DRAFT

CONFORMITY ANALYSIS

For the FY 2026-2030 MAG Transportation Improvement Program and MOMENTUM 2050 Regional Transportation Plan Update

September 2025



MARICOPA ASSOCIATION of GOVERNMENTS

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FOR THE

DRAFT FY 2026-2030 MAG TRANSPORTATION IMPROVEMENT PROGRAM

AND

DRAFT MOMENTUM 2050 MAG REGIONAL TRANSPORTATION PLAN UPDATE

September 2025

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EXECUTIVE SUMMARY

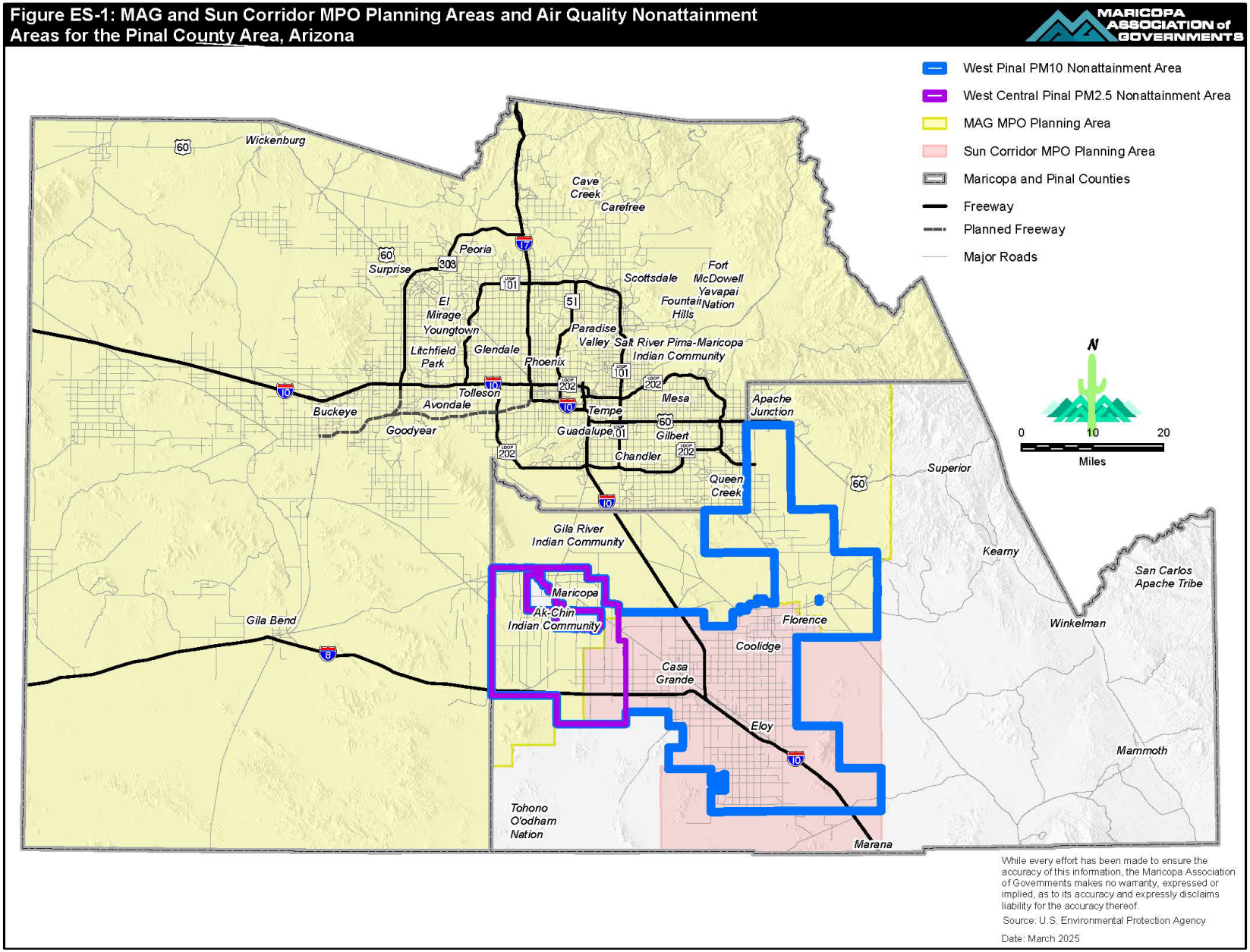
This report presents the MAG Conformity Analysis for the Draft FY 2026-2030 MAG Transportation Improvement Program and Draft MOMENTUM 2050 MAG Regional Transportation Plan Update. The Maricopa Association of Governments is the designated Metropolitan Planning Organization (MPO) for Maricopa County and portions of Pinal County including Apache Junction, Florence, and Maricopa. As a result of this designation, MAG prepares the Transportation Improvement Program and Regional Transportation Plan, and the associated conformity analyses. The FY 2026-2030 MAG Transportation Improvement Program serves as a detailed guide for preservation, expansion, and management of public transportation services. The MOMENTUM 2050 MAG Regional Transportation Plan Update covers FY 2026 through FY 2050 providing the blueprint for future transportation investments in the region. The Regional Transportation Plan includes funding for freeways and highways, streets, regional bus and high capacity transit, as well as bicycle and pedestrian facilities, commensurate with available funding. This conformity analysis supports a finding of conformity for the FY 2026-2030 MAG Transportation Improvement Program and MOMENTUM 2050 Regional Transportation Plan Update for the Maricopa Association of Governments metropolitan planning area.

On May 9, 2013, the MAG Metropolitan Planning Area Boundary was expanded due to the 2010 Census urbanized area updates. For transportation planning and programming purposes, the Federal Highway Administration regulations state that at a minimum, the Metropolitan Planning Area must encompass the entire existing urbanized area boundary as well as the contiguous geographic area(s) likely to become urbanized within the next 20 years. The updated urbanized area boundary for the MAG region included areas within Pinal County. Due to this expansion, the MAG Regional Council amended the MAG By-laws to recognize the new Metropolitan Planning Area Boundary and to provide for new members from Pinal County within the new boundary. The MAG Metropolitan Planning Area Boundary now includes the Town of Florence, City of Maricopa, the portion of the Gila River Indian Community within Pinal County, and unincorporated areas within Pinal County.

Also, on May 6, 2013, the Sun Corridor Metropolitan Planning Organization was designated in the Pinal County area. The Sun Corridor Metropolitan Planning Area Boundary includes the cities of Casa Grande, Eloy, Coolidge, and unincorporated areas of Pinal County.

Both the MAG Metropolitan Planning Area Boundary and the Sun Corridor Metropolitan Planning Area Boundary include portions of the West Pinal PM-10 Nonattainment Area and West Central Pinal PM-2.5 Nonattainment Area. Both nonattainment areas are covered by the boundaries of the two metropolitan planning organizations. Consequently, transportation conformity is required to be demonstrated for both nonattainment areas by both metropolitan planning organizations. Please refer to Figure ES-1.

Figure ES-1: MAG and Sun Corridor MPO Planning Areas and Air Quality Nonattainment Areas for the Pinal County Area, Arizona



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Source: U.S. Environmental Protection Agency

Date: March 2025

To provide assistance to the Sun Corridor Metropolitan Planning Organization, MAG has offered to prepare conformity analyses for the PM-10 and PM-2.5 nonattainment areas in Pinal County, to enable transportation projects in both metropolitan planning organizations to proceed. At a June 17, 2013 meeting with the Arizona Department of Transportation, Sun Corridor Metropolitan Planning Organization and MAG, there was general concurrence that MAG would prepare the initial conformity analysis. The Maricopa Association of Governments works through a cooperative effort with the Arizona Department of Transportation, Arizona Department of Environmental Quality, and Sun Corridor Metropolitan Planning Organization on the coordination of transportation planning activities and conformity analyses consistent with the Memorandum of Understanding among the agencies.

The MAG Conformity Analysis for the FY 2026-2030 MAG Transportation Improvement Program and MOMENTUM 2050 MAG Regional Transportation Plan Update includes results of the regional emissions analysis for eight-hour ozone and PM-10 for the Maricopa County region as well as PM-10 for the West Pinal PM-10 Nonattainment Area and PM-2.5 and NOx for the West Central Pinal PM-2.5 Nonattainment Area located in Pinal County. Summarized below are the applicable federal criteria or requirements for conformity determinations, the conformity tests applied, regional emissions analysis results, and an overview of the organization of this report. Figures presenting the conformity test results and transportation control measure funding in the FY 2026-2030 MAG Transportation Improvement Program are provided at the end of the Executive Summary.

CONFORMITY REQUIREMENTS

The federal transportation conformity rule (40 Code of Federal Regulations Parts 51 and 93) specifies criteria and procedures for conformity determinations for transportation plans, programs, and projects and their respective amendments. The federal transportation conformity rule was first promulgated in 1993 by EPA, following the passage of amendments to the federal Clean Air Act in 1990. The federal transportation conformity rule has been revised several times since its initial release to reflect both EPA rule changes and court opinions. The transportation conformity rule and court opinions are summarized in Chapter 1.

The conformity rule applies nationwide to “all nonattainment and maintenance areas for transportation-related criteria pollutants for which the area is designated nonattainment or has a maintenance plan” (40 CFR 93.102). At this time, portions of Maricopa County are designated as a nonattainment area with respect to federal air quality standards for two criteria pollutants, eight-hour ozone and particulate matter less than or equal to ten microns in diameter (PM-10), and portions of Pinal County are designated as a nonattainment area with respect to PM-10 and particulate matter less than or equal to 2.5 microns in diameter (PM-2.5). Metropolitan transportation plans, programs, and projects in the nonattainment areas of both counties must satisfy the requirements of the federal transportation conformity rule. Under the federal transportation conformity rule, the principal criteria for a determination of conformity for transportation plans and programs are:

(1) the TIP and Regional Transportation Plan must pass an emissions budget test with a budget that has been found to be adequate or approved by EPA for transportation conformity purposes, or interim emissions tests;

(2) the latest planning assumptions and emission models in force at the time the conformity analysis begins must be employed;

(3) the TIP and RTP must provide for the timely implementation of transportation control measures (TCMs) specified in the applicable air quality implementation plans; and,

(4) consultation.

Consultation generally occurs at the beginning of the conformity analysis process, on the proposed models, associated methods, and assumptions for the upcoming analysis and the projects to be assessed, and at the end of the process, on the draft conformity analysis report. The final determination of conformity for the TIP and RTP is the responsibility of the Federal Highway Administration and the Federal Transit Administration.

The conformity tests specified in the federal transportation conformity rule are: (1) the emissions budget test, and (2) interim emissions tests. For the emissions budget test, predicted emissions for the TIP and RTP must be less than or equal to the motor vehicle emissions budget specified in the approved air quality implementation plan or the emissions budget found by EPA to be adequate for transportation conformity purposes. If there is no approved air quality plan for a pollutant for which the region is in nonattainment or no emissions budget found to be adequate for transportation conformity purposes, interim emissions tests apply.

MARICOPA COUNTY NONATTAINMENT AREAS

For the Maricopa County nonattainment areas, separate tests were conducted for eight-hour ozone precursors volatile organic compounds (VOC) and nitrogen oxides (NOx), and PM-10. Budget tests were performed for the Maricopa County nonattainment areas using EPA-approved budgets for transportation conformity purposes. On June 2, 2020, EPA approved the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the 2008 ozone standard and 2017 conformity budgets for volatile organic compounds and nitrogen oxides, effective July 2, 2020. On June 10, 2014, EPA published the final rule approving the MAG 2012 Five Percent Plan for PM-10 and 2012 conformity budget, effective July 10, 2014. On July 25, 2002, EPA approved the Revised MAG 1999 Serious Area Particulate Plan for PM-10 and 2006 conformity budget, effective August 26, 2002.

On April 8, 2025, the Maricopa County carbon monoxide maintenance area reached the end of the 20-year maintenance period and therefore transportation conformity requirements no longer apply to carbon monoxide.

Chapter 1 summarizes the applicable air quality implementation plans and conformity tests for eight-hour ozone and PM-10. For the MAG Conformity Analysis for the FY 2026-2030 MAG TIP and MOMENTUM 2050 MAG Regional Transportation Plan Update, the emissions budget tests were performed for volatile organic compounds (VOC) and nitrogen oxides (NOx) using the approved conformity budgets from the MAG 2017 Eight-Hour Ozone Moderate Area Plan. For PM-10, the emissions budget test was performed using both the approved conformity budget from the MAG 2012 Five Percent Plan for PM-10 and the approved conformity budget from the Revised MAG 1999 Serious Area Particulate Plan for PM-10.

Results of the Conformity Analysis

For the MAG Conformity Analysis, a regional emissions analysis was conducted for the eight-hour ozone precursors (volatile organic compounds and nitrogen oxides) and PM-10 for the years 2026, 2030, 2040, and 2050. All analyses were conducted using the latest planning assumptions and emissions models in force at the time the conformity analysis started on June 27, 2025. The major conclusions of the MAG Conformity Analysis are:

- For eight-hour ozone, the total vehicle-related volatile organic compound and nitrogen oxide emissions associated with implementation of the TIP and Regional Transportation Plan for the analysis years of 2026, 2030, 2040, and 2050 are projected to be less than the approved 2017 emissions budgets. The applicable conformity tests for eight-hour ozone are therefore satisfied. The results of the regional emissions analysis for eight-hour ozone using the 2017 emissions budgets are presented in Figure ES-2 and Figure ES-3.

- For PM-10, the total vehicle-related emissions associated with implementation of the TIP and Regional Transportation Plan for the analysis years of 2026, 2030, 2040, and 2050 are projected to be less than the approved 2012 emissions budget and the approved 2006 emissions budget. The conformity test for PM-10 is therefore satisfied. The results of the regional emissions analysis for PM-10 are presented in Figure ES-4.

- A review of the implementation status of TCMs in applicable air quality plans has indicated that the TIP and Regional Transportation Plan will provide for the timely implementation of the TCMs and there are no obstacles to the implementation of any TCM. The current status of TCMs identified in applicable air quality implementation plans is documented in Chapter 5 of this report. Figure ES-5 presents the total funding programmed in the TIP for transportation projects and programs that implement transportation control measures and other air quality measures.

- Consultation has been conducted in accordance with federal requirements.

Figure ES-2: Eight-Hour Ozone: Volatile Organic Compounds (VOC) Results for Conformity Budget Test

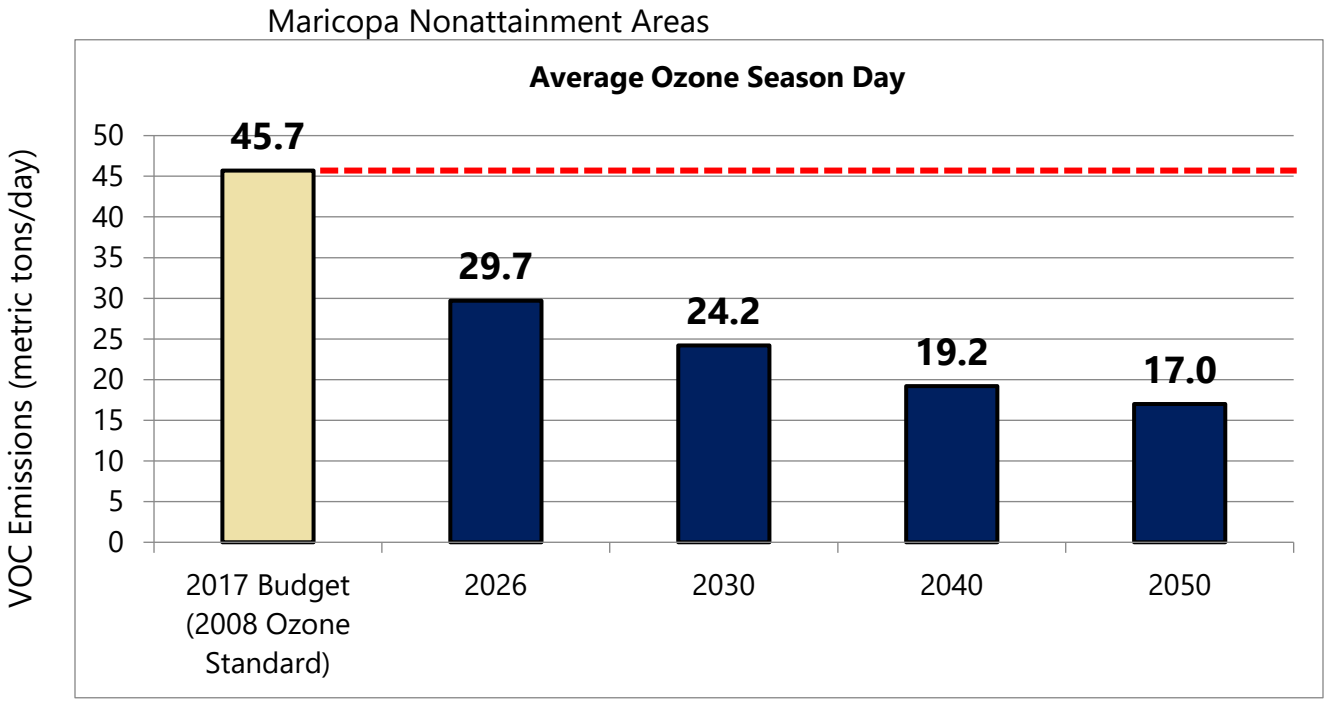


Figure ES-3: Eight-Hour Ozone: Nitrogen Oxides (NOx) Results for Conformity Budget Test

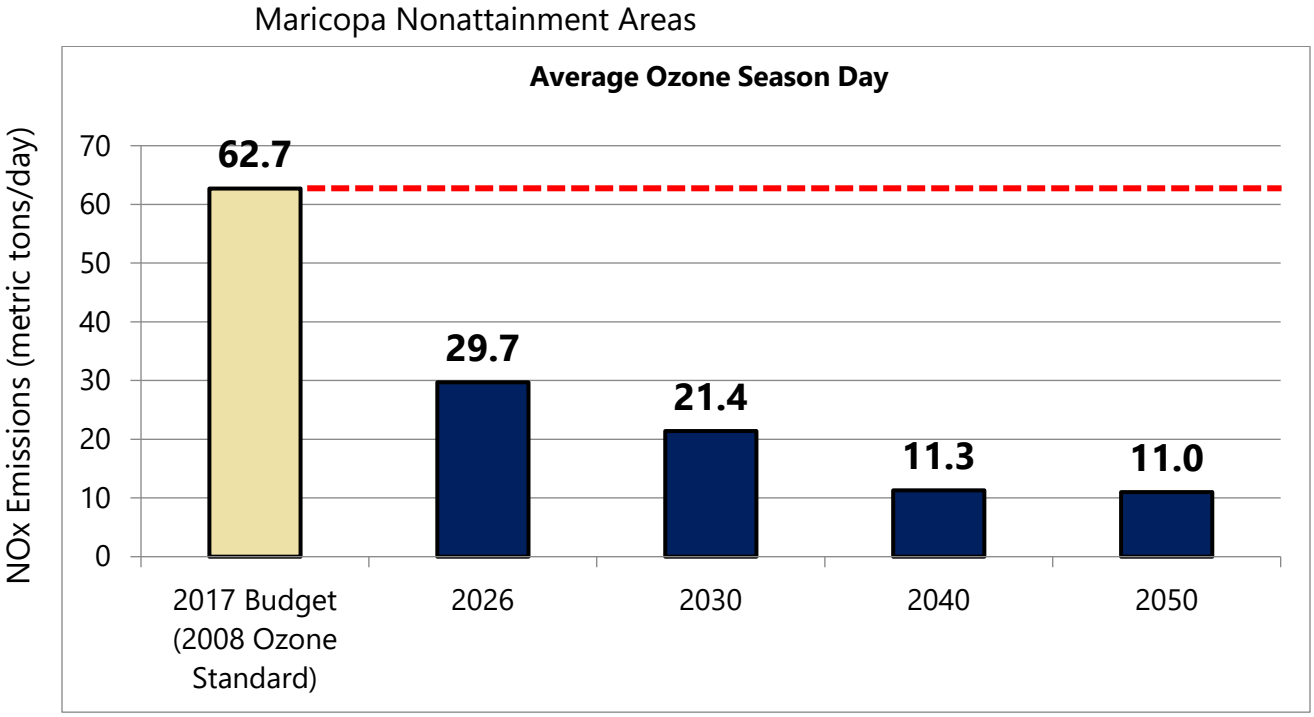


Figure ES-4: PM-10 Results for Conformity Budget Test

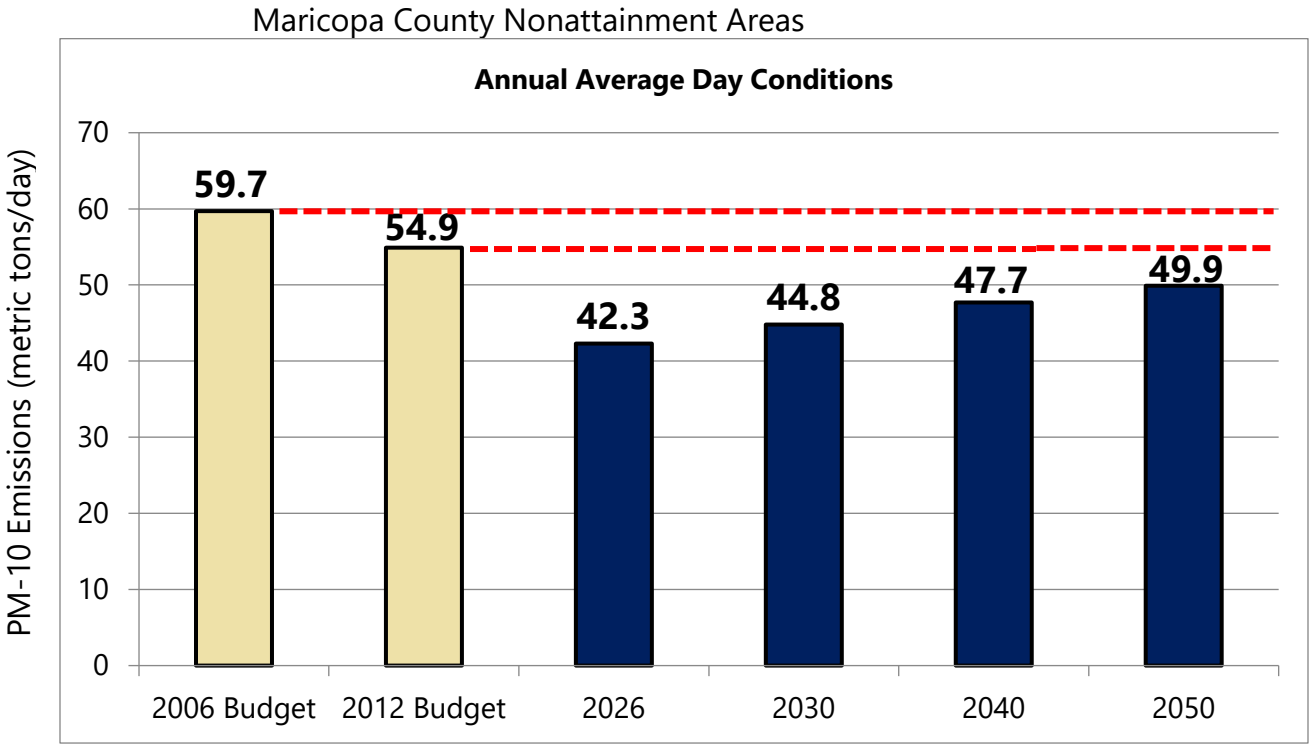
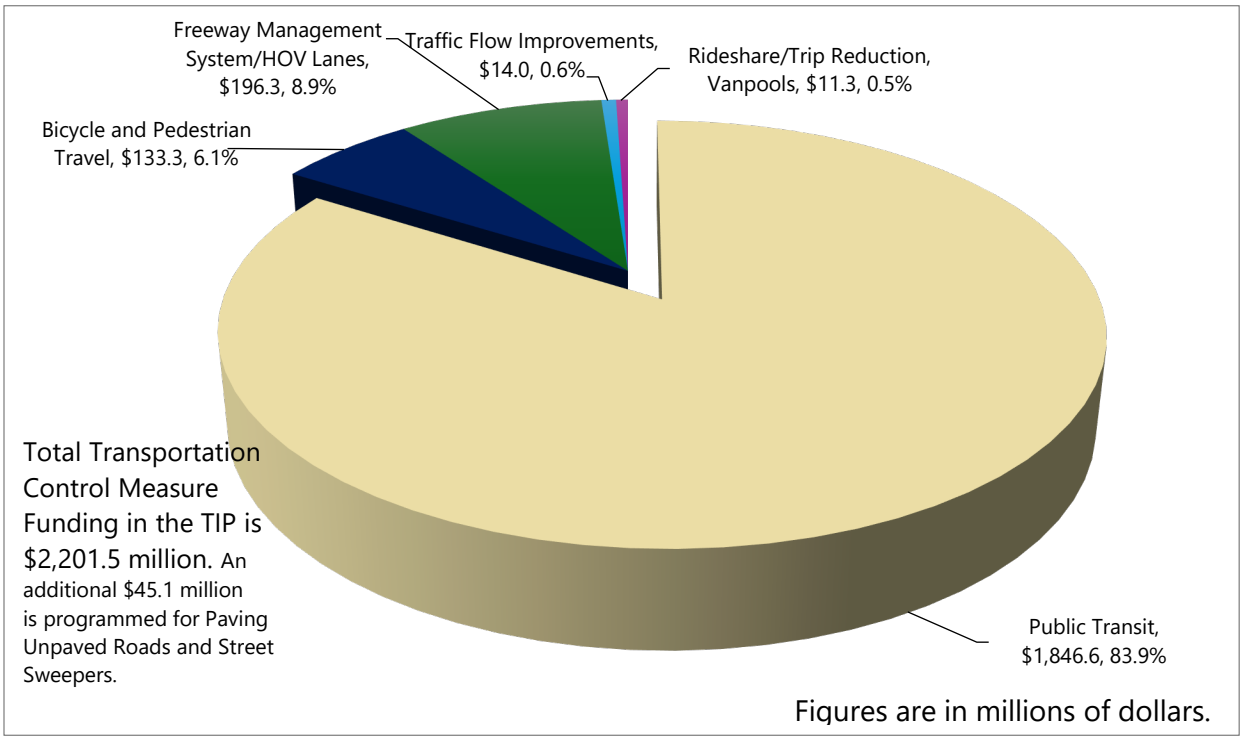


Figure ES-5: Transportation Control Measure Funding in the FY 2026-2030 MAG Transportation Improvement Program



PINAL COUNTY NONATTAINMENT AREAS

For the Pinal County PM-10 and PM-2.5 nonattainment areas, there are no adequate or approved motor vehicle emissions budgets for conformity. Therefore, the conformity interim emissions tests were applied. The Action/Baseline tests were conducted for PM-10 for the West Pinal PM-10 Nonattainment Area and for PM-2.5 and nitrogen oxides (NOx) for the West Central Pinal PM-2.5 Nonattainment Area for the analysis years of 2030, 2040, and 2050. For each test, the required emissions estimates were developed using the transportation and emission modeling approaches required under the federal transportation conformity rule and summarized in this document.

For PM-10, for each analysis year the projected emissions for the Action scenario are not greater than the projected emissions for the Baseline scenario. Since the PM-10 emissions projected for the Action scenarios are not greater than the PM-10 emissions projected for the Baseline scenarios, the conformity interim emission test is satisfied. It is also reasonable to expect the action emissions would not exceed the baseline emissions for the time periods between the analysis years. The results of the regional emissions analysis for PM-10 are presented in Figure ES-6.

For PM-2.5, for each analysis year the projected emissions for the Action scenario are not greater than the projected emissions for the Baseline scenario. Since the PM-2.5 emissions projected for the Action scenarios are not greater than the PM-2.5 emissions projected for the Baseline scenarios, the conformity interim emission tests are satisfied. It is also reasonable to expect the action emissions would not exceed the baseline emissions for the time periods between the analysis years. The results of the regional emissions analysis for PM-2.5 are presented in Figure ES-7.

For NOx, for each analysis year the projected emissions for the Action scenario are not greater than the projected emissions for the Baseline scenario. Since the NOx emissions projected for the Action scenarios are not greater than the NOx emissions projected for the Baseline scenarios, the conformity interim emission tests are satisfied. It is also reasonable to expect the action emissions would not exceed the baseline emissions for the time periods between the analysis years. The results of the regional emissions analysis for NOx are presented in Figure ES-8.

Figure ES-6: PM-10 Results for Conformity Interim Emission (Action/Baseline) Test

Pinal County PM-10 Nonattainment Area

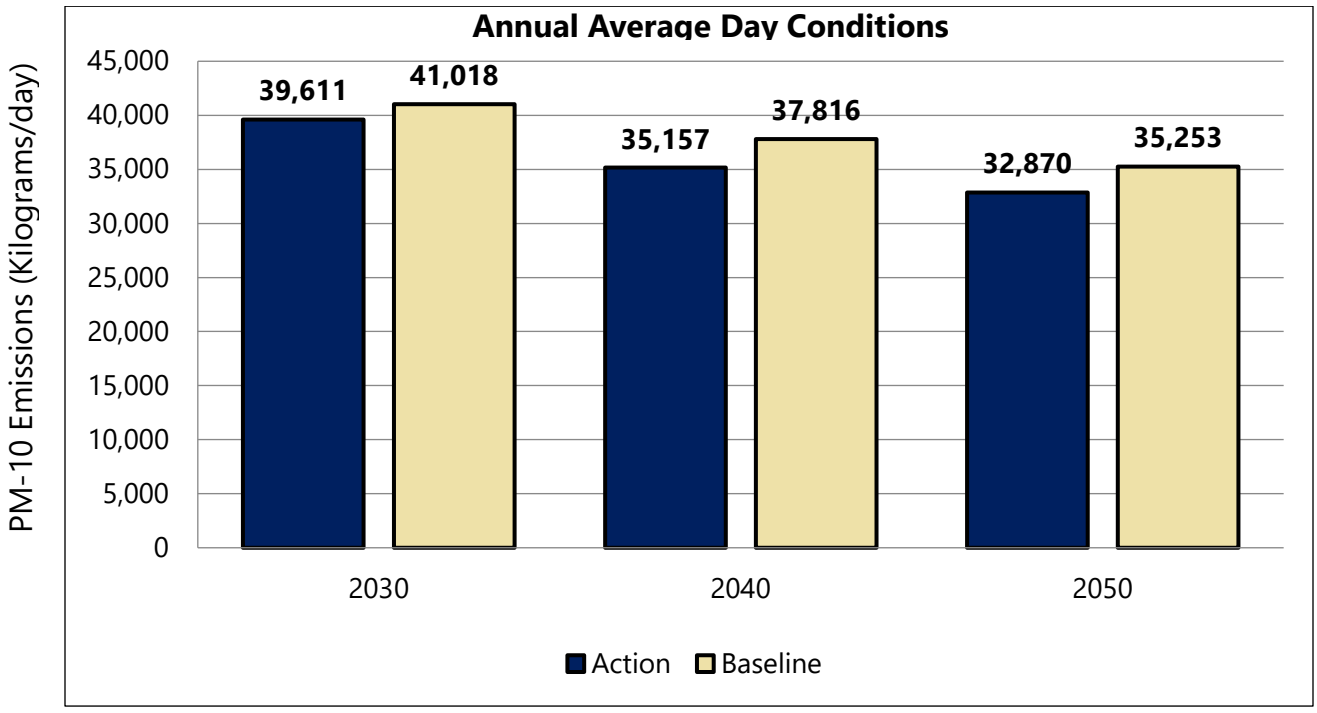


Figure ES-7: PM-2.5 Results for Conformity Interim Emission (Action/Baseline) Test

Pinal County PM-2.5 Nonattainment Area

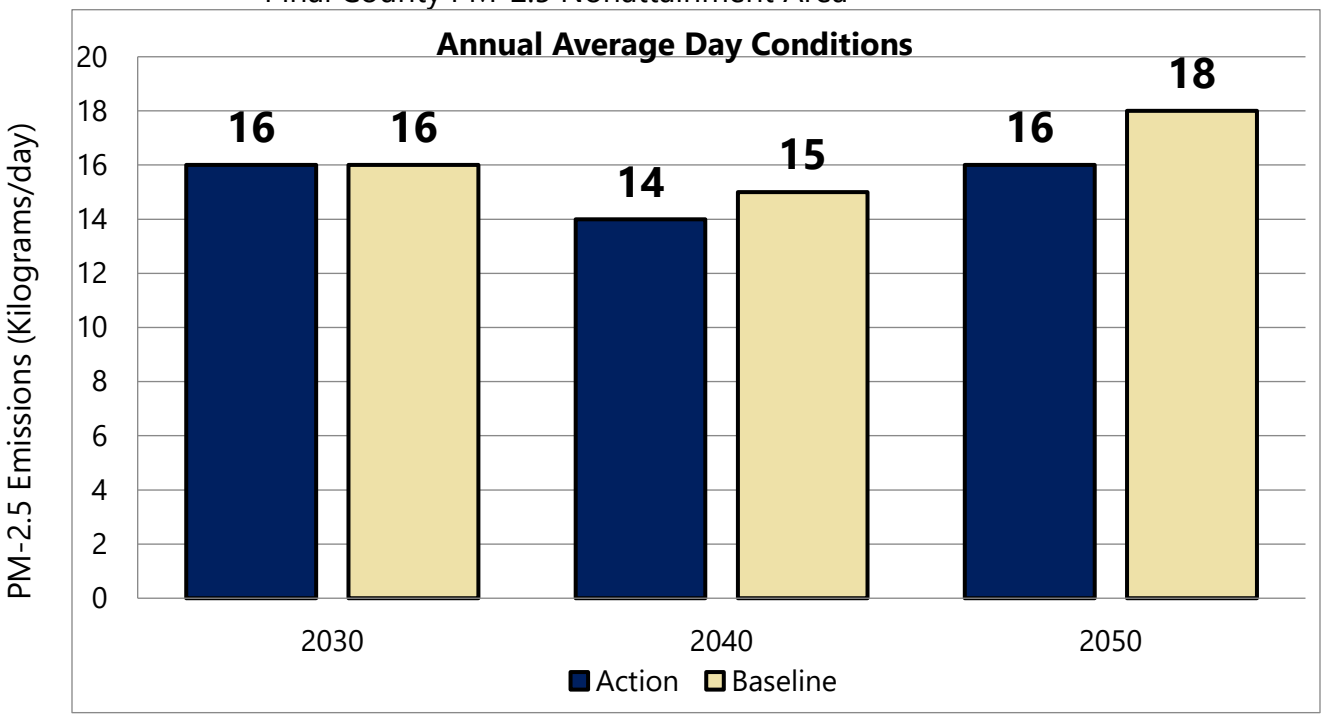
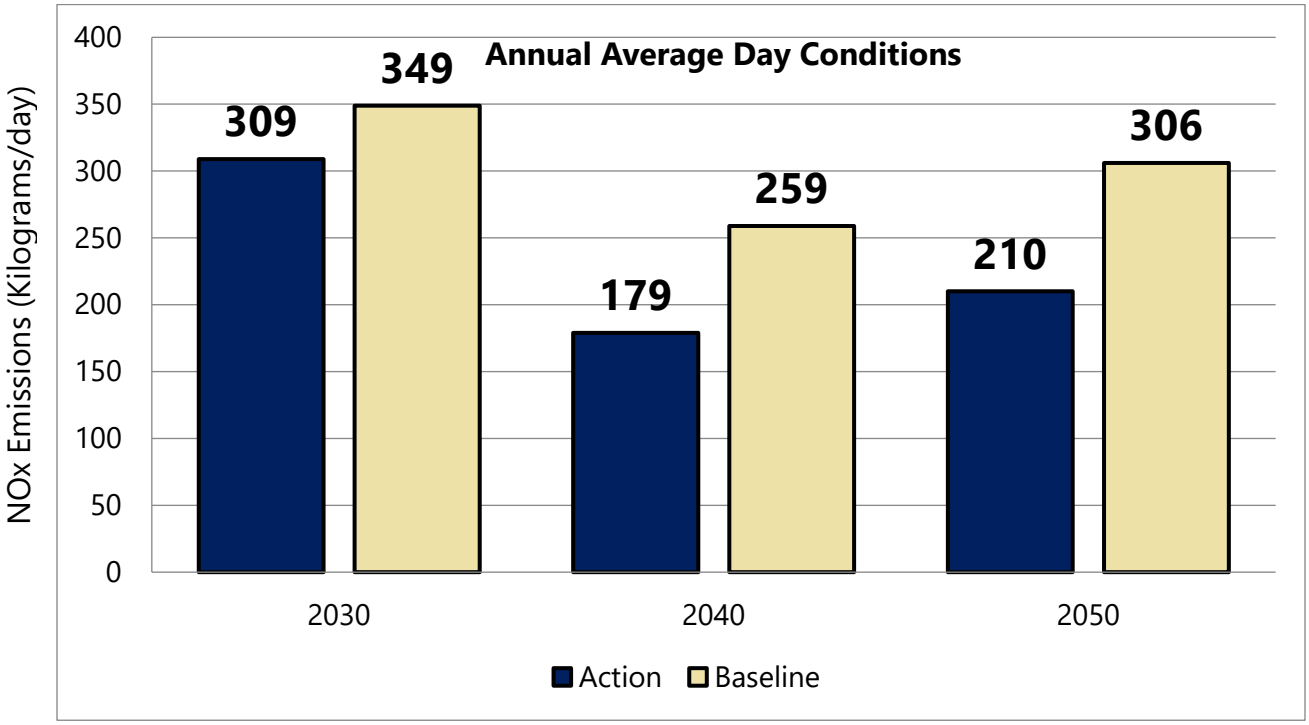


Figure ES-8: NOx Results for Conformity Interim Emission (Action/Baseline) Test

Pinal County PM-2.5 Nonattainment Area



REPORT ORGANIZATION

The report is organized into six chapters. Chapter 1 provides an overview of the applicable federal and state conformity rules and requirements, air quality implementation plans, and conformity test requirements. Chapter 2 contains a discussion of the latest planning assumptions. Chapter 3 includes a summary of the transportation model characteristics, key socioeconomic data, and other data related to the land use and transportation system forecasts, and Chapter 4 describes the air quality modeling used to estimate emission factors and mobile source emissions. Chapter 5 contains the documentation required under the federal transportation conformity rule for transportation control measures. The results of the conformity analysis for the MAG FY 2026-2030 Transportation Improvement Program and MOMENTUM 2050 MAG Regional Transportation Plan Update are provided in Chapter 6.

Excerpts from the applicable air quality plans, consultation documentation, and other related information are contained in the Appendices. The appendices include copies of memoranda previously circulated for consultation. Also, the appendices include any comments received and responses made as part of the 30-day consultation period on the draft report.

1 FEDERAL AND STATE REGULATORY REQUIREMENTS

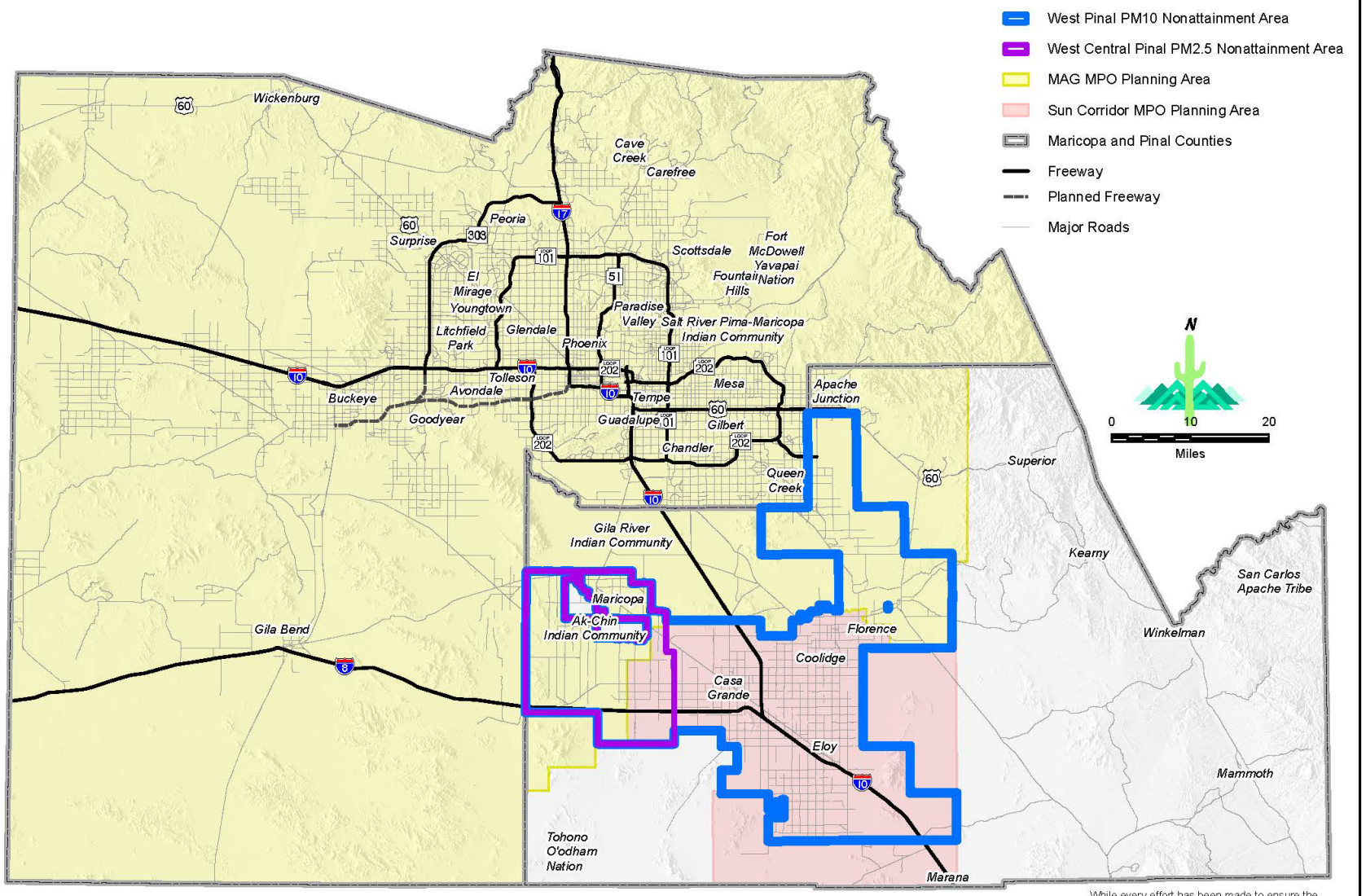
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On May 9, 2013, the MAG Metropolitan Planning Area Boundary was expanded due to the 2010 Census urbanized area updates. For transportation planning and programming purposes, the Federal Highway Administration regulations state that at a minimum, the Metropolitan Planning Area must encompass the entire existing urbanized area boundary as well as the contiguous geographic area(s) likely to become urbanized within the next 20 years. The updated urbanized area boundary for the MAG region included areas within Pinal County. Due to this expansion, the MAG Regional Council amended the MAG By-laws to recognize the new Metropolitan Planning Area Boundary and to provide for new members from Pinal County within the boundary. The MAG Metropolitan Planning Area Boundary now includes the Town of Florence, City of Maricopa, the portion of the Gila River Indian Community within Pinal County, and unincorporated areas within Pinal County.

