Region III Plan Summary
Redesignation Request and Associated Maintenance Plan for the Pennsylvania Portion of the Philadelphia-Wilmington, PA-NJ-DE Nonattainment Area for the 1997 Annual and 2006 24-Hour Fine Particulate Matter Standard

Title: **Pennsylvania; Redesignation Request and Associated Maintenance Plan for the Pennsylvania Portion of the Philadelphia-Wilmington, PA-NJ-DE Nonattainment Area for the 1997 Annual and 2006 24-Hour Fine Particulate Matter Standard**

Federal Register Dates: Final Rule 80 FR 22112 (April 21, 2015) Proposed Rule 80 FR 8254 (February 17, 2015)

EPA Effective date: April 21, 2015

State Submittal Date: September 5, 2014

Affected Area: The Philadelphia Area is comprised of New Castle County in Delaware (the Delaware portion of the Area); Burlington, Camden, and Gloucester Counties in New Jersey (the New Jersey portion of the Area); and Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in Pennsylvania (the Pennsylvania portion of the Area).

Background:
The Environmental Protection Agency (EPA) has approved the Commonwealth of Pennsylvania's September 5, 2014 request to redesignate to attainment the Pennsylvania portion of the Philadelphia-Wilmington, PA-NJ-DE nonattainment area (hereafter "the Philadelphia Area" or "the Area") for both the 1997 annual and the 2006 24-hour fine particulate matter ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS or standards). EPA has also approved as a revision to the Pennsylvania State Implementation Plan (SIP) the associated maintenance plan to show maintenance of the 1997 annual and the 2006 24-hour $PM_{2.5}$ NAAQS through 2025 for the Pennsylvania portion of the Area.

EPA has also approved the motor vehicle emissions budgets (MVEBs) included in Pennsylvania's maintenance plan for the Pennsylvania portion of the Area for both the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS. EPA has also determined that the Pennsylvania portion of the Philadelphia Area continues to attain both the 1997 annual and the 2006 24-hour $PM_{2.5}$ NAAQS. In addition, EPA is proposing to approve the 2007 emissions inventory included in the maintenance plan for the Pennsylvania portion of the Area for the 2006 24-hour $PM_{2.5}$ NAAQS.

This rulemaking action to approve the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS redesignation request and associated maintenance plan for the Pennsylvania portion of the Philadelphia Area is based on EPA's determination that Pennsylvania has met the criteria for redesignation to attainment specified in the Clean Air Act (CAA) for both the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS. EPA has taken separate rulemaking actions to approve the redesignation of the New Jersey portion and the Delaware portion of the Philadelphia Area for the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS. See 78 FR 54396, September 4, 2013 (for the

New Jersey portion of the Area), and 79 FR 45350, August 5, 2014 (for the Delaware portion of the Area).

Summary of the Plan:
EPA completed several rulemaking actions for the Pennsylvania portion of the Area: (1) to redesignate the Pennsylvania portion of the Area to attainment for both the 1997 annual and the 2006 24-hour $PM_{2.5}$ NAAQS; and (2) to approve into the Pennsylvania SIP the associated maintenance plan for both the 1997 annual and the 2006 24-hour $PM_{2.5}$ NAAQS. EPA has also approved the 2007 comprehensive emissions inventory to satisfy section 172(c)(3) requirement for the 2006 24-hour $PM_{2.5}$ NAAQS, which is one of the criteria for redesignation. EPA's approval of the redesignation request and maintenance plan for the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS are based upon EPA's determination that the Area continues to attain both standards and that all other redesignation criteria have been met for the Pennsylvania portion of the Area. The following is a description of how Pennsylvania's September 5, 2014 submittal satisfies the requirements of the CAA including specifically section 107(d)(3)(E) for the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS.

Monitoring:
Pennsylvania currently operates $PM_{2.5}$ monitors in each of the five counties that comprise the Pennsylvania portion of the Philadelphia Area. Pennsylvania's maintenance plan includes a commitment by PADEP and the Philadelphia County Health Department to continue to operate its EPA-approved monitoring network, as necessary to demonstrate ongoing compliance with the NAAQS. In its September 5, 2014 submittal, Pennsylvania stated that it will consult with EPA prior to making any necessary changes to the network and will continue to operate the monitoring network in accordance with the requirements of 40 CFR part 58.

