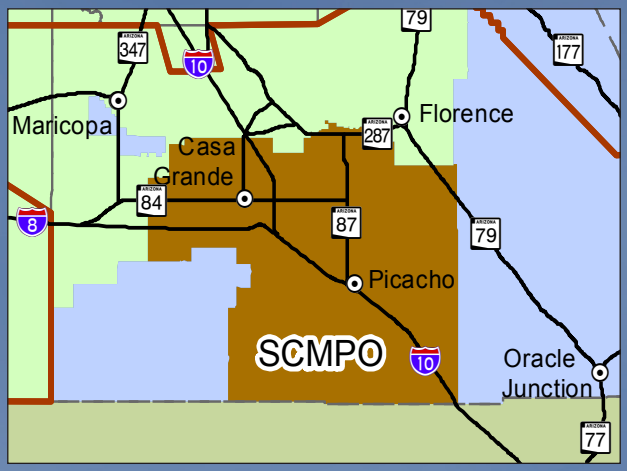
SUN CORRIDOR
METROPOLITAN PLANNING ORGANIZATION



DRAFT
2020 CONFORMITY ANALYSIS

FEBRUARY 2020

2020 SUN CORRIDOR MPO CONFORMITY ANALYSIS

FOR THE

FY 2020-2029 SUN CORRIDOR MPO TRANSPORTATION IMPROVEMENT PROGRAM

AND THE

SUN CORRIDOR MPO REGIONAL TRANSPORTATION PLAN 2040

February 2020

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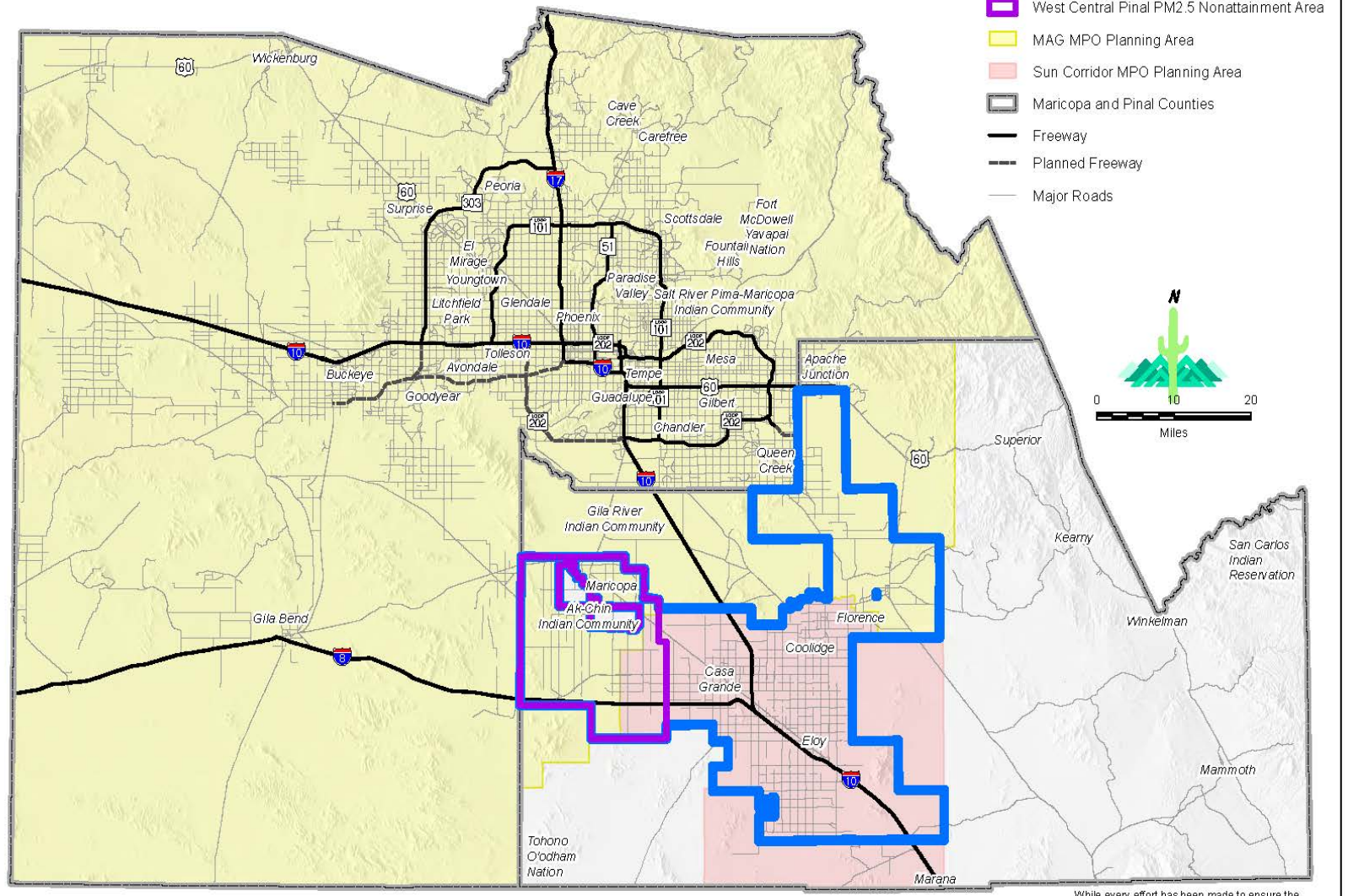
On May 6, 2013, the Sun Corridor Metropolitan Planning Organization (MPO) was designated in the Pinal County area. The Sun Corridor Metropolitan Planning Area Boundary includes the cities of Casa Grande, Eloy, Coolidge, and unincorporated areas of Pinal County. The results of the conformity analysis supports a finding of conformity for the Draft FY 2020-2029 Sun Corridor MPO Transportation Improvement Program and Draft Sun Corridor MPO Regional Transportation Plan 2040 in the West Pinal PM-10 Nonattainment Area and West Central Pinal PM-2.5 Nonattainment 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.

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.

On July 1, 2013, the Federal Highway Administration notified the Governor of a transportation conformity lapse in the West Pinal PM-10 Nonattainment Area, effective July 2, 2013. The new West Pinal PM-10 Nonattainment Area had been designated by the Environmental Protection Agency, effective July 2, 2012. The Clean Air Act §176(c)(6) requires a metropolitan long range transportation plan and transportation improvement program conformity determination within twelve months of the effective date of an area being designated nonattainment. The twelve month conformity grace period had lapsed.

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: July 2019

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.

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 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 Pinal County are designated as a nonattainment area with respect to federal air quality standards for particulate matter less than or equal to ten microns in diameter (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 or maintenance 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.

PINAL COUNTY NONATTAINMENT AREAS

For the Pinal County 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 NOx for the West Central Pinal PM-2.5 Nonattainment Area for the analysis years of 2020, 2025, 2035, and 2040. 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-2.

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-3.

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-4.

Figure ES-2: PM-10 Results for Conformity Interim Emission (Action/Baseline) Test
Pinal County PM-10 Nonattainment Area

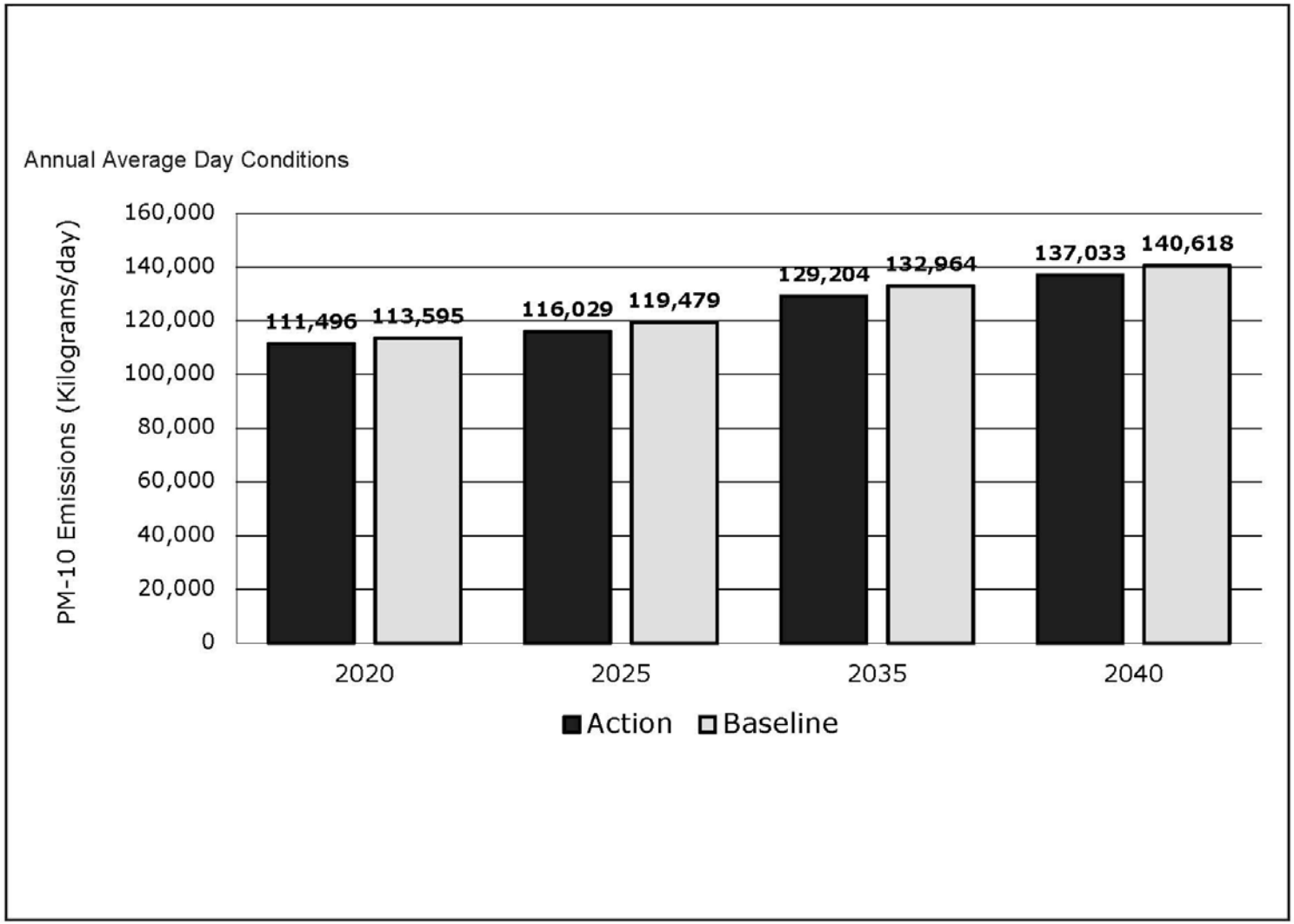


Figure ES-3: PM-2.5 Results for Conformity Interim Emission (Action/Baseline) Test
Pinal County PM-2.5 Nonattainment Area

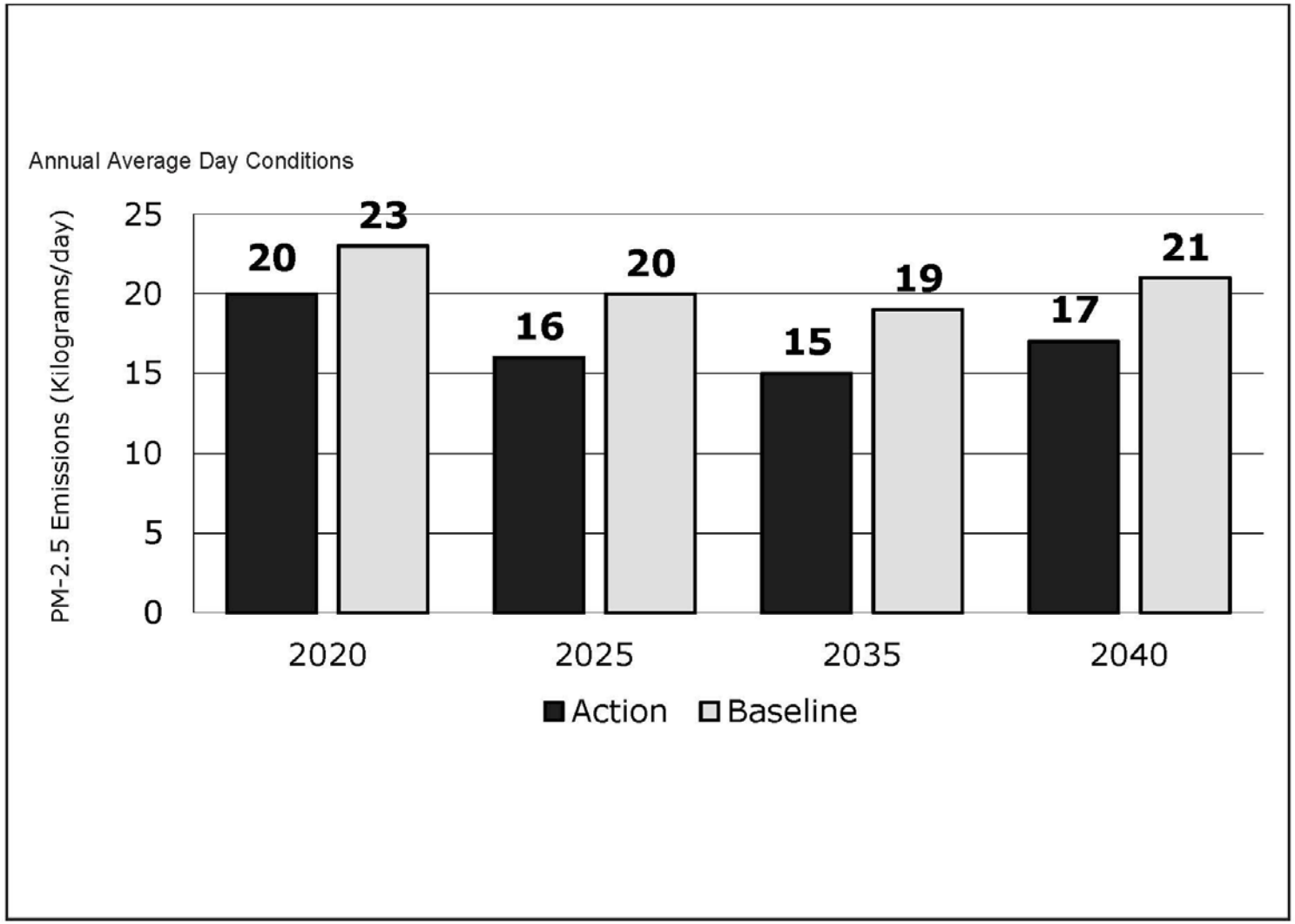


Figure ES-4: NOx Results for Conformity Interim Emission (Action/Baseline) Test
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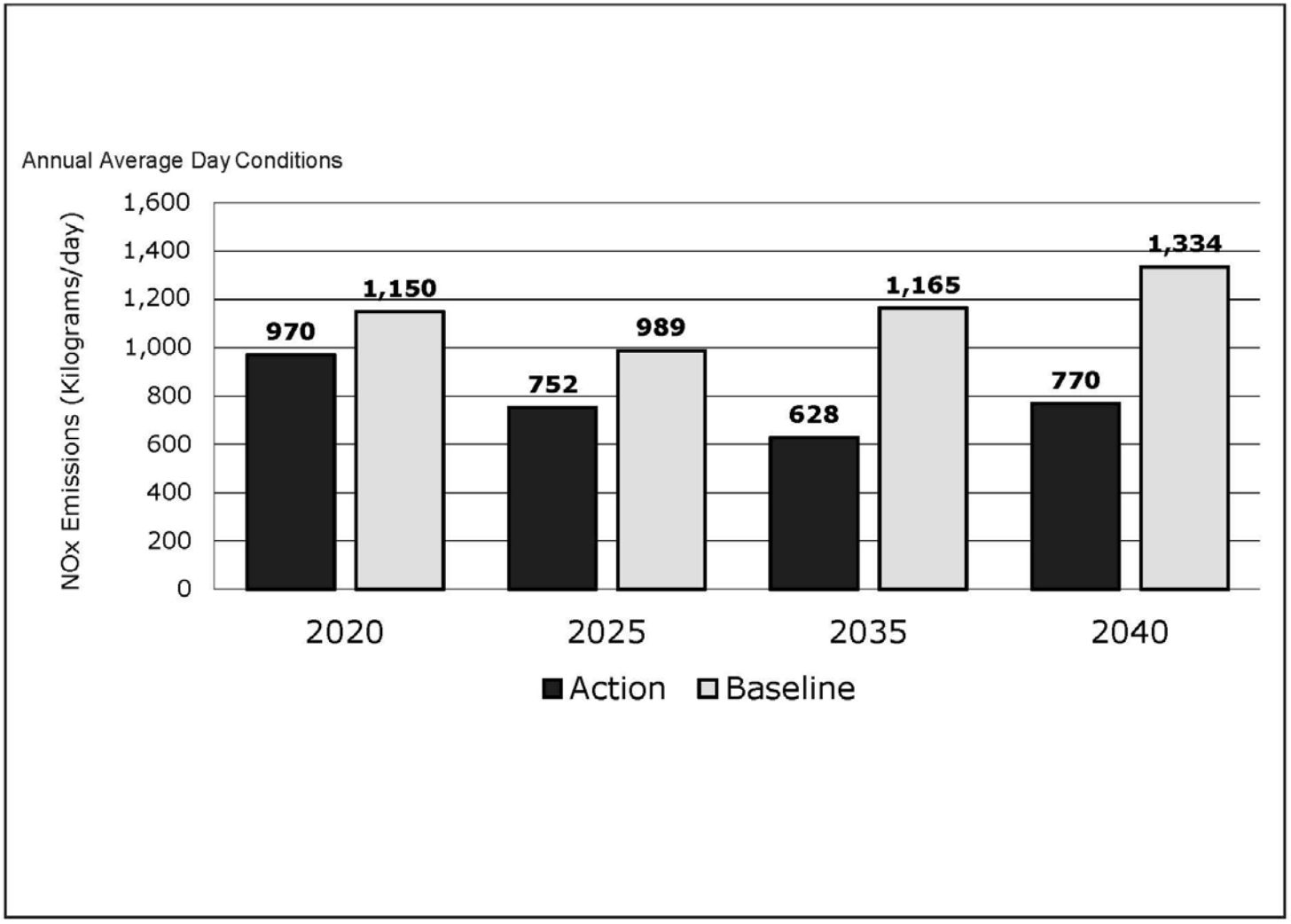

REPORT ORGANIZATION

The report is organized into five 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. The results of the conformity analysis for the FY 2020-2029 Sun Corridor MPO Transportation Improvement Program and Sun Corridor Regional Transportation Plan 2040 are provided in Chapter 5.

Consultation documentation and other related information are contained in the appendices. The appendices include copies of memoranda previously circulated for consultation. The appendices of the final version of this report also includes responses to comments made on the draft report.

