



SIP Revision: Arizona Vehicle Emissions Inspection and Maintenance Program

Air Quality Division
October 27, 2025 Draft

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List of Abbreviations & Acronyms

AAC Arizona Administrative Code

ARS	Arizona Revised Statutes
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
CAA	Federal Clean Air Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DCL	Data Link Connector
DTC	Diagnostic Trouble Codes
EPA	United States Environmental Protection Agency
GVWR	Gross Vehicle Weight Rating
HB/SB	House/ Senate Bill
I/M	Inspection and Maintenance
MVD	Motor Vehicle Division
MY	Model Year
NAAQS	National Ambient Air Quality Standards
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
OBD	On-Board Diagnostics
PM	Particulate matter
PPB	Parts per billion
PPM	Parts per million
Pth	Percentile
PDEQ	Pima County Environmental Quality
SIP	State Implementation Plan

Completeness Criteria

(40 C.F.R. Part 51, Appendix V, § 2.0)

Appendix V § 2.1 - Administrative Materials

(a) A formal signed, stamped, and dated letter of submittal from the Governor or his designee, requesting EPA approval of the plan or revision thereof (hereafter “the plan”). If electing to submit a paper submission with a copy in electronic version, the submittal letter must verify that the electronic copy provided is an exact duplicate of the paper submission.

See the cover letter submitted with this revision.

(b) Evidence that the State has adopted the plan in the State code or body of regulations; or issued the permit, order, consent agreement (hereafter “document”) in final form. That evidence shall include the date of adoption or final issuance as well as the effective date of the plan, if different from the adoption/issuance date.

Copies of the legislation adopting the statute for which approval is sought in this SIP Revision is included in Appendix B.

(c) Evidence that the State has the necessary legal authority under State law to adopt and implement the plan.

ADEQ has primary responsibility for air pollution control and abatement, and as such, is required to adopt and "maintain a state implementation plan that provides for implementation, maintenance and enforcement of national ambient air quality standards and protection of visibility as required by the clean air act." A.R.S. § 49-404(A). ADEQ also maintains authority to issue and administer rules, adopt county rules, and to submit such rules for approval into the SIP. Copies of Arizona Revised Statutes, §§ 49-104, 49-106, 49-404, 49-406, 49-542, and 49-542.03 are included in Appendix B for reference only.

(d) A copy of the actual regulation, or document submitted for approval and incorporation by reference into the plan, including indication of the changes made (such as redline/strikethrough) to the existing approved plan, where applicable. The submission shall include a copy of the official State regulation/document, signed, stamped, and dated by the appropriate State official indicating that it is fully enforceable by the State. The effective date of any regulation/document contained in the submission shall, whenever possible, be indicated in the regulation/document itself; otherwise the State should include a letter signed, stamped, and dated by the appropriate State official indicating the effective date. If the regulation/document provided by the State for approval and incorporation by reference into the plan is a copy of an existing publication, the State submission should, whenever possible, include a copy of the publication cover page and table of contents.

See Appendix B.

(e) Evidence that the State followed all of the procedural requirements of the State’s laws and constitution in conducting and completing the adoption/issuance of the plan.

See Appendix B.

(f) Evidence that public notice was given of the proposed change consistent with procedures approved by EPA, including the date of publication of such notice.

See Appendix C.

(g) Certification that public hearing(s) were held in accordance with the information provided in the public notice and the State's laws and constitution, if applicable and consistent with the public hearing requirements in 40 CFR 51.102.

See Appendix C.

(h) Compilation of public comments and the State's response thereto.

See Appendix C.

Appendix V § 2.1 - Technical Support

(a) Identification of all regulated pollutants affected by the plan.

Ozone, Oxides of Nitrogen, Particulate Matter, Volatile Organic Compounds, and Carbon Monoxide.

(b) Identification of the locations of affected sources including the EPA attainment/nonattainment designation of the locations and the status of the attainment plan for the affected areas(s).

This SIP revision will not affect any specific sources.

(c) Quantification of the changes in plan allowable emissions from the affected sources; estimates of changes in current actual emissions from affected sources or, where appropriate, quantification of changes in actual emissions from affected sources through calculations of the differences between certain baseline levels and allowable emissions anticipated as a result of the revision.

See Sections 5 and 1.5, Demonstrating Noninterference with attainment of the National Ambient Air Quality Standards or reasonable further progress under Clean Air Act Section 110(l).

(d) The State's demonstration that the national ambient air quality standards, prevention of significant deterioration increments, reasonable further progress demonstration, and visibility, as applicable, are protected if the plan is approved and implemented. For all requests to redesignate an area to attainment for a national primary ambient air quality standard, under section 107 of the Act, a revision must be submitted to provide for the maintenance of the national primary ambient air quality standards for at least 10 years as required by section 175A of the Act.

See Sections 5 and 1.4, Demonstrating Noninterference with attainment of the National Ambient Air Quality Standards or reasonable further progress under Clean Air Act Section 110(l).

(e) Modeling information required to support the proposed revision, including input data, output data, models used, justification of model selections, ambient monitoring data used, meteorological data used, justification for use of offsite data (where used), modes of models

used, assumptions, and other information relevant to the determination of adequacy of the modeling analysis.

See Appendix A.

(f) Evidence, where necessary, that emission limitations are based on continuous emission reduction technology.

Not applicable.

(g) Evidence that the plan contains emission limitations, work practice standards and recordkeeping/reporting requirements, where necessary, to ensure emission levels.

Not applicable.

(h) Compliance/enforcement strategies, including how compliance will be determined in practice.

The vehicle emissions inspection and maintenance program addressed in this SIP Revision is an ongoing SIP-approved program. No substantial changes to compliance and enforcement strategies will be required as a result of this revision.

(i) Special economic and technological justifications required by any applicable EPA policies, or an explanation of why such justifications are not necessary.

Not applicable.

1 Introduction and Purpose

The purpose of this revision to the Arizona State Implementation Plan (SIP) under 40 Code of Federal Regulations (CFR) § 52.120 is to incorporate changes to the statutes governing the Arizona vehicle emissions inspection and maintenance (I/M) program and to request that an alternative testing frequency be approved for the Tucson Metropolitan I/M area. Additionally, as required by § 110(I) of the Clean Air Act (CAA), this document includes a demonstration that this SIP revision will not interfere with attainment or maintenance of the National Ambient Air Quality Standards (NAAQS) or any other requirement of the CAA.

The CAA requires certain areas that do not meet the carbon monoxide (CO) and ozone NAAQS to implement inspection and maintenance programs in order to reduce emissions and improve air quality. These programs help identify vehicles emitting excess emissions, provide information to assist with diagnosing malfunctions that cause excess emissions, and require the repair of vehicles to bring them into compliance with national emissions standards.

Arizona currently has two areas within the State that are subject to the federal I/M program requirements due to past or present CO and ozone nonattainment designations. These areas include portions of the Phoenix and Tucson metropolitan areas that were designated nonattainment for CO from 1999 to 2004. Although, since then both areas have attained the CO NAAQS, maintain EPA approved maintenance plans, and have been re-designated as in attainment for CO.¹

The Phoenix area was also designated as nonattainment for the 1979 1-hour, 1997 8-hour, 2008 8-hour, and 2015 8-hour ozone NAAQS, although, EPA has since redesignated the Phoenix area to attainment for the 1979 1-hour and 1997 8-hour NAAQS²; it remains in nonattainment for the 2008 and 2015 standards.

ADEQ currently operates an enhanced I/M program as required by CAA § 182(c)(3) and 40 CFR 51.351 in the expanded Phoenix metropolitan area, known as Area A,³ located in portions of Maricopa, Pinal, and Yavapai Counties. The enhanced program is one of the primary control measures used within the State to help the Phoenix metropolitan area attain and maintain the CO and Ozone NAAQS through annual and biennial vehicle emissions inspection.⁴

In addition to the enhanced I/M program in Area A, Arizona operates a basic I/M program in the Tucson metropolitan area referred to as Area B.⁵ Similar to how the enhanced program I/M program is used in

¹ 65 FR 36353; June 2, 2000. 65 FR 50651; August 21, 2000. See *1987 Carbon Monoxide State Implementation Plan Revision for the Tucson Air Planning*; *1996 Carbon Monoxide Limited Maintenance Plan for the Tucson Air Planning Area*; and *2008 Revision to the Carbon Monoxide Limited Maintenance Plan for the Tucson Air Planning Area (for 2010)*.

² Arizona Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants https://www3.epa.gov/airquality/greenbook/anayo_az.html (last accessed Oct. 24, 2024).

³ See Arizona Revised Statutes §49-541(1) for a description of area A.

⁴ See *Final Serious Area Ozone State Implementation Plan for Maricopa County, December 2000*; *One-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa County Nonattainment Area, March 2004*; *Eight-Hour Ozone Plan for the Maricopa Nonattainment Area, June 2007*; *MAG Eight-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa Nonattainment Area, February 2009*; *Revised MAG 1999 Serious Area Carbon Monoxide Plan for the Maricopa Country Nonattainment Area, March 2001*; and *Carbon Monoxide Redesignation Request and Maintenance Plan for the Maricopa County Nonattainment Area, May 2003*.