The air quality data, included in the docket for this proposed rulemaking action, show that the Philadelphia Area continues to attain both the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS. The Area's annual and 24-hour $PM_{2.5}$ design values[1] are provided in Tables 1 and 2, respectively.

Table 1. Philadelphia Area's Annual Design Values for the 1997 annual $PM_{2.5}$ Standard for the 2009-2013 Monitoring Periods, in $\mu g/m^3$

State	County	Annual Design Values			
		2009-2011	2010-2012	2011-2013	Preliminary 2012-2014
Delaware	New Castle	10.7	10.4	10.0	9.9
New Jersey	Camden	9.7	9.7	10.1	10.5
	Burlington	No monitor			
	Gloucester	9.3	9.3	9.3	9.4
Pennsylvania	Bucks	10.9	10.9	10.8	10.6
	Chester	13.7	12.3	11.1	9.9
	Delaware	12.9	13.1	12.4	12.3

[1] As defined in 40 CFR part 50, Appendix N, section (1)(c).

	Montgomery	10.1	9.8	9.8	9.3
	Philadelphia	11.4	11.0	11.1	12.4
Area's Annual Design Value		13.7	13.1	12.4	12.4

Source: AQS Design Value Report dated December 12, 2014

Table 2. Philadelphia Area's 24-Hour Design Values for the 2006 24-hour $PM_{2.5}$ Standard for the 2009 – 2013 Monitoring Periods, in $\mu g/m^3$

State	County	24-Hour Design Values			
		2009-2011	2010-2012	2011-2013	Preliminary 2012-2014
Delaware	New Castle	27	26	25	25
New Jersey	Camden	24	23	25	26
	Burlington	No monitor			
	Gloucester	22	22	23	24
Pennsylvania	Bucks	28	29	30	30
	Chester	33	31	28	26
	Delaware	30	31	29	30
	Montgomery	27	25	26	25
	Philadelphia	34	29	28	30
Area's Annual Design Value		34	31	30	30

Source: AQS Design Value Report dated December 12, 2014

EPA's review of the monitoring data from 2009 through 2013 supports EPA's previous determinations that the Area has attained the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS, and that the Area continues to attain both standards.

Emissions Inventory:

A summary of the 2007 comprehensive emissions inventory is shown in Table 3. For more information on EPA's analysis of the 2007 emissions inventory, see the TSD prepared by the EPA Region III Office of Air Monitoring and Analysis dated December 23, 2014, "Technical Support Document (TSD) for the Redesignation Request and Maintenance Plan for the Pennsylvania Portion of the Philadelphia-Wilmington, PA-NJ-DE 1997 $PM_{2.5}$ Nonattainment Area" and "Technical Support Document (TSD) for the Redesignation Request and Maintenance Plan for the Pennsylvania Portion of the Philadelphia-Wilmington, PA-NJ-DE 2006 $PM_{2.5}$ Nonattainment Area" ("Inventory TSDs"), available in the docket for this rulemaking action at www.regulations.gov. See Docket ID No. EPA-R03-OAR-2014-0868.

Table 3. 2007 Emissions for the Pennsylvania portion of the Philadelphia Area, in tons per year (tpy)

Sector	$PM_{2.5}$	NOx	SO_2	VOC	NH_3
Point	2,444	20,744	19,633	6,281	743
Area	7,722	12,925	15,005	47,568	3,293
Onroad	2,386	69,327	508	29,293	1,270
Nonroad	1,562	20,393	3,375	18,751	23

Total	14,114	123,390	38,520	101,894	5,329

Emission Reductions from 2002 to 2007 in the Pennsylvania Portion of the Philadelphia Area (tpy)

