Interagency Consultation Procedures for NEPA Projects

Introduction

In December of 2013, ADOT developed a draft "*Air Quality Guidebook for Transportation Conformity*" that developed examples and recommendations for implementing conformity in Arizona, this section was developed as Chapter 2 and Working Paper 2 in draft form. This is an update to that chapter and will be included as an update to the Guidebook when final. This chapter focuses exclusively on the interagency consultation component of transportation conformity.

Review of Existing Requirements and Practices

Federal Regulations and Guidance

The federal conformity rule (40 CFR 93), in addition to any existing applicable state requirements, establish the conformity criteria and procedures necessary to meet the requirements of the Clean Air Act section 176(c) until such time as EPA approves a conformity state implementation plan (Conformity SIP) required by 40 CFR 51.390.

Arizona does not currently have an EPA approved Conformity SIP. Conformity SIPs are required under the Clean Air Act and the regulations that explain the requirements can be found in the conformity rule (40 CFR 51.390). While EPA has not taken action to penalize Arizona, they have the authority, under the Clean Air Act, to do so.

Conformity SIPs are REQUIRED under the Clean Air Act.

Transportation conformity regulations (40 CFR 93.105) require interagency consultation and outline general factors, specific procedures, resolution of conflicts, and public consultation procedures. Further, the regulations require the development of a state implementation plan (40 CFR 51.390) which must include procedures to be undertaken before making conformity determinations or developing implementation plans. Agencies involved should include MPOs, state departments of transportation, and FHWA / FTA, state and local air quality agencies, and EPA.

Interagency consultation is required in all nonattainment and maintenance areas where conformity applies and ensures that agencies involved in the conformity process meet regularly, share information, and identify key issues early in the conformity process. Additionally, the process ensures that schedules are coordinated for transportation plan / transportation improvement program (TIP) conformity determinations and SIP development.

Interagency consultation procedures for a nonattainment or maintenance area are formally integrated into the Conformity SIP, and are legally enforceable. A state's Conformity SIP, or the federal regulations (40 CFR 93.105) govern the decision-making process and specifically require that a process be established to evaluate and choose a model, associated methods, and any assumptions that will be used in the regional emissions analysis. Figure 2-1 outlines some of the general and specific processes identified in the conformity rule.

Figure 2-1: General and Specific Interagency Consultation Requirements

In January 2009, EPA issued a guidance document, *Guidance for Developing Transportation Conformity State Implementation Plans (SIPs)*, designed to provide guidance on the statutory and regulatory requirements for states to develop conformity state implementation plans.

The Clean Air Act Section 176(c)(4)(E) and section 51.390(b) of the conformity rule now require states to submit Conformity SIPs that address only the following provisions of the federal conformity rule:

- 40 CFR 93.105, which addresses consultation procedures
- 40 CFR 93.122(a)(4)(ii), which states that Conformity SIPs must require that written commitments to control measures be obtained prior to a conformity determination if the control measures are not included in a MPOs transportation plan and TIP, and that such commitments be fulfilled; and
- 40 CFR 93.125(c), which states that Conformity SIPs must require that written commitments to mitigation measures be obtained prior to a project-level conformity determination, and that project sponsors comply with such commitments.

Appendix A of the EPA Guidance includes a detailed checklist intended to guide state and local agencies as they establish or revise a Conformity SIP and to help ensure that all relevant conformity rule requirements (40 CFR 93) are addressed.

In July 2012, EPA issued a guidance document, *Guidance for Transportation Conformity Implementation in Multi- Jurisdictional Nonattainment and Maintenance Areas*, designed to provide transportation conformity guidance for areas where multiple MPOs, state, and/or other agencies have jurisdiction in a nonattainment or maintenance area.

The agencies responsible for the conformity determination and regional emissions analysis in multi- jurisdictional nonattainment and maintenance areas must develop interagency consultation procedures to address certain decisions including:

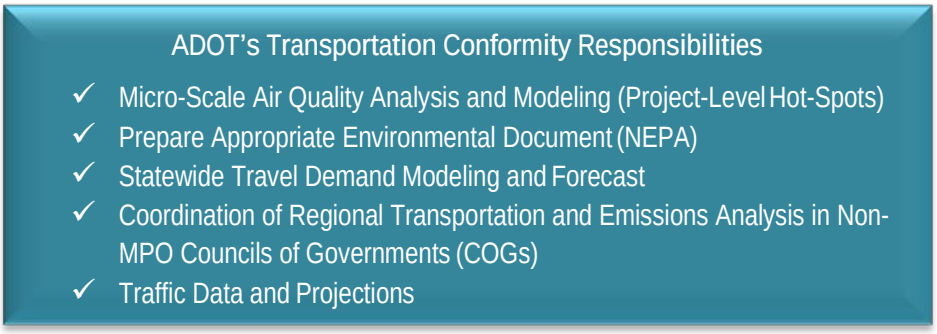
- The timing of individual transportation plan and TIP conformity determinations in those circumstances where they need to be coordinated;
- The analysis years that will be examined in the regional emissions analysis;
- The agency that will analyze emissions for any donut area that is part of the nonattainment or maintenance area;
- The emissions model to be used for the regional emissions analysis, in the case where there is more than one model that could be used (e.g., during a new model grace period);
- The planning assumptions to be used in the regional emissions analysis and the sources of that information.

Per 40 CFR 93.105(b)(1), state air agencies must use the interagency consultation process in developing SIP budgets, including establishing subarea budgets for MPOs or individual state budgets in multi-jurisdictional areas.

Existing Arizona Regulations and Procedures

In April 1995, the Arizona Department of Environmental Quality (ADEQ) adopted transportation conformity rules as required under Section 176(c) of the 1990 Clean Air Act Amendments. The rules were published (adopted effective) in the Arizona Administrative Code (AAC) Title 18, Chapter 2, Article 14. The Arizona Conformity Rules have not been formally adopted by EPA and, as a result, the federal conformity rule, (40 CFR Parts 51 and 93) updated in April 2012, is currently used by Arizona. ADOT's general responsibilities with respect to transportation conformity are outlined in Figure 2-2.

Figure 2- 2: ADOT's Transportation Conformity Responsibilities



Subsequent to the Arizona conformity rule adoption in the AAC, ADOT issued two interagency consultation guidance documents:

Arizona Department of Transportation Conformity Guidance and Procedures Required under Arizona Administrative Code Sections R18-2-1405 (R) and R18-2-1429 (D) which outlines project-level procedures for determining whether a project is regionally significant and performing a conformity analysis / determination if required. This guidance only applies to PM_{10} areas that are outside of the following MPOs, Maricopa Association of Governments (MAG), Pima

Association of Governments (PAG), and the Yuma Metropolitan Planning Organization (YMPO).

ADOT Conformity Consultation Processes for the Nonattainment Areas Outside of a Metropolitan Planning Organization as Required under Arizona Conformity Rule which documents ADOT's interagency consultation processes for PM_{10} areas outside of MPOs. The guidance specifically addresses subsections C, M, N, O, and R of Arizona's Conformity Rule (R18-2-1405).

The guidance documents provide a background regarding Arizona policies, but must be updated to reflect Arizona's current air quality status and to meet the requirements of the current conformity rule using the most recent EPA guidance. ADEQ held a public workshop on revising the Arizona Administrative Code Title 18, Chapter 2, Article 14 on November 15th, 2017 and plans to submit agencies consultation processes to EPA in Spring 2018.

There are sixteen nonattainment areas in Arizona, comprised of partial sections of nine separate counties, which require transportation conformity. The areas are covered by three MPOs or COGs and three of the counties also have county air pollution control agencies. Table 2-1 provides a streamlined outline of the MPO / COG areas and corresponding counties which are currently required to perform regional and project-level conformity determinations.

Table 2-1: Current Regional and Project-Level Conformity Requirements in Arizona

	MPO / COG Area	County (ies)	Pollutants	Both Regional & Project-Level	Project-Level Only
Larger MPOs	MAG	Maricopa	CO, Ozone, PM_{10}, $PM_{2.5}$	X	
	PAG	Pima	CO, PM_{10}	X	
Smaller MPOs / COGs	CAG	Pinal	PM_{10}	X	
	CAG	Gila	PM_{10}		X
	SCMPO	Pinal	$PM_{2.5}$, PM_{10}	X	
	SEAGO	Santa Cruz	$PM_{2.5}$, PM_{10}	X	
	SEAGO	Cochise	PM_{10}	X	
	WACOG	Mohave	PM_{10}		X
	YMPO	Yuma	PM_{10}	X	

Development of ADOT Consultation Requirements and Practices

Note: ADOT intends on relying on some portions of the conformity rule verbatim w/out developing specific processes, where practicable. In Areas w/out MPO when the word MPO is used it should be read as ADOT.

Commitments for Regional Emissions Analysis [R18-2-1403]

The designated MPO pursuant to A.R.S. § 49-406, or ADOT where no MPO is designated, will not include emissions reduction credits from control measures that are not included in the transportation plan or TIP and that do not require a regulatory action in order to be implemented may not be included in the regional emissions analysis used in the conformity determination unless the MPO, or ADOT, obtain written commitments, as defined in R18-2-1401, from the appropriate entities to implement such control measures. The appropriate entities must provide such written commitments to the designated MPO, or ADOT, before a conformity determination can be made. The appropriate entities must obtain and fulfill such written commitments before a conformity determination can be made.

Commitments for Transportation Project-Related Mitigation and Control Measures [R18-2-1404]

A. The project's sponsor or operator must provide the designated MPO pursuant to A.R.S. § 49-406, or ADOT where no MPO is designated, or FHWA/FTA, written commitments, as defined in R18-2-1401, to implement any project-level mitigation or control measures, which are identified as conditions for NEPA process completion, in the construction or operation of the project. The project sponsor or operator must fulfill such written commitments to implement those project-level mitigation or control measures.

B. Prior to making a conformity determination, the designated MPO pursuant to A.R.S. § 49-406, or ADOT where no MPO is designated, must also obtain written commitments for project-level mitigation or control measures which are conditions for making conformity determinations for a transportation plan or TIP, and are included in the project design concept and scope which is used in the regional emissions analysis.

C. Written commitments must be obtained before such mitigation or control measures are used in a project-level hot-spot conformity analysis for a project-level determination.

Consultation Procedures [R18-2-1405]

A. Applicability. This section includes procedures for transportation conformity-related interagency consultation (Federal, State, and local), public consultation, and resolution of conflicts. Notwithstanding this section, each entity listed in subsection (B) below shall follow federal and state law regarding the execution of conformity determinations, and associated public process applicable to each entity's respective responsibilities.

B. Consultation Groups.

Table 2-2: Required Consultation Groups

	ADOT	MPO	ADEQ	Air Quality Control Agencies	Other Local Transportation Agencies/COGS	USDOT, FHWA/FTA	EPA	SIP Implementing Organization
Group 1	X	X	X	If Present	X	X	X	X
Group 2	X	X	X	If Present	X	X	X	
Group 3	X	If Designated	X	If Present	X			

C. Consultation Procedures.

1. Notification: Each lead agency in an interagency consultation process must confer with all other agencies identified in subsection (B) as applicable and must give reasonable notice to such other agencies before making conformity determinations.

2. Consultation: The lead agency is responsible for ensuring a reasonable opportunity for consultation including the following:

a. Provide reasonable notice of the project, document, or decision early in the development phase.
b. Confer with all other agencies in the group that have an interest in the document or decision to be developed.
c. Provide to the other agencies information describing the upcoming decision process.
d. Provide access to all information needed for meaningful input, including distributing or providing access to draft documents if applicable.
e. Convene consultation meetings and establishing meeting agendas throughout the development phase.
f. Ensure notification of project developments or amendments, of any significance, to all agencies involved.
g. Solicit early and continuing input from those agencies, including providing an opportunity for informal question and answers on the draft document or proposed decision.
h. The lead agency shall consider the views of each agency and respond to significant comments in a timely, substantive written manner prior to taking any final action and shall consider such views when taking the final action.

i. Provide final documents and supporting information upon request.
j. Provide reasonable opportunity for formal question and answer sessions upon request of any of the assigned group entities, except federal entities.
k. Provide final documents and supporting information to each agency after approval or adoption.

