

Nogales PM_{2.5} / PM₁₀ Nonattainment Areas Analysis

Purpose and Organization

The Nogales PM_{2.5} / PM₁₀ 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 (PM₁₀) 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 than 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 PM₁₀ 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.

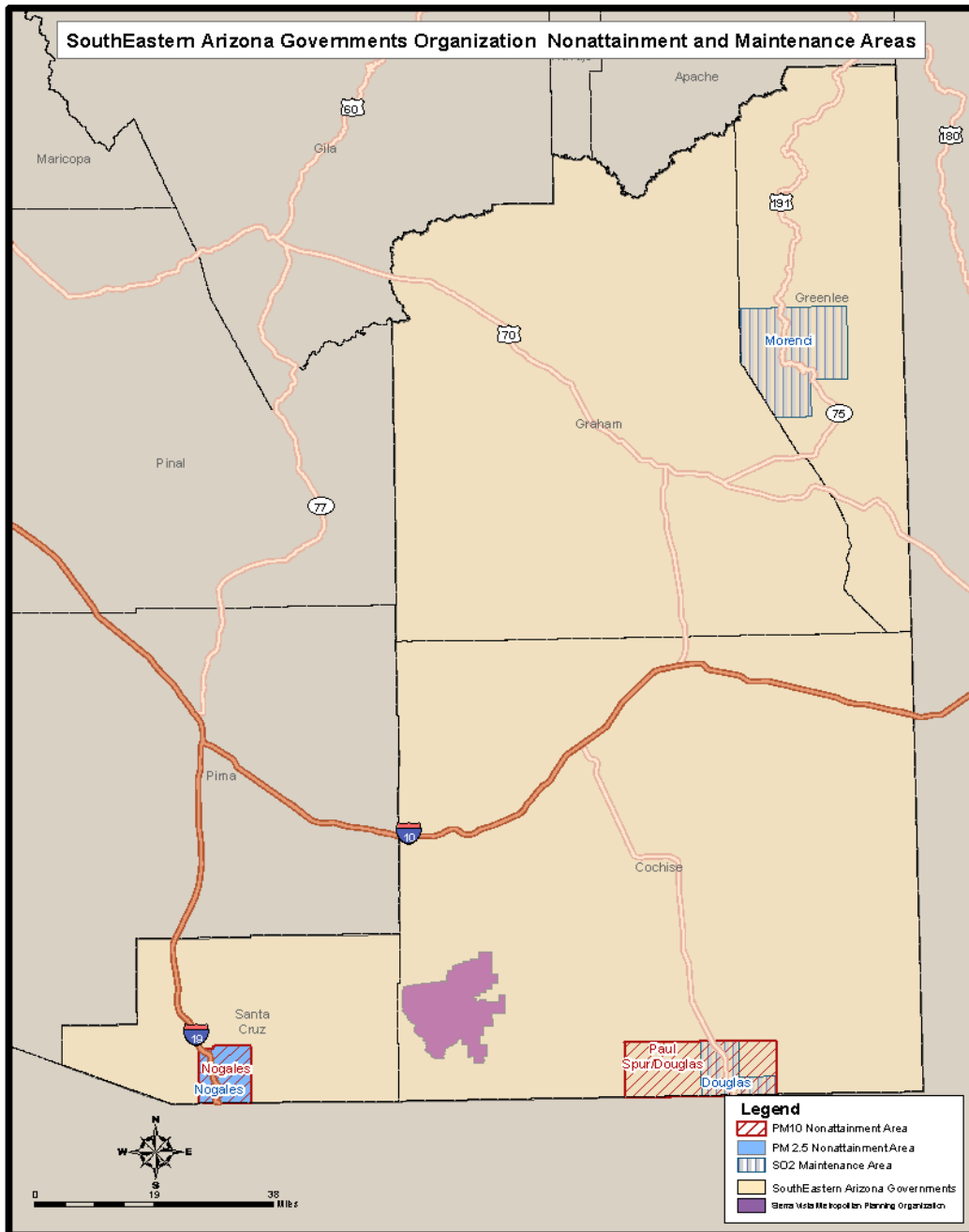
Particle pollution (also called particulate matter or PM) is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using 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 PM₁₀ standard at 150 µg/m³. **Error! Reference source not found.** **Error! Reference source not found.** illustrates the air quality status in the SouthEastern Arizona Governments Organization (SEAGO) region for the 1987 PM₁₀ 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.

