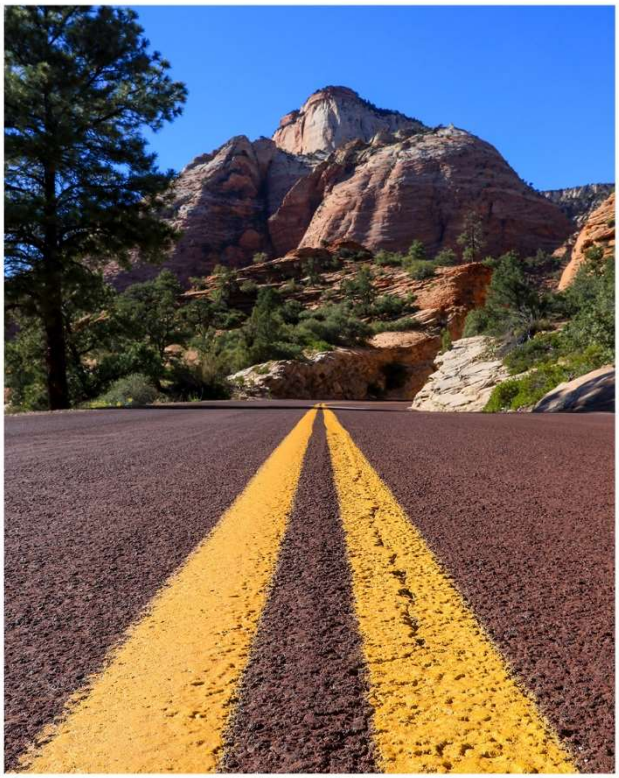
ADOT

Project-Level Air Quality Conformity Guidebook

July 2023



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Project-Level Air Quality Conformity Guidebook

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Contents

Tables

Figures

Appendices

Abbreviations

µg	microgram(s)
AADT	annual average daily traffic
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
APCD	Air Pollution Control District
ARS	Arizona Revised Statute
AZTDM	Arizona Statewide Travel Demand Model
CAG	Central Arizona Governments
Caltrans	California Department of Transportation
CDOT	Colorado Department of Transportation
CFR	Code of Federal Regulations
CO	carbon monoxide
COG	council of governments
Conformity Guidebook	Project-Level Conformity Guidebook
Conformity Rule	Transportation Conformity Rule
Division	(Colorado) Air Pollution Control Division
EA	environmental assessment
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration
FR	Federal Register
FTA	Federal Transit Administration
HOV	high-occupancy vehicle
IAC	interagency consultation
ID	identifier
I/M	inspection/maintenance
m	meter(s)
m2	square meter(s)
m3	cubic meter(s)
MAG	Maricopa Association of Governments
MOVES	Motor Vehicle Emission Simulator
MPO	metropolitan planning organization
MSAT	mobile-source air toxics
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act

NO_2	nitrogen dioxide
O_3	ozone
PAG	Pima Association of Governments
PAQWG	Pennsylvania Air Quality Working Group
PennDOT	Pennsylvania Department of Transportation
PM	particulate matter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns
PM_{10}	particulate matter equal to or less than 10 microns
POAQC	project of air quality concern
ppm	part(s) per million
report	Air Quality Technical Report
RPO	rural planning organization
RTP	regional transportation plan
SCAG	Southern California Association of Governments
SEAGO	SouthEastern Arizona Governments Organization
SIP	State Implementation Plan
TCWG	Transportation Conformity Working Group
TDM	travel demand model
TIP	transportation improvement program
USC	United States Code
VMT	vehicle miles of travel
WACOG	Western Arizona Council of Governments
YMPO	Yuma Metropolitan Planning Organization

INTRODUCTION

This Project-Level Conformity Guidebook (Conformity Guidebook) is intended to assist the Arizona Department of Transportation (ADOT), its consultants, and other potential users in the completion of project-level air quality analyses for road improvement projects in Arizona. This Conformity Guidebook provides basic information and standards for preparing an air quality analysis for ADOT and summarizes the relevant regulations and procedures used in the analysis of air quality impacts resulting from transportation projects.

While conformity addresses three pollutants—ozone (O_3), particulate matter (PM), and carbon monoxide (CO)—this Conformity Guidebook provides the approach to conducting a project-level hot-spot analysis for PM and CO. O_3 emissions are estimated on a regional scale and regional conformity is demonstrated by the metropolitan planning organizations (MPOs) in their long-range transportation plans based on the travel demand models (TDMs). Regional conformity for O_3 is not addressed in this Conformity Guidebook.

The primary goals of this Conformity Guidebook are to:

- Enhance the development of, and standardize, the processes involved with analyzing and reporting potential air quality impacts resulting from transportation projects in Arizona
- Ensure that Transportation Conformity Rule (Conformity Rule[1]) requirements are met for ADOT projects
- Focus on providing guidelines to achieve project-level conformity specific to PM and CO
- Facilitate cooperation among ADOT, other federal and state agencies, transportation planning organizations, businesses, and the public
- Support the improvement of air quality in Arizona

Federal air quality regulations include a Transportation Conformity Rule and a general conformity rule. This Conformity Guidebook focuses on the Conformity Rule, which applies to Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) projects and requires that transportation plans, programs, and projects conform to the Arizona State Implementation Plan (SIP) goals.

FHWA/FTA projects are defined in Code of Federal Regulations (CFR) Title 40 Section 93.101 as “any highway or transit project which is proposed to receive funding assistance and approval through the Federal-Aid Highway Program or the Federal mass transit program or requires FHWA or FTA approval for some aspect of the project, such as connection to an interstate highway or deviation from applicable design standards on the interstate system.”

General conformity applies to other actions in nonattainment or maintenance[2] areas taken by federal agencies (e.g., leasing federal land, granting a permit, construction of federal office buildings) that do not include FHWA or FTA projects[3]. Unless this Conformity Guidebook

[1] Conformity Rules are outlined in United States Code Title 42 Part 7401 (42 USC Part 7401) and are further detailed in CFR Parts 51 and 93.
[2] Maintenance area refers to an area that was previously designated nonattainment and subsequently redesignated to attainment subject to the requirement to develop a maintenance plan under Section 175A of the Clean Air Act.
[3] More information about general conformity applicability can be found at 40 CFR 93.153.

specifically refers to general conformity, the word “conformity” refers to transportation conformity.

The guidance herein is not an adjudication or regulation, and the use of this Conformity Guidebook is not a regulatory requirement. This Conformity Guidebook will be updated as needed, for example, to incorporate changes in regulations and/or guidance.

This Conformity Guidebook is organized into the following five chapters:

Chapter 1: Arizona Air Quality Requirements describes the National Ambient Air Quality Standards (NAAQS) for the six criteria air pollutants and the nonattainment/maintenance areas in Arizona. This chapter also includes an overview of the U.S. Environmental Protection Agency (EPA) and FHWA guidance related to performing project-level air quality conformity analysis.

Chapter 2: Case Studies describes three examples of how conformity analysis is handled in California, Colorado, and Pennsylvania.

Chapter 3: Interagency Consultation Procedures describes the steps to perform a project-level air quality conformity analysis that can be used by a consultant or project sponsor.

Chapter 4: Traffic Input Data Needs for Air Quality Analysis describes the traffic-related data required to perform project-level air quality conformity analysis.

Chapter 5: Air Quality Technical Report Requirements provides guidance for the structure and type of information that should be included in an Air Quality Technical Report (report) to support National Environmental Policy Act (NEPA) and conformity requirements.

Appendix Documents

Appendix A: PM and CO Hot-Spot Questionnaire for Conformity

Appendix B: Project-Specific MOVES Input Table

Appendix C: Traffic Impact Analyses

Appendix D: Air Quality Technical Report Outline

Appendix E: Conformity Checklist

1 ARIZONA AIR QUALITY REQUIREMENTS

This chapter describes the NAAQS for the six criteria air pollutants and the nonattainment/maintenance areas in Arizona. It also includes an overview of the EPA and FHWA guidance related to performing project-level air quality conformity analysis.

1.1 National Ambient Air Quality Standards

The Clean Air Act Amendments of 1990 required EPA to set NAAQS for six criteria air pollutants. EPA regulates these pollutants (CO, lead, nitrogen dioxide [NO_2], O_3, particle pollution, and sulfur dioxide) by developing primary and secondary standards. Primary standards provide public health protection, including protecting the health of sensitive populations, such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

While EPA sets standards and regulates the emissions of all six pollutants, only three of the six, outlined in Table 1-1, are relevant with respect to transportation conformity in Arizona. They are CO, O_3, and PM. EPA is charged with designating areas as attainment, maintenance, or nonattainment of the NAAQS.

Table 1-1. National Ambient Air Quality Standards for Criteria Air Pollutants Subject to Transportation Conformity

Pollutant [Final Rule Citation]		Primary/Secondary	Averaging Time	Level (Concentration)	Form
Carbon monoxide [76 FR 54294, August 31, 2011]		Primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Ozone[a,b] [85 FR 87256, December 31, 2020]		Primary and secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle pollution (PM)[c] [85 FR 82684 December 18, 2020]	$PM_{2.5}$	Primary	1 year	12 µg/m^3	Annual mean, averaged over 3 years
		secondary	1 year	15 µg/m^3	Annual mean, averaged over 3 years
		Primary and secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	Primary and secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years

Source: EPA. NAAQS Table. Last updated 3/15/2023. Available at: https://www.epa.gov/criteria-air-pollutants/naaqs-table.

Notes:

[a] The Federal "Good Neighbor Plan" for the 2015 Ozone NAAQS was proposed in March 2023 with a final rule effective on August 4, 2023.

[b] Final rule signed 10/1/2015, and effective 12/28/2015. The previous (2008) O_3 standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O_3 standards.

[c] As of January 2023, EPA is seeking comments on a proposed rulemaking to decrease the $PM_{2.5}$ annual average standard to 9 to 10 µg/m^3. No change is proposed for the 24-hour average for PM_{10} and $PM_{2.5}$.

ppm = parts per million; µg/m^3 = micrograms per cubic meter.

1.2 Arizona Nonattainment/Maintenance Areas

This section provides an overview of the CO and PM nonattainment and maintenance areas in Arizona as of March 2023. A nonattainment area is a geographic area designated by EPA that does not meet NAAQS for a particular criteria pollutant. The Clean Air Act requires that EPA reevaluate the NAAQS every 5 years to ensure their adequacy. An area previously designated nonattainment and subsequently redesignated to attainment is subject to the requirement to develop a maintenance plan under Section 175A of the Clean Air Act. The Conformity Rule applies to nonattainment areas 1 year after the effective date of the new nonattainment designation and maintenance areas during the two 10-year plan periods (20 years).

Arizona has one CO maintenance area, one $PM_{2.5}$ maintenance area, one $PM_{2.5}$ nonattainment area, and nine PM_{10} nonattainment areas. The only CO maintenance area in Arizona is in Maricopa County through 2025 (Tucson ended CO maintenance on August 10, 2020). The $PM_{2.5}$ maintenance area encompasses Nogales. The $PM_{2.5}$ nonattainment area is west-central Pinal County. Table 1-2 summarizes the PM nonattainment areas in Arizona.

Table 1-2. Arizona's PM_{10} Nonattainment Areas

County	Area
Cochise	Paul Spur/Douglas
Gila	Miami
Maricopa	Maricopa County Nonattainment Area
Pinal	Hayden
Pinal	West Pinal
Pinal	Miami
Pima	Rillito
Santa Cruz	Nogales
Yuma	Yuma

Source: ADEQ 2022.
Notes:
Figure 1-1 through Figure 1-11 present the maintenance and nonattainment areas in Arizona for CO and PM.

