6.0 REASONABLE FURTHER PROGRESS (RFP)

6.1 RFP Introduction, Goals, and Objectives

The Clean Air Act, (42 U.S.C. §7511a(c)(2)(B), §182(c)(2)(B)), has required nonattainment areas to demonstrate continued progress to attain the ozone standard. The United States Environmental Protection Agency (USEPA) defined rate-of-progress (ROP) as the progress required to attain the 1-hour ozone standard. Reasonable further progress (RFP) refers to the progress required toward attaining the 8-hour ozone standard. During the period from 1990-1996, areas that were classified as moderate for the 1-hour ozone standard were required to reduce volatile organic compound (VOC) emissions by 15 percent.[1] After 1996, these areas were required to demonstrate a 9 percent ROP every three years until their attainment date.[2]

The USEPA's final implementation rule (November 29, 2005)[3] and a USEPA follow-up memo titled, "8-hour Ozone National Ambient Air Quality Standards Implementation-Reasonable Further Progress (RFP)," dated August 15, 2006,[4] contain guidance on how to demonstrate RFP under different situations.

The RFP demonstration for the Northern New Jersey/New York/Connecticut (NNJ/NY/CT) nonattainment area and the Southern New Jersey/Philadelphia (SNJ/Phila.) nonattainment area[5] must show an emission reduction of VOC and/or oxides of nitrogen (NO_x) of 15 percent from 2002 to 2008 and all additional reductions from 2008 to 2009 necessary for attainment.

The Clean Air Act and the USEPA guidance also include restrictions on the use of control measures to meet the RFP requirements.[6] Reductions in ozone precursors resulting from four types of federal and state regulations can not be used to meet RFP target. These four types of programs are:

> (1) Federal Motor Vehicle Control Program (FMVCP) tailpipe and evaporative standards applicable as of January 1, 1990

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[1] USEPA. Guidance on the Adjusted Base Year Emissions Inventory and the 1996 Target for the 15 percent Rate of Progress Plans. United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPA-452/R-92-005, October 1992.
[2] USEPA. Guidance on the Post-1996 Rate-of-Progress Plan and the Attainment Demonstration. United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPA-452/R-93-015, January 1994, Corrected Version as of February 18, 1994.
[3] 40 C.F.R. 51.910(a), 70 Fed. Reg. 71612 (November 29, 2005).
[4] USEPA Memorandum from William T. Harnett, USEPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC, "8-hour Ozone National Ambient Air Quality Standard (NAAQS) Implementation – Reasonable Further Progress (RFP)," August 15, 2006.
[5] op. cit., note 3
[6] USEPA. Guidance on the Post-1996 Rate-of-Progress Plan and the Attainment Demonstration. United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPA-452/R-93-015, January 1994, Corrected Version as of February 18, 1994.

(2) Federal regulations limiting the Reid Vapor Pressure (RVP) of gasoline in ozone nonattainment areas applicable as of June 15, 1990
(3) State regulations correcting deficiencies in reasonably available control technology (RACT) rules and
(4) State regulations establishing or correcting inspection and maintenance (I/M) programs for onroad vehicles.

The basic procedures for developing target levels for the 15 percent plan are described in the USEPA's October 1992 guidance.[7] For the purposes of the 8-hour ozone RFP requirements, this guidance was updated by the USEPA in November 2005[8,9] and August 2006.[10]

This chapter describes the methodologies and calculations used to estimate future year inventories and RFP targets for 2008 and 2009, utilizing a base year inventory of 2002.

6.2 2002 Base Inventory

The starting inventory year for the RFP demonstration and inventory projections is 2002 (emission inventories for ozone season emissions in tons per day for VOC and NO_x).[11] Section 42 U.S.C. §7511a(c)(2)(B) subsection (b)(1)(B) of the Clean Air Act defines baseline emissions as the total amount of actual VOC and NO_x emissions from all anthropogenic sources in the area, excluding certain pre-1990 reductions. In accordance with the Clean Air Act, the emission target levels in future years for ROP/RFP plans are based on an adjusted baseline emission inventory. New Jersey's inventory shows actual 2002 emissions, not including biogenics, adjusted to exclude the benefits from any program not credible toward the targets.

6.3 Projection Inventories

6.3.1 Introduction

In order to determine RFP it is necessary to first grow the base year inventory to the year of interest and then account for the reductions achieved from any control measures, Federal or State, which were applicable prior to or in that year. As discussed in Section 6.2, the starting inventory for the projections is the New Jersey 2002 emission inventories

[7] op. cit., note 1
[8] op. cit., note 3
[9] ibid., "Appendix A to Preamble—Methods to Account for Non-Creditable Reductions When Calculating ROP Targets for the 2008 and Later ROP Milestone Years."
[10] op. cit., note 4
[11] "The State of New Jersey Department of Environmental Protection 2002 Periodic Emission Inventory May 2006" submitted to the USEPA as Appendix D of the "The State of New Jersey NJDEP of Environmental Protection State Implementation Plan (SIP) Revisions for the Attainment and Maintenance of the 8-Hour Carbon Monoxide National Ambient Air Quality Standard, 1-Hour Ozone National Ambient Air Quality Standard, and Fine Particulate Matter National Ambient Air Quality Standard; and the 2002 Periodic Emission Inventory May 2006." The USEPA approved the 2002 Emission Inventory effective July 10, 2006.

for ozone season (summer) emissions in tons per day for VOC and NO_x. The projected emission inventories are "grown" from the 2002 actual emission inventory and then "controlled." Controlled means that appropriate emission reductions are then applied to the grown inventory to determine a projection of actual emissions.

In order to project future year emissions, it is necessary to determine appropriate growth factors and the applicable control efficiency, rule effectiveness and rule penetration for each component of the inventory. The difference in the controlled and uncontrolled emissions provides the emission reductions (benefits) associated with the instituted control measures.

6.3.2 Inventory – Overview

The projected emission inventories were calculated by first estimating growth in each source category. As appropriate, the 2002 actual emission inventories were used as the base for applying factors to account for inventory growth. For the point source category, a 2005 inventory was calculated. The USEPA preferred approach for projecting emissions growth incorporates locality-specific estimates such as population, employment, historical averaging, or other category specific activity such as fuel consumption and product output.

