MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

DECEMBER 2016

MARICOPA ASSOCIATION of GOVERNMENTS

MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

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MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN
FOR THE MARICOPA NONATTAINMENT AREA

TABLE OF CONTENTS

CHAPTER PAGE

EXECUTIVE SUMMARY. ES-1

ONE **INTRODUCTION**.. 1-1

HISTORICAL BACKGROUND. 1-1

OUTLINE OF THE MAG 2017 MODERATE AREA OZONE PLAN. . . . 1-3

TWO **DESCRIPTION OF THE NONATTAINMENT AREA**.. 2-1

NONATTAINMENT AREA BOUNDARIES. 2-1

GEOGRAPHY AND CLIMATIC CONDITIONS. 2-1

THREE **ASSESSMENT OF AIR QUALITY CONDITIONS**.. 3-1

OZONE FORMATION AND HEALTH EFFECTS. 3-1

SOURCES OF OZONE PRECURSOR EMISSIONS. 3-2

AIR QUALITY MONITORING DATA AND TREND ANALYSIS.. 3-7

FOUR **EVALUATION OF OZONE CONTROL MEASURE REQUIREMENTS IN THE CLEAN AIR ACT**. 4-1

REASONABLY AVAILABLE CONTROL MEASURE ANALYSIS. 4-1

REASONABLY AVAILABLE CONTROL TECHNOLOGY ANALYSIS.. 4-45

NEW SOURCE REVIEW. 4-46

MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

TABLE OF CONTENTS (Continued)

CHAPTER		PAGE
FIVE	**THE ADOPTED PLAN**	5-1
	EXISTING MEASURES	5-1
	MEASURES USED FOR NUMERIC CREDIT	5-12
	CONTINGENCY MEASURES	5-19
	ASSURANCES THAT THE STATE HAS THE AUTHORITY TO IMPLEMENT THE MEASURES IN THE PLAN	5-19
	TRACKING PLAN IMPLEMENTATION	5-20
SIX	**ATTAINMENT DEMONSTRATION AND WEIGHT OF THE EVIDENCE ANALYSIS**	6-1
	ATTAINMENT DATE	6-1
	EMISSIONS INVENTORIES	6-2
	ATTAINMENT MEASURES	6-7
	ATTAINMENT DEMONSTRATION	6-8
	WEIGHT OF EVIDENCE ANALYSIS	6-12
	ONROAD MOBILE EMISSIONS BUDGETS FOR CONFORMITY	6-15
	REASONABLE FURTHER PROGRESS-15 PERCENT RATE OF PROGRESS DEMONSTRATION	6-16
	CONTINGENCY MEASURES	6-16
	CONCLUSIONS	6-17

MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

TABLE OF CONTENTS (Continued)

CHAPTER PAGE

SEVEN **PUBLIC PARTICIPATION**. 7-1

DECISION MAKING STRUCTURE.. 7-1

PUBLIC PARTICIPATION IN THE PREPARATION OF THE MAG 2017 MODERATE AREA OZONE PLAN FOR THE MARICOPA NONATTAINMENT AREA. 7-3

PUBLIC INVOLVEMENT PROCESS FOR TRANSPORTATION AND AIR QUALITY. 7-5

TITLE VI CONSIDERATIONS.. 7-6

REFERENCES. R-1

MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

LIST OF TABLES

TABLE		PAGE
Table 3-1	Emissions From all Source Categories Included in the 2011 Periodic Emissions Inventory for Ozone Precursors Addendum, August 2015	3-5
Table 3-2	Ozone Monitoring Stations.	3-9
Table 3-3	Eight-Hour Ozone Monitoring Data Summary Three-Year Average of the Fourth-High, 2016* (Standard: 8-Hour: 0.075 ppm).	3-13
Table 3-4	Eight-Hour Ozone Monitoring Data Summary Three-Year Average of the Fourth-High, 2012-2016* (Standard: 8-Hour: 0.075 ppm).	3-14
Table 4-1	Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area.	4-4
Table 4-2	Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures.	4-14
Table 4-3	Comparison of Existing Maricopa County Air Quality Department (MCAQD) and Sacramento Metropolitan Air Quality Management District (SMAQMD) NOx and VOC Rules.	4-39
Table 5-1	Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area.	5-2
Table 6-1	Ozone Season Average Daily Emissions during May - September in 2011 and 2017 for the Maricopa Eight-Hour Ozone Nonattainment Area (metric tons/day).	6-3
Table 6-2	Ozone Season Average Daily Emissions during May - September in 2011 and 2017 for the 4 km Grid Modeling Domain (metric tons/day).	6-3
Table 6-3	2011 and 2017 Design Values and Relative Response Factors for Monitoring Sites in the Maricopa Eight-Hour Ozone Nonattainment Area.	6-10

MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

LIST OF TABLES (Continued)

TABLE PAGE

Table 6-4 Average Daily Anthropogenic VOC and NOx Emission Reductions in 2018 for Contingency Measure Requirements (metric tons/day). . . 6-18

MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

LIST OF FIGURES

FIGURE		PAGE
Figure ES-1	Eight-Hour Ozone Nonattainment Area and Ozone Monitoring Sites.	ES-3
Figure ES-2	Eight-Hour Ozone Trends (2000-2016).	ES-4
Figure ES-3	Violations of the 0.075 ppm Eight-Hour Ozone Standard in the Maricopa Nonattainment Area.	ES-5
Figure ES-4	Source of Volatile Organic Compound Emissions 2011 Periodic Emissions Inventory (Ozone Season Day Emissions).	ES-6
Figure ES-5	Source of Nitrogen Oxide Emissions 2011 Periodic Emissions Inventory (Ozone Season Day Emissions).	ES-7
Figure 2-1	Eight-Hour Ozone Nonattainment Area and Municipal Planning Areas.	2-2
Figure 3-1	Source of Volatile Organic Compound Emissions 2011 Periodic Emissions Inventory (Ozone Season Day Emissions).	3-3
Figure 3-2	Source of Nitrogen Oxide Emissions 2011 Periodic Emissions Inventory (Ozone Season Day Emissions).	3-4
Figure 3-3	Eight-Hour Ozone Nonattainment Area and Ozone Monitoring Sites.	3-10
Figure 3-4	Eight-Hour Ozone Trends (2000-2016).	3-11
Figure 3-5	Violations of the 0.075 ppm Eight-Hour Ozone Standard in the Maricopa Nonattainment Area.	3-12
Figure 6-1	Ozone Season Average Daily VOC Emissions in 2011 and 2017 in the Maricopa Eight-Hour Ozone Nonattainment Area.	6-4
Figure 6-2	Ozone Season Average Daily NOx Emissions in 2011 and 2017 in the Maricopa Eight-Hour Ozone Nonattainment Area.	6-4

MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

LIST OF FIGURES (Continued)

FIGURE PAGE

Figure 6-3 Ozone Season Average Daily CO Emissions in 2011 and 2017 in the Maricopa Eight-Hour Ozone Nonattainment Area. 6-5

Figure 6-4 Ozone Season Average Daily VOC Emissions in 2011 and 2017 in the 4 km Grid Modeling Domain. 6-5

Figure 6-5 Ozone Season Average Daily NOx Emissions in 2011 and 2017 in the 4 km Grid Modeling Domain. 6-6

Figure 6-6 Ozone Season Average Daily CO Emissions in 2011 and 2017 in the 4 km Grid Modeling Domain. 6-6

Figure 6-7 Isopleth Plot of the 2017 Design Values for the Unmonitored Area in the 4 km Grid Modeling Domain. 6-11

Figure 7-1 MAG Regional Air Quality Planning Technical Process. 7-2

Figure 7-2 MAG Regional Air Quality Planning Process.. 7-4

MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

APPENDICES

APPENDIX A

Exhibit 1: 2011 Periodic Emissions Inventory for Ozone Precursors for the Maricopa County, Arizona, Eight-Hour Ozone Nonattainment Area. Maricopa County Air Quality Department. February 2014. Addendum August 2015.

Exhibit 2: 2014 Periodic Emissions Inventory for Ozone Precursors for the Maricopa County, Arizona, Eight-Hour Ozone Nonattainment Area. Maricopa County Air Quality Department. September 2016.

APPENDIX B

Exhibit 1: Technical Support Document in Support of the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area. Maricopa Association of Governments.

Exhibit 2: State of Arizona Fifty-Second Legislature Senate Bill 1255 and Final Revised Fact Sheet for Senate Bill 1255.

APPENDIX C

Exhibit 1: Public Hearing Process Documentation.

Exhibit 2: Certification of Adoption and MAG Authority for Regional Air Quality Planning.

MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

EXECUTIVE SUMMARY

MARICOPA ASSOCIATION of GOVERNMENTS

MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

EXECUTIVE SUMMARY

Within the Maricopa nonattainment area, the National Ambient Air Quality Standard has not yet been attained for the 2008 eight-hour ozone standard of 0.075 parts per million (ppm). The area is classified as a Moderate Area under the Clean Air Act. The Maricopa Association of Governments (MAG) was designated by the Governor of Arizona in 1978 and recertified by the Arizona Legislature in 1992 to serve as the Regional Air Quality Planning Agency to develop plans to address air pollution problems (A.R.S. Section 49-406 A.). On June 22, 2016, the Governor of Arizona transmitted a letter to the Environmental Protection Agency (EPA) to update the planning certifications. This plan was prepared through a coordinated effort with the Arizona Department of Environmental Quality (ADEQ), Arizona Department of Transportation, Maricopa County Air Quality Department, Pinal County Air Quality Department and Maricopa Association of Governments.

The MAG 2017 Eight-Hour Ozone Moderate Area Plan has been prepared to meet the requirements in Section 182(b) of the Clean Air Act and improve air quality in the Maricopa eight-hour ozone nonattainment area. The attainment date for Moderate Areas is July 20, 2018. A Moderate Area Plan is due by January 1, 2017. The Moderate Area Plan is required to include reasonable further progress; reasonably available control technology; reasonably available control measures; new source review; emissions inventories; modeling attainment demonstration for 2017 (ozone season prior to the attainment date); contingency measures; and motor vehicle emissions budgets for transportation conformity. Moderate Areas are also required to make the submissions for Marginal Areas. On October 16, 2015, EPA published a final notice to take direct final action to approve the MAG 2014 Eight-Hour Ozone Plan-Submittal of Marginal Area Requirements for the Maricopa Nonattainment Area.

Unlike other pollutants, ozone is not directly emitted into the atmosphere. Ozone is formed through a chemical reaction that occurs between volatile organic compounds (VOC) and nitrogen oxides (NOx) in the presence of sunlight. As a result, meteorological variability has a strong influence on ozone formation in the nonattainment area. Peak ozone concentrations typically occur from May through September and are influenced by several factors, including: westerly transport of upwind pollutants; a favorable synoptic weather pattern featuring high pressure over the northeastern portion of the state; a low pressure center in the southwest portion of the state; daytime local temperatures above 100 degrees Fahrenheit; and local emissions that are coincident with valley-wide stagnant and weak winds.

Ozone irritates the lungs and repeated exposure may cause permanent lung damage. Symptoms of ozone exposure may include wheezing, coughing, and pain when taking a

deep breath. Children, older adults, persons with pre-existing respiratory conditions such as asthma, and others who are active outdoors when ozone levels are high are most affected by the adverse health effects of ozone. Even low levels of ozone may cause a number of respiratory health effects.

In 2008, the Environmental Protection Agency revised the eight-hour ozone standard from 0.08 parts per million to 0.075 parts per million. The 2008 standard is met when the three-year average of the annual fourth-highest daily maximum eight-hour average ozone concentrations measured at each monitor over each year is less than or equal to 0.075 parts per million. Collectively, there are twenty ozone monitors in the 2008 eight-hour ozone nonattainment area. The nonattainment area encompasses approximately 5,017 square miles. The geographic locations of the monitors within the nonattainment area are shown in Figure ES-1.

Overall, the region has been experiencing a downward trend in ozone concentrations. The trend data for the monitors in the nonattainment area with the highest three-year average of the fourth-highest eight-hour ozone concentration and the number of eight-hour ozone violations recorded since 2008 are summarized in Figures ES-2 and ES-3. It is important to note that the 2016 values are based upon preliminary data through August 31, 2016. Based upon the preliminary data through August 31, 2016, there is only one monitor (Pinnacle Peak) that is violating the standard for 2014-2016. The preliminary 2016 design value at Pinnacle Peak is 0.076 parts per million, just slightly over the 0.075 parts per million standard. All other ozone monitors in the nonattainment area had a three-year average of the fourth-high ozone concentration at or below 0.075 parts per million.

The sources of ozone precursor emissions that contribute to ozone formation are grouped into five major categories: onroad mobile sources, area sources, nonroad mobile sources, point sources, and biogenic sources. Collectively, all five categories are estimated to contribute 599.87 (English) tons of volatile organic compounds, 253.86 tons of nitrogen oxides, and 1,375.98 tons of carbon monoxide per day in the 2011 ozone season for the Maricopa nonattainment area; Figures ES-4 and ES-5 show the relative contribution of each category for volatile organic compounds and nitrogen oxides, respectively. A complete description of these sources and the corresponding methodology used to calculate the emissions for 2011 are included in the 2011 Periodic Emissions Inventory for Ozone Precursors for the Maricopa County, Arizona, Nonattainment Area, February 2014, and Addendum, August 2015, contained in Appendix A, Exhibit 1.

The new MAG 2017 Eight-Hour Ozone Moderate Area Plan includes 93 existing and approved ozone control measures in the Maricopa nonattainment area from EPA approved regional air quality plans and separate EPA actions. The overall approach taken in the plan is to demonstrate attainment with existing federal, state and local ozone control measures. The implementation of existing ozone control measures in the Maricopa eight-hour ozone nonattainment area has already been effective in reducing ozone. These measures have allowed the area to attain and maintain both the one-hour ozone standard and the 1997 eight-hour ozone standard of 0.08 parts per million.

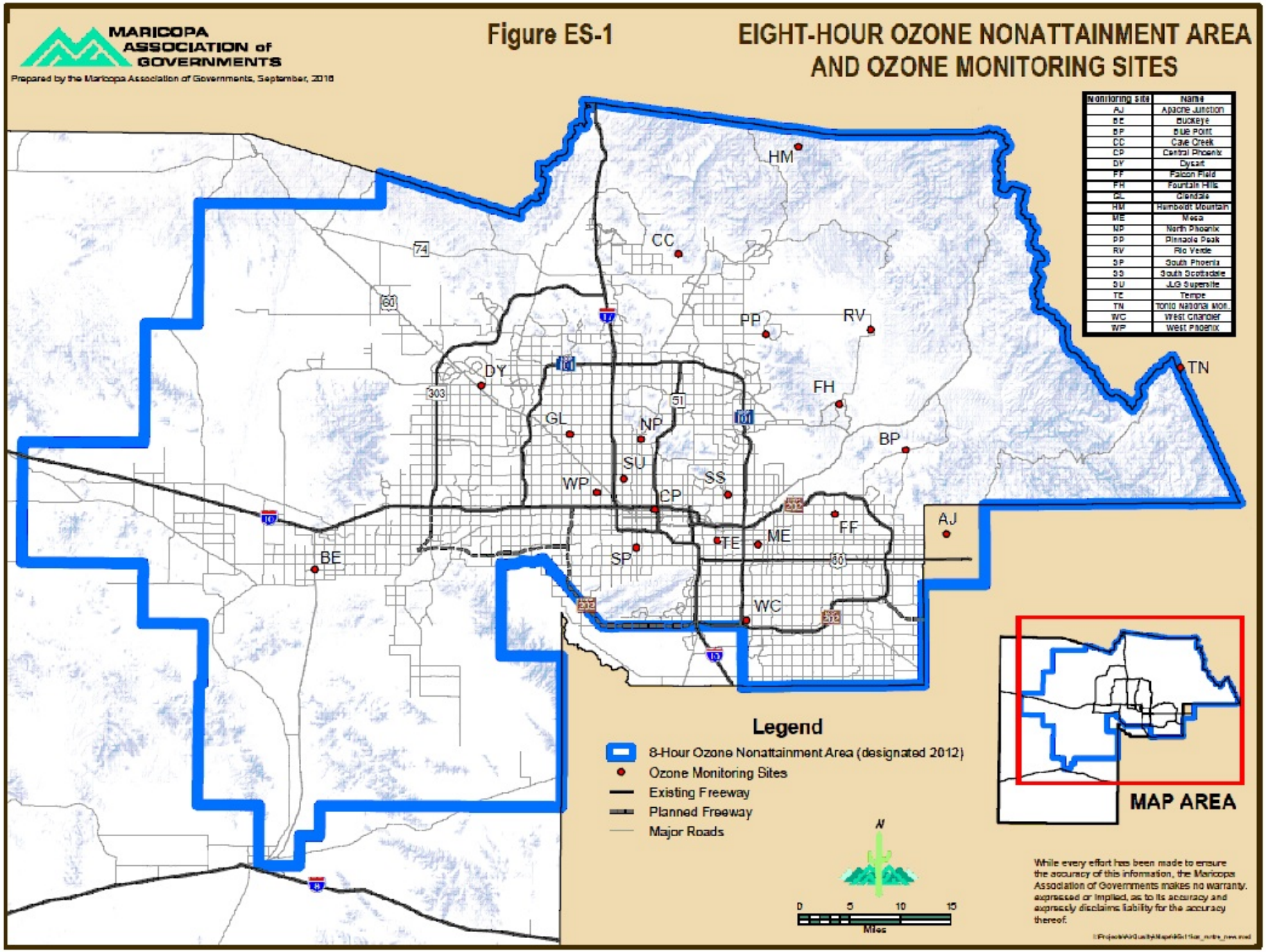
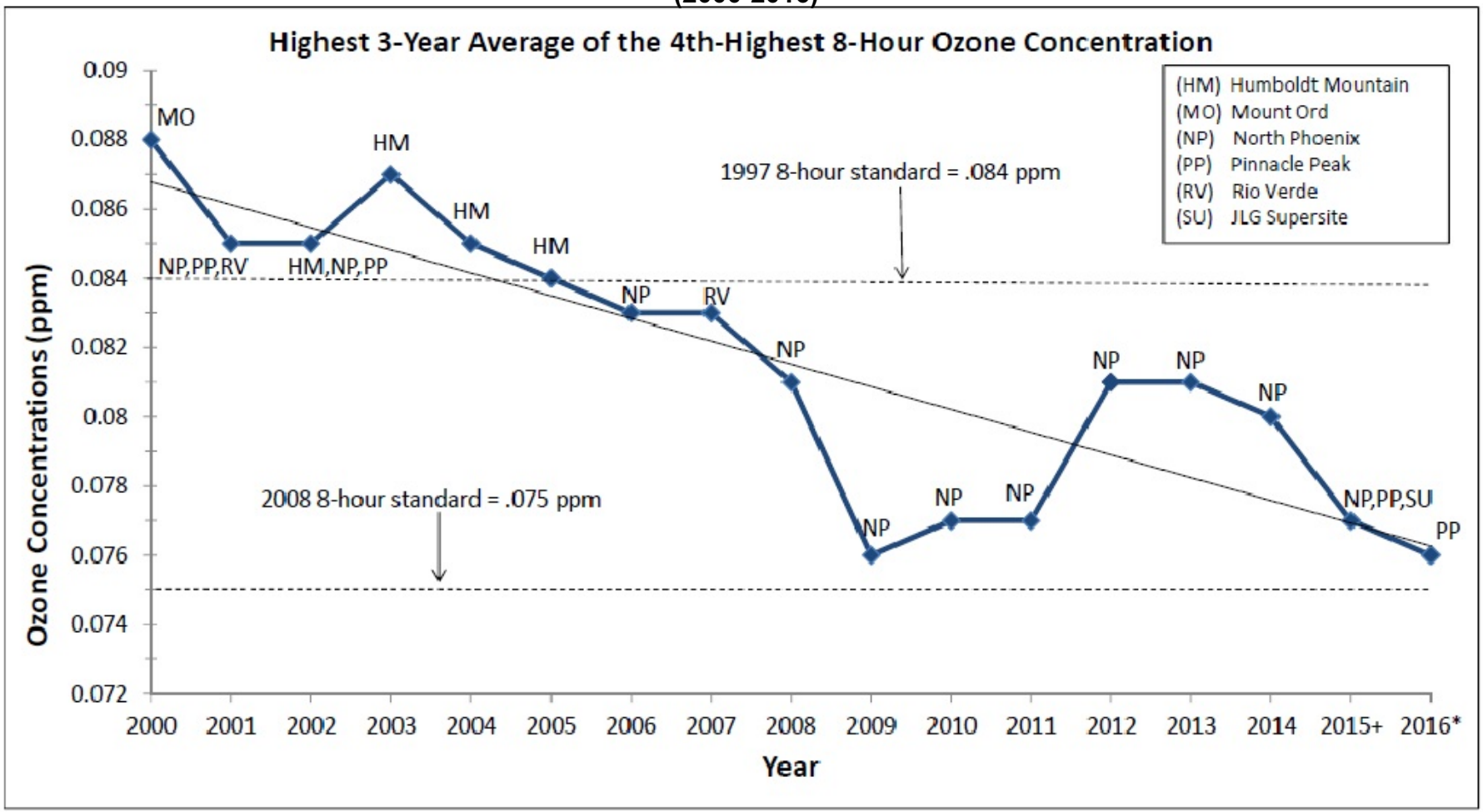

MARICOPA ASSOCIATION of GOVERNMENTS
Prepared by the Maricopa Association of Governments, September, 2016
Figure ES-1
EIGHT-HOUR OZONE NONATTAINMENT AREA AND OZONE MONITORING SITES
Monitoring site | Name
AJ | Apache Junction
BE | Buckeye
BP | Blue Point
CC | Cave Creek
CP | Central Phoenix
DY | Dysart
FF | Falcon Field
FH | Fountain Hills
GL | Glendale
HM | Humboldt Mountain
ME | Mesa
NP | North Phoenix
PP | Pinnacle Peak
RV | Rio Verde
SP | South Phoenix
SS | South Scottsdale
SU | JLG Supersite
TE | Tempe
TN | Tonto National Mon.
WC | West Chandler
WP | West Phoenix
HM
CC
PP
RV
TN
DY
FH
GL
NP
BP
SU
SS
WP
CP
FF
AJ
TE
ME
BE
SP
WC
74
60
17
10
101
303
51
202
30
8
Legend
8-Hour Ozone Nonattainment Area (designated 2012)
Ozone Monitoring Sites
Existing Freeway
Planned Freeway
Major Roads
N
0 5 10 15
Miles
MAP AREA
While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Figure ES-2

Eight-Hour Ozone Trends
(2000-2016)

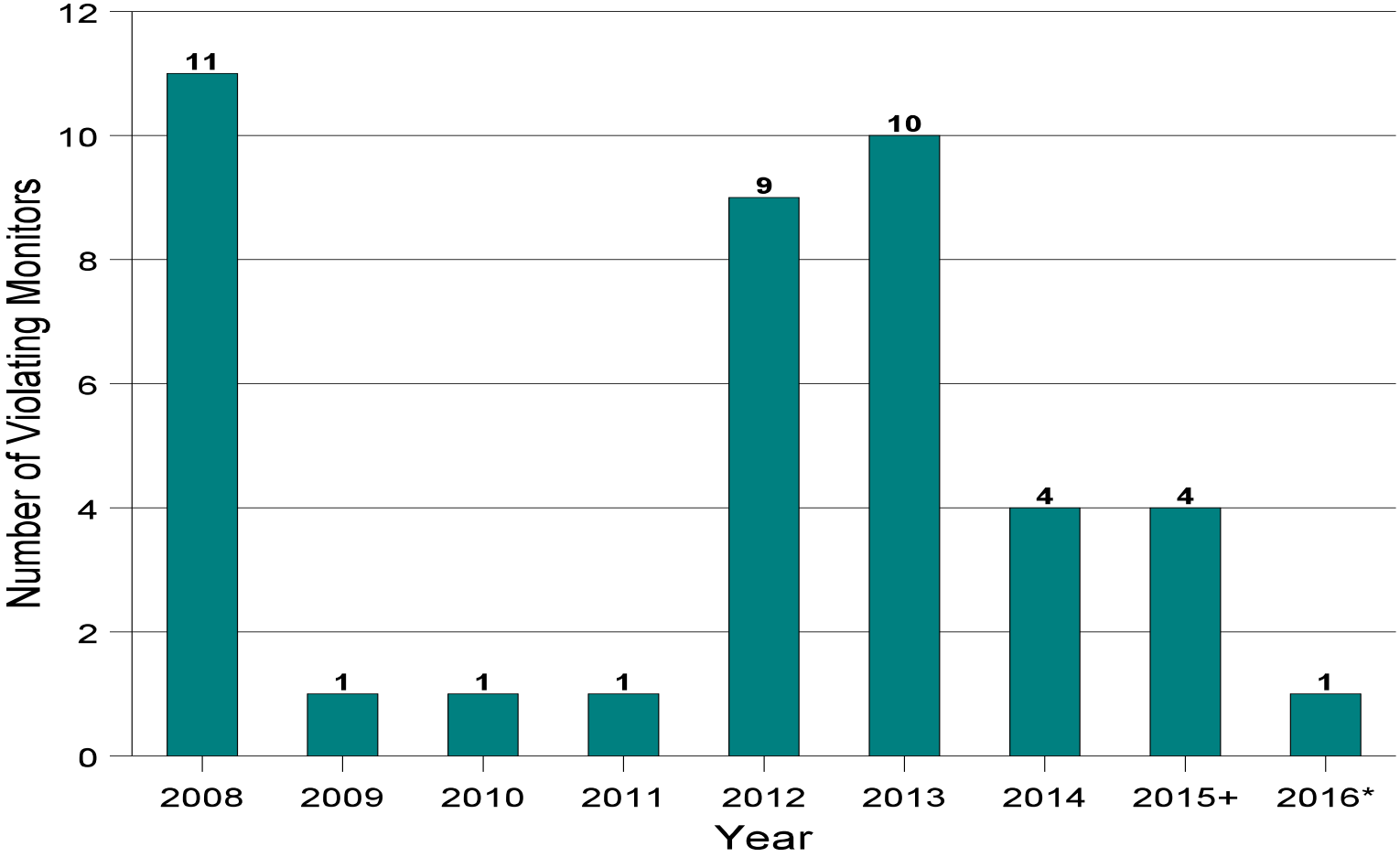


\+ Exceedances from the June 20, 2015 exceptional event have been removed. EPA concurrence of the exceptional event is pending.
* The 2016 values are based on preliminary data through August 31, 2016.
Note: Due to mathematical rounding, values greater than or equal to 0.085 ppm are necessary to exceed the 0.080 ppm standard.

Sources: 2000-2008: MAG Eight-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa Nonattainment Area, February 2009; 2009-2015: Environmental Protection Agency Air Quality System; 2016: Arizona Department of Environmental Quality; Maricopa County; Pinal County.

Figure ES-3

Violations of the 0.075 ppm Eight-Hour Ozone Standard in the Maricopa Nonattainment Area



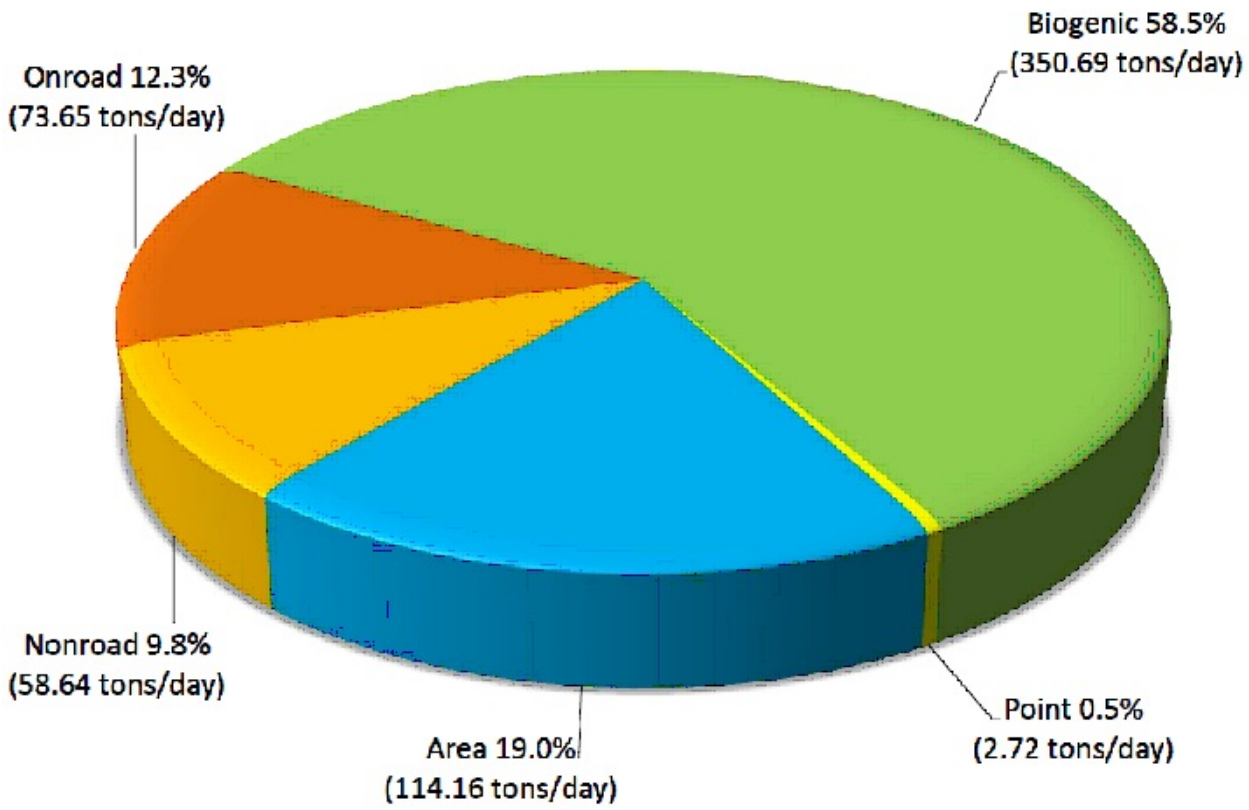
\+ Exceedances from the June 20, 2015 exceptional event have been removed. EPA concurrence of the exceptional event is pending.
* The 2016 values are based on preliminary data through August 31, 2016.

Sources: Environmental Protection Agency Air Quality System; Arizona Department of Environmental Quality; Maricopa County; Pinal County.

Figure ES-4

Sources of Volatile Organic Compound Emissions
2011 Periodic Emissions Inventory (Ozone Season Day Emissions)

2011 Ozone Season-Day VOC Emissions = 599.87 tons/day



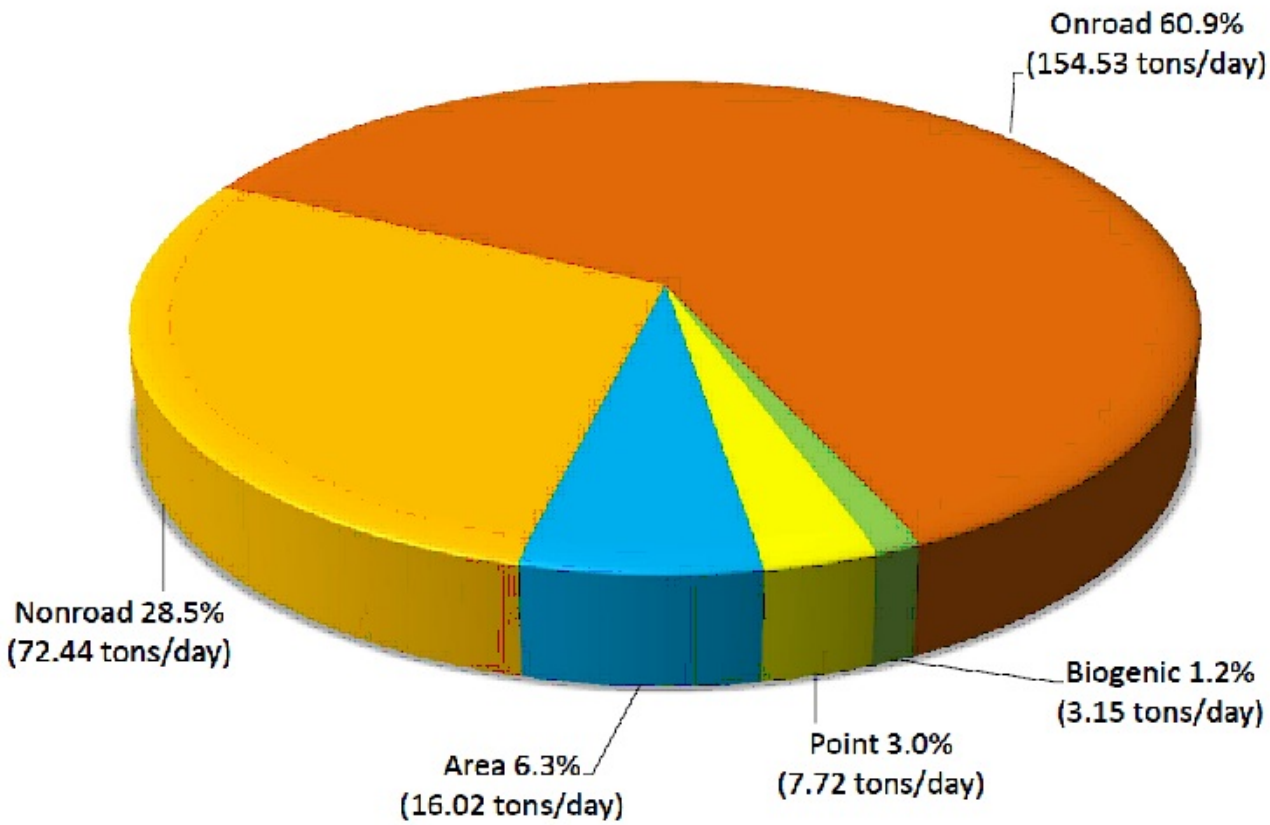
Sources

Point:	Industrial, manufacturing and electrical power generating facilities
Area:	Solvents and coatings use, fuel storage and transport, waste treatment and disposal, industrial/chemical processes, residential/industrial fuel combustion, open burning and wildfires
Onroad:	Cars and trucks
Nonroad:	Commercial, industrial, construction, mining, lawn and garden, farm and recreational equipment, aircraft and locomotives
Biogenic:	Natural vegetation

Figure ES-5

Sources of Nitrogen Oxide Emissions
2011 Periodic Emissions Inventory (Ozone Season Day Emissions)

2011 Ozone Season-Day NOx Emissions = 253.86 tons/day



<u>Sources</u>

Point:	Industrial, manufacturing and electrical power generating facilities
Area:	Waste treatment and disposal, industrial/chemical processes, residential/industrial fuel combustion, open burning and wildfires
Onroad:	Cars and trucks
Nonroad:	Commercial, industrial, construction, mining, lawn and garden, farm and recreational equipment, aircraft and locomotives
Biogenic:	Natural vegetation

The existing ozone control measures continue to have emission reduction benefits that provide for attainment of the 2008 ozone standard in the 2017 ozone season prior to the July 20, 2018 attainment date. The emission reduction benefits of the existing measures also continue beyond the attainment year of 2017, providing the emissions reductions needed in 2018 to satisfy the contingency measure requirements of Clean Air Act Section 172(c)(9).