Figure 1-1. Phoenix/Mesa CO Maintenance Area

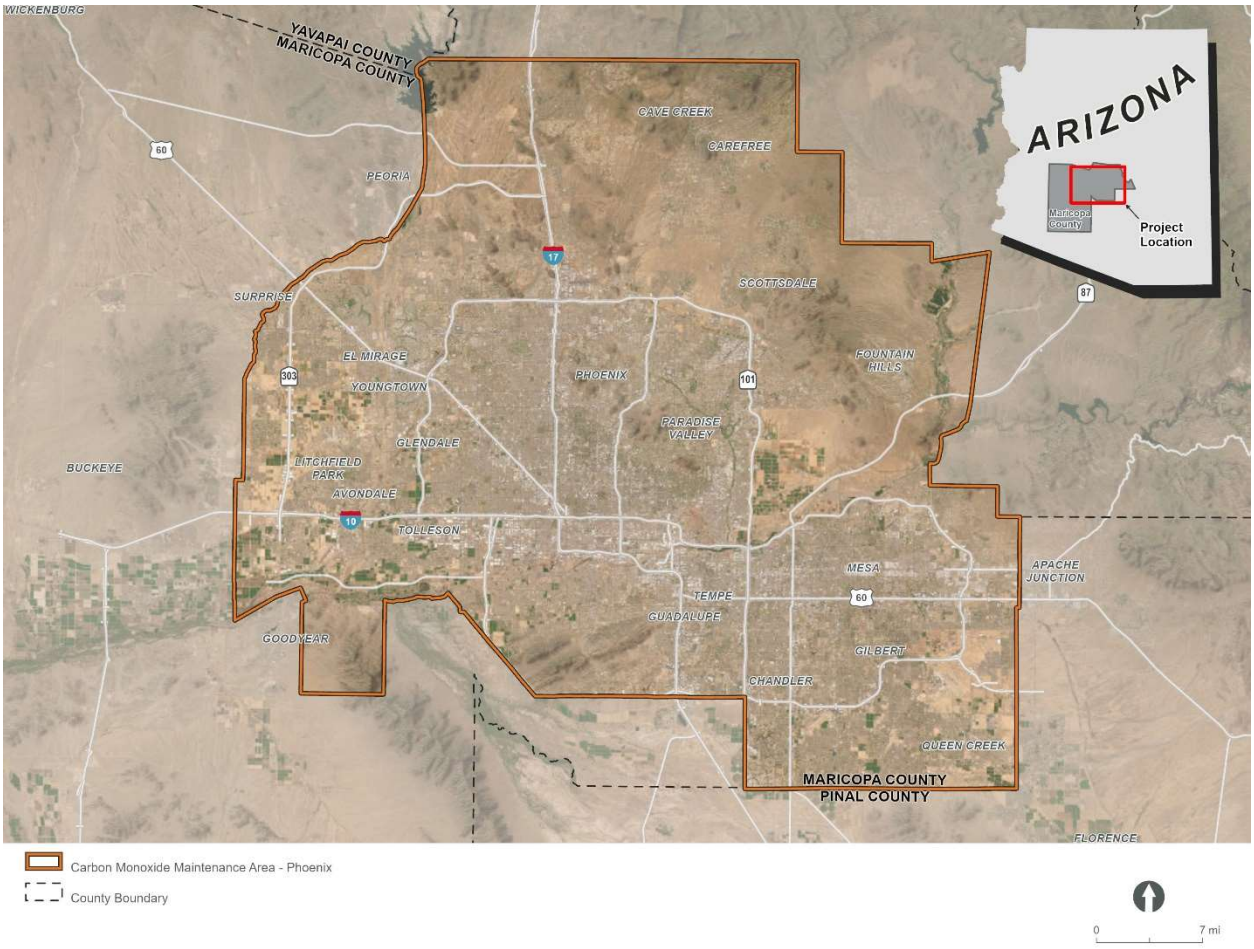


Figure 1-2. Nogales $PM_{2.5}$ Maintenance Area

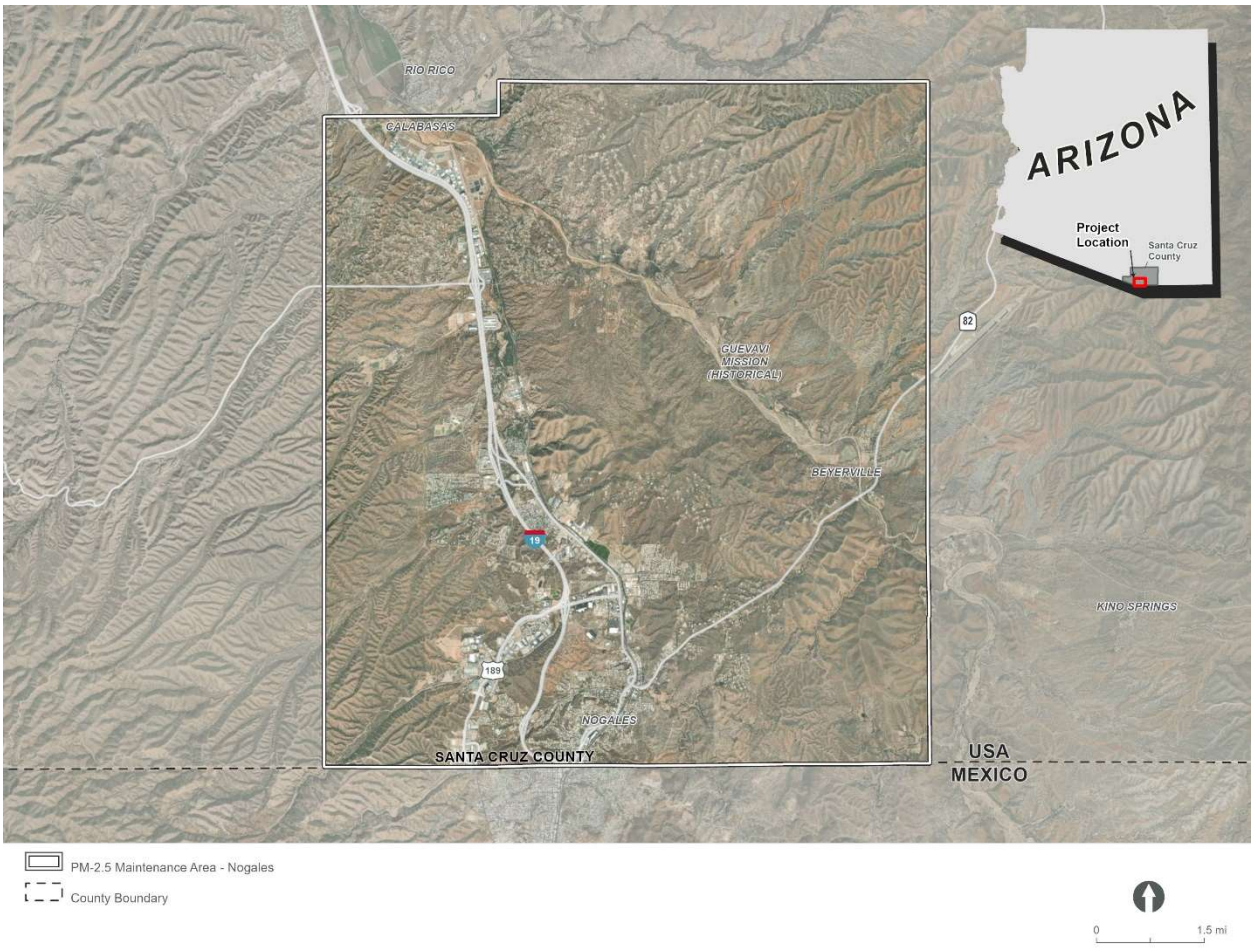


Figure 1-3. West Pinal $PM_{2.5}$ Nonattainment Area

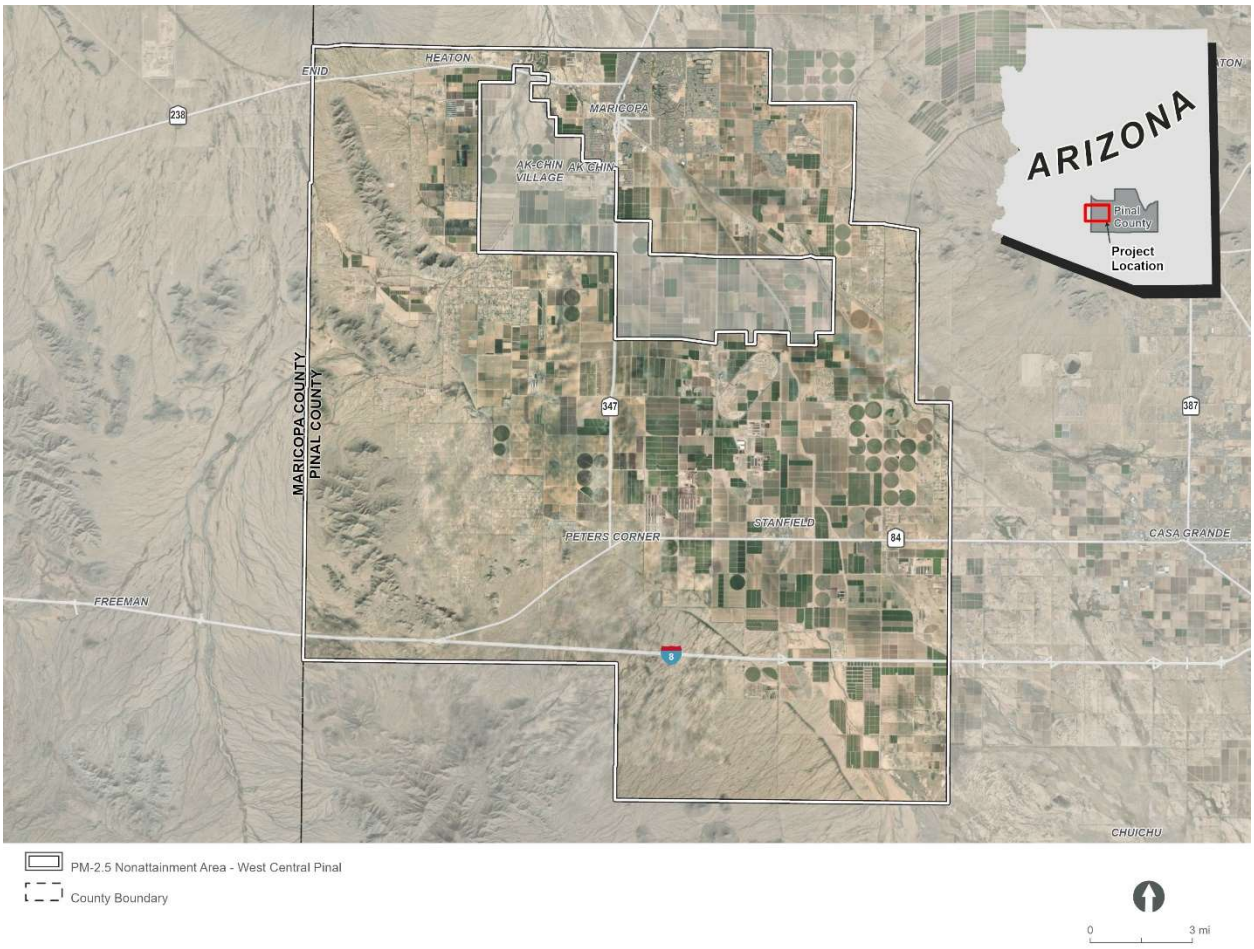


Figure 1-4. Hayden PM_{10} Nonattainment Area

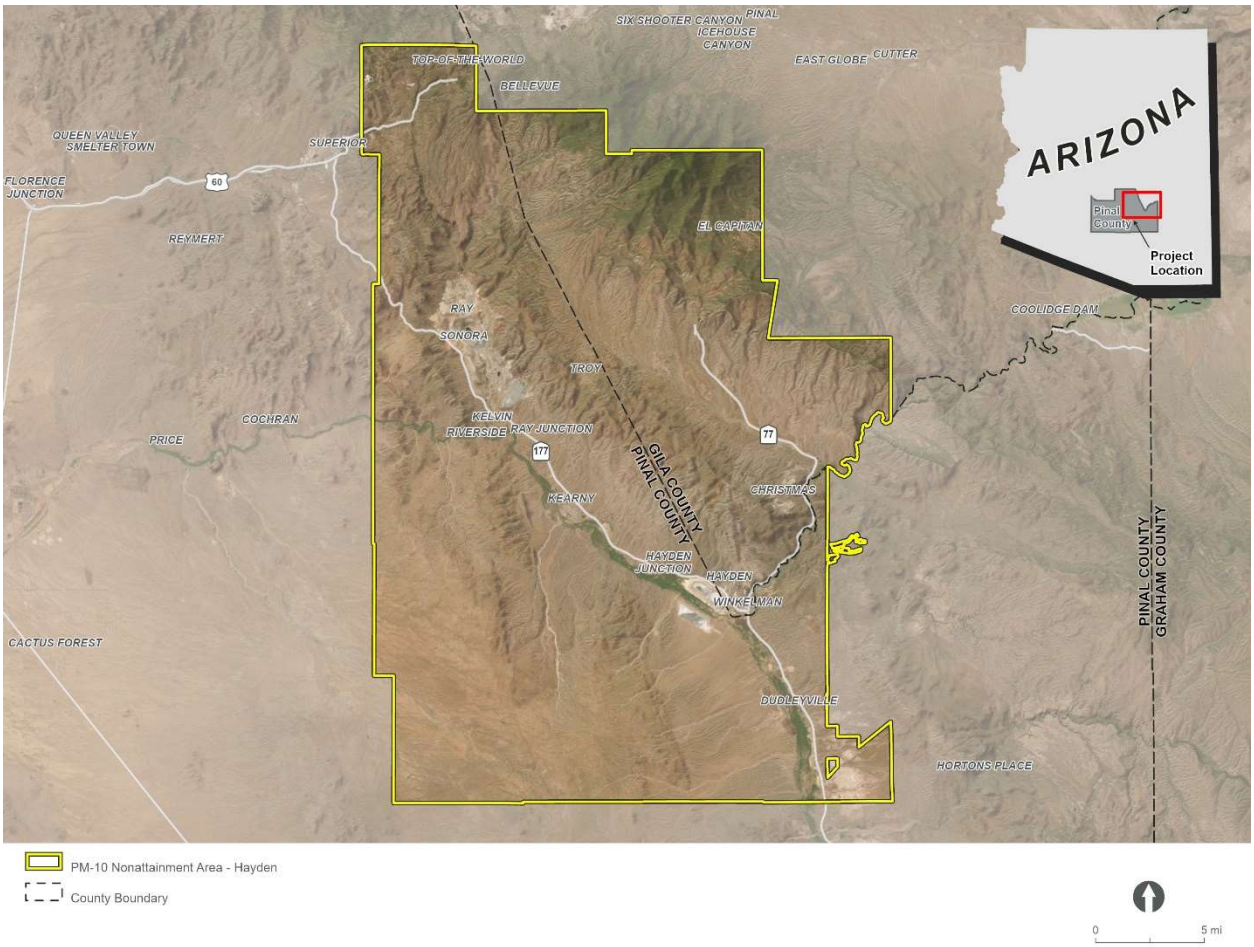


Figure 1-5. Miami PM_{10} Nonattainment Area

Figure 1-6. Nogales PM_{10} Nonattainment Area

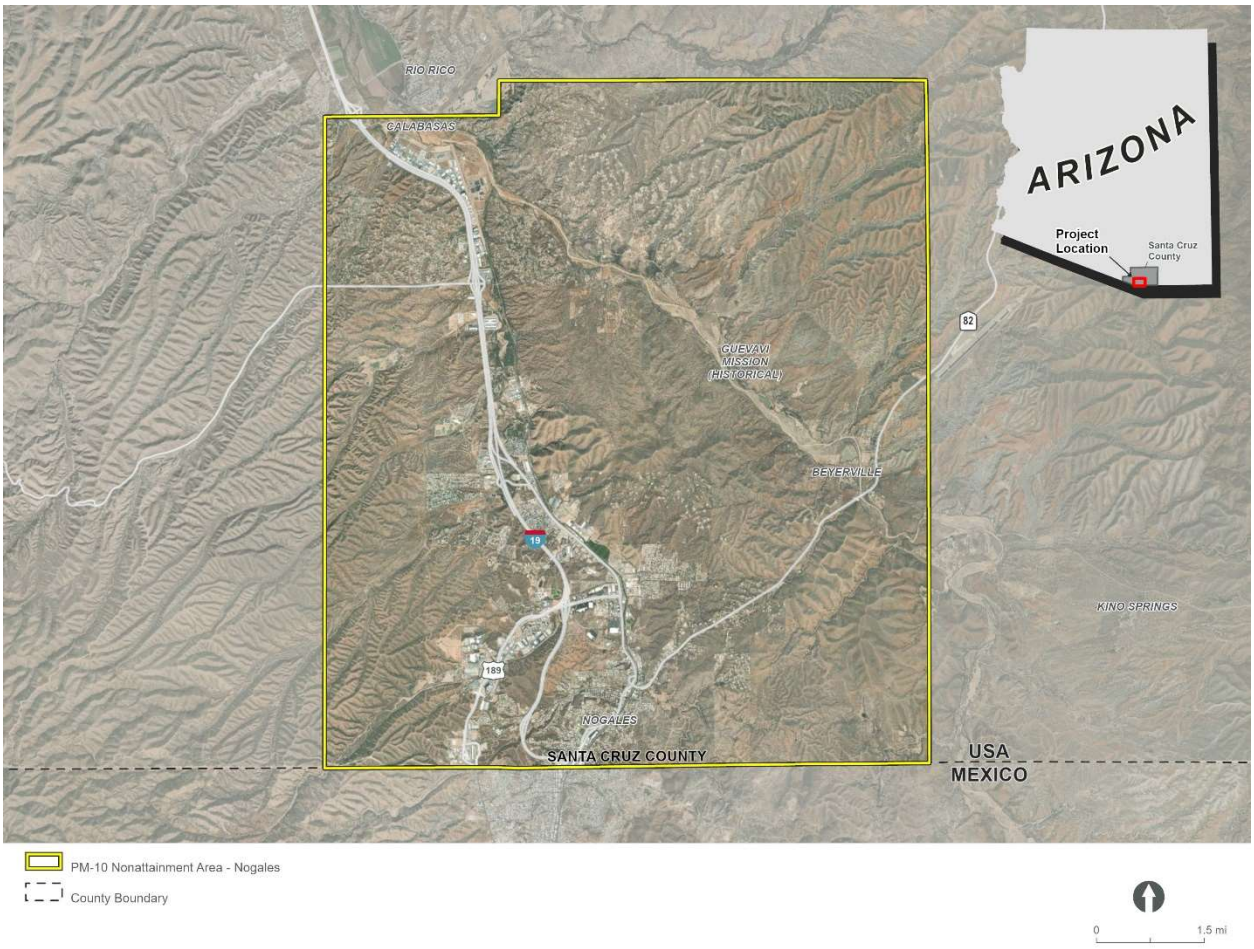


Figure 1-7. Paul Spur PM_{10} Nonattainment Area

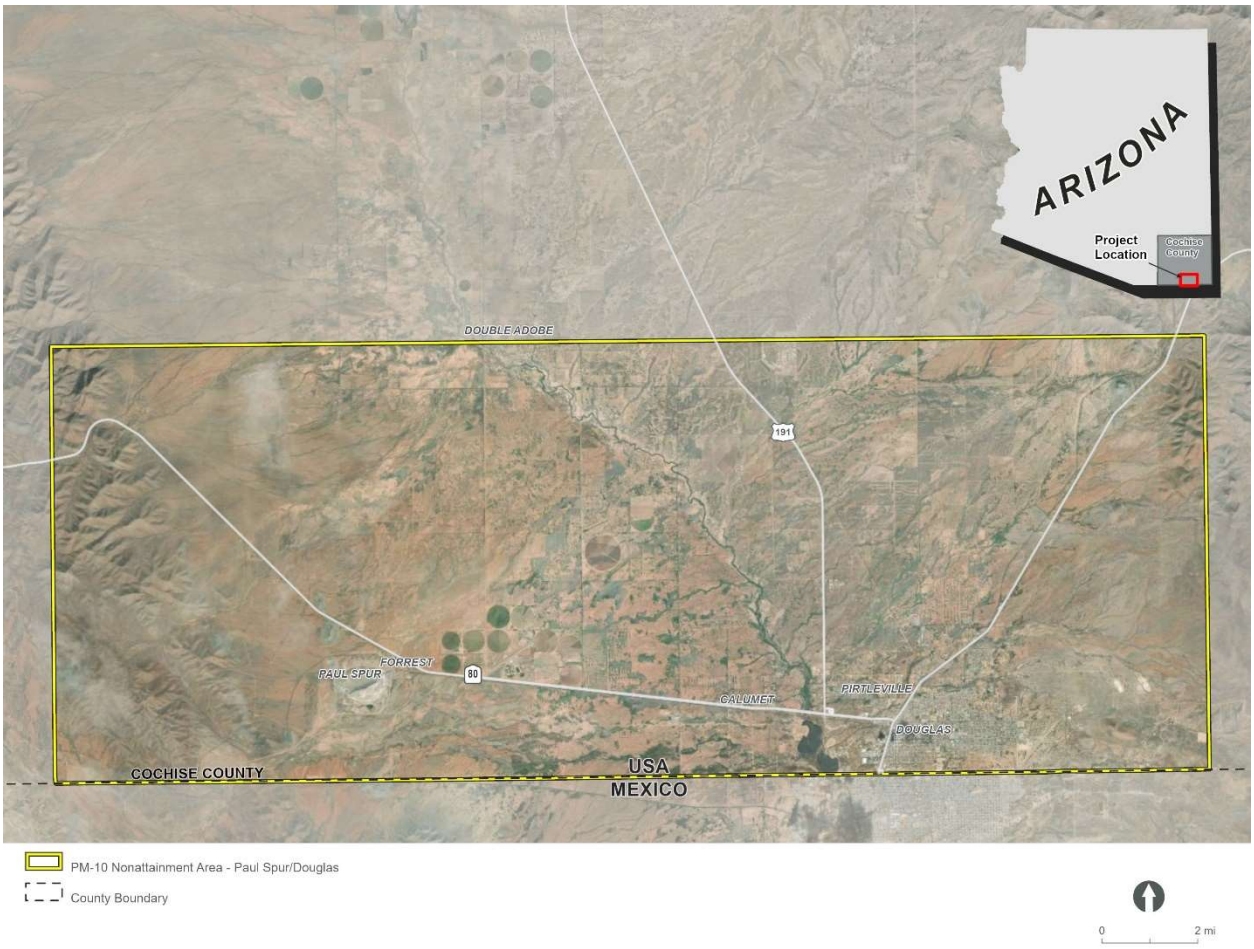


Figure 1-8. Maricopa County PM_{10} Nonattainment Area