Annual growth rates were evaluated for each of the emission categories, in each of the four emission sectors (point, area, nonroad, onroad). Point source growth factors were calculated utilizing information from the USEPA Economic Growth Analysis System (EGAS) [12] computer program and the U.S. Department of Energy (USDOE) projection data. Area source growth was predicted using the USDOE projection data and other activity indicators specific to each category.

Nonroad growth was projected utilizing the USEPA National Nonroad Emissions Model (NNEM) and other federal and state specific data. Some of the projected nonroad emissions with growth and without post-2002 benefits (uncontrolled) are lower than the 2002 emissions even though equipment activity levels are greater for the projection years. These 2008 and 2009 uncontrolled nonroad NO_x emissions indicate negative growth because of how the USEPA NNEM operates when it is run for a future year with no post 2002 controls. The nonroad sector is associated with equipment that is used for many years. In 2002, the nonroad fleet was populated with many older engines that operated without many of the controls phased in by the end of 2002. By 2008/9 many of these uncontrolled older nonroad engines had been replaced with newer ones that incorporated the controls phased in by the end of 2002. Therefore, the equipment turnover from 2002 to 2008/9 of 2002 technology engines can result in what appears to be negative growth because the 2002 emission standards are lower than the engines they are replacing.

[12] Pechan. Economic Growth Analysis System Version 4.0 Reference Manual. E.H. Pechan & Associates, Inc., January 26, 2001.

Onroad growth was projected using travel demand models provided by the Metropolitan Planning Organizations. One of the Metropolitan Planning Organizations, the North Jersey Transportation Planning Authority (NJTPA), replaced their travel demand model between the time that the 2002 inventory was finalized and prior to the development of the 2008 and 2009 inventories. Activity data from the new travel demand model predicts generally lower levels of VOC and NO_x emissions than the previous model. A result of this is that some of the projected onroad emissions with growth and without post-2002 benefits (uncontrolled) are lower than the 2002 emissions even though vehicle miles traveled are greater for the projection years. To investigate the impact of this on the RFP analysis, a sensitivity case was considered. The sensitivity case adjusted the 2008 and 2009 onroad emissions upward by multiplying the ratio of a hypothetical uncontrolled case and the uncontrolled case using the new model. The hypothetical uncontrolled case was grown from 2002 to 2008/9 by the same growth rates predicted for the non-NJTPA counties. The result of the RFP sensitivity case was that the 2002 to 2008 VOC reduction went from 24% to 21% for the Northern New Jersey/New York/Connecticut nonattainment area and from 21% to 20% for the Southern New Jersey/Philadelphia nonattainment area. Therefore, impacts of using the new NJTPA travel demand model for the projection year emission estimates are not significant enough to change the conclusions of the RFP analysis.

Growth factors are discussed and presented in more detail in Appendix E.

6.3.3 Control Measures Overview

Once the emission inventories are grown, the next step is to determine which control measures within each of the various emission sectors would be in place during or prior to that year, and apply the emission reduction benefits from those control measures at that time. Once the grown emissions are "controlled," the emissions in total that are expected with each and every control measure in place are compared to RFP emission target levels. The combined effect of growth and controls represents the inventory projection. The combination of control measures represents a coherent set of actions that are directed towards meeting the RFP requirements.

Post-2002 control measure benefits (including benefits from pre-2002 and post-2002 rules) were applied to each emission sector as appropriate. When all the benefits are summed and subtracted from uncontrolled emission levels, the result is the projected "controlled" inventory.

The control measures included in the projections, the years the RFP plans were affected by them, and the emission benefits are shown in Tables 6.1, 6.2, and 6.3 for the State and the New Jersey portions of the Northern New Jersey/New York/Connecticut nonattainment area, the Southern New Jersey/Philadelphia nonattainment area, respectively. The control measures are described in Chapter 4.

More details regarding the benefits from control measures for each sector are provided in Appendix E.