DRAFT

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 NO_x.

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 NO_x.

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 NO_x are the only emissions that must be analyzed for transportation conformity (§93.119).

PM₁₀

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)
<i>Nogales, AZ 24-Hour PM_{2.5} Nonattainment Area</i>		
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.
<i>Nogales, AZ 24- Hour PM₁₀ Moderate Nonattainment Area</i>		
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 PM ₁₀ , but for international emissions sources in Nogales, Mexico.

Table 2: 2011 Nogales Nonattainment Area PM₁₀ 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 or 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).

DRAFT

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. Local 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, NO _x]
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 PM₁₀ 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 PM₁₀ 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

- PM₁₀: 1.0 g/VMT,
- PM_{2.5}: 0.25 g/VMT

sL = Road surface silt loading [(0.105 g/m² ADEQ Nogales PM₁₀ 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 = PM₁₀ 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)

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

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

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:

Month 2016

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 PM₁₀ 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 PM₁₀ 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 PM₁₀ 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}
[xxx]	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 PM₁₀ 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 PM₁₀ 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}, NO_x, and road dust emissions for summer weekday conditions. Emissions are compared against a [xxx no-build] estimate. The table illustrates that all future analysis year emissions are below the [xxx no-build].]

DRAFT

Table 6: 24-Hour PM₁₀ 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 PM₁₀ 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 all 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.

PPSUITE: Post-Processor for Air Quality, a set of programs that estimate speeds and processes MOBILE emission rates.

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

DRAFT

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

[Insert Project List]

DRAFT

ATTACHMENT B
Detailed Emission Results

DRAFT

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 PM₁₀ Re-entrained Dust Emissions: Roadway VMT_{Annual} x 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} x 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/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)

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

PM₁₀ 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 PM₁₀ 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 = $\left[\frac{k(s/12)^a (S/30)^d}{(M/0.5)^c} \right] - C$

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 PM₁₀ 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 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.

DRAFT

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
- XXX

Meeting Minutes / Discussion Points:

