

## **Region 3 Plan Summary Richmond, Virginia Ozone Area**

**Title:** Maintenance Plan for the Richmond, Virginia Ozone Area

**Federal Register Dates:** June 13, 1997, 62 FR 32258 (proposed rule); November 17, 1997, 62 FR 61237 (final rule).

**EPA Effective Date:** December 17, 1997.

**State Submittal Date:** July 26, 1996; revision submitted on July 30, 1996.

**Affected Areas:** Cities of Colonial Heights, Hopewell, and Richmond; Chesterfield, Hanover and Henrico County; the following portions of Chester City County: Beginning at the intersection of State Route 156 and the Henrico/Charles City County Line, proceeding south along State Route 5/156 to the intersection with State Route 106/156, proceeding south along Route 106/156 to the intersection with the Prince George/Charles City County line, proceeding west along the Prince George/Charles City County line to the intersection with the Chesterfield/ Charles City County line, proceeding north along the Chesterfield/Charles City County line to the intersection with the Henrico/Charles City County line, proceeding north along the Henrico/ Charles City County line to State Route 156.

### **Summary of the Plan:**

The SIP revisions establish a maintenance plan for the Richmond ozone area, including contingency measures, which provides for continued attainment of the ozone NAAQS until the year 2007, and adjust the mobile source emissions budget established in the maintenance plan for Richmond to support the area's long-range transportation plans in the horizon years 2015 and beyond.

The maintenance plan must provide for maintenance of the relevant NAAQS in the area for at least 10 years after redesignation. A revision of the SIP submitted within 8 years after the original redesignation request was approved to provide for maintenance of the NAAQS for an additional 10 years following the initial 10 year period.

### **Emissions Inventory:**

Virginia developed an attainment emissions inventory to identify the level of emissions sufficient to achieve the ozone NAAQS. The maintenance plan contains comprehensive inventories for the years 1993, 1999 and 2007 prepared according to EPA guidance for ozone precursors, VOCs, NO<sub>x</sub>, and CO emissions to demonstrate attainment and maintenance for Richmond. The inventories include area, stationary, non-road mobile and mobile sources. The year 1993 was used for the attainment year inventory because it was the first year of the three year period on which the redesignation request was based. The plan includes a demonstration that emissions will remain below the 1993 attainment year levels for a 10 year period (2007) and provides an interim year inventory, as required by EPA

guidance, for the year 1999.

The following table summarizes the average peak ozone season weekday VOC, NO<sub>x</sub>, and CO emissions for the major anthropogenic (non-biogenic) source categories for the 1993 attainment year inventory and projected 1999 and 2007 inventories.

Richmond Area Emissions Summary

Emissions (tons per year)	1993	1999	2007
<b>VOCs:</b>			
Point sources.....	49.64	53.25	60.05
Area sources.....	70.34	64.48	67.97
Mobile sources <sup>1</sup> .....	40.41	35.94	31.86
Subtotal.....	160.39	153.67	159.88
<b>NO<sub>x</sub>:</b>			
Point sources.....	152.21	156.83	145.99
Area sources.....	29.49	31.36	33.54
Mobile sources.....	59.56	52.85	61.07
Subtotal.....	241.26	241.04	240.60
<b>CO:</b>			
Point sources.....	27.37	28.17	29.47
Area sources.....	177.22	188.60	202.01
Mobile sources.....	309.13	220.82	246.64
Subtotal.....	513.72	437.59	478.12
Totals.....	915.37	832.30	878.60

\1\ The mobile source VOC and NO<sub>x</sub> estimates include emissions safety margins. A safety margin exists when the total emissions (stationary, mobile, area) projected for the attainment year (or years of a maintenance plan) are less than the emissions level necessary to demonstrate attainment or maintenance. That difference in emissions constitutes a safety margin. In this case, Virginia allocated such safety margins to the on-road portion and inflated the mobile emissions budget to satisfy conformity requirements.

**Control Measures:** Virginia attributes the projected reductions of VOC emissions to the following national control measures: FMVCP (Tier 1); RFG (on-road and non-road), Stage II gasoline dispensing systems and pending EPA rules regulating emissions from Consumer/ Commercial Solvents reformulations; Architectural/Industrial Maintenance Coatings reformulation; and Automobile Refinishing. Virginia predicts future NO<sub>x</sub> emission reductions from FMVCP Tier 1, RFG (Phase 2) and source specific seasonal NO<sub>x</sub> emission limits (emission caps) on

two point sources of NOx in the nonattainment area– Virginia Power- Dutch Gap and Allied Signal Corp. On July 21, 1997 (62 FR 38922), EPA approved an action to waive the NOx RACT requirements of section 182(f) of the Clean Air Act in the Richmond area. In addition, on October 14, 1997 (62 FR 53234 and 62 FR 53242), EPA approved VOC RACT determinations for 12 specifically named sources.

Each control program and the anticipated emissions benefit is discussed briefly below:

1. Federal Motor Vehicle Control Program (Tier 1): Virginia projects an anticipated reduction from Tier 1 of VOCs of 8.76 tons/day in the year 1999 and 23.25 tons/day by the year 2007; and of NOx of 16.82 tons/day in 1999 and 34.12 tons/day in 2007.

