

*Washington DC-MD-VA 1997 PM_{2.5} Redesignation
Request*

DRAFT 12-6-11

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1 Introduction

The District of Columbia, the State of Maryland, and the Commonwealth of Virginia request that the United States Environmental Protection Agency (U.S. EPA) redesignate the Washington DC-MD-VA 1997 PM_{2.5} nonattainment area to attainment for this standard pursuant to the provisions § 107 of the federal Clean Air Act (CAA). Since the designations for the National Ambient Air Quality Standard (NAAQS) for this pollutant were published (Federal Register, Vol. 70, No. 3, 1/5/2005), the area's fine particulate (PM_{2.5}) air quality has improved due to permanent and enforceable emission reductions. Air quality in the area is significantly better than required by this standard. Due to the improvement in PM_{2.5} air quality, the Washington DC-MD-VA nonattainment area is currently operating under a clean data determination (Federal Register, Vol. 74, No. 7, 1/12/2009). The Commonwealth of Virginia, the State of Maryland, and the District of Columbia are also requesting that U.S. EPA concurrently approve, as a revision to the state implementation plan (SIP) for each state, the related § 175A maintenance plan. This plan ensures that good PM_{2.5} air quality will be maintained through 2025. [The requirements for an emission inventory will be satisfied by the inventory requirements of the maintenance plan. The Technical Support Document discusses this requirement in more detail.] **or** [The requirements for an emissions inventory was satisfied by the information in Chapter 3 and Appendix B of the *Plan to Improve Air Quality in the Washington, DC-MD-VA Region*, which was submitted to EPA on April 4, 2008, by Virginia; April 2, 2008 by the District of Columbia; and March 8, 2008 by Maryland.]

2 Background

2.1 Health Effects

PM_{2.5}, also known as fine particulate matter or fine particles, is defined as any airborne particle of solid or liquid matter that is less than or equal to 2.5 micrometers in diameter. PM_{2.5} is not a single pollutant, but is a sum of all pollutants that have diameters less than 2.5 micrometers, which is 1/30 the diameter of a human hair.

Sources of PM_{2.5} and PM_{2.5} precursors include, most significantly, coal-fired power plants and other combustion sources, fires, emissions from motor vehicles, windblown dust, and natural emissions from trees and the oceans. These sources can be divided up into two types of sources, primary and secondary. Primary sources directly emit fine particulate matter into the atmosphere without any chemical change occurring to the pollutant. Secondary sources are sources from which precursor chemical species are released into the atmosphere and then react with other chemical species in the atmosphere to create fine particulate matter. Some species which comprise fine particulate matter are sulfates, ammonium nitrate, soot, sea salt, organic carbon, and metals (crustal metals, transitional metals, and potassium).

Exposure to high levels of PM_{2.5} adversely affects human health. The main impacts of PM_{2.5} on human health are on the respiratory system and the cardiovascular system. Children, the elderly, and individuals with pre-existing pulmonary or cardiac disease are the most susceptible to PM_{2.5} pollution. Complications that can arise from exposure to PM_{2.5} include decreased lung function, chronic bronchitis; respiratory symptoms such as asthma attacks and

difficulty breathing, nonfatal heart attacks, irregular heartbeat, and premature death in individuals with pulmonary or cardiac disease.

2.2 Washington DC-MD-VA Nonattainment Designation

The CAA requires each state with areas failing to meet the 1997 PM_{2.5} NAAQS to develop SIPs to expeditiously attain and maintain the standards. The U.S. EPA revised the NAAQS for particulate matter in July 1997 (Federal Register, Vol. 62, No. 138, 7/18/1997). U.S. EPA replaced the existing PM₁₀ standard with a health-based PM_{2.5} standard and retained the PM₁₀ standard as a particulate standard protecting welfare. The standards include an annual standard set at 15.0 micrograms per cubic meter (µg/m³), based on the 3-year average of annual mean PM_{2.5} concentrations, and a 24-hour standard of 65 µg/m³, based on the 3-year average of the 98th percentile of 24-hour concentrations.

On December 17, 2004, U.S. EPA administrator signed the final rule regarding the initial PM_{2.5} nonattainment areas designations for the PM_{2.5} standards across the country. The final rule was published in the federal register on January 5, 2005 (Federal Register, Vol. 70, No. 3, 1/5/2005) and became effective on April 5, 2005. The Washington DC-MD-VA area was originally designated nonattainment for the 1997 PM_{2.5} NAAQS based on air quality data showing that the area did not meet the 15.0 µg/m³ annual standard. Unlike Subpart 2 of the CAA that defined five ozone nonattainment classifications for the areas that exceed the NAAQS based on the severity of the ozone levels, PM_{2.5} nonattainment designations are simply labeled “nonattainment”. The CAA required states with PM_{2.5} nonattainment areas to submit an attainment plan within three years of the effective date of the designations (April 5, 2008) detailing how the PM_{2.5} standards will be attained by April 5, 2010. States within the Washington DC-MD-VA area submitted these attainment plans in a timely manner.

The area designated nonattainment for the 1997 PM_{2.5} NAAQS is defined as listed in Table 2-1 and depicted in Figure 2-1.