Figure 1-9. Rillito PM_{10} Nonattainment Area

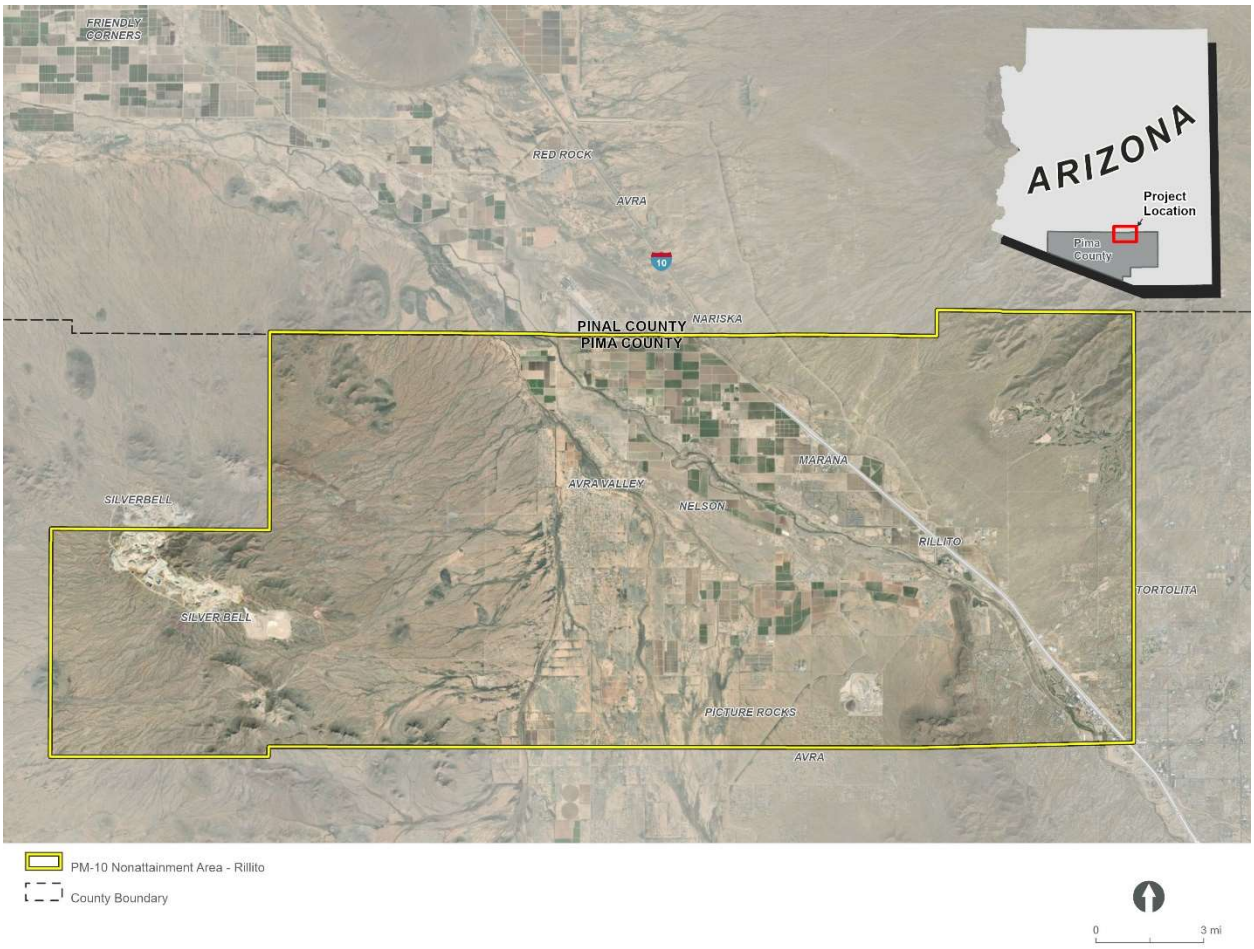


Figure 1-10. West Pinal PM_{10} Nonattainment Area

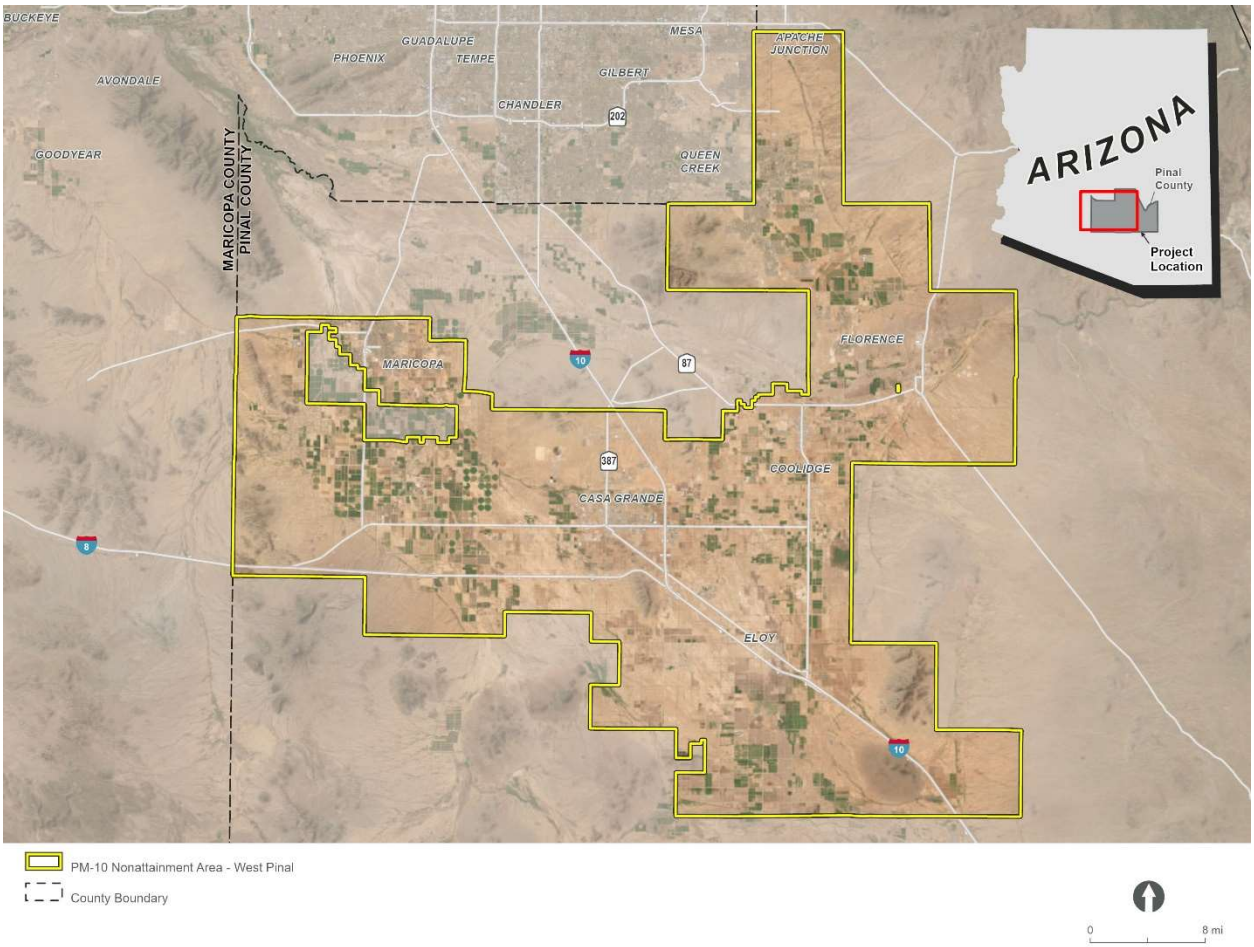
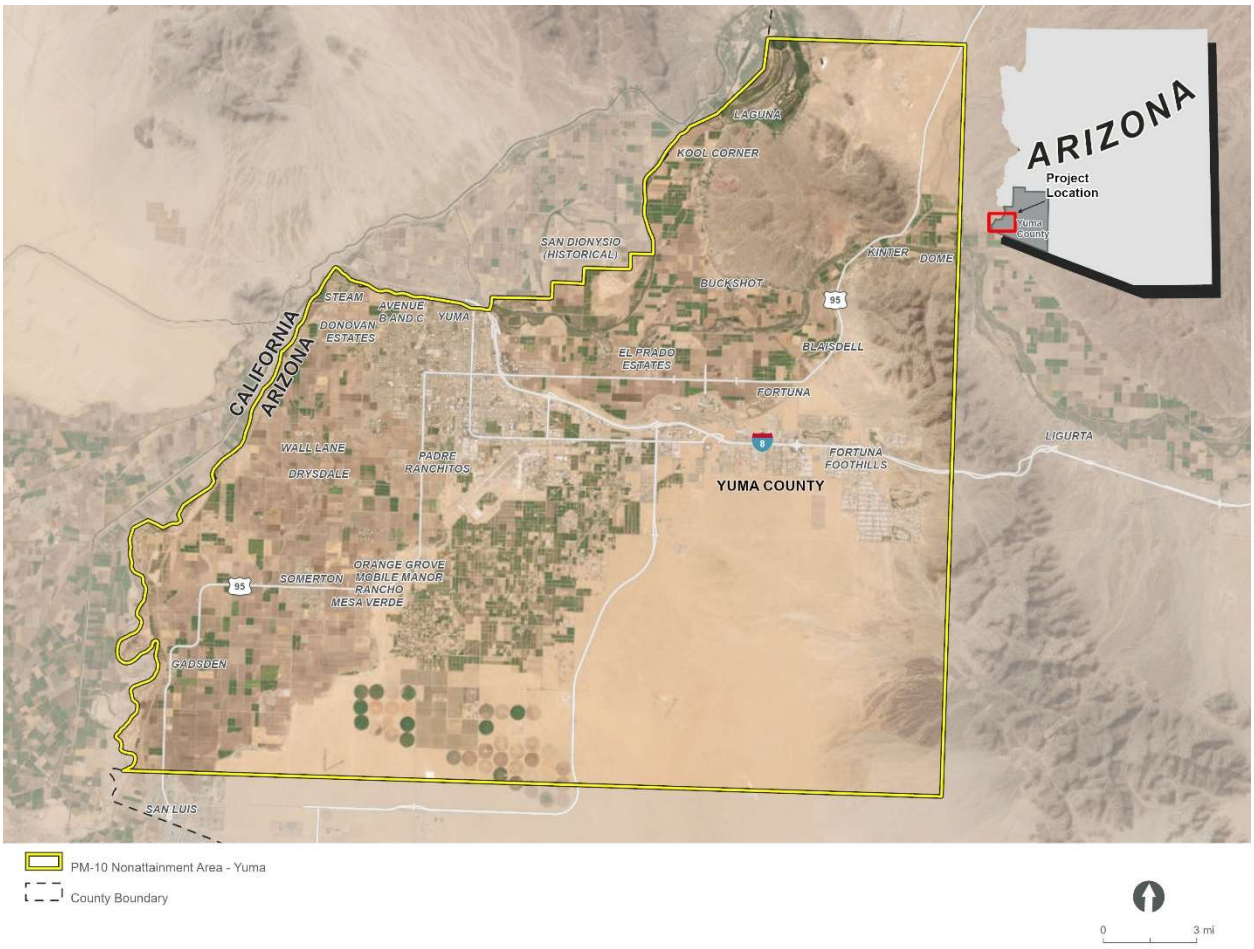


Figure 1-11. Yuma PM_{10} Nonattainment Area



1.3 Regulatory Framework

This section presents the regulatory framework used to guide conformity compliance in Arizona, including Arizona's SIPs, transportation conformity guidance for quantitative analyses in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas, project-level CO analyses, CO categorical hot-spot finding, and Arizona Conformity Rules.