R18-2-1405(D)(4) **Long Range Statewide Transportation Plan and Statewide Transportation Improvement Program**. ADOT shall be the lead agency, including in donut areas, and shall ensure adequacy of consultation for the Statewide Transportation Plan and Statewide Transportation Improvement Program, including the processes listed in subsections (D)(4)(a) through (D)(4)(k) below, in addition to the public processes in subsection (F).

a. ***Determining Conformity [Consultation with Group 1]***

b. ***Evaluating and choosing a model or models and associated methods and assumptions to be used in hot-spot analysis and regional emissions analyses [Consultation with Group 2]***

c. ***Determining which minor arterials and other transportation projects should be considered "regionally significant" for the purpose of a regional emissions analysis (in addition to those functional alternatives to regional highway travel), and which projects should be considered to have a significant change in design concept and scope from the transportation plan or TIP. [Consultation with Group 2]***

d. ***Evaluating whether projects otherwise exempted from conformity determinations should be treated as non-exempt in cases where potential adverse emissions impacts may exist for any reason. [Consultation with Group 2]***

e. ***Determining whether past obstacles to implementation of TCMs that are behind the schedule and are established in the applicable implementation plan have been identified and are being overcome; determining whether State and local agencies with influence over approvals or funding for TCMs are giving maximum priority for approval or funding for TCMs; and determining whether delays in TCM implementation necessitate revisions to the applicable implementation plan to remove TCMs or substitute TCMs and other emission reduction measures. [Consultation with Group 2]***

f. ***Amending a transportation plan or transportation improvement program to merely add or delete exempt projects listed in 40 CFR 93.126 or 40 CFR 93.127. [Consultation with Group 2]***

g. ***Choosing conformity tests and methodologies for isolated rural nonattainment and maintenance areas, as required by 40 CFR 93.109(g)(2)(iii). [Consultation with Group 2]***

h. ***Evaluating events that trigger new conformity determinations in addition to those SIP-related events in 40 CFR 93.104. [Consultation with Group 3]***

i. ***Analyzing emissions for transportation activities which cross the borders of MPOs, nonattainment areas, or air basins. [Consultation with Group 3]***

j. ***Ensuring that plans for construction of regionally significant projects which are not FHWA/FTA projects (including projects for which alternative locations, design concepts and scope, or the no build option are still being considered), including all those by recipients of funds designated under Title 23 of the U.S.C. or the Federal Transit Act are disclosed to the MPO on a regular basis, and to assure that any changes to those plans are also immediately disclosed to the MPO. [Consultation with Group 3]***

k. Designing, scheduling, and funding research and data collection efforts and regional transportation model development. [Consultation with Group 2]

R18-2-1405(D)(6) ***Project-Level Conformity. ADOT shall ensure adequate consultation for:***

a. Determining project-level conformity determinations.
b. Developing procedures for approving or adopting projects.

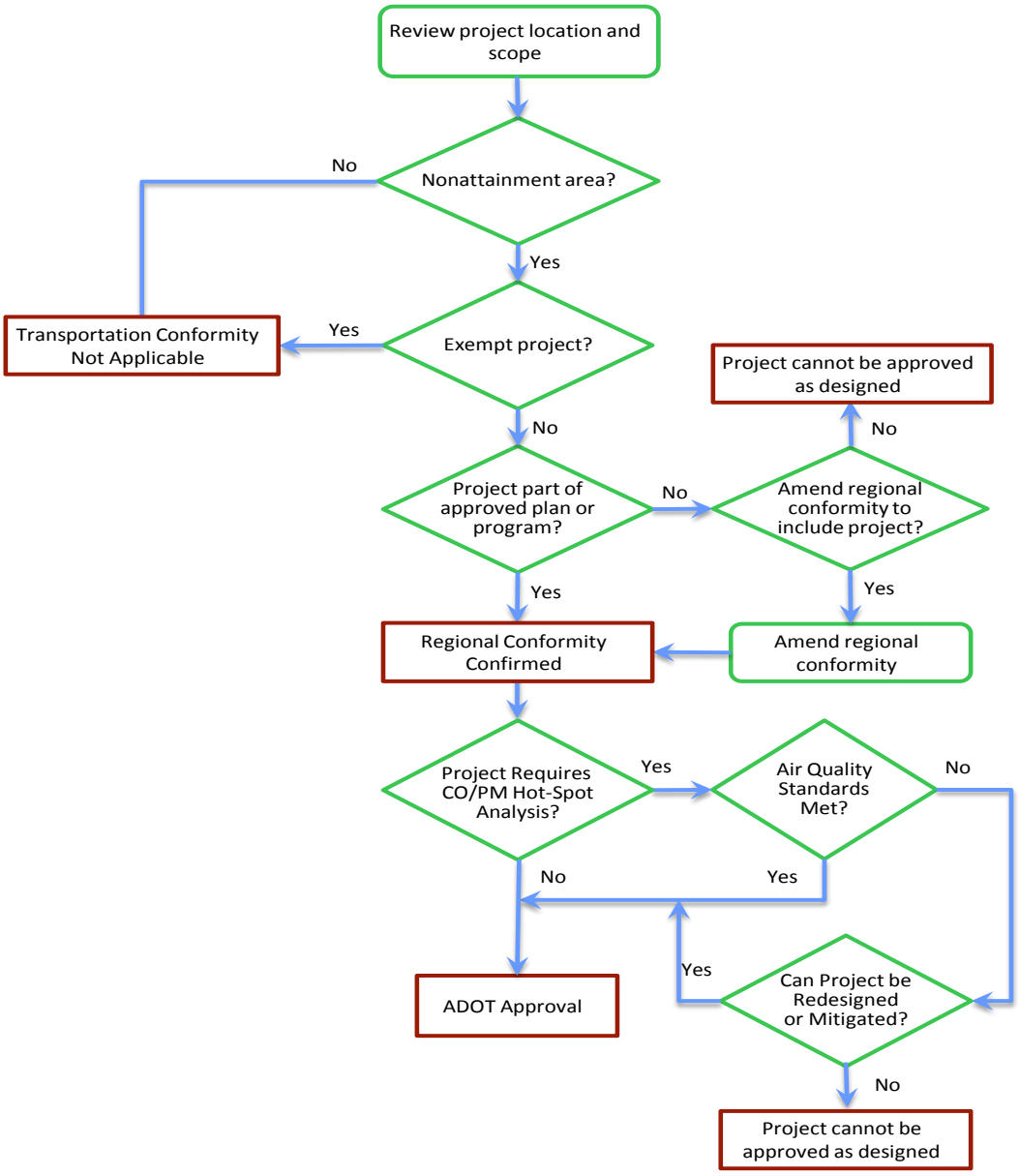
R18-2-1405(F) **Public Consultation**. Affected agencies making conformity determinations on transportation plans, programs, and projects shall establish a proactive public involvement process which provides opportunity for the public review and comment by, at a minimum, providing reasonable public access to technical and policy information considered by the agency at the beginning of the public comment period and prior to taking formal action on a conformity determination for all transportation plans, and TIPs, consistent with federal requirements in 40 CFR 93.112, 23 CFR 450.210, and 40 CFR 450.316. Agencies involved in conformity determinations should ensure any charges imposed for public inspection or copying are reasonable. Agencies must specifically address in writing all public comments that known plans for a regionally significant project which is not receiving FHWA or FTA funding or approval have not been properly reflected in the emissions analysis supporting a proposed conformity finding for a transportation plan or TIP. Affected agencies will also provide opportunity for public involvement in conformity determinations for projects where otherwise required by law.

R18-2-1405G. **Resolution of Conflicts**. Conflicts among State agencies or between State agencies and an MPO shall be escalated to the Governor if they cannot be resolved by the heads of the involved agencies. The agencies and MPOs shall make every effort to resolve any differences before appealing to the Governor, including good faith engagement in all of the steps in consultation procedures. ADEQ has 14 calendar days to appeal a proposed determination of conformity or other policy decision under this Section to the Governor after notification from an MPO or ADOT of resolution of all comments on such conformity determination or policy decision. The 14-day appeal period will begin at the time the MPO or ADOT has confirmed receipt by ADEQ of the resolution of comments. The final conformity determination must have the Governor's concurrence. If there is no appeal by ADEQ within 14 days, the MPO or ADOT may proceed with the final conformity determination. The Governor may delegate his or her role in this process, but not to the head or staff of ADEQ, a local air quality agency, ADOT, transportation commission or board, or an MPO.

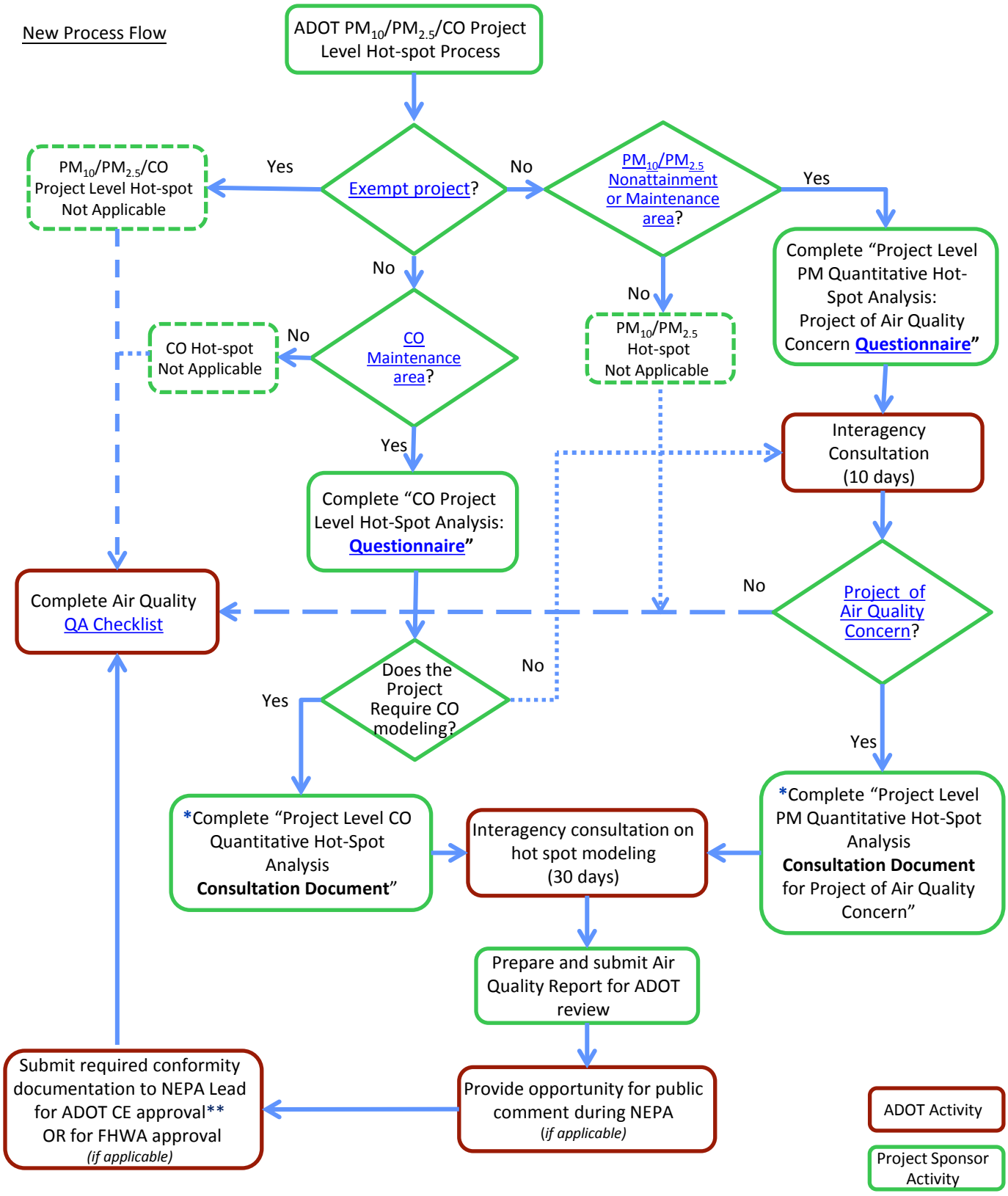
Revised ADOT Processes for Transportation Conformity Consultation

Process for R18-2-1405(D)(4)(a): Determining Conformity.

New Process Flow



Process for R18-2-1405(D)(4)(b):Evaluating and choosing a model or models and associatedmethods and assumptions to be used in hot-spot analysis and regional emissions analyses.



** Obtain questionnaire and/or consultation document (s) from ADOT*

***The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by ADOT pursuant to 23 U.S.C. 326 and a Memorandum of Understanding dated January 3, 2018, and executed by FHWA and ADOT.*

Project Level Conformity

New Process Isolated Rural Areas Regional Emissions Analysis

ADOT has developed a regional analysis template to be used for all regional conformity processes where ADOT is the lead for regional conformity. Regional Conformity Analysis guidance can be found on ADOT's Environmental Planning Website under Transportation Conformity. A draft modeling document will be distributed through email to required consultation parties and posted on the ADOT website for a 30 day review period. After consideration of comments and concurrence on the modeling assumptions ADOT notifies interagency consultation parties of conclusion of consultation and post the final modeling assumptions document online. The draft Regional Conformity Analysis will be posted online for public and interagency consultation for a 30 day review period. ADOT will request a letter from FHWA documenting the conformity finding of the regional conformity analysis.

