

11.0 CONTINGENCY PLAN

The General Preamble and EPA guidance defines the requirements for identification of contingency measures for rate-of-progress and attainment demonstrations. For post-1996 rate-of-progress and attainment demonstrations, contingency measures may reduce emissions of either VOC or NO_x. Contingency measures are required for each milestone year. Air quality plans must include sufficient contingency measures to account for up to 3% of the base-year inventory adjusted to the appropriate milestone year.

11.1 Contingency Measures for the 2008 Reasonable Further Progress Demonstration

11.1.1 Background

EPA requires the Washington region to include a contingency plan containing adopted measures that qualify as contingency measures for the 2002-2008 Reasonable Further Progress (RFP). This section fulfills the requirement for the RFP contingency.

11.1.2 Required Reductions

The contingency measures for the 2008 Reasonable Further Progress and attainment demonstrations must total 3% of the 2002 adjusted base year inventory. A minimum of 0.3 percent VOC must be included. The inventory is calculated as described in Sections 4 and 5. Table 11-1 shows the calculation of the necessary reductions.

**Table 11-1
Calculation of Contingency Measures Requirement
(Ozone Season tons per day)**

Description	VOC	NO_x
Adjusted 2002 Base Year Inventory	442.63	565.56
3% Reduction for Contingency Measure Requirement	0.03	0.03
Total Contingency Measures Required (VOC or NO _x)	13.28	16.97

Contingency reductions must occur on a timetable that is directly related to the RFP SIP schedule. States have no more than one year after notification by EPA of an RFP failure to achieve the contingency plan reductions. For a potential RFP failure, notification would be received in 2009, therefore the contingency reductions must be achieved no later than 2010.

11.1.3 Identified Contingency Measures

To satisfy the contingency requirement for RFP, this SIP includes a Reasonable Further Progress demonstration of 18 percent reduction in VOC (15.3%) and NO_x (2.7%) emissions by 2008. This reduction is 3 percent higher than the required 15% RFP requirement. The additional 3 percent reduction is attributed to the contingency measure specified below.

Table 11-2 lists the contingency measure identified by the District of Columbia, Maryland and Virginia for the 2008 Reasonable Further Progress demonstration. This measure delivers a total benefit of 1.3 tpd VOC and 15.3 tpd NO_x, meeting the contingency measure requirement calculated in Table 11-1.

Table 11-2
Contingency Measures for 2008 Reasonable Further Progress
(Ozone Season tons per day)

Ref. No.	Contingency Measure	VOC (tons/day)	NO _x (tons/day)
□	Ozone Transport Commission Portable Fuel Containers Rule	1.3	0
□	Regional Transport NO _x Reductions (Clean Air Interstate Rule, Healthy Air Act)	0	15.3
TOTAL REDUCTIONS		1.3	15.3

In accordance with EPA’s guidance encouraging early implementation of contingency measures to guard against failure to either meet a milestone or attain, the District of Columbia, Maryland and Virginia will implement the contingency measures identified in Table 11-3 according to the timetable indicated in Chapter [xxxx]. EPA’s guidance on early implementation of control measures is as follows (see Reference 2):

The EPA encourages the early implementation of required control measures and of contingency measures as a means of guarding against failures to meet a milestone or to attain. Any implemented measures (that are not needed for the rate-of-progress requirements or for the attainment requirements) would need to be backfilled only to the extent they are used to meet a milestone.

The reductions from the designated contingency measures are surplus vis-à-vis the RFP demonstration contained in this SIP. They will not be used to meet that milestone requirement. As a result, the states will not be required to backfill any contingency measures that they choose to implement in advance of the requirement.

11.1.4 Portable Fuel Containers Rule: Phase I and Phase II

This measure introduces performance standards for portable fuel containers and spouts. The standards are intended to reduce emissions from storage, transport and refueling activities. The rule also included administrative and labeling requirements. Compliant containers must have: only one opening for both pouring and filling, an automatic shut-off to prevent overfill, an automatic sealing mechanism when not dispensing fuel and specified fuel flow rates, permeation rates and warranties.

Source Type Affected

Any person or entity selling, supplying or manufacturing portable fuel containers, except containers with a capacity of less than or equal to one quart, rapid refueling devices with capacities greater than or equal to four gallons, safety cans and portable marine fuel tanks operating with outboard motors, and products resulting in cumulative VOC emissions below those of a representative container or spout.