⁵ See ARS §49-541(2) for a description of Area B.

Area A as a control measure, the basic I/M program is used as a control measure to help the Tucson area continue to attain the CO NAAQS after Tucson was re-designated to maintenance in July 10, 2000.⁶

The State's I/M program is one of Arizona's most effective air quality control measures. It is listed as a control measure and modeled within a number of the States SIP submissions and drastically reduces air pollution within the State.

⁶ Arizona Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants
https://www3.epa.gov/airquality/greenbook/anayo_az.html (last accessed Oct. 24, 2024).

2 Background and Applicability

In 2010 the Arizona Legislature introduced House Bill (HB) 2033 which extended the conditional enactment included in the 2008 version of Arizona Revised Statutes (A.R.S.) 49-542 that exempted motorcycles in Area A from emission testing requirements.⁷ The Arizona Legislature regularly conditions the enactment of Arizona's environmental regulations on EPA approval. Also, in 2010 the legislature passed HB 2165, which allows owners of vehicles that receive an on-board (OBD) diagnostic testing code indicating the vehicle is "not ready" qualify for a special 90-day waiver.⁸

In 2011, Senate Bill (SB) 1324 was passed which exempted vehicles 1974 model year and older from emissions testing, conditional on EPA approval and on other house bills.⁹

In 2014 the Arizona Legislature introduced House Bill (HB) 2226 which restructured the statutory vehicle emissions testing requirements for vehicles registered in both Area A and Area B.¹⁰ The house bill restructured a section of Arizona Revised Statutes (A.R.S.) § 49-542 that laid out the requirements for on-board diagnostics (OBD) equipped diesel powered vehicles located within the I/M program area. Previously, these diesel vehicles were required to undergo a loaded or idle test, but HB2226 expanded OBD testing to diesel vehicles and exempted them from the functional gas cap inspection requirement. The bill also allowed school districts in Area A that operate alternative fuel vehicles to conduct OBD inspections on OBD equipped school vehicles.

In addition, the bill extended consumer remedies for vehicles in Area B that failed a vehicle inspection within three days of purchase, made changes to the process for issuing emission testing waivers for vehicles that failed reinspection, and vehicles that failed due to catalytic converter system diagnostic codes.

The bill also directed ADEQ to exempt cranes and oversize vehicles, as well as the vehicles of active duty military personnel on assignment outside of Arizona from emissions testing. It also removed all language relating to the liquid fuel leak inspection requirement.

In 2017 the legislature approved HB 2131 which updated the statutory vehicle testing requirements. It allowed a steady state loaded test and curb idle test to be used in Area B; a transient loaded test for vehicles equipped with OBD in Area A, and an opacity test for diesel vehicles with OBD in Areas A or B- as approved by the director of ADEQ.

In 2019 the State legislature passed HB2452 which allowed ADEQ to establish a Remote Pilot program for remote vehicle inspection. It also amended the emission testing time frame to allow for voluntary early emissions inspection, and made technical and conforming changes.

In 2021 two bills were approved by the legislature. The first bill HB2758 amended A.R.S. § 49-542 to exempt collectible vehicles from emission testing if the retail purchaser obtained collectible vehicle or classic automobile insurance coverage as prescribed by statute before the vehicle is delivered or is otherwise exempt from emissions testing based on rules adopted by the ADEQ Director.

⁷ Laws 2010, Ch. 42 (HB2033), § 2

⁸ Laws 2010, Ch. 253 (HB2165), §19

⁹ Laws 2011, Ch. 163 (SB1324), § 163; SB1324 included several conditions that had to be satisfied before the amendments could take effect. However, the amendments expired before they could be submitted to EPA and are therefore, not included for approval into the Arizona SIP.

¹⁰ Laws 2024, Ch. 150 (HB2628), § 1

The second, HB2329 amended A.R.S. §§ 49-542 and 49-553, to expand OBD testing, updated fleet emission testing requirements, statutory exemptions, and research requirements. The bill also authorized ADEQ to hire consultants for the purpose of analyzing the costs and benefits of emission reduction benefits, and updated equipment purchasing requirements.

It also amended A.R.S. § 49-558.02 transferring the operation of the State's Voluntary Vehicle Repair Program from the local governments to ADEQ.

In addition to the technical and substantive changes made to A.R.S. §§ 49-542 and 49-542.03, the house bill included the following conditional enactment clause:

"Section 49-542, Arizona Revised Statutes, as amended by section 3 of this act, and section 49-542.03, Arizona Revised Statutes, as amended by this act, do not become effective unless on or before July 1, 2023 the United States environmental protection agency approves the proposed modifications to the vehicle emissions testing program protocols as part of the state implementation plan for air quality."

Originally, ADEQ intended to submit this SIP prior to 2023, however, when the SIP went to public comment in December of 2022 an error was discovered. The textual error occurred when House Bill (HB) 2329, Laws 2021, Ch. 27, § 3, amended the contingent version of A.R.S. § 49-542(F)(2)(b) to allow more flexibility, but inadvertently changed the test methods required under 40 CFR § 51.357. After discovering the error ADEQ attempted to have it corrected immediately during the 2023 legislative session as a potential floor amendment to HB2439. However, the amended legislation did not proceed forward and was not signed into law until April 10, 2024 under HB2628, Laws 2024, Ch. 150, § 6. As Arizona missed the deadline listed in the conditional enactment, the State legislature extended the original deadline to July 1, 2027.¹¹

Table 2-1 below tracks the previously discussed amendments to Arizona's I/M Program which ADEQ is submitting to EPA in order to update A.R.S. § § 49-542 and 49-542.03 in the Arizona SIP. Table 2-2 lists the actions that ADEQ is requesting and the statutory implementing authority for each of the amendments. All of the legislative documents discussed in this section have been included in Appendix B of this submission.

Table 2-1 Statutory Amendments Adopted Post 2008

Table 2-1. Statutory Amendments Adopted Post 2008	
Legislation	Amendments Made
Laws 2010, Ch. 253 (HB2165), § 19	Amended A.R.S. § 49-542 to allow vehicle owners that receive an on-board diagnostic check that results in a not ready for testing or failure code to qualify for a waiver.
Laws 2010, Ch.42 (HB2033), § 2	Extended the conditional enactment under Laws 2008, Ch.64, Section 1 to July 1, 2012.
Laws 2011, Ch. 163 (SB 1324), §19	Amended A.R.S. § 49-542 to exempt vehicles 1975 years or older from emissions testing upon EPA approval into the Arizona SIP in addition to EPA approving either the exemption of motorcycles from emission testing in Area A or the OBD deferral of compliance for vehicles in Areas A and B.

¹¹ HB 2628 because some of the changes for which this SIP Revision seeks approval will not be enacted until EPA approves them, it is not possible to include an official codified version of §§ 49-542 and 49-542.03 with this SIP Revision. An official codified version will be provided after EPA approval.

Laws 2014, Ch. 89 (HB2226), § 2 ¹²	Amended A.R.S. § 49-542, by making technical corrections and updates to section (J) exemptions and rewrote section (Z).
Laws 2017, Ch. 29 (HB2131), § 2	Amended A.R.S. § 49-542 to add additional test methods for OBD vehicles in Areas A and B. The bill also included a conditional enactment clause.
Laws 2019, Ch. 141 (HB2452), § 1	Amended A.R.S. § 49-542, to establish a remote sensing pilot; allow voluntary early vehicle inspections; define the contract term for the State's I/M program contractor; and make technical and conforming changes.
Laws 2021, Ch. 27 (HB2329), §§ 2, 3	Amended A.R.S. § 49-542, and transferred the operation of the State's Voluntary Vehicle Repair Program from the local governments to ADEQ ; Expanded OBD testing; updated fleet emission testing requirements; updated statutory exemptions, updated the research requirements, authorized ADEQ to hire consultants, and updated equipment purchasing requirements.
Laws 2021, Ch. 116 (HB2758), § 1	Amended A.R.S. § 49-542, and updated the statute to exempt collectible vehicles from emission testing if the retail purchaser obtained collectible vehicle or classic automobile insurance coverage as prescribed by statute before the vehicle is delivered or is otherwise exempt from emissions testing based on rules adopted by the ADEQ Director.
Laws 2024, Ch. 150 (HB2628), § 1	Amended A.R.S. § 49-542, to address an error discovered under section (F)(2)(b) and made additional minor technical corrections.
Laws 2021, Ch. 27 (HB2329), § 4	Amended A.R.S. § 49-542.03 to address minor technical corrections and ensure dealerships were providing customers with notice of their rights prior to the completion of the sale.

Table 2-2 Statutes to be Amended & Incorporated into the SIP**Table 2-2 Statutes to be Amended & Incorporated into the SIP**

Statute	Requested EPA Action	State Authority and Description of Change
A.R.S. § 49-542- Emissions inspection program; powers and duties of director; administration; periodic inspection; minimum standards and rule; exceptions; definition.	Amend A.R.S § 49-542 -Emissions inspection program; powers and duties of director; administration; periodic inspection; minimum standards and rule; exceptions; definition.	HB 2628 Laws 2024, Ch. 150, Sec. 6. Which revised A.R.S. § 49-542 authorizes Arizona's I/M program and establishes the programs general requirements. A.R.S. § 49-542 was last approved into the Arizona SIP on May 22, 2013 after the statute was amended by Laws 2008, Ch. 64 (HB2280) to exempt motorcycles from the I/M program.