1 FEDERAL AND STATE REGULATORY REQUIREMENTS

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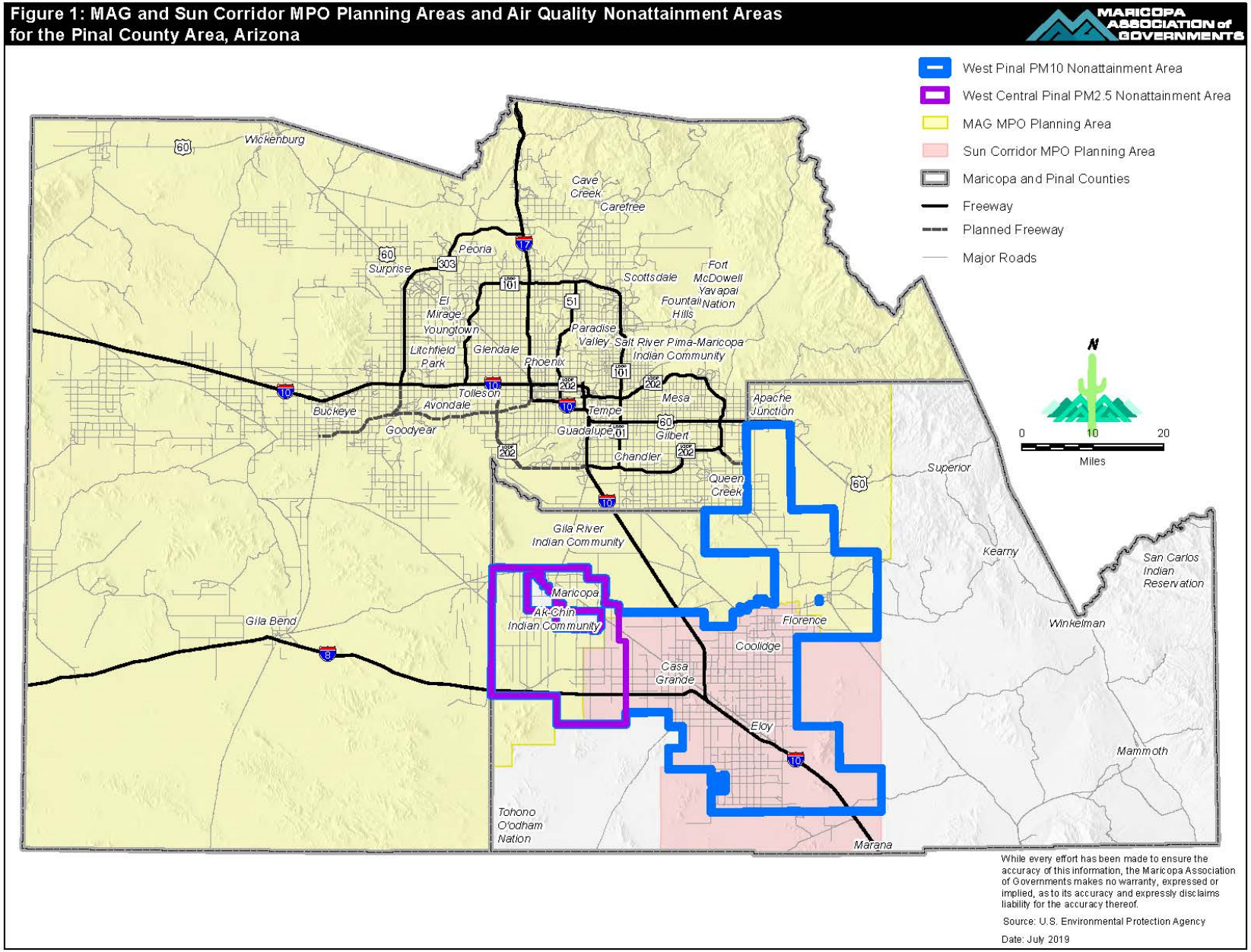

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The criteria for determining conformity of transportation programs and plans under the federal transportation conformity rule (40 Code of Federal Regulations Parts 51 and 93) and the applicable conformity tests for the Pinal County nonattainment areas are summarized in this chapter. The 2020 Sun Corridor MPO Conformity Analysis for the FY 2020-2029 Sun Corridor MPO Transportation Improvement Program (TIP) and the Sun Corridor MPO Regional Transportation Plan 2040 (RTP) 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 issued 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 are:

- 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 2020 Sun Corridor MPO Conformity Analysis are described later in this section, and include the last year of the Sun Corridor MPO Regional Transportation Plan 2040.

- 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.

To date, 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., Sun Corridor MPO, for this region) must develop specific conformity guidance and consultation procedures and processes. The guidance document should address both the determination of "regional significance" status for individual transportation projects, the process by which regionally significant projects may be approved, and procedures for the public and interagency consultation processes to be used in the development of regional transportation plans, programs, and projects within the Sun Corridor MPO portion of the Pinal 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 issued 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 October 23, 2019.

   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.

TABLE 1.
CONFORMITY CRITERIA FROM THE FINAL RULE

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

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. Since there are no applicable plans for the West Pinal PM-10 Nonattainment Area and West Central Pinal PM-2.5 Nonattainment Area, a review of Transportation Control Measure implementation has not been provided.

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:

   - The Sun Corridor MPO 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)).

   - The Sun Corridor MPO 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)).

AIR QUALITY PLANS AND DESIGNATIONS

Pinal County Nonattainment Areas

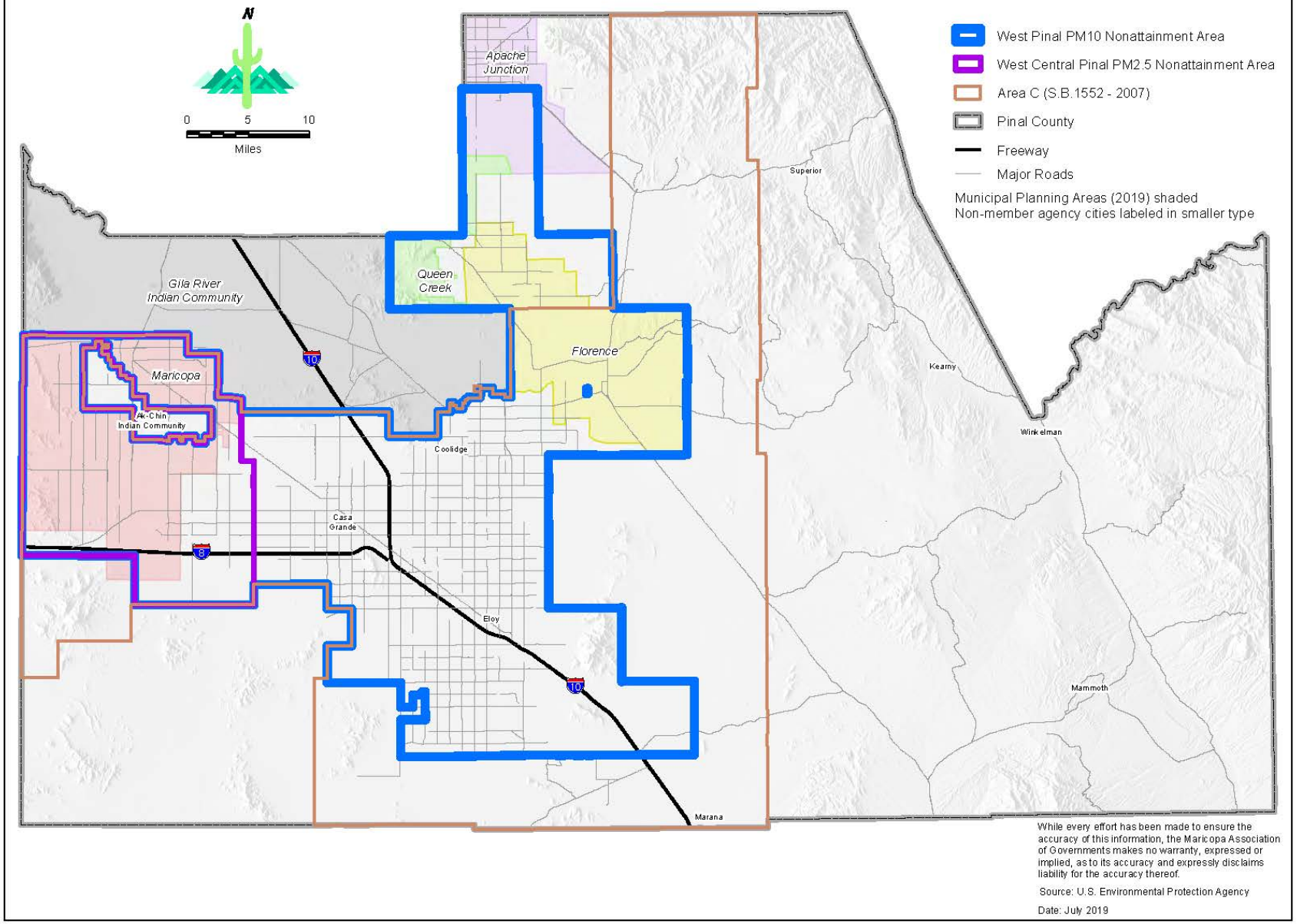
On February 3, 2011, EPA published the final rule designating a portion of Pinal County as nonattainment for the 2006 24-hour PM-2.5 standard based on 2006-2008 data, effective March 7, 2011. The West Central Pinal PM-2.5 Nonattainment Area covers approximately 323 square miles in the west central part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

Nonattainment Boundaries

As shown in Figure 2, portions of the West Pinal PM-10 Nonattainment Area and West Central Pinal PM-2.5 Nonattainment Area are located within the metropolitan planning area boundaries of both the Sun Corridor MPO and MAG.

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



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 September 17, 2019, EPA signed a *Federal Register* notice taking final action to determine that the West Central Pinal PM-2.5 Nonattainment Area met the 2006 24-hour PM-2.5 standard as of December 31, 2017.

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.

CONFORMITY TEST REQUIREMENTS

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. The ADEQ prepared and submitted the 2015 West Pinal Moderate PM-10 Nonattainment Area SIP to EPA on December 21, 2015. In January 2017, EPA indicated they will not find to be adequate or approve the 2018 emissions budget in the 2015 West Pinal Moderate PM-10 Nonattainment Area SIP. Therefore, the 2018 PM-10 budget in that SIP was not included in the 2020 Sun Corridor MPO Conformity Analysis.

Since there is no emissions budget that has 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, 2018. 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 Sun Corridor MPO or MAG TIP projects that were coded in the 2018 traffic assignment for the conformity analysis conducted in September 2019, but are no longer included in the 2018 assignment to be used in the 2020 Sun Corridor MPO Conformity Analysis, or have completed the NEPA process.

The action networks include Sun Corridor TIP and RTP projects in the portion of the nonattainment area located within the Sun Corridor MPA, as well as regionally significant highway and transit projects in the remainder of the West Pinal nonattainment area, that are scheduled to be open to the public by 2025, 2035, and 2040.

PM-2.5

On February 3, 2011, EPA also designated the West Central Pinal PM-2.5 Nonattainment Area in Pinal County, effective March 7, 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. Conformity analyses must also be performed for the PM-2.5 nonattainment area, even if EPA issues a clean data finding. On April 25, 2019, EPA published a proposed 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.

For the 2020 Sun Corridor MPO Conformity Analysis, an action/baseline analysis was performed by applying the assumptions described above to the smaller Pinal PM-2.5 nonattainment area. 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.

ANALYSIS YEARS

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 plan (i.e., the Sun Corridor MPO Regional Transportation Plan 2040 and the MAG 2040 RTP, both of which contain projects in the Pinal nonattainment areas).

These three criteria are met by the years 2020, 2025, 2035, and 2040. For the 2020 Sun Corridor MPO Conformity Analysis, onroad mobile source emissions were estimated for the action/baseline scenarios for 2020, 2025, 2035, and 2040. 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.

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 entitled, “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 Sun Corridor MPO conformity determinations including the 2020 Sun Corridor MPO Conformity Analysis, 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 2020 Sun Corridor MPO Conformity Analysis. For this conformity analysis, “time that the conformity analysis begins” was October 23, 2019.

TABLE 2. LATEST PLANNING ASSUMPTIONS FOR SUN CORRIDOR MPO 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 Department of Administration (ADOA) prepared a new set of Maricopa County projections based on the U.S. Census Bureau's 2013-2017 American Community Survey data and employment projections prepared by Dr. George Hammond at the University of Arizona's Economic and Business Research Center. MAG developed a set of subcounty population and employment projections for Maricopa County that are consistent with the ADOA population projections. The MAG Regional Council approved the subcounty socioeconomic projections in June 2019. In addition, Central Arizona Governments (CAG) approved the Pinal County subcounty socioeconomic projections, based on the ADOA Pinal County projections, in August 2019. The MAG Traffic Analysis Zone System was updated and expanded to reflect the latest socioeconomic changes in 2019.	AZ-SMART (UrbanSim)	Under the Governor's Executive Order 2011-04, official county socioeconomic projections will be developed by the Arizona Department of Administration. Following the release of the 2020 U.S. Census data, the Arizona Department of Administration (ADOA) will prepare a new set of Maricopa County projections in December 2022. MAG will develop a set of subcounty population and employment projections for Maricopa County that are consistent with the ADOA population projections.
Traffic Counts	The highway models were validated for the 2018 base year, using approximately 3,000 traffic counts collected by MAG in 2018-2019.	TransCAD	Region-wide traffic counts are typically collected by MAG every 2-4 years, if funds are available. MAG has just completed 2018-2019 regional traffic counts.

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

Assumption	Source	MAG Models	Next Scheduled Update
Vehicle Miles of Travel	The passenger travel demand models recalibration has been completed. The new datasets used in the recalibration process include 2017 Household and Establishment surveys, 2018-2019 counts, and 2015 transit on-board survey. The recalibration effort includes a complete update of the regional travel demand model based on the relevant data sets listed above. Trip generation has been updated and trip distribution is being recalibrated based on the 2017 Household Travel Survey. Mode choice recalibration is also underway based on the 2015 on-board survey. The truck model was recalibrated based on the new 2013 Transearch data, 2018 ATRI data, and 2015 StreetLight data. The external travel model was recalibrated in 2011 based on the 2008 external travel study. 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 using 2018-2019 traffic counts and speed data. The overall calibration year for the model is 2018 and the latest base year based on a comprehensive validation is 2018.	TransCAD	Future updates to the four-step model will include further refinements/updates to various model sub-components.

TABLE 2 (CONTINUED). LATEST PLANNING ASSUMPTIONS FOR SUN CORRIDOR MPO 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 50 million traffic speed records purchased from HERE for calendar year 2018 and also compared to a similar data set purchased in the same year.	TransCAD	Travel speed data are purchased periodically to validate the transportation models. MAG also utilizes commercial speed data for future estimation and model calibration purposes. MAG has purchased new speed data required for the ongoing model calibration and validation to the new base year processes. MAG has also collaborated with ADOT and capitalized on ADOT speed data contracts.
Vehicle Registrations	July 2019 vehicle registrations were provided by ADOT.	MOVES2014b	When newer data become available from ADOT.
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 socioeconomic projections based on the U.S. Census Bureau's 2013-2017 American Community Survey have been developed by the Arizona Department of Administration (ADOA). ADOA completed the county level projections in December 2018. MAG prepared subcounty socioeconomic projections for Maricopa County that were adopted by the MAG Regional Council in June 2019. The Central Arizona Governments (CAG) also approved subcounty population projections for Pinal County, based on the official ADOA projections, in August 2019.

The travel and speed estimates produced by the MAG transportation models for the analysis years in the 2020 Sun Corridor Conformity Analysis are based on the MAG and CAG subcounty population and employment projections that are consistent with the U.S. Census Bureau's 2013-2017 American Community Survey.

Methodology

ADOA prepared the official Arizona population projections by county, using the U.S. Census Bureau's 2013-2017 American Community Survey as the base. MAG used official ADOA population projections consistent with the U.S. Census Bureau's 2013-2017 American Community Survey data released in December 2018. In addition, employment projections were prepared by Dr. George Hammond at the University of Arizona's Economic and Business Research Center. 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 regional market areas based upon the pre-existing location of these activities, land consumption, and transportation system accessibility. The allocation of population and employment from market areas to land use parcels was accomplished with UrbanSim, which simulates real-estate development and locates population and employment 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 2019.

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 approved by the CAG Regional Council in August 2019.

Next Scheduled Update

Under the Governor's Executive Order 2011-04, official county socioeconomic projections will be developed by the Arizona Department of Administration. Following the release of the 2020 U.S. Census data, the Arizona Department of Administration will prepare a new set of Maricopa County projections in December 2022. MAG will develop a set of subcounty population and employment projections for Maricopa County that are consistent with the ADOA population projections.

TRAFFIC COUNTS

The highway traffic volumes estimated by the MAG transportation models were validated in 2019 for the 2018 base year, using over 3,000 traffic counts collected by MAG in 2018-2019 in Maricopa and Pinal counties. MAG transportation models have been re-calibrated in 2019 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 a traditional four-step process: trip generation, trip distribution, mode choice, and traffic/transit assignment. Trip generation determines the number of person trips produced and attracted by traffic analysis zone. Trip distribution links the productions and attractions by TAZ. The nested logit mode choice model determines the number of person trips allocated to automobile and transit modes. 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 and trip distribution is utilized to achieve near-equilibrium highway speeds.

Next Scheduled Update

Region-wide traffic counts are typically collected by MAG every 2-4 years and commercial speed data is normally purchased every 1-2 years, if funding is available. MAG completed 2018-2019 regional traffic counts. 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 the transportation data.

VEHICLE MILES OF TRAVEL

MAG completed recalibration of the regional transportation model in 2019. The recalibration of the models is based on data from a 2017 household travel survey and 2015 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 MOVESLink 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 3,000 traffic counts 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.

In previous MAG conformity analyses, transportation model estimates of VMT were reconciled with the VMT reported by the Highway Performance Monitoring System (HPMS) in order to comply with Section 93.122(b) of the Transportation Conformity Regulations. These 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 VMT with HPMS.

Since EPA approved the MAG Carbon Monoxide and One-Hour Ozone Redesignation Request and Maintenance Plans in 2005, the Maricopa area is no longer a serious nonattainment area for carbon monoxide or one-hour ozone. In the future, if the Maricopa area is classified as serious, severe or extreme for a more stringent eight-hour ozone standard, the VMT estimated by the transportation models will be reconciled against HPMS VMT for the most recent model calibration year.

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

	Freeways and Arterials	
Area Type	**R^2**	**% RMSE**
CBD	0.982	26.4%
Outlying CBD	0.983	17.5%
Mixed Urban	0.963	20.4%
Suburban	0.852	31.7%
Rural	0.935	31.5%
All	0.973	23.5%

The requirement to reconcile travel demand model output to HPMS traffic volumes does not apply to the Pinal County nonattainment areas, because the urbanized area population is less than 200,000. In addition, the areas are in nonattainment for particulates, rather than ozone or carbon monoxide.

As indicated above, the requirements of Section 93.122(b) do not apply to the Maricopa County nonattainment or maintenance areas or the Pinal County nonattainment areas. Therefore, reconciliation of modeled VMT with HPMS is not required for the 2020 Sun Corridor MPO Conformity Analysis. However, it is important to note that the most recent comparison of model-estimated and HPMS VMT for the travel demand model calibration year of 2015 concluded that the model and HPMS VMT estimates were nearly identical.

Next Scheduled Update

Future updates to the four-step model will include further refinements/updates to various model sub-components.

SPEEDS

Speeds obtained from the capacity-restrained traffic assignments are “fed-back” in the travel demand modeling chain. The trip distribution, mode choice, and traffic assignment steps 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.

Periodically, MAG conducts speed studies or purchases commercial speed data to compare model-estimated speeds with empirical data. MAG purchased 2018 speed data from HERE that was used to update the speeds estimated by the MAG transportation models in 2019, as discussed in the Methodology section below.