The majority of the existing measures are committed state and local measures that have been adopted and approved by EPA in prior regional air quality plans such as the ADEQ 2000 Serious Area Ozone Plan, the MAG 2001 Serious Area Carbon Monoxide Plan, the MAG 2003 Carbon Monoxide Maintenance Plan, the MAG 2004 One-Hour Ozone Maintenance Plan, MAG 2007 Eight-Hour Ozone Plan, and the MAG 2009 Eight-Hour Ozone Maintenance Plan. Existing federal measures that reduce ozone in the Maricopa nonattainment area are also included.

In accordance with Clean Air Act Section 172(c)(1), the MAG 2017 Eight-Hour Ozone Moderate Area Plan is required to provide for the implementation of all reasonably available control measures (RACM), including reasonably available control technology, as expeditiously as practicable to attain the National Ambient Air Quality Standards and to meet reasonable further progress requirements. The EPA final rule on the implementation of the 2008 ozone standard indicates that states should consider all available measures, including those being implemented in other areas, and that a state must adopt measures for an area only if those measures are economically and technologically feasible and will advance the attainment date or are necessary for reasonable further progress.

For the RACM demonstration, the 93 existing control measures were evaluated in comparision to EPA's National Menu of Control Measures. The Menu of Control Measures provides a broad listing of potential emission reduction measures that have been gathered from control programs across the United States. Many of the control measures in the EPA Menu are already in place within the Maricopa eight-hour ozone nonattainment area. In addition, the existing measures were evaluated in comparison to the NOx and VOC rules in place in the Sacramento Metropolitan Air Quality Management District (SMAQMD). The SMAQMD rules apply within the Sacramento Metropolitan eight-hour ozone nonattainment area, which is currently classified as a Severe-15 nonattainment area for the 2008 ozone standard. The SMAQMD recently completed a RACM analysis for their NOx and VOC rules for the 1997 ozone standard. EPA approved the SMAQMD RACM analysis on January 29, 2015. No new or strengthened measures were necessary to demonstrate attainment or meet reasonable further progress requirements.

While all of the existing ozone control measures in the nonattainment area assist in the improvement of air quality, only a subset of measures have emissions reductions benefits that can be quantified. These measures have quantifiable benefits that are used to both demonstrate attainment and meet contingency measure requirements.

The key existing federal, state and local ozone control measures used for numeric credit are listed below:

1. Summer Fuel Reformulation: California Phase 2 and Federal Phase II Reformulated Gasoline with 7 psi from May 1 through September 30
2. Phased-In Emission Test Cutpoints
3. One-Time Waiver from Vehicle Emissions Test
4. Tougher Enforcement of Vehicle Registration and Emissions Test Compliance
5. Expansion of Area A Boundaries
6. Gross Polluter Option for I/M Program Waivers
7. Coordinated Traffic Signal Systems
8. Develop Intelligent Transportation Systems
9. Federal Tier 2 and Tier 3 Motor Vehicle Emissions and Fuel Standards
10. Federal Phase 1 and 2 Light-Duty Vehicle and Phase 1 Medium and Heavy-Duty Vehicle Greenhouse Gas Rules
11. Federal Nonroad Equipment Standards
12. Federal Heavy Duty Diesel Vehicle Emissions Standards
13. Federal Portable Fuel Container Rules

The emissions reduction benefits of ozone control measures 1 through 12 are included in the onroad and nonroad emissions inventories that were developed using the EPA MOVES2014a model. The emissions reduction credit of these measures are aggregated by onroad and nonroad mobile source categories. Measures 1 through 12 provide onroad mobile source emission reductions, on an average ozone season day in 2017, of 25.3 metric tons per day of volatile organic compounds (VOC) and 54.5 metric tons per day of nitrogen oxides (NOx). Nonroad mobile source emission reductions in 2017 for these measures are 7.6 metric tons per day of VOC and 17.3 metric tons per day of NOx.

The emission reduction credit for measure 13, on an average ozone season day in 2017, is 6.2 metric tons per day of VOC, as calculated with emissions data provided by EPA. The methodologies used to quantify the emission reduction credit for the measures are further described in Section V of the Technical Support Document.

The attainment demonstration for the MAG 2017 Eight-Hour Ozone Moderate Area Plan was conducted using photochemical grid modeling for the 4 kilometer MAG modeling domain for the Maricopa nonattainment area. The Comprehensive Air Quality Model with Extensions (CAMx) was used to simulate ozone concentrations during the ozone season months of May 1 through September 30 for the 2011 base year and the 2017 attainment year. Modeling the entire months of May through September (153 days) ensures that the model not only demonstrates attainment on the ten highest modeled ozone concentration days, but also under a variety of meteorological conditions, during periods of low and high ozone production. The emissions inventories used in the modeling attainment demonstration are described in Chapter Six and depicted in Figures 6-1 through 6-6.

To demonstrate attainment of the 2008 ozone standard, the modeled eight-hour ozone concentrations in 2017 should be less than 0.0759 parts per million for all modeled episode days. The attainment demonstration followed the modeling procedures recommended in

the EPA guidance (EPA, 2014a). The modeling attainment demonstration indicated that the peak design value for 2017 at the North Phoenix monitor would be 0.0756 parts per million. Following truncation to three digits, the modeling demonstrates attainment at 0.075 parts per million or less for all of the monitors.

The Environmental Protection Agency requires a supplemental analysis or Weight-of-the-Evidence analysis to show that attainment can be reached in the future with some margin of safety, especially when projected future design values are close to the 2008 ozone standard. A Weight-of-the-Evidence analysis was also conducted for the MAG 2017 Eight-Hour Ozone Moderate Area Plan. The results support the attainment demonstration.

In accordance with Clean Air Act Section 182(b)(1), Moderate Area plans are required to provide a Rate of Progress (ROP) plan that demonstrates a 15 percent reduction in VOC emissions across the nonattainment area over a six-year period from the base year anthropogenic emissions, in this case, the years 2012 through 2017. The 2017 average daily anthropogenic VOC emissions of 165.28 metric tons per day is less than the 2017 ROP 15 percent reduction target of 166.41 metric tons per day, and is equivalent to a 15.6 percent reduction in 2011 base year anthropogenic VOC emissions. Therefore, the 2017 average daily anthropogenic VOC emissions in the Maricopa eight-hour ozone nonattainment area satisfy the Clean Air Act Section 182(b)(1) reasonable further progress and 15 percent ROP plan requirements.

In accordance with the Clean Air Act Section 172(c)(9), the MAG 2017 Eight-Hour Ozone Moderate Area Plan also contains contingency measures. The contingency measures are committed measures in the adopted plan which achieve emissions reductions beyond those measures relied upon to model attainment of the standard and demonstrate progress toward attainment. Since EPA allows early implementation of contingency measures, existing measures that have already been implemented may be contingency measures if they are not needed to show attainment and do not hasten attainment. EPA also allows federal measures to be contingency measures if they are not needed for attainment.

For the MAG 2017 Eight-Hour Ozone Moderate Area Plan, the existing control measures provide enough continuing emission reduction benefits in 2018 to meet the contingency measure requirements. EPA requires that contingency measures represent one-year's worth of reasonable further progress, amounting to reductions of 3 percent of the 2011 base year VOC and/or NOx emissions for the Maricopa eight-hour ozone nonattainment area. The combined VOC and NOx emissions reductions of 3.86 percent in the Maricopa nonattainment area meets the 3 percent emission reduction requirement for contingency measures.

The MAG 2017 Eight-Hour Ozone Moderate Area Plan also establishes motor vehicle emissions budgets for transportation conformity analyses in accordance with Clean Air Act Section 176. The motor vehicle emissions budget is 45.7 metric tons per day for volatile organic compounds and 62.7 metric tons per day for nitrogen oxides.

CHAPTER ONE

INTRODUCTION

Within the Maricopa nonattainment area, the National Ambient Air Quality Standard has not yet been attained for the 2008 eight-hour ozone standard of 0.075 parts per million (ppm). The area is classified as a Moderate Area under the Clean Air Act. The Maricopa Association of Governments (MAG) was designated by the Governor of Arizona in 1978 and recertified by the Arizona Legislature in 1992 to serve as the Regional Air Quality Planning Agency to develop plans to address air pollution problems (A.R.S. Section 49-406 A.). On June 22, 2016, the Governor of Arizona transmitted a letter to the Environmental Protection Agency (EPA) to update the planning certifications. This plan was prepared through a coordinated effort with the Arizona Department of Environmental Quality, Arizona Department of Transportation, Maricopa County Air Quality Department and Maricopa Association of Governments.

The MAG 2017 Eight-Hour Ozone Moderate Area Plan has been prepared to meet the requirements in Section 182(b) of the Clean Air Act and improve air quality in the Maricopa eight-hour ozone nonattainment area. The attainment date for Moderate Areas is July 20, 2018. A Moderate Area Plan is due by January 1, 2017. The Moderate Area Plan is required to include reasonable further progress; reasonably available control technology; reasonably available control measures; new source review; emissions inventories; modeling attainment demonstration for 2017 (ozone season prior to the attainment date); contingency measures; and motor vehicle emissions budgets for transportation conformity. Moderate Areas are also required to make the submissions for Marginal Areas. On October 16, 2015, EPA published a final notice to take direct final action to approve the MAG 2014 Eight-Hour Ozone Plan-Submittal of Marginal Area Requirements for the Maricopa Nonattainment Area.

HISTORICAL BACKGROUND

Over time, the region has made significant progress in reducing ozone pollution. There have been no violations of the 1978 one-hour ozone standard of 0.12 parts per million since 1996. On June 14, 2005, EPA redesignated the Maricopa nonattainment area to attainment status. The Environmental Protection Agency also approved the MAG One-Hour Ozone Redesignation Request and Maintenance Plan, dated March 2004, which demonstrated that the standard would be maintained through 2015. The nonattainment area then became a maintenance area. On June 15, 2005, EPA revoked the one-hour ozone standard.

On June 15, 2004, the Environmental Protection Agency designated a 4,880 square mile area located mainly in Maricopa County and Apache Junction in Pinal County as the nonattainment area for the eight-hour ozone standard (0.08 ppm) established by EPA in 1997. The area had a June 2009 attainment date. The MAG 2007 Eight-Hour Ozone Plan

demonstrated attainment of the standard by June 2008. In February 2009, the MAG 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan was submitted to EPA, which demonstrated that the standard would be maintained through 2025. There have been no violations of the 0.08 ppm standard since 2004. On June 13, 2012, EPA published a final notice to approve the MAG 2007 Eight-Hour Ozone Plan. On September 17, 2014, EPA published a final notice to approve the MAG 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan.

In 2008, EPA revised the eight-hour ozone standard to 0.075 parts per million (from 0.08 ppm). On May 21, 2012, EPA published a final rule to designate the Maricopa nonattainment area as a Marginal Area with a December 31, 2015 attainment date. The boundaries of the ozone nonattainment area were also expanded slightly to the west and south to include new power plants. The eight-hour ozone nonattainment area boundary encompasses 5,017 square miles.

On June 27, 2014, the MAG 2014 Eight-Hour Ozone Plan-Submittal of Marginal Area Requirements for the Maricopa Nonattainment Area was transmitted to EPA. For Marginal Areas, EPA assumed that the areas would be in attainment within three years of designation without any additional control measures. Marginal Areas were not required to submit an attainment demonstration; reasonably available control technologies and measures; reasonable further progress demonstration; and contingency measures. On October 16, 2015, EPA published a final notice to take direct final action to approve the MAG 2014 Eight-Hour Ozone Plan-Submittal of Marginal Area Requirements for the Maricopa Nonattainment Area.

On December 23, 2014, the U.S. Court of Appeals for the District of Columbia had issued a ruling that vacated the Environmental Protection Agency's extension of the attainment dates for the 2008 ozone standard to the end of the calendar year. On March 6, 2015, EPA published a final rule revising the attainment date for Marginal Areas from December 31, 2015 to July 20, 2015. Since the attainment date was now in the middle of the ozone season, the region would have to be in attainment in the prior 2014 ozone season.

On October 26, 2015, the Environmental Protection Agency published a final rule to strengthen the federal eight-hour ozone standard from 0.075 to 0.07 parts per million. The rule became effective on December 28, 2015. By October 1, 2016, states are required to submit designation recommendations for attainment/nonattainment to EPA. By October 1, 2017, EPA anticipates finalizing the designations, classifications, and attainment dates based upon the ozone levels in the area (Marginal-Extreme).

On May 4, 2016, EPA published a final notice to determine that the Maricopa Eight-Hour Ozone Nonattainment Area did not attain the 2008 standard and reclassified the area from Marginal to Moderate. The attainment date for Moderate Areas is July 20, 2018. A Moderate Area Plan is due by January 1, 2017.

OUTLINE OF THE MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN

The purpose of this document is to present the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area. The plan includes a wide variety of existing control measures that continue to be implemented to reduce ozone pollution.

The MAG 2017 Eight-Hour Ozone Moderate Area Plan is composed of the following major sections:

1. Introduction (This Chapter) - Includes a general discussion of historical background and the outline of the MAG 2017 Eight-Hour Ozone Moderate Area Plan.

2. Description of the Nonattainment Area - Includes a description of the nonattainment area; geography and climatic conditions.

3. Assessment of Air Quality Conditions - Includes a discussion of ozone formation and health effects; sources of ozone precursor emissions; and air quality monitoring data and trend analysis.

4. Evaluation of Ozone Control Measure Requirements in the Clean Air Act - Includes a discussion of the reasonably available control measure analysis; reasonably available control technology analysis; and new source review.

5. The Adopted Plan - Includes a description of existing measures; measures used for numeric credit; contingency measures; assurances that the State has the authority to implement the measures in the plan; and tracking plan implementation.

6. Attainment Demonstration and Weight of the Evidence Analysis - Includes a discussion of the attainment date; emissions inventories; attainment measures; attainment demonstration; weight of the evidence analysis; onroad mobile emissions budgets for conformity; reasonable further progress-15 percent rate of progress demonstration; contingency measures; and conclusions.

7. Public Participation - Includes a discussion of the decision making structure; public participation in the preparation of the MAG 2017 Moderate Area Ozone Plan; public involvement process for transportation and air quality; and Title VI considerations.

CHAPTER TWO

DESCRIPTION OF THE NONATTAINMENT AREA

The Maricopa nonattainment area for the 0.075 parts per million (ppm) eight-hour ozone standard was formally designated on May 21, 2012. As defined in the 1977 Clean Air Act, the term nonattainment area refers to locations which exceed any national ambient air quality standard for any pollutant based upon the data collected through air quality monitoring. A general description of the eight-hour ozone nonattainment area, including a discussion of the boundaries of the area and the geography and climatic conditions is provided below.

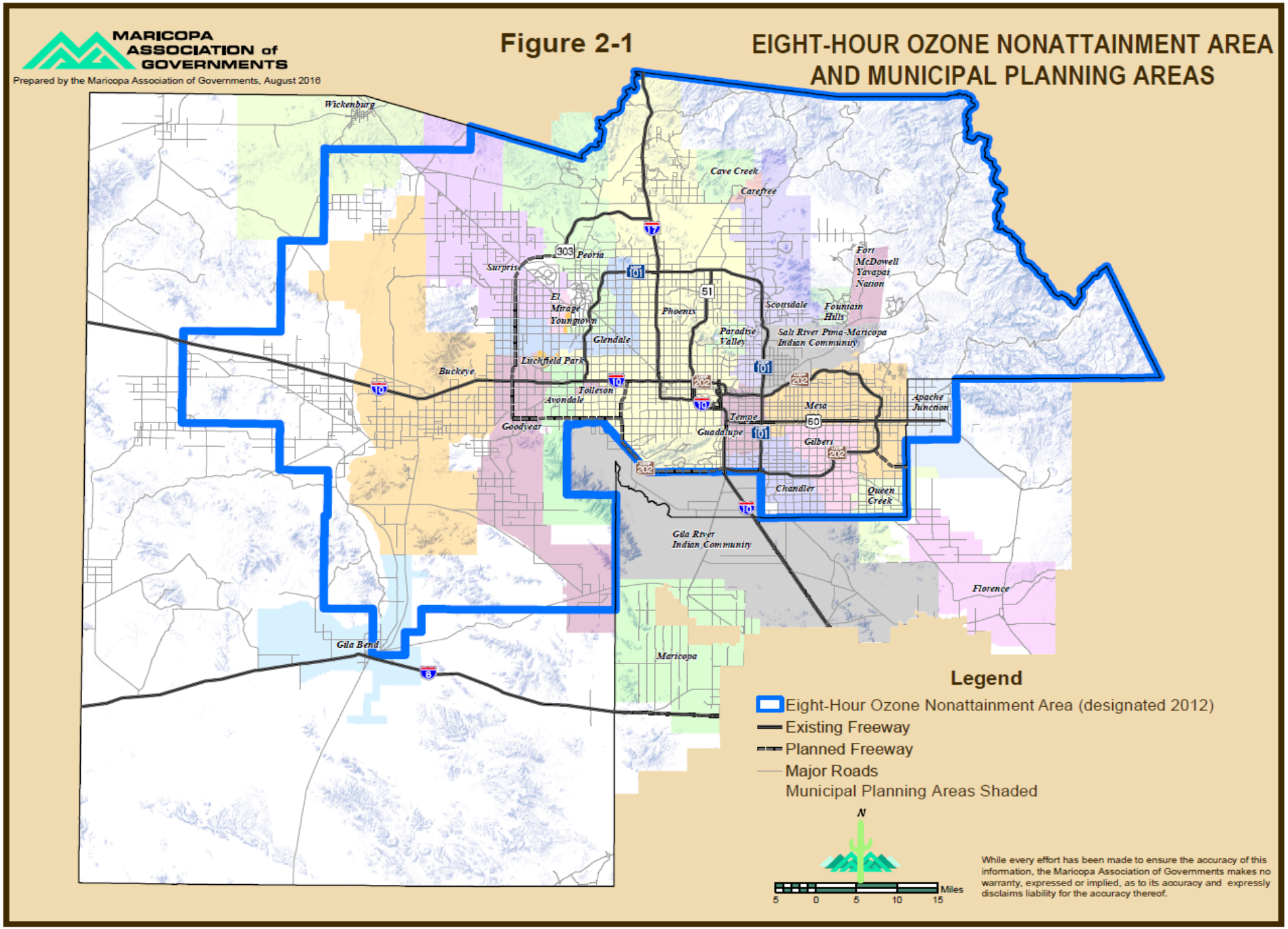
NONATTAINMENT AREA BOUNDARIES

On May 21, 2012, the Environmental Protection Agency (EPA) published a final rule to designate the Maricopa nonattainment area as a Marginal Area for the 0.075 ppm eight-hour ozone standard. In the final rule, EPA expanded the existing nonattainment area boundary slightly to the west and south to include new power plants. The eight-hour ozone nonattainment area is located in the Salt River Valley in the central portion of Arizona and encompasses 5,017 square miles. The northern boundary of the area is the Yavapai County line and the southern boundary is located generally along Hunt Highway, excluding the Gila River Indian Community, and approximately six miles north of Interstate 8, except for a portion that extends to Interstate 8 at the Town of Gila Bend. On the east, the area is bound by Gila County and Pinal County lines, except to include the City of Apache Junction; and on the west by approximately 355th, 403rd, and 499th Avenues. The area contains portions of the municipal planning areas for twenty-five cities and towns, and the Fort McDowell and Salt River Pima-Maricopa Indian Communities, as well as unincorporated areas under the jurisdiction of Maricopa County (see Figure 2-1).

GEOGRAPHY AND CLIMATIC CONDITIONS

The elevation of the Phoenix metropolitan area is approximately 1,105 feet above mean sea level (MSL); however, the elevation in the nonattainment area ranges from approximately 600 feet above MSL near Gila Bend to 7,638 feet above MSL at Four Peaks in the Mazatzal Mountains in eastern Maricopa County. In addition to the Mazatzal Mountains, there are several mountain ranges throughout the nonattainment area. The Salt River Mountains are located on the southern border near the Gila River Indian Community and rise to an elevation of 2,507 feet above MSL. The Sierra Estrella Mountains located in the southwestern portion of the nonattainment area have an elevation of 3,320 feet above MSL. To the west, the White Tank Mountains rise to an elevation of 4,026 feet above MSL and the Phoenix Mountains have an elevation of 2,310 feet above MSL. Additional mountain ranges in the nonattainment area include the Hieroglyphic, McDowell, Maricopa, and Gila Bend Mountains.

There are six main rivers that run through the nonattainment area. These rivers are: the Salt River, Agua Fria River, Gila River, New River, Verde River, and Hassayampa River.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Prepared by the Maricopa Association of Governments, August 2016
Figure 2-1
EIGHT-HOUR OZONE NONATTAINMENT AREA AND MUNICIPAL PLANNING AREAS
Wickenburg
Cave Creek
Carefree
Peoria
Surprise
El Mirage
Youngtown
Phoenix
Scottsdale
Fountain Hills
Fort McDowell Yavapai Nation
Paradise Valley
Salt River Pima-Maricopa Indian Community
Glendale
Litchfield Park
Buckeye
Tolleson
Avondale
Goodyear
Tempe
Mesa
Apache Junction
Guadalupe
Gilbert
Chandler
Queen Creek
Gila River Indian Community
Florence
Maricopa
Gila Bend
Legend
Eight-Hour Ozone Nonattainment Area (designated 2012)
Existing Freeway
Planned Freeway
Major Roads
Municipal Planning Areas Shaded
N
Miles
5 0 5 10 15
While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

The climate in the nonattainment area is arid continental, experiencing extreme ranges in daily temperatures. Temperatures range from a mean of 55.4 degrees Fahrenheit in December to a mean of 94.8 degrees Fahrenheit in July; the annual mean temperature is 75.0 degrees Fahrenheit. The sun shines approximately 85 percent of the time and the annual average rainfall is 8.03 inches. Most of the rainfall occurs from December through March and during the months of July and August (NOAA, 2016).

In the Maricopa nonattainment area, there are several meteorological factors that influence elevated ozone concentrations throughout the summer ozone season. These factors include: early summer westerly transport of upwind air pollutants; a synoptic weather pattern featuring a high pressure over the northeastern portion of Arizona; a low pressure centered in the southwestern portion of Arizona; daytime local temperatures above 100 degrees Fahrenheit; and local emissions coinciding with valley-wide stagnant winds. The spatial distribution of elevated ozone concentrations in the region depends on surface winds that exhibit diurnal valley breezes and directional changes due to surrounding topography. The average annual wind speed is 6.1 miles per hour.

CHAPTER THREE

ASSESSMENT OF AIR QUALITY CONDITIONS

Within the Maricopa nonattainment area, ozone is an air pollution problem during the warmest months. Ozone is not directly emitted from a source, but is produced by the mixing of volatile organic compounds (VOCs) and nitrogen oxides (NOx) in the presence of sunlight. Precursors to ozone, volatile organic compounds, and nitrogen oxides are emitted from onroad and nonroad engines; industrial, manufacturing and electrical power generation facilities; architectural coatings and consumer and commercial solvent use; and natural vegetation (biogenics). Peak ozone concentrations typically occur from May through September and are influenced by several factors, including: westerly transport of upwind pollutants; a favorable synoptic weather pattern featuring high pressure over the northeastern portion of the state; a low pressure center in the southwest portion; daytime local temperatures above 100 degrees Fahrenheit; and local emissions that are coincident with valley-wide stagnant and weak winds.

In order to effectively reduce ozone, it is important to assess air quality conditions in the Maricopa nonattainment area. This chapter presents a discussion of ozone formation and health effects, sources of ozone precursor emissions, and air quality monitoring data.

OZONE FORMATION AND HEALTH EFFECTS

Unlike other air pollutants, ozone is not directly emitted into the atmosphere. Ozone is formed through a chemical reaction between NOx and VOCs in the presence of sunlight. As a result, meteorological variability has a strong influence on ozone formation in the nonattainment area.

Ozone concentrations in the nonattainment area are elevated during the summer due to intense photochemical reactions associated with increased solar radiation, local stagnation or long range transport of natural and anthropogenic ozone precursor emissions, and synoptic and mesoscale atmospheric dynamics. Anthropogenic emissions are generally repetitive throughout the summer, however, biogenic emissions substantially fluctuate depending on the weather conditions. Elevated ozone is created by combinations of these meteorological conditions and ozone precursor emissions generated from anthropogenic and biogenic sources. Also, the interaction of upwind transported and local emissions under various weather conditions characterizes elevated ozone concentrations in the region.

Ozone irritates the lungs and repeated exposure may cause permanent lung damage. Symptoms of ozone exposure may include wheezing, coughing, and pain when taking a deep breath. Children, older adults, persons with pre-existing respiratory conditions such as asthma, and others who are active outdoors when ozone levels are high are most affected by the adverse health effects of ozone. Even low levels of ozone may cause a number of respiratory health effects.

SOURCES OF OZONE PRECURSOR EMISSIONS

The Clean Air Act requires a comprehensive, accurate, and current inventory of actual emissions from all sources. For the Moderate Area Plan, the Environmental Protection Agency (EPA) recommended that a revised 2011 season-day emissions inventory based on June through August data be included (80 FR 62457). In August 2015, the Maricopa County Air Quality Department completed an addendum to the 2011 periodic emissions inventory that used June through August ozone season-day emissions. The 2011 Periodic Emissions Inventory for Ozone Precursors for the Maricopa County, Arizona, Eight-Hour Ozone Nonattainment Area, February 2014, and Addendum, August 2015, are contained in Appendix A, Exhibit 1. The Maricopa County Air Quality Department has also complied a 2014 periodic emissions inventory for ozone precursors in the nonattainment area, which is included in Appendix A, Exhibit 2, to meet the periodic inventory requirements of Clean Air Act Section 182(a)(3)(A).

The 2011 periodic emissions inventory for ozone precursors determines the sources of VOCs, NOx, and carbon monoxide (CO) for the Maricopa eight-hour ozone nonattainment area. The August 2015 addendum provides the average daily emissions, which are calculated for a typical day during the three month period from June through August 2011. The inventory also provides annual emissions for the twelve-month period beginning January 1 and ending December 31, 2011 for the categories listed in the inventory.

The sources of ozone precursor emissions are grouped into five major categories: onroad mobile sources, area sources, nonroad mobile sources, point sources, and biogenic sources. Collectively, all five categories are estimated to contribute 599.87 (English) tons of VOCs, 253.86 tons of NOx, and 1,375.98 tons of CO per day in the 2011 ozone season for the Maricopa nonattainment area; Figures 3-1 and 3-2 show the relative contribution of each category for VOCs and NOx, respectively. A complete description of these sources and the corresponding methodology used to calculate the emissions for 2011 are included in the 2011 Periodic Emissions Inventory for Ozone Precursors for the Maricopa County, Arizona, Nonattainment Area, February 2014, and Addendum, August 2015, contained in Appendix A, Exhibit 1.

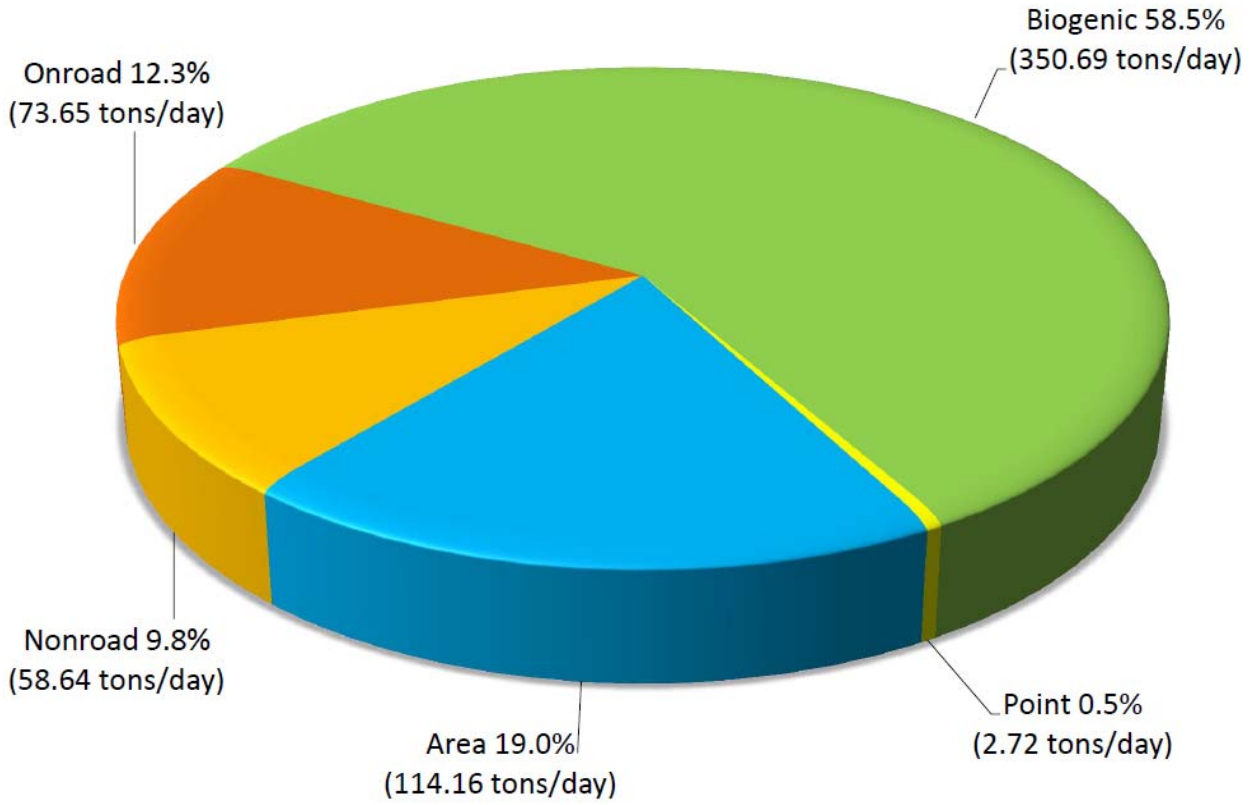
The onroad mobile source category consists of 12 onroad vehicle classes. The estimated 2011 ozone season onroad mobile source emissions in the Maricopa nonattainment area include 73.65 tons of VOCs per day, 154.53 tons of NOx per day, and 655.49 tons of CO per day. Onroad mobile sources account for 12.3 percent of the average season-day VOC emissions, 60.9 percent of the average season-day NOx emissions, and 47.6 percent of the average season-day CO emissions. Table 3-1 includes a breakdown of emissions from all sources in the 2011 periodic emissions inventory.