Control Strategy

Maryland, the District, and Virginia all adopted both Phase I and Phase II of the OTC Model Rule for Portable Fuel Containers.

Implementation

Maryland - Air and Radiation Management Administration
Virginia - Department of Environmental Quality
District of Columbia - Department of Environment

Projected Reductions

	VOC Emission Reductions (tons per day)			
	District of Columbia	Maryland	Virginia	Total
VOC Reductions	0	0.82	0.48	1.3

Emission Benefit Calculations

Projected reductions are based on an emission reduction factor of 75% after full implementation after 10 years. Implementation began in 2005. In 2008, the emission reduction factor is 30%. In 2009, the emission reduction factor is 37.5%. Phase II reductions are based on an additional 4 percent reduction in emissions of VOC.

The District's OTC VOC rules on all the applicable area source categories have been submitted to EPA and they are federally enforceable measures. However, the emission reductions arising

from this measure in the District are not applied to the emissions inventories presented in this contingency demonstration of the Washington DC-MD-VA regional SIP. The District of Columbia's measures are expected to provide additional enhancements to the air quality improvement in the region.

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11.1.5 Regional NO_x Transport Requirements

This section documents contingency credit for NO_x emissions reductions attributable to federal and regional NO_x requirements on point sources. These credits include:

- EPA's Clean Air Interstate Rule (CAIR); and
- Maryland's Healthy Air Act.

Control Strategy

Clean Air Interstate Rule (CAIR)

In 2004, the U.S. EPA promulgated the Clean Air Interstate Rule, which requires reductions in emissions of NO_x and SO₂ from large fossil fuel-fired electric generating units. The rule is set up in several phases with the first phase of NO_x reductions to come by 2009. The rule sets up both an annual emissions budget and an ozone season emissions budget. The rule requires that units with nameplate capacity greater than 25 megawatts emit no more NO_x than their allocations determined by the state either through emission controls or banking and trading.

Virginia CAIR

Virginia has adopted state regulations codifying the requirements of the Clean Air Interstate Rule. Virginia does not allow trading of NO_x allowances for facilities that operate in ozone nonattainment areas.

Maryland Healthy Air Act

In April of 2006 the Maryland General Assembly and Governor Ehrlich adopted the Healthy Air Act (HAA), a law that requires reductions in NO_x, SO₂, and Mercury emissions from Maryland's largest and oldest coal fired power plants. Maryland implements the HAA through regulation. The regulation requires reductions in NO_x emissions from coal-fired electric generating units (excluding fluidized bed combustion units) starting in 2009. By 2009 Maryland expects an approximate 70% reduction in NO_x emissions from these regulations when compared to 2002 emissions. To meet the requirements of Maryland's regulations a company's "system" (covered units owned by the same company) must meet a system-wide cap by 2009. Compliance cannot be achieved through the purchase of allowances under the HAA.

District of Columbia CAIR

The District of Columbia is currently drafting its Clean Air Interstate Rule (CAIR). The District of Columbia's CAIR regulations do not allow trading of NO_x allowances for achieving the reductions for the facilities within its jurisdiction.

Summary

The point source NO_x controls are a phased approach to controlling emissions of NO_x from power plants and other large fuel combustion sources. The programs resulting in emission reductions applied for contingency from point sources in the region include:

- EPA's Clean Air Interstate Rule
- Maryland's Healthy Air Act

Implementation

District Department of the Environment
Maryland - Air and Radiation Management Administration
Virginia - Department of Environmental Quality

Projected Reductions

NOx Emission Reductions (tons per day)				
	District of Columbia	Maryland	Virginia	Total
NOx Reductions	0.66	12.19	2.45	15.3

Emission Benefit Calculations

The emission reductions associated with the state NOx requirements on point sources were supplied by the staffs of the Maryland Air and Radiation Management Administration, the District Department of the Environment, and the Virginia Department of Environmental Quality Air Division.

References

1990 Clean Air Act Amendments, 42 U.S.C. §§7511a (f), (b)(2), and (c).

11.2 Contingency Measures for the Attainment Demonstration

11.2.1 Background

EPA requires the Washington region to include a contingency plan containing adopted measures that qualify as contingency measures for the 2009 attainment demonstration. This section fulfills the requirement for the 2009 attainment demonstration.

11.2.2 Required Reductions

The Washington region must also identify contingency measures to be implemented in the event that the region does not attain the 8-hour ozone standard in 2009. The contingency measures for the attainment demonstration must total 3% of the 2002 Adjusted Base Year Inventory. The adjusted inventory is calculated as described in Sections 4 and 5. Table 11-3 shows the calculation of the necessary reductions.