1.3.1 Arizona's State Implementation Plans

Once an area has been designated as nonattainment for a given NAAQS, the state must create a SIP to bring the region back into attainment status. Included in the SIPs are emission budgets for various pollutant sectors, including on-road mobile source transportation, that outline the maximum emissions allowed, as well as any transportation control measures used to reduce transportation emissions. The state air agency, the Arizona Department of Environmental Quality (ADEQ), develops the state's SIPs and submits them to EPA for approval. In addition to ADEQ, two MPOs in Arizona—the Maricopa Association of Governments (MAG) and Pima Association of Governments (PAG)—have been delegated the responsibility of completing SIP requirements for O_3, CO, and PM (ARS 2023) for their respective nonattainment and/or maintenance areas.

Regarding criteria pollutant SIPs, Table 1-3 lists the applicable plans for pollutants subject to transportation conformity (i.e., CO, O_3, and PM). Areas designated as attainment that were recently nonattainment and maintenance areas are shown for informational purposes as they are no longer subject to transportation conformity. Areas designated as maintenance or nonattainment are subject to transportation conformity.

Table 1-3. Arizona Nonattainment and Maintenance Areas by Pollutant

Area	County	MPO/ COG	Designation	Plan	Notes (as of May 2023)
Carbon Monoxide					
Maricopa County Area	Maricopa	MAG	Maintenance	2013 Carbon Monoxide Maintenance SIP	The *2013 Carbon Monoxide Maintenance SIP* for Maricopa County demonstrates continued maintenance of the CO standards through 2025 with a maximum 8-hour concentration of 4.0 ppm and establishes a 2025 motor-vehicle emissions budget of 559.4 metric tons per day for the CO maintenance area.
Tucson Air Planning Area	Pima	PAG	Attainment	2008 Carbon Monoxide Maintenance SIP	The Tucson Air Planning Area was designated to CO attainment status by EPA, effective 7/10/2000. The maintenance period expired on 7/10/2020.
Ozone					
Phoenix-Mesa 2008 Ozone Area	Maricopa/ Pinal	MAG/ CAG	Moderate nonattainment	2017 Maricopa 8-Hour Ozone Moderate Nonattainment Area Plan (Phoenix/-Mesa 2008 Ozone Area)	On 5/4/2016, EPA determined that the Maricopa 8-Hour Ozone Nonattainment Area did not attain the 2008 O_3 standard (0.075 ppm) and reclassified the area from marginal to moderate. The attainment date for the moderate areas was 7/20/2018.
Phoenix-Mesa 2015 Ozone Area	Maricopa/ Pinal/Gila	MAG/ CAG	Marginal nonattainment	2020 Maricopa 8-Hour Ozone Marginal Nonattainment Area Plan (Phoenix-Mesa 2015 Ozone Area)	EPA established new O_3 standards in 2015. On 6/4/2018 EPA designated the Maricopa nonattainment area a marginal area for the 2015 O_3 standard (0.070 ppm), effective 8/3/2018.
Yuma 2015 Ozone Area	Yuma	YMPO/ WACOG	Marginal nonattainment	2020 Yuma 8-Hour Ozone Marginal Nonattainment Area Plan (Yuma 2015 Ozone Area)	EPA established new O_3 standards in 2015. On 6/4/2018 EPA designated an area in southwest Yuma County as a marginal nonattainment area for the 2015 O_3 standard (0.070 ppm), effective 8/3/2018.

Area	County	MPO/ COG	Designation	Plan	Notes (as of May 2023)
Particulate Matter (PM_{10} and $PM_{2.5}$)					
Payson PM_{10} Maintenance Area	Gila	CAG	Attainment	2012 Limited Maintenance Plan Update for Payson PM_{10} Maintenance Area	The *2012 Limited Maintenance Plan Update for Payson* updates the 2002 *Payson Moderate Area PM_{10} Maintenance Plan and Request for Redesignation to Attainment*, providing for the maintenance of the NAAQS for 2012 to 2022. Payson ended maintenance on 8/26/2022.
Maricopa County Nonattainment Area	Maricopa	MAG	Serious nonattainment	2012 Maricopa Association of Government Five Percent Plan for PM_{10} for Maricopa County Nonattainment Area	This *2012 MAG Five Percent Plan* updated the PM_{10} emissions inventory and established a monitoring network to prevent PM_{10} exceedances region wide. Note that the *2007 MAG Five Percent Plan for PM10* was withdrawn in 2011 and is replaced with this 2012 plan.
Bullhead City PM_{10} Nonattainment Area	Mohave	WACOG	Attainment	2012 Limited Maintenance Plan Update for Bullhead City PM_{10} Nonattainment Area	Bullhead City ended maintenance on 8/26/2022.
Pinal County Township 1 North, Range 8 East Nonattainment Area	Pinal	CAG	Serious nonattainment	2012 Five Percent Plan for PM_{10} for Pinal County Township 1 North, Range 8 East Nonattainment Area	Supplemental Information for Pinal County was submitted alongside the *2007 MAG Five Percent Plan for PM_{10}* in 2008 and 2009 but was never acted on by EPA. This 2012 plan replaces the 2008 and 2009 submittals.
West Pinal $PM_{2.5}$ Nonattainment Area	Pinal	CAG	Nonattainment	N/A	Effective date of designation 3/7/2011 (76 FR 6056). Conformity applies as of 3/7/2012. SIP due by 3/7/2014, this date was waived with the clean data finding. Area remains nonattainment until a Maintenance Plan is submitted and approved. Conformity still applies.

Area	County	MPO/ COG	Designation	Plan	Notes (as of May 2023)
West Pinal PM_{10} Nonattainment Area		CAG/ MAG	Moderate nonattainment	2015 West Pinal Moderate PM_{10} Nonattainment Area Plan	On 5/31/2012, EPA redesignated an area in western Pinal County from Unclassifiable to Nonattainment for the 1987 PM_{10} NAAQS. A SIP revision was submitted on 12/30/2013 but was withdrawn by ADEQ on 2/19/2014. The latest SIP revision was the *2015 West Pinal PM_{10} Nonattainment Area Plan*, submitted on 12/21/2015.
Rillito Moderate Area	Pima	PAG	Nonattainment	2008 Rillito Moderate Area PM_{10} Limited Maintenance Plan and Request for Redesignation	A PM_{10} Maintenance Plan was submitted for Rillito in 2008, but it has not been approved so the area remains in nonattainment.
Ajo PM_{10} Planning Area		PAG	Attainment	2019 Ajo PM_{10} Redesignation Request and Maintenance Plan	Ajo ended maintenance on 9/3/2020.
Nogales PM_{10} Nonattainment Area	Santa Cruz	SEAGO	Moderate nonattainment	2012 Nogales PM_{10} Nonattainment Area Plan	EPA approved this plan in 10/25/2012.
Nogales $PM_{2.5}$ Nonattainment Area		SEAGO	Maintenance	2021 Nogales $PM_{2.5}$ Redesignation Request and Maintenance Plan	The Nogales area will be in maintenance for $PM_{2.5}$ through 2032.
Yuma PM_{10} Nonattainment Area	Yuma	YMPO/ WACOG	Nonattainment	2006 Yuma PM_{10} Maintenance Plan	A PM_{10} Maintenance Plan was submitted for Yuma in 2006, but it has not been approved so the area remains in nonattainment.

Source: Arizona Department of Air Quality. Criteria Pollutant. Available at: https://www.azdeq.gov/node/1713. Accessed on 5/5/2023.

EPA Green Book. Arizona Nonattainment/Maintenance Status for Each County by Year for All Criteria Air Pollutants. Last updated on 4/30/2023. Available at: https://www3.epa.gov/airquality/greenbook/anayo_az.html.

CAG = Central Arizona Governments; SEAGO = SouthEastern Arizona Governments Organization; WACOG = Western Arizona Council of Governments; YMPO = Yuma Metropolitan Planning Organization.

1.3.2 Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas

EPA published the *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* in December 2010. This guidance applied to certain highway and transit projects in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas. The guidance described transportation conformity requirements for hot-spot analyses and provided technical guidance on estimating project emissions using EPA's Motor Vehicle Emission Simulator (MOVES), California's Emission Factors, and other methods (EPA

2021a). The guidance was updated in November 2013 and again in November 2015. The latest October 2021 update to the guidance reflects the newest MOVES model, MOVES3, and establishes AERMOD as the required model for PM hot-spot analyses (EPA 2021a). Transportation-related inputs to MOVES and AERMOD are described in more detail in Chapter 4.

1.3.3 Project-Level Carbon Monoxide Analyses

In December 2021, EPA updated its guidance *Using MOVES3 in Project-Level Carbon Monoxide Analyses* to include instructions on completing a quantitative CO hot-spot analysis with MOVES3 (EPA 2021d). Past versions of the guidance are the March 2015 *Using MOVES2014 in Project-Level Carbon Monoxide Analyses* and the November 1992 *Guideline for Modeling Carbon Monoxide from Roadway Intersections* (EPA 1992).

This 2021 guidance describes how to use the latest MOVES3 emissions model, which generates emission inventories and rates, to estimate CO emissions from transportation projects, including roadway intersections, highways, transit projects, parking lots, and intermodal terminals. This guidance can be applied when using MOVES3 to complete any project-level quantitative CO analysis, including hot-spot analyses for transportation conformity determinations, completing NEPA analyses, and assessing near-road air quality in communities with environmental-justice concerns (EPA 2023). Similarly, the 2017 revised guideline from EPA on Air Quality Models, Appendix W (40 CFR Part 51) provides guidance on air quality modeling using AERMOD and CAL3HQC (EPA 2017).

1.3.4 Carbon Monoxide Categorical Hot-Spot Finding

On January 31, 2023, FHWA announced the availability of an updated CO categorical hot-spot finding for certain projects involving a large urban intersection. The 2023 *CO Categorical Hot-Spot Finding* updates to MOVES3 supersede FHWA's 2017 *CO Categorical Hot-Spot Finding* that was completed with MOVES2014a (EPA 2023).

Where a project's parameters fit the conditions for a categorical hot-spot finding, project sponsors may be able to rely on the categorical hot-spot finding in place of doing their own CO hot-spot analysis as part of a project-level conformity determination in CO maintenance areas in Arizona (Maricopa County Area); see Table 4, Acceptable Ranges for Parameters Common to All Scenarios, located in the appendix of FHWA's 2023 categorical finding for comparison (EPA 2023)[4]. All intersections requiring analysis must fall within the acceptable ranges for all the parameters to rely on the CO categorical hot-spot finding. Reliance on the CO categorical hot-spot finding is still subject to existing interagency consultation (IAC) and the public involvement requirements under NEPA and the Conformity Rule (40 CFR 93.105) for a project.

In the January 24, 2008, Conformity Rule amendments, EPA included a provision at 40 CFR 93.123(a)(3) to allow the U.S. Department of Transportation, in consultation with EPA, to make categorical hot-spot findings in CO nonattainment and maintenance areas if appropriate modeling showed that a type of highway or transit project would not cause or contribute to a new or worsened air quality violation of the CO NAAQS, delay timely attainment of the NAAQS, or required interim milestone(s), as required under 40 CFR 93.116(a). The IAC process should be used to determine whether the CO categorical hot-spot finding applies to a particular project,

[4] See page 11. https://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance/cmcf_2023/co_categorical_finding_memo.pdf.

and any project-level conformity determination that relies on FHWA's finding would be subject to public involvement requirements (40 CFR 93.105). The finding can also be used for NEPA purposes to replace a microscale CO analysis and may be applied to several alternatives in a NEPA document (EPA 2023).

FHWA's 2023 categorical finding is intersection-based and includes four scenarios based on high and low percentages of trucks and high and low road grades (Table 1-4). Compared to the 2017 categorical finding, the 2023 finding has wider application to more projects. In addition, the acceptable ranges for other parameters (e.g., intersection angle, speed, lane width, etc.) have been expanded (EPA 2023).

Table 1-4. 2023 Categorical Finding Scenarios

Scenario	Road Grade[a]	Truck Percentage[b]
High grade high truck percentage	1% < upgrade ≤ 6%	2% < trucks ≤ 20%
Low grade high truck percentage	0% ≤ upgrade ≤ 1%	2% < trucks ≤ 20%
High grade low truck percentage	1% < upgrade ≤ 6%	0% ≤ trucks ≤ 2%
Low grade low truck percentage	0% ≤ upgrade ≤ 1%	0% ≤ trucks ≤ 2%

Source: EPA 2023.

Notes:

[a] The highest grade from all uphill roadway links at the project intersection should be used.

[b] The highest truck percentage (single unit and combination trucks) from all links at the project intersection should be used.

If one or more parameters of any of the four intersection approaches are outside the acceptable range for that parameter, then the project sponsor will not be able to rely on the CO categorical hot-spot finding. These parameters are provided in a spreadsheet tool available on FHWA's website[5] or in the appendix tables of the 2023 CO categorical hot-spot finding technical memorandum[6].

1.3.5 Arizona Transportation Conformity Rules

Transportation conformity regulations (40 CFR Parts 51 and 93) require conformity determinations for areas that have been designated as nonattainment or maintenance for the following NAAQS: CO, O_3, and particulate matter ($PM_{2.5}$ and PM_{10}). As discussed earlier, only CO and PM are evaluated for project-level conformity while O_3 is evaluated for regional conformity. Transportation conformity applies to transportation improvement programs (TIPs), long-range transportation plans, and transportation projects that require FHWA or FTA funding or approval. The Federal Aviation Administration and Federal Railroad Administration use general air quality conformity to evaluate projects.

There is no state version in Arizona to screen out projects for transportation conformity, so federal rules (40 CFR Parts 51 and 93) apply. See 40 CFR 93.126 for a list of the exempt project types.

[5] https://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance/cmcf_2023/index.cfm

[6] https://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance/cmcf_2023/co_categorical_finding_memo.pdf.

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2 CASE STUDIES

This section includes a summary of the areas determined to be most useful for informing ADOT's IAC procedures. The three states/agencies considered for comparison were the Southern California Association of Governments (SCAG), Colorado Department of Transportation (CDOT), and Pennsylvania Department of Transportation (PennDOT).

2.1 Southern California Association of Governments

Founded in 1965, SCAG is a Joint Powers Authority under California state law, established as an association of local governments and agencies that voluntarily convene as a forum to address regional issues. Under federal law, SCAG is designated as an MPO and under state law as a Regional Transportation Planning Agency and a council of governments (COG).

The SCAG region encompasses six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 191 cities in an area covering more than 38,000 square miles. SCAG develops long-range regional transportation plans (RTPs), including sustainable-communities strategy and growth forecast components, regional TIPs, regional housing needs allocations, and a portion of the South Coast Air Quality management plans. Within SCAG, six county transportation commissions hold the primary responsibility for programming and implementing transportation projects, programs, and services in their respective counties.

SCAG's Transportation Conformity Working Group (TCWG) is a forum to support interagency coordination to maintain transportation conformity and help improve air quality in Southern California. SCAG's TCWG includes federal (EPA, FHWA, FTA), state (California Air Resources Board, California Department of Transportation [Caltrans]), regional (air quality management districts, SCAG), and sub-regional (county transportation commissions) agencies and other stakeholders. The TCWG meets monthly to facilitate an inclusive transportation/air quality planning process and to fulfill the IAC requirements for PM of the Federal Transportation Conformity Rule. Transportation conformity for CO is conducted by Caltrans not SCAG. The TCWG helps resolve regional issues pertaining to transportation conformity and coordinates with and supports the Statewide Transportation Conformity Working Group.