Area sources consist of numerous small stationary sources which, when added together, emit significant amounts of ozone precursors. Examples of area sources include solvents and coatings use, fuel storage and transport, waste treatment and disposal, industrial/chemical processes, residential/industrial fuel combustion, and open burning and wildfires. The estimated 2011 ozone season area source emissions for the Maricopa nonattainment area include 114.16 tons of VOCs per day, 16.02 tons of NOx per day, and

Figure 3-1

Sources of Volatile Organic Compound Emissions
2011 Periodic Emissions Inventory (Ozone Season Day Emissions)

2011 Ozone Season-Day VOC Emissions = 599.87 tons/day



<u>Sources</u>

Point: Industrial, manufacturing and electrical power generating facilities

Area: Solvents and coatings use, fuel storage and transport, waste treatment and disposal, industrial/chemical processes, residential/industrial fuel combustion, open burning and wildfires

Onroad: Cars and trucks

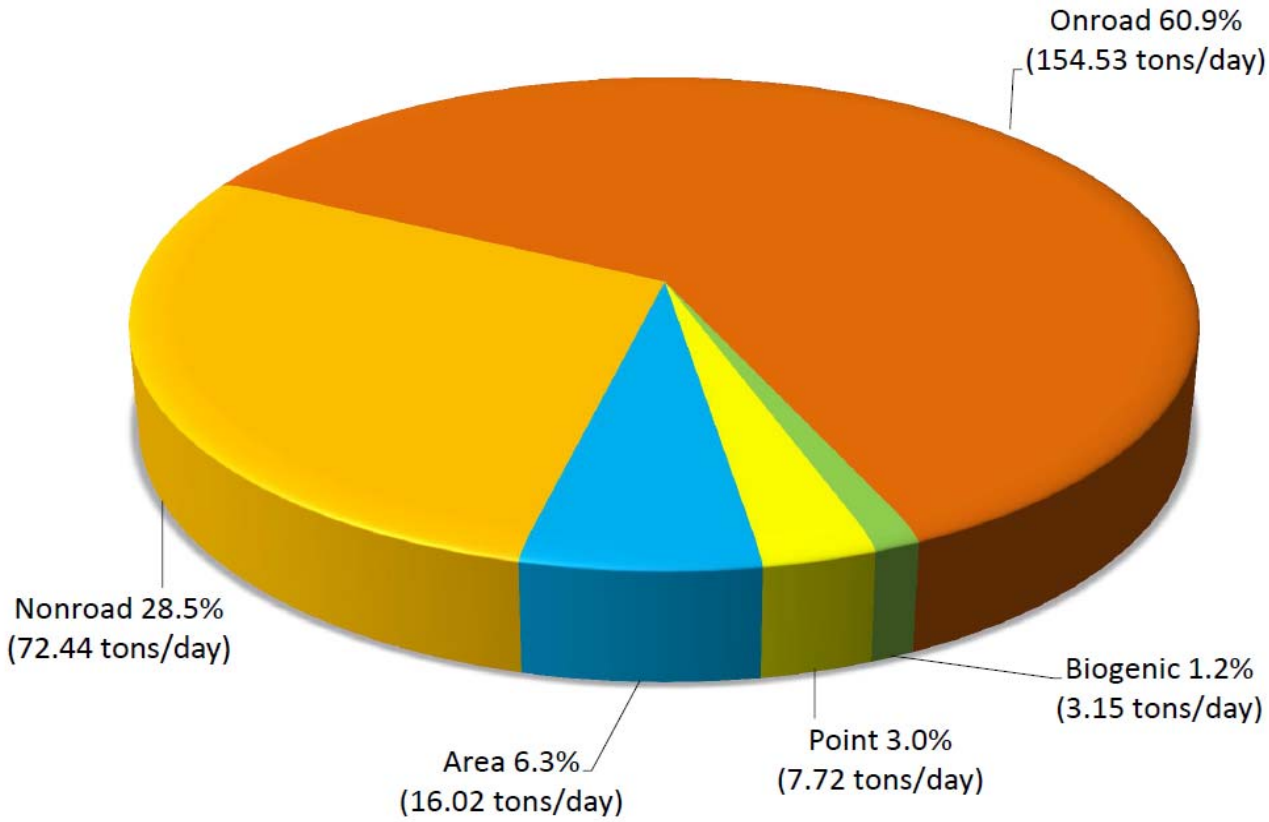
Nonroad: Commercial, industrial, construction, mining, lawn and garden, farm and recreational equipment, aircraft and locomotives

Biogenic: Natural vegetation

Figure 3-2

Sources of Nitrogen Oxide Emissions
2011 Periodic Emissions Inventory (Ozone Season Day Emissions)

2011 Ozone Season-Day NOx Emissions = 253.86 tons/day



<u>Sources</u>

Point:	Industrial, manufacturing and electrical power generating facilities
Area:	Waste treatment and disposal, industrial/chemical processes, residential/industrial fuel combustion, open burning and wildfires
Onroad:	Cars and trucks
Nonroad:	Commercial, industrial, construction, mining, lawn and garden, farm and recreational equipment, aircraft and locomotives
Biogenic:	Natural vegetation

Table 3-1

Emissions From all Source Categories Included in the 2011 Periodic Emissions Inventory for Ozone Precursors Addendum, August 2015

TPY = English Tons/Year TPD = English Tons/Day	VOC		NOx		CO	
	(TPY)	(TPD)	(TPY)	(TPD)	(TPY)	(TPD)
TOTAL POINT SOURCES	**866.87**	**2.72**	**1,758.46**	**7.72**	**1,078.48**	**4.86**
AREA						
Fuel Combustion	659.63	0.30	4,670.68	11.74	4,898.99	4.62
Industrial Processes	2,276.48	8.73	263.41	0.74	590.27	1.71
Solvent Use	28,139.77	83.28	---	---	---	---
Storage/Transport	5,211.35	14.37	---	---	---	---
Waste Treatment/Disposal	116.10	0.42	56.04	0.16	190.06	0.56
Miscellaneous Area Sources	261.09	7.07	161.70	3.38	4,664.71	144.47
TOTAL AREA SOURCES	**36,664.42**	**114.16**	**5,151.83**	**16.02**	**10,344.03**	**151.36**
NONROAD MOBILE						
Agricultural	22.52	0.10	193.22	0.84	177.56	0.79
Airport GSE (+APU)	111.43	0.30	404.49	1.08	3,259.08	8.62
Commercial	1,916.15	7.41	1,355.57	4.14	30,094.46	101.76
Construction & Mining	1,941.80	6.96	13,349.23	46.58	14,855.32	53.05
Industrial	339.78	1.10	1,831.45	5.86	7,110.33	23.02
Lawn & Garden	4,970.15	27.41	876.55	3.66	55,425.05	276.35
Pleasure Craft	530.39	6.60	96.56	1.21	1,249.66	16.31
Railway Maintenance	1.96	0.01	8.64	0.03	16.67	0.06
Recreational	684.30	4.43	29.78	0.17	2,871.27	18.76
Aircraft	1,705.43	4.18	2,585.98	6.39	11,719.36	31.87
Locomotives	50.15	0.14	901.12	2.47	153.29	0.42
TOTAL NONROAD MOBILE SOURCES	**12,274.06**	**58.64**	**21,632.59**	**72.44**	**126,932.05**	**531.01**

Table 3-1 (Continued)

Emissions From all Source Categories Included in the 2011 Periodic Emissions Inventory for Ozone Precursors Addendum, August 2015

TPY = English Tons/Year TPD = English Tons/Day	VOC		NOx		CO	
	(TPY)	(TPD)	(TPY)	(TPD)	(TPY)	(TPD)
TOTAL ONROAD MOBILE SOURCES	**24,110.04**	**73.65**	**56,861.82**	**154.53**	**226,581.20**	**655.49**
TOTAL BIOGENIC SOURCES	**55,311.84**	**350.69**	**527.18**	**3.15**	**5,934.55**	**33.27**
TOTAL ALL SOURCES	**129,277.24**	**599.87**	**85,931.88**	**253.86**	**370,870.31**	**1,375.98**

Notes: Totals shown may not equal the sum of individual values due to independent rounding.
1.00 ton = 0.91 metric tons

Source: 2011 Periodic Emissions Inventory for Ozone Precursors for the Maricopa County, Arizona, Eight-Hour Ozone Nonattainment Area Addendum. Maricopa County Air Quality Department, August 2015.

151.36 tons of CO per day. Area sources account for 19.0 percent of the average season-day VOC emissions, 6.3 percent of the average season-day NOx emissions, and 11.0 percent of the average season-day CO emissions.

Nonroad mobile sources include commercial, industrial, construction, mining, lawn and garden, farm and recreational equipment, aircraft, and locomotives. The estimated 2011 ozone season nonroad mobile source emissions for the Maricopa nonattainment area include 58.64 tons of VOCs per day, 72.44 tons of NOx per day, and 531.01 tons of CO per day. Nonroad mobile sources account for 9.8 percent of the average season-day VOC emissions, 28.5 percent of the average season-day NOx emissions, and 38.6 percent of the average season-day CO emissions.

The point source category includes stationary sources that emit a significant amount of pollution into the air. Examples of point sources include industrial, manufacturing, and electrical power generating facilities. A total of 18 point sources are identified in the inventory, and all are located within the eight-hour ozone nonattainment area. The estimated 2011 ozone season point source emissions for the Maricopa nonattainment area include 2.72 tons of VOCs per day, 7.72 tons of NOx per day, and 4.86 tons of CO per day. Point sources account for 0.5 percent of the average season-day VOC emissions, 3.0 percent of the average season-day NOx emissions, and 0.4 percent of the average season-day CO emissions.

Biogenic sources consist of emissions from all vegetation. These sources include indigenous vegetation, crops, and landscaping. The estimated 2011 ozone season biogenic source emissions for the Maricopa nonattainment area include 350.69 tons of VOCs per day, 3.15 tons of NOx per day, and 33.27 tons of CO per day. Biogenic sources account for 58.5 percent of the average season-day VOC emissions, 1.2 percent of the average season-day NOx emissions, and 2.4 percent of the average season-day CO emissions.

AIR QUALITY MONITORING DATA AND TREND ANALYSIS

In addition to identifying sources of ozone emissions, it is important to examine the impact of these emissions on the ambient concentrations. This section includes discussions of the National Ambient Air Quality Standards (NAAQS) and the air quality data recorded by the areawide monitoring network.

In 2008, EPA revised the eight-hour ozone standard from 0.08 parts per million (ppm) to 0.075 ppm. The standard is met when the three-year average of the annual fourth-highest daily maximum eight-hour average ozone concentrations measured at each monitor over each year is less than or equal to 0.075 ppm.

In order to determine the extent of the regional ozone pollution problem, it is necessary to examine the air quality data collected by the areawide network. A total of 28 criteria pollutant monitoring stations are operated by the Maricopa County Air Quality Department (MCAQD), Pinal County Air Quality Control District (PCAQCD), and Arizona Department

of Environmental Quality (ADEQ) in the Maricopa eight-hour ozone nonattainment area. Twenty of these sites monitor ozone. The Tonto National Monument monitoring site is located just outside the nonattainment area in Gila County and also monitors ozone. The network is dispersed geographically so as to monitor air quality in the many diverse physical environments in the region. Land use patterns near the monitoring sites vary from heavily populated urban areas to sparsely populated rural areas. Site-specific information regarding the ozone monitoring stations is provided in Table 3-2, and the geographic location of each site is indicated in Figure 3-3.

Fifteen of the ozone monitoring stations in the Maricopa nonattainment area are neighborhood scale sites. These stations record the ambient ozone level present in the neighborhood scale air mass surrounding the monitor. The dimensions for neighborhood scale is 0.5 to 4 kilometers. Four of the ozone monitoring stations are urban scale sites and the remaining one is regional scale. The dimensions for urban scale and regional scale are 4 to 50 kilometers and 10 to 100s of kilometers, respectively. The spatial scale for each ozone monitor station is provided in Table 3-2.

All of the ozone monitors within the network operate continuously (24 hours per day) and throughout the year, with periodic short-duration shutdowns for maintenance and calibration. Each monitoring station is linked electronically to computers at the agencies operating the monitors. This allows assessments of overall regional air quality to be readily performed by acquiring near real-time pollutant concentration data from the monitoring sites.

One method of assessing the overall air quality of a region is to examine the concentrations measured at the monitoring stations. An exceedance of the standard occurs when a monitoring station records a daily maximum eight-hour average value greater than 0.075 ppm. A violation occurs when the three-year average of the annual fourth-highest daily maximum eight-hour average concentration measured at each site is greater than 0.075 ppm. Figures 3-4 and 3-5 summarize the trend for monitors in the nonattainment area with the highest three-year average of the fourth-highest eight-hour ozone concentration and the number of eight-hour ozone violations recorded since 2008, respectively. In addition, Table 3-3 provides monitoring data for the most recent three year period (2014-2016). Table 3-4 contains an eight-hour ozone monitoring data summary for the three-year average of the annual fourth-high from 2012-2016. It is important to note that the 2016 values are based on preliminary data through August 31, 2016.

While the 2016 data are still preliminary, and the ozone season is not yet complete, the concentrations for the 2016 ozone season alone indicate that all monitors in the nonattainment area had a fourth-high ozone concentration at or below 0.075 ppm. In 2015, there were also no monitors that experienced a fourth-high above 0.075 ppm, after excluding a wildfire exceptional event that occurred on June 20, 2015. Based on the preliminary data through August 31, 2016, there is only one monitor (Pinnacle Peak) violating the standard for 2014-2016. The preliminary 2016 design value at Pinnacle Peak is 0.076 ppm, just slightly over the 0.075 ppm standard. All other ozone monitors in the nonattainment area are meeting the standard.

Table 3-2

Ozone Monitoring Stations

FIGURE 3-3 MAP INDEX	SITE	ADDRESS	OPERATING AGENCY	SCALE
AJ	Apache Junction Maintenance Yard	305 E. Superstition Blvd.	PCAQCD	Neighborhood
BE	Buckeye	26453 W. MC 85	MCAQD	Neighborhood
BP	Blue Point	Usery Pass and Bush Highway	MCAQD	Urban
CC	Cave Creek	37019 N. Lava Lane	MCAQD	Urban
CP	Central Phoenix	1645 E. Roosevelt	MCAQD	Neighborhood
DY	Dysart	16825 N. Dysart Rd.	MCAQD	Neighborhood
FF	Falcon Field	4530 E. McKellips Rd.	MCAQD	Neighborhood
FH	Fountain Hills	16426 E. Palisades Blvd.	MCAQD	Neighborhood
GL	Glendale	6001 W. Olive	MCAQD	Neighborhood
HM	Humboldt Mountain	Seven Springs Rd. - FAA Radar Station	MCAQD	Regional
ME	Mesa	310 S. Brooks	MCAQD	Neighborhood
NP	North Phoenix	601 E. Butler Dr.	MCAQD	Neighborhood
PP	Pinnacle Peak	24295 N. Alma School Rd.	MCAQD	Urban
RV	Rio Verde	25608 N. Forest Rd.	MCAQD	Urban
SP	South Phoenix	33 W. Tamarisks	MCAQD	Neighborhood
SS	South Scottsdale	2857 N. Miller Rd.	MCAQD	Neighborhood
SU	JLG Supersite	4530 N. 17th Ave.	ADEQ	Neighborhood
TE	Tempe	1525 S. College	MCAQD	Neighborhood
TN*	Tonto National Monument	Tonto National Forest	ADEQ/United States Forest Service	Regional
WC	West Chandler	275 S. Ellis	MCAQD	Neighborhood
WP	West Phoenix	3847 W. Earll	MCAQD	Neighborhood

* The Tonto National Monument monitor is located outside the eastern boundary of the nonattainment area.

Sources: Pinal County Air Quality Website; Arizona Department of Environmental Quality State of Arizona Air Monitoring Network Plan for the Year 2015; Maricopa County Air Quality Department 2015 Air Monitoring Network Plan.

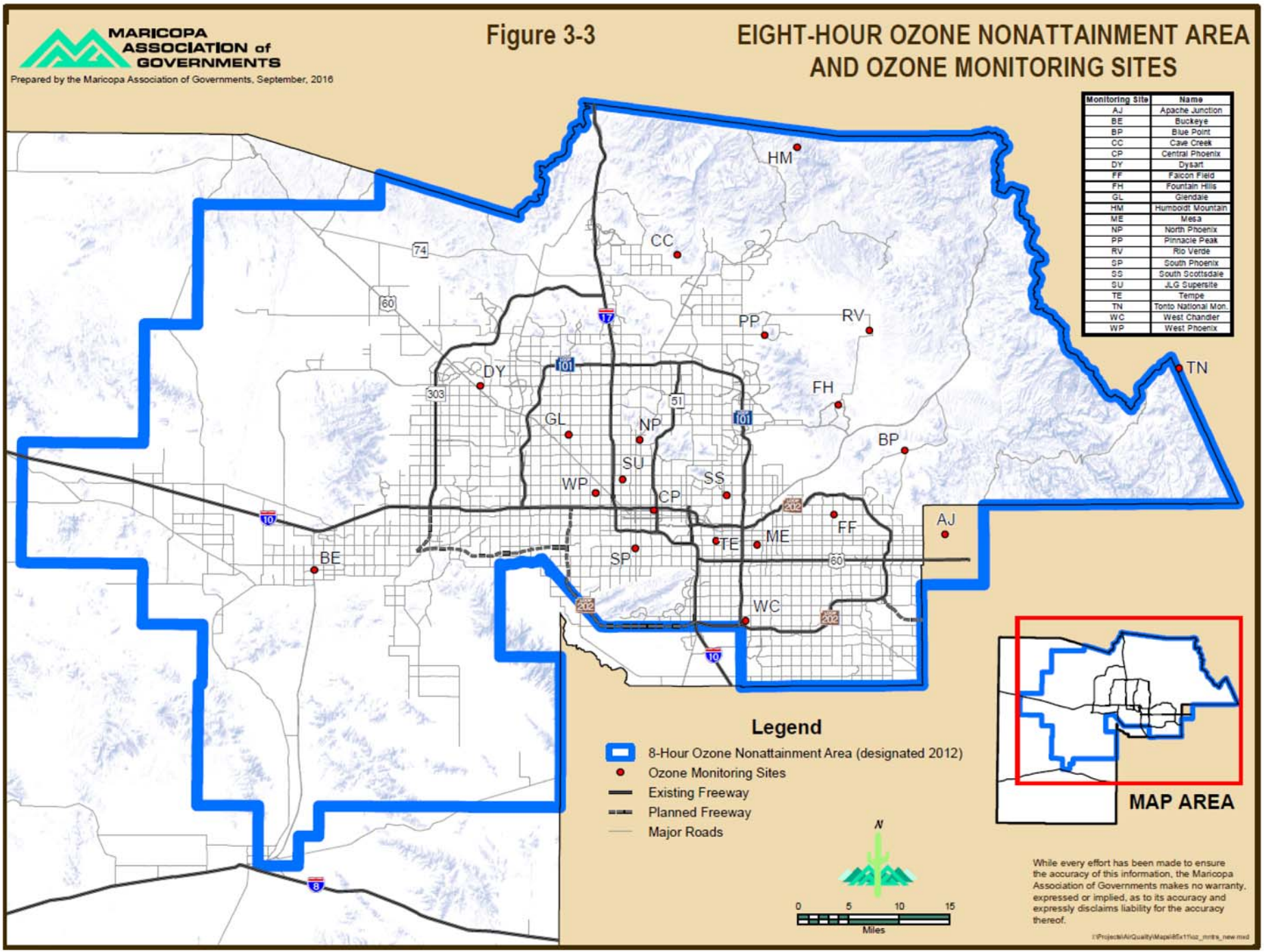
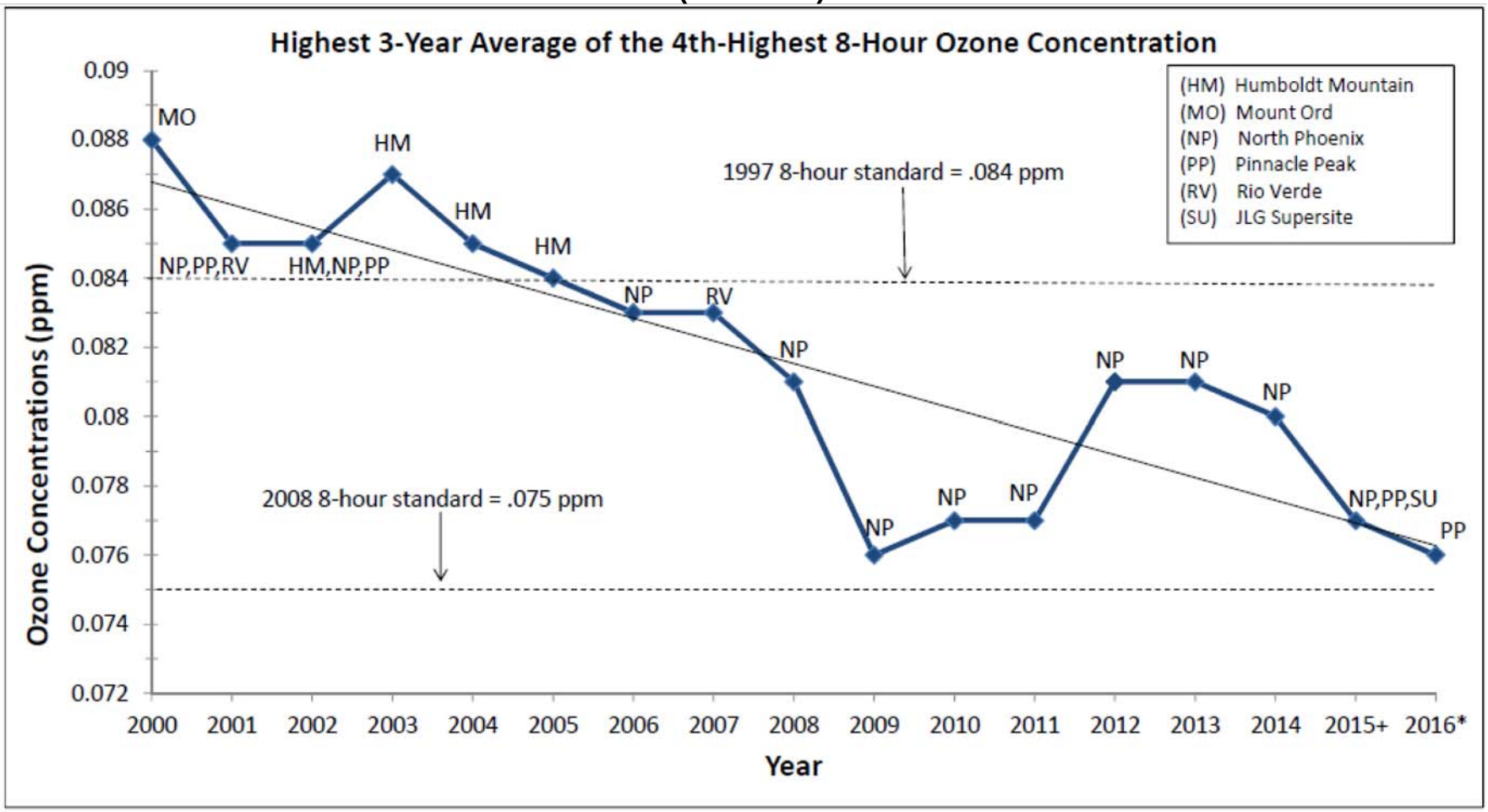

MARICOPA ASSOCIATION of GOVERNMENTS
Prepared by the Maricopa Association of Governments, September, 2016
Figure 3-3
EIGHT-HOUR OZONE NONATTAINMENT AREA AND OZONE MONITORING SITES
Monitoring Site | Name
AJ | Apache Junction
BE | Buckeye
BP | Blue Point
CC | Cave Creek
CP | Central Phoenix
DY | Dysart
FF | Falcon Field
FH | Fountain Hills
GL | Glendale
HM | Humboldt Mountain
ME | Mesa
NP | North Phoenix
PP | Pinnacle Peak
RV | Rio Verde
SP | South Phoenix
SS | South Scottsdale
SU | JLG Supersite
TE | Tempe
TN | Tonto National Mon.
WC | West Chandler
WP | West Phoenix
HM
CC
PP
RV
TN
DY
FH
GL
NP
BP
SU
SS
WP
CP
AJ
FF
ME
TE
BE
SP
WC
74
60
17
101
303
51
10
202
8
Legend
8-Hour Ozone Nonattainment Area (designated 2012)
Ozone Monitoring Sites
Existing Freeway
Planned Freeway
Major Roads
N
0 5 10 15
Miles
MAP AREA
While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Figure 3-4

Eight-Hour Ozone Trends
(2000-2016)

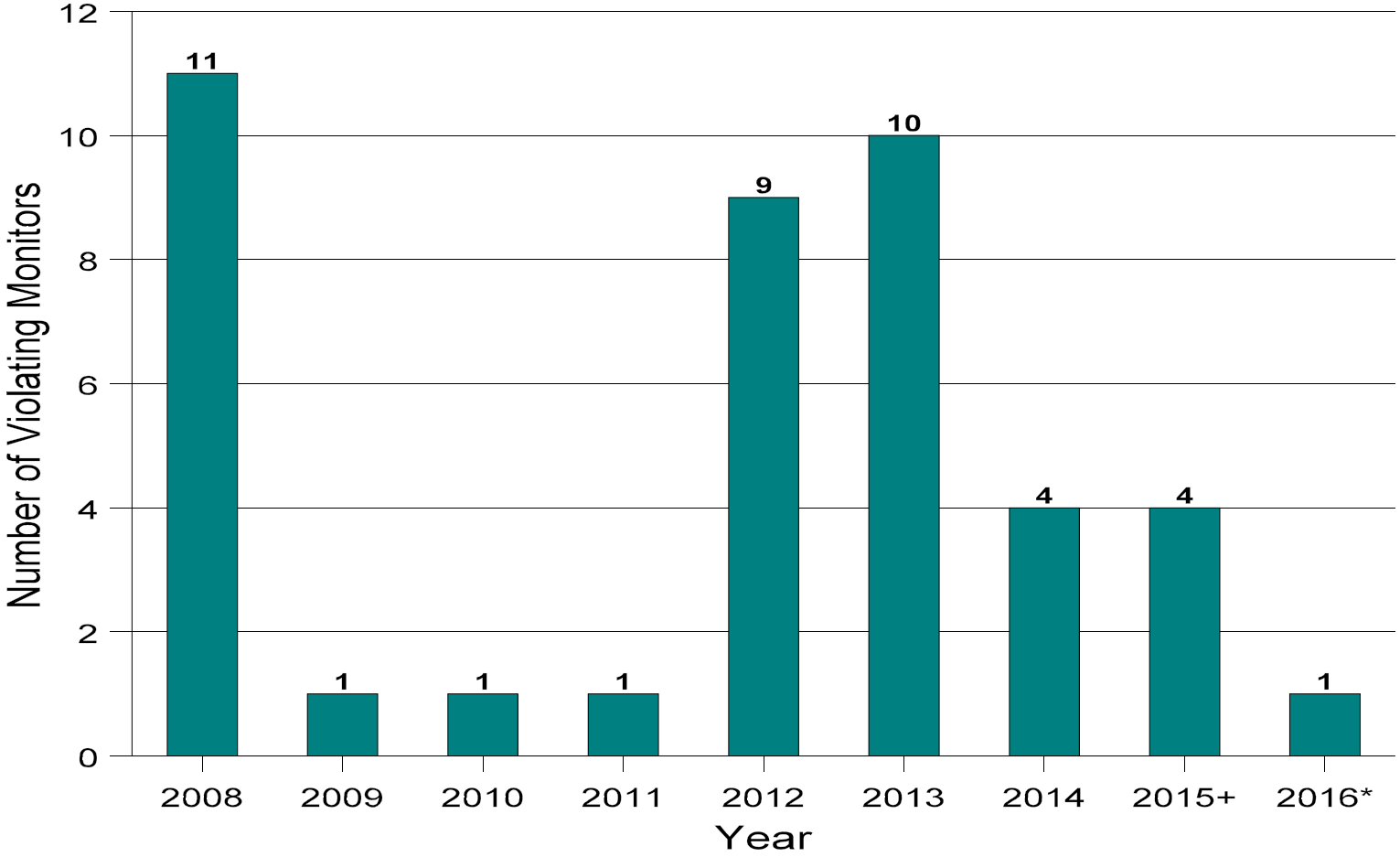


\+ Exceedances from the June 20, 2015 exceptional event have been removed. EPA concurrence of the exceptional event is pending.
* The 2016 values are based on preliminary data through August 31, 2016.
Note: Due to mathematical rounding, values greater than or equal to 0.085 ppm are necessary to exceed the 0.080 ppm standard.

Sources: 2000-2008: MAG Eight-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa Nonattainment Area, February 2009; 2009-2015: Environmental Protection Agency Air Quality System; 2016: Arizona Department of Environmental Quality; Maricopa County; Pinal County.

Figure 3-5

Violations of the 0.075 ppm Eight-Hour Ozone Standard in the Maricopa Nonattainment Area



\+ Exceedances from the June 20, 2015 exceptional event have been removed. EPA concurrence of the exceptional event is pending.
* The 2016 values are based on preliminary data through August 31, 2016.

Sources: Environmental Protection Agency Air Quality System; Arizona Department of Environmental Quality; Maricopa County; Pinal County.

Table 3-3

Eight-Hour Ozone Monitoring Data Summary
Three-Year Average of the Fourth-High, 2016*
(Standard: 8-Hour: 0.075 ppm)

Site	2014 4th High (PPM)	2015 4th High (PPM)+	2016 4th High (PPM)*	3-Year Avg. 4th Highest (PPM)*
Apache Junction	.066	.073	.072	.070
Blue Point	.074	.071	.071	.072
Buckeye	.060	.060	.059	.059
Cave Creek	.074	.069	.071	.071
Central Phoenix	.071	.071	.070	.070
Dysart	.070	.067	.063	.066
Falcon Field	.076	.072	.073	.073
Fountain Hills	.068 #	.069	.068	N/A
Glendale	.071	.067	.066	.068
Humboldt Mountain	.074	.073	.072	.073
JLG Supersite	.077	.075	.075	.075
Mesa	.078	.072	.075	.075
North Phoenix	.078	.074	.075	.075
Pinnacle Peak	.080	.074	.074	.076
Rio Verde	.073	.068	.070	.070
South Phoenix	.073	.070	.067	.070
South Scottsdale	.072	.068	.070	.070
Tempe	.071	.051 #	.068	N/A
Tonto National Monument**	.072	.070	.070	.070
West Chandler	.070	.070	.069	.069
West Phoenix	.076	.074	.071	.073

+ Exceedances from the June 20, 2015 exceptional event have been removed. EPA concurrence of the exceptional event is pending.
* The 2016 values are based on preliminary data through August 31, 2016.
# Indicates < 75 percent data completeness.
** The Tonto National Monument monitor is located outside the eastern boundary of the nonattainment area.

Sources: Environmental Protection Agency Air Quality System; Arizona Department of Environmental Quality; Maricopa County; Pinal County.

Table 3-4

Eight-Hour Ozone Monitoring Data Summary
Three-Year Average of the Fourth-High, 2012-2016*
(Standard: 8-Hour: 0.075 ppm)

Site	2010-2012 Avg. 4th High (PPM)	2011-2013 Avg. 4th High (PPM)	2012-2014 Avg. 4th High (PPM)	2013-2015 Avg. 4th High (PPM)+	2014-2016 Avg. 4th High (PPM)*
Apache Junction	.074	.073	.070	.069	.070
Blue Point	.075	.077	.075	.073	.072
Buckeye	.066	.065	.062	.060	.059
Cave Creek	.077	.077	.074	.071	.071
Central Phoenix	.074	.075	.074	.072	.070
Dysart	.071	.072	.072	.070	.066
Falcon Field	.069	.072	.074	.075	.073
Fountain Hills	.076	N/A	N/A	N/A	N/A
Glendale	.076	.076	.074	.070	.068
Humboldt Mountain	.075	.076	.075	.073	.073
JLG Supersite	.076	.077	.077	.077	.075
Mesa	N/A	N/A	N/A	.076	.075
North Phoenix	.081	.081	.080	.077	.075
Pinnacle Peak	.077	.077	.078	.077	.076
Rio Verde	.074	.075	.072	.071	.070
South Phoenix	.076	.076	.075	.072	.070
South Scottsdale	.077	.076	.075	.071	.070
Tempe	.070	.071	.071	N/A	N/A
Tonto National Monument**	.074	.075	.074	.071	.070
West Chandler	.074	.072	.071	.070	.069
West Phoenix	.078	.079	.078	.075	.073

+ Exceedances from the June 20, 2015 exceptional event have been removed. EPA concurrence of the exceptional event is pending.
* The 2016 values are based on preliminary data through August 31, 2016.
** The Tonto National Monument monitor is located outside the eastern boundary of the nonattainment area.
N/A - Data not available. The 90 percent data completeness requirement was not met.

Sources: Environmental Protection Agency Air Quality System; Arizona Department of Environmental Quality; Maricopa County; Pinal County.

The region has been experiencing a downward trend in ozone concentrations. As shown in Figure 3-4, the highest-three year average of the fourth high has decreased from 0.081 ppm in 2013 to 0.076 ppm in 2016. Consequently, the number of monitors violating the eight-hour ozone standard have also decreased. Figures 3-5 illustrates that there were 10 monitors violating the 0.075 ppm ozone standard in 2013 and only four in 2014 and 2015. The preliminary data shows just the Pinnacle Peak monitor violating in 2016.

The Pinnacle Peak monitor is located in the northeast portion of the nonattainment area, downwind of the Phoenix metropolitan area. Population near the monitoring site is low-density. The higher ozone concentrations in the area are attributed to emissions from the urbanized area reacting photochemically in the presence of sunlight, and being transported by prevailing winds to this less populated area. In addition, biogenics may contribute to higher concentrations at the monitor. While the Pinnacle Peak site is currently violating the 0.075 ppm standard, there continues to be a downward trend in concentrations at the monitor similar to that being experienced throughout the nonattainment area.

In summary, the eight-hour ozone concentration data collected by the monitoring network provide an indication of the progress being made toward attainment by the MAG region. Preliminary 2016 data from the regional monitoring network indicates that the Maricopa nonattainment area is violating the National Ambient Air Quality Standard for eight-hour ozone at only one monitor. The design value at the site is just slightly over the standard at 0.076 ppm. The magnitude of observed eight-hour ozone concentrations have been declining and this trend is expected to continue due to the control measures already implemented within the nonattainment area.

CHAPTER FOUR

EVALUATION OF OZONE CONTROL MEASURE REQUIREMENTS IN THE CLEAN AIR ACT

This chapter addresses the Clean Air Act requirements for implementation of reasonably available control measures (RACM), reasonably available control technology (RACT) and New Source Review (NSR) in the Maricopa eight-hour ozone nonattainment area. RACM requirements are shown to be met through implementation of existing ozone control measures that have been approved by the U.S. Environmental Protection Agency (EPA) in prior regional air quality plans and separate EPA actions.

