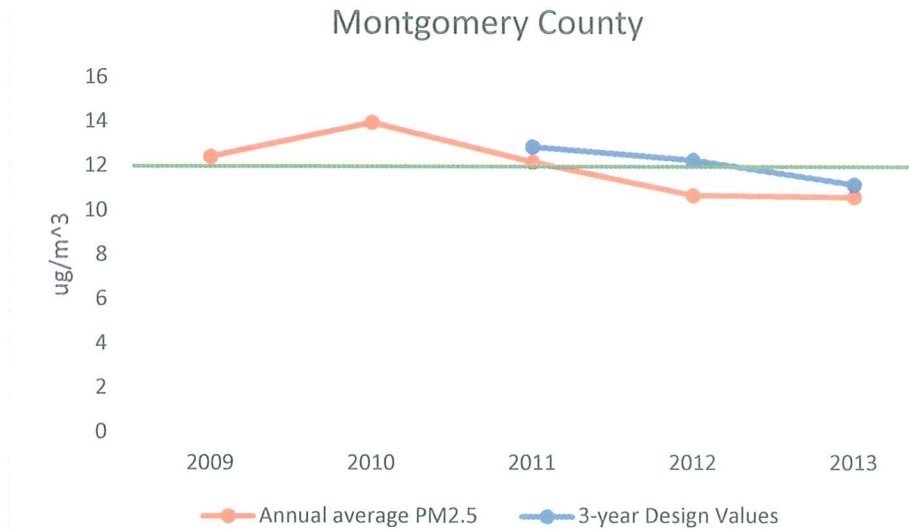
Additionally, we support the measures adopted by the Ohio legislature in 2008 under Senate Bill 221 and oppose the currently propose Ohio Senate Bill 58, which would roll back many of the measures adopted regarding alternative energy portfolios and energy efficiency standards. Thus, we urge Ohio EPA's opposition to the passage of SB 58.

The progress made toward healthy air quality within the RAPCA region and throughout Ohio over the past several decades is remarkable. RAPCA staff believe much of this progress is due to the current suite of national controls, especially those controls on Electric Generating Units and motor vehicles. We pledge our continued support of these national rules and urge that Ohio EPA actively and publically join in this support.

In conclusion, we recognize that Ohio EPA is proposing a nonattainment designation for Montgomery County for the annual PM-2.5 standard based on air quality data for the three-year period of 2010-2012. However we submit for the record our belief that once the 2013 air quality monitoring data are quality assured and certified, the three year period of 2011-2013 will demonstrate attainment of the standard. Thus, we ask that those data be considered for the final designation and that the area remain designated attainment. We recognize that with this attainment designation comes a responsibility for RAPCA to take appropriate measures to assure this attainment is maintained into the future. We stand ready to take these measures.

Thank you for this opportunity to provide testimony. I will be happy to address any questions you might have.

Montgomery County (RAPCA) PM2.5



	Annual average PM2.5	3-year Design Value period	3-year Design Values
2009	12.428		
2010	13.968		
2011	12.179	2009 - 2011	12.9
2012	10.676	2010 - 2012	12.3
2013 to date (Jan thru Oct)	10.597	2011 - 2013	11.2

While the 2013 data is still incomplete (10 months), it is possible to estimate what would be required for PM2.5 measurements in November and December 2013 to return the Montgomery County monitor to violating status.

First, based on the 2011 and 2012 annual average PM2.5, it would require 2013 annual average to be around 13.3 ug/m³ to raise the 3-year DV to 12.05.

$$(12.179 + 10.676 + X) / 3 = 12.05$$

X = 2013 annual average = **13.295 ug/m³ required to violate**

Given the 2013 10-month average is only 10.597 ug/m³, it would require extraordinarily high PM2.5 levels in November and December 2013 to reach the **13.295 ug/m³ required to violate**

$$(10(10.597) + 2Y) / 12 = 13.295 \text{ ug/m}^3 \text{ required to violate}$$

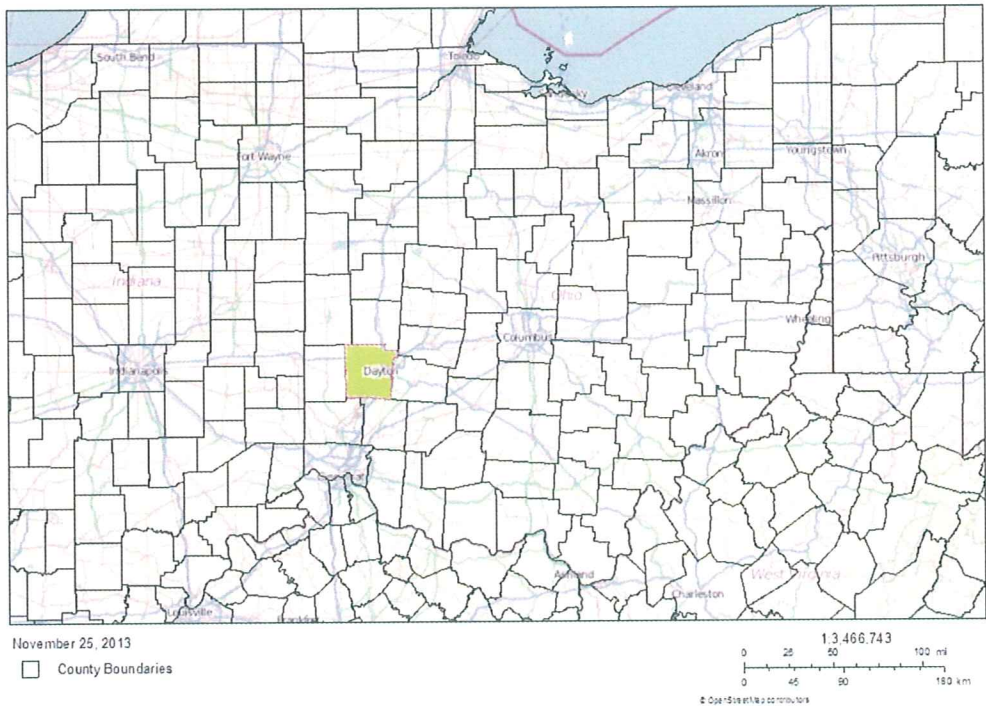
Y = Nov and Dec 2013 average PM2.5 = **26.785 ug/m³ required to violate**

This is deemed exceedingly unlikely.

NOTE this incorrect statement on the bottom of page 30 in current recommendation document:
“Counties to the north are part of the historical Dayton-Springfield PM2.5 nonattainment area which is attaining the newly revised standard.”

Dayton-Springfield, OH

Figure ##: Dayton-Springfield, OH Recommended Nonattainment Area

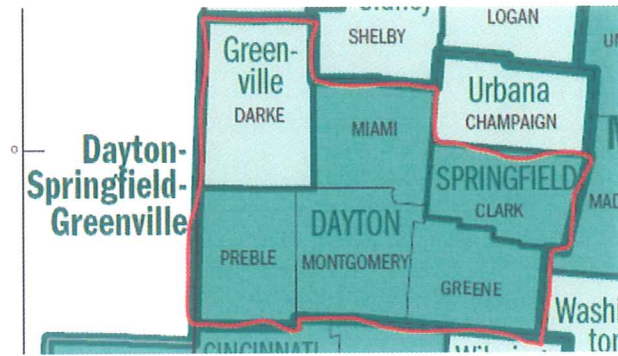


Discussion

There are three Ohio counties in this historic PM2.5 nonattainment area: Clark, Greene, and Montgomery counties. Ohio EPA recommends designating only Montgomery County as nonattainment for the annual PM2.5 NAAQS. After considering the five factors, Ohio EPA does not recommend adding any additional contributing counties.

There is one violating monitor in Montgomery County, and three non-violating monitors in Clark, Greene, and Preble counties (one per county). The Dayton-Springfield-Greenville CSA includes the following additional counties: Darke and Miami.

Figure ##: Dayton-Springfield-Greenville CSA

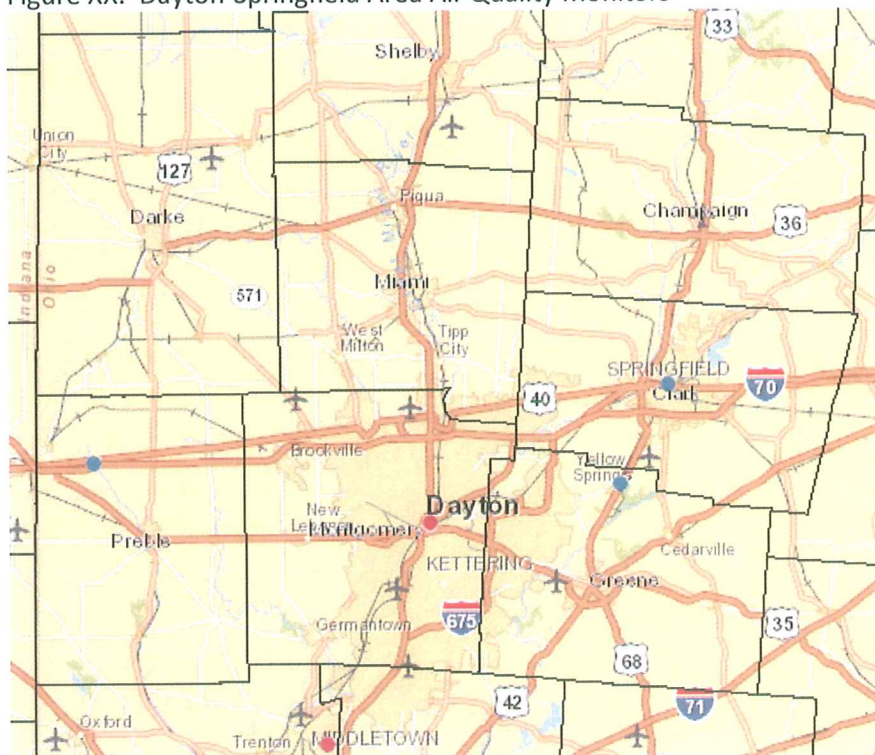


Ohio EPA will not be analyzing any additional adjacent counties to the CSA counties. Counties to the south are part of the Cincinnati-Middletown-Wilmington CSA and they have been addressed elsewhere in this document. Counties to the east, north and south are rural and border Dayton-Springfield-Greenville CSA counties that are rural or non-violating counties or both.

Factor 1: Air Quality

There are four PM2.5 monitors in this area.

Figure XX: Dayton-Springfield Area Air Quality Monitors



Only the Montgomery County monitor 39-113-0032 is violating the standard based on 2010 to 2012 air quality data. The other three monitors in the CSA are all non-violating monitors. As can be seen from Table 1, PM2.5 concentrations have declined in this area. We emphasize that the downward trend continues in 2013, with the average PM2.5 at all monitors for 2013 to date well below the standard.