Table 6.1: Projected Emissions and Control Measure Benefits
Statewide

		2002		2008		2009	
		Inventory		Projected		Projected	
		VOC	NOx	VOC	NOx	VOC	NOx
		Tpd	tpd	Tpd	Tpd	tpd	tpd
POINT SOURCES							
Point Source Emissions, with growth and without post-2002 benefits (from pre- and post-2002 controls)		**113.5**	**280.4**	**78.5**	**203.3**	**79.0**	**208.8**
Point Source Control Measures Benefits, post-2002							
Pre-2002 State OTB	NOx Budget Program	NA	NA	0.0	79.6	0.0	0.0
Post-2002 State OTB	NOx RACT rule 2006	NA	NA	0.0	6.8	0.0	6.8
Post-2002 Federal OTB	CAIR	NA	NA	0.0	0.0	0.0	64.0
Post-2002 Federal OTB	USEPA MACT Standards	NA	NA	0.0	0.0	2.7	1.4
Post-2002 State BOTW	Certain Categories of ICI Boilers	NA	NA	0.0	0.0	0.0	6.8
Post-2002 Federal	ACO - PSEG	NA	NA	0.0	48.4	0.0	48.5
Post-2002 Federal	Refinery Enforcement Initiative	NA	NA	0.0	0.0	1.2	1.9
Total Point Source Benefits, post-2002		**0.0**	**0.0**	**0.0**	**134.8**	**4.0**	**129.4**
Point Source Emissions Grown and Controlled		**113.5**	**280.4**	**78.5**	**68.5**	**75.0**	**79.4**
AREA SOURCES							
Area Source Emissions, with growth and without post-2002 benefits (from pre- and post-2002 controls)		**369.8**	**35.9**	**383.0**	**36.4**	**384.9**	**36.7**
Area Source Control Measures Benefits, From Uncontrolled							
Post-2002 State OTB	Architectural Surface Coatings 2005	NA	NA	22.0	0.0	22.1	0.0
Post-2002 State OTB	Mobile Equipment Repair and Refinishing (Autobody)	NA	NA	2.0	0.0	2.0	0.0
Post-2002 State OTB	Solvent Cleaning (Degreasing)	NA	NA	3.2	0.0	3.2	0.0
Post-2002 State OTB	Consumer Products 2005	NA	NA	9.8	0.0	9.8	0.0
Post-2002 State BOTW	Consumer Products 2009 Amendments	NA	NA	0.0	0.0	1.2	0.0
Post-2002 State OTB & BOTW	Portable Fuel Containers (2005 + 2009)	NA	NA	3.9	0.0	6.1	0.0
Post-2002 State OTB	Stage I (Gasoline Transfer Operations) (Balanced Submerged Filling)	NA	NA	8.8	0.0	8.8	0.0
Post-2002 State OTB	NOx RACT rule 2006	NA	NA	0.0	4.1	0.0	4.1
Pre-2002 Federal OTB	Residential Woodstove NSPS	NA	NA	0.1	0.0	0.1	0.0
Post-2002 State BOTW	Adhesives and Sealants	NA	NA	0.0	0.0	6.9	0.0
Post-2002 State BOTW	Asphalt Paving (Cutback and Emulsified Asphalt)	NA	NA	0.0	0.0	3.6	0.0
Total Area Source Benefits, post-2002		**0.0**	**0.0**	**49.6**	**4.1**	**63.7**	**4.1**
Area Source Emissions Grown and Controlled		**369.8**	**35.9**	**333.4**	**32.3**	**321.2**	**32.6**
ONROAD SOURCES							
Onroad Source Emissions with growth and without post-2002 benefits (from pre and post-2002 controls) *		**274.7**	**558.7**	**271.2**	**489.4**	**275.1**	**497.7**
Onroad Source Control Measures Benefits, post-2002							
Post-2002 State OTB	Stage II (Gasoline Transfer Operations)	NA	NA	2.2	0.0	1.8	0.0
Post-2002 State OTB	On-board Diagnostics (OBD) - I/M	NA	NA	4.4	6.5	4.9	7.3
Post-2002 Federal OTB	Total Federal control measure benefits in MOBILE model	NA	NA	130.5	228.1	143.9	250.9
Post-2002 State BOTW	NJLEV	NA	NA	0.0	0.0	0.1	0.2
Total Onroad Source Benefits, post-2002		**0.0**	**0.0**	**137.1**	**234.6**	**150.7**	**258.4**
Onroad Source Emissions, Grown and Controlled		**274.7**	**558.7**	**134.1**	**254.9**	**124.4**	**239.3**
NONROAD SOURCES							
Nonroad Source Emissions, with growth and without post-2002 benefits (from post-2002 controls) *		**220.6**	**231.6**	**238.8**	**215.9**	**240.4**	**219.1**
Nonroad Source Control Measure Benefits, post-2002							
Post-2002 State OTB	Portable Fuel Containers 2005	NA	NA	1.4	0.0	1.9	0.0
Post-2002 Federal OTB	Total Federal Control Measure Benefits/Nonroad model	NA	NA	69.4	31.8	79.7	39.9
Post-2002 State BOTW	Portable Fuel Container 2009 Amendments	NA	NA	0.0	0.0	0.3	0.0
Total Nonroad Source Benefits, post-2002		**0.0**	**0.0**	**70.8**	**31.8**	**81.9**	**39.9**
Nonroad Source Emissions, Grown and Controlled		**220.6**	**231.6**	**168.0**	**184.0**	**158.4**	**179.3**
TOTALS							
TOTAL EMISSIONS, with growth and without post-2002 controls		978.7	1106.5	971.5	945.0	979.3	962.2
TOTAL BENEFITS, post-2002		0.0	0.0	257.5	405.3	300.3	431.7
TOTAL EMISSIONS, Grown and Controlled		**978.7**	**1106.5**	**714.0**	**539.8**	**679.0**	**530.5**
NOTES: * See Section 6.3.2 for description of emissions							

Table 6.2: Projected Emissions and Control Measure Benefits New Jersey Portion of Northern New Jersey/New York/Connecticut Nonattainment Area