In regard to the RACT requirements, descriptions of the RACT State Implementation Plan (SIP) revisions independently prepared and submitted to EPA by the Maricopa County Air Quality Department and the Pinal County Air Quality Control District are included. Additionally, a discussion of New Source Review implementation and other associated Clean Air Act permitting requirements in the Maricopa nonattainment area is included at the end of the chapter.

REASONABLY AVAILABLE CONTROL MEASURES ANALYSIS

In accordance with Section 172(c)(1) of the Clean Air Act, the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area “shall provide for the implementation of all reasonably available control measures [RACM] as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through adoption, at a minimum, of reasonably available control technology [RACT]) and shall provide for attainment of the national primary ambient air quality standards”. Regulation finalized in the EPA rule on implementation of the 2008 ozone standards (80 FR 12282) at 40 CFR Section 51.1112(c) also requires the State to submit “with the attainment demonstration a SIP [State Implementation Plan] revision demonstrating that it has adopted all RACM necessary to demonstrate attainment as expeditiously as practicable and to meet RFP [reasonable further progress] requirements.”

The EPA final rule on implementation of the 2008 ozone standards (80 FR 12282) states that an area subject to the reasonably available control measures (RACM) requirements of Clean Air Act Section 172(c)(1) should provide “a demonstration that the state has adopted all reasonable measures (including RACT) to meet RFP [reasonable further progress] requirements and to demonstrate attainment as expeditiously as practicable and thus that no additional measures that are reasonably available will advance that attainment date or contribute to RFP for the area.” The EPA implementation rule further states that "EPA is finalizing the interpretation of the CAA requirements that states should consider all available measures, including those being implemented in other areas, and that a state must adopt measures for an area only if those measures are economically and technologically feasible and will advance the attainment date or are necessary for RFP."

To address these RACM requirements, Tables 4-1 through 4-3 have been developed to analyze the implementation of RACM in the Maricopa eight-hour ozone nonattainment area.

Table 4-1 identifies 93 existing and approved ozone control measures in the Maricopa nonattainment area from EPA-approved regional air quality plans and separate EPA actions. The source of the existing measures listed in Table 4-1 is most often the EPA approved plan or separate action in which the measure first appeared, although a specific measure may appear in more than one EPA-approved plan or action. The majority of the existing measures are committed state and local measures that have been adopted and approved by EPA in prior regional air quality plans such as the Serious Area Ozone Plan (ADEQ, 2000), the Serious Area Carbon Monoxide Plan (MAG, 2001), the Carbon Monoxide Maintenance Plan (MAG, 2003), the One-Hour Ozone Maintenance Plan (MAG, 2004), the Eight-Hour Ozone Plan (MAG, 2007), and the Eight-Hour Ozone Maintenance Plan (MAG, 2009). Existing federal measures that reduce ozone in the Maricopa nonattainment area are also included in Table 4-1.

Table 4-2 evaluates the existing ozone control measures in the Maricopa nonattainment in comparison to EPA's National Menu of Control Measures (EPA, 2016a). EPA describes the Menu of Control Measures as a document which "provides state, local and tribal air agencies with the existing emission reduction measures as well as relevant information concerning the efficiency and cost effectiveness of the measures. State, local and tribal agencies will be able to use this information in developing emission reduction strategies, plans, and programs to assure they attain and maintain the National Ambient Air Quality Standards (NAAQS)". The Menu of Control Measures provides a broad listing of potential emission reduction measures for the precursors of ozone production (nitrogen oxides (NOx) and volatile organic compounds (VOC)) which have been gathered from control programs across the United States. Many of the control measure listed in EPA's Menu are already in place within the Maricopa eight-hour ozone nonattainment area.

As EPA recommends evaluating ozone control measures in other nonattainment areas, existing Maricopa County Air Quality Department NOx and VOC rules were also evaluated in comparison to NOx and VOC rules in place in the Sacramento Metropolitan Air Quality Management District (SMAQMD) in Table 4-3. The SMAQMD rules apply within the Sacramento Metropolitan eight-hour ozone nonattainment area, which is currently classified as a Severe-15 nonattainment area for the 2008 ozone standard. SMAQMD recently completed a RACM analysis of their NOx and VOC rules for the 1997 ozone standard. EPA approved the SMAQMD RACM analysis on January 29, 2015 (80 FR 4795).

A small portion of Pinal County, located in the city of Apache Junction, is included in the Maricopa eight-hour ozone nonattainment area. Mobile sources in this area are subject to the same measures that exist within the Maricopa County portion of the nonattainment area through state statutes that apply to Area A, an area that includes the Pinal County portion of the nonattainment area. Point and area sources of NOx and VOC in this area are regulated by the Pinal County Air Quality Control District (PCAQCD). Pinal County Air

Quality Control District point and area source NOx and VOC rules were not evaluated in Tables 4-2 and 4-3 for the following reasons: (1) Within the Pinal County portion of the Maricopa nonattainment area, there are no major sources of NOx and VOC and there are only two source categories that are subject to RACT requirements, gas stations and a metal surface coating operation; (2) the RACT rules for these two source categories are being updated as part of a RACT SIP submittal by PCAQCD; and (3) the few remaining permitted stationary sources in the Pinal County portion of the nonattainment area that are not gas stations or surface coating operations have negligible emissions in comparison to total anthropogenic emissions in the nonattainment area and do not warrant inclusion in Table 4-3.

RACM Analysis Findings

As discussed in detail in Chapter Six, attainment modeling indicates that the existing Maricopa nonattainment area ozone control measures are sufficient to demonstrate attainment as expeditiously as practicable and to meet reasonable further progress (RFP) requirements in the Maricopa nonattainment area. No new measures were necessary to demonstrate attainment at the ozone monitors or to meet the reasonable further progress requirements (i.e., a 15 percent rate of progress reduction of anthropogenic VOC emissions across the entire nonattainment area). The evaluation of RACM in Tables 4-2 and 4-3 therefore concludes that the adoption of additional measures, or the strengthening of existing measures, is not necessary.

Additionally, any identified new or strengthened measure will not be available in time to meet a one-year advancement of the attainment date, which is July 20, 2017. EPA requires that ozone control measures be implemented, and attainment be modeled, for the last full ozone season preceding the attainment date, which would be 2016 if the attainment date were July 20, 2017. It is infeasible to have any new measure in place by April 1, 2016 (the beginning of the 2016 ozone season), as this date both precedes the MAG 2017 Eight-Hour Ozone Moderate Area Plan adoption and submittal date of January 1, 2017, and the June 3, 2016 effective date of the final EPA rule reclassifying the Maricopa nonattainment area from a Marginal Area to a Moderate Area (81 FR 26697).

In summary, the existing and approved federal, state and local ozone control measures in the Maricopa eight-hour ozone nonattainment area lead to expeditious attainment of the 2008 ozone standard by the July 20, 2018 attainment date and meet all reasonable further progress requirements of the Clean Air Act. Furthermore, any available new or strengthened measure cannot be feasibly implemented in time to advance the attainment date by at least one year.

Table 4-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
1	Phased-In Emission Test Cutpoints	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
2	Enhanced Emission Testing of Constant Four-Wheel Drive Vehicles	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
3	One-Time Waiver from Vehicle Emissions Test	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
4	Increased Waiver Repair Limit Options	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
5	Gross Polluter Option for I/M Program Waivers	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
6	Catalytic Converter Replacement Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
7	Vehicle Repair Grant Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
8	Voluntary Vehicle Repair and Retrofit Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
9	Tougher Enforcement of Vehicle Registration and Emissions Test Compliance	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
10	Random Roadside Testing of Diesel Vehicles	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
11	Snap Acceleration Test for Heavy-Duty Diesel	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553

Table 4-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
12	Require Pre-1988 Heavy-Duty Diesel Commercial Vehicles Registered in the Nonattainment Area to Meet 1988 Federal Emissions Standards; Provide Incentives to Encourage Voluntary Accelerated Vehicle Replacement by the Year 2004	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
13	Long-Term Fuel Reformulation: From and After May 1, 1999	Onroad/Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
14	Limit Sulfur Content of Diesel Fuel Oil to 500 ppm	Onroad/Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
15	Diesel Fuel Sampling and Reporting	Onroad/Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
16	Alternative Fuel Vehicles for Local Governments, School Districts and Federal Government/Low Emission Vehicle Requirements	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
17	Alternative Fuel Vehicles for State Government/Low Emission Vehicle Requirements	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
18	Alternative Fuel Vehicle and Equipment Tax Incentives/Low Emission Vehicle Requirements	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
19	Public Awareness Program for Alternative Fuels	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
20	National Low Emission Vehicle Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553

Table 4-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
21	Voluntary Gasoline Vehicle Retirement Program/Maricopa County Travel Reduction Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
22	Oxidation Catalyst for Heavy Duty Diesel Vehicles	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
23	Mass Transit Alternatives	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
24	Develop Intelligent Transportation Systems	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
25	Special Event Controls-Required Implementation from List of Approved Strategies	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
26	Voluntary Lawn Mower Emission Reduction Program	Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
27	Off-Road Vehicle and Engine Standards	Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
28	Encourage the Use of Temporary Electrical Power Lines Rather than Portable Generators at Construction Sites	Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
29	Defer Emissions Associated with Government Activities	Onroad/Nonroad/ Area	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
30	Encourage Limitations on Vehicle Idling	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
31	Expansion of Area A boundaries	Onroad/Nonroad/ Area	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553

Table 4-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

Existing Control Measure		Source Category	Pollutant	Source
32	Voluntary No-Drive Days	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
33	Analysis of Intersource Credit Trading and Banking Program	Onroad/Nonroad/ Area/Point	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
34	Expansion of Public Transportation Programs	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
35	Employer Rideshare Program Incentives	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
36	Preferential Parking for Carpools and Vanpools	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
37	Coordinate Traffic Signal Systems	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
38	Reduce Traffic Congestion at Major Intersections	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
39	Site-Specific Transportation Control Measures	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
40	Encouragement of Bicycle Travel	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
41	Development of Bicycle Travel Facilities	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
42	Alternative Work Schedules	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
43	Land Use/Development Alternatives	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
44	Encouragement of Pedestrian Travel	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553

Table 4-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
45	Restrictions on the Use of Gasoline-Powered Blowers for Landscaping Maintenance	Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
46	Alternative Fuels for Fleets	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
47	Areawide Public Awareness Programs	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
48	Encouragement of Vanpooling	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
49	Trip Reduction Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
50	Park and Ride Lots	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
51	Encouragement of Telecommuting, Teleworking and Teleconferencing	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
52	Promotion of High Occupancy Vehicle Lanes and By-Pass Ramps	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
53	MCAQD Rule 331 - Solvent Cleaning	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
54	MCAQD Rule 333 - Petroleum Solvent Dry Cleaning	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
55	MCAQD Rule 334 - Rubber Sports Ball Manufacturing	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
56	MCAQD Rule 335 - Architectural and Industrial Coating	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
57	MCAQD Rule 336 - Surface Coating Operations	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362

Table 4-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
58	MCAQD Rule 337 - Graphic Arts	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
59	MCAQD Rule 338 - Semiconductor Manufacturing	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
60	MCAQD Rule 339 - Vegetable Oil Extraction Process	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
61	MCAQD Rule 340 - Cutback and Emulsified Asphalt	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
62	MCAQD Rule 341 - Metal Casting	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
63	MCAQD Rule 342 - Coating Wood Furniture and Fixtures	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
64	MCAQD Rule 343 - Commercial Bread Bakeries	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
65	MCAQD Rule 344 - Windshield Washer Fluid	Point/Area	VOC	Final Serious Area Ozone SIP, Appendix A. (2000) EPA final approval June 2005, 70 FR 34362
66	MCAQD Rule 346 - Coating Wood Millwork	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
67	MCAQD Rule 347 - Ferrous Sand Casting	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
68	MCAQD Rule 348 - Aerospace Manufacturing and Rework Operations	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
69	MCAQD Rule 349 - Vitamin Manufacturing	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362

Table 4-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
70	MCAQD Rule 350 - Storage of Organic Liquids at Bulk Plants and Terminals	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
71	MCAQD Rule 351 - Loading of Organic Liquids	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
72	MCAQD Rule 352 - Gasoline Delivery Vessel Testing and Use	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
73	MCAQD Rule 353 - Transfer of Gasoline in Stationary Storage Dispensing Tanks	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
74	Clean Air Campaign	Onroad/Nonroad/ Point/Area	VOC, NOx, CO	Final Serious Area Ozone SIP, Appendix A. (2000) EPA final approval June 2005, 70 FR 34362
75	Allow Use of High Occupancy Vehicle Lanes and Freeway Ramps by Alternative Fueled Vehicles	Onroad	VOC, NOx, CO	Final Serious Area Ozone SIP, Appendix A. (2000) EPA final approval June 2005, 70 FR 34362
76	MCAQD Rule 358 - Polystyrene Foam Operations	Point/Area	VOC	MAG Eight-Hour Ozone Plan (2007) EPA final approval June 2012, 77 FR 35285
77	Federal Heavy Duty Diesel Vehicle Emissions Standards (Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements, EPA final rule January 2001, 66 FR 5002)	Onroad	VOC, NOx, CO	MAG Eight-Hour Ozone Plan (2007) EPA final approval June 2012, 77 FR 35285

Table 4-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
78	Federal Nonroad Equipment Emissions Standards (Control of Emissions of Air Pollution From Nonroad Diesel Engines and Fuel, EPA final rule June 2004, 69 FR 38958 and Control of Emissions of Air Pollution From Nonroad Diesel Engines, EPA final rule October 1998, 63 FR 56968)	Nonroad	VOC, NOx, CO	MAG Eight-Hour Ozone Plan (2007) EPA final approval June 2012, 77 FR 35285
79	Ban on Open Burning	Area	VOC, NOx, CO	MAG Eight-Hour Ozone Redesignation Request and Maintenance Plan (2009) EPA final approval September 2014, 79 FR 55645
80	National Autobody Refinishing Rule	Point/Area	VOC	15 Percent Rate of Progress FIP (1998) EPA final rule July 1999, 64 FR 36243
81	National Consumer Products Rule	Area	VOC	15 Percent Rate of Progress FIP (1998) EPA final rule July 1999, 64 FR 36243
82	Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements	Onroad	VOC, NOx, CO	EPA final rule February 2000, 65 FR 6698
83	Control of Hazardous Air Pollutants From Mobile Sources (Including VOCs from portable gas cans)	Onroad/Area	VOC	EPA final rule February 2007, 72 FR 8428
84	Control of Emissions of Air Pollution From Locomotive Engines and Marine Compression-Ignition Engines Less Than 30 Liters per Cylinder	Nonroad	VOC, NOx, CO	EPA final rule May 2008, 73 FR 25098

Table 4-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
85	Control of Emissions From Nonroad Spark-Ignition Engines and Equipment	Nonroad	VOC, NOx, CO	EPA final rule October 2008, 73 FR 59034
86	MCAQD Rule 322 - Power Plant Operations	Point/Area	NOx	EPA final approval October 2009, 74 FR 52693
87	MCAQD Rule 323 - Fuel Burning Equipment from Industrial/Commercial/Institutional (ICI) Sources	Point/Area	NOx	EPA final approval October 2009, 74 FR 52693
88	MCAQD Rule 324 - Stationary Internal Combustion (IC) Engines	Point/Area	NOx	EPA final approval October 2009, 74 FR 52693
89	National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters	Point	VOC, NOx, CO co-benefit	EPA final rule March 2011, 76 FR 15608
90	Phase 1 Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles	Onroad	VOC, NOx, CO co-benefit	EPA final rule September 2011, 76 FR 57106
91	Phase 1 and Phase 2 Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards	Onroad	VOC and NOx co-benefit	EPA final rules May 2010, 75 FR 25324 and October 2012, 77 FR 62624

Table 4-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
92	National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines; New Source Performance Standards for Stationary Internal Combustion Engines	Point/Area	VOC, NOx, CO co-benefit	EPA final rules January 2013, 78 FR 6674; August 2010, 75 FR 51570; March 2010, 75 FR 9648
93	Tier 3 Motor Vehicle Emission and Fuel Standards	Onroad	VOC, NOx, CO	EPA final rule April 2014, 79 FR 23414

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Area Sources	Commercial/Institutional - Natural Gas	Water heater replacement	Water heaters are generally exempted from regulation by MCAQD Rule 323, Fuel Burning Equipment From Industrial/Commercial/Institutional (ICI) Sources. The listed control measure may provide reductions in NOx emissions for water heaters. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Area Sources	Industrial Coal/Natural Gas/Oil Combustion	RACT to 50 tpy, and to 25 tpy (Low NOx Burner)	MCAQD Rule 323, Fuel Burning Equipment From Industrial/Commercial/Institutional (ICI) Sources, includes a parts per million by volume (ppmv) NOx emission limit. A combustion source may select low NOx burners to help meet the NOx emissions limit. This measure may provide reductions in NOx emissions beyond what is required in Rule 323. Requiring a combustion source to use low NOx burners may not result in reduced NOx emissions in all cases and is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Area Sources	Open Burning	Episodic Ban (Daily Only)	Arizona Revised Statute Section 49-501 bans open burning during May 1 through September 30 and is equivalent to this measure.
NOx Controls for Area Sources	Process Heaters - Distillate Oil, Residual Oil, or Other Fuel	Low NOx Burner, and Selective Noncatalytic Reduction	MCAQD Rule 323, Fuel Burning Equipment From Industrial/Commercial/Institutional (ICI) Sources, includes a parts per million by volume (ppmv) NOx emission limit. A process heater may select this control measure to help meet NOx emission limit. This measure may provide reductions in NOx emissions beyond what is required in Rule 323. Requiring all process heaters to use this control measure may not result in reduced NOx emissions in all cases and is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Area Sources	Residential/Commercial/ Institutional Water Heaters and Space Heaters	Low NOx Water Heaters, and Low NOx Burner Space Heaters	Water heaters are generally exempted from regulation by MCAQD Rule 323, Fuel Burning Equipment From Industrial/Commercial/Institutional (ICI) Sources. Space heaters are also normally too small to be regulated by MCAQD Rule 323. This measure may provide reductions in NOx emissions beyond what is required in Rule 323. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Adipic Acid Manufacturing	Extended Absorption, and Thermal Reduction	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Ammonia Production - Natural Gas-Fired/Oil-Fired Reformers	Low NOx Burner, Low NOx Burner and Flue Gas Recirculation, Oxygen Trim and Water Injection, Selective Catalytic Reduction, and Selective Non-Catalytic Reduction	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Asphalt Plant Manufacture	Low NOx Burner and Flue Gas Recirculation	No current requirement exists to install this control. This measure may provide reductions in NOx emissions beyond what is currently required at asphalt batch plants. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Non-EGU Point Sources	Asphaltic Concrete - Rotary Dryer - Conventional Plant	Low NOx Burner	No current requirement exists to install this control. This measure may provide reductions in NOx emissions beyond what is currently required at asphalt batch plants. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	By-Product Coke Manufacturing - Oven Underfiring	Selective Non-Catalytic Reduction	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Cement Kilns	Biosolid Injection Technology, Changing Feed Composition, and Process Control Systems	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Cement Manufacturing - Dry and Wet Process	Selective Non-Catalytic Reduction - Ammonia and/or Urea, Low NOx Burner, Mid-Kiln Firing, and Selective Catalytic Reduction	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Ceramic Clay Manufacturing - Drying	Low NOx Burner	No current requirement exists to install this control. This measure may provide reductions in NOx emissions beyond what is currently required at ceramic clay manufacturing facilities. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

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Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Non-EGU Point Sources	Coal Cleaning-Thermal Dryer - Fluidized Bed	Low NOx Burner	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Combustion Turbine - Aeroderivative Gas Turbines/Natural Gas/Oil or Jet Fuel	Water Injection, Low NOx Burner, Selective Catalytic Reduction and Low NOx Burner, Selective Catalytic Reduction and Steam Injection, Selective Catalytic Reduction and Water Injection, and Steam Injection	MCAQD Rule 323, Fuel Burning Equipment From Industrial/Commercial/Institutional (ICI) Sources, includes a parts per million by volume (ppmv) NOx emission limit. A combustion turbine may select these control measures to help meet the NOx emission limit. These measures may provide for reductions in NOx emissions beyond what is required in Rule 323. Requiring all combustion turbines to use these control measure may not result in reduced NOx emissions in all cases and is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Commercial/Institutional or Industrial Incinerators	Selective Non-Catalytic Reduction, and Selective Catalytic Reduction	No current requirement exists to install these controls. These measures may provide reductions in NOx emissions beyond what is currently required for facilities with incinerators. These measures are not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Fluid Catalytic Cracking Units - Cracking Unit	Low NOx Burner and Flue Gas Recirculation, and Selective Catalytic Reduction	Source not present in the nonattainment area.

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Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Non-EGU Point Sources	Furnaces - Natural Gas	Low NOx Burner	Most natural gas furnaces are required to obtain a MCAQD general permit for fuel burning equipment and are too small to be regulated by MCAQD Rule 323, Fuel Burning Equipment From Industrial/Commercial/Institutional (ICI) Sources. No current requirement exists to install this control measure. This measures may provide for reductions in NOx emissions beyond what is required in Rule 323. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Glass Manufacturing - Container/Flat/General/ Pressed	Cullet Preheat, Electric Boost, OXY-Firing, Selective Catalytic Reduction, Selective Non-Catalytic Reduction, and Low NOx Burner	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Industrial Natural Gas Internal Combustion Engines - 2cycle (lean) and 4-cycle (rich)	Low Emission Combustion, and Non-Selective Catalytic Reduction	MCAQD Rule 324, Stationary Internal Combustion (IC) Engines, controls NOx emissions from these sources. A stationary internal combustion engine may select these control measures to help meet the NOx controls and limits in Rule 324. These control measures may provide reductions in NOX emissions beyond what is required in Rule 324. Requiring all stationary internal combustion engines to use these control measures may not result in reduced NOx emissions in all cases and is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Non-EGU Point Sources	Industrial/ Commercial/ Institutional Boilers - Bagasse/Coal/Distillate Oil/Gas/Liquid Waste/LPG/Municipal Solid Waste/Natural Gas/Process Gas/Oil/Petroleum Coke/Residual Oil/Wood/Bark/Waste	Coal Reburn, Low NOx Burner, Low NOx Burner and Flue Gas Recirculation, Low NOx Burner and Over Fire Air, Natural Gas Reburn, Oxygen Trim and Water Injection, Selective Catalytic Reduction, Selective Non-Catalytic Reduction, and Selective Non-Catalytic Reduction - Urea	MCAQD Rule 323, Fuel Burning Equipment From Industrial/Commercial/Institutional (ICI) Sources, includes a parts per million by volume (ppmv) NOx emission limit. A boiler may select these control measures to help meet the NOx emission limit. These control measures may provide reductions in NOx emissions beyond what is required in Rule 323. Requiring all boilers to use these control measures may not result in reduced NOx emissions in all cases and is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	In-Process - Bituminous Coal - Cement Kilns or Lime Kilns	Selective Catalytic Reduction, and Selective Non-Catalytic Reduction - Urea	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	In-Process - Process Gas - Coke Oven Gas/Blast Furnace	Low NOx Burner and Flue Gas Recirculation, and Selective Catalytic Reduction	Source not present in the nonattainment area.

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Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Non-EGU Point Sources	Internal Combustion Engines - Gasoline/Diesel/LPG/Oil /Natural Gas	Adjust Air to Fuel Ratio, Adjust Air to Fuel Ratio and Ignition Retard, Ignition Retard, Non-Selective Catalytic Reduction, Selective Catalytic Reduction, Low Emissions Combustion (Low Speed), and Low Emissions Combustion (Medium Speed)	MCAQD Rule 324, Stationary Internal Combustion (IC) Engines, controls NOx emissions from this source. A stationary internal combustion engine may select these control measures to help meet the NOx controls and limits in MCAQD Rule 324. These control measures may provide reductions in NOx emissions beyond what is required in Rule 324. Requiring all internal combustion engines to use these control measures may not result in reduced NOx emissions in all cases and is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Iron & Steel - In-Process Combustion - Bituminous Coal/Natural Gas/Process Gas/Coke Oven Gas/Blast Furnace/Residual Oil	Selective Catalytic Reduction, Low NOx Burner, and Low NOx Burner and Flue Gas Recirculation	No current requirement exists to install these controls. These control measures may provide reductions in NOx emissions beyond what is currently required at iron and steel manufacturers. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Non-EGU Point Sources	Iron & Steel Mills - Annealing/Cupola Melt Furnaces/Galvanizing/ Reheating	Low Excess Air, Low NOx Burner, Low NOx Burner and Flue Gas Recirculation, Low NOx Burner and Selective Catalytic Reduction, Low NOx Burner and Selective Non-Catalytic Reduction, Selective Catalytic Reduction, and Selective Non-Catalytic Reduction	No current requirement exists to install these controls. These control measures may provide reductions in NOx emissions beyond what is currently required at iron and steel manufacturers. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Iron Production - Blast Furnace - Blast Heating Stoves	Low NOx Burner and Flue Gas Recirculation	No current requirement exists to install these controls. These control measures may provide reductions in NOx emissions beyond what is currently required at iron manufacturers. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Lime Kilns	Low NOx Burner	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Medical Waste Incinerators	Selective Non-Catalytic Reduction	Source not present in the nonattainment area.

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Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Non-EGU Point Sources	Natural Gas Production - Compressors	Selective Catalytic Reduction	MCAQD Rule 323, Fuel Burning Equipment From Industrial/Commercial/Institutional (ICI) Sources, includes a parts per million by volume (ppmv) NOx emission limit. A compressor may select this control measure to help meet the NOx emission limit. This control measure may provide reductions in NOx emissions beyond what is required in Rule 323. Requiring all compressors to use this control measure may not result in reduced NOx emissions in all cases and is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Nitric Acid Manufacturing	Extended Absorption, Non-Selective Catalytic Reduction, and Selective Catalytic Reduction	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Primary Copper Smelters - Reverberatory Smelter Furnace	Low NOx Burner and Flue Gas Recirculation	Source not present in the nonattainment area.

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Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Non-EGU Point Sources	Process Heaters - Distillate Oil/LPG/Natural Gas/Process Gas/Residual Oil/Other Fuel	Low NOx, Burner, Low NOx Burner and Flue Gas Recirculation, Low NOx Burner and Selective Catalytic Reduction, Low NOx Burner and Selective Non-Catalytic Reduction, Selective Catalytic Reduction, Selective Non-Catalytic Reduction, and Ultra-Low NOx Burner	MCAQD Rule 323, Fuel Burning Equipment From Industrial/Commercial/Institutional (ICI) Sources, includes a parts per million by volume (ppmv) NOx emission limit. A process heater may select these control measures to help meet NOx emission limit. These control measures may provide reductions in NOx emissions beyond what is required in Rule 323. Requiring all process heaters to use these control measures may not result in reduced NOx emissions in all cases and is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Pulp and Paper - Natural Gas - Incinerators	Selective Catalytic Reduction	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Sand/ Gravel - Dryer	Low NOx Burner and Flue Gas Recirculation	No current requirement exists to install this control. This measure may provide reductions in NOx emissions beyond what is currently required at sand and gravel facilities. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Non-EGU Point Sources	Secondary Aluminum Production - Smelting Furnace/ Reverberatory	Low NOx Burner	No current requirement exists to install this control. This measure may provide reductions in NOx emissions beyond what is currently required at secondary aluminum production facilities. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Sewage Sludge Incinerators	Selective Catalytic Reduction	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Space Heaters - Distillate Oil/Natural Gas	Low NOx Burner, Low NOx Burner and Flue Gas Recirculation, Oxygen Trim and Water Injection, Selective Catalytic Reduction, and Selective Non-Catalytic Reduction	Most space heaters in the nonattainment area are too small to be regulated by MCAQD Rule 323, Fuel Burning Equipment From Industrial/Commercial/Institutional (ICI) Sources or through a fuel burning general permit. These control measures may provide reductions in NOx emissions beyond what is required in Rule 323. Requiring these control measures is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Steel Foundries - Heat Treating Furnaces/Soaking Pits	Low NOx Burner, and Low NOx Burner and Flue Gas Recirculation	No current requirement exists to install these controls. These control measures may provide reductions in NOx emissions beyond what is currently required at steel foundries. These measures are not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Non-EGU Point Sources	Sulfate Pulping - Recovery Furnaces	Low NOx Burner, Low NOx Burner and Flue Gas Recirculation, Oxygen Trim and Water Injection, Selective Catalytic Reduction, and Selective Non-Catalytic Reduction	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Surface Coating Operations - Coating Oven Heater -Natural Gas	Low NOx Burner	No current requirement exists to install this control. This measure may provide reductions in NOx emissions beyond what is currently required at surface coating operations. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Non-EGU Point Sources	Taconite Iron Ore Processing - Induration - Coal or Gas	Selective Catalytic Reduction	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Textile-Type Fiberglass Manufacturing - Recuperative Furnace	Low NOx Burner	Source not present in the nonattainment area.
NOx Controls for Non-EGU Point Sources	Waste Incineration - Municipal Waste Combustors or Solid Waste Disposal - Sludge Incinerators (Government)	Selective Non-Catalytic Reduction	Source not present in the nonattainment area.

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Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Electricity Generating Units (EGUs)	External Combustion Boilers - Electric Generation - Natural Gas (Tangential or Non-Tangential Firing)/Coal/Residual Oil/Solid Waste/Distillate Oil	Natural Gas Reburn, and Selective Non-Catalytic Reduction	MCAQD Rule 322, Power Plant Operations, includes a parts per million by volume (ppmv) NOx emission limit. An EGU may select these control measures to help meet the NOx emission limit. These control measures may provide reductions in NOx emissions beyond what is required in Rule 322. Requiring all EGUs to use these control measures may not result in reduced NOx emissions in all cases and is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Electricity Generating Units (EGUs)	External Combustion Boilers for Electricity Generation	Energy Efficiency Policies & Programs	Energy efficiency programs exist within the nonattainment area but have not been specifically identified and included in prior air quality plans addressing ozone. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

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Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Electricity Generating Units (EGUs)	Utility Boiler - Coal Wall/Coal Tangential/Cyclone/Oil-Gas Tangential/Oil-Gas Wall	Low NOx Burner, Low NOx Burner and Over Fire Air, Low NOx Coal-and-Air Nozzles with Cross-Coupled and Separated Over Fire Air, Low NOx Coal-and-Air Nozzles with Cross-Coupled Over Fire Air, Low NOx Coal-and-Air Nozzles with Separated Over Fire Air, Natural Gas Reburn, Selective Catalytic Reduction, and Selective Non-Catalytic Reduction	MCAQD Rule 322, Power Plant Operations, includes a parts per million by volume (ppmv) NOx emission limit. An EGU may select these control measures to help meet the NOx emission limit. These control measures may provide reductions in NOx emissions beyond what is required in Rule 322. Requiring all EGUs to use these control measures may not result in reduced NOx emissions in all cases and is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Adhesives - Industrial	Reformulation	Industrial adhesives are regulated in multiple MCAQD coating rules. The VOC content limits for adhesives in the listed measure may provide reductions in VOC emissions beyond what is currently required in MCAQD rules. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

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Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
VOC Controls for Point and Area Sources	Aerosol Coatings	National Rule	This measure refers to the EPA final rule, National Volatile Organic Compound Emission Standards for Aerosol Coatings, which limits the reactivity of the VOCs in aerosol coatings (73 FR 15604). This final rule became effective on March 24, 2008. The nonattainment area is already subject to this national rule.
VOC Controls for Point and Area Sources	Architectural, Traffic, and Industrial Maintenance Coatings	OTC Model Rule and South Coast -Rule 1113 Phase III VOC limits	MCAQD Rule 335, Architectural Coatings, limits VOC emissions from architectural, traffic and industrial maintenance coatings. The listed measure contains VOC limits that may provide reductions in VOC emissions beyond what is required in Rule 335. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Auto and Light-Duty Truck Assembly Coatings	Control Technique Guidelines	MCAQD Coatings Rule 345, Vehicle and Mobile Equipment Coating, limits VOC emissions from auto and light-duty truck assembly coatings. The listed measure may provide reductions in VOC emissions beyond what is required in Rule 345. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Bakery Products	Catalytic Incineration	MCAQD Rule 343, Commercial Bread Bakeries, limits VOC emissions from bakeries. The listed measure requires a higher VOC capture and control percentage rate than Rule 343 and may provide reductions in VOC emissions beyond what is required in Rule 343. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Coating Operations at Aerospace Manufacturing and Rework Operations	Control Technique Guidelines	MCAQD Coating Rule 348, Aerospace Manufacturing and Rework Operations, limits VOC emissions from aerospace manufacturing and rework operations. Rule 348 is equivalent to this control measure.