Methodology

MAG used the 2015 HERE region-wide speed data to improve the speed estimates produced by the transportation models. In the transportation modeling area covering Maricopa and Pinal counties, the TransCAD-estimated speeds for arterials and freeways are on average 0.9 percent higher than the observed peak and off-peak speeds for all area types. The differences in speed by time period, functional class, and area type demonstrate that 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 obtains commercial speed data on a regular basis, every one or two years. The recalibrated model will be validated with new speed and traffic count data as appropriate.

VEHICLE REGISTRATIONS

Vehicle registrations for Maricopa and Pinal counties in July 2019 are the latest provided to MAG by the Motor Vehicle Division of the Arizona Department of Transportation (ADOT). In the 2020 Sun Corridor MPO Conformity Analysis, the July 2019 registrations were input to the latest version of MOVES to estimate onroad mobile source emissions. MOVES derives the vehicle population and age distribution for estimating wintertime CO emissions from the July 2019 registrations. The vehicle registration data provided by ADOT has been converted to MOVES2014b format. MAG will use newer vehicle registration data when provided by ADOT.

IMPLEMENTATION MEASURES

Pinal County Nonattainment Areas

Table 4 summarizes the implementation measures used in performing conformity for the Maricopa County nonattainment and maintenance areas. Some of these measures also apply to portions of Pinal County that are located in Area A. These measures are discussed in Chapter 4.

Since EPA has not approved State Implementation Plan (SIP) revisions for the Pinal County nonattainment areas, emission reductions were assumed for sources in these areas that are currently controlled by Arizona state laws. For the 2020 Sun Corridor MPO Conformity Analysis, a six percent reduction was applied to PM-10 emissions from

vehicles traveling on agricultural unpaved roads in the Pinal PM-10 nonattainment area. This reduction reflects requirements of the Arizona Agricultural Best Management Practices (BMPs) that apply to all moderate PM-10 nonattainment areas in the state. The Agricultural BMPs went into effect when EPA designated West Pinal to be a moderate PM-10 nonattainment area, effective July 2, 2012. The Arizona Department of Environmental Quality is responsible for the regulation and enforcement of Agricultural Best Management Practices.

The six percent reduction is based on assumptions used in calculating agricultural unpaved road emissions in the 2008 Periodic Emissions Inventory for PM-10 prepared by the Maricopa County Air Quality Department (MCAQD, 2011). State statute requires the implementation of two BMPs for unpaved agricultural roads within the Maricopa County PM-10 nonattainment area. The 2008 Periodic Emissions Inventory calculated a 12 percent reduction in uncontrolled PM-10 emissions from unpaved agricultural roads due to the implementation of two BMPs: access restriction and reduced vehicle speeds.

State statute requires the implementation of one BMP for unpaved agricultural roads within the West Pinal County PM-10 nonattainment area. Since only one BMP is required, a six percent reduction in uncontrolled PM-10 emissions from unpaved agricultural roads in the West Pinal County PM-10 nonattainment area is applied. The six percent reduction was applied in each conformity analysis year for both the action and baseline scenarios in the Pinal PM-10 nonattainment area.

In addition, PM-10 emission reduction credit was taken in the Pinal PM-10 nonattainment area for projects to pave unpaved roads that are included in the FY 2020-2024 MAG TIP and 2040 RTP, as well as projects in the Sun Corridor MPO FY 2020-2029 TIP and RTP 2040. The emission reductions due to BMPs and paving projects were not applied to the Pinal PM-2.5 nonattainment area, because unpaved road emissions are not part of the conformity analysis for that area.

TABLE 4.
COMMITTED MEASURES IN THE
MARICOPA COUNTY NONATTAINMENT AND MAINTENANCE AREAS

Measure #	Reference	Measure Description	Pollutant(s)
1	CO Maintenance Plan[1]	CARB Phase 2 with 3.5 Percent Oxygenate in Winter	CO
1	Eight-Hour Ozone Maintenance Plan[2]	Summer Fuel Reformulation with 7 psi from May 1 through September 30	VOC, NOx
2 2	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Phased-In Emission Test Cutpoints	CO, VOC, NOx
3 3	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	One-Time Waiver from Vehicle Emissions Test	CO, VOC, NOx
5 4C 16	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan Serious Area PM-10 Plan[3]	Coordinate Traffic Signal Systems	CO, VOC, NOx, PM-10
6 5C	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Develop Intelligent Transportation Systems	CO, VOC, NOx
7 4	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Tougher Enforcement of Vehicle Registration and Emission Test Compliance	CO, VOC, NOx
1C 6	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Expansion of Area A Boundaries (HB 2538)	CO, VOC, NOx
2C 1C	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Gross Polluter Option for I/M Program Waivers	CO, VOC, NOx
3C 2C	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Increase Waiver Repair Limit Options	CO, VOC, NOx
3C	Eight-Hour Ozone Maintenance Plan	Federal Heavy Duty Diesel Vehicle Emissions Standards	VOC, NOx

[1]*MAG 2003 Carbon Monoxide Redesignation Request and Maintenance Plan for the Maricopa County Nonattainment Area*, May 2003 (MAG, 2003).

[2]*MAG 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa Nonattainment Area*, February 2009 (MAG, 2009).

[3]*Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area*, February 2000 (MAG, 2000).

3 TRANSPORTATION MODELING

The transportation modeling performed for the 2020 Sun Corridor MPO Conformity Analysis for the FY 2020-2029 Sun Corridor MPO Transportation Improvement Program and Sun Corridor MPO Regional Transportation Plan 2040 is based on the latest planning assumptions, as required in the federal 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 night time vehicle traffic, as well as daily transit ridership, for the MAG transportation modeling area. The transportation model utilized for the 2020 Sun Corridor MPO Conformity Analysis contains approximately 3,400 traffic analysis zones and covers an area of approximately 16,000 square miles in Maricopa and Pinal counties. The current official model was comprehensively validated for 2018 traffic data. The new base year for the most recent validations is 2018 and over 3,000 recently collected traffic counts were used. The latest calibration of the transportation models was completed prior to the 2020 Sun Corridor MPO Conformity Analysis. MAG recalibrated the entire travel demand model using the 2017 Household Travel Survey and the 2015 transit on-board survey. Several other recently acquired 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 has also acquired new truck GPS data that was used to recalibrate 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 against over 3,000 traffic counts. 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 2019. The Pinal County subcounty population projections were approved by the Central Arizona Governments (CAG) Regional Council in September 2019. 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. The allocation of population and employment from market areas to land use parcels is accomplished with UrbanSim. 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. Restrained assignments are produced for the AM peak period, mid-day, PM peak period, and night time, with volumes and congestion estimated for each period.

- Speeds obtained from the capacity-restrained traffic assignments are "fed-back" in the travel demand modeling chain. The trip distribution, mode choice, and traffic assignment steps of the chain are executed until a convergence criteria is met. MAG convergence criteria is based on the recommendations produced by the Federal Transit Administration.

- The travel impedances used in the trip distribution and traffic assignment steps of the MAG travel demand modeling are a composite function of highway travel times and costs. The nested logit mode choice 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 recently purchased 2018 HERE data for the validation of the new 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., Sun Corridor MPO for the Pinal County nonattainment areas). The 2020 Sun Corridor MPO Conformity Analysis is based on socioeconomic projections that were approved by the MAG Regional Council in June 2019 and Central Arizona Governments (CAG) in August 2019.

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 Department of Administration (ADOA) consistent with the U.S. Census Bureau's 2013-2017 American Community Survey data released in December 2018. In addition, employment projections were prepared by Dr. George Hammond at the University of Arizona's Economic and Business Research Center. MAG then prepared socioeconomic projections by traffic analysis zone (TAZ), based on the ADOA 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 ADOA county projections were approved by the MAG Regional Council in June 2019.

In addition, socioeconomic projections for Pinal County were prepared by MAG utilizing AZ-SMART and were approved in collaboration with Central Arizona Governments. The projections by Municipal Planning Area (MPA) for Pinal County were approved by the CAG Regional Council in August 2019 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 2018-2022) and RTP (including amendments through December 2018) in effect at the time the projections were approved. For the 2020 Sun Corridor MPO Conformity Analysis, the projections of population, households, and employment by TAZ will be 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 2020 Sun Corridor MPO Conformity Analysis for the FY 2020-2029 Sun Corridor MPO Transportation Improvement Program and Sun Corridor MPO Regional Transportation Plan 2040. A summary of the population, employment, and travel characteristics for the MAG transportation modeling area for each action scenario in the 2020 Sun Corridor MPO Conformity Analysis is presented in Table 5. The vehicle miles of travel forecasts for each of the pollutant specific modeling areas for Maricopa and Pinal counties are presented in Appendix B.

Transportation Network Assumptions

Not all of the street and freeway projects included in the TIP qualify for inclusion in the highway network. Projects which call for study, design, right-of-way acquisition, 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 highway networks include only the one-mile grid system of streets, plus freeways. This includes all streets classified as arterials, as well as some collectors.

Traffic on collectors and local streets not explicitly coded on the highway network 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 network used in the 2020, 2025, 2035, and 2040 baseline scenarios for the Pinal County nonattainment areas contains regionally significant highways open to traffic by December 31, 2018. In addition, the baseline network includes regionally significant projects in the Pinal County PM-10 nonattainment area, regardless of funding source, that meet one of the following criteria: are under construction, undergoing right of way acquisition, programmed in FY 2019 of the conforming MAG TIP, or have completed the National Environmental Policy Act (NEPA) process. These criteria comply with Section 93.119(h) of EPA conformity regulations.

The 2020, 2025, 2035, and 2040 networks used in the conformity budget analyses for the Maricopa nonattainment and maintenance areas and as the action scenarios for the Pinal County nonattainment areas assume implementation of all qualifying highway projects in the FY 2020-2024 MAG Transportation Improvement Program (TIP) and 2040 MAG Regional Transportation Plan Update (RTP), as well as other regionally significant projects to be implemented in the Pinal County area.

The 2020 network includes highway projects in the TIP scheduled to be open to traffic by December 31, 2020. The 2025 network includes highway projects in the RTP through the year 2025, as well as projects in the TIP. The 2035 network includes highway projects in the RTP through the year 2035, as well as projects in the TIP. The 2040 network assumes implementation of all highway projects in the RTP, as well as all qualifying highway projects in the TIP. It is important to note that the action transportation modeling networks include the regionally significant highway projects in the Maricopa County nonattainment and maintenance areas, as well as the Pinal County nonattainment areas.

TABLE 5.
TRAFFIC NETWORK COMPARISON FOR ACTION SCENARIOS EVALUATED FOR THE 2020 SUN CORRIDOR MPO 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]
2020	5,390	2,310	129.1	31.4	5,660
2025	5,844	2,527	141.9	31.3	5,875
2035	6,754	2,981	170.4	30.9	6,621
2040	7,195	3,173	182.7	30.4	6,852

[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, Mid-Day, PM and Night Time 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 P.M. peak period.

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

Coding Conventions

Specific coding conventions or criteria are applied to determine whether a project qualifies for highway 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 input to the mode choice step of the MAG transportation models to determine the number of person trips made by transit, which in turn, removes vehicle trips from the highways. For all analysis years, the bus and rail networks reflect the latest planning information available at the time the conformity analysis began.

Maricopa Nonattainment and Maintenance Areas

The most recent information on transit ridership and operating policies is provided by Valley Metro/Regional Public Transportation Authority (Valley Metro/RPTA, 2019c). Information on current transit fares is provided in Table 6 (Valley Metro/RPTA, 2019a).

The information on fares and transit operations in this section of the conformity analysis is provided to address federal transportation conformity requirements.

TABLE 6.
SUMMARY OF TRANSIT FARES FOR
VALLEY METRO SERVICE

Valley Metro Service	Fares
Local Bus/Light Rail	
1-Ride	$2.00
One Day Pass	$4.00
7-Day	$20.00
15-Day	$33.00
31-Day	$64.00
Semester Pass	$230.00
Express/Rapid Bus	
1-Ride	$3.25
One Day Pass	$6.50
31-Day	$104.00

Note: Reduced fares are available to persons with disabilities, seniors age 65 and older, Medicare cardholders, and youths ages 6 through 18. Youths age 5 and under ride for free when accompanied by a fare-paying responsible person who can directly supervise the child (Valley Metro/RPTA, 2019a).

Current Fixed Route Service

Valley Metro bus service is provided to an area of approximately 523 square miles within the MAG region. In addition, the METRO 28-mile light rail system connects the cities of Phoenix, Tempe, and Mesa. According to Valley Metro, there were 62 local routes providing fixed route service, 14 express bus routes, six RAPID commuter express routes, and 20 circulator routes located in Avondale, Glendale, Mesa, Phoenix, Scottsdale, and Tempe. Based on the FY 2018 Transit Performance Report for the period ending June 30, 2018, there were 50,998,002 fixed route boardings and 15,786,911 light rail boardings. In FY 2018, there were 68,908,957 system total boardings including fixed

route, light rail, dial-a-ride (1,089,542 boardings) and vanpools (1,034,502 boardings), a increase of 0.9 percent from FY 2017.

Other Existing Transit Services

Nine paratransit systems operate within Maricopa County, including Glendale Paratransit, Peoria Paratransit, Phoenix Paratransit, Phoenix Taxi, Scottsdale Taxi, Valley Metro East Valley Paratransit, Valley Metro Northwest Valley Paratransit, Valley Metro Regional Paratransit and Valley Metro Ride Choice. These services generally operate within the area with fixed route bus service.

In addition, 21 shuttle and circulator transit services have been implemented across the region with different operating schedules, including: Avondale Circulator ZOOM; Glendale Urban Shuttle (GUS) 1, GUS 2, and GUS 3 providing transit in the Glendale area; Mesa Downtown BUZZ; Peoria On The Go (POGO) serving areas in Peoria; 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, Scottsdale Mustang, Scottsdale Old Town Trolley, Scottsdale 68th Street/Camelback Road 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 reports a number of transit service changes in FY 2018. The changes are as follows:

- Service increases on Local Routes 3, 19, 29, 32, 50, 51, 60, 67, 72, 77, 83, 104, 112, 136, and Rural Route 685, and Neighborhood Circulator Route GUS 2;
- Service reductions on Local Routes 1, 30, 70, 184;
- Routes additions included Local Route 140 and Neighborhood Circulator Route – Orbit SATURN and ZOOM North
- Route eliminations on Local Route 251;

Pinal Nonattainment Areas

The City of Coolidge operates the Cotton Express that provides fixed route bus service and curb-to-curb paratransit 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 including Florence, Coolidge, and Casa Grande. Fares range from $2.00 for one-way, $4.00 for daily, $60.00 for monthly, and $90.00 for local and regional month fare for ages 13 to 54. Table 7 provides a summary of the transit fares for the Cotton Express and the Central Arizona Regional Transit bus system.

The MAG transportation 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 and maintenance area. A detailed description of the MAG emissions models is provided in Chapter 4.

TABLE 7.
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 2020 Sun Corridor MPO Conformity Analysis, the models which have been used to estimate particulates (PM-10 and PM-2.5) and nitrogen oxides (NOx) are MOVES2014b, for motor vehicle emission factors; AP-42, for emission factors from reentrained dust produced by vehicles traveling on paved and unpaved roads; and MOVESLink, 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 TransCAD transportation model.

In August 2018, EPA released the latest version of its Motor Vehicle Emission Simulator (MOVES) model, MOVES2014b. MOVES2014b is used to estimate emissions for onroad motor vehicles.

In the Pinal County PM-10 and PM-2.5 nonattainment areas regional emissions have been estimated for PM-10, PM-2.5, and NOx for 2020, 2025, 2035, and 2040. The conformity rule requirements for the selection of the analysis years are summarized in Chapter 1.

MAG conducted interagency consultation in October 2019 on the transportation conformity processes, including the models, associated methods, and assumptions to be applied in the 2020 Sun Corridor MPO Conformity Analysis. A copy of the consultation correspondence is provided in Appendix A.

Air quality modeling for the 2020 Sun Corridor MPO Conformity Analysis was performed for the Pinal County nonattainment areas. The conformity analysis for the Pinal County nonattainment areas involves a comparison of action and baseline scenario emissions in 2020, 2025, 2035, and 2040 for the West Pinal PM-10 Nonattainment Area and West Central Pinal PM-2.5 Nonattainment Area.

In January 2017, EPA indicated that they would not find to be adequate or approve the 2018 emissions budget in the 2015 West Pinal Moderate PM-10 Nonattainment Area SIP prepared by ADEQ and submitted to EPA in December 2015. Therefore, the 2018 PM-10 budget in that SIP will not be included in the 2020 Sun Corridor MPO Conformity Analysis. The air quality modeling assumptions for the Pinal county area are described below.

PINAL COUNTY PM-10 AND PM-2.5 NONATTAINMENT AREAS

MOVES2014b

MOVES2014b is a model developed by EPA for the purpose of estimating motor vehicle emission factors for specified vehicle fleet, fuel, temperature, and speed conditions. This model is used to estimate particulate (exhaust, tire wear, and brake wear) emission factors for the Pinal PM-10 and PM-2.5 nonattainment areas and nitrogen oxide (NOx) exhaust emission factors for the Pinal PM-2.5 nonattainment area.

The MOVES2014b model generates estimates of motor vehicle emission factors in unit of grams of pollutant emitted per vehicle mile of travel. MOVES2014b uses a locally-derived motor vehicle registration distribution (by model year) of 31 years. For the 2020 Sun Corridor MPO Conformity Analysis, July 2019 vehicle registrations for Pinal County, obtained from the Arizona Department of Transportation, were used as input to MOVES2014b. MOVES2014b also incorporates fleet turnover to newer, cleaner vehicles over time, which counters the increase in regional emissions that occur with growth in vehicle miles of travel. Other factors, such as fuel quality and vehicle speed, are also important.

Inspection and maintenance (I/M) program benefits were assumed for the portion of Area A which is located in the Pinal PM-10 nonattainment area. 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” (see Table 4), implemented in January 2000. The cutpoint values used are the MOVES2014b 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.

MOVES2014b outputs were weighted to account for vehicles driving in the Pinal PM-10 nonattainment 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 within the Area A portion of the Pinal PM-10 nonattainment area. 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” (see Table 4). 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 fuel inspection data provided to MAG by the Arizona Department of Agriculture (AZDA) Weights and Measures Services Division.

The MOVES2014b runs that reflected the I/M programs in Area A assumed vehicle waiver rates of 1.3 percent or 1.0 percent, dependent upon model year. These fractions reflected the lower waiver rates resulting from the implementation of “One Time Waiver from Vehicle Emissions Test” (see Table 4). The output from the MOVES2014b model

includes emission factors by hour, roadway facility type, pollutant, vehicle class, and area type.

MOVESLink

MOVESLink software processes link data files output by the MAG transportation model, TransCAD. 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 night time) 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 MOVES2014b for each facility type, area type, and vehicle class using link speeds by time of day.

The transportation model inputs to MOVESLink consist of database formatted files that contain link-specific data and a node coordinate definitions file. MOVESLink also requires 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 annual fuel inspection data for gasoline and diesel fuels.
- The annual transit bus data for natural gas, gasoline, and diesel fuels.

The air quality modeling assumptions for the three pollutants for which conformity in the Pinal County nonattainment areas has been performed are discussed below. These pollutants are PM-10, PM-2.5 and NOx.

For the 2020 Sun Corridor MPO Conformity Analysis, the applicable conformity tests for PM-10 in the Pinal PM-10 nonattainment area and PM-2.5 and NOx in the Pinal PM-2.5 nonattainment area are the action/baseline scenario analyses for 2020, 2025, 2035, and 2040 as discussed in Chapter 1. MOVES2014b and MOVESLink were applied to estimate vehicle emissions for PM-10, PM-2.5 and NOx.