¹² HB2226 also included the same conditionally enacted amendments contained in the 2021 legislation. The time period for satisfying the condition, EPA approval, expired before the amendments could take effect.

A.R.S. § 49-542.03 - Motor vehicle dealer; emissions testing; remedies; definition.	Add to 40 CFR § 52.120.	HB 2329 Laws 2021, Ch. 27. Sec.4 which revised A.R.S. § 49-542.03, has yet to be approved into the SIP, establishes the requirements for motor vehicle dealers. This statute was amended to ensure dealerships were providing purchasers with a written notice of their rights prior to completing the sales transaction.
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3 SIP Requirements

The requirements for basic and enhanced I/M programs are listed under 40 CFR 51.350 through 51.373. However, when revising a I/M program States must also follow the SIP requirements under 40 CFR 51.356. At this time 40 CFR 51.356 requires I/M SIP revisions to include “a description of any special exemptions which will be granted by a program, and an estimate of the percentage and number of subject vehicles which will be impacted. Such exemptions shall be accounted for in the emission reduction analysis.” Therefore, this chapter, as required under 40 CFR 51.356, will provide a description of the Arizona's current I/M programs, the program exceptions being submitted for EPA approval, and an estimate of the percentage and number of vehicles impacted by the proposed changes.

3.1 Arizona's Vehicle Inspection and Maintenance Program.

A.R.S. § 49-542 requires all vehicles located in Area A and Area B to undergo periodic vehicle emission testing and A.R.S. § 49-542(D) and A.A.C. R18-2-1007 require that no affected motorist in those areas can obtain a vehicle registration without demonstrating that the vehicle has completed vehicle emission inspection. The Vehicle I/M Program is administered by ADEQ. ADEQ also maintains the database that submits emissions test results directly to the Arizona Department of Transportation (ADOT), Motor Vehicle Division, which uses the database to verify emissions compliance and then allows the vehicles that have passed emissions inspection to register. The program is primarily enforced through the State's vehicle registration requirements and no changes have been made to the Arizona I/M program's enforcement process since Arizona's last I/M SIP was approved by EPA in 2013.

The test procedures used are largely the same in both Area A and Area B, although there is some deviation due to the basic and enhanced statuses of the programs. The table in Appendix A-1: Arizona Testing Requirements shows all the vehicle emission tests performed in the Arizona I/M program and what tests will be used once the SIP is approved. While all vehicles located in Area A and Area B are required to undergo emissions testing, there are some statutorily approved exceptions. The following vehicles are exempted from inspection under A.R.S. § 49-542(J)(2):

- Motor vehicles manufactured in or before the 1966 model year.
- Motor vehicles manufactured in or before the 1974 model for which EPA issues a vehicle emission testing exemption for the purposes of the state implementation plan and air quality.
- New vehicles originally registered at the time of initial retail sale and titling in this state pursuant to A.R.S. §§ 28-2153 or 28-2154.
- New vehicles originally registered at the time of initial retail sale and titling in this state pursuant to A.R.S. §§ 28-2153 or 28-2154.
- New vehicles before the sixth registration year after initial purchase or lease.
- Vehicles that are outside of this state at the time of registration, except the director by rule may require testing of those vehicles within a reasonable period of time after those vehicles return to this state.
- Golf carts.

- Electrically- powered vehicles.
- Vehicles with an engine displacement of less than ninety cubic centimeters.
- Vehicles sold between motor vehicle dealers.
- Vehicles leased to a person residing outside of Area A or Area B by a leasing company whose place of business is in Area A or Area B.
- Registered collectable vehicles.
- Motorcycles.
- Cranes and oversize vehicles that require permits pursuant to A.R.S. §§ 28-1100, 28-1103 or 28-1144 (pending EPA approval).
- Vehicles that are not in use and that are owned by residents of this state while on active military duty outside of this state (pending EPA approval).

These vehicles have been exempted from the state's emission inspection requirements as historic modeling has shown that exempting these vehicles will not interfere with attainment, reasonable further progress, or any other clean air act requirement.

4 Performance Standard Modeling for Area A's Enhanced I/M Program

Performance Standard Modeling (PSM) is required when changes are made to an existing I/M program.¹³ Area A is a nonattainment area for ozone and is therefore required to undergo PSM per 40 CFR § 51.372(2). Area B, however, does not need PSM because the pollutant¹⁴ the Area B I/M program was implemented to regulate is now in attainment.^{15,16} This section will examine the extensive I/M PSM analysis conducted by the Maricopa Association of Governments (MAG) as part of their 2025 Eight-Hour Ozone Plan Submittal of Applicable Moderate Area Requirements for the Maricopa Nonattainment Area.

MAG performed the PSM analysis to determine whether or not the existing program meets the enhanced I/M performance standards under 40 CFR 51.351. The standard is met if the existing program obtains the same or lower VOC and NOx emission rates than the Performance Standard Benchmark Program with a 0.02 grams per mile (gpm) buffer. MAG's full PSM analysis is available in Appendix A-3: Maricopa Association of Government's 2025 Eight-Hour Ozone Plan Submittal of Applicable Moderate Area Requirements for the Maricopa Nonattainment Area.

4.1 Modeling Inputs

MAG conducted the PSM analysis using the enhanced I/M performance standards under 40 CFR 51.351 as Arizona anticipates the Maricopa Eight-Hour Ozone Nonattainment Area will be reclassified as a serious nonattainment area.

MAG used the Motor Vehicle Emissions Simulator (MOVES) 4.0.1 and the movesdb20240104 database to estimate VOC and NOx emission rates to model two scenarios: the existing program and the performance standard benchmark scenario. For the existing program, MAG included all of the local area parameters and control measures along with the inputs required to define the existing I/M program.¹⁷ For the performance standard benchmark scenario MAG included all the local area parameters and control measures, as well as the I/M program elements of the Enhanced I/M program's testing of passenger cars and light-duty trucks. Diesel vehicles were not included in the inputs as MOVES cannot model diesel emissions at this time.

Because the analysis year(s) depend on the area's ozone classification and Arizona anticipates that the Maricopa Eight-Hour Ozone Nonattainment Area will have attained the standard MAG determined that the 2026 calendar year should be used for the PSM analysis.¹⁸ According to U.S. EPA guidance the PSM analysis should be performed for the attainment date or the program implementation date whichever is later. The year 2026 was selected as it is the attainment date.

¹³ Performance Standard Modeling for New and Existing Vehicle Inspection and Maintenance (I/M) Programs Using the MOVES Mobile Source Emission Model, Env'tl Prot. Agency, pg. 4 EPA-420-B-22-034, Oct. 2022.

¹⁴ 53 FR 14818, 14819 (Apr. 4, 1988).

¹⁵ See 65 FR 36353 (June 8, 2000).

¹⁶ Performance Standard Modeling for New and Existing Vehicle Inspection and Maintenance (I/M) Programs Using the MOVES Mobile Source Emission Model, Env'tl Prot. Agency, EPA-420-B-22-034, Oct. 2022.

¹⁷ See Appendix A-3 Draft MAG 2025 Eight-Hour Ozone Plan- Submittal of Applicable Moderate Area Requirements for the Maricopa Nonattainment Area

¹⁸ *Id.*

4.2 Modeling Results

The following modeling results were taken directly from MAG's 2025 Eight-Hour Ozone Plan Submittal of Applicable Moderate Area Requirements for the Maricopa Nonattainment Area. In summary MAG's MOVES output shows that the existing I/M program meets the enhanced performance standard if the existing program area-wide emission rates for NO_x and VOC are not more than 0.02 gpm higher than the area-wide emission rates of the benchmark program. Furthermore, based on the results in Table 4-1, the results for NO_x and VOC in the proposed/existing program are less than the performance standard benchmark program with 0.02 gpm buffer and, therefore, meets the performance standard. The complete report containing MAG's PSM analysis is located in Appendix A-3: Maricopa Association of Government's 2025 Eight-Hour Ozone Plan Submittal of Applicable Moderate Area Requirements for the Maricopa Nonattainment Area.

Table 4-1 Summary of July Weekday Emission Rates (in grams per mile) for the Maricopa Eight-Hour Ozone Nonattainment Area

Table 4-1 Summary of July Weekday Emission Rates (in grams per mile) for the Maricopa Eight-Hour Ozone Nonattainment Area		
Scenario	NO _x	VOC
Proposed/existing Program	0.2511	0.2516
Performance Standard Benchmark	0.2673	0.2721
Performance Standard Benchmark with 0.02 gpm Buffer	0.2873	0.2921

5 Demonstrating Noninterference with Attainment of the NAAQS, Reasonable Further Progress and Other Requirements Under CAA Section 110(I)

The Arizona I/M program was designed to meet the federal requirements for both the basic and enhanced I/M programs under 40 CFR Subpart S and is fully approved by EPA.¹⁹ The program is an "applicable requirement" for a number of Phoenix and Tucson nonattainment area SIPs. As a result, any changes made to the approved program must satisfy the requirements under CAA § 110(I) which states:

"The Administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in Section 171), or any other applicable requirement of this Act."