	Sector	2002	2007	Net Reduction 2002-2007	Percent Reduction 2002-2007
$PM_{2.5}$	Point	2,139	2,444	-305	-14.3
	Area	10,020	7,722	2,298	22.7
	On-road	2,905	2,386	518	17.8
	Non-road	1,535	1,562	-27	-1.8
	Total	16,598	14,114	2,484	15.0
NO_X	Point	22,124	20,744	1,380	6.2
	Area	13,029	12,925	105	0.8
	On-road	90,879	69,327	21,552	23.7
	Non-road	21,619	20,393	1,226	5.7
	Total	147,651	123,390	24,262	16.3
SO_2	Point	23,745	19,633	4,112	17.3
	Area	13,153	15,005	-1,852	-14.1
	On-road	1,848	508	1,340	72.6
	Non-road	1,640	3,375	-1,735	-1.1
	Total	40,387	38,520	1,866	4.6
VOC	Point	8,183	6,281	1,903	23.3
	Area	59,227	47,568	11,659	19.7
	On-road	32,150	29,293	2,856	8.9
	Non-road	21,589	18,751	2,838	13.1
	Total	121,149	101,894	19,256	15.9
NH_3	Point	256	743	-487	-190
	Area	4,821	3,293	1,529	31.7
	On-road	1,451	1,270	181	12.5
	Non-road	14	23	-9	-64.3
	Total	6,542	5,329	1,213	18.5

EPA reviewed the procedures used to develop the projected inventory and found them to be reasonable. EPA has reviewed the documentation provided by PADEP and found the 2007 emissions inventory to be approvable.

Table 5 incorporates the expected emissions from future construction at the Philadelphia International Airport (PHL-CEP), as well as potential emissions increases from Emission Reduction Credits (ERCs), which are also included in Tables 6a – 6e.

Table 5. Emission Reductions from 2007 to 2025 due to Control Measures

	NOx	$PM_{2.5}$	SO_2	VOC	NH_3
Point	2,279	-90	3,936	-690	-46

Area	250	674	5,818	3,039	-143
On-Road	43,966	1,070	249	18,071	363
Non-Road	8,493	624	2,817	6,666	-6
TOTALS	54,988	2,278	12,820	27,085	167

Where the emissions inventory method of showing maintenance is used, its purpose is to show that emissions during the maintenance period will not increase over the attainment year inventory.

EPA has reviewed the documentation provided by PADEP for developing annual 2017 and 2025 emissions inventories for the Pennsylvania portion of the Area. EPA has determined that the 2017 and 2025 projected emissions inventories provided by PADEP are approvable.

Tables 6a through 6e provide a summary of the $PM_{2.5}$, NOx, SO_2, VOC, and NH_3 emissions inventories for the Pennsylvania portion of the Philadelphia Area for the 2007 attainment year, the 2017 interim year, and the 2025 maintenance plan end year for the 1997 annual $PM_{2.5}$ NAAQS. The future year inventories include expected emissions from future construction at the PHL-CEP, as well as potential emissions increases from ERCs.

Table 6a. Comparison of 2007, 2017, and 2025 Emissions of $PM_{2.5}$ for the Pennsylvania Portion of the Philadelphia Area (tpy)

$PM_{2.5}$							
Sector	2007	2017	2025	2007-2017		2007-2025	
				Reduction	Percent Reduction	Reduction	Percent Reduction
Point	2,444	1,788	1,808	656	26.8	636	26.0
Area	7,722	7,383	7,047	339	4.4	675	8.7
On-Road	2,386	1,679	1,316	707	29.6	1,070	44.8
Non-Road	1,562	1,019	837	543	34.8	725	46.4
PHL-CEP		83	102	-83		-102	
ERC		726	726	-726		-726	
Total	14,114	12,678	11,837	1,436	10.2	2,277	16.1

Table 6b. Comparison of 2007, 2017, and 2025 Emissions of NOx for the Pennsylvania Portion of the Philadelphia Area (tpy)

NOx							
Sector	2007	2017	2025	2007-2017		2007-2025	
				Reduction	Percent Reduction	Reduction	Percent Reduction
Point	20,744	11,366	11,316	9,378	45.2	9,428	45.4
Area	12,925	12,461	12,675	464	3.4	250	1.9
On-Road	68,327	37,922	25,361	31,405	45.3	43,966	63.4
Non-Road	20,393	10,332	7,990	10,061	49.3	12,403	60.2
PHL-CEP		3,337	3,910	-3,337		-3,910	
ERC		7,150	7,150	-7,150		-7,150	

Total	123,390	82,567	68,402	40,823	33.1	54,988	44.6

Table 6c. Comparison of 2007, 2017, and 2025 Emissions of SO_2 for the Pennsylvania Portion of the Philadelphia Area (tpy)