Table YY: Annual average PM2.5 (ug/m3) for Dayton-Springfield area Monitors

Site	County				Average
		2010	2011	2012	'10 – '12
39-023-0005	Clark	13.1	12.3	10.4	11.9
39-057-0005	Greene	13.2	11.3	9.6	11.4
39-113-0032	Montgomery	14.0	12.1	10.7	12.3
39-135-1001	Preble	12.0	10.9	9.3	10.7

Insufficient data

Violating monitor

There are two PM2.5 speciation monitors in this area. The Montgomery County speciation monitor is collocated with the violating monitor at 39-113-0032. The Preble County speciation monitor is collocated with the non-violating monitor at 39-135-1001.

Table YY: Dayton-Springfield Area Speciation Monitors

NOTE – this data is not in the cnspeciationdata2010-2012.xlsx spreadsheet provided. Only data for Franklin (390490081) and Hamilton (390610040).

Note I did contact Beth Palma and obtained SANDWICH data for the Montgomery 39 113 0032 speciation monitor and Preble 39 135 1001 speciation monitor. They aren't on the designations tool because they didn't meet their completeness criteria. Attached is her spreadsheet, edited down to just Ohio speciation data.

However, similar data is available in the pm25designvalues2010-2012withurbanincrements.xlsx spreadsheet and is shown here following the format in your Table 12.

2010-2011 AVG.		PM2.5 Total	PM2.5 Total UI	Org. Carbon	OC UI	Elem. Carbon	EC UI	Nitrate	Nitrate UI	Sulfate	Sulfate UI	Crust	Crust UI
Montgomery	Q1	15.2	5.7	4.9	2.6	0.5	0.0	4.9	3.0	4.5	0.0	0.3	0.0
County	Q2	11.0	1.7	4.4	0.3	0.8	0.1	0.5	0.4	4.7	0.8	0.6	0.1
39-	Q3	14.3	1.5	6.2	0.6	0.8	0.2	0.0	0.0	6.8	0.7	0.4	0.0
113-	Q4	11.6	3.0	4.8	1.6	0.9	0.2	2.1	1.2	3.4	0.0	0.5	0.0
0032	Ann.	13.0	3.0	5.1	1.3	0.8	0.1	1.9	1.2	4.9	0.4	0.5	0.0

As can be seen from these data, Organic Carbon and Sulfate are the dominant contributors to PM2.5 in Montgomery County on an annual basis. However, some significant seasonality is also evident. In the cool season quarters (Q1 – January February March and Q4 – October November December), nitrate is a large contributor to total PM2.5 mass. In the cool season quarters, urban increment is also much larger, due to the prevalence of local inversions. Conversely, atmospheric conditions favors sulfate and organic carbon PM2.5 formation in the warm season quarters (Q2 April – June and Q3 July – September) and a much lower urban increment. Therefore, local reductions of NOx emissions and regional reductions of SO2 emissions should figure prominently in PM2.5 NAAQS attainment strategies.

Factor 2: Emissions and emission related data

As the sole recommended nonattainment county, Montgomery County alone accounts for very large fractions of the PM2.5 primary and precursor emissions in the Dayton-Springfield-Greenville CSA.

TABLE YYY: Montgomery County 2008 source sector emissions percent of total CSA emissions

Montgomery	PM2.5	OC	EC	NOx	Nitrate	SO2	Sulfate	NH3	VOC	Other
% of CSA	33%	41%	42%	45%	29%	68%	52%	6%	42%	24%

Clearly in most cases Montgomery County dominates emissions in the CSA. Of all primary and precursor pollutants, only NH3 is emitted in lesser quantities than another county in the CSA (Darke). This is due to the high level of agricultural and animal husbandry activities in the rural Darke County.

Detailed emission tables for each county in the CSA are shown below. Most emissions data are for 2008, but the Point 2011 data are included. Large reductions in NOx and SO2 Point source emissions are evident in Montgomery and Greene counties due to source shutdowns or fuel switching or improved controls. This trend is expected to continue.

Montgomery	PM2.5	OC	EC	NOx	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point 2011	182.6	n/a	n/a	1,611.0	n/a	2,368.0	n/a	7.2	727.2	n/a
Point 2008	383.9	25.1	34.4	2,678.7	0.8	4,776.0	46.8	3.2	1,187.6	397.0
Nonpoint	2,484.2	950.2	104.2	2,598.6	4.4	642.6	37.1	570.7	11,242.9	2,660.9
Nonroad	188.3	51.0	106.4	2,562.0	0.3	44.9	1.0	2.6	1,942.3	29.7
Onroad	509.6	163.3	241.8	11,834.0	0.7	63.4	4.1	254.4	6,436.4	99.7
Fire	0	0	0	0	0	0	0	0	0	0
Total 2008	3,566.0	1,189.5	486.8	19,673.4	6.2	5,526.9	88.6	830.9	20,809.2	3,187.3

Clark	PM2.5	OC	EC	NOx	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point 2011	17.7	n/a	n/a	17.6	n/a	5.1	n/a	5.2	99.1	n/a
Point 2008	12.4	2.2	1.7	13.4	0.1	1.9	1.2	0.4	199.1	11.6
Nonpoint	1,283.6	383.0	58.9	942.4	2.8	154.3	15.2	737.1	3,828.2	1,769.2
Nonroad	54.7	13.7	33.3	693.1	0.1	12.3	0.3	0.6	526.9	7.4
Onroad	173.5	55.9	85.6	4,229.1	0.2	19.0	1.2	81.9	2,049.7	30.5
Fire	0	0	0	0	0	0	0	0	0	0
Total 2008	1,524.2	454.8	179.5	5,878.0	3.2	187.6	17.9	820.1	6,603.9	1,818.6

Greene	PM2.5	OC	EC	NOx	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point 2011	135.0	n/a	n/a	1,518.1	n/a	1,132.7	n/a	24.2	26.8	n/a
Point 2008	121.9	11.9	3.5	2,400.5	1.7	1,822.1	15.0	2.7	18.8	149.1
Nonpoint	1,173.6	289.9	27.2	656.7	1.9	136.6	9.6	757.2	4,224.3	1,639.6
Nonroad	75.1	18.8	45.9	863.7	0.1	17.9	0.2	0.9	617.4	10.2
Onroad	147.0	45.5	73.1	3,331.5	0.2	18.7	1.1	73.5	1,599.3	27.1
Fire	3.4	1.7	0.4	0.9	0.0	0.4	0.0	0.6	8.5	1.3
Total 2008	1,521.0	367.7	150.0	7,253.2	3.9	1,995.7	25.9	834.9	6,468.4	1,827.2

Miami	PM2.5	OC	EC	NOx	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point 2011	74.6	n/a	n/a	33.7	n/a	0.8	n/a	0.8	121.3	n/a
Point 2008	0.4	0.1	0.2	2.1	0.0	0.2	0.0	0.0	27.6	0.1
Nonpoint	1,248.8	320.9	51.4	962.3	2.6	163.6	14.9	1,137.1	4,085.8	1,895.5
Nonroad	58.1	14.7	34.9	752.1	0.1	12.6	0.3	0.7	518.6	8.0
Onroad	112.8	35.6	56.5	3,103.4	0.2	13.1	0.8	54.4	1,614.1	19.8
Fire	1.4	0.7	0.2	0.4	0.0	0.2	0.0	0.2	3.5	0.5
Total 2008	1,421.5	372.0	143.2	4,820.3	2.8	189.7	16.1	1,192.5	6,249.6	1,923.9

Darke	PM2.5	OC	EC	NOx	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point 2011	31.0	n/a	n/a	210.4	n/a	13.9	n/a	3.2	124.5	n/a
Point 2008	3.9	0.8	2.8	121.7	0.0	1.0	0.1	0.1	89.2	0.4
Nonpoint	1,618.2	271.7	40.9	777.0	2.8	78.9	12.4	8,205.6	4,083.4	2,781.2
Nonroad	54.9	11.4	38.4	635.1	0.1	11.8	0.2	0.5	271.8	4.8
Onroad	45.0	15.1	21.7	1,329.4	0.1	5.2	0.3	24.9	735.0	7.9
Fire	0	0	0	0	0	0	0	0	0	0
Total 2008	1,722.0	299.0	103.7	2,863.2	3.0	96.9	13.0	8,231.1	5,179.4	2,794.3

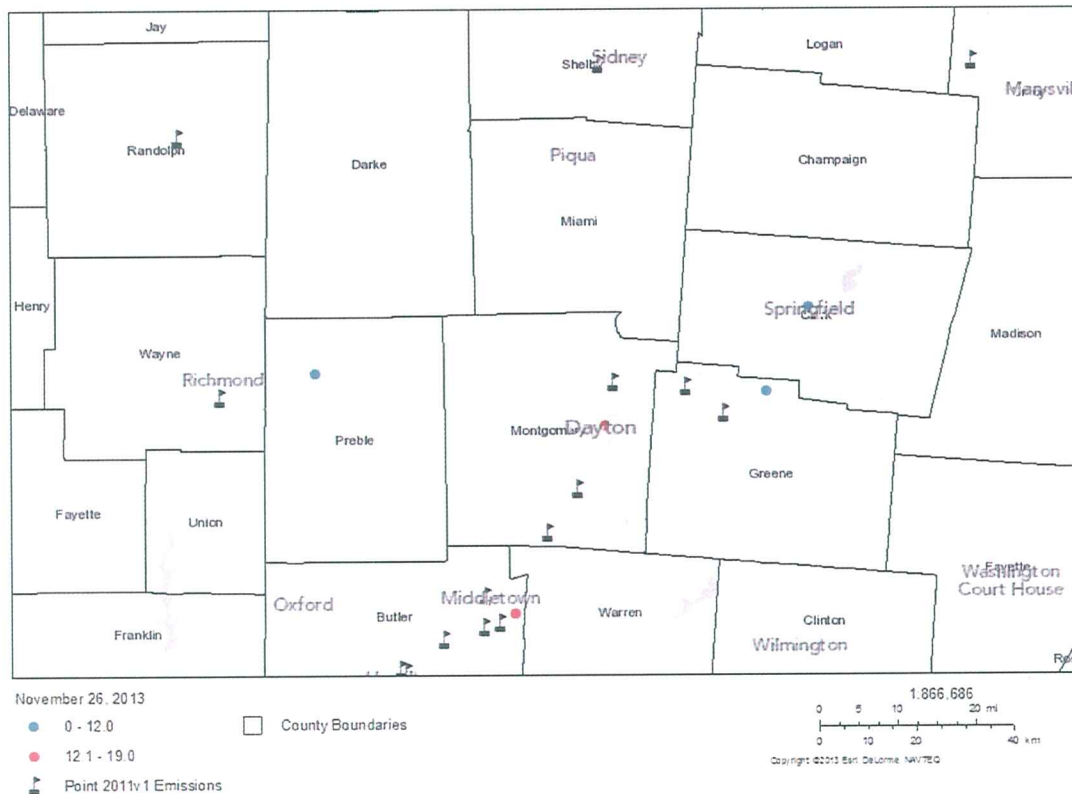
Preble	PM2.5	OC	EC	NOx	Nitrate	SO2	Sulfate	NH3	VOC	Other
Point 2011	8.0	n/a	n/a	2.6	n/a	0.2	n/a	0	60.3	n/a
Point 2008	0.1	0.0	0.1	0.6	0.0	0.0	0.0	0	26.0	0.0
Nonpoint	927.7	209.0	39.3	606.7	2.0	70.3	9.8	1,178.6	3,703.6	1,493.7
Nonroad	37.4	8.9	23.8	405.5	0.1	7.5	0.1	0.4	304.3	4.5
Onroad	61.1	18.7	33.5	1,818.4	0.1	5.8	0.4	27.5	734.8	8.5
Fire	0	0	0	0	0	0	0	0	0	0
Total 2008	1,026.3	236.6	96.6	2,831.2	2.1	83.7	10.3	1,206.4	4,768.6	1,506.8

Summary table of total 2008 source sector emissions.

