

**RESPONSE TO PUBLIC COMMENTS ON THE
DRAFT MAG EIGHT-HOUR OZONE PLAN FOR THE
MARICOPA NONATTAINMENT AREA**

JUNE 1, 2007 AND JUNE 4, 2007 PUBLIC HEARINGS

The Maricopa Association of Governments (MAG) appreciates the comments made during the public comment period for the Draft MAG Eight-Hour Ozone Plan for the Maricopa Nonattainment Area. Two advertised public hearings were conducted on June 1, 2007 and June 4, 2007. Verbal testimony was presented at the June 1, 2007 public hearing. No verbal testimony was presented at the June 4, 2007 public hearing. Written comments were submitted from three entities. The following represents the MAG response to the comments received.

COMMENTS FROM DIANNE BARKER (Testimony at the June 1, 2007 public hearing)

Comment: Your presentation would be good for school children to hear so they can teach the ideas back to adults and their parents.

Response: The Maricopa Association of Governments appreciates the comment.

Comment: Ozone is increasing in the nonattainment area. You've modeled certain days that could be some of the worst days and you've modeled the measures. This is a rapidly growing area. It is people buying gasoline that are causing emissions. Reformulated fuel is not that good for overall pollution. I believe that we'll have more aldehydes. Aldehydes are carcinogens.

Response: According to the air quality monitors, the number of eight-hour ozone violations has been decreasing. In 2005 and 2006, there were no violating monitors. Reformulated fuel is a clean burning gasoline that reduces emissions which cause ozone. Reformulated fuel has a large impact since it reduces tailpipe emissions from all vehicle trips, rather than a specific type of trip such as work trips.

Comment: I don't see any measures to encourage people to rideshare or to go out and purchase hybrid automobiles that aren't using petroleum, reformulated, or otherwise.

Response: The MAG Eight-Hour Ozone Plan for the Maricopa Nonattainment Area relies on the State, County, and local commitments to implement control measures in the Serious Area Carbon Monoxide Plan, One-Hour Ozone Maintenance Plan, and the Serious Area Ozone State Implementation Plan which have all been approved by the Environmental Protection Agency. The Serious Area Carbon Monoxide Plan includes Employer Rideshare Program Incentives; Preferential Parking for Carpools and Vanpools; Expansion of Public Transportation Programs; Encouragement of Pedestrian Travel; Encouragement of Bicycle Travel; and Development of Bicycle Travel Facilities.

Comment: I'm here to be part of the solution. I do use the natural gas bus and I also rode my

bicycle and walked today. Some people in MAG are using alternative transportation. Governments should serve as models for the community.

Response: The Maricopa Association of Governments participates in the Maricopa County Trip Reduction Program. MAG encourages the use of alternative modes of transportation.

Comment: The Maricopa Government Air Quality Division listed \$1.5 million dollars in fines in 2007 from offenders for gasoline, dust, open fires, and permit problems.

Response: The Maricopa County Air Quality Department issues permits and has regulatory authority. The fines were posted on the Maricopa County Air Quality Department website.

COMMENTS FROM MICHAEL HERNANDEZ (Testimony at the June 1, 2007 public hearing)

Comment: The Arizona Department of Transportation Natural Resources Division is out there conducting their chemical and vegetation control operations without properly and effectively communicating the risk for the traveling public by putting up signs. When the Maricopa County Department of Transportation is fogging for mosquitoes with West Nile Virus, the County takes the responsibility for notifying everyone what areas will be targeted for spraying.

Response: The Maricopa Association of Governments will convey your concerns regarding chemical spraying to the Arizona Department of Transportation. In addition, it is suggested that you contact the Maricopa County Air Quality Department.

Comment: I was exposed to Amine 424D which is Agent Orange in May 22, 2000 on Interstate 10 while working for the Arizona Department of Transportation. Two of my fellow coworkers and I were sprayed down with Amine 424D. Back in 1999, several people with multiple chemical sensitivity, MCS, reported this. I have learned about this through the Federal Highway Administration of the U.S. Department of Transportation in Washington D.C., Arizona Center for Disability Laws.

Response: As the designated Regional Air Quality Planning Agency for this area, the Maricopa Association of Governments does not have authority over the application of pesticides and other chemicals. Your comments will be conveyed to the Arizona Department of Transportation. It is also suggested that you contact the Maricopa County Air Quality Department.

Comment: Thank you very much for affording me this opportunity to come and be a part of this outstanding setting. I find you all to be very knowledgeable and thank you for doing what you do for us.

Response: The Maricopa Association of Governments appreciates your comments.

COMMENTS FROM THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
(Letter from Colleen McKaughan, dated May 31, 2007 received by e-mail May 31, 2007)

EPA Comments on Chapter 1

Comment: *Provisions to prohibit sources from impacting air quality in other states* (page 1-7). ADEQ recently completed and has submitted to EPA the *Arizona Interstate Transport SIP* to address the requirements of section 110(a)(2)(D)(I) of the CAA. A reference to this SIP in this section would be appropriate.

Response: A reference to the Arizona Interstate Transport SIP has been added to this section.

Comment: *Meet the applicable requirements of section 110(a)(2)(M)* (page 1-9). It would be helpful to specify the consultation which occurred with affected entities for this particular plan.

Response: More detail on the consultation process has been added to this section.

Comment: *RACT*. Since Maricopa County is designated a subpart 1 non-attainment area for ozone, and expects to show attainment by 2009, RACT is deemed to be met with the control requirements associated with a demonstration that the NAAQS is attained as expeditiously as practicable. (70 FR 71612, 11/29/2005, section IV.G.1)

Response: This language has been added to the section discussing RACT.

Comment: There are a number of typographical errors in Table 1-1 of VOC RACT measures (see Attachment A). Also, it would be helpful to explain that NOx RACT was not required under 1-hour ozone because of the 1995 NOx exemption.

Response: The Maricopa County Air Quality Department (MCAQD) provided Table 1-1 to MAG for inclusion in the Eight-Hour Ozone Plan. In response to this comment, MCAQD has provided MAG with a corrected Table 1-1 that will be included in the Final Plan. A sentence on the 1995 NOx exemption has been added to page 1-10.

Comment: MAG should include an updated negative declaration regardless of whether such negative declarations were made for an earlier SIP. This is necessary since there may now be sources in the area that previously did not exist. Language similar to the following may be appropriate:

Maricopa County AQD has reviewed its permit files and the emission inventory for its federal Clean Air Plan, [include any other information sources searched such as SIC Codes and telephone yellow pages], and has determined that there are no stationary sources or emitting facilities for the following CTG categories. MCAQD also does not anticipate these sources in the future.

GUIDANCE DOCUMENT TITLE	DOCUMENT TYPE	DOCUMENT NUMBER
Control of Refinery Vacuum Producing Systems, Wastewater Separators, and Process Unit Turnarounds	CTG	EPA-450/2-77-025

Response: The Maricopa County Air Quality Department has indicated that based upon discussions with EPA, an updated negative declaration is not necessary.

Comments on Chapter 2

Comment: It is not clear how the detailed discussion on p. 2-3 to 2-15 concerning the transportation system, congestion management process, and public transit system relates to air quality or 8-hour ozone planning.

Response: Onroad mobile sources produce a significant share of the ozone precursor emissions, (i.e., 51% of the nitrogen oxides and 10% of the volatile organic compounds in 2008). For the Eight-Hour Ozone Plan, the emission rates for onroad mobile sources were estimated with the EPA MOBILE6.2 model, using speeds by facility and area type estimated by the MAG transportation models. The highway speeds represent congestion levels at four different times of day (AM peak, midday, PM peak and nighttime). The speeds input to MOBILE6.2 differ in the base case (2001 and 2002) and attainment (2008) years, due to differences in the magnitude and distribution of population, employment, and transportation supply (e.g., freeway and arterial lane miles, bus service, light rail). The MOBILE 6.2 emission rates are applied to the vehicle miles of travel, simulated by the MAG transportation models, to estimate onroad mobile source emissions. The present and future regional transportation systems are discussed in Chapter 2, because these systems influence the speeds and vehicle miles of travel used in developing onroad mobile source emissions for the Plan.

EPA Comments on Chapter 3

Comment: *Emissions Inventory.* The pie chart in the executive summary shows biogenic emissions constitute 65% of total emissions. However, the emissions inventory in Table 3-1 indicates biogenics are about 22% of total emissions. Can you explain the discrepancy and clarify which is the correct number? We understand that you relied on a biogenics study done by a consultant; can you make this document and all the references you cite in the plan and TSD publicly available?

Response: The biogenic emissions for the attainment demonstration were estimated by MEGAN (Model of Emissions of Gases and Aerosols from Nature) using vegetative emissions rates measured in Maricopa County during June 2005. MEGAN is a state-of-the-art biogenics model developed by Dr. Alex Guenther, under the sponsorship of EPA, the National Science Foundation, and the National Center for Atmospheric Research. Unlike other biogenic models (i.e., GLOBEIS, MAGBEIS), MEGAN uses a bottom-up approach that more accurately reflects current understanding of the processes controlling biogenic emissions. The pie charts in Figure ES-2 (for 2002) and Figure ES-5 (for 2008) of the Executive Summary represent biogenic emissions estimated by MEGAN for the ozone modeling domain.

Table 3-1 summarizes data from the 2002 Maricopa County Periodic Emissions Inventory (PEI) for ozone precursors. This inventory is included in Chapter 3, because EPA requires that the most recent inventory be included in the Plan. (See Appendix A, Exhibit 1.), even if some of the assumptions differ from the emissions inventories developed to model attainment. The biogenic emissions in the 2002 PEI were prepared using MAGBEIS and default emission rates based primarily on measurements of East Coast vegetation. The Maricopa County Air Quality Department (MCAQD) is in the process of preparing the 2005 PEI for ozone precursors that will include the biogenic emissions estimates from MEGAN.

MAG has mailed a copy of the Final Report for the MAG 2006 Biogenics Study to Colleen McKaughan. We would be happy to provide any other reports cited in the Plan. Please let us know what other reports you would like to obtain.

Comment: *Emissions Inventory.* The emissions inventory is in English tons, while the control measure emissions reductions are in metric tons. This could be confusing to the public. Can you use consistent units and/or provide the conversions to the other unit, for example 1.0 English tons (___ metric tons).

Response: The conversion from English tons to metric tons will be added as a footnote to Figure 3-1 and Table 3-1. The only use of English tons in the Plan is in the 2002 PEI in Chapter 3 and Appendix A, Exhibit 1. As discussed above, the PEI is included in the Plan because it is the latest emissions inventory for ozone precursors submitted to EPA. In addition to use of a different biogenics model, the PEI represents average conditions (e.g. temperatures, vehicle miles of travel) during the 2002 ozone season, while the modeling inventories are specific to the episode days in August 2001, June 2002 and August 2002. The modeling emissions inventories presented in the Executive Summary and Chapter 5 of the Plan are consistently expressed in terms of metric tons. A more detailed description of the assumptions used in developing the modeling inventories is provided in Chapter V of the Technical Support Document.

Comment: *Monitoring.* The text and tables refer to a total of both 19 and 20 monitors.

Response: The text in Chapter 3 indicates that there are nineteen monitoring stations within the Maricopa County eight-hour ozone nonattainment area that monitor ozone. The Tonto National Monument site also monitors ozone and is located just outside the nonattainment area in Gila County, downwind of the Phoenix Metropolitan Area. The text and tables in Chapter 3 include the nineteen monitoring stations within the Maricopa County eight-hour ozone nonattainment area and the Tonto National Monument monitor.

EPA Comments on Chapter 4

Comment:

Control Measures

The plan indicates the following (page 4-2) "Maricopa County Rule 348 was a maintenance measure for which credit was taken in the One-Hour Ozone Maintenance Plan. However, since Rule 348 was

adopted in 1999, it has been assumed in the base case 2001 and 2002 emissions inventories, rather than as an attainment measure in this Plan.” There are several other control measures which were adopted a number of years ago, and yet this same caveat was not applied to these other measures, such as *Phased in Emission Test Cutpoints*, *One-Time Waiver from Vehicle Emissions Test*, and *Tougher Enforcement of Vehicle Registration and Emission Test Compliance*. Can you please clarify this discrepancy?

Response: The general approach applied in the Eight-Hour Ozone Plan was to quantify the emissions reductions for the same measures that were quantified in the One-Hour Ozone Maintenance Plan. These quantified measures were called maintenance measures in the One-Hour Ozone Maintenance Plan. They are called attainment measures in the Eight-Hour Ozone Plan, because numeric credit was applied in modeling attainment. Rule 348 was removed from the attainment measures, and Rule 358 was added, at the request of Jo Crumbaker of the Maricopa County Air Quality Department. Chapter Four describes the seven attainment measures and Table 5-2 shows the emission reductions for each of these measures in 2008. Emission reductions for attainment measures implemented prior to the base year are applied in modeling the base year, as well as the attainment year.

Comment: *Arizona Cleaner Burning Gasoline (CBG)* – both the Executive Summary (on page ES-5) and the control measure discussion on page 4-3 indicate an increase in VOC emissions from the Phoenix CBG program. Can you explain how this ozone precursor control measure increases emissions of VOCs? A minor correction, the most recent Arizona CBG approval was published in the *Federal Register* on March 4, 2004 (citing the date of publication rather than signature provides the public with the information to find the *Federal Register* notice) and was signed by the Regional Administrator for Region 9, not the EPA Administrator.

Response: The benefit of the CBG control measure was modeled by setting the MOBILE6.2 flag for reformulated gasoline, indicating fuel use in the southern U.S., and specifying an RVP of 7.0 psi. The emissions resulting from this run were compared with MOBILE 6.2 output using actual fuel specifications in 2002 provided by the Arizona Department of Weights and Measures. Since the fuel in 2002 had an RVP less than 7.0 psi, the CBG program showed a slight increase in VOC emissions, compared with the base case. The sentence alluding to the approval of the CBG by EPA has been corrected.