SO_2							
Sector	2007	2017	2025	2007-2017		2007-2025	
				Reduction	Percent Reduction	Reduction	Percent Reduction
Point	19,633	5,870	5,858	13,763	70.1	13,775	70.2
Area	15,005	12,844	9,186	2,161	14.4	5,819	38.8
On-Road	508	248	259	260	51.2	249	49.0
Non-Road	3,375	305	123	3,070	91.0	3,252	96.4
PHL-CEP		355	435	-355		-435	
ERC		9,839	9,839	-9,839		-9,839	
Total	38,520	29,460	25,701	9,060	23.5	12,819	33.3

Table 6d. Comparison of 2007, 2017, and 2025 Emissions of VOC for the Pennsylvania Portion of the Philadelphia Area (tpy)

VOC							
Sector	2007	2017	2025	2007-2017		2007-2025	
				Reduction	Percent Reduction	Reduction	Percent Reduction
Point	6,281	6,438	6,508	-157	-2.5	-227	-3.6
Area	47,568	45,239	44,530	2,329	4.9	3,038	6.4
On-Road	29,293	16,349	11,222	12, 944	44.2	18,041	6.2
Non-Road	18,751	11,224	11,058	7,527	40.1	7,693	41.0
PHL-CEP		828	1,027	-828		-1,027	
ERC		463	463	-463		-463	
Total	101,894	80,540	74,808	21,354	20.9	27,086	26.6

Table 6e. Comparison of 2007, 2017, and 2025 Emissions of NH_3 for the Pennsylvania Portion of the Philadelphia Area (tpy)

NH_3							
Sector	2007	2017	2025	2007-2017		2007-2025	
				Reduction	Percent Reduction	Reduction	Percent Reduction
Point	743	814	789	-71	-9.5	-46	-6.2
Area	3,293	3,375	3,436	-82	-2.5	-143	-4.3
On-Road	1,270	903	908	387	30.5	362	28.5
Non-Road	23	26	29	-3	-13.0	-6	-26.1
PHL-CEP		0	0	0		0	
ERC		0	0	0		0	
Total	5,329	5,117	5,162	212	4.0	167	3.1

Table 7a provides a summary of $PM_{2.5}$, NOx, and SO_2 emissions for the entire Philadelphia Area for the 2007 attainment year, the 2017 interim year, and the 2025 maintenance plan end year for the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS. The inventories show that, between 2007 and 2025, the Area is projected to reduce $PM_{2.5}$ emissions by 16.2 percent, NOx emissions by 41.2 percent, and SO_2 emissions by 46.8 percent.

Table 7a. Comparison of 2007, 2017, and 2025 $PM_{2.5}$, NOx, and SO_2 Emissions for the entire Philadelphia Area (tpy)

	$PM_{2.5}$			NOx			SO_2		
	2007	2017	2025	2007	2017	2025	2007	2017	2025
Pennsylvania portion	14,114	12,678	11,837	38,520	29,460	25,701	123,390	82,567	68,402
Delaware portion	3,193	2,844	2,893	15,228	6,995	6,958	23,084	14,475	13,797
New Jersey portion	5,159	4,549	4,102	4,965	1,579	1,880	41,718	26,057	17,780
Total	22,466	20,071	18,832	58,713	38,034	34,539	188,192	123,099	100,069

The redesignation requests for Delaware and New Jersey did not include VOC and NH_3 emission inventories. Therefore, in order to take VOC and NH_3 emissions for the Delaware and New Jersey portions of the Area into consideration, Pennsylvania used information from EPA's Regulatory Impact Analysis (RIA) for the 2012 $PM_{2.5}$ NAAQS. Table 7b provides a comparison of the 2007 and 2020 VOC and NH_3 emissions for the entire Philadelphia Area. The RIA only projected to 2020; however, Pennsylvania believes, and EPA agrees, that the downward trend for these precursors and attainment would continue into 2025, given that the area is attaining both the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS with the current level of emissions in the Area, and that additional reductions will be achieved from the Federal and State measures that will be implemented during the maintenance period. The projected emissions inventories show that the Philadelphia Area will continue to maintain the 1997 annual $PM_{2.5}$ standards during the maintenance period.