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Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
VOC Controls for Point and Area Sources	Cold Cleaning Degreasing	Process Modification, Reformulation-Process Modification (OTC Rule)	MCAQD Rule 331, Solvent Cleaning, limits VOC emissions from solvent cleaning. The listed control measure may provide reductions in VOC emissions beyond what is required in Rule 331. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Consumer Products	California Consumer Products Rules Cumulative through 2010 Proposed Amendments, Reformulation (2001 and 2006 OTC Model Rule)	Consumer products in the nonattainment area are regulated by EPA's national rule. This measure may provide for reductions in VOC emissions beyond what is required in the national rule. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Cutback Asphalt	Reformulation-Process Modification	MCAQD Rule 340, Cutback and Emulsified Asphalt, limits VOC emissions from asphalt application. Not enough information is provided to evaluate if this measure would provide VOC reductions beyond what is required in Rule 340.
VOC Controls for Point and Area Sources	Fabric Printing and Coating	Permanent Total Enclosure (PTE)	MCAQD Coating Rule 336, Miscellaneous Surface Coatings Operations, limits VOC emissions from the coating of fabric. The listed control measure may provide for reductions in VOC emissions beyond what is required in Rule 336. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Fiberglass Boat Manufacturing	Solvent substitution, non-atomized resin application methods	Source not present in the nonattainment area.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
VOC Controls for Point and Area Sources	Flat Wood Paneling Coatings	Low-VOC materials coatings	Source not present in the nonattainment area.
VOC Controls for Point and Area Sources	Flexible Package Printing	Add-on controls, work practices, and material reformulation or substitution	MCAQD Rule 337, Graphic Arts, limits VOC emissions from printing operations and is equivalent to these measures.
VOC Controls for Point and Area Sources	Flexographic Printing	Permanent Total Enclosure (PTE)	MCAQD Rule 337, Graphic Arts, limits VOC emissions from printing operations. A permanent total enclosure is one type of emission control system that may be used to meet the requirements of Rule 337 and may provide higher VOC capture and control efficiencies than other systems, possibly resulting in the reduction of VOC emissions beyond what is required in Rule 337. Requiring this particular type of control for all flexographic printing operations is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Industrial Cleaning Solvents, Non-Halogenated Solvent - Parts Cleaners, Other Non-Halogenated Solvent Cleaning Operations	Solvent Substitution, and Add-on Controls, Low VOC Cleaning Materials and Improved Work Practices	MCAQD Rule 331, Solvent Cleaning, limits VOC emissions from solvent cleaning and is equivalent to these measures.
VOC Controls for Point and Area Sources	Large Appliance Surface Coating	Low-VOC coating materials	Source not present in the nonattainment area.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
VOC Controls for Point and Area Sources	Lithographic Printing & Letterpress Printing	Add-on controls, work practices, and material reformulation or substitution	MCAQD Rule 337, Graphic Arts, limits VOC emissions from printing operations and is equivalent to these measures.
VOC Controls for Point and Area Sources	Metal Can and Coil Surface Coating	Incineration, Permanent Total Enclosure (PTE), Process Modification	MCAQD Coating Rule 336, Miscellaneous Surface Coating Operations, limits VOC emissions from the coating of metal cans and coils. The listed control measures may provide reductions in VOC emissions beyond what Rule 336 requires. These control measures are not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Metal Furniture Coatings	Low-VOC coating materials, Permanent Total Enclosure, and Reduced Solvent Utilization	MCAQD Coating Rule 336, Miscellaneous Surface Coating Operations, limits VOC emissions from the coating of metal furniture. The listed control measures may provide reductions in VOC emissions beyond what is required in Rule 336. These control measures are not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Metal Furniture, Appliances, Parts	Reformulation-Process Modification	MCAQD Coating Rule 336, Miscellaneous Surface Coating Operations, limits VOC emissions from the coating of metal furniture, appliances and parts. The listed control measure may provide reductions in VOC emissions beyond what is required in Rule 336. This control measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Metal Parts and Products coating	Reformulation-Process Modification	MCAQD Coating Rule 336, Miscellaneous Surface Coating Operations, limits VOC emissions from the coating of metal parts and products. The listed control measure may provide reductions in VOC emissions beyond what is required in Rule 336. This control measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
VOC Controls for Point and Area Sources	Miscellaneous Industrial Adhesives	Low VOC Adhesives and Improved Application Methods, Solvent Substitution	Industrial adhesives are regulated in multiple MCAQD coating rules. The VOC content limits for adhesives in the listed measures may provide reductions in VOC emissions beyond what is currently required in MCAQD rules. These measures are not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Miscellaneous Metal and Plastic Parts Coatings	Coating Reformulation	MCAQD Coating Rule 336, Miscellaneous Surface Coatings Operations, limits VOC emissions from the coating of metal and plastic parts and is equivalent to this measure.
VOC Controls for Point and Area Sources	Mobile Equipment Repair and Refinishing	California Air Resources Board - Suggested Control Measures for Automotive Coatings, OTC Model Rule	MCAQD Coatings Rule 345, Vehicle and Mobile Equipment Coating, limits VOC emissions from mobile equipment. The listed measure may provide reductions in VOC emissions beyond what is required in Rule 345. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Municipal Solid Waste Landfill	Gas Recovery	MCAQD Rule 321, Municipal Solid Waste Landfills, limits VOC emissions from landfills and is equivalent to this control measure.
VOC Controls for Point and Area Sources	Oil and Natural Gas Production - Fugitive Emissions	SCAQMD Rule 1148.1	Source not present in the nonattainment area.
VOC Controls for Point and Area Sources	Open Top Degreasing	Process Modification, Reformulation-Process Modification	MCAQD Rule 331, Solvent Cleaning, limits VOC emissions from solvent cleaning. The listed control measure is based off of SCAQMD Rule 1122, which may provide reductions in VOC emissions beyond what is required in Rule 331. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
VOC Controls for Point and Area Sources	Paper Film and Foil Coatings	Low-VOC coating materials and/or add-on controls	MCAQD Coating Rule 336, Miscellaneous Surface Coatings Operations, limits VOC emissions from the coating of paper film and foil and is equivalent to this measure.
VOC Controls for Point and Area Sources	Pesticide Application	Reformulation	The nonattainment area does not currently regulate the VOC content of pesticides. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Petroleum Flare	Flare	Source not present in the nonattainment area.
VOC Controls for Point and Area Sources	Petroleum Refinery Fugitives	Process Modification	Source not present in the nonattainment area.
VOC Controls for Point and Area Sources	Petroleum Wastewater	Wastewater	Source not present in the nonattainment area.
VOC Controls for Point and Area Sources	Pharmaceutical and Cosmetic Manufacturing Operations	SCAQMD Rule 1103	MCAQD Rule 349, Pharmaceutical, Cosmetic, and Vitamin Manufacturing Operations, limits VOC emissions from pharmaceutical and cosmetic manufacturing operations. The listed control measure may provide reductions in VOC emissions beyond what is required in Rule 349. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Polystyrene Foam Manufacturing	Control Technique Guidelines	MCAQD Rule 358, Polystyrene Foam Operations, limits VOC emissions from polystyrene foam manufacturing and is equivalent to this measure.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
VOC Controls for Point and Area Sources	Rubber/Plastics Coating	Reformulation-Process Modification	MCAQD Coating Rule 336, Miscellaneous Surface Coating Operations, limits VOC emissions from the coating of rubber and plastics. The listed control measure may provide reductions in VOC emissions beyond what is required in Rule 336. This control measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Semi-Conductor Manufacturing	Reformulation-Process Modification	MCAQD Rule 338, Semiconductor Manufacturing, limits VOC emissions from semiconductor manufacturing. The listed control measure may provide reductions in VOC emissions beyond what is required in Rule 338. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Shipbuilding and Ship Repair (Surface Coating)	Incineration, Reformulation, and Process Modification	Source not present in the nonattainment area.
VOC Controls for Point and Area Sources	Stage II Service Stations - Underground Tanks (Breathing and Emptying)	LPV Relief Valve	EPA has approved the phased removal of Stage II controls in the nonattainment area to avoid a VOC emissions disbenefit beginning in 2018.
VOC Controls for Point and Area Sources	Storage Tanks at Petroleum Facilities	SCAQMD Rule 1178	MCAQD Rule 350, Storage of Organic Liquids at Bulk Plants and Terminals, limits VOC emissions from storage tanks. The listed control measure may provide reductions in VOC emissions beyond what is required in Rule 350. This control measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
VOC Controls for Point and Area Sources	Wood Furniture Surface Coating	Add-On Controls, and Control Technique Guidelines	MCAQD Coating Rule 342, Coating Wood Furniture and Fixtures, limits VOC emissions from the coating of wood furniture. The listed control measures may provide reductions in VOC emissions beyond what is required in Rule 342. These measures are not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Point and Area Sources	Wood Product Surface Coating	Incineration, and Reformulation	MCAQD Coating Rule 342, Coating Wood Furniture and Fixtures, and MCAQD Coatings Rule 346, Coating Wood Millwork limit VOC emissions from the coating of wood products. The listed control measures may provide reductions in VOC emissions beyond what is required in Rule 342 or Rule 346. These control measures are not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Onroad and Nonroad Mobile Sources	Onroad Heavy Duty Diesel Vehicles (Class 6 and above)	Diesel Retrofit, and Eliminate Long Duration Idling	Existing measures have been implemented within the nonattainment area that are equivalent to these control measures (see measure number 8 and 30 in Table 4-1). MCAQD Ordinance P-21 also limits vehicle idling.
NOx Controls for Onroad and Nonroad Mobile Sources	Onroad Light Duty Vehicles	Continuous Inspection and Maintenance	The listed measure may provide reductions in NOx emissions beyond what is required in the current vehicle inspection and maintenance program. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Onroad and Nonroad Mobile Sources	Onroad Light Duty Gasoline Vehicles and Trucks	Travel Efficiency Strategies	Many existing measures have been implemented within the nonattainment area that are equivalent to this control measure (see measures 35-44 in Table 4-1).

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
NOx Controls for Onroad and Nonroad Mobile Sources	Onroad and Nonroad Vehicles	Ozone Action Days - Education and promotion campaigns	The Arizona Department of Environmental Quality provides public notification of High Pollution Advisory Days and Health Watch Days during the ozone season in the nonattainment area.
NOx Controls for Onroad and Nonroad Mobile Sources	Nonroad Aircraft Ground Support Equipment	Alternative Fuels - CNG/LPG/Electric	Conversion of aircraft ground support equipment to LPG or CNG engines is not a currently required control measure. The listed measure may provide reductions in NOx emissions. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Onroad and Nonroad Mobile Sources	Nonroad Commercial Marine - Ocean Going Vessels	Shore Based Electrical Power - Cold Ironing	Source not present in the nonattainment area.
NOx Controls for Onroad and Nonroad Mobile Sources	Nonroad Heavy Duty Diesel Equipment	Diesel Retrofits and Engine Rebuilds	Diesel retrofits and engine rebuilds for nonroad equipment is not a currently required control measure. The listed measure may provide reductions in NOx emissions. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx Controls for Onroad and Nonroad Mobile Sources	Nonroad Locomotives	Idling Reduction, and Upgrade Engines in Switcher Locomotives - Diesel-electric hybrid locomotives	These control measures for locomotives are currently not required. These measures may provide reductions in NOx emissions. These measures are not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Onroad and Nonroad Mobile Sources	Onroad and Nonroad Gasoline Vehicles	Opt into Reformulated Gasoline (RFG) standards	Existing measures have been implemented within the nonattainment area that are equivalent to this control measure (see measure number 13 in Table 4-1).

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
VOC Controls for Onroad and Nonroad Mobile Sources	Onroad and Nonroad Gasoline Vehicles	Petition EPA to remove the 1 psi allowance for 9-10% ethanol blends	Petitioning EPA to remove the 1 psi allowance for 9-10% ethanol blends is not a currently required control measure. This measure may provide reductions in VOC emissions. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC Controls for Onroad and Nonroad Mobile Sources	Onroad and Nonroad Vehicles	Ozone Action Days - Education and promotion campaigns	The Arizona Department of Environmental Quality provides public notification of High Pollution Advisory Days and Health Watch Days during the ozone season in the nonattainment area.
VOC Controls for Onroad and Nonroad Mobile Sources	Onroad Heavy Duty Vehicles	Alternative Fuel Programs	Existing measures have been implemented within the nonattainment area that are equivalent to this control measure (see measure numbers 16-19 in Table 4-1).
VOC Controls for Onroad and Nonroad Mobile Sources	Onroad Gasoline Vehicles	Low RVP Gasoline	Existing measures have been implemented within the nonattainment area that are equivalent to this control measure (see measure number 13 in Table 4-1).
VOC Controls for Onroad and Nonroad Mobile Sources	Nonroad Gasoline Vehicles	Low RVP Gasoline	Existing measures have been implemented within the nonattainment area that are equivalent to this control measure (see measure number 13 in Table 4-1).
VOC Controls for Onroad and Nonroad Mobile Sources	Onroad Light Duty Vehicles	Continuous Inspection and Maintenance	The listed measure may provide reductions in VOC emissions beyond what is required in the current vehicle inspection and maintenance program. This measure is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-2

Comparison of Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area With the EPA Menu of Control Measures

Control Category	Source Category	EPA Emission Reduction Measure(s) from Menu of Controls	Evaluation of EPA Measure
VOC Controls for Onroad and Nonroad Mobile Sources	Onroad Light Duty Gasoline Vehicles and Trucks	Travel Efficiency Strategies	Many existing measures have been implemented within the nonattainment area that are equivalent to this control measure (see measures 35-44 in Table 4-1).

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-3

Comparison of Existing Maricopa County Air Quality Department (MCAQD) and Sacramento Metropolitan Air Quality Management District (SMAQMD) NOx and VOC Rules

Pollutant	Sacramento Metropolitan Rule (date last amended)	Existing Maricopa County Rule (date last amended)	Evaluation of SMAQMD Rule
NOx	Rule 411 - NOx from Boilers, Process Heaters and Steam Generators (8-23-2007)	Rule 323 - Fuel Burning Equipment From Industrial/Commercial/ Institutional (ICI) Sources (10-17-2007)	Sections of SMAQMD Rule 411 contain provisions that may provide reductions in NOx emissions beyond what is currently required in MCAQD Rule 323, such as lower NOx emission limits and lower BTU/hr exemption limits for boilers, process heaters and steam generators. Adoption of these provisions of Rule 411 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx	Rule 412 - Stationary IC Engines at Major Stationary Sources of NOx (6-01-1995)	Rule 324 - Stationary Internal Combustion (IC) Engines (10-17-2007)	Sections of SMAQMD Rule 412 contain provisions that may provide reductions in NOx emissions beyond what is currently required in MCAQD Rule 324, such as lower NOx emission limits for existing stationary internal combustion engines. Adoption of these provisions of Rule 412 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx	Rule 413 - Stationary Gas Turbines (3-24-2005)	Rule 322 - Power Plant Operations (10-17-2007)	Sections of SMAQMD Rule 413 contain provisions that may provide reductions in NOx emissions beyond what is currently required in MCAQD Rule 322, such as lower NOx emission limits for stationary gas turbines. Adoption of these provisions of Rule 413 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
NOx	Rule 414 - Water Heaters, Boilers and Process Heaters Rated Less than 1,000,000 BTU per Hour (3-25-2010)	N/A	MCAQD currently does not have a rule that is similar to SMAQMD Rule 414. Boilers and process heaters in the nonattainment area rated greater than 300,000 BTU/hr may be regulated through a general or site-specific permit. There are no NOx limits currently for equipment of this size in the nonattainment area. Adoption of a rule similar to SMAQMD Rule 414 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 441 - Organic Solvents (12-6-1978)	Rule 330 - Volatile Organic Compounds (9-25-2013)	MCAQD Rule 330 provides equivalent control of VOC emissions as compared to SMAQMD Rule 441.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-3

Comparison of Existing Maricopa County Air Quality Department (MCAQD) and Sacramento Metropolitan Air Quality Management District (SMAQMD) NOx and VOC Rules

Pollutant	Sacramento Metropolitan Rule (date last amended)	Existing Maricopa County Rule (date last amended)	Evaluation of SMAQMD Rule
VOC	Rule 442 - Architectural Coatings (9-24-2015)	Rule 335 - Architectural Coatings (9-25-2013)	Sections of SMAQMD Rule 442 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD Rule 335, such as lower VOC content limits for architectural coatings. Adoption of these provisions of Rule 442 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 443 - Leaks from Synthetic Organic Chemical and Polymer Manufacturing (9-5-1996)	N/A	MCAQD currently does not have a rule that is similar to SMAQMD Rule 443. Sources in the nonattainment area that would be subject to SMAQMD's Rule 443 are regulated through source-specific permits and MCAQD's other VOC rules that may apply to these operations. Adoption of a rule similar to SMAQMD Rule 443 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 444 - Petroleum Solvent Dry Cleaning (8-13-1981)	Rule 333 - Petroleum Solvent Dry Cleaning (9-25-2013)	MCAQD Rule 333 provides equivalent control of VOC emissions as compared to SMAQMD Rule 444.
VOC	Rule 446 - Storage of Petroleum Products (11-16-1993)	Rule 350 - Storage of Organic Liquids at Bulk Plants and Terminals (4-6-1992)	MCAQD Rule 350 provides equivalent control of VOC emissions as compared to SMAQMD Rule 446.
VOC	Rule 447 - Organic Liquid Loading (4-02-1998)	Rule 351 - Loading of Organic Liquids (2-15-1995)	Sections of SMAQMD Rule 447 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD Rule 351, such as a lower vapor pressure exemption limit for organic liquids. Adoption of these provisions of Rule 447 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-3

Comparison of Existing Maricopa County Air Quality Department (MCAQD) and Sacramento Metropolitan Air Quality Management District (SMAQMD) NOx and VOC Rules

Pollutant	Sacramento Metropolitan Rule (date last amended)	Existing Maricopa County Rule (date last amended)	Evaluation of SMAQMD Rule
OC	Rule 448 - Gasoline Transfer into Stationary Storage Containers (2-26-2009)	Rule 353 - Gasoline in Stationary Dispensing Tanks (9-25-2013) and Rule 352 Gasoline Delivery Vessel Testing and Use (9-25-2013)	Sections of SMAQMD Rule 448 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD Rules 352 and 353, such as a lower exemption limit for vapor recovery controls on gasoline storage tanks. Adoption of these provisions of Rule 448 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 449 - Transfer of Gasoline into Vehicle Fuel Tanks (2-26-2009)	N/A	On November 16, 2015, EPA approved removal of Stage II vapor recovery systems in the Maricopa nonattainment area in order to avoid a VOC disbenefit beginning in 2018 from the use of such systems in the nonattainment area. Adoption of SMAQMD Rule 449 is therefore not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 450 - Graphic Arts Operations (10-23-2008)	Rule 337 - Graphic Arts (8-17-2011)	Sections of SMAQMD Rule 450 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD Rule 337, such as lower exemption limits for VOC content limits on inks and coatings. Adoption of these provisions of Rule 450 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 451 - Surface Coating of Miscellaneous Metal Parts and Products (10-28-2010)	Rule 336 - Surface Coating Operations (9-25-2013)	Sections of SMAQMD Rule 451 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD Rule 336, such as lower VOC content limits for solvents used in the cleaning of application equipment. Adoption of these provisions of Rule 451 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-3

Comparison of Existing Maricopa County Air Quality Department (MCAQD) and Sacramento Metropolitan Air Quality Management District (SMAQMD) NOx and VOC Rules

Pollutant	Sacramento Metropolitan Rule (date last amended)	Existing Maricopa County Rule (date last amended)	Evaluation of SMAQMD Rule
VOC	Rule 452 - Can Coating (9-25-2008)	Rule 336 - Surface Coating Operations (9-25-2013)	Sections of SMAQMD Rule 452 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD Rule 336, such as lower VOC content limits for can coatings. Adoption of these provisions of Rule 452 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 453 - Cutback and Emulsified Asphalt Paving Materials (8-31-1982)	Rule 340 - Cutback and Emulsified Asphalt (9-25-2013)	MCAQD Rule 340 provides equivalent control of VOC emissions as compared to SMAQMD Rule 453.
VOC	Rule 454 - Degreasing Operations (9-25-2008)	Rule 331 - Solvent Cleaning (9-25-2013)	Sections of SMAQMD Rule 454 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD Rule 331, such as lower VOC content limits for cleaning solvents. Adoption of these provisions of Rule 454 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 455 - Pharmaceuticals Manufacturing (9-5-1996)	Rule 349 - Pharmaceutical, Cosmetic and Vitamin Manufacturing Operations (9-25-2013)	MCAQD Rule 349 provides equivalent control of VOC emissions as compared to SMAQMD Rule 455.
VOC	Rule 456 - Aerospace Coating Operations (10-23-2008)	Rule 348 - Aerospace Manufacturing and Rework Operations (9-25-2013)	Sections of SMAQMD Rule 456 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD Rule 348, such as lower VOC content limits for aerospace coatings. Adoption of these provisions of Rule 456 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-3

Comparison of Existing Maricopa County Air Quality Department (MCAQD) and Sacramento Metropolitan Air Quality Management District (SMAQMD) NOx and VOC Rules

Pollutant	Sacramento Metropolitan Rule (date last amended)	Existing Maricopa County Rule (date last amended)	Evaluation of SMAQMD Rule
VOC	Rule 458 - Large Commercial Bread Bakeries (9-5-1996)	Rule 343 - Commercial Bread Bakeries (9-25-2013)	Sections of SMAQMD Rule 458 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD Rule 343, such as a higher VOC control efficiency for bakery ovens and a lower rule exemption level. Adoption of these provisions of Rule 458 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 459 - Automotive, Mobile Equipment, and Associated Parts and Components Coating Operations (8-25-2011)	Rule 345 - Vehicle and Mobile Equipment Coating (9-25-2013)	Sections of SMAQMD Rule 459 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD Rule 345, such as lower VOC content limits for vehicle and mobile equipment coatings. Adoption of these provisions of Rule 459 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 460 - Adhesives and Sealants (11-30-2000)	N/A	MCAQD currently regulates adhesives and sealants in their suite of coating rules. Sections of SMAQMD Rule 460 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD coatings rules, such as lower VOC content limits for adhesives and sealants. Adoption of a rule similar to SMAQMD Rule 460 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 463 - Wood Products Coatings (9-25-2008)	Rule 342 - Coating Wood Furniture (9-25-2013) and Rule 346 - Coating Wood Millwork (9-25-2013)	Sections of SMAQMD Rule 463 contain provisions that may provide reductions in VOC emissions beyond what is currently required in MCAQD Rule 342 and MCAQD Rule 346, such as lower VOC content limits for wood coatings. Adoption of these provisions of Rule 463 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

Table 4-3

Comparison of Existing Maricopa County Air Quality Department (MCAQD) and Sacramento Metropolitan Air Quality Management District (SMAQMD) NOx and VOC Rules

Pollutant	Sacramento Metropolitan Rule (date last amended)	Existing Maricopa County Rule (date last amended)	Evaluation of SMAQMD Rule
VOC	Rule 464 - Organic Chemical Manufacturing Operations (9-25-2008)	N/A	MCAQD currently does not have a rule that is similar to SMAQMD Rule 464. Sources in the nonattainment area that would be subject to SMAQMD's Rule 464 are regulated through source-specific permits and MCAQD's other VOC rules that may apply to these operations. Adoption of a rule similar to SMAQMD Rule 464 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 465 - Polyester Resin Operations (9-25-2008)	N/A	MCAQD currently does not have a rule that directly controls VOC emissions from polyester resin operations. Sources that perform polyester resin operations in the nonattainment area are currently regulated by site-specific permits. Adoption of the VOC controls in SMAQMD Rule 465 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 466 - Solvent Cleaning (10-28-2010)	Rule 331 - Solvent Cleaning (9-25-2013)	Sections of SMAQMD Rule 466 contain provisions that may provide reductions in VOC emissions beyond what currently exists in MCAQD Rule 331, such as lower VOC content limits of cleaning solvents. Adoption of these provisions of Rule 466 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.
VOC	Rule 485 - Municipal Landfill Gas (7-23-2008)	Rule 321 - Municipal Solid Waste Landfills (11-18-2015)	MCAQD Rule 321 provides equivalent control of VOC emissions as compared to SMAQMD Rule 485.
VOC	Rule 496 - Large Confined Animal Operations (8-24-06)	N/A	There are currently no requirements to control VOC emissions from large confined animal operations in the nonattainment area. Adoption of a rule similar to SMAQMD Rule 496 is not necessary for attainment or reasonable further progress and will not advance the Moderate Area attainment date.

Note: Maricopa County is revising their existing VOC and NOx rules in Tables 4-2 and 4-3 as necessary to meet RACT requirements.

REASONABLY AVAILABLE CONTROL TECHNOLOGY ANALYSIS

Sections 182(b)(2) and 182(f) of the Clean Air Act require reasonably available control technology (RACT) to be implemented in ozone nonattainment areas classified as Moderate or higher. Additionally, 40 CFR Section 51.1112(a) requires the State to submit a SIP revision "that meets the VOC and NOx RACT requirements in Clean Air Act Sections 182(b)(2) and 182(f)" for nonattainment areas classified as Moderate or higher. The RACT SIP revision for the Maricopa eight-hour ozone nonattainment area is required to be submitted to EPA by January 1, 2017, as stated in the EPA final rule reclassifying the Maricopa nonattainment area to a Moderate Area (81 FR 26697).

EPA defines RACT (44 FR 53762) as "the lowest emission limitation that a particular source is capable of meeting by the application of technology that is reasonably available considering technological and economic feasibility." RACT is required for all major sources of VOC and NOx within the nonattainment area, and for each category of VOC sources in the nonattainment area covered by a Control Techniques Guideline (CTG) issued by the EPA. The requirement to implement RACT in the Maricopa eight-hour ozone nonattainment area is separate and independent from the Clean Air Act Section 172(c)(1) requirement to adopt the reasonably available control measures (RACM) necessary to meet reasonable further progress requirements and attain the 2008 ozone standard.

Within the Maricopa nonattainment area, the Maricopa County Air Quality Department (MCAQD) and the Pinal County Air Quality Control District (PCAQCD) implement RACT for point and area sources. MCAQD and PCAQCD are independently preparing RACT SIP submittals that meet the requirements of Clean Air Act Section 182(b)(2) and 182(f). Emission reductions of NOx and VOC due to RACT implementation by MCAQD and PCAQCD have not been quantified and were not necessary to demonstrate attainment of the 2008 ozone standard or meet reasonable further progress requirements in the Maricopa nonattainment area. The implementation of RACT by MCAQD and PCAQCD in the Maricopa nonattainment area is described below.

RACT for the Maricopa County Portion of the Nonattainment Area

In coordination with EPA Region IX, the Maricopa County Air Quality Department conducted an analysis of permitted sources within the Maricopa County portion of the eight-hour ozone nonattainment area. The analysis incorporated actual emissions of the permitted facilities and compared them to the Control Techniques Guidelines (CTGs) emissions thresholds and addressed the RACT requirements for major sources of VOC and NOx (both CTG and non-CTG), i.e., sources that emit or have the potential to emit, 100 tons per year of either VOC or NOx. The analysis showed that permitted facilities covered under twelve CTG source categories surpassed the CTG thresholds and needed ozone RACT rules revisions in order to comply with the Clean Air Act RACT requirements for Moderate ozone nonattainment areas.

MCAQD revised six VOC RACT rules for these twelve CTG source categories. MCAQD also revised three NOx RACT rules in response to the analysis of non-CTG source categories. The MCAQD rulemaking timeline had a formal process starting with a Notice of Proposed Rulemaking that was published in the Arizona Administrative Register on May 13, 2016. The rulemaking included twenty-one Stakeholder Workshops and a 30-day comment period. A public hearing before the Maricopa County Board of Supervisors was conducted on November 2, 2016, at which the Maricopa County Board of Supervisors approved the revisions to the nine rules. The ozone RACT rules State Implementation Plan (SIP) package will be submitted to the EPA by the Arizona Department of Environmental Quality. The rules became effective upon adoption by the Maricopa County Board of Supervisors.

RACT for the Pinal County Portion of the Nonattainment Area

In coordination with EPA Region IX and the Maricopa County Air Quality Department, the Pinal County Air Quality Control District conducted an analysis of permitted sources within the Apache Junction portion of the Maricopa eight-hour ozone nonattainment area. The analysis incorporated actual emissions of the permitted facilities and compared them to the Control Technique Guidelines emissions thresholds. The analysis showed that permitted facilities covered under two source categories (gas stations, surface coatings) surpassed the CTG thresholds and needed ozone RACT rules in order to comply with the Clean Air Act RACT requirements for Moderate ozone nonattainment areas. There are no major sources of VOC or NOx located within the Pinal County portion of the Maricopa nonattainment area.

In tandem with MCAQD's ozone RACT rulemaking, PCAQCD drafted ozone RACT rules for these two source categories. The PCAQCD rulemaking timeline has the formal process starting with a Notice of Proposed Rulemaking being published in the Arizona Administrative Register on August 26, 2016. The rulemaking includes one stakeholder meeting for each draft rule, a 30 day public comment period including oral proceedings with the Control Officer and a Public Hearing with the Pinal County Board of Supervisors. Upon adoption by the Pinal County Board of Supervisors, the ozone RACT rules State Implementation Plan (SIP) package will be submitted to EPA by the Arizona Department of Environmental Quality. The rules will go into effect on January 1, 2017.

NEW SOURCE REVIEW

Section 182(a)(2)(C) requires the State to submit a revision that requires permits, in accordance with Sections 172(c)(5) and 173 of the Clean Air Act, for the construction and operation of each new or modified major stationary source (with respect to ozone) located within the Moderate nonattainment area. Except as noted below, the nonattainment area preconstruction permit program for the portions of the Moderate ozone nonattainment area located in Maricopa County is administered by the Maricopa County Air Quality Department. On August 15, 1994, the Arizona Department of Environmental Quality submitted to EPA the State Implementation Plan - Maricopa County New Source Review

and Prevention of Significant Deterioration (NSR/PSD) Program for Major Sources and Major Modifications, and New Source Review (NSR) for Minor Sources. The submission included new or amended Maricopa County Air Quality Rules 100, 200, 210, 220, 240, 241, 245, 270, 500 and Appendix B as revisions to the County's approved nonattainment new source review program. These new and amended rules were designed in part to satisfy the requirements of Title I, Part D, Subpart 2 of the Clean Air Act Amendments of 1990 for nonattainment new source review in ozone nonattainment areas as well as all of the requirements of sections 172(c)(5) and 173 of the Clean Air Act. The Arizona Department of Environmental Quality submitted supplemental documentation, amendments to these rules and additional rules implementing the County's new source review program (County Rules 242 and 510) on August 30, 1994, August 31, 1995, February 26, 1997, June 7, 2007 and July 5, 2007.

On May 18, 2016, The Arizona Department of Environmental Quality submitted to EPA the Maricopa County SIP Revision Package: New Source Review Rules as a revision to the Arizona State Implementation Plan. The submission included amended Maricopa County Air Quality Rules 100, 200, 210, 220, 230, 240, 241,500, 510, 600 and Appendices D and E as revisions to the County's new source review program.

The nonattainment area preconstruction permit program for the portions of the Moderate ozone nonattainment area located in Pinal County is administered by the Pinal County Air Quality Control District under a delegation agreement with the Arizona Department of Environmental Quality. Pinal County does not have an approved nonattainment new source review program. Under A.R.S. Section 49-402 A.1., the Arizona Department of Environmental Quality therefore has original jurisdiction over major sources located in the County, and the Department's permitting rules, rather than Pinal County's, apply to these sources. Except as noted below, the Department has delegated responsibility for administering the permitting program for major sources in Pinal County to the District.

On October 29, 2012, the Department submitted to EPA the State Implementation Plan Revision - New Source Review, as a revision to the Arizona State Implementation Plan. The submitted revision included amended state new source review rules (such as Rule R18-2-403, Permits for Sources Located in Nonattainment Areas) that meet current federal requirements. EPA published a limited approval/limited disapproval of the 2012 Revision on November 2, 2015. EPA found that the Revision generally strengthened the State's New Source Review Program but identified deficiencies that the Department must correct before full approval can be granted.

Under A.R.S. Section 49-402 A.1., the Arizona Department of Environmental Quality has original jurisdiction throughout the state, including Maricopa and Pinal Counties, over the following stationary source types: smelting of metal ore, petroleum refineries, coal fired electric generating stations, Portland cement plants and portable sources. In its delegation agreement with Pinal County, the Department retained jurisdiction over these source types. The Department therefore administers the nonattainment area preconstruction permit

program in both Maricopa and Pinal County with respect to sources falling within these categories.

Offset Requirements

Section 182(b)(5) of the Clean Air Act requires emission offsets in the form of a ratio of total emission reductions of volatile organic compounds to total increased volatile organic compound emissions of at least 1.15 to 1 for major sources in the Maricopa nonattainment area. Clean Air Act Section 182(f) triggers application of the emission ratio offset requirement in Section 182(b)(5) to major sources of NOx. Both the Maricopa County and State rules included in the New Source Review SIP revisions referenced above satisfy this requirement. See Arizona Administrative Code Rule 18-2-404(J) and Maricopa County Air Pollution Control Regulations, Rule 240, Section 304.6.

CHAPTER FIVE

THE ADOPTED PLAN

The overall approach taken in the MAG 2017 Eight-Hour Ozone Moderate Area Plan is to demonstrate attainment in the Maricopa eight-hour ozone nonattainment area with existing federal, state and local ozone control measures. The implementation of existing ozone control measures in the Maricopa eight-hour ozone nonattainment area has already been effective in reducing ozone. These measures have allowed the area to attain and maintain both the one-hour ozone standard and the 1997 eight-hour ozone standard of 0.08 parts per million.

The existing ozone control measures continue to have emission reduction benefits that provide for attainment of the 2008 ozone standard in the Maricopa nonattainment area by the July 20, 2018 attainment date, as demonstrated in Chapter Six. The emission reduction benefits of the existing measures also continue beyond the attainment year of 2017, providing the emission reductions needed in 2018 to satisfy the contingency measure requirements of Clean Air Act Section 172(c)(9).

Descriptions of the 93 existing ozone control measures in the Maricopa nonattainment area are included below. While all of the existing measures in the nonattainment area assist in the improvement of air quality, only a subset of measures have emission reduction benefits that can be quantified. Measures with quantifiable benefits that are used to both demonstrate attainment and meet contingency measure requirements are described separately below.