Comment: *Measures That Improve Air Quality But Were Not Used for Numeric Credit*. 38 measures are included in the plan under this category. We suggest that you take them out of the plan unless it is MAG’s intent to make these measures federally-enforceable by including them in the SIP. If so, you need to provide an implementing agency, a specific commitment to implement, including evidence of funding for the measure, and a timeframe for implementation in order to make them approvable. [CAA section 110(a)(2)]

Response: The Eight-Hour Ozone Plan indicates that some of the committed measures from the EPA approved Serious Area Carbon Monoxide Plan, Carbon Monoxide Redesignation Request and Maintenance Plan, and One-Hour Ozone Redesignation Request and Maintenance Plan improve air quality but were not used for numeric credit in those approved plans. The reduction in ozone precursor emissions attributable to these measures was not easily quantified or may not have been

possible to quantify. Some of these committed measures may continue to reinforce the air quality benefits of the measures for which numeric credit towards attainment was taken. As requested by ADEQ, the two measures which have been repealed have been removed from Chapter Four and a more general discussion will be included.

Comment: *Transportation Control Measure (TCM) Implementation.* For the purposes of verifying timely implementation of TCMs, it would be helpful if you could specifically identify TCMs and their implementation dates, implementing agency, funding source, and timeframe for implementation.

Response: The Revised MAG 1999 Serious Area Carbon Monoxide Plan, approved by EPA on March 9, 2005, includes the implementation dates, agency, funding source, and timeframes for the TCMs that were adopted as part of that plan.

EPA Comments on Chapter 5

Comment:

Motor Vehicle Emissions Budgets (MVEBs) for Transportation Conformity

On page 5-14, the plan indicates that the NO_x MVEB for 2008 is 138.2 mtpd, but on page 5-15 the NO_x MVEB is listed as 133.1 mtpd. Which is the correct value?

Response: 138.2 mtpd is the correct value; the value on page 5-15 has been corrected.

Comment:

Contingency Measures

HB2538 (2001), Expansion of Area A. Wouldn't this measure already be included in the emissions reductions associated with the measures which apply to Area A in Maricopa County's baseline 2002 emissions inventory? It is not clear how this measure would assist in reducing emissions in the event of a violation of the NAAQS.

Response: Maricopa County's baseline 2002 emissions inventory would include benefits for the expansion of Area A attributable to HB2538. However, in the emissions inventories used to validate the models on the episode days in 2001 and 2002, the benefits of this measure have been removed using GIS. Only credit for the Area A measures within the boundary defined by SB1427 have been assumed in modeling the base years. Additional contingency measures will be considered in the event there is a violation of the NAAQS for eight-hour ozone. (See the response to the comment on Contingency Measures in the EPA Comments on the TSD below).

Comment: In total, the contingency measures are estimated to reduce emissions of VOC by 2.3 percent and NO_x emissions by 6.4 percent, whereas the control measures for which credit was taken in total reduce VOC emissions by about 2.3 percent and NO_x emissions by about 4.5 percent. If the contingency measures achieve additional reductions equal to or larger than the control measures

credited in the attainment demonstration, and they are already implemented, why do we not see the benefits from the contingency measures in peak ozone concentrations in the modeling?

Response: EPA has published guidelines for the reductions in base case emissions that should be attributable to contingency measures (i.e., at least a 3 percent reduction in VOC and NO_x with at least a 0.3 percent reduction in VOC). EPA allows measures that have already been implemented, including federal programs, to be used as contingency measures. However, you must be able to demonstrate that attainment can be modeled without taking emission reduction credit for the contingency measures. The benefits of the contingency measures were removed from the 2008 emissions inventory used to model attainment. The methodologies used to remove the contingency measures are described on pages V-20 through V-24 of the TSD.

EPA Comments on the TSD

Comment:

Modeling

Diagnostic Analyses. MAG should provide documentation of sensitivity and diagnostic analyses performed, and any conclusions from these. The modeling protocol (TSD Appendix D) lists various diagnostic analyses that could be performed using the model, to ensure that it responds in a physically reasonable way to altered inputs. The list included zero boundary conditions, zero initial conditions, diffusion break heights, and other tests such as changes in emission levels, emission speciation; alternative wind fields could be added to this list. There should be a summary of any such sensitivity and diagnostic analyses that were performed. This could be an expansion of the "Corroboratory Tests" section. The summary could include references to certain of the analyses that are already described, such as some for meteorology (TSD App. III-ii "Addendum to ENVIRON's Report to MAG: MM5 Meteorological Simulation", 5/19/06 p. III-51), and process analysis (in TSD App. V at page 17). But it should also describe pertinent results from, e.g. the across-the-board and other VOC and NO_x emission reduction simulations that MAG performed (these are referred to, but not described, in TSD App. V section on weekend effects).

Response: MAG performed several sensitivity and diagnostic analyses and they are presented in TSD chapter IV-2. Analyses include zero boundary conditions, zero initial conditions, and zero emission sources. MAG will conduct further diagnostic analyses and any conclusions from these analyses will be supplied later as supplemental information.

The summary of the analyses mentioned above (meteorology and process analysis) will be included in the final TSD. The pertinent results from the across-the-board NO_x and NO_x RACT reduction tests referred in TSD Appendix V was removed from the Draft TSD at the last moment because MAG decided not to apply for a NO_x exemption. This results will be supplied later as supplemental information.

Comment: It would be highly desirable to include a color version of TSD App. V in the final electronic document, since some of the graphs are very difficult to interpret in black and white.

Response: A color version of Appendix V will be included in the final document on the MAG website.

Comment: *Unmonitored Area Analysis (UAA)*. MAG should carry out an analysis of unmonitored areas using gradient-adjusted spatial fields. If this cannot be completed in time for the submittal deadline, it can be supplied later as supplemental information. The TSD section on "Corroboratory Tests" (p. V-87, in the Attainment Demonstration section) shows results of screening tests to address attainment at locations not at a monitor, and appear to have been adequately carried out and to have shown favorable results. The screening test was described in the 2/17/05 version of EPA's attainment demonstration guidance. This test was superceded by the "unmonitored area analysis" described in the October 2005 guidance version, and in the final version, "Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze", EPA-454/B-07-002, April 2007 (web page: http://www.epa.gov/scram001/guidance_sip.htm direct link: <http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf>). Under the later guidelines, Relative Reduction Factors (RRFs) are applied not directly to fields of spatially-interpolated monitoring values, but rather to the fields adjusted using model output gradients. EPA has developed "Modeled Attainment Test Software" (MATS) to carry out this adjustment; MATS has been available in a beta version for several months. An additional corroboratory analysis MAG could consider for unmonitored areas is the direct absolute ozone results from simulation of the future year (i.e., model output for each grid cell, without using RRFs).

Response: Since MAG conducted attainment demonstration based on the October 2005 guidance version, which does not include any information about MATS, gradient-adjusted spatial fields could not be applied for the attainment demonstration. MAG will conduct additional corroboratory analyses as EPA suggested and provide results later as supplemental information.

Comment:

Contingency Measures

Section V-2-2 on page V-16 of the TSD has the following statement: "The Eight-Hour Ozone Plan discusses procedures that will be followed to consider and implement additional contingency measures if they are needed." We did not see this discussion in the plan or TSD.

Response: The following language has been added to the end of the section on Contingency Measures in Chapter Five of the Plan: "The success of an air quality program is measured by the concentrations recorded at the monitors. A violation of the eight-hour ozone standard occurs when the three-year average of the fourth highest annual value at a monitor is 0.085 ppm or greater. Ambient air quality monitoring data will be examined to determine if a violation has occurred. If the standard is violated at any monitor, additional contingency measures will be considered, which may include new measures or the strengthening of existing measures. If a violation occurs, additional contingency measures would be considered on the following schedule: (A) verification of the monitoring data to be completed three months after the violation occurs; (B) applicable contingency measure(s) to be considered for adoption six months after the date established in (A) above, and © contingency measure(s) to be implemented within six to twelve months after adoption, depending upon the time needed to put the measure in place."

Comment:

Control Measures

Coordinate Traffic Signal Systems. The discussion of the control measure Coordinate Traffic Signal Systems on page V-13 indicates that 151 traffic signals would be coordinated between 1997 and 2008. How did you ascertain that only the traffic signals modified since 2002 were credited, since signals synchronized between 1997 and 2002 would be in the base year of the inventory?

Response: State law (ARS 9-500.04 2.) requires jurisdictions to synchronize traffic signals at intersections in Area A that exceed 15,000 motor vehicles per day. MAG applied GIS techniques to 2002 and 2008 traffic assignments to quantify the number of intersections with more than 15,000 average daily trips (ADT). The growth in the number of intersections exceeding 15,000 ADT between 2002 and 2008 was 151 in the CO nonattainment area. This represents a conservative estimate because the law actually applies to intersections in a much larger area (i.e., Area A).

Comment: *Tougher Enforcement of Vehicle Registration and Emission Test Compliance.* Pages V-14 and V-15 of the TSD indicate that the Arizona Department of Transportation has increased staff for this program. However, increased staff does not necessarily translate into increased emissions reductions. How were the emissions reductions associated with this program calculated? The TSD states that “the number of vehicles which participate in the I/M program was increased by 2.0 percent.” Was this a total of 2 percent, or 2 percent per year? What is the basis for the 2 percent number? Why would this 2 percent emissions reduction not be included in the baseline 2002 emissions inventory?

Response: At the bottom of Page V-15, under Modeling Methodology, it indicates that the 2 percent was applied by “changing the weighting from 89.6 for I/M and 10.4 for non-I/M to 91.6 and 8.4 respectively.” These percentage weights were applied to the emission factors obtained from MOBILE 6.2 run with and without the I/M program. This is consistent with the methodology used to model this measure in the Serious Area CO Plan and the CO and One-Hour Ozone Redesignation Request and Maintenance Plans, all of which were approved by EPA. This shift in the I/M weighting results in a very small emissions reduction: less than a 0.1 percent reduction in anthropogenic VOC and NOx emissions in 2008. As discussed in the first response under Chapter 4, credit for attainment measures that were implemented before the base years was applied to the 2001 and 2002 modeling emissions inventories, as well as the 2008 attainment modeling emissions inventory.

COMMENTS FROM THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
(Letter from Nancy C. Wrona dated June 4, 2007 received by e-mail and hand delivery June 4, 2007)

Comment: ADEQ understands the complexity of this planning effort and recognizes that MAG has worked diligently to develop this plan, including collaboration with ADEQ. At the same time, ADEQ has concluded that implementation of additional control measures will be necessary to attain the eight-hour ozone standard. ADEQ is aware that recent staff work by EPA recommended changing the eight-hour ozone standard to below .080 parts per million to as low as .060 parts per million to protect public health for sensitive groups. For those reasons, ADEQ does not concur that committed measures in the Serious Area Carbon Monoxide Plan, Carbon Monoxide Maintenance

Plan, and the One-Hour Ozone Maintenance Plan will result in attainment of the eight-hour averaged ozone standard.

Response: Based upon local air quality monitoring data, there have been no violating monitors for the eight-hour ozone standard for two consecutive three year periods: 2003-2005 and 2004-2006. The air quality monitoring data indicates that the eight-hour ozone standard has already been attained with the existing measures. According to the EPA Final Rule to Implement the Eight-Hour Ozone National Ambient Air Quality Standard-Phase I, dated April 30, 2004, "attainment is determined based on an average of the 4th high reading at a monitor over a three year period. Thus, the 4th high reading for an area could be above the NAAQS for one or both of the years preceding the attainment year, but so long as the 4th high level for the other year(s) was low enough to produce an average at or below 0.84 parts per million, the area would be attaining the NAAQ."

In reviewing the air quality monitoring data for the eight-hour ozone standard for the last seven years, there has been a downward trend in the number of violating monitors. In 2000, there were seven violating monitors. In 2005 and 2006, there were no violating monitors based upon the three year average of the 4th high readings. In addition, the air quality modeling demonstration and weight of the evidence demonstration in the Eight-Hour Ozone Plan indicate attainment of the standard for 2008 ozone season.

The current eight-hour ozone standard was promulgated by EPA in 1997. The EPA nonattainment area designations were not effective until June 15, 2004. This region is classified as a Basic Area under Subpart 1 of the Clean Air Act and has a June 15, 2009 attainment date. The current air quality monitoring data indicates that the standard has been met well before the attainment date.

Based upon the EPA 2007 Fact Sheet entitled, Review of National Ambient Air Quality Standards for Ozone Final Staff Paper, Human Exposure and Risk Assessments and Environmental Report, EPA indicated that it will propose action to revise or retain the current ozone standards by June 20, 2007 and then take final action by March 12, 2008. If EPA revises the eight-hour ozone standard to be more stringent, it is anticipated that EPA would then make the nonattainment area designations in 2011. This timeline assumes no delays due to ensuing legal challenges.

Comment: To that end, the Plan should have evaluated the following control measures: A Liquid Leaker Test component added to the Vehicle Emissions Test; Seasonal Open Burning Ban 5/1 through 9/30 each year and Cleaner Burning Gasoline (CBG) in western Pinal County.

Response: At this time, there are no commitments to implement the Liquid Leaker Test, Seasonal Open Burning Ban, and Cleaner Burning Gasoline for western Pinal County. These measures would fall under the authority of the Arizona Legislature and the Legislature has not passed the necessary legislation.

In accordance with the Clean Air Act, only measures with commitments for implementation may be included in the adopted plan and modeling attainment demonstration. To rely on measures with no commitments for implementation to attain the eight-hour ozone standard would be a direct violation of the Clean Air Act requirements in Section 110 (a)(2). If the legislature passes legislation with additional controls, additional submittals may be made to EPA to include the measures in the Eight-Hour Ozone Plan.