New Process Project-Level Hot-Spot Analysis

ADOT has developed a consultation process for projects that require hot spots analysis. Project level conformity guidance can be found on ADOT's Environmental Planning Website under Reports and Guidance. ADOT will use the "Project Level PM Quantitative Hot-Spot Analysis – Project of Air Quality Concern **Questionnaire**" to meet the interagency consultation requirements, for all federally funded projects in PM10 and PM2.5 nonattainment areas. The questionnaire will identify any potential projects of local air quality concern, and is reviewed by FHWA prior to a 10 day consultation period. If the project requires a quantitative hot spot analysis, the "Project Level PM Quantitative Hot-Spot Analysis **Consultation Document** for Project of Air Quality Concern", will be completed and circulated to gain consensus from consulting parties on the modeling assumptions and inputs needed to perform a quantitative hot-spot analysis, for 30 days when needed. ADOT will circulate all these documents through email to required consulted parties, for projects that require a public meeting or hearing under the National Environmental Protection Act (NEPA) these documents will be provided on the project website for public review. ADOT also developed a "Project Level CO Hot-Spot Analysis **Questionnaire**" to guide both the NEPA CO analysis and conformity. If the project requires a quantitative hot spot analysis, the "Project Level CO Hot-Spot Analysis, **Consultation Document**", will be completed and circulated to gain consensus from consulting parties on the modeling assumptions and inputs needed to perform a quantitative hot-spot analysis, for 30 days when needed. All completed documents will be available on the Reports and Guidance website for public review.

Additional Documents (not on website) Used for Process for R18-2-1405(D)(6) Project-Level Conformity:

- Appendix 1: Regional Conformity Analysis Template Isolated Rural Areas
- Appendix 2: "Project Level PM Quantitative Hot-Spot Analysis Consultation Document for Project of Air Quality Concern" template.
- Appendix 3: "Project Level CO Hot-Spot Analysis - Consultation Document" template.

Appendix 1:

Regional Conformity Analysis Template Isolated Rural Areas

Regional Conformity Analysis Template
Example: Nogales $PM_{2.5}$ / PM_{10} Nonattainment Areas

Purpose and Organization

The Nogales $PM_{2.5}$ / PM_{10} Nonattainment Areas Template outline a sample regional conformity analysis and the supporting documentation for analysis year 2008. This documentation and emissions analysis is based on data provided by ADOT and is meant to be illustrative only. The analysis and documentation should be updated as necessary to reflect real-world conditions for any future conformity analyses. Areas where updates are required are [contained in brackets and highlighted].

The Template is organized into the following sections, which would be found in a typical regional conformity analysis:

1) **Introduction:** Includes information on the nonattainment or maintenance area, background on transportation conformity and the applicable national ambient air quality standards, as well as a status update on the (S)TIP and (S)LRTP.
2) **Interagency Consultation:** Outlines interagency consultation requirements and includes a tabulation of all decisions made through interagency consultation.
3) **Analysis Methodology and Data:** This section outlines all of the technical steps taken to conduct the conformity analysis and includes details on MOVES and AP-42 inputs and methodologies.
4) **Conformity Analysis Results:** Building upon the methodology and data described in the previous section, this section documents the actual results by emissions test and analysis year. the details
5) **Conformity Determination:** The final result of the conformity analysis, which includes documentation demonstrating financial constraint, public participation, and the conformity statement.
6) **Resources:** Lists of informational websites and guides, particularly with respect to the MOVES model.
7) **Attachments:** The attachments contain additional detail including the project list, detailed emission results, interagency consultation materials and checklist, and sample run specifications for MOVES.

Introduction

This report provides an analysis of the air quality implications of the current Arizona Department of Transportation (ADOT) Statewide Transportation Improvement Program (STIP) and Statewide Long-Range Transportation Plan (LRTP). This analysis demonstrates transportation conformity for the Nogales nonattainment area (NA) for the 2006, 24-hour fine particulate matter ($PM_{2.5}$) and 1987 coarse particulate matter (PM_{10}) National Ambient Air Quality Standards (NAAQS). The air quality conformity analysis reflects regionally significant, non-exempt transportation projects included in the STIP as the statewide LRTP did not identify specific projects. Since there is no metropolitan planning organization (MPO) associated with the planning process in the Nogales NA, ADOT and the Arizona Department of Environmental Quality (ADEQ) coordinated the conformity process closely with local representatives.

Background on Transportation Conformity

Transportation conformity is required by the CAA (Section 176 (c)) to ensure that federal funding and approval are given to highway and transit projects that are consistent with the area's air quality goals. Demonstrating conformity means verifying that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS.

Regional conformity, or the conformity of a plan or TIP, demonstrates that the total emissions from an area's transportation system are consistent with goals for air quality found in the SIP, i.e., they are less than or equal to the motor vehicle emission budgets (§93.118). If an area does not have adequate or approved motor vehicle emission budgets (MVEBs) another test, known as the interim emissions test (§93.119), must be performed. The interim emissions tests include either demonstrating that the emissions predicted in the "action" scenario are not greater than the emissions predicted in the "baseline" scenario or by demonstrating that the emissions predicted in the "action" scenario are not greater that the emissions in the baseline year for a given NAAQS.

The transportation conformity determination includes an assessment of future dust and on-road, highway emissions for defined analysis years including the end year of the LRTP. Emissions are estimated using the latest available planning assumptions and available analytical tools, including the Environmental Protection Agency's (EPA's) latest approved on-highway mobile sources emissions model. The conformity determination includes a tabulation of the analysis results for applicable pollutants demonstrating that the required conformity test was met for each analysis year.

National Ambient Air Quality Standards

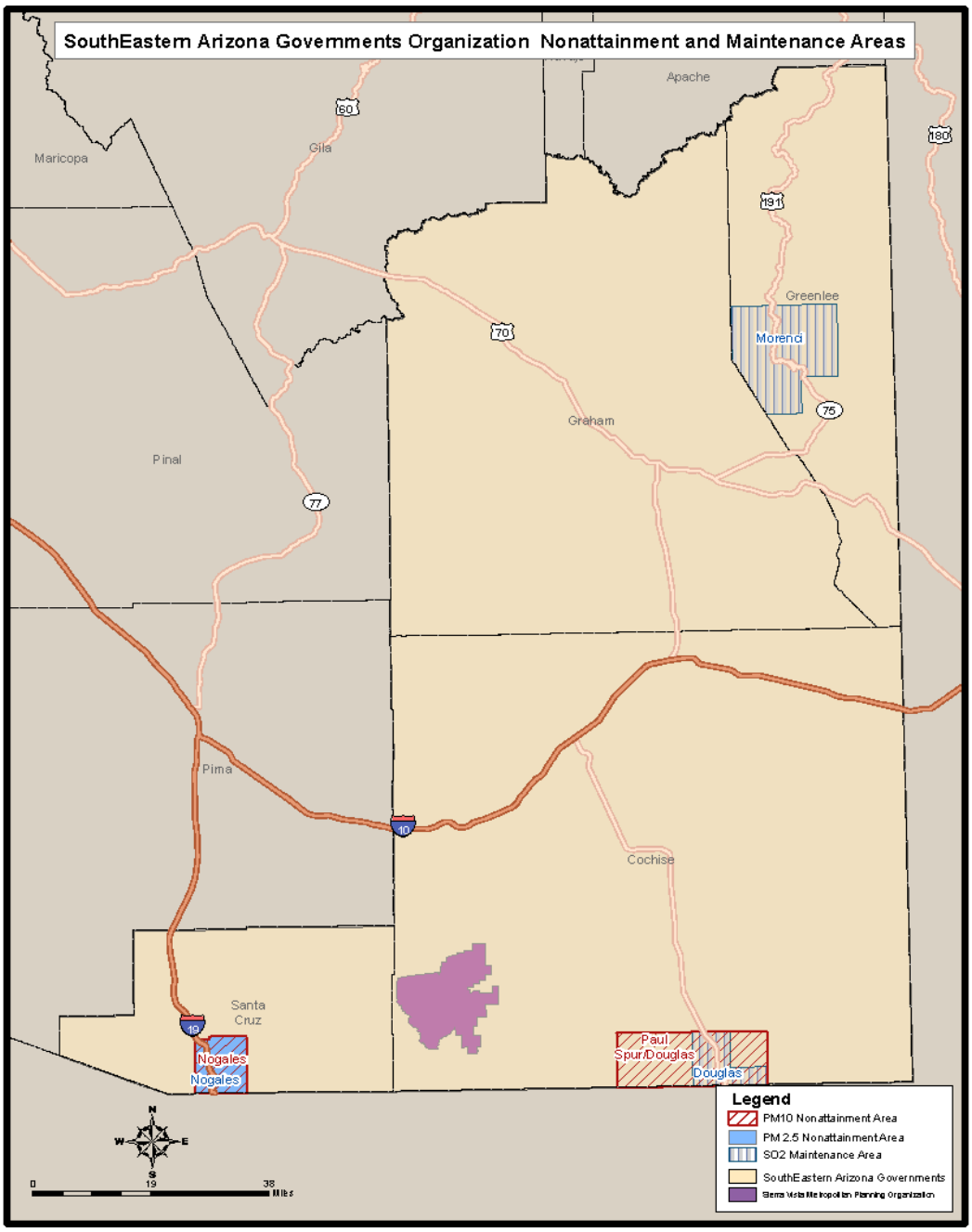
The CAA requires EPA to set NAAQS for pollutants considered harmful to public health and the environment. A nonattainment area is any area that does not meet the national primary or secondary NAAQS. A maintenance area is any area that the EPA previously designated as a nonattainment area for one or more pollutants, and subsequently redesignated as an attainment area following the fulfillment of the requirement to develop a maintenance plan under section 175A of the CAA. The Nogales area has been designated as nonattainment under the $PM_{2.5}$ and PM_{10} NAAQS. Transportation conformity requires nonattainment and maintenance areas to demonstrate that the implementation of planned and programmed transportation projects will not prevent the area from reaching its attainment goals.

Particle pollution (also called particulate matter or PM) is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.

Particle pollution includes "inhalable coarse particles," with diameters larger than 2.5 micrometers and smaller than 10 micrometers and "fine particles," with diameters that are 2.5 micrometers and smaller. These particles come in many sizes and shapes and can be made up of hundreds of different chemicals. Some particles, known as primary particles, are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks or fires. Others form in complicated reactions in the atmosphere of chemicals such as sulfur dioxides and nitrogen oxides that are emitted from power plants, industries and automobiles. These particles, known as secondary particles, make up most of the fine particle pollution in the country.

Effective on December 18, 2006, the EPA tightened the 24-hour $PM_{2.5}$ standard from 65 µg/m³ to 35 µg/m³, and retained the current 1987 24-hour PM_{10} standard at 150 µg/m³. Figure 1 illustrates the air quality status in the SouthEastern Arizona Governments Organization (SEAGO) region for the 1987 PM_{10} and 2006 $PM_{2.5}$ NAAQS. On December 14, 2012, EPA issued a revised $PM_{2.5}$ annual NAAQS of 12 µg/m³. This was published in Federal Register on January 15, 2013 and was effective March 18, 2013. EPA published the new nonattainment areas designations in the Federal Register on January 15, 2015 and there were no new nonattainment areas established for the annual standard in Arizona.

Figure 1: SEAGO Nonattainment and Maintenance Areas Map



$PM_{2.5}$

The Nogales area was designated as nonattainment under the 2006 24-hour $PM_{2.5}$ standard. Effective February 6, 2013, the EPA took final action to determine that the Nogales NA attained the 2006 $PM_{2.5}$ standard (see Table 1). The finding did not constitute a redesignation of the Nogales NA to attainment; the classification and designation status remain nonattainment until such time as EPA determines that Arizona has met the CAA requirements for redesignating the Nogales nonattainment area to attainment.

At this time, the Nogales $PM_{2.5}$ NA does not have adequate or approved MVEBs, and will therefore use the interim conformity test for the 24-hour $PM_{2.5}$ standard. According to the EPA Final Rule for the 24-hour $PM_{2.5}$ standard, prior to the approval of SIP budgets, $PM_{2.5}$ areas may use either the "build-no-greater-than-no-build" test or the "no-greater-than 2008" test. Following interagency consultation, the Nogales area used the "build-no-greater-than-no-build" test for 24-hour $PM_{2.5}$ direct emissions and $PM_{2.5}$ precursors. The only $PM_{2.5}$ precursor that is required to be analyzed is NOx.

The pollutant sources to be analyzed in the conformity analysis are:

[1] Direct $PM_{2.5}$ emissions (exhaust emissions, brake and tire wear),
[2] Re-entrained road dust, and
[3] Precursors NOx.

Until a SIP is established, the EPA has ruled that, unless the EPA or the State's Division of Air Quality finds otherwise, direct $PM_{2.5}$ emissions and NOx are the only emissions that must be analyzed for transportation conformity (§93.119).

