<table>
<tr><th>Comment Number</th><th>Reviewer Name</th><th>Sheet Number</th><th>Comment</th><th>Resolution</th></tr>
<tr><td>1</td><td>Lindsay Wickersham, EPA</td><td>F0316_Project-Level-CO-Modeling Consultation_20230213.pdf</td><td>1. There appears to be a typo in the numbering of the pages. There are two page 8, and no page 7.</td><td>Will address</td></tr>
<tr><td>2</td><td>Lindsay Wickersham, EPA</td><td>F0316_Project-Level-CO-Modeling Consultation_20230213.pdf</td><td>2. On the top of page 7 (labeled as 8), there are 4 intersections listed for modeling and it is stated that, “analysis will be performed for the following four intersections’ peak hours of the days…”
a. From Table 2, it looks like there are worse delays in the build scenario for Deer Valley Rd/MB 1-17 and for Pinnacle Peak Rd/NB-17 in the PM Peaks when compared to the existing conditions. Can ADOT elaborate on why the AM peaks were chosen for all four of these intersections?</td><td>The worst LOS and highest delay would result in the AM at both Pinnacle Peak Rd/NB I-17 and Pinnacle Peak Rd/SB I-17 intersections, and Deer Valley Rd/SB I-17 intersection. See Table 2. To be consistent, AM peak hour was used for all intersections for Pinnacle Peak Rd TI and Deer Valley Rd TI.</td></tr>
<tr><td></td><td></td><td></td><td>Table 2 – Intersections LOS in the Project Area
<table><tr><th colspan="2" rowspan="3">Level of Service (LOS)</th><th colspan="2">2020 Existing</th><th colspan="2">2050 No-Build</th><th colspan="2">2050 Build</th></tr><tr><th>AM Peak</th><th>PM Peak</th><th>AM Peak</th><th>PM Peak</th><th>AM Peak</th><th>PM Peak</th></tr><tr><th>LOS (delay)</th><th>LOS (delay)</th><th>LOS (delay)</th><th>LOS (delay)</th><th>LOS (delay)</th><th>LOS (delay)</th></tr><tr><td rowspan="4">Overall Intersection LOS</td><td>Deer Valley Rd/NB I-17</td><td>C (22.7)</td><td>C (24.3)</td><td>C (20.7)</td><td>D (49.2)</td><td>C (23.9)</td><td>D (40.1)</td></tr><tr><td>Deer Valley Rd/SB I-17</td><td>D (36.6)</td><td>C (28.9)</td><td>D (36.5)</td><td>C (27.7)</td><td>C (33.3)</td><td>C (29.6)</td></tr><tr><td>Pinnacle Peak Rd/NB-17</td><td>E (64.4)</td><td>D (40.4)</td><td>E (65.8)</td><td>E (60.1)</td><td>E (56.3)</td><td>D (50.9)</td></tr><tr><td>Pinnacle Peak Rd/SB-17</td><td>C (28.9)</td><td>C (22.9)</td><td>D (49.2)</td><td>C (26.3)</td><td>E (66.5)</td><td>C (25.1)</td></tr></table>Notes:
Source: LOS data provided by Stanley Consultants. MAG traffic demand model received from Stanley Consultants on November 1, 2022</td><td></td></tr>
<tr><td>3</td><td>Lindsay Wickersham, EPA</td><td>F0316_Project-Level-CO-Modeling Consultation_20230213.pdf</td><td>3. On the top of page 8, it is stated that the MOVES2014 in Project-Level Carbon Monoxide Analyses will be used. Please update to the most recent guidance, “Using MOVES3 in Project-Level Carbon Monoxide Analyses” available here: Using MOVES3 in Project-Level Carbon Monoxide Analyses (EPA-420-B-21-047, December 2021)</td><td>Will address</td></tr>
<tr><td>4</td><td>Lindsay Wickersham, EPA</td><td>F0316_Project-Level-CO-Modeling Consultation_20230213.pdf</td><td>4. EPA had the following comments in regards to Table 1. Methods, Models and Assumptions
a. For the row labeled “Time Spans” please elaborate on what time will be used for the AM peaks and what time will be used for the PM peaks (as applicable) when modeling the worst case scenario. Will 17:00-17:59 be used for AM peaks as well?</td><td>Thanks for pointing that out.
For AM Peak hour: opening year 2026, January, Weekdays, 7:00 - 7:59 AM
For PM Peak hour: opening year 2026, January Weekdays, 17:00 - 17:59 AM</td></tr>
</table>

Project Level PM Quantitative Hot-Spot Analysis – Project of Air Quality Concern Questionnaire

Project Setting and Description

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being carried out by Arizona Department of Transportation (ADOT), pursuant to 23 U.S.C. 326 and a Memorandum of Understanding dated January 4, 2021, and executed by the Federal Highway Administration (FHWA) and ADOT. The Arizona Department of Transportation project [MAG TIP ID DOT23-014D, design ramp and turnbacks] is being present for interagency consultation in preparation for design for the addition of capacity to the I-17/SR 101L westbound-to-northbound ramp (Ramp WN) from approximately 19th Avenue on SR 101L to approximately Pinnacle Peak Road on I-17. The Ramp WN improvements are located within the city of Phoenix in Maricopa County, Arizona, within ADOT's Central District.