Paved and unpaved road emissions were not estimated for the Pinal PM-2.5 nonattainment area, because Section 93.119(f)(8) of the EPA 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.

Road construction emissions were not included in the conformity analysis for the PM-10 nonattainment area, because the 2008 Pinal County PM-10 emissions of 185.31 tons per year from road construction (Edwards, 2010) represent less than one percent of the total low wind emissions reported in the Draft Pinal County PM10 Nonattainment Area 2008 Base Year Emissions for Selected Design Days and Modeling Domains (Sierra Research, 2013).

Traffic data (vehicle miles of travel and speeds by link) were generated with the TransCAD transportation model. GIS was used to derive VMT and vehicle speed by link for the Pinal PM-10 and PM-2.5 nonattainment areas. The MOVESLink model was used to calculate emissions for each nonattainment area using MOVES2014b emission factors and the traffic data. The analysis for both the Pinal PM-10 and PM-2.5 nonattainment areas reflects data on an annual average day.

The MOVES2014b and MOVESLink models used in estimating onroad vehicle emissions for the Pinal County nonattainment areas are described in the next two sections. For the West Pinal PM-10 nonattainment area, output of the MOVESLink model represents PM-10 emissions from vehicle exhaust, tire wear and brake wear. For the West Central Pinal PM-2.5 nonattainment area, the MOVESLink output represents vehicle exhaust emissions for nitrogen oxides (NOx) and exhaust, tire wear and brake wear emissions for PM-2.5.

PM-10 emission factors for reentrained dust from vehicles traveling on unpaved and paved roads in the Pinal PM-10 nonattainment area 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 last two sections discuss the assumptions used to calculate particulate emissions from unpaved and paved roads in the Pinal PM-10 nonattainment area.

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). The unpaved roads in the Pinal PM-10 nonattainment area are stratified by four categories (agricultural, public, private and trails) and a number of subcategories. The silt content, moisture content and speeds shown in Table 8 are inputs to the AP-42 equation for unpaved roads. This 2018 data was provided to MAG in January 2016 by the Arizona Department of Environmental Quality, based on their 2018 unpaved road emission calculations in the 2015 West Pinal Moderate PM-10 Nonattainment Area SIP, submitted to EPA on December 21, 2015.

Based on 2008 precipitation data, there was an annual average of 33 days with at least 0.01 inch of precipitation in Pinal County. This annual number of wet days, reported by the National Weather Service station located in Casa Grande, is also input to the AP-42 equation to calculate unpaved road emission factors for the Pinal PM-10 nonattainment area.

The annual average daily traffic (AADT) and miles of unpaved roads by subcategory in the Pinal PM-10 nonattainment area are shown in Table 8. The AADT and miles represent 2008 data provided to MAG by the Pinal County Air Quality Control District in July 2013.

TABLE 8.
DATA USED TO CALCULATE EMISSIONS FROM UNPAVED ROADS
IN THE PINAL PM-10 NONATTAINMENT AREA

Categories/Subcategories	Silt Content	Moisture Content	Speed	AADT	Miles
Agricultural	14.9%	0.8%			
Non-Harvest			28 mph	11.3	922.7
Inspection			28 mph	11.3	2,830.7
Harvest			21 mph	19.3	421.7
Public	7.1%	0.3%			
Class A			29 mph	28.0	89.7
Class B			44 mph	96.4	239.2
Class C			37 mph	108.8	89.7
Class D			47 mph	181.7	119.6
Class E			40 mph	619.0	59.8
Private	14.4%	0.3%			
Non-irrigation			25 mph	28.0	893.2
Principal Canal			25 mph	16.8	148.2
Secondary Canal			15 mph	3.4	743.6
Trails	14.4%	0.3%	15 mph	2.0	1,244.0

The AADT 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 trails and each

agricultural, public and private unpaved road subcategory. The daily unpaved road emissions calculated using AP-42 represent uncontrolled PM-10 emissions. The uncontrolled 2008 unpaved road emissions are held constant for all conformity analysis years.

Emission reductions are assumed for sources in Pinal County that are currently controlled by Arizona state laws. For the 2020 Sun Corridor MPO Conformity Analysis, a six percent reduction has been applied to fugitive dust emissions from agricultural unpaved roads for the action and baseline scenarios in all conformity analysis years. This reduction reflects requirements of the state Agricultural Best Management Practices (BMPs) that apply to all moderate PM-10 nonattainment areas in Arizona. The Agricultural BMPs went into effect when EPA designated the West Pinal area to be a moderate nonattainment area for PM-10, effective July 2, 2012. The Arizona Department of Environmental Quality is responsible for the regulation and enforcement of Agricultural Best Management Practices.

The six percent reduction in agricultural unpaved road emissions is consistent with assumptions in the 2008 PM-10 Periodic Emissions Inventory for the Maricopa County, Arizona, Nonattainment Area, prepared by the Maricopa County Air Quality Department (MCADQ, 2011). State statute requires the implementation of two BMPs for unpaved agricultural roads within the Maricopa County PM-10 nonattainment area. The 2008 Periodic Emissions Inventory calculated a 12 percent reduction in uncontrolled PM-10 emissions from unpaved agricultural roads due to the implementation of two BMPs: access restriction and reduced vehicle speeds.

State statute requires the implementation of one BMP for unpaved agricultural roads within the West Pinal County PM-10 nonattainment area. Since only one BMP is required, a six percent reduction in uncontrolled PM-10 emissions from unpaved agricultural roads in the West Pinal County PM-10 nonattainment area is applied. This reduction is applied to both the action and baseline scenarios in each conformity analysis year (i.e., 2020, 2025, 2035, and 2040).

The emissions from public unpaved roads are reduced in the action scenario to take credit for paving projects scheduled for implementation in the Pinal PM-10 nonattainment area. The benefit of these projects is calculated using the AP-42 emission factor for public unpaved roads multiplied by the length and average daily traffic (ADT) of the road to be paved. The ADT is multiplied by 0.97 to convert to annual average daily traffic (AADT).

The AP-42 unpaved road emission benefit for each project is reduced by 1.47 grams per mile to account for the paved road emission rate of vehicles traveling on the newly paved road. To be conservative, this rate assumes that the newly-paved road does not have a paved shoulder or curb and gutter. If a traffic count has not been performed on the unpaved road, an ADT of 140 vehicles per day is assumed. This represents the average ADT for all public unpaved roads in the Pinal PM-10 nonattainment area in 2008.

The total PM-10 emissions reduction due to the paving projects is applied to the 2020,

2025, 2035, and 2040 action scenarios, based on the year of implementation. Credit for the paving projects implemented in FY 2016-2019 is applied in 2020. Credit for the paving projects implemented in FY 2016-2024 is applied in 2025; credit for the projects implemented in FY 2016-2034 is applied in 2035 and 2040.

Paved Roads

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). The road surface silt loadings used for the Pinal PM-10 nonattainment area are 0.02 g/m^2 for freeways, 0.067 g/m^2 for high-traffic arterials, and 0.23 g/m^2 for low-traffic arterials.

The average vehicle weights for the baseline scenarios are 6.93 tons for freeways and 2.30 tons for arterials in 2020, 7.22 tons for freeways and 2.32 tons for arterials in 2025, 7.77 tons for freeways and 2.34 tons for arterials in 2035, and 8.01 tons for freeways and 2.37 tons for arterials in 2040. The average vehicle weights for the action scenarios are 6.86 tons for freeways and 2.29 tons for arterials in 2020, 7.08 tons for freeways and 2.35 tons for arterials in 2025, 7.52 tons for freeways and 2.41 tons for arterials in 2035, and 7.78 tons for freeways and 2.45 tons for arterials in 2040.

Based on 2008 precipitation data, there was an annual average of 33 days with at least 0.01 inch of precipitation in Pinal County. This annual number of wet days, reported by the National Weather Service station located in Casa Grande, is also input to the AP-42 equation to calculate paved road emission factors for the Pinal PM-10 nonattainment area.

The resulting AP-42 emission factors are multiplied by the VMTs for the Pinal PM-10 nonattainment area for the action and baseline scenarios that were derived from the TransCAD model output. The TransCAD output is multiplied by 1.01 for freeways and by 0.97 for arterials to convert from average weekday to annual average daily traffic which were derived from the Arizona Department of Transportation 2017 Pinal County Traffic Count Data. The total VMT is stratified by freeway, high-traffic arterials and low-traffic arterials using the percent of VMT for each of these categories in the Pinal PM-10 nonattainment area, obtained by applying GIS to a MAG TransCAD traffic assignment.

For the conformity analysis years of 2020, 2025, 2035, and 2040 paved road emissions for the action and baseline scenarios are increased based on the growth in VMT estimated by the MAG TransCAD model for the Pinal PM-10 nonattainment area. In conformity analysis years the paved road emissions for the action scenario are higher than the baseline scenario. This increase is more than offset by the emission reductions attributable to the projects that pave unpaved roads in the Pinal PM-10 nonattainment area.

5 TIP AND REGIONAL TRANSPORTATION PLAN CONFORMITY

The principal requirements of the federal transportation conformity rule for TIP and Regional Transportation Plan assessments 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. A status report on transportation control measures is not necessary since there are no applicable plans for the West Pinal PM-10 Nonattainment Area and West Central Pinal PM-2.5 Nonattainment Area. The Appendix includes the public notice, consultation correspondence, and any 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. Conformity interim emissions Action/Baseline tests were performed for the Pinal County nonattainment areas. The results of the Pinal County conformity analyses are described below.

PINAL COUNTY NONATTAINMENT AREAS

For the Pinal County nonattainment areas, action/baseline tests were conducted for particulate matter (PM-10) for the PM-10 nonattainment area and particulate matter (PM-2.5) and nitrogen oxides (NOx) for the PM-2.5 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 9 and Figures 3 through 5 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 Pinal PM-10 Nonattainment Area

The conformity modeling results for PM-10 are listed in Table 9 and graphed in Figure 3. The PM-10 emissions were calculated for the PM-10 nonattainment area for an annual average day.

The projected PM-10 emissions in 2020, 2025, 2035, and 2040 for the action scenarios are 111,496, 116,029, 129,204, and 137,033 kilograms per day, respectively. The projected PM-10 emissions in 2020, 2025, 2035, and 2040 for the baseline scenarios are 113,595, 119,479, 132,964, and 140,618 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.[1] These results support a finding of conformity.

Conformity Test Results for the Pinal PM-2.5 Nonattainment Area

The conformity modeling results for PM-2.5 and NOx are listed in Table 9 and graphed in Figures 4 and 5. The PM-2.5 and NOx emissions were calculated for the PM-2.5 nonattainment area for an annual average day.

The projected PM-2.5 emissions in 2020, 2025, 2035, and 2040 for the action scenario are 20, 16, 15, and 17 kilograms per day, respectively. The projected PM-2.5 emissions in 2020, 2025, 2035, and 2040 for the baseline scenario are 23, 20, 19, and 21 kilograms per day, respectively.

The projected NOx emissions in 2020, 2025, 2035, and 2040 for the action scenario are 970, 752, 628, and 770 kilograms per day, respectively. The projected NOx emissions in 2020, 2025, 2035, and 2040 for the baseline scenario are 1,150, 989, 1,165, and 1,334 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

[1]Section 93.119(d)(1) of the Transportation Conformity Regulations (EPA, 2012c), refers to “build” as the “action” scenario and “no-build” as the “baseline” scenario.

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.[1] These results support a finding of conformity.

TABLE 9.
CONFORMITY INTERIM EMISSION (ACTION/BASELINE) TEST RESULTS
(KILOGRAMS/DAY)
PINAL COUNTY NONATTAINMENT AREAS

Pollutant	*PM-10*	*PM-2.5*	*NOx*
2020			
- Action	111,496	20	970
- Baseline	113,595	23	1,150
2025			
- Action	116,029	16	752
- Baseline	119,479	20	989
2035			
- Action	129,204	15	628
- Baseline	132,964	19	1,165
2040			
- Action	137,033	17	770
- Baseline	140,618	21	1,334

Figure 3: **PM-10 Results for Conformity Interim Emission (Action/Baseline) Test**
Pinal County PM-10 Nonattainment Area

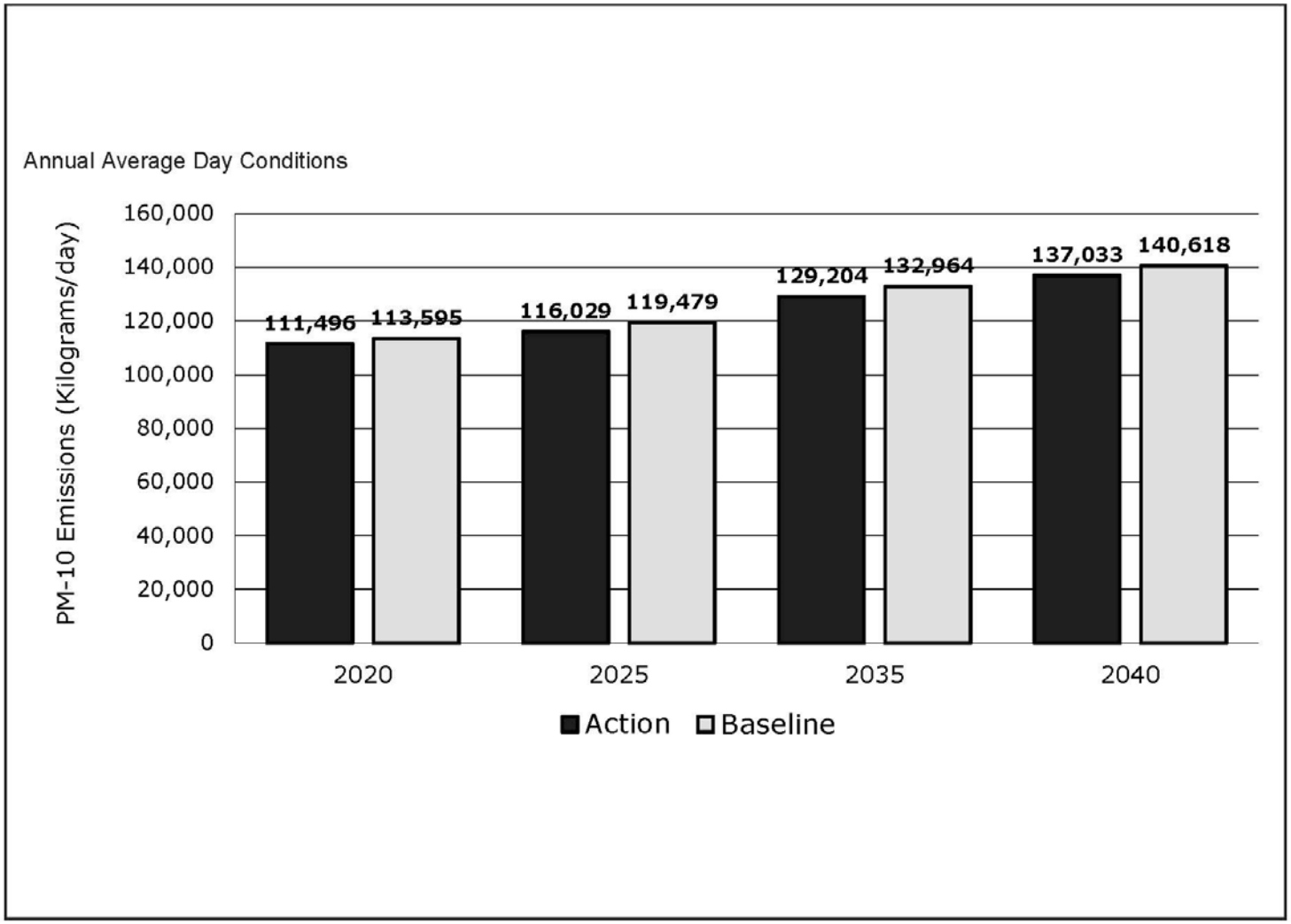


Figure 4: **PM-2.5 Results for Conformity Interim Emission (Action/Baseline) Test**
Pinal County PM-2.5 Nonattainment Area