PM_{10}

The Nogales area was designated as a nonattainment area under the 1987 24-hour PM10 standard, which was retained under the EPA's 2006 PM NAAQS review (effective December 18, 2006). The EPA approved the Nogales 2012 PM10 nonattainment area SIP, "Final 2012 State Implementation Plan Nogales PM10 Nonattainment Area," effective October 25, 2012 (see Table 1). As part of that process, EPA approved the MVEBs for 2008 and 2011 the demonstration that the Nogales nonattainment area is attaining the NAAQS, but for international emissions sources in Nogales, Mexico.

Table 2 illustrates the EPA-approved MVEBs which must be used for transportation conformity determinations, only the most current budget year 2011 is required.

Table 1: Nogales Area Nonattainment and Maintenance Areas and Current SIP Status by Pollutant

County	Current SIP Status[1]	Notes *(as of February 1, 2013)*
Nogales, AZ 24-Hour $PM_{2.5}$ Nonattainment Area		
Santa Cruz (P)	Attainment Finding Effective 2/6/2013 78 FR 887	Area remains nonattainment until a Maintenance Plan is submitted and approved. Regional conformity still applies.
Nogales, AZ 24- Hour PM_{10} Moderate Nonattainment Area		
Santa Cruz (P)	2012 SIP Approval Effective 10/25/2012 77 FR 58962	EPA approved the plan element demonstrating that the Nogales nonattainment area is attaining the NAAQS for PM10, but for international emissions sources in Nogales, Mexico.

Table 2: 2011 Nogales Nonattainment Area PM_{10} Motor Vehicle Emissions Budgets

Sector	PM_{10} Tons per Year (tpy)
Dust – Unpaved Road Dust	864.9
Dust – Paved Road Dust	121.4
Dust – Road Construction	26.0
Mobile – Gasoline and Diesel (Including Exhaust, Brake and Tire Wear)	21.0
2011 MVEB	1274.3

Status of the FY 2016-2020 TIP and 2035 Long Range Plan

The 2016-2020 STIP was approved by the FHWA on October 8, 2015 and the ADOT LRTP was adopted by the Arizona State Transportation Board on November 18, 2011.

Interagency Consultation

As required by the Federal transportation conformity rule (§93.105), the conformity process includes a significant level of cooperative interaction among federal, state, and local agencies. For this air quality conformity analysis, interagency consultation was conducted as required by the Arizona Conformity SIP. Conference call(s) or meeting(s), involving ADOT, ADEQ, EPA, FHWA, [representatives from SEAGO and other Interagency Consultation Group members] were conducted on [Date(s)] to review all input planning assumptions, methodologies and analysis years. Table 3 summarizes the key decisions made by the interagency consultation group.

Table 3: [Interagency Consultation Decisions]

Item	Decision
Traffic Forecasts	Use of statistical relationships based on historic HPMS VMT trends and future county socioeconomic projections.
EPA Emission Model(s)	[MOVES2014 and EPA's AP-42]
Regionally Significant Projects, Projects with a Significant Change in Design Concept and Scope	As shown in STIP and Plan listing, and project coding.
Transportation Control Measures (TCM) Progress	[Pave of Chemically Stabilize Unpaved Roads; Pave, Vegetate or Chemically Stabilize Access Points Where Unpaved Traffic Surfaces Adjoin Unpaved Roads.]
Exempt Projects	Notification of transportation plan or TIP amendments which merely add or delete exempt projects listed in §93.126 or §93.127.
Triggers for Conformity	[New Federally Funded Regionally Significant Project]
24-Hour $PM_{2.5}$ Conformity Test	Analysis for [Nogales Nonattainment Area] Use [build-no-greater-than-no-build] emission test Analysis Years: [base year][2020, last year STIP], [Year2030], [Year2035, last year LRTP]
24-Hour PM_{10} Conformity Test	Analysis for [Nogales Nonattainment Area] Compare to EPA-Approved 2011 SIP MVEBs Analysis Years : [base year][2020, last year STIP], [Year2030], [Year2035, last year LRTP]
Analysis Years	Analysis years (by pollutant/precursor) as shown in this report.
Boundary Issues	RPO nonattainment and maintenance area boundaries as stated in this report.
Project Identification	All regionally significant, non-exempt projects, regardless of funding source, have been identified and included in this analysis.
Design Scope	The design scope of projects under development is as stated or modeled in this analysis.
Latest Planning Assumptions	As stated in this report, including: fleet age data, I/M program, fuels used, environmental data, and other MOVES inputs (see MOVES input summary).

Analysis Methodology and Data

This transportation conformity analysis was conducted using EPA's Motor Vehicle Emission Simulator (MOVES) model to estimate on-road emissions and EPA's AP-42 methodologies to estimate fugitive dust impacts including paved and unpaved road dust. The methodologies used for this analysis are consistent with those used to develop SIP inventories. Since no substantial road construction projects have taken place in the last five years, and no projects are planned for the next five years, estimates for this category represent a conservative, worst-case scenario, not actual emissions.

On-Road Analysis Background

MOVES represents a state-of-the-art upgrade to EPA's modeling tools. It is the EPA-approved model required for estimating emissions from highway vehicles, replacing the MOBILE6.2 model. EPA announced the release of MOVES2010 in March 2010 (75 FR 9411), and released a minor revision as MOVES2010a in September 2010. In April 2012, EPA released MOVES2010b to allow MOVES users to benefit from several improvements to general model performance. MOVES2014 was released in October, 2014 (79 FR 60343) with a grace period for use of October 7, 2016, subsequently in November of 2015 EPA made minor corrections and released MOVES2014a, these changes did not affect the criteria pollutant emissions results of MOVES2014a and therefore is not considered a new model.

This analysis utilizes available traffic, vehicle fleet, and environmental data to estimate regional on-road emissions. Air quality conformity analyses must use the most recent planning assumptions that are available at the start of the analysis. Areas are encouraged to review and update their planning assumptions and strive towards regular 3-year updates of planning assumptions, especially population, employment and vehicle registration assumptions.

The analysis methodology and data inputs were developed through interagency consultation and using available EPA guidance documents including:

- Policy Guidance on the Use of MOVES204 and Subsequent Minor Revisions for State Implementation Plan Development, Transportation Conformity, and Other Purposes, US EPA Office of Air and Radiation, EPA-420-B-14-008, July 2014.
- MOVES2014 and 2014a Technical Guidance: Using MOVES to prepare Emission Inventories for State Implementation Plans and Transportation Conformity. US EPA Office of Air and Radiation, and Office of Transportation and Air Quality, EPA-420-B-15-093, November 2015.
- MOVES2014a User Guide, EPA-420-B-15-095, November 2015.

The methodologies used to produce the emissions data conform to the recommendations provided in EPA's technical guidance. A mix of local and national default (internal to MOVES) data are used in the analysis. Lcal data has been used for the primary data items that have a significant impact on emissions including vehicle miles of travel, vehicle population, congested speeds, vehicle type mix and environmental and fuel assumptions. Local data inputs to the analysis process reflect the latest available planning assumptions using information obtained from the ADOT, ADEQ and other local/national sources.

Key MOVES Input Data

A large number of inputs to MOVES are needed to fully account for the numerous vehicle and environmental parameters that affect emissions. These include traffic flow characteristics, vehicle descriptions, fuel parameters, inspection/maintenance program parameters, and environmental variables. MOVES includes a default national database of meteorology, vehicle fleet, vehicle activity, fuel, and emission control program data for every county; but EPA cannot certify that the default data is the most current or best available information for any specific area. As a result, local data is recommended for use in conformity analyses, where available. A mix of local and default data is used for this analysis. These data items are discussed in the following sections.

Fleet Inputs

Fleet inputs include age distribution and source (vehicle) type population. Inputs are provided for 13 categories of LDVs, trucks, and buses. The primary source of fleet inputs is the state registration database, which provides information on registered vehicles by county. Data from Arizona's I/M program also could be used as a supplemental or alternative source for covered vehicle types if registration data are difficult to obtain or analyze.

The latest available Arizona registration data should be obtained and analyzed to develop both age distributions and source type populations. The primary limitation of this database is that it will not provide information on vehicle use to split LDTs into passenger and commercial categories, or HDTs into short- and long-haul categories. At least in the short term, it will be necessary to use MOVES default values for these proportions. In the long term, additional research efforts may be possible to better evaluate in-state vs. out-of-state vehicles and short- vs. long-haul use.

Activity Inputs

Activity inputs include VMT by vehicle class, road type distribution, temporal adjustments (hour, day, and month VMT fractions); ramp fractions; and speed distributions. The primary sources of activity data include ADOT traffic monitoring data from the Transportation Data Management System (TDMS), and the Arizona statewide and five MPO travel demand forecasting models.

The existing data are generally adequate for preparing VMT-based MOVES inputs. Priority is given to using MPO model data for VMT and road type distributions in the five metropolitan areas, where these models are available. Outside of these areas, statewide model VMT and HPMS VMT by road type should be used. For counties that are partially in an MPO area, it may be necessary to combine MPO and statewide travel demand model outputs to obtain VMT for the entire county. Traffic monitoring data should be used to validate base-year VMT, and also to provide temporal adjustments. The existing monitoring system is not extensive enough to provide source type-specific adjustments at a county level, but may be adequate to provide separate adjustments for major subareas of the state (e.g., north and south), if significant differences are observed. In the long term, an expanded network of classification counters could improve county-level adjustments.

Travel demand model data (MPO models in metro areas, and statewide model elsewhere) is also recommended for creating speed distributions. However, for rural areas, statewide model predictions should be compared against observed speed data from ADOT's monitoring network, and consideration given to using observed speed data or recalibrating statewide model parameters if significant differences are observed. Postprocessing of model data is recommended to create distributions for each hour of the day. In the long term, acquisition of additional speed data will support validation and improvement of speed estimates.

Other Inputs

Other inputs include meteorology, I/M programs, and fuel formulations. Only modest effort should be required to create or update these inputs. Meteorology data should be obtained for each county from local NCDC monitoring stations, and is freely available on the Internet. The default I/M and fuels data in MOVES are reasonable representations of actual conditions in Arizona. Some tweaks should be made to the I/M data in MOVES to better represent the programs active in the Phoenix and Tucson areas. Fuels data would be difficult to update without an extensive field survey, and this is considered a low priority.

MOVES Analysis Process Details

As an example, this section describes how to use currently available data to generate MOVES input data for producing emission estimates.

VMT Preparation

This data needs to be processed individually to determine the distribution of vehicle hours of travel (VHT) by speed and then aggregated by vehicle class to determine the input VMT to the MOVES emission model. Key steps in the preparation of VMT include:

- *Assemble VMT* – The network databases, prepared from the statewide travel model data as described above, contain the roadway segments, distances and travel volumes needed to estimate VMT.
- *Disaggregate to Hours* - The traffic volumes are split to each hour of the day. This allows for more accurate speed calculations (effects of congested hours) and prepares the hourly VMT and speeds for input to the MOVES model.
- *Disaggregation to Vehicle Types* - EPA requires VMT estimates to be prepared by the six HPMS vehicle groups, reflecting specific local characteristics. As described previously, the hourly volumes are disaggregated to the thirteen MOVES source types based on data from the travel model and MOVES defaults. The thirteen MOVES source types are then recombined to the six HPMS vehicle classes.
- *Apply HPMS VMT Adjustments* - Volumes must also be adjusted to account for differences with the HPMS VMT totals, as described previously. [The 20xx HPMS adjustment factors developed for the Santa Cruz County are also applied to the Nogales area.]

Speed Estimation

Emissions for many pollutants vary significantly with travel speed. The following procedures are recommended:

- Compare modeled speeds with observed speed data from existing sources (ADOT traffic recorders).

- Develop a speed postprocessing procedure for the statewide model, and possibly for other regional models, to create speed distributions for 24 hours of the day. Compare the resulting distributions against observed distributions.
- Compare County and statewide model speed distributions for counties in which the nonattainment area covers part of the county. If they are significantly different, they may need to be combined (weighted based on VHT),unless separate inputs are to be prepared for subcounty areas. Developing the MOVES Traffic Input Files.

MOVES Runs

After computing speeds and aggregating VMT and VHT, additional required MOVES inputs are prepared including temperatures, I/M program parameters, fuel characteristics, vehicle fleet age distributions and source type population.

The MOVES county importer is run in batch mode. This program converts all data files into the MYSQL formats used by the MOVES model. At that point a MOVES run specification file (*.mrs) is created which specifies options and key data locations for the run. MOVES is then executed in batch mode. A summary of key MOVES run specification settings is shown in Table 4. For this analysis, MOVES is applied using the *inventory-based* approach. Under this method, actual VMT and population are provided as inputs to the model; MOVES is responsible for producing the total emissions for the region.