Table 7b. Comparison of 2007 and 2020 VOC and NH_3 Emissions for the entire Philadelphia Area (tpy)

	VOC		NH_3	
	2007	2020	2007	2020
Pennsylvania portion	95,255	75,861	5,229	4,903
Delaware portion	14,326	9,242	984	850
New Jersey portion	36,108	27,510	1,677	1,526
Total	145,689	112,613	7,890	7,279

Contingency Measures:

The contingency plan provisions are designed to promptly correct a violation of the 1997 annual and/or the 2006 24-hour $PM_{2.5}$ NAAQS that occurs in the Pennsylvania portion of the Area after redesignation. Section 175A of the CAA requires that a maintenance plan include such contingency measures as EPA deems necessary to ensure that a state will promptly correct a

violation of the NAAQS that occurs after redesignation. The maintenance plan should identify the events that would "trigger" the adoption and implementation of a contingency measure(s), the contingency measure(s) that would be adopted and implemented, and the schedule indicating the time frame by which the state would adopt and implement the measure(s).

Pennsylvania's maintenance plan describes the procedures for the adoption and implementation of contingency measures to reduce emissions should a violation occur. Pennsylvania's contingency measures include a first level response and a second level response. A first level response is triggered if the annual mean $PM_{2.5}$ concentration exceeds 15.5 $\mu g/m^3$ in a single calendar year within the Area, if the 98^{th} percentile 24-hour $PM_{2.5}$ concentration exceeds 35.0 $\mu g/m^3$ in a single calendar year within the Area, or if the periodic emissions inventory for the Area exceed the attainment year inventory (2007) by more than ten percent. The first level response will consist of a study to determine if the emissions trends show increasing concentrations of $PM_{2.5}$, and whether this trend is likely to continue. If it is determined through the study that action is necessary to reverse a trend of emissions increases, Pennsylvania will, as expeditiously as possible, implement necessary and appropriate control measures to reverse the trend.

A second level response will be prompted if the two-year average of the annual mean concentration exceeds 15.0 $\mu g/m^3$ or if the two-year average of 98^{th} percentile 24-hour $PM_{2.5}$ concentration exceeds 35.0 $\mu g/m^3$ within the Area. This would trigger an evaluation of the conditions causing the exceedance, whether additional emission control measures should be implemented to prevent a violation of the standard, and analysis of potential measures that could be implemented to prevent a violation. Pennsylvania would then begin its adoption process to implement the measures as expeditiously as practicable. If a violation of the $PM_{2.5}$ NAAQS occurs, PADEP will propose and adopt necessary additional control measures in accordance with the implementation schedule in the maintenance plan.

Pennsylvania's candidate contingency measures include the following: (1) a regulation based on the Ozone Transport Commission (OTC) Model Rule to update requirements for consumer products; (2) a regulation based on the Control Techniques Guidelines (CTG) for industrial cleaning solvents; (3) voluntary diesel projects such as diesel retrofit for public or private local onroad or offroad fleets, idling reduction technology for Class 2 yard locomotives, and idling reduction technologies or strategies for truck stops, warehouses, and other freight-handling facilities; (4) promotion of accelerated turnover of lawn and garden equipment, focusing on commercial equipment; and (5) promotion of alternative fuels for fleets, home heating and agricultural use. Pennsylvania's rulemaking process and schedule for adoption and implementation of any necessary contingency measure is shown in the SIP submittals as being 18 months from PADEP's approval to initiate rulemaking. For all of the reasons discussed in this section, EPA has approved Pennsylvania's 1997 annual and 2006 24-hour $PM_{2.5}$ maintenance plan for the Pennsylvania portion of the Philadelphia Area as meeting the requirements of section 175A of the CAA.

Motor Vehicle Emissions Budgets:

MVEBs for the Pennsylvania portion of the Philadelphia Area for the 1997 $PM_{2.5}$ and 2006 24-hour NAAQS, in tpy

Year	$PM_{2.5}$	NOx
2017	1,679	37,922
2025	1,316	25,361

EPA has reviewed the MVEBs and found that the submitted MVEBs are consistent with the maintenance plan and meet the criteria for adequacy and approval. Therefore, EPA is proposing to approve the 2017 and 2025 $PM_{2.5}$ and NOx MVEBs for Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties for transportation conformity purposes.

Conclusion:
EPA has approved Pennsylvania's request to redesignate the Pennsylvania portion of the Philadelphia Area from nonattainment to attainment for the 1997 annual and the 2006 24-hour $PM_{2.5}$ NAAQS.

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