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Both the MAG Metropolitan Planning Area Boundary and the Sun Corridor Metropolitan Planning Area Boundary include portions of the West Pinal PM-10 Nonattainment Area and West Central Pinal PM-2.5 Nonattainment Area located in Pinal County. Both nonattainment areas are covered by the boundaries of the two metropolitan planning organizations. Consequently, transportation conformity is required to be demonstrated for both nonattainment areas by both metropolitan planning organizations. Please refer to Figure 1.

Figure 1: MAG and Sun Corridor MPO Planning Areas and Air Quality Nonattainment Areas for the Pinal County Area, Arizona



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Source: U.S. Environmental Protection Agency

Date: March 2025

To provide assistance to the Sun Corridor Metropolitan Planning Organization, MAG has offered to prepare the conformity analyses for the PM-10 and PM-2.5 nonattainment areas in Pinal County, to enable transportation projects in both metropolitan planning organizations to proceed. At a June 17, 2013 meeting with the Arizona Department of Transportation, Sun Corridor Metropolitan Planning Organization and MAG, there was general concurrence that MAG would prepare the initial conformity analysis. The Maricopa Association of Governments works through a cooperative effort with the Arizona Department of Transportation, Arizona Department of Environmental Quality, and Sun Corridor Metropolitan Planning Organization on the coordination of transportation planning activities and conformity analyses consistent with the Memorandum of Understanding among the agencies.

The criteria for determining conformity of transportation programs and plans under the federal transportation conformity rule (40 Code of Federal Regulations Parts 51 and 93) and the applicable conformity tests for the Maricopa County nonattainment areas and Pinal County nonattainment areas are summarized in this chapter. The MAG Conformity Analysis for the FY 2026-2030 MAG Transportation Improvement Program (TIP) and MOMENTUM 2050 MAG Regional Transportation Plan (RTP) Update was prepared based on these criteria and tests. Presented first is a review of the development of the applicable conformity rule and guidance procedures, followed by a summary of conformity rule requirements, air quality designation status, conformity test requirements, and analysis years.

FEDERAL AND STATE CONFORMITY RULES

Clean Air Act Amendments

Section 176(c) of the Clean Air Act (CAA, 1990) requires that Federal agencies and Metropolitan Planning Organizations (MPOs) not approve any transportation project, program, or plan which does not conform with the approved State Implementation Plan (SIP). The 1990 amendments to the Clean Air Act expanded Section 176(c) to more explicitly define conformity to an implementation plan to mean:

> Conformity to the plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and that such activities will not (i) cause or contribute to any new violation of any standard in any area; (ii) increase the frequency or severity of any existing violation of any standard in any area; or (iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The expanded Section 176(c) also provided conditions for approval of transportation plans, programs, and projects; requirements that the Environmental Protection Agency (EPA) promulgate conformity determination criteria and procedures no later than November 15, 1991; and a requirement that States submit their conformity procedures to

EPA by November 15, 1992. The initial November 15, 1991 deadline for conformity criteria and procedures was not met by EPA.

Federal Rule

Supplemental interim conformity guidance was issued on June 7, 1991 (EPA/U.S. DOT, 1991a and 1991b) for carbon monoxide, ozone, and particulate matter less than or equal to ten microns in diameter. The applicable period of this guidance was designated as Phase 1 of the interim period. EPA subsequently promulgated the Conformity Final Rule, in the November 24, 1993 *Federal Register* (EPA, 1993). The Rule became effective on December 27, 1993. The federal Transportation Conformity Final Rule has been revised several times since its initial release. The first set of amendments, finalized on August 7, 1995, (EPA, 1995a) aligned the dates of conformity lapses due to SIP failures with the application of Clean Air Act highway sanctions for certain ozone areas and all areas with disapproved SIPs with a protective finding.

The second set of amendments was finalized on November 14, 1995 (EPA, 1995b). This set allowed any transportation control measure (TCM) from an approved SIP to proceed during a conformity lapse, and aligned the date of conformity lapses with the date of application of Clean Air Act highway sanctions for any failure to submit or submissions of an incomplete control strategy SIP. The second set also corrected the nitrogen oxides provisions of the transportation conformity rule consistent with the Clean Air Act and previous commitments made by EPA. Finally, the amendments extended the grace period for areas to determine conformity to a submitted control strategy SIP and established a grace period for determining conformity on transportation plans and programs in recently designated nonattainment areas. This grace period was later overturned in *Sierra Club v. EPA* in November 1997.

The third set of amendments was finalized August 15, 1997 (EPA, 1997a). These amendments streamlined the conformity process by eliminating the reliance on the classification system of “Phase II interim period,” “transitional period,” “control strategy period,” and “maintenance period” to determine whether the budget test and/or emission reduction tests apply. The amendments also changed the time periods during which the budget test and the “Build/No Build” test are required.

To incorporate provisions from the *Sierra Club v. EPA* court decision, EPA promulgated an amendment to the transportation conformity rule on April 10, 2000 that eliminated a one-year grace period for new nonattainment areas before conformity applies (EPA, 2000). Then on August 6, 2002, the EPA promulgated an amendment to the transportation conformity rule which requires conformity to be determined within 18 months of the effective date of the EPA *Federal Register* notice on an budget adequacy finding in an initial SIP submission and established a one-year grace period before conformity is required in areas that are designated nonattainment for a given air quality standard for the first time (EPA, 2002b).

On July 1, 2004, EPA published the final rule, Transportation Conformity Rule Amendments for the New Eight-Hour Ozone and PM-2.5 National Ambient Air Quality Standards and Miscellaneous Revisions for Existing Areas; Transportation Conformity Rule Amendments - Response to Court Decision and Additional Rule Changes (EPA, 2004a). The rule describes transportation conformity requirements for the new eight-hour ozone and fine particulate matter (PM-2.5) standards. The rule also incorporates existing EPA and United States Department of Transportation (U.S. DOT) guidance that implements the March 2, 1999, court decision and provides revisions that clarify the existing regulation and improve its implementation. On July 20, 2004, EPA published a *Federal Register* notice that corrects two errors in the preamble to the July 1, 2004 final rule.

On February 14, 2006, EPA and U.S. DOT jointly issued guidance on the implementation of the transportation conformity-related provisions from the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The transportation bill, which became law on August 10, 2005, made several changes to the transportation conformity provisions in Section 176(c) of the Clean Air Act. On January 24, 2008, EPA issued a final rule on the transportation conformity amendments to implement the conformity provisions contained in SAFETEA-LU (EPA, 2008a). A summary of the key conformity provisions is:

- Additional time is provided for areas to redetermine conformity of existing transportation plans and programs from 18 months to two years after the date that EPA finds a motor vehicle emissions budget to be adequate or approves an implementation plan that establishes a motor vehicle emissions budget, or when EPA promulgates an implementation plan that establishes or revises a motor vehicle emissions budget.

- The requirement for frequency of conformity determinations on updated transportation plans and programs is changed from three to four years, except when the MPO elects to update a transportation plan or program more frequently, or when the MPO is required to determine conformity after EPA finds a motor vehicle emissions budget to be adequate or approves an implementation plan that establishes a motor vehicle emissions budget, or when EPA promulgates an implementation plan that establishes or revises a motor vehicle emissions budget.

- Conformity determinations for transportation plans shall include the final year of the transportation plan as a horizon year, or optionally, after consultation with the air pollution control agency and the public and consideration of comments, the MPO may elect the longest of the following periods: the first 10-year period of the transportation plan; the latest year in the implementation plan that contains a motor vehicle emissions budget; the year after the completion date of a regionally significant project if the project is included in the transportation improvement program or the project requires approval before the subsequent conformity determination.

In addition, if the MPO elects to determine conformity for a period less than the last horizon year of the transportation plan, the conformity determination must include a regional emissions analysis for the last year of the transportation plan and for any year shown to exceed emission budgets from a previous conformity determination, for information only. The analysis years selected for the MAG Conformity Analysis are described later in this section, and include the last year of MOMENTUM 2050 MAG Regional Transportation Plan Update and the Sun Corridor MPO Regional Transportation Plan 2050 Update.

- Allows the substitution of transportation control measures in an implementation plan that achieve equivalent or greater emissions reductions than the control measure to be replaced and that are consistent with the schedule provided for control measures in the plan. The substitution or addition of a transportation control measure shall not require a new conformity determination for the transportation plan or a revision of the implementation plan.

- An additional 12 month grace period is provided after a missed deadline before conformity lapses on a transportation plan or program. This provision applies to two types of conformity determination deadlines: the deadline resulting from the requirement to determine conformity for the transportation plan and program at regular intervals and the deadlines resulting from the requirement for a conformity redetermination within two years of an EPA action approving or finding a motor vehicle emissions budget adequate.

- Requires a conformity SIP amendment addressing requirements from Title 40 CFR sections 93.105, 93.122(a)(4)(ii), and 93.125(c) of the federal transportation conformity regulations.

On March 14, 2012, EPA published the Transportation Conformity Rule Restructuring Amendments. This rule restructured sections 40 CFR 93.109 and 93.119 so that they apply to any new or revised federal air quality standard. The rule also allows any nonattainment area that EPA determines has clean air quality data to satisfy transportation conformity test requirements by using on-road emissions from the most recent year of clean data as the budgets for that standard rather than using the interim emissions tests per 40 CFR 93.119 (EPA, 2012a).

State Rule

State rules for transportation conformity were adopted on April 12, 1995, by the Arizona Department of Environmental Quality (ADEQ), in response to requirements in Section 176(c)(4)(C) of the Clean Air Act as amended in 1990 (ADEQ, 1995). These rules became effective upon their certification by the Arizona Attorney General on June 15, 1995 and, as required by the federal conformity rule, were submitted to EPA as a revision to the State transportation conformity SIP.

A State transportation conformity SIP has not received approval by EPA. Section 51.390(b) of the federal conformity rule states: “Following EPA approval of the State conformity provisions (or a portion thereof) in a revision to the applicable implementation plan, conformity determinations would be governed by the approved (or approved portion of the) State criteria and procedures.” The federal transportation conformity rule therefore still governs, as a State transportation conformity SIP has not yet been approved for this State.

The State rule specifies that MPOs (i.e., MAG, for this region) must develop specific conformity guidance and consultation procedures and processes. MAG has developed and adopted two conformity guidance documents to meet State requirements. MAG developed the “Transportation Conformity Guidance and Procedures” document, which was adopted initially on September 27, 1995 by the MAG Regional Council. The document was revised by the MAG Regional Council on March 27, 1996 (MAG, 1996b). This guidance document addresses both the determination of “regional significance” status for individual transportation projects, and the process by which regionally significant projects may be approved.

MAG also developed the “Conformity Consultation Processes” document, which was adopted on February 28, 1996 by the MAG Regional Council (MAG, 1996a). This guidance document details the public and interagency consultation processes to be used in the development of regional transportation plans, programs, and projects within the Maricopa County nonattainment areas.

Case Law

On November 14, 1997, the U.S. Court of Appeals for the District of Columbia issued an opinion in *Sierra Club v. EPA* involving the 1995 transportation conformity amendment that allowed new nonattainment areas a one-year grace period. Under this ruling, conformity applied as soon as an area was designated nonattainment. The EPA published a final rule on April 10, 2000 in the *Federal Register* deleting 40 CFR 93.102(d) that allowed the grace period for new nonattainment areas (EPA, 2000). Then, on October 27, 2000, the FY 2001 EPA Appropriations bill included an amendment to Section 176(c) of the Clean Air Act that adds the one-year grace period to the statutory language.

On March 2, 1999, the U.S. Court of Appeals for the District of Columbia issued an opinion in *Environmental Defense Fund v. EPA* involving the 1997 transportation conformity amendments. In general, the court struck down 40 CFR 93.120(a)(2) which permitted a 120-day grace period after disapproval of a SIP; determined that the EPA must approve a “safety margin” prior to its use for conformity in 40 CFR 93.124(b); concluded that a submitted SIP budget must be found by EPA to be adequate, based on criteria found in 40 CFR 93.118(e)(4) before it can be used in a conformity determination; and ended a provision that allowed “grandfathered” projects to proceed during a conformity lapse.

Following the court ruling, the EPA and U.S. DOT issued guidance to address implementation of conformity requirements based on the court findings. The EPA issued guidance contained in a May 14, 1999 memorandum (EPA, 1999b). In addition, the U.S. DOT issued guidance on June 18, 1999 that incorporates all U.S. DOT guidance in response to the court decision in a single document (U.S. DOT, 1999). On July 1, 2004, transportation conformity rule amendments were published in the *Federal Register* to incorporate provisions of the *Environmental Defense Fund v. EPA* court decision.

On October 20, 2006, the U.S. Court of Appeals for the District of Columbia filed an opinion vacating a provision of the transportation conformity rule at 40 CFR 93.109(e)(2)(v) that allowed areas to use the interim emission tests instead of the one-hour budgets. All other provisions regarding the use of the interim emissions tests remain unaffected by the court decision. Table 1 summarizes the criteria for conformity determinations for transportation projects, programs, and plans, as specified in amendments to the federal conformity rule.

CONFORMITY RULE REQUIREMENTS

The federal regulations identify general criteria and procedures that apply to all transportation conformity determinations, regardless of pollutant and implementation plan status. These include:

1) Conformity Tests - Sections 93.118 and 93.119 specify emission tests (budget and interim emissions) that the TIP and RTP must satisfy in order for a determination of conformity to be found. The final transportation conformity rule requires a submitted SIP motor vehicle emissions budget to be affirmed as adequate by EPA prior to use for making conformity determinations. The budget must be used on or after the effective date of EPA's finding of adequacy.

2) Methods / Modeling:

   Latest Planning Assumptions - Section 93.110 specifies that conformity determinations must be based upon the most recent planning assumptions in force at the time the conformity analysis begins, which is "the point at which the MPO or other designated agency begins to model the impact of the proposed transportation plan or TIP on travel and/or emissions. New data that becomes available after an analysis begins is required to be used in the conformity determination only if a significant delay in the analysis has occurred, as determined through interagency consultation". This section of the conformity rule also requires reasonable assumptions to be made regarding transit service and changes in projected fares. All analyses were conducted using the latest planning assumptions and emissions models in force at the time the conformity analysis started on June 27, 2025.

TABLE 1.
CONFORMITY CRITERIA FROM THE FINAL RULE

Applicability	Pollutant	Section	Requirement
All Actions at All Times	CO, Ozone, PM-10 PM-2.5	93.110	Latest Planning Assumptions
		93.111	Latest Emissions Model
		93.112	Consultation
Transportation Plan (RTP)	CO, Ozone, PM-10 PM-2.5	93.113(b)	TCMs
		93.118 and/or 93.119	Emissions Budget and/or Interim Emissions
TIP	CO, Ozone, PM-10 PM-2.5	93.113(c)	TCMs
		93.118 and/or 93.119	Emissions Budget and/or Interim Emissions
Project (From a Conforming Plan and TIP)	CO, Ozone, PM-10 PM-2.5	93.114	Currently Conforming Plan and TIP
		93.115	Project From a Conforming Plan and TIP
	CO, PM-10, PM-2.5	93.116	CO, PM-10, and PM-2.5 Hot Spots
	PM-10, PM-2.5	93.117	PM-10 and PM-2.5 Control Measures
Project (Not From a Conforming Plan or TIP)	CO, Ozone, PM-10 PM-2.5	93.113(d)	TCMs
		93.114	Currently Conforming Plan and TIP
	CO, PM-10, PM-2.5	93.116	CO, PM-10, and PM-2.5 Hot Spots
	PM-10, PM-2.5	93.117	PM-10 and PM-2.5 Control Measures
	CO, Ozone, PM-10 PM-2.5	93.118 and/or 93.119	Emissions Budget and/or Interim Emissions

Source: Adapted from (EPA, 2012b), Section 93.109(b), “Table 1 - Conformity Criteria”.

Latest Emissions Models - Section 93.111 requires that the latest emission estimation models specified for use in SIPs must be used for the conformity analysis.

3) Timely Implementation of TCMs - Section 93.113 provides a detailed description of the steps necessary to demonstrate that the TIP and RTP are providing for the timely implementation of TCMs, as well as demonstrate that the plan and/or program is not interfering with this implementation. TCM documentation is included in Chapter Five.

4) Consultation - Section 93.105 requires that the conformity determination be made in accordance with the consultation procedures outlined in the federal regulations. These include:

    - MAG is required to provide reasonable opportunity for consultation with local air quality and transportation agencies, state air and transportation agencies, the U.S. DOT and EPA (Section 93.105(c)(1)).

    - MAG is required to establish a proactive public involvement process which provides opportunity for public review and comment prior to taking formal action on a conformity determination (Section 93.105(e)).

Under the interagency consultation procedures, the RTP is prepared by MAG staff with guidance from the MAG Transportation Policy Committee, the MAG Management Committee, and the MAG Regional Council. The RTP is available for review by MAG member agencies and others, including the Federal Transit Administration (FTA), Federal Highway Administration (FHWA), Arizona Department of Transportation (ADOT), ADEQ, Valley Metro/RPTA, City of Phoenix Public Transit Department, Pinal County Air Quality Control District (PCAQCD), Central Arizona Governments (CAG), Sun Corridor Metropolitan Planning Organization, Maricopa County Air Quality Department (MCAQD), and EPA. The RTP is required to be publicly available and an opportunity for public review and comment is provided.

The TIP is prepared by MAG staff with the assistance of the MAG modal committees, Transportation Review Committee, and Transportation Policy Committee. The Draft TIP is available for review by MAG member agencies and others, including FTA, FHWA, ADOT, ADEQ, Valley Metro/RPTA, City of Phoenix Public Transit Department, MCAQD, CAG, PCAQCD, Sun Corridor Metropolitan Planning Organization, and EPA for review. As with the RTP, the TIP is required to be publicly available and an opportunity for public review and comment is provided.

AIR QUALITY PLANS AND DESIGNATIONS

Maricopa County Nonattainment Areas

Portions of Maricopa County are currently designated as nonattainment for the National Ambient Air Quality Standards (NAAQS) for eight-hour ozone and particulate matter less than or equal to ten microns in diameter (PM-10). On April 8, 2025, the Maricopa County carbon monoxide maintenance area reached the end of the 20-year maintenance period and therefore transportation conformity requirements no longer apply to carbon monoxide. Air quality plans have been prepared to address carbon monoxide, one-hour ozone, eight-hour ozone, and PM-10:

- The Revised MAG 1999 Serious Area Carbon Monoxide Plan, reflecting the repeal of the remote sensing program by the Arizona Legislature in 2000, was submitted to EPA in March 2001. On March 9, 2005, EPA approved the Revised MAG 1999 Serious Area Carbon Monoxide Plan, effective April 8, 2005. All control measures contained in the Serious Area Carbon Monoxide Plan remain in effect beyond the end of the 20-year maintenance period.

- The MAG 2003 Carbon Monoxide Redesignation Request and Maintenance Plan for the Maricopa County Nonattainment Area was submitted to EPA in June 2003. On March 9, 2005, EPA approved the MAG 2003 Carbon Monoxide Redesignation Request and Maintenance Plan, effective April 8, 2005;

- The MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area was submitted to EPA in April 2013. On March 3, 2016, EPA approved the MAG 2013 Carbon Monoxide Maintenance Plan, effective April 4, 2016;

- On July 6, 1999, EPA approved and promulgated a Revised 1998 15 Percent Rate of Progress Plan for Ozone (Revised ROP FIP) for the Maricopa County nonattainment area, effective August 5, 1999;

- The Serious Area Ozone State Implementation Plan for Maricopa County was prepared by ADEQ and submitted to EPA in December 2000 to meet the Serious Area requirements. No budget is contained in the Serious Area Ozone Plan. On June 14, 2005, EPA approved the Serious Area Ozone Plan, effective June 14, 2005;

- The MAG 2004 One-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa County Nonattainment Area was submitted to EPA in May 2004. On June 14, 2005, EPA approved the MAG 2004 One-Hour Ozone Redesignation Request and Maintenance Plan, effective June 14, 2005;

- The MAG 2007 Eight-Hour Ozone Plan for the Maricopa Nonattainment Area was submitted to EPA by June 15, 2007. The MAG 2007 Eight-Hour Ozone Plan addresses the 1997 eight-hour ozone standard of 0.080 parts per million. On June 13, 2012, EPA approved the MAG 2007 Eight-Hour Ozone Plan, effective July 13, 2012;

- The MAG 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa Nonattainment Area was submitted to EPA in March 2009. The MAG 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan addresses the 1997 eight-hour ozone standard of 0.080 parts per million. On September 17, 2014, EPA approved the MAG 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan, effective October 17, 2014;

- The MAG 2014 Eight-Hour Ozone Plan - Submittal of Marginal Area Requirements for the Maricopa Nonattainment Area was submitted to EPA in July 2014. The MAG 2014 Eight-Hour Ozone Plan addresses the 2008 eight-hour ozone standard of 0.075 parts per million. On October 16, 2015, EPA approved the MAG 2014 Eight-Hour Ozone Plan, effective December 15, 2015;

- The MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area was submitted to EPA in December 2016. The MAG 2017 Eight-Hour Ozone Moderate Area Plan addresses the 2008 eight-hour ozone standard of 0.075 parts per million. On June 2, 2020, EPA published a final rule to approve the portions of the MAG 2017 Eight-Hour Ozone Plan that address the requirements for emissions inventories, a demonstration of attainment by the applicable attainment date, reasonably available control measures, reasonable further progress, motor vehicle emission budgets for transportation conformity, vehicle inspection and maintenance programs, new source review rules, and offsets, effective July 2, 2020;

- The MAG 2020 Eight-Hour Ozone Plan – Submittal of Marginal Area Requirements for the Maricopa Nonattainment Area was submitted to EPA on June 29, 2020. The MAG 2020 Eight-Hour Ozone Plan addresses the 2015 eight-hour ozone standard of 0.070 parts per million. On April 5, 2022, EPA published a final rule in the *Federal Register* to approve the 2017 base year emissions inventory in the MAG 2020 Eight-Hour Ozone Plan, effective May 5, 2022;

- The MAG 2025 Eight-Hour Ozone Plan – Submittal of Applicable Moderate Area Requirements for the Maricopa Nonattainment area was submitted to EPA on April 25, 2025. The MAG 2025 Eight-Hour Ozone Plan addresses applicable moderate area requirements including reasonably available control technology, new source review, reasonable further progress, contingency measures, and vehicle inspection and maintenance programs. On May 1, 2025, EPA found the MAG 2025 Eight-Hour Ozone Plan complete that stopped the

sanctions clocks.

- The Revised MAG 1999 Serious Area Particulate Plan for PM-10 was submitted to EPA in February 2000. On July 25, 2002, EPA approved the Revised MAG 1999 Serious Area Particulate Plan for PM-10, effective August 26, 2002;

- The MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area was submitted to EPA on May 25, 2012. On June 10, 2014, EPA approved the MAG 2012 Five Percent Plan for PM-10, effective July 10, 2014.

  On July 29, 2014, the Arizona Center for Law in the Public Interest filed a lawsuit against EPA to challenge the approval of the MAG 2012 Five Percent Plan for PM-10. On September 12, 2016, the U.S. Ninth Circuit Court of Appeals issued a ruling in the lawsuit filed by the Arizona Center for Law in the Public Interest to challenge the Environmental Protection Agency approval of the MAG 2012 Five Percent Plan for PM-10. While the Ninth Circuit upheld most of the plan approval, the Court remanded the contingency measures to EPA for further consideration, since they had been implemented early. The Court held that contingency measures cannot be implemented early under the plain language of the Clean Air Act.

The boundaries of the nonattainment areas are identified below, followed by a summary of the attainment status for each pollutant for the Maricopa County region.

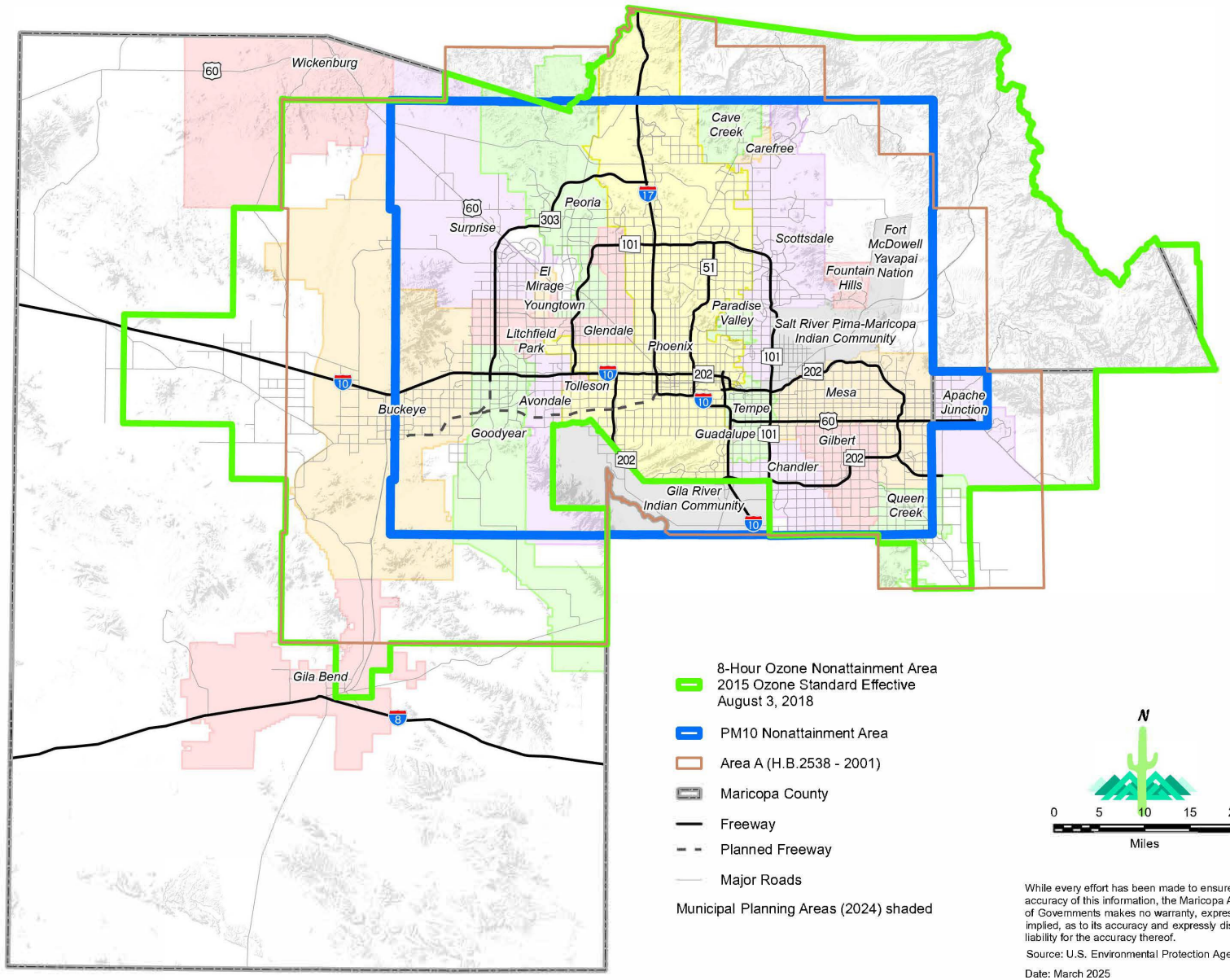
Nonattainment Boundaries

Maricopa County area is currently designated as nonattainment for the National Ambient Air Quality Standards (NAAQS) for eight-hour ozone and particulate matter less than or equal to ten microns in diameter (PM-10). Maricopa County nonattainment areas are shown in Figure 2.

Portions of the Maricopa County area, including the Gila River Indian Community, were designated nonattainment for one-hour ozone in September 1979. On June 14, 2005, EPA redesignated the area to attainment for one-hour ozone. The associated designations and classifications for the one-hour standard were revoked on June 15, 2005. On November 10, 2005, EPA published a direct final rule to correct the boundary of the Phoenix metropolitan one-hour ozone nonattainment area to exclude a portion of the Gila River Indian Community, effective January 9, 2006.

On April 15, 2004, EPA designated an eight-hour ozone nonattainment area located mainly in Maricopa County and Apache Junction in Pinal County. On April 30, 2004, EPA published the air quality designations and classifications for the 1997 eight-hour ozone standard that includes T1N, R8E and sections 1 through 12 of T1S, R8E in Pinal County (EPA, 2004b).

Figure 2: Air Quality Nonattainment Areas for the Maricopa County Area, Arizona



The 1997 eight-hour ozone nonattainment area covered approximately 4,880 square miles.

In 2008, EPA strengthened the eight-hour ozone standard from 0.080 parts per million to 0.075 parts per million. On April 30, 2012, EPA published the final rule designating nonattainment areas for the 2008 eight-hour ozone standard. For the 2008 eight-hour ozone nonattainment area, the nonattainment area boundary for the 1997 eight-hour ozone standard for the Maricopa County nonattainment area was expanded to the west

and southwest. The 2008 eight-hour ozone nonattainment area covers approximately 5,017 square miles.

On October 1, 2015, EPA published a final rule to strengthen the eight-hour ozone standard from 0.075 parts per million to 0.070 parts per million. On June 4, 2018, EPA published the final rule designating the Maricopa nonattainment area as a Marginal Area for the 2015 eight-hour ozone standard, effective August 3, 2018. For the 2015 ozone standard, the nonattainment area was expanded to include the Queen Creek monitor in Pinal County and the Tonto National Monument monitor in Gila County, as shown in Figure 2.

The nonattainment area for the 2015 ozone standard covers a larger geographic area of 5,287 square miles and encompasses the entire area designated for the previous ozone standards. Also, on December 6, 2018, EPA finalized the implementation requirements for the new eight-hour ozone standard.

Following promulgation of the PM-10 standard in 1987, EPA identified a larger PM-10 nonattainment area in 1990. The PM-10 nonattainment area encompasses 2,916 square miles, consisting of a 48 by 60 mile rectangular grid encompassing eastern Maricopa County, plus a six by six mile section that includes a portion of the City of Apache Junction in Pinal County.

Attainment Status

Following the requirements of the 1990 Clean Air Act Amendments, EPA initially classified the MAG region as a Moderate nonattainment area for the eight-hour CO standard, with a design value of 12.6 parts per million (ppm), exceeding the current NAAQS of 9.0 ppm. The carbon monoxide area boundary encompassed 1,814 square miles (approximately 20 percent) of the County. This boundary was originally defined in 1974. The standard was not achieved by the Clean Air Act deadline of December 31, 1995. The area was reclassified to Serious by operation of law with an effective date of August 28, 1996 (EPA, 1996b). The new carbon monoxide attainment date was December 31, 2000. No violations of the carbon monoxide standard have occurred since 1996. The State, in a July 23, 1999 letter, requested a carbon monoxide attainment determination from EPA.

In June 2003, the MAG 2003 Carbon Monoxide Redesignation Request and Maintenance Plan for the Maricopa County Nonattainment Area was submitted to EPA (MAG, 2003). The CO Maintenance Plan demonstrated that all Clean Air Act requirements have been met and requested that EPA redesignate the area to attainment for carbon monoxide. On September 22, 2003, EPA published a final attainment determination for the carbon monoxide standard (EPA, 2003). On March 9, 2005, EPA published the final rule in the *Federal Register* approving the Revised MAG 1999 Serious Area Carbon Monoxide Plan and the Carbon Monoxide Maintenance Plan, designating the carbon monoxide area to attainment, and removing the Gila River Indian Community from the Maricopa County maintenance area, effective April 8, 2005 (EPA, 2005a).

In April 2013, the MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area was submitted to EPA. This plan satisfies Section 175A(b) of the Clean Air Act that requires an additional plan revision for maintaining the primary air quality standard for ten years after the expiration of the initial ten-year period be submitted to EPA eight years after redesignation of the area to attainment. On March 3, 2016, EPA published the final rule in the *Federal Register* approving the MAG 2013 Carbon Monoxide Maintenance Plan, effective April 4, 2016 (EPA, 2016). On April 8, 2025, the Maricopa County carbon monoxide maintenance area reached the end of the 20-year maintenance period and therefore transportation conformity requirements no longer apply to carbon monoxide.

Under the 1990 Clean Air Act Amendments, the Maricopa County nonattainment area was classified as Moderate for the one-hour ozone standard. The standard was not achieved by the deadline of November 19, 1996. On November 6, 1997, EPA reclassified the area to Serious for ozone (EPA, 1997b), effective February 13, 1998 (EPA, 1998a). The new ozone attainment date was November 19, 1999. Prior to EPA's revocation of the one-hour ozone standard in 2005, no violations of the one-hour ozone standard had occurred since 1996. The State, in a February 21, 2000 letter, requested an ozone attainment determination. On May 30, 2001, the Environmental Protection Agency published a final attainment determination for the one-hour ozone standard (EPA, 2001).

The MAG 2004 One-hour Ozone Redesignation Request and Maintenance Plan for the Maricopa County Nonattainment Area was submitted to EPA in May 2004. The MAG One-Hour Ozone Maintenance Plan demonstrated that all Clean Air Act requirements had been met and requested that EPA redesignate the area to attainment for one-hour ozone. On June 14, 2005, EPA published the final rule in the *Federal Register* approving the One-Hour Ozone Maintenance Plan and redesignating the one-hour ozone area to attainment (EPA, 2005b). EPA revoked the one-hour ozone standard on June 15, 2005.

On April 30, 2004, EPA published the final rule designating eight-hour ozone nonattainment areas, effective June 15, 2004. The eight-hour ozone nonattainment area in Maricopa and Pinal Counties was classified under Section D, Subpart 1, of the Clean Air Act, referred to as Basic nonattainment, with an attainment date of June 15, 2009. The MAG 2007 Eight-Hour Ozone Plan for the Maricopa Nonattainment Area for the 1997 ozone standard was submitted to EPA by June 15, 2007 (MAG, 2007a). On

June 13, 2012, the EPA approved the MAG 2007 Eight-Hour Ozone Plan, including the emissions budgets, effective July 13, 2012 (EPA, 2012c). The MAG 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa Nonattainment Area for the 1997 ozone standard was submitted to EPA in March 2009 (MAG, 2009). EPA approved the MAG 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan, including the emissions budgets, effective October 17, 2014 (EPA, 2014b).

In 2008, EPA strengthened the eight-hour ozone standard from 0.080 parts per million to 0.075 parts per million. On April 30, 2012, EPA published the final rule designating nonattainment areas for the 2008 eight-hour ozone standard. For the 2008 eight-hour ozone nonattainment area, the existing nonattainment area boundary for the 1997 eight-hour ozone standard for the Maricopa County nonattainment area was expanded to the west and southwest.

The MAG 2014 Eight-Hour Ozone Plan-Submittal of Marginal Area Requirements for the Maricopa Nonattainment Area was prepared in accordance with Section 182(a) of the Clean Air Act. On May 21, 2012, the Environmental Protection Agency (EPA) designated the Maricopa nonattainment area as a Marginal Area for the 2008 eight-hour ozone standard of 0.075 parts per million. The plan addresses the Marginal Area requirements, such as an Emissions Statement, Baseline Emissions Inventory, Periodic Emissions Inventory, Corrections to Pre-1990 Reasonably Available Control Technology, New Source Review, Corrections to Pre-1990 Previously Required Vehicle Inspection and Maintenance Programs, and Transportation Conformity. On October 16, 2015, EPA approved the MAG 2014 Eight-Hour Ozone Plan, effective December 15, 2015.

The MAG 2017 Eight-Hour Ozone Moderate Area Plan for the 2008 ozone standard was submitted to EPA in December 2016 to meet the requirements in Section 182(b) of the Clean Air Act and improve air quality in the Maricopa eight-hour ozone nonattainment area. The attainment date for Moderate Areas is July 20, 2018. The Moderate Area Plan was due by January 1, 2017. On November 12, 2019, EPA published a final rule to determine that the Maricopa nonattainment area attained the 2008 ozone standard by the July 20, 2018 attainment date based upon complete, quality-assured, and certified monitoring data for 2015-2017. On June 2, 2020, EPA published a final rule to approve the portions of the MAG 2017 Eight-Hour Ozone Plan that address the requirements for emissions inventories, a demonstration of attainment by the applicable attainment date, reasonably available control measures, reasonable further progress, motor vehicle emission budgets for transportation conformity, vehicle inspection and maintenance programs, new source review rules, and offsets, effective July 2, 2020 (EPA, 2020a).

The MAG 2020 Eight-Hour Ozone Plan – Submittal of Marginal Area Requirements for the Maricopa Nonattainment Area was submitted to EPA on June 29, 2020. The MAG 2020 Eight-Hour Ozone Plan addresses the 2015 eight-hour ozone standard of 0.070 parts per million. The plan was due to EPA by August 3, 2020. On October 7, 2022, EPA published a final rule to determine that the Maricopa nonattainment area failed to attain the 2015 ozone standard by the August 3, 2021 attainment date and to reclassify the

Maricopa nonattainment area as a Moderate Area, effective November 7, 2022.

On October 18, 2023, the Environmental Protection Agency (EPA) published a final action finding that the state failed to submit State Implementation Plan (SIP) revisions required by the Clean Air Act (CAA) in a timely manner for nonattainment areas classified as Moderate for the 2015 ozone standard. Also, based upon ozone air quality monitoring data from 2021-2023, the Maricopa eight-hour ozone nonattainment area failed to meet the Moderate area attainment date of August 3, 2024. On April 25, 2025, the MAG 2025 Eight-hour Ozone Plan was submitted to EPA to meet Moderate Area planning requirements for the 2015 ozone standard. The MAG 2025 Eight-Hour Ozone Plan addresses applicable moderate area requirements including reasonably available control technology, new source review, reasonable further progress, contingency measures, and vehicle inspection and maintenance programs. On May 1, 2025, EPA found the MAG 2025 Eight-Hour Ozone Plan complete that stopped the sanctions clocks.

Under Section 107(d)(4) of the 1990 Clean Air Act Amendments, the PM-10 nonattainment area was initially classified as Moderate, with an attainment deadline of December 31, 1994. The standard was not achieved by that date. EPA reclassified the region to Serious in May 1996, with an effective date of June 10, 1996 (EPA, 1996a). The new attainment date for PM-10 was December 31, 2001 for Serious areas; however, the Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area contained a request to extend the attainment date to December 31, 2006, as allowed in the Clean Air Act Amendments (MAG, 2000). In the July 25, 2002 *Federal Register*, the Environmental Protection Agency published the final approval of the Revised MAG 1999 Serious Area Particulate Plan for PM-10, including the request to extend the attainment date to December 31, 2006 (EPA, 2002a).

On May 25, 2007, EPA issued a final rule finding that the Maricopa County nonattainment area did not attain the PM-10 standard by December 31, 2006. In accordance with Section 189(d) of the Clean Air Act, MAG prepared a Five Percent Plan for PM-10 that was submitted to EPA by December 31, 2007 (MAG, 2007b). On September 9, 2010, EPA proposed to partially approve and partially disapprove the Five Percent Plan. On January 25, 2011, prior to any final EPA action, Arizona withdrew the Five Percent Plan from EPA consideration. On February 9, 2011, EPA published a notice of withdrawal of the May 30, 2008 adequacy finding on the PM-10 motor vehicle emissions budget from the Five Percent Plan, effective January 31, 2011. On February 14, 2011, EPA made a finding that Arizona failed to submit the plan as required under the Clean Air Act, which triggered the sanctions clocks and obligation to impose a federal implementation plan if a new complete plan is not submitted. This EPA finding began an 18-month clock for mandatory application of sanctions and a two-year clock for a Federal Implementation Plan. The EPA published a corrected notice of withdrawal on February 28, 2011.

The MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area was submitted to EPA on May 25, 2012. On July 20, 2012, EPA issued a completeness finding that stopped the 18-month clock for mandatory application of sanctions. On

June 10, 2014, EPA published the final rule approving the MAG 2012 Five Percent Plan for PM-10, effective July 10, 2014.

In addition, on July 18, 1997, EPA promulgated federal air quality standards for PM-2.5. On January 5, 2005, EPA published a notice designating the Maricopa County area as an attainment area for PM-2.5, effective April 5, 2005.

Also, on February 7, 2024, the EPA announced a final rule to strengthen the annual federal air quality standard for PM-2.5 from 12.0 to 9.0 micrograms per cubic meter. Portions of Maricopa County are not expected to meet the strengthened PM-2.5 standard.

Pinal County Nonattainment Areas

On February 3, 2011, EPA published the final rule designating a portion of Pinal County as nonattainment for the 2006 24-hour PM-2.5 standard based on 2006-2008 data, effective March 7, 2011. The West Central Pinal PM-2.5 Nonattainment Area covers approximately 323 square miles in the west central part of Pinal County.

Also, on May 31, 2012, EPA published the final rule designating the West Pinal PM-10 Nonattainment Area, effective July 2, 2012. EPA classified the nonattainment area as Moderate. The West Pinal PM-10 Nonattainment Area covers approximately 1,326 square miles in the western half of Pinal County. On June 24, 2020, EPA published the final rule to determine that the West Pinal PM-10 Nonattainment Area did not attain the PM-10 standard by the December 31, 2018 attainment date and to reclassify the nonattainment area as Serious, effective July 24, 2020 (EPA, 2020b).