Table 2-1: Washington DC-MD-VA Nonattainment Area Jurisdiction Listing With FIPS Codes

Maryland Jurisdictions

Charles County (24-017)
Frederick County (24-021)
Montgomery County (24-031)
Prince Georges County (24-033)

Washington D.C. (11-001)

Virginia Jurisdictions

Fairfax County (51-059)
Prince William County (51-153)
Arlington County (51-013)
Loudon County (51-107)
City of Fairfax (51-600)
City of Falls Church (51-610)
City of Manassas (51-683)
City of Manassas Park (51-685)
City of Alexandria (51-510)

(Nice Map Here)

Figure 2-1: Washington DC-MD-VA 1997 PM_{2.5} NAAQS Nonattainment Area

3 U.S. EPA Requirements for Redesignation

The CAA provides a process whereby a state may petition U.S. EPA to redesignate a nonattainment area as attainment. The criteria for redesignating a nonattainment area to attainment are as follows:

- The request must contain a determination that the NAAQS has been attained.
- The request must contain a showing that the improvement in air quality is due to permanent and enforceable reductions in emissions.
- The applicable implementation plan must be fully approved by U.S. EPA under § 110(k) of the CAA, and the redesignation request must contain a determination that the state meets all applicable requirements for the area under § 110 and Part D.
- A fully approved maintenance plan, including contingency measures, for the area under § 175A of the Act.

This document addresses each of these requirements, and provides additional information to support continued compliance with the 1997 PM_{2.5} NAAQS. U.S. EPA has published detailed guidance in a memorandum from John Calcagni, Director, Air Quality Management Division, entitled *Procedures for Processing Requests to Redesignate Areas to Attainment* (redesignation guidance), issued September 4, 1992, to Regional Air Directors. 40 CFR Part 51, Subpart Z, entitled *Provisions for Implementation of PM_{2.5} National Ambient Air Quality Standards* (implementation rule) provides additional information. The District of Columbia, the State of Maryland, and the Commonwealth of Virginia have based this redesignation request and its associated maintenance plan on the redesignation guidance and the implementation rule, supplemented with additional guidance received from staff of EPA Region III.

3.1 NAAQS Compliance

3.1.1 U.S. EPA Requirements

This demonstration should rely upon on ambient air quality data. The data that are used to demonstrate attainment should be the product of ambient monitoring that is representative of the area of highest concentration. Additionally, the data should be collected and quality-assured in accordance with 40 CFR Part 58 and recorded in the Air Quality System (AQS) in order for it to be available to the public for review.

3.1.2 Washington DC-MD-VA Approach

To determine whether or not a site is in compliance with the 1997 annual PM_{2.5} NAAQS, the three-year average of annual average PM_{2.5} concentrations must be calculated and compared to the standard of 15.0 µg/m³. Compliance with the 1997 24-hour NAAQS for PM_{2.5} is determined by the three year average of the 98th percentile of each individual year's 24-hour concentrations. The 1997 24-hour NAAQS standard is 65 µg/m³. For an area to be in compliance with the 1997 PM_{2.5} NAAQS, all sites within that area must be in compliance with

the annual and 24-hour NAAQS. Even if there is only one station that is not in compliance, that one station makes the entire area a nonattainment area for that standard.

The Washington DC-MD-VA region's federal reference monitors have demonstrated compliance with the $65 \mu\text{g}/\text{m}^3$ daily standard since the inception of the $\text{PM}_{2.5}$ monitoring programs within each state. The federal reference monitors have demonstrated compliance with the $15.0 \mu\text{g}/\text{m}^3$ annual standard since 2005. The most recent design value for the 24-hour standard, based on 2008-2010 data, is $27 \mu\text{g}/\text{m}^3$, and the most recent design value for the annual standard, based on 2008-2010 data, is $11.5 \mu\text{g}/\text{m}^3$.

Figure 3-1 shows the location of each of the $\text{PM}_{2.5}$ monitoring sites within the Washington DC-MD-VA area. Three $\text{PM}_{2.5}$ speciation monitors located at the McMillan Reservoir and the Haines Point sites in the District of Columbia and the Howard university-Beltsville site in Maryland also operate in this area.

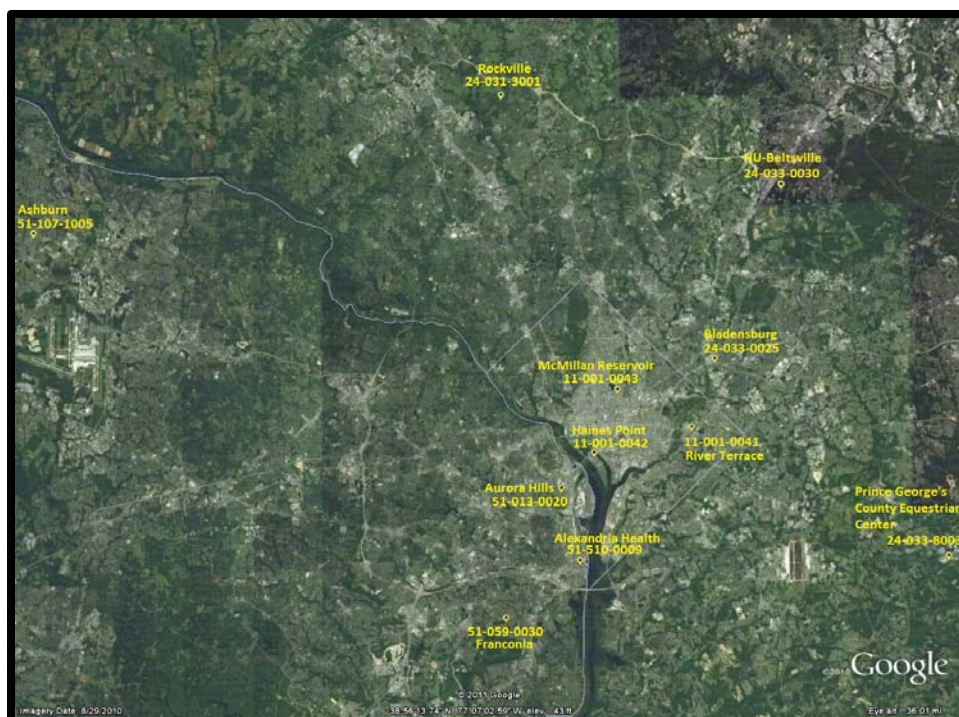


Figure 3-1: Washington DC-MD-VA $\text{PM}_{2.5}$ Monitoring Sites (As of December 6, 2011)

All $\text{PM}_{2.5}$ ambient monitoring data through 2010 have been quality assured in accordance with 40 CFR 58.10, recorded in U.S. EPA's AQS, and are available for public review. The 2005-2007 design value has been chosen as the attainment year for this area, and therefore the attainment year inventory used within this redesignation request and the § 175A maintenance plan is based on year 2007.