EXISTING MEASURES

Table 5-1 identifies 93 existing and approved ozone control measures in the Maricopa nonattainment area from EPA-approved regional air quality plans and separate EPA actions. The source of the existing measures listed in Table 5-1 is most often the EPA approved plan or separate action in which the measure first appeared, although a specific measure may appear in more than one EPA-approved plan or action.

The majority of the existing measures are committed state and local measures that have been adopted and approved by EPA in prior regional air quality plans such as the Serious Area Ozone Plan (ADEQ, 2000), the Serious Area Carbon Monoxide Plan (MAG, 2001), the Carbon Monoxide Maintenance Plan (MAG, 2003), the One-Hour Ozone Maintenance Plan (MAG, 2004), the Eight-Hour Ozone Plan (MAG, 2007), and the Eight-Hour Ozone Maintenance Plan (MAG, 2009). Existing federal measures that reduce ozone in the Maricopa nonattainment area are also included in Table 5-1. Table 5-1 lists the existing control measure, the source category the control measure is applicable to (e.g., point sources), the ozone precursor pollutants reduced by the measure, and the approved plan or EPA action in which the measure appears.

Table 5-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

Existing Control Measure		Source Category	Pollutant	Source
1	Phased-In Emission Test Cutpoints	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
2	Enhanced Emission Testing of Constant Four-Wheel Drive Vehicles	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
3	One-Time Waiver from Vehicle Emissions Test	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
4	Increased Waiver Repair Limit Options	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
5	Gross Polluter Option for I/M Program Waivers	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
6	Catalytic Converter Replacement Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
7	Vehicle Repair Grant Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
8	Voluntary Vehicle Repair and Retrofit Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
9	Tougher Enforcement of Vehicle Registration and Emissions Test Compliance	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
10	Random Roadside Testing of Diesel Vehicles	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
11	Snap Acceleration Test for Heavy-Duty Diesel	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553

Table 5-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
12	Require Pre-1988 Heavy-Duty Diesel Commercial Vehicles Registered in the Nonattainment Area to Meet 1988 Federal Emissions Standards; Provide Incentives to Encourage Voluntary Accelerated Vehicle Replacement by the Year 2004	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
13	Long-Term Fuel Reformulation: From and After May 1, 1999	Onroad/Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
14	Limit Sulfur Content of Diesel Fuel Oil to 500 ppm	Onroad/Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
15	Diesel Fuel Sampling and Reporting	Onroad/Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
16	Alternative Fuel Vehicles for Local Governments, School Districts and Federal Government/Low Emission Vehicle Requirements	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
17	Alternative Fuel Vehicles for State Government/Low Emission Vehicle Requirements	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
18	Alternative Fuel Vehicle and Equipment Tax Incentives/Low Emission Vehicle Requirements	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
19	Public Awareness Program for Alternative Fuels	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
20	National Low Emission Vehicle Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553

Table 5-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
21	Voluntary Gasoline Vehicle Retirement Program/Maricopa County Travel Reduction Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
22	Oxidation Catalyst for Heavy Duty Diesel Vehicles	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
23	Mass Transit Alternatives	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
24	Develop Intelligent Transportation Systems	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
25	Special Event Controls-Required Implementation from List of Approved Strategies	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
26	Voluntary Lawn Mower Emission Reduction Program	Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
27	Off-Road Vehicle and Engine Standards	Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
28	Encourage the Use of Temporary Electrical Power Lines Rather than Portable Generators at Construction Sites	Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
29	Defer Emissions Associated with Government Activities	Onroad/Nonroad/ Area	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
30	Encourage Limitations on Vehicle Idling	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
31	Expansion of Area A boundaries	Onroad/Nonroad/ Area	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
32	Voluntary No-Drive Days	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553

Table 5-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

Existing Control Measure		Source Category	Pollutant	Source
33	Analysis of Intersource Credit Trading and Banking Program	Onroad/Nonroad/ Area/Point	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
34	Expansion of Public Transportation Programs	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
35	Employer Rideshare Program Incentives	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
36	Preferential Parking for Carpools and Vanpools	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
37	Coordinate Traffic Signal Systems	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
38	Reduce Traffic Congestion at Major Intersections	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
39	Site-Specific Transportation Control Measures	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
40	Encouragement of Bicycle Travel	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
41	Development of Bicycle Travel Facilities	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
42	Alternative Work Schedules	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
43	Land Use/Development Alternatives	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
44	Encouragement of Pedestrian Travel	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
45	Restrictions on the Use of Gasoline-Powered Blowers for Landscaping Maintenance	Nonroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553

Table 5-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

Existing Control Measure		Source Category	Pollutant	Source
46	Alternative Fuels for Fleets	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
47	Areawide Public Awareness Programs	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
48	Encouragement of Vanpooling	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
49	Trip Reduction Program	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
50	Park and Ride Lots	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
51	Encouragement of Telecommuting, Teleworking and Teleconferencing	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
52	Promotion of High Occupancy Vehicle Lanes and By-Pass Ramps	Onroad	VOC, NOx, CO	Revised MAG 1999 Serious Area Carbon Monoxide Plan (2001) EPA final approval March 2005, 70 FR 11553
53	MCAQD Rule 331 - Solvent Cleaning	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
54	MCAQD Rule 333 - Petroleum Solvent Dry Cleaning	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
55	MCAQD Rule 334 - Rubber Sports Ball Manufacturing	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
56	MCAQD Rule 335 - Architectural and Industrial Coating	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
57	MCAQD Rule 336 - Surface Coating Operations	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
58	MCAQD Rule 337 - Graphic Arts	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362

Table 5-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
59	MCAQD Rule 338 - Semiconductor Manufacturing	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
60	MCAQD Rule 339 - Vegetable Oil Extraction Process	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
61	MCAQD Rule 340 - Cutback and Emulsified Asphalt	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
62	MCAQD Rule 341 - Metal Casting	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
63	MCAQD Rule 342 - Coating Wood Furniture and Fixtures	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
64	MCAQD Rule 343 - Commercial Bread Bakeries	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
65	MCAQD Rule 344 - Windshield Washer Fluid	Point/Area	VOC	Final Serious Area Ozone SIP, Appendix A. (2000) EPA final approval June 2005, 70 FR 34362
66	MCAQD Rule 346 - Coating Wood Millwork	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
67	MCAQD Rule 347 - Ferrous Sand Casting	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
68	MCAQD Rule 348 - Aerospace Manufacturing and Rework Operations	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
69	MCAQD Rule 349 - Vitamin Manufacturing	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
70	MCAQD Rule 350 - Storage of Organic Liquids at Bulk Plants and Terminals	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362

Table 5-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
71	MCAQD Rule 351 - Loading of Organic Liquids	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
72	MCAQD Rule 352 - Gasoline Delivery Vessel Testing and Use	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
73	MCAQD Rule 353 - Transfer of Gasoline in Stationary Storage Dispensing Tanks	Point/Area	VOC	Final Serious Area Ozone SIP (2000) EPA final approval June 2005, 70 FR 34362
74	Clean Air Campaign	Onroad/Nonroad/ Point/Area	VOC, NOx, CO	Final Serious Area Ozone SIP, Appendix A. (2000) EPA final approval June 2005, 70 FR 34362
75	Allow Use of High Occupancy Vehicle Lanes and Freeway Ramps by Alternative Fueled Vehicles	Onroad	VOC, NOx, CO	Final Serious Area Ozone SIP, Appendix A. (2000) EPA final approval June 2005, 70 FR 34362
76	MCAQD Rule 358 - Polystyrene Foam Operations	Point/Area	VOC	MAG Eight-Hour Ozone Plan (2007) EPA final approval June 2012, 77 FR 35285
77	Federal Heavy Duty Diesel Vehicle Emissions Standards (Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements, EPA final rule January 2001, 66 FR 5002)	Onroad	VOC, NOx, CO	MAG Eight-Hour Ozone Plan (2007) EPA final approval June 2012, 77 FR 35285

Table 5-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
78	Federal Nonroad Equipment Emissions Standards (Control of Emissions of Air Pollution From Nonroad Diesel Engines and Fuel, EPA final rule June 2004, 69 FR 38958 and Control of Emissions of Air Pollution From Nonroad Diesel Engines, EPA final rule October 1998, 63 FR 56968)	Nonroad	VOC, NOx, CO	MAG Eight-Hour Ozone Plan (2007) EPA final approval June 2012, 77 FR 35285
79	Ban on Open Burning	Area	VOC, NOx, CO	MAG Eight-Hour Ozone Redesignation Request and Maintenance Plan (2009) EPA final approval September 2014, 79 FR 55645
80	National Autobody Refinishing Rule	Point/Area	VOC	15 Percent Rate of Progress FIP (1998) EPA final rule July 1999, 64 FR 36243
81	National Consumer Products Rule	Area	VOC	15 Percent Rate of Progress FIP (1998) EPA final rule July 1999, 64 FR 36243
82	Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements	Onroad	VOC, NOx, CO	EPA final rule February 2000, 65 FR 6698
83	Control of Hazardous Air Pollutants From Mobile Sources (Including VOCs from portable gas cans)	Onroad/Area	VOC	EPA final rule February 2007, 72 FR 8428
84	Control of Emissions of Air Pollution From Locomotive Engines and Marine Compression-Ignition Engines Less Than 30 Liters per Cylinder	Nonroad	VOC, NOx, CO	EPA final rule May 2008, 73 FR 25098

Table 5-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
85	Control of Emissions From Nonroad Spark-Ignition Engines and Equipment	Nonroad	VOC, NOx, CO	EPA final rule October 2008, 73 FR 59034
86	MCAQD Rule 322 - Power Plant Operations	Point/Area	NOx	EPA final approval October 2009, 74 FR 52693
87	MCAQD Rule 323 - Fuel Burning Equipment from Industrial/Commercial/Institutional (ICI) Sources	Point/Area	NOx	EPA final approval October 2009, 74 FR 52693
88	MCAQD Rule 324 - Stationary Internal Combustion (IC) Engines	Point/Area	NOx	EPA final approval October 2009, 74 FR 52693
89	National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters	Point	VOC, NOx, CO co-benefit	EPA final rule March 2011, 76 FR 15608
90	Phase 1 Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles	Onroad	VOC, NOx, CO co-benefit	EPA final rule September 2011, 76 FR 57106
91	Phase 1 and Phase 2 Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards	Onroad	VOC and NOx co-benefit	EPA final rules May 2010, 75 FR 25324 and October 2012, 77 FR 62624

Table 5-1

Existing Ozone Control Measures in the Maricopa Eight-Hour Ozone Nonattainment Area

	Existing Control Measure	Source Category	Pollutant	Source
92	National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines; New Source Performance Standards for Stationary Internal Combustion Engines	Point/Area	VOC, NOx, CO co-benefit	EPA final rules January 2013, 78 FR 6674; August 2010, 75 FR 51570; March 2010, 75 FR 9648
93	Tier 3 Motor Vehicle Emission and Fuel Standards	Onroad	VOC, NOx, CO	EPA final rule April 2014, 79 FR 23414

MEASURES USED FOR NUMERIC CREDIT

The existing federal, state and local ozone control measures used in demonstrating attainment of the 2008 ozone standard are listed below:

1. Summer Fuel Reformulation: California Phase 2 and Federal Phase II Reformulated Gasoline with 7 psi from May 1 through September 30 (Measure 13 in Table 5-1)
2. Phased-In Emission Test Cutpoints (Measure 1 in Table 5-1)
3. One-Time Waiver from Vehicle Emissions Test (Measure 3 in Table 5-1)
4. Tougher Enforcement of Vehicle Registration and Emissions Test Compliance (Measure 9 in Table 5-1)
5. Expansion of Area A Boundaries (Measure 31 in Table 5-1)
6. Gross Polluter Option for I/M Program Waivers (Measure 5 in Table 5-1)
7. Coordinated Traffic Signal Systems (Measure 37 in Table 5-1)
8. Develop Intelligent Transportation Systems (Measure 24 in Table 5-1)
9. Federal Tier 2 and Tier 3 Motor Vehicle Emissions and Fuel Standards (Measures 82 and 93 in Table 5-1)
10. Federal Phase 1 and 2 Light-Duty Vehicle and Phase 1 Medium and Heavy-Duty Vehicle Greenhouse Gas Rules (Measures 90 and 91 in Table 5-1)
11. Federal Nonroad Equipment Standards (Measures 78 and 85 in Table 5-1)
12. Federal Heavy Duty Diesel Vehicle Emissions Standards (Measure 77 in Table 5-1)
13. Federal Portable Fuel Container Rules (Measure 83 in Table 5-1)

The emissions reduction benefits of ozone control measures 1 through 12 listed above are included in the onroad and nonroad emissions inventories that were developed using the EPA MOVES2014a model. The emissions reduction credit of these measures are aggregated by onroad and nonroad mobile source categories. Measures 1 through 12 provide onroad mobile source emission reductions, on an average ozone season day in 2017, of 25.3 metric tons per day of volatile organic compounds (VOC) and 54.5 metric tons/day of nitrogen oxides (NOx). Nonroad mobile source emission reductions in 2017 for these measures are 7.6 metric tons per day of VOC and 17.3 metric tons per day of NOx.

The emission reduction credit for measure 13 listed above, on an average ozone season day in 2017, is 6.2 metric tons per day of VOC, as calculated with emissions data provided by EPA. The methodologies used to quantify the emission reduction credit for the above listed measures is further described in Section V of the Technical Support Document. A detailed description of each measure used for numeric credit is provided below.

1. *Summer Fuel Reformulation: California Phase 2 and Federal Phase II Reformulated Gasoline with 7 psi from May 1 through September 30*

The Arizona Legislature passed H.B. 2307 in 1997 which contains requirements for the sale of gasoline from and after May 1, 1999 in Area A, subject to an appropriate waiver granted

under Section 211(c)(4) of the Clean Air Act, that meets the following fuel reformulation options:

- California Phase 2 Reformulated Gasoline, including alternative formulations allowed by the predictive model, as adopted by the California Air Resources Board pursuant to the California Code of Regulations, Title 13, Sections 2261 through 2262.7 and 2265, in effect on January 1, 1997, that meets the maximum 7.0 psi summertime vapor pressure requirements in A.R.S. Section 41-2083, Subsections D and F. (now in A.R.S. Section 3-3433, Subsection F)

- Gasoline that meets the standards for Federal Phase II Reformulated Gasoline, as provided in 40 CFR Section 80.41, paragraphs (a) through (h), in effect on January 1, 1997, that meets the maximum 7.0 psi summertime vapor pressure requirement in A.R.S. Section 41-2083 Subsections D and F. (now in A.R.S. Section 3-3433, Subsection F).

On February 10, 1998, the Environmental Protection Agency approved Arizona's cleaner burning gasoline (CBG) program into the State Implementation Plan. The program was implemented in two stages - from June to September 1998, gasoline sold in the area had to meet the standards similar to Federal Phase I Reformulated Gasoline or California's Phase 2 Reformulated Gasoline. Then, beginning May 1, 1999, all gas sold in the area had to meet standards similar to Federal Phase II or California's Phase 2 Reformulated Gasoline.

Arizona's CBG Program was included in the 1998 metropolitan Phoenix Ozone 15 Percent Rate of Progress Federal Implementation Plan as a committed control measure for emissions reduction credit. On July 6, 1999, EPA finalized a rule revising the federal plan as it related to the CBG Program.

On April 28, 2000, Senate Bill 1504 was signed into law by the Governor of Arizona. The law revised A.R.S. Section 41-2124 by eliminating the minimum oxygenate requirement for summertime gasoline in Maricopa County. Because of the cost and difficulty of blending ethanol in CBG and meeting the 7.0 psi Reid Vapor Pressure standard, methyl tertiary butyl ether (MTBE) had been the primary oxygenate used in Arizona's summertime CBG. In addition, A.R.S. Section 41-2122. E. (now in A.R.S. Section 3-3491. E.) prohibited the use of MTBE in gasoline beginning on January 1, 2005.

On September 29, 2003, the Environmental Protection Agency published a notice proposing to approve revisions to the Arizona Clean Burning Gasoline Program currently approved in the State Implementation Plan. The revisions replace Arizona's interim CBG program with a permanent program, amend the wintertime CBG program to limit the types of gasoline that may be supplied, and remove the minimum oxygen requirement for summertime gasoline. On January 26, 2004, the EPA Administrator signed the final

approval notice for the revisions to the Arizona Clean Burning Gasoline Program. The final notice was published in the Federal Register on March 4, 2004, effective on April 5, 2004.

2. *Phased-In Emission Test Cutpoints*

The Arizona Vehicle Inspection Maintenance Program was established in 1976 to promote the clean operation of motor vehicles by controlling vehicle exhaust emissions. The program is operated by the Arizona Department of Environmental Quality and contains the provisions listed in Section 182(c)(3) of the Clean Air Act for an Enhanced Vehicle Inspection and Maintenance Program. This program exceeds the motor vehicle inspection and maintenance requirements for Moderate areas listed in Clean Air Act Section 182(b)(4).

The Vehicle Emissions Inspection Maintenance Program was significantly enhanced and strengthened by the Arizona Legislature in 1993 (H.B. 2001). The Legislature established a biennial, transient loaded (I/M 240) emissions test for gasoline powered vehicles model year 1981 or newer with a gross vehicle weight of up to 8,500 pounds, beginning January 1, 1995.

In 1993, the Arizona Legislature passed H.B. 2001 which increased the repair threshold limits for gasoline powered vehicles in order to be eligible for a waiver through the Vehicle Emissions Inspection Maintenance Program. The repair limits were increased in the following manner: 1967-1974 from $50 to $100; 1975-1980 from $200 to $300; and 1981 and newer from $300 to $450. The bill also increased the repair threshold limits from $300 to $500 for diesel powered vehicles with tandem axles or a gross vehicle weight in excess of 26,000 pounds.

The Arizona Legislature passed H.B. 2237 in 1997 which contained an appropriation of $120,000 from the State General Fund to the Arizona Department of Environmental Quality to develop and implement an alternative test protocol to reduce the false failure rates associated with the more stringent pass-fail standards for the Vehicle Emissions Testing Program (Section 19 of H.B. 2237).

In addition, the Arizona Department of Environmental Quality was to implement Interim Test Cutpoints for the Vehicle Emissions Inspection Program until issues were resolved with the final test cutpoints for the I/M 240 Program. The Interim Cutpoints were selected to achieve the following failure rates in three vehicle class categories (Light Duty Gasoline Vehicles, Light Duty Gasoline Trucks 1, and Light Duty Gasoline Trucks 2: 50 percent for Model Years 1981-85; 25 percent for 1986 to 1989 model years, and 10 percent for Model Years 1990-93).

In August 2002, EPA proposed approval of the Arizona I/M Program and signed the final approval notice on October 31, 2002. The final approval notice was published in the Federal Register on January 22, 2003. In 2016, the Arizona Legislature passed S.B. 1255 which includes a statutory provision that authorizes the Arizona Vehicle Emissions

Inspection Program through July 1, 2022 (A.R.S. Section 41-3022.09). S.B. 1255 and associated fact sheet are included in Appendix B, Exhibit 2.

3. *One-Time Waiver from Vehicle Emissions Test*

The Arizona Legislature passed S.B. 1002 in 1996 which limits the issuance of a waiver for failure to comply with the emission testing requirements to one-time only beginning January 1, 1997 (A.R.S. Section 49-542 D)

4. *Tougher Enforcement of Vehicle Registration and Emissions Test Compliance*

The Motor Vehicle Division (MVD) of the Arizona Department of Transportation (ADOT) has instituted a comprehensive vehicle registration enforcement program. Three key elements of the new program are a Registration Enforcement Team, a Registration Enforcement Tracking System, and a New Resident Tracking Program. Through public participation, consistent policy and procedure application, and new tracking methods, MVD will enforce the Arizona registration laws to ensure vehicles in question are registered properly. This will be an ongoing effort.

Another phase of the Program is an initiative to coordinate ADOT efforts with other law enforcement agencies to assist MVD personnel in enforcing registration compliance. Other initiatives include a system user agreement between MVD and the City Courts to utilize information in conjunction with registration compliance and discussions with U.S. West (now known as Century Link) for obtaining information relating to new connect customers.

The Arizona Legislature passed S.B. 1427 in 1998 which requires school districts and special districts in Area A to prohibit parking in employee parking lots by employees who have not complied with emissions testing requirements. Cities, towns, and counties in Area A and Area B are currently subject to this provision (A.R.S. Section 49-552).

In 1999, the Arizona Legislature passed H.B. 2254 which requires each vehicle that is owned by the United States government and that is domiciled in this state for more than ninety consecutive days and each vehicle that is owned by a state or political subdivision of this state to comply with A.R.S. Section 49-542.

5. *Expansion of Area A Boundaries*

The Arizona Legislature passed H.B. 2538 in 2001 which expands the boundaries of Area A. Previously, the Area A boundaries followed the boundaries defined by S.B. 1427, which was passed by the Arizona Legislature in 1998. Specifically, H.B. 2538 expands the boundaries of Area A past those described in S.B. 1427, adding additional portions of Maricopa County west of Goodyear and Peoria and a small piece of land on the north side of Lake Pleasant. The implementation of air quality measures in the areas described in H.B. 2538 began on January 1, 2002, except for public sector alternative fuel requirements that are phased in over a seven year period.

“Area A” means the area delineated as follows (A.R.S. 49-541.1.):

(a) In Maricopa County:
Township 8 North, Range 2 East and Range 3 East
Township 7 North, Range 2 West Through Range 5 East
Township 6 North, Range 5 West Through Range 6 East
Township 5 North, Range 5 West Through Range 7 East
Township 4 North, Range 5 West Through Range 8 East
Township 3 North, Range 5 West Through Range 8 East
Township 2 North, Range 5 West Through Range 8 East
Township 1 North, Range 5 West Through Range 7 East
Township 1 South, Range 5 West Through Range 7 East
Township 2 South, Range 5 West Through Range 7 East
Township 3 South, Range 5 West Through Range 1 East
Township 4 South, Range 5 West Through Range 1 East

(b) In Pinal County:
Township 1 North, Range 8 East And Range 9 East
Township 1 South, Range 8 East And Range 9 East
Township 2 South, Range 8 East And Range 9 East
Township 3 South, Range 7 East Through Range 9 East

(c) In Yavapai County:
Township 7 North, Range 1 East And Range 1 West Through Range 2 West
Township 6 North, Range 1 East And Range 1 West

6. *Gross Polluter Option for I/M Program Waivers*

The Arizona Legislature passed Senate Bill 1427 in 1998. This legislation requires that in order to obtain a waiver from compliance with the Vehicle Emissions Inspection Program, the owner of a vehicle emitting more than twice the emission standard has to repair the vehicle sufficiently to reduce the emission levels to less than twice the emissions standard (A.R.S. Section 49-542).

7. *Coordinated Traffic Signal Systems*

House Bill 2237 passed in 1997 contained an appropriation of $500,000, in each of fiscal years 1997-1998 and 1998-1999 from the State General Fund, to the Arizona Department of Transportation for distribution to cities and counties for synchronization of traffic control signals within and across jurisdictional boundaries (Section 23 of H.B. 2237).

In addition, the cities, towns, and ADOT also responded to the measure, Coordinate Traffic Signal Systems. The synchronization of existing traffic signals, as well as the enhancement of coordination in signal systems which are already synchronized, has been identified by many jurisdictions through a number of programs. Enhancement efforts range from large

scale programs covering broad geographic areas to incremental additions of a few synchronized signals to the network. This includes both individual city projects and regional level programs, such as “AZ Tech” which is noted under measure #8, “Develop Intelligent Transportation Systems” below. This measure reduces VOC and NOx emissions by increasing vehicle speeds and reducing congestion.

8. *Develop Intelligent Transportation Systems*

Nearly all of the local jurisdictions are planning and implementing advanced technology based solutions to address complex traffic management issues on the regional transportation network. These technologies involve the application of electronics, telecommunications and sensor technologies and are collectively referred to as Intelligent Transportation Systems (ITS). This measure reduces VOC and NOx emissions by increasing vehicle speeds and reducing congestion.

9. *Federal Tier 2 and Tier 3 Motor Vehicle Emissions and Fuel Standards*

In 2000, EPA issued a final rule setting Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements (65 FR 6698). The Tier 2 Program set the standards for tailpipe emissions for all passenger vehicles, including sport utility vehicles (SUVs), minivans, vans, and pick-up trucks, beginning in 2004. The Tier 2 Program also required reduced levels of sulfur in gasoline.

In 2014, EPA issued Tier 3 motor vehicle emission and fuel standards (79 FR 23414). Starting in 2017, Tier 3 sets new vehicle emissions standards and lowers the sulfur content of gasoline. The vehicle emissions standards reduce both tailpipe and evaporative emissions from passenger cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles.

10. *Federal Phase 1 and 2 Light-Duty Vehicle and Phase 1 Medium and Heavy-Duty Vehicle Greenhouse Gas Rules*

In 2010, EPA finalized phase 1 light-duty vehicle greenhouse gas emissions standards and corporate average fuel economy standards for model year 2012-2016 vehicles (75 FR 25324). In 2012, EPA finalized phase 2 light-duty vehicle greenhouse gas emissions standards and corporate average fuel economy standards for model year 2017-2025 vehicles (77 FR 62624). Phase 1 greenhouse gas emissions standards and fuel efficiency standards for medium- and heavy-duty engines and vehicles were adopted by EPA in 2011 for model year 2014-2018 vehicles and engines (76 FR 57106).

These rules reduce fuel consumption and greenhouse gas emissions from light-duty, medium-duty and heavy-duty vehicles and engines. Reductions in fuel consumption by these vehicles provides a co-benefit in the form of reduced VOC and NOx emissions from the use and refueling of these vehicles.

11. *Federal Nonroad Equipment Standards*

In 1998, EPA issued a final rule setting more stringent Tier 2 and Tier 3 emission standards for new diesel nonroad equipment (63 FR 56968). The Tier 2 program phased in more stringent standards for all equipment types between 2001 and 2006. The Tier 3 program imposed even more stringent standards for 50 to 750 horsepower (hp) engines, beginning in 2005 through 2008.

In 2004, EPA issued the Clean Air Diesel - Tier 4 Final Rule that requires manufacturers to produce nonroad engines with advanced emission-control technologies that will reduce emissions by an additional 90 percent or more (69 FR 38958). The Tier 4 standards apply to nonroad engines with less than 25 hp, beginning in 2008. The Tier 4 standards for larger engines will be phased in between 2011 and 2015, depending upon the size and type of engine.

In 2008, EPA adopted new standards for emissions of hydrocarbons (HC), nitrogen oxides (NOx), and carbon monoxide (CO) from a variety of nonroad engines, equipment, and vessels that cause or contribute to air pollution (73 FR 59034). For small nonroad engines, EPA set new HC+NOx exhaust emission standards of 10 g/kW-hr for Class I engines starting in the 2012 model year and 8 g/kW-hr for Class II engines starting in the 2011 model year. The EPA rule additionally includes new evaporative emission standards for both handheld and non-handheld equipment EPA also set a more stringent level of emission standards for outboard and personal watercraft engines starting with the 2010 model year in the final rule.

12. *Federal Heavy Duty Diesel Vehicle Emissions Standards*

In 2001, EPA issued a final rule setting more stringent emission standards for new heavy duty diesel vehicles (66 FR 5002). The rule requires that high-efficiency catalytic converters or comparably effective technologies be installed on 2007 and later model year diesel vehicles. Because these devices are damaged by sulfur, the rule also mandated that ultra-low sulfur (i.e., 15 ppm sulfur or less) diesel fuel be used in all onroad diesel vehicles beginning in 2006. The requirement for all onroad diesel vehicles to use ultra-low sulfur fuel went into effect nationwide on October 15, 2006.

13. *Federal Portable Fuel Container Rules*

In 2007, EPA issued a final rule that includes emission standards for portable fuel containers, such as gas cans (72 FR 8428). Gas cans are consumer products used to refuel a wide variety of gasoline-powered equipment, including lawn and garden equipment, recreational equipment, and passenger vehicles. Starting with containers manufactured in 2009, the standard limits evaporation and permeation emissions from these containers to 0.3 grams of hydrocarbons per gallon per day.

CONTINGENCY MEASURES

Section 172(c)(9) of the Clean Air Act requires that the State Implementation Plans provide for the implementation of contingency measures without any further rulemaking action if the Moderate area fails to attain or to meet the standard by the attainment date. Since EPA allows early implementation of contingency measures (EPA, 1993), existing measures that have already been implemented may be contingency measures if they are not needed to show attainment and do not hasten attainment. EPA also allows federal measures to be contingency measures if they are not needed for attainment (EPA, 2015a).

The emission reduction benefits of the existing measures in Table 5-1 continue to provide emission reductions beyond the attainment year of 2017, into the continency year of 2018. The same 13 existing measures that were quantified to show attainment in 2017, as discussed in the prior section, were also used to quantify emission reductions in 2018. The emission reductions achieved by these measures in 2018 allow these measures to be used as contingency measures that meet the requirements of Clean Air Act Section 172(c)(9). The methodologies used to quantify the emission reduction impact of these contingency measures are described in Chapter Six of this plan and Section V of the Technical Support Document.

ASSURANCES THAT THE STATE HAS THE AUTHORITY TO IMPLEMENT THE MEASURES IN THE PLAN

In order to comply with Section 110(a)(2)(E) of the Clean Air Act, a State law was passed in 1992 which provides an approach for assurances that State and local measures will be adequately implmented (A.R.S. Section 49-406 I. and J.). If any person (includes State, County, local governments, regional agencies, and other entities) fails to implement a measure as described in the resolution adopted pursuant to A.R.S. Section 49-406 G., the County would file an action in Superior Court to have the Court order that the measure be implemented. Likewise, the Director of the Arizona Department of Environmental Quality will backstop the County if it fails to implement a measure or if the County fails to backstop the local governments and regional agencies.

Regarding measures, A.R.S. Section 49-406 G. (passed by the Legislature in 1992) requires that each agency which commits to implement any control measure contained in the State Implementation Plan must describe the commitment in a resolution. The resolution must be adopted by the appropriate governing body of the agency. State law also requires the entity to specify the following information in the resolutions: (1) its authority for implementing the limitation or measure as provided in statute, ordinance, or rule; (2) a program for the enforcement of the limitation or measure; and (3) the level of personnel and funding allocated to the implementation of the measure.

As noted in the MAG regional air quality plans, the action taken by the MAG Regional Council to approve the Suggested Measures and Adopted Plan Measures does not commit each jurisdiction to implement those measures. As indicated in the resolutions and

commitments, each jurisdiction determines which measures are reasonably available for implementation by that jurisdiction.

TRACKING PLAN IMPLEMENTATION

The Maricopa County Air Quality Department determines reasonable further progress and reviews the implementation status of the various measures contained in the air quality plans. The Maricopa County Air Quality Department will also continue to have the responsibility for conducting ambient air quality monitoring.

Supplemental to these tracking efforts, the Maricopa Association of Governments publishes regional traffic flow maps and calculates regional vehicle miles of travel from these flow maps. MAG also conducts vehicle occupancy studies and performs special traffic volume and speed studies, as needed. Phoenix Public Transit continuously monitors transit ridership for each month. The Regional Public Transportation Authority will also be collecting transit and carpooling ridership information. The Arizona Department of Environmental Quality continuously monitors the number of vehicles inspected in the Vehicle Emissions Inspection Maintenance Program, the number of vehicles failing the test, and the improvement in tail pipe emissions after failed vehicles are repaired.

In addition, the MAG Air Quality Technical Advisory Committee will review the information pertaining to the implementation of measures. The committee will also review the air quality monitoring data to assist in tracking air quality improvement over time.

CHAPTER SIX

ATTAINMENT DEMONSTRATION AND WEIGHT OF THE EVIDENCE ANALYSIS

This chapter documents the attainment demonstration for the 2008 ozone standard for the Maricopa eight-hour ozone nonattainment area. Photochemical air quality grid modeling has been performed to determine if the Maricopa eight-hour ozone nonattainment area will meet the 2008 ozone standard of 0.075 ppm by July 20, 2018. The modeling concludes that the Maricopa eight-hour ozone nonattainment area will meet the 2008 ozone standard with existing federal, state, and local ozone control measures.

The conclusion that the 2018 ozone standard will be attained by July 20, 2018 is supported by results of EPA-recommended supplemental or weight of evidence analyses. A detailed description of the modeled attainment demonstration and weight of evidence analysis is provided in the Technical Support Document (TSD).

To support the finding of attainment, this chapter discusses the attainment date, modeling emissions inventories, attainment measures, modeled attainment demonstration, and weight of evidence analysis. Other Clean Air Act requirements for an attainment demonstration, addressed at the end of this chapter, include the onroad mobile source emissions budgets for conformity, reasonable further progress, and contingency measures.

ATTAINMENT DATE

The Maricopa eight-hour ozone nonattainment area is classified as a Moderate Area for the 2008 ozone standard of 0.075 parts per million (81 FR 26697). The attainment date for the Moderate nonattainment area is July 20, 2018. Since the attainment date is in the middle of the 2018 ozone season, EPA requires that control measures be implemented and attainment be modeled for the ozone season in the year that precedes the attainment date, in this case, 2017.

The MAG 2017 Eight-Hour Ozone Moderate Area Plan demonstrates through photochemical air quality grid modeling and other supporting technical analyses that attainment will be achieved by the end of the 2017 ozone season. For the eight-hour ozone modeling analysis, the Comprehensive Air Quality Model with Extensions (CAMx) was used to simulate ozone concentrations during the ozone season months of May 1 through September 30 for the 2011 base year and the 2017 attainment year. Modeling the entire months of May through September (153 days) ensures that the model not only demonstrates attainment on the ten highest modeled ozone concentration days, but also under a variety of meteorological conditions, during periods of low and high ozone production.