2008 TOTALS	PM2.5	OC	EC	NOx	Nitrate	SO2	Sulfate	NH3	VOC	Other
MONTGOMERY	3,566.0	1,189.5	486.8	19,673.4	6.2	5,526.9	88.6	830.9	20,809.2	3,187.3
Clark	1,524.2	454.8	179.5	5,878.0	3.2	187.6	17.9	820.1	6,603.9	1,818.6
Greene	1,521.0	367.7	150.0	7,253.2	3.9	1,995.7	25.9	834.9	6,468.4	1,827.2
Miami	1,421.5	372.0	143.2	4,820.3	2.8	189.7	16.1	1,192.5	6,249.6	1,923.9
Darke	1,722.0	299.0	103.7	2,863.2	3.0	96.9	13.0	8,231.1	5,179.4	2,794.3
Preble	1,026.3	236.6	96.6	2,831.2	2.1	83.7	10.3	1,206.4	4,768.6	1,506.8
TOTAL CSA	10,780.9	2,919.6	1,159.8	43,319.3	21.2	8,080.6	171.8	13,115.9	50,079.0	13,058.0

As seen in Table XX below, there are five large (> 500 tpy PM precursor emissions in 2011) point sources in the Dayton-Springfield-Greenville CSA.

2011 POINT	FACILITY NAME	PM2.5	NOx	SO2	NH3	VOC
MONTGOMERY	DP&L O.H. Hutchings Generating Station	26.6	220.0	648.7	0.7	1.4
MONTGOMERY	Appleton Papers Inc.	57.9	538.3	937.6	1.0	23.8
MONTGOMERY	Cargill Inc.	55.2	468.3	747.1	1.4	356.9
Greene	Wright-Patterson Air Force Base	99.1	336.0	918.1	0.2	5.9
Greene	CEMEX Construction Materials Atlantic, LLC	33.6	1,175.0	213.1	23.9	0



Both DP&L Hutchings and Appleton Papers are south-southwest of the violating monitor, at distances of 19 km and 11 km, respectively. It should be noted that DP&L Hutchings ceased burning coal in September 2012 and Appleton Papers ceased burning coal in June 2012. While largely due to market conditions, these shutdowns are expected to be enforceable in the near future.

Cargill, WPAFB and CEMEX are west or southwest of the non-violating monitors in Greene and Clark counties, at distances ranging from 7 km to 30 km from the non-violating monitors. It should be noted that WPAFB announced in July 2013 that a permit to construct gas-fired boilers was obtained. They will be converting or shutting down all existing coal-fired boilers at WPAFB by January 2016.

Level of control of emission sources

In Dayton-Springfield area, the emission reduction programs which have had or will have the greatest potential impact on PM2.5 concentrations are:

- on-road and off-road diesel control programs in conjunction with ultra-low sulfur diesel fuel requirements
- NOx trading program
- Clean Air Interstate Rule (CAIR)
- Ohio Clean Diesel Initiatives
- Mercury and Air Toxics Standards (MATS)
- Industrial Boiler MACT

CAIR and MATS regulate electric generating units (EGUs, or power plants). CAIR is the program which will bring about largest reductions in precursor or primary emissions of any of the PM2.5 species (sulfates, nitrates, organic carbon, elemental carbon and crustal). Compliance with the MATS rule will also lead to additional reductions in precursor species, in particular, sulfur dioxide.

The Industrial Boiler MACT played a large role in Appleton Papers and WPAFB decisions to cease burning coal, leading to SO2 reductions.

In addition, many of the large Ohio utilities that contribute to regional SO2 and sulfate are shutting down or adding controls or repowering with natural gas.

Urbanization, population and commuting trends

The following table provides a summary of 2010 population and VMT for each of the counties that are discussed in this section.

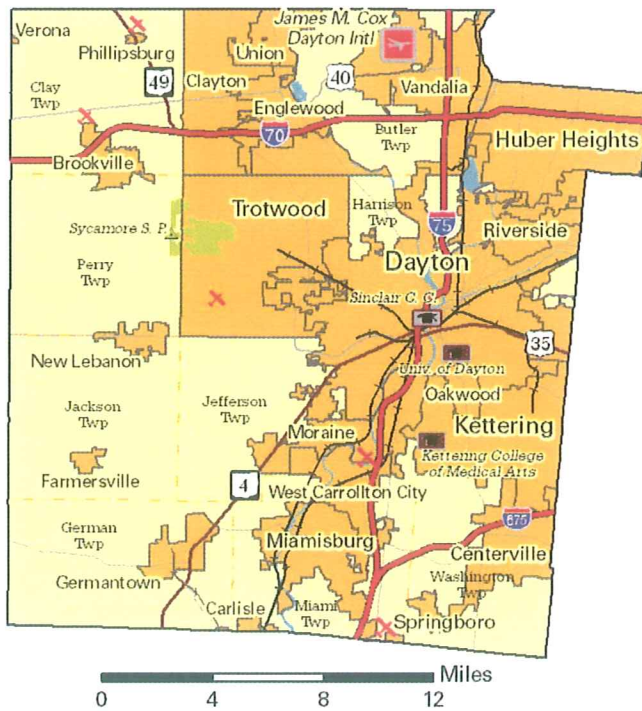
2010	VMT	Population	Land Area (sq miles)	Population Density (1,000 per sq mile)
MONTGOMERY	5,280,882,633	559,062	462	1.21
Clark	1,611,832,319	144,742	400	0.36
Greene	1,582,905,852	147,886	415	0.36
Miami	1,128,090,712	98,868	407	0.24
Darke	482,564,788	53,309	600	0.09
Preble	511,464,251	42,337	425	0.10
TOTALS	10,597,740,555	1,046,204	2,708	0.39

Degree of urbanization and population trends

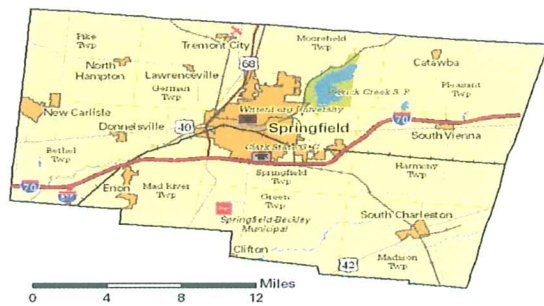
As can be seen in the table, Montgomery County is by far the most populous and urbanized county in the CSA. In Ohio as a whole (88 counties) it ranks #5 in VMT, #4 in population, and #6 in population density. As a result, and as noted above in Table , Montgomery County dominates anthropogenic emissions of PM2.5 and PM2.5 precursors in the CSA.

Figure XX: Dayton-Springfield Analysis Area County Profiles

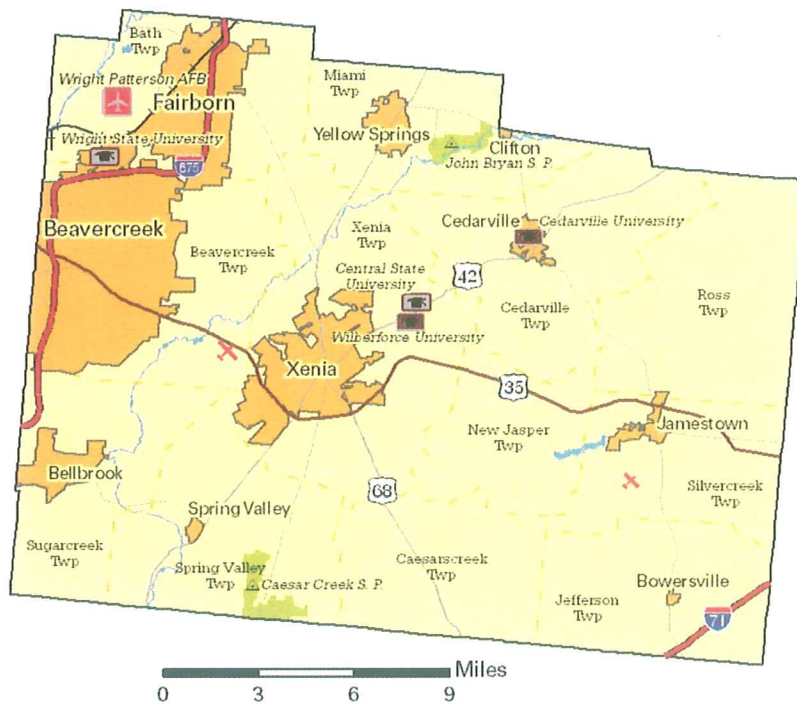
Montgomery County is 43% urban, 33% cropland and 18% forest. Dayton is the largest city with population 141,527 (2010). The county population in 2010 was 535,153 and is estimated 534,325 for 2012. Population has been declining since 1970, and is expected to continue to decline to 513,830 by 2020.



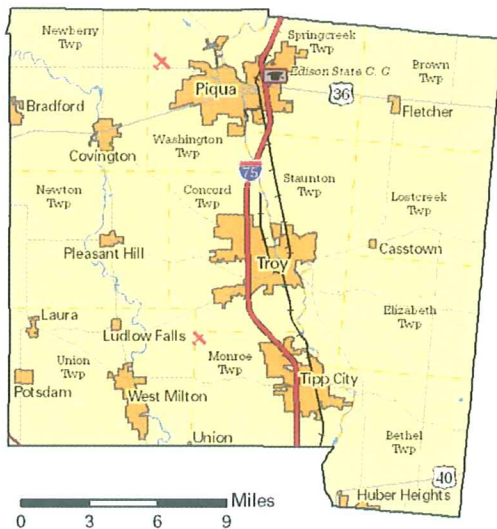
Clark County is 21% urban, 57% cropland, and 13% forest. Springfield is the largest city with population 60,608 (2010). The county population in 2010 was 138,333 and is estimated 137,206 for 2012. Population has been declining since 1970, and is expected to continue to decline to 133,240 by 2020.



Greene County is 22% urban, 56% cropland, and 15% forest. Beavercreek is the largest city with population 45,193 (2010). The county population in 2010 was 161,573 and is estimated 163,587 for 2012. In contrast to Montgomery and Clark counties, population is expected to increase to 164,940 by 2020.



Miami County is 13% urban, 64% cropland, and 19% forest. Troy is the largest city with population 25,058 (2010). The county population in 2010 was 102,506 and is estimated 103,060 for 2012. Population is expected to remain fairly steady at 102,590 by 2020.



Darke County is 2% urban, 83% cropland, and 10% forest. Greenville is the largest city with population 13,227 (2010). The county population in 2010 was 52,959 and is estimated 52,507 for 2012. Population is expected to decline slightly to 51,270 by 2020.