As required, this chapter includes analyses of emission impacts due to changes made to the I/M program and a demonstration that this SIP will not interfere with the ability of the program area to attain or maintain the NAAQS or any other requirement under the CAA.

5.1 OBD Test Expansion

In 2021 HB2329 amended A.R.S. § 49-542, to expand on-board diagnostic system (OBD) testing in Arizona to include more EPA OBD certified vehicles. Emissions testing using the on-board diagnostic system is a quick, efficient, and effective way to conduct an emissions test. ADEQ conducts OBD tests by inserting a scanning device into a vehicle's data link connector (DLC), the device will then scan the vehicle's internal computer and if it finds anything out of the ordinary it will alert the technician by displaying a diagnostic trouble code (DTC) referencing the area of the vehicle that is malfunctioning.

Originally Arizona only conducted OBD testing on light-duty gasoline vehicles that were not registered with a fleet. However, as OBD technology has become a standard fixture within vehicles ADEQ has reassessed which vehicles should undergo OBD testing. As a result, the statutes incorporated in this SIP revision would expand OBD testing to all OBD certified vehicles.

However, because there is no federal heavy-duty OBD standards or guidance available, ADEQ has decided to restrict certain vehicle classes (i.e. non-fleet, heavy-duty vehicles) from OBD testing. This option is granted to ADEQ under A.R.S. § 49-542(F)(1)(a), (2)(a), and (3)(a). This limitation will be lifted when federal heavy-duty OBD standards and guidance are made available.

Since ADEQ is using its discretion to limit the application of OBD testing, this legislative change will only impact a small number of vehicles as presented in Table 5-1, most of which are motor vehicle dealer fleets. The amended version of A.R.S. § 49-542 (D) mandates that every motor vehicle sold in the state must pass an emissions test before being delivered to a retail purchaser. To ensure dealerships meet this requirement, ADEQ runs the fleet emissions testing program as authorized by A.R.S. § 49-546. Currently, motor vehicle dealer fleets in Arizona are not licensed to perform OBD testing, while the fleets of other businesses, governments, state agencies, and cities are able to perform emissions testing on the vehicles they own and operate.²⁰ Instead, dealerships must perform idle testing as prescribed by

¹⁹ See 40 CFR § 52.120

²⁰ In Arizona, under A.R.S. 49-542(J) and A.A.C. R18-2-1006 governments and non-dealer fleets are allowed to perform OBD testing, but only on non-diesel vehicles.

A.R.S. § 49-542 (F)(4) and (F)(6). Once the statutory updates included in this submission are approved, the light-duty vehicles in dealership fleets will be able to undergo OBD testing outside of the State test station so long as they are inspected at a licensed as fleet emissions testing station. The various testing changes are listed below in Table 5-1.

Table 5-1 Dealer Fleet Vehicle Testing Procedures

Table 5-1 Area A and Area B Dealer Fleet Vehicles (Until the SIP is Approved)				
Model Year	GVWR	Test Frequency	OBD Certified	Required Test
1981 or newer	Any	Annual	No	Two Speed Idle Test Gas Cap & Tampering Inspection
1975-1980	Any	Annual	No	Idle Test Gas Cap & Tampering Inspection
1967-1974	Any	Annual	No	Idle Test Gas Cap Test
Area A and Area B Dealer Fleet Vehicles (After the SIP is Approved)				
Model Year	GVWR	Test Frequency	OBD Certified	Required Test
1981 or newer	Any	Biennial	Yes	OBD Gas Cap & Tampering Inspection
1975-1980	Any	Annual	No	Idle Test (2500 RPM) or Curb Idle Test Gas Cap & Tampering Inspection
1967-1974	Any	Annual	No	Idle Test (2500 RPM) or Curb Idle Test Gas Cap Test

Furthermore, as shown in Table 5-2, ADEQ has determined that around 4.6% of vehicles that were not receiving OBD tests are now eligible.

Table 5-2 Percentage of Vehicle's Receiving OBD Tests After Revisions

Table 5-2 Percentage of Vehicle's Receiving OBD Tests After Legislative Amendments				
	Area A (2022)	Area A (2023)	Area B (2022)	Area B (2023)
Total Number of OBD Tests Completed at a State Testing Station	1,479,082	1,499,610	329,560	327,607
Total Number of Light Duty Diesel Vehicles Eligible for OBD Testing at a State Station	0	0	2,540	2,860
Total Number of Fleet Tests Completed	86,595	88,743	13,964	14,365
Total Number of Dealer Fleet Tests Completed*	79,054	81,605	11,390	11,888
Total Number of Government Loaded Diesel Tests Completed	0	0	0	0
Percentage of Eligible Vehicles Not Receiving OBD Test Prior to Registration	5.0%	5.1%	4.1%	4.3%

* This includes all fleet- dealers and non-government light-duty vehicles that undergo curb idle and 2500 RPM testing.

In order to evaluate OBD testing for fleet vehicles, a baseline MOVES run is needed. This baseline model would represent the I/M program before the proposed SIP change. The next step would be to create a new I/M coverage input that included the proposed I/M testing procedure. This new projected I/M

program would then be ran for the same area as the baseline. The results of these two runs would then be compared, and any change in emissions would be due to the projected I/M program.

However, because of the way the I/M coverage input interacts with the emission rate tables in the model, it would not be possible for the simple addition of a new test to cause an increase in emissions in the area. This assumes that 1) no tests were removed from the projected I/M coverage input, 2) compliance rates and percent waiver rates for existing tests were kept constant between the two runs, and 3) no vehicle types were removed from the existing tests. All of these assumptions have been proven true by MAG's PSM analysis.

The MOVES runs used in MAG's PSM sufficiently covers the expansion of OBD to the fleet program because the compliance factor for dealer fleet vehicles will not change. The compliance factor is the driver for manipulating emission rates of vehicles within the covered area. Data that goes into calculating this compliance factor, which are test specific, include the percent compliance rate, percent waiver rate, and the regulatory class adjustment factor. Because vehicle dealers are required to ensure all vehicles sold pass inspection prior to delivery to a retail purchaser the compliance factor will not change from zero percent. Additionally, expanding OBD testing to diesel fleet vehicles will have no impact on the current MOVES model, because the MOVES software only applies to gasoline vehicles.

Overall, expanding OBD testing to fleet vehicles will make Arizona law more consistent with the federal requirements pursuant to 40 CFR § 51.356(a)(2) and allow dealerships to perform more accurate, cheaper, and quicker emissions testing. This change will affect the testing method for around 4-5% of vehicles per year as reflected in Table 5-1 and should not negatively impact any applicable requirement concerning attainment, reasonable further progress, or any other CAA requirement.

5.2 Eliminating Waivers for Vehicles with a Failing Catalytic Converter

In 2014 HB2226 modified A.R.S. § 49-542 (R) on a non-contingent basis to prevent vehicles failing emissions testing due to catalytic converter from being eligible to receive a one-time waiver. Since 2014, Arizona has required that vehicles with failing catalytic converters receive repairs before allowing registration to help ensure that gross polluters are not able to operate in Arizona's non-attainment areas. As this change was implemented in 2014, the 1,075 vehicles that failed emission testing due to a catalytic converter code in 2014 and any potential impacts to air quality are reflected in the MOVES runs included in MAG's PSM analysis. Furthermore, because these vehicles cannot be registered until they are repaired there should be no negative impacts to any applicable CAA requirements concerning attainment, reasonable further progress, or any other CAA requirement.

5.3 Eliminating the Statutory Liquid Fuel Leak Test Requirement

Arizona implemented a liquid fuel leak test as part of the pre-emissions test safety inspection in 2007.²¹ However, the liquid fuel leak test proved to be an impractical requirement at centralized emissions

²¹ HB 1552, 48th Leg., 1st Reg. Sess. (Ariz. 2007).

testing stations, as the pre-safety check inspection also detected fuel leaks. As a result, ADEQ halted the test in October of 2013. HB2226 (2014) memorialized this change.

When implemented, the number of vehicles affected by this change was minimal. In 2012 there were 233 vehicles that failed the liquid fuel leak test. In 2013, there were 161 that failed before the test was suspended in October. Despite elimination of this specific test, vehicles with leaking fuel are still rejected from testing for being presented in an unsafe testing condition. As the liquid fuel leak test went into effect in 2014, the change was reflected in MAG's PSM. Therefore, there will be no negative impacts to any applicable requirement concerning attainment, reasonable further progress, or any other CAA requirement.

5.4 Exemption of Cranes and Oversize Vehicles

Arizona has never required oversized vehicles and cranes to undergo emissions inspection. In 2014 HB2226 amended A.R.S. § 49-542 (J)(2)(m) to codify this practice by explicitly exempted cranes and oversized vehicles permitted pursuant to A.R.S. § 28-1103 from Arizona's emissions testing requirements. Vehicles permitted under A.R.S. § 28-1103 are not manufactured for highway use and only permitted by Arizona Department of Transportation (ADOT) to travel on state highways when they must be moved to a new location.