Table 2-1 highlights some of the potential advantages and disadvantages of SCAG's IAC approach.

Table 2-1. Southern California Association of Government's Interagency Consultation Approach: Potential Advantages and Disadvantages

Potential Advantages	Potential Disadvantages
• MPO responsible for leading IAC procedure • Streamlined approach with form templates (in particular, the form template for the PM hot-spot questionnaire has been replicated for Arizona in Appendix A) • Flexibility for MPO to revamp procedures as needed • SCAG staff has an organized system for receiving and evaluating project inquiries that is efficient and keeps projects on schedule • Examples of past projects are posted online so consultants can model their analysis from similar, recently conducted projects	• Responsibilities are different for a MPO versus a department of transportation • Only applicable to PM

2.2 Colorado Department of Transportation

Colorado addresses IAC requirements through a conformity SIP and the Code of Colorado Regulations that were adopted by the Colorado Air Quality Control Commission.

2.2.1 Metropolitan Planning Organization Areas

MPOs are responsible for meeting regional Conformity Rule requirements within their planning areas, including preparing RTPs, TIPs, and transportation conformity documents. Colorado has five MPOs, but only the following three MPOs have maintenance or nonattainment areas within their planning areas: Denver Regional Council of Governments, North Front Range MPO, and Pikes Peak Area Council of Governments.

The MPOs are responsible for establishing a review team to consult regarding Transportation Conformity assessment and findings. The review team typically consists of the following agencies: the MPO, the local transit agency, the Air Pollution Control Division (Division), CDOT, EPA, FHWA, and FTA. For example, the Denver Regional Council of Governments has established the Air Quality Interagency Consultation Group that meets monthly. CDOT's primary responsibility is to attend the interagency meetings and provide technical inputs to the MPOs.

2.2.2 Non-Metropolitan Planning Organization Areas

CDOT is the lead agency responsible for IAC outside the metropolitan planning areas. CDOT is involved with the administration and review of project-level analyses throughout the state, makes initial project-level conformity determinations on transportation projects prior to submitting them to FHWA or FTA for the final conformity determination, and initiates IACs. For each project, CDOT establishes a project management team consisting of CDOT, FHWA, EPA, the Division, MPOs, FTA, and local governments to participate in interagency coordination meetings for conformity determinations.

CO and PM_{10} are the only criteria pollutants to be addressed for conformity at the project level in Colorado because they are the only transportation pollutants that have nonattainment or maintenance areas. CO and PM_{10} may require hot-spot analyses, but O_3 does not because it is

a regional pollutant.[7] CDOT's responsibilities related to hot-spot analyses include evaluating and choosing a hot-spot model to be used for conformity determinations and identifying the projects or categories of project to be evaluated for potential hot spots, subject to concurrence by the Division.

Table 2-2 highlights some of the potential advantages and disadvantages of CDOT's IAC approach.

Table 2-2. CDOT Interagency Approach: Advantages and Disadvantages

Potential Advantages	Potential Disadvantages
• Applicable to both PM and CO. • Inclusion of an air quality scoping meeting, that is documented by email, containing all decisions made during the meeting and a determination of whether a project needs a modeling protocol. • Buy-in from multiple parties (CDOT, Air Pollution Control District [APCD], FHWA, consultant, and other interested parties) up front may prevent any surprises or last-minute comments. There is an 11-business-day timeline that agencies must respond to either the email or modeling protocol.	• Responsibilities are different in MPO versus non-MPO areas • Federal and state staff must attend multiple meetings

2.3 Pennsylvania Department of Transportation

IAC requirements are addressed through a Conformity SIP and individual Memorandums of Understanding in Pennsylvania. In addition, PennDOT is the lead agency responsible for required IAC across 38 counties in 15 MPOs and eight rural planning organizations (RPOs).

In Pennsylvania, an IAC group called the Pennsylvania Air Quality Working Group (PAQWG) has been established to provide reviews and consultation for regional and project-level air quality issues. PAQWG consists of representatives from urban MPOs, PennDOT (representing all other MPOs and RPOs), FHWA, FTA, the Pennsylvania Department of Environmental Protection, and EPA. PAQWG meets quarterly to discuss transportation air quality issues including conformity. PAQWG structure allows for standardized documents, data, and data development methodologies that support not only transportation conformity but the development of triennial emissions inventories and motor-vehicle emissions budgets as well. Subarea motor-vehicle emissions budgets are used for all pollutants in relevant areas to ensure MPO/RPO autonomy, as nonattainment and maintenance area boundaries are generally different from MPO/RPO boundaries. This minimizes IAC once SIPs and motor-vehicle emissions budgets are in place.

PennDOT (via IAC with EPA, FHWA, FTA, Pennsylvania Department of Environmental Protection, MPOs, and applicable transit agencies) established a screening procedure to determine projects of air quality concern. The screening process has three distinct levels as illustrated in Table 2-3 below. A project does not have to go through each screening level. For example, if a project is determined to be exempt in Level 1 screening, then additional traffic data

[7] Project-level ozone is addressed by showing that the regional emissions analysis for ozone was completed with the project included. Regional emissions analyses are conducted by MPOs as required by the Conformity Rule.

and IAC review are not required; likewise, if the project can be screened using the Level 2 thresholds, then the IAC group review is not needed.

Table 2-3. Summary of PM Project Screening Levels

Screening Level	Criteria Based On	Who Makes the Decision?	What Data Used?
Level 1 Is the project exempt or does the project fall in an area that requires analysis?	Final Rule and EPA/FHWA guidance	PennDOT, PennDOT District	Maps of nonattainment and maintenance areas and/or exempt project table
Level 2 Is the project clearly not of air quality concern?	Same as above plus assumptions	PennDOT, PennDOT District	Project traffic data, base year traffic maps, and/or intermodal facility information
Level 3 Does the project require more substantial review to determine if it is of air quality concern?	Same as above plus PAQWG review of project	PAQWG	Project traffic data, base year traffic maps, and/or intermodal facility information

Source: PennDOT 2016.

2.3.1 Large Metropolitan Planning Organization Areas

For IAC, areas in Pennsylvania that have assumed responsibility for all technical and procedural aspects of air quality conformity in their geographic domain are called Scenario 2 Agencies. Seven MPOs fall into this category. These seven MPOs each maintain their own TDMs, and six of the seven MPOs use PennDOT-supplied tools to perform travel and air quality modeling activities. The Philadelphia MPO includes counties in two states (Pennsylvania and New Jersey), and the nonattainment/maintenance areas span Pennsylvania, New Jersey, Delaware, and Maryland and include consultation linkages to the North Jersey and New York–Connecticut areas. Scenario 2 Agencies attend the quarterly IAC process.

2.3.2 Small Metropolitan Planning Organization Areas

Small MPOs and RPOs that have not assumed responsibility for air quality conformity activities are referred to as Scenario 1 Agencies. These agencies rely on PennDOT to perform all technical and most programmatic services related to mobile source–air quality issues, including maintaining TDMs, conducting emissions analyses, documenting the conformity process, and leading IAC. These agencies are welcome to attend the quarterly IAC meetings but typically attend only the biennial conformity kickoff meetings. Table 2-4 highlights some of the potential advantages and disadvantages of Pennsylvania's conformity approach.

Table 2-4. Pennsylvania Department of Transportation's Interagency Consultation Approach: Potential Advantages and Disadvantages

Potential Advantages	Potential Disadvantages
• Standardized IAC process via PennDOT • Applicable to both PM and CO • PennDOT Project Scoping Thresholds have been developed to use in addition to exemptions and categorical hot-spot findings to assist in scoping the CO air quality analysis for transportation projects • CO modeling defaults shown in PennDOT guidance • PennDOT's screening process to determine projects of air quality concern for PM limits the number of projects requiring formal interagency review • Streamlined project reviews	• Federal and state staff must attend multiple meetings

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3 INTERAGENCY CONSULTATION PROCEDURES

This chapter describes the steps to perform a project-level air quality conformity analysis that can be used by a consultant or project sponsor.

3.1 Exempt Projects

The first step in determining whether hot-spot analysis or IAC is required for project-level conformity is to check whether the project is exempt. Projects that do not require a project-level hot-spot analysis for PM or CO are those that meet one or more of the following criteria:

- Exempt pursuant to 40 CFR 93.126
- A traffic signal synchronization project under 40 CFR 93.128
- Not federally funded AND require no federal funds AND require no federal approval

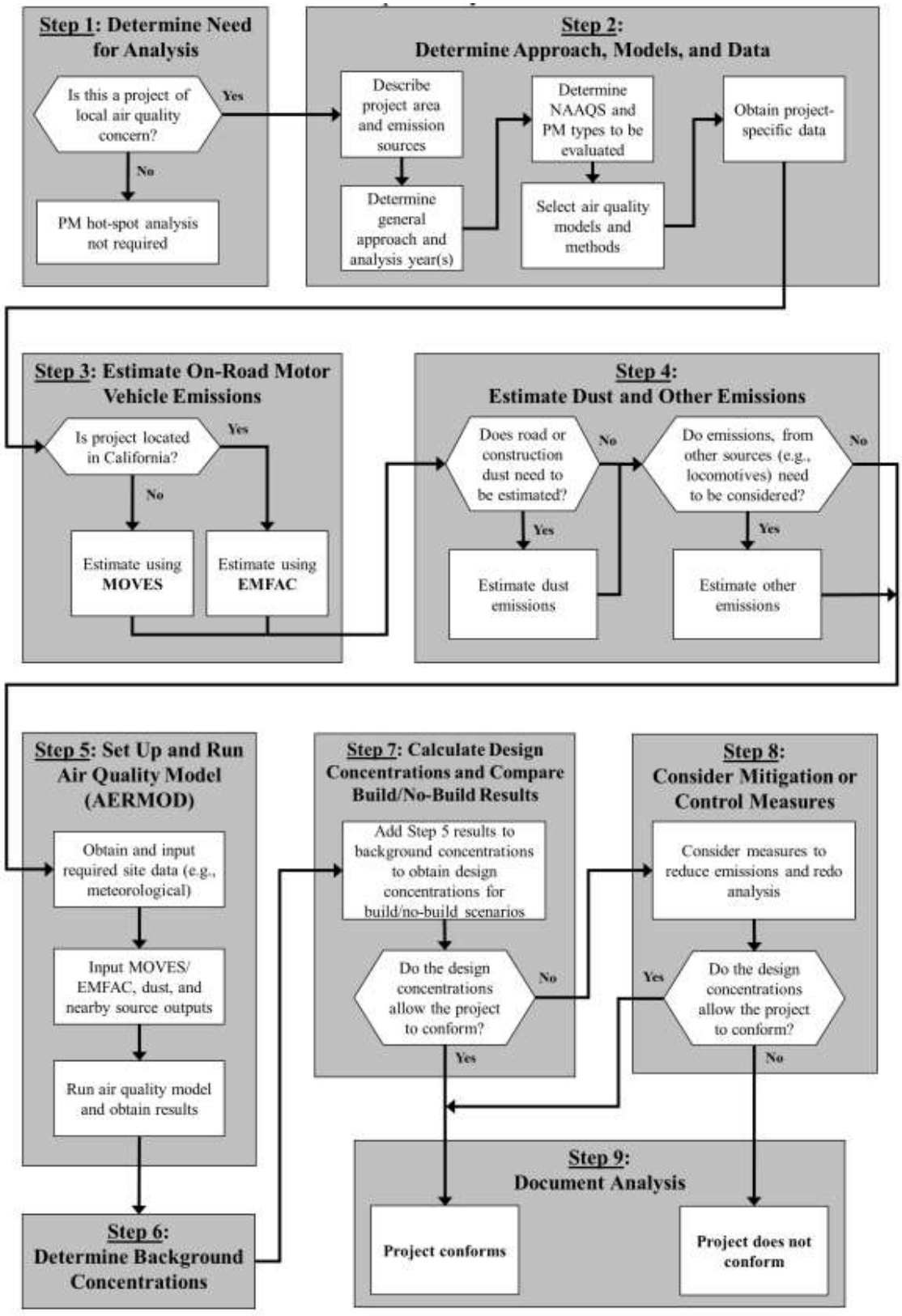
3.2 Project-Level Particulate Matter Hot-Spot Analysis Procedures

The following consultation procedures apply to projects that have been determined projects of air quality concern (POAQC) through IAC. This chapter describes the methods, models, and assumptions used for a quantitative hot-spot analysis, as required in 40 CFR 93.105(c)(1)(i), 93.123, and 93.116.

3.2.1 Completing a Particulate Matter Hot-Spot Analysis

The general steps required to complete a quantitative PM hot-spot analysis are outlined in Figure 3-1 below and described in detail in the EPA Office of Transportation and Air Quality guidance document, *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (EPA 2021a).

Figure 3-1. Overview of a Particulate Matter Hot-Spot Analysis



Source: EPA 2021a.

Step 1: Determine Need for Analysis

The need for a conformity analysis is described in Appendix A.

Step 2: Determine the Approach, Models, and Data

a. Describe the project area (area substantially affected by the project, Federal Register [FR] Volume 58 page 62212) and emission sources.

b. Determine the general approach and analysis year(s)—year(s) of peak emissions during the time frame of the transportation plan (69 FR 40056).

c. Determine NAAQS and PM types to be evaluated.

d. Select emissions and dispersion models and methods to be used. Consider the following emission parameters: type of source (volume source vs. area/line source), emission height of different vehicle types, dispersion modeling assumptions (vertical dimension for area source and both initial horizontal and vertical dimensions for volume sources), meteorological data location and years (i.e., which weather station they should obtain the upper air profile [*.pfl file] and surface file [*.sfc file]), and need for variable emission rate due to the difference in volume/classification between peak and non-peak hours. See Table 3-1 through Table 3-4 for determining other emission parameters.

e. Obtain project-specific data (e.g., fleet mix, peak-hour volumes, and average speed).

Step 3: Estimate On-Road Motor-Vehicle Emissions

a. Estimate on-road motor-vehicle emissions using MOVES. A project-level MOVES run should be conducted for the specific county in which the project is located.

Step 4: Estimate Dust and Other Emissions

a. Estimate road dust emissions using AP-42 Paved Roads (EPA 2011).[8]

b. Determine if emissions from other sources (e.g., locomotives) need to be considered. These may include other major permitted Title V sources or other state permit sources within 1,000 feet of the emission source.

Step 5: Set Up and Run Air Quality Model (AERMOD)

a. Obtain and input required site data (e.g., meteorological).

b. Input MOVES and AP-42 outputs (emission factors).

c. Determine the number and location of receptors, roadway links, and signal timing.

d. Run the air quality dispersion model and obtain concentration results.

Step 6: Determine Background Concentrations

a. Determine background concentrations from nearby and other emission sources (typically within 1,000 feet) excluding the emissions from the project itself.

[8] The emission factor equation, $E = k(sL)^{0.91} \times (W)^{1.02}$, is given on page 4 of *Section 13.2.1 Paved Roads* of EPA's AP-42, Fifth Edition, Volume I, Chapter 13: Miscellaneous Sources (EPA 2011).

Step 7: Calculate Design Concentrations and Compare Build/No-Build Scenario Results

a. Add Step 5 results to background concentrations to obtain values for the build scenario.

b. Determine if the design values allow the project to conform. If "yes," proceed to Step 9; if "no," proceed to Step 8.