At the national level, the Environmental Protection Agency has added new ozone control measures for Consumer and Commercial Products under Section 183(e) of the Clean Air Act. On May 30, 2007, EPA issued an Emission Reduction Credit Memorandum regarding these measures.

Comment: ADEQ has determined that the documents that MAG made available on the Internet for public review are not adequate to help interested publics review the complex and lengthy documents. The posted plan was not searchable, and because it was in black and white many of the graphics were difficult to interpret. Appendices III and IV of the Technical Support Document were not listed on the website, and it was later determined that they were included at the end of the file labeled Appendix II. The website should include information on how to obtain copies of MAG studies.

Response: The public hearing advertisements for the Draft Eight-Hour Ozone Plan for the Maricopa Nonattainment Area indicate that the draft document is available for public review at the MAG Office, third floor, from 8:00 a.m. to 5:00 p.m. Monday through Friday. Often times, members of the public come to the MAG Office and review the draft documents in the library. The website was not used to comply with the document availability for public review.

As ADEQ acknowledges, the draft document was also available on the MAG website. Appendices III and IV of the Technical Support Document were appropriately located behind Appendix II. MAG will take into consideration your suggestions to make the website more convenient. If ADEQ is experiencing difficulty navigating the website, ADEQ is welcome to call MAG for assistance, as the ADEQ staff member did in this case.

Comment: Although the June 15, 2007 submittal deadline has been known for several years, the Eight-Hour Ozone Planning Team did not meet until February 1, 2007. Its second and last meeting was February 9, 2007 to discuss both the Eight-Hour Ozone Plan and the Five Percent Plan for PM-10. One identified issue was resolved in subsequent teleconference calls on April 20 and 27, 2007. The remaining issues identified in this comment letter were never elevated or referred by the Planning Team to the Air Quality Policy Team for consideration. The Silt Loading Study and Biogenics Study were not provided to the Planning Team. When an ADEQ employee contacted MAG on May 29 to access the Biogenics Study, he learned that it was not electronically available on the website but that a photocopy would be provided to him.

Response: The Maricopa Nonattainment Area was classified as a Basic Area effective June 15, 2004. The June 15, 2007 plan deadline has been known for three years as opposed to several years.

The Air Quality Planning Team members include the staff from the Arizona Department of Environmental Quality, Arizona Department of Transportation, Maricopa County Air Quality Department and Maricopa Association of Governments. Any member of the Air Quality Planning Team may call a meeting or elevate issues to the Air Quality Policy Team at any time. If any member of the Air Quality Planning Team would like a copy of the various MAG studies mentioned by ADEQ, the member may request a copy.

Regarding the preparation of the Eight-Hour Ozone Plan, ADEQ is incorrect in stating that the Planning Team did not meet until February 1, 2007. Specifically, Planning Team meetings were conducted on October 19, 2005; December 13, 2006; and February 9, 2007. The February 1, 2007 meeting was on the Eight-Hour Ozone Plan and included not only staff on the Air Quality Planning Team but others as well. The Air Quality Planning Team was also provided with a copy of the Draft

Ozone Modeling Protocol on October 5, 2005. In addition, there were several Air Quality Planning Team meetings to discuss the data, issues and implications of the eight-hour ozone boundary. There have also been discussions and presentations on the preparation of the Eight-Hour Ozone Plan and the modeling at the MAG Air Quality Technical Advisory Committee meetings, which include the members of the Air Quality Planning Team.

Comment: The MAG Air Quality Policy Committee in existence in 1992 was subsequently recast by MAG as the Air Quality Technical Advisory Committee (AQTAC) without amendment to the Memorandum of Agreement.

Response: The MAG Air Quality Policy Committee was established by MAG in 1975, approximately seventeen years before the Air Quality Memorandum of Agreement. In 1994, the MAG Regional Council established the Air Quality Technical Advisory Committee, in addition to the Air Quality Policy Committee. In 1999, MAG streamlined its committee structure and the Air Quality Policy Committee was replaced by the Air Quality Technical Advisory Committee. The Standing and Special Committees of MAG are created by the MAG Regional Council pursuant to the MAG Bylaws. According to the Air Quality Memorandum of Agreement, the Agreement may be amended at any time upon mutual written agreement of all parties.

Comment: MAG scheduled the Public Hearing on Friday, June 1, 2007 at 5:30 p.m. After ADEQ advised MAG that the general public would not be well served by that schedule, a second Public Hearing was scheduled for the following Tuesday.

Response: MAG scheduled the first Public Hearing for Friday, June 1, 2007 at 5:30 p.m. When ADEQ indicated that Friday may be questionable, MAG then promptly offered to schedule a second Public Hearing for Monday, June 4, 2007 at 5:30 p.m. Two public verbal testimonies were presented at the Friday, June 1, 2007 Public Hearing. No public verbal testimonies were presented at the Monday, June 4, 2007 Public Hearing. MAG was pleased to offer two Public Hearing opportunities to the general public.

Comment: MAG has not added any new control measures to achieve the new eight-hour ozone standard despite the narrow margin relied upon for its attainment demonstration. ADEQ is not confident that the modeled attainment demonstration will be achieved unless the additional control measures identified on the first page of this comment are added to the plan.

Response: The modeling attainment demonstration and weight of the evidence demonstration included in the Eight-Hour Ozone Plan indicate attainment of the eight-hour ozone standard in the ozone season of 2008 which is prior to the attainment date of June 15, 2009. Currently, the air quality monitor data indicates that there have been no violating monitors for the three year average of the 4th high readings for the two consecutive three year periods of 2003-2005 as well as 2004-2006.

On May 30, 2007, the EPA issued an Emission Reduction Credit Memorandum for three Federal Rules for Categories of Consumer and Commercial Products under Section 183(e) of the Clean Air Act. These federal rules may yield additional emissions reductions for ozone precursors.

As stated previously, if the Arizona Legislature passes legislation to implement the three ozone control measures discussed by ADEQ, there will be additional control measures to reduce emissions

which contribute to ozone formation. Additional supplements may be prepared at any time to include additional ozone control measures in the eight-hour ozone plan.

Comment: The Plan also included 38 measures from past CO Plans and the One-Hour Ozone Maintenance Plan and stated that emission reduction benefits associated with these measures were not quantifiable. Many of these measures were repealed, not fully implemented or should have been reflected in the base case. ADEQ recommends retention of only those measures that have been fully implemented and are not reflected in the base case.

Response: The Eight-Hour Ozone Plan indicates that some of the committed measures from the EPA approved Serious Area Carbon Monoxide Plan, Carbon Monoxide Redesignation Request and Maintenance Plan, and One-Hour Ozone Redesignation Request and Maintenance Plan improve air quality but were not used for numeric credit in those approved plans. The reduction in ozone precursor emissions attributable to these measures was not easily quantified or may not have been possible to quantify. Some of these committed measures may continue to reinforce the air quality benefits of the measures for which numeric credit towards attainment was taken. As requested by ADEQ and EPA, the two measures which have been repealed have been removed from Chapter Four and a more general discussion will now be included in the plan.

Comment: Control measures and the Emission Inventory should both be expressed in English tons to enable evaluation of the efficiency of the measures.

Response: The conversion from English tons to metric tons will be added as a footnote to Figure 3-1 and Table 3-1. The only use of English tons in the Plan is in the 2002 PEI in Chapter 3 and Appendix A, Exhibit 1.

Comment: With the addition of the control measures identified on the first page of the comment and additional modeling consistent with the suggestions above, ADEQ is confident that the Phoenix Eight-Hour Ozone Planning Area will attain the national public health standard on or before the deadline of December 31, 2008, ADEQ appreciates the time and effort MAG has devoted to technical planning work.

Response: At the national level, the Environmental Protection Agency has added new ozone control measures for Consumer and Commercial Products under Section 183(e) of the Clean Air Act. On May 30, 2007, EPA issued an Emission Reduction Credit Memorandum regarding these measures. If the Arizona Legislature passes legislation with commitments to implement the three measures identified by ADEQ, the additional measures may be submitted in a supplement to EPA to include the measures in the eight-hour ozone plan. At this time however, there are no commitments to implement those measures.

ADEQ Comments on Emissions Inventory

Comment: *Population.* The population estimates for 2010 for "County Areas" reflecting unincorporated portions of the County, minus Indian Country, should be corrected to 231,390 instead of 92,900. The corrected figure is based on the Department of Economic Security estimate for July 1, 2006. The total at the bottom of the 2010 column should be increased by 138,490 to read 4,272,890.

Response: The population for the unincorporated portion of the County and the population of County Areas rely on two different geographies. The correct figure for County Areas in 2010 is 92,900.

The population of the July 1, 2006 **unincorporated portion** of the county is the difference between the July 1, 2006 population of twenty four cities and towns based on their CURRENT boundaries along with three Indian communities (Maricopa County portion of the Gila River Indian Community, the Salt River Pima-Maricopa Indian Community and the Fort McDowell Yavapai Nation), and the total population of Maricopa County. In 2006 this figure is 231,605.

The projected population of **County Areas** for 2010 is the difference between the sum of the projected population of twenty-four cities and towns and the Indian Communities, based on their anticipated FUTURE boundaries, and the total population of Maricopa County. These future boundaries are referred to Municipal Planning Areas, and include areas that are currently in the unincorporated area of the county. Therefore, County Areas do not include the “county islands” that fall within Municipal Planning Areas. In 2010 the projected population of the County Areas is 92,900 based upon the MAG 2003 Interim Socioeconomic Projections.

In addition to the difference in definitions between the unincorporated area and County Areas, it should be noted that the July 1, 2006 population estimates are for a period in time that is four years earlier than the 2010 projections.

Comment: MAG should add an explanation on page 5-5 of the Plan, or cross-reference the appropriate page of the Technical Support Document, to explain its choice to increase anthropogenic VOC and NO_x emissions for the 2001 and 2002 episodes it modeled by only 3% for the 2008 estimates. MAG’s population estimates in Table 2-1 show a linear population increase of 18.8% from 2002 to 2008, far greater than the 3% increase MAG selected for modeling purposes. The reason for the difference between population increase and MAG’s projected anthropogenic emissions increase is not apparent and has not been explained in the Plan.

Response: Anthropogenic VOC and NO_x emissions for 2008 were estimated from the emissions for the 2001 and 2002 episodes applying growth factor. Then additional three percent was applied to the 2008 estimates to reflect an expected increase in population and employment projections for the modeling domain based on the 2005 Census Survey. In other words, the 2008 projection was increased by three percent in addition to the referenced 18.8 percent linear population increase between 2002 and 2008. This paragraph could be found in V-3. *Future Year Emission Inventories of the Eight-Hour Ozone Technical Support Document*. As well as the TSD, the paragraphs on page 5-5 are self-explanatory about this issue and Tables 5-3 and 4 showing emission comparison between base year and future year provide information that projected emissions increase is more than three percent. Additional information on the growth factors is presented in Appendix IV-iii.

Comment: *Biogenics*. Definition: Figure 3-1 on page 3-3 of the Plan divides the 65% to show 33.2% “Residential Wood burning... wildfires” and 32.5% biogenic emissions. The Plan needs to explain what was included in the term “biogenics” in the 2002 Periodic Emissions Inventory and compare it to the use of the same term on page 3-3 for purposes of the 2005 Emissions Inventory.

Response: Table 3-1 summarizes data from the 2002 Maricopa County Periodic Emissions Inventory (PEI) for ozone precursors. This inventory is included in Chapter 3, because EPA requires that the

most recent inventory be included in the Plan. (See Appendix A, Exhibit 1.), even if some of the assumptions differ from the emissions inventories developed to model attainment. The biogenic emissions in the 2002 PEI were prepared using MAGBEIS and default emission rates based primarily on measurements of East Coast vegetation. The Maricopa County Air Quality Department (MCAQD) is in the process of preparing the 2005 PEI for ozone precursors that will include the biogenic emissions estimates from MEGAN.

Comment: *Biogenics*. Study Area Selected: The 8-Hour Ozone Nonattainment Area is nearly twice the size of the 1-Hour Ozone Nonattainment area. Although the 8-Hour nonattainment area is approximately 12,533 square kilometers (4880 square miles), the Study Area that MAG's contractor ENVIRON selected covers 33,562 square kilometers-2.68 times the size of the Nonattainment Area. The largest of the 25 land use categories in the Study area, entitled Palo Verde-Mixed Cacti-Scrub, exceeds the size of the entire Nonattainment Area at 14,852 square kilometers. ENVIRON's study placed an inappropriate emphasis on areas downwind and outside of the expanded 8-Hour Ozone Nonattainment Area. These areas to the east of the Nonattainment Area are downwind from the most significant portion of the diurnal isoprene cycle. Biogenic emissions are lower in the urbanized areas that constitute the majority of the actual Nonattainment Area.

Response: The size of the Eight-Hour Ozone Nonattainment Area is approximately 12,638 square kilometers and the size of the eight-hour ozone modeling domain is 23,200 square kilometers, which is 1.84 times the size of the Eight-Hour Ozone Nonattainment Area. Traditionally, air quality models adapt rectangular modeling domain. In that reason, to run a model for the area having irregular shape, like the Eight-Hour Ozone Nonattainment Area, a rectangular domain covering the whole interest area is configured. When MAG set up the modeling domain in consultation with ENVIRON, it was considered and the eight-hour ozone modeling domain was set to cover all the edges of the Eight-Hour Ozone Nonattainment Area. Therefore the current modeling domain size is almost the minimal as we could get. Also the Guidance on the Use of Models and Other Analyses in Attainment Demonstrations for the 8-hour Ozone NAAQS states that isolated nonattainment areas of the western U.S. that are not impacted by regional ozone and ozone precursors may be able to use a relatively small domain. The biogenic study area means the eight-hour ozone modeling domain instead of the Eight-Hour Ozone Nonattainment Area. It explains the size of area covered by Paloverde-Mixed Cacti-Scrub, which is 14,852 square kilometers, is less than the study area and the value is correct.