Nonattainment Boundaries

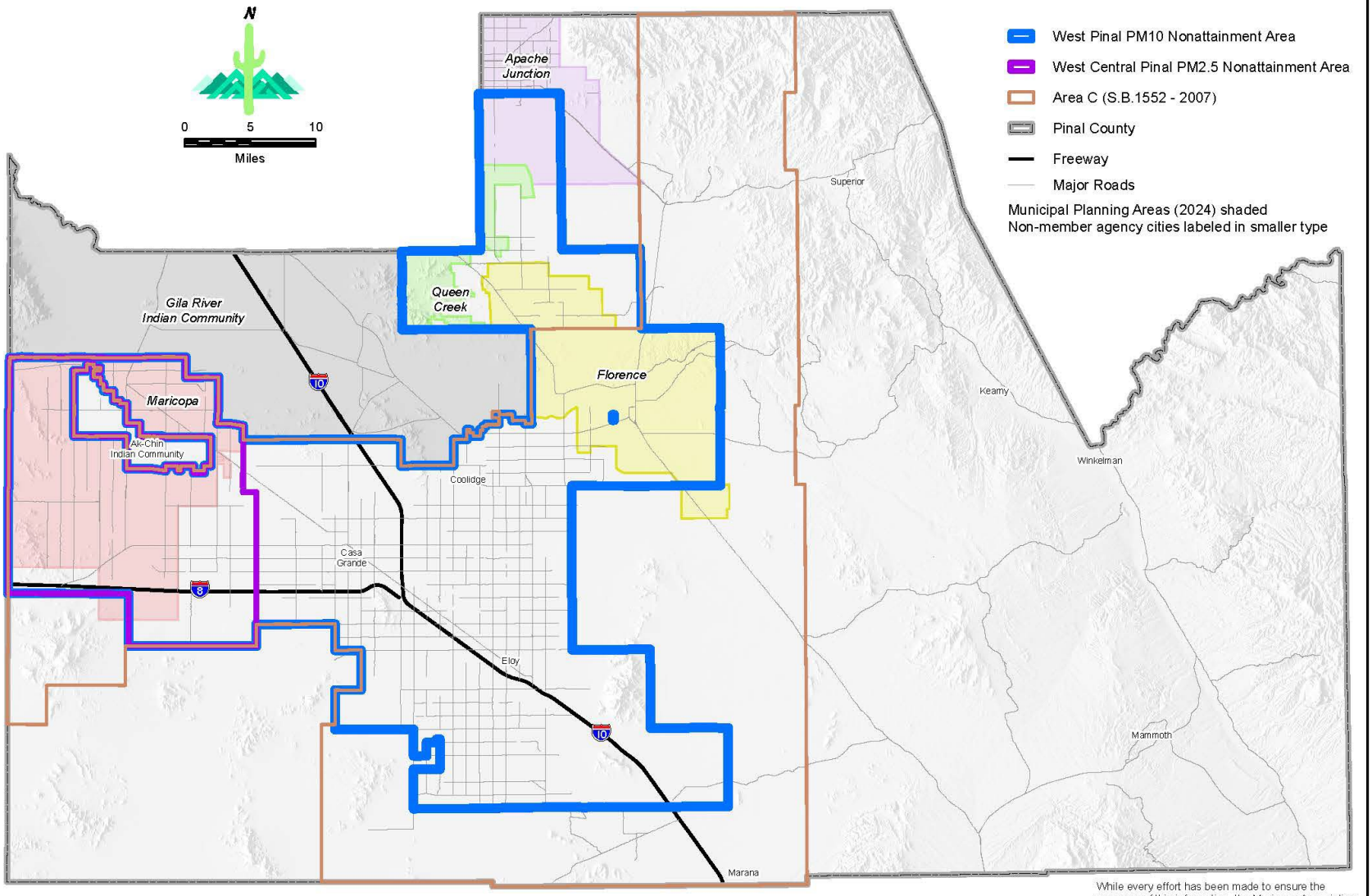
The West Pinal PM-10 Nonattainment Area and West Central Pinal PM-2.5 Nonattainment Area are shown in Figure 3. Portions of both nonattainment areas are located within the metropolitan planning area boundaries of both MAG and the Sun Corridor Metropolitan Planning Organization.

Attainment Status

At the time of designation, EPA indicated that the State of Arizona is required to submit a SIP for the West Central Pinal PM-2.5 Nonattainment Area within three years following the March 7, 2011 effective date. On September 4, 2013, EPA published in the *Federal Register* a determination that the West Central Pinal PM-2.5 Nonattainment Area has attained the 2006 24-hour PM-2.5 standard based on clean data at the monitor during the 2010-2012 monitoring period and issued a clean data finding, effective October 4, 2013. On October 3, 2019, EPA published a final rule with a determination that the West Central Pinal PM-2.5 Nonattainment Area attained the 2006 24-hour PM-2.5 standard by the December 31, 2017 attainment date based on 2015-2017 data, effective November 4, 2019.

Figure 3: Air Quality Nonattainment Areas for the Pinal County Area, Arizona

MARICOPA ASSOCIATION of GOVERNMENTS



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Source: U.S. Environmental Protection Agency

Date: March 2025

In the May 31, 2012 final rulemaking, EPA indicated that the State of Arizona is required to submit a revision to the SIP for the West Pinal PM-10 Nonattainment Area within 18 months following the July 2, 2012 effective date. On December 21, 2015, the Arizona Department of Environmental Quality submitted the 2015 West Pinal Moderate PM-10 Nonattainment Area SIP to EPA. Also, on May 1, 2017, EPA approved SIP revisions that concern particulate matter emissions from construction sites, agricultural activity, and other fugitive dust sources.

On January 8, 2021, EPA published a proposed rule in the *Federal Register* to approve in part and disapprove in part the 2015 West Pinal Moderate PM-10 Nonattainment Area Plan prepared by the Arizona Department of Environmental Quality. In the notice, EPA proposed to approve the base year 2008 emissions inventory for direct PM-10 and to disapprove the remaining elements of the plan. On May 17, 2021, the Arizona Department of Environmental Quality withdrew the Moderate area attainment plan submission.

On July 23, 2021, EPA published a final rule finding that Arizona had not submitted a required revision to the Arizona State Implementation Plan for the West Pinal County nonattainment area addressing the Clean Air Act requirements for a Moderate area attainment plan, related rules, and other analyses needed to attain the 1987 24-hour particulate matter (PM-10) air quality standard by December 31, 2018 (EPA, 2021). The EPA Finding of Failure to Submit final rule was effective August 23, 2021. The finding established a deadline of 24 months after the effective date for EPA to promulgate a Federal Implementation Plan to address the Moderate area requirements, unless prior to the deadline, Arizona submits and EPA approves the State's Moderate area PM-10 attainment plan as meeting the requirements of the Clean Air Act. The final rule provided for the imposition of the emissions offset sanctions 18 months, and highway sanctions 24 months after the effective date, if the required complete Moderate area PM-10 attainment plan was not submitted before these deadlines. In the notice, EPA also indicated that the Clean Air Act does not require sanctions or a Federal Implementation Plan if the State and EPA take timely action to remedy the finding.

On June 1, 2022, the 2022 Serious Area Particulate Plan for PM-10 for the West Pinal County Nonattainment Area was submitted to EPA. On November 30, 2022, EPA issued a letter to ADEQ finding that the 2022 Serious Area Particulate Plan for PM-10 for the West Pinal County Nonattainment Area meets the minimum criteria for completeness terminating the sanction clocks started by EPA's July 23, 2021 finding of failure to submit. Also, on July 21, 2023, EPA published a final rule to determine that the West Pinal PM-10 Nonattainment Area did not attain the PM-10 national ambient air quality standards by the December 31, 2022 attainment date, effective August 21, 2023. A state implementation plan (SIP) revision was required to be submitted to EPA no later than December 31, 2023 that among other elements, provides for expeditious attainment of the PM-10 standard and for a five percent annual reduction in PM-10 emissions in the nonattainment area. In December 2023, the Arizona Department of Environmental Quality officially submitted the 2023 Five Percent Particulate Plan for PM-10 for the West Pinal County Nonattainment Area.

On June 14, 2024, a completeness finding was received from EPA on the 2023 Five Percent Particulate Plan for PM-10 for the West Pinal County Nonattainment Area that determined that it includes all SIP elements required as a result of the July 21, 2023 finding of failure to attain and all outstanding Serious area elements.

CONFORMITY TEST REQUIREMENTS

Maricopa County Nonattainment Areas

The descriptions of the conformity tests that were performed for eight-hour ozone and PM-10, as part of the MAG Conformity Analysis, are detailed below.

Eight-Hour Ozone

On June 4, 2018, EPA published a final rule that designated the Maricopa nonattainment area as a Marginal Area for the 2015 ozone standard, effective August 3, 2018. For the 2015 ozone standard, the nonattainment area was expanded to include the Queen Valley monitor in Pinal County and the Tonto National Monument monitor in Gila County. The nonattainment area for the 2015 ozone standard covers a larger geographic area and encompasses the entire area designated for the previous ozone standards. This is described as “Scenario 3” in the June 2018 EPA Transportation Conformity Guidance for 2015 Ozone Standard Nonattainment Areas. The EPA Guidance explains that where the nonattainment area for the 2015 ozone standard is larger than and contains the area designated for the previous ozone standards, the conformity budget test may be used to demonstrate conformity in the entire nonattainment area for the 2015 ozone standard, consistent with 40 CFR 93.109(c)(2)(iii)(B).

The MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area addresses the 2008 eight-hour ozone standard of 0.075 parts per million and was submitted to EPA in December 2016 (MAG, 2016). On June 2, 2020, EPA published the final rule approving the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the 2008 ozone standard, including the 2017 emissions budgets for VOC of 45.7 metric tons per day and NOx of 62.7 metric tons per day, effective July 2, 2020 (EPA, 2020a). The conformity budget test using the EPA-approved 2017 VOC and NOx budgets were applied to horizon years 2026, 2030, 2040, and 2050 in the MAG Conformity Analysis for the Maricopa Eight-hour Ozone Nonattainment Area.

PM-10

The Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area was submitted to EPA in February 2000. This Plan established a PM-10 conformity budget of 59.7 metric tons per day for the attainment year of 2006. EPA approved the Revised MAG 1999 Serious Area PM-10 Plan, effective August 26, 2002 (EPA, 2002a).

On May 25, 2012, the MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area was submitted to EPA (MAG, 2012). The 2012 budget established in this Plan is 54.9 metric tons per day. On June 10, 2014, EPA published the final rule approving the MAG 2012 Five Percent Plan for PM-10 and the 2012 emissions budget of 54.9 metric tons per day, effective July 10, 2014 (EPA, 2014a). The conformity test applies the budgets from the approved Revised MAG 1999 Serious Area Particulate Plan and MAG 2012 Five Percent Plan for PM-10 to horizon years 2026, 2030, 2040, and 2050 for the Maricopa County PM-10 Nonattainment Area.

Section 93.122(e)(2) of the federal conformity rule requires that PM-10 from construction-related fugitive dust be included in the regional PM-10 emissions analysis, if it is identified as a contributor to the nonattainment problem in a PM-10 plan. The motor vehicle emissions budget established in the Revised MAG 1999 Serious Area PM-10 Plan includes vehicle exhaust, tire wear, brake wear, reentrained dust from travel on paved roads, travel on unpaved roads, and road construction. Therefore, emissions from road construction are included as part of the PM-10 estimates developed for this conformity analysis.

Pinal County Nonattainment Areas

PM-10

On May 31, 2012, EPA designated the West Pinal PM-10 Nonattainment Area in Pinal County, effective July 2, 2012 (EPA, 2012c). EPA classified the nonattainment area as Moderate. The West Pinal PM-10 Nonattainment Area covers approximately 1,326 square miles in the western half of Pinal County. On June 24, 2020, EPA published the final rule to determine that the West Pinal County PM-10 nonattainment area did not attain the PM-10 standard by the December 31, 2018 attainment date and to reclassify the nonattainment area as Serious, effective July 24, 2020 (EPA, 2020b).

On December 21, 2015, the Arizona Department of Environmental Quality submitted the 2015 West Pinal Moderate PM-10 Nonattainment Area SIP to EPA. On May 17, 2021, the Arizona Department of Environmental Quality withdrew the 2015 West Pinal Moderate PM-10 Nonattainment Area Plan prepared by the Arizona Department of Environmental Quality.

On June 1, 2022, the 2022 Serious Area Particulate Plan for PM-10 for the West Pinal County Nonattainment Area was submitted to EPA. On November 11, 2022, EPA issued a letter finding that the 2022 Serious Area Particulate Plan for PM-10 for the West Pinal County Nonattainment Area meets the minimum criteria for completeness terminating the sanction clocks started by EPA's July 23, 2021 finding of failure to submit. EPA has not approved or found adequate the motor vehicle emissions budget.

Also, on July 21, 2023, EPA published a final rule to determine that the West Pinal PM-10 Nonattainment Area did not attain the PM-10 national ambient air quality standards by the December 31, 2022 attainment date and required a new state implementation plan (SIP) revision that provides for expeditious attainment of the PM-10 standard and for a five percent annual reduction in PM-10 emissions in the nonattainment area, effective August 21, 2023 (EPA, 2023a). On December 15, 2023, the 2023 Five Percent Plan for PM-10 for the West Pinal County Nonattainment Area was submitted to EPA. At this time, EPA has not approved or found adequate the motor vehicle emissions budgets.

Since there are no PM-10 emission budgets that have been found to be adequate or approved by EPA, an Action/Baseline analysis was performed in accordance with the EPA transportation conformity rule (EPA, 2012b). The baseline network includes regionally significant highways open to traffic and transit service in operation by December 31, 2024. In accordance with Section 93.119(h) of EPA conformity regulations, the baseline network also includes all regionally significant projects, regardless of funding source, which are currently under construction or undergoing right-or-way acquisition, are MAG and Sun Corridor MPO TIP projects that were coded in the baseline traffic assignment for the previous conformity analysis conducted in June 2025, including any projects from the previous traffic assignment that have been deferred past the start of the Conformity Analysis, or have completed the NEPA process. Each action network includes regionally significant highway and transit projects from the MAG and Sun Corridor MPO TIPs and RTPs in the West Pinal PM-10 Nonattainment Area, that are scheduled to be open to the public by 2030, 2040, and 2050, respectively.

Also, for information, MAG conducted a budget test using the 2026 budget established in the submitted 2023 Five Percent Particulate Plan for PM-10 for the West Pinal Nonattainment Area. The 2023 Five Percent Particulate Plan for PM-10 establishes a 2026 budget of 42.5 metric tons per day for the attainment year. The budget includes PM-10 emissions from vehicle exhaust, tire wear and break wear, road construction, reentrained dust from vehicle travel on paved roads, and fugitive dust from vehicle travel on public and private (non-agricultural) unpaved roads.

PM-2.5

On February 3, 2011, EPA designated the West Central Pinal PM-2.5 Nonattainment Area in Pinal County, effective March 7, 2011 (EPA, 2011). On September 4, 2013, EPA published in the *Federal Register* a determination that the West Central Pinal nonattainment area has attained the 2006 24-hour PM-2.5 standard based on clean data at the monitor during the 2010-2012 period (EPA, 2013).

Conformity analyses must also be performed for the PM-2.5 nonattainment area, even if EPA issues a clean data finding. On October 3, 2019, EPA published a final rule with a determination that the West Central Pinal PM-2.5 Nonattainment Area attained the 2006 24-hour PM-2.5 standard by the December 31, 2017 attainment date based on 2015-2017 data, effective November 4, 2019 (EPA, 2019).

Since EPA or the Arizona Department of Environmental Quality have not determined that nitrogen oxide (NOx) emissions are an insignificant contributor to the PM-2.5 attainment problem, per Section 93.119(f)(9) of EPA conformity regulations, NOx, as well as PM-2.5 emissions from onroad mobile sources, were included in the Action/Baseline analysis for the Pinal PM-2.5 nonattainment area.

Since there are no PM-2.5 and NOx emission budgets that have been found to be adequate or approved by EPA, an Action/Baseline analysis was performed in accordance with the latest EPA conformity guidance (EPA, 2012b). The baseline network includes regionally significant highways open to traffic and transit service in operation by December 31, 2024. In accordance with Section 93.119(h) of EPA conformity regulations, the baseline network also includes all regionally significant projects, regardless of funding source, which are currently under construction or undergoing right-or-way acquisition, are MAG and Sun Corridor MPO TIP projects that were coded in the baseline traffic assignment for the previous conformity analysis conducted in June 2025, including any projects from the previous traffic assignment that have been deferred past the starting of the Conformity Analysis, or have completed the NEPA process. Each action network includes regionally significant highway and transit projects from the MAG and Sun Corridor MPO TIPs and RTPs in the West Central Pinal PM-2.5 Nonattainment Area, that are scheduled to be open to the public by 2030, 2040, and 2050, respectively.

ANALYSIS YEARS

Maricopa Nonattainment Areas

In selecting analysis years for the Maricopa County nonattainment areas, which have mobile source emissions budgets that EPA has found to be adequate or approved, the conformity rule (Section 93.118(d)) requires that: (1) if the attainment year is in the time frame of the transportation plan and conformity determination, it must be modeled; (2) the last year forecast in the transportation plan must be an analysis year; and (3) analysis years may not be more than ten years apart.

For the MAG Conformity Analysis, onroad mobile source emissions of PM-10, volatile organic compounds (VOC), and nitrogen oxides (NOx) were estimated for the analysis years 2026, 2030, 2040, and 2050. The year 2026 was modeled for VOC and NOx since 2026 is an attainment year.

The years 2030 and 2040 were also modeled for all pollutants since these are intermediate years that meet the federal conformity requirement that analysis years be no more than ten years apart. The year 2050 was modeled for all pollutants, since it is the last year of MOMENTUM 2050 MAG Regional Transportation Plan Update. These analysis years will be used to compare mobile source emissions with EPA-approved budgets for VOC, NOx, and PM-10.

Pinal County Nonattainment Areas

In selecting Action/Baseline analysis years for the Pinal County nonattainment areas, which do not have approved or adequate mobile source emissions budgets, the conformity rule (Section 93.119(g)) indicates that the years must be no more than ten years apart, the first year must be no more than five years beyond the year in which the conformity determination is being made, and the last year must be aligned with the transportation plans (i.e., the MOMENTUM 2050 MAG Regional Transportation Plan Update and the Sun Corridor MPO Regional Transportation Plan 2050 Update, both of which contain projects in the Pinal nonattainment areas).

These three criteria are met by the analysis years 2030, 2040, and 2050. For the MAG Conformity Analysis, onroad mobile source emissions were estimated for the Action/Baseline scenarios for 2030, 2040, and 2050. PM-10 emissions were estimated for the West Pinal PM-10 Nonattainment Area, while PM-2.5 and nitrogen oxide (NOx) emissions were estimated for the West Central Pinal PM-2.5 Nonattainment Area.

Also, for informational purposes, MAG conducted a conformity budget test using the budget established in the submitted 2023 Five Percent Particulate Plan for PM-10 for the West Pinal County Nonattainment Area. The analysis years include 2026, 2030, 2040, and 2050. The year 2026 was modeled since it is the attainment year in the 2023 Five Percent Particulate Plan for PM-10. The years 2030 and 2040 were modeled since these are intermediate years that meet the federal conformity requirement that analysis years be no more than ten years apart. The year 2050 was modeled since it is the last year of MOMENTUM 2050 MAG Regional Transportation Plan Update and the Sun Corridor MPO Regional Transportation Plan 2050 Update.

2 LATEST PLANNING ASSUMPTIONS

The Clean Air Act states that “the determination of conformity shall be based on the most recent estimates of emissions, and such estimates shall be determined from the most recent population, employment, travel, and congestion estimates as determined by the MPO or other agency authorized to make such estimates.” On January 18, 2001, the U.S. DOT issued guidance developed jointly with EPA to provide additional clarification concerning the use of latest planning assumptions in conformity determinations (U.S. DOT, 2001). In December 2008, EPA published revisions to the 2001 guidance, “Guidance for the Use of Latest Planning Assumptions in Transportation Conformity Determinations” (EPA, 2008b).

Key elements of this guidance are identified below:

- Areas are strongly encouraged to review and strive towards regular five-year updates of planning assumptions, especially population, employment, and vehicle registration assumptions.

- The latest planning assumptions must be derived from the population, employment, travel and congestion estimates that have been most recently developed by the MPO (or other agency authorized to make such estimates) and approved by the MPO.

- Conformity determinations that are based on information that is older than five years should include written justification for not using more recent information. For areas where updates are appropriate, the conformity determination should include an anticipated schedule for updating assumptions.

The latest planning assumptions for MAG conformity analyses for the MAG transportation modeling domain covering Maricopa and Pinal counties, are summarized in Table 2. The methodology and scheduled updates for the planning assumptions are discussed below.

The conformity regulations (EPA, 2012b) indicate that “the conformity determination...must be based upon the most recent planning assumptions in force at the time the conformity analysis begins...as determined through the interagency consultation process.” It has been determined through the consultation process that the “time that the conformity analysis begins” will be the day that the first traffic assignment is submitted for travel demand modeling for the MAG Conformity Analysis. For this conformity analysis, “time that the conformity analysis begins” was June 27, 2025.

TABLE 2. LATEST PLANNING ASSUMPTIONS FOR MAG CONFORMITY DETERMINATIONS
FOR THE MAG TRANSPORTATION MODELING DOMAIN COVERING MARICOPA AND PINAL COUNTIES

Assumption	Source	MAG Models	Next Scheduled Update
Population and Employment	Under the Governor's Executive Order 2011-04, official County projections are updated every 3 to 4 years. These official projections are used by all agencies for planning purposes. The Arizona State Demographer prepared a new set of Maricopa County projections based on the U. S. Census Bureau's 2017-2021 American Community Survey. Employment projections were prepared by Dr. George Hammond at the University of Arizona's Economic and Business Research Center in December 2022. MAG developed a set of subcounty population and employment projections for Maricopa County that are consistent with the State Demographer's population projections. The MAG Regional Council approved the subcounty socioeconomic projections in June 2023. In addition, Central Arizona Governments (CAG) approved the Pinal County subcounty socioeconomic projections, based on the State's Pinal County projections, in June 2023. The MAG Traffic Analysis Zone System was updated to reflect the latest socioeconomic changes in July 2023.	AZ-SMART (UrbanSim)	Under the Governor's Executive Order 2011-04, official county socioeconomic projections will be developed by the Arizona State Demographer. According to the schedule set forth in the Executive Order, the State Demographer will produce county level projections of population by December 2025. Following that release, MAG will produce subcounty population and employment projections by June 2026.
Traffic Counts	The highway models were validated for the 2018 base year based on traffic count data from approximately 1,000 traffic count locations, collected by MAG in 2018-2019 during peak seasons.	MAG Travel Demand Models	Region-wide traffic counts are typically collected by MAG every 3-4 years, depending on available funds and model base year definition. MAG has completed new traffic count data collection during peak seasons of 2023 - 2024.

TABLE 2 (CONTINUED). LATEST PLANNING ASSUMPTIONS FOR MAG CONFORMITY DETERMINATIONS FOR THE MAG TRANSPORTATION MODELING DOMAIN COVERING MARICOPA AND PINAL COUNTIES

Assumption	Source	MAG Models	Next Scheduled Update
Vehicle Miles of Travel	MAG's Activity Based Model is based on the Coordinated Travel Regional Activity Based Modeling Platform (CT-RAMP2) family of Activity Based Models for travel demand forecasting. The calibration work for the major components of the Activity Based Model has been completed. Datasets used in the model calibration process include 2017 Household and Establishment surveys and the 2019 transit on-board survey. In addition, 2013-2017 ACS PUMS and MAG socioeconomic data are also used to generate a synthetic population which is input to the Activity Based Model. Activity Based Model components such as long-term choice for mandatory activity (work and school) location models, day-level models for activity participation, tour formation, and other tour and trip detail models such as time-of-day choice and mode choice were recalibrated based on the 2017 Household Travel Survey and the 2019 transit on-board survey. The truck model was recalibrated based on the 2017 ATRI data, 2015 StreetLight data, and 2013 Transearch data. The external travel model was recalibrated in 2014 based on regional growth projections for Arizona and neighboring states. Incremental updates and improvements were introduced to the model to reflect network changes, socioeconomic forecast changes, and changes in the traffic zone system. MAG conducted a comprehensive revalidation of the Activity Based Model using 2018-2019 traffic counts and 2018 speed data. The overall calibration year for the model is 2018 and the latest base year based on a comprehensive validation is 2018.	MAG Travel Demand Models	MAG has completed a new regional household travel survey to capture behavioral shifts triggered in the post-pandemic era that may impact activity and travel behavior in the region. Additionally, MAG recently completed a travel survey to better understand the travel behavior of the Arizona State University student population. The MAG forecasting model is currently being updated to a new base year of 2024 based on the above travel surveys and other recent data sources. The updates are anticipated to be completed in calendar year 2025.

TABLE 2 (CONTINUED). LATEST PLANNING ASSUMPTIONS FOR MAG CONFORMITY DETERMINATIONS FOR THE MAG TRANSPORTATION MODELING DOMAIN COVERING MARICOPA AND PINAL COUNTIES

Assumption	Source	MAG Models	Next Scheduled Update
Speeds	The highway models were validated using peak season average speed based on 50 million traffic speed records purchased from HERE for calendar year 2018 and also compared to a similar data set (INRIX) acquired in the same year.	MAG Travel Demand Models	Commercial travel speed data are acquired by MAG periodically to validate the transportation models. MAG also utilizes commercial speed data for future estimation and model calibration purposes. MAG has access to new speed data required for the ongoing model calibration and validation to the new base year. This calibration process is ongoing, and the MAG forecasting models will be updated based on the survey. MAG has also collaborated with ADOT and capitalized on ADOT commercial speed data contracts.
Vehicle Registrations	For this conformity analysis, the 2024 vehicle registration data provided by ADOT in January 2025 were used as MOVES source population, age distribution, and Alternative Vehicle Fuel and Technology (AVFT) input data by decoding the vehicle identification numbers (VIN) and classifying them into MOVES source types using the scripts developed by ERG.	MOVES4	MAG will decode the latest VIN registration data provided by ADOT for MOVES source types and AVFT data for future conformity determinations.
Implementation Measures	Latest implementation status of commitments in prior SIPs.	N/A	Updated for every conformity analysis.

POPULATION AND EMPLOYMENT

In accordance with the Governor's Executive Order 2011-04, official county level population projections based on the 2017-2021 American Community Survey have been developed by the Arizona State Demographer. The State Demographer completed the county level projections in December 2022. MAG prepared subcounty socioeconomic projections for Maricopa County that were adopted by the MAG Regional Council in June 2023. The Central Arizona Governments (CAG) approved subcounty population projections for Pinal County in June 2023.

The travel and speed estimates produced by the MAG transportation models for the analysis years in the MAG Conformity Analysis are based on the MAG and CAG subcounty population and employment projections that are consistent with the 2017-2021 American Community Survey.

Methodology

The Arizona State Demographer prepared the official Arizona population projections by county, using 2017-2021 American Community Survey data as the base. MAG used those population projections consistent with the 2017-2021 American Community Survey. These projections for Maricopa County were distributed to smaller geographic areas by MAG using the latest available data and a state-of-the-art land use model system called AZ-SMART. The nationally recognized UrbanSim microsimulation model was integrated into AZ-SMART and used to allocate county projections of households and employment to land use parcels based on measures such as accessibility to employment, adjacent land uses, highway access, and proximity to other development.

Population and employment at the land use parcel level in the MAG planning area were aggregated to TAZs using AZ-SMART. The subcounty socioeconomic projections developed with the AZ-SMART model were approved by the MAG Regional Council in June 2023.

Since the MAG transportation modeling area includes Pinal County, in collaboration with the Central Arizona Governments (CAG), MAG has also prepared socioeconomic projections for Pinal County. MAG prepared the projections at the traffic analysis zone (TAZ) level by controlling to the County control totals approved by CAG. AZ-SMART, the MAG socioeconomic modeling system, was utilized to produce the MPA and TAZ projections for Pinal County. The TAZ projections were reviewed by the CAG Management Committee in June 2023.

Next Scheduled Update

Under the Governor's Executive Order 2011-04, official county socioeconomic projections will be developed by the Arizona State Demographer. According to the schedule set forth in the Executive Order, the State Demographer will develop new county level projections

of population by December 2025. MAG will then develop a set of subcounty population and employment projections for Maricopa County that are consistent with the State's population projections.

TRAFFIC COUNTS

The highway traffic volumes estimated by the MAG transportation models were validated in 2021 for the 2018 base year, using traffic counts from approximately 1,000 freeway and arterial locations. The traffic counts were collected by MAG during peak seasons of 2018-2019 in Maricopa and Pinal counties. MAG transportation models were recalibrated based on the travel surveys conducted in 2017. New model validations are based on the model runs with updated socioeconomic input files and recalibrated transportation models. Use of the most recent traffic counts to validate the models is consistent with the federal conformity guidance which strongly encourages areas to update the planning assumptions for network-based travel models at least every five years (EPA, 2008b).

Methodology

MAG uses TransCAD software, as well as custom developed programs, to perform travel demand modeling. TransCAD provides a geographic information systems (GIS) interface that facilitates transportation modeling. The MAG transportation models follow activity-based model procedure that includes accessibility calculation, population synthesis, long-term choice for mandatory activities such as work and school location, day-level models for activity participation, tour formation, time allocation, tour-level models such as time-of-day choice and mode choice, and traffic/transit assignment. The mode choice model is sensitive to highway and transit travel times, as well as pricing variables. Highway and transit route choice is determined in the assignment step, based on operating costs, travel times, and distances. Capacity-restrained traffic assignments are performed for the AM peak period, midday, the PM peak period, and nighttime. A feedback loop between traffic assignment for the current loop and accessibility calculation for the next loop is utilized to achieve near-equilibrium highway speeds.

Next Scheduled Update

Region-wide traffic counts are typically collected by MAG every 3-4 years. MAG has completed 2018-2019 regional traffic counts data collection. MAG conducts incremental updates, recalibration and validation of the regional model on an on-going basis in order to maintain relevancy of the regional forecast and as new data sets become available. Rapid changes in technology and transportation data field change the ways regional models are developed and maintained. MAG model development plans reflect these changes and capitalize on the most recent offerings in transportation data. MAG has completed new traffic count data collection during peak seasons of 2023 - 2024.

VEHICLE MILES OF TRAVEL

The MAG travel forecasting model is calibrated based on data from the 2017 household travel survey and 2019 regional transit on-board survey.

The transportation models simulate peak and daily traffic volumes on more than 30,000 highway links, as well as the transit trips on bus and light rail routes in the MAG transportation modeling domain covering Maricopa and Pinal counties. Vehicle miles of travel (VMT) by link, output by the highway assignment process, are input to the MAG MOVESLink4 model used to estimate onroad mobile source emissions for conformity analyses.

Transportation model estimates of vehicle volumes are validated using actual traffic counts. The MAG transportation models were validated against over 1,000 count locations collected in 2018-2019 for the 2018 base year. Table 3 summarizes the validation results by area type for freeways and arterials. Both the R-squared (R^2) and Root Mean Square Error (RMSE) statistics indicate that there is a good fit between transportation model-estimated 2018 weekday traffic volumes and traffic count data.

R^2: The coefficient of determination, or R^2, is a measure that provides information about the goodness of fit of a model. In the context of regression, it is a statistical measure of how well the regression line approximates the actual data.

Percent RMSE: The root-mean-square error (RMSE) of a sample is the quadratic mean of the differences between the observed values and predicted ones. Percent RMSE is the ratio of “RMSE” over “mean of observed values” in percent form.

$$\mathrm{RMSE} = \sqrt{\frac{\sum_{i=1}^{N}\left[(\mathrm{Count}_i - \mathrm{Model}_i)^2\right]}{N}}$$

and

$$\%\mathrm{RMSE} = \frac{\mathrm{RMSE}}{\left(\frac{\sum_{i=1}^{N}\mathrm{Count}_i}{N}\right)} \times 100$$

where N is the number of observed values.

Typically, for a regional model comparable to the size of the MAG Activity-Based Model, an overall R^2 over 0.85 and an RMSE under 40% is considered a good fit. The MAG

model validation statistics surpass these requirements with an overall R^2 of 0.961 and an RMSE of 26.5%. A more detailed validation statistics by Area Type is summarized in the table below.

TABLE 3.
AGGREGATED MODEL VALIDATION RESULTS
MODEL-ESTIMATED 2018 WEEKDAY VOLUMES VS. 2018 TRAFFIC COUNTS

	Freeways and Arterials	
Area Type	**R^2**	**% RMSE**
CBD	0.974	24.5%
Outlying CBD	0.967	23.0%
Mixed Urban	0.943	24.0%
Suburban	0.877	33.6%
Rural	0.895	36.1%
All	0.961	26.5%

Next Scheduled Update

MAG completed a new regional household travel survey to capture behavioral shifts triggered in the post-pandemic era that may impact activity and travel behavior in the region. Additionally, MAG has also recently completed a travel survey to better understand the travel behavior of the Arizona State University student population. The MAG forecasting model is currently being updated to a new base year of 2024 based on the above travel surveys and other recent data sources. The updates are anticipated to be completed in calendar year 2025.

HPMS Reconciliation Factor

Section 93.122(b) of the transportation conformity regulations require that regional emissions analyses in serious, severe, and extreme ozone nonattainment areas and serious carbon monoxide nonattainment areas, with urbanized area populations over 200,000, meet certain network-based modeling requirements, including reconciliation of modeled vehicle miles of travel (VMT) with the Highway Performance Monitoring System (HPMS) VMT. As described in Section 93.122(b)(3), for areas with network-based travel models, a factor (or factors) may be developed to reconcile and calibrate the network-based travel model estimates of VMT in the base year of its validation to the HPMS estimates for the same period. In conformity analyses prior to 2005, transportation model estimates of VMT were reconciled with the VMT reported by HPMS to comply with this requirement.

Also, Section 93.122(d), indicates that in all areas not otherwise subject to paragraph 93.122(b), regional emissions analyses must use those procedures described in paragraph (b) (i.e. reconcile network-based travel model estimates of VMT with the VMT reported by HPMS) if the use of those procedures has been the previous practice of the MPO.

A comparison of the MAG travel demand model VMT for 2018 with the HPMS data reported for 2018 for the eight-hour ozone nonattainment area was completed in August 2024. The year 2018 was used since that is the year that the MAG Activity-Based Model was last validated. The analysis provided in Table 4 indicates that the difference between HPMS vehicle miles of travel and the MAG travel demand model vehicle miles of travel in 2018 is -1.75 percent. Therefore, the VMT for the eight-hour ozone nonattainment area has been increased by the HPMS reconciliation factor of 1.75 percent.

In the HPMS database, VMT is calculated from AADT estimates at the segment level. These AADT estimates can be derived from actual traffic counts or historical counts. In cases where actual counts are not available for a segment, a grown count estimate from historical count is used in HPMS. Approximately 35 percent of the segments in the 2018 HPMS database rely on these grown counts for AADT estimates. For these reasons, HPMS data was not used in the transportation model calibration and validation process.

The MAG travel demand model in 2018 has been validated against actual traffic counts that result in the model's volume estimates being 0.7 percent higher than the ground truth. MAG adheres to the FHWA Model Validation and Reasonableness Checking Manual for the validation process.

On October 4, 2024, MAG staff discussed changes with EPA and FHWA to the HPMS reconciliation factor and the use of monthly average meteorological data that more accurately estimate emissions. EPA and FHWA concurred with both proposed changes for regional emissions analyses.

TABLE 4.
COMPARISON BETWEEN THE 2018 MAG TRAVEL DEMAND MODEL VEHICLE MILES OF TRAVEL (VMT) AND 2018 HPMS VMT FOR THE MARICOPA EIGHT-HOUR OZONE NONATTAINMENT AREA

	2018 Highway Performance Monitoring System VMT	**2018 MAG Travel Demand Model VMT**	**Difference**
Vehicle Miles of Travel for the Eight-Hour Ozone Nonattainment Area	71,974,125	70,713,088	-1.75%

SPEEDS

Speeds obtained from the capacity-restrained traffic assignments are used to recompute link travel times that are then fed-back into the travel demand modeling chain. Accessibility calculation, long-term choice for mandatory activities such as work and school location, day-level models for activity participation, tour formation, time allocation, and tour-level models such as time-of-day choice and mode choice of the chain are executed until PM peak period trip tables and link volumes are in equilibrium. In addition to vehicle miles of travel, the MAG transportation models calculate system performance measures such as vehicle hours of travel and volume to capacity ratios.

MAG acquires commercial speed data from third party vendors and uses the data to compare with model-estimated speeds. MAG purchased 2018 speed data from HERE that was used to validate the speeds estimated by the MAG transportation models in 2021, as discussed in the Methodology section below.

Methodology

MAG used the 2018 HERE regionwide speed data to validate the speed estimates produced by the transportation models. The model-estimated speeds are in reasonable agreement with observed arterial and freeway speeds during the peak and off-peak periods.

Next Scheduled Update

MAG has access to commercial speed data from INRIX continuously. The recalibrated model will be validated with new speed and traffic count data as appropriate.

VEHICLE REGISTRATIONS

MAG contracted with Eastern Research Group, Inc. (ERG) to decode vehicle identification numbers (VINs) from the Arizona vehicle registration data and classify the VIN decoded registration data in Maricopa and Pinal counties into the MOVES source types, fuel types, and age distribution, as needed for MOVES model runs. For the MAG Conformity Analysis, the MOVES source type population was derived using ERG's vehicle classification scripts, the 2024 vehicle registration data provided by Arizona Department of Transportation in January 2025, the transit bus data (see Chapter 4, Table 26 and Table 28), and the MOVES4 default source type population data. Since the vehicle registration and VIN decoded data did not provide population for short-haul or long-haul trucks, the MOVES4 default source type population data were used to derive short-haul/long-haul truck fractions for single unit trucks (Source Types 52 and 53) and combination trucks (Source Types 61 and 62).

For this conformity analysis, MAG continued to use MOVES4 to project source type population for each horizon year by applying MOVES5 default source type population growth rate between the calendar year 2024 and the horizon year for each source type as shown in Table 14. MOVES5 default source type population growth rates, which were derived from the up-to-date vehicle stock estimates of Annual Energy Outlook (AEO) 2023, represent potential sales growth more adequately than MOVES4 default source type population growth rates. To verify adequacy of applying MOVES5 default source type population growth rate to this region, historic source type population growth rates were compared between the U.S. and Arizona. According to the EPA Population and Activity of Onroad Vehicles, November 2024, MOVES5 default source type population for pre-2023 were mainly derived from the FHWA's annual Highway Statistics report (EPA, 2024). For the vehicle population growth in the FHWA's annual Highway Statistics report, Arizona has less annual growth rate than the U.S. for the past six years (2017-2022). Therefore, applying MOVES5 default source type population growth rates to Maricopa County for the horizon years appears to represent potential sales growth in this region adequately and conservatively.

Finally, source type population for the selected nonattainment area was extracted using a ratio of the population projections between the county and the nonattainment area. The population projections for future years were developed using the socioeconomic projection data approved by the MAG Regional Council in June 2023.

IMPLEMENTATION MEASURES

Maricopa County Nonattainment Areas

For the Maricopa County nonattainment areas, emission reduction credit was assumed for the committed measures in the SIPs including the measures in Table 5 for performing the conformity analysis. Emission reduction credit was applied for committed control measures and committed contingency measures contained in the applicable MAG air quality plans. Credit is also taken for air quality projects in the MAG Transportation Improvement Program if credit for these measures was not quantified in the air quality plans. In addition, emission reduction credit for strengthening existing control measures or implementation of new control measures, specifically identified in the MAG TIP or RTP, were incorporated into the analysis, where appropriate. A description of the emission reduction credit taken for PM-10 certified street sweepers and the paving of unpaved roads in the Maricopa County PM-10 Nonattainment Area is provided in Chapter 4, Air Quality Modeling.

Pinal County Nonattainment Areas

For the Pinal County nonattainment areas, emission reduction credit was assumed for the committed measures in the SIPs including the measures in Table 5 for performing the conformity analysis. The West Pinal PM-10 Nonattainment Area includes a small portion of Area A, where participation in the Vehicle Inspection/Maintenance Program is required

for all vehicles registered in Area A. These control measures reduce tailpipe emissions of PM-10 as well as ozone precursor emissions of volatile organic compounds and nitrogen oxides.

TABLE 5.
COMMITTED MEASURES IN THE
MARICOPA NONATTAINMENT AREAS AND WEST PINAL PM-10 NONATTAINMENT AREA USED FOR EMISSION REDUCTION CREDIT

Measure #	Reference	Measure Description	Pollutant(s)
4	MAG 2009 Eight-Hour Ozone Maintenance Plan	Tougher Enforcement of Vehicle Registration and Emission Test Compliance	PM-10
6	MAG 2009 Eight-Hour Ozone Maintenance Plan	Expansion of Area A Boundaries (HB 2538)	PM-10

3 TRANSPORTATION MODELING

The transportation modeling performed for the MAG Conformity Analysis for the FY 2026-2030 MAG Transportation Improvement Program and MOMENTUM 2050 MAG Regional Transportation Plan Update is based on the latest planning assumptions, as required in the federal transportation conformity rule (40 CFR 93.110) and documented in Chapter 2. A summary of the transportation model characteristics, key socioeconomic data, and other data related to the land use and transportation system forecasts is provided in this chapter.

TRANSPORTATION MODELS

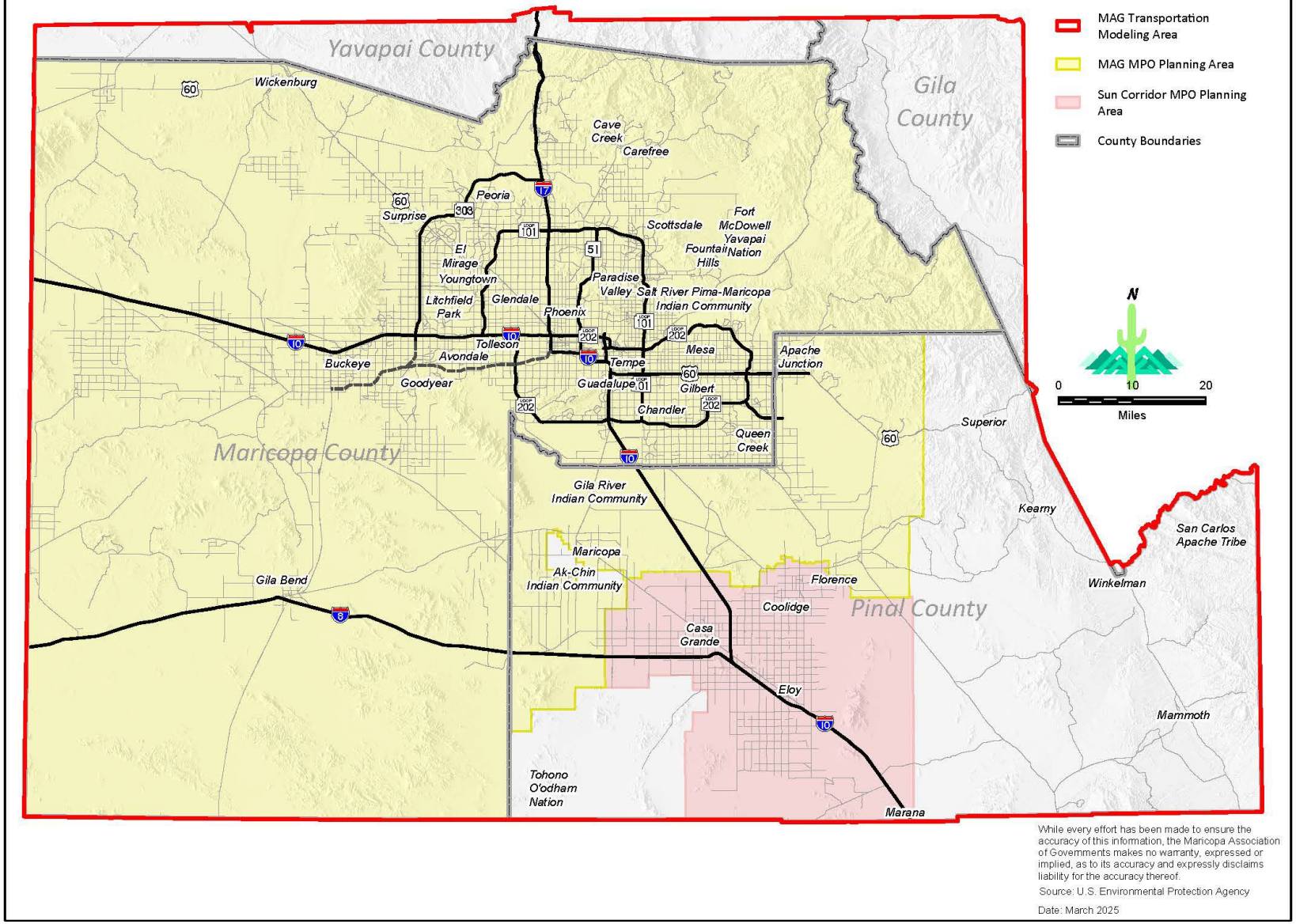
MAG regional transportation modeling is performed using TransCAD software for both highway and transit network assignments. The transportation models forecast AM peak period, midday, PM peak period, and nighttime vehicle traffic, as well as daily transit ridership, for the MAG transportation modeling area. The transportation model utilized for the MAG Conformity Analysis contains approximately 3,600 traffic analysis zones and covers an area of approximately 16,000 square miles in Maricopa and Pinal counties. A map of the transportation modeling domain is provided in Figure 4. The current official model was comprehensively validated for 2018 traffic data. The base year for the most recent validations is 2018 and traffic counts from approximately 1,000 freeway and arterial locations were used. MAG recalibrated the travel demand model using the 2017 Household Travel Survey and the 2019 transit on-board survey. Several other datasets were used in the recalibration process to update various components of the model. MAG conducted speed data validations with the 2018 commercial speed data from HERE. MAG utilized 2013 Transearch data, 2015 Streetlight data, and 2017 ATRI data to recalibrate the truck models.