The states commit to continuing the operation of an appropriate $\text{PM}_{2.5}$ air quality monitoring network to verify the maintenance of the attainment status. Table 3-1 and Table 3-2 show the design values for monitoring sites in the Washington DC-MD-VA nonattainment area.

Table 3-1: Washington DC-MD-VA 24-Hour PM_{2.5} Design Values

| Site | 1999-2001 | 2000-2002 | 2001-2003 | 2002-2004 | 2003-2005 | 2004-2006 | 2005-2007 | 2006-2008 | 2007-2009 | 2008-2010 |
|---------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 11-001-0041 River Terrace, DC | 41 | 45 | 44 | 42 | 38 | 37 | 35 | 32 | 29 | 27 |
| 11-001-0042 Haines Point, DC | 39 | 38 | 37 | 37 | 37 | 35 | 33 | 31 | 28 | 26 |
| 11-001-0043 McMillan Reservoir, DC | 40 | 41 | 40 | 37 | 35 | 34 | 34 | 32 | 29 | 26 |
| 24-031-3001 Rockville, MD | 35 | 37 | 35 | 33 | 32 | 31 | 30 | 28 | 26 | 26 |
| 24-033-0025 Bladensburg, MD | * | * | * | * | * | * | 32 | 31 | 28 | 25 |
| 24-033-0030 HU-Beltsville, MD | * | * | * | 38 | 35 | 35 | 32 | 31 | 28 | 25 |
| 24-033-8003 Equestrian Center, MD | * | 47 | 39 | 39 | 33 | 35 | 32 | 31 | 26 | 22 |
| 51-013-0020 Aurora Hills, VA | 36 | 37 | 38 | 37 | 36 | 34 | 32 | 30 | 27 | 24 |
| 51-059-0030 Franconia, VA | 34 | 36 | 35 | 35 | 35 | 35 | 34 | 31 | 28 | 25 |
| 51-107-1005 Ashburn, VA | 36 | 35 | 34 | 34 | 36 | 35 | 33 | 29 | 25 | 22 |
| 51-510-0009 Alexandria, VA | * | * | * | * | * | * | * | * | * | 24 |

*Monitor not operating or a complete 3 year value was not available.

Table 3-2: Washington DC-MD-VA Annual PM_{2.5} Design Values

| Site | 1999-2001 | 2000-2002 | 2001-2003 | 2002-2004 | 2003-2005 | 2004-2006 | 2005-2007 | 2006-2008 | 2007-2009 | 2008-2010 |
|---------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 11-001-0041 River Terrace, DC | 16.5 | 16.4 | 15.8 | 15.1 | 14.8 | 14.4 | 14.0 | 13.0 | 12.0 | 11.2 |
| 11-001-0042 Haines Point, DC | 15.2 | 15.3 | 14.7 | 14.5 | 14.5 | 14.5 | 14.2 | 13.1 | 12.1 | 11.2 |
| 11-001-0043 McMillan Reservoir, DC | 15.7 | 15.6 | 15.2 | 14.7 | 14.4 | 14.0 | 13.5 | 12.5 | 11.6 | 10.8 |
| 24-031-3001 Rockville, MD | 13.5 | 13.4 | 12.6 | 12.5 | 12.7 | 12.5 | 12.2 | 11.3 | 10.8 | 10.3 |
| 24-033-0025 Bladensburg, MD | * | * | * | * | * | * | 14.1 | 13.3 | 12.4 | 11.5 |
| 24-033-0030 HU-Beltsville, MD | * | * | * | 12.6 | 13.0 | 12.5 | 12.2 | 11.6 | 11.1 | 10.0 |
| 24-033-8003 Equestrian Center, MD | * | 15.5 | 14.1 | 13.8 | 13.2 | 13.1 | 12.8 | 11.9 | 10.8 | 9.9 |
| 51-013-0020 Aurora Hills, VA | 14.5 | 14.8 | 14.6 | 14.5 | 14.6 | 14.2 | 14.0 | 12.9 | 11.9 | 10.8 |
| 51-059-0030 Franconia, VA | 14.0 | 13.9 | 13.6 | 13.4 | 13.6 | 13.4 | 13.0 | 12.1 | 11.1 | 10.3 |
| 51-107-1005 Ashburn, VA | 13.6 | 13.8 | 13.6 | 13.5 | 13.9 | 13.6 | 13.2 | 12.2 | 11.2 | 10.3 |
| 51-510-0009 Alexandria, VA | * | * | * | * | * | * | * | * | * | 11.3 |

*Monitor not operating or a complete 3 year value was not available.

Figure 3-2 illustrates the steady decrease in the design value for the 24-hour $PM_{2.5}$ design value. Since 2006, the $PM_{2.5}$ design value for the Washington DC-MD-VA nonattainment area has decreased an average of $2.5 \mu\text{g}/\text{m}^3$ per year. This equates to a 27% drop in the 24-hour $PM_{2.5}$ design value over the last four years. Looking at the interval from 2002 to 2010, the 24-hour $PM_{2.5}$ design value decreased $18 \mu\text{g}/\text{m}^3$ over the eight year period, which is a 40% decrease in the $PM_{2.5}$ design value since 2002.