		2002 Inventory		2008 Projected		2009 Projected	
		VOC	NOx	VOC	NOx	VOC	NOx
		tpd	tpd	Tpd	Tpd	tpd	Tpd
POINT SOURCES							
Point Source Emissions, with growth and without post-2002 benefits (from pre- and post-2002 controls)		**68.2**	**152.7**	**50.5**	**110.9**	**50.9**	**113.8**
Point Source Control Measures Benefits, post-2002							
Pre-2002 State OTB	NOx Budget Program	NA	NA	0.0	44.0	0.0	0.0
Post-2002 State OTB	NOx RACT rule 2006	NA	NA	0.0	4.5	0.0	4.5
Post-2002 Federal OTB	CAIR	NA	NA	0.0	0.0	0.0	37.0
Post-2002 Federal OTB	EPA MACT Standards	NA	NA	0.0	0.0	1.6	0.8
Post-2002 State BOTW	Certain Categories of ICI Boilers	NA	NA	0.0	0.0	0.0	4.8
Post-2002 Federal	ACO – PSEG	NA	NA	0.0	11.1	0.0	11.3
Post-2002 Federal	Refinery Enforcement Initiative	NA	NA	0.0	0.0	0.4	1.6
Total Point Source Benefits, post-2002		**0.0**	**0.0**	**0.0**	**59.6**	**2.0**	**60.0**
Point Source Emissions Grown and Controlled		**68.2**	**152.7**	**50.5**	**51.3**	**48.9**	**53.8**
AREA SOURCES							
Area Source Emissions, with growth and without post-2002 benefits (from pre- and post-2002 controls)		**243.5**	**24.4**	**252.7**	**24.7**	**254.1**	**24.9**
Area Source Control Measures Benefits, From Uncontrolled							
Post-2002 State OTB	Architectural Surface Coatings 2005	NA	NA	15.0	0.0	15.0	0.0
Post-2002 State OTB	Mobile Equipment Repair and Refinishing (Autobody)	NA	NA	1.5	0.0	1.5	0.0
Post-2002 State OTB	Solvent Cleaning (Degreasing)	NA	NA	2.4	0.0	2.4	0.0
Post-2002 State OTB	Consumer Products 2005	NA	NA	6.7	0.0	6.7	0.0
Post-2002 State BOTW	Consumer Products 2009 Amendments	NA	NA	0.0	0.0	0.9	0.0
Post-2002 State OTB & BOTW	Portable Fuel Containers (2005 + 2009)	NA	NA	2.6	0.0	4.0	0.0
Post-2002 State OTB	Stage I (Gasoline Transfer Operations) (Balanced Submerged Filling)	NA	NA	5.9	0.0	5.9	0.0
Post-2002 State OTB	NOx RACT rule 2006	NA	NA	0.0	2.9	0.0	2.9
Pre-2002 Federal OTB	Residential Woodstove NSPS	NA	NA	0.0	0.0	0.0	
Post-2002 State BOTW	Adhesives and Sealants	NA	NA	0.0	0.0	4.8	0.0
Post-2002 State BOTW	Asphalt Paving (Cutback and Emulsified Asphalt)	NA	NA	0.0	0.0	2.1	0.0
Total Area Source Benefits, post-2002		**0.0**	**0.0**	**34.0**	**2.9**	**43.3**	**2.9**
Area Source Emissions Grown and Controlled		**243.5**	**24.4**	**218.7**	**21.8**	**210.8**	**22.0**
ONROAD SOURCES							
Onroad Source Emissions with growth and without post-2002 benefits (from pre and post-2002 controls) *		**183.0**	**378.9**	**172.0**	**287.3**	**174.4**	**292.2**
Onroad Source Control Measures Benefits, post-2002							
Post-2002 State OTB	Stage II (Gasoline Transfer Operations)	NA	NA	1.3	0.0	1.1	0.0
Post-2002 State OTB	On-board Diagnostics (OBD) - I/M	NA	NA	2.9	4.2	3.2	4.7
Post-2002 Federal OTB	Total Federal control measure benefits in MOBILE model	NA	NA	82.5	139.5	91.0	153.9
Post-2002 State BOTW	NJLEV	NA	NA	0.0	0.0	0.1	0.1
Total Onroad Source Benefits, post-2002		**0.0**	**0.0**	**86.7**	**143.7**	**95.4**	**158.7**
Onroad Source Emissions, Grown and Controlled		**183.0**	**378.9**	**85.3**	**143.6**	**79.0**	**133.5**
NONROAD SOURCES							
Nonroad Source Emissions, with growth and without post-2002 benefits (from post-2002 controls) *		**121.6**	**161.0**	**134.0**	**144.9**	**135.6**	**147.1**
Nonroad Source Control Measure Benefits, post-2002							
Post-2002 State OTB	Portable Fuel Containers 2005	NA	NA	1.0	0.0	1.3	0.0
Post-2002 Federal OTB	Total Federal Control Measure Benefits -Nonroad model	0.0	0.0	45.0	24.0	51.9	29.9
Post-2002 State BOTW	Portable Fuel Container 2009 Amendments	NA	NA	0.0	0.0	0.2	0.0
Total Nonroad Source Benefits, post-2002		**0.0**	**0.0**	**46.0**	**24.0**	**53.5**	**29.9**
Nonroad Source Emissions, Grown and Controlled		**121.6**	**161.0**	**87.9**	**120.8**	**82.2**	**117.1**
TOTALS							
TOTAL EMISSIONS, with growth and without post-2002 controls		616.2	717.0	609.2	567.8	615.0	578.0
TOTAL BENEFITS, post-2002		0.0	0.0	166.8	230.2	194.2	251.5
TOTAL EMISSIONS, Grown and Controlled		**616.2**	**717.0**	**442.4**	**337.6**	**420.9**	**326.5**
NOTES: * See Section 6.3.2 for description of emissions							

Table 6.3: Projected Emissions and Control Measure Benefits
New Jersey Portion of Southern New Jersey/Philadelphia Nonattainment Area