Table 4: MOVES Run Specification File Parameter Settings

Parameter	Setting
MOVES Default Database Version	[xxxx]
Scale	COUNTY
Analysis Mode	Inventory
Time Span	Annual Runs: 12 months, Weekday and Weekend, 24 hours July Weekday Runs: July month, Weekday, 24 hours
Time Aggregation	Hour
Geographic Selection	[Santa Cruz County / Nogales]
Vehicle Selection	All source types Gasoline, Diesel, CNG
Road Type	All road types including off-network
Pollutants and Processes	[All $PM_{2.5}$ and PM_{10} categories, NOx]
General Output	Units: Emission = grams; Distance = miles; Time = hours; Energy = Million BTU
Output Emissions	Time = Month, Emissions by Process ID, Source Type, and Road Type

Fugitive Dust Analyses

The arid conditions and soil composition in many areas of Arizona makes fugitive dust a major contributor to regional PM_{10} and, to a lesser extent, $PM_{2.5}$ levels. Fugitive dust was determined through interagency consultation to be a significant factor in in the Nogales PM_{10} SIP, requiring that re-entrained road dust from

paved roads, unpaved roads and fugitive dust from roadway construction activities be considered in subsequent air quality planning efforts.

The methods used to calculate fugitive dust emissions are consistent with the MVEB methodologies contained in the SIP and with EPA's AP-42 methodologies.

Paved Roadway Emissions

Paved roadway fugitive dust emissions were calculated using the MOVES-based VMT estimates documented in this analysis and the following methodology and assumptions, consistent with the Nogales NA SIP:

Emissions Factor is $E = [k (sL)^{0.91} \times (W)^{1.02}] (1 - P/4N)$
Annual Emissions Reduction = Roadway VMT_{Annual} * E

Where:
E = Annual or other long-term average emission factor in the same units as k,
k = Particle size multiplier for particle size range and units of interest

- PM_{10}: 1.0 g/VMT,
- $PM_{2.5}$: 0.25 g/VMT

sL = Road surface silt loading [(0.105 g/m^2 ADEQ Nogales PM_{10} SIP)]
W = Average weight (tons) of the vehicles traveling the road (3 tons)
P = Number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period
For precipitation a value of 60 days/365 days per year is the value presented in the AP-42 references for the region containing Nogales, ADEQ used 45 days in nonattainment plan.
N = Number of days in the averaging period (e.g., 365 for annual)

Emissions Factor

$E = [k (sL)^{0.91} \times (W)^{1.02}] (1 - P/4N)$
$E = [1(0.105)^{0.91} \times (3)^{1.02}](1-(45)/(4 \times 365)$
E = 0.38225 g/VMT

Unpaved Roadways

The main contributor to the fugitive dust inventory was re-entrained dust from unpaved roads. Unpaved road emission factors were calculated for a range of possible surface material silt contents within the Nogales NA using a low surface material silt content value of 2.90 percent and a high surface material silt content value of 7.50 percent per EPA recommendation.

Unpaved roadway fugitive dust emissions were calculated using the MOVES-based VMT estimates documented in this analysis and the following methodology and assumptions, consistent with the Nogales NA SIP:

Emission factor is $E = ([k(s/12)^a(S/30)^d] / [(M/0.5)^c]) - C$

Where:
E = PM_{10} emission factor (lb/VMT) = 0.248 lb/VMT (low value) & 0.642 lb/VMT (high value)

k = Empirical Constant = 1.8 lb/VMT (EPA AP-42 Chapter 13.2.2, 2006)

s = surface material silt content (%) = 2.90 % and 7.50 % (recommended by EPA and based on the Mexican NEI – 2004 and the Mexicali Emission Inventory - 2005).

M = Surface material moisture content (%) = 5.23 % (No reliable surface soil moisture measurements are known for the area. Therefore, the average 2 inch depth soil moisture from Walnut Gulch, AZ NRCS Site # 2026 for the year of 2008 of 4.30% was adjusted for Nogales, AZ based on the average annual difference in rainfall between the two locations of 21.5% [Balling, 1988])

S = Mean vehicle speed (mph) = 25 mph (Based on the typical unpaved road speed limit in Arizona)

a = Empirical Constant = 1 (EPA AP-42 Chapter 13.2.2, 2006)

c = Empirical Constant = 0.2 (EPA AP-42 Chapter 13.2.2, 2006)

d = Empirical Constant = 0.5 (EPA AP-42 Chapter 13.2.2, 2006)

C = 0.00047 lb/VMT (EPA AP-42 Chapter 13.2.2, 2006)

This emission factor is then corrected to only account for non-rainy days:

E_{est} = E[(365-P)/ 365]

Where:

E_{est} = Annual size-specific emission factor extrapolated for natural mitigation (lb/VMT) = 0.217 lb/VMT (low value) & 0.563 lb/VMT (high value)

E = The unadjusted emission factor = 0.248 lb/VMT (low value) & 0.642 lb/VMT (high value)

P = Number of days in a year with at least 0.254 mm (0.01 in) of precipitation = 45 days (EPA AP-42 Figure 13.2.2-1., 2006)

E_{low} = VMT* E_{est} / 2000 lb/ton

E_{high} = VMT* E_{est} / 2000 lb/ton

Road Construction

Based on documentation in the SIP and the current STIP, there have been no substantial local road construction projects in the Nogales NA in the last five years and no projects are planned for the next five years. Or ADOT has current project in Nogales ; {therefore, estimates for this category represent a conservative worst-case scenario, not actual emissions. This methodology was determined appropriate through interagency consultation.] – INSERT Nogales project table

Transportation Control Measures

There is one transportation control measure in the SIP:

- Pave or Chemically Stabilize Unpaved Roads; Pave, Vegetate or Chemically Stabilize Access Point Where Unpaved Traffic Surfaces Adjoin Paved Roads

The TCM is continuing to be implemented in a timely manner and none of the projects in the STIP or LRTP interfere with the implementation of the TCM.

Paving of unpaved roadways is the single most effective control measure available to reduce re-entrained road dust. The emissions resulting from the implementation of this TCM were calculated using the following methodology and assumptions, consistent with the Nogales NA SIP:

Daily Emission Reductions = (BEF – AEF) * Miles * 0.93 * ADT * 1 /1000 (Kg/day)

Where:
BEF = The PM10 emission factor for vehicles traveling on unpaved roads or alleys
AEF = The PM10 emission factor for vehicles traveling on paved roads
Miles = The length of the project (in centerline miles)
ADT = The average weekday traffic on the unpaved road or alley
0.93 = The factor to convert from weekday to annual average daily traffic on arterials.

Conformity Analysis Results

A transportation conformity analysis of the current TIP and LRTP has been completed for the Nogales NA. The analyses were performed according to the requirements of the federal transportation conformity rule 40 CFR Part 93, Subpart A. The PM_{10} analysis was performed in accordance with 40 CFR 93.118 (Criteria and procedures: Motor vehicle emissions budget). The $PM_{2.5}$ analysis was conducted pursuant to 40 CFR 93.119 (Criteria and procedures: Interim emissions in areas without motor vehicle budgets). The analysis utilized the methodologies, assumptions and data as presented in previous sections. Interagency consultation has been used to determine applicable emission models, analysis years and emission tests.

Emission Tests

The PM_{10} conformity analysis was conducted to evaluate emissions in comparison to the applicable MVEBs summarized in Table 5. The budgets were established using the MOVES emission model.

Table 5: 2011 Nogales Nonattainment Area PM_{10} Motor Vehicle Emissions Budgets

Sector	PM_{10} Tons per Year (tpy)
Dust – Unpaved Road Dust	864.9
Dust – Paved Road Dust	121.4
Dust – Road Construction	26.0
Mobile – Gasoline and Diesel (Including Exhaust, Brake and Tire Wear)	21.0
2011 MVEB	1274.3

There are currently no approved SIP budgets for the Nogales 24-hour $PM_{2.5}$ NA. Until budgets are developed by ADEQ and found adequate by EPA, the area must continue to demonstrate conformity to the interim emission test (§93.119). Per the interagency consultation process, the interim emission test has been defined as: the "build-no-greater-than no build" test. The analysis has been conducted for direct $PM_{2.5}$ emissions (exhaust and brake/tire wear), the precursor NO_x and re-entrained road dust (paved and unpaved road dust).

Analysis Years

EPA regulations, as outlined in Sections §93.118(c) and §93.119(g) of the Final Transportation Conformity Rule, require that emissions analyses be conducted for specific analysis years as follows:

- Each year for which the applicable implementation plan specifically establishes a MVEB(s)
- A near-term year, one to five years in the future (applicable in areas without budgets).
- The last year of the LRTP's forecast period.
- Attainment year of the standard if within timeframe of STIP and LRTP.

- An intermediate year or years such that analysis years are no more than ten years apart.

All analysis years were determined through the interagency consultation process.

Table 5 provides the analysis years used for this conformity analysis.

Table 5: Transportation Conformity Analysis Years

Analysis Year	Description	Applicable To 24-Hour PM_{10}	Applicable To 24-Hour $PM_{2.5}$
[xxxx]	Base Year for Interim Conformity Test/ no-build	[No]	[Yes]
[2020]	Near-Term Analysis Year/ Proposed Budget Year	[Yes]	[Yes]
[2030]	Interim Year	[Yes]	[Yes]
[2035]	Last Year of LRTP	[Yes]	[Yes]

Regionally Significant Highway Projects

For the purpose of conformity analysis, model highway networks are created for each analysis year. For the horizon years, regionally significant projects from the LRTP were coded onto the networks. Detailed assessments were only performed for those new projects which may have a significant effect on emissions in accordance with 40 CFR Parts 51 and 93. Essentially, only those projects which would increase capacity or significantly impact vehicular speeds were considered. Projects such as bridge replacements and roadway restoration projects, which constitute the majority of the STIP and LRTP list, have been excluded from consideration since they are not expected to significantly alter the volume or speed of traffic. A list of highway projects is shown in **Attachment A**. There are no air quality significant transit STIP/LRTP projects in the region.

Analysis Results

An emissions analysis has been completed for the 2006 24-Hour PM_{10} and $PM_{2.5}$ NAAQS. The results of the analysis are summarized in the tables below. A detailed emission summary is also provided in **Attachment B**. A summary of MOVES input parameters is provided in **Attachment C**. Example MOVES importer (XML) and run specification (MRS) files are provided in **Attachment D**.

[Table 6 summarizes the PM_{10} emission results for a summer weekday in each analysis year. The summer weekday was converted to an annual value by multiplying by 315.38 days/year to match the annual budgets in the SIP. The [2020], [2030], and [2035] analysis years are compared to the [2011] budgets. The table illustrates that all years satisfy the conformity ozone budget test.]

Table 7 summarizes the 24-hour $PM_{2.5}$, NOx, and road dust emissions for summer weekday conditions. Emissions are compared against a [xxxx no-build] estimate. The table illustrates that all future analysis year emissions are below the [xxx no-build].]

Table 6: 24-Hour PM_{10} Emission Analysis Results and Conformity Test
(July Weekday Converted to Tons per Year to Match SIP MVEBs)

Pollutant	*2011 MVEB (tons/year)*	*[2008 Example] (tons/year)*	*[Year] (tons/year)*	*[Year] (tons/year)*	*[Year] (tons/year)*
Dust – Unpaved Road Dust	*864.9*	*891.39*	*X.XX*	*X.XX*	*X.XX*
Dust – Paved Road Dust	*121.4*	*131.91*	*X.XX*	*X.XX*	*X.XX*
Dust – Road Construction	*267.0*	*267.00*	*X.XX*	*X.XX*	*X.XX*
Mobile Gasoline & Diesel (Exhaust Brake and Tire Wear)	*21.0*	*27.96*	*X.XX*	*X.XX*	*X.XX*
2011 MVEB	*1274.3*	*1318.26*	*X.XX*	*X.XX*	*X.XX*
TCM Emissions Benefits (Paving Unpaved Roads)		*-51.76*			
Conformity Result		Pass	Pass/Fail	Pass/Fail	Pass/Fail

Table 7: 24-Hour $PM_{2.5}$ Emission Analysis Results and Conformity Test
(July Weekday)

Pollutant	*2008 BASELINE (tons/day)*	*[Year] (tons/day)*	*[Year] (tons/day)*	*[Year] (tons/day)*	*[Year] (tons/day)*
Dust – Unpaved Road Dust	*0.71*	*X.XX*	*X.XX*	*X.XX*	*X.XX*
Dust – Paved Road Dust	*0.11*	*X.XX*	*X.XX*	*X.XX*	*X.XX*
Mobile $PM_{2.5}$	*0.08*	*X.XX*	*X.XX*	*X.XX*	*X.XX*
Mobile NO_x	*3.39*	*X.XX*	*X.XX*	*X.XX*	*X.XX*
Conformity Result		Pass/Fail	Pass/Fail	Pass/Fail	Pass/Fail

Conformity Determination

Financial Constraint

The federal planning regulations, Sections 450.322(b)(11) and 450.324(e), require the transportation program and plan to be financially constrained while the existing transportation system is being adequately operated and maintained. Only projects for which construction and operating funds are reasonably expected to be available are included. ADOT, in conjunction with SEAGO, ADEQ, FHWA and FTA, has developed an estimate of the cost to maintain and operate existing roads and bridges in the Nogales NA and have compared that with the estimated revenues and maintenance needs of the new roads over the same period. The STIP and LRTP have been determined to be financially constrained.