The MAG transportation models exhibit the following characteristics, which are consistent with the federal transportation conformity rule (Section 93.122(b)):

- The current traffic volumes simulated by the MAG transportation models were validated to traffic counts from approximately 1,000 freeway and arterial locations. This validation demonstrated a good statistical fit between actual and model-estimated daily traffic volumes.

- The population, households, and employment inputs to the travel demand models are based on the official Maricopa County socioeconomic projections which were approved by the MAG Regional Council in June 2023. The Central

Figure 4: MAG and Sun Corridor MPO Planning Areas and MAG Transportation Modeling Area



Arizona Governments (CAG) approved subcounty population projections for Pinal County in June 2023. These projections were prepared using the AZ-SMART land use model system and UrbanSim.

- The population and employment projections used in the conformity analysis are consistent with the transportation system alternatives considered. In the MAG land use models, transportation system accessibility influences the allocation of population and employment to smaller geographic areas. The UrbanSim model was integrated into AZ-SMART and used to allocate county projections of households and employment to regional market areas based upon the pre-existing location of these activities, land consumption, and transportation system accessibility. These congested travel times are derived from an appropriate capacity-restrained traffic assignment for each forecast year. UrbanSim uses transportation system accessibility measures, such as proximity to the closest highway, in determining the likelihood that a land use parcel will develop during a given forecast interval. AZ-SMART also aggregates population, households, and employment projections by land use parcel to the TAZ-level for input to the transportation models. Congested travel times output by the transportation models are fed-back into the land use models to ensure that there is consistency between the transportation system assumptions and the land use projections.

- The transportation models perform capacity-restrained traffic assignments. Traffic assignments are produced for the AM peak period, mid-day, PM peak period, and nighttime, with volumes and congestion estimated for each period.

- Speeds obtained from the traffic assignments are used to recompute link travel times that are then fed back in the travel demand modeling chain. The various submodels with the Activity-Based Model (ABM) are executed until convergence criteria are met. MAG convergence criteria are based on the recommendations produced by the Federal Transit Administration.

- The travel impedances used in the traffic assignment as well as the accessibilities that serve as inputs to multiple submodels in the ABM such as car ownership, daily activity patter (DAP), and tour frequency models include a composite function of highway travel times and costs. The mode choice logit model is sensitive to highway and transit travel times, as well as pricing variables.

- As a result of the feedback loop in the MAG travel demand modeling process, the final peak and off-peak speeds are sensitive to the capacity-restrained volumes on each highway segment represented in the network. MAG routinely validates model outputs with commercial speed data by time period. MAG has purchased and utilized 2018 HERE data for the validation of the base year 2018.

SOCIOECONOMIC PROJECTIONS

Section 93.110 of the federal conformity rule requires that the population and employment projections used in the conformity analysis be the most recent estimates that have been officially approved by the Metropolitan Planning Organization (i.e., MAG for the Maricopa County nonattainment areas). The MAG Conformity Analysis for the Maricopa County nonattainment areas is based on socioeconomic projections for Maricopa County that were approved by the MAG Regional Council in June 2023.

In accordance with the Arizona Governor's Executive Order 2011-04, the population projections used for all State agency planning purposes were updated by the Arizona State Demographer consistent with the 2017-2021 American Community Survey. MAG then prepared socioeconomic projections by traffic analysis zone (TAZ), based on the State's county-level population projections. MAG allocated the projections for Maricopa County to traffic analysis zones (TAZs) using the AZ-SMART model system. The official Maricopa County socioeconomic projections based on State Demographer county projections, were approved by the MAG Regional Council in June 2023.

In addition, socioeconomic projections for Pinal County were prepared by MAG utilizing AZ-SMART and were approved in collaboration with Central Arizona Governments (CAG). The projections by Municipal Planning Area (MPA) for Pinal County were approved by the CAG Regional Council in June 2023 and the TAZ projections are based upon the approved MPA projections.

The TAZ population, households and employment projections take into account the transportation improvements contained in the conforming TIP (FY 2022-2025) and RTP (including amendments through December 2022) in effect at the time the projections were approved. For the MAG Conformity Analysis, the projections of population, households, and employment by TAZ were input to the MAG transportation models to estimate auto and transit trips, VMT, and speeds for each analysis year.

TRAFFIC ESTIMATES

This section describes the development of the highway and transit networks that were used to perform the MAG Conformity Analysis for the FY 2026-2030 MAG Transportation Improvement Program and MOMENTUM 2050 MAG Regional Transportation Plan Update. A summary of the population, employment, and travel characteristics for the MAG transportation modeling area for each analysis year in the MAG Conformity Analysis is presented in Table 6. The vehicle miles of travel forecasts for each of the pollutant specific modeling areas for Maricopa and Pinal counties are presented in Chapter 4.

TABLE 6.
TRAFFIC NETWORK COMPARISON FOR ACTION SCENARIOS EVALUATED FOR THE MAG CONFORMITY ANALYSIS

Year	Total Population[a] (thousands)	Total Employment[a] (thousands)	Average Weekday VMT[b] (millions)	Average PM Peak Period Speed[c]	Freeway Lane Miles[d]
2026	5,440	2,600	140.5	32.2	4,406
2030	5,788	2,787	152.8	32.1	4,650
2040	6,542	3,173	179.0	31.5	4,870
2050	7,180	3,463	201.9	30.9	5,161

[a] Population and employment estimates are for the 16,000 square mile transportation modeling area in Maricopa and Pinal counties. Total population includes resident population in households and group quarters, transient population and seasonal population. Total employment includes number of workers in public, retail, office, industrial, work-at-home, construction, non-site based and other land use employees.

[b] Vehicle miles of travel (VMT) is obtained from the summation of VMTs in the AM peak, Mid-Day, PM peak, and Nighttime from the action traffic assignments for the transportation modeling area.

[c] Average speed on freeways, HOV lanes, expressways, arterials, ramps and collector-distributor roads in the transportation modeling area during the PM peak period.

[d] Freeways, expressways, ramps, HOV lanes are included in the lane miles reported for freeways in the transportation modeling area.

Transportation Network Assumptions

Not all of the street, freeway, and transit projects included in the TIP qualify for inclusion in the model networks. Projects which call for study, design, right-of-way acquisition, intersection improvements, center lane additions, curb improvements or non-capacity improvements are not included in the networks. When these projects result in actual facility construction projects, the associated capacity changes are coded into the network, as appropriate. Since the networks define capacity in terms of the number of through traffic lanes, only construction projects that increase the lane-miles of through traffic are

included. Generally, MAG networks include only the one-mile grid system of streets, plus freeways. This includes all streets classified as arterials, six-legged arterials, expressways, collector-distributor roads, ramps, parkways, as well as some collectors. In addition, fixed guideway system transit facilities and park-and-ride locations are included in the networks.

Traffic on collectors and local streets not explicitly coded on the networks are simulated in the models by use of abstract links called centroid connectors. These represent collectors, local streets and driveways which connect a neighborhood to a regionally significant roadway. Centroid connectors also include travel occurring on public and private unpaved roads and alleys.

Highway Networks

The 2026, 2030, 2040, and 2050 travel demand model networks used in the conformity analyses for the Maricopa nonattainment areas and Action scenarios for the Pinal County nonattainment areas assume implementation of all qualifying regionally significant highway projects in the FY 2026-2030 MAG Transportation Improvement Program (TIP) and MOMENTUM 2050 Regional Transportation Plan (RTP) Update, as well as other regionally significant projects to be implemented in Pinal County from the Sun Corridor MPO FY 2025-2029 TIP and Regional Transportation Plan 2050 Update.

The 2026 network includes all existing highway facilities in the travel demand model and regionally significant highway projects in the TIP through the year 2026. The 2030 network includes all existing highway facilities in the travel demand model and regionally significant highway projects in the TIP through the year 2030. The 2040 network includes all existing highway facilities in the travel demand model and regionally significant highway projects in the RTP through the year 2040. The 2050 network includes all existing highway facilities in the travel demand model and assumes implementation of all regionally significant highway projects in the RTP through the year 2050.

The networks used in the 2030, 2040, and 2050 Baseline scenarios for the Pinal County nonattainment areas contain regionally significant highway projects open to traffic by December 31, 2024. In addition, the baseline network includes regionally significant projects, regardless of funding source, that meet one of the following criteria: are under construction, undergoing right of way acquisition, was included in the baseline scenario for the previous conformity analysis, or have completed the National Environmental Policy Act (NEPA) process. These criteria comply with Section 93.119(h) of the EPA conformity regulations.

Coding Conventions

Specific coding conventions or criteria are applied to determine whether a project qualifies for the travel demand model network coding. This results in coding of all arterial streets and some collectors. The coding conventions are:

1) Capacity-related projects on existing links or extensions of existing links on the base highway network are coded in future networks. This includes projects on freeways, the mile-street grid, and half-mile streets already on the base network.

2) Capacity-related projects which are not on links or extensions of links in the base network are coded, if the street is considered a logical part of the one-mile street grid system. If the project is on a half-mile street, it is considered for inclusion on a case-by-case basis. The key factors considered in making this assessment include:

    - the density of current and future development and travel in the area of the project;

    - whether the change may be accommodated without increasing the number of zones; and

    - whether the change is consistent with standard network coding practices.

Transit Networks and Operations

Transit networks are a necessary part of the MAG travel demand models and are required for producing a coherent regional multimodal transportation forecast that includes transit ridership. For all analysis years, the bus and rail networks reflect the latest planning information available at the time the conformity analysis began.

Transit Operations in Maricopa County

The information on fares and transit operations in this section of the conformity analysis is provided to address federal transportation conformity requirements. In Maricopa County, the most recent information on transit ridership and operating policies is provided by Valley Metro/Regional Public Transportation Authority (Valley Metro/RPTA, 2024a). Information on current transit fares is provided in Table 7 (Valley Metro/RPTA, 2024b).

Current Fixed Route Service

Valley Metro bus service is provided to an area of approximately 525 square miles within the MAG region. In addition, the METRO 35-mile light rail system connects the cities of Phoenix, Tempe, and Mesa. According to Valley Metro, there are 61 local routes providing fixed route service, 14 express bus routes, six RAPID commuter express routes, and 21 circulator routes located in Avondale, Glendale, Mesa, Peoria, Phoenix, Scottsdale, and Tempe. For the period ending June 30, 2024, there were 29,344,711 total weekday boardings and a grand total of 36,849,353 total boardings that includes Saturday and Sunday service. For Fiscal Year 2024, there were 25,893,430 boardings from bus service and 10,955,923 from light rail and streetcar service (Valley Metro/RPTA, 2024a).

TABLE 7.
SUMMARY OF TRANSIT FARES FOR
VALLEY METRO SERVICE

Valley Metro Service	Full Fare
Local 1-Ride	$2.00
Local Daily Maximum	$4.00
Local Weekly Maximum	$20.00
Local Monthly Maximum	$64.00
Express/RAPID 1-Ride	$3.25
Express/RAPID Daily Maximum	$6.50
Express/RAPID Monthly Maximum	$104.00
Streetcar	$1.00

Note: Reduced fares are available to persons with disabilities, seniors 65 and older, Medicare cardholders, and youths 6 through 18. Youths 5 and under ride for free when accompanied by a fare-paying responsible person who can directly supervise the child (Valley Metro/RPTA, 2024b).

Other Existing Transit Services

Six paratransit systems operate within Maricopa County, including Glendale Dial-a-Ride, Peoria Dial-a-Ride, Phoenix Dial-a-Ride, Phoenix Taxi, Scottsdale Taxi, Valley Metro Regional Paratransit, and Valley Metro RideChoice. These services generally operate within the area with fixed route bus service.

In addition, 20 shuttle and circulator transit services have been implemented across the region with different operating schedules, including: Avondale and Goodyear Circulator ZOOM; Glendale Urban Shuttle (GUS) providing transit in the Glendale area; Mesa Downtown BUZZ; Phoenix Downtown Area Shuttle (DASH) serving the Downtown Phoenix-State Capitol area; Ahwatukee Local Explorer (ALEX) serving Ahwatukee and west Chandler areas; Phoenix Maryvale Area Ride for You (MARY) serving the Maryvale area of Phoenix; Sunnyslope Neighborhood Circulator (SMART) serving the Sunnyslope area of Phoenix, and the Scottsdale Miller/Hayden (MLHD), Scottsdale Mustang (MSTG), Scottsdale 68th Street/Camelback Road (68CM), and several local circulators in Tempe including Tempe FLASH, Orbit Earth, Orbit Jupiter, Orbit Mars, Orbit Mercury, Orbit Saturn, and Orbit Venus serving various neighborhoods in the city.

Recent Transit Service Changes

Valley Metro/Regional Public Transportation Authority reported several transit service and schedule adjustments effective April 28, 2025. This includes the elimination of Route 515 and changes to Route 531. The Route 0 and Route 0A on Central Avenue and South Central Shuttle have been combined into a single route. In addition, many schedule adjustments went into effect on many routes during this time.

Transit Operations in Pinal County

In Pinal County, the cities of Coolidge and Maricopa operate transit service. The City of Coolidge operates the Cotton Express that provides deviated flex route bus service and curb-to-curb demand response service in Coolidge. The Cotton Express is a local circulator that provides bus service between neighborhoods and business, schools, and government offices. Fares range from $1.00 for one-way, $2.00 for daily, and $30.00 for monthly fare for age 12 to adult.

The City of Coolidge also operates the Central Arizona Regional Transit (CART) bus system that provides regional transportation services in central Pinal County between Coolidge, Casa Grande, Florence, and Central Arizona College. Fares range from $2.00 for one-way, $4.00 for daily, $60.00 for monthly, and $90.00 for local and regional monthly fare for ages 13 to 54. Table 8 provides a summary of the transit fares for the Cotton Express and the Central Arizona Regional Transit bus system.

The City of Maricopa operates a local circulator transit service, Maricopa Express Transit, within the city at no charge. The fixed route service operates Monday through Friday from 8 a.m. to 4 p.m. Also, local Dial-a-Ride is available Monday through Friday from 8 a.m. to 5 p.m. at a fare of $1.00 per one-way trip.

The MAG travel demand models and the highway and transit networks described above are utilized to estimate daily vehicle travel and transit ridership in the MAG transportation modeling area. The primary input to the air quality modeling process is transportation model estimates of daily vehicle traffic and speeds on each highway link, along with the attendant link lengths and coordinate data, for each nonattainment area. A detailed description of the emissions models utilized for the conformity analysis is provided in Chapter 4.

TABLE 8.
SUMMARY OF TRANSIT FARES FOR
COTTON EXPRESS AND CENTRAL ARIZONA REGIONAL TRANSIT SERVICES

Fixed Route Transit Services in Pinal County	**Fares**
Cotton Express	
One-way	$1.00
Daily	$2.00
Monthly	$30.00
Central Arizona Regional Transit	
One-way	$2.00
Daily	$4.00
Monthly	$60.00
Local & Regional Monthly	$90.00

Note: Demand and deviated route fares are available for the Cotton Express. For the Central Arizona Regional Transit service, lower fares apply to children 12 and under or students.

4 AIR QUALITY MODELING

For the MAG Conformity Analysis, air quality modeling was performed for the Maricopa nonattainment and the Pinal County nonattainment areas. The conformity analysis for the Maricopa County PM-10 nonattainment area involved the comparison of projected emissions for analysis years 2026, 2030, 2040, and 2050 with the EPA-approved conformity budget established in the MAG 2012 Five Percent Plan for PM-10. In addition, the conformity analysis for the Maricopa eight-hour ozone nonattainment area involved the comparison of projected emissions for analysis years 2026, 2030, 2040, and 2050 with EPA-approved conformity budgets established in the MAG 2017 Eight-Hour Ozone Moderate Area Plan for volatile organic compounds (VOC) and nitrogen oxides (NOx).

The conformity analysis for the Pinal County nonattainment areas involved the comparison of the Action and Baseline scenario emissions for analysis years 2030, 2040, and 2050 for PM-10 for the West Pinal PM-10 Nonattainment Area and PM-2.5 and NOx for the West Central Pinal PM-2.5 Nonattainment Area. Also, for informational purposes, MAG performed the conformity budget test comparing the emissions for analysis years 2026, 2030, 2040, and 2050 with the 2026 motor vehicle emissions budget established in the submitted 2023 Five Percent Particulate Plan for PM-10 for the West Pinal County Nonattainment Area. The 2023 Five Percent Particulate Plan for PM-10 for the West Pinal County Nonattainment Area was submitted to EPA in December 2023.

The models which have been used to estimate eight-hour ozone precursors VOC and NOx, PM-10, PM-2.5, and NOx are the EPA Motor Vehicle Emission Simulator 4 (MOVES) model to derive motor vehicle emission factors, MOVESLink4 for the calculation of spatially and temporally allocated onroad vehicle emissions using the emission factors from the above models and travel and speed data from the MAG Activity-Based transportation model, and AP-42 to derive paved and unpaved road PM-10 emissions.

On September 12, 2023, EPA published in the *Federal Register* the availability of the emissions model MOVES4 for use in state implementation plans and transportation conformity. The announcement started a two-year transportation conformity grace period that ends on September 12, 2025. MAG began using MOVES4 before the two-year grace period ends on September 12, 2025.

Also, on December 11, 2024, EPA published in the *Federal Register* the availability of the latest emissions model MOVES5 for use in state implementation plans and transportation conformity. The announcement started a two-year transportation conformity grace period that ends on December 11, 2026.

For the Maricopa nonattainment areas, the FY 2026-2030 MAG TIP and MOMENTUM 2050 MAG Regional Transportation Plan Update must pass the emissions budget tests

with budgets that have been found to be adequate or approved by EPA for transportation conformity purposes. On June 2, 2020, EPA published the final rule approving the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the 2008 ozone standard, including the 2017 emissions budgets for VOC of 45.7 metric tons per day and NOx of 62.7 metric tons per day, effective July 2, 2020. On June 10, 2014, EPA published the final rule approving the MAG 2012 Five Percent Plan for PM-10 and the 2012 emissions budget of 54.9 metric tons per day, effective July 10, 2014.

For the Pinal County PM-10 and PM-2.5 nonattainment areas, there are no adequate or approved motor vehicle emissions budgets for conformity. Therefore, the Action/Baseline interim conformity tests were applied. The Action/Baseline test involved the comparison of the Action and Baseline scenario emissions for analysis years 2030, 2040, and 2050 for the West Pinal PM-10 Nonattainment Area and West Central Pinal PM-2.5 Nonattainment Area. The conformity rule requirements for the selection of the analysis years are summarized in Chapter 1.

The inputs to MOVES4, MOVESLink4, and AP-42 models used in estimating onroad vehicle emissions for the Maricopa PM-10 and eight-hour ozone nonattainment areas and the Pinal County PM-10 and PM-2.5 nonattainment areas are described below.

MOVES4

MOVES4 is the onroad emissions model developed by EPA for the purpose of estimating motor vehicle emission factors in unit of gram per vehicle mile of travel. MOVES requires local data such as the Inspection and Maintenance (I/M) program, meteorological data, vehicle populations, source type age distribution, annual average daily vehicle miles of travel (VMT), VMT fractions, road type distribution, average speed distribution, fuel data, and Alternative Vehicle and Fuel Technologies (AVFT). This model was used to estimate ozone precursors and particulate (exhaust, tire wear, and brake wear) emission factors for the Maricopa nonattainment areas. MOVES is also used to estimate particulate (exhaust, tire wear, and brake wear) emission factors for the Pinal County PM-10 and PM-2.5 nonattainment areas and NOx exhaust emission factors for the Pinal PM-2.5 nonattainment area. The output from the MOVES4 model included emission factors by hour, roadway facility type, pollutant, vehicle class, and area type.

I/M Programs

MOVES4 has a table for Inspection and Maintenance (I/M) programs that reflects the actual proportion of vehicles subject to the specified levels of inspection. The term “I/M vehicles” denotes vehicles which are required to undergo an emission test and/or inspection under the Vehicle Inspection/Maintenance Program administered by the Arizona Department of Environmental Quality (ADEQ). The MOVES table was developed using the I/M program data provided by ADEQ. It is important to note that participation in

the I/M program is required for all vehicles registered in Area A, except for certain model years and vehicle classes.

Inspection and Maintenance program benefits were assumed in the modeling. The I/M runs reflect the provisions of the enhanced inspection program which was implemented in January 1995 and the measure “Phased-in Emission Test Cutpoints”, implemented in January 2000. The cutpoint values used are the MOVES4 default Phase 2 cutpoints. For the four horizon years modeled in this analysis, it was assumed that the onboard diagnostic (OBD) test would be used for the model year 1996 and newer vehicles with an exemption for all vehicles of the current plus four model years.

The compliance factors for MOVES vehicle Inspection and Maintenance programs were derived from gasoline regulatory class coverage adjustments, compliance rate, waiver rate, and failure rate. The gasoline regulatory class coverage adjustments were obtained from the MOVES Technical Guidance. Compliance rate, waiver rate, and failure rate were calculated using the ADEQ vehicle inspection data. Table 9 shows the MOVES compliance factors for I/M programs in 2025.

TABLE 9.
THE COMPLIANCE FACTORS FOR MOVES VEHICLE
INSPECTION AND MAINTENANCE PROGRAMS IN AREA A

I/M Test Type	MOVES Test StandardID	Model Years		Test Frequency	MOVES Regulatory Class ID	Compliance Factor
		From	To			
Exhaust Loaded-Idle	13	1967	1980	Annual	21	85.65%
					31	88.45%
					32	87.85%
Exhaust IM147	33	1981	1995	Biennial	21	91.78%
					31	91.93%
					32	86.14%
Exhaust OBD	51	1996	2020	Biennial	21	99.48%
					31	99.30%
					32	97.37%
Exhaust Loaded-Idle	13	1967	2020	Annual	41	98.86%
					42	98.99%
					43	97.83%
					51	96.24%
					52	98.99%
					53	98.94%
					54	97.98%

I/M Test Type	MOVES Test StandardID	Model Years		Test Frequency	MOVES Regulatory Class ID	Compliance Factor
		From	To			
					61	88.84%
					62	88.84%
Evaporative Gas Cap	41	1967	1980	Annual	21	85.57%
					31	88.41%
					32	87.82%
Evaporative Gas Cap and Pressure Check	44	1981	1995	Biennial	21	91.77%
					31	91.93%
					32	86.13%
Evaporative OBD and Gas Cap	45	1996	2020	Biennial	21	99.48%
					31	99.13%
					32	95.94%
Evaporative Gas Cap	41	1967	2020	Annual	41	98.85%
					42	98.99%
					43	97.83%
					51	96.20%
					52	98.99%
					53	98.94%
					54	97.98%
					61	88.09%
					62	88.09%

MOVES4 outputs were weighted to account for vehicles driving in the modeling area that do not participate in the I/M programs. Therefore, each modeled scenario required runs with and without the I/M program benefits. For this analysis, it was assumed that 91.6 percent of eligible onroad vehicles participate in the I/M programs. This fraction reflects an increase in the participation in the I/M programs due to implementation of the measure, “Tougher Enforcement of Vehicle Registration and Emission Test Compliance”. For all scenarios modeled for this analysis, the inputs for each run included oxygenated gasoline with an assumed market share of 100 percent ethanol. The gasoline volatility and average oxygen content of the ethanol blend gasoline were based on the regulatory limits provided to MAG by the Arizona Department of Agriculture (AZDA) Weights and Measures Services Division.

The MOVES4 runs that reflected the I/M programs in Area A assumed vehicle waiver rates of 1.3 percent or 1.0 percent, depending on model year. These fractions reflected the lower waiver rates resulting from the implementation of “One Time Waiver from Vehicle Emissions Test”.

Meteorological Data

MOVES4 requires hourly temperature and relative humidity data by specific month of the year. For the conformity analysis, the 2011 meteorological data used in the MAG 2017 Eight-Hour Ozone Moderate Area Plan were used for the eight-hour ozone nonattainment area, and the 2008 meteorological data used in the MAG 2012 Five Percent Plan for PM-10 were used for the Maricopa County PM-10 nonattainment area. The monthly average temperature and relative humidity used for the conformity analysis for the eight-hour ozone and Maricopa County PM-10 nonattainment areas are provided in Table 10 and Table 11. The 2017 meteorological data used in the MAG 2023 Five Percent Plan for PM-10 were used for the conformity analysis for the West Pinal PM-10 and West Central Pinal PM-2.5 nonattainment areas. Specifically, average temperature and relative humidity for each month of 2017 were utilized in Pinal County (see Table 12). The transportation conformity regulations at 40 CFR 93.122(a)(6) require that ambient temperature used for the regional emissions analysis shall be consistent with those used to establish the motor vehicle emissions budget in the applicable implementation plan. Section 2.9 of EPA's Guidance for the Use of Latest Planning Assumptions in Transportation Conformity Determinations, December 2008, also states that other meteorological factors such as humidity must be consistent with those used to establish the motor vehicle emissions budget. In June 2024, MAG conducted a series of sensitivity tests and found that the MOVES run with monthly average meteorological data estimates more accurate emissions than the MOVES run with seasonal average meteorological data. Based on this finding, MAG used monthly average meteorological data for this conformity analysis.

On October 4, 2024, MAG staff discussed changes to the HPMS reconciliation factor and the use of monthly average meteorological data that more accurately estimate emissions with EPA and FHWA. EPA and FHWA concurred with both proposed changes for regional emissions analyses.

TABLE 10.
METEOROLOGICAL DATA FOR THE EIGHT-HOUR
OZONE NONATTAINMENT AREA

	Temperature (F)					**Relative Humidity (%)**				
Hour ID	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
1	74.9	87.8	90.5	93.7	85.6	17.5	13.0	32.4	31.5	29.5
2	73.2	85.0	89.0	92.7	84.7	19.2	15.6	34.5	32.3	30.8
3	71.2	82.4	87.9	91.6	83.5	20.8	17.5	36.5	33.7	32.9
4	69.7	80.8	86.9	90.9	82.5	22.1	18.9	37.5	34.6	33.9
5	68.1	79.0	85.9	89.6	81.5	23.8	21.1	39.9	37.2	35.2
6	67.1	78.3	85.1	88.9	80.9	24.6	20.8	40.8	38.5	35.7
7	68.9	80.4	86.4	89.3	81.0	23.3	18.7	39.0	38.4	35.7
8	72.0	84.0	88.8	91.3	83.8	20.7	15.8	35.6	35.5	32.2
9	75.5	88.0	91.5	94.3	87.6	18.1	13.1	31.7	31.0	27.8

Hour ID	Temperature (F)					Relative Humidity (%)				
	May	Jun	Jul	Aug	Sep	May	Jun	Jul	Aug	Sep
10	79.0	91.5	94.3	96.7	90.7	15.8	11.1	27.9	27.5	24.7
11	82.2	94.7	97.3	99.7	93.8	13.5	9.5	24.4	24.4	21.6
12	84.4	97.4	99.9	102.2	96.2	12.0	8.1	21.8	21.5	19.4
13	86.7	99.7	102.1	103.8	99.0	10.7	7.4	20.1	19.5	16.9
14	88.0	101.1	103.5	105.6	100.2	10.5	6.9	18.8	17.8	15.7
15	89.0	102.1	104.6	106.7	100.6	9.7	6.3	16.9	16.9	15.0
16	89.7	102.5	105.0	107.0	101.0	9.4	6.3	16.5	16.2	14.2
17	88.9	102.3	104.5	107.0	100.3	10.2	6.3	17.3	16.2	15.0
18	88.2	101.6	103.6	106.3	98.7	10.3	6.4	17.4	16.4	16.2
19	86.9	100.3	102.4	104.3	96.8	10.8	6.7	17.9	18.0	17.3
20	84.7	98.4	100.5	102.5	94.6	11.9	7.2	19.6	19.7	18.8
21	82.4	95.7	97.4	100.5	92.1	13.5	8.6	23.9	22.1	22.1
22	80.6	92.7	95.3	98.4	90.6	14.2	10.1	25.9	25.6	23.4
23	79.1	91.3	92.7	96.5	88.7	14.5	10.8	31.3	27.2	25.9
24	77.3	90.2	91.5	95.2	86.8	15.9	11.4	32.1	29.1	27.9

TABLE 11.
METEOROLOGICAL DATA FOR THE MARICOPA COUNTY
PM-10 NONATTAINMENT AREA

Hour ID	Temperature (F)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	51.0	53.0	62.0	69.0	75.0	88.0	90.0	89.0	85.0	71.0	62.0	51.0
2	50.0	52.0	59.0	68.0	72.0	87.0	89.0	88.0	83.0	70.0	60.0	51.0
3	49.0	51.0	59.0	66.0	71.0	85.0	88.0	87.0	82.0	69.0	60.0	50.0
4	48.0	50.0	57.0	64.0	70.0	83.0	88.0	86.0	81.0	68.0	59.0	49.0
5	48.0	50.0	56.0	63.0	69.0	81.0	87.0	86.0	80.0	68.0	58.0	49.0
6	47.0	49.0	55.0	62.0	68.0	81.0	86.0	85.0	80.0	67.0	58.0	48.0
7	46.0	49.0	55.0	63.0	69.0	82.0	87.0	85.0	80.0	67.0	57.0	48.0
8	47.0	49.0	57.0	66.0	72.0	86.0	89.0	87.0	83.0	70.0	58.0	48.0
9	49.0	52.0	62.0	71.0	76.0	90.0	92.0	89.0	86.0	75.0	63.0	51.0
10	53.0	56.0	66.0	74.0	79.0	94.0	94.0	92.0	90.0	79.0	67.0	54.0
11	56.0	59.0	69.0	78.0	82.0	97.0	96.0	95.0	93.0	82.0	70.0	57.0
12	59.0	61.0	72.0	80.0	84.0	100.0	99.0	97.0	95.0	85.0	72.0	60.0
13	61.0	64.0	75.0	83.0	86.0	102.0	100.0	99.0	97.0	87.0	74.0	61.0
14	62.0	65.0	77.0	84.0	87.0	104.0	102.0	101.0	99.0	88.0	76.0	63.0
15	63.0	66.0	78.0	85.0	88.0	105.0	103.0	102.0	99.0	89.0	77.0	64.0
16	63.0	67.0	78.0	86.0	89.0	105.0	104.0	102.0	100.0	90.0	77.0	64.0
17	63.0	67.0	78.0	85.0	88.0	105.0	103.0	102.0	99.0	89.0	76.0	63.0
18	61.0	66.0	77.0	85.0	88.0	104.0	103.0	101.0	98.0	87.0	74.0	61.0
19	59.0	64.0	74.0	83.0	86.0	103.0	101.0	100.0	95.0	84.0	71.0	59.0
20	57.0	62.0	72.0	80.0	84.0	100.0	99.0	98.0	93.0	81.0	69.0	57.0
21	55.0	60.0	69.0	78.0	82.0	97.0	97.0	95.0	91.0	79.0	67.0	55.0

Temperature (F)												
Hour ID	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
22	54.0	58.0	68.0	76.0	80.0	95.0	95.0	91.0	89.0	77.0	65.0	54.0
23	53.0	56.0	66.0	74.0	78.0	93.0	93.0	91.0	88.0	75.0	63.0	54.0
24	52.0	55.0	64.0	71.0	77.0	92.0	91.0	90.0	86.0	73.0	62.0	52.0

Relative Humidity (%)												
Hour ID	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1	54.0	64.0	32.0	18.0	25.0	18.0	39.0	43.0	35.0	30.0	39.0	65.0
2	54.0	65.0	35.0	19.0	28.0	20.0	41.0	44.0	38.0	31.0	42.0	66.0
3	57.0	68.0	36.0	23.0	28.0	23.0	42.0	48.0	39.0	32.0	42.0	68.0
4	58.0	70.0	39.0	23.0	31.0	24.0	43.0	49.0	41.0	33.0	43.0	69.0
5	59.0	69.0	40.0	24.0	32.0	25.0	44.0	49.0	42.0	32.0	43.0	68.0
6	60.0	71.0	42.0	25.0	34.0	26.0	46.0	51.0	42.0	32.0	44.0	67.0
7	62.0	70.0	43.0	25.0	32.0	24.0	45.0	50.0	42.0	31.0	45.0	68.0
8	61.0	68.0	38.0	22.0	29.0	21.0	41.0	47.0	38.0	28.0	44.0	67.0
9	56.0	61.0	31.0	17.0	25.0	18.0	37.0	43.0	34.0	24.0	38.0	60.0
10	48.0	52.0	25.0	14.0	22.0	15.0	34.0	39.0	30.0	20.0	33.0	52.0
11	42.0	45.0	21.0	12.0	20.0	12.0	30.0	35.0	27.0	18.0	30.0	45.0
12	37.0	41.0	18.0	10.0	18.0	11.0	27.0	31.0	24.0	16.0	27.0	39.0
13	35.0	36.0	15.0	9.0	16.0	9.0	25.0	28.0	21.0	14.0	25.0	38.0
14	32.0	34.0	13.0	8.0	17.0	9.0	23.0	26.0	19.0	13.0	23.0	36.0
15	31.0	33.0	12.0	8.0	14.0	8.0	22.0	24.0	17.0	12.0	22.0	35.0
16	30.0	32.0	12.0	7.0	13.0	8.0	21.0	24.0	17.0	12.0	22.0	33.0
17	31.0	32.0	12.0	7.0	14.0	8.0	23.0	25.0	17.0	12.0	22.0	35.0
18	33.0	34.0	13.0	7.0	14.0	8.0	23.0	25.0	18.0	13.0	25.0	41.0
19	36.0	38.0	15.0	8.0	15.0	9.0	24.0	26.0	21.0	16.0	28.0	47.0
20	40.0	43.0	17.0	10.0	16.0	10.0	26.0	28.0	23.0	18.0	31.0	51.0
21	45.0	49.0	20.0	11.0	19.0	12.0	30.0	34.0	26.0	21.0	34.0	54.0
22	46.0	50.0	23.0	12.0	20.0	13.0	32.0	40.0	27.0	23.0	37.0	56.0
23	50.0	55.0	25.0	14.0	23.0	14.0	35.0	41.0	29.0	26.0	39.0	59.0
24	52.0	60.0	27.0	17.0	23.0	15.0	38.0	42.0	32.0	28.0	40.0	61.0

TABLE 12.
METEOROLOGICAL DATA FOR THE WEST PINAL PM-10 AND
WEST CENTRAL PINAL PM-2.5 NONATTAINMENT AREAS

Temperature (F)												
Hour ID	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1	48.0	48.0	56.0	64.0	70.0	83.0	86.0	85.0	79.0	65.0	54.0	45.0
2	47.0	47.0	54.0	62.0	69.0	81.0	84.0	83.0	78.0	64.0	52.0	44.0
3	46.0	46.0	53.0	60.0	66.0	79.0	84.0	83.0	76.0	63.0	51.0	43.0
4	46.0	45.0	52.0	59.0	64.0	76.0	83.0	81.0	75.0	62.0	51.0	43.0
5	45.0	44.0	51.0	57.0	63.0	74.0	82.0	80.0	75.0	61.0	50.0	42.0
6	45.0	43.0	50.0	56.0	62.0	74.0	82.0	79.0	74.0	61.0	49.0	41.0
7	44.0	43.0	50.0	60.0	68.0	80.0	84.0	81.0	75.0	61.0	49.0	41.0

Temperature (F)												
Hour ID	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
8	44.0	45.0	55.0	65.0	73.0	85.0	86.0	84.0	79.0	66.0	51.0	41.0
9	47.0	50.0	60.0	70.0	77.0	89.0	89.0	87.0	82.0	70.0	57.0	46.0
10	52.0	54.0	65.0	75.0	81.0	93.0	92.0	91.0	86.0	75.0	61.0	50.0
11	54.0	58.0	69.0	77.0	84.0	96.0	94.0	93.0	89.0	79.0	65.0	54.0
12	57.0	62.0	72.0	80.0	86.0	99.0	96.0	96.0	91.0	82.0	69.0	57.0
13	59.0	64.0	74.0	82.0	88.0	100.0	98.0	98.0	93.0	84.0	71.0	60.0
14	61.0	66.0	76.0	84.0	90.0	102.0	99.0	99.0	95.0	85.0	72.0	61.0
15	61.0	67.0	77.0	85.0	90.0	102.0	100.0	99.0	95.0	86.0	73.0	62.0
16	61.0	67.0	77.0	86.0	91.0	103.0	101.0	99.0	96.0	86.0	73.0	62.0
17	61.0	67.0	77.0	85.0	90.0	102.0	101.0	99.0	95.0	85.0	72.0	60.0
18	58.0	65.0	75.0	84.0	89.0	101.0	99.0	97.0	93.0	82.0	67.0	56.0
19	55.0	60.0	71.0	81.0	87.0	100.0	96.0	95.0	90.0	77.0	64.0	53.0
20	54.0	57.0	67.0	77.0	83.0	95.0	94.0	92.0	87.0	75.0	62.0	51.0
21	53.0	55.0	64.0	74.0	80.0	93.0	91.0	91.0	85.0	72.0	60.0	50.0
22	51.0	53.0	62.0	72.0	77.0	90.0	90.0	89.0	83.0	71.0	58.0	48.0
23	50.0	51.0	60.0	69.0	74.0	88.0	88.0	88.0	82.0	68.0	56.0	47.0
24	48.0	49.0	58.0	67.0	72.0	84.0	87.0	85.0	80.0	67.0	54.0	46.0

Relative Humidity (%)												
Hour ID	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1	72.0	52.0	40.0	23.0	26.0	19.0	53.0	44.0	46.0	41.0	46.0	61.0
2	74.0	54.0	42.0	25.0	27.0	21.0	55.0	47.0	47.0	43.0	47.0	62.0
3	75.0	55.0	44.0	27.0	30.0	22.0	56.0	47.0	49.0	45.0	49.0	63.0
4	76.0	56.0	47.0	29.0	31.0	24.0	58.0	49.0	51.0	46.0	51.0	64.0
5	76.0	58.0	48.0	30.0	33.0	25.0	60.0	52.0	52.0	47.0	51.0	66.0
6	77.0	59.0	50.0	32.0	34.0	26.0	62.0	54.0	53.0	48.0	53.0	66.0
7	77.0	60.0	50.0	30.0	31.0	24.0	59.0	51.0	53.0	48.0	54.0	67.0
8	78.0	59.0	44.0	26.0	28.0	22.0	53.0	47.0	48.0	43.0	51.0	67.0
9	71.0	50.0	38.0	23.0	24.0	19.0	48.0	42.0	43.0	38.0	45.0	61.0
10	61.0	45.0	33.0	20.0	21.0	16.0	43.0	37.0	39.0	34.0	39.0	54.0
11	57.0	38.0	28.0	17.0	19.0	14.0	39.0	33.0	35.0	30.0	34.0	48.0
12	51.0	34.0	25.0	15.0	16.0	12.0	36.0	30.0	32.0	26.0	31.0	43.0
13	47.0	31.0	23.0	14.0	15.0	12.0	33.0	27.0	29.0	24.0	28.0	39.0
14	43.0	29.0	21.0	12.0	14.0	10.0	31.0	25.0	27.0	22.0	26.0	37.0
15	43.0	27.0	20.0	12.0	13.0	10.0	30.0	25.0	26.0	21.0	25.0	36.0
16	44.0	26.0	19.0	11.0	13.0	9.0	29.0	26.0	26.0	21.0	25.0	35.0
17	44.0	26.0	19.0	11.0	12.0	8.0	29.0	26.0	26.0	22.0	26.0	37.0
18	50.0	28.0	20.0	11.0	14.0	8.0	31.0	29.0	28.0	23.0	30.0	43.0
19	56.0	33.0	23.0	12.0	15.0	8.0	36.0	31.0	30.0	27.0	33.0	48.0
20	58.0	38.0	27.0	14.0	16.0	11.0	38.0	35.0	34.0	30.0	35.0	51.0
21	59.0	41.0	29.0	16.0	19.0	13.0	43.0	34.0	36.0	32.0	38.0	53.0
22	63.0	44.0	31.0	17.0	21.0	14.0	46.0	36.0	39.0	34.0	40.0	56.0
23	67.0	47.0	34.0	19.0	23.0	15.0	49.0	37.0	40.0	37.0	43.0	57.0
24	70.0	50.0	37.0	21.0	25.0	17.0	50.0	42.0	43.0	39.0	45.0	59.0

Vehicle Source Type Population

In February 2024, MAG contracted with Eastern Research Group, Inc. (ERG) to decode vehicle identification numbers (VINs) from Arizona registration data and classify vehicles registered in Maricopa and Pinal counties into the vehicle types, fuel types, and model years needed as inputs to the MOVES model. For the MAG Conformity Analysis, the vehicle source type population were derived using ERG's vehicle classification scripts, the 2024 vehicle registration data provided in January 2025 by the Arizona Department of Transportation, the transit bus data (see Table 26 and Table 28), and the MOVES4 default source type population data (see Table 13). ERG's vehicle classification scripts decode a Vehicle Identification Number (VIN) for each vehicle in the ADOT vehicle registration data, extract vehicles registered in Maricopa and Pinal counties, remove non-road equipment or trailers, remove duplicate entries, classify the VIN decoded data into MOVES source type categories, and generate the MOVES source type population input for Maricopa and Pinal counties by totaling populations grouped by source type. Since vehicle registration and VIN decoded data do not provide short-haul or long-haul truck population, the MOVES4 default source type population data are used to derive short-haul/long-haul fractions for single unit trucks (Source Types 52 and 53) and combination trucks (Source Types 61 and 62). The source type population derived using ERG's vehicle classification scripts is provided in Table 13.