Comment: *Biogenics*. Local Emission Factors: ENVIRON developed its very first emission factors for desert vegetation in its new MEGAN Model Biogenics Study for the Phoenix area. ADEQ has concluded that these emission factors are over estimated.

- ENVIRON's in-situ, small sampling techniques produced results that are not in agreement with widely recognized estimates and appear to err on the high side by substantial amounts.

- ADEQ has compared the ENVIRON emission factors to published U.S. Geological Survey (USGS) factors and has found that ENVIRON's factors are substantially higher. For example, ENVIRON has assigned the Palo Verde-Mixed Cacti-Scrub category an emissions rate that is 87% of the USGS emissions rate for a deciduous forest. Likewise, ENVIRON assigned an emission factor 5.5 times the USGS factor for conifer forests to the Pinon-Juniper.

The Plan should explain the differences between the ENVIRON emission rates and the USGS emission rates or revise the emission rates used in the Plan. MAG should also revise page ES-7 and Figure 3-1 of the Draft Plan to focus on the vegetation that contributes to ozone formation inside the boundaries of the nonattainment area-not downwind vegetation.

Response: The biogenic emissions for the attainment demonstration were estimated by MEGAN (Model of Emissions of Gases and Aerosols from Nature) using vegetative emissions rates measured in Maricopa County during June 2005. MEGAN is a state-of-the-art biogenics model developed by Dr. Alex Guenther, under the sponsorship of EPA, the National Science Foundation, and the National Center for Atmospheric Research. Unlike other biogenic models (i.e., GLOBEIS, MAGBEIS), MEGAN uses a bottom-up approach that more accurately reflects current understanding of the processes controlling biogenic emissions. The pie charts in Figure ES-2 (for 2002) and Figure ES-5 (for 2008) of the Executive Summary present biogenic emissions estimated by MEGAN for the ozone modeling domain.

Table 3-1 summarizes data from the 2002 Maricopa County Periodic Emissions Inventory (PEI) for ozone precursors. This inventory is included in Chapter 3, because EPA requires that the most recent inventory be included in the Plan. (See Appendix A, Exhibit 1.), even if some of the assumptions differ from the emissions inventories developed to model attainment. The biogenic emissions in the 2002 PEI were prepared using MAGBEIS and default emission rates based primarily on measurements of East Coast vegetation. The Maricopa County Air Quality Department (MCAQD) is in the process of preparing the 2005 PEI for ozone precursors that will include the biogenic emissions estimates from MEGAN.

In addition, local emission factors estimated by MEGAN, which are based on the local measurement, are expected to be different from the USGS factors, which are based on the normalized values for the entire Arizona.

Comment: *Biogenics. Modeling versus Weight of Evidence Analyses:* Figure IV-19 in the TSD shows that zeroing out biogenic emissions results in peak ozone concentration dropping by 8 ppb on June 7, 2002. In contrast, the Weight of Evidence Analysis in Appendix V, page 17, states that isoprene (a major component of biogenic VOCs) has little impact on ozone formation. This inconsistency needs further explanation.

Response: The description of Figure 14(g) showing the Fractional contribution of isoprene to reaction of OH radicals with VOCs in Table 5 of the Weight of Evidence Analysis in Appendix V, page 21, presents its interpretation as below:

- Only a small fraction of OH radicals reacting with VOCs in the Phoenix urban plum are reacting with (biogenic) isoprene. This fraction is low with GloBEIS biogenic emissions and almost zero with MEGAN biogenic emissions.
- Biogenic VOCs other than isoprene (i.e., terpenes and other VOCs) may be driving the impact of biogenic emissions on ozone production in Phoenix.

It describes that isoprene has little impact on ozone formation in the Phoenix urban plum but some impact in the other area. In Table IV-16 in the TSD shows that daily maximum one-hour ozone for zeroing out biogenic emissions occurs in suburban area and this result accords with the statement above in the Weight of Evidence Analysis.

Comment: Mobile Sources. The calculation of on-road mobile emissions used for the Draft Plan is problematic. Appendix IV presents several MOBILE6 input files. MAG used the command “FUEL PROGRAM: 2 S” to simulate Cleaner Burning Gasoline (CBG) in Area A and added another command, “FUEL RVP: 7.0”, to specify Reid Vapor Pressure (RVP) in Area A. The command “FUEL PROGRAM: 2 S” models the effect of a Federal Reformulated Gasoline (RFG) program in the Southern region. In MOBILE6, the default fuel properties for the Federal RFG option for the summer of calendar 2008 are as follows:

RVP: 6.8 psi;
Ether oxygen content: 2.1% by weight;
Ether market share: 100%.

No matter what value is specified in the command “FUEL RVP”, the command “FUEL PROGRAM: 2 S” overrides it. The net effect of using the two commands MAG chose was to set RVP at 6.8 psi and ether oxygen content at 2.1% by weight. However, Arizona banned all ether oxygenates in gasoline effective on January 1, 2005. The ether oxygen content for gasoline is 0% instead of “2.1% by weight,” and the “Ether market share” in the 8-Hour Ozone Planning Area is also 0%. Therefore, the following commands should be used in the MOBILE6 modeling for this Plan: “FUEL PROGRAM: 4” to set the sulfur content and “RVP” to specify the actual RVP. The 2006 retail sampling, conducted by the Arizona Department of Weights and Measures for the months of May through September, show average sulfur content of 50 ppm and RVP of 6.5 psi. Note that additional emission reductions may need to be applied to account for the fact that summertime CBG meets federal RFG standards. This modeling should be repeated using the revised inputs.

Response: As presented in the TSD Appendix II-BASE YEARS EMISSION INVENTORY DEVELOPMENT, MAG used “FUEL PROGRAM: 4” with RVP of 6.5 psi for the base years, which is exactly the same configuration suggested by ADEQ, with collaboration from the Arizona Department of Weights and Measures (Mr. Yantorno). One of attainment measures for the future year in the Eight-Hour Ozone Plan is summer fuel reformulation (California Phase 2 and Federal Phase II Reformulated Gasoline). To adapt this measure to MOBILE6, the FUEL PROGRAM command options 2 or 4 could be used. MOBILE6 treats FUEL PROGRAM command option 4 as a conventional gasoline program with alternate sulfur levels so that additional emission reductions are required to account for the fact that summertime Arizona CBG meets federal RFG standards as ADEQ noted. In addition, although MOBILE6 allows users to enter alternate sulfur levels, user-

supplied sulfur levels in the FUEL PROGRAM command option 4 just approximates the non-sulfur effects of RFG. On the contrary, the FUEL PROGRAM command option 2 S more closely reflected the summertime CBG in Area A to meet the federal RFG standards without additional emission reductions. For this reason, the FUEL PROGRAM command option 2 S was used in the One-Hour Ozone Maintenance Plan approved by EPA on June 14, 2005 and also in the Eight-Hour Ozone Plan.

ADEQ Comments on Attainment Demonstration Modeling

Comment: *Mathematical demonstration.* The attainment demonstration relies on truncating a modeled value of 0.0847 parts per million (ppm), as allowed by Federal regulations. Rounding up to 0.085 ppm would demonstrate nonattainment. The demonstration relies on a statistical margin of 0.0003 ppm, which is considerably less than the margin of error for this type of modeling demonstration.

Response: The Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze (page 41) states that the final future design value is *truncated*. This effectively defines attainment in the modeled test as ≤ 84.999 ppb and nonattainment as ≥ 85.0 ppb. This guidance does not mention about the margin of error for modeling demonstration but additional analyses to supplement the primary modeling analysis for the attainment case, in which the projected future design value is closer to the NAAQS. Thus, MAG provided weight of evidence analysis as supplemental analysis.

Comment: *Validation of actual episodes.* The uncertainties in this modeling demonstration are high because the model only successfully simulated the transport episode (June 2002). It significantly underestimated peak ozone concentrations for both the local production-dominated episode (July 2002) and the combination of the transport and local formation episode (August 2001). The cause of the underestimation has not been clearly identified in the Plan or TSD. This unresolved bias, which could be due to a bias in meteorological field or bias in chemistry, call into question the validity of the modeling analysis.

Response: In the TSD, page IV-29, it was mentioned that the modeled wind speed and wind direction misdirect the ozone plume in the July 2002 episode. MAG may consider to provide additional diagnostic analyses to identify any bias causing the underestimation for both the July 2002 and August 2001 episodes later as supplemental analysis.

Comment: *Predicted emissions reductions.* The modeling does not convincingly demonstrate attainment because the predicted reduction of peak ozone concentrations is nearly zero.

- The model predicts that total NO_x emissions are only reduced by 1.7% and that total VOC emissions increase by 0.5%. These small modeled changes in ozone precursors are not sufficient to guarantee attainment.
- For many monitoring sites, the predicted peak ozone concentration is increased from the baseline conditions.

- MAG has projected concentrations for 6 of the 18 monitoring sites to be greater than 95% of the National Ambient Air Quality Standard in the attainment year.
- Attainment is demonstrated in this modeling because only one of the 18 values used in the baseline design value is an exceedance, not because of the effectiveness of the control measures in the Plan.

Response: The Plan and TSD present that total NOx and VOC emissions reductions from attainment measures are approximately 4.6% and 2.4%, respectively. Concerning of short time frame from the Plan submission to the attainment deadline, these changes in ozone precursors are not small. Although the predicted reduction of peak ozone concentrations is not significant, the modeling demonstrates attainment because of the effectiveness of the control measures in the Plan. In addition, the Weight of Evidence Analysis concludes that ozone concentrations in the Maricopa Nonattainment area are trending downward and that the federal standard for eight-hour ozone will be attained by June 15, 2009.

Comment: *Meteorological modeling.* Vertical diffusivity: Typically, modelers choose a single vertical diffusivity calculation for all episodes modeled in the same region in the same season. The TSD at page III-47 states that two different vertical diffusivity calculation options were applied according to the results of sensitivity testing, one for the transport-dominated episode and the combination episode, and the other for the local formation-dominated episode.

- The Plan should explain why two different options were chosen for the same ozone season and the same region, and it should explain the criteria used to select each of the two options.
- In the alternative, a single vertical diffusivity calculation should be used for additional modeling.

Response: Although modelers may typically choose a single vertical diffusivity calculation for all episodes modeled in the same region in the same season, the EPA's guidance does not mention about consistency of vertical diffusivity calculation for all modeling episodes. In addition, these vertical diffusivity options were adapted in consultation with ENVIRON.

Comment: *Meteorological modeling.* Mixing height: Past work by Sonoma Technology and others demonstrates that the diurnal variation of mixing height is even more important than the maximum value. Studies have shown that slow development of mixing height is a cause of excessive ground-level ozone.

- It would be helpful to understand the impact of mixing height on peak ozone concentrations by plotting diurnal mixing height for the peak ozone grid cells for all three episodes.
- ADEQ's wind profiler data for the past two years may be available for use to determine the hourly mixing heights. These data may be used to explore the typical mixing height for the design dates.

Response: MAG may consider to exam the impact of mixing height on peak ozone concentrations by plotting diurnal mixing height for the peak ozone grid cells for all three episodes.

Comment: *Meteorological modeling.* Site-to-site variation: A model/observation comparison is provided in the Plan TSD for means, not for individual sites. For the July 2002 and August 2001 episodes, when ozone is underestimated, observational precipitation, humidity, temperature and wind data near the peak location could be compared with the modeled values.

- Site-to-site variation could be significant; averaging them could mask the actual impact. Site-specific comparisons of meteorological data may reveal the factor or factors that contribute most to the under-prediction of ozone by the model.

Response: A model/observation comparison in the TSD Appendix III-i was provided by ENVIRON. Those statistical evaluations for typical meteorological model performance (not for individual sites but entire region by averaging) have been widely adopted in many local and regional air quality modeling studies throughout the U.S.

Comment: *Sensitivity Testing.* The TSD at page IV-85 states that sensitivity test for emissions were conducted by simply modeling 100% emission reductions from (zeroing out) each entire emission category: mobile sources, area sources, and point sources.

- Zeroing out on-road and off-road NO_x emissions should reduce modeled ozone concentrations, because Reformulated Gasoline resulted in actual reductions of ozone in this Planning Area, but MAG's modeling shows inconsistent patterns of ozone concentrations when these sources were eliminated. For the June 2002 episode, the modeled peak ozone concentration increased as mobile source emissions were eliminated in the 2nd-4th days, but decreased on the 5th day (TSD at page IV-87). A similar pattern occurred in the other two modeled episodes. A consistent pattern would have been expected on all five days.
- The Plan does not clearly explain why removing significant ozone precursors (especially NO_x from mobile sources) would lead to a higher peak ozone concentration at all, much less on three of five days in an episode. This modeling performance should be explained.
- Sensitivity testing should be used to evaluate the effectiveness of each control measure selected for inclusion in the Plan.
- Since the Emission Inventory shows the dominant contributor to NO_x to be mobile source (63%) and the dominant contributor to VOCs to be biogenic emissions (65%), the elimination of the majority of NO_x or VOC emissions does not represent a realistic scenario. Sensitivity testing should be conducted in an incremental manner such as 20% or 30% emission reductions.

Response: As referred in the comments, MAG conducted sensitivity tests for emissions (both NO_x and VOC) by modeling 100% emission reductions (zeroing out) from each emission category: on-road, non-road, area, point, and biogenic sources. Zeroing out on-road and off-road reduces not only NO_x emissions but also VOC emissions. Since photochemical model predicts ozone concentrations from the process of the complex chemical reactions under various meteorological conditions, it may not be expected to have consistent responses to a certain amount of emissions reduction for both NO_x and VOC in a certain modeling episode. However, we may expect a consistent pattern when we reduce emissions for a single component, either NO_x or VOC. Under the NO_x-rich and VOC-limited conditions in urban Phoenix area, it is expected to have consistent patterns that NO_x reductions will increase ozone concentrations and VOC reductions will decrease ozone concentrations. These phenomena were consistently observed on the other sensitivity tests for NO_x exemption, which was not included in the TSD. To reflect ADEQ's suggestions, MAG may consider to conduct a series of sensitivity tests for each source category for each emission category (NO_x and VOC) in an incremental manner such as 20% or 30% emission reductions and to evaluate the effectiveness of each control measure selected in the Plan. These results may be supplied later as supplemental information.