		2002 Inventory		2008 Projected		2009 Projected	
		VOC tpd	NOx tpd	VOC Tpd	NOx tpd	VOC tpd	NOx Tpd
POINT SOURCES							
Point Source Emissions, with growth and without post-2002 benefits (from pre- and post-2002 controls)		**45.4**	**127.7**	**28.0**	**92.5**	**28.0**	**95.0**
Point Source Control Measures Benefits, post-2002							
Pre-2002 State OTB	NOx Budget Program	NA	NA	0.0	35.6	0.0	0.0
Post-2002 State OTB	NOx RACT rule 2006	NA	NA	0.0	2.1	0.0	2.1
Post-2002 Federal OTB	CAIR	NA	NA	0.0	0.0	0.0	27.0
Post-2002 Federal OTB	EPA MACT Standards	NA	NA	0.0	0.0	1.1	0.5
Post-2002 State BOTW	Certain Categories of ICI Boilers	NA	NA	0.0	0.0	0.0	2.0
Post-2002 Federal	ACO – PSEG	NA	NA	0.0	37.3	0.0	37.2
Post-2002 Federal	Refinery Enforcement Initiative	NA	NA	0.0	0.0	0.9	0.3
Total Point Source Benefits, post-2002		**0.0**	**0.0**	**0.0**	**75.0**	**2.0**	**69.2**
Point Source Emissions Grown and Controlled		**45.4**	**127.7**	**28.0**	**17.4**	**26.1**	**25.8**
AREA SOURCES							
Area Source Emissions, with growth and without post-2002 benefits (from pre- and post-2002 controls)		**126.4**	**11.5**	**130.3**	**11.7**	**130.8**	**11.8**
Area Source Control Measures Benefits, From Uncontrolled							
Post-2002 State OTB	Architectural Surface Coatings 2005	NA	NA	7.0	0.0	7.1	0.0
Post-2002 State OTB	Mobile Equipment Repair and Refinishing (Autobody)	NA	NA	0.5	0.0	0.5	0.0
Post-2002 State OTB	Solvent Cleaning (Degreasing)	NA	NA	0.8	0.0	0.8	0.0
Post-2002 State OTB	Consumer Products 2005	NA	NA	3.0	0.0	3.0	0.0
Post-2002 State BOTW	Consumer Products 2009 Amendments	NA	NA	0.0	0.0	0.4	0.0
Post-2002 State OTB & BOTW	Portable Fuel Containers (2005 + 2009)	NA	NA	1.3	0.0	2.1	0.0
Post-2002 State OTB	Stage I (Gasoline Transfer Operations) (Balanced Submerged Filling)	NA	NA	2.9	0.0	2.9	0.0
Post-2002 State OTB	NOx RACT rule 2006	NA	NA	0.0	1.2	0.0	1.2
Pre-2002 Federal OTB	Residential Woodstove NSPS	NA	NA	0.0	0.0	0.0	
Post-2002 State BOTW	Adhesives and Sealants	NA	NA	0.0	0.0	2.2	0.0
Post-2002 State BOTW	Asphalt Paving (Cutback and Emulsified Asphalt)	NA	NA	0.0	0.0	1.5	0.0
Total Area Source Benefits, post-2002		**0.0**	**0.0**	**15.6**	**1.2**	**20.4**	**1.2**
Area Source Emissions Grown and Controlled		**126.4**	**11.5**	**114.7**	**10.5**	**110.4**	**10.6**
ONROAD SOURCES							
Onroad Source Emissions with growth and without post-2002 benefits (from pre and post-2002 controls)		**91.8**	**179.8**	**99.2**	**202.1**	**100.8**	**205.5**
Onroad Source Control Measures Benefits, post-2002							
Post-2002 State OTB	Stage II (Gasoline Transfer Operations)	NA	NA	0.8	0.0	0.7	0.0
Post-2002 State OTB	On-board Diagnostics (OBD) - I/M	NA	NA	1.6	2.3	1.7	2.6
Post-2002 Federal OTB	Total Federal control measure benefits in MOBILE model	NA	NA	48.0	88.5	52.9	96.9
Post-2002 State BOTW	NJLEV	NA	NA	0.0	0.0	0.1	0.1
Total Onroad Source Benefits, post-2002		**0.0**	**0.0**	**50.4**	**90.8**	**55.4**	**99.6**
Onroad Source Emissions, Grown and Controlled		**91.8**	**179.8**	**48.8**	**111.3**	**45.4**	**105.9**
NONROAD SOURCES							
Nonroad Source Emissions, with growth and without post-2002 benefits (from post-2002 controls)		**99.0**	**70.6**	**104.8**	**70.98**	**104.7**	**72.03**
Nonroad Source Control Measure Benefits, post-2002							
Post-2002 State OTB	Portable Fuel Containers 2005	NA	NA	0.4		0.5	
Post-2002 Federal OTB	Total Federal Control Measure Benefits -Nonroad model	0.0	0.0	24.3	7.7	27.9	9.9
Post-2002 State BOTW	Portable Fuel Container 2009 Amendments	NA	NA	0.0	0.0	0.1	0.0
Total Nonroad Source Benefits, post-2002		**0.0**	**0.0**	**24.7**	**7.8**	**27.9**	**9.9**
Nonroad Source Emissions, Grown and Controlled		**99.0**	**70.6**	**80.1**	**63.3**	**76.2**	**62.1**
TOTALS							
TOTAL EMISSIONS, with growth and without post-2002 controls		362.5	389.6	362.3	377.2	364.4	384.3
TOTAL BENEFITS, post-2002		0.0	0.0	90.7	174.7	105.6	179.9
TOTAL EMISSIONS, Grown and Controlled		**362.5**	**389.6**	**271.6**	**202.5**	**258.2**	**204.4**
NOTES: This category may contain area sources also, estimate includes all sources.							

6.3.4 Projected Inventories by Sector and Area

This section presents the controlled emission level results for each year of interest by emission sector and nonattainment area. A more detailed discussion of the projection inventories is found in Appendix E.

6.3.4.1 Point Sources

The 2005 actual emissions were used to project the State's point source inventory to 2009. This was done to decrease the level of uncertainty with growth factors for the 2002-2005 time period. By doing so, the error was decreased by including more recent data. Table 6.4 shows projected and actual NO_x and VOC emissions in tons/day for 2005. The actual NO_x emissions were less than the projected emissions for 2005, when compared to the 2002 inventory. Phase III, known as NO_x SIP Call began in 2003 with a reduction of the base emission budget along with additional add-on controls by a number of the utility companies in the state explains the decrease in NO_x emissions. VOC emissions decreased largely due to the fact that two- (2) automobile manufacturer ceased operations in the state. Other facilities tightened controls on their operations adding to the decrease in VOC emissions.

Table 6.4: Projected vs. Actual Statewide 2005 Point Source Inventory

Pollutant	Actual 2002 tpd	Projected 2005 tpd	Actual 2005 tpd
NO_x	280.36	270.36	208.25
VOC	113.15	117.54	76.73

Tables 6.5 and 6.6 summarize the 2002 actual point source emission inventories and projected inventories by pollutant for years 2002, 2008 and 2009, for VOCs and NO_x, presented by nonattainment area, and statewide. The detailed point source projected inventories by source classification code (SCC) for each county, nonattainment area and the entire state can be found in Appendix E, Attachment 1.

Table 6.5: VOC 2002 Actual and Future Year Projected Inventories
Point Sources

Area-New Jersey Portion	Controlled Emissions Summer (tpd)			
	2002 Actual	2005 Actual	2008	2009
NNJ/NY/CT NAA	68.2	49.4	50.5	48.9
SNJ/Phila. NAA	45.4	27.4	28.0	26.1
Statewide	113.5	76.7	78.5	75.0

Table 6.6: NO_x 2002 Actual and Future Year Projected Inventories
Point Sources

Area-New Jersey Portion	Controlled Emissions Summer (tpd)			
	2002 Actual	2005 Actual	2008	2009
NNJ/NY/CT NAA	152.7	116.1	51.3	53.8
SNJ/Phila. NAA	127.7	92.1	17.4	25.8
Statewide	280.4	208.2	68.5	79.4

6.3.4.2 Area Sources

Tables 6.7 and 6.8 summarize the 2002 actual area emission inventories and projected inventories by pollutant for years 2002, 2008 and 2009, for VOCs and NO_x, presented by nonattainment area, and statewide. The detailed area source projected inventories by SCC for each county, nonattainment area and the entire State is found in Appendix E, Attachment 2-1.

