

Plan Summary

Title: Redesignation Request and Associated Maintenance Plan for the Pittsburgh-Beaver Valley Nonattainment Area for the 1997 Annual and 2006 24-Hour Fine Particulate Matter Standard

Federal Register Date: October 02, 2015 FRN 80 FR 59624; May 20, 2015 NPR 80 FR 28906

EPA Effective Date: Effective on the date of publication of FRN - October 2, 2015

State Submittal Date: 12/22/2014

Affected Area(s): Pittsburgh-Beaver Valley Area is comprised of Beaver, Butler, Washington, Westmoreland Counties and portions of Allegheny, Armstrong, Green and Lawrence Counties.

Background of the Plan:

The first air quality standards for PM_{2.5} were established on July 18, 1997 (62 FR 38652). EPA promulgated an annual standard at a level of 15 micrograms per cubic meter (mg/m³), and a 24-hour standard of 65 mg/m³ in the same rulemaking. On January 5, 2005 (70 FR 944), EPA published air quality area designations for the 1997 PM_{2.5} NAAQS. Pittsburgh-Beaver Valley Area was designated as Nonattainment for the 1997 annual PM_{2.5} NAAQS in this rulemaking. *Id.* at 1000. On October 17, 2006 (71 FR 61144), EPA revised the 24-hour standard to 35 mg/m³. On November 13, 2009 (74 FR 58688), EPA published designations for the 2006 24-hour PM_{2.5} NAAQS, which became effective on December 14, 2009. Pittsburgh-Beaver Valley Area was designated as nonattainment for the 2006 24-hour PM_{2.5} NAAQS in this rulemaking. *See* 40 CFR 81.339. On October 12, 2012 (77 FR 62147) and May 2, 2014 (79 FR 25014), EPA made determinations that the Pittsburgh Area had attained the 1997 annual and 2006 24-hour PM_{2.5} NAAQS, respectively.

Summary:

The Environmental Protection Agency (EPA) approved the Commonwealth of Pennsylvania's request to redesignate to attainment the Pittsburgh Nonattainment Area (Pittsburgh Area or Area) for the 1997 annual and 2006 24-hour fine particulate matter (PM_{2.5}) national ambient air quality standard. EPA has determined that the Pittsburgh Area attained both the 1997 annual and 2006 24-hour PM_{2.5} NAAQS. In addition, EPA approved the associated maintenance plan to show maintenance of the 1997 annual and 2006 24-hour PM_{2.5} NAAQS through 2025 for the Pittsburgh Area for the 1997 annual and 2006 24-hour PM_{2.5} NAAQS, which EPA approved for the purpose of transportation conformity, as a revision to the Pennsylvania State Implementation Plan (SIP). EPA also approved the 2007 emissions inventories for the 1997 annual PM_{2.5} NAAQS and the 2011 emissions inventories for 2006 24-hour PM_{2.5} NAAQS included in the maintenance plan for the Pittsburgh Area.

Emissions Inventory:

2005 Baseline Emissions Inventory:

An emissions inventory is an estimate of the emissions from sources in a particular area. The 2005 baseline year inventory represents the emissions of the Pittsburgh-Beaver Valley Area when it did not meet the PM2.5 standards. The Department considered using 2002 as the baseline year; but condensable PM2.5 emissions were not accounted for in the 2002 emissions inventory, which would have made the comparison of the 2002 inventory to the 2007, 2011, 2017, and 2025 inventories problematic.

Table III-1: 2005 Pittsburgh-Beaver Valley Area Annual Emissions (Tons per Year)

Pittsburgh-Beaver Valley 2005	PM_{2.5}	PM₁₀	SO₂	NO_x	VOC	NH₃
Stationary Point Sources	27,817	33,370	470,511	92,808	5,553	738
Area Sources	7,916	41,206	9,905	8,622	36,683	2,948
Highway Vehicle Sources	1,898	2,304	875	58,268	22,306	934
Non-Road Sources	1,539	1,598	2,364	31,519	11,499	14
Totals	39,170	78,478	483,655	191,217	76,041	4,634

2007 Emissions Inventor:

A 2007 inventory of PM10, PM2.5, SO2, NOX, VOC and NH3 emissions for the Pittsburgh-Beaver Valley Area is used to identify emissions during the period when attainment of the 1997 annual PM2.5 NAAQS was demonstrated for the Pittsburgh-Beaver Valley Area. A summary of the 2007 inventory is provided in Table III-2. Emissions of PM2.5, PM10, SO2, NO_x, VOC, and NH3 decreased by 54 percent, 57 percent, 6 percent, 11 percent, 17 percent and 15 percent, respectively, from 2005 to 2007.