Table 11-3
Calculation of 2009 Contingency Measure Requirement
(Ozone Season tons per day)

Description	Tons/day VOC	Tons/day NOx
Adjusted 2002 Base Year Inventory	442.63	565.56
3% Reduction for Contingency Measure Requirement	0.03	0.03
Total Contingency Measures Required (VOC or NOx)	13.28	16.97

Contingency reductions must occur on a timetable that is directly related to the attainment SIP schedule. States have no more than one year after notification by EPA of an attainment failure to achieve the contingency plan reductions. For a potential attainment failure in 2009, notification would be received in 2010, therefore the contingency reductions must be achieved no later than 2011.

11.2.3 Identified Contingency Measures

Table 11-4 lists the contingency measures identified by the District of Columbia, Maryland and Virginia for the attainment demonstration. These measures deliver total benefits of 8.46 tpd VOC and 6.05 tpd NOx, exceeding the contingency measure requirement calculated in Table 11-3; therefore this measure fulfills the region's contingency measure requirement. All of these control measures will be effective by 2011.

Table 11-4
Contingency Measures for Attainment Demonstration
(Ozone Season tons per day)

Ref. No.	Contingency Measure	VOC (tons/day)	NOx (tons/day)
	Tier 2 Motor Vehicle Emission Standards	0	1.77
	Phase I and Phase II Emissions Standards for Gasoline-Powered Non-Road Utility Engines	1.49	0.04
	Emissions Standards for Diesel-Powered Non-Road Utility Engines of 50 or More Horsepower	0.39	3.28
	Emissions Standards for Spark Ignition Marine Engine	1.42	0
	Emissions Standards for Large Spark Ignition Engines	0.54	0.96
	Ozone Transport Commission Portable Fuel Containers Rule	4.62	0
TOTAL REDUCTIONS		8.46	6.05

The contingency reduction from the on-road source is substantiated by a 2010 Mobile Emissions Budget, as specified in Section [xxxxx].

In accordance with EPA's guidance encouraging early implementation of contingency measures to guard against failure to either meet a milestone or attain, the District of Columbia, Maryland and Virginia will implement the contingency measures identified in Table 11-4 according to the timetable indicated in Chapter [xxxx]. EPA's guidance on early implementation of control measures is as follows (see Reference 2):

The EPA encourages the early implementation of required control measures and of contingency measures as a means of guarding against failures to meet a milestone or to attain. Any implemented measures (that are not needed for the rate-of-progress requirements or for the attainment requirements) would need to be backfilled only to the extent they are used to meet a milestone.

The reductions from the designated contingency measures are surplus vis-à-vis the attainment demonstration contained in this SIP. They will not be used to meet that milestone requirement. As a result, the states will not be required to backfill any contingency measures that they choose to implement in advance of the requirement.

11.2.4 Tier 2 Motor Vehicle Emission Regulations

The U.S. EPA promulgated a rule on February 10, 2000 requiring more stringent tailpipe emissions standards for all passenger vehicles, including sport utility vehicles (SUVs), minivans, vans and pick-up trucks. These regulations also require lower levels of sulfur in gasoline, which will ensure the effectiveness of low emission-control technologies in vehicles and reduce harmful air pollution.

Source Type Affected

These federally implemented programs affect light-duty vehicles and trucks.

Control Strategy

The new tailpipe and sulfur standards require passenger vehicles to be 77 to 95 percent cleaner than those built before the rule was promulgated and will reduce the sulfur content of gasoline by up to 90 percent. The new tailpipe standards are set at an average standard of 0.07 grams per mile for NO_x for all classes of passenger vehicles beginning in 2004. This includes all light-duty trucks, as well as the largest SUVs. Vehicles weighing less than 6000 pounds will be phased-in to this standard between 2004 and 2007.

Beginning in 2004, the refiners and importers of gasoline have the flexibility to manufacture gasoline with a range of sulfur levels as long as all of their production is capped at 300 parts per million (ppm) and their annual corporate average sulfur levels are 120 ppm. In 2005, the refinery average was set at 30 ppm, with a corporate average of 90 ppm and a cap of 300 ppm. Finally, in 2006, refiners met a 30 ppm average sulfur level with a maximum cap of 80 ppm.

As newer, cleaner cars enter the national fleet, the new tailpipe standards will significantly reduce emissions of nitrogen oxides from vehicles by about 74 percent by 2030.

