

**Region III Plan Summary**  
**Washington, DC-MD-VA 8-Hour Ozone Moderate Nonattainment Area**

**Title:** Reasonable Further Progress Plan, 2002 Base Year Emission Inventory, Contingency Measures, Reasonably Available Control Measures, and Transportation Conformity Budgets for the Washington, DC Area 1997 8-Hour Moderate Ozone Nonattainment Area

**Federal Register Dates:** June 30, 2011, 76 FR 38334 (Proposed Rule); September 20, 2011, 76 FR 58116 (Final Rule)

**EPA Effective date:** October 20, 2011

**State Submittal Date:** June 12, 2007 from the District of Columbia Department of the Environment (DDOE), June 4, 2007 from the Maryland Department of the Environment (MDE), and on June 12, 2007 from the Virginia Department of Environmental Quality (VADEQ)

**Affected Areas:** District of Columbia; Arlington, Fairfax, Loudoun, and Prince William Counties and the cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park in Virginia; and Calvert, Charles, Frederick, Montgomery, and Prince George's Counties in Maryland.

**Summary of the Plan**

In June 2007, DDOE, MDE, and VADEQ (the States) submitted SIP revisions to address emissions inventory, reasonable further progress (RFP), reasonably available control measures (RACM) analysis, and contingency measure requirements for the Washington DC-MDVA moderate nonattainment area (Washington Area) for the 1997 8-hour ozone national ambient air quality standard (NAAQS). The SIP revision also establishes a motor vehicle emissions budget (MVEB) for 2008 for the Washington Area.

Pursuant to Phase 1 of the 8-hour ozone implementation rule, an area was classified under Subpart 2 of the Clean Air Act (CAA) based on its 8-hour design value if that area had a 1-hour design value at or above 0.121 ppm (the lowest 1-hour design value in Table 1 of Subpart 2). Based on this criterion, the Washington Area was classified under Subpart 2 as moderate nonattainment areas.

**Emission Inventories**

A summary of the Washington Area 2002 base year VOC and NOx emissions inventory is included in Table 1, below.

**Table 1. Washington Area 2002 Base Year VOC & NOx Emissions in Tons per Day (tpd)**

<b>Emission Source Category</b>	<b>VOC</b>	<b>NOx</b>
Point	12.91	220.6

Stationary Area	192.64	24.25
Non-Road Mobile	125.79	85.72
On-Road Mobile	116.94	266.65
Total (excluding Biogenics)	448.28	597.22
Biogenics	314.74	3.07

Under the Clean Air Act, the emissions benefits resulting from the Federal Motor Vehicle Control Program (FMVCP) and the Reid Vapor Pressure (RVP) regulations are excluded from the base year inventory. The FMVCP and RVP emissions reductions, determined by the state using EPA's on-road mobile source emissions modeling software (MOBILE6), are then removed from the base year inventory by the state, resulting in an adjusted base year inventory. The emission reductions needed to satisfy the RFP requirement are then calculated from the adjusted base year inventory. These reductions are then subtracted from the adjusted base year inventory to establish the emissions target for the RFP milestone year (2008). The RFP SIP revision must provide for a 15 percent emission reduction (either NOx and/or VOC) accounting for any growth that occurs during the 6-year period following the baseline emissions inventory year, that is, 2002-2008.

The Washington ozone nonattainment area under the 1-hour ozone standard had the same boundary as the Washington Area under the 1997 8-hour ozone standard. The Washington nonattainment area under the 1-hour ozone standard was classified as severe. For the 1-hour ozone NAAQS, EPA fully approved the 15% ROP plans for the Washington, DC 1-hour severe ozone nonattainment area on August 5, 1999 (64 FR 42600), July 19, 2000 (65 FR 44686), and October 6, 2000 (65 FR 59727). Therefore, according to the Phase 2 Rule, the RFP plan for the Washington Area may use either NOx or VOC emissions reductions (or both) to achieve the 15 percent emission reduction requirement.

The Washington Area 2002 anthropogenic base year inventory is summarized in Table 2, below.

**Table 2. Washington Area 2002 Anthropogenic Base Year Inventory (Ozone Season tpd)**

Source Category	VOC	NOx
Point	12.91	220.6
Area	192.64	24.25
Nonroad	125.79	85.72
On-Road	116.94	266.65
Total	<b>448.28</b>	<b>597.22</b>

The States calculated the non-creditable emission reductions between 2002 and 2008 by modeling its 2002 and 2008 motor vehicle emissions with all post-1990 CAA measures turned off, and calculating the difference. The non-creditable reductions are calculated in Table 3,

below

**Table 3. Washington Area Non-Creditable Emission Reductions (Ozone Season tpd)**

Source Category	VOC	NO <sub>x</sub>
(i) 2002 On-Road	166.55	308.24
(ii) 2008 On-Road	154.10	276.63
Non-creditable Reductions (i) – (ii)	12.45	31.61

The States' calculations of the Washington Area 2002 VOC and NO<sub>x</sub> inventories adjusted relative to 2008 and VOC and NO<sub>x</sub> target levels for 2008 are summarized in Table 4, below.