Table 6.7: VOC 2002 Actual and Future Year Projected Inventories
Area Sources

Area-New Jersey Portion	Controlled Emissions Summer (tpd)		
	2002 Actual	2008	2009
NNJ/NY/CT NAA	243.5	218.7	210.8
SNJ/Phila. NAA	126.4	114.7	110.4
Statewide	369.8	333.4	321.2

Table 6.8: NO_x 2002 Actual and Future Year Projected Inventories Area Sources

Area-New Jersey Portion	Controlled Emissions Summer (tpd)		
	2002 Actual	2008	2009
NNJ/NY/CT NAA	24.4	21.8	22.0
SNJ/Phila. NAA	11.5	10.5	10.6
Statewide	35.9	32.3	32.6

6.3.4.3 Nonroad Sources

Tables 6.9 and 6.10 summarize the 2002 actual nonroad emission inventories and projected inventories by pollutant for years 2002, 2008 and 2009 for VOCs and NO_x, presented by nonattainment area, and statewide. The detailed nonroad projected inventories by SCC for each county, nonattainment area and the entire state is found in Appendix E, Attachment 3-1.

Table 6.9: VOC 2002 Actual and Future Year Projected Inventories Nonroad Sources

Area-New Jersey Portion	Controlled Emissions Summer (tpd)		
	2002 Actual	2008	2009
NNJ/NY/CT NAA	121.6	87.9	82.2
SNJ/Phila. NAA	99.0	80.1	76.2
Statewide	220.6	168.0	158.4

Table 6.10: NO_x 2002 Actual and Future Year Projected Inventories Nonroad Sources

Area-New Jersey Portion	Controlled Emissions Summer (tpd)		
	2002 Actual	2008	2009
NNJ/NY/CT NAA	161.0	120.8	117.1
SNJ/Phila. NAA	70.6	63.3	62.1
Statewide	231.6	184.1	179.3

6.3.4.4 Onroad Sources

Tables 6.11 and 6.12 summarize the 2002 actual onroad emission inventories and projected inventories by pollutant for years 2002, 2008 and 2009, for VOCs and NO_x, presented by nonattainment area, and statewide. The detailed onroad source projected inventories by SCC for each county, nonattainment area and the entire state is found in Appendix E, Attachment 4-1.

Table 6.11: VOC 2002 Actual and Future Year Projected Inventories
Onroad Sources

Area-New Jersey Portion	Controlled Emissions Summer (tpd)		
	2002 Actual	2008	2009
NNJ/NY/CT NAA	183.0	85.3	79.0
SNJ/Phila. NAA	91.8	48.8	45.5
Statewide	274.7	134.1	124.5

Table 6.12: NO_x 2002 Actual and Future Year Projected Inventories
Onroad Sources

Area-New Jersey Portion	Controlled Emissions Summer (tpd)		
	2002 Actual	2008	2009
NNJ/NY/CT NAA	378.9	143.6	133.4
SNJ/Phila. NAA	179.8	111.3	105.9
Statewide	558.7	254.9	239.3

6.3.4.5 Overall Projection Emissions Summary

Tables 6.13 and 6.14 and Figures 6.1 and 6.2 summarize the 2002 actual total emission inventory and projected inventories by pollutant for years 2002, 2008 and 2009, for VOCs and NO_x, presented by nonattainment area, and statewide. The detailed projected inventories by SCC for each county, nonattainment area and the entire state can be found in Appendix E.

Table 6.13: VOC 2002 Actual and Future Year Projected Inventories
All Emission Sectors

Area-New Jersey Portion	Controlled Emissions Summer (tpd)		
	2002 Actual	2008	2009
NNJ/NY/CT NAA	616.2	442.4	420.9
SNJ/Phila. NAA	362.5	271.6	258.2
Statewide	978.7	714.4	679.1

Table 6.14: NO_x 2002 Actual and Future Year Projected Inventories
All Emission Sectors

Area-New Jersey Portion	Controlled Emissions Summer (tpd)		
	2002 Actual	2008	2009
NNJ/NY/CT NAA	717.0	337.6	326.3
SNJ/PhilaNAA	389.6	202.5	204.4
Statewide	1106.5	539.8	530.6