Public Participation

The STIP and LRTP have undergone the public participation requirements and the comment and response requirements set forth in the Final Conformity Rule, the Final Statewide/Metropolitan Planning Rule, and

Arizona's Conformity SIP. The draft document was made available for [30-days of public review and comment] beginning on [Date].

Conformity Statement

Based on the quantitative assessment of the ADOT STIP and ADOT LRTP for the Nogales NA, it has been determined that the project elements and programmatic strategies of the TIP and LRTP conform to the [Nogales PM_{10} SIP and the $PM_{2.5}$ interim emissions test (emissions are below the no-build)].

Resources

MOVES Model

Modeling Page within EPA's Office of Mobile Sources Website contains a downloadable model, MOVES users guide and other information. (http://www.epa.gov/omswww/models.htm)

[Insert MOVES2014a policy guides, etc]

Traffic Engineering

Highway Capacity Manual, Transportation Research Board, presents current knowledge and techniques for analyzing the transportation system.

[Insert traffic report and analysis details]

Highway Vehicle Inventory Glossary

AADT: Average Annual Daily Traffic, average of ALL days.

CAA: Clean Air Act as amended.

CARB: California Air Resources Board.

CFR: Code of Federal Regulations.

CDM: County Data Manager. User interface developed to simplify importing specific local data for a single county or a user-defined custom domain without requiring direct interaction with the underlying MySQL database.

Emission rate or factor: Expresses the amount of pollution emitted per unit of activity. For highway vehicles, usually in grams of pollutant emitted per mile driven.

FC: Functional code, applied in data management to road segments to identify their type (freeway, local, etc.).

FHWA: Federal Highway Administration

Final Rule: Current conformity guidance under CAA.

FR: Federal Register.

FTA: Federal Transit Administration.

Growth factor: Factor used to convert volumes to future years.

HPMS: Highway Performance Monitoring System

I/M: Vehicle emissions inspection/maintenance programs ensure that vehicle emission controls are in good working order throughout the life of the vehicle. The programs require vehicles to be tested for emissions. Most vehicles that do not pass must be repaired.

MOVES: The latest model EPA has developed to estimate emissions from highway vehicles.

MVEB: Motor Vehicle Emissions Budget.

Pattern data: Extrapolations of traffic patterns (such as how traffic volume on road segment types varies by time of day, or what kinds of vehicles tend to use a road segment type) from segments with observed data to similar segments.

Road Type: Functional code, applied in data management to road segments to identify their type (rural/urban highways, rural/urban arterials, etc.)

RMS: Roadway Management System.

Source Type: One of thirteen vehicle types used in MOVES modeling.

VHT: Vehicle hours traveled.

VMT: Vehicle miles traveled. In modeling terms, it is the simulated traffic volumes times link length.

ATTACHMENT A

Project List

INSERT STIP listing, any other local road construction project expected

The following TIP/LRTP air quality significant highway projects are included in this analysis:

[Insert Project List]

ATTACHMENT B

Detailed Emission Results

Detailed On-Road Emission Results for 24-hour Analysis [Sample]

Road Type	Vehicle Mile of Travel (VMT)	Source Type Population (VPOP)	Vehicle Hours of Travel (VHT)	Average Speed (mph)	PM2.5 Emissions (tons/day)	PM10 Emissions (tons/day)	NOX Emissions (tons/day)
	2008 Summer Day						
Off-Road	-		-	-	0.012	0.013	0.79
Rural Restricted Access	46,794		632	74.0	0.004	0.005	0.16
Rural UnRestricted Access	98,275		1,900	51.7	0.005	0.006	0.21
Urban Restricted Access	200,586		2,980	67.3	0.021	0.023	0.75
Urban UnRestricted Access	659,130		19,490	33.8	0.039	0.055	1.48
Off Network Emission Benefits	-		-	-	0.000	0.000	0.00
TOTAL	***1,004,785***	***59,314***	***25,002***	***40.2***	***0.081***	***0.102***	***3.39***

Detailed On-Road Emission Results for Annual Analysis [Sample]

Road Type	Vehicle Mile of Travel (VMT)	Source Type Population (VPOP)	Vehicle Hours of Travel (VHT)	Average Speed (mph)	PM2.5 Emissions (tons/year	PM10 Emissions (tons/year)	NOX Emissions (tons/year)
	2008 Annual						
Off-Road							
Rural Restricted Access	14,757,736		199,359	74.0	1.34	1.47	51.79
Rural UnRestricted Access	30,994,063		599,122	51.7	1.48	1.85	66.83
Urban Restricted Access	63,260,886		939,833	67.3	6.67	7.35	236.21
Urban UnRestricted Access	207,876,504		6,146,904	33.8	12.23	17.29	466.02
Off Network Emission Benefits	-			-	-	-	-
TOTAL	***316,886,804***	***59,314***	***7,885,217***	***40.2***	***21.72***	***27.96***	***820.85***

Detailed Paved Road Baseline Emission Results [Sample]

Particle Size Multiplier (k)	Road Surface Silt Loading (sL) (g/m^2)	Average Weight of Vehicles (W)	Number of Wet Days (P)	Number of Days in Averaging	PM_{10} / $PM_{2.5}$ Ratio
0.0022	0.105	3	45	365	0.25

Emissions Factor Calculation $E = [k (sL)^{0.91} \times (W)^{1.02}] (1 - P/4N)$

PM_{10} Emission Factor (E_{ext}) (lbs/VMT)	$PM_{2.5}$ Emission Factor (E_{ext}) (lbs/VMT)	lb to grams Conversion Factor	PM_{10} Emission Factor (E_{ext}) (g/VMT)	$PM_{2.5}$ Emission Factor (E_{ext}) (g/VMT)
0.000841	0.000210	453.592	0.381450	0.095362

Annual PM_{10} Re-entrained Dust Emissions: Roadway $VMT_{Annual} \times E_{ext}$

Road Name	$RoadwayVMT_{Annual}$	x	Emissions Factor (E_{ext}) (g/VMT)	=	Annual Emissions Reduction (kg/year)	Annual Emissions Reduction (tons/year)
Road 1	313,717,936	x	0.3814500	=	119,667.70	131.91

Annual $PM_{2.5}$ Re-entrained Dust Emissions: Roadway $VMT_{Annual} \times E_{ext}$

Road Name	$RoadwayVMT_{Annual}$	x	Emissions Factor (E_{ext}) (g/VMT)	=	Annual Emissions Reduction (kg/year)	Annual Emissions Reduction (tons/year)
Road 1	313,717,936	x	0.0954	=	29,916.92	32.98

Emissions Factor is $E = [k (sL)^{0.91} \times (W)^{1.02}] (1 - P/4N)$

Annual Emissions Reduction = Roadway VMT_{Annual} * E

Where:

E	=	Annual or other long-term average emission factor in the same units as k
k	=	particle size multiplier for particle size range and units of interest = 0.0022 lbs/VMT (Table 13.2.1-1 from AP-
sL	=	Road surface silt loading – 0.105 g/m2 ADEQ Nogales PM_{10} SIP
W	=	Average weight (tons) of the vehicles traveling the road – 3 tons
P	=	Number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period For precipitation a value of 60 days/365 days per year is the value presented in the AP-42 references for the region containing Nogales, ADEQ used 45 days in nonattainment plan.
N	=	Number of days in the averaging period (e.g., 365 for annual)

Detailed Unpaved Road Baseline Emission Results [Sample]

	% Road Surface Silt Loading (s)	% Road Surface Moisture Content(M)	Mean Vehicle Speed (MPH)	Number of Wet Days (P) (>=0.254mm)	Number of Days in Averaging Period	$PM_{2.5}/PM_{10}$ Ratio
Low Estimate	2.9	5.23	25	45	365	0.25
High Estimate	7.5	5.23	25	45	365	0.25

	Empirical Constant (k) (lb/VMT)	Empirical Constant (a)	Empirical Constant (c)	Empirical Constant (d)	Empirical Constant (C) lb/VMT
	1.8	1	0.2	0.5	0.00047
	1.8	1	0.2	0.5	0.00047

PM_{10} Emissions Factor Calculation

	Unadjusted Emissions Factor (E) lb/VMT	Number of Wet Days (P) (>=0.254mm)	PM_{10} Adjusted Emissions Factor (E_{est}) lb/VMT	lb to grams Conversion Factor	PM_{10} Adjusted Emissions Factor (E_{est}) g/VMT
Low Estimate	0.248	45	0.21728	453.592	98.558
High Estimate	0.642	45	0.56259	453.592	255.188

Annual PM_{10} Emissions: Roadway VMT_{Annual} x E_{ext}

Road Name	$RoadwayVMT_{Annual}$	x	PM_{10} Emissions Factor (E_{ext})	=	Annual Emissions (kg/year)	Annual Emissions (tons/year)
Low Estimate	3,168,868	x	98.558	=	312,317.37	344.27
High Estimate	3,168,868	x	255.188	=	808,656.80	891.39

Annual $PM_{2.5}$ Emissions: Roadway VMT_{Annual} x E_{ext}

Road Name	$RoadwayVMT_{Annual}$	x	$PM_{2.5}$ Emissions Factor (E_{ext})	=	Annual Emissions (kg/year)	Annual Emissions (tons/year)
Low Estimate	3,168,868	x	24.640	=	78,079.34	86.07
High Estimate	3,168,868	x	63.797	=	202,164.20	222.85

Emissions Factor = $([k(s/12)^a(S/30)^d] / [(M/0.5)^c]) - C$

Where:

E	=	the unadjusted emission factor (lb/VMT)
E_{est}	=	annual size-specific emission factor extrapolated for natural mitigation (lb/VMT)
s	=	surface material silt content (%) = 2.90 % and 7.50 % (recommended by EPA and based on the Mexican NEI – 2004 and the Mexicali Emission Inventory - 2005).
M	=	surface material moisture content (%) = 5.23 % (No reliable surface soil moisture measurements are known for the area. Therefore, the average 2 inch depth soil moisture from Walnut Gulch, AZ NRCS Site # 2026 for the year of 2008 of 4.30% was adjusted for Nogales, AZ based on the average annual difference in rainfall between the two locations of 21.5% [Balling, 1988])
S	=	mean vehicle speed (mph) = 25 mph (Based on the typical unpaved road speed limit in Arizona)
k	=	Empirical Constant = 1.8 lb/VMT (EPA AP-42 Chapter 13.2.2, 2006)
a	=	Empirical Constant = 1 (EPA AP-42 Chapter 13.2.2, 2006)
c	=	Empirical Constant = 0.2 (EPA AP-42 Chapter 13.2.2, 2006)
d	=	Empirical Constant = 0.5 (EPA AP-42 Chapter 13.2.2, 2006)
C	=	0.00047 lb/VMT (EPA AP-42 Chapter 13.2.2, 2006)
P	=	number of days in a year with at least 0.254 mm (0.01 in) of precipitation = 45

Detailed TCM Calculations: Paving Unpaved Roads or Alleys [Sample]

Difference in Emissions Factors

Emissions Factor Paved (AEF) (g/mile)	-	Emissions Factor Unpaved (BEF) (g/mile)	=	Difference in Emissions Factors (g/mile)
0.382251788	-	255	=	-254.6177482

Daily Emissions Reductions = (BEF – AEF) x Miles x 0.93 x ADT x 1 /1000 (Kg/day)

Road Name	Difference in Emissions Factors (g/mile)	x	Length of Segment (miles)	x	Average Daily Traffic	=	PM_{10} Emissions Reductions (kg/day)
Road 1	-254.6177482	x	6	x	100	=	-142.08

Annual PM_{10} Emissions Reductions

Total Daily Emissions Reductions (kg/day)	x	Number of Days per Year (days/year)	=	Annual Emissions Reductions (kg/year)	Annual Emissions Reductions (tons/year)
-142.08	x	365	=	-51,858.00	-57.16

Annual $PM_{2.5}$ Emissions Reductions

Total Daily Emissions Reductions (kg/day)	x	Number of Days per Year (days/year)	=	Annual Emissions Reductions (kg/year)	Annual Emissions Reductions (tons/year)
-35.52	x	365	=	-12,964.50	-14.29

For Paving Unpaved Roads or Alleys:

Daily Emission Reductions = (BEF – AEF) * Miles * 0.93 * ADT * 1 /1000 (Kg/day)

Where:

BEF	=	The PM_{10} emission factor for vehicles traveling on unpaved roads or alleys
AEF	=	The PM_{10} emission factor for vehicles traveling on paved roads
Miles	=	The length of the project (in centerline miles)
ADT	=	The average weekday traffic on the unpaved road or alley
0.93	=	The factor to convert from weekday to annual average daily traffic on arterials.