**Table 4. Washington Area 2008 RFP Target Level Calculations (Ozone Season tpd)**

Description		Formula	VOC
A	2002 Rate-Of Progress Base Year Inventory		448.28
B	FMVCP/RVP Reductions Between 2002 And 2008		12.45
C	2002 Adjusted Base Year Inventory Relative To 2008	A - B	435.83
D	RFP Ratio		15%
E	Emissions Reductions Required Between 2002 & 2008	C * D	65.37
F	Target Level for 2008	C - E	<b>370.45</b>

The States elected to meet RFP in the Washington Area using only VOC reductions. A moderate 8-hour ozone nonattainment area with an approved 15 percent ROP plan under the 1-hour standard can use reductions from VOC or NO<sub>x</sub> or a combination of either.

**Projected Inventories and Determination of RFP**

Projected controlled 2008 emissions for the Washington Area are summarized in Table 5 below.

**Table 5. Washington Area 2008 Projected Controlled VOC & NO<sub>x</sub> Emissions (tpd)**

Emission Source Category	VOC Emissions (tpd)	NO <sub>x</sub> Emissions (tpd)
Point	13.98	229.36
Area	181.59	26.93
Non-road	92.48	76.91
Mobile	70.98	160.30
Total	358.84	493.22

To determine if 2008 RFP is met in the Washington Area, the total projected controlled emissions must be compared to the target levels calculated in Section B of this notice. As shown

below in Table 6, the total VOC emission projections meet the 2008 RFP emission target. Therefore, the 2008 RFP in the Washington Area is demonstrated.

**Table 6. Determination of whether RFP is met in 2008 in the Washington Area**

Description		VOC Emissions (tpd)
A	Total 2008 Projected Controlled Emissions	358.84
B	Target Level for 2008	370.45
<b>RFP met if A &lt; B</b>		Yes

### **Control Measures and Emission Reductions for RFP**

To meet the RFP requirement for the Washington Area, the States used a combination of area source control, nonroad mobile, and on-road mobile measures.

The area source measures the States used to meet 2008 RFP in the Washington Area include the mobile repair and refinishing rule, phase I of the portable fuel containers rule, the architectural and industrial maintenance (AIM) coatings rule, phase I of the reformulated consumer products rule, and the solvent cleaning operations rule. Area source 2008 emission reductions are 30.98 tpd VOC and 0 tpd NO<sub>x</sub>.

Nonroad measures include phase I and II emissions standards for gasoline-powered nonroad utility engines, the federal non-road diesel engines rule, federal emissions standards for spark ignition marine engines, federal emissions standards for large spark ignition engines, and federal reformulated gasoline use in nonroad motor vehicles and equipment. Using EPA's NONROAD model, the States calculated emission reductions from these measures to be 36.91 tpd VOC and 11.68 tpd NO<sub>x</sub>. EPA reviewed the procedures that the State's used to develop its projected inventories, including the use of the NONROAD model, and found them to be reasonable.

On-road mobile measures include high-tech vehicle inspection and maintenance (enhanced I/M), federal tier I vehicle emission standards and new federal evaporative test procedures, the national low emission vehicle (NLEV) program, tier 2 vehicle standards, and the heavy duty diesel engine (HDDE) rule. On-road 2008 emission reductions that the States calculated using EPA's MOBILE model are 6.19 tpd VOC and 29.67 tpd NO<sub>x</sub>. EPA reviewed the procedures that the States used to develop the projected inventories, including the use of the MOBILE model, and found them to be reasonable.

Additional measures include national standards for locomotives, transportation control measures (TCMs) and vehicle technology, fuel, or maintenance measures, and a voluntary bundle.

Table 7 summarizes the VOC emission reductions that the States claimed in the Washington Area 8-hour ozone plan to meet RFP in the Washington Area. While many of the emission control measures used to meet RFP also resulted in NO<sub>x</sub> emission reductions, the States elected to meet RFP in the Washington Area using only VOC reductions.

Table 7 summarizes the emission reductions achieved in the Washington Area RFP plan by source category.