Comment: Weekday versus weekend. ADEQ suggests that MAG also examine the differences in weekday versus weekend ozone concentrations for the July 2002 episode. For this local production-dominated episode, the predicted weekend ozone concentrations for July 12-13 are significantly higher than some of the predicted weekday concentrations.

- This result is unexpected for a local formation-dominated episode when local ozone precursor emissions are significantly reduced.

Response: In the July 2002 episode, weekend days are July 13 (Saturday) and 14 (Sunday). Figure IV-9 in the TSD shows the predicted weekend ozone concentrations are not significantly higher than the predicted weekday ozone concentrations at most sites. Although, at the few number of sites, weekend ozone concentrations, especially July 13 (Saturday), were predicted slightly higher than some of weekday ozone concentrations, the same phenomenon was observed at those monitoring sites. In any case, MAG will examine the differences in weekday versus weekend ozone concentrations for the July 2002 episode and the results will be supplied later as supplemental information.

Comment: *Transported ozone.* ADEQ suggests further examination of the contribution of transported ozone and the possible larger contribution of locally produced ozone than this modeling shows.

- The ozone-precursor relationship in the July 2002 episode could provide insight on the contribution of regional transport to high ozone and on the effectiveness of controlling mobile emissions to reduce peak ozone.
- ADEQ suggests conducting source apportionment analysis, or at least quantitatively estimating the transported ozone versus the locally formed ozone.

- The qualitative discussion in the Weight of Evidence Analysis is not sufficient, since it only indicates an upper limit of the transport ozone. Ozone may also be transported from aloft over a longer distance, which could not be reliably captured by upwind surface monitors.
- ADEQ suggests plotting ozone versus altitude to see the vertical ozone distribution. This may help to identify ozone transport from aloft and reveal regional transport. These exercises could help diagnose the contribution of transport compared to locally-formed ozone and point to effective control measures necessary for attainment and maintenance.

Response: MAG may consider to conduct further examination of the contribution of transported ozone suggested by ADEQ. Examination may include the ozone-precursor relationship in the July 2002 episode, the vertical ozone distribution, and quantitative estimation of the transported ozone versus the locally formed ozone. The results may be provided later as supplemental information.

Comment: *Precursors.* MAG compared modeled ozone to monitored ozone data.

- ADEQ recommends comparing modeled NO_x concentrations with monitored NO_x data, and comparing modeled VOC concentrations to monitored VOC data. Five NO_x monitors and two VOC monitors are in the Planning Area, and ADEQ and Maricopa County Air Quality Department data are available. These comparisons will provide information on how well the model replicates actual photochemistry.
- ADEQ also recommends plotting modeled peak ozone versus modeled NO_x concentrations, VOC concentrations, and the VOC/NO_x ratio for the June 2002 and July 2002 meteorological regimes to see if there is any correlation.

Response: MAG may consider to provide additional analyses dealing with comparing modeled NO_x/VOC concentrations with monitored NO_x/VOC data, plotting modeled peak ozone versus modeled NO_x concentrations, VOC concentrations, and the VOC/NO_x ratio for the June 2002 and July 2002 later as supplemental information.

Comment: *Relative Response Reduction Factor (RRF).* According to the 'Guidance on the Use of Models and Other Analysis for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze' [EPA, April 2007 at page 145], RRF should be calculated based on no less than 5 modeled days to provide statistical robustness. To support the use of less than 5 days in the RRF calculation, the variability of daily RRF should be analyzed. In this Plan, most RRFs are calculated based on 4 or fewer modeled days, raising the uncertainty of these RRF values-especially when the attainment demonstration is so marginal. The RRF ranges from 0.990 to 1.013, showing very little emission reduction, if any. Again, the control measures in this Plan do not appear to be sufficient to reduce ozone concentrations.

Response: As presented in the Eight-Hour Ozone Modeling Protocol and the Eight-Hour Ozone Plan, modeled days are 5 (June 2002 episode) or 7 days (July 2002 and August 2001 episodes). Therefore, none of modeled episodes has less than 5 modeled days. In addition, before MAG submitted the Protocol, number of modeling days was discussed with EPA Region IX (Scott Bohning) and it was allowed to use these numbers of days. Also the Protocol was accepted by EPA Region IX.

Comment: *NOx Waiver versus Safety Margin.* The Draft Technical Support Document should be revised on Page I-2 to be consistent with the NOx safety margin in the Draft Plan, which replaced an earlier NOx waiver concept. The following sentences are no longer accurate: “A secondary objective of the modeling was to evaluate the complex chemical relationships between precursor emissions of volatile organic compounds and nitrogen oxides and the formation of ozone. This evaluation has concluded that additional reductions in NOx emissions do not contribute to attainment of the eight-hour ozone standard in 2008; and therefore, the Maricopa nonattainment area qualifies for a NOx exemption under section 182(f) of the Clean Air Act.”

Response: This language has been revised on the section.

ADEQ Comments on Weight of Evidence Analysis

Comment: TSD Appendix V, page 10: The trend analyses for NOx and VOC emissions show sizable reductions for seven (1999-2006) or nine (2006-2015) year periods, averaging a reduction of 2-3 tons per day; however, the NOx concentration trend analysis shows up and down trends in the time period from 1999-2006. The model results also show that a 5 tons per day reduction in NOx does not provide any reliable ozone concentration reduction (RRF for June 2002 in a range of 0.990-1.013). It appears that the magnitude of the emission reductions is not sufficient to reduce ozone.

Response: As described in the Weight of Evidence Analysis in Appendix V, the VOC/NOx ratio and process analyses indicate that the condition in central Phoenix is NOx-rich and VOC-limited, which means decrease of NOx will tend to increase ozone and decrease of VOC will tend to decrease ozone. Even the suburban areas have similar conditions. Therefore, any magnitude of NOx reduction is not sufficient to reduce ozone concentration and the model results accords with this. Inconsistent trends between the trend analysis for NOx emissions and the NOx concentration trend analysis are reasonable because observed concentrations, which are the resultant of the complex chemical reactions under various meteorological conditions, may not directly correlate with anthropogenic emissions.

Comment: TSD Appendix V, page 16: VOC/NOx ratio analysis was only done for June 7, 2002. It should also be conducted for the July 2002 episode, since it is assumed to be an entirely different meteorological regime. This analysis does not provide sufficient explanation of how the modeled ozone concentration would respond to changes in the VOC/NOx ratio.

Response: MAG may consider conducting additional VOC/NOx ratio analysis for the July 2002 episode. If it is decided to conduct additional analysis, the results will be provided later as supplemental information.

Comment: TSD Appendix V, page 17: Process Analysis was only conducted for June 2002 episode. The net ozone production rate for noon on June 7 is 7-10 ppbv/hour. This episode was identified as transport dominated, but the net ozone production rate is substantial. The process analysis should also be conducted for the July and August episodes. The net ozone production and other chemical quantities should be compared for these three episodes to see whether the model predicted different patterns under different meteorological conditions.

Response: MAG may consider conducting additional Process Analysis for the July 2002 and August 2001 episodes. If it is decided to conduct additional analysis, the results will be provided later as supplemental information.

COMMENTS FROM THE ARIZONA CENTER FOR LAW IN THE PUBLIC INTEREST (Letter from Joy E. Herr-Cardillo dated June 4, 2007 received by e-mail on June 4, 2007)

Comment: We are very disappointed to see that the proposed 8 Hour Ozone Plan does not include any additional control measures and instead, simply relies upon those measures already implemented as part of the One Hour Ozone Maintenance Plan. As EPA cautioned ADEQ recently, the values at several of the monitors are very close to the standard and it will be very difficult for the area to maintain those values without taking some additional steps. In particular, the 3 year average for the monitors at Fountain Hills, North Phoenix, and Rio Verde rely upon the 2004 values to bring the three year average in under .085 ppm. If the fourth highest reading for 2007 for any of these monitors comes in at .085, there will be a violation, and in the case of North Phoenix the fourth high reading need only reach .083 to put the average over .084 ppm. Under these circumstances, it is simply irresponsible for the state not to proactively address the problem without additional control measures to ensure attainment.

Response: At the national level, the Environmental Protection Agency has added new ozone control measures for Consumer and Commercial Products under Section 183 (e) of the Clean Air Act. On May 30, 2007, EPA issued an Emission Reduction Credit Memo regarding these measures.

If the Arizona Legislature passes legislation with commitments to implement the Liquid Leaker Test component for the Vehicle Emissions Test; Seasonal Open Burning Ban 5/1 through 9/30 each year and Clean Burning Gasoline in western Pinal County, there may be additional emission reductions from those measures and a supplement could be submitted to EPA. However, the Arizona Legislature has not yet taken action and no commitments have been received.

According to the air quality monitoring data, there have been no violating monitors for the eight-hour ozone standard for two consecutive three year periods: 2003-2005 and 2004-2006. The air quality monitoring data indicates that the eight-hour ozone standard has already been attained with the existing measures. The EPA Final Rule to Implement the Eight-Hour Ozone National Ambient Air Quality Standard-Phase I, dated April 30, 2004, indicates that “attainment is determined based on an average of the 4th high reading at a monitor over a three year period. Thus, the 4th high reading for an area could be above the NAAQS for one or both of the years proceeding the attainment year, but so long as the 4th high level for the other year(s) was low enough to produce an average at or below 0.84 parts per million, the area would be attaining the NAAQS.”

In reviewing the air quality monitoring data for the eight-hour ozone standard for the last seven years, there has been a downward trend in the number of violating monitors. In 2000, there were seven violating monitors. In 2005 and 2006, there were no violating monitors based upon the three year average of the 4th high readings. In addition, the air quality modeling demonstration and weight of the evidence demonstration in the Eight-Hour Ozone Plan indicate attainment of the standard for the 2008 ozone season.

Comment: As noted in the draft plan, Section 172(c)(1) of the Clean Air Act requires the plan to include all “reasonably available control measures.” The Draft Plan, however, makes no effort to demonstrate that it has, in fact, complied with this requirement. Rather the plan simply sets forth the various control measures already implemented in the area and includes a model that demonstrates that these measures will be sufficient to reach attainment. The plan makes reference to a previous RACT demonstration, but does not attempt to update the demonstration to consider new control measures or changes in technology that would make previously rejected control measures now reasonably available. The omission of this fundamental requirement renders the plan noncompliant and incomplete under the Clean Air Act.

Response: According to the Maricopa County Air Quality Department, the “Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard” (70 FR 71612, 11/25/2005, Section IV.G.1) states, “For subpart 1 areas that submit a demonstration of attainment for 5 or less years after designation (i.e. do not request an attainment date extension beyond 5 years after designation), the CAA’s RACT requirement is met with the control requirements associated with a demonstration that the NAAQS is attained as expeditiously as practicable.” In contrast, the rule specifically requires subpart 1 areas that request an attainment date extension to submit a RACT SIP updating the RACM or RACT analysis. To clarify the requirements applicable to subpart 1 areas demonstrating attainment by 2009, the following text has been inserted on page 1-10 in section (10) A, “Since the Maricopa nonattainment area is designated as a subpart 1 area for ozone, and expects to show attainment by 2009, RACT is deemed to be met with control requirements associate with a demonstration that the NAAQS is attained as expeditiously as practicable (70 FR 71612, 11/29/2005, Section IV.G.1).”

EPA received a similar comment regarding the RACT provision in section 172(c)(1) during the rulemaking cited above. Their response to that comment on page 71653 provided the following explanation:

“The general RACT provision under subpart 1 in the statute, is found in section 172(c)(1). It is a portion of the RACM provision found in that same section. Our long-standing interpretation of the RACM provision is that areas need only submit such RACM as will contribute to timely attainment and meet RFP, and that measures which might be available but would not advance attainment or contribute to RFP need not be considered RACM. This interpretation has been upheld in several recent court cases. *See Sierra Club v. EPA*, 294 F.3d 155, 162 (D.C. Circuit, 2002) (concerning the Metropolitan Washington, D.C., attainment demonstration) and *Sierra Club v. EPA*, No. 01-60537 (5th Circuit, 2002) (concerning the Beaumont attainment demonstration). Since subpart 1 RACT is a portion of RACM, these cases also support a conclusion that, where we are dealing only with section 172 RACT, it is reasonable to require only such RACT as will meet RFP and advance attainment. In view of these court cases, EPA disagrees with the comments opposing the approach that, in subpart 1 areas, RACT would be met by control measures in a SIP demonstrating attainment of the standard as expeditiously as practicable and meeting RFP.”

This response was prepared by the Maricopa County Air Quality Department.

Comment: Finally, we disagree that the Draft Plan properly includes contingency measures. The measures designated as contingency measures in the Draft Plan are already implemented. According

to Section 175(d), the purpose of contingency provisions is to assure that the state will immediately implement additional control measures without further action if the area fails to attain by the deadline. Obviously, if these so called contingency measures are already being implemented when the triggering event occurs, there is nothing to suggest that their continued implementation would ensure that the situation will be corrected and the public health protected. Simply showing contingency measures on paper, as the Draft Plan does, is contrary to the intent and purpose of the Act's requirement.