Step 8: Consider Mitigation or Control Measures

a. Consider measures to reduce emissions and update the analysis. If mitigation measures are required for project conformity, they must be included in the applicable SIP and be enforceable.

b. Determine if the design values allow the project to conform after implementing mitigation or control measures.

Step 9: Document Analysis

a. Determine whether the project conforms based on the results of Step 7 or Step 8.

To support the conclusion that a project meets conformity under 40 CFR 93.116 and 93.123, at a minimum the documentation will include:

- Description of the proposed project, when it is expected to open, and projected travel activity data.
- Analysis years examined and factors considered in determining years of peak emissions.
- Emissions modeling data, model used with inputs and results, and how characterization of the project links.
- Model inputs and results for road dust, construction emissions, and emissions from other sources if needed.
- Air quality modeling data, including receptors, model used, inputs, and results. How background concentrations were determined.
- Any mitigation and control measures implemented.
- How interagency and public participation requirements were met.
- Conclusion that the proposed project meets conformity requirements.

3.2.2 Particulate Matter Hot-Spot Analysis Steps

If it is determined that there is need for a hot-spot analysis according to Appendix A, then Table 3-1 through Table 3-4 shall be used as a reference to provide general guidance on how to complete the following steps listed in the PM Hot-Spot Guidance (EPA 2021a).

Table 3-1. Methods, Models, and Assumptions for MOVES3

MOVES3.1	Description	Reference
Estimate On-Road Motor-Vehicle Emissions (Step 3): Modeling highways and/or intersections for PM_{10} (contact ADOT if modeling off-network data such as terminals and parking lots or performing a $PM_{2.5}$ analysis)		
Scale	On-road, project scale, and inventory.	PM Hot-Spot Guidance Section 4.4.2 (EPA 2021a)
Time spans	Four weekday runs for each of the following months: January, April, July, and October for each year. Each of these four runs will further be split by morning, midday, afternoon, and overnight hours as defined by the TDM.	PM Hot-Spot Guidance Sections 2.8, 4.3, and 4.4.3 (EPA 2021a)
Geographic bounds	County (If a project spans multiple counties, see the EPA Guidance).	PM Hot-Spot Guidance Section 4.4.4 (EPA 2021a)
On-road vehicles	All fuels and source use types will be selected.	PM Hot-Spot Guidance Section 4.4.5 (EPA 2021a)
Road type	Based on the project location.	PM Hot-Spot Guidance Section 4.4.6 (EPA 2021a)
Pollutants and processes	Primary exhaust PM_{10}: total (for running exhaust and crankcase running exhaust), brake wear particulate, tire wear particulate.	PM Hot-Spot Guidance Sections 2.5 and 4.4.7 (EPA 2021a)
General output and output emissions detail	Database will be created; grams, joules, miles, distance traveled, population will be selected. Output aggregation is set to hour and link by default and the vehicle/equipment categories and on-road selections are optional in the output emissions detail. After running MOVES3.1 for a particular hour/day/month scenario, the PM_{10}_Grams_Per_Veh_Hour script or emission rates script for mass and vehicle miles of travel (for inventory mode) can be run on the output database.	PM Hot-Spot Guidance Sections 4.4.8, 4.4.9, and 4.6 (EPA 2021a)
Create input database	Input database will be created and modified for project level using required regional inputs from latest regional conformity analysis.	PM Hot-Spot Guidance Section 4.4.10 (EPA 2021a) and see Project Data Manager below
Project data manager	Database will be created and MOVES3.1 templates will be created to include local project data and information provided by the MPO, e.g., fuel, age distribution, meteorology data, to be consistent with the regional model. Links and link source type will be specific to project as provided by the traffic study; any missing information will use default MOVES3.1 data.	PM Hot-Spot Guidance Sections 4.5 and Appendix D (EPA 2021a)
Meteorology	Same for build and no-build scenarios. A minimum of 4 hours (morning, midday, afternoon, and overnight hours) for one weekday in January, April, July, and October is required. May use the county meteorology file for the county used in the latest SIP or regional conformity analysis.	PM Hot-Spot Guidance Section 4.5.1 (EPA 2021a)

MOVES3.1	Description	Reference
Age distribution	Same for build and no-build scenarios unless something about the project would change them.	PM Hot-Spot Guidance Section 4.5.2 (EPA 2021a)
Fuel	Same for build and no-build scenarios. Fuel files should be consistent with those used in the latest SIP or regional conformity analysis if local information is available. Otherwise, MOVES default fuel supply and formulation information can be used.	PM Hot-Spot Guidance Section 4.5.3 (EPA 2021a), PM hot-spot training slides Module 2
Inspection/maintenance (I/M) programs	No impact on PM emissions.	PM Hot-Spot Guidance Section 4.5.4 (EPA 2021a)
Retrofit data	If necessary. For example, a bus terminal project might include plans to mitigate emissions by retrofitting the bus fleet.	Project-specific modeling PM Hot-Spot Guidance Section 4.5.5 (EPA 2021a)
Links	Unique inputs needed for each run. Requires information for each link: length (in miles), traffic volume (vehicles per hour), average speed (miles per hour), and road grade (percentage).	PM Hot-Spot Guidance Section 4.5.6 and Appendix D (EPA 2021a)
Link source types	Unique inputs needed for each run. Project-specific data are preferred. If the source type distribution can be represented by that of the regional fleet, the data used in the latest regional emissions analysis can be provided.	PM Hot-Spot Guidance Section 4.5.7 (EPA 2021a)
Link drive schedules, operating mode distribution	Unique inputs needed for each run. Three options are available: (1) provide average speed and road type through the Links Importer, (2) provide a link drive schedule using the link drive schedule importer, (3) provide a detailed operation distribution for the link.	PM Hot-Spot Guidance Section 4.5.8 (EPA 2021a)
Off-network, hoteling, generic	If necessary. For example, a project analysis includes areas where vehicles are not driving on the project links but are still contributing to the project's emissions. For example, this could be a rest area where vehicles would idle for an extended period.	PM Hot-Spot Guidance Section 4.5.9 (EPA 2021a)

Table 3-2. Methods, Models, and Assumptions for Dust and Other Emissions

AP-42, Fifth Edition, 2011	Description	Reference
Estimate Dust and Other Emissions (Step 4) (AP-42 emission factors below should be based on SIP or Regional Conformity Analysis provided by ADEQ, MAG, PAG, or YMPO depending on the project's location)		
Average weight vehicles	20 tons for heavy vehicles and 2.5 tons for light vehicles. Can average the weight based on the classification information provided for link source type input.	Source of data TIPs or RTP, regional conformity analysis
Silt loading	Section 13.2.1, Paved Roads, from AP-42 will be used, consistent with the regional analysis. Emission factors for road and construction dust should be added to the emission factors generated for each link by MOVES3.1. For example: silt loading—freeways 0.02 g/m^2; arterials >10,000 ADT 0.067g/m^2; low traffic roads <10,000 ADT 0.23g/m^2.	PM Hot-Spot Guidance Section 6 (EPA 2021a): When estimating emissions of re-entrained road dust from paved roads, site-specific silt loading data must be consistent with the data used for the project's county in the regional emissions analysis (40 CFR 93.123l(3))
Construction dust	If construction dust is temporary, it will not be included. If there are other sources (e.g., locomotives), they need to be considered.	PM Hot-Spot Guidance Section 6.5 (EPA 2021a)
Precipitation	Average days with at least 0.01 inch of precipitation from SIP or regional conformity analysis.	Source: TIPs or RTP, regional conformity analysis, SIP

Table 3-3. Methods, Models, and Assumptions for AERMOD (24-hour PM_{10} run)

AERMOD v.21112	Description	Reference
Set Up and Run Air Quality Model (AERMOD) (Step 5)		
Model setup (CO pathway)	Control pathway defines the primary model settings.	PM Hot-Spot Guidance Sections 7.1 and 7.2 and Appendix J (EPA 2021a), *User's Guide for the AMS/EPA Regulatory Model (AERMOD)* Sections 2.3.2 and 3.2 (EPA 2021b)
TITLEONE	Model title	
MODELOPT	CONC FLAT (conduct IAC if modeling nearby elevated source)	Modeling concentrations and flat terrain
AVERTIME	24	Average across each 24-hour period from the available meteorological data
URBANOPT	Population for urban area	
FLAGPOLE	1.8	
POLLUTID	PM_{10}	
Source types and characters (SO pathway)	For highway and interaction sources, characterize area sources with the LINE source keyword (use IAC if volume sources are needed).	PM Hot-Spot Guidance Sections 7.3 and 7.4 and Appendices J.2 and J.3 (EPA 2021a), *User's Guide for the AMS/EPA Regulatory Model (AERMOD)* Sections 2.3.3 and 3.3 (EPA 2021b)
LOCATION	Srcid Srctyp (LINE)	
SRCPARAM	Srcid Lnemis Relhgt Width Szinit	LINE source parameters See PM Hot-Spot Guidance Appendix J.3.1 (EPA 2021a)
URBANSRC	Srcid	Urban source IDs
EMISFACT	Emission rate=1, Use SEASHR for variable emission rate	Total 16 MOVES run=4 seasons × 4 time periods to 96 factors (4 seasons/24 hours); see PM hot-spot training slides (FHWA 2022)
SRCGROUP	GroupID or All	
Meteorological data (ME pathway)	The meteorological data will be based on the pre-processed files from ADEQ or the meteorological files produced by AERMET program. Use the most recent 5-year data.	PM Hot-Spot Guidance Section 7.5 and Appendix J.4 (EPA 2021a), *User's Guide for the AMS/EPA Regulatory Model (AERMOD)* Sections 2.3.5 and 3.5 (EPA 2021b)
SURFFILE	Surface file name	*.sfc
PROFFILE	Profile (upper air) file name	*.pfl
SURFDATA	Surface data station	
UAIRDATA	Upper air data station	
PROFBASE	Meteorological data station elevation	
Run meteorological pre-processor	If necessary	*User's Guide for the AERMOD Meteorological Preprocessor (AERMET)* (EPA 2022)
Urban or rural sources	Specifications for URBANOPT (CO pathway) and URBANSRC (SO pathway)	PM Hot-Spot Guidance Section 7.5.5 and Appendix J.4 (EPA 2021a), *AERMOD Implementation Guide* (EPA 2021c), Section 7.2.3 of Appendix W to 40 CFR Part 51

AERMOD v.21112	Description	Reference
Receptors (RE pathway)	Receptors should begin 5 m from roadway edge, extending up to 105 m (or further if needed). Spacing of 25 m is typically sufficient.	PM Hot-Spot Guidance Section 7.6 (EPA 2021a), *User's Guide for the AMS/EPA Regulatory Model (AERMOD)* Sections 2.3.4 and 3.4 (EPA 2021b), Section 7.2.2 of Appendix W to 40 CFR Part 51; see PM hot-spot training slides
DISCCART	X Y (Z)	Z is optional if FLAGPOLE is already defined in CO pathway.
GRIDCART	Use a third-party program if available.	e.g., AERMOD View
Output (OU pathway)	PLOTFILE and/or POSTFILE will be generated if necessary.	PM Hot-Spot Guidance Appendix J.6 (EPA 2021a), *User's Guide for the AMS/EPA Regulatory Model (AERMOD)* Sections 2.3.6 and 3.7 (EPA 2021b)
RECTABLE	24 6th	Because PM should be one or less exceedance per year, with 5 years of meteorological data, the 6th highest concentration at each receptor
PLOTFILE	Optional	
POSTFILE	Optional	
Model runs	Use *User's Guide for the AMS/EPA Regulatory Model (AERMOD)* Appendix B (EPA 2021b) to decode and correct errors.	PM Hot-Spot Guidance Section 7.7 (EPA 2021a), *User's Guide for the AMS/EPA Regulatory Model (AERMOD)* Sections 2.3.7, 2.3.8, and 3.8 and Appendix B (EPA 2021b)

Table 3-4. Methods, Models, and Assumptions for Identifying Background Monitors

Source Type	Description	Reference
Determine Background Concentrations (Step 6)		
Nearby sources	If necessary.	PM Hot-Spot Guidance Section 8.2 (EPA 2021a)
Other sources (ambient monitoring data)	Using a single monitor (most likely option) or interpolating between several monitors. When using a single monitor select a monitor with similar land use to the project that is upwind from the project that is not impacted by exceptional events. Use the fourth-highest reading from 3 years (1,076 days) of monitoring data. To estimate the sixth-highest concentration for each receptor the six highest 24-hour concentrations from each quarter and year of meteorological data will be arrayed together, ranked, then added to the monitor value.	PM Hot-Spot Guidance Section 8.3 (EPA 2021a), PM hot-spot training slides Modules 5 and 6

3.2.3 Project Specific Guidance

The project sponsor shall fill out the Project-Specific MOVES Input Table, shown in Appendix B, with the proposed inputs, parameters, and data sources. This information will be unique to each project and will be used to help focus the discussion during modeling meetings. While the guidance in Appendix B points to potential sources to use, the project sponsor shall list directly the modeling selections chosen so that the inputs may be vetted during IAC.

Furthermore, the project sponsor shall keep a conformity checklist of items completed and in progress to track progress and completion of milestones during the conformity process. While the items to be tracked in the checklist may be flexible and revised along the way, a sample checklist is provided in Appendix E.

3.2.4 Schedule

When a project is located in a nonattainment area, the project sponsor shall assess for conformity and whether IAC is required. The project sponsor shall have 30 business days to complete this analysis. If a hot-spot analysis is determined to be required, then it is requested that consulted parties provide comments or questions on the methods, models, and assumptions as soon as feasible and that the IAC period last 30 business days. A non-response will be interpreted to mean that the party concurs with the planning assumptions as described in Table 3-1 through Table 3-4 above and Appendix B. It is suggested that discussions focus on key project-specific parameters such as why the project needs modeling, receptor grid and locations, background monitor/meteorology data, and build/analysis years to stay on schedule.

At the close of the IAC period, the project sponsor shall have 30 business days to process the final modeling assumptions and model and produce a draft Air Quality Technical Report. All consultation documents should be included in the draft report submittal for review by any consulted parties. Table 3-5 shows the proposed timeline.

Table 3-5. Timeline for Modeling and Draft Air Quality Technical Report

Milestone	Timeline
Conformity assessment	30 business days
IAC period	30 business days
Develop draft report and finalized consultation documents	30 business days

3.3 Project-Level Carbon Monoxide Quantitative Hot-Spot Analysis

Currently, all CO areas meet the NAAQS and are in either attainment or maintenance. A CO hot-spot analysis is required as part of project-level conformity in maintenance areas to demonstrate that the project would not increase the frequency or severity of existing violations or delay timely attainment of the CO NAAQS. A non-exempt project shall either include a qualitative or quantitative project-level conformity analysis. See Appendix A.

3.3.1 Qualitative Project-Level Analysis

If it is determined that a qualitative CO hot-spot analysis is required for conformity under 40 CFR 93.123(a)(2), then project sponsors should then consider whether other requirements for NEPA compliance apply. The demonstrations required by 40 CFR 93.116—localized CO, PM_{10}, and $PM_{2.5}$ violations (hot spots)—may be based on either quantitative methods that represent reasonable and common professional practice or a qualitative consideration of local factors. If these provide a clear demonstration that the requirements of 40 CFR 93.116 are met, they may be presented in an Air Quality Technical Report for a NEPA environmental assessment (EA)/environmental impact statement (EIS).