Table III-2: 2007 Pittsburgh-Beaver Valley Area Annual Emissions (Tons per Year)

Pittsburgh-Beaver Valley 2007	PM_{2.5}	PM₁₀	SO₂	NO_x	VOC	NH₃
Stationary Point Sources	8,913	14,518	438,716	92,750	3,186	584
Area Sources	6,392	15,761	12,817	7,946	28,991	2,474
Highway Vehicle Sources	1,692	2,087	378	49,052	20,194	858
Non-Road Sources	1,151	1,232	694	21,175	10,834	16
Totals	18,148	33,598	452,605	170,923	63,205	3,932

Emissions Inventory for 2011:

A 2011 inventory of PM10, PM2.5, SO2, NOX, VOC and NH3 emissions for the Pittsburgh-Beaver Valley Area is used to identify emissions during the period when attainment of the 2006 24 hour PM2.5 NAAQS was demonstrated for the Pittsburgh-Beaver Valley Area. PM2.5, PM10, SO2, NO_x, VOC, and NH3 emissions decreased by 58 percent, 58 percent, 74 percent, 29 percent, 32 percent and 12 percent, respectively, from 2005 to 2011.

Table III-3: 2011 Pittsburgh-Beaver Valley Area Annual Emissions (Tons per Year)

Pittsburgh-Beaver Valley 2011	PM_{2.5}	PM₁₀	SO₂	NO_x	VOC	NH₃
Stationary Point Sources	7,287	10,381	122,541	80,746	3,333	322
Area Sources	7,455	20,867	3,841	19,667	26,012	3,109
Highway Vehicle Sources	967	1,304	149	29,184	14,813	624
Non-Road Sources	667	700	20	7,110	7,832	10
Totals	16,376	33,252	126,551	136,707	51,990	4,065

Table III-5: Change in Pittsburgh-Beaver Valley Area Annual Emissions (Tons per Year) from 2005 to 2011

Change from 2005 to 2011	PM_{2.5}	PM₁₀	SO₂	NO_x	VOC	NH₃
Stationary Point Sources	-20,530	-22,989	-347,970	-12,062	-2,220	-416
Area Sources	-461	-20,339	-6,064	11,045	-10,671	161
Highway Vehicle Sources	-931	-1,000	-726	-29,084	-7,493	-310
Non-Road Sources	-872	-898	-2,344	-24,409	-3,667	-4
Totals	-22,794	-45,226	-357,104	-54,510	-24,051	-569

Summary of Emissions Projections: 2007, 2011, 2017, 2025:

A summary of the total emissions in 2007 and 2011 and projected estimates for 2017 (the interim year) and 2025 (the maintenance year) is included in Table III-6. The emission estimates account for any anticipated growth in the activity of sources and include a transportation conformity safety margin for PM_{2.5} and NO_x. For all pollutants, emissions in 2017 and 2025 in the Pittsburgh-Beaver Valley Area are anticipated to be lower than they were in 2007 and 2011.

Table III-6: Summary of Emission Totals (Tons) in 2007, 2011, 2017 and 2025

Pittsburgh-Beaver Valley	PM_{2.5}	PM₁₀	SO₂	NO_x	VOC	NH₃
2007	18,148	33,598	452,605	170,923	63,205	3,932
2011	16,376	33,252	126,551	136,707	51,990	4,065
2017*	15,932	31,074	100,867	132,236	49,860	3,625
2025*	16,053	31,826	108,610	133,044	49,273	3,678

*A portion of the difference between attainment year and maintenance year emissions of PM_{2.5} and NO_x has been set aside as a transportation conformity safety margin to accommodate unanticipated growth in highway vehicles. The emissions in Table III-6 reflect inclusion of that safety margin.