**Table 7. VOC Control Measures and 2008 Emission Reductions in the Washington Area**

<b>Control Measure</b>	<b>VOC (tpd)</b>
Area Sources Measures	30.98
Nonroad Measures (NONROAD Model)	36.91
Onroad Measures (MOBILE Model)	6.19
Locomotive Standards	0.05
Transportation Control Measures	0.19
Voluntary Bundle	0.19
<b>Total</b>	<b>74.51</b>

**Contingency Measures for Failure to Meet RFP**

Section 172(c)(9) of the CAA requires a state with a moderate or above ozone nonattainment area to include sufficient additional contingency measures in its RFP plan in case the area fails to meet RFP. The same provision of the CAA also requires that the contingency measures must be fully adopted control measures or rules. Upon failure to meet an RFP milestone requirement, the state must be able to implement the contingency measures without any further rulemaking activities. Upon implementation of such measures, additional emission reductions of at least 3 percent of the adjusted 2002 baseline emissions must be achieved.

To meet the requirements for contingency emission reductions, EPA allows states to use NO<sub>x</sub> emission reductions to substitute for VOC emission reductions in their contingency plans. However, the States chose to use only VOC reductions to meet the contingency measure requirement in the Washington Area. The States calculated the contingency VOC reduction for the Washington Area as shown in Table 8, below. The RFP contingency requirement may be met by including in the RFP plan a demonstration of 18 percent VOC & NO<sub>x</sub> RFP. The additional 3 percent reduction above the 15 percent requirement must be attributed to specific measures.

**Table 8. Washington Area 2008 RFP Contingency Measure Target Level Calculations**

<b>Description</b>		<b>Formula</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
A	2002 Rate-Of Progress Base Year Inventory		448.28	597.22
B	FMVCP/RVP Reductions Between 2002 And 2008		12.45	31.61

C	2002 Adjusted Base Year Inventory Relative To 2008	A - B	435.83	565.61
D	RFP Ratio		15%	0
E	RFP Emissions Reductions Required Between 2002 & 2008	C * D	65.37	0
F	Contingency Percentage		0.3%	2.7%
G	Contingency Emission Reduction Requirements	C * F	1.31	15.27
H	Contingency Measure Target Level for 2008	C- E- G	369.15	550.34

To determine if the States meet the three percent contingency measure requirement for the Washington Area, the total projected controlled emissions must be compared to the contingency measure target levels calculated above. As shown below in Table 9, the total VOC and NO<sub>x</sub> emission projections meet the 2008 contingency measure targets. Therefore, the States have met the contingency measure requirement for the Washington Area.

**Table 9. Evaluation of the Washington Area 2008 RFP Contingency Measure Requirement**

Description		VOC (tpd)	NO <sub>x</sub> (tpd)
A	Total 2008 Projected Controlled Emissions	358.84	493.22
B	Contingency Measure Target Level for 2008	369.15	550.34
<b>Contingency measure requirement met if A &lt; B</b>		Yes	Yes

### **RACM Analysis and Determination**

The purpose of the RACM analysis is to determine whether or not reasonably available control measures exist that would advance the attainment date for nonattainment areas. Control measures that would advance the attainment date are considered RACM and must be included in the SIP. To meet the RACM requirement, the States must demonstrate that they have adopted all RACM necessary to move the Washington Area toward attainment as expeditiously as practicable and to meet all RFP requirements. The States have demonstrated that they have met the RFP requirements for the Washington Area.

The States evaluated all source categories that could contribute meaningful emission reductions, and compiled an extensive list of potential control measures. Furthermore, the States considered the time needed to develop and adopt regulations and the time it would take to see the benefit from these measures. While the States found that the measures could not be used to advance the Washington Area's attainment date, the State's determined that many of the measures were useful and would be considered for future SIPs for the Washington Area. Therefore, EPA concurs with the States' conclusion that there are no RACM that would have advanced the 2010 attainment date for the Washington Area.

### Transportation Conformity Budgets

The Washington Area MVEB for the 2008 RFP is based on the projected 2008 mobile source emissions, accounting for all mobile control measures. The budgets are equal to the projected 2008 on-road mobile source emission inventories minus reductions from transportation control measures. The MVEBs for the 2008 RFP are shown in Table 10, below.

**Table 10. Washington Area 2008 RFP MVEBs**

	<b>VOC (tpd)</b>	<b>NOx (tpd)</b>
(A) Projected Controlled Mobile Emissions	70.98	160.30
(B) Transportation Control Measures	0.19	0.49
(A) - (B)	70.79	159.81
<b>MVEB (rounded to nearest 0.1 tpd)</b>	<b>70.8</b>	<b>159.8</b>

In a September 4, 2009 Federal Register notice, EPA notified the public that EPA found that the 2008 RFP MVEBs in the Washington Area 8-hour ozone plan are adequate for transportation conformity purposes (74 FR 45853). As a result of EPA's finding, the States must use the MVEBs from the Washington Area 8-hour ozone plan for future conformity determinations for the 1997 8-hour ozone standard.

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