The purpose of the photochemical grid modeling is to demonstrate attainment of the eight-

hour ozone standard with the existing and implemented federal, state and local ozone control measures. The modeled attainment demonstration in this chapter verifies that the implemented federal, state and local control measures provide the emission reductions necessary to attain the 2008 ozone standard by the end of the 2017 ozone season.

Expeditious Attainment

The attainment demonstration discussed in this chapter indicates that the existing ozone control measures will achieve modeled attainment at all monitors in 2017, meeting the July 20, 2018 attainment date for Moderate nonattainment areas. The reasonably available control measures analysis in Chapter Four analyzed whether the attainment date could be advanced by up to one year, which would be July 20, 2017. That analysis concluded it would be infeasible to meet the standard by July 20, 2017, as any new or strengthened ozone control measure would have to be in place by April 1, 2016, which would be prior to both the adoption and submittal date of the MAG 2017 Eight-Hour Ozone Moderate Area Plan and the effective date of the EPA final rule reclassifying the Maricopa nonattainment area to a Moderate Area.

In addition, preliminary 2016 ozone concentration data at the Pinnacle Peak monitor indicates that the monitor may violate the 2008 ozone standard with a 2014-2016 ozone design value of 0.076 ppm, just 0.001 ppm over the standard. For these reasons, the existing measures included in the MAG 2017 Eight-Hour Ozone Moderate Area Plan demonstrate attainment as expeditiously as practicable by the end of the 2017 ozone season.

EMISSIONS INVENTORIES

The ozone season average daily modeling emissions for the period of May - September in 2011 and 2017 by source category are provided in Table 6-1 for the Maricopa eight-hour ozone nonattainment area and Table 6-2 for the 4 km grid modeling domain. Wildfire emissions are excluded from the ozone season average daily emissions for the five month period because wildfires occurred on specific days in 2011 and assumed to be constant between 2011 and 2017. The methodologies and assumptions used in developing the base year (2011) and attainment year (2017) emissions inventories are described in Section III of the Technical Support Document.

Pie charts of the average daily 2011 and 2017 VOC, NOX and CO emissions by source category are presented for the Maricopa eight-hour ozone nonattainment area in Figures 6-1 through 6-3, respectively. Figures 6-4 through 6-6 present pie charts of the VOC, NOx and CO emissions by source category in the 4 km grid modeling domain. The daily average ozone season (May through September) emissions for anthropogenic and biogenic sources, and wildfires are provided in Appendix E of the Technical Support Document.

Table 6-1

Ozone Season Average Daily Emissions during May - September in 2011 and 2017 for the Maricopa Eight-Hour Ozone Nonattainment Area (metric tons/day)

	2011			2017		
	VOC	NOx	CO	VOC	NOx	CO
Point	2.47	7.02	4.41	3.32	13.75	6.75
Area	94.46	10.96	7.71	96.05	12.59	8.50
Nonroad Mobile	27.89	53.58	343.58	20.26	36.26	310.41
Onroad Mobile	70.96	117.15	675.97	45.65	62.69	492.98
Biogenic	487.52	2.37	63.46	487.52	2.37	63.46
Total	683.30	191.08	1,095.13	652.80	127.66	882.10

Table 6-2

Ozone Season Average Daily Emissions during May - September in 2011 and 2017 for the 4 km Grid Modeling Domain (metric tons/day)

	2011			2017		
	VOC	NOx	CO	VOC	NOx	CO
Point	3.33	7.40	5.95	4.16	14.16	7.98
Area	103.79	11.16	10.09	105.54	12.81	11.02
Nonroad Mobile	36.60	62.78	387.21	26.89	43.49	350.04
Onroad Mobile	78.71	144.63	748.33	51.31	80.85	543.04
Biogenic	1,336.57	6.32	169.62	1,336.57	6.32	169.62
Total	1,559.00	232.29	1,321.20	1,524.47	157.63	1,081.70

Figure 6-1

Ozone Season Average Daily VOC Emissions in 2011 and 2017 in the Maricopa Eight-Hour Ozone Nonattainment Area

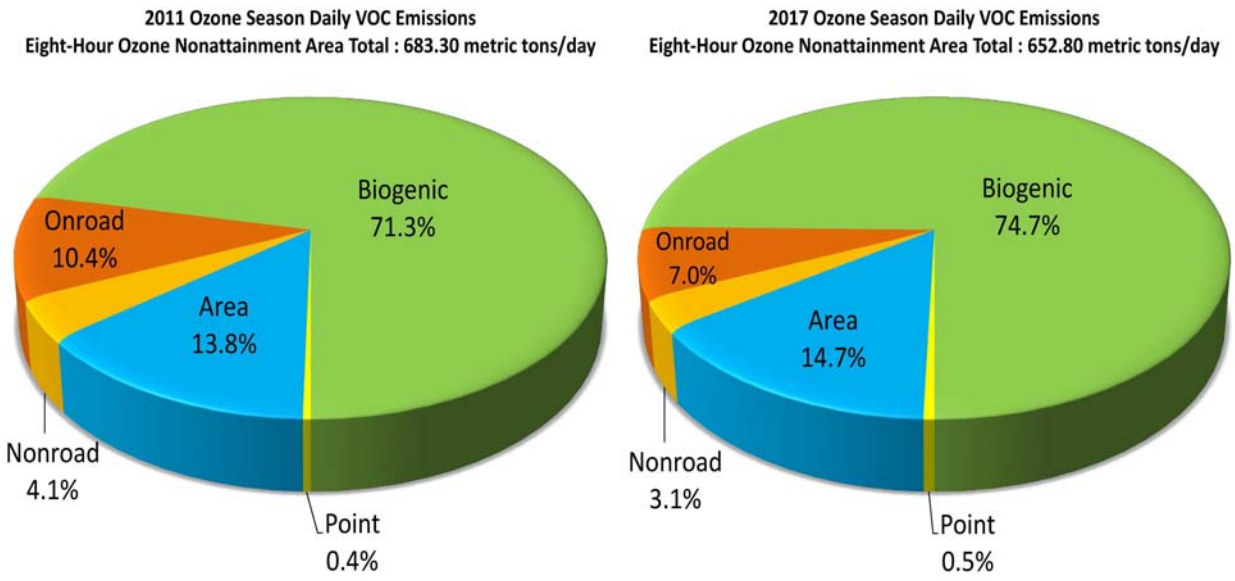


Figure 6-2

Ozone Season Average Daily NOx Emissions in 2011 and 2017 in the Maricopa Eight-Hour Ozone Nonattainment Area

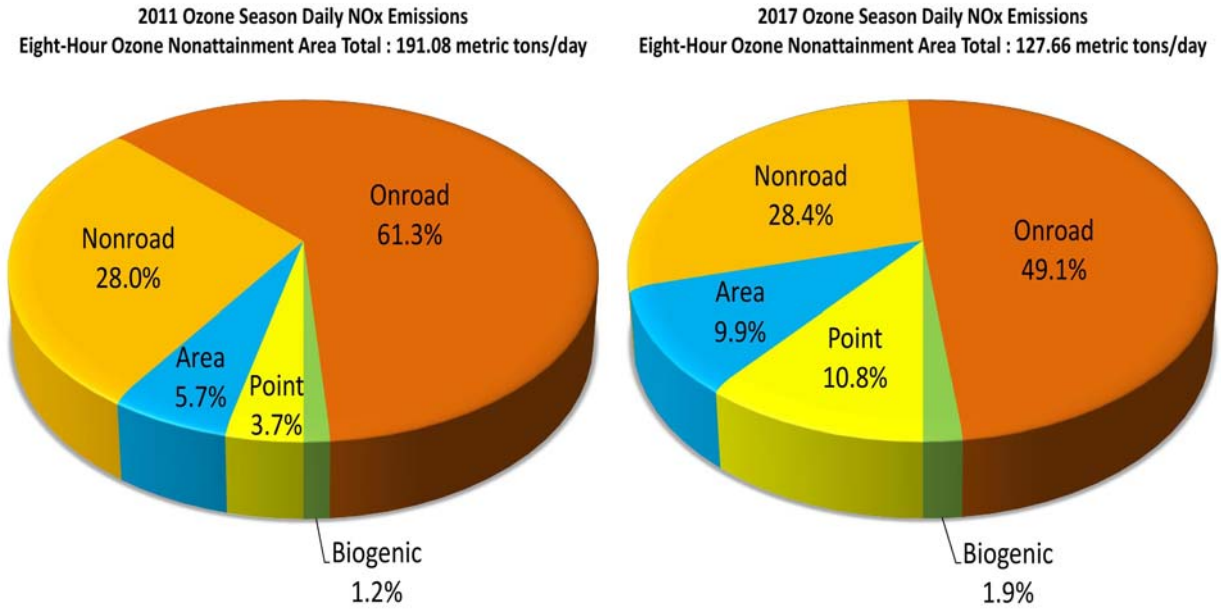


Figure 6-3

Ozone Season Average Daily CO Emissions in 2011 and 2017 in the Maricopa Eight-Hour Ozone Nonattainment Area

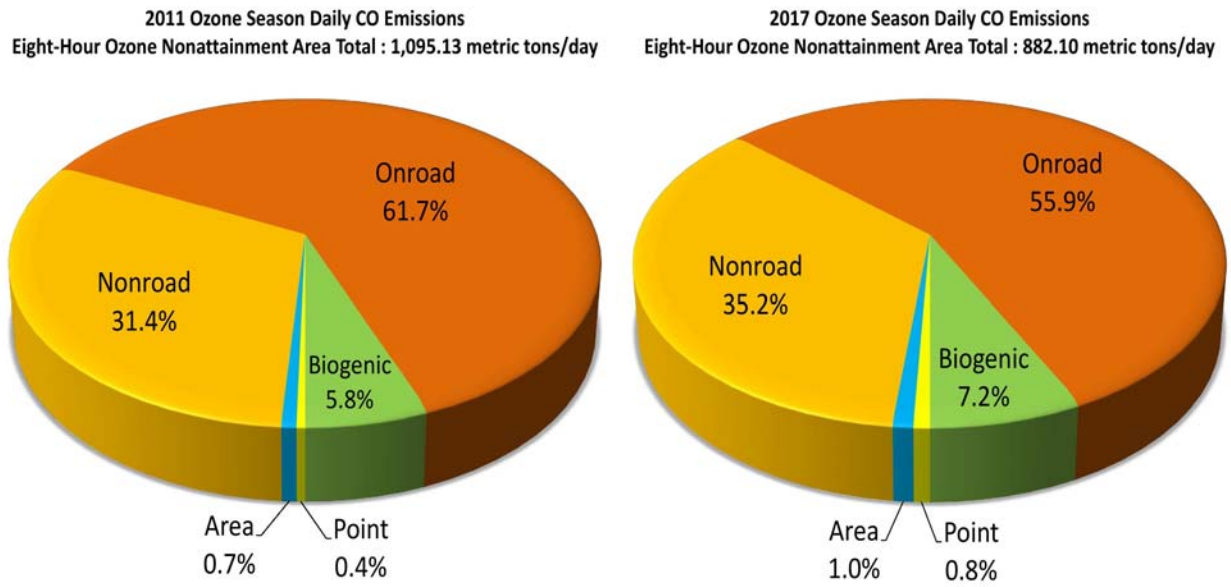


Figure 6-4

Ozone Season Average Daily VOC Emissions in 2011 and 2017 in the 4 km Grid Modeling Domain

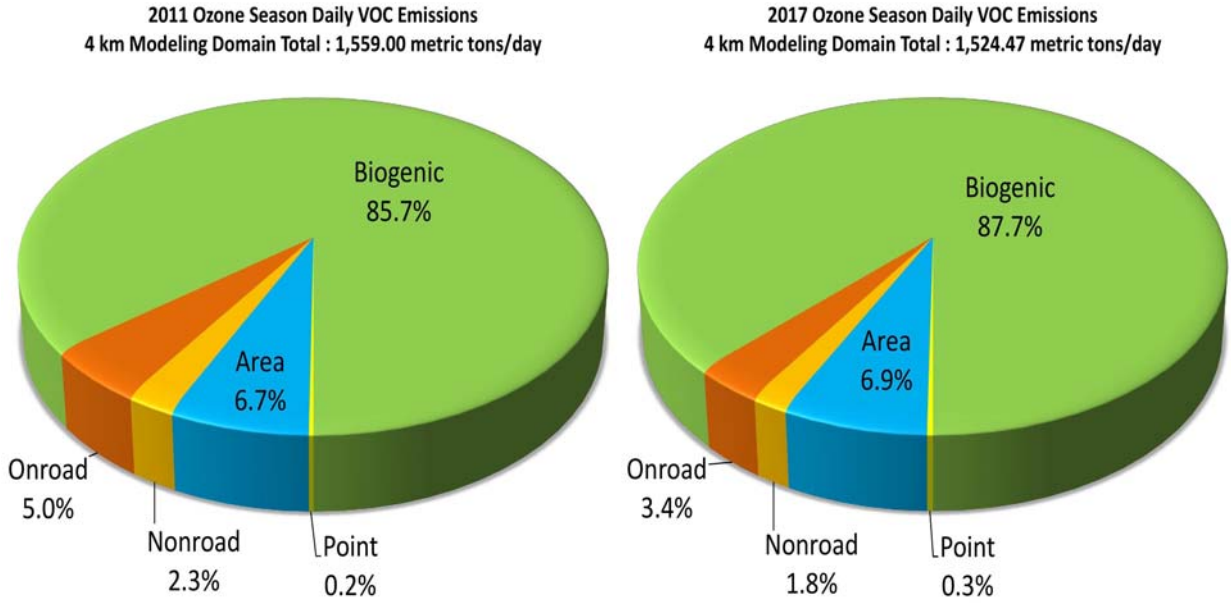


Figure 6-5

Ozone Season Average Daily NOx Emissions in 2011 and 2017 in the 4 km Grid Modeling Domain

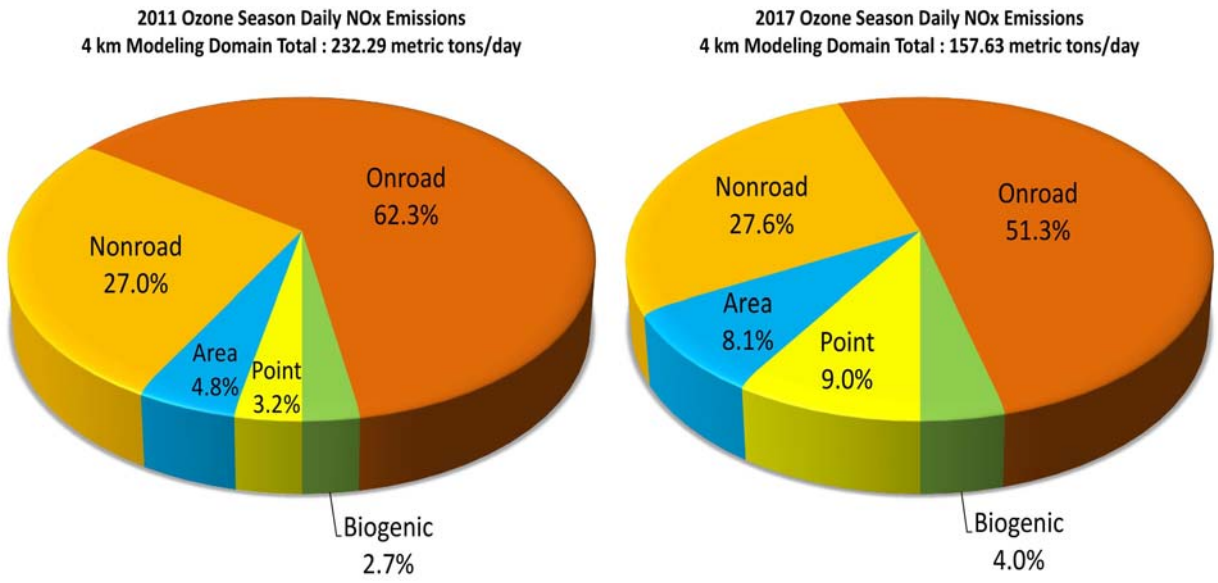
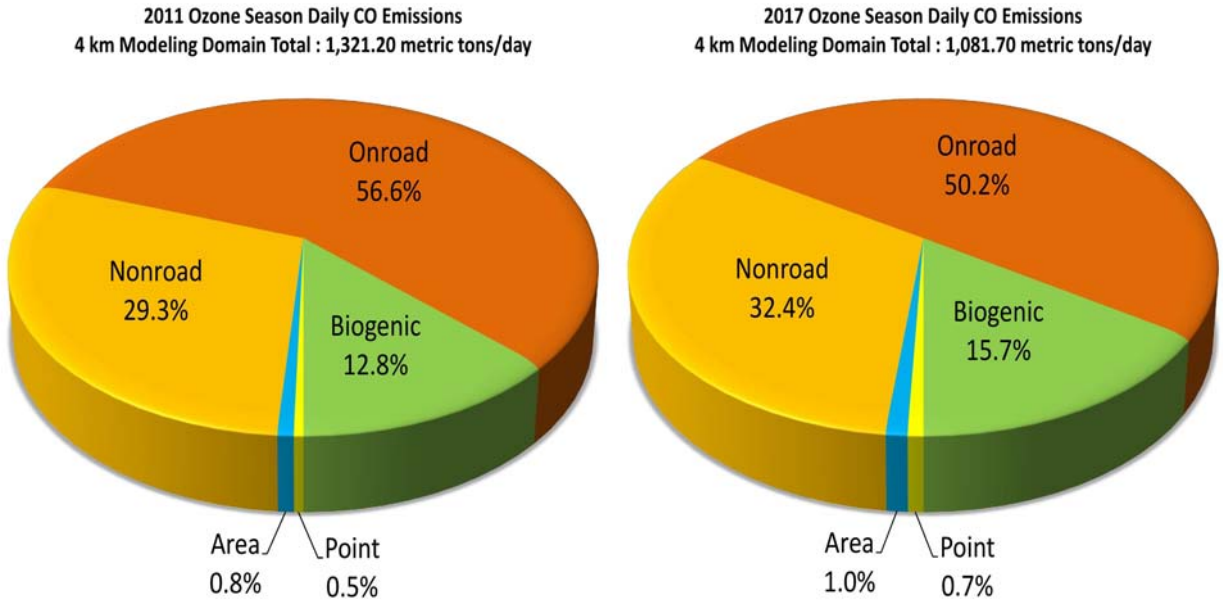


Figure 6-6

Ozone Season Average Daily CO Emissions in 2011 and 2017 in the 4 km Grid Modeling Domain



ATTAINMENT MEASURES

Chapter Five of the MAG 2017 Eight-Hour Ozone Moderate Area Plan includes a table of the 93 existing federal, state and local ozone control measures. The 93 existing ozone control measures have been approved by EPA in prior regional air quality plans or in separate EPA actions. The continuous implementation of these existing control measures in the nonattainment area assists in the attainment of the 2008 ozone standard in 2017. Only a subset of these control measures has quantifiable emission reduction benefits that were used to demonstrate attainment and meet contingency measure requirements. The federal, state, and local control measures used in demonstrating attainment of the 2008 ozone standard are as follows:

1. Summer Fuel Reformulation: California Phase 2 and Federal Phase II Reformulated Gasoline with 7 psi from May 1 through September 30
2. Phased-In Emission Test Cutpoints
3. One-time Waiver from Vehicle Emissions Test
4. Tougher Enforcement of Vehicle Registration and Emissions Test Compliance
5. Expansion of Area A Boundaries
6. Gross Polluter Option for I/M Program Waivers
7. Coordinated Traffic Signal Systems
8. Develop Intelligent Transportation Systems
9. Federal Tier 2 and Tier 3 Motor Vehicle Emissions and Fuel Standards
10. Federal Phase 1 and 2 Light-Duty Vehicle and Phase 1 Medium and Heavy-Duty Vehicle Greenhouse Gas Rules
11. Federal Nonroad Equipment Standards
12. Federal Heavy Duty Diesel Vehicle Emissions Standards
13. Federal Portable Fuel Container Rules

The emissions reduction benefits of ozone control measures 1 through 12 are included in the onroad and nonroad emissions inventories that were developed by MOVES2014a. The aggregated emission reductions from these measures are used in modeling attainment in this plan. Measures 1 through 6, 9, 11, and 12 are reflected in the fuel parameters (e.g., RVP, gasoline and diesel sulfur contents, oxygen contents, etc.), vehicle registration data, and I/M programs for the MOVES2014a onroad and nonroad modeling. Measures 7 and 8 are incorporated into transportation network assignments of the Travel Demand Model (TDM), which were developed by the MAG Transportation Division. Onroad and nonroad mobile source emissions factors in MOVES2014a reflect the benefits of measures 9, 11, and 12 through the onroad and nonroad engine and fuel standards. Measure 10 contributes to ozone precursor emissions reductions by way of improved fuel efficiency.

The MOVES2014a and SMOKE models estimated aggregated emissions reductions of 25.3 metric tons per day of VOC and 54.5 metric tons per day of NOx for onroad mobile sources in the Maricopa eight-hour ozone nonattainment area. Aggregated nonroad mobile source emissions reductions of 7.6 metric tons per day of VOC and 17.3 metric tons per day of NOx were estimated in the Maricopa eight-hour ozone nonattainment area. The

benefits of measure 13, the federal portable fuel container rules, were provided by EPA for Maricopa and Pinal Counties. The 2011 controlled emissions for the portable fuel containers were obtained from the EPA 2011 National Emissions Inventory (NEI). The 2017 emission reduction benefits were interpolated using the EPA 2015 and 2020 emissions benefits for the portable fuel container rules. Measure 13 provided 6.2 metric tons per day of VOC emission reduction benefit in the Maricopa eight-hour ozone nonattainment area in 2017. The attainment demonstration in this plan was primarily dependent upon the emissions benefits of the tighter federal standards for new onroad and nonroad engines and fuel requirements, and the continuing fleet turnover in the nonattainment area.

In addition to the ozone control measures used for numeric credit in the attainment demonstration, numerous other control measures, as shown in the Chapter Five of this plan, have been implemented in the Maricopa eight-hour ozone nonattainment area. These measures have been approved by EPA in prior regional air quality plans or separate EPA action and contribute to improved air quality, but cannot be quantified. As a result, the measures were not used as numeric credit for the attainment demonstration.

As an example, the Arizona Department of Environmental Quality (ADEQ) issues an ozone High Pollution Advisory (HPA) when ozone is likely to exceed the NAAQS and pose health risks. When the HPA is issued, notices are sent to employers participating in trip reduction programs. At that time, employers activate HPA plans to help reduce air pollutants. The HPA plans may include commuting on public transportation, carpooling, vanpooling, and teleworking. The general public is also encouraged to take actions during an HPA such as limiting engine idling, refueling after dark, and limiting uses of gas-powered garden equipment and charcoal BBQs. The emissions reductions attributable to an HPA are not easily quantified, and thus are not used in the attainment demonstration. Many of the 93 existing control measures, such as the HPA program, were not used as numeric credit in the CAMx model attainment demonstration. These measures, while not quantified, improve air quality and contribute to attainment of the 2008 ozone standard in 2017.

ATTAINMENT DEMONSTRATION

To demonstrate attainment of the 2008 ozone standard, modeled eight-hour ozone concentrations in 2017 should be less than 0.0759 ppm (75.9 ppb) for all modeled episode days. The attainment demonstration followed the modeling procedures recommended in EPA guidance (EPA, 2014a).

The process for selecting the models, modeling domains, and episode period for the attainment demonstration is fully described in the modeling protocol included in Appendix A to the Technical Support Document. The Technical Support Document includes a detailed discussion of the models that were applied, as well as the model inputs, validation, and predictions.

The Comprehensive Air Quality Model with Extensions (CAMx) is the photochemical grid

model that was selected and applied to model attainment of the 2008 ozone standard in 2017. The entire ozone season episode period of May 1 through September 30 (153 days) was modeled using CAMx for the base year (2011) and the attainment year (2017). The CAMx model attainment demonstration was performed based on the five-year weighted 2011 base year design values for all monitoring sites which included the worst ozone episodes induced by the unfavorable meteorology of 2011 and 2012.

CAMx eight-hour ozone concentration predictions from the base year and attainment year simulations were used in calculating a Relative Response Factor (RRF) in accordance with EPA modeling guidance (EPA, 2014a). The RRF is the ratio of the 2017 attainment year modeled ozone concentrations to the 2011 base year modeled ozone concentrations at each monitoring location. The 2011 base year design value (DVB) at each monitoring site is multiplied by the RRF to produce the 2017 design value (DVF) at each monitoring site as depicted in the following equation:

$$(DVF)_i = (RRF)_i (DVB)_i$$

where:
$(DVB)_i$ = Baseline (2011) design value monitored at monitoring site *i* (unit: ppb)
$(RRF)_i$ = Relative response factor for monitoring site *i* (unitless)
$(DVF)_i$ = Estimated design value for the future year (2017) at monitoring site *i* (unit: ppb)

The resulting 2017 design values at each monitoring site were compared to the 2008 ozone standard for the attainment test. All monitoring sites within the Maricopa nonattainment area demonstrate modeled attainment of the 2008 ozone standard in 2017. The peak 2017 DVF was predicted at the North Phoenix monitoring site with a eight-hour ozone concentration of 75.6 ppb or 0.0756 ppm. Table 6-3 presents the 2011 and 2017 design values and RRF at each monitoring site in the Maricopa eight-hour ozone nonattainment area.

Since high ozone concentrations may occur in the areas where no ozone monitors were situated, an unmonitored area analysis was performed using the CAMx 2011 and 2017 ozone simulations data and the EPA Model Attainment Test Software (MATS) (EPA, 2014b). The EPA MATS interpolated the 2011 base year design values of monitors for ozone spatial fields, and adjusted the ozone spatial fields using the CAMx gridded ozone predictions for the unmonitored area. The 2017 future design values for the unmonitored area in the 4 km modeling domain were calculated using the adjusted ozone spatial fields and RRFs. The RRFs for grid cells were derived from the CAMx 2011 and 2017 gridded ozone predictions. Figure 6-7 provides an isopleth plot of the results from the unmonitored area analysis. The peak 2017 future design value of 75.5 ppb in the unmonitored area was predicted at a grid cell in the northwest of the Supersite monitor, as indicated by a red square in Figure 6-7. Since the 2017 peak unmonitored area ozone concentration is less than the 2008 ozone standard, attainment is demonstrated throughout the unmonitored areas of the 4 km modeling domain.

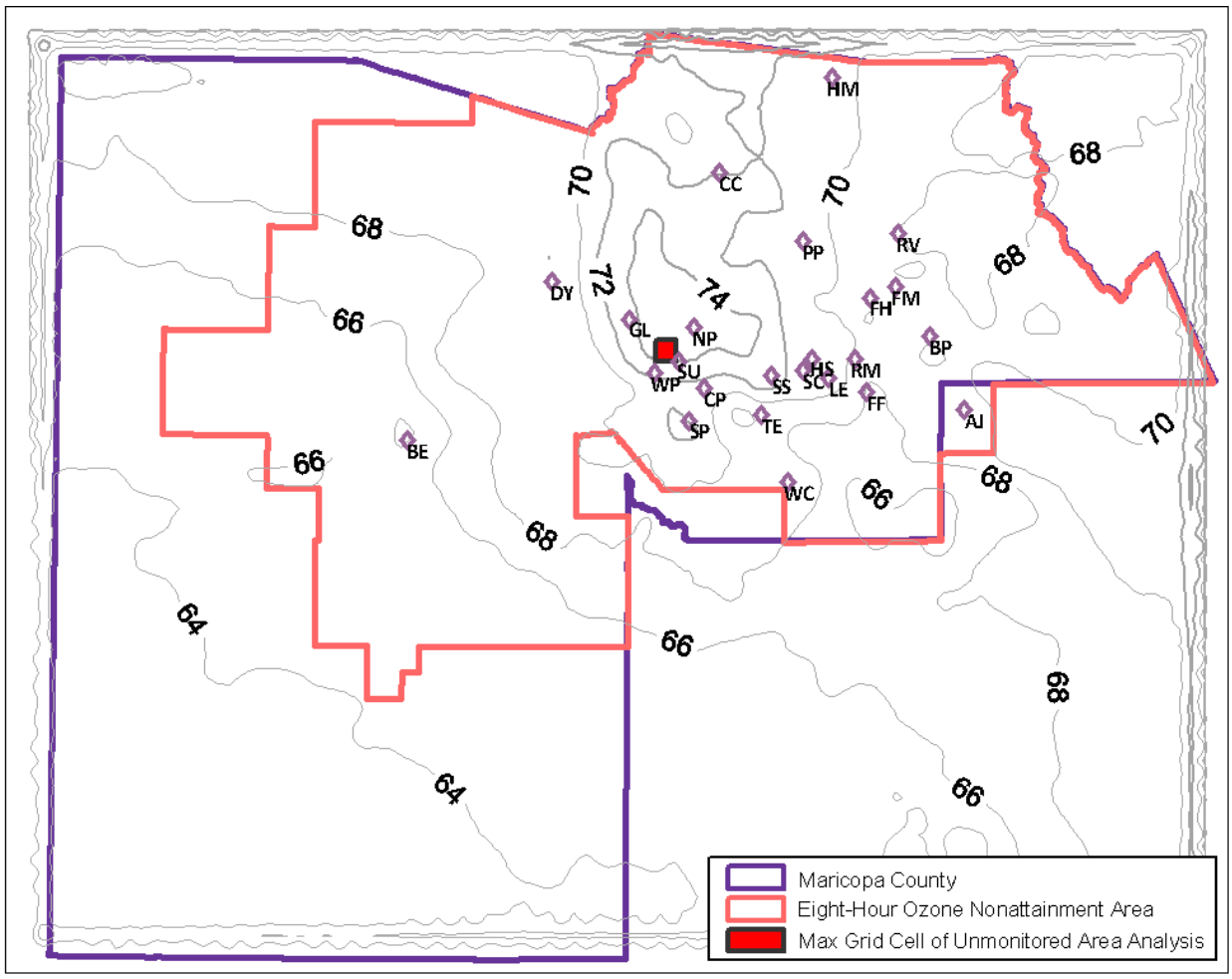
Table 6-3

2011 and 2017 Design Values and Relative Response Factors for Monitoring Sites in the Maricopa Eight-Hour Ozone Nonattainment Area

Site Name	Abbr	AIRS	2011 Design Value (ppb)	RRF	2017 Design Value (ppb)
West Phoenix	WP	040130019	76.7	0.9561	73.3
North Phoenix	NP	040131004	79.7	0.9487	**75.6**
Falcon Field	FF	040131010	69.7	0.9318	64.9
Glendale	GL	040132001	74.7	0.9633	71.9
Pinnacle Peak	PP	040132005	76.0	0.9232	70.1
Central Phoenix	CP	040133002	73.3	0.9518	69.7
South Scottsdale	SS	040133003	75.7	0.9463	71.6
South Phoenix	SP	040134003	74.7	0.9580	71.5
West Chandler	WC	040134004	72.7	0.9602	69.8
Tempe	TE	040134005	69.7	0.9721	67.7
Cave Creek	CC	040134008	76.3	0.9391	71.6
Dysart	DY	040134010	71.0	0.9597	68.1
Buckeye	BE	040134011	65.0	0.9754	63.4
Fort McDowell/Yuma	YF	040135100	70.3	0.9309	65.4
Senior Center	SC	040137020	73.7	0.9454	69.6
Red Mountain	RM	040137021	76.7	0.9343	71.6
Lehi	LE	040137022	73.3	0.9470	69.4
High School	HS	040137024	73.3	0.9403	68.9
Humboldt Mountain	HM	040139508	74.0	0.9438	69.8
Blue Point	BP	040139702	74.7	0.9383	70.0
Fountain Hills	FH	040139704	74.3	0.9351	69.4
Rio Verde	RV	040139706	74.0	0.9243	68.3
Super Site	SU	040139997	76.0	0.9590	72.8
Apache Junction	AJ	040213001	73.0	0.9314	67.9

Figure 6-7

Isopleth Plot of the 2017 Design Values for the Unmonitored Area in the 4 km Grid Modeling Domain



WEIGHT OF EVIDENCE ANALYSIS

EPA requires the supplemental analysis or the Weight-of-Evidence (WOE) analysis to show that attainment can be reached in the future with some margin of safety, especially when projected future design values are close to the 2008 ozone standard. Technical details on the WOE analyses are provided in Section VI of the Technical Support Document (TSD). As part of the Weight-of-Evidence analysis, MAG contracted with RAMBOLL ENVIRON for additional technical assistance and analysis. The WOE analysis report provided by RAMBOLL ENVIRON is included in Appendix B to the TSD. The WOE analyses provided in the TSD are summarized as follows:

- *Ambient Air Quality Trends*: The ambient eight-hour ozone concentration trends in the Maricopa nonattainment area were provided to evaluate progress towards attainment of the 2008 ozone standard. The number of annual exceedance days for the 2008 ozone standard in the nonattainment area have steadily decreased from seventy-two in 2000, to nineteen in 2011, and to seven in 2015. The peak eight-hour ozone design values decreased from 85 ppb to 77 ppb over 2002-2015. Additionally, preliminary 2016 ozone season data through August 30, 2016 indicates that only one monitor (Pinnacle Peak) in the Maricopa nonattainment area has a 2014-2016 design value (0.076 ppm) that just slightly exceeds the 2008 ozone standard.