The Ramp WN improvements will convert the existing directional system TI Ramp WN from 1-lane to 2-lanes to reduce traffic congestion and improve Level of Service (LOS) for the movement from WB SR 101L to NB I-17.

Improvements to convert the ramp from 1-lane to 2-lanes include:

- Restriping the WB SR 101L beginning at the back of gore at the 19th Avenue exit ramp to provide a 3-lane exit from WB SR 101L to I-17 Ramp WN/WS.
- Restriping Ramp WN from two lanes to three from the split with Ramp WS to the merge with Ramp EN.
- Restripe the segment from the Ramp EN and Ramp WN merge to the NB Deer Valley Road exit ramp from 2-lanes to 3-lanes.
- Widen the Ramp EN and Ramp WN connector from the NB Deer Valley Road exit ramp to the Deer Valley overpass bridge to continue and drop 3-lanes to 2-lanes.
- Widen between the NB Deer Valley Entrance Ramp and NB Pinnacle Peak exit ramp to continue five travel lanes and shift and maintain the existing auxiliary lane.
- Widen between the NB Pinnacle Peak exit ramp and the NB Pinnacle Peak entrance ramp to continue and drop 5-lanes to 4-lanes.

Adding the lane between WB SR 101L to the NB Deer Valley Road exit ramp will be accomplished by restriping and reducing inside and outside shoulders and travel lanes.

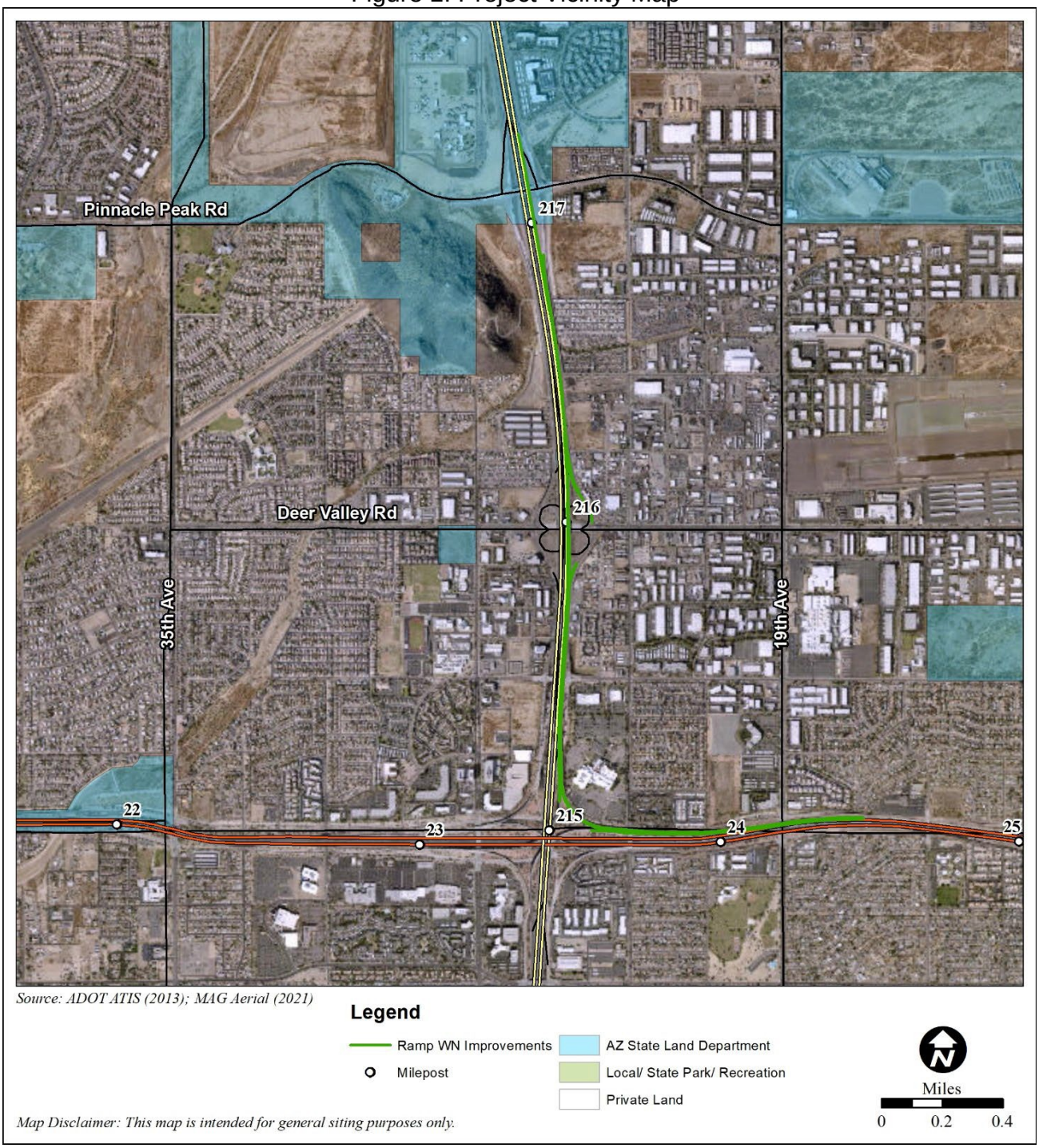
Adding the lane between the NB Deer Valley Road entrance ramp and NB Pinnacle Peak entrance ramp will be accomplished by widening the existing roadway.