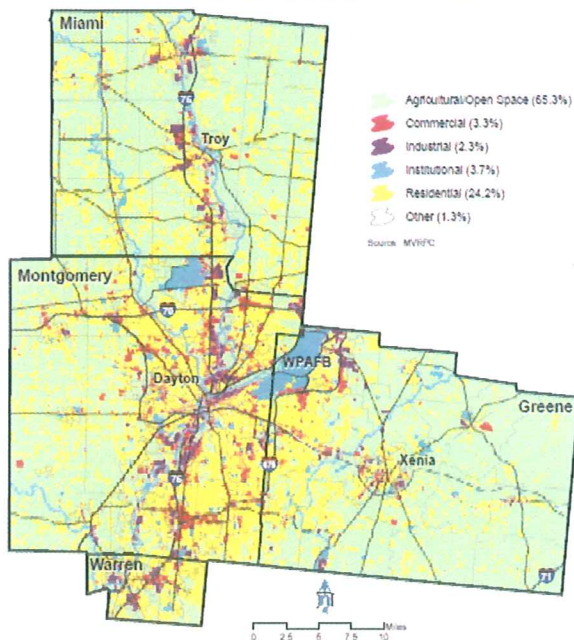


Preble County is 6% urban, 67% cropland, and 17% forest. Eaton is the largest city with population 8,407 (2010). The county population in 2010 was 42,270 and is estimated 41,886 for 2012. Population is expected to remain essentially the same at 42,060 by 2020.



Overall, the Dayton-Springfield analysis area is approximately 18% urban, 66% cropland, and 16% forest. This is depicted in the following RPO regional land use map for three of the six counties in the area.

Figure 4. Regional Land Use/Land Cover Map - 2007



Source: <http://docs.mvrpc.org/rlu/Ph1ExecSummary/2-PhysicalConditionAssessment.pdf>

Commuting Trends

	# of workers living in county	% of workers living in /working out county	# of workers working in county	% of workers living out / working in county
Clark	60,448	34.5%	50,810	22.0%
Darke	24,233	38.5%	19,063	21.8%
Greene	77,386	42.8%	79,916	44.6%
Miami	48,727	38.7%	42,905	30.4%
MONTGOMERY	238,542	21.0%	263,040	28.4%
Preble	19,892	52.4%	12,389	23.6%

Compared to the attainment counties in the Dayton-Springfield area, levels of commuting in Montgomery County are fairly low. Greene County's rates are high due to the presence of the large federal installation Wright-Patterson Air Force Base.

Nevertheless, as a regional center for manufacturing and commerce, Montgomery County does draw significant numbers of workers from the surrounding area. Several thousands of workers (a few percent) commute between Butler and Hamilton counties and Montgomery County.

Number of workers living in Montgomery County 238,542

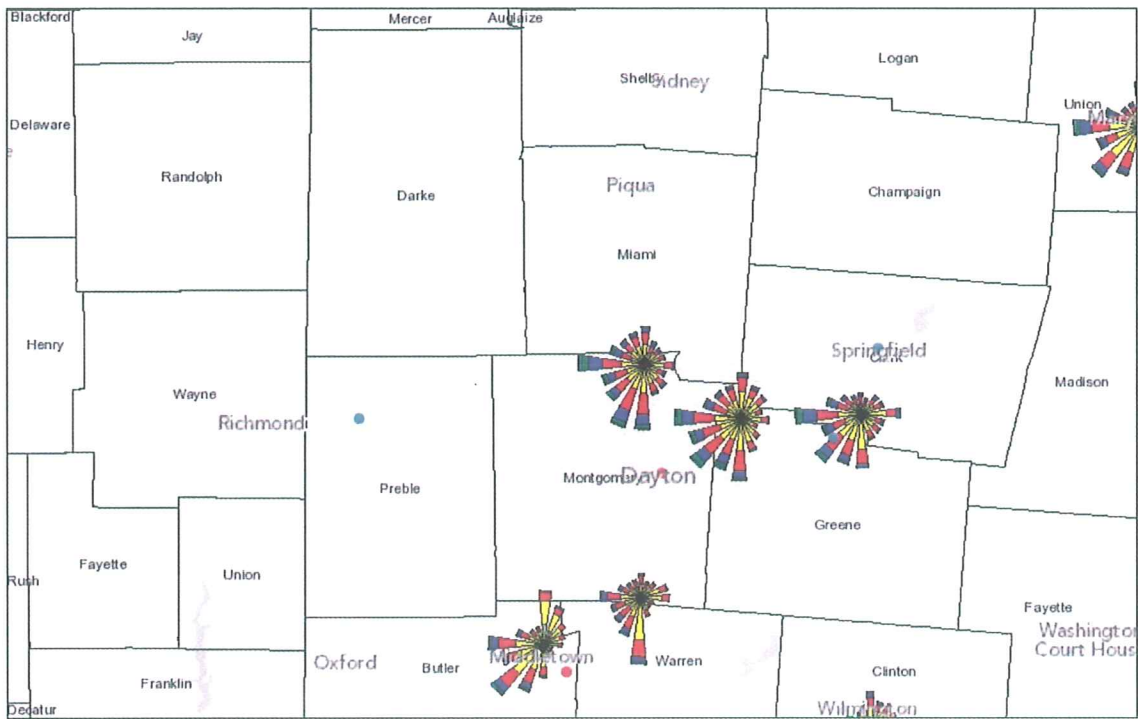
Commute Out To	Number	Percent of workers living in Montgomery County
Greene Co. OH	23,035	9.7%
Warren Co. OH	5,790	2.4%
Miami Co. OH	4,404	1.8%
Butler Co. OH	3,709	1.6%
Hamilton Co. OH	3,293	1.4%
Clark Co. OH	2,827	1.2%
Franklin Co. OH	994	0.4%
Preble Co. OH	989	0.4%
Clinton Co. OH	418	0.2%
Darke Co. OH	407	0.2%
Shelby Co. OH	365	0.2%
Clermont Co. OH	226	0.1%
SUBTOTAL	46,457	19.5%

Number of workers working in Montgomery County 263,040

Commute In From	Number	Percent of workers working in Montgomery County
Greene Co. OH	24,126	10.1%
Warren Co. OH	12,867	5.4%
Miami Co. OH	10,109	4.2%

Clark Co. OH	7,004	2.9%
Butler Co. OH	4,537	1.9%
Preble Co. OH	4,067	1.7%
Darke Co. OH	2,245	0.9%
Hamilton Co. OH	1,632	0.7%
Franklin Co. OH	729	0.3%
Shelby Co. OH	668	0.3%
Clinton Co. OH	631	0.3%
Champaign Co. OH	628	0.3%
SUBTOTAL	69,243	26.3%

Factor 3: Meteorology



November 26, 2013



US EPA CARMAP/SAGAD
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FACTOR 4: Geography/topography

This analysis area does not have any geographical or topographical barriers significantly affecting air pollution transport. Therefore, this factor does not play a role in the analysis of this area.

FACTOR 5: Jurisdictional boundaries

Clark, Greene and Montgomery counties were designated as nonattainment counties for the 1997 annual PM2.5 standard as part of the Dayton-Springfield nonattainment area. However, they were recently redesignated as attainment (78 FR 45135) for that standard. The entire area has been designated attainment for the 2008 ozone standard.

The Miami Valley Regional Planning Commission (MVRPC) and the Clark County-Springfield Transportation Coordinating Committee (Clark TCC) are the MPOs for the Dayton-Springfield area.

Conclusion

Montgomery, Clark and Greene have historically been part of the Dayton-Springfield nonattainment area. They are the most populous of the CSA counties and have the highest emissions and VMT.

However, Montgomery County has been shown to have the lion's share of the area's emissions and hosts the only PM2.5 monitor with design value above the standard in 2010 – 2012. Considering all six counties in this analysis area, Montgomery County alone accounts for 33% of direct PM2.5, 45% of NOx and 68% of SO2.

We note that there is an ongoing trend of PM2.5 and PM2.5 precursor emissions reductions, with concomitant reductions in monitored PM2.5 levels. We anticipate revising the nonattainment recommendation for Montgomery County when the design value 2011- 2013 showing attainment is calculated from certified 2011 – 2013 monitoring data.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 88TH AIR BASE WING
WRIGHT-PATTERSON AIR FORCE BASE OHIO

5 Dec 13

Mr. Raymond Baker
Chief, Environmental Branch
88 ABW/CEIE
1450 Littrell Road
Wright-Patterson AFB OH 45433

Ms. Jennifer Van Vlerah
Ohio Environmental Protection Agency, DAPC
Lazarus Government Center
PO Box 1049
Columbus OH 43216-1049

RE: Comments Regarding Ohio EPA Recommended Designation of Nonattainment Area Boundaries for the 2012 Annual PM_{2.5} National Ambient Air Quality Standard (NAAQS)

Dear Ms. Van Vlerah

Wright-Patterson AFB is pleased to submit comments regarding Ohio EPA's recommended designation of nonattainment boundaries for the 2012 annual PM_{2.5} NAAQS. The base is located in Greene and Montgomery counties, which are part of the Dayton-Springfield Metropolitan Air Quality Control Region. Wright-Patterson AFB is the largest single site employer in the state of Ohio with over 6,200 active duty Air Force personnel and over 12,000 civilian employees and contractors, and is a significant economic presence in Dayton-Springfield, supporting a multitude of small businesses and community organizations throughout the region.

Wright-Patterson AFB supports Ohio EPA's recommendation to designate Greene County to attainment/unclassifiable for the 2012 annual PM_{2.5} NAAQS, but would like to offer an alternative approach for determining the Montgomery County PM_{2.5} design value. For the past fifteen years, the Dayton-Springfield area has demonstrated steady progress in reducing PM_{2.5} pollution, which resulted in re-designating the area to attainment for the 1997 annual PM_{2.5} NAAQS effective September 26, 2013. As shown on the attached table, the five major sources of sulfur dioxide in Montgomery and Greene counties have collectively reduced sulfur dioxide emissions by 47% and nitrogen oxides by 43% from 2008 through 2011 (Note: sulfur dioxide and nitrogen oxides are precursors of PM_{2.5}). These area emission reductions are, for the most part, the result of permanent operational changes or unit shutdowns which will leave only one operating coal-fired industrial boiler in the Dayton-Springfield region by spring of 2016.

Wright-Patterson AFB has committed to further reduce future area PM_{2.5} pollution levels by changing from coal to natural gas combustion at both of our main central heating plants by January 2016. Through federally enforceable air permit terms, the base will reduce annual emissions by over 1,000 tons of sulfur dioxide, 200 tons of nitrogen oxides, and 5 tons of particulate emissions within the next two years. Additionally, Wright-Patterson AFB will continue to proactively implement energy programs designed to promote efficiency and reduce fuel consumption.