For this conformity analysis, MAG used MOVES4 to project source type population for each horizon year by applying MOVES5 default source type population growth rate between the calendar year 2024 and the horizon year for each source type as shown in Table 14. MOVES5 default source type population growth rates were derived from the up-to-date vehicle stock estimates of Annual Energy Outlook (AEO) 2023. To verify adequacy of applying MOVES5 default source type population growth rate to this region, historic source type population growth rates were compared between the U.S. and Arizona. According to the EPA Population and Activity of Onroad Vehicles, November 2024, MOVES5 default source type population for pre-2023 were mainly derived from the FHWA's annual Highway Statistics report (EPA, 2024). For the vehicle population growth in the FHWA's annual Highway Statistics report, Arizona has less annual growth rate than the U.S. for the past six years (2017-2022). Therefore, applying MOVES5 default source type population growth rates to Maricopa County for the horizon years appears to represent potential sales growth in this region adequately and conservatively.

Finally, source type population for the selected nonattainment area was computed using a ratio of the population projections between the county and the nonattainment area. The population projections for future years were provided by the MAG socioeconomic modeling staff, which were approved by the MAG Regional Council in June 2023.

TABLE 13.
SOURCE TYPE POPULATION FOR MARICOPA AND PINAL COUNTIES

Source Type	Maricopa County		Pinal County	
	MOVES4 Default for 2024	2024 Population with 2024 Vehicle Registration Data	MOVES4 Default for 2024	2024 Population with 2024 Vehicle Registration Data
11	133,073	90,427	12,976	15,642
21	1,408,620	1,329,866	119,480	147,823
31	2,014,190	1,672,472	197,161	213,526
32	205,547	187,132	17,768	8,571
41	4,857	201	501	76
42	1,555	1,019	149	23
43	6,425	490	720	99
51	840	225	90	17
52	122,663	149,416	13,382	9,084
53	5,456	6,551	586	398
54	16,144	14,102	1,862	3,170
61	22,723	8,708	2,818	841
62	14,056	5,782	2,163	559
Total	3,956,150	3,466,391	369,655	399,829

TABLE 14.
PROJECTION RATIOS OF SOURCE TYPE POPULATION
FOR MARICOPA AND PINAL COUNTIES

Source Type	Maricopa County			Pinal County		
	MOVES5 Default Source Type Population		Projection Ratio to 2024	MOVES5 Default Source Type Population		Projection Ratio to 2024
	2024	2050	2050	2024	2050	2050
11	127,850	142,839	1.1172	12,466	13,928	1.1172
21	1,395,600	966,366	0.6924	118,375	81,967	0.6924
31	2,003,960	2,894,140	1.4442	196,160	283,295	1.4442
32	205,676	297,039	1.4442	17,779	25,676	1.4442
41	4,929	7,296	1.4804	508	752	1.4804
42	1,481	2,193	1.4804	142	210	1.4804
43	6,307	9,337	1.4804	707	1,046	1.4804
51	722	1,202	1.6650	77	128	1.6650

Source Type	Maricopa County			Pinal County		
	MOVES5 Default Source Type Population		Projection Ratio to 2024	MOVES5 Default Source Type Population		Projection Ratio to 2024
	2024	2050	2050	2024	2050	2050
52	124,900	207,953	1.6650	13,626	22,686	1.6650
53	5,555	9,249	1.6650	597	994	1.6650
54	14,329	23,857	1.6650	1,653	2,752	1.6650
61	20,127	23,809	1.1829	2,496	2,953	1.1829
62	17,084	20,209	1.1829	2,629	3,109	1.1829

Vehicle Source Type Age Distribution

The source type age distribution was derived using ERG's vehicle classification scripts, ADOT 2024 vehicle registration data, transit bus data from public transit providers, and MOVES4 default age distributions. ERG's vehicle classification scripts generated the source type age distributions from the VIN decoded registration data for most of the source types, except transit bus (source type 42) and long-haul truck (source types 53 and 62). Age distribution for transit bus was developed using the local transit bus data provided by Valley Metro, City of Phoenix, City of Scottsdale, City of Glendale, and ADOT (see Tables 27 and 29) for both Maricopa and Pinal counties.

The age distribution for the long-haul truck was obtained from the MOVES4 default age distribution. The age distribution for the calendar year 2024 was projected for the horizon years using the MOVES Age Distribution Projection Tool.

Vehicle Miles of Travel

Vehicle miles of travel (VMT) is used to estimate onroad exhaust, brake wear, and tire wear emissions. The VMT for the Maricopa and Pinal nonattainment areas were derived from traffic assignment data output from the MAG Activity-Based transportation model.

For ozone precursors of VOC and NOx, the VMT was estimated by applying ozone season average daily adjustment factors to the annual average weekday VMT for the eight-hour ozone nonattainment area. For PM-10, the VMT reflected annual average daily traffic volumes for the PM-10 nonattainment area. The vehicle miles of travel projections used to estimate emissions for each pollutant analyzed in the conformity analysis are provided in Table 15.

For the Pinal County nonattainment areas, for PM-10, PM-2.5, and NOx the VMT estimates reflected annual average daily traffic volumes in the Action and Baseline scenarios for each analysis year in the West Pinal PM-10 Nonattainment Area and the West Central Pinal PM-2.5 Nonattainment Area, respectively. The VMT projections used

to estimate emissions for each pollutant analyzed in the conformity analysis are provided in Table 16.

TABLE 15.
TOTAL VMT USED IN THE MAG CONFORMITY ANALYSIS
FOR THE MARICOPA NONATTAINMENT AREAS
(Daily vehicle miles of travel for pollutant-specific areas and episodes)

YEAR	EIGHT-HOUR OZONE (Average Ozone Season Day)	PM-10 (Annual Average Day)
2026	118,472,063	115,501,129
2030	127,999,744	124,407,882
2040	147,542,481	141,403,513
2050	163,078,619	153,982,669

TABLE 16.
TOTAL VMT USED IN THE CONFORMITY ANALYSIS FOR THE
PINAL COUNTY NONATTAINMENT AREAS
(Daily vehicle miles of travel for pollutant-specific areas)

	PM-10 NONATTAINMENT AREA		PM-2.5 NONATTAINMENT AREA	
YEAR	Action	Baseline	Action	Baseline
2030	7,943,918	7,705,874	964,505	947,007
2040	11,449,653	10,818,121	1,325,152	1,396,883
2050	14,478,926	15,663,272	1,744,873	1,854,912

VMT Fraction

Since VMT varies by month, day of week, and hour, MOVES4 requires month/day/hour VMT fractions and the Annual Average Daily Vehicles Miles Travelled (AADVMT) conversion factor as a local input to derive specific weekday, monthly, seasonal and yearly

average VMT from the annual average weekday transportation assignment data from the MAG Activity-Based transportation model for freeways and arterials.

MAG has utilized the Arizona Department of Transportation (ADOT) Transportation Data Management System for freeway traffic counts in Maricopa County in developing the VMT fractions and AADVMT conversions. ADOT operates permanent automatic traffic recorders on freeways and highways on State Highway System routes. For arterial street traffic counts, MAG consultants performed traffic counts in 2018-2019 meeting spatial coverage and data collection requirements at 800 locations in Maricopa County and these counts have been shared with ADOT through the ADOT Traffic Count Database System. For Pinal County, ADOT provides traffic count data for both freeway and arterial locations.

For the development of freeway VMT fractions and AADVMT conversions for Maricopa County, the 2022 ADOT Transportation Data Management System data in Maricopa County were collected from https://adot.public.ms2soft.com/tcds/. The data of the 28 permanent traffic count stations providing the full records for the 12-month period were used for the development of the freeway VMT fractions and AADVMT conversions for Maricopa County. The arterial VMT fractions and AADVMT conversions for Maricopa County were provided by the MAG transportation modeling team and were based on the MAG 2018-2019 survey data that were the latest data available for arterials in the region.

The freeway and arterial AADVMT conversions were used to derive the average daily or day specific VMT for freeways and arterials from the annual average weekday transportation network data. The AADVMT conversions for Maricopa County used in the conformity analysis are 0.93 for freeways and 0.91 for arterials for the five-month ozone season average and 0.95 for freeways and 0.93 for arterials for the annual average daily VMT for the Maricopa County PM-10 nonattainment area.

The 2022 ADOT Transportation Data Management System data for Pinal County were collected from the website, https://adot.public.ms2soft.com/tcds/. Data from five permanent traffic count stations for freeways in Pinal County were used to develop the AADVMT conversions for freeways, and data from the four stations for arterials in Pinal County were used to develop the AADVMT conversion for arterials. The AADVMT conversions derived from the 2022 traffic count data were used in developing the annual average daily VMTs for freeways and arterials from the annual average weekday transportation network data for the West Pinal PM-10 and West Central Pinal PM-2.5 nonattainment areas. The AADVMT conversions used in the West Pinal PM-10 and West Central Pinal PM-2.5 nonattainment areas for the conformity analysis are 1.01 for freeways and 0.93 for arterials.

Road Type Distribution

The local road type distributions were derived from the MAG Activity-Based Model (ABM) transportation network assignment data that provided VMTs for local road types and ABM vehicle classes. MAG ABM network assignment data provided all road type distributions

for the MOVES runs for the conformity analysis. The matchup methods used in mapping the ABM vehicle classes to the MOVES source types are provided in Table 17.

TABLE 17.
MATCHUP TABLE FOR ABM VEHICLE CLASSES AND
MOVES SOURCE TYPES

MAG Activity-Based Model Vehicle Class	Source Type
MC (Motorcycle)	11. Motorcycle
LDV (Light Duty Vehicle)	21. Passenger Car 31. Passenger Truck
LGT (Light Commercial Truck)	32. Light Commercial Truck
BUS (Transit Bus)	42. Transit Bus
MED (Medium Duty Vehicle)	51. Refuse Truck 52. Single Unit Short-haul Truck 53. Single Unit Long-haul Truck 54. Motor Home
HVY (Heavy Duty Vehicle)	41. Other Buses 43. School Bus 61. Combination Short-haul Truck 62. Combination Long-haul Truck

The same road type distribution was used for the source types within a given transportation model vehicle class. The road type distributions to the MOVES source types used for Maricopa County and Pinal County in 2030 are provided in Table 18 and Table 19 as an example. For Table 18 and Table 19, road type distributions are identified as Off-network (road type ID 1), Rural Restricted Access (road type ID 2), Rural Unrestricted Access (road type ID 3), Urban Restricted Access (road type ID 4), and Urban Unrestricted Access (road type ID 5).

Average Speed Distribution

In MOVES, vehicle power, speed, and acceleration have a significant effect on vehicle emissions for all pollutants. The speed distribution is required for the MOVES inventory mode run, while the MOVES emission rate mode run uses the link-specific speed instead of the speed distribution. Since MAG uses the emission rate mode to calculate onroad emissions based on link-specific speeds and VMTs for road types 2 to 5, the speed distribution input was not used in the conformity analysis.

TABLE 18.
ROAD TYPE DISTRIBUTION FOR MARICOPA COUNTY IN 2030

ABM Vehicle Class	sourceTypeID	roadTypeID	roadTypeVMTFraction	
			Ozone Conformity	PM-10 Conformity
MC	11	1	0.00000	0.00000
		2	0.00949	0.00597
		3	0.05682	0.04192
		4	0.30430	0.31870
		5	0.62940	0.63341
LDV	21 31	1	0.00000	0.00000
		2	0.00919	0.00560
		3	0.03827	0.02765
		4	0.33522	0.34579
		5	0.61732	0.62096
LGT	32	1	0.00000	0.00000
		2	0.01617	0.01837
		3	0.06122	0.04356
		4	0.57762	0.59201
		5	0.34499	0.34606
BUS	42	1	0.00000	0.00000
		2	0.00000	0.00000
		3	0.00444	0.00497
		4	0.08934	0.08928
		5	0.90623	0.90575
MED	51 52 53 54	1	0.00000	0.00000
		2	0.04882	0.02008
		3	0.04725	0.03440
		4	0.60653	0.63808
		5	0.29740	0.30743
HVY	41 43	1	0.00000	0.00000
		2	0.08953	0.02041
		3	0.04402	0.02313
		4	0.54110	0.60198
		5	0.32535	0.35449
	61 62	1	0.00000	0.00000
		2	0.17910	0.04419
		3	0.04516	0.02568
		4	0.61366	0.73898
		5	0.16208	0.19115

TABLE 19.
ROAD TYPE DISTRIBUTION FOR PINAL COUNTY IN 2030

ABM Vehicle Class	sourceTypeID	roadTypeID	roadTypeVMTFraction	
			PM-10 Conformity	PM-2.5 Conformity
MC	11	1	0.00000	0.00000
		2	0.14763	0.05303
		3	0.31955	0.29993
		4	0.02083	0.00000
		5	0.51199	0.64704
LDV	21 31	1	0.00000	0.00000
		2	0.19070	0.04751
		3	0.29639	0.24543
		4	0.02628	0.00000
		5	0.48664	0.70707
LGT	32	1	0.00000	0.00000
		2	0.16210	0.05304
		3	0.38657	0.43759
		4	0.06840	0.00000
		5	0.38292	0.50937
BUS	42	1	0.00000	0.00000
		2	0.00000	0.00000
		3	0.28213	0.00000
		4	0.00000	0.00000
		5	0.71787	1.00000
MED	51 52 53 54	1	0.00000	0.00000
		2	0.49833	0.38716
		3	0.19992	0.25365
		4	0.09317	0.00000
		5	0.20858	0.35919
HVY	41 43	1	0.00000	0.00000
		2	0.65839	0.68940
		3	0.07519	0.11132
		4	0.15645	0.00000
		5	0.10996	0.19928
	61 62	1	0.00000	0.00000
		2	0.80980	0.86596
		3	0.04743	0.07170
		4	0.10909	0.00000
		5	0.03368	0.06233

The MAG Activity-Based Model transportation network assignment data provide link-specific data in the four time periods: AM peak (6:00-8:59), Mid-day (9:00-13:59), PM peak (14:00-17:59), Nighttime (0:00-5:59 and 18:00-23:59).

Fuel Data

In consultation with FHWA, the fuel formulation data are developed based on the MOVES4 default fuel parameters, the local gasoline Reid Vapor Pressure (RVP) regulatory values from the Arizona Department of Agriculture (AZDA), and the MOVES4 Fuel Wizard. The MOVES4 default gasoline fuel parameters for Maricopa County are obtained from the MOVES4 County Data Manager and are provided in Table 20 (Note: The MOVES4 default RVP parameters listed in Table 20 are for informational purposes only. Maricopa County regulatory RVP values are used in place of MOVES4 defaults as described further below). In June 2024, MAG conducted a series of sensitivity tests and found that the MOVES run with monthly average fuel data estimates more accurately estimated emissions than when using the MOVES run with seasonal average fuel data. Based on this finding, MAG used monthly average fuel data for this conformity analysis.

TABLE 20.
MARICOPA COUNTY MOVES4 DEFAULT GASOLINE PARAMETERS
BY MONTH

	Month											
Fuel Parameter	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
fuelFormulationID	9037	9037	9037	9038	9036	9036	9036	9036	9036	9038	9037	9037
fuelSubtypeID	12	12	12	12	12	12	12	12	12	12	12	12
RVP	13.05	13.05	13.05	10.18	7.30	7.30	7.30	7.30	7.30	10.18	13.05	13.05
sulfurLevel	4	4	4	3.5	3	3	3	3	3	3.5	4	4
ETOHVolume	10.2	10.2	10.2	9.95	9.7	9.7	9.7	9.7	9.7	9.95	10.2	10.2
MTBEVolume	0	0	0	0	0	0	0	0	0	0	0	0
ETBEVolume	0	0	0	0	0	0	0	0	0	0	0	0
TAMEVolume	0	0	0	0	0	0	0	0	0	0	0	0
aromaticContent	20.15	20.15	20.15	22.05	23.95	23.95	23.95	23.95	23.95	22.05	20.15	20.15
olefinContent	1.85	1.85	1.85	2.125	2.4	2.4	2.4	2.4	2.4	2.125	1.85	1.85
benzeneContent	0.58	0.58	0.58	0.59	0.60	0.60	0.60	0.60	0.60	0.59	0.58	0.58
e200	60.30	60.30	60.30	55.19	50.09	50.09	50.09	50.09	50.09	55.19	60.30	60.30
e300	89.43	89.43	89.43	88.37	87.32	87.32	87.32	87.32	87.32	88.37	89.43	89.43
BioDieselEsterVolume	0	0	0	0	0	0	0	0	0	0	0	0
CetaneIndex	0	0	0	0	0	0	0	0	0	0	0	0
PAHContent	0	0	0	0	0	0	0	0	0	0	0	0
T50	164	164	164	181.75	199.5	199.5	199.5	199.5	199.5	181.75	164	164
T90	303	303	303	308	313	313	313	313	313	308	303	303

Table 21 provides the modeling period of each conformity test and the regulatory gasoline RVPs provided by AZDA Weights and Measures.

TABLE 21.
REGULATORY RVP BY MONTH FOR GASOLINE IN MARICOPA COUNTY

Month	Averaged Reid Vapor Pressure (pounds per square inch)	Modeling Period of Ozone Conformity	Modeling Period of PM-10 Conformity
January	9		X
February	9		X
March	9		X
April	10		X
May	9	X	X
June	7	X	X
July	7	X	X
August	7	X	X
September	7	X	X
October	9		X
November	9		X
December	9		X

The MOVES4 Fuel Wizard adjusts the MOVES4 default gasoline fuel parameters in Table 20 using the regulatory Reid Vapor Pressure values provided in Table 21. The final gasoline fuel parameters adjusted by the MOVES4 Fuel Wizard with the regulatory RVPs for each month are given in Table 22.

The MOVES4 default gasoline fuel parameters for Pinal County were derived using the MOVES4 County Data Manager and are provided in Table 23.

TABLE 22.
MARICOPA COUNTY GASOLINE PARAMETERS BY MONTH

	Month											
Fuel Parameter	1	2	3	4	5	6	7	8	9	10	11	12
fuelFormulationID	9037	9037	9037	9038	9040	9036	9036	9036	9036	9039	9037	9037
fuelSubtypeID	12	12	12	12	12	12	12	12	12	12	12	12
RVP	9	9	9	10	9	7	7	7	7	9	9	9
sulfurLevel	4	4	4	3.5	3	3	3	3	3	3.5	4	4
ETOHVolume	10.2	10.2	10.2	9.95	9.7	9.7	9.7	9.7	9.7	9.95	10.2	10.2
MTBEVolume	0	0	0	0	0	0	0	0	0	0	0	0

Fuel Parameter	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
ETBEVolume	0	0	0	0	0	0	0	0	0	0	0	0
TAMEVolume	0	0	0	0	0	0	0	0	0	0	0	0
aromaticContent	20.15	20.15	20.15	22.05	23.95	23.95	23.95	23.95	23.95	22.05	20.15	20.15
olefinContent	1.85	1.85	1.85	2.13	2.40	2.40	2.40	2.40	2.40	2.13	1.85	1.85
benzeneContent	0.58	0.58	0.58	0.59	0.60	0.60	0.60	0.60	0.60	0.59	0.58	0.58
e200	58.26	58.26	58.26	58.45	54.06	49.47	49.47	49.47	49.47	56.16	58.26	58.26
e300	86.93	86.93	86.93	87.63	87.40	86.47	86.47	86.47	86.47	87.17	86.93	86.93
BioDieselEsterVolume	0	0	0	0	0	0	0	0	0	0	0	0
CetaneIndex	0	0	0	0	0	0	0	0	0	0	0	0
PAHContent	0	0	0	0	0	0	0	0	0	0	0	0
T50	183.0	183.0	183.0	182.6	191.5	200.9	200.9	200.9	200.9	187.3	183.0	183.0
T90	311.5	311.5	311.5	308.4	309.4	313.6	313.6	313.6	313.6	310.5	311.5	311.5

TABLE 23.
PINAL COUNTY MOVES4 DEFAULT GASOLINE FUEL PARAMETERS BY MONTH

Fuel Parameter	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
fuelFormulationID	9022	9022	9022	9023	9021	9021	9021	9021	9021	9023	9022	9022
fuelSubtypeID	12	12	12	12	12	12	12	12	12	12	12	12
RVP	10.5	10.5	10.5	10.5	10	10	10	10	10	10.5	10.5	10.5
sulfurLevel	7.71	7.71	7.71	8.12	7.15	7.15	7.15	7.15	7.15	8.12	7.71	7.71
ETOHVolume	10	10	10	10	10	10	10	10	10	10	10	10
MTBEVolume	0	0	0	0	0	0	0	0	0	0	0	0
ETBEVolume	0	0	0	0	0	0	0	0	0	0	0	0
TAMEVolume	0	0	0	0	0	0	0	0	0	0	0	0
aromaticContent	22.18	22.18	22.18	22.68	23.04	23.04	23.04	23.04	23.04	22.68	22.18	22.18
olefinContent	7.62	7.62	7.62	7.83	8.22	8.22	8.22	8.22	8.22	7.83	7.62	7.62
benzeneContent	0.67	0.67	0.67	0.67	0.70	0.70	0.70	0.70	0.70	0.67	0.67	0.67
e200	44.66	44.66	44.66	44.90	42.77	42.77	42.77	42.77	42.77	44.90	44.66	44.66
e300	84.08	84.08	84.08	84.38	83.86	83.86	83.86	83.86	83.86	84.38	84.08	84.08
BioDieselEsterVolume	0	0	0	0	0	0	0	0	0	0	0	0
CetaneIndex	0	0	0	0	0	0	0	0	0	0	0	0
PAHContent	0	0	0	0	0	0	0	0	0	0	0	0
T50	229.2	229.2	229.2	227.9	240.0	240.0	240.0	240.0	240.0	227.9	229.2	229.2
T90	325.1	325.1	325.1	323.9	326.1	326.1	326.1	326.1	326.1	323.9	325.1	325.1

The MOVES4 default gasoline fuel parameters for Pinal County are set for three distinct seasons: winter period (January, February, March, November, December), summer period (May, June, July, August, September), and transitional period (April and October).

Within Maricopa and Pinal counties, specific geographic areas designated as Area A and Area C have been created to implement different fuel parameter regulations. Area A includes wintertime and summertime RVP limits, while Area C only includes summertime RVP limits. A map showing Area A and Area C is included in Figure 5 below.

In Pinal County, a small portion of the West Pinal PM-10 Nonattainment Area is situated within Area A, whereas Area C encompasses the remaining portion, including the entirety of the West Central Pinal PM-2.5 Nonattainment Area and most of the PM-10 nonattainment area. The MOVES4 Fuel Wizard adjusts the MOVES4 default gasoline fuel parameters for each month using the Arizona monthly regulatory RVP values for both Area A and Area C in Table 24. Given in Table 25, the final two sets of gasoline fuel parameters adjusted by the MOVES4 Fuel Wizard with the regulatory RVPs for the 12 months were used for the West Pinal PM-10 and West Central Pinal PM-2.5 conformity tests.

TABLE 24.
ARIZONA REGULATORY RVP FOR AREA A AND AREA C BY MONTH FOR GASOLINE IN PINAL COUNTY

Month	Averaged Reid Vapor Pressure (pounds per square inch) for AREA A	Averaged Reid Vapor Pressure (pounds per square inch) for AREA C
January	9.0	13.5
February	9.0	13.5
March	9.0	11.5
April	10.0	10.0
May	9.0	10.0
June	7.0	7.0
July	7.0	7.0
August	7.0	7.0
September	7.0	7.0
October	9.0	10.0
November	9.0	11.5
December	9.0	13.5

Figure 5: Area A and Area C in Maricopa and Pinal Counties

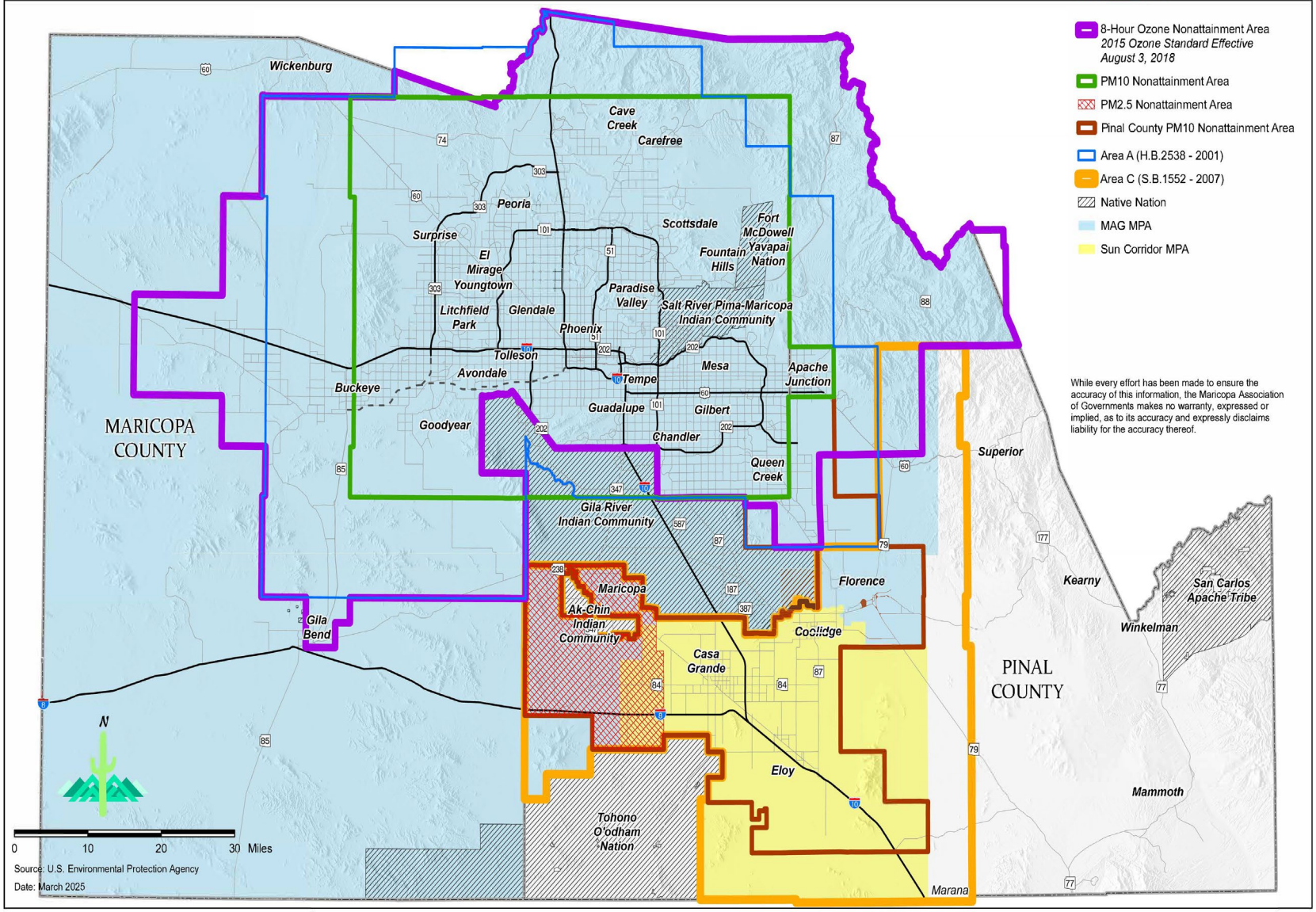


TABLE 25.
TWO SETS OF PINAL COUNTY GASOLINE PARAMETERS FOR PM-10 AND PM-2.5 CONFORMITY TESTS IN BOTH AREA A AND AREA C BY MONTH

	Month (AREA A)											
Fuel Parameter	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
fuelFormulationID	9023	9023	9023	9024	9025	9026	9026	9026	9026	9030	9023	9023
fuelSubtypeID	12	12	12	12	12	12	12	12	12	12	12	12
RVP	9	9	9	10	9	7	7	7	7	9	9	9
sulfurLevel	7.71	7.71	7.71	8.12	7.15	7.15	7.15	7.15	7.15	8.12	7.71	7.71
ETOHVolume	10	10	10	10	10	10	10	10	10	10	10	10
MTBEVolume	0	0	0	0	0	0	0	0	0	0	0	0
ETBEVolume	0	0	0	0	0	0	0	0	0	0	0	0
TAMEVolume	0	0	0	0	0	0	0	0	0	0	0	0
aromaticContent	22.18	22.18	22.18	22.68	23.04	23.04	23.04	23.04	23.04	22.68	22.18	22.18
olefinContent	7.62	7.62	7.62	7.83	8.22	8.22	8.22	8.22	8.22	7.83	7.62	7.62
benzeneContent	0.67	0.67	0.67	0.67	0.70	0.70	0.70	0.70	0.70	0.67	0.67	0.67
e200	32.16	32.16	32.16	35.11	28.00	23.41	23.41	23.41	23.41	32.82	32.16	32.16
e300	83.24	83.24	83.24	83.98	83.27	82.35	82.35	82.35	82.35	83.52	83.24	83.24
BioDieselEsterVolume	0	0	0	0	0	0	0	0	0	0	0	0
CetaneIndex	0	0	0	0	0	0	0	0	0	0	0	0
PAHContent	0	0	0	0	0	0	0	0	0	0	0	0
T50	236.2	236.2	236.2	230.2	244.7	254.1	254.1	254.1	254.1	234.9	236.2	236.2
T90	328.3	328.3	328.3	324.9	328.2	332.4	332.4	332.4	332.4	327.0	328.3	328.3

	Month (AREA C)											
Fuel Parameter	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
fuelFormulationID	9022	9022	9024	9023	9021	9020	9020	9020	9020	9023	9024	9022
fuelSubtypeID	12	12	12	12	12	12	12	12	12	12	12	12
RVP	13.5	13.5	11.5	10	10	7	7	7	7	10	11.5	13.5
sulfurLevel	7.71	7.71	7.71	8.12	7.15	7.15	7.15	7.15	7.15	8.12	7.71	7.71
ETOHVolume	10	10	10	10	10	10	10	10	10	10	10	10
MTBEVolume	0	0	0	0	0	0	0	0	0	0	0	0
ETBEVolume	0	0	0	0	0	0	0	0	0	0	0	0
TAMEVolume	0	0	0	0	0	0	0	0	0	0	0	0
aromaticContent	22.18	22.18	22.18	22.68	23.04	23.04	23.04	23.04	23.04	22.68	22.18	22.18
olefinContent	7.62	7.62	7.62	7.83	8.22	8.22	8.22	8.22	8.22	7.83	7.62	7.62
benzeneContent	0.67	0.67	0.67	0.67	0.70	0.70	0.70	0.70	0.70	0.67	0.67	0.67
e200	42.49	42.49	37.90	35.11	42.77	23.41	23.41	23.41	23.41	35.11	37.90	42.49

Fuel Parameter	Month (AREA C)											
	1	2	3	4	5	6	7	8	9	10	11	12
e300	85.33	85.33	84.40	83.98	83.86	82.35	82.35	82.35	82.35	83.98	84.40	85.33
BioDieselEsterVolume	0	0	0	0	0	0	0	0	0	0	0	0
CetaneIndex	0	0	0	0	0	0	0	0	0	0	0	0
PAHContent	0	0	0	0	0	0	0	0	0	0	0	0
T50	215.1	215.1	224.5	230.2	240.0	254.1	254.1	254.1	254.1	230.2	224.5	215.1
T90	318.8	318.8	323.0	324.9	326.1	332.4	332.4	332.4	332.4	324.9	323.0	318.8

Alternative Vehicle Fuel and Technologies (AVFT) Data

The AVFT table is used to adjust fuel type distributions to reflect local information, such as vehicle registration data. The AVFT table was derived using ERG's vehicle classification scripts, ADOT 2024 vehicle registration data, transit bus data from public transit providers, and the MOVES4 default AVFT to adjust fuel type distributions for the conformity analysis in Maricopa and Pinal counties.

ERG's vehicle classification scripts generate the AVFT table from the VIN decoded registration data for most source types, except long-haul truck (source types 53 and 62) and transit bus (source type 42). The AVFT table for the long-haul truck was obtained from the MOVES4 default AVFT. The AVFT table for transit bus was developed using the 2024 transit bus data from Valley Metro, City of Phoenix, City of Scottsdale, and City of Glendale, which include the number of buses by model year and fuel type, as shown in Table 26.

TABLE 26.
TRANSIT BUS DATA IN MARICOPA COUNTY

Model Year	Diesel	LNG	CNG	Unleaded	Bio-Diesel	Hybrid	Total
2009	-	7	-	-	-	-	7
2010	-	-	-	-	-	-	-
2011	-	-	22	-	-	15	37
2012	-	-	36	-	-	-	36
2013	-	-	41	1	-	1-	52
2014	2	-	-	3	-	-	5
2015	-	-	-	1	-	-	1
2016	21	-	91	-	-	-	112
2017	29	-	91	2	-	-	122
2018	15	-	1-9	3	-	-	127
2019	4-	-	48	-	-	-	88

Model Year	Diesel	LNG	CNG	Unleaded	Bio-Diesel	Hybrid	Total
2020	85	-	46	25	-	-	156
2021	2-	-	41	11	-	-	72
2022	-	-	14	17	-	-	31
2023	-	-	5-	61	-	-	111
2024	-	-	17	25	-	2-	62
TOTAL	**212**	**7**	**606**	**149**	**0**	**45**	**1,019**

MOVES AVFT input requires fuel engine fraction by source type and model year. Fuel engine fraction for transit bus is calculated based on transit bus population by fuel type for each model year. Table 27 shows the MOVES AVFT inputs that were used in the conformity analyses for the Maricopa ozone and PM-10 nonattainment areas.

TABLE 27.
ADJUSTED MOVES AVFT INPUTS FOR TRANSIT BUS IN MARICOPA COUNTY

sourceTypeID	modelYearID	fuelTypeID	engTechID	fuelEngFraction
42	2009	1	1	0.00000
42	2009	2	1	0.00000
42	2009	3	1	1.00000
42	2010	1	1	0.15730
42	2010	2	1	0.81315
42	2010	3	1	0.02955
42	2011	1	1	0.00000
42	2011	2	1	0.40541
42	2011	3	1	0.59459
42	2012	1	1	0.00000
42	2012	2	1	0.00000
42	2012	3	1	1.00000
42	2013	1	1	0.01923
42	2013	2	1	0.19231
42	2013	3	1	0.78846
42	2014	1	1	0.60000
42	2014	2	1	0.40000
42	2014	3	1	0.00000
42	2015	1	1	1.00000
42	2015	2	1	0.00000
42	2015	3	1	0.00000
42	2016	1	1	0.00000
42	2016	2	1	0.18750

sourceTypeID	modelYearID	fuelTypeID	engTechID	fuelEngFraction
42	2016	3	1	0.81250
42	2017	1	1	0.01639
42	2017	2	1	0.23770
42	2017	3	1	0.74590
42	2018	1	1	0.02362
42	2018	2	1	0.11811
42	2018	3	1	0.85827
42	2019	1	1	0.00000
42	2019	2	1	0.45455
42	2019	3	1	0.54545
42	2020	1	1	0.16026
42	2020	2	1	0.54487
42	2020	3	1	0.29487
42	2021	1	1	0.15278
42	2021	2	1	0.27778
42	2021	3	1	0.56944
42	2022	1	1	0.54839
42	2022	2	1	0.00000
42	2022	3	1	0.45161
42	2023	1	1	0.54955
42	2023	2	1	0.00000
42	2023	3	1	0.45045
42	2024	1	1	0.40323
42	2024	2	1	0.32258
42	2024	3	1	0.27419

The Pinal County 2024 transit bus data were obtained from the Arizona Department of Transportation (ADOT) in February 2025. For the conformity analysis for the West Pinal PM-10 and West Central Pinal PM-2.5 nonattainment areas, the Pinal County 2024 transit bus data is provided in Table 28.

TABLE 28.
TRANSIT BUS DATA IN PINAL COUNTY

	2024 Transit Bus Data	
Model Year	Gasoline	Diesel
2007	1	0
2008	0	0
2009	0	3
2010	0	0

Model Year	2024 Transit Bus Data	
	Gasoline	Diesel
2011	0	0
2012	0	0
2013	0	0
2014	2	1
2015	4	0
2016	0	0
2017	0	0
2018	4	1
2019	1	0
2020	3	0
2021	0	2
2022	0	0
2023	0	0
2024	1	0
TOTAL	23	

MOVES4 AVFT input requires fuel engine fraction (e.g. gasoline or diesel) by source type and model year. Fuel engine fraction for transit bus was calculated based on transit bus population by fuel type for each model year. Table 29 shows the MOVES AVFT 2024 inputs for the conformity analysis for the West Pinal PM-10 and West Central Pinal PM-2.5 nonattainment areas.

TABLE 29.
ADJUSTED MOVES AVFT INPUTS FOR TRANSIT BUS IN PINAL COUNTY

sourceTypeID	modelYearID	fuelTypeID	engTechID	fuelEngFraction
42	2007	1	1	1.00000
42	2007	2	1	0.00000
42	2007	3	1	0.00000
42	2008	1	1	0.15051
42	2008	2	1	0.75128
42	2008	3	1	0.09821
42	2009	1	1	0.00000
42	2009	2	1	1.00000
42	2009	3	1	0.00000
42	2010	1	1	0.15730
42	2010	2	1	0.81315
42	2010	3	1	0.02955

sourceTypeID	modelYearID	fuelTypeID	engTechID	fuelEngFraction
42	2011	1	1	0.20020
42	2011	2	1	0.69603
42	2011	3	1	0.10377
42	2012	1	1	0.20082
42	2012	2	1	0.72171
42	2012	3	1	0.07746
42	2013	1	1	0.17748
42	2013	2	1	0.71616
42	2013	3	1	0.10636
42	2014	1	1	0.66667
42	2014	2	1	0.33333
42	2014	3	1	0.00000
42	2015	1	1	1.00000
42	2015	2	1	0.00000
42	2015	3	1	0.00000
42	2016	1	1	0.13791
42	2016	2	1	0.80279
42	2016	3	1	0.05931
42	2017	1	1	0.13791
42	2017	2	1	0.80279
42	2017	3	1	0.05931
42	2018	1	1	0.80000
42	2018	2	1	0.20000
42	2018	3	1	0.00000
42	2019	1	1	1.00000
42	2019	2	1	0.00000
42	2019	3	1	0.00000
42	2020	1	1	1.00000
42	2020	2	1	0.00000
42	2020	3	1	0.00000
42	2021	1	1	0.00000
42	2021	2	1	1.00000
42	2021	3	1	0.00000
42	2022	1	1	0.13791
42	2022	2	1	0.80279
42	2022	3	1	0.05931
42	2023	1	1	0.13791
42	2023	2	1	0.80279
42	2023	3	1	0.05931
42	2024	1	1	1.00000

sourceTypeID	modelYearID	fuelTypeID	engTechID	fuelEngFraction
42	2024	2	1	0.00000
42	2024	3	1	0.00000

MOVESLink4

MOVESLink4 processes link data files output by the MAG transportation models. The program calculates emissions for roadway links in the MAG highway networks, which include all of Maricopa and Pinal counties. Traffic volumes for four time periods (AM peak, mid-day, PM peak, and nighttime) for each link are converted into hourly volumes based upon traffic count data collected in Maricopa and Pinal counties. Hourly emission factors are developed by running MOVES4 for each facility type, area type, and vehicle class using link speeds by time of day.

The transportation model inputs to MOVESLink4 consist of database formatted files that contain link-specific data and node coordinate definitions. MOVESLink4 also requires the following data as input:

- A table containing adjustment factors used to allocate traffic volumes for four time periods to hourly traffic volumes.
- A matrix of emission factors for a range of hours, facility types, area types, vehicle classes, and vehicle ages (generated by the MOVES model).
- The ratio of vehicles participating in the I/M program.
- The year being modeled.
- The regulatory fuel RVP values and MOVES default fuel parameters adjusted by the MOVES Fuel Wizard.
- The annual transit bus data for natural gas, gasoline, and diesel fuels.

For the MAG Conformity Analysis, the applicable conformity tests in Maricopa County for eight-hour ozone and PM-10 are the conformity budget tests for 2026, 2030, 2040, and 2050. MOVES4 and MOVESLink4 were applied to estimate vehicle emissions for ozone precursors VOC and NOx, and PM-10.

The MOVES4 model was used to estimate VOC and NOx emission factors specific to hour of the day, area type, facility type, vehicle class, and domain temperatures. The factors were output by MOVES4 vehicle emission processes such as exhaust running, evaporative resting, and crankcase evaporative emissions. These emission factors and traffic data (vehicle miles of travel and speeds by link) generated by the MAG Activity-Based transportation model were used by the MOVESLink4 program to estimate the motor vehicle emissions for the eight-hour ozone nonattainment area.

The MOVES4 model was used to estimate PM-10 emissions from vehicle exhaust, tire wear, and brake wear. Traffic data (vehicle miles of travel and speeds by link) were generated by the MAG Activity-Based transportation model. GIS was used to derive VMT and vehicle speed by link for the Maricopa County PM-10 Nonattainment Area. MOVESLink4 model was used to calculate vehicle exhaust, tire wear, and brake wear emissions for the PM-10 nonattainment area using MOVES4 emission factors and the traffic data.

The applicable conformity tests for PM-10 in the West Pinal PM-10 Nonattainment Area and PM-2.5 and NOx in the West Central Pinal PM-2.5 Nonattainment Area are the Action/Baseline scenario analyses for 2030, 2040, and 2050. MOVES4 and MOVESLink4 were applied to estimate vehicle emissions for PM-10, PM-2.5, and NOx.

Traffic data (vehicle miles of travel and speeds by link) were generated with the MAG transportation models. GIS was used to derive VMT and vehicle speed by link for the West Pinal PM-10 and West Central Pinal PM-2.5 nonattainment areas. The MOVESLink4 model was used to calculate vehicle exhaust, tire wear and brake wear emissions for each nonattainment area using MOVES4 emission factors and the traffic data.

For this conformity analysis, MAG utilized monthly average meteorological and fuel inputs and processed MOVES4 for each month of the selected season resulting in a more accurate estimate of emissions. As a post processing step, MOVESLink4 model calculated the weighted seasonal average emissions for each day type (weekday and weekend) from the monthly average results by weighting the number of days for each month for the selected season. Finally, MOVESLink4 model calculated the weighted seasonal average day emissions by weighting the number of days for each day type.