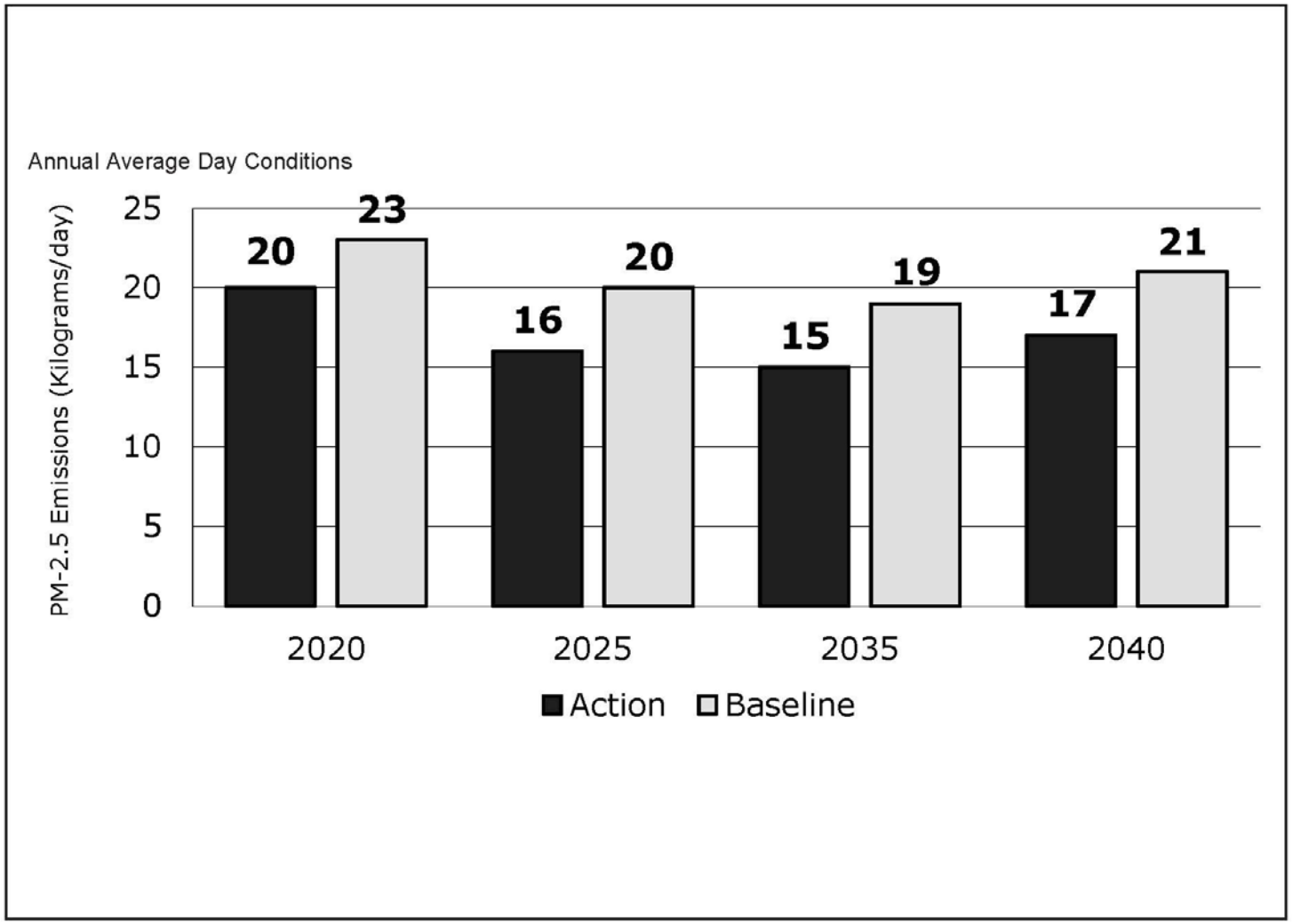
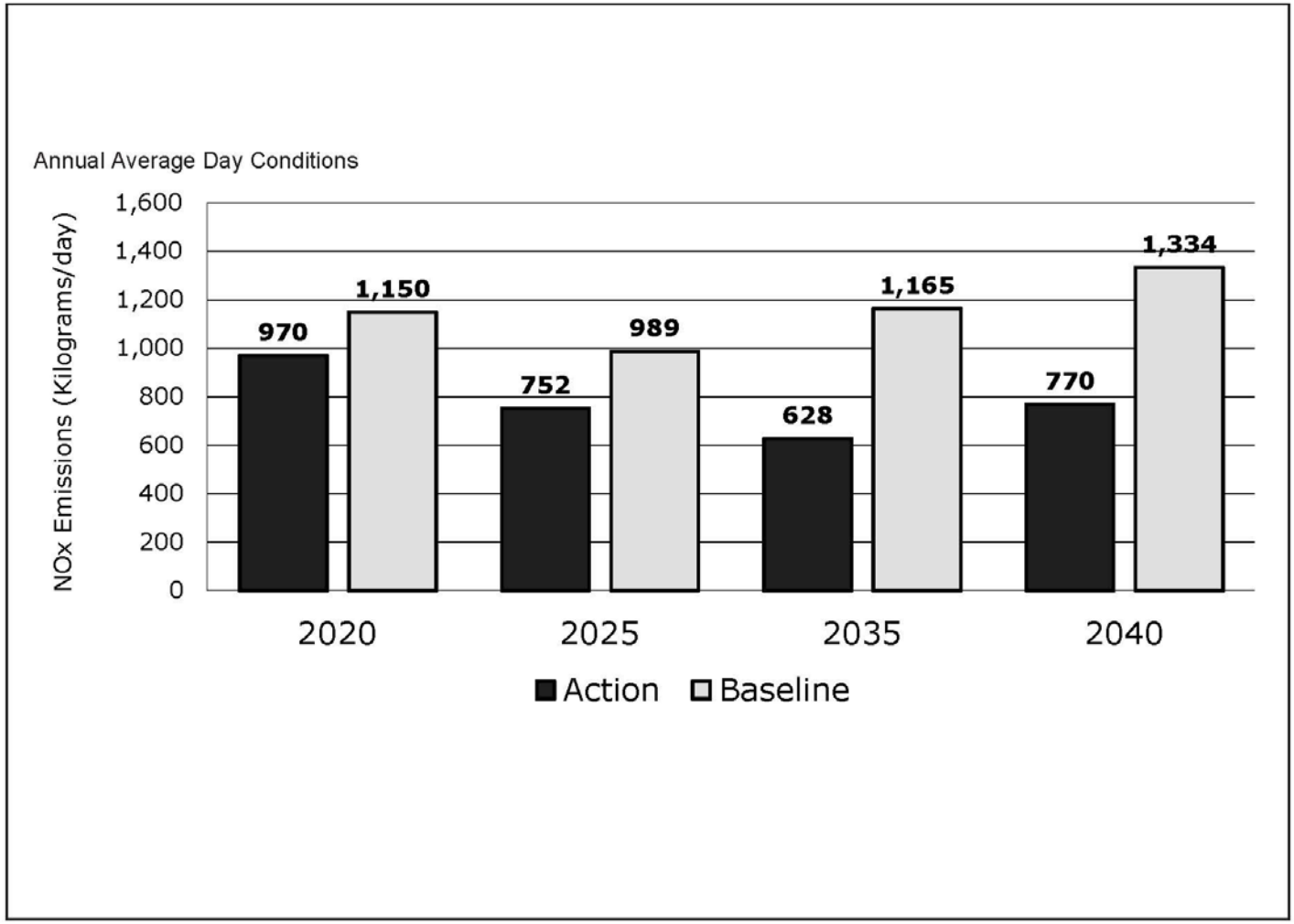


Figure 5: **NOx Results for Conformity Interim Emission (Action/Baseline) Test**
Pinal County PM-2.5 Nonattainment Area



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 2020 begins on October 1, 2019.
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.
MOVES2014b	MOVES2014b is a currently approved EPA model for estimating onroad vehicle emission factors. This model is used to estimate the emission factors for CO, VOC,

	NOx, and PM-10 exhaust, tire wear, and brake wear emissions.
MOVESLink	A MAG software program that combines emission factors (such as from MOVES2014a) 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 engines' 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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APPENDICES

APPENDIX A

CONSULTATION CORRESPONDENCE

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October 2, 2019

TO: Ray Tellis, Federal Transit Administration
Karla Petty, Federal Highway Administration
John Halikowski, Arizona Department of Transportation
Misael Cabrera, Arizona Department of Environmental Quality
Jesus Sapien, City of Phoenix Public Transit Department
Scott Smith, Valley Metro/RPTA
Philip McNeely, Maricopa County Air Quality Department
Andrea Robles, Central Arizona Governments
Michael Sundblom, Pinal County Air Quality Control District
Irene Higgs, Sun Corridor Metropolitan Planning Organization
Jerry Wamsley, U.S. Environmental Protection Agency, Region IX
Other Interested Parties

FROM: Dean Giles, Air Quality Planning Project Manager

SUBJECT: CONSULTATION ON PROPOSED TRANSPORTATION CONFORMITY PROCESSES FOR THE 2019 MAG CONFORMITY ANALYSIS

The Maricopa Association of Governments is distributing for interagency consultation the proposed transportation conformity processes to be applied beginning with the upcoming 2019 MAG Conformity Analysis for the Maricopa Nonattainment and Maintenance Areas and the Pinal County Nonattainment Areas. Both the MAG Metropolitan Planning Area Boundary and 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. Please provide any comments regarding the material by October 23, 2019.

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. Consultation on the proposed processes is required under MAG conformity consultation procedures that were developed to meet state and federal requirements.

The following information is being transmitted for consultation:

- Attachment A documents the models, associated methods, and assumptions to be used in regional emissions analyses.

- Attachment B documents the process for ensuring timely implementation of transportation control measures.

- Attachment C documents the process for the types of projects considered exempt from conformity requirements.

If you have any questions or comments, please contact me at (602) 254-6300.

Attachments

cc: Dallas Hammitt, P.E. Arizona Department of Transportation

ATTACHMENT A

DRAFT

MODELS, ASSOCIATED METHODS, AND ASSUMPTIONS FOR USE IN REGIONAL EMISSIONS ANALYSES

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 Metropolitan Planning Area Boundary and to provide for 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.

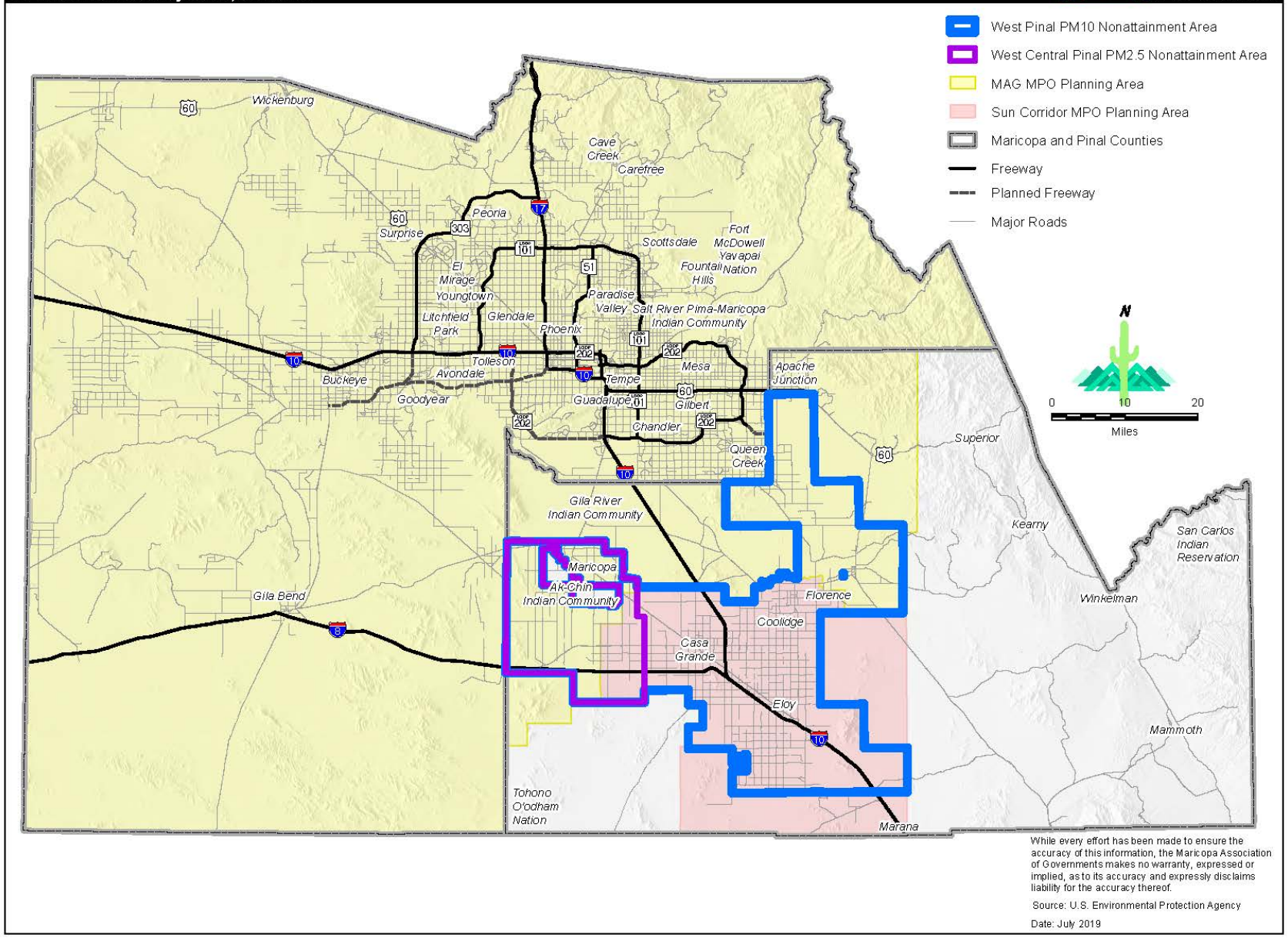
Also, on May 6, 2013, the Sun Corridor Metropolitan Planning Organization was designated in the Pinal County area. The Sun Corridor Metropolitan Planning Area Boundary includes the cities of Casa Grande, Eloy, Coolidge, and unincorporated areas of Pinal County.

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 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.

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.

As part of the assistance provided to the Sun Corridor Metropolitan Planning Organization, MAG is also conducting consultation on the models, associated methods, and assumptions that will be applied for the conformity analysis for projects in the Pinal County Nonattainment Areas outside of the MAG Metropolitan Planning Area Boundary. In the July 2012 EPA document *Guidance*

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: July 2019

for Transportation Conformity Implementation in Multi-Jurisdictional Nonattainment and Maintenance Areas, in a nonattainment area where there is more than one MPO, MPOs may develop the regional emissions analysis by conducting one modeling analysis for the entire nonattainment area (EPA, 2012d).

I. PROPOSED METHODOLOGY FOR THE 2019 MAG CONFORMITY ANALYSIS

In accordance with the transportation conformity rule 40 CFR 93.105(c)(1)(i), the Maricopa Association of Governments (MAG) is conducting interagency consultation on the models, associated methods, and assumptions to be applied beginning with the 2019 MAG Conformity Analysis for a conformity determination on an update for the FY 2020-2024 MAG Transportation Improvement Program (TIP) and 2040 Regional Transportation Plan (RTP). MAG conducts consultation on the models, associated methods, and assumptions for use in regional emissions analyses at the outset of the process to prepare a conformity analysis for a new TIP and RTP and when there are major changes to the models, methods, or assumptions used in preparing a conformity analysis for a major amendment to a conforming TIP and RTP.

In addition, the Sun Corridor Metropolitan Planning Organization is preparing a new FY 2020-2030 Sun Corridor MPO Transportation Improvement Program and Regional Transportation Plan 2040. The Maricopa Association of Governments and the Sun Corridor Metropolitan Planning Organization will be coordinating on the inputs to the transportation model as well as consultation on the conformity analysis.

In February 1996, the MAG Regional Council adopted conformity consultation processes in response to federal and state requirements (MAG, 1996a). The MAG process M-1 directly addresses the requirement for periodic consultation on models, associated methods, and assumptions to be used in hot-spot analyses and regional emissions analyses. The process indicates that regional emissions analyses are to use the latest United States Environmental Protection Agency (EPA) approved motor vehicle emissions models and that all model inputs use the latest planning assumptions as required in 40 CFR Sections 93.110-111.

Consultation on the proposed methodology for the 2019 MAG Conformity Analysis is being conducted with the Federal Transit Administration, Federal Highway Administration, Arizona Department of Transportation, Arizona Department of Environmental Quality, Valley Metro/RPTA, City of Phoenix Public Transit Department, Maricopa County Air Quality Department, Central Arizona Governments, Pinal County Air Quality Control District, Sun Corridor Metropolitan Planning Organization, United States Environmental Protection Agency, and MAG member agencies (e.g. Maricopa County, Pinal County, cities, towns, and Indian communities).

The criteria for determining conformity of transportation programs and plans under the federal conformity rule (40 CFR Parts 51 and 93) and the applicable conformity tests for the Maricopa County nonattainment and maintenance areas and Pinal County nonattainment areas are summarized in this section. The 2019 MAG Conformity Analysis will be 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 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/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, 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 a 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, 2002).

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 issued 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 are:

- 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 2019 MAG Conformity Analysis are described later in this section, and include the last year of the 2040 MAG Regional Transportation Plan and Sun Corridor MPO Regional Transportation Plan 2040.

- 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.

To date, 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 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 area.

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 issued 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, 1999). 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 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.

   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.

TABLE 1.
CONFORMITY CRITERIA FROM THE FINAL RULE

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

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.

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, and 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. Copies of the final Draft are made available to 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. Copies of the Draft TIP are made available to 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 and Maintenance Areas

Portions of Maricopa County are currently designated as nonattainment or maintenance for the National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO), eight-hour ozone, and particulate matter less than or equal to ten microns in diameter (PM-10). 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;

- 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. 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. On September 17, 2014, EPA approved the MAG 2009 Eight-Hour 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. 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 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.

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

Nonattainment and Maintenance Boundaries

Maricopa County nonattainment and maintenance areas are shown in Figure 2. The carbon monoxide maintenance boundary, encompasses 1,814 square miles (approximately 20 percent) of the county. This boundary was originally specified in 1974.

On March 9, 2005, EPA published a final rule redesignating portions of Maricopa County to attainment for carbon monoxide and also removed the Gila River Indian Community from the Maricopa County maintenance area, effective April 8, 2005 (EPA, 2005a).

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.

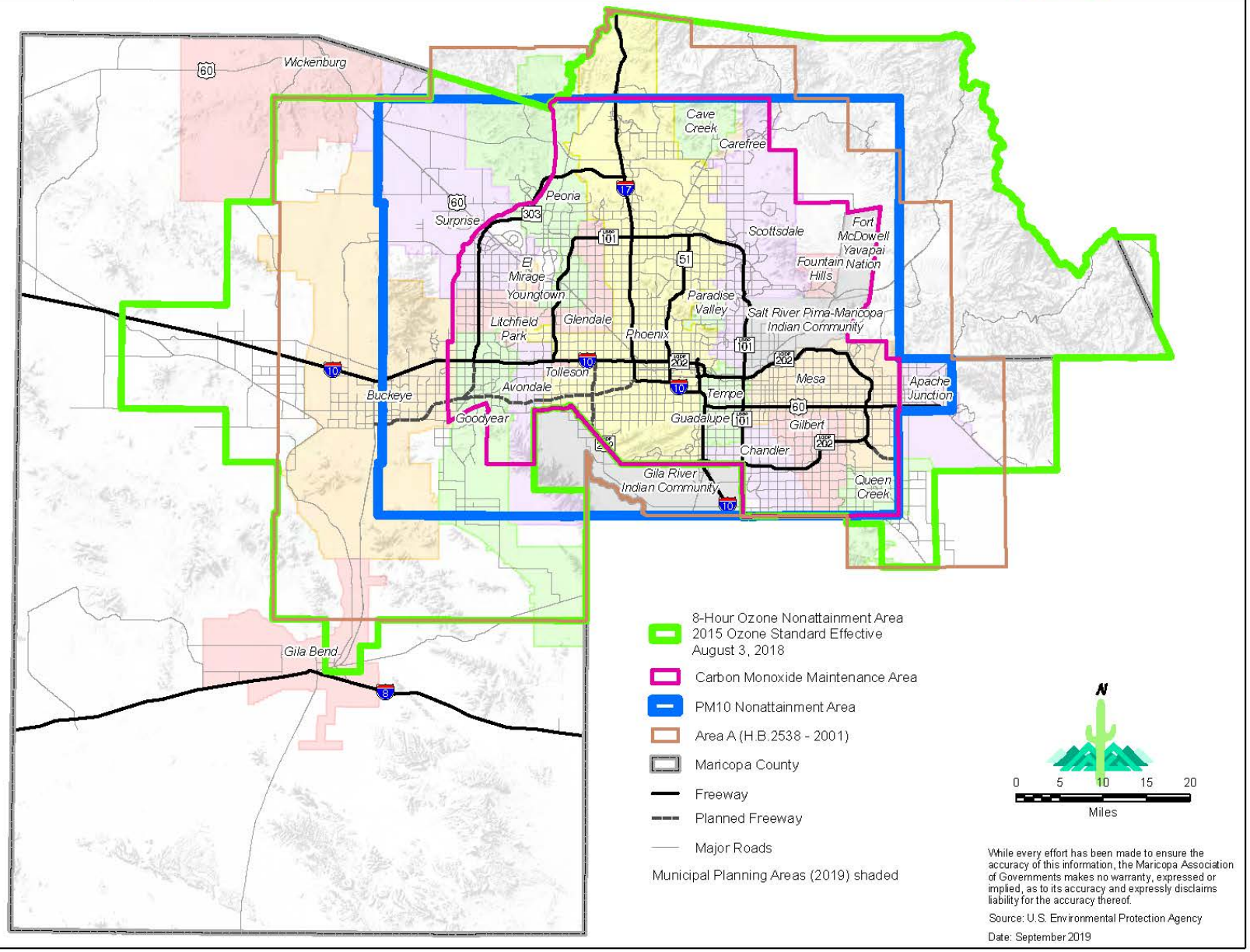
On April 15, 2004, EPA designated an eight-hour ozone nonattainment area located mainly in Maricopa County and Apache Junction in Pinal County. On April 30, 2004, EPA published the air quality designations and classifications for the 1997 eight-hour ozone standard that includes T1N, R8E and sections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

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

MARICOPA ASSOCIATION of GOVERNMENTS



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Source: U.S. Environmental Protection Agency

Date: September 2019

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 standard was not achieved by the Clean Air Act deadline of December 31, 1995. The area was reclassified to "Serious" by operation of law in July 1996, 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 the EPA.

In June 2003, the MAG 2003 Carbon Monoxide Redesignation Request and Maintenance Plan for the Maricopa County Nonattainment Area was submitted to EPA. The CO Maintenance Plan demonstrated that all Clean Air Act requirements had 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 and designating the carbon monoxide area to attainment, 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).