Ohio EPA has selected the calendar years 2010 through 2012 for the three-year averaging period to determine the Montgomery County annual PM_{2.5} NAAQS design value. The annual quality assured monitoring data are 14.0, 12.1, and 10.7 µg/m³ for each year respectively, averaged together for 12.3 µg/m³ design value. Wright-Patterson AFB believes that the significant reduction of monitored PM_{2.5} data comparing 2010 to 2012 is reflective of the recent permanent PM_{2.5} precursor emissions reductions enacted by the largest sulfur dioxide sources in the region. For this reason, the base believes that the 2010 PM_{2.5} data do not represent current conditions in Montgomery County and should be replaced with quality assured monitored data from 2013 for use in determining the three-year averaging period and design value. Any annual average data result from 2013 that would be 12.8 µg/m³ or less for Montgomery County will result in an annual PM_{2.5} NAAQS design value of 11.9 µg/m³ or less, thus making the county attainment/unclassifiable for the 2012 annual PM_{2.5} NAAQS. It is highly anticipated that the 2013 PM_{2.5} quality assured monitored data will resemble 2011 or 2012 data.

Wright-Patterson AFB understands that Ohio EPA must meet certain regulatory deadlines for submitting recommended designation area boundaries to the US EPA and that the 2013 quality assured PM_{2.5} monitored data may not be available prior to submittal. Therefore, the base proposes that Ohio EPA recommend Montgomery County to be in attainment/unclassifiable for the 2012 annual PM_{2.5} NAAQS, contingent upon submittal of supplemental quality assured PM_{2.5} monitored data for 2013. The basis for supporting this contingency is that the significant PM_{2.5} emissions reductions affecting Montgomery County after 2010 are for the most part permanent and/or federally enforceable through air permit term revisions. In the long run, Ohio EPA will benefit from this approach by eliminating the years of time and effort needed for the Montgomery County re-designation process in the future, when attainment data may in fact be available today.

Wright-Patterson AFB is committed to being a good neighbor in the Dayton-Springfield area and a community leader in supporting sustainable economic growth. The combination of Ohio EPA's recommended PM_{2.5} NAAQS attainment designations with the proposed alternative approach and our commitment to future pollution reductions will go far toward allowing the Dayton-Springfield area to continue to grow and thrive. Thank you for considering our comments.

Sincerely

BAKER.RAYMOND
D.F.1230231105

Digitally signed by
BAKER.RAYMOND.F.1230231105
DN: c=US, o=U.S. Government, ou=DoD,
ou=PKI, ou=USAF,
cn=BAKER.RAYMOND.F.1230231105
Date: 2013.12.05 16:56:13 -05'00'

RAYMOND F. BAKER
Chief, Environmental Branch
Installation Management Division

Attachment:
Table: Emission Levels

Table: Comparison of Montgomery County Ohio PM_{2.5} NAAQS Monitored Data to the PM_{2.5} Precursor Emission Levels of the Five Major Sources of Sulfur Dioxide in Montgomery and Greene Counties Ohio

Averaging Period		'06-08	'07-09	'08-10	'09-11	'10-12
Montgomery County PM _{2.5} 3-year Annual Average	µg/m ³	14.1	13.7	13.2	12.8	12.3
Calendar Year		2008	2009	2010	2011	2012
Montgomery County PM _{2.5} Monitored Data Annual Average	µg/m ³	13.2	12.4	14.0	12.1	10.7
O H Hutchings ¹ Coal Combustion Montgomery County	SO ₂ (tons)	2,886	796	1,405	649	411
	NO _x (tons)	858	251	476	220	130
	SO ₂ + NO _x (tons)	3,744	1,047	1,881	869	541
Wright-Patterson AFB ² Central Heating Plants Greene County	SO ₂ (tons)	1,024	1,027	962	922	662
	NO _x (tons)	382	409	380	361	249
	SO ₂ + NO _x (tons)	1,406	1,436	1,342	1,283	911
Cargil, Inc. ³ Coal Combustion Montgomery County	SO ₂ (tons)	742	566	663	674	N/A ⁴
	NO _x (tons)	755	379	422	410	N/A ⁴
	SO ₂ + NO _x (tons)	1,497	945	1,085	1,084	N/A ⁴
Appleton ³ Coal Combustion Montgomery County	SO ₂ (tons)	1,054	982	725	937	N/A ⁴
	NO _x (tons)	564	526	400	479	N/A ⁴
	SO ₂ + NO _x (tons)	1,618	1,508	1,125	1,416	N/A ⁴
Cemex ³ Kiln Operation Greene County	SO ₂ (tons)	739	184	534	212	N/A ⁴
	NO _x (tons)	2,108	1,477	2,418	1,175	N/A ⁴
	SO ₂ + NO _x (tons)	2,847	1,661	2,952	1,387	N/A ⁴
Group Totals	SO ₂ (tons)	6,445	3,555	4,289	3,394	N/A ⁴
	NO _x (tons)	4,667	3,042	4,096	2,645	N/A ⁴
	SO ₂ + NO _x (tons)	11,112	6,597	8,385	6,039	N/A ⁴
Percentage Reduction From 2008 to 2011 And 2010 to 2011	SO ₂ (%)	47.3		20.8		
	NO _x (%)	43.3		35.4		
	SO ₂ + NO _x (%)	45.7		28.0		

Notes:

- (1) Data Source: US EPA Air Markets Program, US EPA Website
- (2) Data Source: Wright-Patterson AFB Coal-to-Gas Conversion PTI Application
- (3) Data Source: Ohio EPA EIS Data Reports, Ohio EPA Website
- (4) Data Source: Ohio EPA EIS Data Reports Not Available on Ohio EPA Website for Calendar Year

Public Notice
Ohio Environmental Protection Agency
Amendment to Recommended Designation of Nonattainment Area Boundaries for
the 2012 Annual PM2.5 Standard

The Ohio Environmental Protection Agency (Ohio EPA) recently issued public notices soliciting comments regarding the extent of Ohio's nonattainment areas for the revised annual PM2.5 National Ambient Air Quality Standard (NAAQS) which lowered the 1997 annual standard from 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to 12.0 $\mu\text{g}/\text{m}^3$. The United States Environmental Protection Agency (U.S. EPA) adopted this revised annual PM2.5 standard effective on December 14, 2012. Since that time, Ohio EPA identified Montgomery County as an additional area that is not attaining the standard based on 2010 to 2012 air quality data. The 3-year design value for monitor 39-113-0031, located in Montgomery County, is 12.3 $\mu\text{g}/\text{m}^3$. Ohio EPA is now also soliciting comments regarding the addition of this county as a recommended nonattainment county. The comments received will be used to formulate the State's formal recommendation proposal to U.S. EPA. Ohio EPA's preliminary recommendations are for the following counties to be designated nonattainment for the revised annual PM2.5 standard: Montgomery, Cuyahoga, Stark, Jefferson, Butler, Clermont, and Hamilton. The remainder of the State is recommended as unclassifiable/attainment.

These actions must be noticed to allow public comment and to satisfy U.S. EPA requirements for public involvement in state implementation plan related activities. Comments should be submitted on or before December 5, 2013 at the following address:

E-mail: Jennifer.dines@epa.state.oh.us

Mailing address: Jennifer Van Vlerah
Ohio Environmental Protection Agency, DAPC
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049
Phone: (614) 644-3696

Pursuant to Section 119.03 of the Ohio Revised Code, public hearings on these recommendations will be conducted on:

December 4, 2013 at 1:00 PM, at the Stark County Library, Sandy Valley Branch, 9754 Cleveland Ave SE., Magnolia, Ohio, 44643; and

December 5, 2013 at 10:30 AM, at the Southwest Ohio Air Quality Agency, 250 William Howard Taft Road, Cincinnati, Ohio, 45219.

All interested persons are entitled to attend or be represented at the hearing and give written or oral comments on these recommendations. All oral comments presented at

the hearing, and all written statements submitted at the hearing or to the above address by the close of business on December 5, 2013, will be considered by Ohio EPA prior to final action on these recommendations. Written statements submitted after December 5, 2013, may be considered as time and circumstances permit, but will not be part of the official record of the hearing.

The PM2.5 designation recommendation documentation is available on Ohio EPA DAPC's Web page for electronic downloading at:
<http://www.epa.ohio.gov/dapc/SIP/2013.aspx>. Questions regarding accessing the web site should be directed to Arunee Niamlarb at 614-728-1342; other questions or comments about this document should be directed to Jennifer Van Vlerah at (614) 644-3696, Jennifer.dines@epa.state.oh.us or mailed to Jennifer Van Vlerah at the above address.



ArcelorMittal

December 5, 2013

Via E-Mail & Overnight Mail

Jennifer VanVlerah
Ohio EPA, DAPC
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049

RE: ArcelorMittal USA LLC's Comments on Ohio's Recommended Designations for the 2012 Annual PM_{2.5} Standard (October 2013)

Dear Ms. VanVlerah,

ArcelorMittal USA LLC ("ArcelorMittal") appreciates the opportunity to comment on the above captioned proposed PM_{2.5} designation recommendations. ArcelorMittal respectfully requests that Ohio EPA amend its proposed designation in the Cleveland-Akron-Lorain CMSA to properly reflect the contribution of large power plants located just outside Cuyahoga County.

Pursuant to Clean Air Act ("CAA") §107, an area is to be designated as "nonattainment" when it "does not meet . . . [a] national primary or secondary ambient air quality standard" or when it "*contributes to ambient air quality* in a nearby area that does not meet" a national primary or secondary ambient air quality standard.¹ The largest sources in the area are the coal-fired electric utilities in Avon Lake and Eastlake located just outside of the proposed Cuyahoga County nonattainment area. These sources emit thousands of tons of SO₂ and NO_x that contribute to the formation of ambient PM_{2.5} at the nearby monitors in Cuyahoga County that exceed the National Ambient Air Quality Standard ("NAAQS"). By expressly identifying these sources as contributing to the ambient air quality in Cuyahoga County's nonattainment area, Ohio EPA ensures its authority to require enforceable emission reductions from these sources and its ability to take credit for those emission reductions in its State Implementation Plan for bringing the area into attainment with the NAAQS.²

¹ CAA §107(d)(1)(A)(i)(emphasis added).

² To the contrary, without enforceable emission reductions, these sources can create Emission Reduction Credits that can be used by new or modified sources to increase emissions.

Jennifer VanVlerah, Ohio EPA, DAPC

December 5, 2013

ArcelorMittal Comments On Recommended Designations for the 2012 Annual PM_{2.5} Standard

Under the instructions provided in the United States Environmental Protection Agency's ("USEPA") Designations Guidance, designations must be made based on the three most recent years of air quality data from appropriate monitoring stations.³ Ohio EPA has concluded that four monitors in Cuyahoga County do not meet the new 12ug/m³ standard.⁴ As a result, Ohio EPA has the obligation to propose boundaries for the designated nonattainment area that meet the statutory criteria. In so doing, Ohio EPA is directed to consider the following five factors; (1) air quality data, (2) emissions and emissions-related data, (3) meteorology, (4) geography and topography, and (5) jurisdictional boundaries.⁵ Ohio EPA's proposal to use the jurisdictional boundary of Cuyahoga County as its designated nonattainment area improperly excludes sources that have a demonstrated contribution to ambient air quality in this area.