Arizona and many other States do not emission test cranes and oversized vehicles, because traditional emission testing methods cannot be used due to the vehicle's size. Table 5-3 below shows the number of permits the Arizona Department of Transportation issued for cranes and oversized vehicles from 2022 to 2024.

Table 5-3 ADOT Permits Issued for Cranes and Oversized Vehicles from 2022-2024

ADOT Permits Issued for Cranes and Oversized Vehicles from 2022-2024			
	2022	2023	2023
Number of Oversized Vehicle Permits Issued	99,277	79,615	86,254
Number of Crane Permits Issued	664	480	804
Permitting information was provided by the Arizona Department of Transportation's Permits Office			

Since ADEQ has never required the inspection of cranes and oversize vehicles, there should be no negative impact on any applicable requirement concerning attainment, reasonable further progress, or any other CAA requirement.

5.5 Exemption of Active Duty Military Owned Vehicles

In addition to exempting oversized vehicles and cranes from emissions inspection, HB2226 also amended A.R.S. § 49-542 (J)(2)(n) to exempt unused vehicles owned by active military service members serving out-of-state.

To qualify for this exemption, the service member must submit an affidavit to ADEQ affirming: that the applicant is classified as an active member of the U.S. military; the service member is an Arizona resident currently stationed outside of Arizona; and the vehicle in question will not be used within the State. When the service member returns to Arizona the exemption no longer applies and they must have their vehicle tested according to A.R.S. § 49-542.

Overall, this legislative change is emissions neutral. For example, in 2024 Arizona approved 1,927 out-of-state military exemptions, so these vehicles were not in use and therefore did not contribute to transportation emissions. Therefore, this legislative change will not negatively impact any applicable requirement concerning attainment, reasonable further progress, or any other CAA requirement.

5.6 Expansion of Emission Testing Consumer Remedies to Area B.

In 2014, HB2226 also amended A.R.S. § 49-542(D) to expand the consumer protections for Area A to include Area B on a non-contingent basis. Under section (D) automobile dealers licensed to sell motor vehicles pursuant to Title 28, whose place of business is located in Area A or Area B must not deliver any vehicle to the retail purchaser until the vehicle passes emissions inspection. Only vehicles that qualify for an exemption under A.R.S. § 49-542 (J)(2) may forgo this requirement.

The purpose of this provision is to ensure vehicles sold by dealers will pass emission inspection, and in the event the vehicle fails, the costs of repair will fall upon the dealer instead of the purchaser.

This change will not impact any applicable requirement concerning attainment, reasonable further progress, or any other CAA requirement because vehicles are being repaired and passing emission inspection prior to leaving the dealership. Additionally, because the dealerships are addressing emissions issues prior to delivery, the legislative change has no impact on ADEQ's current enforcement practices, and it would not be visible in any MOVES runs as the compliance factor will remain 100 percent.

1 Proposed Update to Area B Testing Frequency

Pursuant to 40 CFR § 51.355, State I/M programs are presumed to have an annual emission testing frequency unless an alternative testing frequency is approved by EPA. However, as Area B has met and maintained its federally mandated emissions targets, with this SIP, ADEQ is requesting EPA allow biennial vehicle emission testing in Area B for OBD certified vehicles.

As required under 40 CFR § 51.355 this section will discuss:

1. the proposed test frequency and test year selection scheme;
2. Arizona's legal authority to implement and enforce the test frequency requirement;
3. how the test frequency will be integrated with the enforcement process; and
4. demonstrate how changing Area B's testing frequency will not interfere with attainment and maintenance as required under CAA 110(I).

1.1 The Proposed Testing Frequency and Test Year Selection Scheme for Area B

ADEQ is proposing to use the same test year selection scheme used in Area A in Area B. This testing scheme requires all vehicles older than five years, located in, or that commute into Area A or Area B for work to undergo emissions testing. The testing scheme is authorized under A.R.S. § 49-542 and A.A.C. R18-2-1006 and can be found in Appendix A-1: Arizona Testing Requirements of this supplement. The Table in Appendix A-1 contains an exhaustive list of all the vehicles required to undergo emission testing in Arizona's Area B. The table includes the vehicles currently required to undergo emission testing and the vehicles that will be required to undergo testing once the SIP is approved, as well as the test frequency, and the test required to be taken. The vehicles exempted from emission testing mentioned in 3.1 of this submission also apply to Area B.

1.2 Arizona's Legal Authority to Implement and Enforce the Test Frequency Requirement

Arizona has the legal authority to implement the testing frequency requirement through A.R.S. § 49-452(A) which authorizes ADEQ to implement "annual" and "biennial" vehicle emission testing frequencies for the State's I/M program.

Arizona has the legal authority to enforce the testing frequency requirement through the following statutes:

- A.R.S. § 28-2531 (B)(8) (registration; violation; classification; exceptions) makes it a class 2 misdemeanor to operate on a street or highway a motor vehicle without an emissions control device as required by section 28-955 or with a device that has been dismantled or disconnected or is otherwise inoperative.
- A.R.S. § 49-550 provides ADEQ with the legal authority to enforce the test frequency requirement.

- A.R.S. § 28-955 (D-E) (mufflers; noise and air pollution prevention; emissions control devices; civil penalty; exception) provides: " [b]eginning with motor vehicles and motor vehicle engines of the 1968 model year, motor vehicles and motor vehicle engines shall be equipped with emissions control devices that meet the standards established by the director of environmental quality. . . A person who violates this section is subject to a civil penalty of at least one hundred dollars."

1.3 How Biennial Test Frequency will be Integrated with the Enforcement Process.

A.R.S. § 49-542 describes the registration requirements for I/M program subject vehicles. The Arizona Department of Transportation, Motor Vehicle Division (MVD) has the authority to approve or deny vehicle registration. The requirement for inspection of a vehicle is determined by zip code of the physical address of the vehicle registration and by other parameters relating to the exemptions listed in A.R.S. § 49-542. A.A.C. R18-2-1023 provides procedures for registering vehicles that are not available within the State at the time of registration. The rule also requires inspection by an out of state I/M program if the vehicle is operating in a location with a I/M program.

If a vehicle owner does not comply with the I/M program requirements their vehicle will not be registered for on-road use and cannot be driven legally. As the proposed enforcement process is the same process that has been implemented in Area B since the I/M program's inception, ADEQ does not anticipate any enforcement issues.

1.4 Demonstrating Noninterference with Attainment and Maintenance Under CAA 110(I)

The Area B I/M program was originally promulgated as a control measure for CO in the late 1980s and early 1990s.²² However, Area B was redesignated as in attainment for CO by EPA in 2000.²³ Performance standard modeling is not necessary "when the I/M program area in question has been redesignated to attainment for the NAAQS that triggered the I/M requirement and is not otherwise required to operate an I/M program."²⁴ Arizona retains the I/M program in Area B as part of the area's maintenance plan.

As mentioned in section 2.4 of this submission CAA § 110(I) requires that all revisions to SIP approved control measures must not interfere with any applicable requirement concerning attainment and reasonable further progress as defined in CAA § 171, or any other applicable requirement of the CAA.

Therefore, this section will address the requirements under CAA § 110(I) and demonstrate that implementing biennial testing in Area B will not interfere with attainment or maintenance of the NAAQS or other applicable requirements of the CAA. ADEQ will demonstrate non-interference by examining the data taken from Pima County Department of Environmental Quality's (PDEQ) 2023 Air Quality Summary Report and EPA's Air Quality Database for monitor values.²⁵ Table 1-1 below lists PDEQ's air quality

²² 51 FR 14818 (April 26, 1988)

²³ 65 FR 36353 (Jun. 8, 2000).

²⁴ Performance Standard Modeling for New and Existing Vehicle Inspection and Maintenance (I/M) programs Using the MOVES Mobile Source Emissions Model, EPA Transportation and Climate Division, Office of Transportation and Air Quality, Oct. 2022.