On October 4, 2024, MAG staff discussed changes to the HPMS reconciliation factor and the use of monthly average meteorological data that more accurately estimate emissions with EPA and FHWA. EPA and FHWA concurred with both proposed changes for regional emissions analyses.

AP-42

PM-10 emission factors for reentrained dust from vehicles traveling on unpaved and paved roads in the Maricopa County and West Pinal PM-10 nonattainment areas are calculated using the latest equations found in Sections 13.2.2 and 13.2.1.3, respectively, of AP-42, EPA Compilation of Air Pollutant Emission Factors. The AP-42 equation for paved roads was revised by EPA in January 2011. The unpaved and paved road emission factors are multiplied by vehicle miles of travel to estimate unpaved and paved road emissions. The following two sections discuss the assumptions used to calculate PM-10 emissions from unpaved and paved roads.

Paved and unpaved road PM-2.5 emissions were not estimated for the West Central Pinal PM-2.5 Nonattainment Area, because Section 93.119(f)(8) of the EPA transportation conformity regulations indicates that reentrained road dust only needs to be included in the conformity analysis for PM-2.5 nonattainment areas if EPA or the Arizona Department of Environmental Quality have made a finding and notified MAG and the U.S. Department of Transportation that these sources are a significant contributor to the PM-2.5 problem.

PM-10 Emissions from Public and Private Unpaved Roads

The AP-42 equation that calculates PM-10 emission factors for unpaved road fugitive dust requires as input the road surface material silt content, road surface moisture content, average vehicle speed, and the annual number of wet days (with at least 0.01 inch of precipitation). For public and private unpaved roads in the Maricopa County PM-10 Nonattainment Area the values for these inputs are shown below in Table 30. These inputs are consistent with the assumptions used in the MAG 2012 Five Percent Plan for PM-10.

TABLE 30.
UNPAVED ROAD REENTRAINED PM-10 EMISSION INPUTS IN THE MARICOPA COUNTY PM-10 NONATTAINMENT AREA

Road Type	k (lb/mi)	s (%)	S (mph)	M (%)	C (lb/mi)	P (Wet Days)
Public Road	1.8	11.9	25	0.5	0.00047	32
Private Road	1.8	11.9	20	0.5	0.00047	32
Alleys	1.8	11.9	10	0.5	0.00047	32

The AP-42 emission factors for unpaved roads are multiplied by the vehicle miles traveled (VMT) on public and private unpaved roads and alleys in the Maricopa County PM-10 Nonattainment Area. The vehicle miles of travel for public and private unpaved roads are derived initially from MAG studies conducted in 2009 and 2011. MAG utilized traffic counts on unpaved roads, supplemented by Geographic Information Systems (GIS) image recognition techniques, to estimate the daily VMT on public unpaved roads. The estimates have been updated annually since 2011. The latest 2022 inventory of unpaved roads indicated that there were 324.0 miles of public unpaved roads, 946.0 miles of private unpaved roads, and 650.0 miles of unpaved alleys in the Maricopa County PM-10 Nonattainment Area.

Since the miles of the private unpaved roads from the 2011 – 2022 MAG Unpaved Road Inventory decreased slightly, the miles of private unpaved roads in the PM-10 nonattainment area after 2022 have been held constant, to be conservative. No annual growth rate will be applied to the miles of private unpaved roads in the PM-10 nonattainment area. Emissions reduction credit for unpaved road and alley projects are described further in the section below entitled Emission Reductions.

For the West Pinal PM-10 Nonattainment Area, the AP-42 inputs for public unpaved roads are provided in Table 31 and the AP-42 inputs for private unpaved roads are provided in Table 32. Average vehicle speeds are available for five classes of public unpaved roads (Classes A-E) and are identical to the average speeds used in the 2017 Base Year PM-10 Emissions Inventory for the West Pinal County Serious PM-10 Nonattainment Area, December 2023. The 2017 Base Year PM-10 Emissions Inventory was used in the development of the 2023 Five Percent Particulate Plan for PM-10 for the West Pinal County Nonattainment Area. For the five classes, Class A represents the lowest average daily traffic (ADT) roads and Class E represents the highest ADT roads.

TABLE 31.
WEST PINAL PM-10 NONATTAINMENT AREA PUBLIC UNPAVED ROADS
(2017 BASE YEAR INVENTORY DATA)

	k	s	S	M	C	P	ADT	Miles
	lb/mi	%	mph	%	lb/mi	wet days		
Class A	1.8	7.1	29	0.3	0.00047	25	15	7.22
Class B	1.8	7.1	44	0.3	0.00047	25	53	324.10
Class C	1.8	7.1	37	0.3	0.00047	25	104	14.63
Class D	1.8	7.1	47	0.3	0.00047	25	160	21.3
Class E	1.8	7.1	40	0.3	0.00047	25	485	7.18

TABLE 32.
WEST PINAL PM-10 NONATTAINMENT AREA PRIVATE UNPAVED ROADS
(2017 BASE YEAR INVENTORY DATA)

	k	s	S	M	C	P	ADT	Miles
	lb/mi	%	mph	%	lb/mi	wet days		
Non-Irrigation Roads	1.8	14.4	25	0.3	0.00047	25	29	1,027.54
Alleys	1.8	14.4	10	0.3	0.00047	25	4	51.88

PCAQCD provided a GIS shapefile in 2021 that contained the lengths and ADT for all public unpaved roads within the nonattainment area. Using the data from this shapefile and the AP-42 equation values, 2017 base year emissions for all public unpaved roads were calculated. To be consistent with the 2023 Five Percent Particulate Plan for PM-10, for the Action/Baseline analysis years, the same values used to calculate 2017 base year emissions are used, with the exception of grown ADT values. Consistent with assumptions in the 2023 Five Percent Particulate Plan for PM-10, 2030, 2040 and 2050 ADT on each public unpaved road is grown from 2017 ADT by using the VMT growth rate observed on paved low-ADT arterials from the Action and Baseline scenarios as a surrogate.

In addition to growing ADT of public unpaved roads by the growth rate described above, unpaved public roads that have been paved since 2017 have been removed. In the committed controls for the 2023 Five Percent Particulate Plan for PM-10, beginning in 2023, all unpaved public roads with ADT above 26 are required to be either paved or stabilized. The 2023 Five Percent Particulate Plan for PM-10 assumes that beginning in 2024, implementation of these committed controls will result in combined emission reduction benefits equivalent to the paving of 15 miles per year and the stabilization of 15 miles per year as documented in the Technical Support Document for the 2023 Five Percent Particulate Plan for PM-10. This assumption is carried forward into future years until all unpaved roads with ADT above 26 are paved or stabilized.

For the Action scenario, the control assumptions for public unpaved roads from the 2023 Five Percent Particulate Plan for PM-10 are applied without any modification. For the Baseline scenario, the control assumptions are reduced in the future, as under a Baseline scenario less funds are allocated for the paving and stabilizing of unpaved roads, and less new paved roads are being built, which increases and forces increased traffic onto existing unpaved roads. To account for this, under a Baseline scenario, it is assumed that emissions reductions equivalent to the paving and stabilizing of 10 miles per year are occurring, instead of the 15 miles per year assumed in the 2023 Five Percent Particulate Plan for PM-10.

On January 15, 2025, EPA and FHWA concurred with the assumption of reducing the number of unpaved roads paved under the Baseline scenarios to 10 miles per year. MAG explained that this assumption is reasonable because new road paving projects that would normally be included and identified for funding in a TIP under an Action scenario (for example, paving projects funded with CMAQ funds) are not to be included in the status quo Baseline scenario. As such, it is very reasonable to assume that without the identification and funding for paving projects that exist in the Action scenario, the Baseline scenario will not be able to fund the paving of public unpaved roads beyond present activities, or at a rate that would be equal to the Action scenario. In fact, it would not be unreasonable to assume that no new paving projects would continue under the Baseline scenario, as there would be no funding identified for these paving projects. However, to keep assumptions conservative in estimating emissions for a Baseline scenario, road paving projects were only reduced by 33%, from the 15 miles per year expected in the Action scenario, resulting in the 10 miles per year currently assumed in the Baseline scenario. While the requirement to control PM-10 emissions from public unpaved roads with ADT above 26 exists under both an Action and a Baseline scenario, the rate at which public unpaved roads are either paved or stabilized will be different under each scenario given the project identification and funding limitations of a Baseline scenario. For example, an unpaved road that is scheduled to be paved with CMAQ funding under the Action scenario, may only be able to be stabilized under a Baseline scenario if funding for paving has not been identified. In general, stabilization only provides 50% of the emission reduction benefits that paving provides, thus resulting in different emissions under the Baseline or Action scenario.

The ADT is multiplied by the miles to calculate VMT. The VMT is multiplied by the AP-42 emission factor to obtain the PM-10 unpaved road emissions for each of the five road type classifications (Classes A-E).

As described in the 2023 Five Percent Particulate Plan for PM-10 motor vehicle emissions budgets, private unpaved roads include non-irrigation roads and alleys. Consistent with the assumptions in the 2023 Five Percent Particulate Plan for PM-10, it is assumed that there is no growth in VMT from private unpaved roads from the 2017 base year PM-10 emissions for either the Action scenario or the Baseline scenario. To calculate 2030, 2040, and 2050 PM-10 emissions from private unpaved roads, 2017 base year PM-10 emissions are held constant. The 2023 Five Percent Particulate Plan for PM-10 assumes that the committed control measures for unpaved roads will only be applied to public unpaved roads due to the financial difficulties in using public funds on private roads. If a private unpaved road becomes paved, or becomes a public unpaved road, those emissions are removed from the private unpaved road inventory. After accounting for known paving, private unpaved road emissions in 2030, 2040 and 2050 are identical for the Action and Baseline scenarios.

For this updated methodology, PM-10 emissions from unpaved agricultural roads (e.g. irrigation canal roads, harvest roads, etc.) are no longer included in the Action/Baseline scenarios as these roads have not been included in the motor vehicle emissions budget in the 2023 Five Percent Particulate Plan for PM-10.

PM-10 Emissions for Reentrained Dust from Paved Roads

For the Maricopa County PM-10 Nonattainment Area, the AP-42 equation that calculates PM-10 emission factors for paved road fugitive dust requires as input the road surface silt loading, the average weight of vehicles traveling on paved roads, and the annual number of wet days (with at least 0.01 inch of precipitation). These values are shown in Table 33 below.

For the silt loadings, paved roads are split into three classes: freeways, with a silt loading of 0.02 grams per square meter; high-traffic arterials (non-freeways carrying 10,000 vehicles or more per average weekday), with a silt loading of 0.067 grams per square meter; and low-traffic arterials (non-freeways carrying less than 10,000 vehicles per average weekday), with a silt loading of 0.23 grams per square meter. These silt loadings are consistent with the MAG 2012 Five Percent Plan for PM-10.

Since the silt loadings are stratified by road type, vehicle weights are estimated separately for freeways and arterials for each analysis year. The average vehicle weights for freeways and arterials were calculated using MOVES4 Source Type (i.e., vehicle class) output, based on vehicle registrations for Maricopa County and the latest traffic assignment data for each year. The average vehicle weights for freeways and arterials in units of tons, are shown in Table 33 below.

The AP-42 equation for paved roads uses the assumptions above to estimate PM-10 emission factors in grams per vehicle mile of travel (VMT). The AP-42 emission factors for paved roads are multiplied by the VMT for freeways, high-traffic arterials, and low-traffic arterials to calculate uncontrolled paved road emissions. The VMTs for freeways and high and low traffic arterials in the Maricopa County PM-10 Nonattainment Area are derived from the MAG transportation model for each analysis year and are also shown in Table 33.

TABLE 33.
PAVED ROAD REENTRAINED PM-10 EMISSIONS IN THE MARICOPA COUNTY PM-10 NONATTAINMENT AREA

Year	Facility Type	k g/mi	sL g/m2	W tons	P* wet days	N days in yr	E g/vmt	VMT mile/day
2026	Freeway	1.00	0.02	3.97	32	365	0.11	49,096,408
	High ADT Arterial	1.00	0.07	2.65	32	365	0.23	49,816,196
	Low ADT Arterial	1.00	0.23	2.65	32	365	0.69	16,588,526
2030	Freeway	1.00	0.02	4.02	32	365	0.11	52,974,140
	High ADT Arterial	1.00	0.07	2.67	32	365	0.23	54,037,256
	Low ADT Arterial	1.00	0.23	2.67	32	365	0.70	17,396,486
2040	Freeway	1.00	0.02	4.17	32	366	0.12	60,811,667
	High ADT Arterial	1.00	0.07	2.70	32	366	0.23	61,913,387
	Low ADT Arterial	1.00	0.23	2.70	32	366	0.71	18,678,459
2050	Freeway	1.00	0.02	4.33	32	365	0.12	66,919,962
	High ADT Arterial	1.00	0.07	2.72	32	365	0.23	67,671,791
	Low ADT Arterial	1.00	0.23	2.72	32	365	0.71	19,390,915

For the West Pinal PM-10 Nonattainment Area, the estimation of PM-10 emissions for reentrained dust from paved roads are also based on the AP-42 equation released by EPA in January 2011 and are consistent with the data inputs and control assumptions described in the 2023 Five Percent Particulate Plan for PM-10.

The AP-42 equation that calculates PM-10 emission factors for paved road fugitive dust requires as input the road surface silt loading, the average weight of vehicles traveling on paved roads, and the number of wet days (with at least 0.01 inch of precipitation). These values are shown in Table 34 below for the Action scenarios and Table 35 for the Baseline scenarios.

The silt loadings were derived from the MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area and were used in the development of the motor vehicle emissions budgets in the 2023 Five Percent Particulate Plan for PM-10. Since the silt loadings are stratified by road type, vehicle weights are estimated separately for freeways and arterials for each analysis year. The average vehicle weights for freeways and arterials were calculated using MOVES4 Source Type (i.e., vehicle class) output, based on vehicle registrations for Pinal County and the latest traffic assignment data for each year for the Action and Baseline scenarios. The average vehicle weights for freeways and arterials in units of tons, are shown in Table 34 below for the Action scenarios and in Table 35 for the Baseline scenarios.

TABLE 34.
PAVED ROAD REENTRAINED PM-10 EMISSIONS IN THE WEST PINAL PM-10 NONATTAINMENT AREA (ACTION SCENARIO)

Year	Facility Type	k g/mi	sL g/m2	W tons	P* wet days	N days in yr	E g/vmt	VMT mile/day
2026	Freeway	1.00	0.02	8.13	25	365	0.24	2,200,444
	High ADT Arterial	1.00	0.07	2.68	25	365	0.23	1,581,866
	Low ADT Arterial	1.00	0.23	2.68	25	365	0.70	2,860,707
2030	Freeway	1.00	0.02	8.24	25	365	0.25	2,447,757
	High ADT Arterial	1.00	0.07	2.67	25	365	0.23	2,280,319
	Low ADT Arterial	1.00	0.23	2.67	25	365	0.72	3,215,842
2040	Freeway	1.00	0.02	8.65	25	366	0.27	3,243,277
	High ADT Arterial	1.00	0.07	2.73	25	366	0.23	4,175,162
	Low ADT Arterial	1.00	0.23	2.73	25	366	0.72	4,031,214
2050	Freeway	1.00	0.02	9.17	25	365	0.24	4,337,072
	High ADT Arterial	1.00	0.07	2.74	25	365	0.23	6,609,502
	Low ADT Arterial	1.00	0.23	2.74	25	365	0.71	4,716,698

TABLE 35.
PAVED ROAD REENTRAINED PM-10 EMISSIONS IN THE WEST PINAL PM-10 NONATTAINMENT AREA (BASELINE SCENARIO)

Year	Facility Type	k g/mi	sL g/m2	W tons	P* wet days	N days in yr	E g/vmt	VMT mile/day
2030	Freeway	1.00	0.02	8.29	25	365	0.24	2,521,041
	High ADT Arterial	1.00	0.07	2.60	25	365	0.22	2,299,828
	Low ADT Arterial	1.00	0.23	2.60	25	365	0.68	2,885,005
2040	Freeway	1.00	0.02	8.75	25	366	0.26	3,466,971
	High ADT Arterial	1.00	0.07	2.57	25	366	0.22	3,955,598
	Low ADT Arterial	1.00	0.23	2.57	25	366	0.67	3,395,552
2050	Freeway	1.00	0.02	9.13	25	365	0.27	4,762,224
	High ADT Arterial	1.00	0.07	2.55	25	365	0.22	5,729,411
	Low ADT Arterial	1.00	0.23	2.55	25	365	0.67	3,987,291

A control factor based upon the control effectiveness assumptions in the 2023 Five Percent Plan is equally applied to both the resulting Action and Baseline AP-42 emission factors to reflect the adopted controls in the 2023 Five Percent Particulate Plan for PM-10.

In addition to AP-42 emission factors for freeways, high ADT arterials, and low ADT arterials, the 2023 Five Percent Particulate Plan for PM-10 also includes paved road reentrained dust PM-10 emissions from asphalt rock dust palliative (ARDP, often referred to as “chip-sealed” roads) roads. Consistent with the 2023 Five Percent Particulate Plan for PM-10, ARDP roads are assumed to emit reentrained road dust at a rate 10 percent higher than traditionally paved roads, since ARDP roads require more upkeep to maintain. ARDP roads are assumed to have the same silt loading content as low ADT arterials. The same paved road control factors applied to traditionally paved roads are also applied to ARDP roads, consistent with the assumptions in the 2023 Five Percent Particulate Plan

for PM-10.

The Action and Baseline AP-42 emission factors for paved roads are multiplied by the VMT for freeways, high traffic arterials, low traffic arterials and ARDP roads to obtain total paved road emissions. The VMTs for freeways and high and low traffic arterials for the Action and Baseline scenarios are derived from the MAG transportation model traffic assignments. All centroid connectors are considered low traffic arterials. VMT on ARDP roads is grown from the 2017 base year inventory data based upon the growth rate of low ADT arterials from 2017 to the analysis years, as the ABM network assignments do not provide VMT estimates for ARDP roads.

Road Construction

As required under 40 CFR 93.122(e) of the transportation conformity rule, PM-10 emission estimates from road construction in the Maricopa County PM-10 Nonattainment Area are included in the MAG Conformity Analysis. Previously, PM-10 emissions from road construction were extracted from the Maricopa County 2023 Periodic Emissions Inventory for PM-10 and were held constant for all analysis years. On March 6, 2025, EPA and FHWA concurred with a new approach to estimate road construction dust emissions from the network assignment data. MAG reviewed how other agencies calculate road construction emissions for their conformity analyses and developed a new calculation method to estimate road construction dust emissions from the ABM network assignments. The new calculation method is based on a CARB methodology which multiplies an average project duration, an emission rate, and acres disturbed by new road built. Then control efficiency and rule effectiveness are applied to the emission estimates. In the new calculation method, the average project duration is 12 months, emission rates of 0.265 tons/acre-month, control efficiency of 90%, and rule effectiveness 87.63% are obtained from the Maricopa County 2023 Periodic Emissions Inventory for PM-10. In the Maricopa County PM-10 Nonattainment area, daily emissions are derived from annual calculations using a 365-day period.

The same approach was applied to calculate PM-10 emissions from road construction in the West Pinal PM-10 Nonattainment Area for the Action scenarios. As outlined in the 2023 Five Percent Particulate Plan for PM-10, the average project duration is 12 months, with emission rates of 0.265 tons/acre-month, control efficiency of 90%, and rule effectiveness of 90%. For the Baseline scenario, road construction emissions are assumed to be zero since no new construction is anticipated in future analysis years, as specified in the 2023 Five Percent Particulate Plan for PM-10.

Road construction emissions for the West Central Pinal PM-2.5 Nonattainment Area were not included in the Action/Baseline scenarios per 40 CFR 93.122(f), as there is no implementation plan that identifies construction-related PM-2.5 emissions as a significant contributor to the PM-2.5 nonattainment problem.

Emission Reductions

The MAG Conformity Analysis for the Maricopa County PM-10 Nonattainment Area includes credit for measures and projects that reduce PM-10 emissions. The PM-10 reductions assumed in the MAG Conformity Analysis for the Maricopa County PM-10 Nonattainment Area are described below. No additional emission reductions for the West Pinal PM-10 Nonattainment Area have been applied beyond what has been described in the prior sections.

PM-10 Certified Street Sweepers - In the MAG Conformity Analysis, emission reduction credit is taken for PM-10 certified street sweepers that have been purchased to replace conventional sweepers, increase the frequency of sweeping, and expand the area swept in the Maricopa County PM-10 Nonattainment Area. The purchase of PM 10 certified street sweeper projects supports the measure “PM-10 Efficient Street Sweepers” in the Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area. In addition, the MAG 2012 Five Percent Plan for PM 10 for the Maricopa County Nonattainment Area includes PM-10 Certified Street Sweepers.

In every year since 2001, MAG has programmed Congestion Mitigation and Air Quality Improvement (CMAQ) Program funds or other funding sources for the purchase of PM-10 certified street sweepers. There is approximately $8.8 million in CMAQ funds in the MAG FY 2025-2030 TIP to purchase PM-10 certified street sweepers. After the FY 2025-2030 TIP, it will be assumed in the conformity analysis that MAG will continue to fund PM-10 certified sweepers annually through the RTP year of 2050.

An inventory conducted by MAG for the period ending June 30, 2024, indicated that 133 PM-10 certified street sweepers are in operation by MAG member agencies in the Maricopa County PM-10 Nonattainment Area. The methodology used in calculating the benefit of these sweepers is consistent with that used in the MAG 2012 Five Percent Plan for PM-10. For all conformity analysis years, the benefit of the CMAQ-funded sweepers is increased in direct proportion to the annual growth in VMT on arterials in the Maricopa County PM-10 Nonattainment Area; this reflects the fact that arterials being swept with PM-10 certified street sweepers are projected to continue having higher traffic volumes in future years.

In addition, ADOT has contracted for sweeping services for the sweeping and sweeping frequency of specific freeways, ramps and frontage roads in the Maricopa County PM-10 Nonattainment Area with PM-10 certified street sweepers. The emission reduction credit for sweeping the specific freeways, ramps and frontage roads identified in the 2020 ADOT contract was calculated by multiplying the VMT derived from the MAG transportation model output on these freeways, ramps, and frontage roads by PM-10 emission factors for the sweeping cycles for each conformity analysis year.

In the MAG 2012 Five Percent Plan for PM-10, virtually all conventional sweepers had been replaced with PM-10 certified street sweepers in the Maricopa County PM-10

Nonattainment Area. Therefore, the PM-10 emission reduction benefit of the PM-10 certified sweepers that had been purchased and were still active on December 31, 2009, was used in calculating the 2010 base case emissions in Appendix B, Exhibit 2: Calculation of Benefits from PM-10 Certified Street Sweepers Purchased with CMAQ Funds in 2001-2009.

Unpaved Road and Alley Projects - For the MAG Conformity Analysis, emission reduction credit was also taken for projects completed between January 1, 2008 and December 31, 2012 that paved or reduced speed limits on unpaved roads and alleys in the PM-10 nonattainment area. The emission reductions for projects completed by December 31, 2012 are consistent with those used in the MAG 2012 Five Percent Plan for PM-10. Credit for these projects is applied to all conformity analysis years.

In addition, the MAG Conformity Analysis takes credit for paving projects programmed in the MAG Transportation Improvement Program (TIP). Credit for TIP projects that pave unpaved roads and alleys programmed in FY 2011-2025 is taken in 2026, and credit for additional paving projects programmed in fiscal years 2026 through 2028 is taken in 2030, 2040, and 2050 conformity analysis years.

Chapter Seven of MOMENTUM 2050 MAG Regional Transportation Plan (RTP) indicates that ten miles of unpaved roads will be paved each year in the PM-10 nonattainment area. The MAG Conformity Analysis assumes that ten miles will be paved each year beginning in 2026 and continuing through 2050, the last year of the RTP.

Paved Road Projects - For the MAG Conformity Analysis, emission reduction credit was taken for projects completed between January 1, 2008 and December 31, 2012 that paved unpaved shoulders. The emission reductions for projects completed by December 31, 2012 are consistent with those used in the MAG 2012 Five Percent Plan for PM-10. Credit for these projects is applied to all conformity analysis years.

5 TRANSPORTATION CONTROL MEASURES

This chapter provides an update of the status of transportation control measures identified in applicable implementation plans. Requirements of the federal conformity rule relating to transportation control measures (TCMs) are presented first, followed by a review of the applicable air quality implementation plans and TCM findings for the FY 2026-2030 MAG Transportation Improvement Program (TIP) and MOMENTUM 2050 MAG Regional Transportation Plan Update. A review of the funding and status of TCM implementation is presented. The chapter concludes with a measure-by-measure assessment of the status of each transportation control measure.

FEDERAL CONFORMITY RULE REQUIREMENTS FOR TCMs

The federal conformity rule (40 CFR 93.113) requires that the TIP and Regional Transportation Plan "must provide for the timely implementation of TCMs in the applicable implementation plan." The federal definition for the term "transportation control measure" is provided in 40 CFR 93.101:

> "Any measure that is specifically identified and committed to in the applicable implementation plan that is either one of the types listed in Section 108 of the CAA [Clean Air Act], or any other measure for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Notwithstanding the first sentence of this definition, vehicle technology-based, fuel-based, and maintenance-based measures which control the emissions from vehicles under fixed traffic conditions are not TCMs for the purposes of this subpart."

In the federal conformity rule, the definition provided for the term "applicable implementation plan" is:

> "Applicable implementation plan is defined in section 302(q) of the CAA and means the portion (or portions) of the implementation plan, or most recent revision thereof, which has been approved under section 110, or promulgated under section 110(c), or promulgated or approved pursuant to regulations promulgated under section 301(d) and which implements the relevant requirements of the CAA."

Section 108(f)(1) of the Clean Air Act as amended in 1990 lists the following transportation control measures and technology-based measures:

(i) programs for improved public transit;
(ii) restriction of certain roads or lanes to, or construction of such roads or lanes for use by, passenger buses or high occupancy vehicles;
(iii) employer-based transportation management plans, including incentives;
(iv) trip-reduction ordinances;
(v) traffic flow improvement programs that achieve emission reductions;
(vi) fringe and transportation corridor parking facilities serving multiple occupancy vehicle programs or transit service;
(vii) programs to limit or restrict vehicle use in downtown areas or other areas of emission concentration particularly during periods of peak use;
(viii) programs for the provision of all forms of high-occupancy, shared-ride services;
(ix) programs to limit portions of road surfaces or certain sections of the metropolitan area to the use of non-motorized vehicles or pedestrian use, both as to time and place;
(x) programs for secure bicycle storage facilities and other facilities, including bicycle lanes, for the convenience and protection of bicyclists, in both public and private areas;
(xi) programs to control extended idling of vehicles;
(xii) programs to reduce motor vehicle emissions, consistent with title II, which are caused by extreme cold start conditions;
(xiii) employer-sponsored programs to permit flexible work schedules;
(xiv) programs and ordinances to facilitate non-automobile travel, provision and utilization of mass transit, and to generally reduce the need for single-occupant vehicle travel, as part of transportation planning and development efforts of a locality, including programs and ordinances applicable to new shopping centers, special events, and other centers of vehicle activity;
(xv) programs for new construction and major reconstructions of paths, tracks or areas solely for the use by pedestrian or other non-motorized means of transportation when economically feasible and in the public interest. For purposes of this clause, the Administrator shall also consult with the Secretary of the Interior; and
(xvi) program to encourage the voluntary removal from use and the marketplace of pre-1980 model year light duty vehicles and pre-1980 model light duty trucks.

TCM Requirements For A Transportation Plan

The EPA regulations in 40 CFR 93.113(b) indicate that transportation control measure requirements for transportation plans are satisfied if two criteria are met:

"(1) The transportation plan, in describing the envisioned future transportation system, provides for the timely completion or implementation of all TCMs in the applicable implementation plan which are eligible for funding under Title 23 U.S.C. or the Federal Transit Laws, consistent with schedules included in the applicable implementation plan.

(2) Nothing in the transportation plan interferes with the implementation of any TCM in the applicable implementation plan."

TCM Requirements For A Transportation Improvement Program

Similarly, in 40 CFR Section 93.113(c), EPA specifies three TCM criteria applicable to a transportation improvement program:

"(1) An examination of the specific steps and funding source(s) needed to fully implement each TCM indicates that TCMs which are eligible for funding under title 23 U.S.C. or the Federal Transit Laws are on or ahead of the schedule established in the applicable implementation plan, or, if such TCMs are behind the schedule established in the applicable implementation plan, the MPO and DOT have determined that past obstacles to implementation of the TCMs have been identified and have been or are being overcome, and that all state and local agencies with influence over approvals or funding for TCMs are giving maximum priority to approval or funding of TCMs over other projects within their control, including projects in locations outside the nonattainment or maintenance area;

(2) If TCMs in the applicable implementation plan have previously been programmed for federal funding but the funds have not been obligated and the TCMs are behind the schedule in the implementation plan, then the TIP cannot be found to conform:

- if the funds intended for those TCMs are reallocated to projects in the TIP other than TCMs, or

- if there are no other TCMs in the TIP, if the funds are reallocated to projects in the TIP other than projects which are eligible for federal funding intended for air quality improvement projects, e.g., the Congestion Mitigation and Air Quality Improvement Program; and

(3) Nothing in the TIP may interfere with the implementation of any TCM in the applicable implementation plan."

APPLICABLE AIR QUALITY IMPLEMENTATION PLANS

Only transportation control measures from applicable implementation plans for the MAG region are required to be updated for this analysis. For the MAG Conformity Analysis, the applicable implementation plans, according to the definition provided at the start of this chapter, are the:

- Revised MAG 1999 Serious Area Carbon Monoxide Plan approved by EPA on March 9, 2005;
- MAG 2003 Carbon Monoxide Redesignation Request and Maintenance Plan approved by EPA on March 9, 2005;
- MAG 2013 Carbon Monoxide Maintenance Plan approved by EPA on March 3, 2016;
- Serious Area Ozone State Implementation Plan for Maricopa County was prepared by ADEQ and approved by EPA on June 14, 2005;
- MAG 2004 One-Hour Ozone Redesignation Request and Maintenance Plan approved by EPA on June 14, 2005;
- MAG 2007 Eight-Hour Ozone Plan approved by EPA on June 13, 2012;
- MAG 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan approved by EPA on September 17, 2014;
- MAG 2014 Eight-Hour Ozone Plan - Submittal of Marginal Area Requirements approved by EPA on October 16, 2015;
- MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area approved by EPA on June 2, 2020;
- Revised MAG 1999 Serious Area Particulate Plan for PM-10 approved by EPA on July 25, 2002; and
- MAG 2012 Five Percent Plan for PM-10 approved by EPA on June 10, 2014.

In addition, the Revised 1998 15 Percent Rate of Progress (ROP) Federal Implementation Plan (FIP) for ozone and the Moderate Area Federal Implementation Plan for PM-10 are applicable plans. However, neither of these plans contained TCMs.

Although not approved and therefore not applicable by definition, TCMs in previous air quality plans submitted to EPA are discussed in this chapter for informational purposes. A summary of the commitments from the submitted plans are also included for

informational purposes.

Applicable Implementation Plans for Carbon Monoxide

Since EPA has approved the Revised MAG 1999 Serious Area Carbon Monoxide Plan, this plan is applicable and the transportation control measures contained in the plan are discussed. The TCMs in the Serious Area Carbon Monoxide Plan are the same as those in the approved Serious Area PM-10 Plan. The Revised MAG 1999 Serious Area CO Plan provides a comprehensive implementation schedule for all of the control measures in Chapter Eight (pages 8-1 through 8-146). An assessment of the expected effectiveness of each measure is located in Chapter V of the Technical Support Document (TSD) of the Revised MAG 1999 Serious Area CO Plan. These chapters are contained in Appendix F of the conformity analysis. All TCMs for which emission reduction credit was taken in the Serious Area CO Plan have been implemented and are incorporated into the base year traffic assignment for the conformity analysis.

In addition, on March 9, 2005, the EPA approved the MAG 2003 Carbon Monoxide Redesignation Request and Maintenance Plan for the Maricopa County Nonattainment Area. The MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area was approved by EPA on March 3, 2016. The Carbon Monoxide Maintenance Plans do not introduce any new TCMs; however, two TCMs, “Coordinate Traffic Signal Systems” and “Develop Intelligent Transportation Systems”, will continue to be implemented through the maintenance year of 2025. However, no emission reduction credit is taken for these TCMs in conformity.

Submitted Implementation Plans for Carbon Monoxide

Two other submitted carbon monoxide plans provide information on additional transportation control measures. All TCMs for which emission reduction credit was taken in submitted carbon monoxide plans have been incorporated into the base year traffic assignment for the conformity analysis.

The MAG 1987 Carbon Monoxide Plan provides a comprehensive implementation schedule in Chapter Seven (pages 7-1 through 7-84) for all of the control measures of that Plan. Chapter Eight of the MAG 1987 CO Plan assessed the expected effectiveness of each measure. These chapters are located in Appendix C of the conformity analysis.

In the MAG 1993 Carbon Monoxide Plan, the control measures and implementation schedule are contained in Chapter Eight (pages 8-1 through 8-68). Chapter Nine of the MAG 1993 CO Plan presents an assessment of the expected effectiveness of each measure. These chapters are located in Appendix D. Similarly, Chapter Two of the MAG 1993 Carbon Monoxide Plan Addendum contains a description of additional measures provided under Arizona House Bill 2001 (see Appendix E).

Applicable Implementation Plans for Ozone

The MAG One-Hour Ozone Redesignation Request and Maintenance Plan, approved by EPA on June 14, 2005, contains measures from the Revised MAG 1999 Serious Area Carbon Monoxide Plan and Carbon Monoxide Redesignation Request and Maintenance Plan, since most of those measures also reduce ozone. Therefore, no new TCMs are introduced. The Serious Area Ozone State Implementation Plan for Maricopa County, submitted by the Arizona Department of Environmental Quality (ADEQ, 2000), was approved by EPA on June 14, 2005. This Plan contains a list of control measures; however no new TCMs are introduced on this list.

In addition, on June 13, 2012, EPA approved the MAG 2007 Eight-Hour Ozone Plan for the Maricopa Nonattainment Area, effective July 13, 2012. On September 17, 2014, EPA approved the MAG 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa Nonattainment Area. These Plans do not introduce any new TCMs; however, two TCMs, “Coordinate Traffic Signal Systems” and “Develop Intelligent Transportation Systems”, will continue to be implemented through the maintenance year of 2025. The MAG 2014 Eight-Hour Ozone Plan - Submittal of Marginal Area Requirements did not include any measures. The MAG 2017 Eight-Hour Ozone Moderate Area Plan relies on the continuing emission reduction benefits of the 93 existing ozone control measures to demonstrate attainment, including two existing TCMs “Coordinate Traffic Signal Systems” and “Develop Intelligent Transportation Systems”. No emission reduction credit is taken for these TCMs in conformity.

The other applicable ozone plan is the 15 Percent Rate of Progress (ROP) Federal Implementation Plan (FIP) promulgated by EPA on May 27, 1998 for the Maricopa County nonattainment area, effective June 26, 1998. On July 6, 1999, EPA issued the Final Rule for changes to the control strategy used in developing the Revised ROP FIP (EPA, 1999a). However, the Revised ROP FIP did not introduce any TCMs.

Submitted Implementation Plans for Ozone

Although there is no submitted implementation plan for ozone that specifies TCMs for this region, measures included in submitted plans for ozone are reviewed for informational purposes in this report. These measures have been implemented and any resulting creditable emission reduction benefits have been incorporated into the base year traffic assignment for the conformity analysis.

The selected control strategies in the 1978 Nonattainment Area Plan for CO and Photochemical Oxidants in the Maricopa County Urban Planning Area (ADHS, 1978) are contained in Chapter Four (pages 4-1 through 4-18) of that document. Chapter Five of that Plan addressed the expected impact of the selected control strategies. These chapters are provided in Appendix G. The 1978 Plan contained five transportation-related measures, of which only two would be considered TCMs under the EPA definition: Carpooling - Voluntary Program; and Modified Work Schedules - Voluntary Program.

TCMs from the 1987 MAG Ozone Plan for the Maricopa County Area have been documented in Appendix H of the conformity analysis. The MAG 1993 Ozone Plan and 1993 Ozone Plan Addendum contain additional TCMs that would reduce ozone related emissions, and these measures are documented in appendices I and J.

The MAG 2020 Eight-Hour Ozone Plan – Submittal of Marginal Area Requirements for the Maricopa Nonattainment Area was submitted to EPA on June 29, 2020. The MAG 2020 Eight-Hour Ozone Plan addresses the 2015 eight-hour ozone standard of 0.070 parts per million. Marginal Areas are not required to submit an attainment demonstration, reasonably available control technologies and measures, reasonable further progress demonstration and contingency measures. On April 5, 2022, EPA published a final rule in the *Federal Register* to approve the 2017 base year emissions inventory in the MAG 2020 Eight-Hour Ozone Plan – Submittal of Marginal Area Requirements, effective May 5, 2022.

Applicable Implementation Plans for PM-10

On July 25, 2002, EPA took final action to approve the Revised MAG 1999 Serious Area Particulate Plan for PM-10. A measure-by-measure review of TCMs contained in the Revised MAG 1999 Serious Area PM-10 Plan is provided later in this chapter. A comprehensive implementation schedule for all of the transportation control measures is provided in Chapter Seven (pages 7-1 through 7-285) of the Revised MAG 1999 Serious Area PM-10 Plan. An assessment of the expected effectiveness of each measure is described in Chapter V of the Technical Support Document of the Revised MAG 1999 Serious Area Particulate Plan for PM-10. The TCMs in the approved MAG 1999 Serious Area PM-10 Plan are the same as those in the Serious Area Carbon Monoxide Plan. These chapters are contained in Appendix L.

In accordance with Section 189(d) of the Clean Air Act, the MAG 2007 Five Percent Plan for PM-10 was submitted to EPA by December 31, 2007. On September 9, 2010, EPA proposed to partially approve and partially disapprove the Five Percent Plan. On January 25, 2011, prior to any final EPA action, Arizona voluntarily withdrew the Five Percent Plan from EPA consideration.

On May 25, 2012, the MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area was submitted to EPA. The MAG 2012 Five Percent Plan for PM-10 contains a wide variety of existing control measures and projects that have been implemented to reduce PM-10 and a new measure designed to reduce PM-10 during high risk conditions, including high winds. While the 2007 Five Percent Plan was withdrawn, a wide range of control measures in that plan continue to be implemented to reduce PM-10 and have been resubmitted (see Appendix K). The MAG 2012 Five Percent Plan does not include any TCMs. On June 10, 2014, EPA approved the MAG 2012 Five Percent Plan for PM-10, effective July 10, 2014.

Submitted Implementation Plans for PM-10

In addition, three submitted plans for PM-10, described below, are reviewed for information on transportation control measures. All TCMs in the submitted and applicable PM-10 plans have been implemented and any resulting creditable emissions reduction benefits have been incorporated into the base year traffic assignment for the conformity analysis.

On August 3, 1998, EPA promulgated a PM-10 Moderate Area Federal Implementation Plan (EPA, 1998b), effective September 2, 1998, but this Plan did not introduce any TCMs. The MAG 1988 Particulate Plan for PM-10 provides a comprehensive implementation schedule in Chapter Seven (pages 7-1 through 7-108) for all of the control measures of that Plan. Chapter Eight of the MAG 1988 PM-10 Plan assessed the expected effectiveness of each measure. These chapters are located in Appendix M. The control measures and implementation schedule for the MAG 1991 Particulate Plan for PM-10 for the Maricopa County Area and 1993 Revisions are contained in Chapter Seven (see Appendix N).

TCM FINDINGS FOR THE TIP AND REGIONAL TRANSPORTATION PLAN

Currently, MAG estimates that all TCMs in the applicable SIPs have been implemented for several years and any ongoing TCMs are on schedule and there are no obstacles to implementation of the TCMs. In addition, Table 36 confirms that considerable resources are being allocated to projects above and beyond the TCMs and other committed measures from applicable regional air quality plans. Therefore, the TIP and Regional Transportation Plan provide for the timely implementation of the TCMs in the applicable air quality plans and nothing in the TIP or RTP interferes with the implementation of any TCM in an applicable implementation plan.

A measure-by-measure assessment of individual transportation control measures in the applicable and other submitted plans is provided below. Some of the TCMs in the plans were implemented in the short term and have been fully implemented for several years. Their completed implementation is therefore assumed in the base year set of assumptions in the traffic assignments for the FY 2026-2030 MAG Transportation Improvement Program and MOMENTUM 2050 MAG Regional Transportation Plan Update. The

TABLE 36. PROGRAMMED TRANSPORTATION PROJECTS THAT IMPLEMENT TCMs AND OTHER AIR QUALITY MEASURES

SIP CATEGORY	FY 2026 FUNDING ($ MILLIONS)	FY 2026-2030 FUNDING ($ MILLIONS)	MEASURE DESCRIPTION
Public Transit	278.6	1,846.6	FY 2026 includes 112 proposed transit projects. The entire TIP includes 164 proposed transit projects.
Areawide Ridesharing, Travel Reduction, Education and Outreach Programs, and Vanpools	4.3	11.3	Rideshare and Travel Reduction programs are funded for each year of the FY 2026 - 2030 TIP including: the Valley Metro/RPTA Regional Rideshare and Telework Program, Maricopa County Travel Reduction Program, and the Arizona Department of Administration Travel Reduction Program. The TIP also funds 36 new and replacement vehicles for vanpools.
Freeway Management System and HOV lanes	41.9	196.3	The TIP contains 10 ADOT Freeway Management System projects; new HOV lanes are being designed and constructed on 11.7 miles of freeways.
Traffic Flow Improvements	5.2	14.0	The TIP includes 17 Intelligent Transportation System (ITS) projects for improvements such as install fiber, conduit, upgrade traffic signal equipment and Traffic Management Centers.
Bicycle and Pedestrian Travel	47.7	133.3	The TIP includes 26 bicycle, pedestrian, and multiuse path projects.
Paving of Streets, Shoulders, and Alleys	12.8	37.7	The TIP includes 7 projects to pave unpaved roadways, alleys, and access points.
PM-10 Certified Street Sweepers	1.4	7.4	The TIP includes $7.4 million to purchase PM-10 Certified Street Sweepers to reduce dust on paved roads.

TIP provides continued funding for many such TCMs (e.g. travel reduction, transit, bikeway improvements, ridesharing, and freeway management systems), which now have been implemented to a significantly greater degree than committed originally. In addition, the transportation plan assumes or specifically calls for TCM implementation at current or expanded levels, consistent with adopted TCM commitments. The plan includes projects for transit, high occupancy vehicle lanes, demand management programs, and bicycle and pedestrian facilities.

A listing of projects and programs from the TIP which implement transportation control measures and other air quality measures is provided in Table 36. It should be noted that not all of the projects listed in the table correspond to specific implementation of commitments, because additional TCM implementation over and above SIP committed levels will be taking place.