- XXXXXX

DRAFT

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.
IM Parameters	No IM 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)

```

<moves>
  <importer mode="county" >
    <filters>
      <geographicselections>
        <geographicselection type="COUNTY" key="4023" description="ARIZONA - Santa Cruz County"/>
      </geographicselections>
      <timespan>
        <year key="2008"/>
        <month id="07"/>
        <day id="2"/>
        <day id="5"/>
        <beginhour id="1"/>
        <endhour id="24"/>
        <aggregateBy key="Hour"/>
      </timespan>
      <onroadvehicleselections>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="62" sourcetype="Combination Long-haul Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="61" sourcetype="Combination Short-haul Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="41" sourcetype="Intercity Bus"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="32" sourcetype="Light Commercial Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="54" sourcetype="Motor Home"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="11" sourcetype="Motorcycle"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="21" sourcetype="Passenger Car"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="31" sourcetype="Passenger Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="51" sourcetype="Refuse Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="43" sourcetype="School Bus"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="53" sourcetype="Single Unit Long-haul Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="52" sourcetype="Single Unit Short-haul Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="42" sourcetype="Transit Bus"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="62" sourcetype="Combination Long-haul Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="61" sourcetype="Combination Short-haul Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="41" sourcetype="Intercity Bus"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="32" sourcetype="Light Commercial Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="54" sourcetype="Motor Home"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="11" sourcetype="Motorcycle"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="21" sourcetype="Passenger Car"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="31" sourcetype="Passenger Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="51" sourcetype="Refuse Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="43" sourcetype="School Bus"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="53" sourcetype="Single Unit Long-haul Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="52" sourcetype="Single Unit Short-haul Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="42" sourcetype="Transit Bus"/>
      </onroadvehicleselections>
      <offroadvehicleselections>
      </offroadvehicleselections>
      <offroadvehiclesccs>
      </offroadvehiclesccs>
      <roadtypes>
        <roadtype roadtypeid="1" roadtypename="Off-Network"/>
        <roadtype roadtypeid="2" roadtypename="Rural Restricted Access"/>
        <roadtype roadtypeid="3" roadtypename="Rural Unrestricted Access"/>
        <roadtype roadtypeid="4" roadtypename="Urban Restricted Access"/>
        <roadtype roadtypeid="5" roadtypename="Urban Unrestricted Access"/>
      </roadtypes>
      </filters>
      <databaseselection servername="localhost" databasename="4023_2008_07_05_Wkd_Inv_Nogales_Final3_mi"/>
      <agedistribution>
        <description><![CDATA[]]></description>
        <parts>
          <sourceTypeAgeDistribution>
            <filename>C:\AZMOVES\MOVESInputs\AgeDistribution\4023_2008_SourceTypeAgeDistribution.csv</filename>
          </sourceTypeAgeDistribution>
        </parts>
      </agedistribution>
      <avgspeeddistribution>

```

```

    <description><![CDATA[]]></description>
    <parts>
      <avgSpeedDistribution>
<filename>C:\AZMOVES\Out\Inv_2008_Nogales_Final3\4023_2008_07_05_Wkd_Inv_Nogales_Final3\CDM\avgSpeedDistribution.csv</filename>
      </avgSpeedDistribution>
    </parts>
  </avgSpeedDistribution>
  <imcoverage>
    <description><![CDATA[]]></description>
    <parts>
      <imcoverage>
        <filename>C:\AZMOVES\MOVESInputs\IM\4000_IMCoverage.csv</filename>
      </imcoverage>
    </parts>
  </imcoverage>
<fuel>
  <description><![CDATA[]]></description>
  <parts>
    <FuelSupply>
      <filename>C:\AZMOVES\MOVESInputs\Fuel\4000_2008_FuelSupply_moves2010ab.csv</filename>
    </FuelSupply>
    <FuelFormulation>
      <filename>C:\AZMOVES\MOVESInputs\Fuel\4000_FuelFormulation_moves2010ab.csv</filename>
    </FuelFormulation>
  </parts>
</fuel>
  <zonemonthhour>
    <description><![CDATA[]]></description>
    <parts>
      <zoneMonthHour>
        <filename>C:\AZMOVES\MOVESInputs\Meteorology\4023_2008_met.csv</filename>
      </zoneMonthHour>
    </parts>
  </zonemonthhour>

  <roadtypedistribution>
    <description><![CDATA[]]></description>
    <parts>
      <roadTypeDistribution>
<filename>C:\AZMOVES\Out\Inv_2008_Nogales_Final3\4023_2008_07_05_Wkd_Inv_Nogales_Final3\CDM\roadTypeDistribution.csv</filename>
      </roadTypeDistribution>
    </parts>
  </roadtypedistribution>

  <sourcetypepopulation>
    <description><![CDATA[]]></description>
    <parts>
      <sourceTypeYear>
<filename>C:\AZMOVES\Out\Inv_2008_Nogales_Final3\4023_2008_07_05_Wkd_Inv_Nogales_Final3\CDM\SourceTypePopulation.csv</filename>
      </sourceTypeYear>
    </parts>
  </sourcetypepopulation>
  <rampfraction>
    <description><![CDATA[]]></description>
    <parts>
      <roadType>
        <filename>C:\AZMOVES\Out\Inv_2008_Nogales_Final3\4023_2008_07_05_Wkd_Inv_Nogales_Final3\CDM\rampFraction.csv</filename>
      </roadType>
    </parts>
  </rampfraction>
  <vehicletypevmt>
    <description><![CDATA[]]></description>
    <parts>
      <hpmsVTypeYear>
<filename>C:\AZMOVES\Out\Inv_2008_Nogales_Final3\4023_2008_07_05_Wkd_Inv_Nogales_Final3\CDM\hpmsVTypeYear.csv</filename>
      </hpmsVTypeYear>