Response: The Environmental Protection Agency allows for the early implementation of contingency measures as indicated in the August 13, 1993 EPA memorandum on the Early Implementation of Contingency Measures for Ozone and Carbon Monoxide Nonattainment Areas. Committed measures that have already been implemented may be contingency measures if they are not needed to show attainment and do not hasten attainment. According to the EPA Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard dated November 29, 2005, EPA also allows federal measures to be contingency measures if they are not needed for attainment.

The combined VOC and NO_x reductions of 8.7 percent surpasses the EPA-recommended three percent. In addition, the 2.3 percent reduction in VOC emissions greatly exceeds the EPA-recommended value of 0.3 percent. Therefore, the EPA guidelines for emission reductions from contingency measures are satisfied.



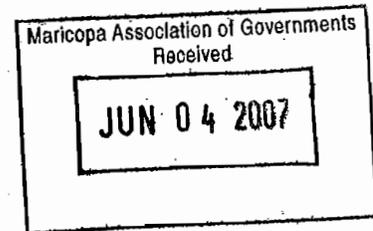
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

May 31, 2007



Ms. Lindy Bauer
Environmental Planning Manager
Maricopa Association of Governments
302 N. 1st Avenue, Suite 300
Phoenix, AZ 85003

Dear Lindy,

Thank you for the opportunity to review the *Draft Eight Hour Ozone Plan for the Maricopa Nonattainment Area* ("Draft Plan"). We have reviewed the Draft Plan with regard to the Clean Air Act (CAA) requirements for 8-hour ozone state implementation plans (SIPs) that EPA will consider after the SIP has been formally submitted to EPA as a revision to the Arizona SIP. We are committed to working with you and your staff to address any future issues in a timely manner to move towards our common goal of approving a plan that demonstrates how the 8-hour ozone National Ambient Air Quality Standards (NAAQS) will be attained.

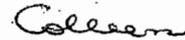
Attached please find our preliminary comments on the Draft Plan. Please note that we have reviewed the Draft Plan as thoroughly as possible given the limited time frame for our review, but our comprehensive review will follow the formal submittal of the SIP by the Arizona Department of Environmental Quality (ADEQ). We note that monitored 8-hour ozone values in the Phoenix-Mesa nonattainment area are very close to the ambient standard based on monitored air quality data from 2004–2006. As we indicated in our letter from EPA Regional Administrator Wayne Nastri to ADEQ Director Stephen Owens on April 20, 2007, we are concerned that Maricopa County will not be able to maintain these monitored values without taking additional steps. We urge you to consider measures in addition to those state and local agencies have already put in place.

We want to remind you of three additional considerations. We still do not know the outcome of the *South Coast Air Quality Management Dist. v. E.P.A.*, 472 F.3d 882 (DC Cir. December 22, 2006) litigation. We will keep you apprised of any changes to our guidance on implementation of the 8-hour ozone standard. In addition, on June 20th, EPA may propose a revised ozone standard. We urge you to keep this in mind as you finish this current plan. We also finalized our guidance entitled "Emission Reduction Credit for

Three Federal Rules for Categories of Consumer and Commercial Products under Section 183(e) of the Clean Air Act “. We forwarded the guidance memo to you yesterday.

Thank you for the opportunity to provide comments on the Draft Plan. We are committed to working with you and your staff on any of the topics in the attachment, or other issues that arise before the final SIP is submitted. If you have any questions, please contact me at 520-498-0118, or Wienke Tax at 520-622-1622.

Sincerely,



Colleen McKaughan

cc: Nancy Wrona, Arizona Department of Environmental Quality
Robert Kard, Maricopa County Air Quality Department
Don Gabrielson, Pinal County Air Quality Control Department

Chapter 1

Provisions to prohibit sources from impacting air quality in other states (page 1-7). ADEQ recently completed and has submitted to EPA the *Arizona Interstate Transport SIP* to address the requirements of section 110(a)(2)(D)(i) of the CAA. A reference to this SIP in this section would be appropriate.

Meet the applicable requirements of section 110(a)(2)(M) (page 1-9). It would be helpful to specify the consultation which occurred with affected entities for this particular plan.

RACT. Since Maricopa County is designated a subpart 1 non-attainment area for ozone, and expects to show attainment by 2009, RACT is deemed to be met with the control requirements associated with a demonstration that the NAAQS is attained as expeditiously as practicable. (70 FR71612, 11/29/2005, section IV.G.1)

There are a number of typographical errors in Table 1-1 of VOC RACT measures (see Attachment A). Also, it would be helpful to explain that NOx RACT was not required under 1-hour ozone because of the 1995 NOx exemption.

MAG should include an updated negative declaration regardless of whether such negative declarations were made for an earlier SIP. This is necessary since there may now be sources in the area that previously did not exist. Language similar to the following may be appropriate:

Maricopa County AQD has reviewed its permit files and the emission inventory for its federal Clean Air Plan, [include any other information sources searched such as SIC Codes and telephone yellow pages], and has determined that there are no stationary sources or emitting facilities for the following CTG categories. MCAQD also does not anticipate these sources in the future.

GUIDANCE DOCUMENT TITLE	DOCUMENT TYPE	DOCUMENT NUMBER
Control of Refinery Vacuum Producing Systems, Wastewater Separators, and Process Unit Turnarounds	CTG	EPA-450/2-77-025

Chapter 2

It is not clear how the detailed discussion on p. 2-3 to 2-15 concerning the transportation system, congestion management process, and public transit system relates to air quality or 8-hour ozone planning.

Chapter 3

Emissions Inventory. The pie chart in the executive summary shows biogenic emissions constitute 65% of total emissions. However, the emissions inventory in Table 3-1 indicates biogenics are about 22% of total emissions. Can you explain the discrepancy and clarify which is the correct number? We understand that you relied on a biogenics study done by a consultant; can you make this document and all the references you cite in the plan and TSD publicly available?

Emissions Inventory. The emissions inventory is in English tons, while the control measure emissions reductions are in metric tons. This could be confusing to the public. Can you use consistent units and/or provide the conversions to the other unit, for example 1.0 English tons (__ metric tons).

Monitoring. The text and tables refer to a total of both 19 and 20 monitors.

Chapter 4

Control Measures

The plan indicates the following (page 4-2) “Maricopa County Rule 348 was a maintenance measure for which credit was taken in the One-Hour Ozone Maintenance Plan. However, since Rule 348 was adopted in 1999, it has been assumed in the base case 2001 and 2002 emissions inventories, rather than as an attainment measure in this Plan.” There are several other control measures which were adopted a number of years ago, and yet this same caveat was not applied to these other measures, such as *Phased in Emission Test Cutpoints*, *One-Time Waiver from Vehicle Emissions Test*, and *Tougher Enforcement of Vehicle Registration and Emission Test Compliance*. Can you please clarify this discrepancy?

Arizona Cleaner Burning Gasoline (CBG) – both the Executive Summary (on page ES-5) and the control measure discussion on page 4-3 indicate an increase in VOC emissions from the Phoenix CBG program. Can you explain how this ozone precursor control measure increases emissions of VOCs? A minor correction, the most recent Arizona CBG approval was published in the *Federal Register* on March 4, 2004 (citing the date of publication rather than signature provides the public with the information to find the *Federal Register* notice) and was signed by the Regional Administrator for Region 9, not the EPA Administrator.

Measures That Improve Air Quality But Were Not Used for Numeric Credit. 38 measures are included in the plan under this category. We suggest that you take them out of the plan unless it is MAG’s intent to make these measures federally-enforceable by including them in the SIP. If so, you need to provide an implementing agency, a specific commitment to implement, including evidence of funding for the measure, and a

Transportation Control Measure (TCM) Implementation. For the purposes of verifying timely implementation of TCMs, it would be helpful if you could specifically identify TCMs and their implementation dates, implementing agency, funding source, and timeframe for implementation.

Chapter 5

Motor Vehicle Emissions Budgets (MVEBs) for Transportation Conformity

On page 5-14, the plan indicates that the NO_x MVEB for 2008 is 138.2 mtpd, but on page 5-15 the NO_x MVEB is listed as 133.1 mtpd. Which is the correct value?

Contingency Measures

HB2538 (2001), Expansion of Area A. Wouldn't this measure already be included in the emissions reductions associated with the measures which apply to Area A in Maricopa County's baseline 2002 emissions inventory? It is not clear how this measure would assist in reducing emissions in the event of a violation of the NAAQS.

In total, the contingency measures are estimated to reduce emissions of VOC by 2.3 percent and NO_x emissions by 6.4 percent, whereas the control measures for which credit was taken in total reduce VOC emissions by about 2.3 percent and NO_x emissions by about 4.5 percent. If the contingency measures achieve additional reductions equal to or larger than the control measures credited in the attainment demonstration, and they are already implemented, why do we not see the benefits from the contingency measures in peak ozone concentrations in the modeling?

TSD

Modeling

Diagnostic Analyses. MAG should provide documentation of sensitivity and diagnostic analyses performed, and any conclusions from these. The modeling protocol (TSD Appendix I) lists various diagnostic analyses that could be performed using the model, to ensure that it responds in a physically reasonable way to altered inputs. The list included zero boundary conditions, zero initial conditions, diffusion break heights, and other tests such changes in emission levels, emission speciation; alternative wind fields could be added to this list. There should be a summary of any such sensitivity and diagnostic analyses that were performed. This could be an expansion of the "Corroboratory Tests" section. The summary could include references to certain of the analyses that are already described, such as some for meteorology (TSD App. III-ii "Addendum to ENVIRON's Report to MAG: MM5 Meteorological Simulation", 5/19/06 p. III-51), and process analysis (in TSD App. V at page 17). But it should also describe pertinent results from, e.g. the across-the-board and other VOC and NO_x emission reduction simulations that MAG performed (these are referred to, but not described, in TSD App. V section on

weekend effects).

It would be highly desirable to include a color version of TSD App. V in the final electronic document, since some of the graphs are very difficult to interpret in black and white.

Unmonitored Area Analysis (UAA). MAG should carry out an analysis of unmonitored areas using gradient-adjusted spatial fields. If this cannot be completed in time for the submittal deadline, it can be supplied later as supplemental information. The TSD section on "Corroboratory Tests" (p. V-87, in the Attainment Demonstration section) shows results of screening tests to address attainment at locations not at a monitor, and appear to have been adequately carried out and to have shown favorable results. The screening test was described in the 2/17/05 version of EPA's attainment demonstration guidance. This test was superseded by the "unmonitored area analysis" described in the October 2005 guidance version, and in the final version, "Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze", EPA-454/B-07-002, April 2007 (web page: http://www.epa.gov/scram001/guidance_sip.htm direct link: <http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf>). Under the later guidelines, Relative Reduction Factors (RRFs) are applied not directly to fields of spatially-interpolated monitoring values, but rather to the fields adjusted using model output gradients. EPA has developed "Modeled Attainment Test Software" (MATS) to carry out this adjustment; MATS has been available in a beta version for several months. An additional corroboratory analysis MAG could consider for unmonitored areas is the direct absolute ozone results from simulation of the future year (i.e., model output for each grid cell, without using RRFs).

Contingency Measures

Section V-2-2 on page V-16 of the TSD has the following statement: "The Eight-Hour Ozone Plan discusses procedures that will be followed to consider and implement additional contingency measures if they are needed." We did not see this discussion in the plan or TSD.

Control Measures

Coordinate Traffic Signal Systems. The discussion of the control measure Coordinate Traffic Signal Systems on page V-13 indicates that 151 traffic signals would be coordinated between 1997 and 2008. How did you ascertain that only the traffic signals modified since 2002 were credited, since signals synchronized between 1997 and 2002 would be in the base year of the inventory?

Tougher Enforcement of Vehicle Registration and Emission Test Compliance. Pages V-14 and V-15 of the TSD indicate that the Arizona Department of Transportation has increased staff for this program. However, increased staff does not necessarily translate

into increased emissions reductions. How were the emissions reductions associated with this program calculated? The TSD states that "the number of vehicles which participate in the I/M program was increased by 2.0 percent." Was this a total of 2 percent, or 2 percent per year? What is the basis for the 2 percent number? Why would this 2 percent emissions reduction not be included in the baseline 2002 emissions inventory?

ATTACHMENT A

Corrections to Table 1-1, Maricopa County VOC RACT Rules and SIP Status

“Control Techniques Guidelines” should be a subheading in the table, at the same level as “Major Sources Subject to RACT.”

“Gasoline Loading Terminals: MC Rules 350 and 351” should not be in the heading of the table at all.

The FR cite for first entry in the table, MC Rule 350, should read 60 FR 46024.

The sixth entry in the table, “Miscellaneous Refinery Sources” should not say “Submitted” right after the source category. The 3rd column should say “Submitted December 14, 2000.”

For Rule 331, Solvent Metal Cleaning, the 3rd column should read: Revised June 22, 1991, revised June 19, 1996, Revised April 21, 2004; approved February 1, 1996, (61 FR 3578), approved February 9, 1998, (63 FR 6489), approved December 21, 2004 (69 FR 76417).

An entry for Paper Products should follow the entry for “Surface Coating of Fabrics”. The entry should read as follows:

Rule	Adoption	Revisions and Approvals
Rule 336 - Paper Products	July 13, 1988	Revised September 21, 1992, June 16, 1996, April 7, 1999; approved September 20, 1999 (64 FR 50759)

There should be no “submitted” after the entry name for “Magnetic Wire.”

The entry for Rule 350- “External Floating Roof Petroleum Tanks” should have an FR approval citation of 60 FR 46024.

Rule 337 – Graphic Arts, was submitted on February 26, 1997.

Rule 358 was not a negative declaration, though “Manufacture of High-Density Polyethylene, Polypropylene, and Polystyrene Resins” was. The entry should read as follows:

Rule	Adoption	Revisions and Approvals
Manufacture of High-	Negative declaration	Submitted December 14,

Density Polyethylene, Polypropylene, and Polystyrene Resins		2000, approved August 26, 2002 (<u>67 FR 54741</u>)
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The entry for "Industrial Wasted Water" should read "Industrial Wastewater."