1. Air Quality Data

The first factor, air quality data, demonstrates that the air quality problems in Cuyahoga County have a significant regional component. Sulfates and nitrates are both very significant PM_{2.5} components in Cuyahoga County, with sulfates being the single largest contributor based on speciation data.⁶ However, not all of the sulfates and nitrates originate in Cuyahoga County. In fact, the largest point sources of Sulfur Dioxide ("SO₂") and Nitrogen Oxides ("NOx") originate just outside of Cuyahoga County in Avon Lake and Eastlake where large coal-fired utilities operate. Table 1 below illustrates that the contributions of these major sources in Lake and Lorain Counties dwarf local Cuyahoga County SO₂ and NOx emissions.

³ Memorandum from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency to Regional Administrators, *Initial Area Designations for the 2012 Revised Primary Annual Fine Particle National Ambient Air Quality Standard*, p. 3 (April 16, 2013).

⁴ We note that the E.14 & Orange Site (monitor 39-035-0060) increased PM_{2.5} in 2012 vs. 2011 due to a major multi-year (2012-2015) construction project conducted by the Ohio Department of Transportation project adjacent to monitor and now has become the PM_{2.5} monitor with the highest concentration in Cuyahoga County with a 2012 value of 13.2 ug/m³ while the monitor with the next highest 2012 value is 12.3 ug/m³. All other monitor sites decreased during this same time period. This indicates that the data from the Orange Site is flawed and should be disregarded as unreliable for designations purposes.

⁵ Memorandum from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency to Regional Administrators, *supra* note 2 at p. 11.

⁶ See Ohio's Recommended Designations for the 2012 Annual PM_{2.5} Standard, Table 20, p. 58 (October 2013).

Table 1: Point Source Emissions Data for Sulfur Dioxide and Nitrogen Oxides⁷

County	SO ₂ Emissions (tpy) 2008 Point Sources	SO ₂ Emissions (tpy) 2011 Point Sources	NO _x Emissions (tpy) 2008 Point Sources	NO _x Emissions (tpy) 2011 Point Sources
Lake	58,673.6	51,964.8	11,078.2	9,667.4
Lorain	23,087.0	32,418.3	6,361.0	5,389.8
Cuyahoga	9,487.7	6,492.5	5,837.4	4,193.1

2. Emissions Related Data

The second factor, emission and emissions-related data, confirms that the large coal-fired utilities in Avon Lake and Eastlake (Lorain and Lake Counties, respectively) play substantial roles in the overall profile of the combined statistical area (“CSA”) for Cuyahoga County. As Ohio EPA acknowledges, Cuyahoga, Lorain, Lake and Summit Counties alone “account for: 79% of PM_{2.5}, 81% of NO_x, 73% of VOC and 95% of SO₂” while “while Cuyahoga County alone only accounts for 19% of PM_{2.5}, 25% of NO_x, 24% of VOC and 8% of SO₂.”⁸ As Table 1 illustrates, SO₂ and NO_x emissions from point sources in Lorain and Lake Counties contribute more to these percentages than all of the point sources in Cuyahoga County. Recognizing the significance of those nearby emissions, the proposed recommendation explains that the large coal-fired utilities in these areas have “planned” or “announced” that they will convert units to natural gas or shutdown “in the near future to justify their exclusion from the nonattainment area.”⁹ Ohio EPA apparently relied on these unsupported assertions to justify excluding these sources and their local areas from its nonattainment designation analysis.

⁷ *Id.* at p. 62.

⁸ *Id.*, at p. 61.

⁹ *Id.* at 71-72.

Jennifer VanVlerah, Ohio EPA, DAPC

December 5, 2013

ArcelorMittal Comments On Recommended Designations for the 2012 Annual PM_{2.5} Standard

That approach is inconsistent with USEPA's Designations Guidance and Ohio EPA's own expressed test regarding how to assess emissions. While USEPA's Designations Guidance allows the consideration of "additional information...on changes to the emission levels that are not reflected in the most recent emissions inventories," such information can only include "emissions reductions due to *permanent and enforceable* emission controls that will be in place before the final designations are issued."¹⁰ Ohio EPA mirrored this requirement in its designation recommendation stating that while emissions data for areas nearby an exceeding monitor are derived from the 2008 and 2011 NEI data, "[e]missions reductions that may occur beyond those in these inventories that are due to *permanent and enforceable emissions controls* that will be in place in time for attainment are also discussed."¹¹

Ohio EPA's proposed recommendations do not identify any permit requirement, consent decree or other enforceable obligation that requires the two large Lorain and Lake County power plants highlighted by the Agency to reduce their emissions. Nor has ArcelorMittal been able to identify any obligations beyond unenforceable statements made in press releases. Without permanent and enforceable reductions, these sources must be considered contributors to the PM_{2.5} ambient air quality exceedances in Cuyahoga County.¹²

Ohio EPA's exclusion of the areas with the largest nearby sources in Lorain and Lake Counties based on mere projections rather than enforceable, permanent requirements also falls short of what USEPA has required in similar PM_{2.5} designations:

- EPA cannot take into account proposed rules like CAIR when designating areas as attainment or nonattainment for the PM_{2.5} NAAQS. Since there is no guarantee that proposed rules like CAIR will be implemented, EPA cannot take CAIR into consideration in this process.¹³
- Although the State has indicated that the power plant located in Ashtabula County has reduced its NO_x and SO₂ emissions, EPA does not have information as to the performance or federal enforceability of those reductions, nor did the State indicate what portion of these emission reductions occurred after the 2001 date for which EPA's emissions data base applies.¹⁴

¹⁰ Memo from Gina McCarthy, Assistant Administrator to Regional Administrators, *supra* note 2, p.22 (April 16, 2013).

¹¹ Ohio's Recommended Designations for the 2012 Annual PM_{2.5} Standard, p. 7 (October 2013).

¹² The state implementation plan must provide for attainment of the standard based on PM_{2.5} emission reductions from control measures that are permanent and enforceable. See §110(a)(2)(A) which provides that each plan shall include "enforceable emission limitations and other control measures, means, or techniques (including economic incentives such as fees, marketable permits, and auctions of emission rights), as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of this chapter."

¹³ Response to Comments, EPA's Designations and Classifications Of Areas for the Particulate Matter (PM_{2.5}) National Ambient Air Quality Standards, Chapter 5, U.S. Environmental Protection Agency (December 17, 2004) at p.5-53.

¹⁴ *Id.* at p. 6-310-11.

Jennifer VanVlerah, Ohio EPA, DAPC

December 5, 2013

ArcelorMittal Comments On Recommended Designations for the 2012 Annual PM_{2.5} Standard

- The state has indicated that selective catalytic reduction (“SCR”) equipment has been installed on the DP&L J.M. Stuart Generating Station in Adams County and on the Ohio Power Gavin power plant and the Ohio Valley Electric Corporation Kyger Creek power plant in Gallia County. However, EPA does not have information as to the permanence, federal enforceability, or magnitude of those reductions. It is also unclear whether the NOx emission controls are operated on an annual basis.¹⁵

Thus, mere assertions that emission reductions are either “planned” or “announced” for the Avon Lake and Eastlake power plants in Lake and Lorain Counties are not sufficient to support Ohio EPA’s proposed nonattainment designation boundary for Cuyahoga County. Without proof of a permanent and federally enforceable reduction, the baseline emissions from 2010 to 2012 for these utilities must be considered in Ohio EPA’s designation determination.

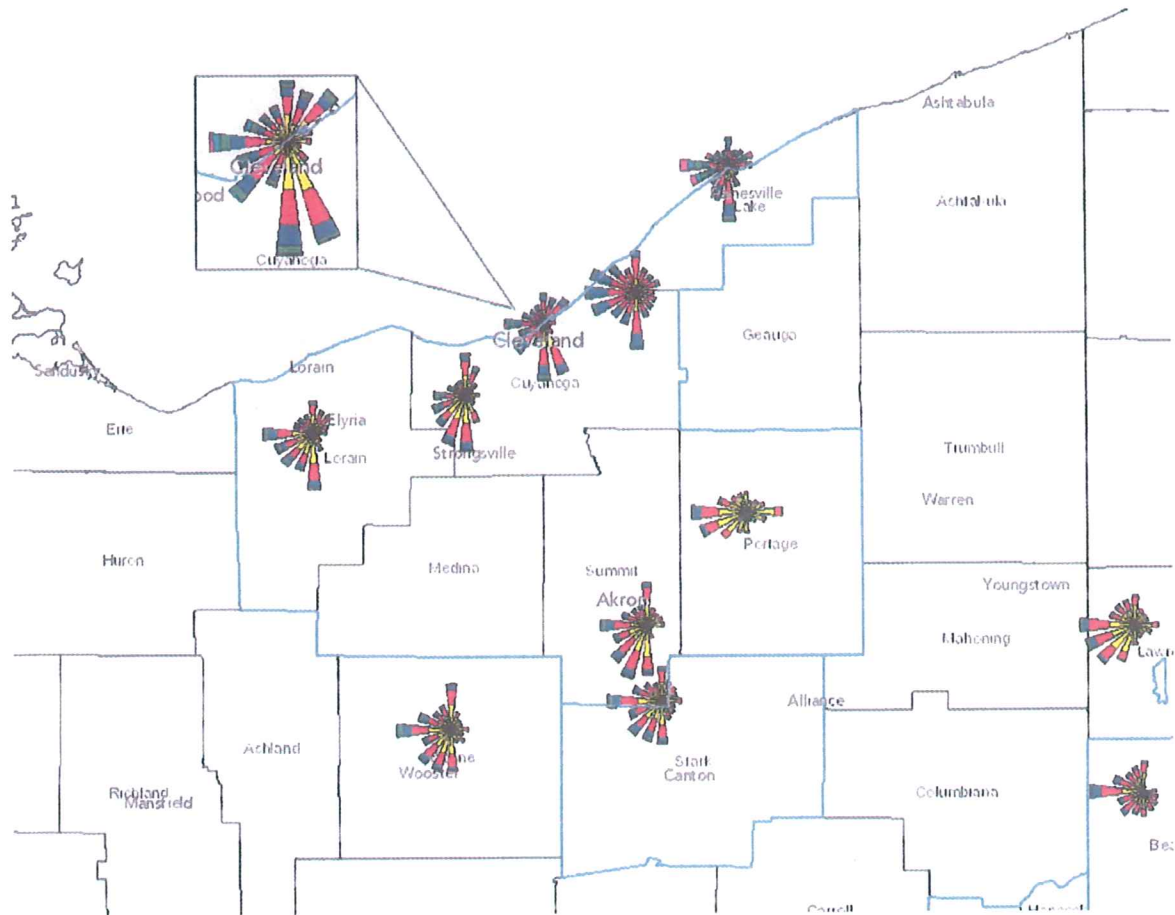
3 & 4. Meteorology and Geography

The third and fourth factors, meteorology and geography also support including the areas adjacent to Cuyahoga County with the large utilities in Lorain and Lake Counties in the nonattainment area. As the map below illustrates,¹⁶ prevailing winds blow directly towards Cuyahoga County from Lorain County. And, due to lake effect winds that cause variable conditions near Lake Erie, emissions from Lake County are carried the opposite direction toward the nonattainment monitors in Cuyahoga County in some circumstances. These winds include significant components that are directed towards the monitors that exceed the standard. As Ohio EPA notes, no “geographical or topographical barriers significantly affect[] air pollution transport” from Lake and Lorain Counties to Cuyahoga County.¹⁷

¹⁵ *Id.* at p. 6-323.