ATTACHMENT C

Air Quality Interagency Consultation and Data Checklist

Air Quality Conformity Analysis: Interagency Consultation Conference Call Meeting Minutes

[Date Time]

[Insert Interagency Consultation Group Meeting Minutes]

Attendees:

- XXX
- XXX
- XXX
- XXX
- XXX
- XXX
- XXX
- XXX

Meeting Minutes / Discussion Points:

- XXXXXX

Air Quality Data Checklist Summary [Sample]

Data Item	Inputs Assumptions
MOVES RunSpec	
Scale/Calculation Type	County Scale Inventory Run
Analysis County	Santa Cruz County (FIPS:4023)
Analysis Year	2008
Analysis Days/Months	July Weekday Annual (Convert July weekday results to annual values by multiplying by 315.38 days/year)
Pollutants	PM2.5, PM10, NOx
Stage II Refueling Emissions	Not Included
Fuel Types	Gasoline, Diesel, CNG
Traffic Data	
Highway Network	Use 2008 statewide travel model data provided by ADOT. Data is reformatted and additional fields are added to prepare PPSUITE-ready network databases.
County HPMS VMT Adjustments	Calculate AADT HPMS adjustments for 2008 to ensure VMT is consistent with reported 2008 HPMS total.
Seasonal Adjustments	Seasonal adjustments are not applied to model traffic volume. (Use MOVES day/month VMT fractions in MOVES run for seasonal adjustments).
Vehicle Mixes	MOVES VMT required by 6 HPMS vehicle classes. Use model traffic volume (by auto, SUT, MUT), and MOVES default VMT distributions for the state to split the three vehicle groups into MOVES 13 source types, which are recombined to the 6 HPMS vehicle classes.
MOVES Inputs	
Annual VMT	Calculated by PPSUITE from model / seasonal factors / vehicle mapping.
Avg. Hourly Speed Distribution	Calculated by PPSUITE (Minimum Speed = 2.5 mph).
Road Type Distribution	Calculated by PPSUITE; a RoadType field must be added to the travel model network based on FC.
Ramp Fraction	Calculated by PPSUITE (use ramp classes coded in model network).
Month VMT Fractions	Based on ADOT data.
Day VMT Fractions	Based on ADOT data.
Hour VMT Fractions	Calculated by PPSUITE. Factors to disaggregate daily traffic volumes by hour for different roadway functional classes. Use 2008 model network volume to calculate hourly distribution as inputs to PPSUITE.
Source Type Population	Based on ADOT data.
Vehicle Age Distribution	Based on ADOT data.
Fuel Parameters (Gasoline/Diesel/CNG)	Based on ADOT data and add MOVES default CNG fuel parameters.
I/M Parameters	No I/M programs.
Temperatures/Humidity	Based on ADOT data.
Control Programs	
Early NLEV/ CA LEV-II	Not Included
Stage II Refueling Parameters	Not Included

ATTACHMENT D

Sample MOVES
Data Importer (XML) Input File
and
Run Specification (MRS) Input File

[(Sample For 2008 July Weekday and Annual Runs)]

MOVES County Data Manager Importer File – July Weekday Run (MOVESIMPORTER.XML)

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MOVES Run Specification File – July Weekday Run (MOVESRUN.MRS)

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Appendix 2:

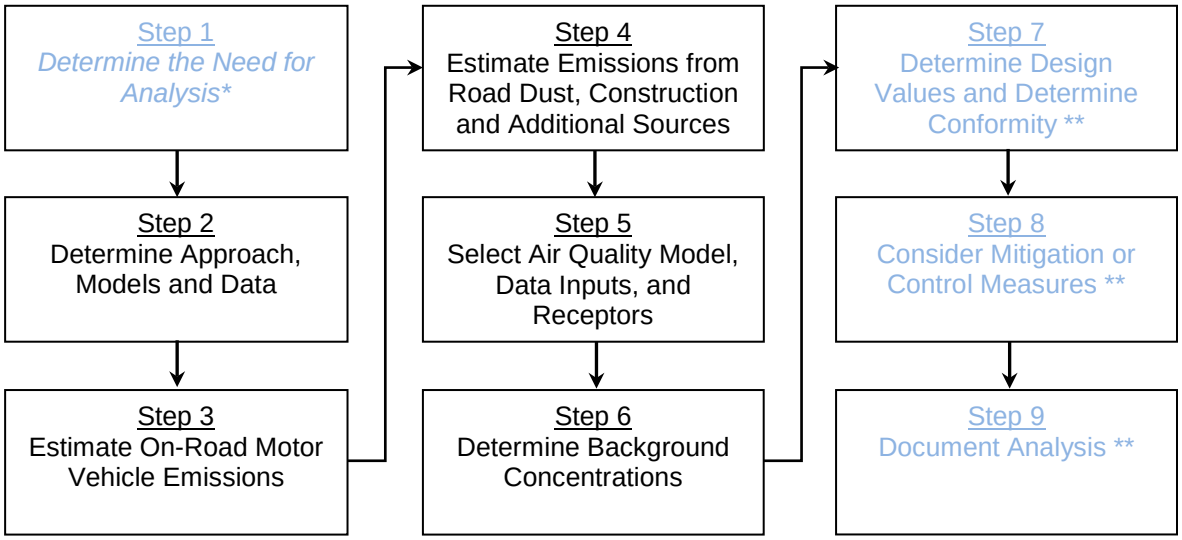
“Project Level PM Quantitative Hot-Spot Analysis Consultation Document for Project of Air Quality Concern” template.

Project Level PM Quantitative Hot-Spot Analysis – Consultation Document for Project of Air Quality Concern

General Instructions: The Arizona Department of Transportation (ADOT) developed the following consultation document for projects that are administering Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) funding that is projects of air quality concern as determined through interagency consultation. The Purpose of this document is to describe the methods, models and assumptions used for a quantitative Hot-spot analysis as required in 40 CFR 93.105(c)(1)(i), 93.123, 93.116 and to document that the analysis follows the Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas.

Completing a Particulate Matter (PM) Hot-Spot Analysis

The general steps required to complete a quantitative PM hot-spot analysis are outlined 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-420-B-15-084, November 2015.



* Described in the previous section (Air Quality Concern Questionnaire).
** These Steps will be described and documented in a final air quality analysis report.

Step 2: Determine the Approach, Models, and Data

a. Describe the project area (area substantially affected by the project, 58 FR 62212) and emission sources.
b. Determine general approach and analysis year(s) – year(s) of peak emissions during the time frame of the transportation plan (69 FR 40056).
c. Determine National Ambient Air Quality Standards (NAAQS) and PM types to be evaluated.
d. Select emissions and dispersion models and methods to be used.
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.

Step 4: Estimate Emissions from Road Dust, Construction, and Additional Sources

a. Estimate road dust emissions using AP-42 Paved Roads.
b. Do emissions from other sources (e.g., locomotives) need to be considered?

Step 5: Select Air Quality Model, Data Inputs, and Receptors

a. Obtain and input required site data (e.g., meteorological).
b. Input MOVES and AP-42 outputs (emission factors).
c. Determine number and location of receptors, roadway links, and signal timing.
d. Run air quality dispersion model and obtain concentration results.

Step 6: Determine Background Concentrations

a. Determine background concentrations from nearby and other emission sources excluding the emissions from the project itself.

Step 7: Calculate Design Values and Determine Conformity

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.

Step 8: Consider Mitigation or Control Measures

a. Consider measures to reduce emissions and redo 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 from allow the project to conform after implementing mitigation or control measures.

Step 9: Document Analysis

a. Determine if the project conforms or not 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 proposed project, when it is expected to open, and projected travel activity data.*
- *Analysis year(s) examined and factors considering in determining year(s) of peak emissions.*
- *Emissions modeling data, model used with inputs and results, and how characterization of project links.*
- *Model inputs and results for road dust, construction emissions, and emissions from other source if needed.*
- *Air Quality modeling data, included model used, inputs and results and receptors.*
- *How background concentrations were determined.*
- *Any mitigation and control measures implemented, including public involvement or consultation if needed.*
- *How interagency and public participation requirements were met.*
- *Conclusion that the proposed project meets conformity requirements.*
- *Sources of data for modeling.*

Interagency Consultation

ADOT will circulate the following Tables along with the *Project Level Conformity – Particulate Matter Project of Air Quality Concern Questionnaire* to describe in detail how the steps listed in EPA hot spot guidance will be followed. It is requested that consulted parties provide comments or questions on the methods, models and assumptions within 20 business days, a non-response will be interpreted to mean that the party concurs with the planning assumptions as describe in the Table.

Identify under each area the assumptions, data, and method that is proposed for each identified step found in Methods, Models and Assumptions Table.

Methods, Models and Assumptions for PM *(Example)*

Table 1. Methods, Models and Assumptions		
Estimate On-Road Motor Vehicle Emissions (Step 3)		
MOVES2014a	**Description**	**Data Source**
Scale	*On road, Project Emissions Rate*	EPA Hot Spot Guidance Section 4.4.2
Time Span	*4 weekday runs for each of the following months January (Quarter 1), April (Quarter 2), July (Quarter 3); October (Quarter 4) for each year. Each of these 4 runs will further be split by Morning peak hours, Midday Emissions, Evening Peak and Overnight hours as defined by TDM model.*	EPA Hot Spot Guidance Sections 2.8, 4.3.2, 4.4.3
Geographic Bounds	*County*	EPA Hot Spot Guidance Section 4.4.4
Vehicles Equipment	*All Fuels and Source Use Types will be selected*	EPA Hot Spot Guidance Section 4.4.5
Road Type	*Urban Restricted and Urban Unrestricted access*	EPA Hot Spot Guidance Section 4.4.6
Pollutants and Processes	*Primary Exhaust, Tire wear Break wear for PM10 (and PM2.5 as a prerequisite for model), Organic Carbon, Elemental Carbon, Sulfate Particulate.*	EPA Hot Spot Guidance Sections 2.5, 4.4.7
Manage Input Data Set	*Input database will be created and modified for Project level using required Regional Inputs from latest Regional Conformity Analysis.*	EPA Hot Spot Guidance Section 4.4.8, See Project Data Manager below
Output	*Database will be created, Grams, Joules, Miles, Distance Traveled, Population will be selected. Fuel type, Emissions process, Road Type and Source Use Type will be selected in the Output Emissions Detail. After running MOVES2014a for a particular hour/day/month scenario, the PM10_Grams_Per_Veh_Mile script can be run on the output database.*	EPA Hot Spot Guidance Section 4.4.10, 4.6

Project Data Manager	*Database will be created and MOVES2014a templates will be created to include local project data and information provided by xx, e.g., I/M programs, 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 MOVES2014a data.*	See Table 2 below for details
Estimate Emissions from Road Dust, Construction, and Additional Sources (Step 4) (ADOT will develop AP-42 emission factors below based on SIP or Regional Conformity Analysis provided by ADEQ, MAG, PAG or YMPO depending on the projects' locations)		
AP-42, Fifth Edition, 2011	**Description**	**Data Source**
Average Weight Vehicles	*All roads xx Ton, Freeway xx Ton, Arterials xx Ton*	*Source of Data TIP or RTP, Regional Conformity Analysis*
Silt Loading	*Section 13.2.1 Paved Roads from AP 42 will be used, consistent with the Regional analysis from xx. Emission factors for road and construction dust should be added to the emission factors generated for each link by MOVES2014a. Ex. Silt loading – Freeways .02 g/m^2, Arterials >10,000 ADT .067g/m^2, Low traffic roads <10,000 ADT .23g/m^2.*	EPA Hot Spot Guidance Section 6, 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 93.123(c)(3)).
Construction Dust	*Construction Emissions need to be addressed if construction lasts longer than 5 years at any individual site. There are no other sources (e.g., locomotives) that need to be considered for most projects.*	EPA Hot Spot Guidance Section 6.4
Precipitation	*In xxx SIP/Regional Conformity used average of xx days with at least .01 inch of precipitation County*	*Source of Data TIP or RTP, Regional Conformity Analysis, SIP*
Select Air Quality Model, Data Inputs, and Receptors (Step 5)		
AERMOD v.16216r / CAL3QHCR v.13196	**Description**	**Data Source**
Emissions Sources	*Emissions Rates in grams/time for AERMOD, in grams/mile for CAL3QHCR, all four quarters of analysis years as described in MOVES2014a section. The free flow and queue links defined for modeling with MOVES2014a will be used as inputs. The link width was defined as the width of the travel lanes plus 3 meters on either side of the roadway to account for the dispersion of the plume generated by the wake of moving vehicles. All links will be modeled at grade, with a source height of 0 m.*	EPA Hot Spot Guidance Section 7.4, Appendix J, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose Dispersion Model and Other Revisions Final Rule (U.S. EPA 2005)
Background concentration	*A value of 0 will be used as recommended in guidance.*	EPA Hot Spot Guidance Section 7, Appendix J
Queuing algorithm	*While modeling arterial/intersection projects, the PM hot-spot guidance recommends not using the queuing algorithm.*	EPA Hot Spot Guidance Section 7, Appendix J