Figure 3-2: Washington DC-MD-VA 24-Hour $PM_{2.5}$ Data Trends

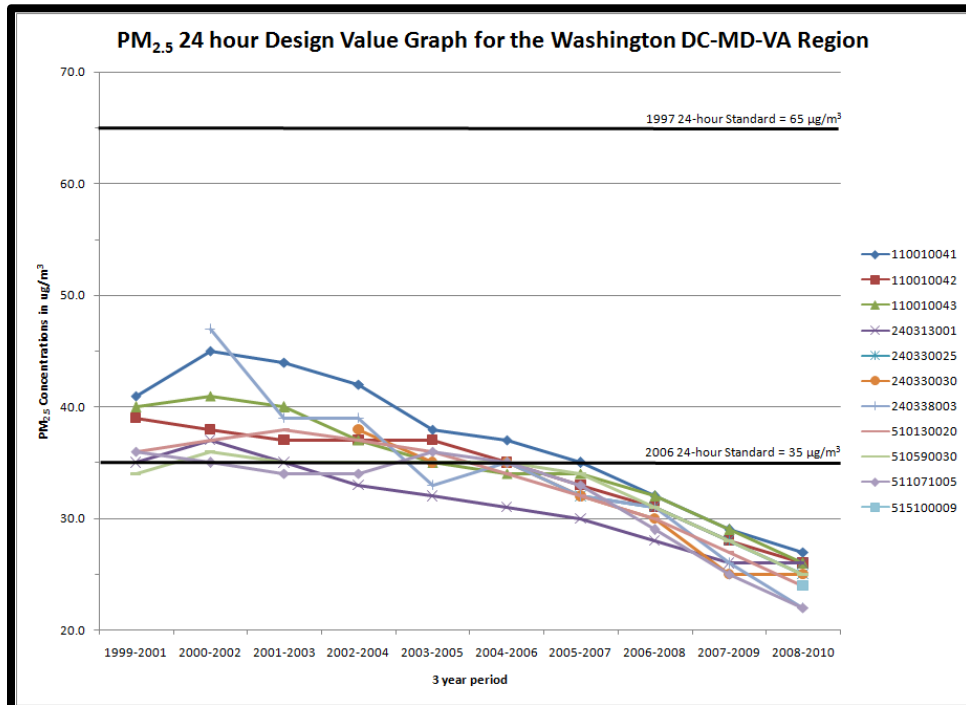
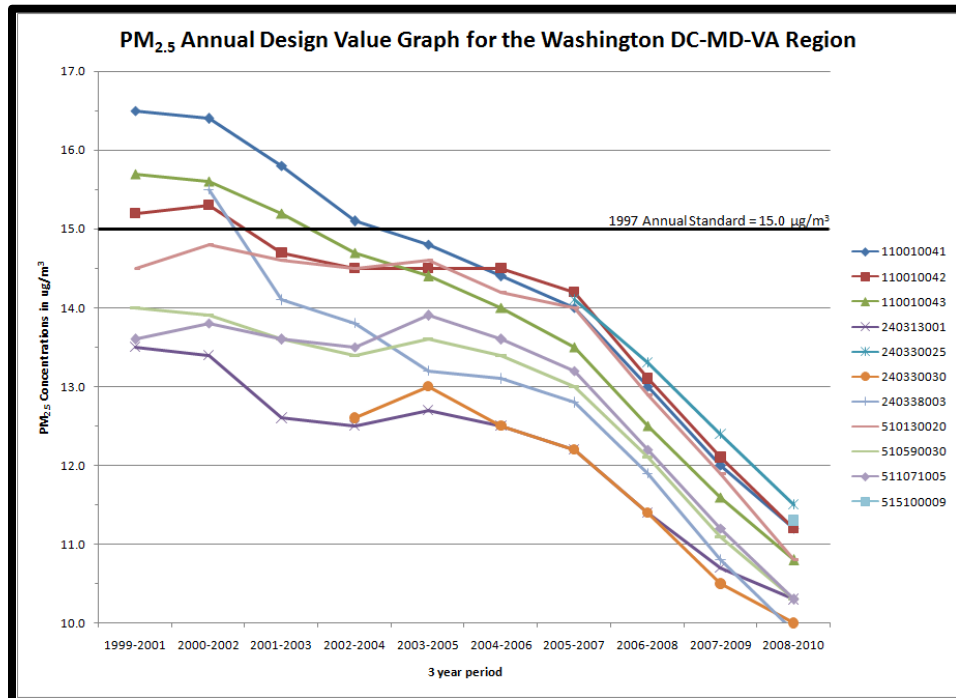


Figure 3-3 shows a decreasing trend in the annual $PM_{2.5}$ design value as well. For each year from 2001 to 2010, the annual $PM_{2.5}$ design value decreased for the Washington DC-MD-VA 1997 $PM_{2.5}$ NAAQS nonattainment area. Over this time period, the annual $PM_{2.5}$ design value has improved $5.8 \mu\text{g}/\text{m}^3$, a decrease of 33.5% since 2001. Since 2007, the annual $PM_{2.5}$ design value has decreased $2.7 \mu\text{g}/\text{m}^3$ over three years, an average decrease of $0.9 \mu\text{g}/\text{m}^3$ per year.

Figure 3-3: Washington DC-MD-VA Annual $PM_{2.5}$ Data Trends



3.2 Permanent and Enforceable Emission Reductions

3.2.1 U. S. EPA Requirements

As noted in § 107(d)(3)(E)(iii) and in the redesignation guidance, states must be able to reasonably attribute its air quality improvements to emission reductions of precursors or direct $PM_{2.5}$ that are permanent and enforceable. Attainment resulting from temporary reductions in emission rates (such as reduced production or shutdown due to temporary adverse economic conditions) or unusually favorable meteorological conditions does not qualify.