Major work items associated with Ramp WN improvements include:

- Removing and replacing sign panels on overhead sign structures and ground mounted signs and posts.
- Obliterating and replacing pavement markings.
- Removing and replacing concrete barrier and curb and gutter.
- Placing new concrete pavement.
- Relocating an FMS cabinet and pull boxes.
- Removing and replacing I-17 NB in-pavement loop detector.
- Removing and replacing catch basins.

The project is in the Maricopa County (Phoenix) Nonattainment Area for particulates 10- microns in diameter or less (PM10), eight-hour ozone, maintenance area for carbon monoxide. The proposed project is included in the *Maricopa Association of Governments (MAG) Regional Transportation Plan (RTP) MOMENTUM 2050*. In addition, the project is included in the *FY 2022-2025 MAG Transportation Improvement Program*.

Figure 1. Project Vicinity Map



Project Assessment

The following questionnaire is used to compare the proposed project to a list of project types in 40 CFR 93.123(b) requiring a quantitative analysis of local particulate emissions (Hot- spots) in nonattainment or maintenance areas, which include:

i) New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;
ii) Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of an increase in traffic volumes from a significant number of diesel vehicles related to the project;
iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
v) Projects in or affecting locations, areas, or categories of sites which are identified in the PM_{10} or $PM_{2.5}$ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

If the project matches one of the listed project types in 40 CFR 123(b)(1) above, it is considered a project of local air quality concern and the hot-spot demonstration must be based on quantitative analysis methods in accordance to 40 CFR 93.116(a) and the consultation requirements of 40 CFR 93.105(c)(1)(i). If the project does not require a PM hot- spot analysis, a qualitative assessment will be developed that demonstrates that the project will not contribute to any new localized violations, increase the frequency of severity of any existing violations, or delay the timely attainment of any NAAQS or any required emission reductions or milestones in any nonattainment or maintenance area.

On March 10, 2006, EPA published *PM2.5 and PM10 Hot-Spot Analyses in Project-Level Transportation Conformity Determinations for the New PM2.5 and Existing PM10 National Ambient Air Quality Standards; Final Rule* describing the types of projects that would be considered a project of air quality concern and that require a hot-spot analysis (71 FR 12468- 12511). Specifically on page 12491, EPA provides the following clarification: "Some examples of *projects of air quality concern* that would be covered by § 93.123(b)(1)(i) and (ii) are: A project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT) and 8% or more of such AADT is diesel truck traffic;" .." Expansion of an existing highway or other facility that affects a congested intersection (operated at Level-of-Service D, E, or F) that has a significant increase in the number of diesel trucks;" These examples will be considered as extreme cases for determining if the project is a project of air quality concern.

New Highway Capacity

Is this a new highway project that has a significant number of diesel vehicles? *Example: total traffic volumes ≥125,000 annual average daily traffic (AADT) and truck volumes ≥10,000 diesel trucks per day (8% of total traffic).*

NO – This project is not a new highway project.

Expanded Highway Capacity

Is this an expanded highway projects that have a significant increase in the number of diesel vehicles? *Example: the build scenario of the expanded highway or expressway causes a significant increase in the number of diesel trucks compared with the no-build scenario, truck volumes > 8% of the total traffic.*

YES/NO – ADOT is requesting comments on if this is considered to a significant increase in the number of diesel vehicles. The ADT and truck percentage for the Build alternative were compared to the No Build alternative on 3 mainline sections and 4 intersections along the project corridor, as summarized in Table 1. The percentage increase in the total trucks (medium and heavy trucks) ranges from a 0.14% to 0.26% on mainline and from -0.41% to 0.63% at the intersections, and the total increase in medium and heavy truck ranging from 1,677 to 2,337 vehicles on mainline and from -279 to 523 vehicles at the intersections.