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, 1998). 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 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 (MAG, 2004). 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 was submitted to the EPA by June 15, 2007. 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 was submitted to EPA in March 2009. EPA approved the MAG 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan, including the emissions budgets, effective October 17, 2014 (EPA, 2014).

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 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. The Moderate Area Plan is required to include reasonable further progress; reasonably available control technology; reasonably available control measures; new source review; emissions inventories; modeling attainment demonstration for 2017 (ozone season prior to the attainment date); contingency measures; and motor vehicle emissions budgets for transportation conformity. Moderate Areas are also required to make the submissions for Marginal Areas. On June 13, 2019, EPA published a proposed rule to determine the Maricopa nonattainment area attained the 2008 eight-hour ozone standard based on 2015-2017 data.

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.

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, 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 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 missions 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 and 24-month clocks for the 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 region as an attainment area for PM-2.5, effective April 5, 2005.

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.

Nonattainment Boundaries

As shown in Figure 3, portions of the West Pinal PM-10 Nonattainment Area and West Central Pinal PM-2.5 Nonattainment Area 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 September 17, 2019, EPA signed a *Federal Register* notice taking final action to determine that the West Central Pinal PM-2.5 Nonattainment Area met the 2006 24-hour PM-2.5 standard as of December 31, 2017.

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 January 9, 2017, EPA proposed to approve SIP revisions that concern particulate matter emissions from construction sites, agricultural activity, and other fugitive dust sources.

CONFORMITY TEST REQUIREMENTS

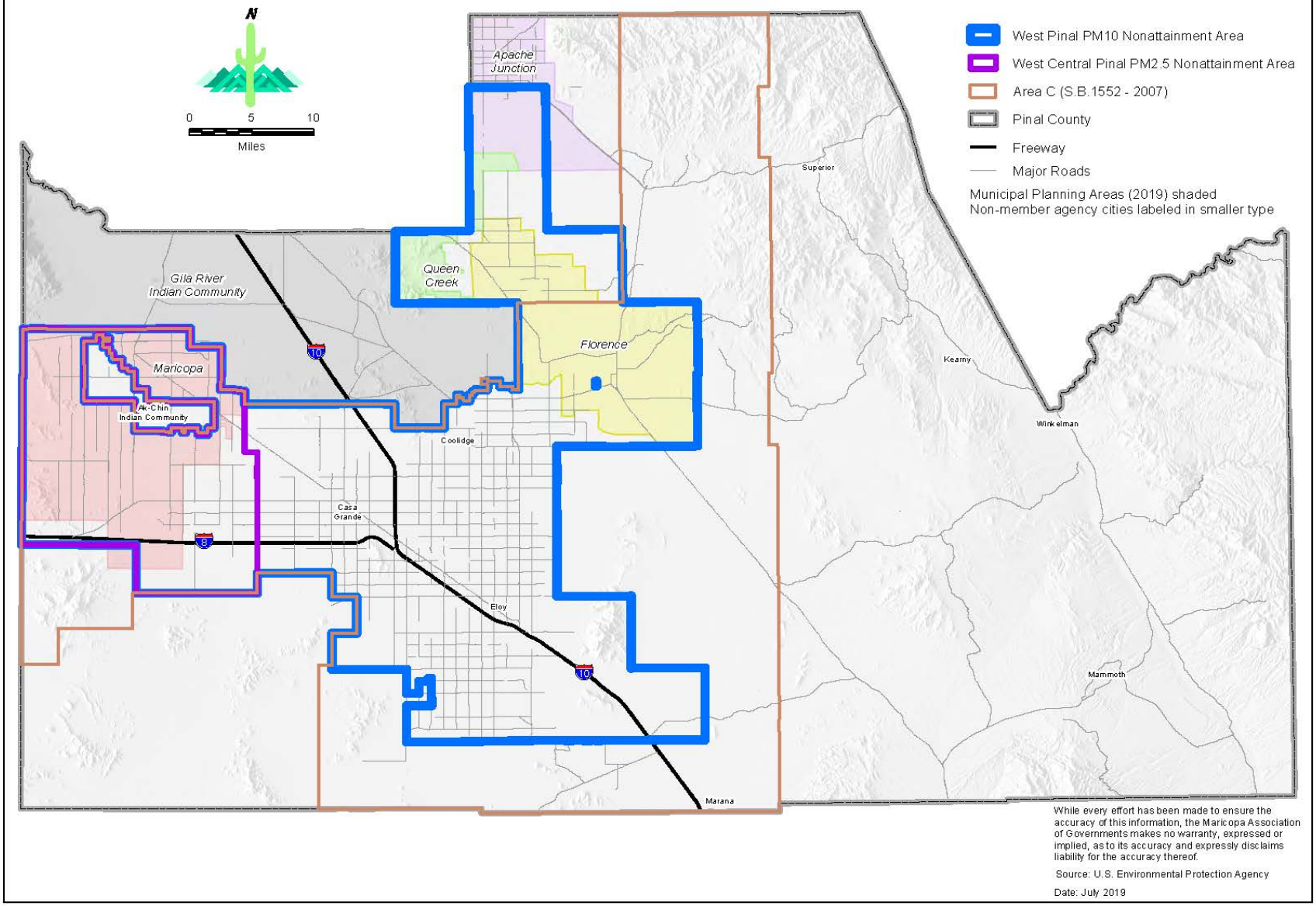
Maricopa County Nonattainment and Maintenance Areas

Specific conformity test requirements established for the carbon monoxide maintenance area and the eight-hour ozone and PM-10 nonattainment areas are summarized below.

Carbon Monoxide

In April 2013, the MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area was submitted to EPA (MAG, 2013). The MAG 2013 Carbon Monoxide Maintenance Plan is the second maintenance plan. The MAG 2013 Carbon Monoxide Maintenance Plan used the EPA-approved MOVES model to develop a 2025 mobile source emissions budget of 559.4 metric tons per day. On March 3, 2016, EPA published the final rule approving the MAG 2013 Carbon Monoxide Maintenance Plan and 2025 budget of 559.4 metric tons per day, effective April 4, 2016. The conformity budget test will use the EPA-approved 2025 budget that will be applied to all horizon years in the 2019 MAG Conformity Analysis for the Maricopa County Carbon Monoxide Maintenance Area.

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



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).

On June 13, 2012, EPA published the final rule approving the MAG 2007 Eight-Hour Ozone Plan for the 1997 ozone standard, including the 2008 emissions budgets for VOC of 67.9 metric tons per day and NOx of 138.2 metric tons per day, effective July 13, 2012. Also, on September 17, 2014, EPA published a final rule approving the MAG 2009 Eight-Hour Ozone Maintenance Plan for the 1997 ozone standard, including the 2025 emissions budgets for VOC of 43.8 metric tons per day and NOx of 101.8 metric tons per day, effective October 17, 2014. The conformity budget test will use the EPA-approved 2008 VOC and NOx budgets that will be applied to horizon year 2020, and the 2025 VOC and NOx budgets that will be applied to horizon years 2025, 2035, and 2040 in the 2019 MAG Conformity Analysis for the Maricopa Eight-Hour Ozone Nonattainment Area.

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. The Eight-Hour Ozone Moderate Area Plan establishes 2017 conformity budgets for VOC and NOx. Since EPA may find the conformity budgets to be adequate or approve the MAG 2017 Eight-Hour Ozone Moderate Area Plan prior to FHWA's approval of the 2019 MAG Conformity Analysis, the 2017 VOC and NOx budgets will be used in the 2019 MAG Conformity Analysis, in addition to the 2008 and 2025 budgets approved by EPA in prior MAG Eight-Hour Ozone Plans.

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 and the conformity budget, effective August 26, 2002.

On May 25, 2012, the MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area was submitted to EPA. 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. The conformity test includes using the budgets from the approved Revised MAG

1999 Serious Area Particulate Plan and MAG 2012 Five Percent Plan for PM-10. Both the EPA-approved 2006 and 2012 PM-10 budgets will be applied to horizon years in the 2019 MAG Conformity Analysis 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 will be 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. The ADEQ prepared and submitted the 2015 West Pinal Moderate PM-10 Nonattainment Area SIP to EPA on December 21, 2015. In January 2017, EPA indicated they will not find to be adequate or approve the 2018 emissions budget in the 2015 West Pinal Moderate PM-10 Nonattainment Area SIP. Therefore, the 2018 PM-10 budget in that SIP will not be included in the 2019 MAG Conformity Analysis.

Since there is no emissions budget that has found to be adequate or approved by EPA, an action/baseline analysis will be performed in accordance with the latest EPA conformity guidance (EPA, 2012b). The baseline network will include regionally significant highways open to traffic and transit service in operation by December 31, 2018. In accordance with Section 93.119(h) of EPA conformity regulations, the baseline network will also include all regionally significant projects, regardless of funding source, which are currently under construction or undergoing right-or-way acquisition, are MAG TIP or Sun Corridor MPO projects that were coded in the 2018 traffic assignment for the conformity analysis conducted in June 2019, but are no longer included in the 2018 traffic assignment to be used in the 2019 MAG Conformity Analysis, or have completed the NEPA process. The action networks will include MAG TIP and RTP projects in the portion of the nonattainment area located within the MAG MPA, as well as regionally significant highway and transit projects in the remainder of the West Pinal nonattainment area, that are scheduled to be open to the public by 2025, 2035, and 2040.

PM-2.5

On February 3, 2011, EPA also designated the West Central Pinal PM-2.5 Nonattainment Area in Pinal County, effective March 7, 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. Conformity analyses must also be performed for the PM-2.5 nonattainment area, even if EPA issues a clean data finding. On April 25, 2019, EPA published a proposed 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. For the

2019 MAG Conformity Analysis, an action/baseline analysis will be performed by applying the assumptions described above to the smaller Pinal PM-2.5 nonattainment area. 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, will be included in the action/baseline analysis for the Pinal PM-2.5 nonattainment area.

ANALYSIS YEARS

Maricopa County Nonattainment and Maintenance Areas

In selecting analysis years for the Maricopa County nonattainment and maintenance 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 timeframe 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 2019 MAG Conformity Analysis, onroad mobile source emissions of carbon monoxide (CO) and PM-10 will be estimated for the analysis years 2025, 2035, and 2040. In addition, the onroad mobile source emissions of volatile organic compounds (VOC) and nitrogen oxides (NOx) will be estimated for the analysis years 2020, 2025, 2035, and 2040. These analysis years will be used to compare mobile source emissions with EPA-approved or adequate budgets for CO, VOC, NOx and PM-10.

The year 2020 will be modeled for VOC and NOx since it is the attainment year for marginal areas for the 2015 eight-hour ozone standard. Also, the year 2025 will be modeled for VOC and NOx, because it is the maintenance year in the Eight-Hour Ozone Redesignation Request and Maintenance Plan (MAG, 2009). The year 2025 will be modeled for CO, since it is the maintenance year in the MAG 2013 Carbon Monoxide Maintenance Plan (MAG, 2013). The year 2035 will also be modeled for all pollutants since it is an intermediate year that meets the federal conformity requirement that analysis years be no more than ten years apart. The year 2040 will be modeled for all pollutants, since it is the last year of the 2040 MAG Regional Transportation Plan.

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 plan (i.e., the MAG 2040 RTP and the Sun Corridor Metropolitan Planning Organization RTP 2040, both of which contain projects in the Pinal nonattainment areas). These three criteria are met by the years 2020, 2025, 2035, and 2040. For the 2019 MAG Conformity Analysis, onroad mobile source emissions will be estimated for the Action/Baseline scenarios for 2020, 2025, 2035, and 2040. PM-10 emissions will be estimated for the West Pinal PM-10 nonattainment area, while PM-2.5 and nitrogen oxide (NOx) emissions will be estimated for the West Central Pinal PM-2.5 nonattainment area.

In January 2017, EPA indicated they will not find to be adequate or approve the 2018 emissions budget in the 2015 West Pinal Moderate PM-10 Nonattainment Area SIP submitted to EPA by ADEQ in December 2015. Therefore, the 2018 PM-10 budget in that SIP will not be included in the 2019 MAG Conformity Analysis.

II. 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 entitled, "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 proposed for use in the 2019 MAG Conformity Analysis are summarized in Table 2. The methodology and scheduled updates for the planning assumptions are discussed below. The latest conformity regulations 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 is proposed that the "time that the conformity analysis begins" will be the day that the first traffic assignment (i.e., 2020, 2025, 2035, or 2040) has been submitted for travel demand modeling for the 2019 MAG Conformity Analysis.

POPULATION AND EMPLOYMENT

In accordance with the Governor's Executive Order 2011-04, official county socioeconomic projections based on the 2013-2017 American Community Survey have been developed by the Arizona Department of Administration (ADOA). ADOA completed the county level projections in December 2018. MAG prepared subcounty socioeconomic projections for Maricopa County

that were adopted by the MAG Regional Council in June 2019. The Central Arizona Governments (CAG) is expected to approve subcounty population projections for Pinal County, based on the official ADOA projections, in September 2019.

The travel and speed estimates produced by the MAG transportation models for the analysis years in the 2019 MAG Conformity Analysis will be based on the MAG and CAG subcounty population and employment projections that are consistent with the 2013-2017 American Community Survey.

Methodology

ADOA prepared the official Arizona population projections by county, using 2013-2017 American Community Survey data as the base. MAG used official ADOA population projections consistent with the 2013-2017 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 regional market areas based upon the pre-existing location of these activities, land consumption, and transportation system accessibility. The allocation of population and employment from market areas to land use parcels was accomplished with UrbanSim, which simulates real-estate development and locates population and employment based on measures such as accessibility to employment, adjacent land uses, highway access, and proximity to other development, et cetera.

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 2019.

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 August 2019.

Next Scheduled Update

Under the Governor's Executive Order 2011-04, official county socioeconomic projections will be developed by the Arizona Department of Administration. Following the release of the 2020 U.S. Census data, the Arizona Department of Administration will prepare a new set of Maricopa County projections in December 2022. MAG will develop a set of subcounty population and employment projections for Maricopa County that are consistent with the ADOA population projections.

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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 Department of Administration (ADOA) prepared a new set of Maricopa County projections based on the 2013-2017 American Community Survey in December 2018. MAG developed a set of subcounty population and employment projections for Maricopa County that are consistent with the ADOA population projections. The MAG Regional Council approved the subcounty socioeconomic projections in June 2019. In addition, Central Arizona Governments (CAG) is expected to approve the Pinal County subcounty socioeconomic projections, based on the ADOA Pinal County projections, in September 2019. The MAG Traffic Analysis Zone System was updated and expanded to reflect the latest socioeconomic changes in 2019.	AZ-SMART (UrbanSim)	Under the Governor's Executive Order 2011-04, official county socioeconomic projections will be developed by the Arizona Department of Administration. Following the release of the 2020 U.S. Census data, the Arizona Department of Administration (ADOA) will prepare a new set of Maricopa County projections in December 2022. MAG will develop a set of subcounty population and employment projections for Maricopa County that are consistent with the ADOA population projections.
Traffic Counts	The highway models are being validated for the 2018 base year, using approximately 3,000 traffic counts collected by MAG in 2018-2019.	TransCAD	Region-wide traffic counts are typically collected by MAG every 2-4 years, if funds are available. MAG has just completed 2018-2019 regional traffic counts.

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	The passenger travel demand models recalibration is scheduled to be completed prior to the 2019 MAG Conformity Analysis. The new datasets being used in the recalibration process include 2017 Household and Establishment surveys, 2018-2019 counts, and 2015 transit on-board survey. The recalibration effort includes a complete update of the regional travel demand model based on the relevant data sets listed above. Trip generation has been updated and trip distribution is being recalibrated based on the 2017 Household Travel Survey. Mode choice recalibration is also underway based on the 2015 on-board survey. The truck model was recalibrated based on the new 2013 Transearch data, 2018 ATRI data, and 2015 StreetLight data. The external travel model was recalibrated in 2011 based on the 2008 external travel study. Incremental updates and improvements were introduced to the model to reflect network changes, socioeconomic forecast changes, and changes in the traffic zone system. MAG is currently conducting comprehensive revalidation using 2018-2019 traffic counts and speed data. The overall calibration year for the model is 2018 and the latest base year based on a comprehensive validation is 2018.	TransCAD	Future updates to the four-step model will include further refinements/updates to various model sub-components.

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 50 million traffic speed records purchased from HERE for calendar year 2018 and also compared to a similar data set purchased in the same year.	TransCAD	Travel speed data are purchased periodically to validate the transportation models. MAG also utilizes commercial speed data for future estimation and model calibration purposes. MAG has purchased new speed data required for the ongoing model calibration and validation to the new base year processes. MAG has also collaborated with ADOT and capitalized on ADOT speed data contracts.
Vehicle Registrations	July 2019 vehicle registrations were provided by ADOT.	MOVES2014b	When newer data become available from ADOT.
Implementation Measures	Latest implementation status of commitments in prior SIPs.	N/A	Updated for every conformity analysis.

TRAFFIC COUNTS

The highway traffic volumes estimated by the MAG transportation models are being validated in 2019 for the 2018 base year, using over 3,000 traffic counts collected by MAG in 2018-2019 in Maricopa and Pinal counties. MAG transportation models are in the process of recalibration based on the travel surveys conducted in 2017 and the recalibration is scheduled to be completed prior to the 2019 MAG Conformity Analysis. 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 a traditional four-step process: trip generation, trip distribution, mode choice, and traffic/transit assignment. Trip generation determines the number of person trips produced and attracted by traffic analysis zone. Trip distribution links the productions and attractions by TAZ. The nested logit mode choice model determines the number of person trips allocated to automobile and transit modes. 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 and trip distribution is utilized to achieve near-equilibrium highway speeds.

Next Scheduled Update

Region-wide traffic counts are typically collected by MAG every 2-4 years and commercial speed data is normally purchased every 1-2 years, if funding is available. MAG just completed 2018-2019 regional traffic counts. 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.

VEHICLE MILES OF TRAVEL

MAG is in the process of recalibrating the regional transportation model. The recalibration of the models is based on data from a 2017 household travel survey and 2015 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 MOVESLink 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 are being validated against over 3,000 traffic counts 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 2015 weekday traffic volumes and traffic count data. A 2018 validation will be completed before the 2019 MAG Conformity Analysis.

TABLE 3.
AGGREGATED MODEL VALIDATION RESULTS
MODEL-ESTIMATED 2015 WEEKDAY VOLUMES VS. 2015 TRAFFIC COUNTS

	Freeways and Arterials	
Area Type	**R^2**	**% RMSE**
CBD	0.985	19.4%
Outlying CBD	0.977	20.4%
Mixed Urban	0.965	21.1%
Suburban	0.936	32.1%
Rural	0.943	38.3%
All	0.973	23.9%

In previous MAG conformity analyses, transportation model estimates of VMT were reconciled with the VMT reported by the Highway Performance Monitoring System (HPMS) in order to comply with Section 93.122(b) of the Transportation Conformity Regulations. These 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 VMT with HPMS.

Since EPA approved the MAG Carbon Monoxide and One-Hour Ozone Redesignation Request and Maintenance Plans in 2005, the Maricopa area is no longer a serious nonattainment area for carbon monoxide or one-hour ozone. In the future, if the Maricopa area is classified as serious, severe or extreme for a more stringent eight-hour ozone standard, the VMT estimated by the transportation models will be reconciled against HPMS VMT for the most recent model calibration year.

The requirement to reconcile travel demand model output to HPMS traffic volumes does not apply to the Pinal County nonattainment areas, because the urbanized area population is less than 200,000. In addition, the areas are in nonattainment for particulates, rather than ozone or carbon monoxide.