Rule 331, "Cleaning Solvents", was also revised April 21, 2004.

Rule 334, "Rubber Sports Ball Manufacturing" was approved on February 2, 1998.



Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov



Stephen A. Owens
Director

June 4, 2007

Ms. Lindy Bauer
Environmental Planning Manager
Maricopa Association of Governments
302 N. 1st Avenue, Suite 300
Phoenix, AZ 85003

SUBJECT: Draft 8-Hour Ozone Plan

Dear Ms. Bauer:

The Arizona Department of Environmental Quality (ADEQ) is hereby submitting comments on the Draft Plan the Maricopa Association of Governments (MAG) has prepared for submittal to the U.S. EPA on June 15th. ADEQ understands the complexity of this planning effort and recognizes that MAG has worked diligently to develop this Plan, including collaboration with ADEQ.

At the same time, ADEQ has concluded that implementation of additional control measures will be necessary to attain the 8-hour ozone standard. In addition, ADEQ is aware that recent staff work by EPA recommended changing the National Ambient Air Quality Standards for eight-hour ozone below 0.080 parts per million (ppm) to as low as 0.060 ppm to better protect public health for sensitive groups. For reasons that are set forth below, ADEQ does not concur that committed measures in the Serious Area Carbon Monoxide Plan (2001), the Carbon Monoxide Maintenance Plan (2003), and the 1-Hour Ozone Maintenance Plan (2004) will result in attainment of the 8-Hour Averaged Ozone standard. To that end, the Plan should have evaluated the following control measures:

- A Liquid Leaker Test component added to the Vehicle Emissions Test
VOC reductions estimate: 3,595 Tons per Year (TPY)
- Seasonal Open Burning Ban 5/1 through 9/30 each year
VOC reductions estimate: 8 TPY
NOx reductions estimate: 4 TPY

In addition, the General Preamble provides that the modeling domain for ozone planning areas extends 25 miles beyond the official nonattainment area border. Requirements for Cleaner Burning Gasoline (CBG) in western Pinal County, populated by many drivers who commute into the nonattainment area for employment and recreation, are currently being considered as part of SB 1552. MAGG should have also evaluated this control measure, considering its significant additional emission reductions:

Northern Regional Office
1801 W. Route 66 • Suite 117 • Flagstaff, AZ 86001
(928) 779-0313

Southern Regional Office
400 West Congress Street • Suite 433 • Tucson, AZ 85701
(520) 628-6733

Ms. Lindy Bauer
June 4, 2007
Page 2

VOC reductions estimate: 8,640 TPY
NOx reductions estimate: 5,525 TPY.

General Comments

ADEQ has determined that the documents MAG made available on the Internet for public review are not adequate to help interested publics review the complex and lengthy documents. MAG should post a searchable PDF version of the Plan and Technical Support Document in color, clearly identifying each of the four (4) separate Appendices, on its Web site for the general public. This posted Plan was not searchable, and because it was in black and white many of the graphics were difficult to interpret. Appendices III and IV of the Technical Support Document were not listed on MAG's Web site, and it was later determined that they were included at the end of the file labeled "Appendix II." Public review of documents that are hundreds of pages in length is impaired when electronic documents are not searchable. In addition, MAG's Web site should include information on how to obtain a copy (electronic or otherwise) of MAG's Silt Loading Study and Biogenics Study that were used to develop the Emissions Inventory. More detailed comments appear below.

Emissions Inventory

Population. The population estimates for 2010 for "County Areas" reflecting unincorporated portions of the County, minus Indian Country, should be corrected to **231,390** instead of 92,900. The corrected figure is based on the Department of Economic Security estimate for July 1, 2006. The total at the bottom of the 2010 column should be increased by 138,490 to read **4,272,890**.

MAG should add an explanation on page 5-5 of the Plan, or cross-reference the appropriate page of the Technical Support Document, to explain its choice to increase anthropogenic VOC and NOx emissions for the 2001 and 2002 episodes it modeled by only 3% for the 2008 estimates. MAG's population estimates in Table 2-1 show a linear population increase of 18.8% from 2002 to 2008, far greater than the 3% increase MAG selected for modeling purposes. The reason for the difference between population increase and MAG's projected anthropogenic emissions increase is not apparent and has not been explained in the Plan.

Biogenics. MAG's Executive Summary on page ES-7 of the Draft Plan lists the contribution of biogenic emissions as 65% of Total VOCs --an eightfold increase over the 2002 Periodic Inventory. ADEQ expressed concerns about ENVIRON's MEGAN model preliminary conclusions in February, that biogenics contribute 62% of total Volatile Organic Compound (VOC) emissions for the desert nonattainment area and that percentage would be unchanged from 2002 to 2008. This percentage is especially jarring when compared with the 2002 Periodic Emissions Inventory for the 1-Hour ozone Nonattainment Area that listed only 8% of VOCs

from biogenics. The MAG BEIS2 model was used in 2002. ADEQ suspects that the ENVIRON MEGAN Model Biogenics Study distorts the emissions estimates for the official 8-Hour Ozone nonattainment area by as much as 300% for the reasons set forth below.

Definition: Figure 3-1 on page 3-3 of the Plan divides the 65% to show 33.2% “Residential Wood burning...wildfires” and 32.5% biogenic emissions. The Plan needs to explain what was included in the term “biogenics” in the 2002 Periodic Emissions Inventory and compare it to the use of the same term on page 3-3 for purposes of the 2005 Emissions Inventory.

Study Area Selected: The 8-Hour Ozone Nonattainment Area is nearly twice the size of the 1-Hour Ozone Nonattainment area. Although the 8-Hour nonattainment area is approximately 12,533 square kilometers (4880 square miles), the Study Area that MAG’s contractor ENVIRON selected covers 33,562 square kilometers—2.68 times the size of the Nonattainment Area. The largest of the 25 land use categories in the Study area, entitled Palo Verde-Mixed Cacti-Scrub, exceeds the size of the entire Nonattainment Area at 14,852 square kilometers. ENVIRON’s study placed an inappropriate emphasis on areas downwind and outside of the expanded 8-Hour Ozone Nonattainment Area. These areas to the east of the Nonattainment Area are downwind from the most significant portion of the diurnal isoprene cycle. Biogenic emissions are lower in the urbanized areas that constitute the majority of the actual Nonattainment Area.

Local Emission Factors. ENVIRON developed its very first emission factors for desert vegetation in its new MEGAN Model Biogenics Study for the Phoenix area. ADEQ has concluded that these emission factors are over estimated.

- ENVIRON’s in-situ, small sampling techniques produced results that are not in agreement with widely recognized estimates and appear to err on the high side by substantial amounts.
- ADEQ has compared the ENVIRON emission factors to published U.S. Geological Survey (USGS) factors and has found that ENVIRON’s factors are substantially higher. For example, ENVIRON has assigned the Palo Verde-Mixed Cacti-Scrub category an emissions rate that is 87% of the USGS emissions rate for a deciduous forest. Likewise, ENVIRON assigned an emission factor 5.5 times the USGS factor for conifer forests to the Pinon-Juniper.

The Plan should explain the differences between the ENVIRON emission rates and the USGS emission rates or revise the emission rates used in the Plan. MAG should also revise page ES-7 and Figure 3-1 of the Draft Plan to focus on the vegetation that contributes to ozone formation inside the boundaries of the nonattainment area—not downwind vegetation.

Further, no attempt was made to reconcile the emission estimates with the publicly-available Photochemical Assessment Monitoring System data that ADEQ has been collecting for nearly a decade. These data show that isoprene, the widely-prevalent biogenic compound, constitutes less than 2% of total VOCs in the ambient air.

Land Use Conversion: MAG assumed biogenic emissions do not change over time, despite conversion of land to housing and other uses. The 2008 biogenic emission rate is the same as the rates for 2002 and 2001. The Plan should explain either why this emission rate should not be adjusted due to land conversion or apply a corrected emissions rate for 2008.

Modeling versus Weight of Evidence Analysis: Figure IV-19 in the TSD shows that zeroing out biogenic emissions results in peak ozone concentration dropping by 8 ppb on June 7, 2002. In contrast, the Weight of Evidence Analysis in Appendix V, page 17, states that isoprene (a major component of biogenic VOCs) has little impact on ozone formation. This inconsistency needs further explanation.

Mobile Sources. The calculation of on-road mobile emissions used for the Draft Plan is problematic. Appendix IV presents several MOBILE6 input files. MAG used the command "FUEL PROGRAM: 2 S" to simulate Cleaner Burning Gasoline (CBG) in Area A and added another command, "FUEL RVP: 7.0", to specify Reid Vapor Pressure (RVP) in Area A. The command "FUEL PROGRAM: 2 S" models the effect of a Federal Reformulated Gasoline (RFG) program in the Southern region. In MOBILE6, the default fuel properties for the Federal RFG option for the summer of calendar 2008 are as follows:

RVP: 6.8 psi;
Ether oxygen content: 2.1% by weight;
Ether market share: 100%.

No matter what value is specified in the command "FUEL RVP", the command "FUEL PROGRAM:2 S" overrides it. The net effect of using the two commands MAG chose was to set RVP at 6.8 psi and ether oxygen content at 2.1% by weight. However, Arizona banned all ether oxygenates in gasoline effective on January 1, 2005. The ether oxygen content for gasoline is 0% instead of "2.1% by weight," and the "Ether market share" in the 8-Hour Ozone Planning Area is also 0%. Therefore, the following commands should be used in the MOBILE 6 modeling for this Plan: "FUEL PROGRAM: 4" to set the sulfur content and "RVP" to specify the actual RVP. The 2006 retail sampling, conducted by the Arizona Department of Weights and Measures for the months of May through September, show average sulfur content of 50 ppm and RVP of 6.5 psi. Note that additional emission reductions may need to be applied to account for the fact

that summertime CBG meets federal RFG standards. This modeling should be repeated using the revised inputs.

2002 Baseline. The Plan should clearly identify which control and contingency measures in the Plan (to achieve emission reductions in 2002-2008) have already been accounted for in the 2002 Baseline. Only those control and contingency measures that are not already in the 2002 Baseline should be listed as control measures to attain the 8-Hour Ozone Standard.

The Emissions Inventory is a critical component of the attainment demonstration, and comments specific to the modeling are addressed next.

Attainment Demonstration Modeling

The demonstration of attainment in the Plan is uncertain at best and precariously close to the National Ambient Air Quality Standard. The committed control measures do not convincingly demonstrate attainment. Therefore, ADEQ recommends assessing the modeled impact of the additional control measures listed above.

In addition, several aspects of the computer modeling raise issues that require either further explanation in the Plan and the Technical Support Document or further modeling using more accurate inputs.

Mathematical demonstration. The attainment demonstration relies on truncating a modeled value of 0.0847 parts per million (ppm), as allowed by Federal regulations. Rounding up to 0.085 ppm would demonstrate nonattainment. The demonstration relies on a statistical margin of 0.0003 ppm, which is considerably less than the margin of error for this type of modeling demonstration.

Validation of actual episodes. The uncertainties in this modeling demonstration are high because the model only successfully simulated the transport episode (June 2002). It significantly underestimated peak ozone concentrations for both the local production-dominated episode (July 2002) and the combination of the transport and local formation episode (August 2001). The cause of the underestimation has not been clearly identified in the Plan or TSD. This unresolved bias, which could be due to a bias in meteorological field or bias in chemistry, call into question the validity of the modeling analysis.

Predicted emissions reductions. The modeling does not convincingly demonstrate attainment because the predicted reduction of peak ozone concentrations is nearly zero.

- The model predicts that total NO_x emissions are only reduced by 1.7% and that total VOC emissions *increase* by 0.5%. These small modeled changes in ozone precursors are not sufficient to guarantee attainment.

Ms. Lindy Bauer

June 4, 2007

Page 6

- For many monitoring sites, the predicted peak ozone concentration is *increased* from the baseline conditions.
- MAG has projected concentrations for 6 of the 18 monitoring sites to be greater than 95% of the National Ambient Air Quality Standard in the attainment year.
- Attainment is demonstrated in this modeling because only one of the 18 values used in the baseline design value is an exceedance, not because of the effectiveness of the control measures in the Plan.

Meteorological modeling. Several special modeling treatments were employed without sufficient justification in the Plan. MAG should either add a more detailed justification for these treatments or re-model following the recommendations outlined below.

Vertical diffusivity. Typically, modelers choose a single vertical diffusivity calculation for all episodes modeled in the same region in the same season. The TSD at page III-47 states that two different vertical diffusivity calculation options were applied according to the results of sensitivity testing, one for the transport-dominated episode and the combination episode, and the other for the local formation-dominated episode.

- The Plan should explain why two different options were chosen for the same ozone season and the same region, and it should explain the criteria used to select each of the two options.
- In the alternative, a single vertical diffusivity calculation should be used for additional modeling.

Mixing height. Past work by Sonoma Technology and others demonstrates that the diurnal variation of mixing height is even more important than the maximum value. Studies have shown that slow development of mixing height is a cause of excessive ground-level ozone.

- It would be helpful to understand the impact of mixing height on peak ozone concentrations by plotting diurnal mixing height for the peak ozone grid cells for all three episodes.
- ADEQ's wind profiler data for the past two years may be available for use to determine the hourly mixing heights. These data may be used to explore the typical mixing height for the design dates.

Site-to-site variation. A model/observation comparison is provided in the Plan for means, not for individual sites. For the July 2002 and August 2001 episodes, when ozone is underestimated,

observational precipitation, humidity, temperature and wind data near the peak location could be compared with the modeled values.

- Site-to-site variations could be significant; averaging them could mask the actual impact. Site-specific comparisons of meteorological data may reveal the factor or factors that contribute most to the under-prediction of ozone by the model.