- *Trends in Ambient Ozone Precursors*: Ozone precursor trends as represented by nitrogen oxides (NOx), total non-methane organic compounds (TNMOC, a surrogate for volatile organic compounds), and carbon monoxide (CO) at the Supersite monitor were provided to support the decreasing trends seen in ambient ozone concentrations. The ambient NOx concentrations at the Supersite have decreased on the order of 1.6 ppb per year, a 30-40% reduction over the period of 1999-2015. The ambient TNMOC concentrations at the site have decreased on the order of 11.6 ppbC per year, a reduction of 55-65% over 1999-2015. The ambient CO concentrations at the site have decreased on the order of 40.9 ppb per year, a reduction of 55-65% over 1999-2015.

- *Absolute Model Forecasts*: This analysis is used to demonstrate substantial reductions in absolute model concentrations from the base year to the future year. The percent changes in the total amount of ozone, the number of grid cells, the grid cell hours (or days), and the maximum modeled eight-hour ozone concentration were estimated as metrics to verify substantial reductions in ozone values in the nonattainment area. The results of the analysis affirm that reductions of ozone predictions from the base year to the future year are substantial in terms of magnitudes, frequencies, and relative amounts.

- *Process Analysis*: This chemical process analysis is used to identify NOx-limited vs. VOC-limited chemistry. Since the ozone formation process is controlled by the relative availability of NOx and VOC emissions, ozone formation is described as

either NOx-limited or VOC-limited. The analysis results indicated a movement from 2011 VOC-limited conditions in the urban core to 2017 NOx-limited chemistry. This means that NOx emissions controls may be the best mechanism to reduce ozone levels in the nonattainment area in 2017 and beyond.

- *Zero-out Anthropogenic Emissions Analysis*: The zero-out anthropogenic emissions analysis was performed to evaluate the impact of transported anthropogenic emissions from a variety of regions in the U.S. and Mexico on ozone levels at the North Phoenix monitor. California contributed to ozone concentrations at the North Phoenix monitor in 2017 by up to 4.5 ppb in June, Texas by up to 1.6 ppb in July, and Mexico by up to 7.1 ppb in July.

- *Decoupled Direct Method Analysis*: This analysis is used to characterize the potential uncertainties in the predicted future (2017) ozone concentrations by evaluating the sensitivity of ozone concentrations to changes in VOC and NOx emissions in the nonattainment area. The analysis indicated that increases of anthropogenic VOC emissions by up to 15%, NOx emissions by up to 5%, and combined VOC and NOx emissions less than 5% in the 2017 emissions inventory provide a margin of safety whereby attainment of the 2008 ozone standard can still be modeled in 2017.

- *Source Apportionment Technology*: The purpose of this analysis is to estimate the contribution of multiple emission source areas, source categories, and pollutant types to ozone in the nonattainment area. The analysis is used to rank the anthropogenic emission source categories in the 4 km modeling domain based on the contributions of individual emission source categories to ozone levels at the North Phoenix monitor. Onroad mobile sources were a major contributor to ozone concentrations at the North Phoenix monitor. As a result, controls in onroad mobile source emissions are the most efficient in further reducing ozone in the nonattainment area.

- *Uncertainty of Projected 2017 Emissions for Electric Generating Units (EGU)*: The ten-year maximum EGU emissions over 2005-2014 in Maricopa County were used as the 2017 projected EGU emissions for the attainment demonstration. Using the ten-year maximum for the 2017 EGU emissions is very conservative because the EPA's national inventory of NOx emissions for power plants show substantial decreases over 1990-2015. An alternative no-growth assumption for the EGU emissions between 2011 and 2017 was tested for the modeled attainment of the 2008 ozone standard. The alternative no-growth approach lowered the future design values by up to 0.6 ppb. The no-growth assumption for the 2017 EGU emissions projection provides a significant safety margin for the modeled attainment demonstration.

- *EPA Projected 2017 Ozone Concentrations*: The modeling results from EPA's proposed Cross-State Air Pollution Rule (CSAPR) for the 2008 ozone standard

(EPA, 2015b) affirmed that the Maricopa eight-hour ozone nonattainment area is expected to attain the 2008 ozone standard in 2017. None of the monitoring sites in Maricopa County were projected to exceed the 2008 ozone standard in 2017 in EPA's CSAPR ozone modeling.

- *NOx Model Performance Evaluation*: Recent studies by the National Aeronautics and Space Administration (NASA), based on satellite and aircraft remote sensing data, indicated that a high bias in EPA's Motor Vehicle Emissions Simulator (MOVES) model might cause overestimations of NOx emissions from mobile sources. As such, RAMBOLL ENVIRON conducted a NOx model performance evaluation. Hourly NO_2 concentrations from the 2011 simulation are compared to observations at six monitors within Maricopa County. Scatter plots of predicted and observed hourly NO_2 concentrations show over estimation biases with the predictions at five urban monitors in Maricopa County. The over prediction is largest at the West Phoenix and Supersite monitors. Time series at the Supersite monitor show that the model reproduces the diurnal pattern of NO_2 relatively well, but largely overestimates both morning and evening peaks. Midday NO_2 predictions agree well with the observations. In contrast, NO_2 is under predicted at the Buckeye site. RAMBOLL ENVIRON concludes that the effectiveness of NOx emission reductions in lowering ozone concentrations in Maricopa County may be understated in the model, if input NOx emissions are overstated as suggested by this analysis.

- *Review of Trajectory Analyses and Conceptual Model*: The conceptual model developed for the Maricopa eight-hour ozone nonattainment area found that elevated ozone concentrations are associated with intense summer photochemical reactions, local stagnation or long range transport of ozone precursor emissions, and synoptic and mesoscale atmospheric dynamics. Analyses of 24-hour back trajectories on ozone exceedance days in 2011 revealed varied geographic origins of air masses: May exceedances are associated with westerly wind bringing air from Southern California enhanced by cold fronts and stratospheric intrusions from late spring low pressure systems; July exceedances are associated with westerly wind bringing air from Southern California enhanced by high temperature and long exposure to sunlight; and July and August exceedances are associated with extremely high daytime temperatures and are influenced by the regional monsoon pattern. Peak biogenic VOC emissions can also enhance ozone formation.

- *Background Ozone and Interstate Transport*: US Background (USB) includes all global natural sources and anthropogenic sources of ozone from outside the U.S. High background contributions make local ozone less responsive to local emission controls. The MAG CAMx modeling results show that USB contributes 63% (47.3 ppb) to the 2017 design value (DVF), with more than 60% in all summer months except August. The EPA's CSAPR modeling also indicates that the 2017 ozone contributions from non-US anthropogenic sources (USB) are 52% at North Phoenix, the site with highest predicted 2017 ozone concentrations, and 55% averaged across all Maricopa County sites. The results confirm significant impact from USB

to local ozone in Maricopa County. In addition, ozone precursor emissions from California play a major role in attaining the eight-hour ozone NAAQS in Maricopa County. California contributions are roughly 2 ppb in May across all monitors, increase to a range of 2.7-7.3 ppb in June, and then drop to under 2 ppb in July and August. Peak contributions of California in June are consistent with HYSPLIT back trajectories performed by RAMBOLL ENVIRON. Contributions from other states are almost entirely below the EPA threshold of 0.75 ppb.

ONROAD MOBILE EMISSIONS BUDGETS FOR CONFORMITY

In accordance with the 1990 Clean Air Act (CAA) Amendments, transportation conformity requirements are intended to ensure that transportation activities do not result in air quality degradation. Section 176 of the CAA requires that transportation plans, programs, and projects conform to applicable air quality plans before the transportation action is approved by a Metropolitan Planning Organization (MPO). The designated MPO for Maricopa County is the Maricopa Association of Governments.

Section 176(c) of the CAA provides the framework for ensuring that Federal actions conform to air quality plans under section 110. Conformity to an implementation plan means that proposed activities should not: (1) cause or contribute to any new violation of any standard in any area, (2) increase the frequency or severity of any existing violation of any standard in any area, or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

EPA transportation conformity regulations establish criteria involving comparison of projected transportation plan emissions with the motor vehicle emissions assumed in applicable air quality plans. These regulations define the term “motor vehicle emissions budget” as meaning “the portion of the total allowable emissions defined in a revision of the applicable implementation plan (or in an implementation plan revision which was endorsed by the Governor or his or her designee) for a certain date for the purpose of meeting reasonable further progress milestones or attainment demonstrations, for any criteria pollutants or its precursors, allocated by the applicable implementation plan to highway and transit vehicles.”

On June 13, 2012, EPA published the final rule approving the MAG 2007 Eight-Hour Ozone Plan, including the 2008 emissions budgets for VOC of 67.9 metric tons per day and NOx of 138.2 metric tons per day, effective July 13, 2012. On September 17, 2014, EPA published a final rule approving the MAG 2009 Eight-Hour Ozone Maintenance Plan, including the 2025 emissions budget for VOC of 43.8 metric tons per day and NOx of 101.8 metric tons per day, effective October 17, 2014.

The MAG 2017 Eight-Hour Ozone Moderate Area Plan establishes 2017 conformity budgets based on 2017 onroad mobile source VOC and NOx emissions in the Maricopa eight-hour ozone nonattainment area that were used to model attainment of the 2008 ozone standard of 0.075 ppm. The 2017 conformity budgets are represented by the

average daily onroad VOC and NOx emissions from May 1 through September 30. The methodology used in estimating onroad mobile source emissions in 2017 is discussed in Section III-1-4 of the TSD. The average daily onroad motor vehicle emissions in the Maricopa eight-hour ozone nonattainment area for the period of May through September are 45.7 metric tons per day for VOC and 62.7 metric tons per day for NOx, as listed in Table 6-1. These represent the 2017 emissions budgets that will be used in future transportation conformity analyses that begin after these emissions budgets have been found to be adequate or are approved by EPA as part of this plan. In subsequent conformity analyses, onroad mobile source emissions for conformity horizon years of 2017 and beyond should not exceed the 2017 VOC and NOx emissions budgets.

REASONABLE FURTHER PROGRESS - 15 PERCENT RATE OF PROGRESS DEMONSTRATION

In accordance with Clean Air Act Section 182(b)(1), a Moderate nonattainment area must provide a Rate of Progress (ROP) plan that demonstrates a 15 percent reduction in VOC emissions across the nonattainment area over a six-year period from the base year anthropogenic emissions, in this case, the years 2012 through 2017. For the purpose of meeting the 15 percent ROP requirements in the Maricopa eight-hour ozone nonattainment area, the base year 2011 average daily anthropogenic VOC emissions for the period of May 1 through September 30 in the nonattainment area are shown to be reduced by at least 15 percent by 2017 through the following calculations. The 2017 ROP 15 percent reduction target of 166.41 metric tons per day in the Maricopa nonattainment area is calculated by multiplying the 2011 average daily anthropogenic VOC emissions of 195.78 metric tons/day (sum of 2011 point, area, nonroad and onroad VOC emissions in Table 6-1) by 85% (100% - 15%) as follows:

195.78 metric tons/day x (100% - 15%) = 166.41 metric tons/day

The 2017 average daily anthropogenic VOC emissions of 165.28 metric tons/day in Table 6-1 (sum of 2017 point, area, nonroad and onroad VOC emissions) is less than the 2017 ROP 15 percent reduction target of 166.41 metric tons/day, and is equivalent to a 15.6% reduction in 2011 base year anthropogenic VOC emissions. Therefore, the 2017 average daily anthropogenic VOC emissions in the Maricopa eight-hour ozone nonattainment area satisfy the CAA Section 182(b)(1) reasonable further progress and 15 percent ROP plan requirements.

CONTINGENCY MEASURES

Section 172(c)(9) of the Clean Air Act requires that the State Implementation Plans provide for the implementation of contingency measures without any further rulemaking action if the Moderate area fails to attain or to meet the standard by the attainment date. Since EPA allows early implementation of contingency measures (EPA, 1993), existing measures that have already been implemented may be contingency measures if they are not needed to show attainment and do not hasten attainment. EPA also allows federal measures to be

contingency measures if they are not needed for attainment (EPA, 2015a).

EPA requires that contingency measures represent one-year's worth of progress, amounting to reductions of 3 percent of the 2011 base year VOC and/or NOx emissions for the Maricopa eight-hour ozone nonattainment area. These reductions would be achieved in 2018 in the Maricopa eight-hour ozone nonattainment area while the state is revising its plans for the area, if the area failed to meet the ozone standard by the required attainment date of July 20, 2018.

For the MAG 2017 Eight-Hour Ozone Moderate Area Plan, the existing control measures provide enough continuing emission reduction benefits in 2018 to meet the contingency measure requirements. The VOC and NOx emissions reductions of the contingency measures in 2018 for the Maricopa eight-hour ozone nonattainment area are provided in Table 6-4. Details on the emission reductions in 2018 are provided in the TSD. Average daily anthropogenic VOC emissions of the modeling episode from May 1 through September 30 in the Maricopa eight-hour ozone nonattainment area are 165.28 metric tons per day in 2017 and 164.08 metric tons per day in 2018. The difference of total anthropogenic VOC emissions between 2017 and 2018 is 1.20 metric tons per day., which amounts to a 0.61 percent reduction from the 2011 base year emissions. In the same manner, NOx emissions reductions are estimated to be at 3.25 percent from the 2011 base year NOx emissions. The combined VOC and NOx emissions reduction of 3.86 percent in the Maricopa eight-hour ozone nonattainment area meets the 3 percent emission reduction requirement for contingency measures.

CONCLUSIONS

Photochemical air quality grid modeling by the CAMx model demonstrated that the Maricopa eight-hour ozone nonattainment area would attain the 2008 ozone standard by the end of ozone season in 2017. The CAMx model attainment demonstration was performed based on the five-year weighted 2011 base year design values for monitors. The CAMx modeling predicted the 2017 maximum design value of 0.0756 ppm (or 75.6 ppb) at the North Phoenix monitor. The unmonitored area analysis with CAMx and MATS predicted the 2017 maximum design value of 0.0755 ppm (75.5 ppb) in the unmonitored area of the 4 km modeling domain, located northwest of the Supersite monitor. Since both the 2017 maximum design values at the monitors and in the unmonitored area of the 4 km modeling domain are 0.075 ppm (after truncation to three digits), the photochemical modeling demonstrates attainment of the 2008 ozone standard in the Maricopa eight-hour ozone nonattainment area by the July 20, 2018 attainment date.

To support the CAMx model attainment demonstration for the monitors and the unmonitored area in the Maricopa eight-hour ozone nonattainment area, supplemental or Weight of Evidence (WOE) analyses were provided in the TSD. Key findings of the

Table 6-4

Average Daily Anthropogenic VOC and NOx Emission Reductions in 2018 for Contingency Measure Requirements (metric tons/day)

Source Category	VOC					NOx				
	2011	2017	2018	2018 minus 2017	2018 Percent Reduced from 2011	2011	2017	2018	2018 minus 2017	2018 Percent Reduced from 2011
Point	2.47	3.32	3.39	+0.07	2.83%	7.02	13.75	13.76	+0.01	0.14%
Area	94.46	96.05	97.88	+1.83	1.94%	10.96	12.59	12.98	+0.39	3.56%
Nonroad	27.89	20.26	20.07	-0.19	-0.68%	53.58	36.26	34.36	-1.90	-3.55%
Onroad	70.96	45.65	42.74	-2.91	-4.10%	117.15	62.69	58.05	-4.64	-3.96%
Total	195.78	165.28	164.08	-1.20	-0.61%	188.71	125.29	119.15	-6.14	-3.25%
Combined VOC and NOx Emissions Reduction Percent in 2018 from 2011: 3.86%										

analyses are as follows:

- Ambient concentration trends show a persistent decline over 1999-2015. Preliminary 2016 ozone data indicates only one monitor is currently violating the 2008 standard in the Maricopa nonattainment area based upon 2014-2016 data.

- Absolute model forecast confirm that ozone reductions from 2011 to 2017 are substantial in terms of magnitude, frequency and relative amount.

- Safety margins exists in the modeled attainment demonstration whereby anthropogenic emissions of VOC may increase by up to 15%, NOx may increase by up to 5%, and combined VOC and NOx may increase by less than 5%, while attainment can still be modeled in 2017.

- An alternative no-growth assumption for emissions from Electric Generating Units in 2017 from 2011 base emissions also provides a safety margin by lowering predicted 2017 ozone design values by up to 0.6 ppb.

- Chemical ozone process analysis indicate the urban core of the nonattainment area is transitioning from a VOC-limited area to a NOx-limited area and that reductions in NOx may provide the best mechanism to reduce ozone in 2017 and beyond.

- Source apportionment analysis concludes that reductions in onroad mobile source emissions will be the most efficient at reducing ozone in the nonattainment area.

- Modeling performed by EPA for the Cross-State Air Pollution Rule predicts that the Maricopa nonattainment area will attain the 2008 ozone standard in 2008.

- The zero-out anthropogenic emissions analysis indicates that the peak ozone design value monitoring site of North Phoenix is significantly impacted by transported anthropogenic emissions from California, and non-US emissions.

In summary, the photochemical air quality modeling at the monitoring sites and in the unmonitored area demonstrated attainment of the 2008 ozone standard in 2017, meeting the July 20, 2018 attainment date. The results of the modeled attainment demonstration for the Maricopa nonattainment area are supported and affirmed by extensive supplemental and weight of evidence analyses.

CHAPTER SEVEN

PUBLIC PARTICIPATION

The Transportation-Air Quality Guidelines for public participation are issued jointly by the U.S. Environmental Protection Agency and the U.S. Department of Transportation. These guidelines are designed to encourage an effective public participation program for the development and implementation of the State Implementation Plan (SIP). According to the guidelines, the objectives of the public participation program should be to:

1. Promote public awareness of the air pollution problem, the SIP revision process, and the effects of various transportation control measures;

2. Encourage active participation from a variety of interest groups in the plan preparation process;

3. Promote public understanding and agreement on the transportation control measures necessary to improve air quality;

4. Provide for the identification of both interested and affected constituencies;

5. Ensure that the agencies and elected officials are responsive to these constituencies; and

6. Encourage a spirit of openness and trust among elected officials, agencies, and the public.

In order to be responsive to these guidelines, the Maricopa Association of Governments has established a formal public participation program. The program includes the MAG Air Quality Technical Advisory Committee, additional Air Quality Working Groups, as necessary, the MAG Management Committee, and the MAG Regional Council. Technical support for the public participation program is provided by MAG, the Arizona Department of Environmental Quality, the Arizona Department of Transportation, and Maricopa County Air Quality Department (see Figure 7-1). A brief description of these components of the program is described below.

DECISION MAKING STRUCTURE

The Maricopa Association of Governments has been designated as the lead planning agency for air quality planning within the Maricopa and Pinal County areas. MAG member agencies include twenty-seven cities and towns within Maricopa County and portions of Pinal County, Maricopa County, Pinal County, the Gila River Indian Community, the Salt River Pima-Maricopa Indian Community, Fort McDowell Yavapai Nation, and the Arizona Department of Transportation. A representative from the Regional Public Transportation

Figure 7-1

MAG Regional Air Quality Planning Technical Process

- The MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area was prepared through a coordinated effort among the Arizona Department of Environmental Quality, Arizona Department of Transportation, Maricopa County Air Quality Department, and Maricopa Association of Governments.

MAG AIR QUALITY POLICY TEAM

Composition: Director of Arizona Department of Environmental Quality; Director of Arizona Department of Transportation; Air Pollution Control Officer of Maricopa County; MAG Executive Director

- Oversees preparation of plans and overall technical planning effort
- Resolves technical problems and issues

MAG AIR QUALITY PLANNING TEAM

Composition: Staff from the Arizona Department of Environmental Quality, Arizona Department of Transportation; Maricopa County Air Quality Department; Maricopa Association of Governments

Agency Roles

- Arizona Department of Environmental Quality - air quality modeling and technical assistance, mobile source emissions research and inventory, input for the comprehensive list of measures and feasibility analysis, information, relating to the Vehicle Emission Inspection Maintenance Program, stationary and portable source control strategies, air quality research studies, State Air Quality Fund administration, adoption and submittal of State Implementation Plans to the Environmental Protection Agency, tracking plan implementation, assurances, special purpose air quality and meteorological monitoring for plan development and compliance
- Arizona Department of Transportation - State Transportation Improvement Program, other transportation plans and programs, input for the comprehensive list of measures and feasibility analysis
- Maricopa County Air Quality Department - stationary source emissions inventory and controls, coordinating the comprehensive emissions, inventory, air quality monitoring data, input for comprehensive list of measures and feasibility analysis, mandatory travel reduction program, trip reduction data, voluntary no drive days program, tracking plan implementation, reasonable further progress, assurances, special purpose air quality and meteorological monitoring for plan development and compliance
- Maricopa Association of Governments - demographic projections and socioeconomic data, transportation modeling, air quality modeling, Regional Transportation improvement Program, Regional Transportation Plan, other transportation plans and programs, congestion management system, conformity, input for comprehensive list of measures and feasibility analysis, development of the air quality plans, interface with state, county, and local entities, recommending future year travel reduction goals, policies, and standards to Maricopa County, assistance to Maricopa County for the mandatory travel reduction program, review reasonable further progress made to reduce air pollution and plan adjustments if necessary, review plan implementation

The technical planning work is closely coordinated with EPA Region IX staff, Federal Highway Administration, and Federal Transit Administration.

Authority is also included on the MAG Management Committee. A representative from the Citizens Transportation Oversight Committee is also on the Regional Council. The policy development process is influenced by input from the MAG member agencies, MAG committees, local citizens, and staff. The decision making body for MAG is the Regional Council, which is composed of elected officials from the member agencies. The MAG Management Committee, which is composed of managers from the member agencies, makes recommendations to the Regional Council (see Figure 7-2).

The MAG Air Quality Technical Advisory Committee was established by the MAG Regional Council in 1995. The purpose of the Committee is to review and comment on technical information generated during the planning process and make technical recommendations to the MAG Management Committee.

PUBLIC PARTICIPATION IN THE PREPARATION OF THE MAG 2017 EIGHT-HOUR OZONE MODERATE AREA PLAN FOR THE MARICOPA NONATTAINMENT AREA

The process used to develop the MAG 2017 Eight-Hour Ozone Moderate Area Plan included numerous meetings of the MAG Air Quality Technical Advisory Committee, MAG Management Committee and MAG Regional Council. All of these meetings were open to public attendance. During the preparation of the Eight-Hour Ozone Moderate Area Plan, a public hearing was conducted to solicit additional citizen input. A brief description of the Air Quality Technical Advisory Committee meetings conducted in preparing the plan is provided below.

Meetings of the MAG Air Quality Technical Advisory Committee

On January 22, 2015, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Update on the Arizona Center for Law in the Public Interest Lawsuit on the MAG 2012 Five Percent Plan for PM-10; Final Designations for the PM-2.5 Standard; Update on the Winter Holiday Non Burn Campaign; and Court Ruling on Ozone Attainment Dates and Transportation Conformity.

On March 26, 2015, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the Update on the Arizona Center for Law in the Public Interest Lawsuit on the MAG 2012 Five Percent Plan for PM-10; CMAQ Annual Report; EPA Final State Implementation Plan Requirements Rule for the 2008 Ozone Standard (0.075 parts per million); Comments on the EPA Proposed Ozone Standards; and Proposed New Air Quality Project for the MAG FY 2016 Work Program.

On May 21, 2015, a meeting of the Air Quality Technical Advisory Committee was conducted to discuss the EPA Approval of the MAG 2014 State Implementation Plan Revision for the Removal of Stage II Vapor Recovery; Maricopa County Ozone Campaign; and Development of the 2014 Periodic Emissions Inventory.

On August 27, 2015, a meeting of the MAG Air Quality Technical Advisory Committee

Figure 7-2

MAG Regional Air Quality Planning Process

MAG REGIONAL COUNCIL

Composition: Elected officials from twenty-seven cities and towns within Maricopa County and portions of Pinal County, Maricopa County, Pinal County, the Gila River Indian Community, the Salt River Pima-Maricopa Indian Community, Fort McDowell Yavapai Nation, and the Arizona Department of Transportation. McDowell Yavapai Nation, Arizona Department of Transportation, and Citizens Transportation Oversight Committee.

MAG MANAGEMENT COMMITTEE

Composition: Managers from twenty-seven cities and towns within Maricopa County and portions of Pinal County, Maricopa County, Pinal County, the Gila River Indian Community, the Salt River Pima-Maricopa Indian Community, Fort McDowell Yavapai Nation, the Arizona Department of Transportation and Regional Public Transportation Authority.

MAG AIR QUALITY
TECHNICAL ADVISORY COMMITTEE

Composition: MAG member agencies, citizens, and representatives from the following interests: health, environment, automobile industry, fuel industry and utilities, public transit, trucking industry, rock products industry, construction firms, housing industry, agriculture, industry, business, biogenics, parties to the Air Quality Memorandum of Agreement, and other State and Federal entities.

was conducted to discuss the EPA Notice Proposing to Reclassify the Maricopa Eight-Hour Ozone Nonattainment Area From Marginal to Moderate for the 2008 Ozone Standard; Air Quality Status Report; Update on the MAG Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area; Draft Maricopa County 2014 Air Monitoring Network Plan; and Tentative MAG Air Quality Project Schedule.

On October 22, 2015, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Evaluation of Proposed FY 2018, 2019, and 2020 CMAQ Projects for the FY 2017-2021 MAG Transportation Improvement Program; Evaluation of Proposed PM-10 Certified Street Sweeper Projects for FY 2016 CMAQ Funding; Evaluation of Proposed PM-10 Paving Unpaved Road Projects for FY 2018, 2019, and 2020 CMAQ Funding; EPA Approval of the MAG 2014 Eight-Hour Ozone Plan-Submittal of Marginal Area Requirements (2008 Ozone Standard 0.075 parts per million); New Strengthed Ozone Standard; EPA Withdrawal of the Direct Final Rule to Approve the Removal of Stage II Vapor Recovery; and EPA Approval of the MAG 2013 Carbon Monoxide Maintenance Plan.

On January 28, 2016, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the EPA Proposed Revisions to the Exceptional Events Rule; Draft MAG 2014 Inventory of Unpaved Roads; Update on the New Strengthened Ozone Standard; Update on the Moderate Area Ozone Plan; and EPA Final Rule to Approve the Removal of Stage II Vapor Recovery at Gasoline Stations.

On March 24, 2016, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Update on the Moderate Area Ozone Plan; Ozone Boundary Designations (2015 Ozone Standard); Update on the Maricopa County Winter No Burn Campaign; Maricopa County Ozone Campaign; and Update on the PM-10 Lawsuit.

On May 26, 2016, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Draft April 2016 Conformity Analysis for the Draft FY 2017-2021 MAG Transportation Improvement Program and Draft Amendment to the 2035 MAG Regional Transportation Plan; Update on the Moderate Area Ozone Plan; Ozone Boundary Designations (2015 Ozone Standard); and CMAQ Annual Report.

On August 25, 2016, a meeting of the MAG Air Quality Technical Advisory Committee was conducted to discuss the Update on the Ozone Monitoring Data; Update on the Moderate Area Ozone Plan; and Ozone Boundary Designations (2015 Ozone Standard).

PUBLIC INVOLVEMENT PROCESS FOR TRANSPORTATION AND AIR QUALITY

Federal transportation legislation emphasizes public involvement in the metropolitan transportation planning process. New transportation authorization was signed into law on December 4, 2015. The new enabling legislation, Fixing America's Surface Transportation Act (FAST Act) continues to emphasize public involvement in the metropolitan transportation planning process. Current legislation requires that the metropolitan planning organization work cooperatively with the state department of transportation and the regional

transit operator to provide citizens, affected public agencies, representatives of transportation agency employees, freight shippers, private providers of transportation, representatives of users of public transit, and other interested parties a reasonable opportunity to comment on proposed transportation plans and programs. The Maricopa Association of Governments will continue to adhere to the federal requirements for public involvement, in addition to finding new ways of engaging Valley residents in the transportation planning and programming process.

In response to previous federal guidelines under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), in December 2006 the MAG Regional Council approved a Public Participation Plan to guide the MAG public input process. This enhanced plan incorporated many of the previously adopted public involvement guidelines set forth by the Regional Council in 1994 and enhanced in 1998. The MAG Public Participation Plan sets forth guidelines for receiving public opinions, comments and suggestions on transportation planning and programming in the MAG region. This process provides complete information on transportation plans, timely public notice, full public access to key decisions, and opportunities for early and continuing involvement in the planning process.

The public involvement process is divided into four phases: Early Input Phase, Mid-Phase, Final Phase and Continuous Involvement. The Early Input meetings ensure early involvement of the public in the development of these plans and programs. The Mid-Phase process provides for input on initial plan analysis for the Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP) and generally includes a public hearing on regional transportation issues. The Final Phase provides an opportunity for final comment on the RTP, TIP and Air Quality Conformity Analysis. The Final Phase generally culminates with a public hearing. The hearing is advertised with a formal public notice and draft reports are also available for thirty days for public review. Air quality information is often provided at the input meetings and on a continual basis throughout the year. In addition, Continuous Involvement is conducted throughout the annual update process and includes activities such as presentations to community and civic groups, distributing press releases and newsletters, and coordinating with the Citizens Transportation Oversight Committee.

In accordance with 40 CFR §93.105, consultation is conducted on the draft air quality plans with the State air and transportation agencies, local air quality and transportation agencies, Environmental Protection Agency, Federal Transit Administration, and Federal Highway Administration. Public hearings are conducted on draft air quality plans in accordance with State and federal requirements.

TITLE VI CONSIDERATIONS

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color and national origin by recipients and sub-recipients of federal funds and prohibits exclusion from participation in, denial of benefits, or being subjected to discrimination under any program or activity receiving federal financial assistance. Additional federal and state laws and directives prohibit discrimination on the basis of age, gender, handicap or disability.

The Executive Order on Environmental Justice encourages consideration of environmental justice concerns, especially the impact of programs and activities on low-income and minority populations. The Act and its related laws and directives hereinafter are called, collectively, *Title VI*.

MAG is responsible for incorporating Title VI requirements and environmental justice concerns in its planning and programming processes, and the enforcement of statewide compliance, including the MAG region, is the responsibility of the Arizona Department of Transportation. MAG's policy is to assist the Arizona Department of Transportation in its compliance efforts.

For more than forty years, MAG has fully integrated the voices of vulnerable populations into regional planning activities. The Maricopa Association of Governments is the Metropolitan Planning Organization and Council of Governments for the region, comprising twenty-seven cities and towns within Maricopa County and portions of Pinal County, Maricopa County, Pinal County, the Gila River Indian Community, the Salt River Pima-Maricopa Indian Community, Fort McDowell Yavapai Nation, and the Arizona Department of Transportation. A representative from the Regional Public Transportation Authority is a member of the MAG Management Committee. A representative of the Arizona Department of Transportation Board and a representative of the Citizens' Transportation Oversight Committee are members of the MAG Regional Council. MAG receives funds from a variety of sources, including direct federal, indirect federal, and state and local government funds.

Historically, the MAG Human Services Planning Program has considered the needs of populations vulnerable to discrimination or exclusion. These populations may be described by minority race or ethnicity, low income, functional limitations or disabilities, or advanced age. Program activities intentionally solicit public input, participation and feedback regarding local needs.

The MAG Title VI Program is implemented through the Title VI Coordinator. The Coordinator is responsible for reviewing and updating the program in collaboration with the division liasions. The liasions in each of the MAG divisions are the main point of contact for both the public and Coordinator on Title VI issues.

On May 28, 2014, the MAG Regional Council approved the MAG Title VI and Environmental Justice Program. On April 26, 2016, the Arizona Department of Transportation requested changes to the MAG program to remain in compliance with federal legislation. The new program reflects activities that fulfill the responsibilities set forth by the Federal Transit Administration, the Federal Highway Administration, and the U.S. Department of Justice. The new MAG Title VI and Environmental Justice Program was approved by the MAG Regional Council on June 22, 2016.

Public Involvement Process

MAG currently conducts activities to encourage public participation in its decisions. These activities include open houses, community meetings, and presentations to local

committees. This open process offers complete information on plans, timely public notice, public access to decisions, and opportunities for early and continuing involvement. In addition to general public involvement processes, the MAG Human Services Planning Program solicits input from local minority populations and people in under served communities. The processes and findings of the Human Services Planning Program are integrated into MAG's planning programs, and members of the MAG Human Services Planning Program staff are part of the MAG Title VI team.

MAG reaches out to known potential populations that could be affected by proposed policies of this plan. Each entity or individual was sent a personal invitation to comment on the Draft MAG 2017 Eight-Hour Ozone Moderate Area Plan (see Appendix C, Exhibit 1).

Information Dissemination

MAG employs a strategy of expanded information dissemination and public access to plans and decisions. Copies of studies and reports are placed in public libraries in the region as standard procedure.

MAG committee meetings are conducted in accordance with the Open Meeting Law, and therefore provide citizens public opportunities to comment before meetings of MAG technical and policy committees. Alternative formats, accessible meeting locations and accessible meeting times are encouraged for MAG meeting planning.

MAG houses numerous records of data, statistics and information. Data collection, analysis and portrayal methods and products are evaluated periodically. Program area managers assess MAG's available data sources for relevance to Title VI requirements not less often than annually.

These partnerships will continue in the form of periodic meetings and communications with Arizona Department of Transportation, the Regional Public Transportation Authority, and MAG member agencies. MAG maintains an open dialogue with the Arizona Department of Transportation Office of Civil Rights.

Since 1976, the MAG human services committees have collaborated with a number of key stakeholders, such as state and county agencies, municipalities, community-based organizations and funders of human services within the region to identify strategies to address human services priorities at the regional level. The MAG human services planning process enhances the organization's consideration and participation of minority, poor and other population groups in developing regional plans and projects.

MAG maintains a home page on the Internet (www.azmag.gov) which provides the public with access to information on the role and history of the agency and its programs, as well as the agendas and minutes of Committee meetings. The web page serves as an excellent portal for disseminating information about MAG events, programs and plans.

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