As indicated above, the requirements of Section 93.122(b) do not apply to the Maricopa County nonattainment or maintenance areas or the Pinal County nonattainment areas. Therefore, reconciliation of modeled VMT with HPMS is not required for the 2019 MAG Conformity Analysis. However, it is important to note that the most recent comparison of model-estimated and HPMS VMT for the travel demand model calibration year of 2015 concluded that the model and HPMS VMT estimates were nearly identical.

Next Scheduled Update

Future updates to the four-step model will include further refinements/updates to various model sub-components.

SPEEDS

Speeds obtained from the capacity-restrained traffic assignments are "fed-back" in the travel demand modeling chain. The trip distribution, mode choice, and traffic assignment steps 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.

Periodically, MAG conducts speed studies or purchases commercial speed data to compare model-estimated speeds with empirical data. MAG purchased 2018 speed data from HERE that was used to update the speeds estimated by the MAG transportation models in 2019, as discussed in the Methodology section below.

Methodology

MAG used the 2015 HERE regionwide speed data to improve the speed estimates produced by the transportation models. In the transportation modeling area covering Maricopa and Pinal counties, the TransCAD-estimated speeds for arterials and freeways are on average 0.9 percent higher than the observed peak and off-peak speeds for all area types. The differences in speed by time period, functional class, and area type demonstrate that the model-estimated speeds are in reasonable agreement with observed arterial and freeway speeds during the peak and off-peak periods. The speed validations against 2018 HERE data is currently ongoing.

Next Scheduled Update

MAG obtains commercial speed data on a regular basis, every one or two years. The recalibrated model will be validated with new speed and traffic count data as appropriate.

VEHICLE REGISTRATIONS

Vehicle registrations for Maricopa and Pinal Counties in July 2019 are the latest provided to MAG by the Motor Vehicle Division of the Arizona Department of Transportation (ADOT). In the

2019 MAG Conformity Analysis, the July 2019 registrations will be input to the latest version of MOVES to estimate onroad mobile source emissions. MOVES will derive the vehicle population and age distribution for estimating wintertime CO emissions from the July 2019 registrations. The vehicle registration data provided by ADOT has been converted to MOVES2014b format. MAG will use newer vehicle registration data when provided by ADOT.

IMPLEMENTATION MEASURES

Maricopa County Nonattainment and Maintenance Areas

For the Maricopa County nonattainment and maintenance areas, emission reduction credit will be assumed for the committed measures in the applicable SIPs, including the measures shown in Table 4. The emission reductions assumed for these committed measures will reflect the latest implementation status of all measures for which emission reduction credits were assumed in the applicable SIPs. Emission reduction credit will be applied for committed control measures and committed contingency measures contained in the applicable MAG air quality plans. Credit may also be taken for Congestion Mitigation and Air Quality Improvement (CMAQ) projects in the MAG Transportation Improvement Program, if credit for these measures was not quantified in the air quality plans. The equations, methods, and assumptions to be used in calculating emission reductions attributable to CMAQ projects are described in the Methodologies for Evaluating Congestion Mitigation and Air Quality Improvement Projects (MAG, 2011). In addition, emission reduction credit for the strengthening of existing control measures or implementation of new control measures, specifically identified in the Transportation Improvement Program and Regional Transportation Plan, will be incorporated into the analysis, where appropriate.

Table 4 does not include committed measures in the MAG 2007 Five Percent Plan for PM-10, because the Plan was withdrawn from EPA in January 2011. However, PM-10 reduction credit will be taken for projects completed between January 1, 2008 and December 31, 2012 that paved or stabilized unpaved roads or alleys, paved unpaved shoulders, or reduced speed limits on unpaved roads or alleys.

The reduction in paved road emissions due to PM-10 certified street sweepers purchased with CMAQ funds (through December 2009) is 3,158.8 kg/day in 2010. For conformity analysis years after 2010, this reduction will be increased proportionally to the growth in VMT on non-freeways in the PM-10 nonattainment. PM-10 emission reduction credit will also be taken for freeways, ramps, and frontage roads that are being swept with PM-10 certified units, in compliance with an ADOT contract executed in 2014 and highways that have been re-paved with rubberized asphalt by ADOT.

In addition, uncontrolled road construction emissions for all analysis years will be reduced by a rule effectiveness rate of 93 percent, calculated by MCAQD, using actual 2012 construction site inspection data and a methodology developed in coordination with EPA Region IX staff. The assumptions to be used in calculating the benefit of measures that have been implemented to reduce paved and unpaved road emissions are described below.

TABLE 4.

COMMITTED MEASURES IN THE
MARICOPA COUNTY NONATTAINMENT AND MAINTENANCE AREAS

Measure #	Reference	Measure Description	Pollutant(s)
1	CO Maintenance Plan[1]	CARB Phase 2 with 3.5 Percent Oxygenate in Winter	CO
1	Eight-Hour Ozone Maintenance Plan[2]	Summer Fuel Reformulation with 7 psi from May 1 through September 30	VOC, NOx
2 2	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Phased-In Emission Test Cutpoints	CO, VOC, NOx
3 3	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	One-Time Waiver from Vehicle Emissions Test	CO, VOC, NOx
5 4C 16	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan Serious Area PM-10 Plan[3]	Coordinate Traffic Signal Systems	CO, VOC, NOx, PM-10
6 5C	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Develop Intelligent Transportation Systems	CO, VOC, NOx
7 4	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Tougher Enforcement of Vehicle Registration and Emission Test Compliance	CO, VOC, NOx
1C 6	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Expansion of Area A Boundaries (HB 2538)	CO, VOC, NOx
2C 1C	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Gross Polluter Option for I/M Program Waivers	CO, VOC, NOx
3C 2C	CO Maintenance Plan Eight-Hour Ozone Maintenance Plan	Increase Waiver Repair Limit Options	CO, VOC, NOx
3C	Eight-Hour Ozone Maintenance Plan	Federal Heavy Duty Diesel Vehicle Emissions Standards	VOC, NOx

[1]*MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area*, March 2013 (MAG, 2013).

[2]*Eight-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa Nonattainment Area*, February 2009 (MAG, 2009).

[3]*Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area*, February 2000 (MAG, 2000).

Shoulder Paving Projects

For all conformity analysis years, credit for shoulder paving projects that were implemented in 2008-2012 will be applied to reduce PM-10 emissions from paved roads. The emission reductions (in grams per VMT) from the shoulder paving projects will be assumed to be constant for all conformity analysis years.

PM-10 Certified Street Sweepers

A new ADOT contract identifies the specific roads in the PM-10 nonattainment area that are being swept with PM-10 certified street sweepers and the required sweeping frequency. In the regional emissions analysis, the PM-10 reduction represents the benefit of sweeping the freeways, ramps and frontage roads identified in the ADOT contract. For all conformity analysis years, credit will be increased proportionally to the growth in VMT on the roads in the PM-10 nonattainment area that are being swept by the ADOT contractor.

In addition, 123 PM-10 certified street sweepers were purchased with MAG CMAQ funds by December 31, 2009. A sweeper inventory conducted by MAG for the period ending June 30, 2010 indicates that 23 of the 123 sweepers were no longer in service, as of December 31, 2009. Therefore, emission reduction credit for these 23 sweepers will be removed from the credit taken for the CMAQ-funded sweepers.

In every year since 2001, MAG has funded PM-10 efficient street sweepers using Congestion Mitigation and Air Quality Improvement (CMAQ) funds. By 2010, virtually all conventional sweepers had been replaced with PM-10 efficient 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 in the MAG 2012 Five Percent Plan for PM-10.

Since 2010, CMAQ funding in the MAG TIP has continued to be used every year to replace older PM-10 certified sweepers, expand the area swept, and increase sweeping frequency. There is approximately $6.8 million in CMAQ funds in the upcoming MAG FY 2020-2024 TIP to purchase future PM-10 efficient street sweepers. After the FY 2020-2024 TIP, it will be assumed in the conformity analysis that MAG will continue to fund PM-10 certified sweepers annually through the MAG Regional Transportation Plan final year of 2040. 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 PM-10 nonattainment area; this reflects the fact that arterials being swept with PM-10 efficient sweepers are projected to continue having higher traffic volumes in future years.

Unpaved Road and Alley Projects

For all conformity analysis years, credit for paving, stabilization and lower speed limit projects completed in 2008-2012 will be applied to reduce PM-10 emissions from public unpaved roads and alleys. In addition, credit for paving and stabilization projects programmed in the FY 2011-2022 MAG Transportation Improvement Program (TIP) will be taken in the conformity analysis years of 2025, 2035 and 2040.

The Regional Transportation Plan (RTP) indicates that ten miles of public unpaved roads will be paved each year. The 2019 MAG Conformity Analysis will assume that ten miles of public unpaved roads will be paved each year beginning in 2023 (the year after the TIP) and continuing until the inventory of public unpaved roads is depleted.

Pinal County Nonattainment Areas

Credit will be taken in the build scenarios for projects that are scheduled to pave or stabilize unpaved roads and shoulders in the Pinal County nonattainment areas.

III. TRANSPORTATION MODELING

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 2019 MAG Conformity Analysis will contain approximately 3,400 traffic analysis zones and covers an area of approximately 16,000 square miles in Maricopa and Pinal counties. The current official model was comprehensively validated for 2015 traffic data. The new base year for the most recent validations will be 2018 and over 3,000 recently collected traffic counts are being used. The latest calibration of the transportation models is scheduled to be completed prior to the 2019 MAG Conformity Analysis. MAG is currently in the process of recalibrating the entire travel demand model using the 2017 Household Travel Survey and the 2015 transit on-board survey. This latest calibration is scheduled to be completed prior to the 2019 MAG Conformity Analysis. Several other recently acquired datasets are also being used in the recalibration process to update various components of the model. MAG will conduct speed data validations with the 2018 commercial speed data from HERE. MAG has also acquired new truck GPS data that will be used to recalibrate 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 against over 3,000 traffic counts. 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 2019. These projections were prepared using the AZ-SMART land use model system and UrbanSim.

- The population and employment projections to be 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. The allocation of population and employment from market areas to land use parcels is accomplished with UrbanSim. 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. Restrained assignments are produced for the AM peak period, midday, PM peak period, and nighttime, with volumes and congestion estimated for each period.

- Speeds obtained from the capacity-restrained traffic assignments are "fed-back" in the travel demand modeling chain. The trip distribution, mode choice, and traffic assignment steps of the chain are executed until convergence criteria is met. MAG convergence criteria is based on the recommendations produced by the Federal Transit Administration.

- The travel impedances used in the trip distribution and traffic assignment steps of the MAG travel demand modeling are a composite function of highway travel times and costs. The nested logit mode choice 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 recently purchased 2018 HERE data for the validation of the new 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 and maintenance areas). The 2019 Conformity Analysis for the Maricopa County nonattainment and maintenance areas will be based on socioeconomic projections that were approved by the MAG Regional Council in June 2019.

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 Department of Administration (ADOA) consistent with the 2013-2017 American Community Survey. MAG then prepared socioeconomic projections by traffic analysis zone (TAZ), based on the ADOA 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 ADOA county projections were approved by the MAG Regional Council in June 2019.

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 are expected to be approved by the CAG Regional Council September 2019 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 2018-2022) and RTP (including amendments through December 2018) in effect at the time the projections were approved. For the 2019 MAG Conformity Analysis, the projections of population, households, and employment by TAZ will be input to the MAG transportation models to estimate auto and transit trips, VMT, and speeds for each analysis year.

TRANSPORTATION NETWORK ASSUMPTIONS

This section describes the development of the highway and transit networks that will be used to perform the 2019 MAG Conformity Analysis for the MAG 2020-2024 Transportation Improvement Program (TIP) and the 2040 Regional Transportation Plan (RTP). Criteria for identification of "qualifying" projects are defined below. The choice of analysis years is reviewed in Section I, Proposed Methodology for the 2019 MAG Conformity Analysis.

Qualifying Projects. Not all of the street and freeway projects included in the TIP will qualify for inclusion in the highway network. Projects which call for study, design, right-of-way acquisition, or other non-capacity improvements will not be included in the networks. When these projects result in actual facility construction projects, the associated capacity changes will be coded into the network, as appropriate. Since the networks define capacity in terms of number of through traffic lanes, only construction projects that increase the lane-miles of through traffic will be included. Generally, MAG highway networks will include only the one-mile grid system of streets, plus freeways. This includes all streets classified as arterials, as well as some collectors.

Traffic on collectors and local streets not explicitly coded on the highway network will be 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 will also include travel occurring on public and private unpaved roads.

Highway Networks. The 2020 network to be used to estimate 2020 VOC and NOx emissions for the 2019 MAG Conformity Analysis will assume implementation of all qualifying highway projects in FY 2020 of the FY 2020-2024 MAG TIP. The 2025, 2035 and 2040 networks used in the 2019 MAG Conformity Analysis will assume implementation of all qualifying highway projects in the FY 2020-2024 MAG TIP. Projects for the horizon years beyond TIP planning horizons are implemented in the modeling network in a way consistent with the MAG Regional Transportation Plan. MAG is currently working on updating the RTP with the planning horizon of 2040.

Coding Conventions. Specific coding conventions or criteria are applied to determine whether a project qualifies for highway 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 will be coded in future networks. This will include 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 will be 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 will be considered for inclusion on a case-by-case basis. The key factors to be considered in making this assessment will 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. Transit networks are a necessary part of the MAG transportation 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 will reflect the latest transit planning information available at the time the conformity analysis begins.

EMISSIONS MODEL INPUT

The MAG transportation models and the highway and transit networks described above will be utilized to estimate daily vehicle travel and transit ridership in the MAG transportation modeling area. The primary input to the air quality modeling process will be transportation model estimates of vehicle traffic and speeds for four time periods (AM peak, midday, PM peak, and nighttime) on each highway link, along with the attendant link lengths and coordinate data. A detailed description of the MAG emission models is provided below in Section IV, Air Quality Modeling.

IV. AIR QUALITY MODELING

The models that will be used to estimate emissions for the 2019 MAG Conformity Analysis will be: (1) the latest version of MOVES (i.e. MOVES2014b), to derive motor vehicle emission factors for CO, VOC, NOx, PM-10, and PM-2.5, (2) MOVESLink, to apply MOVES emission factors to vehicle miles of travel output by the MAG transportation models, and allocate the emissions temporally (by hour) and geographically (to the appropriate nonattainment or maintenance area), and (3) the latest AP-42 equations, to derive paved and unpaved road PM-10 and PM-2.5 emissions.

Paved and unpaved road emissions will be calculated for the Maricopa PM-10 and Pinal PM-10 nonattainment areas. The 2019 MAG Conformity Analysis does not need to include paved and unpaved road emissions for the Pinal PM-2.5 nonattainment area, because EPA or ADEQ has not determined that paved and unpaved road emissions are a significant contributor to the PM-2.5 nonattainment problem (see Section 93.119(f)(8) of the conformity rule).

A brief description of the emission models is provided below, along with a summary of the principal input and output data. For the 2019 MAG Conformity Analysis, model inputs not dependent on the TIP or RTP are generally derived from the 2013 Carbon Monoxide Maintenance Plan (MAG, 2013) for CO; the Eight-Hour Ozone Redesignation Request and Maintenance Plan (MAG, 2009) and the MAG 2017 Eight-Hour Ozone Moderate Area Plan for the Maricopa Nonattainment Area (MAG, 2016) for VOC and NOx; and the MAG 2012 Five Percent Plan for PM-10 (MAG, 2012).

MOVES2014b

Description. MOVES2014b is the latest version of MOVES model developed by EPA for the purpose of estimating motor vehicle emission factors, in unit of gram per mile, for specified vehicle fleet, fuel, temperature, and speed conditions. This model estimates carbon monoxide, ozone precursors (i.e., VOC and NOx), and PM-10 and PM-2.5 (exhaust, tire wear and brake wear) motor vehicle emission factors.

Inputs. There are a variety of inputs to MOVES2014b. The use of a locally-derived motor vehicle registration distribution (by model year) of 31 years is recommended. For the conformity analysis, July 2019 vehicle registration data obtained from ADOT for Maricopa and Pinal counties will be used as input to MOVES2014b for CO, VOC, NOx, and PM-10. MOVES2014b will use temperature and humidity data for the 2019 MAG Conformity Analysis that are consistent with those used for the motor vehicle emissions budgets in the MAG air quality plans.

In addition, each modeled scenario may require several runs to reflect I/M programs and no I/M programs. The results from these runs are weighted to reflect the fraction of vehicles participating in the I/M programs. Fuel parameters, which include fuel volatility, sulfur content and the use of oxygenated fuels (market share and oxygen content), are also input. The model is executed with hourly temperatures at the Sky Harbor Airport monitoring site and an array of speeds by link as estimated by the transportation model.

Output. The output from the MOVES2014b model includes emission factors by hour, roadway facility type, pollutant, and area type. These emission factors will be utilized by the MOVESLink program in estimating motor vehicle emissions for the MAG region. The emission factors for the 2019 MAG Conformity Analysis will be calculated for the pollutants, CO, VOC, NOx, and PM-10, in the Maricopa nonattainment and maintenance areas; 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.

AP-42

Description. PM-10 emission factors for reentrained dust for unpaved and paved roads will be 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.

Inputs. The AP-42 equation that calculates PM-10 and PM-2.5 emission factors for unpaved road fugitive dust requires as input: the road surface material silt content, road surface moisture content, average vehicle speeds, and the annual number of wet days (with at least 0.01 inch of precipitation). The unpaved road emission factors will be calculated separately for the Maricopa and Pinal PM nonattainment areas.

For unpaved roads in the Maricopa County PM-10 nonattainment area, the silt content assumption is 11.9%, the moisture content is 0.5%, and the vehicle speeds are 25 mph for public unpaved roads, 20 mph for private unpaved roads and 10 mph for unpaved alleys. These inputs to the AP-42 equations for unpaved roads are consistent with the MAG 2012 Five Percent Plan for PM-10 (MAG, 2012).

The unpaved roads in the Pinal County PM-10 and PM-2.5 nonattainment areas are stratified by four categories (agricultural, public, private and trails) and a number of subcategories for agricultural, public and private roads. The silt content, moisture content and speeds shown in Table 5 are inputs to the AP-42 equation for unpaved roads. These data were provided to MAG by the Pinal County Air Quality Control District in July 2013.

During the period 2008-2012, there was an annual average of 32 days with at least 0.01 inch of precipitation in Maricopa County, while Pinal County experienced 33 days with 0.01 inch of precipitation in 2008. These numbers of precipitation days will be used to calculate both unpaved and paved road emission factors for the nonattainment areas in Maricopa and Pinal counties.

The AP-42 equation that calculates PM-10 and PM-2.5 emission factors for paved road fugitive dust requires as input the road surface silt loading, the average weight of vehicles traveling on the roads, and the number of wet days (with at least 0.01 inch of precipitation). The emission factors for paved roads will be calculated separately for the Maricopa and Pinal County PM-10 nonattainment areas. The road surface silt loadings to be used for both PM-10 nonattainment areas are 0.02 g/m^2 for freeways, 0.067 g/m^2 for high-traffic arterials, and 0.23 g/m^2 for low-traffic arterials. These silt loadings are consistent with those used in the MAG 2012 Five Percent Plan for PM-10 (MAG, 2012). Since the silt loadings are stratified by road type, vehicle weights will be estimated separately for freeways, high-traffic arterials, and low-traffic arterials. The average vehicle weights for freeways and arterials will be calculated using July 2019 vehicle registrations for Maricopa and Pinal counties, vehicle miles of travel (VMT) derived from the latest traffic assignment for trucks and all vehicle types in Maricopa and Pinal counties.