¹⁶ Wind Roses for the Cleveland-Akron-Lorain Analysis Area, data provided by U.S. EPA’s PM_{2.5} Designations Mapping Tool. See Ohio’s Recommended Designations for the 2012 Annual PM_{2.5} Standard, p. 81 (October 2013).

¹⁷ *Id.*



5. Jurisdictional Boundaries

Finally, the fifth factor, jurisdictional boundaries, supports including at least part of Lake and Lorain Counties in the nonattainment area. USEPA has consistently included Cuyahoga, Lorain, and Lake Counties in nonattainment areas for PM_{2.5}. On January 5, 2005, USEPA published air quality area designations for the 1997 PM_{2.5} standard based on data for calendar years 2001-2003. (70 Fed. Reg. 944). USEPA determined that the Cleveland area as defined to include Cuyahoga, Lake Lorain, Medina, Portage and Summit Counties and Ashtabula township in Ashtabula County would be included in the nonattainment area. (70 Fed. Reg. 995).

Similarly, on November 13, 2009, USEPA published air quality area designations for the 2006, 24-hour PM_{2.5} standard and defined the area to include Cuyahoga, Lake, Lorain, Medina, Portage and Summit Counties. The Ashtabula Township was not included, but instead was designated as unclassifiable/attainment.

Jennifer VanVlerah, Ohio EPA, DAPC

December 5, 2013

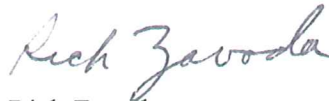
ArcelorMittal Comments On Recommended Designations for the 2012 Annual PM_{2.5} Standard

In this case, a similar designation may well be appropriate. However, if Ohio EPA determines that it would be overbroad to include the entirety of Lorain and Lake Counties, it can reasonably decide to include only the townships with the largest contributing sources. This is consistent with past designation practices including USEPA's designation of Ashtabula Township rather than the entirety of Ashtabula County in the Agency's 1997 PM_{2.5} designation discussed above. Regardless of how Ohio EPA ultimately structures its designation determination, Ohio EPA must consider and include the areas that contain the major sources that contribute to ambient air quality in the nonattainment area designation.

Conclusion

The large coal-fired utilities located just outside of the Cuyahoga County boundary are contributing to ambient air quality in the area exceeding the NAAQS for PM_{2.5}. The area containing these sources should be included in the nonattainment area to ensure that the agency has the authority to require federally enforceable emission reductions and to preserve its ability to take full credit for these reductions when preparing the state implementation plan to demonstrate how the Cuyahoga Nonattainment Area will be brought back into attainment. The burden for these emission reductions should not fall solely on local sources when the baseline emissions from nearby coal-fired utilities are contributing significantly to the ambient concentrations that are driving this nonattainment designation. If you have any questions concerning this issue, please do not hesitate to contact me at (330) 659-9163.

Sincerely,



Rich Zavoda
Regional Manager, Air Quality Program
Environmental Affairs

December 5, 2013

Ms. Jennifer Van Vlerah
Ohio EPA, DAPC
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049

***RE: 2012 PM2.5 National Ambient Air Quality Standard (NAAQS) –
State Nonattainment Designations***

Dear Ms. Van Vlerah:

On behalf of the North American Die Casting Association (“NADCA” or “Association”); please accept these comments as you develop the Ohio EPA’s proposed designations for the 2012 PM2.5 National Ambient Air Quality Standard (“NAAQS”). NADCA is the sole trade and technical association of the die casting industry, representing members from over 350 companies located in every geographic region of the United States. Die casters manufacture a wide range of non-ferrous castings, from automobile engine and transmission parts to intricate components for computers and medical devices. In the U.S., die casters contribute over \$7 billion to the economy annually and provide over 50,000 jobs directly and indirectly.

NADCA and manufacturing groups, representing a broad swath of the industry, objected to the U.S. Environmental Protection Agency (U.S. EPA) actions, believing the NAAQS PM rulemaking is “arbitrary and capricious” and unlikely to achieve its stated benefits. As the State EPA develops its nonattainment area designations under NAAQS, we ask that policymakers take into account the affect these decisions will have on local, regional, and state-wide economies. Nonattainment designations as currently recommended by the State for Montgomery, Cuyahoga, Stark, Jefferson, Butler, Clermont, and Hamilton counties will make manufacturers in those areas less competitive.

Since the establishment of the 15 µg/m³ standard, data shows risks from PM2.5 exposure have declined, while the 24-hour “supplementary” protection standard continues to provide protection to children and other sensitive subpopulations. For example, scientific data demonstrates a decade-long downward trend in PM2.5 concentrations in the St. Louis area as we have in other regions. This decline is expected to continue due to effective control measures that are already in place in the metropolitan area. Although it is the U.S. EPA setting the new standards, the Clean Air Act gives states and local governments the “primary responsibility” to prevent and control air pollution. This is why a state’s determination of attainment vs. nonattainment is so fundamental to the future of manufacturing in the local community.

All Ohio manufacturers, including NADCA members, provide over 638,400 jobs at roughly 15,212 facilities in the State. These employees, their families, and supporting businesses will see a significant impact on their operations whether or not they work in an attainment or nonattainment area. While either designation carries with it significant economic burdens and disputed public health benefits, nonattainment status can cripple the local manufacturing community.

Regardless of their merit, regulations that go beyond this standard will add unnecessary cost and complexity without furthering the goals that Congress set forth in the Clean Air Act. For this reason and those stated below, NADCA asks the State of Ohio to closely consider the impact a nonattainment designation will have on local manufacturing businesses, their employees, and the ability to expand production while adding jobs.

An April 2013 survey conducted by NADCA found that of all respondents, 66% have job openings and 95% face severe or moderate challenges recruiting qualified employees to fill those positions. Nationwide, manufacturers have 600,000 skilled job openings according to a study by Deloitte and the Manufacturing Institute. This shocking data clearly indicates manufacturing in America is expanding and employers in Ohio are ready to hire more people and increase production at their facilities. However, should the State and U.S. EPA designate certain areas as nonattainment zones; manufacturers will face numerous obstacles to expanding their operations and hiring more employees.

As you know, Ohio manufacturers are not only competing with businesses in neighboring states such as Indiana, Michigan, and Pennsylvania, but also against foreign businesses who do not face the same restrictions as U.S. manufacturers. The NAAQS PM2.5 regulations are far more stringent than standards in other industrialized nations. For example, European Union annual PM2.5 standard is 25 $\mu\text{g}/\text{m}^3$ and set an average exposure indicator ("AEI") reduced to 18 $\mu\text{g}/\text{m}^3$ by 2020. Japan, a major competitor for U.S. automotive suppliers, applies an annual PM2.5 standard of 15 $\mu\text{g}/\text{m}^3$. The Manufacturers Alliance for Productivity and Innovation (MAPI) states that U.S. manufacturers face a 20% competitive disadvantage against foreign competitors. The arbitrary and capricious standards set under NAAQS PM will place American manufacturers even further behind overseas companies.

A Roadblock to Growing Jobs and Businesses

The State of Ohio can control much of its own economic destiny by deciding whether to designate an area as nonattainment. Should the State make such a designation, whether in the Cuyahoga, Hamilton, or another county, a series of additional requirements will apply to businesses located within the zone. When it comes to attracting new businesses to the State and opening new manufacturing facilities, this will have a significant negative impact. NADCA believes that state governments should do all they can to foster an environment which encourages manufacturing in America, not erect self-imposed barriers.

Should the State choose to move forward with nonattainment designations, under 40 CFR part 81, subpart C, the federal government then places multiple stringent conditions on businesses before the company may be allowed to construct or modify an existing facility. The goal is to control the source's total emissions, either by requiring emission offsets from existing sources to counteract the new emissions or the installation of pollution control equipment.

Die casters like NADCA members are in an even more unique situation. The structure of a typical die casting machine does not allow for an emissions capture apparatus in a cost effective manner nor in a way which will likely achieve the stated goals under NAAQS. Regardless of the technical feasibility of additional controls, a January 2003 study of the die casting industry showed an "analysis of samples taken from a die cast machine suggest very little if any residue is exhausted out into the environment."

The greatest concern to NADCA members and manufacturers is the potential requirement that a manufacturer cap production at a certain level in order to meet national air quality standards. What this means to a typical manufacturer is that they cannot hire more employees, purchase new equipment, or expand their existing facilities – all of which are essential to local, regional, and national economic growth. At a time when the country is slowly emerging from the Great Recession, policymakers, whether in Washington or state capitals, should find ways to support these employers, especially when current policy is already working.

In a 2012 MIT study titled, “The Effects of Environmental Regulation on the Competitiveness of U.S. Manufacturing,” researchers found that there is a direct connection between a decline in manufacturing productivity and companies located in a nonattainment area. According to the report, “this corresponds to an annual economic cost from the regulation of manufacturing plants of roughly \$21 billion in 2010 dollars.”

Establishing Boundaries – Picking Winners and Losers

Among the most consequential decisions a state can make is determining the boundaries for a nonattainment area. Per federal guidelines, even if a community is outside the primary subject zone, a state may include that region in the nonattainment area if the government determines it contributes pollution to a nonattainment zone. Policymakers should not assume primary and secondary attainment areas are the same for designation purposes. This assumption unnecessarily restricts manufacturing growth.

Among the greatest threats to domestic manufacturing is a state establishing a larger nonattainment area than originally prescribed. Federal guidelines also make it more difficult for local communities with a significant manufacturing presence to meet national air quality standards on their own. We believe both the state and public are better served in this instance with an “unclassified” designation which will preserve jobs and allow businesses to compete more fairly.

The State has more than one metropolitan area which regulators can classify as “urban concentration”. As with any major city, vehicle miles traveled and mobile sources of emissions contribute to ozone and PM2.5 release more than in a rural community. Emissions from non-stationary sources released in a certain region can unfairly lead to a nonattainment classification for this community. These mobile sources can result in to restrictions placed on local businesses who will struggle to attract new employees and employers to the region. State designations will lead to arbitrary boundaries drawn, leaving government officials to decide the winners and losers.

Take for example the St. Louis metropolitan area. The State of Missouri analyzed the impact of additional controls in that region. The State concluded that,

“Even if areas in Missouri were to be included in a nonattainment area as a result of the violating monitors in the Illinois portion of the St. Louis MSA, few if any new controls in Missouri...would actually be required for the area. This means there would be no net air quality benefit by designating areas in Missouri nonattainment based on these violating monitors.”

Accordingly, areas of Ohio which border other heavy manufacturing states such as Indiana and Pennsylvania, will be “penalized” for emissions generated from outside the Ohio borders. Yet, designation of nonattainment in these areas will unduly place manufacturers within the State’s boundaries at a significant disadvantage over neighboring states. This will ultimately lead to more manufacturers leaving Ohio and discourage new businesses from investing and opening factories which create jobs in the Buckeye State.

Another critical factor in a major metropolitan zone is freight and other transportation which does not serve the local businesses but are simply "passing through". For example, the Cleveland area is a major transit route for people and cargo headed to areas outside of Cuyahoga County and to other states. Factoring in freight, commercial, passenger, this area of the State is one of the busiest economic zones in the country which brings significant benefits to the local population and state government.