Throughout the process of preparing the MAG Conformity Analysis for the FY 2026-2030 Transportation Improvement Program and MOMENTUM 2050 MAG Regional Transportation Plan Update, no impediments to the timely implementation of adopted TCMs have been identified. In addition, the information provided in Table 36 provides an indication that considerable resources are being allocated to TCMs and other measures that will result in significant air quality benefits, beyond those represented by TCM commitments in applicable Plans.

MEASURE-BY-MEASURE TCM ASSESSMENT

Transportation control measure documentation used in conjunction with the conformity analysis of the TIP and Regional Transportation Plan is provided below. The numbering system used to identify control measures is consistent with the list of TCMs in Section 108(f)(1) of the Clean Air Act.

(i) Programs for Improved Public Transit

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measures 3, 4, and 10
1993 Carbon Monoxide Plan*, measures 1a, 1b, and 1c
1993 Carbon Monoxide Plan Addendum*, measure I-1
Revised 1999 Serious Area Carbon Monoxide Plan, measure 24
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan*, measures 3, 4, and 10
1993 Ozone Plan*, measures 1a, 1b, and 1c
1993 Ozone Plan Addendum*, measure I-1
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan

2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measures 18, 19, and 25
1991 PM-10 Plan with 1993 Revisions, measures 18, 19, and 25
Revised 1999 Serious Area PM-10 Plan, measure 25
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

Local commitments in the MAG 1987 CO Plan and 1987 Ozone Plan demonstrated widespread support for short- and long-range transit improvements, including park-and-ride lot improvements coordinated through the Regional Public Transportation Authority (RPTA). The MAG 1993 CO Plan and 1993 Ozone Plan includes commitments for programs for improved public transit and local commitments for an expansion of public transportation services. New funding sources for transit improvements represented approximately a seven percent increase to base service levels. In addition, several jurisdictions advocated park-and-ride lots to support the public transit network.

The commitments from local governments for the Serious Area plans include initiatives addressing mass transit alternatives. For example, a number of cities worked in a cooperative effort with MAG, RPTA, and FTA to conduct feasibility studies for high capacity transit corridors within the metropolitan area. The studies evaluated the feasibility of options such as light rail, bus ways, and commuter rail.

Several local governments have made public transit improvements beyond commitments made in air quality plans. For example, in September 1996, Tempe voters approved a sales tax referendum to fund improved transit service. In 2000, the Phoenix voters approved the Transit 2000 Plan increasing the local sales tax by 0.4 percent over 20-years. The Transit 2000 Plan provides for light rail rapid transit, extended hours of local bus service, increased dial-a-ride service, additional express bus service, and other transit improvements. In November 2001, Glendale voters approved a half-cent sales tax for transportation improvements including increased bus service, light rail transit, and dial-a-ride. Also, in September 2005, Peoria voters approved a sales tax increase of 0.3 percent that will be dedicated to transportation improvements, including the addition of fixed route bus lines. On August 25, 2015, Phoenix voters approved Transportation 2050, a citywide investment plan for bus service, light rail construction, and other street improvements. Funding for Transportation 2050 is being generated by a 0.7 percent sales tax over a 35-year period. Transportation 2050 became effective on January 1, 2016.

On November 2, 2004, Maricopa County voters approved Proposition 400 that

extends the half-cent sales tax for transportation improvements through December 2025. On November 5, 2024, voters in Maricopa County approved Proposition 479 that extends the half-cent sales tax for transportation improvements through December 2045. The Regional Transportation Plan provides the blueprint for the implementation of Proposition 479 funding, including future public transit improvements.

In December 2008, the 20-mile Light Rail Transit (LRT) Minimum Operating Segment began service from Bethany Home Road and 19th Avenue into downtown Phoenix and from downtown Phoenix to downtown Tempe and Arizona State University, and continuing to the intersection of Main Street and Sycamore in Mesa. Since 2008, five Light Rail Extensions have opened for service. In August 2015, a 3.1 mile Central Mesa project extended light rail to Mesa Drive in Mesa. In March 2016, a 3.2 mile Northwest Phase I project extended light rail to Dunlap Avenue in Phoenix. A 1.9 mile extension of the system to Gilbert Road in Mesa was completed in May 2019. In January 2024, the 1.6 mile Northwest Extension Phase II light rail project opened for service in Phoenix. In addition, in June 2025, the 5.5 mile South Central Extension was opened to service between the Downtown Hub and Baseline Road in Phoenix.

In addition, for the Conformity Analysis, MAG reports on the recent changes to the transit system. Chapter 3 provides a list of transit service changes reported by Valley Metro/RPTA in April 2025.

Impact of TIP and RTP:

The FY 2026-2030 MAG Transportation Improvement Program contains a listing of 164 proposed transit projects estimated to cost a total of $1,846.6 million. For FY 2026, the funding programmed for proposed transit projects is approximately $278.6 million. It is concluded that implementation of the TIP will directly support transit improvements. Chapter Six of the Regional Transportation Plan includes funding for transit facilities.

(ii) Restriction of Certain Roads or Lanes to, or Construction of Such Roads or Lanes for Use by, Passenger Buses or High Occupancy Vehicles

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measures 5, 14, 15, and 16
1993 Carbon Monoxide Plan*, measures 2a, 2b, and 2c
1993 Carbon Monoxide Plan Addendum*, measure I-17
Revised 1999 Serious Area Carbon Monoxide Plan, measure 55
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan*, measures 5, 14, 15, and 16
1993 Ozone Plan*, measures 2a, 2b, and 2c
1993 Ozone Plan Addendum*, measure I-20
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measures 20, 29, 30, and 31
1991 PM-10 Plan with 1993 Revisions, measures 20, 29, 30, and 31
Revised 1999 Serious Area PM-10 Plan, measure 76
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

The Arizona Department of Transportation, in cooperation with local jurisdictions, is responsible for the construction of the planned MAG Freeway System. An implementation schedule for High Occupancy Vehicle (HOV) lanes and ramps on freeways was specified in the MAG 1987 CO Plan and 1987 Ozone Plan. The MAG 1993 CO Plan and 1993 Ozone Plan identified additional HOV lanes and ramps programmed by ADOT.

The 1993 CO Plan and the 1993 Ozone Plan both indicate that State and local governments will analyze traffic projections and bus frequency on a periodic basis to determine the feasibility of the restriction of certain roads or lanes to provide a higher level of transit service, or the construction of roads or lanes for use by passenger buses or high occupancy vehicles. This measure could include fixed lanes for buses and carpools on arterial streets, fixed lanes for buses and carpools on freeways, and high occupancy vehicle ramps which by-pass freeway ramp meter signals.

In the Serious Area plans, the commitments from State and local governments include the promotion of high occupancy vehicle lanes and by-pass ramps through rideshare activities. The Regional Public Transportation Authority indicated that as new facilities open, rideshare activities will be coordinated with employers affected by the Maricopa County Travel Reduction Program and the general public.

High occupancy vehicle lane improvements have continued to be implemented beyond the commitments made in air quality plans. There are approximately 437 centerline miles of High Occupancy Vehicle facilities on regional freeways. As new HOV facilities open, Valley Metro/RPTA continues to coordinate the promotion of park-and-ride and rideshare activities.

Impact of TIP and RTP:

The FY 2026-2030 MAG Transportation Improvement Program and MOMENTUM 2050 MAG Regional Transportation Plan Update directly contributes to the implementation of this measure by providing funds for the construction of HOV lanes. Chapter Six of the Regional Transportation Plan supports improvements for High Occupancy Vehicle facilities.

(iii) Employer-Based Transportation Management Plans, Including Incentives

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measures 12 and 13
1993 Carbon Monoxide Plan*, measures 3a, 3b, 3c, 3d, 3e, 3f and 3g
Revised 1999 Serious Area Carbon Monoxide Plan, measures 38 and 52
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan*, measures 12 and 13
1993 Ozone Plan*, measures 3a, 3b, 3c, 3d, 3e, 3f and 3g
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measures 27 and 28
1991 PM-10 Plan with 1993 Revisions, measure 22
Revised 1999 Serious Area PM-10 Plan, measures 56 and 73
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

For the MAG 1987 CO Plan and 1987 Ozone Plan, several local governments made commitments to either review the results, consider, or support preferential parking for carpools and vanpools from the MAG Model Trip Reduction Study.

In the MAG 1993 CO Plan and 1993 Ozone Plan, several jurisdictions indicated an ongoing commitment to employer rideshare incentives including passage of ordinances and expanded training at employer sites. Several cities indicated an ongoing commitment to mandatory employee parking fees and preferential parking for carpools and vanpools. Maricopa County and the Arizona Department of Transportation provide preferential parking for carpools and vanpools. Commitments also included the encouragement of vanpools for County and State

employees.

In the Serious Area plans, the commitments from the State and local governments include measures supporting employer rideshare program incentives and the trip reduction program. To encourage municipal employees to use alternative modes of transportation, several local governments indicated that they would be offering incentives such as preferential parking, gift drawings, subsidized bus passes, emergency ride home service, and telecommuting options. In addition, the Regional Public Transportation Authority indicated that the agency would provide formal training, employer assistance, facilitate transportation coordinator associations, and provide information to Trip Reduction Program employers.

The Trip Reduction Program was mandated by Arizona legislation in 1988 and is administered by Maricopa County. All employers with 50 or more employees are required to participate in the Trip Reduction Program. Elements of the Trip Reduction Program include employer training and facilitation of Transportation Coordinators Associations conducted by the Regional Public Transportation Authority. MAG increased the annual allocation of federal funding for the Regional Rideshare Program from $250,000 in FY 1988 to $420,000 in FY 1991, and to $460,000 annually beginning in FY 1993. Then, beginning in FY 2000, an additional $200,000 was added for an expanded Regional Rideshare and Telework Program of $660,000. In each fiscal year 2026 through 2030 of the TIP, the Regional Rideshare and Telework Program funding amount is $594,000.

In the most recent Maricopa County Travel Reduction Program Annual Report for the fiscal year ending June 30, 2024, the Travel Reduction Program applied to 1,160 employers with 923,455 employees and students participating in the survey at 2,932 work and school sites across Maricopa County. Valley Metro/RPTA staff have played an important role in the success of the Maricopa County Travel Reduction Program through the training of employer transportation coordinators. In addition, Valley Metro\RPTA services include a web-based trip matching service at ShareTheRide.com that provides online ridematching and commute tracking. The online tool connects commuters to a secure online matching program that displays carpooling, vanpooling, transit, and bicycle options. The Arizona Department of Administration conducts the Travel Reduction Program to approximately 23,496 non-university state employees in Maricopa County.

Impact of TIP and RTP:

A major portion of funding for this TCM is through the FY 2026-2030 MAG Transportation Improvement Program that includes an annual amount of $962,347 for the Maricopa County Travel Reduction Program and $135,000 for the Arizona Department of Administration Travel Reduction Program. In each fiscal year 2026 through 2030 of the TIP, the Regional Rideshare and Telework Program funding amount is $594,000. The amounts indicated above include only monies specified in the TIP and not funds that the programs may receive from other sources.

Chapter Six of the Regional Transportation Plan provides for continued consideration of transportation demand management programs. A copy of the latest Maricopa County Travel Reduction Program Annual Report for the period July 1, 2023 - June 30, 2024 (MCAQD, 2024) and the Transportation Demand Management Survey Results, Spring 2025 (Valley Metro/RPTA, 2025) are provided in Appendix O.

(iv) Trip Reduction Ordinances

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measure 7
1993 Carbon Monoxide Plan*, measure 4
1993 Carbon Monoxide Plan Addendum*, measure I-3
Revised 1999 Serious Area Carbon Monoxide Plan, measures 38 and 52
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan*, measure 7
1993 Ozone Plan*, measure 4
1993 Ozone Plan Addendum*, measure I-3
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measure 22
1991 PM-10 Plan with 1993 Revisions, measure 22
Revised 1999 Serious Area PM-10 Plan, measures 56 and 73
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

The Maricopa County Travel Reduction Program was established by the Arizona Legislature in 1988, with the goal of reducing the number of single occupant vehicle trips by five percent annually. Originally, the program affected employers with 100 or more employees at a work site. In 1992, the program was expanded to include employers with 75 or more employees at a site. Arizona House Bill 2001, enacted in November 1993, required Maricopa County to adopt and enforce a strengthened Travel Reduction Program Ordinance by May 31, 1994. The strengthened ordinance applies to all employers with 50 or more employees at a single worksite throughout the Maricopa County area. The annual goals are increased from a five percent to a ten percent reduction in employee single occupant vehicle trips or commuter vehicle miles of travel. The ordinance contains

annual goals for five years. The ordinance also provides employers with opportunities to accomplish equivalent reductions through alternative reduction strategies.

The commitments from the State and local governments for the Serious Area plans include measures supporting employer rideshare program incentives and the Travel Reduction Program. Several commitments indicate incentives and promotional activities to increase awareness and participation in alternative modes of transportation and work schedules. The Regional Public Transportation Authority indicated efforts to provide training and promotional materials to employers required to participate in the Maricopa County Travel Reduction Program.

According to the latest annual report available, in FY 2024 the Maricopa County Travel Reduction Program applied to 1,160 employers with 923,455 employees and students participating in the survey at 2,932 work and school sites across Maricopa County. Also, on November 18, 2020, the Maricopa County Board of Supervisors adopted revisions to Ordinance P-7 for the Travel Reduction Program.

Impact of TIP and RTP:

This TCM receives strong support through funding in the FY 2026-2030 MAG Transportation Improvement Program for the Valley Metro/RPTA Regional Rideshare and Telework Program, the Maricopa County Travel Reduction Program, and the Arizona Department of Administration Travel Reduction Program. Combined, the programs have been allocated funds of approximately $8.7 million in the FY 2026-2030 TIP. This total only includes funding specified in the TIP and not funds that the programs may receive from other sources. Chapter Six of the Regional Transportation Plan provides for continued consideration of demand management programs.

(v) Traffic Flow Improvement Programs That Achieve Emission Reductions

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measures 17, 18, 19, 20, 21, 22, 24, 25 and 26
1993 Carbon Monoxide Plan*, measures 5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j and 5k
1993 Carbon Monoxide Plan Addendum*, measures I-2, I-16, and I-18
Revised 1999 Serious Area Carbon Monoxide Plan, measures 25, 40, and 41
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan*, measures 17, 18, 19, 20, 21, 22, 24, 25 and 26
1993 Ozone Plan*, measures 5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j and 5k

1993 Ozone Plan Addendum*, measures I-2 and I-19
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measures 32, 33, 34, 35, 36, 37, 38, 39, 40, and 41
1991 PM-10 Plan with 1993 Revisions, measures 33, 34, 35, 39, and 40
Revised 1999 Serious Area PM-10 Plan, measures 26, 58, and 59
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

This TCM includes a number of measures that were identified in previous air quality plans including the 1987 CO and Ozone Plans and the 1993 CO and Ozone Plans which contained measures for mitigation of freeway construction impacts; freeway surveillance; ramp metering, and signage; computerized synchronization of traffic signals; reversible lanes on arterials; one way streets; truck restrictions during peak periods; intersection improvements; on-street parking restrictions; and bus pullouts.

In April 2001, MAG approved the first comprehensive ITS Strategic Plan and ITS Architecture for the region. This Plan has provided direction for ITS implementation within the region. The Regional ITS Architecture, which is part of the Plan, played a direct role in the identification of ITS projects for programming in the Transportation Improvement Program.

Traffic flow improvements have taken place beyond commitments made in air quality plans. In 2016, MAG initiated a study to develop the Transportation Systems Management and Operations (TSMO) Plan for the region. The Plan recommends a new approach for making future system improvements through 2030 by categorizing investments into four priority areas: (1) Integrated Corridor Management that supports improved freeway-arterial coordination; (2) Regional Priority Arterials that supports critical routes for transit and freight, and that connect travelers to freeways and destinations; (3) Local Priority Corridors that support local agency priorities; and (4) Regional Operations Priorities that support operations at a regional level, such as traffic incident management, regional data and reporting, and other related activities. On August 29, 2018, the MAG Regional Council approved the 2018 MAG Transportation Systems Management and Operations Plan.

The TCMs “Coordinate Traffic Signal Systems” and “Develop Intelligent Transportation Systems” are supported by several jurisdictions in the Serious Area plans. Commitments include the development of Intelligent Transportation

Systems (ITS), the coordination of traffic signal systems, and other intersection improvements to reduce traffic congestion. A general summary of the commitments, and current projects that implement the TCM above the level committed to in the plans, are provided below.

ITS Projects and Freeway Management System Improvements

Several municipalities mentioned the effort to coordinate local traffic signals with the Freeway Management System (FMS) implemented by ADOT, the responsible agency for traffic management on MAG-area freeways. The FMS consists of electronic variable message signs, signals for metering traffic flow at ramps, closed circuit television cameras, vehicle detectors, and a telecommunication network that links all these devices to a Traffic Operations Center. In 2025, the total Freeway Management System coverage of regional freeways was approximately 567 miles.

Traffic Signal System Coordination

Effective December 31, 1988, traffic signal synchronization has been required by Arizona law for municipalities and for ADOT roadways with traffic volumes exceeding 15,000 vehicles per day. AzTech, a federally funded ITS project launched by the region in 1996, has integrated a number of local traffic management systems. Most of the larger cities and towns in the region have installed computerized traffic management systems that are managed and operated from that jurisdiction's Traffic Management Center. As of December 2021, there are 14 Traffic Management Centers in the region.

Intersection Improvements

Implementation of intersection improvements have continued at major intersections as a method to reduce traffic congestion and improve traffic flow. Some jurisdictions reported other traffic control techniques such as bus pull-outs to reduce congestion at major intersections.

Impact of TIP and RTP:

Implementation of this measure is supported through the FY 2026-2030 MAG Transportation Improvement Program. For FY 2026, a total of $5.2 million has been programmed for traffic flow improvement projects in the TIP. The TIP includes a total of $14.0 million programmed for these projects. In addition, the TIP includes funds totaling $41.9 million in FY 2026 and $196.3 million over the next five years for traffic flow improvements on freeways, including Freeway Management System projects. Chapter Six of MOMENTUM 2050 MAG Regional Transportation Plan Update provides for continued consideration of Transportation Systems Management and Operations.

(vi) Fringe and Corridor Parking Facilities Serving Multiple Occupancy Vehicle Programs or Transit Service

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measure 10
1993 Carbon Monoxide Plan*, measure 6
Revised 1999 Serious Area Carbon Monoxide Plan, measure 53
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan*, measure 10
1993 Ozone Plan*, measure 6
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measure 25
1991 PM-10 Plan with 1993 Revisions, measure 25
Revised 1999 Serious Area PM-10 Plan, measure 74
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

The 1987 CO and Ozone Plans contain commitments from many jurisdictions agreeing to assist and cooperate in the location of park-and-ride lots. Similarly, in the 1993 CO and Ozone Plans, State and several local jurisdictions committed to promote and expand park-and-ride lots and to seek out agreements with owners of major facilities such as shopping centers and institutions for the placement of park-and-ride lots.

The commitments from the State and local governments for the Serious Area CO and PM-10 plans include measures in which the RPTA will continue to work with member jurisdictions, private entities, and employers in the development, design, and implementation of new park-and-ride facilities.

In addition, implementation of park-and-ride lots continues to occur beyond commitments made in the air quality plans. In January 2001, MAG completed the MAG Park and Ride Site Selection Study to identify a regional system of park-and-ride lots to support the regional express bus system, carpooling, and vanpooling. The recommended system included ten sites for near-term development and ten sites for long-term development. Additional recommendations addressed design

guidelines and criteria for lot development, a management and operations plan for the lots, and programming and implementation strategies.

A large number of park-and-ride lots are already operational in the Maricopa County area. There are approximately 15 transit centers and 41 publicly owned park-and-ride facilities that support public transit. The RPTA works with employers and Transportation Management Associations style groups to promote park-and-ride lots as a means to encourage ridesharing and use of public transit.

Impact of TIP and RTP:

In support of park-and-ride facilities, Chapter Six of the Regional Transportation Plan provides for continued consideration of public transit, including planned bus facilities and service improvements.

(vii) Programs to Limit or Restrict Vehicle Use in Downtown Areas or Other Areas of Emission Concentrations, Particularly During Periods of Peak Use

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measure 23
1993 Carbon Monoxide Plan*, measures 7a and 7b

1987 Ozone Plan*, measure 23
1993 Ozone Plan*, measures 7a and 7b

1988 PM-10 Plan, measure 38

* = EPA approval pending

Measure Status:

In the 1987 CO Plan, 1988 PM-10 Plan, and MAG 1993 CO and Ozone Plans, several jurisdictions in the MAG region indicated they would agree to consider the implementation of truck restrictions during peak periods. In the 1993 CO Plan, a jurisdiction indicated that it restricted truck loading operations on downtown streets during peak hours would continue to enforce its existing restrictions on deliveries into the downtown area during peak hours (7:00 to 9:00 am, and 4:00 to 6:00 pm). Also, another jurisdiction indicated that it currently has an ordinance in place to restrict truck deliveries by place. At the time of these plans, there were approximately 16 miles of city streets with truck use restrictions in cities in Maricopa County.

Impact of TIP and RTP:

The construction of transportation facilities and provisions of transportation services which are programmed in the FY 2026-2030 MAG Transportation Improvement Program will not affect the schedule or effectiveness of this measure. Chapter Six of the Regional Transportation Plan provides for continued consideration of Transportation Systems Management and Operations and Demand Management.

(viii) Programs for the Provision of All Forms of High-Occupancy, Shared Ride Services

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measures 6 and 11
1993 Carbon Monoxide Plan*, measures 8a, 8b, and 8c
1993 Carbon Monoxide Plan Addendum*, measure II-9
Revised 1999 Serious Area Carbon Monoxide Plan, measures 39 and 51
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan*, measures 6 and 11
1993 Ozone Plan*, measures 8a, 8b, and 8c
1993 Ozone Plan Addendum*, measure II-9
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measures 21 and 26
Revised 1999 Serious Area PM-10 Plan, measures 57 and 72
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

The MAG 1987 CO Plan and the MAG 1993 CO and Ozone Plans contain commitments requiring the expansion of the Valley Metro Regional Rideshare Program, Park-and-Ride Programs, and Financial Incentives Including Zero Bus Fares. Several jurisdictions indicated that park-and-ride lots would be coordinated with the Arizona Department of Transportation, Regional Public Transportation Authority, and local businesses. The 1993 CO Plan Addendum includes a measure to pay for the administrative cost associated with the public transportation subsidy program for state employees. A description of Park-and-Ride Programs are reviewed in Transportation Control Measure number “vi”. A description of each

measure is provided below.

Ridesharing programs in the Maricopa County area include the Valley Metro Regional Rideshare and Telework Program and Arizona Department of Administration Travel Reduction Program. The Regional Rideshare and Telework Program maintains an internet-based service for instant carpool matching for the general public and for employers required to participate in the Maricopa County Travel Reduction Program. In addition, the Regional Rideshare and Telework Program emphasizes the need to reduce emissions through using alternative transportation modes and alternative work schedules.

The commitments from State and local governments for the Revised Serious Area CO and PM-10 Plans include measures supporting preferential parking for carpools and vanpools and encouraging the use of vanpooling.

MAG increased the annual allocation of federal funding for the Regional Rideshare Program from $250,000 in FY 1988 to $420,000 in FY 1991, and to $460,000 annually beginning in FY 1993. Beginning in FY 2000, an additional $200,000 was added for expansion of the Regional Rideshare Program. Valley Metro has also expanded the program to include employers as part of the existing Travel Reduction Program administered by Maricopa County. This involves organizations with 50 or more employees or students, affecting an estimated 1,160 employers at 2,932 work and school sites in FY 2024 (MCAQD, 2024). In addition, Maricopa County has reported that approximately 28 employers in the Travel Reduction Program were subsidizing employee participation in vanpool programs for the year ending September 30, 2024.

In addition, through the Arizona Department of Administration Travel Reduction Program, all non-university state employees in Maricopa County are encouraged to use carpools, vanpools, public transit, and alternative work schedules. Beginning on June 1, 2022, a pilot program was launched that offered a fully subsidized transit card to state employees for six months, subject to funding availability. Currently, the pilot program has been extended year round and will run through June 30, 2025. Previously, the ADOA provided a 50 percent public transit subsidy to approximately 2,045 state employees who participated in the Platinum Plus Bus Card Program.

Impact of TIP and RTP:

The FY 2026-2030 MAG Transportation Improvement Program provides federal Congestion Mitigation and Air Quality Improvement (CMAQ) Program funding for implementation of the Valley Metro Regional Rideshare and Telework Program and the Arizona Department of Administration Travel Reduction Program. An amount of $594,000 is programmed for the Valley Metro Regional Rideshare and Telework Program for each fiscal year 2026 through 2030. The Arizona Department of Administration Travel Reduction Program is programmed at

$135,000 annually in the TIP. In addition, the TIP includes $2.5 million to provide capital funding for vehicles for the replacement and expansion of vanpools. As reviewed under Transportation Control Measure number "ii", the provision of HOV lanes on area highways as implemented through the TIP assists in promoting ridesharing. Chapter Six of the Regional Transportation Plan provides for continued consideration of demand management programs.

(ix) Programs to Limit Portions of Road Surfaces or Certain Sections of the Metropolitan Area to the Use of Non-Motorized Vehicles or Pedestrian Use, Both as to Time and Place

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measure 42
1993 Carbon Monoxide Plan*, measure 9
Revised 1999 Serious Area Carbon Monoxide Plan, measure 47
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan*, measure 42
1993 Ozone Plan*, measure 9
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measure 55
Revised 1999 Serious Area PM-10 Plan, measure 65
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

The 1987 CO and Ozone Plan, as well as the 1993 CO Plan, indicated that pedestrian malls were being considered in the downtown plans for various cities and towns in the MAG area. Auto free zones and pedestrian malls can be used to reduce traffic congestion and air pollution on a localized basis. The successful establishment of auto free zones and pedestrian malls is dependent upon high transit accessibility, good circulation design of adjacent arterials, and parking management.

The commitments from the state and local governments for the Revised Serious Area CO and PM-10 Plans include strengthening of initiatives to encourage pedestrian travel. Several jurisdictions have supported this measure through the linkage of activity centers with sidewalks, establishing pedestrian routes in residential areas, and creating links between subdivisions and commercial

development.

The MAG Regional Off-Street System (ROSS) Plan was adopted by the MAG Regional Council in February 2001. The ROSS Plan provides guidance to MAG member agencies in creating an off-street non-motorized transportation system utilizing an extensive number of canal banks, utility line easements, and flood control channels.

In 2007, MAG developed the MAG Regional Bikeway Master Plan, which incorporates a 1999 MAG Regional Bicycle Plan, Alternative Solutions to Pedestrian Mid-block Crossings at Canals, and the 2001 ROSS Plan. With these planning efforts, many improvements have taken place beyond commitments made in air quality plans.

Impact of TIP and RTP:

The construction of transportation facilities and other transportation services programmed in the FY 2026-2030 MAG Transportation Improvement Program will not affect the schedule or effectiveness of this measure. Chapter Six of the Regional Transportation Plan provides for the continued consideration of this measure.

(x) Programs for Secure Bicycle Storage Facilities and Other Facilities Including Bicycle Lanes, for the Convenience and Protection of Bicyclists, in Both Public and Private Areas

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measures 27 and 28
1993 Carbon Monoxide Plan*, measures 10a and 10b
1993 Carbon Monoxide Plan Addendum*, measure II-7
Revised 1999 Serious Area Carbon Monoxide Plan, measures 43 and 44
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan*, measures 27 and 28
1993 Ozone Plan*, measures 10a and 10b
1993 Ozone Plan Addendum*, measure II-7
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measures 42 and 43
1991 PM-10 Plan with 1993 Revisions, measures 42 and 43

Revised 1999 Serious Area PM-10 Plan, measures 61 and 62
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

In the 1993 CO and Ozone Plans, a number of jurisdictions indicated a commitment to improve bicycle facilities through the construction of additional miles of bike paths, striping of bike lanes on arterial and collector streets, and installation of additional bike racks and lockers to encourage bicycle use.

The commitments from the state and local governments for the Serious Area CO and PM-10 Plans include initiatives by most cities and towns in the region to encourage bicycle travel and develop bicycle travel facilities. Several jurisdictions indicated that bicycle travel would be encouraged through establishing bike lanes with new road development and by signing and striping bikeway routes along arterials, collectors, and local routes, by promoting bicycle use newsletters and Bike-to-Work Weeks, by encouraging private developers and businesses to include bike racks, lockers, and showers at work sites and other facilities.

The general level of planning and commitment for encouraging bicycle use and providing bicycle support facilities has increased substantially beyond the commitments made in the air quality plans. The City of Phoenix, for example, has expanded the connectivity of bikeway facilities that includes bike lanes, protected bike lanes, bike routes, paved shoulders, multi-use paths and recreational trails to an estimated 1,400 miles as of 2025.

At the regional level, MAG established a Regional Bicycle Task Force in 1990. This task force guided the development of the Regional Bicycle Plan, which was adopted as part of the MAG Long Range Regional Transportation Plan in July 1992. The *MAG Regional Bicycle Plan* was updated in 1999. Creating a regional off-street multi-use path/trail plan was identified as an important future planning activity during the Regional Bicycle Plan Update in 1999. The MAG Regional Off-Street System (ROSS) Plan reveals a region-wide system of off-street paths/trails for non-motorized transportation along existing rights-of-ways and easements, such as canal banks, utility line easements and flood control channels. These types of rights-of-way and easements intersect numerous arterial streets where local daily destinations are typically located. The goal of the ROSS Plan is to help make bicycling and walking viable options for daily travel trips using off-street opportunities.

To further encourage safe bicycling, the MAG Active Transportation Committee oversees the update of the Regional Bikeways Map. Updated every three years, the map shows existing, locally-designated bicycling facilities, and is provided for free distribution. The first map was created in 1994. Several hundred thousand

maps have been distributed. The map includes bicycle lanes and paths, designated bicycle routes on roadways, popular undesignated routes, and off-street transportation trails.

In 2022, the MAG Active Transportation Committee completed an update of the Regional Bikeways Map. The Regional Bikeways Map shows 2,538 miles of bicycle lanes, 475 miles of bicycle routes, and 687 miles of paved shoulders. The *MAG Regional Bicycle Plan* also encourages the development of bicycle parking and shower facilities at appropriate daily trip destinations.

Impact of TIP and RTP:

The implementation of the FY 2026-2030 MAG Transportation Improvement Program will directly support the goal of increased bicycle use. Funding for bicycle, pedestrian, and multiuse path projects totals $47.7 million in FY 2026 and $133.3 million for fiscal years 2026 through 2030 of the TIP.

In addition, the provision of new bicycle lanes or facilities is often included as part of various road improvement projects, rather than being implemented and programmed separately as a bicycle project. Chapter Six of the Regional Transportation Plan includes bicycle transportation and the continued development of bicycle facilities.

(xi) Programs to Control Extended Idling of Vehicles

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measure 41
1993 Carbon Monoxide Plan*, measure 11
Revised 1999 Serious Area Carbon Monoxide Plan, measure 33
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan*, measure 41
1993 Ozone Plan*, measure 11
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measure 54
1991 PM-10 Plan with 1993 Revisions, measure 54
Revised 1999 Serious Area PM-10 Plan, measure 34
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

In the MAG 1993 CO Plan, some cities indicated that they would take steps to address emissions from idling at drive-up window facilities. Information provided to MAG by Sierra Research, a leading consultant in the field of vehicular emissions, indicates that vehicles with catalytic converters may produce more emissions during engine start-up than engine idling for brief periods. The Sierra Research report concluded that banning the use of drive-up window facilities would not significantly increase or decrease emissions of CO or oxides of nitrogen, and would potentially increase emissions of volatile organic compounds. It is important to note that the report was completed in 1991, based upon emission data from vehicles in Southern California.

The commitments from the state and local governments for the Serious Area CO and PM-10 Plans include an initiative by RPTA to follow guidelines developed by that agency in June 1996 to reduce idling of engines. The guideline specifies that, for temperatures below 90 degrees Fahrenheit and over three minutes layover, the operator should turn the engine off. If the vehicle is located within 100 yards of any residence, for temperatures below 90 degrees Fahrenheit, the engine is to be turned off regardless of layover time. Further, Valley Metro/RPTA will continue to work with member jurisdictions to promote environmentally sensitive transit operations practices and policies.

Impact of TIP and RTP:

The construction of transportation facilities and other transportation services programmed in the FY 2026-2030 MAG Transportation Improvement Program will not affect the schedule or effectiveness of this measure. In addition, the Regional Transportation Plan will not affect this measure.

(xii) Programs to Reduce Motor Vehicle Emissions, Consistent with Title II, Which Are Caused by Extreme Cold Start Conditions

This measure is not applicable in the MAG region.

(xiii) Employer-Sponsored Programs to Permit Flexible Work Schedules

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measures 35 and 36
1993 Carbon Monoxide Plan*, measures 13a, 13b, 13c, and 13d
1993 Carbon Monoxide Plan Addendum*, measure I-12
Revised 1999 Serious Area Carbon Monoxide Plan, measure 45

2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1978 Ozone Plan, measure "Modified Work Schedules"
1987 Ozone Plan*, measures 35 and 36
1993 Ozone Plan*, measures 13a, 13b, 13c, and 13d
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measures 48 and 49
1991 PM-10 Plan with 1993 Revisions, measure 48
Revised 1999 Serious Area PM-10 Plan, measure 63
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

The 1978 Ozone Plan indicated that modified work schedules were to be implemented on a voluntary basis with emphasis on the winter period of maximum temperature inversions. The effect of this measure in reducing ozone was not calculated in the 1978 Ozone Plan.

In the 1987 CO and Ozone Plans, a number of jurisdictions supported the use of alternative work hours and work weeks for their employees. Since 1987, this measure has been implemented on a formal basis as mandated by Arizona legislation. SB 1360 established requirements for the use of adjusted work hours by at least 85 percent of State employees with offices located in a nonattainment area. Beginning in 1987, this requirement became applicable for the period between October 1 and March 31 of each year. In 1989, the requirement was also applied to county employees and to the employees of cities and towns which have a population of 50,000 or more. The 1987 legislation also required businesses with 500 or more employees at one site within a nonattainment area to prepare an adjusted work hour proposal for submission to ADEQ by October 1 of each year.

In the MAG 1993 CO Plan and 1993 Ozone Plan, numerous MAG member agencies indicated that this measure was ongoing through the use of compressed or staggered work schedules to lessen the number of commuting trips. Also, several agencies indicated that telecommuting and teleconferencing options would be investigated and/or expanded. MAG initiated a telecommuting and teleconferencing program for its member agencies, with planning for the program initiated in FY 1998.

As specified in the 1993 CO Plan Addendum, measure I-12 “Air Pollution Emergency”, enacted by Arizona HB 2001 in November 1993, authorized the Governor of Arizona to declare air emergencies on days when the National Ambient Air Quality Standards are likely to be exceeded. The Governor will prohibit, restrict, or condition the employment schedules for employees of the state and its political subdivisions (includes the county and local governments) in order to reduce vehicle emissions during air pollution emergencies. The Governor has developed a plan for implementation of this measure. Under these provisions, state employees were sent home early due to elevated carbon monoxide concentrations on one occasion in late 1994.

In 1996, the Governor issued a proclamation which requires the cities, towns and county meet a 75 percent employee compliance of three options to reduce hydrocarbon emissions from mobile sources during June 1 to September 30, 1996. The options are: work schedules that avoid workday start and ending in the peak traffic hours; compressed work week schedules; travel to and from work by alternate mode including bus, carpool, vanpool, bicycle, or walking.

This measure also responds to Clean Air Act Section 108(f)(1)(B): Additional methods or strategies that will contribute to the reduction of mobile source related pollutants during periods in which any primary air quality standard will be exceeded and during episodes for which an air pollution alert, warning, or emergency has been declared.

The commitments from the state and local governments for the Serious Area CO and PM-10 Plans include initiatives supporting alternative work schedules and the use of off-peak driving, ridesharing, and the use of transit. As part of the Maricopa County Travel Reduction Program, Valley Metro/RPTA facilitates formal training on compressed or alternative work schedules and provides onsite assistance to individual employers on an as-needed basis.

Impact of TIP and RTP:

The FY 2026-2030 MAG Transportation Improvement Program contains funding for the Maricopa County Travel Reduction Program, Valley Metro Regional Rideshare and Telework Program, and Arizona Department of Administration Travel Reduction Program in the amount of $8.7 million. The construction of other transportation or related facilities and other transportation services programmed in the TIP will not affect the schedule or effectiveness of this measure. Chapter Six of the Regional Transportation Plan includes demand management programs in support of this measure.

(xiv) Programs and Ordinances to Facilitate Non-Automobile Travel, Provision and Utilization of Mass Transit, and to Generally Reduce the Need for Single-Occupant Vehicle Travel, as Part of Transportation Planning and Development Efforts of a

Locality, Including Programs and Ordinances Applicable to New Shopping Centers, Special Events, and Other Centers of Vehicle Activity

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measures 8, 9, 39, and 40
1993 Carbon Monoxide Plan*, measures 14a, 14b, 14c, and 14d
Revised 1999 Serious Area Carbon Monoxide Plan, measures 46, 50, and 54
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan*, measures 8, 9, 39, and 40
1993 Ozone Plan*, measures 14a, 14b, 14c, and 14d
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measures 23, 24, 52, and 53
1991 PM-10 Plan with 1993 Revisions, measures 23 and 24
Revised 1999 Serious Area PM-10 Plan, measures 64, 68, and 75
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

In the MAG 1993 CO Plan, numerous MAG member jurisdictions indicated that new developments are encouraged through their General Plan to support alternative modes of transportation. In 1995, the Maricopa Association of Governments completed an Urban Form Study which examines the transportation and air quality impacts of land use development within the region.

Arizona legislation enacted in 1987 requires every State agency, board, and commission to submit an air quality impact report to ADEQ on any State-funded transportation related project that it determines may impact air quality. In 1988, the Arizona Legislature required Maricopa County to establish a Voluntary No Drive Days Program. The Clean Air Campaign urges the public not to drive on a given day each week, as well as on alert days when severe pollution concentrations are expected. The program is in effect from October through March when atmospheric conditions may lead to increased carbon monoxide levels.

The commitments from the State and local governments for the Serious Area CO and PM-10 plans include initiatives from a number of municipalities in support of Land Use/Development Alternatives. For example, some municipalities implement general land use planning and development administration to improve the quality

of life, promote land use compatibility, reduce infrastructure costs, promote accessibility, and reduce traffic congestion. Promotion of air quality is an integral part of these efforts and a natural by-product. Another example of general plan support of this measure is through the promotion of land development that integrates multiple modes of transportation, including transit, pedestrians and bicycle facilities, and the creation of ordinances, policies, or design guidelines that encourage mixed-use development and promote non-polluting modes of travel into urban design.

Impact of TIP and RTP:

The construction of transportation facilities and other transportation services programmed in the FY 2026-2030 MAG Transportation Improvement Program will not affect the schedule or effectiveness of this measure.

(xv) Programs for New Construction and Major Reconstruction of Paths, Tracks or Areas Solely for Use by Pedestrian or Other Non-motorized Means of Transportation When Economically Feasible and in the Public Interest

Submitted Plans and Measures:

1987 Carbon Monoxide Plan, measures 29 and 30
1993 Carbon Monoxide Plan*, measures 15a and 15b
1993 Carbon Monoxide Plan Addendum*, measure II-7
Revised 1999 Serious Area Carbon Monoxide Plan, measures 43 and 44
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

1987 Ozone Plan, measures 29 and 30
1993 Ozone Plan*, measures 15a and 15b
1993 Ozone Plan Addendum*, measure II-7
One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

1988 PM-10 Plan, measures 44 and 45
1991 PM-10 Plan with 1993 Revisions, measures 44 and 45
Revised 1999 Serious Area PM-10 Plan, measures 61 and 62
2012 Five Percent Plan for PM-10

* = EPA approval pending

Measure Status:

In the 1987 CO and Ozone Plans and the 1993 CO Plan, a number of jurisdictions indicated that encouragement of pedestrian travel is an ongoing measure. In November 1993, House Bill 2001 authorized ADOT to make grants from its portion of the State Air Quality Fund for intermodal transportation, pedestrian, and bicycle projects and activities.

The commitments from the state and local governments for the Serious Area CO and PM-10 plans include initiatives by most cities and towns in the region to encourage bicycle travel and development of bicycle travel facilities. Several municipalities have encouraged the construction of bike lanes and the installation of bike facilities at activity centers. Demonstration programs will also be explored to promote bicycle use. A pilot program to provide free bikes (Purple People Movers) was identified for use in the downtown area. Over 100 purple bikes and 30 purple bike racks were made available. After implementation of this demonstration project, the Program was ended.

Several local governments have made bicycle and pedestrian improvements beyond commitments made in air quality plans. As an example of the improvements made a few are listed here. Phoenix is developing a Bikeway Master Plan and is painting shared lane markings on streets to create bike boulevards. Mesa has finished a Bikeway Masterplan and has completed 17 miles of pathway along the Consolidated Canal. Also, Scottsdale completed construction on the Upper Camelback Wash along the Arizona Canal that connects 22 miles of pathway.

Impact of TIP and RTP:

The provision of new sidewalks (and supporting amenities such as lighting and landscaping) is often included as part of various road improvement projects, rather than being implemented and programmed separately. It should also be noted that sidewalk provisions are often required of the private sector as a condition for property development. The FY 2026-2030 MAG Transportation Improvement Program contains 24 projects that incorporate pedestrian improvements. Funding for pedestrian projects totals $42.3 million in FY 2026 and $127.9 million over the period of the TIP. Chapter Six of the Regional Transportation Plan includes pedestrian travel in support of these measures.

(xvi) Program to Encourage Voluntary Removal from Use and the Marketplace of Pre-1980 Model Year Light Duty Vehicles and Pre-1980 Model Light Duty Trucks

Submitted Plans and Measures:

Revised 1999 Serious Area Carbon Monoxide Plan, measures 8 and 22
2003 Carbon Monoxide Maintenance Plan
2013 Carbon Monoxide Maintenance Plan

One-Hour Ozone Maintenance Plan
2007 Eight-Hour Ozone Plan
2009 Eight-Hour Ozone Maintenance Plan
2017 Eight-Hour Ozone Moderate Area Plan

Revised 1999 Serious Area PM-10 Plan, measures 8 and 23
2012 Five Percent Plan for PM-10

*= EPA approval pending

Measure Status:

This Transportation Control Measure is a committed measure in the Serious Area CO and PM-10 Plans. This measure includes the Voluntary Vehicle Repair Program and the Voluntary Gasoline Vehicle Retirement Program/Maricopa County Travel Reduction Program as described below.