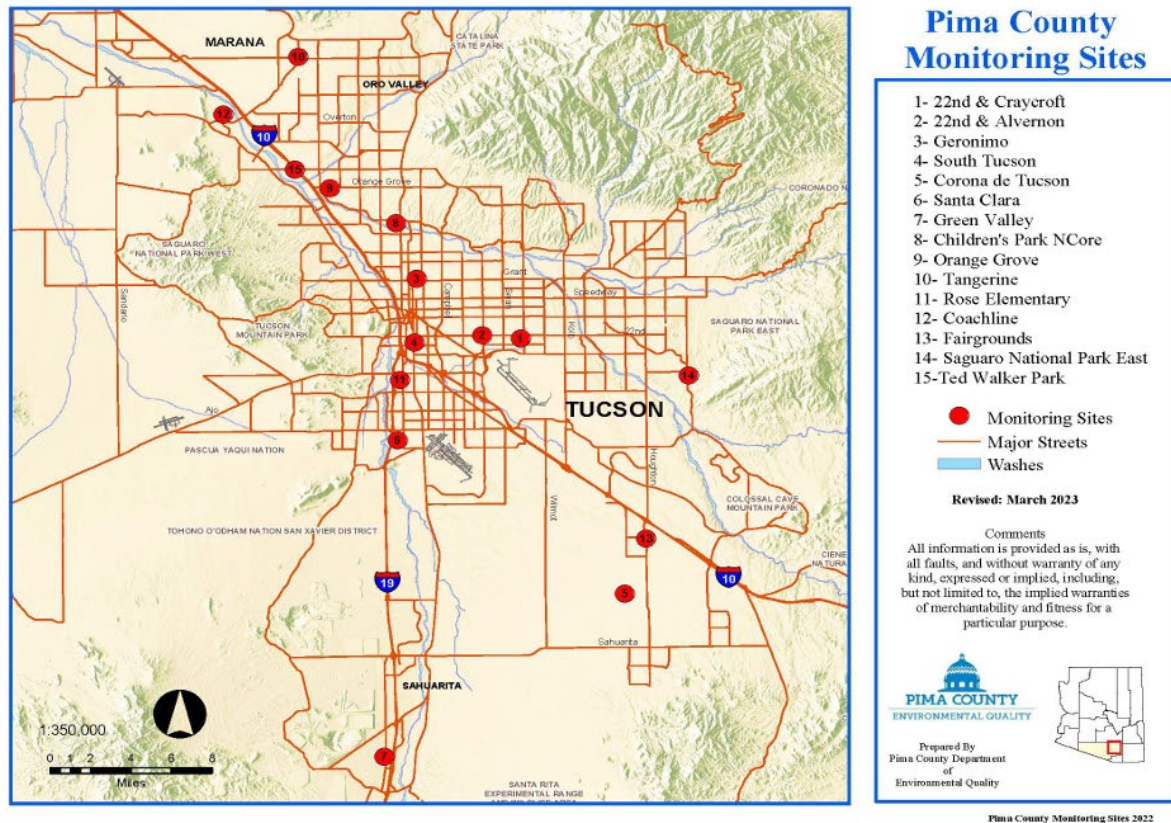
²⁵ Monitor Value Report, U.S. Env'tl Prot. Agency, <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>
<https://content.civicplus.com/api/assets/ec36f49c-5cb6-42cd-beef-7f5329207055>, (last accessed March 3, 2025).

monitoring locations and the pollutants captured at each site. Figure 1 shows the location of each active monitoring site across Area B.

Table 1-1 Pima County Department of Environmental Quality's Air Quality Monitoring Locations

Table 1-1 Pima County Department of Environmental Quality's Air Quality Monitoring Locations		
Site Map #	Monitor/ Address	Pollutant
1	22nd & Craycoft 1237 S. Beverly	Ozone, Nitrogen Dioxide (NO ₂)
2	22nd & Alvernon 3895 E. 22nd	Carbon Monoxide (CO)
3	Geronimo 2498 N. Geronimo	Particulate Matter (PM ₁₀ , PM _{2.5})
4	South Tucson 1601 S. 6th Ave	PM ₁₀
5	Corona De Tucson 22000 S. Houghton Rd.	PM ₁₀
6	Santa Clara #1 & 2 6910 S. Santa Clara Ave	PM ₁₀
7	Green Valley 601 N. La Canada Dr.	Ozone, PM ₁₀ , PM _{2.5}
8	Children's Park N. Corner 400 W. River Road	CO, Ozone, Sulfur Dioxide (SO ₂), NO ₂ , PM _{2.5}
9	Orange Grove 3401 W. Orange Grove Rd	PM ₁₀ , PM _{2.5}
10	Tangerine 12101 N. Camino De Oeste	Ozone, PM ₁₀
11	Rose Elementary 710 E. Michigan St.	Ozone, PM _{2.5}
12	Coachline 9597 N. Coachline Blvd.	Ozone, PM _{2.5}
13	Fairgrounds 11330 S. Houghton Rd.	Ozone
14	Saguaro National Park East 3905 S. Old Spanish Trail	Ozone
15	Ted Walker Park 6751 N. Casa Grande Hwy	CO, NO ₂ , PM _{2.5}

Figure 1 Pima County Monitoring Sites



The following sections will breakdown the pollutant concentrations captured by the monitors shown in Figure 1 and Table 1-1 in 2023.

1.4.1 Ozone

The 2008 primary standard for ozone was 0.075 ppm, however this standard was strengthened in 2015 to 0.070 ppm. The revised standard is met when the three-year average of the annual fourth highest daily eight-hour average ozone concentration is less than or equal to 0.070 ppm. Ground level ozone concentrations in Arizona are highest in the summer months due to the intense desert sunlight and heat, but the levels generally decline after sunset as the photochemical reactions between ozone precursors such as Oxides of Nitrogen (NOX), Particulate Matter, and Volatile Organic Compounds (VOC) cease. Normally, in Tucson, the highest ozone concentrations are not found as expected near major intersections.²⁶ Instead, the Saguaro National Park East site generally records the highest ozone levels.²⁷ This is due to the dispersion of ozone precursors prior to the formation of ozone.

According to the Pima County report, six ozone air pollution action days were issued in 2023.²⁸ The highest 4th highest 8-hour average ozone level in 2023 was 0.070 ppm at the Fairgrounds, Saguaro Park East, and

²⁶ 2023 Air Quality Summary Report, Pima County, Apr. 2024, <https://content.civicplus.com/api/assets/ec36f49c-5cb6-42cd-beef-7f5329207055> (last accessed: Nov. 19, 2024)

²⁷ *Id.*

²⁸ *Id.*

Children’s Park locations.²⁹ In 2024 the 4th highest 8-hour average ozone level was 0.074 at the Fairground monitor location. Despite the Tucson monitors showing slightly elevated concentrations of ozone, the area is in attainment for ozone. Table 1-2 below presents a summary of the monitoring data for Area B for the period of 2022 through 2024.

When ozone concentrations are elevated PDEQ issues an ozone air pollution action day (previously an ozone advisory or watch) to the local media to protect very sensitive members of our population when the predicted ozone levels are elevated.³⁰ In addition to the local ozone control measures, state ozone control measures are also enforced in Area B. One such state control measures is the use of Arizona's EPA approved cleaner burning gasoline. Area B is required to use this fuel per A.R.S. § 3-3495 as an EPA approved control measure for ozone. Another state control measure for ozone is the area's basic I/M program, which identifies and removes vehicles producing excess emissions from Arizona's roads. Therefore, despite the slightly elevated concentrations of ozone, ADEQ believes the current control measures will ensure that the area remains in attainment and changing the testing frequency will have no impact.

Table 1-2 2022-2024 Eight- Hour Ozone Monitor Data Summary (ppm)

Table 1-2: 2022-2024 Eight- Hour Ozone Monitor Data Summary (ppm)				
2008 NAAQS: The three-year average of the annual fourth- highest daily maximum eight-hour average ozone concentration is less than or equal to 0.075 parts per million.				
2015 NAAQS: Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years that is less than or equal to 0.070 parts per million.				
Monitor/ Location	Fourth- Highest Value			Three-Year Average
	2022	2023	2024	
Saguaro National Park East 3905 S. Old Spanish Trail, Saguaro Park E.	0.069	0.070	0.071	0.07
22nd & Craycoft 1237 S. Beverly	0.071	0.068	0.071	0.07
Tangerine 12101 N. Camino De Oeste	0.068	0.067	0.065	0.06
Fairgrounds 11330 S. Houghton	0.069	0.07	0.074	0.071
Children's Park N. Corner 400 W. River Road	0.071	0.07	0.069	0.07
Green Valley 601 N. La Canada Drive	0.069	0.067	0.071	0.069
Rose Elementary 710 W. Michigan St.	0.065	0.063	0.067	0.065
Coachline 9597 N. Coachline Blvd.	0.066	0.062	0.065	0.064

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2023 Air Quality Summary Report, Pima County, Apr. 2024, <https://content.civicplus.com/api/assets/ec36f49c-5cb6-42cd-beef-7f5329207055>

(last accessed: Nov. 19, 2024)

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Id.

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1.4.2 Carbon Monoxide

Area B is in attainment/ unclassified for carbon monoxide (CO). Carbon monoxide concentrations in Area B have continued to decline over the past four decades.³¹ This decline has been attributed to the use of control measures such as cleaner burning fuels, catalytic converters, fuel efficient vehicles, and locally adopted Clean Air and Travel Reduction Programs.

PDEQ monitors CO at three monitoring locations within the Tucson area. These monitors in generally experience higher CO readings in the winter months due to stagnant air conditions. In the winter CO tends to build up, especially near congested intersections.^{32 33} According to PDEQ monitoring data there were no exceedances of the CO NAAQS in 2023 or 2024. The highest readings in the last two years took place in 2023 at the 22nd & Alvernon monitor with the 1-hour reading was 1.6 ppm and the highest 8-hour reading was 0.8 ppm which are far below the NAAQS standards for CO.³⁴ Table 1-3 and Table 1-4 list the three CO sites in the PDEQ network and the CO monitor data for 2021 and 2024.