Contingency Measures:

On October 12, 2012, the EPA determined that the Pittsburgh-Beaver valley Area has attained the 1997 PM_{2.5} NAAQS based certified ambient air monitoring data show the area had monitored attainment based on 2008-2010 and 2009-2011 data (“Clean Data Determination”)

(77 FR 62147). EPA's final action promulgating the Clean Data Determination suspended the requirements for the area to submit an attainment demonstration and associated contingency measures related to the attainment of the 1997 PM_{2.5} NAAQS for as long as the area continues to attain the 1997 PM_{2.5} NAAQS.

Table 1. Design Values for the Pittsburgh Area for the 1997 Annual PM_{2.5} NAAQS (µg/m³) for 2008-2010, 2009-2011, 2010-2012, and 2011-2013

Monitor ID #	2008-2010	2009-2011	2010-2012	2011-2013
Avalon 420030002	16.3*	14.7*	13.4	11.4
South Fayette 420030067	11.1	11	10.5	9.6
North Braddock 420031301	13.3	12.7	12.5	11.7*
Washington 421250200	11.8	11.3	11.1	10.3
Charleroi 421250005	12.9	12.6	11.9	11
Florence 421255001	10.8	9	7.2	7.2
Harrison 2 420031008	13	12.4	11.7*	10.6
Beaver Falls 420070014	13.1	12.4	12	11.6
Greensburg 42129008	13.4	13.7	12.6	11.1
Lawrenceville 420030008	12.2	11.6	11.1	10.3
North Park 420030093	10.1	9.7	9.4	8.8

* This data is shown in EPA's AQS as incomplete. Additional statistical analysis was done to ensure the Pittsburgh-Beaver Valley Area meets the completeness requirement of the Clean Data Determination.

Table 2. Design Values for the Pittsburgh Area for the 2006 24-hour PM_{2.5} NAAQS (µg/m³) for 2008-2010, 2009-2011, 2010-2012, and 2011-2013

Monitor ID #	2008-2010	2009-2011	2010-2012	2011-2013
Avalon 420030002	38*	34*	29	25
South Fayette 420030067	26	27	26	24
North Braddock 420031301	35	34	33	29
Washington 421250200	26	27	25	23
Charleroi	28	28	26	25

421250005				
Florence 421255001	25	20	17	16
Harrison 2 420031008	31*	30*	28	25
Beaver Falls 420070014	30	29	27	26
Greensburg 42129008	32	33*	29*	26*
Lawrenceville 420030008	28	27	26	23
North Park 420030093	25*	25	23	19

* This data is shown in EPA's AQS as incomplete. Additional statistical analysis was done to ensure the Pittsburgh-Beaver Valley Area meets the completeness requirement of the Clean Data Determination.

Table 3. 2007 Emissions for the Pittsburgh-Beaver Valley Area, in tons per year (tpy)

Sector	PM _{2.5}	NO _x	SO ₂	VOC	NH ₃
Point	8,913	92,750	438,716	3,186	584
Area	6,392	7,946	12,817	28,991	2,474
Onroad	1,692	49,052	378	20,194	858
Nonroad	1,151	21,175	694	10,834	16
Total	18,148	170,923	452,605	63,205	3,932

Table 4. 2011 Emissions for the Pittsburgh-Beaver Valley Area, in tpy

Sector	PM _{2.5}	NO _x	SO ₂	VOC	NH ₃
Point	7,287	80,746	122,541	3,333	322
Area	7,455	19,667	3,841	26,012	3,109
Onroad	967	29,184	149	14,813	624
Nonroad	667	7,110	20	7,832	10
Total	16,376	136,707	126,551	51,990	4,065

Table 5. Emission Reductions from 2005 to 2007 in the Pittsburgh-Beaver Valley Area