Figure 6.1: Controlled VOC Emissions, OTB/OTW/BOTW Statewide

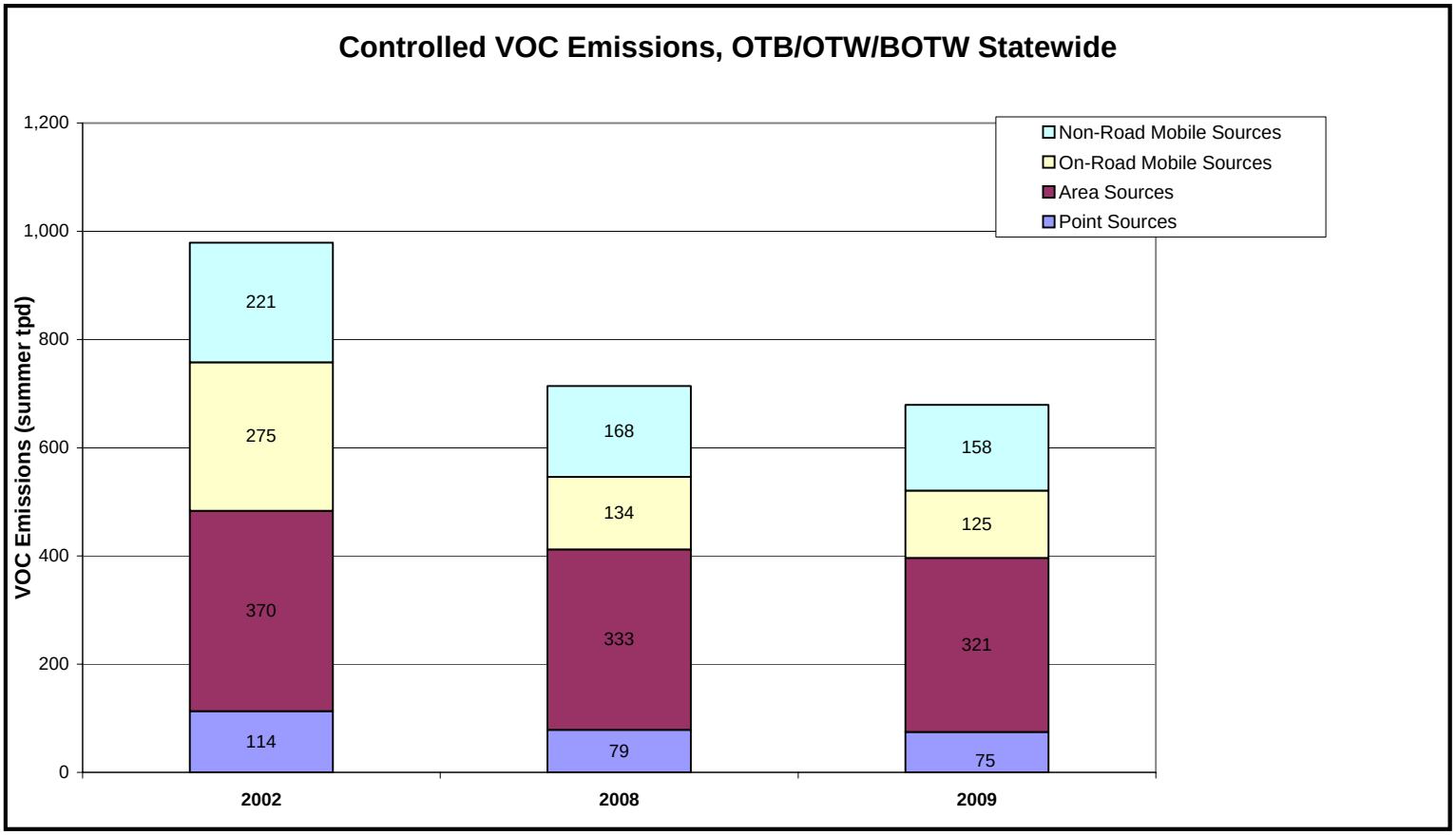
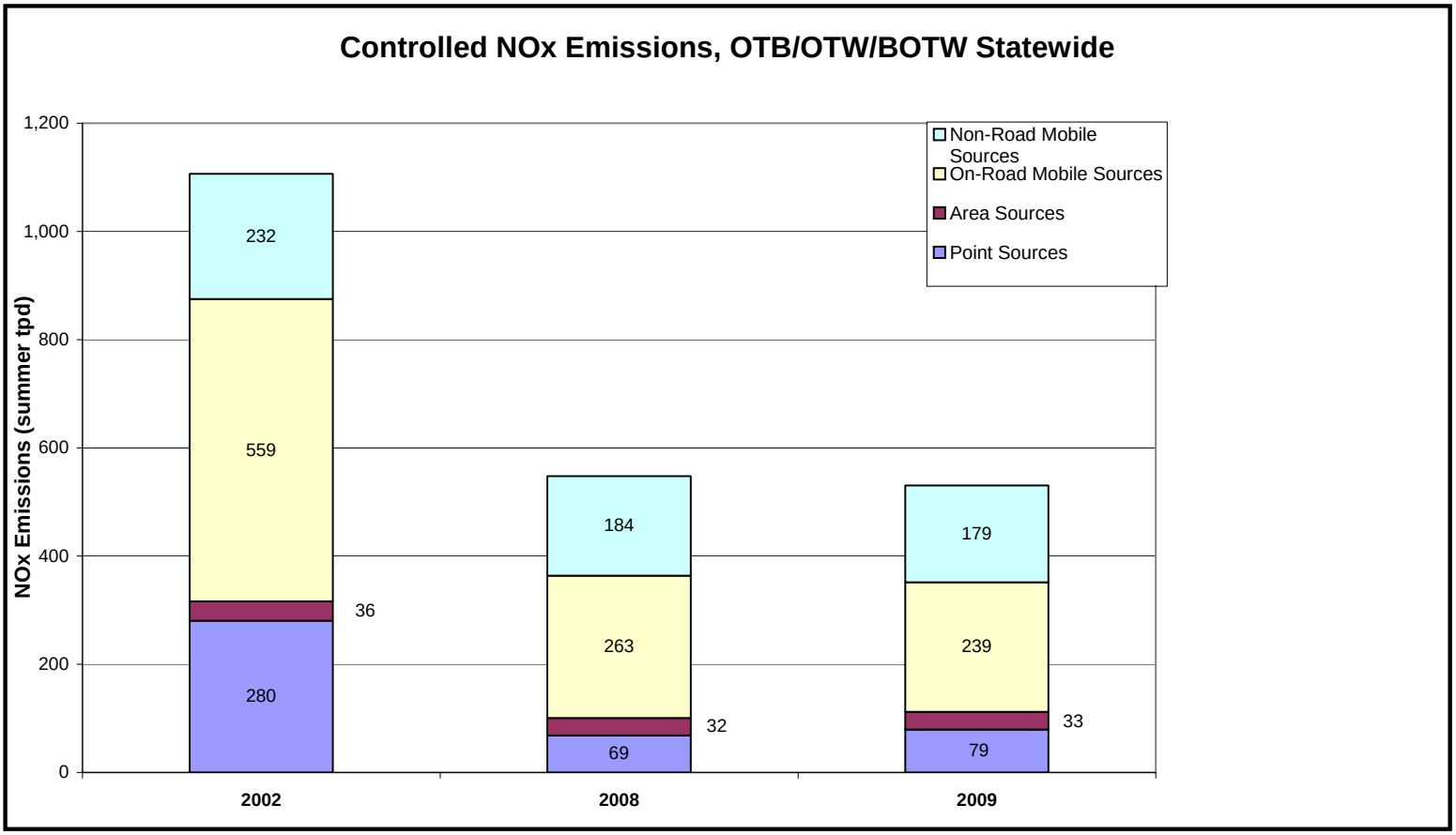


Figure 6.2: Controlled NO_x Emissions, OTB/OTW/BOTW Statewide



6.4 RFP Target Calculations

This section describes the emission reduction calculations performed to determine compliance with RFP requirements. The RFP calculations and projected emission reductions in percent and tons per summer day, are shown in Tables 6.15 and 6.16 for the New Jersey portion of the Northern New Jersey/New York/Connecticut nonattainment area and the New Jersey portion of the Southern New Jersey/Philadelphia nonattainment area, respectively. The steps described below correspond with the rows in Tables 6.15 and 6.16**.**

Step 1: Calculate a 2002 base year emission inventory. This inventory does not include biogenic emissions. The base year inventory is developed as discussed in Section 6.2 of this Chapter.