```



```
<monthvmtfraction>  
  <filename>C:\AZMOVES\MOVESInputs\MonthDayHourFractions\MonthFraction\4023_2008_MonthVMTFraction.csv</filename>  
</monthvmtfraction>  
<dayvmtfraction>  
  <filename>C:\AZMOVES\MOVESInputs\MonthDayHourFractions\DayFraction\4023_2008_dayvmtfraction.csv</filename>  
</dayvmtfraction>  
<hourvmtfraction>  
  <filename>C:\AZMOVES\Out\Inv_2008_Nogales_Final3\4023_2008_07_05_Wkd_Inv_Nogales_Final3\CDM\hourvmtfraction.csv</filename>  
</hourvmtfraction>  
</parts>  
</vehicletypevmt>  
</importer>  
</moves>
```

DRAFT

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

```

<runspec>
  <description><![CDATA[MOVES2010 RunSpec Created by CENTRAL4 Scenario: SANT 2008 JULWKD Wkd_Inv_Nogales_Final3 Emission Inventory with user's
data]]></description>
<modelscale value="INV"/>
  <modeldomain value="SINGLE"/>
  <geographicselections>
    <geographicselection type="COUNTY" key="4023" description="ARIZONA - Santa Cruz County"/>
  </geographicselections>
  <timespan>
    <year key="2008"/>
<month id="07"/>
<day id="5"/>
  <beginhour id="1"/>
  <endhour id="24"/>
<aggregateBy key="Hour"/>
  </timespan>
  <onroadvehicleselections>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="11" sourcetype="Motorcycle"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="21" sourcetype="Passenger Car"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="31" sourcetype="Passenger Truck"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="32" sourcetype="Light Commercial Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="11" sourcetype="Motorcycle"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="21" sourcetype="Passenger Car"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="31" sourcetype="Passenger Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="32" sourcetype="Light Commercial Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="11" sourcetype="Motorcycle"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="21" sourcetype="Passenger Car"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="31" sourcetype="Passenger Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="32" sourcetype="Light Commercial Truck"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="41" sourcetype="Intercity Bus"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="42" sourcetype="Transit Bus"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="43" sourcetype="School Bus"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="41" sourcetype="Intercity Bus"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="42" sourcetype="Transit Bus"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="43" sourcetype="School Bus"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="41" sourcetype="Intercity Bus"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="42" sourcetype="Transit Bus"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="43" sourcetype="School Bus"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="51" sourcetype="Refuse Truck"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="52" sourcetype="Single Unit Short-haul Truck"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="53" sourcetype="Single Unit Long-haul Truck"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="54" sourcetype="Motor Home"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="61" sourcetype="Combination Short-haul Truck"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="62" sourcetype="Combination Long-haul Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="51" sourcetype="Refuse Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="52" sourcetype="Single Unit Short-haul Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="53" sourcetype="Single Unit Long-haul Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="54" sourcetype="Motor Home"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="61" sourcetype="Combination Short-haul Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="62" sourcetype="Combination Long-haul Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="51" sourcetype="Refuse Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="52" sourcetype="Single Unit Short-haul Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="53" sourcetype="Single Unit Long-haul Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="54" sourcetype="Motor Home"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="61" sourcetype="Combination Short-haul Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="62" sourcetype="Combination Long-haul Truck"/>
  </onroadvehicleselections>
  <offroadvehicleselections>
  </offroadvehicleselections>
  <offroadvehiclesscs>
  </offroadvehiclesscs>
  <roadtypes>
    <roadtype roadtypeid="1" roadtypename="Off-Network"/>
    <roadtype roadtypeid="2" roadtypename="Rural Restricted Access"/>
    <roadtype roadtypeid="3" roadtypename="Rural Unrestricted Access"/>
    <roadtype roadtypeid="4" roadtypename="Urban Restricted Access"/>
  </roadtypes>