Output. The AP-42 equations for unpaved and paved roads use the assumptions discussed above to estimate PM-10 emission factors in gram per VMT. These emission factors are multiplied by vehicle miles of travel in order to estimate fugitive dust PM-10 emissions on unpaved and paved roads in the Maricopa and Pinal County PM nonattainment areas.

Unpaved Roads

Maricopa County PM-10 Nonattainment Area

The miles of public unpaved roads are derived from the 2009 MAG Unpaved Road Inventory (URI) (MAG, 2010). According to the URI, there were 613.4 miles of public unpaved roads in the PM-10 nonattainment area in 2009. MAG utilized traffic counts on unpaved roads, supplemented by Geographic Information Systems (GIS) image recognition techniques, to estimate the daily vehicle miles of travel (VMT) on public unpaved roads in 2009.

In February 2011, MAG conducted additional traffic counts on a random sample of unpaved roads and alleys in the PM-10 nonattainment area. MAG also conducted a comprehensive inventory of private unpaved roads in the PM-10 nonattainment area that was completed in September 2011.

TABLE 5.
DATA USED TO CALCULATE EMISSIONS FROM UNPAVED ROADS
IN THE WEST PINAL PM-10 NONATTAINMENT AREA

Categories/Subcategories	Silt Content	Moisture Content	Speed	AADT	Miles
Public	7.1%	0.3%			
Class A			29 mph	28.0	89.7
Class B			44 mph	96.4	239.2
Class C			37 mph	108.8	89.7
Class D			47 mph	181.7	119.6
Class E			40 mph	619.0	59.8
Private	14.4%	0.3%			
Non-Irrigation			25 mph	28.0	893.2
Principal Canal			25 mph	16.8	148.2
Secondary Canal			15 mph	3.4	743.6

The 2011 URI indicated that there were 461.1 miles of public unpaved roads in the PM-10 nonattainment area. For 2017, the miles of public unpaved roads were updated to reflect the 2017 MAG URI completed in November 2018. There were 366.2 miles of public unpaved roads in the PM-10 nonattainment area in 2017.

The 2011 URI indicated that there were 974.6 miles of private unpaved roads in the PM-10 nonattainment area. In addition, the 2011 traffic counts indicated that 26 vehicles travel on private unpaved roads on an average weekday. From the 2017 URI, there were 958.1 miles of private unpaved roads in the PM-10 nonattainment area.

MAG used GIS to estimate that there were 650 miles of unpaved alleys in the PM-10 nonattainment area in 2009. The VMT on unpaved alleys is obtained by multiplying the miles of unpaved alleys by AADT. The AADT for unpaved alleys, obtained from 2011 traffic counts, is four vehicles per day, which is used to estimate uncontrolled emissions (i.e., before applying reductions attributable to alley paving projects). The VMT on unpaved alleys is held constant for all conformity analysis years.

The VMT on public unpaved roads will also be held constant for all conformity analysis years to estimate uncontrolled emissions (i.e., before applying reductions attributable to paving projects). The PM-10 emissions produced by public unpaved roads with 150 ADT or more will be reduced by 50 percent to reflect the Maricopa County Rule 310.01 requirement that these roads needed to be paved or stabilized by June 10, 2004. It is assumed that these high volume dirt roads are being stabilized with dust suppressants that have a control efficiency of 50 percent.

Using July 2002 - July 2013 data, MAG has determined the annual growth rate of 0.9 percent per year for private unpaved roads in the PM-10 nonattainment area. This growth rate will be applied to increase private unpaved road emissions by 0.9 percent per year after 2014.

Pinal County PM-10 and PM-2.5 Nonattainment Areas

For the Pinal County PM-10 nonattainment area, the annual average daily traffic (AADT) and miles of unpaved roads by subcategory are shown in Table 5. The AADT and miles for the PM-10 nonattainment area represent 2008 data provided to MAG by the Pinal County Air Quality Control District in July 2013. The AADT is multiplied by the miles to calculate vehicle miles of travel (VMT). The VMT is multiplied by the AP-42 emission factor to obtain the PM-10 unpaved road emissions for trails and each subcategory of agricultural, public and private unpaved roads. The total daily unpaved road emissions are calculated by summing the trail and subcategory emissions.

Paved Roads

Paved road PM-10 emissions are based on the new AP-42 equation released by EPA in January 2011 using silt loadings, in gram per square meter, of 0.02 for freeways, 0.067 for high ADT arterials and 0.23 for low ADT arterials. The silt loadings were derived from the MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area. The average vehicle weights on freeways and arterials will be calculated based on the July 2019 vehicle registrations and the latest traffic assignment data for each year. The VMT weighting factors by vehicle type used in averaging the vehicle weights will be estimated using MOVES2014b Source Type output. The annual average number of wet days for the Maricopa PM-10 nonattainment area is assumed to be 32, based on the 2008-2012 precipitation data reported by the National Weather Service (NWS) station located in the Sky Harbor International Airport. The annual average number of wet days for the Pinal PM-10 nonattainment area is assumed to be 33, based on 2008 precipitation data reported by the NWS station located in Casa Grande.

The AP-42 emission factors for paved roads are multiplied by the VMT for freeways, high traffic arterials, and low traffic arterials to obtain total paved road emissions. The VMTs for freeways and high and low traffic arterials are derived from the MAG TransCAD transportation models. All centroid connectors are considered to be low traffic arterials.

Onroad Vehicles. MOVESLink2014 processes link data files output by the MAG transportation model, TransCAD. The program calculates emissions for roadway links in the MAG highway networks. Traffic volumes for four time periods (AM peak, midday, PM peak, and nighttime) for each link are converted into hourly volumes based upon local survey data. Hourly emission factors are developed by running MOVES2014b for each facility type, area type, and vehicle class using link speeds by time of day.

The transportation models are designed to model average weekday traffic patterns, which typically do not represent conditions on the specific episode day used to demonstrate attainment or maintenance and establish the conformity budget. As a result, MOVESLink2014 applies day of the week and month of the year conversion factors that are consistent with the MAG 2013 CO Maintenance Plan and the 2009 Eight-Hour Ozone Redesignation Request and Maintenance Plan for VOC and NOx. PM-10 emissions are assumed to represent an annual average day.

Inputs. The transportation model input to MOVESLink2014 consists of database formatted files that contain link-specific data and a node coordinate definitions file. MOVESLink2014 also requires as input:

- MOVES2014b emissions factors and VMT.
- 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.

Outputs. The outputs from MOVESLink2014 include an hourly, gridded onroad mobile source emissions file and several summary files containing emissions and traffic data in the modeling domain.

CALCULATION OF PM-10 EMISSIONS FROM ROAD CONSTRUCTION

Maricopa County PM-10 Nonattainment Area

As required by Section 93.122(e) of the federal transportation conformity rule, PM-10 emissions from road construction will be estimated for each conformity analysis year for the Maricopa County PM-10 Nonattainment Area. The PM-10 emissions from road construction are based on the assumptions used in the MAG 2012 Five Percent Plan for PM-10 with the exception of an updated rule effectiveness rate for 2012. The latest data from the Maricopa County Air Quality Department indicates that the actual Rule Effectiveness for Rule 310 declined from 94% to 93% between 2011 and 2012. Therefore, the 2012 Rule Effectiveness of 93% will be used in calculating 2025, 2035, and 2040 road construction emissions.

Pinal County PM-10 and PM-2.5 Nonattainment Areas

Since Section 93.122(e) does not mention PM-2.5, it is assumed that construction-related PM-2.5 emissions do not need to be included in the Action/Baseline analysis for the Pinal PM-2.5 nonattainment area. PM-10 emissions from construction-related fugitive dust will also not be included in the Action/Baseline conformity analyses for the Pinal County PM-10 nonattainment area, because road and transit construction-related emissions are anticipated to be an insignificant contributor to the nonattainment problem.

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ATTACHMENT B

DRAFT

PROCESS FOR ENSURING TIMELY IMPLEMENTATION OF TRANSPORTATION CONTROL MEASURES

Section 93.105(c)(1)(iv) of the federal conformity rule requires a consultation process to be established for making a determination of whether past obstacles to implementation of transportation control measures which are behind the schedule established in the applicable air quality plan have been identified and are being overcome. A determination also is required as to whether State and local agencies with influence over approvals or funding for transportation control measures (TCMs) are giving maximum priority to approval or funding for TCMs. In addition, the process is required to consider whether delays in transportation control measure implementation necessitate revisions to the air quality plan to remove or substitute TCMs or other emission reduction measures.

In February 1996, the MAG Regional Council adopted conformity consultation processes (MAG,1996b) in response to federal and state requirements. The following text from the process M-6 directly addresses the requirement for consultation on the timely implementation of TCMs:

> "A consultation process is required for the determination of whether past obstacles to implementation of transportation control measures which are behind schedule have been identified and are being overcome. Also, a determination is required whether State and local agencies with influence over approvals or funding for TCMs are giving maximum priority to approval or funding of TCMs. These determinations are part of the criteria for TIP conformity determinations, specified in the federal conformity regulation 40 CFR 51.418(c)(2) *(now 93.113(c)(2))*."

For the 2019 MAG Conformity Analysis, the anticipated approach will be to conduct a review of projects and funds allocated in the TIP which implement adopted pollution control measures. This will be used together with any TCM implementation annual reports described above that are available, as the basis for assessing whether or not implementing agencies are giving maximum priority to approval or funding of transportation control measures.

The TCM findings required under federal conformity regulations will be incorporated as part of the 2019 MAG Conformity Analysis, which will be made available for interagency and public review, prior to a Finding of Conformity by the MAG Regional Council.

ATTACHMENT C

DRAFT

TYPES OF PROJECTS CONSIDERED EXEMPT FROM CONFORMITY REQUIREMENTS

Under U.S. Environmental Protection Agency regulations, a conformity determination is required before a regionally significant road or transit project (regardless of funding source) can be approved by any agency which is a recipient of federal road or transit funds. As part of this conformity determination, regional emissions analyses are required. However, the regulations also identify various types of projects which are exempted from the analytical requirements due to their presumed negligible air quality impacts. Interagency consultation is required to determine whether any of these normally exempted projects "should be treated as nonexempt in cases where potential adverse emissions impacts may exist for any reason."

In February 1996, the MAG Regional Council adopted conformity consultation processes (MAG, 1996b) in response to federal and state requirements. The following text from the process M-5 directly addresses the requirement for consultation on exempt projects:

> "...the Metropolitan Planning Organization (i.e. MAG, for this region) shall initiate consultation for evaluating whether projects listed as exempt from conformity in the conformity regulation should be treated as nonexempt projects where potential adverse emission impacts may exist for any reason. In this consultation process, MAG provides for the participation of the transportation and air quality agencies, as well as the public."

MAG consults on the designation of exempt status for a specific project proposal at the time the project in question is proposed for addition to the TIP and RTP. This consultation process is described in MAG process M-8.

For the 2019 MAG Conformity Analysis, the anticipated approach includes the exempt projects which are contained in the EPA conformity regulations, as listed in the three tables which follow. Table 1 identifies the specific types of projects which require no conformity determination of any kind, by any agency. These project types include specific actions involving safety, mass transit, air quality, and other actions likely to have no adverse air quality impacts. Table 2 lists projects for which a regional emissions analysis is not required. These projects are, however, <u>not</u> exempt from other conformity requirements. In addition, Table 3 lists traffic signal synchronization projects which are exempt from conformity determinations prior to being funded, approved, or implemented.

TABLE 1
PROJECTS NORMALLY EXEMPT FROM CONFORMITY DETERMINATIONS
(From 40 CFR 93.126)

Safety

Railroad/highway crossing.
Projects that correct, improve, or eliminate a hazardous location or feature.
Safer non-Federal-aid system roads.
Shoulder improvements.
Increasing sight distance.
Highway Safety Improvement Program implementation.
Traffic control devices and operating assistance other than signalization projects.
Railroad/highway crossing warning devices.
Guardrails, median barriers, crash cushions.
Pavement resurfacing and/or rehabilitation.
Pavement marking.
Emergency relief (23 U.S.C. 125).
Fencing.
Skid treatments.
Safety roadside rest areas.
Adding medians.
Truck climbing lanes outside the urbanized area.
Lighting improvements.
Widening narrow pavements or reconstructing bridges (no additional travel lanes).
Emergency truck pullovers.

Mass Transit

Operating assistance to transit agencies.
Purchase of support vehicles.
*Rehabilitation of transit vehicles.
Purchase of office, shop, and operating equipment for existing facilities.
Purchase of operating equipment for vehicles (e.g., radios, fareboxes, lifts, etc.).
Construction or renovation of power, signal, and communications systems.
Construction of small passenger shelters and information kiosks.
Reconstruction or renovation of transit buildings and structures (e.g., rail or bus buildings, storage and maintenance facilities, stations, terminals, and ancillary structures).
Rehabilitation or reconstruction of track structures, track, and trackbed in existing rights-of-way.
*Purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet.
Construction of new bus or rail storage/maintenance facilities categorically excluded in 23 CFR part 771.

TABLE 1 (continued)
PROJECTS NORMALLY EXEMPT FROM CONFORMITY DETERMINATIONS
(From 40 CFR 93.126)

Air Quality

Continuation of ride-sharing and van-pooling promotion activities at current levels.
Bicycle and pedestrian facilities.

Other

Specific activities which do not involve or lead directly to construction, such as:
Planning and technical studies.
Grants for training and research programs.
Planning activities conducted pursuant to titles 23 and 49 U.S.C.
Federal-aid systems revisions.
Engineering to assess social, economic, and environmental effects of the proposed action or alternatives to that action.
Noise attenuation.
Emergency or hardship advance land acquisitions (23 CFR 710.503).
Acquisition of scenic easements.
Plantings, landscaping, etc.
Sign removal.
Directional and informational signs.
Transportation enhancement activities (except rehabilitation and operation of historic transportation buildings, structures, or facilities).
Repair of damage caused by natural disasters, civil unrest, or terrorist acts, except projects involving substantial functional, locational or capacity changes.

* In PM-10 and PM-2.5 nonattainment or maintenance areas, such projects are exempt only if they are in compliance with control measures in the applicable implementation plan.

TABLE 2
PROJECTS NORMALLY EXEMPT FROM REGIONAL EMISSIONS ANALYSIS, BUT NOT FROM OTHER CONFORMITY REQUIREMENTS
(From 40 CFR 93.127)

Intersection channelization projects.
Intersection signalization projects at individual intersections.
Interchange reconfiguration projects.
Changes in vertical and horizontal alignment.
Truck size and weight inspection stations.
Bus terminals and transfer points.

TABLE 3
TRAFFIC SIGNAL SYNCHRONIZATION PROJECTS
(From 40 CFR 93.128)

Traffic signal synchronization projects may be approved, funded, and implemented without satisfying the requirements of this subpart. However, all subsequent regional emissions analyses required by sections 93.118 and 93.119 for transportation plans, TIPs, or projects not from a conforming plan and TIP must include such regionally significant traffic signal synchronization projects.

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October 29, 2019

TO: Ray Tellis, Federal Transit Administration
Karla Petty, Federal Highway Administration
John Halikowski, Arizona Department of Transportation
Misael Cabrera, Arizona Department of Environmental Quality
Jesus Sapien, City of Phoenix Public Transit Department
Scott Smith, Valley Metro/RPTA
Philip McNeely, Maricopa County Air Quality Department
Andrea Robles, Central Arizona Governments
Michael Sundblom, Pinal County Air Quality Control District
Irene Higgs, Sun Corridor Metropolitan Planning Agency
Jerry Wamsley, U.S. Environmental Protection Agency, Region IX
Other Interested Parties

FROM: Dean Giles, Air Quality Planning Project Manager

SUBJECT: NOTIFICATION OF CONCLUSION OF CONSULTATION ON PROPOSED TRANSPORTATION CONFORMITY PROCESSES FOR THE 2019 MAG CONFORMITY ANALYSIS

On October 2, 2019, the Maricopa Association of Governments transmitted for consultation the proposed transportation conformity processes for the 2019 MAG Conformity Analysis. The transmittal indicated that the proposed processes will be applied beginning with the upcoming conformity analysis for the Maricopa County Nonattainment and Maintenance Areas and the Pinal County Nonattainment Areas. This memorandum completes the consultation process by notifying the agencies listed above and other interested parties of the record of consultation on the proposed transportation conformity processes and of any comments received during the period of consultation. No comments were received. Copies of the consultation memorandum on the transportation conformity processes may be requested from MAG. Also, copies of the MAG Management Committee and MAG Regional Council meeting agendas and approved minutes will be available at www.azmag.gov, or they may also be requested from MAG.

If you have any questions, please call me at (602) 254-6300.

cc: Dallas Hammit, P.E., Arizona Department of Transportation

APPENDIX B

AIR QUALITY MODELING VEHICLE MILES OF TRAVEL

AIR QUALITY MODELING VEHICLE MILES OF TRAVEL

In the Maricopa Nonattainment and Maintenance Areas, the vehicle miles of travel (VMT) used to estimate emissions for each pollutant analyzed in the conformity analysis are reported in Table 1. For carbon monoxide, the VMT estimates reflect the carbon monoxide maintenance area and carbon monoxide season average weekday adjustment factors. For eight-hour ozone, the VMT estimates reflect the eight-hour ozone nonattainment area and Thursday in June episode day adjustment factors. For particulates, the VMT estimates reflect annual average daily traffic volumes for the PM-10 nonattainment area.

In the Pinal County Nonattainment Areas, the VMT used to estimate emissions for each pollutant analyzed in the conformity analysis are reported in Table 2. For particulates, the VMT estimates reflect 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.

In general, MAG highway networks include those facilities which are functionally classified as freeways or arterials. Although the MAG regional network includes some collector streets, they are not generally coded on the network. Their inclusion would increase the number of traffic analysis zones and links to a size which would tax the capabilities of available computer software and hardware. For this same reason, local street improvements contained in the TIP are not coded on the highway network. The MAG transportation modeling area currently contains approximately 3,400 traffic analysis zones and more than 30,000 highway links.

Although not explicitly assigned to the networks, traffic on most collector and all local streets is simulated in the models by use of abstract links called "centroid connectors". These represent a collection of collector streets, local streets and driveways which connect a neighborhood to a regionally-significant highway. Centroid connector travel is included in the model-estimated VMT from which emission estimates for the conformity analysis are generated.

TABLE 1. Total VMT Used in the 2020 MAG Conformity Analysis for the Maricopa Nonattainment and Maintenance Areas
(Daily vehicle miles of travel in thousands for pollutant-specific areas and episodes)

YEAR	CARBON MONOXIDE (Friday in December Episode Day)	EIGHT-HOUR OZONE (Thursday in June Episode Day)	PM-10 (Annual Average Day)
2020		118,934	
2025	118,366	130,132	115,540
2035	135,439	154,200	135,309
2040	141,104	163,598	142,344

TABLE 2. Total VMT Used in the Conformity Analysis for the Pinal County Nonattainment Areas
(Daily vehicle miles of travel in thousands for pollutant-specific areas)

YEAR	PM-10 NONATTAINMENT AREA		PM-2.5 NONATTAINMENT AREA	
	Action	Baseline	Action	Baseline
2020	6,408	6,450	734	765
2025	7,672	7,575	920	946
2035	11,516	10,853	1,284	1,329
2040	13,868	12,785	1,495	1,531

APPENDIX C

RESPONSE TO COMMENTS