Voluntary Vehicle Repair Program

In February 2021, the Governor signed House Bill 2329 into law that includes revisions to the Voluntary Vehicle Repair Program (VVRP) (current statute ARS 49-474.03 to be replaced by ARS 49-558.02, effective September 29, 2021). With this legislation, the VVRP becomes the statutory responsibility of the Arizona Department of Environmental Quality (ADEQ). The ADEQ administers the VVRP in parts of Maricopa, Pinal, Yavapai, and Pima counties by providing financial assistance to vehicle owners for emissions related repairs, with the goal of reducing air pollution emitted by vehicles that have failed the required emissions inspection.

ADEQ reports that in FY 2024, 1,553 vehicles have been repaired resulting in annual emissions reductions of 5.06 tons of volatile organic compounds, 98.1 tons of carbon monoxide, and 3.0 tons of nitrogen oxides. For FY 2024, the cost-effectiveness was calculated as $12,698 per ton of emissions reduced. The cost-effectiveness was calculated by dividing the cost of repairing the vehicles by the tons per year of emissions reduced. The Voluntary Vehicle Repair Program is acknowledged as a voluntary program with no emissions credits taken for regional maintenance modeling.

A vehicle owner may participate in the program if all the following criteria are met:

- The owner is willing to participate in the program.
- The vehicle is functionally operational.
- The vehicle is titled in Arizona, has taken the emissions inspection test,

has been registered during the immediately preceding twelve months and has not been unregistered for more than sixty days.

- The vehicle is required to take the emissions inspection test and the vehicle fails the emissions test in the emissions inspection results portion of the test. The vehicle owner is required to apply to the program not more than sixty days after failing the test.

- The emissions control system has not been tampered with.

- The emissions control system has not been removed or disabled, in whole or in part.

- The vehicle is taken to a participating repair facility. Any repairs performed at an unauthorized repair facility are not eligible for payment.

- The vehicle owner repairs the vehicle not more than 60 days after acceptance into the program.

- Participation in the program is limited to one vehicle per owner.

- Motor homes, motorcycles, and salvage and fleet vehicles are not eligible to participate in the program.

In addition, the Voluntary Vehicle Repair and Retrofit Program provides that:

- The vehicle owners who qualify shall pay the first $100 as a copayment.

- Vehicles that require more than $1,000 in repair or retrofit costs are not eligible unless the vehicle owner chooses to pay additional costs.

Voluntary Gasoline Vehicle Retirement Program/Maricopa County Travel Reduction Program

This measure was also included as part of an initiative entitled “Voluntary Gasoline Vehicle Retirement Program/Maricopa County Travel Reduction Program”. Maricopa County indicates that the implementation of this measure involves a program to purchase and retire vehicles that produce excessive emissions, particularly pre-1980 model year light duty automobiles and trucks. Maricopa County revised its Trip Reduction Ordinance to include flexibility provisions, also called Equivalent Emission Reduction Credit, authorized under A.R.S. Section 49-588 which includes voluntary vehicle trade-outs. This revision allowed trade-outs completed after October 16, 1996 to be used to achieve the emission reduction goals established under the ordinance.

Impact of TIP and RTP:

The transportation projects in the FY 2026-2030 MAG Transportation Improvement Program and Regional Transportation Plan are not anticipated to impact the schedule or effectiveness of this measure.

6 TIP AND REGIONAL TRANSPORTATION PLAN CONFORMITY

The principal requirements of the federal transportation conformity rule for TIP and Regional Transportation Plan conformity determinations are: (1) the TIP and Regional Transportation Plan (RTP) must pass an emissions budget test with a budget that has been found to be adequate or approved by EPA for transportation conformity purposes, or interim emissions tests; (2) the latest planning assumptions and emission models in force at the time the conformity analysis begins must be employed; (3) the TIP and RTP must provide for the timely implementation of transportation control measures (TCMs) specified in the applicable air quality implementation plans; and (4) consultation. Consultation generally occurs both at the beginning of the process of preparing the conformity analysis, on the proposed models, associated methods, and assumptions for the upcoming analysis and the projects to be assessed, and at the end of the process, on the draft conformity analysis report. The final determination of conformity for the TIP and Regional Transportation Plan is the responsibility of the Federal Highway Administration and the Federal Transit Administration.

The previous chapters and the appendices present the documentation for all of the requirements listed above for conformity determinations, except for the conformity test results. Prior chapters have also addressed the updated documentation required under the federal transportation conformity rule for the latest planning assumptions and the implementation of transportation control measures specified in the applicable air quality implementation plans. Appendices to this report include consultation correspondence on the MAG Conformity Analysis, the public notice, and the comments received and responses made as part of the public comment process.

This chapter presents the results of the conformity tests, satisfying the remaining requirement of the federal transportation conformity rule. Budget tests were performed for the Maricopa County nonattainment areas, while Action/Baseline tests were performed for the Pinal County nonattainment areas. The results of the Maricopa and Pinal County conformity analyses are described in separate sections below.

MARICOPA COUNTY NONATTAINMENT AREAS

For the Maricopa County nonattainment areas, separate tests were conducted for eight-hour ozone precursors volatile organic compounds (VOC) and nitrogen oxides (NOx), and particulate matter less than or equal to ten microns in diameter (PM-10). On April 8, 2025, the Maricopa County carbon monoxide maintenance area reached the end of the 20-year maintenance period and therefore transportation conformity requirements no longer apply to carbon monoxide.

For each test, the required emissions estimates were developed using the transportation and emission modeling approaches required under the federal transportation conformity rule and summarized in Chapters 3 and 4. The applicable conformity tests were reviewed in Chapter 1. The results are summarized below, followed by a more detailed discussion of the findings for each pollutant. Table 37 and Figures 6 through Figure 8 present results for VOC, NOx, and PM-10, respectively, in metric tons per day for each of the analysis years tested.

For volatile organic compounds and nitrogen oxides for the eight-hour ozone standard, the applicable conformity test is the emissions budget test using the 2017 conformity budgets for VOC and NOx established in the MAG 2017 Eight-Hour Ozone Moderate Area Plan (2008 ozone standard). On June 2, 2020, EPA published a final rule to approve the portions of the MAG 2017 Eight-Hour Ozone Plan that address the requirements for emissions inventories, a demonstration of attainment by the applicable attainment date, reasonably available control measures, reasonable further progress, motor vehicle emission budgets for transportation conformity, vehicle inspection and maintenance programs, new source review rules, and offsets, effective July 2, 2020. The modeling results indicated that the VOC and NOx emissions projected for 2026, 2030, 2040, and 2050 are less than the 2017 VOC and NOx emissions budgets established in the MAG 2017 Eight-Hour Ozone Moderate Area Plan. The TIP and Regional Transportation Plan therefore satisfy the conformity emissions test for eight-hour ozone.

For PM-10, the applicable conformity test is the emissions budget test, using the approved budgets from both the MAG 2012 Five Percent Plan for PM-10 and the Revised MAG 1999 Serious Area Particulate Plan for PM-10. On June 10, 2014, EPA approved the MAG 2012 Five Percent Plan for PM-10 including the 2012 PM-10 conformity budget, effective July 10, 2014. Also, on July 25, 2002, EPA approved the Revised MAG 1999 Serious Area Particulate Plan for PM-10 including the 2006 PM-10 motor vehicle emissions budget, effective August 26, 2002. The modeling results indicated that the PM-10 emissions projected for 2026, 2030, 2040, and 2050 are less than the 2012 PM-10 emissions budget and the 2006 PM-10 emissions budget. The TIP and Regional Transportation Plan therefore satisfy the conformity tests for PM-10.

As all requirements of the federal conformity rule have been satisfied, a finding of conformity for the FY 2026-2030 MAG Transportation Improvement Program and MOMENTUM 2050 MAG Regional Transportation Plan Update is supported.

Conformity Test Results for Eight-Hour Ozone

The conformity modeling results for eight-hour ozone, compared with the budgets from the MAG 2017 Eight-Hour Ozone Moderate Area Plan (2008 ozone standard), are presented in Table 37 and graphed in Figure 6 and Figure 7. The volatile organic compound and nitrogen oxides emissions correspond to ozone season average day conditions consistent with the MAG 2017 Eight-Hour Ozone Moderate Area Plan. The projected VOC emissions in 2026, 2030, 2040, and 2050 are 29.7, 24.2, 19.2, and 17.0 metric tons per day, respectively, which are less than the 2017 VOC budget of 45.7 metric

Figure 6: Eight-Hour Ozone: Volatile Organic Compounds (VOC) Results for Conformity Budget Test

Maricopa Nonattainment Areas

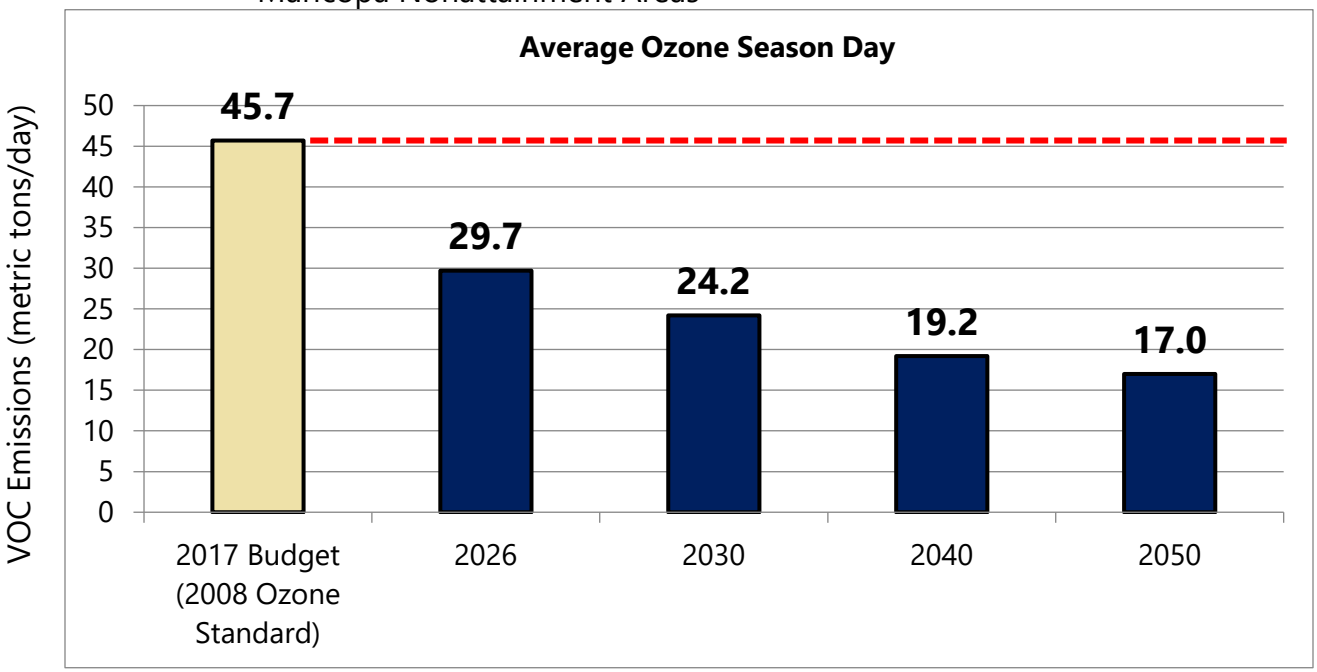
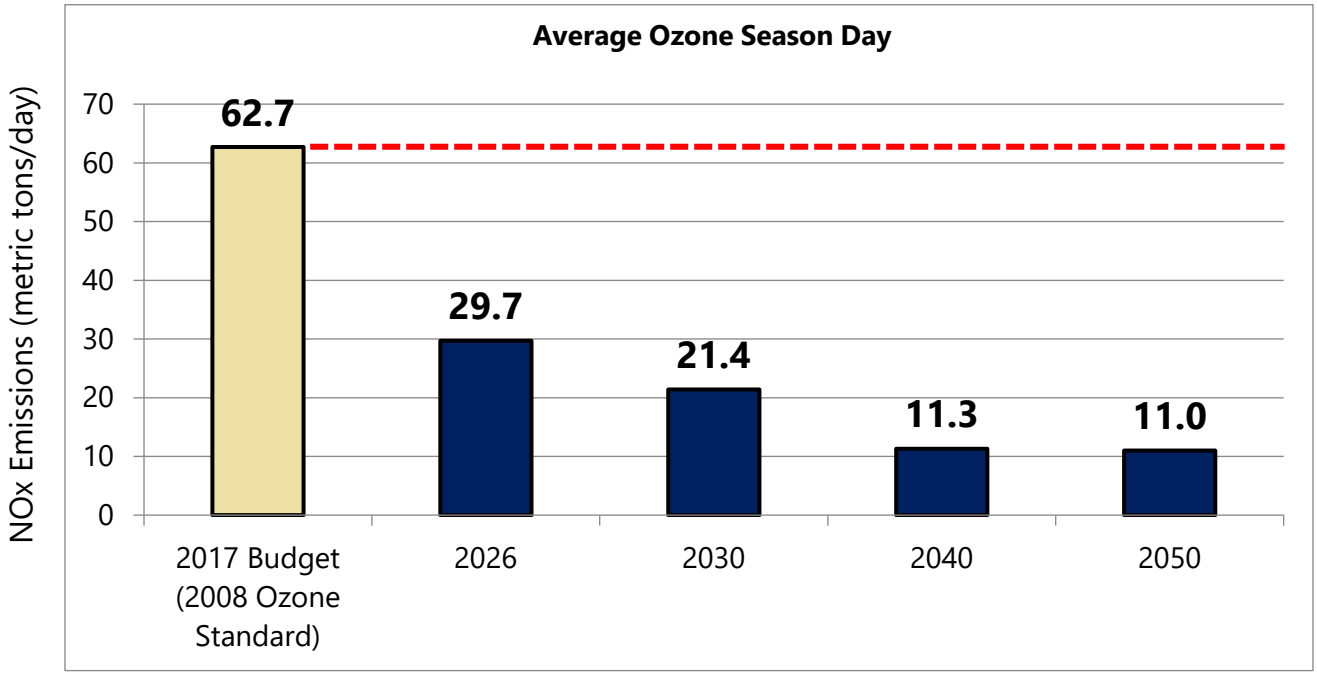


Figure 7: Eight-Hour Ozone: Nitrogen Oxides (NOx) Results for Conformity Budget Test

Maricopa Nonattainment Areas



tons per day. The projected NOx emissions in 2026, 2030, 2040, and 2050 are 29.7, 21.4, 11.3, and 11.0 metric tons per day, respectively, which are less than the 2017 NOx budget of 62.7 metric tons per day. Since the projected 2026, 2030, 2040, and 2050 VOC and NOx emissions for the TIP and Regional Transportation Plan are all less than the approved 2017 VOC and NOx budgets in the MAG 2017 Eight-Hour Ozone Moderate Area Plan, the results support a finding of conformity.

Conformity Test Results for Particulate Matter

The conformity modeling results for PM-10 are listed in Table 37 and graphed in Figure 8. The PM-10 emissions were calculated for the PM-10 nonattainment area for an annual average day. The projected PM-10 emissions in 2026, 2030, 2040, and 2050 are 42.3, 44.8, 47.7, and 49.9 metric tons per day, respectively, which are all less than the 2012 budget of 54.9 metric tons per day and the 2006 budget of 59.7 metric tons per day.

Since the projected PM-10 emissions for the TIP and Regional Transportation Plan are less than the approved 2012 budget established in the MAG 2012 Five Percent Plan for PM-10 and the approved 2006 budget established in the Revised MAG 1999 Serious Area Particulate Plan for PM-10, the results support a finding of conformity.

Figure 8: PM-10 Results for Conformity Budget Test

Maricopa County Nonattainment Areas

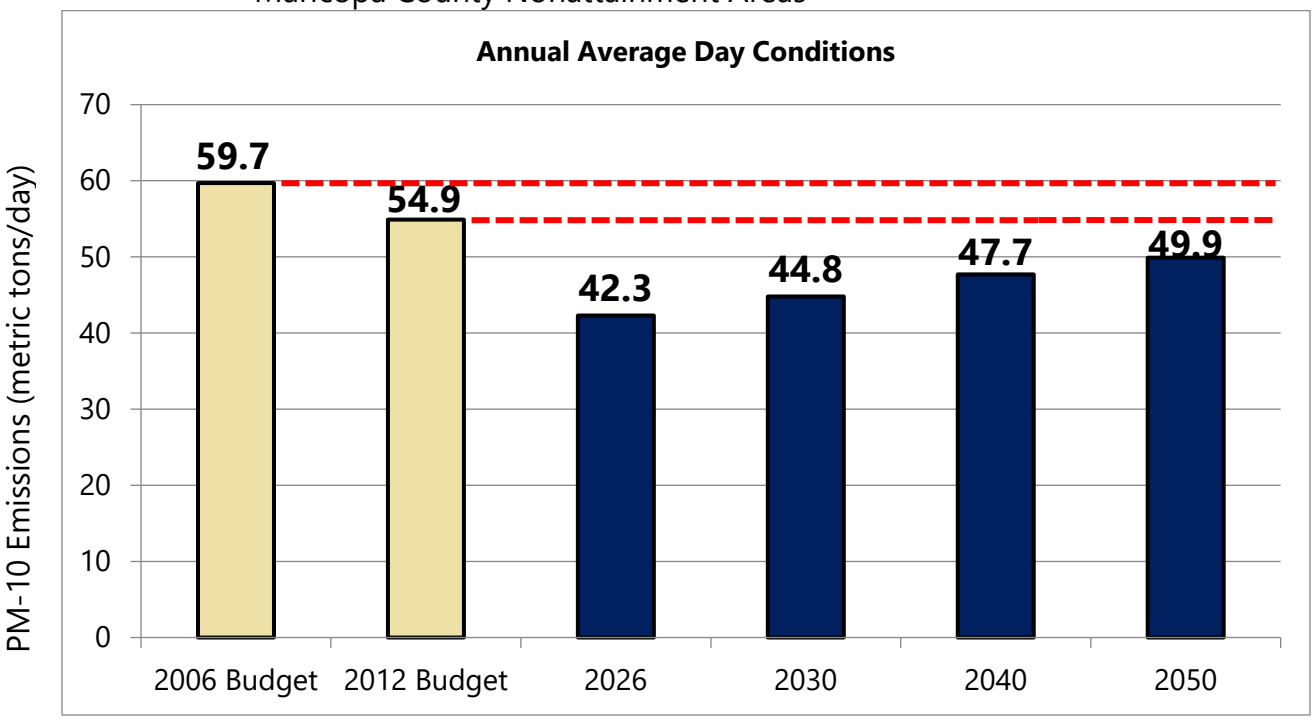


TABLE 37.
CONFORMITY BUDGET TEST RESULTS FOR VOC, NOx, AND PM-10 (METRIC TONS/ DAY)
MARICOPA COUNTY NONATTAINMENT AREAS

Pollutant	**Eight-Hour Ozone**		**PM-10**	
Year	2017 [a] VOC	2017 [a] NOx	2012 [b]	2006 [c]
Budget Test	*45.7*	*62.7*	*54.9*	*59.7*
2026	29.7	29.7	42.3	42.3
2030	24.2	21.4	44.8	44.8
2040	19.2	11.3	47.7	47.7
2050	17.0	11.0	49.9	49.9

a. The MAG 2017 Eight-Hour Ozone Moderate Area Plan (2008 ozone standard) established 2017 budgets for volatile organic compounds (VOC) and nitrogen oxides (NOx). The onroad mobile source emissions correspond to ozone season average day conditions.

b. The MAG 2012 Five Percent Plan for PM-10 established a 2012 emissions budget corresponding to an annual average day.

c. The Revised MAG1999 Serious Area Particulate Plan for PM-10 established a 2006 emissions budget corresponding to an average annual day.

PINAL COUNTY NONATTAINMENT AREAS

For the Pinal County nonattainment areas, Action/Baseline tests were conducted for particulate matter (PM-10) for the West Pinal PM-10 Nonattainment Area and particulate matter (PM-2.5) and nitrogen oxides (NOx) for the West Central Pinal PM-2.5 Nonattainment Area. Also, for informational purposes, MAG conducted a budget test using the 2026 budget established in the submitted 2023 Five Percent Particulate Plan for PM-10 for the West Pinal County Nonattainment Area. For each test, the required emissions estimates were developed using the transportation and emission modeling approaches required under the federal transportation conformity rule and summarized in Chapters 3 and 4. The applicable conformity tests were reviewed in Chapter 1. The results are summarized below. Table 38 and Figure 9 through Figure 11 present the conformity results for the PM-10 and PM-2.5 nonattainment areas for each of the analysis years tested.

Conformity Test Results for the West Pinal PM-10 Nonattainment Area

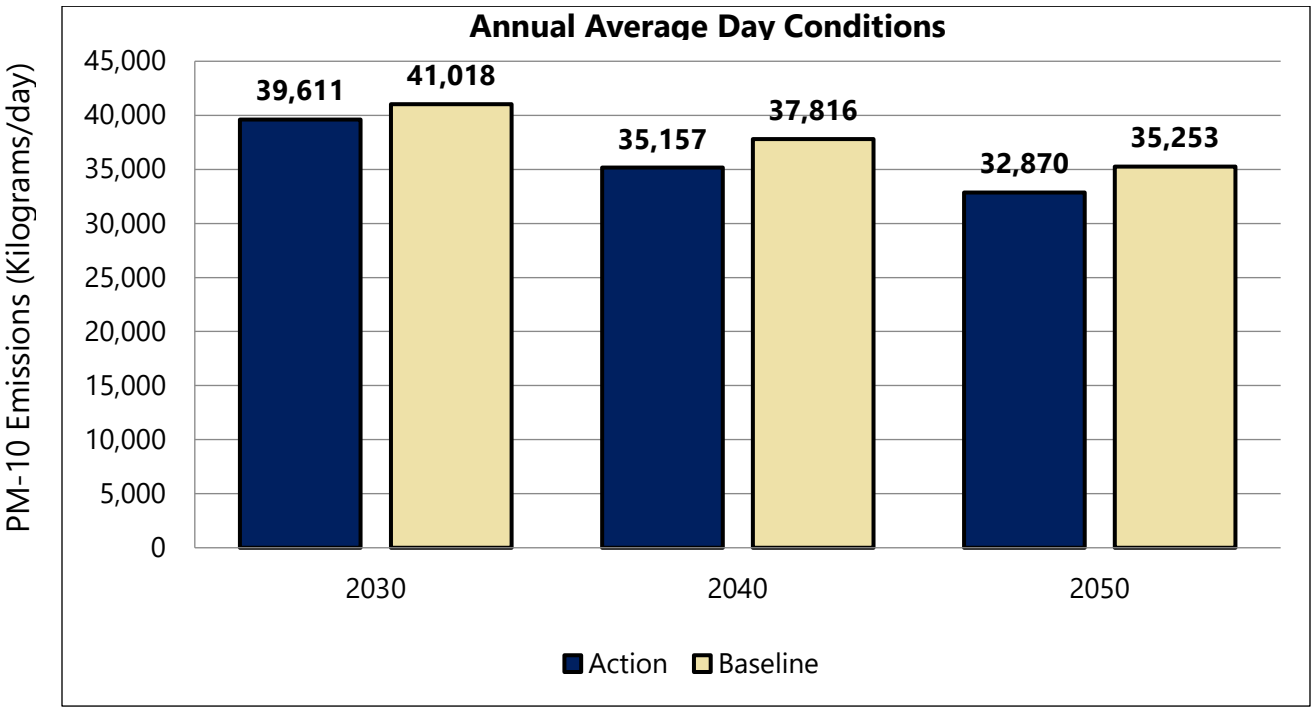
As required by the EPA transportation conformity rule, the interim emissions tests must be applied since EPA has not found the 2026 budget to be adequate for transportation conformity purposes or approved the 2023 Five Percent Particulate Plan for PM-10 for the West Pinal County Nonattainment Area. The conformity modeling results for PM-10 are listed in Table 38 and graphed in Figure 9. The PM-10 emissions were calculated for the PM-10 nonattainment area for an annual average day.

The projected PM-10 emissions in 2030, 2040, and 2050 for the Action scenarios are 39,611, 35,157, and 32,870, kilograms per day, respectively. The projected PM-10 emissions in 2030, 2040, and 2050 for the Baseline scenarios are 41,018, 37,816, and 35,253 kilograms per day, respectively.

Since the PM-10 emissions projected for the Action scenarios are not greater than the PM-10 emissions projected for the Baseline scenarios in all conformity analysis years, it is also reasonable to expect the build emissions would not exceed the baseline emissions for the time periods between the analysis years. These results support a finding of conformity.

Also, for informational purposes, MAG conducted the budget test using the 2026 budget of 42.5 metric tons per day established in the submitted 2023 Five Percent Particulate Plan for PM-10 for the West Pinal County Nonattainment Area. The conformity modeling results are provided in Table 39. The PM-10 emissions were calculated for the West Pinal PM-10 Nonattainment Area for an annual average day. The projected emissions in 2026, 2030, 2040, and 2050 are 42.4, 39.6, 35.2, and 32.9 metric tons per day, respectively, which are all less than the 2026 motor vehicle emissions budget of 42.5 metric tons per day.

Figure 9: PM-10 Results for Conformity Interim Emission (Action/Baseline) Test
Pinal County PM-10 Nonattainment Area



Conformity Test Results for the West Central Pinal PM-2.5 Nonattainment Area

The conformity modeling results for PM-2.5 and NOx are listed in Table 38 and graphed in Figure 10 and Figure 11. The PM-2.5 and NOx emissions were calculated for the West Central Pinal PM-2.5 Nonattainment Area for an annual average day.

The projected PM-2.5 emissions in 2030, 2040, and 2050 for the Action scenarios are 16, 14, and 16 kilograms per day, respectively. The projected PM-2.5 emissions in 2030, 2040, and 2050 for the Baseline scenarios are 16, 15, and 18 kilograms per day, respectively.

The projected NOx emissions in 2030, 2040, and 2050 for the Action scenarios are 309, 179, and 210 kilograms per day, respectively. The projected NOx emissions in 2030, 2040, and 2050 for the Baseline scenario are 349, 259, and 306 kilograms per day, respectively.

Since the PM-2.5 and NOx emissions projected for the Action scenarios are not greater than the PM-2.5 and NOx emissions projected for the Baseline scenarios in all conformity analysis years, it is also reasonable to expect the build emissions would not exceed the baseline emissions for the time periods between the analysis years. These results support a finding of conformity.

Figure 10: PM-2.5 Results for Conformity Interim Emission (Action/Baseline) Test

Pinal County PM-2.5 Nonattainment Area

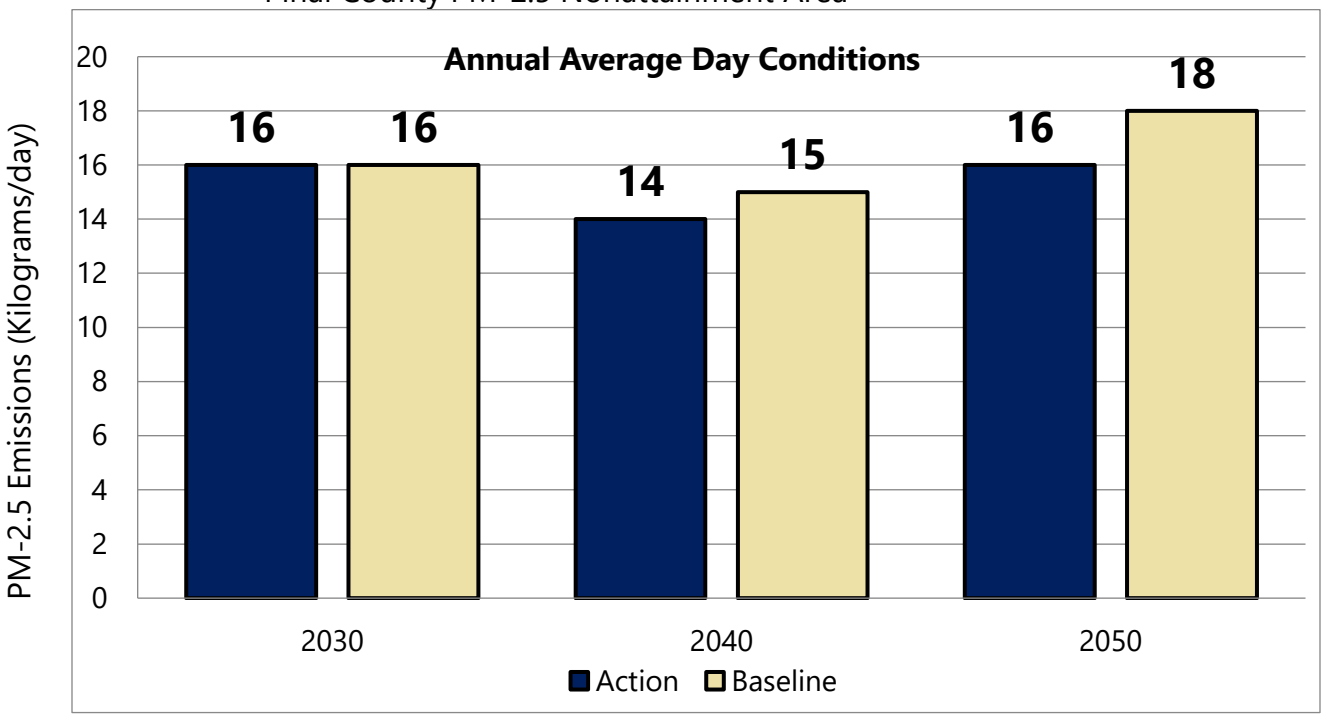


Figure 11: NOx Results for Conformity Interim Emission (Action/Baseline) Test

Pinal County PM-2.5 Nonattainment Area

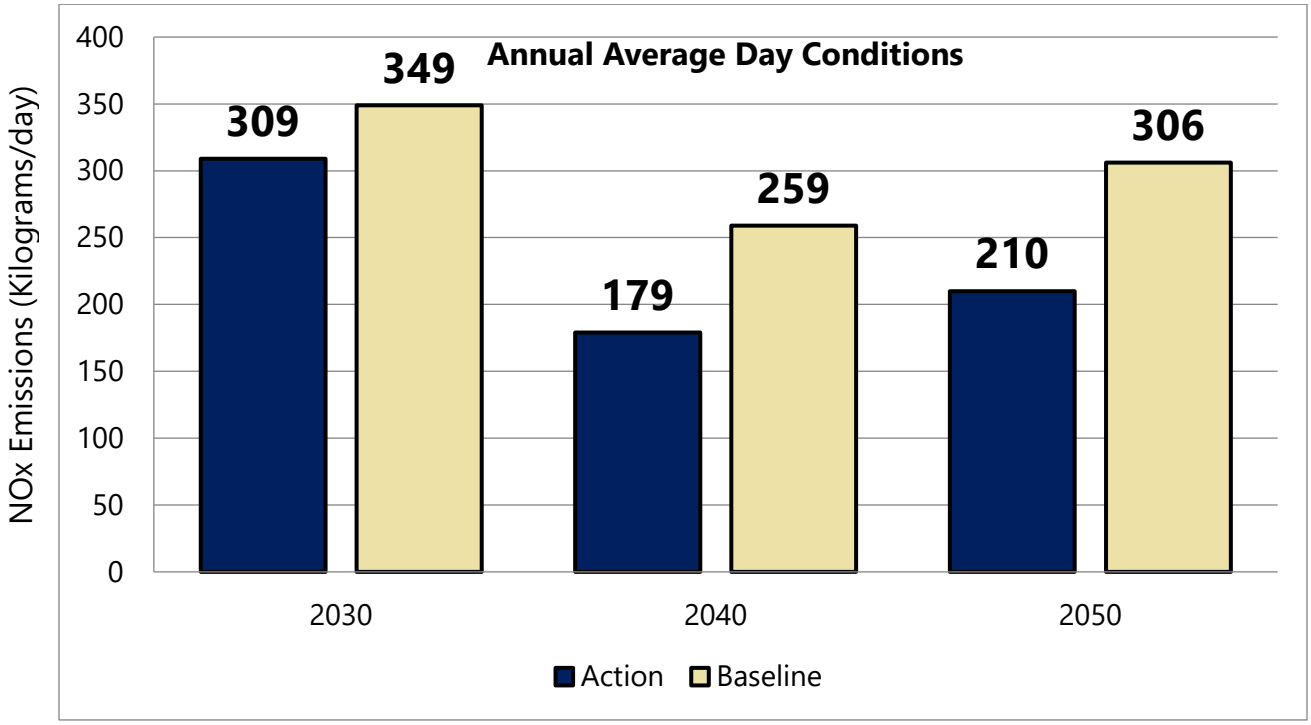


TABLE 38.
CONFORMITY INTERIM EMISSION (ACTION/BASELINE) TEST RESULTS
(KILOGRAMS/DAY)
PINAL COUNTY NONATTAINMENT AREAS

Pollutant	***PM-10***	***PM-2.5***	***NOx***
2030			
- Action	39,611	16	309
- Baseline	41,018	16	349
2040			
- Action	35,157	14	179
- Baseline	37,816	15	259
2050			
- Action	32,870	16	210
- Baseline	35,253	18	306

TABLE 39.
CONFORMITY TEST RESULTS USING THE BUDGET FROM THE SUBMITTED 2023 FIVE PERCENT PLAN FOR PM-10 FOR THE PINAL PM-10 NONATTAINMENT AREA FOR INFORMATIONAL PURPOSES
(METRIC TONS/DAY)

Pollutant	**PM-10**
Budget Test	42.5
2026	42.4
2030	39.6
2040	35.2
2050	32.9

The submitted 2023 Five Percent Particulate Plan for PM-10 for the Pinal County Nonattainment Area establishes a 2026 PM-10 budget of 42.5 metric tons/day. EPA has advised that MAG should include the budgets from submitted plans so that an adequacy finding on a submitted SIP does not interfere with the conformity process.

GLOSSARY

40 CFR Parts 51 and 93	Sections 51 and 93 from Title 40 of the Code of Federal Regulations describing the transportation conformity rule.
ADEQ	Arizona Department of Environmental Quality.
ADOT	Arizona Department of Transportation.
AP-42	AP-42, Fifth Edition, provides PM-10 emission factors. Common name for the EPA Compilation of Air Pollutant Emission Factors.
Applicable Plan	An air quality plan that has been approved by EPA for a specific air pollutant.
A.R.S.	Arizona Revised Statutes. The codified laws of the State of Arizona.
Arterial Roadway	A major urban street serving through traffic and also providing access to adjacent land.
Attainment	The status of having air quality that is below (i.e., cleaner air) the allowable national standard for a particular pollutant.
AZ-SMART	Arizona Socioeconomic Modeling, Analysis, and Reporting Toolbox is the MAG socioeconomic model used to develop population and employment projections.
Action/Baseline	Action or Build refers to the Action scenario which assumes the Baseline or No-Build scenario and the implementation of the proposed action (included in the TIP or RTP) for each of the years to be analyzed. The Baseline scenario assumes the future transportation network without implementation of the proposed action (included in the TIP or RTP) for the years to be analyzed.
CAA	The U.S. Clean Air Act, referring to the Air Pollution Control Act of 1955, as subsequently amended in 1963, 1967, 1970, 1974, 1977, and 1990.

Capacity	The maximum number of vehicles that a roadway can carry in a given time period under prevailing roadway, traffic, and control conditions.
Centroid Connector	An abstract representation of the local street system, as used in MAG travel demand models. These links connect the centroids of zones, where trips begin or end, to arterial or collector roadways on the modeled road network.
CMAQ	Congestion Mitigation and Air Quality Improvement Program.
CO	Carbon monoxide. A colorless, odorless, poisonous gas that results from the incomplete combustion of carbon-based fuels, such as gasoline.
Collector Roadway	A minor urban street providing access to and from local streets and serving adjacent land use.
Concentration	The relative content of a pollutant in the air, expressed as a volume unit to volume unit often expressed as an average for a specified time interval. For example, the national standard for ambient carbon monoxide concentration is an eight-hour average of 9.0 parts per million.
Conformity	An analysis which demonstrates that a transportation plan, program, or project conforms with the State Implementation Plan purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and that such activities will not cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.
Congestion	Traffic congestion is a condition in which vehicles experience undue delay. It is quantified in the MAG travel demand models by the ratio of traffic volume to capacity (V/C). A V/C ratio of 1.00 or more is considered severe congestion.

Emission Factor	The rate at which a pollutant is emitted from a given source (example: grams per mile) for given conditions (e.g., vehicle type and model year, vehicle speed, fuel type, and ambient air temperature).
Episode Day	A day selected to represent conditions (meteorology, etc.) under which violations of the air quality standard for a particular pollutant are likely to occur.
EPA	United States Environmental Protection Agency.
Exceedance	A term used to refer to an episode during which ambient concentrations of an air pollutant in a region are higher than the allowable national standard.
FHWA	Federal Highway Administration.
FIP	Federal Implementation Plan.
FMS	Freeway Management System. Infrastructure such as cameras, variable message signs, and ramp metering systems to improve the flow of people and goods on limited access facilities.
FTA	Federal Transit Administration.
Freeway	A divided highway with two or more lanes for the exclusive use of traffic in each direction, and with full control of access and egress.
FY	Fiscal Year. The federal fiscal year extends from October 1 to September 30. For example, FY 2025 begins on October 1, 2024.
Hot Spot	Localized area with the potential to cause or contribute to a violation of an air quality standard. For example, a busy intersection where vehicular traffic may cause or contribute to increased emissions of carbon monoxide may attribute to a violation of the standard.
HOV	High Occupancy Vehicle. Multi-occupant vehicles such as a carpool, vanpool, or bus.
HOV Lane	A roadway lane available for use by High Occupancy Vehicles.

HPMS	Highway Performance Monitoring System. Summary information for urbanized areas provides detailed data for a sample of the arterial and collector functional systems to assess highway condition, performance, air quality trends, and future investment requirements.
I/M	Vehicle Inspection/Maintenance Program.
ITS	Intelligent Transportation System. The deployment of advanced electronics and information technologies to improve the performance of freeways and arterial roadways.
Link	A computer record describing a section of roadway in the MAG transportation models.
Local Roadway	A road, usually with low traffic volume, designed solely to serve adjacent development rather than through traffic.
MAG	Maricopa Association of Governments. The Maricopa Association of Governments was designated the metropolitan planning agency for Maricopa County, Arizona, by Governor Jack Williams on December 14, 1973.
MCAQD	Maricopa County Air Quality Department.
Metric Ton	A unit of mass equal to 1000 kilograms, or approximately 2203 pounds.
Mode Choice Model	A computer model which determines mode choice, such as transit, auto driver, and auto passenger, based on variables such as travel times, costs, and income of travelers.
MOVES4	MOVES4 is a currently approved EPA model for estimating onroad vehicle emission factors. This model is used to estimate the emission factors for VOC, NOx, and PM-10 exhaust, tire wear, and brake wear emissions.
MOVESLink4	A MAG software program that combines emission factors (such as from MOVES4) with link-level transportation data to produce onroad mobile emission inventories.

MPO	Metropolitan Planning Organization. A body of elected public officials responsible for regional transportation decision-making, as required under federal transportation planning regulations.
NAAQS, or National Standard	Refers to the National Ambient Air Quality Standards (NAAQS) which are the maximum pollutant levels which may not be exceeded in the ambient air to protect the public from adverse health effects.
Network	A computer readable representation of a specific urban street and highway system.
Nonattainment Area	An area designated by the U.S. Environmental Protection Agency as not being in attainment of the national standard for a specified pollutant.
Node	A point identifying one end of a link in the MAG transportation models.
NO_x	Nitrogen Oxides includes nitric oxide (NO) and nitrogen dioxide (NO_2). These gaseous air pollutants combine with volatile organic compounds (i.e. hydrocarbons) in the presence of sunlight to produce ozone.
O_3	Ozone is a secondary pollutant formed by the combination of VOCs and NO_x in the presence of sunlight.
OBD	On-Board Diagnostics. A computer based system built into all model year 1996 and newer light-duty cars and trucks. OBD monitors the performance of some of the engine's major components, including individual emission controls.
Phased in I/M Cutpoints	Cutpoints are the maximum emission level, by pollutant, used to determine if a vehicle passes or fails the emissions test administered through the vehicle inspection and maintenance program. The phased-in I/M cutpoints are the cutpoints currently enacted into legislation for vehicles subject to the enhanced emissions test.
PM-10	Particulate Matter less than or equal to ten microns in diameter.
ppm	Parts per million, a measure of pollution concentration.

psi	Pounds per square inch, a measure of pressure.
Reentrained Dust	Dust deposited on the roadway that is subsequently projected into the air by the passage of motor vehicles.
Regional Rideshare and Telework Program	The MAG sponsored program which provides free technical assistance to individuals, companies, and public sector entities interested in carpooling, vanpooling, or other transportation alternatives to drive-alone motor vehicle use.
ROSS Plan	Regional Off-Street System Plan. A plan describing a region-wide system of off-street paths/trails for non-motorized transportation.
RPTA	Regional Public Transportation Authority. A political subdivision of the State of Arizona established in 1985 to conduct regional transit planning and to develop and operate a regional transit system in Maricopa County.
RTP	Regional Transportation Plan.
SIP	State Implementation Plan. Mandated by the Clean Air Act, SIPs contain details to monitor, control, maintain, and enforce compliance with National Ambient Air Quality Standards.
Socioeconomic Data	Data consists primarily of TAZ-level household projections of population and employment by type which are input to the MAG travel demand models.
TAZ	Traffic Analysis Zone. A small geographic area for which socioeconomic data is estimated in the MAG travel demand models.
TCM	Transportation Control Measure. A TCM as defined in CAA Section 108(f)(1)(A) includes any measure in an applicable implementation plan which is intended to reduce emissions from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions (e.g., transit improvements).
TIP	Transportation Improvement Program. An annual or biennial document listing transportation projects to be funded in upcoming years.

TMA	Transportation Management Association. A group comprised generally of businesses to identify and develop solutions to shared transportation problems.
TOG	Total Organic Gases. Gaseous emissions that lead to the formation of ozone.
TransCAD	Software programs which are used to perform the MAG travel demand modeling.
Travel Reduction Program (TRP)	A program administered by Maricopa County, pursuant to the provisions of Arizona House Bill 2206 (1988), as subsequently strengthened by adoption of the Maricopa County Trip Reduction Ordinance.
U.S. DOT	United States Department of Transportation.
V/C Ratio	Volume to Capacity Ratio. A parameter used to measure congestion. For a given roadway link, it is calculated as total traffic volume divided by capacity.
Violation	A term used to define the number of exceedances that result in noncompliance with the national standard.
VMT	Vehicle Miles of Travel. A measure of total vehicle travel within a specified area and time frame.
VOC	Volatile Organic Compounds. VOCs are emitted in the storage and use of fuel, solvents, and many industrial and consumer chemicals, as well as from vegetation. VOCs and nitrogen oxides, when emitted in the presence of sunlight, undergo chemical reactions which result in the formation of ozone.

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