However, this economic activity comes with mobile emissions which count against the local community under NAAQS. As a result, it is this local community who will suffer under a nonattainment designation even though their manufacturers are not responsible for the released emissions. Essentially, this punishes businesses purely based on happenstance and activities completely out of their control. This is yet another reason that if a county attains the secondary NAAQS, the state should designate that area as "attainment". Any other designation would artificially expand the primary zone and unnecessarily capture other locations subjecting them to needless restrictions.

Use of Flawed and Incomplete Data

The EPA guidelines call on states to use data from the preceding three years or 2010-2012. This date range will include the surge in manufacturing which resulted from manufacturers and consumers rebounding from the Great Recession. In the early recovery period, manufacturers ramped up production to meet pent up demand. The inclusion on this high-production period may produce skewed results.

More consequential however is the use of monitoring data over modeling predictions which typically overestimate ambient concentrations. The use of modeling may lead to an incorrect designation which could cripple the local manufacturing community. The states should not go beyond the criteria set forth under the Clean Air Act and adopt additional methods which could unduly restrict the flexibility provided by the federal government.

The selective use of data and targeting the maximum levels rather than ambient air conditions will lead to incorrect findings. While the EPA rule contains significant technical flaws rendering it arbitrary and capricious, under the Clean Air Act it is ultimately the states that have primary responsibility to prevent and control air pollution.

Conclusion

The State of Ohio, under the Clean Air Act, has the opportunity to control its own economic destiny and the success of its manufacturers. Therefore, NADCA believes that the state should not designate areas as nonattainment, nor should it include surrounding communities in a nonattainment boundary.

Government officials from President Obama to local representatives recognize that manufacturing is the engine driving the country out from the Great Recession. At a time when businesses are already leaving the state, Ohio should not erect additional barriers to restrict manufacturing job growth.

Thank you for your consideration of these comments and we look forward to working with you to strengthen manufacturing in America.

Sincerely



Daniel Twarog
President
North American Die Casting Association



Division of Air Pollution Control

Ohio's 2012 Annual PM2.5 Standard Draft Area Designation Recommendation

Agency Contact for this Package

Jennifer Van Vlerah, Division of Air Pollution Control, (614) 644-3696,
jennifer.vanvlerah@epa.ohio.gov

Ohio EPA held public hearings in Magnolia, OH on December 4, 2013 and Cincinnati, OH on December 5, 2013, regarding the 2012 annual PM2.5 national ambient air quality standard designation recommendations for the State of Ohio. This document summarizes the comments and questions received at the public hearing and during the associated comment period, which ended on December 5, 2013.

Ohio EPA reviewed and considered all comments received during the public comment period. By law, Ohio EPA has authority to consider specific issues related to protection of the environment and public health.

In an effort to help you review this document, the questions are grouped by topic and organized in a consistent format. The name of the commenter follows the comment in parentheses.

General/Overall Concerns

Comment 1: My testimony is intended to alert all interested parties—Ohio EPA, USEPA, and others to the fact that whereas the 2010 thru 2012 data indicate nonattainment of the standard, the 2011 thru 2013 data, once certified, will show attainment. Thus, whereas we agree with the proposed recommendation at this time, we want to alert interested parties to the fact that once the 2013 data are certified, we will be recommending that the nonattainment proposal not go final. We believe current air quality meets the annual standard for PM-2.5. (John Paul, Administrator, RAPCA)

In conclusion, we recognize that Ohio EPA is proposing a nonattainment designation for Montgomery County for the annual PM-2.5 standard based on air quality data for the three-year period of 2010-2012. However we submit for the record our belief that once the 2013 air quality monitoring data are quality assured and certified, the three year period of 2011-2013 will demonstrate attainment of the standard. Thus, we

ask that those data be considered for the final designation and that the area remain designated attainment. We recognize that with this attainment designation comes a responsibility for RAPCA to take appropriate measures to assure this attainment is maintained into the future. We stand ready to take these measures. (John Paul, Administrator, RAPCA)

Response 1: Ohio EPA will be preparing our final recommendation to USEPA based upon preliminary 2011-2013 design values based on nearly complete 2013 data. We will be recommending attainment/unclassifiable for Montgomery County contingent upon final certification of the 2013 data. This certification will occur prior to USEPA proposing recommendations to the states. In the event the air quality does not show attainment after all air quality data is in for 2013, Ohio EPA will revise our recommendation accordingly.

Comment 2: **RAPCA staff have prepared an analysis of the air quality data and the emissions inventory for our six counties over the past several years and will work with Ohio EPA staff to supplement these data as necessary. We also have looked closely at national inventories of those pollutants that are transported across regions. Our analysis shows a steady decrease in emissions and a corresponding steady increase in air quality over the years. In fact, the 2013 data will show the cleanest air quality measured over our monitoring history of more than 40 years. (John Paul, Administrator, RAPCA)**

Response 2: Ohio EPA will be reviewing the information submitted to help us inform our recommendation. Thank you.

Comment 3: **As stated above, attainment and maintenance of the NAAQS is important to the agency. In order to assure continued maintenance of the standards, it is important to document the sources of emissions and assure that enforceable controls are in place to limit those emissions to levels that correspond to healthy air quality. Given the sources of fine particulates and their precursors (direct PM, SO₂, and NO_x), and given the ability of these emissions to be transported over long distances, we are active supporters of national rules on major sources. In fact we believe that the following national rules must be upheld by USEPA:**

- **The Clean Air Interstate Rule (CAIR) or the Cross State Air Pollution Rule (CSAPR) or a replacement transport rule.**

- The Utility Maximum Achievable Control Technology (MACT) rule for Electric Generating Units (EGUs).
- The Portland Cement MACT.
- The Industrial Boiler MACT.
- The Tier 3 Tailpipe and Evaporative Emission and Vehicle Fuel Standards.

Each of these rules are under various legal attacks, but must be preserved for current air quality (both for PM-2.5 and ozone) to be maintained. We urge Ohio EPA's support of these rules. (John Paul, Administrator, RAPCA)

Response 3: Ohio EPA will be providing a copy of your comments to USEPA.

Comment 4: Wright-Patterson AFB supports Ohio EPA's recommendation to designate Greene County to attainment/unclassifiable for the 2012 annual PM2.5 NAAQS, but would like to offer an alternative approach for determining the Montgomery County PM2.5 design value. For the past fifteen years, the Dayton-Springfield area has demonstrated steady progress in reducing PM2.5 pollution, which resulted in re-designating the area to attainment for the 1997 annual PM2.5 NAAQS effective September 26, 2013. As shown on the attached table¹, the five major sources of sulfur dioxide in Montgomery and Greene counties have collectively reduced sulfur dioxide emissions by 47% and nitrogen oxides by 43% from 2008 through 2011 (Note: sulfur dioxide and nitrogen oxides are precursors of PM2.5). These area emission reductions are, for the most part, the result of permanent operational changes or unit shutdowns which will leave only one operating coal-fired industrial boiler in the Dayton-Springfield region by spring of 2016.

Wright-Patterson AFB has committed to further reduce future area PM2.5 pollution levels by changing from coal to natural gas combustion at both of our main central heating plants by January 2016. Through federally enforceable air permit terms, the base will reduce annual emissions by over 1,000 tons of sulfur dioxide, 200 tons of nitrogen oxides, and 5 tons of particulate emissions within the next two years. Additionally, Wright-Patterson AFB will continue to proactively implement energy programs designed to promote efficiency and reduce fuel consumption.

¹ Please see the submittal letter by Mr. Baker to view the table.

Ohio EPA has selected the calendar years 2010 through 2012 for the three-year averaging period to determine the Montgomery County annual PM2.5 NAAQS design value. The annual quality assured monitoring data are 14.0, 12.1, and 10.7 µg/m³ for each year respectively, averaged together for 12.3 µg/m³ design value. Wright-Patterson AFB believes that the significant reduction of monitored PM2.5 data comparing 2010 to 2012 is reflective of the recent permanent PM2.5 precursor emissions reductions enacted by the largest sulfur dioxide sources in the region. For this reason, the base believes that the 2010 PM2.5 data do not represent current conditions in Montgomery County and should be replaced with quality assured monitored data from 2013 for use in determining the three-year averaging period and design value. Any annual average data result from 2013 that would be 12.8 µg/m³ or less for Montgomery County will result in an annual PM2.5 NAAQS design value of 11.9 µg/m³ or less, thus making the county attainment/unclassifiable for the 2012 annual PM2.5 NAAQS. It is highly anticipated that the 2013 PM2.5 quality assured monitored data will resemble 2011 or 2012 data.

Wright-Patterson AFB understands that Ohio EPA must meet certain regulatory deadlines for submitting recommended designation area boundaries to the US EPA and that the 2013 quality assured PM2.5 monitored data may not be available prior to submittal. Therefore, the base proposes that Ohio EPA recommend Montgomery County to be in attainment/unclassifiable for the 2012 annual PM2.5 NAAQS, contingent upon submittal of supplemental quality assured PM2.5 monitored data for 2013. The basis for supporting this contingency is that the significant PM2.5 emissions reductions affecting Montgomery County after 2010 are for the most part permanent and/or federally enforceable through air permit term revisions. In the long run, Ohio EPA will benefit from this approach by eliminating the years of time and effort needed for the Montgomery County re-designation process in the future, when attainment data may in fact be available today. (Mr. Raymond Baker, Chief, Environmental Branch, Wright-Patterson AFB)

Response 4: Please see response 1.

Comment 5: The commentor requests Lake and Lorain Counties (or partial townships around power plants) be included in the Cleveland-Akron Lorain area recommended nonattainment areas. Please see the attached comments for their detailed analysis. (Rich

**Zavoda, Regional Manager, Air Quality Program,
Environmental Affairs, Arcelor Mittal)**

Response 5: Ohio EPA continues to believe the PM2.5 nonattainment issues surrounding Cuyahoga County emanate from sources located locally and nearby the monitors. Other monitors to the west and east of the violating monitors but between the violating monitors and the power plants referenced in Arcelor Mittal's comments continue to show attainment. Ohio EPA will be requesting only Cuyahoga County be designated nonattainment.

Comment 6: The commentor did not provide any specific comments regarding Ohio's recommended nonattainment designations and boundaries. Rather the commentor cited several issues regarding USEPA regulatory actions and/or policy and guidance regarding the 2012 PM2.5 NAAQS level and implementation. The commentor goes on to state "The State of Ohio, under the Clean Air Act, has the opportunity to control its own economic destiny and the success of its manufacturers. Therefore, NADCA believes that the state should not designate areas as nonattainment, nor should it include surrounding communities in a nonattainment boundary." Please see the attached comments for complete details. (Daniel Twarog, President, North American Die Casting Association)

Response 6: Ohio EPA based recommendations for Ohio's nonattainment areas on USEPA rule, policy and guidance, as has been done historically, also taking into consideration Ohio EPA's knowledge regarding those sources we believe impact violating monitors and which may necessitate reductions in the future in order to achieve the 2012 PM2.5 standard. Ohio EPA will be providing your comments regarding the new standard, USEPA's policy and guidance, directly to USEPA.