Step 2: Calculate the emission benefits achieved from pre-1990 control measures that cannot be applied to the percentage reduction requirement. For New Jersey, this only includes the benefits achieved from the Federal Motor Vehicle Control Program (FMVCP). These benefits vary with the projection year as the number of FMVCP vehicles on the road changes.

Step 3: Adjust the 2002 base year inventory by subtracting the benefits achieved from the FMVCP, since these reductions are not creditable towards the reduction requirement. The resulting inventory is hereafter referred to as the "adjusted baseline inventory".

Step 4: Calculate the RFP reduction required. As discussed above in Section 6.1, NJDEP is required to reduce VOC emissions from the 2002 adjusted baseline emissions by 15 percent from 2002 to 2008. By definition, the 2008-2009 reduction target is the amount necessary for attainment.

Step 5: Show RFP required VOC emission target levels for each year of interest (2008) by reducing the 2002 adjusted baseline emissions by the reduction amount in Step 4.

Steps 6 through 10: The projected (grown and controlled) VOC and NO_x inventories for 2008 and 2009 are presented by emission sector in rows 6 through 9 and totaled in Row 10. The inventories are derived as discussed in Section 6.3.

Steps 11 and 12: The contingency measure requirement is presented in Row 11 and added to the total controlled emissions in Row 10 to show RFP controlled emissions in Row 12, without contingency measures. Contingency measures are discussed in more detail in Chapter 8.

Steps 13 and 14: The VOC and NO_x emission reductions from the 2002 adjusted baseline inventory (Row 3-Row 12) are presented in tons per ozone season day in Row 13 and as a percentage of the 2002 adjusted baseline inventory ((Row 3-Row 12)/Row 3) in Row 14.

Table 6.15: Rate of Further Progress
New Jersey Portion of
Northern New Jersey/New York/Connecticut Nonattainment Area

Row		2002 Inventory		2008 Projected		2009 Projected	
		VOC tpd*	NOx tpd*	VOC tpd*	NOx tpd*	VOC tpd*	NOx tpd*
1	2002 Base year Emissions	616.2	717.0	616.2	717.0	616.2	717.0
2	Pre-1990 Non-Creditable Reductions (FMVCP Program)	0.0	0.0	13.3	6.9	13.4	7.0
3	2002 Adjusted Baseline Emissions	616.2	717.0	602.9	710.1	602.8	710.1
4	RFP % Reduction Required From 2002 Adjusted Baseline			15%			
5	RFP Required VOC Emission Target Levels			512.5			
6	Controlled Point Emissions	68.2	152.7	50.5	51.3	48.9	53.8
7	Controlled Area Emissions	243.5	24.4	218.7	21.8	210.8	22.0
8	Controlled Onroad Emissions	183.0	378.9	85.3	143.6	79.0	133.4
9	Controlled Nonroad Emissions	121.6	161.0	87.9	120.8	82.2	117.1
10	Controlled Total Emission Levels	616.2	717.0	442.4	337.6	420.9	326.3
11	Contingency Measures Requirement (3% VOC)			18.1			
12	RFP Controlled Emissions (without contingency measures	616.2	717.0	460.5	337.6	420.9	326.3
13	Emission Reduction From 2002 Baseline	0.0	0.0	142.4	372.6	181.9	383.8
14	% Reduction From 2002 Baseline	0%	0%	24%	52%	30%	54%

*Unless otherwise noted

Table 6.16: Rate of Further Progress
New Jersey Portion of
Southern New Jersey/Philadelphia Nonattainment Area

Row		2002 Inventory		2008 Projected		2009 Projected	
		VOC tpd*	NOx tpd*	VOC tpd*	NOx tpd*	VOC tpd*	NOx tpd*
1	2002 Base year Emissions	362.5	389.6	362.5	389.6	362.5	389.6
2	Pre-1990 Non-Creditable Reductions (FMVCP Program)	0.0	0.0	6.9	3.9	7.2	4.0
3	2002 Adjusted Baseline Emissions	362.5	389.6	355.6	385.7	355.3	385.6
4	RFP % Reduction Required From 2002 Adjusted Baseline			15%			
5	RFP Required VOC Emission Target Levels			302.2			
6	Controlled Point Emissions	45.4	127.7	28.0	17.4	26.1	25.8
7	Controlled Area Emissions	126.4	11.5	114.7	10.5	110.4	10.6
8	Controlled Onroad Emissions	91.8	179.8	48.8	111.3	45.5	105.9
9	Controlled Nonroad Emissions	99.0	70.6	80.1	63.3	76.2	62.1
10	Controlled Total Emission Levels	362.5	389.6	271.6	202.5	258.2	204.4
11	Contingency Measures Requirement (3% VOC)			10.7			
12	RFP Controlled Emissions (without contingency measures	362.5	389.6	282.3	202.5	258.2	204.4
13	Emission Reduction From 2002 Baseline	0.0	0.0	73.3	183.2	97.1	181.2
14	% Reduction From 2002 Baseline	0%	0%	21%	47%	27%	47%

* Unless otherwise noted

6.5 RFP Summary and Conclusions

The RFP calculations and projected emission reductions in percent and tons per summer day, are shown in Tables 6.15 and 6.16, the New Jersey portion of the Northern New Jersey/New York/Connecticut nonattainment area and the New Jersey portion of the Southern New Jersey/Philadelphia nonattainment area, respectively.

For the New Jersey portion of the Northern New Jersey/New York/Connecticut nonattainment area, as shown in Table 6.15, the projected percent reduction of VOC from the 2002 baseline is 24 percent in 2008, which exceeds the required 15 percent.

For the Southern New Jersey/Philadelphia nonattainment area, as shown in Table 6.16, the projected percent reduction of VOC from the 2002 baseline is 21 percent in 2008, which exceeds the required 15 percent.

Both of the New Jersey portions of the multi-state nonattainment areas meet the 2008 and 2009 RFP requirement.