While Area B's CO concentrations remain below the standard, PDEQ anticipates possibly higher CO levels in the future due to population growth and an increased number of cars on the roads. However, any additional CO emissions should be mitigated by existing control measures (i.e. cleaner burning gasoline, Travel Reduction Programs, etc.) and new and improved vehicle technology. Based on the available data, control measures, and the continuous decline in CO emissions, ADEQ believes that changing the basic I/M program's testing frequency to biennial testing should have no impact on the area's one hour or eight-hour CO concentrations, attainment, or any other CAA requirement.

Table 1-3 2023-2024 One-Hour Carbon Monoxide Monitor Data Summary (ppm)

Table 1-3: 2023-2024 One-Hour Carbon Monoxide Monitor Data Summary (ppm)³⁵				
NAAQS: 35ppm for 1-hour, not to be exceeded more than once per year.				
Monitor/ Location	2023		2024	
	Max Value	2nd High	Max Value	2nd High
22nd & Alvernon 3895 E. 22nd	1.5	1.5	1.3	1.2
Children's Park N. Corner 400 W River Road	0.7	0.7	1	0.7
Ted Walker Park 6751 N. Casa Grande Hwy	0.8	0.8	0.8	0.8

³¹ 2023 Air Quality Summary Report, Pima County, Apr. 2024, <https://content.civicplus.com/api/assets/ec36f49c-5cb6-42cd-beef-7f5329207055> (last accessed: Nov. 19, 2024)

³² *Id.*

³³ A demonstration of the seasonal trends can be found in the 2023 PDEQ Air Quality Report which has been attached for reference in Appendix A-2.

³⁴ 2023 Air Quality Summary Report, Pima County, Apr. 2024, <https://content.civicplus.com/api/assets/ec36f49c-5cb6-42cd-beef-7f5329207055> (last accessed: Nov. 19, 2024).

³⁵ 2023 and 2024 Pima County, Arizona, Monitor Values Report, U.S. Env'tl Prot. Agency, <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report> (last accessed: Sept. 4, 2025).

Table 1-4 2023-2024 Eight-Hour Carbon Monoxide Monitor Data Summary (ppm)

Table 1-4 2023-2024 Eight-Hour Carbon Monoxide Monitor Data Summary (ppm) NAAQS: 9ppm for 8-hour averaging time, not to be exceeded more than once per year.				
Monitor/ Location	2023		2024	
	Max Value	2nd High	Max Value	2nd High
22nd & Alvernon 3895 E. 22nd	0.8	0.8	0.7	0.7
Children's Park N. Corner 400 W River Road	0.6	0.5	0.5	0.4
Ted Walker Park 6751 N. Casa Grande Hwy	0.6	0.5	0.6	0.5

1.4.3 Nitrogen Dioxide and Sulfur Dioxide

ADEQ does not monitor the NO₂ and SO₂ concentrations in Area B as the area is not classified as a nonattainment area for either pollutant.³⁶ However, PDEQ, the local planning agency, does monitor both pollutants in Area B despite the areas unclassified status. According to PDEQ, the levels of NO₂ and SO₂ in Area B have not changed significantly in the past 20 years.³⁷ PDEQ measures NO₂ at the Children's Park, 22nd Street & Craycroft, and Ted Walker Park monitors.³⁸ From this monitoring they have determined that while the NO₂ concentrations remain low the emissions still act as an ozone precursor in the Tucson basin.³⁹

As seen in below in Table 1-5 the PDEQ monitors show that there were no exceedances of the NO₂ standard from 2022 through 2024 and the NO₂ concentrations in Pima County average about 30% of the standard.⁴⁰ PDEQ has determined that motor vehicles are a major contributor of NO₂ in Pima County.

Table 1-5 2023-2024 Nitrogen Dioxide Monitor Data Summary (ppb)

Table 1-5: 2023-2024 Nitrogen Dioxide Monitor Data Summary (ppb) NAAQS Annual standard: The annual mean for NO₂ cannot be more than 53ppb. NAAQS 1 Hour Standard: The 98th percentile of the 1-hr daily maximum concentrations, averaged over three years for NO₂ is 100ppb.									
Monitor / Location	2022			2023			2024		
	Annual Avg	Max 1-Hr Value	98th Pth	Annual Avg	Max 1-Hr Value	98th Pth	Annual Avg	Max 1-Hr Value	98th Pth
22nd & Craycroft 1237 S. Beverly	7.45	40	37	7.48	39	37	7.35	39	36
Children's Park N. Corner 400 W. River Road	7.28	35	32	6.89	36	31	6.61	34	30

³⁶ The Ajo SO₂ maintenance area is outside of Area B.

³⁷ 2023 Air Quality Summary Report, Pima County, Apr. 2024, <https://content.civicplus.com/api/assets/ec36f49c-5cb6-42cd-beef-7f5329207055> (last accessed: Nov. 19, 2024)

³⁸ 2023 and 2024 Pima County, Arizona, Monitor Values Report, U.S. Env'tl Prot. Agency, <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report> (last accessed: Sept. 4, 2025).

³⁹ 2023 Air Quality Summary Report, Pima County, Apr. 2024, <https://content.civicplus.com/api/assets/ec36f49c-5cb6-42cd-beef-7f5329207055> (last accessed: Nov. 19, 2024)

⁴⁰ *Id.*

Ted Walker Park 6751 North Casa Grande Hwy	12.63	42	37	13.21	47	39	12.44	51	38
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In addition to NO₂ concentrations, PDEQ also measures SO₂ levels at the Children’s Park monitor location. Tucson has no significant sources of SO₂ and the monitor readings reflect this. The SO₂ concentrations in the area are extremely low with averages at around 7% of the standard. This is reflected in Table 1-6 which contains PDEQ's SO₂ monitoring data from 2022 through 2024.

Table 1-6 2022-2024 Sulfur Dioxide Monitor Data Summary (ppb)

Table 1-6: 2022-2024 Sulfur Dioxide Monitor Data Summary (ppb)						
NAAQS: 1-hr daily maximum 99th percentile, averaged over 3 years for sulfur dioxide is 75ppb.						
Monitor/ Location	2022		2023		2024	
	Max 1-Hr Value	99 th Pth	Max 1-Hr Value	99 th Pth	Max 1-Hr Value	99 th Pth
Children's Park N. Corner 400 W. River Road	3.5	2	1.2	0.9	1.7	1

Because the NO₂ and SO₂ concentration levels have continuously been below the NAAQs standard over the last twenty years ADEQ does not foresee any negative impacts to any applicable requirement concerning attainment, reasonable further progress, or any other CAA requirement.

1.4.4 Air Toxics

There are no ambient air quality standards for air toxics, therefore, compliance with applicable maximum achievable control technology (MACT) standards, as well as any federal mobile source control requirements under CAA sections 112 or 202(l) demonstrate noninterference for air toxics in the program area. Motor vehicles are not subject to MACT standards and this SIP revision does not interfere with any federal mobile source control requirements that apply in the area. Arizona thus concludes that this SIP revision will not interfere with any applicable air toxics requirements of the CAA.

1.4.5 Particulate Matter (PM₁₀ and PM_{2.5})

PM₁₀ is particulate matter with an aerodynamic diameter of 10 microns or less and PM_{2.5} is particulate matter with an aerodynamic diameter of 2.5 microns or less. The 24-hour NAAQS for PM₁₀ is 150 micrograms per cubic meter (µg/m³). According to PDEQ the highest level recorded in Pima County in the last three years was 118 µg/m³ in 2023 at the Corona de Tucson monitor. The monitor is located near the Tucson International Airport and is on the other side of the city from the Rillito planning area, leading ADEQ to believe the excess emissions likely came from the airport or a weather event in the surrounding desert.

Pima County, where Area B is located currently follows the Exceptional Events Rule instituted by EPA on November 21, 2008 for exceedances of the standard. To help minimize PM Pima County will issue a dust air pollution action day (previously a particulate matter advisory or watch) to the public when there are elevated levels of PM recorded.

Table 1-7 below lists the seven PM₁₀ monitoring sites in the network and summarizes the monitor data from 2022 to 2024.

Table 1-7 2022-2024 Particulate Matter (PM₁₀) Monitor Data Summary (µg/m³)

Table 1-7: 2022-2024 Particulate Matter (PM ₁₀) Monitor Data Summary (µg/m ³) ⁴¹						
NAAQS: The national ambient air quality standard 24-hour average for PM ₁₀ is 150 µg/m ³						
Monitor /Location	2022		2023		2024	
	Max 24-Hr Value	2 nd Max 24-Hr Value	Max 24-Hr Value	2 nd Max 24-Hr Value	Max 24-Hr Value	2 nd Max 24-Hr Value
South Tucson 1601 S. 6th Ave	104	72	107	59	66	64
Corona De Tucson 22000 S. Houghton Rd.	158	68	118	66	23	23
Santa Clara #1 6910 S. Santa Clara Ave	73	40	52	44	108	47
Santa Clara #2 6910 S. Santa Clara Ave	42	30	53	38	36	32
Green Valley 601 N. La Canada Dr.	86	69	107	32	43	27
Orange Grove 3401 W. Orange Grove Rd	164	90	105	50	74	66
Geronimo 2498 N. Geronimo	106	82	113	62	66	64
Tangerine 12101 N. Camino De Oeste	85	54	102	46	65	43

Unlike the area's PM₁₀ concentrations, there have been no exceedances of the NAAQS for PM_{2.5} since monitoring began for this pollutant in 1999. The highest 24-hour PM_{2.5} concentration in 2023 in Pima

⁴¹ 2023 and 2024 Pima County, Arizona, Monitor Values Report, U.S. Env'tl Prot. Agency, <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report> (last accessed: Sept. 4, 2025).