3.3.2 Quantitative Project-Level Analysis

Project sponsors shall compare their proposed project to the list of project types in 40 CFR 93.123(a), shown below, requiring a quantitative analysis of local CO emissions (hot spots) in nonattainment or maintenance areas. Instructions for project sponsors are described in *italics*. The list of project types includes:

i. Projects in or affecting locations, areas, or categories of sites that are identified in the applicable implementation plan as sites of violation or possible violation.

As of May 2023, there are no such areas in any Arizona implementation plan. The only CO nonattainment or maintenance area in Arizona is the Phoenix area, which is in maintenance through 2025.

ii. Projects affecting intersections that are at Level of Service D, E, or F, or those that will change to Level of Service D, E, or F because of increased traffic volumes related to the project.

Using the latest traffic study, consider the level of service of intersections in the existing, interim (if necessary), and design year affected by the project and the total annual average daily traffic (AADT) for the no-build and build alternatives.

iii. Any project affecting one or more of the top three intersections in the nonattainment or maintenance area with the highest traffic volumes, as identified in the applicable implementation plan, and the three highest traffic volume Intersections in the MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area.

- 16th Street and Camelback Road
- 107th Avenue and Grand Avenue
- Priest Drive and Southern Avenue

iv. Any project affecting one or more of the top three intersections in the nonattainment or maintenance area with the worst level of service, as identified in the MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area.

- 7th Avenue and Van Buren Street
- Germann Road and Gilbert Road
- Thomas Road and 27th Avenue

If a proposed project matches any one of the listed project types above, it is considered a project of local air quality concern and the hot-spot demonstration must be based on quantitative analysis methods in accordance with 40 CFR 93.116(a) and the consultation requirements of 40 CFR 93.105(c)(1)(i).

If it is determined that a quantitative CO hot-spot analysis is required for conformity, then the project sponsor shall either complete a formal Air Quality Technical Report, which is circulated through IAC following the time frame for review and comments as stated in Section 3.2.4 or determine that the project fits the condition of FHWA's 2023 CO Categorical Hot-Spot Finding described in Section 1.3, *Regulatory Framework*. It is recommended that the project sponsor meet with ADOT's Air and Noise team for an early coordination meeting, when ready, rather than waiting for the monthly IAC meeting to introduce the project and determine the best course of action.

3.3.3 Interagency Consultation and Motor-Vehicle Emission Simulator Inputs for Quantitative Project-Level Analysis

As described above in Section 1.3, *Regulatory Framework*, EPA's *Using MOVES3 in Project-Level Carbon Monoxide Analyses* requires IAC to develop a process to evaluate and choose models and associated methods and assumptions to be used in CO hot-spot analyses (40 CFR 93.105(c)(1)(i)) (EPA 2021d). A project can either be screened out based on the *Guideline for Modeling Carbon Monoxide from Roadway Intersections* (EPA 1992) for completing CO screening analyses (that are not related to the calculation of vehicle emission rates) or require a project-specific MOVES3 run(s). For the general steps to complete a MOVES3 run for project-level CO analysis, please refer to Section 2 of EPA's *Using MOVES3 in Project-Level Conformity Analyses* (EPA 2021d).

This Conformity Guidebook splits out the MOVES3 input parameters (Table 3-6 and Table 3-7) into those applicable to multiple projects (Table 3-6) and project-specific parameters (Table 3-7). Table 3-7 Table 3-8 provides general input parameters for CAL3HQC. The project sponsor should fill out these input parameters in consultation with ADOT and other participants in the IAC meeting (e.g., EPA, FHWA, etc.). The project-specific parameters are intended to focus review on the key project-specific characteristics to keep the project on schedule. While the guidance points to potential sources to use, the project sponsor shall list directly the modeling selections chosen so that the inputs may be vetted during IAC.

Table 3-6. Methods, Models, and Assumptions for MOVES3

Estimate On-Road Motor-Vehicle Emissions		
MOVES3.1	**Description**	**Data Source**
Scale	On road, project, inventory.	EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.3.2 (EPA 2021d)
Time span	*Guideline for Modeling Carbon Monoxide from Roadway Intersections* (EPA 1992) conservatively uses a typical peak-hour traffic activity in one MOVES run to generate emission rates.	EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.3.3 (EPA 2021d)
Geographic bounds	Maricopa County; Pima County for any conformity determinations prior to 7/10/2020.	EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.3.4 (EPA 2021d)
On-road vehicles	All fuels and source use types will be selected.	EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.3.5 (EPA 2021d)
Road type	Urban restricted and urban unrestricted access.	EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.3.6 (EPA 2021d)
Pollutants and processes	CO running exhaust, CO crankcase running exhaust.	EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.3.7 (EPA 2021d)
Output	Database will be created, grams, miles, distance traveled, population will be selected. emissions process will be selected in the output emissions detail. Emission rates for each process can be appropriately summed to calculate aggregate CO emission rates for each link.	EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.3.10 (EPA 2021d)
Project data manager	Database and MOVES3.1 templates will be created to include local project data and information provided by MPO, e.g., MAG's or PAG's I/M programs, age distribution data that are consistent with the regional models. The average temperature and humidity in January for meteorology data and the default MOVES fuel data will be used. Links and Link Source Type will be specific to the project as provided by the traffic analysis; any missing information will use default MOVES3.1 data. After running MOVES, the MOVES CO_CAL3QHC_EF post-processing script is run.	*Guideline for Modeling Carbon Monoxide from Roadway Intersections*, Section 4.7.1 (EPA 1992), *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Sections 2.1 and 2.4 for Links (EPA 2021d); the required data necessary to be consistent with regional emissions analysis (40 CFR 93.123(c)(3)). See Table 3-8 below for details.

Table 3-7. Project Data Manager Inputs for MOVES3

Input	Level of Detail/Notes	Possible Data Source
Meteorology	Same for build and no-build scenarios. A minimum of 4 hours (morning peak hours, midday emissions, evening peak, and overnight hours), for 1 day (weekday) and for a winter month (January) is required. May use the County meteorology file for the county used in the latest SIP or regional conformity analysis.	ADEQ, MPO EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.4.1 (EPA 2021d)
Age distribution	Same for build and no-build scenarios unless something about the project would change them.	ADOT, MPO EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.4.2 (EPA 2021d)
Fuel	Same for build and no-build scenarios. May use the fuel file used in the latest SIP or regional conformity analysis if local information is available. Otherwise, MOVES default fuel supply and formulation information can be used.	MPO, MOVES defaults EPA *Using MOVES2014 in Project-Level Carbon Monoxide Analyses*, Section 2.4.3
I/M programs	Same for build and no-build scenarios. Projects in Areas A and B should define the I/M programs. Use MPO data. If not available, may use the MOVES default I/M programs but review the details and make any necessary changes before use. The “No I/M” option is not recommended as inspection and maintenance of engine will impact CO emissions.	MPO, MOVES defaults EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.4.4 (EPA 2021d)
Retrofit data	If necessary. For example, a bus terminal project might include plans to mitigate emissions by retrofitting the bus fleet.	Project-specific modeling EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.4.5 (EPA 2021d)
Links	Unique inputs needed for each run. Requires information on each link’s length (in miles), traffic volume (vehicle per hour), average speed (miles per hour), and road grade (percentage).	Project-specific modeling, ADOT, MPO EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.4.6 (EPA 2021d)
Link source types	Unique inputs needed for each run. Project-specific data are preferred. If the source type distribution can be represented by that of the regional fleet, the data used in the latest regional emissions analysis can be provided.	Project-specific modeling, ADOT, MPO EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.4.7 (EPA 2021d)
Link drive schedules, operating mode distribution	Unique inputs needed for each run. Three options are available: (1) provide average speed and road type through the Links Importer, (2) provide a link drive schedule using the Link Drive Schedule Importer, or (3) provide a detailed operation distribution for the link.	Project-specific modeling, ADOT, MPO EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Sections 2.4.8 and 2.4.9 (EPA 2021d)
Off-network, hoteling	If necessary. For example, a project analysis includes areas where vehicles are not driving on the project links, but still contributing to the project’s emissions.	EPA *Using MOVES3 in Project-Level Carbon Monoxide Analyses*, Section 2.4.10 (EPA 2021d)

Table 3-8. Methods, Models, and Assumptions for CAL3QHC

Select Air Quality Model, Data Inputs, and Receptors		
CAL3QHC	**Description**	**Data Source**
Emissions sources	Emissions rates in grams/mile will be developed using the inputs described in MOVES3.1 section above. The free flow and queue links defined for modeling with MOVES3.1 will be used as input into CAL3QHC.	*Guideline for Modeling Carbon Monoxide from Roadway Intersections*, EPA-454/R-92-005 (EPA 1992). Section 5.2.3 of Appendix W to 40 CFR Part 51, CO screening analyses of intersection projects should use the CAL3QHC dispersion model.
Receptor locations	At least 3 meters from the roadways at a height of 1.8 meters, nearby occupied lot, vacant lot, sidewalks, and any locations near breathing height (1.8 meters) to which the general public has continuous access.	*Guideline for Modeling Carbon Monoxide from Roadway Intersections*, Section 2.2 (EPA 1992)
Traffic and geometric design	Lane configuration, lane width, signalization, turning movements, median width, traffic volume, level of service, grade, percentage of heavy-duty trucks, and peak hour average approach speed.	*Guideline for Modeling Carbon Monoxide from Roadway Intersections*, Section 4.7.4 (EPA 1992)
Meteorology	Temperature, wind speed, wind direction, atmospheric stability class, mixing heights, and surface roughness.	*Guideline for Modeling Carbon Monoxide from Roadway Intersections*, Section 4.7.1 (EPA 1992)
Persistence factor	Local persistence factor based on monitoring data. If it is not available, use a default persistence factor of 0.7 for an 8-hour averaging time.	*Guideline for Modeling Carbon Monoxide from Roadway Intersections*, Section 4.7.2 (EPA 1992)
Determine Background Concentrations		
Background monitor	Should be obtained from a monitoring site not affected by the intersection of interest. Should be adjusted for the future by multiplying the present CO background by the ratio of future to current MOVES CO emission factor and multiplying by the ratio of future to current traffic.	*Guideline for Modeling Carbon Monoxide from Roadway Intersections*, Section 4.7.3 (EPA 1992)

Construction emissions need to be addressed if construction lasts longer than 5 years at any individual site. In the context of CO, this is usually excess CO emissions because of traffic delay and/or detours. According to 40 CFR 93.123(c)(5), sites affected by construction-related activities shall be considered separately using established methods. If applicable, include analysis as an appendix to the Air Quality Technical Report.

To support the conclusion that a project meets conformity under 40 CFR 93.116 and 93.123, at a minimum, the documentation shall include the following:

- Description of proposed project, opening date, and projected travel activity data
- Analysis years examined and factors considered in determining years of peak emissions
- Emissions modeling data, model used with inputs and results, and characterization of project links

- Model inputs and results for road dust, construction emissions, and emissions from other sources, if needed
- Air quality modeling data, including model used, inputs, and results and receptors
- Method of determining background concentrations
- Any mitigation and control measures implemented
- How interagency and public participation requirements were met
- Conclusion that the proposed project meets conformity requirements
- Sources of data for modeling

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4 TRAFFIC INPUT DATA NEEDS FOR AIR QUALITY ANALYSIS

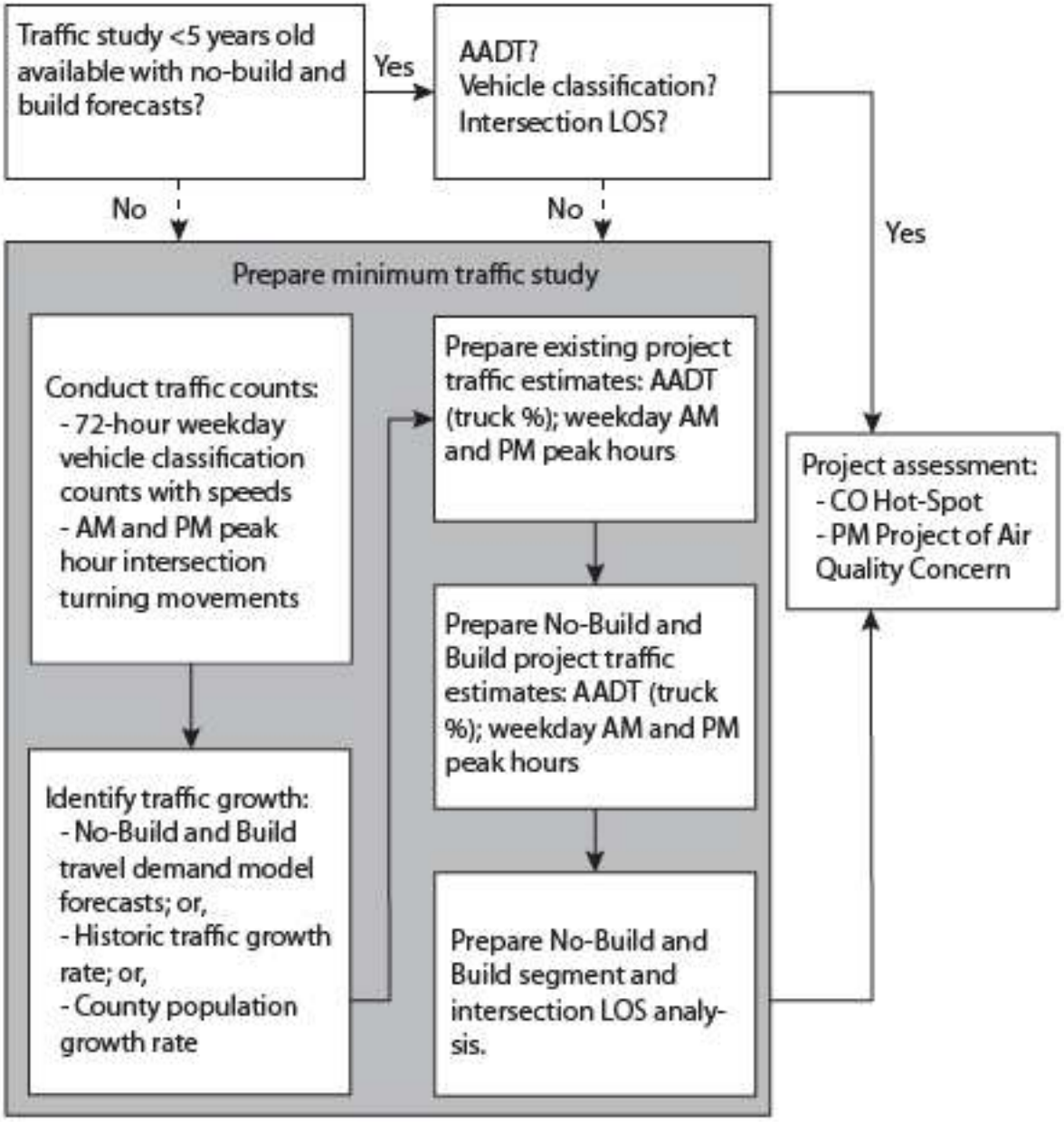
Traffic data for a project-level air quality analysis should be less than 5 years old. Other traffic data requirements include:

- No-build and build scenario traffic forecasts
- AADT
- Truck percentage data (using the 13 vehicle classes in MOVES3, not the ADOT vehicle classifications)[9]
- Intersection level of service

There are several potential sources of project-level vehicle activity data. The design concept report provides most traffic data needed for project-level air quality studies, including current and design year daily and peak hour traffic volumes, truck factors, and intersection turning movement counts. If a design concept report is not available or its traffic data are incomplete or more than 5 years old, traffic inputs can be prepared from other data sources. Figure 4-1 shows a flow chart for determining whether a traffic study is required to prepare data for the project-level air quality conformity analysis.