Sensitivity Testing. The TSD at page IV-85 states that sensitivity tests for emissions were conducted by simply modeling 100% emission reductions from (zeroing out) each entire emission category: mobile sources, area sources, and point sources.

- Zeroing out on-road and off-road NO_x emissions should reduce modeled ozone concentrations, because Reformulated Gasoline resulted in actual reductions of ozone in this Planning Area, but MAG's modeling shows inconsistent patterns of ozone concentrations when these sources were eliminated. For the June 2002 episode, the modeled peak ozone concentration increased as mobile source emissions were eliminated in the 2nd – 4th days, but decreased on the 5th day (TSD at page IV-87). A similar pattern occurred in the other two modeled episodes. A consistent pattern would have been expected on all five days.
- The Plan does not clearly explain why removing significant ozone precursors (especially NO_x from mobile sources) would lead to a higher peak ozone concentration at all, much less on three of five days in an episode. This modeling performance should be explained.
- Sensitivity testing should be used to evaluate the effectiveness of each control measure selected for inclusion in the Plan.
- Since the Emission Inventory shows the dominant contributor to NO_x to be mobile sources (63%) and the dominant contributor to VOCs to be biogenic emissions (65%), the elimination of the majority of NO_x or VOC emissions does not represent a realistic scenario. Sensitivity testing should be conducted in an incremental manner such as 20% or 30% emission reductions.

Weekday versus weekend. ADEQ suggests that MAG also examine the differences in weekday versus weekend ozone concentrations for the July 2002 episode. For this local production-dominated episode, the predicted weekend ozone concentrations for July 12-13 are significantly higher than some of the predicted weekday concentrations.

- This result is unexpected for a local formation-dominated episode when local ozone precursor emissions are significantly reduced.

Transported ozone. ADEQ suggests further examination of the contribution of transported ozone and the possibly larger contribution of locally produced ozone than this modeling shows.

- The ozone-precursor relationship in the July 2002 episode could provide insight on the contribution of regional transport to high ozone and on the effectiveness of controlling mobile emissions to reduce peak ozone.
- ADEQ suggests conducting source apportionment analysis, or at least quantitatively estimating the transported ozone versus the locally formed ozone.
- The qualitative discussion in the Weight of Evidence Analysis is not sufficient, since it only indicates an upper limit of the transport ozone. Ozone may also be transported from aloft over a longer distance, which could not be reliably captured by upwind surface monitors.
- ADEQ suggests plotting ozone versus altitude to see the vertical ozone distribution. This may help to identify ozone transport from aloft and reveal regional transport. These exercises could help diagnose the contribution of transport compared to locally-formed ozone and point to effective control measures necessary for attainment and maintenance.

Precursors. MAG compared modeled ozone to monitored ozone data.

- ADEQ recommends comparing modeled NO_x concentrations with monitored NO_x data, and comparing modeled VOC concentrations to monitored VOC data. Five NO_x monitors and two VOC monitors are in the Planning Area, and ADEQ and Maricopa County Air Quality Department data are available. These comparisons will provide information on how well the model replicates actual photochemistry.
- ADEQ also recommends plotting modeled peak ozone versus modeled NO_x concentrations, VOC concentrations, and the VOC/NO_x ratio for the June 2002 and July 2002 meteorological regimes to see if there is any correlation.

Relative Response Factor (RRF). According to the 'Guidance on the Use of Models and Other Analysis for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze' [EPA, April 2007 at page 145], RRF should be calculated based on no less than 5 modeled days to provide statistical robustness. To support the use of less than 5 days in the RRF calculation, the variability of daily RRF should be analyzed. In this Plan, most RRFs are calculated based on 4 or fewer modeled days, raising the uncertainty of these RRF values—especially when the attainment demonstration is so marginal. The RRF ranges from 0.990 to

1.013, showing very little emission reduction, if any. Again, the control measures in this Plan do not appear to be sufficient to reduce ozone concentrations.

Contingency Measures. According to the TSD at page V-16, only the aggregated emissions reduction is estimated for all five contingency control measures. ADEQ suggests conducting additional CAMx model run to quantify the reduction of peak ozone concentrations due to each individual measure that is not already accounted for in the 2002 Baseline.

NOx Waiver versus Safety Margin. The Draft Technical Support Document should be revised on Page I-2 to be consistent with the NOx safety margin in the Draft Plan, which replaced an earlier NOx waiver concept. The following sentences are no longer accurate: "A secondary objective of the modeling was to evaluate the complex chemical relationships between precursor emissions of volatile organic compounds and nitrogen oxides and the formation of ozone. This evaluation has concluded that additional reductions in NOx emissions do not contribute to attainment of the eight-hour ozone standard in 2008; and therefore, the Maricopa nonattainment area qualifies for a NOx exemption under section 182(f) of the Clean Air Act".

Weight of Evidence Analysis

ADEQ has identified several inconsistencies in the Technical Support document that should be reconciled.

- TSD Appendix V, page 10: The trend analyses for NOx and VOC emissions show sizable reductions for seven (1999 – 2006) or nine (2006-2015) year periods, averaging a reduction of 2–3 tons per day; however, the NOx concentration trend analysis shows up and down trends in the time period from 1999 – 2006. The model results also show that a 5 tons per day reduction in NOx does not provide any reliable ozone concentration reduction (RRF for June 2002 in a range of 0.990 – 1.013). It appears that the magnitude of the emission reductions is not sufficient to reduce ozone.
- TSD Appendix V, page 16: VOC/NOx ratio analysis was only done for June 7, 2002. It should also be conducted for the July 2002 episode, since it is assumed to be an entirely different meteorological regime. This analysis does not provide sufficient explanation of how the modeled ozone concentration would respond to changes in the VOC/NOx ratio.
- TSD Appendix V, page 17: Process Analysis was only conducted for June 2002 episode. The net ozone production rate for noon on June 7 is 7 – 10 ppbv/hour. This episode was identified as transport dominated, but the net ozone production rate is substantial. The process analysis should also be conducted for the July and August episodes. The net ozone production and other chemical quantities should be compared for these three

episodes to see whether the model predicted different patterns under different meteorological conditions.

Planning and Consultation Process

Although the June 15, 2007, Plan submittal deadline had been known for several years, the 8-Hour Ozone Planning Team did not meet until February 1, 2007. Its second and last meeting was on February 9th to discuss both the 8-Hour Ozone Plan and the 5% Reasonable Further Progress PM₁₀ Plan. One identified issue, the NO_x waiver issue, was resolved in subsequent teleconference calls on April 20th and April 27th. The remaining issues identified in this comment letter were never elevated or referred by the Planning Team to the MAG Air Quality Policy Team for resolution.

Copies of MAG's Silt Loading Study and MAG's Biogenics Study were not provided to the Planning Team. When an ADEQ employee contacted MAG on May 29th to access the Biogenics Study, he learned that it was not electronically available, had not been posted on the website with the other Public Comment documents, but that a photocopy would be provided to him.

The MAG Air Quality Policy Committee in existence in 1992 was subsequently recast by MAG as the Air Quality Technical Advisory Committee (AQTAC) *without* amendment to the Memorandum of Agreement. Although some conclusions were shared with AQTAC, neither the Silt Loading Study nor the Biogenics Study was presented for review by the MAG Air Quality Technical Advisory Committee, the Maricopa County Air Quality Department (charged with development of the Emission Inventory), ADEQ or EPA.

MAG scheduled the Public Hearing on Friday June 1st at 5:30 PM. After ADEQ advised MAG that the general public would not be well served by that schedule, a second Public Hearing was scheduled for the following Tuesday evening.

Control Measures

MAG has not added any new control measures to achieve the new 8-Hour Ozone standard despite the narrow margin relied upon for its attainment demonstration. ADEQ is not confident that the modeled attainment demonstration will be achieved unless the additional control measures identified on the first page of this comment are added to the plan.

The Plan also included 38 measures from past CO Plans and the One-Hour Ozone Maintenance Plan and stated that emission reduction benefits associated with these measures were not quantifiable. Many of these measures were repealed, not fully implemented or should have been reflected in the 2002 base case. As a result, many of these measures may not be considered to be binding legal commitments to reduce ozone precursor emissions. ADEQ recommends retention of only those measures that have been full implemented and are not reflected in the base case in this Plan. The following table lists measures by their number in the Draft Plan that MAG should reconsider for inclusion in the Final Plan.

MEASURES THAT IMPROVE AIR QUALITY BUT WERE NOT USED FOR NUMERIC CREDIT				
Implemented Measures Included in Base Case	Implemented Measures that Need Updating	Implemented Measures that Require Documentation on Actual Implementation	Measures that Have Been Repealed	Measures that Were Never Implemented
3, 14, 16, 20, 25, 29, 32, 34, 35	4*, 6, 7, 11, 17, 19, 28, 30, 31, 33, 38	12, 15, 18, 21, 22, 23, 24, 26, 27	8, 9	1, 2, 10, 37

Specific Comments:

Measure No.5, *Diesel Fuel Sampling and Reporting*, is a reporting requirement only and is inappropriate for inclusion in the SIP.

Measure No. 13, *Encourage the Use of Temporary Electrical Power Lines rather than Portable Generators at Construction Sites*, has been included in this section; however, implementation of this measure has been limited due to local requirements that developments receive certificates of occupancy prior to connection to utility-provided power.

Measure No. 36, *Voluntary Vehicle Repair and Retrofit Program*, has been included in this section when it is an implemented measure for which extensive documentation on emissions reductions are available. In fact, the importance of this measure should necessitate its inclusion in the base case.

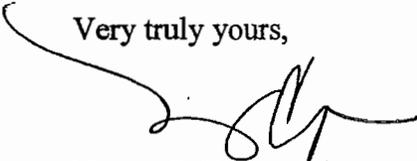
Ms. Lindy Bauer
June 4, 2007
Page 12

Consistent Measurement Units. Control measures and the Emission Inventory should both be expressed in metric tons or both be expressed in English tons to enable evaluation of the efficacy of the measures.

Conclusion

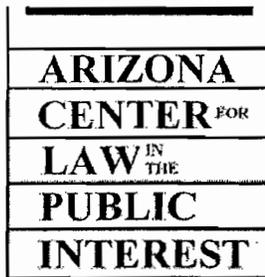
With the addition of the control measures identified on the first page of this comment and additional modeling consistent with the suggestions above, ADEQ is confident that the Phoenix 8-Hour Ozone Planning Area will attain the national public health standard on or before the deadline of December 31, 2008. ADEQ appreciates the time and effort MAG has devoted to technical planning work and looks forward to timely, coordinated decision making by all of the parties to achieve and maintain standards that protect citizens in the fastest growing County in the fastest growing State in the nation.

Very truly yours,



Nancy C. Wrona, Director
Air Quality Division

NCW:DLA:MBL



2205 E. SPEEDWAY BLVD.
TUCSON, ARIZONA 85701
(520) 529-1798
(520) 529-2927 (FAX)
WWW.ACLPI.ORG

JOY E. HERR-CARDILLO
STAFF ATTORNEY

June 4, 2007

VIA ELECTRONIC MAIL

Lindy Bauer
Maricopa Association of Governments
302 N. 1st Avenue, Suite 300
Phoenix, AZ 85003

Re: Draft Eight Hour Ozone Plan

Dear Ms. Bauer,

We provide the following comments on the above-referenced Draft Plan:

1. Failure to Include Additional Control Measures.

We are very disappointed to see that the proposed 8 Hour Ozone Plan does not include any additional control measures and instead, simply relies upon those measures already implemented as part of the One Hour Ozone Maintenance Plan. As EPA cautioned ADEQ recently (see Letter dated April 20, 2007 from Wayne Nastro to Steven Owens), the values at several of the monitors are very close to the standard and it will be very difficult for the area to maintain those values without taking some additional steps. In particular, the 3 year average for the monitors at Fountain Hills, North Phoenix, and Rio Verde rely upon the 2004 values to bring the three year average in under .085 PPM. If the fourth highest reading for 2007 for any of these three monitors comes in at .085, there will be a violation, and in the case of North Phoenix the fourth high reading need only reach .083 to put the average over .084 PPM. Under these circumstances, it is simply irresponsible for the state not to proactively address the problem with additional control measures to ensure attainment.

2. Failure to Include Updated RACM or RACT Analysis

As noted in the draft plan, Section 172(c)(1) of the Clean Air Act requires the plan to include all “reasonably available control measures.” The Draft Plan, however, makes no effort to demonstrate that it has, in fact, complied with this requirement. Rather the plan simply sets forth the various control measures already implemented in the area and includes a model that purportedly demonstrates that these measures will be sufficient to reach attainment by the deadline. The plan makes reference to previous RACT demonstration, but does not attempt to update the demonstration to consider new control measures or other changes in technology that would make previously rejected control measures now “reasonably available.” The omission of this fundamental requirement renders the plan noncompliant and incomplete under the Clean Air Act.

3. Contingency Measures.

Finally, we disagree that the Draft Plan properly includes contingency measures. The measures designated as “contingency measures” in the Draft Plan are already implemented. Thus, the plan contains no additional measures that would be immediately implemented in the event the area fails to demonstrate reasonable further progress or fails to attain the standard by the deadline. According to Section 175(d), the purpose of contingency provisions is to assure that the state will immediately implement additional control measures without further action if the area fails to make further reasonable progress or fails to attain by the deadline. At that point, the fact that some of the implemented measures were not included in the modeling used to demonstrate attainment is of little help to the public. Obviously, if these so called “contingency measures” are already being implemented when the triggering event occurs, there is nothing to suggest that their continued implementation would ensure that the situation will be corrected and the public health protected. That is why the Act clearly envisions *additional* measures that are automatically and immediately implemented if and when a violation occurs. Simply showing “contingency measures” on paper, as the Draft Plan does, is contrary to the intent and purpose of the Act’s requirement.

Sincerely,

s/Joy E. Herr-Cardillo
Joy E. Herr-Cardillo
Staff Attorney