In making this showing, the state should estimate the percent reduction (from the year that was used to determine the design value for designation and classification) achieved from federal and state measures. Estimates should consider factors such as emission rates and production capacities in order to show that the improvements are the result of implemented controls. The analysis should assume that sources are operating at permitted levels (or historic peak levels), unless evidence is presented that such an assumption is unrealistic.

For this redesignation request and the associated maintenance plan, ammonia and volatile organic compounds (VOC) are precursors, however, they are not considered significant overall contributors to $PM_{2.5}$ air quality issues, as noted in the $PM_{2.5}$ implementation rule at 40 CFR 51.1002(c)(3). Therefore, this maintenance demonstration focuses on SO_2 , $PM_{2.5}$, and NO_x .

3.2.2 Washington DC-MD-VA Approach

Permanent and enforceable reductions of PM_{2.5}, NO_x and SO₂, from a variety of state and federal measures, have contributed to the attainment of the standard for fine particles. Measures that have contributed to fine particulate air quality improvement include, but are not limited to, a variety of on-road emissions control programs and federal consent decrees for specific power plants within the Washington DC-MD-VA area.

3.2.2.1 On-Road Emission Reduction Requirements

A variety of federal vehicle control programs have contributed to reduced on-road emissions of PM_{2.5}, NO_x, and SO₂ in the Washington DC-MD-VA area between 2002 and 2007. These programs include:

- Federal Tier 1 New Vehicle Emission and New Federal Evaporative Emission Standards: Under § 202, U.S. EPA established federal motor vehicle emission standards (Tier I standards), which were phased in beginning with model year 1994. The benefits of this program are reflected in the 2002 base year inventory and the 2007 attainment year inventory. This federally implemented program affects light duty vehicles and light duty trucks. The regulations require more stringent exhaust emission standards as well as a uniform level of evaporative emission controls.
- National Low Emission Vehicle Program: Under the National Low Emission Vehicle program, automobile manufacturers agreed to comply with tailpipe standards that were more stringent than U.S. EPA could mandate prior to model year 2004. Once manufacturers committed to the program, the standards became enforceable in the same manner in which other federal motor vehicle emission control requirements were enforceable. The program was in place nationwide for model year 2001, and the benefits of this program are reflected in the 2002 base year inventory and the 2007 attainment year inventory.
- Tier 2 Motor Vehicle Emission Regulations: On February 10, 2000 (65 FR 6698), U.S. EPA promulgated a rule requiring more stringent tailpipe emissions standards for all passenger vehicles, including sport utility vehicles, minivans, vans, and pick-up trucks. These regulations also required lower levels of sulfur in gasoline, which ensured the effectiveness of low emission control technologies in vehicles and reduced harmful air pollution. The tailpipe and sulfur standards required passenger vehicles to be 77 to 95% cleaner than those built before the rule was promulgated and reduced the sulfur content of gasoline by up to 90% by 2006. The benefits of this program are reflected in the 2007 attainment year on-road mobile inventory.
- Heavy Duty Diesel Engine Rule: This federal rule (66 FR 5002) required truck manufacturers to comply with more stringent tailpipe standards by 2004 and 2007. The rule also mandated use of ultra-low sulfur diesel fuel to enable modern pollution control technology on trucks and buses. Refiners began producing the cleaner-burning diesel fuel for use in highway vehicles beginning June 1, 2006. The benefits of this program are reflected in the 2007 attainment year inventory for on-road mobile sources.

The reductions in emissions from the on-road sector between 2002 and 2007 are presented in Table 3-3. These emissions estimates are derived using the Motor Vehicle Emissions Simulator (MOVES2010a), the latest travel demand model (TMD????), and the most recent planning assumptions as updated in the Metropolitan Washington Council of Governments Cooperative Forecast. To calculate incremental benefits from the implementation of the individual control measures listed above is very difficult. Therefore, the information presented summarizes the combined benefits of these rules. More information on the development of these emissions estimates may be found in the Technical Support Document.

Table 3-3: On-Road Emission Reductions for the Washington DC-MD-VA Area, 2002 - 2007

| 2002 On-Road Emissions | | | | 2007 On-Road Emissions | | | | 2002-2007 % On-Road Reduction, Metro Wide |
|--|----|----|----------------|------------------------|----|----|----------------|--|
| DC | MD | VA | Metro Total | DC | MD | VA | Metro Total | |
| SO₂ On-Road Emissions, tpy | | | | | | | | |
| | | | | | | | | |
| NO_x On-Road Emissions, tpy | | | | | | | | |
| | | | | | | | | |
| PM_{2.5} On-Road Emissions, tpy | | | | | | | | |
| | | | | | | | | |

3.2.2.2 Federal Consent Orders and Permitting Actions

Two federal settlements reduced emissions of NO_x and SO₂ significantly at electric generating units (EGUs) located within the Washington DC-MD-VA nonattainment area. In the first of these consent decrees, which was signed April 17, 2003 and involved Virginia Electric and Power Company (VEPCO), the Possum Point Power Station was required to switch two coal-fired boilers to natural gas. Since the power station is located in Fairfax, Virginia, this consent decree resulted in significant reductions of emissions for both SO₂ and NO_x. Table 3-4 provides the percentage reduction of SO₂ and NO_x resulting from this consent decree.

Table 3-4: Possum Point Power Station Reductions, 2002-2007

| Unit ID | 2002 | | 2007 | | Percent Reduction, SO ₂ | Percent Reduction, NO _x |
|---------|------------------------|------------------------|------------------------|------------------------|--|--|
| | SO ₂ tpy | NO _x tpy | SO ₂ tpy | NO _x tpy | | |
| 3 | 6,228 | 1,582 | 0 | 39 | 99+% | 97.5% |
| 4 | 10,975 | 2,349 | 1 | 111 | 99+% | 95.3% |
| 5 | 3,804 | 2,096 | 1,949 | 562 | 48.8% | 73.2% |
| Total: | 21,006 | 5,026 | 1,950 | 712 | 90.7% | 63.5% |

Data taken from U.S. EPA's CAMD database.