2. Reformulated Gasoline Gasoline is reformulated to reduce combustion by-products and to produce fewer evaporative emissions. Virginia claims the following projected reductions in tons/day from this program:

	1999 (TPD)	2007 (TPD)
On-road sources.....	6.34	9.93
Non-road sources.....	0.63	0.67
Area sources.....	0.41	0.63

3. Stage II Vapor Recovery: This is a control measure which substantially reduces VOC emissions during the refueling of motor vehicles at gasoline service stations. Virginia projects an overall control effectiveness of 77%. The Reid Vapor Pressure (RVP) of gasoline marketed for use in the Richmond, Virginia area is 7.8 pounds per square inch (psi).

3. Architectural and Industrial Maintenance Coatings (AIM): Virginia projects a 20% reduction in VOC emissions from the 1993 attainment year inventory for this category which translates into 1.57 tons/day by 1999 and 1.59 tons/day by 2007.

4. Consumer and Commercial Products: Virginia projects a 20% reduction in VOC emissions from the 1993 attainment year inventory in this category which translates into 0.91 tons/day by 1999 and 0.97 tons/day by 2007.

5. Automobile Refinishing: Virginia projects a 37% reduction in VOC emissions from the 1993 attainment year inventory in this category which translates into 1.46 tons/day by 1999 and 1.49 tons/day by 2007.

6. Source Specific NOx Emission Limits: Virginia established NOx emission limits for selected major point sources. These emission limits are only effective during the peak ozone season months, June-August. In the maintenance plan, the permitted emission limits for Virginia Power- Dutch Gap and

Allied Signal Corp. will result in 0.84 tons/day (1999) and 26.82 tons/day (2007) reduction in NOx emissions from the previously permitted emission levels in the 1993 attainment year inventory.

**Motor Vehicle Emissions Budgets (MVEBs):** Virginia submitted a SIP revision modifying the motor vehicle emissions budgets in the Richmond maintenance plan in support of the area's transportation plans for the period beginning in 2015. Although mobile source emissions of NOx and VOC are predicted to rise in the year 2015 as VMT increases, Virginia anticipates that emission reductions will occur during this time period. The mobile emissions budget relies on reductions from a ban on open burning of such materials as trees, shrubs and brush from land clearing, trimmings from landscaping and household or business trash in the maintenance area during the ozone season months of June-August beginning in the year 2000. Additionally, reductions are anticipated from pending national emission control programs on non-road sources to offset growth, specifically new engine standards for marine engines, locomotive engines and heavy duty diesel engines. The Clean Air Act requires that EPA promulgate new emission standards for marine engines, locomotive engines and heavy duty diesel engines. The emissions reductions from the open burning ban and the national control programs create a safety margin. For Richmond the safety margin for VOCs is 3.78 tons/day and for NOx 6.64 tons/day. All these reductions from the area and non-road source categories are allocated to the motor vehicle emissions budget for the purposes of conformity determinations. The motor vehicle emissions budgets in the maintenance plan are increased to 35.64 tons/day for VOCs and 67.71 tons/day for NOx, effective on January 1, 2015.

**Contingency Measures:** The level of VOC and NOx emissions in Richmond will largely determine its ability to stay in compliance with the ozone NAAQS. In the event that the Richmond Area exceeds or violates the NAAQS, Virginia has provided the following triggering events and contingency measures with a schedule for implementation in the event of future ozone air quality problems:

1. In the event that VOC or NOx emissions exceed the regional emissions budgets, with no more than one recorded ozone exceedance: Virginia will prepare a complete VOC and NOx emission inventory and implement voluntary control measures, such as an ozone health advisory notification program.

2. In the event of two or more monitored exceedances of the ozone NAAQS at any one monitor, voluntary controls will continue to be implemented.

3. In the event of a monitored violation of the ozone standard, Virginia commits to implement a basic I/M program.

4. In the event that a violation of the ozone NAAQS at any one monitor occurs after the I/M contingency measure has been implemented:

The Commonwealth commits to implement NOx RACT on sources emitting greater than 100 tons/year.

5. In the event of more than two violations of the ozone NAAQS at any individual monitor following implementation of the I/M and NO<sub>x</sub> RACT contingency measures: More restrictive requirements on open burning will be implemented; and if appropriate, transportation control measures will be developed and implemented.

The Basic I/M contingency measure will be implemented on the following schedule:

1. Notification received from EPA that a contingency measure must be implemented, or three months after a recorded violation;
2. Applicable regulation to be adopted 12 months after date established in "1." above;
3. Regulation implemented within 8 months of adoption;
4. Program will complete one full cycle two years after implementation.

The other contingency measures 1, 2, 4 and 5 will be implemented on the following schedule:

1. Notification received from EPA that a contingency measure must be implemented, or three months after a recorded violation;
2. Applicable regulation to be adopted 12 months after date established in "1." above;
3. Regulation implemented within 6 months of adoption;
4. Compliance achieved within 12 months of adoption.

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