[9] https://github.com/USEPA/EPA_MOVES_Model/blob/master/docs/MOVES3CheatsheetOnroad.pdf

Figure 4-1. Project-Level Air Quality Conformity Traffic Study Flow Chart



4.1 Traffic Impact Analysis Study

The traffic impact analysis study document includes existing traffic and no-build and build traffic volume and speed estimates for each roadway link inside the study area. The traffic impact analysis report uses traffic count data, regional TDM estimates, or other techniques to prepare study area project traffic estimates. Appendix C includes a traffic data request checklist and a traffic impact analysis study outline. Several of the tools used to prepare the traffic impact analysis include TransCAD, Synchro, and traffic microsimulation software.

4.1.1 TransCAD

The TransCAD software package is the primary interface for most of Arizona's TDMs. The analyst preparing traffic data for hot-spot analysis may provide no-build and build socioeconomic and transportation network information to the MPO modeling team in TransCAD format. This may include preparing population and employment estimates and updating model roadway geometry.

Results from each completed model scenario are typically supplied in a geographic database with a linked table showing the traffic volumes and speeds. The database will have volume and speed estimates for passenger vehicles and trucks. The analyst will use the TransCAD geographic information system interface to select the highway network links for the analysis area and identify the traffic information.

After the links are selected, the steps to transform the traffic data for the MOVES software typically occurs in a spreadsheet. Inputs for a typical project-level hot-spot analysis include:

- A defined study area with roadways included within 1,000 feet from selected intersections
- Build year traffic volumes for each roadway inside the study area:
  - Build scenario
  - No-build scenario
- Build year average speed (including delays) for each roadway inside the study area:
  - Build scenario
  - No-build scenario
- Build year vehicle classification for the MOVES vehicle types:
  - Build scenario
  - No-build scenario

4.1.2 Synchro

A level-of-service screening analysis may be required for predicting pollutants near intersections. While TransCAD is the interface for the regional TDMs, the Synchro software package is used to analyze signalized intersection operations. While setting up the Synchro model is a manual process, it can be used to automatically optimize traffic signal timings for no-build and build scenarios. Synchro inputs include:

- Intersection geometry, including the number of approaches and the number and type of lanes in each approach
- Traffic signal timing information
- Morning and afternoon peak hour approach volumes by lane
- Heavy, medium, and light truck percentages by approach

4.1.3 Traffic Microsimulation Software

Traffic microsimulation software such as VISSIM or TransModeler provide roadway segment operations analysis. Similar to Synchro, these models require information on lane geometry and

peak hour traffic volumes to estimate level of service. Analysts typically use a spreadsheet to transform TDM forecasts for input into the models.

4.2 Motor-Vehicle Emission Simulator Traffic Inputs

Project-level MOVES analysis requires traffic volume, speed, and roadway slope information for each roadway link in the air quality analysis area.

MOVES traffic inputs typically include the morning and afternoon peak hours and no-build and build scenarios. Build scenarios with traffic mitigation may also be simulated. For example, Maricopa County is in maintenance for CO until 2025 and is a serious nonattainment area for PM_{10}. With both morning and afternoon peak hours and no-build and build scenarios, a basic project-level conformity analysis requires four MOVES runs (2 peak hours × 2 analysis scenarios).

4.3 AERMOD Traffic Data

For CO and PM hot-spot analysis, AERMOD is used to conduct dispersion modeling at signalized intersections. Typically, the roadway links within 1,000 feet from each direction of the signalized intersections will be included in the AERMOD model. The AERMOD model uses the peak hour roadway emission factors from the MOVES model and then analyzes the dispersion of project-related roadway emissions either as a line area source or as a line volume source.

In addition to roadway emissions data, AERMOD requires geospatial project design data (Caltrans 2017). This is typically imported into AERMOD from a computer-aided design system file. Spatial data may also be imported from an online map server.

4.3.1 Data from Motor-Vehicle Emission Simulator

The key step in preparing the MOVES emission factor for AERMOD is converting the peak hour emissions from grams per vehicle mile of travel per hour into an AERMOD area source in grams per second per square meter:

$$\frac{g}{s-m^2} = \frac{\frac{g}{VMT-hr} \times VMT \times \frac{1hr}{3600s}}{road\ segment\ length\ \times\ width\ (meters)}$$

The roadway link length in AERMOD in meters should be consistent with the length in the LinkLength attribute on MOVES. The width of each link should be consistent with the sum of all lanes in each direction.

Emission height is another AERMOD input. There could be two area sources—one above the other—to cover emissions from cars and trucks separately. Alternately, one area source with the weighted average vehicle height may be used.

According the EPA *User's Guide for the AMS/EPA Regulatory Model (AERMOD)*, the initial vertical dimension in the AERMOD should be equal to the release height divided by 2.15 (EPA 2021b).

5 AIR QUALITY TECHNICAL REPORT REQUIREMENTS

If, during IAC, it is determined that an Air Quality Technical Report is required to support a conformity determination, then the following chapter provides guidance for the information that should be included in the report. Please see Appendix D for an illustrative outline.

The report should include a discussion of the project's potential air quality impacts and compliance with the conformity requirements of the Clean Air Act. Depending on whether the report is supporting an exemption, EA, or EIS, more or less description of the topic areas listed below may need to be included. For an EIS, each alternative must be described with an equal level of analysis for comparison. For an EA, the project alternative may be compared only to the no-action alternative. For further requirements, ADOT recommends referring to the guidance in *Addressing Air Quality Issues in the NEPA Process for Highway Projects Practitioner's Handbook* (AASHTO 2017).

The report shall be divided into the following topic areas:

Report cover page

This section of the report shall include the following information:

a. Project name, number, and subaccount code

b. NEPA class of action (CatEx, EA, EIS)

c. Report date (month, day, year)

d. ADOT region and address for which the report was prepared

e. Consulting company name, address, and phone number that prepared the report

1. Project Description

This section of the report shall include the following information:

a. Introduction

b. Project purpose and need

c. Project location, both general and specific, including a figure

d. Project description, including the project sponsor, NEPA project description, and ADOT's fiscal year(s) for construction

e. Description of project alternatives

2. Regulatory Framework

a. Provide an overview of any criteria pollutants and mobile-source air toxics (MSATs), including any relevant standards, emission sources, and health effects. State what type of analysis is required for each pollutant as it relates to NEPA or conformity.

b. Include a description of relevant regulations at the federal, state, and local levels. For local regulations, include any plans/studies conducted by the local MPO, air district, or city/county.

3. Affected Environment

Describe the existing-conditions data for the project location, including the project setting, regional NAAQS status, weather data (if modeled), NAAQS pollutant monitoring data, and sensitive receptor locations.

a. **Project setting:** Identify the local setting of the project with respect to air quality. Describe the climate, meteorology, and topography at the project site. Identify if the project is in an urban versus rural area. Identify the land uses within the project area and surrounding areas.

b. **Regional NAAQS status:** Provide a project-specific table with the following information:

- Pollutant (CO, PM_{10}, $PM_{2.5}$, and O_3)
- NAAQS and its units (e.g., parts per million [ppm])
- NAAQS status (attainment, maintenance, nonattainment)
- NAAQS classification (e.g., “severe,” “moderate”) (“not applicable” for attainment areas)
- Year the standard for maintenance or nonattainment was established (“not applicable” for attainment areas)
- Anticipated year for end of maintenance period (“not applicable” for nonattainment or attainment areas)
- Relevant SIPs by title and date for each pollutant for which the project area is in nonattainment or maintenance (“not applicable” for attainment areas)

Obtain the current NAAQS and NAAQS status at the time of the analysis. The project area NAAQS status can be determined by checking EPA’s website (https://www.epa.gov/green-book) and ADEQ’s website (https://azdeq.gov/nonattainment_areas)

c. **Weather data:** Describe the weather data used for pollutant dispersion modeling, if the project was modeled.

d. **NAAQS pollutant monitoring data:** Provide monitoring data from the station(s) that best represents the project area for pollutants for which the project has nonattainment and/or maintenance areas. Selection of the monitoring station(s) most representative for a project site may require consultation with ADOT or EPA. Generally, 3 years of air quality data from the nearest monitoring station(s) should be used as a demonstration of the air quality trends.

e. **Sensitive receptors:** If the project was modeled for PM and/or CO hot spots, discuss the sensitive receptors within 0.25 mile of the project area (e.g., homes, schools, daycare facilities, elder-care facilities).

4. Conformity Determination

a. State whether conformity is applicable to the project (40 CFR 93). If so, for project-level conformity, state whether the project was exempt (Table 2 of 40 CFR 93.126 or 40 CFR 93.128) or required a qualitative analysis or a quantitative analysis. For regional conformity (40 CFR 93.127), check if regional conformity applies and, if so, include the TIP or RTP number and project information consistent with the project description written in the report.

b. For conducting a project-level conformity evaluation, please refer to Chapter 3.

c. The hot-spot analysis, if applicable, should contain information regarding the analysis years, geographic area, emissions model, other emissions, air quality dispersion model, background concentrations, and mitigation. Provide the raw files of the supporting traffic data that were inputted into the dispersion model, spreadsheet of dispersion model inputs, air quality dispersion model input and output files, and any post-processing spreadsheets used for tables in the Technical Appendices section.

d. Describe IAC activities and include a record of any meetings or correspondence that occurred. If consultation was not conducted, include a justification on why it was not required.

e. Determine if an O_3 conformity determination is applicable or state if the project is exempt.

5. Environmental Consequences

a. Provide the methodology and calculations of the criteria pollutant emissions for each build and no-build alternative.

b. Consistent with FHWA Updated Interim Guidance on MSAT Analysis in NEPA Documents[10], published in January 2023, state whether the project will have no potential for meaningful impacts (no analysis required), low potential for MSAT effects (qualitative analysis required), or higher potential for MSAT effects (quantitative analysis required). If a qualitative analysis is required, include background information on MSATs, MSAT emission trends, sensitive receptors, traffic volumes, MSAT discussion including health effects (see FHWA guidance), and justification of why the analysis was needed. A quantitative analysis will follow the same format as the qualitative analysis but would also include technical methods and inputs and discussion of the IAC process.

6. Mitigation Strategies

Mitigation strategies will be split between construction and operation as needed. During construction, refer to the local air district for any requirements related to dust mitigation and consider whether any alternative fuel, electric, or Tier 4 equipment will be used.

[10] https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/

During operation, mitigation may consider methods to improve traffic flow such as traffic signal optimization, high-occupancy vehicle (HOV) lanes, and transit use.

7. References

8. Technical Appendices

The appendices may include any dispersion modeling maps, sensitive receptor maps, EPA emission model input/output files, CAL3QHC/AERMOD input/output files, traffic data, conformity documentation correspondence including memoranda prepared for IAC review, assumptions, and any other files used in the preparation of the report.

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Appendix A: PM and CO Hot-Spot Questionnaire for Conformity

(Contact: adotairnoise@azdot.gov)

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Appendix B: Project-Specific MOVES Input Table

(To be provided project by project)

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Appendix C: Traffic Impact Analyses

Traffic Data Request Checklist

The project development team may complete the proposed checklist to guide vehicle activity data requests to prepare traffic studies. The completed checklist would outline the traffic study scope of work.

ID	Yes	No	Question
Travel Model Availability			
1	☐	☐	Is a regional conformity model available? (Yes: #1a; No: #1b)
1a			Confirm approved air quality conformity model forecast year.
			Current year: _____; Forecast year: _____.
1b			If MPO area, confirm travel model forecast year.
			Current year: _____; Forecast year: _____.
1c			Otherwise, confirm AZTDM travel model forecast year.
			Current year: _____; Forecast year: _____.
Vehicle Classification Data			
2	☐	☐	Are travel model vehicle classification estimates consistent with traffic counts? (Yes: #3; No: #2a)
2a	☐	☐	Are TDMS classification average daily traffic counts available nearby? (Yes: #2c; No: #2b)
2b			Estimate vehicle classification counts based on data from nearest ADOT permanent continuous count station.
2c			Forecast design year average daily traffic volumes by growing counts based on travel model traffic growth rate.
Vehicle Speed Data			
3	☐	☐	Are travel model peak hour speed estimates consistent with observed data from Google Maps or RITIS? (Yes: #4; No: #3a)
3a	☐	☐	Are TDMS traffic counts with speed data available nearby? (Yes: #4; No: #3b)
3b			Use RITIS probe data to estimate vehicle speeds by time-of-day.
Peak Hour Traffic Volumes			
4	☐	☐	Are travel model peak hour traffic volume estimates acceptable? (Yes: #5; No: #4a)
4a	☐	☐	Are TDMS traffic counts with peak hour traffic data available nearby? (Yes: #5; No: #4b)
4b			Use nearest ADOT permanent continuous count station data to estimate project peak hour traffic volumes based on average daily traffic.
Intersection Turning Movements			
5	☐	☐	Are intersection turning movement volumes needed? (Yes: #5a; No: stop)
5a	☐	☐	Are intersection turning movement counts available? (Yes: stop; No: #5b)
5b			Evaluate travel model or Streetlight probe data for development of intersection turning movement counts.

Study and Report Format

Traffic data prepared for a project-level air quality conformity assessment should be documented in a brief memorandum generally following the ADOT *Traffic Engineering and Guidelines and Processes Section 240 Traffic Impact Analyses* outline. This memorandum should include:

1) Introduction and Summary
    a. Purpose of report and study objectives
    b. Executive summary
        i. Study area location
        ii. Roadway system improvement description
        iii. Principal findings
        iv. Conclusions
2) Roadway system improvement description
    a. Location
    b. Description of no-build and build roadway system
    c. Land use and intensity
3) Analysis of Existing Conditions
    a. Traffic volumes with vehicle classification
        i. Daily, morning, and afternoon peak periods (2 hours), and others as required
    b. Level of service
        i. Morning peak hour, afternoon peak hour, and others as required
    c. Travel speeds
    d. Distribution of traffic across multiple-lane facility (if applicable)
    e. Hourly diurnal traffic distribution from traffic counts
4) Projected Traffic
    a. Horizon year
    b. Source of traffic growth projections
    c. Discussion of regional TDM (if applicable), including mention of base year and horizon year.
    d. Discussion of other traffic growth projection method (if applicable)
5) Traffic and Improvement Analysis
    a. Projected traffic volumes with vehicle classification
        i. Daily, morning, and afternoon peak periods (2 hours), and others as required
    b. Future Level of service
        i. Morning peak hour, afternoon peak hour, and other as required
    c. Travel speeds
    d. Distribution of traffic across multiple-lane facility (if applicable)
6) Conclusions
7) Appendices
    a. Traffic counts
    b. Capacity analyses worksheets
    c. Traffic build and no build summary tables
        i. AADT and truck volumes
        ii. Level of service
            1. Segment
            2. Intersection

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Appendix D: Air Quality Technical Report Outline

- Project Mapping with Receptors

- EPA Emission Model Input/Output Files
- CAL3QHC/AERMOD Input/Output Files
- Traffic Data Used in the Analysis
- Conformity Documentation
- Correspondence including memos prepared for IAC review
- List of Assumptions

Appendix E: Conformity Checklist