In a joint federal-state settlement, Mirant Mid-Atlantic agreed to eliminate nearly 29,000 tons of harmful pollution each year that is generated by four plants, all of which are located in the Washington DC-MD-VA nonattainment area. Under the terms of the settlement, Mirant capped NO_x emissions on a system-wide basis from its Chalk Point Generating Plant, in Prince George's County, Maryland; Dickerson Generating Plant, in Montgomery County, Maryland; Morgantown Generating Plant, in Charles County, Maryland; and Potomac River Generating Station, in Alexandria, Virginia.

Table 3-5: Washington DC-MD-VA Mirant System 2002-2007 NO_x Reductions

| Facility | Unit ID | 2002 NO _x Emissions | | 2007 NO _x Emissions | | % Reduction |
|---|---------|--------------------------------|---------------|--------------------------------|---------------|--------------|
| | | lbs/mmbtu | tpy | lbs/mmbtu | tpy | |
| Chalk Point | 1 | 0.562 | 6,337 | 0.446 | 4,885 | 22.9% |
| Chalk Point | 2 | 0.560 | 6,755 | 0.450 | 4,835 | 28.4% |
| Chalk Point | 3 | 0.156 | 846 | 0.136 | 538 | 36.4% |
| Chalk Point | 4 | 0.169 | 1,169 | 0.128 | 426 | 63.6% |
| Dickerson | 1 | 0.466 | 2,121 | 0.343 | 1,645 | 22.5% |
| Dickerson | 2 | 0.498 | 2,444 | 0.334 | 1,644 | 32.7% |
| Dickerson | 3 | 0.471 | 2,661 | 0.338 | 1,658 | 37.7% |
| Morgantown | 1 | 0.504 | 10,014 | 0.191 | 3,097 | 69% |
| Morgantown | 2 | 0.501 | 8,605 | 0.360 | 6,321 | 26.5% |
| Potomac River | 1 | 0.379 | 759 | 0.326 | 483 | 36.3% |
| Potomac River | 2 | 0.416 | 789 | 0.287 | 444 | 43.7% |
| Potomac River | 3 | 0.418 | 1,545 | 0.254 | 412 | 73.4% |
| Potomac River | 4 | 0.415 | 1,443 | 0.234 | 481 | 66.6% |
| Potomac River | 5 | 0.398 | 1,474 | 0.245 | 516 | 65.0% |
| Washington DC-MD-VA Mirant System: | | | 46,962 | -- | 27,386 | 42.7% |

Source: U.S. EPA's CAMD database.

These consent decrees remain enforceable, and these facilities must continue to meet the pertinent applicable requirements. Tables 3-4 and 3-5 enumerate emission reductions achieved from these consent decrees by 2007. Additional reductions are required by each consent decree in future years so that regional air quality will continue to benefit from these decrees. These requirements will not change due to the redesignation of the Washington DC-MD-VA area to attainment.

3.3 SIP Completeness

3.3.1 U.S. EPA Requirements

States must provide assurances that the applicable implementation plan has been fully approved by EPA under § 110(k) and must satisfy all requirements that apply to the area. Approval action on SIP elements and the redesignation request may occur simultaneously. An area cannot be redesignated if a required element of its plan is the subject of a disapproval; a finding of failure to submit or to implement the SIP; or partial, conditional, or limited approval.

For purposes of redesignation, states must meet all requirements of § 110 and Part D of the CAA that were applicable prior to submittal of the complete redesignation request. Subpart 1 of Part D consists of general requirements applicable to all areas which are designated nonattainment based on a violation of the NAAQS. Subpart 4 of Part D consists of more specific requirements applicable to particulate matter (specifically to address PM₁₀). However, for the purpose of implementing the 1997 PM_{2.5} standard, the U.S. EPA's Implementation Rule stated Subpart 1, rather than Subpart 4, is appropriate for the purpose of implementing PM_{2.5} (72 FR 20589).

3.3.2 Washington DC-MD-VA Approach

The Washington DC-MD-VA area has had few SIP submittal requirements in the past since the area has not been a persistent nonattainment area for PM_{2.5}. Since the area's air quality improved so that the area met the 1997 PM_{2.5} NAAQS well prior to the 2010 compliance date, most requirements, other than those associated with major new source review permitting and conformity, were limited.

Section 110(a) of the CAA contains the general requirements for a SIP. Section 110(a)(2) provides that the implementation plan submitted by a state must have been adopted by the state after reasonable public notice and hearing, and that, among other things, it must include:

- Enforceable emission limitations and other control measures, means or techniques necessary to meet the requirements of the CAA;
- Provide for establishment and operation of appropriate devices, methods, systems and procedures necessary to monitor ambient air quality;
- Provide for implementation of a source permit program to regulate the modification and construction of any stationary source within the areas covered by the plan; include provisions for the implementation of Part C, prevention of significant deterioration (PSD) and Part D, NSR permit programs;
- Include criteria for stationary source emission control measures, monitoring, and reporting; include provisions for air quality modeling; and
- Provide for public and local agency participation in planning and emission control rule development.

Section 110(a)(2)(D) also requires state plans to prohibit emissions from within the state that contribute significantly to nonattainment or maintenance areas in any other state, or which interfere with programs under Part C to prevent significant deterioration of air quality or to achieve reasonable progress toward the national visibility goal for federal Class I areas (national parks and wilderness areas).

Table 3-6a-c provides information on these submittals for the District of Columbia, the State of Maryland, and the Commonwealth of Virginia.