```



```

<pollutantprocessassociation pollutantkey="6" pollutantname="Nitrous Oxide (N2O)" processkey="2" processname="Start Exhaust"/>
<pollutantprocessassociation pollutantkey="6" pollutantname="Nitrous Oxide (N2O)" processkey="15" processname="Crankcase Running Exhaust"/>
<pollutantprocessassociation pollutantkey="6" pollutantname="Nitrous Oxide (N2O)" processkey="16" processname="Crankcase Start Exhaust"/>
<pollutantprocessassociation pollutantkey="79" pollutantname="Non-Methane Hydrocarbons" processkey="11" processname="Evap Permeation"/>
<pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="11" processname="Evap Permeation"/>
<pollutantprocessassociation pollutantkey="87" pollutantname="Volatile Organic Compounds" processkey="11" processname="Evap Permeation"/>
<pollutantprocessassociation pollutantkey="1" pollutantname="Total Gaseous Hydrocarbons" processkey="11" processname="Evap Permeation"/>
  </pollutantprocessassociations>
  <databaseselections>
  </databaseselections>
  <inputdatabase servername="" databasename="" description=""/>
  <uncertaintyparameters uncertaintymodeenabled="false" numberofrunspersimulation="0" numberofsimulations="0"/>
<geographicoutputdetail description="COUNTY"/>
  <outputemissionsbreakdownselection>
<modelyear selected="false"/>
<fueltype selected="false"/>
<emissionprocess selected="false"/>
  <onroadoffroad selected="true"/>
<roadtype selected="true"/>
<sourceusertype selected="true"/>
  <movesvehicletype selected="false"/>
<onroadsc selected="false"/>
  <offroadsc selected="false"/>
  <estimateuncertainty selected="false" numberofiterations="2" keepSampledData="false" keepiterations="false"/>
  <sector selected="false"/>
  <engtechid selected="false"/>
  <hpclass selected="false"/>
</outputemissionsbreakdownselection>
  <outputdatabase servername="localhost" databasename="4023_2008_07_05_Wkd_Inv_Nogales_Final3_mo" description=""/>
<outputtimestep value="Hour"/>
<outputvmtdata value="true"/>
<outputsho value="true"/>
<outputsh value="true"/>
<outputshp value="true"/>
<outputshidling value="true"/>
<outputstarts value="true"/>
<outputpopulation value="true"/>
<scaleinputdatabase servername="localhost" databasename="4023_2008_07_05_Wkd_Inv_Nogales_Final3_mi" description=""/>
<pmsize value="0"/>
<outputfactors>
  <timefactors selected="true" units="Hours"/>
  <distancefactors selected="false" units="Miles"/>
  <massfactors selected="false" units="Grams" energyunits="Million BTU"/>
</outputfactors>
<savedata>
</savedata>
<donotexecute>
</donotexecute>
<generatordatabase shouldsave="false" servername="" databasename="" description=""/>
  <donotperformfinalaggregation selected="false"/>
<lookupableflags scenarioid="" truncateoutput="false" truncateactivity="false"/>
  <internalcontrolstrategies>
<internalcontrolstrategy classname="gov.epa.otaq.moves.master.implementation.ghg.internalcontrolstrategies.rateofprogress.RateOfProgressStrategy"><![CDATA[
useParameters
No
]]></internalcontrolstrategy>
  </internalcontrolstrategies>
</runspec>

```