Implementation

EPA implements this program under 40 CFR Parts 80, 85, and 86.

Projected Reductions

This measure provides 1.77 tpd NO_x reduction applied for contingency purposes.

Emission Benefit Calculations

The contingency reductions are based on Tier 2 motor vehicle emission standards, for reductions occurring between 2009 and 2010.

11.2.5 Phase I and Phase II Emissions Standards for Gasoline-Powered Non-Road Utility Engines

This measure takes credit for VOC emissions reductions attributable to emissions standards promulgated by the EPA for small non-road, spark-ignition (i.e., gasoline-powered) utility engines, as authorized under 42 U.S.C. §7547. The measure affects gasoline-powered (or other spark-ignition) lawn and garden equipment, construction equipment, chain saws, and other such utility equipment as chippers and stump grinders, wood splitters, etc., rated at or below 19 kilowatts (an equivalent of 25 or fewer horsepower). Phase 2 of the rule applied further controls on handheld and non-handheld outdoor equipment.

Control Strategy

Federal emissions standards promulgated under §7547 (a) apply to spark-ignition non-road utility engines. The EPA's Phase 1 Spark Ignition Nonroad final rule on such emissions standards was published in 60 *Federal Register* 34581 (July 3, 1995), and was effective beginning August 2, 1995. Compliance was required by the 1997 model year. The Phase 2 final rule for handheld nonroad equipment was published in 65 *Federal Register* 24267 (April 25, 2000). The Phase 2 final rule for non-handheld equipment was published in 64 *Federal Register* 15207 (March 30, 1999).

Implementation

This program is implemented by the EPA, under 42 U.S.C. §7547 (a).

Projected Reductions

VOC Emission Reductions (tons per day)				
	District of Columbia	Maryland	Virginia	Total
VOC Reductions	0.08	0.68	0.73	1.49
NOx Reductions	0.01	0.02	0.02	0.04

Emission Benefit Calculations

The contingency reductions are estimated using EPA's NONROAD model for reductions occurring between 2009 and 2011.

11.2.6 Emissions Standards for Diesel-Powered Non-Road Utility Engines of 50 or More Horsepower

This measure takes credit for NO_x emissions reductions attributable to emissions standards promulgated by the EPA for non-road, compression-ignition (i.e., diesel-powered) utility engines, as authorized under 42 U.S.C. § 7547. The measure affects diesel-powered (or other compression-ignition) construction equipment, industrial equipment, etc., rated at or above 37 kilowatts (37 kilowatts is approximately equal to 50 horsepower).

Control Strategy

Federal emissions standards applicable to compression-ignition non-road utility engines are promulgated under §7547 (a).

EPA's first rule on such emissions standards was published in 59 Federal Register 31306 (June 17, 1994), and was effective on July 18, 1994.

Tier 2 and Tier 3 Emission Standards were promulgated in 1998. This program includes the first set of standards for nonroad diesel engines less than 37 kW (phasing in between 1999 and 2000), including marine engines in this size range. It also phases in more stringent "Tier 2" emission standards from 2001 to 2006 for all engine sizes and adds yet more stringent "Tier 3" standards for engines between 37 and 560 kW (50 and 750 hp) from 2006 to 2008.

EPA adopted a comprehensive national program to greatly reduce emissions from future nonroad diesel engines by integrating engine and fuel controls as a system to gain the greatest air quality benefits. This rule was published June 29, 2004. The requirement to reduce sulfur levels in nonroad diesel fuel by more than 99 percent will allow for the first time advanced emission control systems to be used on the engines used in construction, agricultural, industrial, and airport service equipment.

Implementation

This program is implemented by the EPA under 42 U.S.C. § 7547 (a).

Projected Reductions

Emission Reductions (tons per day)				
	District of Columbia	Maryland	Virginia	Total
VOC Reductions	0.07	0.19	0.13	0.39
NOx Reductions	0.57	1.34	1.37	3.28

Emission Benefit Calculations

The contingency reductions are estimated using EPA's NONROAD model for reductions occurring between 2009 and 2011.

11.2.7 Emissions Standards for Spark Ignition Marine Engines

This EPA measure controls exhaust VOC emissions from new spark-ignition (SI) gasoline marine engines, including outboard engines, personal watercraft engines, and jet boat engines. Of nonroad sources studied by EPA, gasoline marine engines were found to be one of the largest contributors of hydrocarbon (HC) emissions (30% of the nationwide nonroad total).