Table 3-6a: Infrastructure Submittals in the Washington DC-MD-VA area for the 1997 PM_{2.5} NAAQS - Virginia

| SIP Requirement | Deadline | Latest Action | Date | FR Citation (link to GPO website) |
|---|------------|---------------|------------|--------------------------------------|
| Section 110(a)(2)(A) Emission limits and other control measures | 07/18/2000 | Approval | 10/11/2011 | 76 FR 62635 |
| Section 110(a)(2)(B) Ambient air quality monitoring/data system | 07/18/2000 | Approval | 10/11/2011 | 76 FR 62635 |
| Section 110(a)(2)(C) Program for enforcement of control measures | 07/18/2000 | Approval | 10/11/2011 | 76 FR 62635 |
| Section 110(a)(2)(D)(i) - I Prong 1: Interstate transport - significant contribution | 07/18/2000 | Approval | 12/28/2007 | 72 FR 73602 |
| Section 110(a)(2)(D)(i) - I Prong 2: Interstate transport - interfere with maintenance | 07/18/2000 | Approval | 12/28/2007 | 72 FR 73602 |
| Section 110(a)(2)(D)(i) - II Prong 3: Interstate transport - prevention of significant deterioration | 07/18/2000 | Completeness | 05/13/2008 | |
| Section 110(a)(2)(D)(i) - II Prong 4: Interstate transport - protect visibility | 07/18/2000 | Completeness | 05/13/2008 | |
| Section 110(a)(2)(E) Adequate resources | 07/18/2000 | Approval | 10/11/2011 | 76 FR 62635 |
| Section 110(a)(2)(F) Stationary source monitoring system | 07/18/2000 | Approval | 10/11/2011 | 76 FR 62635 |
| Section 110(a)(2)(G) Emergency power | 07/18/2000 | Approval | 10/11/2011 | 76 FR 62635 |
| Section 110(a)(2)(H) Future SIP revisions | 07/18/2000 | Approval | 10/11/2011 | 76 FR 62635 |
| Section 110(a)(2)(J) Consultation with government officials; Public notification; PSD and visibility prot | 07/18/2000 | Approval | 10/11/2011 | 76 FR 62635 |
| Section 110(a)(2)(K) Air quality modeling/data | 07/18/2000 | Approval | 10/11/2011 | 76 FR 62635 |
| Section 110(a)(2)(L) Permitting fees | 07/18/2000 | Approval | 10/11/2011 | 76 FR 62635 |
| Section 110(a)(2)(M) Consultation/participation by affected local entities | 07/18/2000 | Approval | 10/11/2011 | 76 FR 62635 |

Source: http://www.epa.gov/airquality/urbanair/sipstatus/reports/va_infrabypoll.html

Table 3-6b: Infrastructure Submittals in the Washington DC-MD-VA area for the 1997 PM_{2.5} NAAQS - Maryland

| SIP Requirement | Deadline | Latest Action | Date | FR Citation (link to GPO website) |
|---|------------|-------------------|------------|--------------------------------------|
| Section 110(a)(2)(A) Emission limits and other control measures | 07/18/2000 | Proposed approval | 09/12/2011 | 76 FR 56130 |
| Section 110(a)(2)(B) Ambient air quality monitoring/data system | 07/18/2000 | Proposed approval | 09/12/2011 | 76 FR 56130 |
| Section 110(a)(2)(C) Program for enforcement of control measures | 07/18/2000 | Proposed approval | 09/12/2011 | 76 FR 56130 |
| Section 110(a)(2)(D)(i) - I Prong 1: Interstate transport - significant contribution | 07/18/2000 | Final FIP | 10/07/2011 | 76 FR 48208 |
| Section 110(a)(2)(D)(i) - I Prong 2: Interstate transport - interfere with maintenance | 07/18/2000 | Approval | 10/30/2009 | 74 FR 56117 |
| Section 110(a)(2)(D)(i) - II Prong 3: Interstate transport - prevention of significant deterioration | 07/18/2000 | Completeness | 10/03/2008 | |
| Section 110(a)(2)(D)(i) - II Prong 4: Interstate transport - protect visibility | 07/18/2000 | Completeness | 10/03/2008 | |
| Section 110(a)(2)(E) Adequate resources | 07/18/2000 | Proposed approval | 09/12/2011 | 76 FR 56130 |
| Section 110(a)(2)(F) Stationary source monitoring system | 07/18/2000 | Proposed approval | 09/12/2011 | 76 FR 56130 |
| Section 110(a)(2)(G) Emergency power | 07/18/2000 | Proposed approval | 09/12/2011 | 76 FR 56130 |
| Section 110(a)(2)(H) Future SIP revisions | 07/18/2000 | Proposed approval | 09/12/2011 | 76 FR 56130 |
| Section 110(a)(2)(J) Consultation with government officials; Public notification; PSD and visibility prot | 07/18/2000 | Proposed approval | 09/12/2011 | 76 FR 56130 |
| Section 110(a)(2)(K) Air quality modeling/data | 07/18/2000 | Proposed approval | 09/12/2011 | 76 FR 56130 |
| Section 110(a)(2)(L) Permitting fees | 07/18/2000 | Proposed approval | 09/12/2011 | 76 FR 56130 |
| Section 110(a)(2)(M) Consultation/participation by affected local entities | 07/18/2000 | Proposed approval | 09/12/2011 | 76 FR 56130 |

Source: http://www.epa.gov/airquality/urbanair/sipstatus/reports/md_infrabypoll.html