County was 28.4 µg/m³ at the Geronimo location. Table 1-8 below lists the seven PM_{2.5} monitoring locations within the PDEQ network and their maximum concentrations from 2022 to 2024.

Table 1-8 2022-2024 Particulate Matter (PM_{2.5}) Monitor Data Summary (µg/m³)

Table 1-8: 2022-2024 Particulate Matter (PM _{2.5}) Monitor Data Summary (µg/m ³) ⁴²									
NAAQS:									
Annual- annual average averaged over 3-years for PM 2.5 is 12 µg/m ³ . ⁴³									
24-Hour- the average 98th percentile (Pth) value averaged over three years is 35 µg/m ³									
Monitor/ Location	2022			2023			2024		
	Annual Avg	Max 24-Hr Value	98th Pth ⁴⁴	Annual Avg	Max 24-Hr Value	98th Pth	Annual Average	Max 24-Hr Value	98th Pth
Children's Park N. Corner #2 (Method 145) 400 W. River Rd	6	12.3	12	5.21	14.4	10.3	5.6	21.6	15
Children's Park N. Corner #3 (Method 170) 400 W. River Rd	6.3	18.9	13	6.33	16.8	14.2	6.1	17.9	12
Orange Grove 3401 W. Orange Grove Rd.	5.5	26.4	13	5.08	17.2	12.0	5.0	27.2	12
Ted Walker Park 6751 N. Casa Grande Hwy	3.8*	17	16	7.82	18.5	15.7	6.7	84.2	17
*The mean does not satisfy minimum data completeness criteria.									

1.5 MOVES Modeling

After reviewing Pima County's monitoring data, ADEQ conducted modeling using EPA's Motor Vehicle Emissions Simulator (MOVES) version 5 to further ensure that changing the testing frequency in Area B from annual to biennial would not negatively impact the area's air quality. This section will discuss the methodology ADEQ used and the Department's analysis of the MOVES modeling results.

1.5.1 Methodology

ADEQ used EPA's MOVES5 model to estimate how changing the testing frequency would impact category CO, NO_x, primary exhaust PM₁₀, and VOC emissions quantities from on-road mobile sources.

⁴² 2023 and 2024 Pima County, Arizona, Monitor Values Report, U.S. Env'tl Prot. Agency, <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report> (last accessed: Sept. 4, 2025).

⁴³ PM 2.5 method 145 is from a filter-based monitor that runs for 24-hours that uses gravimetric analysis in order to calculate concentration. PM 2.5 method 170 is from a monitor that runs continuously giving hourly measurements that are then averaged for a 24-hour measurement.

⁴⁴ Pth is the abbreviation for percentile.

ADEQ also looked at how changes to the testing frequency could potentially impact ozone concentrations within the modeling domain.

To accomplish this, ADEQ used the entirety of Pima County as the modeling domain for the analysis. ADEQ decided to use Pima County as the modeling domain instead of Area B because the population difference between the two areas is marginal. In addition, by selecting Pima County as the domain ADEQ was able to further simplify the input sourcing for the emission modeling, with little impact to the modeling results.

ADEQ selected 2024 as the model year for the analysis as it would be more informative for the vehicle fleet to consist of current model year age distributions and emission rates. The MOVES runs were conducted using a county data manager (CDM) that included default MOVES5 data, specific to 2024, for all inputs except the IMcoverage input. The IMcoverage input table defines the vehicle emissions testing program within a modeling domain, it allows users to define the pollutants, vehicle types, I/M inspection types, and other characteristics of the I/M program to be included in the model. For this analysis the most important characteristic on the IMcoverage input table is the inspectFreq input, which defines the frequency of the included vehicle tests.⁴⁵

ADEQ developed the IMcoverage input for the MOVES5 model from ADEQ's emission testing data collected from the Area B Basic I/M program. The data collected included compliance, waiver, and failure rates for all vehicle emission tests and vehicles in the 2024 model year, which ADEQ used to calculate the compliance factors for the IMcoverage input.⁴⁶

Two MOVES5 CDMs were created for this analysis, both of which were exactly the same except for the IMcoverage inputs. These inputs varied only in the testing frequencies used. One CDM included annual testing for all tests and the other included biannual.

1.5.2 Results

Table 1-9 below shows the MOVES5 modeling results highlighting the changes to vehicle emissions based on testing frequency. With the exception of exhaust PM10, the MOVES5 modeling results indicated the biannual testing run produced slightly higher emissions than the annual run. The exhaust PM¹⁰ emissions did not change between the two runs because the IMcoverage input does not impact PM¹⁰ emission rates in the MOVES algorithm. Due to this aspect of the model, ADEQ is unable to comment on how changes in testing frequency would impact monitored PM¹⁰ concentrations.

Table 1-9 2024 Pima County I/M Testing Frequency Results in Tons Per Year (TPY)

Pollutant	Annual (TPY)	Biannual (TPY)	Emissions Change (TPY)
Carbon Monoxide	44,720.35	44,723.38	3.03
Oxides of Nitrogen	5,487.52	5,486.62	0.11

⁴⁵ MOVES5 Technical Guidance: Using MOVES to Prepare Emission Inventories for State Implementation Plans and Transportation Conformity, Office of Transportation and Air Quality, U.S. Env'tl Prot. Agency, EPA-420-B-24-043 (November 2024).

⁴⁶ *Id.*

Exhaust PM ¹⁰	120.61	120.61	0.0
Volatile Organic Compounds	3,417.96	3,418.03	0.072

However, ADEQ was able to evaluate how the testing frequency could potentially impact ozone concentrations at the Pima County air quality monitors. To do this, ADEQ compared the emission increases from Table 1-9 against the EPA's Modeled Emission Rates for Precursors (MERPs) for Tier 1 demonstrations under the Prevention of Significant Deterioration (PSD) Permitting Program.⁴⁷

MERPs provide a method to "relate modeled downwind impacts with an air quality threshold that is used to determine if such an impact causes or contributes to a violation of the appropriate National Ambient Air Quality Standard."⁴⁸ ADEQ used EPA's MERPs View Qlik dashboard, to download the NOx and VOC MERPs for 500 TPY and a stack height of 10 meters (m).⁴⁹ These values, shown in Table 1-10, demonstrate based on EPA's MERPs that a stationary source emitting 500 TPY from a 10m stack would have provided the same parts per billion (ppb) impact on ozone.

ADEQ selected an emission rate of 500 TPY because it's the lowest emission rate provided by EPA's dashboard, and the closest to NOx and VOC increases (<0.25 TPY) shown in Table 1-9. A stack height of 10 meters was selected due to reflect the low release height of vehicle emissions. ADEQ also found the selection of a 10-meter stack height to be more appropriate because it results in slightly higher ozone concentrations than compared to concentrations found at a 90-meter stack height.⁵⁰

Using the NOx and VOC increases from Table 1-9, and the largest ppb increases for those same pollutants from Table 1-10, ADEQ estimates the maximum potential increase in ozone concentration at 0.00054 ppb. This estimate is based on the NOx increase from Table 1-9. The increase in ozone based on the VOC emissions change in Table 1-9 is two orders of magnitude less than the NOx estimate. Based on this result, ADEQ believes the increase in ozone precursors from the testing program moving to a biannual frequency is di minimis in terms of ozone concentrations.

Table 1-10 EPA MERPs View Qlik Dashboard Arizona Results

County	Metric	Precursor	Emissions (TPY)	Stack Height (m)	Max Concentration (ppb)
Coconino	8-hr Ozone	NOx	500	10	2.446
Coconino	8-hr Ozone	VOC	500	10	0.026

⁴⁷ U.S. Environmental Protection Agency. (2019). Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program. Publication No. EPA-454/R-19-003. Office of Air Quality Planning and Standards, Research Triangle Park, NC.

⁴⁸ *Id.*

⁴⁹ MERPs VIEW Qlik application <https://www.epa.gov/scram/merps-view-qlik>

⁵⁰ Comparing the increase in vehicle emissions from Table 1-9 to EPA's MERPs is likely overly conservative. The emissions from Table 1-9 would be emitted over a larger area compared to MERPs, which assumes a single point source.

Gila	8-hr Ozone	NOx	500	10	1.226
Gila	8-hr Ozone	VOC	500	10	0.025
La Paz	8-hr Ozone	NOx	500	10	2.336
La Paz	8-hr Ozone	VOC	500	10	0.021

2 Conclusion

This revision incorporates legislative changes made to the statutes governing the Arizona I/M program and a request to implement an alternative testing frequency for the Tucson Metropolitan I/M area. Using monitoring data and MOVES modeling Arizona has shown that the proposed changes will not interfere with attainment or maintenance of the National Ambient Air Quality Standards (NAAQS) or any other requirement of the CAA.