Control Strategy

EPA is imposing emission standards for 2 – stroke technology, outboard and personal watercraft engines. This will involve increasingly stringent HC control over the course of a nine-year phase-in period beginning in model year 1998. By the end of the phase-in, each manufacturer must meet an HC and NOx emission standard that represents a 75% reduction in HC compared to unregulated levels. These standards do not apply to any currently owned engines or boats.

Implementation

This program is implemented by the EPA under 42 U.S.C. § 7547 (a).

Projected Reductions

	Emission Reductions (tons per day)			
	District of Columbia	Maryland	Virginia	Total
VOC Reductions	0.19	1.07	0.15	1.42

Emission Benefit Calculations

The contingency reductions are estimated using EPA's NONROAD model for reductions occurring between 2009 and 2011.

11.2.8 Emissions Standards for Large Spark Ignition Engines

This EPA measure controls VOC and NOx emissions from several groups of previously unregulated nonroad engines, including large industrial spark-ignition engines.

Control Strategy

The EPA requirements vary depending upon the type of engine or vehicle, taking into account environmental impacts, usage rates, the need for high performance models, costs and other factors. The emission standards apply to all new engines sold in the United States and any imported engines manufactured after these standards began.

Controls on the category of large industrial spark-ignition engines were first required in 2004. Controls on the other engine categories began in years after 2005. Large industrial spark-ignition engines are those rated over 19 kW used in a variety of commercial applications; most use liquefied petroleum gas, with others operating on gasoline or natural gas.

EPA adopted two tiers of emission standards for Large SI engines. The first tier of standards, which started in 2004, are based on a simple laboratory measurement using steady-state procedures. The Tier 1 standards are the same as those adopted earlier by the California Air Resources Board for engines used in California. Tier 2 standards became effective in 2007.

Implementation

This program is implemented by the EPA under 42 U.S.C. § 7547 (a).

Projected Reductions

	Emission Reductions (tons per day)			
	District of Columbia	Maryland	Virginia	Total
VOC Reductions	0.04	0.30	0.21	0.54
NOx Reductions	0.08	0.48	0.40	0.96

Emission Benefit Calculations

The contingency reductions are estimated using EPA's NONROAD model for reductions occurring between 2009 and 2011.

11.2.9 Portable Fuel Containers Rule: Phase I and Phase II

This measure introduces performance standards for portable fuel containers and spouts. The standards are intended to reduce emissions from storage, transport and refueling activities. The rule also included administrative and labeling requirements. Compliant containers must have: only one opening for both pouring and filling, an automatic shut-off to prevent overfill, an automatic sealing mechanism when not dispensing fuel and specified fuel flow rates, permeation rates and warranties.

Source Type Affected

Any person or entity selling, supplying or manufacturing portable fuel containers, except containers with a capacity of less than or equal to one quart, rapid refueling devices with capacities greater than or equal to four gallons, safety cans and portable marine fuel tanks operating with outboard motors, and products resulting in cumulative VOC emissions below those of a representative container or spout.

Control Strategy

Maryland, the District, and Virginia all adopted both Phase I and Phase II of the OTC Model Rule for Portable Fuel Containers.

Implementation

Maryland - Air and Radiation Management Administration
Virginia - Department of Environmental Quality
District of Columbia - Department of Environment

Projected Reductions

	VOC Emission Reductions (tons per day)			
	District of Columbia	Maryland	Virginia	Total
VOC Reductions	-0.06	2.98	1.71	4.62

Emission Benefit Calculations

Projected reductions are based on an emission reduction factor of 75% after full implementation after 10 years. Implementation began in 2005. In 2008, the emission reduction factor is 30%. In 2009, the emission reduction factor is 37.5%. Phase II reductions are based on an additional 4 percent reduction in emissions of VOC.

The District's OTC VOC rules on all the applicable area source categories have been submitted to EPA and they are federally enforceable measures. However, the emission

reductions of 0.59 tpd VOC arising from this measure in the District are not applied to the emissions inventories presented in this contingency demonstration of the Washington DC-MD-VA regional SIP. The District of Columbia's measures are expected to provide additional enhancements to the air quality improvement in the region.

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U. S. EPA, "State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990", Proposed Rule, *57 Federal Register* 13498 (April 16, 1992).

U.S. EPA, "Guidance on the Post-1996 Rate-of-Progress Plan and the Attainment Demonstration," Corrected Version as of February 18, 1994, p. 50.

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