Table 3-6c: Infrastructure Submittals in the Washington DC-MD-VA area for the 1997 PM_{2.5} NAAQS - District of Columbia

| SIP Requirement | Deadline | Latest Action | Date | FR Citation (link to GPO website) |
|--|------------|---------------|------------|--------------------------------------|
| Section 110(a)(2)(A) Emission limits and other control measures | 07/18/2000 | Approval | 05/12/2011 | 76 FR 20237 |
| Section 110(a)(2)(B) Ambient air quality monitoring/data system | 07/18/2000 | Approval | 05/12/2011 | 76 FR 20237 |
| Section 110(a)(2)(C) Program for enforcement of control measures | 07/18/2000 | Approval | 05/12/2011 | 76 FR 20237 |

| | | | | |
|---|------------|--------------|------------|-----------------------------|
| Section 110(a)(2)(D)(i) - I Prong 1: Interstate transport - significant contribution | 07/18/2000 | Approval | 06/27/2006 | 71 FR 25328 |
| Section 110(a)(2)(D)(i) - I Prong 2: Interstate transport - interfere with maintenance | 07/18/2000 | Approval | 06/27/2006 | 71 FR 25328 |
| Section 110(a)(2)(D)(i) - II Prong 3: Interstate transport - prevention of significant deterioration | 07/18/2000 | Completeness | 07/11/2008 | |
| Section 110(a)(2)(D)(i) - II Prong 4: Interstate transport - protect visibility | 07/18/2000 | Completeness | 07/11/2008 | |
| Section 110(a)(2)(E) Adequate resources | 07/18/2000 | Approval | 05/12/2011 | 76 FR 20237 |
| Section 110(a)(2)(F) Stationary source monitoring system | 07/18/2000 | Approval | 05/12/2011 | 76 FR 20237 |
| Section 110(a)(2)(G) Emergency power | 07/18/2000 | Approval | 05/12/2011 | 76 FR 20237 |
| Section 110(a)(2)(H) Future SIP revisions | 07/18/2000 | Approval | 05/12/2011 | 76 FR 20237 |
| Section 110(a)(2)(J) Consultation with government officials; Public notification; PSD and visibility prot | 07/18/2000 | Approval | 05/12/2011 | 76 FR 20237 |
| Section 110(a)(2)(K) Air quality modeling/data | 07/18/2000 | Approval | 05/12/2011 | 76 FR 20237 |
| Section 110(a)(2)(L) Permitting fees | 07/18/2000 | Approval | 05/12/2011 | 76 FR 20237 |
| Section 110(a)(2)(M) Consultation/participation by affected local entities | 07/18/2000 | Approval | 05/12/2011 | 76 FR 20237 |

Source: http://www.epa.gov/airquality/urbanair/sipstatus/reports/dc_infraypoll.html

Section 172(c) contains general requirements for nonattainment plans. The requirements for reasonable further progress, identification of certain emissions increases, and other measures needed for attainment do not apply for redesignations because they only have meaning for areas not attaining the standard. [The requirements for an emission inventory will be satisfied by the inventory requirements of the maintenance plan. The Technical Support Document discusses this requirement in more detail.] **or** [The requirements for an emissions inventory was satisfied by the information in Chapter 3 and Appendix B of the *Plan to Improve Air Quality in the Washington, DC-MD-VA Region*, which was submitted to EPA on April 4, 2008, by Virginia; April 2, 2008 by the District of Columbia; and March 8, 2008 by Maryland.]

The SIPs for the District of Columbia, the State of Maryland, and the Commonwealth of Virginia contain provisions that are consistent with the § 176(c)(4) conformity requirements. In Virginia's SIP, general conformity requirements are contained in 9VAC5 Chapter 160 (Regulation for General Conformity) and transportation conformity requirements are contained in 9VAC5 Chapter 151 (Regulation for transportation Conformity). In the District of Columbia's SIP, transportation and general conformity requirements are contained in 20 DCMR Section 403. In Maryland's SIP, both general conformity requirements and transportation conformity requirements are contained in COMAR 26.11.26.

3.4 Maintenance Plan

3.4.1 U.S. EPA Requirements

Section 107(d)(3)(E) of the CAA stipulates that for an area to be redesignated, U.S. EPA must fully approve a maintenance plan that meets the requirements of § 175(A). States may submit both the redesignation request and the maintenance plan at the same time, and rulemaking on both may proceed on a parallel track. All applicable nonattainment area requirements remain in place. The maintenance plan will constitute a SIP revision and must provide for maintenance of the relevant NAAQS in the area for at least 10 years after redesignation. Section 175(A) further states that the plan shall contain such additional measures, if any, as may be necessary to ensure such maintenance. States must also submit a SIP revision eight years after the original redesignation request is approved to provide for maintenance of the NAAQS for an additional 10 years following the first 10-year period.

U.S. EPA requires the following provisions to ensure maintenance of the NAAQS:

- The state must develop an attainment emissions inventory to identify the level of emissions in the area which is sufficient to attain the NAAQS.
- A state may generally demonstrate maintenance by showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory over the 10-year period following redesignation.
- Once an area has been redesignated, the state must continue to operate an appropriate air quality monitoring network in order to verify the area's attainment status.
- The state must ensure that it has the legal authority to implement and enforce all measures necessary to attain and maintain the NAAQS. Continued attainment must be verified by the state by indicating how maintenance plan progress will be tracked.
- Contingency measures must be available to promptly correct any NAAQS violation. At a minimum, the contingency measures must include a requirement that the state will implement all measures contained in the nonattainment SIP prior to redesignation.

3.4.2 Washington DC-MD-VA Approach

An appropriate maintenance plan for the area meeting all federal requirements is being submitted along with this redesignation request for each state in the Washington DC-MD-VA area. This maintenance plan relies upon programs such as the Healthy Air Act, New Source Review permitting, Tier II vehicle emission standards, and other on road and nonroad engine standards, to demonstrate that air quality will be maintained at least 10 years into the future. The plan contains contingency measures to be implemented in case of worsening air quality and mobile vehicle emission budgets for transportation conformity purposes. These contingency measures do not reflect measures contained in the nonattainment SIP since the Washington DC-MD-VA nonattainment area is operating under a clean data determination rather than an approved attainment plan.