	Sector	2005	2007	Net Reduction 2005-2007	Percent Reduction 2005-2007
PM_{2.5}	Point	27,817	8,913	18,904	67.9
	Area	7,916	6,392	1,524	19.3
	On-road	1,898	1,692	206	10.9
	Non-road	1,539	1,151	388	25.2
	Total	39,170	18,148	21,022	53.7
NO_x	Point	92,808	92,750	58	0.0
	Area	8,622	7,946	676	7.8
	On-road	58,268	49,052	9,216	15.8
	Non-road	31,519	21,175	10,344	32.8
	Total	191,217	170,923	20,294	10.6
SO₂	Point	470,511	438,716	31,795	6.8
	Area	9,905	12,817	-2,912	-29.4
	On-road	875	378	497	56.8
	Non-road	2,364	694	1,670	70.6
	Total	483,655	452,605	31,050	6.4
VOC	Point	5,553	3,186	2,367	42.6
	Area	36,683	28,991	7,692	20.9
	On-road	22,306	20,194	2,112	9.5
	Non-road	11,499	10,834	665	5.8
	Total	76,041	63,205	12,836	16.9
NH₃	Point	738	584	154	20.9
	Area	2,948	2,474	474	16.1
	On-road	934	858	76	8.1
	Non-road	14	16	-2	-14.3
	Total	4,634	3,932	702	15.1

Table 6. Emission Reductions from 2005 to 2011 in the Pittsburgh-Beaver Valley Area

	Sector	2005	2011	Net Reduction 2005-2011	Percent Reduction 2005-2011
PM_{2.5}	Point	27,817	7,287	20,530	73.8
	Area	7,916	7,455	461	5.8
	On-road	1,898	967	931	49.1
	Non-road	1,539	667	872	56.6
	Total	39,170	16,376	22,794	58.2
NO_x	Point	92,808	80,746	12,062	12.9
	Area	8,622	19,667	-11,045	-128.1
	On-road	58,268	29,184	29,084	50.0

	Non-road	31,519	7,110	24,409	77.4
	Total	191,217	136,707	54,510	28.5
SO₂	Point	470,511	122,541	347,970	73.9
	Area	9,905	3,841	6,064	61.1
	On-road	875	149	762	82.9
	Non-road	2,364	20	2,344	99.1
	Total	483,655	126,551	357,104	73.8
VOC	Point	5,553	3,333	2,200	40.0
	Area	36,683	26,012	10,671	29.1
	On-road	22,306	14,813	7,493	33.6
	Non-road	11,499	7,832	3,667	31.9
	Total	76,041	51,990	24,051	31.6
NH₃	Point	738	322	416	56.3
	Area	2,948	3,109	-161	-5.5
	On-road	934	624	310	33.2
	Non-road	14	10	4	28.6
	Total	4,634	4,065	569	12.3

Table 7. Emission Reductions from 2007 to 2025 due to Control Measures in tpy

	PM_{2.5}	NOx	SO₂	VOC	NH₃
Point	54	-3,095	340,699	-293	-12
Area	672	-23	2,515	2,961	-136
On-Road	1,155	38,343	260	15,069	405
Non-Road	611	11,370	588	4,697	-3
Natural Gas Activities	-397	-8,716	-37	-8,502	0
TOTALS	2,095	37,879	343,995	13,932	254

Table 8. Emission Reductions from 2011 to 2025 due to Control Measures in tpy

	PM_{2.5}	NOx	SO₂	VOC	NH₃
Point	-1,572	-15,099	24,494	-146	-274
Area	1,735	11,698	-6,461	-18	499
On-Road	430	18,475	31	9,688	171
Non-Road	127	-2,695	-86	1,695	0
Natural Gas Activities	-397	-8,716	-37	-8,502	0
TOTALS	323	3,663	17,941	2,717	387

Table 9. Comparison of 2007 and 2011 Attainment Years and 2017 and 2025 Projected PM_{2.5} Emissions in the Pittsburgh Area

Year	PM_{2.5}	NOx	SO₂	NH₃	VOC
2007 (attainment)	18,148	170,923	452,605	3,932	63,205
2011 (attainment)	16,376	136,707	126,551	4,065	51,990
2017 (interim)	15,932	132,236	100,867	3,625	49,860
2007-2017 (projected decrease)	2,216	38,687	351,738	307	13,345
2011-2017 (projected decrease)	444	4,471	25,644	440	2,130
2025 (maintenance)	16,053	133,044	108,610	3,678	49,273
2007-2025 (projected decrease)	2,095	37,879	343,995	254	13,932
2011-2025 (projected decrease)	323	3,663	17,941	387	2,717

Table 10. MVEBs for the Pittsburgh Area for the 1997 annual and 2006 24-hour PM_{2.5} NAAQS in tpy

Year	PM_{2.5}	NOx
2017	700	17,584
2025	537	10,709

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