Meteorological Data	*The meteorological data will be based on the meteorological data derived from the EPA's Support Center for Regulatory Atmospheric Modeling for the Phoenix International Airport (surface data) and the Tucson International Airport (upper air data) for the 5-year period from 1987 through 1991.*	EPA Hot Spot Guidance Section 7.5, Appendix J
Surface Roughness, Dispersion	*Based on land cover surface roughness of xx cm used Single family residential. The urban option will be selected based on the land use classification in the project areas.*	AERMOD User Guide, CAL3CQHR User Guide
Output	*While AERMOD requires that users specify the type and format of output files in the main input file for each run, CAL3QHCR produces concentrations for each quarter; all necessary data will be developed for each quarter.*	EPA Hot Spot Guidance Appendix J.6.1, J.6.2
Receptors	*Receptors are suggested to be placed at a height of 6 feet above the ground. Around the sources, receptors are placed more closely together (e.g., 30 to 90 feet); and farther from a source, they are spaced more widely (e.g., 150 to 300 feet). Receptor locations are placed in the area most impacted by the project.*	EPA Hot Spot Guidance Section 7.6.2, Appendix K and EPA 1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections (1992 EPA Guideline). Placed in appropriate locations in "the area substantially impacted by the project" (in the "project area") (93.123(c)(1)) 40 CFR Part 58: Appendix D, E
Determine Background Concentrations (Step 6)		
Background Monitor	*Select a monitor with similar land use to the project and upwind from project. Three years of monitoring data (20xx-20xx) using the 4th highest readings based on total number of sampling days of 1076 days, the 4th highest monitor value over these three years is xxx. 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 and ranked, then added to the xxx monitor value. Data from exceptional event days are not used in calculating the 4th highest readings.*	EPA Hot Spot Guidance Section 8.3

Table 2. Project Data Manager Inputs		
Input	**Level of Detail/notes**	**Possible Data Source**
Meteorology	*Same for build and no-build scenarios. A minimum of four hours (AM, PM, MD & ON), for one day (weekday) and for 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.*	ADEQ, MPO EPA Hot Spot Guidance Section 4.5.1
Age Distribution	*Same for build and no-build scenarios, unless something about the project would change them.*	ADOT, MPO EPA Hot Spot Guidance Section 4.5.2

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 Hot Spot Guidance Section 4.5.3
I/M Programs	*No impact on PM emissions.*	EPA Hot Spot Guidance Section 4.5.4
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 Hot Spot Guidance Section 4.5.5
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 (percent).*	Project specific modeling, ADOT, MPO EPA Hot Spot Guidance Section 4.5.6, Appendix D
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 Hot Spot Guidance Section 4.5.7
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.*	Project specific modeling, ADOT, MPO EPA Hot Spot Guidance Section 4.5.8
Off-Network, Hotelling	*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 Hot Spot Guidance Section 4.5.9

Appendix 3:

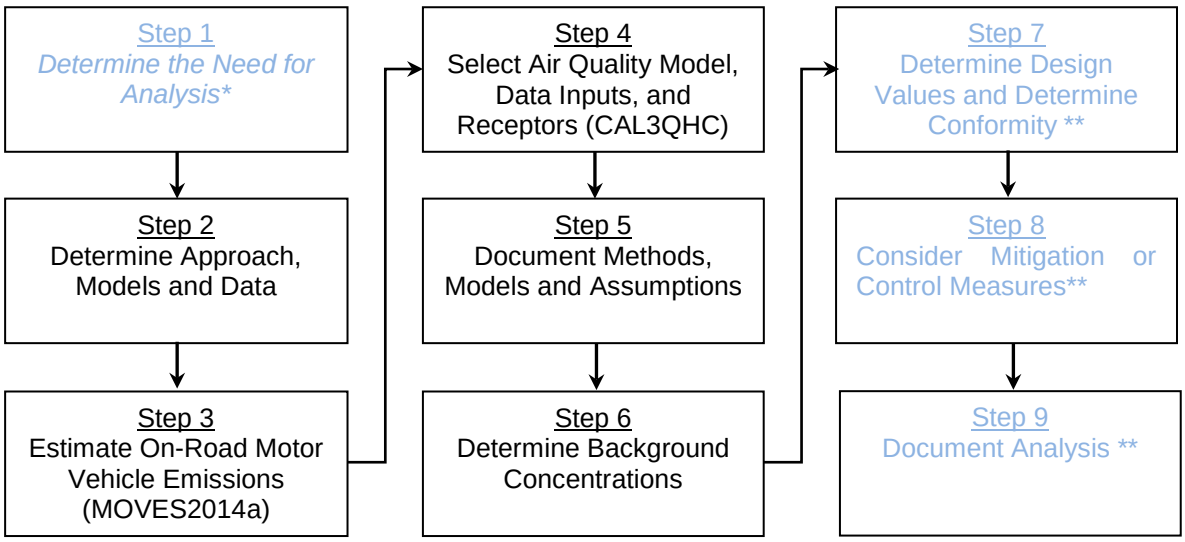
“Project Level CO Hot-Spot Analysis - Consultation Document” template.

Project Level CO Quantitative Hot-Spot Analysis – Consultation Document

General Instructions: The Arizona Department of Transportation (ADOT) developed the following consultation document for the projects of air quality concern that are funded by Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). The Purpose of this document is to describe the methods, models and assumptions used for a CO quantitative Hot-spot analysis as required in 40 CFR 93.105(c)(1)(i), 93.123, 93.116.

Completing a Carbon Monoxide (CO) Hot-Spot Analysis

The general steps required to complete a quantitative CO hot-spot analysis are outlined below and described in detail in the EPA Office of Transportation and Air Quality guidance document "Using MOVES2014 in Project-Level Carbon Monoxide Analyses" EPA-420-B-15-028, March 2015, and "Guideline for Modeling Carbon Monoxide from Roadway Intersections" EPA-454/R-92-005, November 1992.



* Described in the previous section (Air Quality Concern Questionnaire).
** These Steps will be described and documented in a final air quality analysis report.

Step 2: Determine the Approach, Models, and Data

a. Describe the project area (area substantially affected by the project, 58 FR 62212) and emission sources.
b. Determine general approach and analysis year(s) – year(s) of peak emissions during the time frame of the transportation plan (69 FR 40056).
c. Determine CO National Ambient Air Quality Standards (NAAQS) to be evaluated.
d. Select emissions and dispersion models and methods to be used.
e. Obtain project-specific data (e.g., fleet mix, peak-hour volumes and average speed).

Step 3: Estimate On-Road Motor Vehicle Emissions with MOVES2014a

a. Generate RunSpec and enter project-specific data into Project Data Manager
b. Estimate on-road motor vehicle emissions.

Step 4: Select Air Quality Model, Data Inputs, and Receptors for CAL3QHC

a. Obtain and input required site data (e.g., meteorological).
b. Input MOVES outputs (emission factors).
c. Determine number and location of receptors, roadway links, and signal timing.
d. Run air quality dispersion model and obtain concentration results.

Step 5: Document Methods, Models and Assumptions

a. Summarize the methods, models and assumptions based on Step 3 & 4 (see the example in Table 1).
b. Submit the summary document to ADOT for review.

Step 6: Determine Background Concentrations

a. Determine background concentrations from nearby and other emission sources excluding the emissions from the project itself.

Step 7: Calculate Design Values and Determine Conformity

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.

Step 8: Consider Mitigation or Control Measures

a. Consider measures to reduce emissions and redo 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 from allow the project to conform after implementing mitigation or control measures.

Step 9: Document Analysis

a. Determine if the project conforms or not 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 proposed project, when it is expected to open, and projected travel activity data.*
- *Analysis year(s) examined and factors considering in determining year(s) of peak emissions.*
- *Emissions modeling data, model used with inputs and results, and how characterization of project links.*
- *Model inputs and results for road dust, construction emissions, and emissions from other source if needed.*
- *Air Quality modeling data, included model used, inputs and results and receptors.*
- *How background concentrations were determined.*
- *Any mitigation and control measures implemented, including public involvement or consultation if needed.*
- *How interagency and public participation requirements were met.*
- *Conclusion that the proposed project meets conformity requirements.*
- *Sources of data for modeling.*

Methods, Models and Assumptions for CO *(Example)*

Table 1. Methods, Models and Assumptions		
Estimate On-Road Motor Vehicle Emissions (Step 3)		
MOVES2014a	**Description**	**Data Source**
Scale	*On road, Project, Inventory*	EPA Using MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.3.2
Time Span	*EPA 1992 Guideline conservatively uses a typical peak-hour traffic activity in one MOVES run to generate emission rates.*	EPA Using MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.3.3
Geographic Bounds	*Maricopa County; Pima County for any conformity determinations prior to 7/10/20*	EPA Using MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.3.4
Vehicles Equipment	*All Fuels and Source Use Types will be selected*	EPA Using MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.3.5
Road Type	*Urban Restricted and Urban Unrestricted access*	EPA Using MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.3.6
Pollutants and Processes	*CO Running Exhaust, CO Crankcase Running Exhaust*	EPA Using MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.3.7
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 MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.3.10
Project Data Manager	*Database will be created and MOVES2014a templates will be created to include local project data and information provided by MPO, e.g., MAG's or PAG's I/M programs, Fuel, Age Distribution, Meteorology data which are consistent with the regional models. Otherwise, the average temperature and humidity in January may be used. Links and Link Source Type will be specific to project as provided by the traffic study, any missing information will use default MOVES2014a data. After running MOVES, the MOVES CO_CAL3QHC_EF post-processing script is run.*	See Table 2 below for details

Select Air Quality Model, Data Inputs, and Receptors (Step 4)		
CAL3QHC	**Description**	**Data Source**
Emissions Sources	*Emissions Rates in grams/mile, as described in MOVES2014a section. The free flow and queue links defined for modeling with MOVES2014a will be used as input into CAL3QHC.*	1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, EPA-454/R-92-005, November 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 3m from the roadways at a height of 1.8m, nearby occupied lot, vacant lot, sidewalks, and any locations near breathing height (1.8m) to which the general public has continuous access.*	1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 2.2
Traffic and Geometric Design	*Lane Configuration, Lane Width, Signalization, Turning Movements, Median Width, Traffic Volume, Level of Service, Grade, % of Heavy-Duty Trucks, and Peak Hour Average Approach Speed.*	1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 4.7.4
Meteorology	*Temperature, Wind Speed, Wind Direction, Atmospheric Stability Class, Mixing Heights and Surface Roughness.*	1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 4.7.1
Persistence Factor	*Local persistence factor based on monitoring data. If it is not available, use a default persistence factor of 0.7.*	1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 4.7.2
Determine Background Concentrations (Step 6)		
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*	1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 4.7.3

Table 2. Project Data Manager Inputs		
Input	**Level of Detail/notes**	**Possible Data Source**
Meteorology	*Same for build and no-build scenarios. A minimum of four hours (AM, PM, MD & ON), for one 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 MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.4.1
Age Distribution	*Same for build and no-build scenarios, unless something about the project would change them.*	ADOT, MPO EPA Using MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.4.2
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 Area A and B should define the I/M programs. Use*	MPO, MOVES defaults EPA Using MOVES2014 in Project-Level

	MPO data. If not available, may use the MOVES default I/M programs but review the details and make any necessary changes before use.	Carbon Monoxide Analyses, Section 2.4.4
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 MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.4.7
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 (percent).*	Project specific modeling, ADOT, MPO EPA Using MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.4.6
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 MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.4.5
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.*	Project specific modeling, ADOT, MPO EPA Using MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.4.8, 2.4.9
Off-Network, Hotelling	*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 MOVES2014 in Project-Level Carbon Monoxide Analyses, Section 2.4.9

Table 3. Construction Emissions *(Only if Applicable)*		
Construction Emissions	*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 due to traffic delay and/or detours.*	40CFR93.123(c)(5)"Each site which is affected by construction-related activities shall be considered separately, using established "Guideline" methods." If applicable, include analysis as an Appendix to the Air Quality Report.