Table 1 – Freeway Mainline ADT and Truck ADT in Existing, No Build and Build Conditions

	AADT and Truck Volumes	2020 Existing		2050 No-Build		2050 Build		Difference (Build - No- Build)		
		ADT	Truck (%)	ADT	Truck (%)	ADT	Truck (%)	ADT	Truck ADT	Truck (%)
Mainline	I-17, Rose Garden Ln to Deer Valley Rd	173,157	11.06%	263,911	16.09%	275,955	16.23%	12,044	2,337	0.14%
	I-17, Deer Valley Rd to Pinnacle Peak Rd	181,922	10.31%	280,634	14.98%	286,920	15.24%	6,286	1,677	0.26%
Intersection	Deer Valley Rd/NB I-17	51,158	6.64%	72,885	8.21%	73,595	8.85%	710	523	0.63%
	Deer Valley Rd/SB I-17	33,741	3.99%	46,468	4.40%	44,277	3.99%	-2,191	-279	-0.41%
	Pinnacle Peak Rd/NB-17	41,178	4.60%	54,738	5.25%	52,164	5.17%	-2,573	-177	-0.08%
	Pinnacle Peak Rd/SB-17	34,316	4.87%	45,222	5.13%	41,781	4.99%	-3,441	-237	-0.14%

Note: Truck% includes heavy truck and medium truck. AADT at intersections include volumes on approach lanes.
Source: MAG traffic demand model received from Stanley Consultants on November 1, 2022

Projects with Congested Intersections

Is this a project that affects a congested intersection (LOS D or greater) that has a significant number of diesel trucks, OR will change LOS to D or greater because of an increase in traffic volumes from a significant number of diesel trucks related to the project?

YES. This is a project that affects a congested intersection of LOS D or will change LOS to D or greater which has a significant number of diesel trucks, see Table 2. The intersection operation analysis shows 3 intersections have a LOS of D, E, or F, and each of these intersections has significant numbers of diesel trucks related to the project in 2050 Build alternative, as shown in previous Table 1.

Table 2 – Intersections LOS in the Project Area

Level of Service (LOS)		2020 Existing		2050 No-Build		2050 Build	
		AM Peak LOS (delay)	PM Peak LOS (delay)	AM Peak LOS (delay)	PM Peak LOS (delay)	AM Peak LOS (delay)	PM Peak LOS (delay)
Overall Intersection LOS	Deer Valley Rd/NB I-17	C (22.7)	C (24.3)	C (20.7)	D (49.2)	C (23.9)	D (40.1)
	Deer Valley Rd/SB I-17	D (36.6)	C (28.9)	D (36.5)	C (27.7)	C (33.3)	C (29.6)
	Pinnacle Peak Rd/NB-17	E (64.4)	D (40.4)	E (65.8)	E (60.1)	E (56.3)	D (50.9)
	Pinnacle Peak Rd/SB-17	C (28.9)	C (22.9)	D (49.2)	C (26.3)	E (66.5)	C (25.1)

Notes: Source: LOS data provided by Stanley Consultants. MAG traffic demand model received from Stanley Consultants on November 1, 2022

New Bus and Rail Terminals

Does the project involve construction of a new bus or intermodal terminal that accommodates a significant number of diesel vehicles?

NO – This project does not construct any new bus or rail terminals.

Expanded Bus and Rail Terminals

Does the project involve an existing bus or intermodal terminal that has a large vehicle fleet where the number of diesel buses (or trains) increases by 50% or more, as measured by arrivals?

NO – This project does not expand any bus or rail terminals.

Projects Affecting PM Sites of Violation or Possible Violation

Does the project affect locations, areas or categories of sites that are identified in the PM_{10} or $PM_{2.5}$ applicable plan or implementation plan submissions, as appropriate, as sites of violation or potential violation?

NO – The project location is not listed in MAG's 2012 SIP as a site of violation or potential violation.

POAQC Determination

If through Interagency consultation this project is determined to have a significant increase in the number of diesel vehicles, on the mainline or LOS at intersections, and should be treated as a Project that is of Air Quality Concern, then ADOT will commence PM10-hot Spot in accordance with the modeling assumptions provided in the document. If through Interagency consultation it is determined that the mainline truck numbers or LOS at intersections are not significant than the project will be treated as a project that is not a project of air quality concern and would not require a PM hot-spot analysis. The POAQC modeling assumptions are included starting on page 8 of this document.

EPA determined that this project will be treated as a Project that is of Air Quality Concern through Interagency consultation.

The top three intersections ranked by volume are as follows:

- Deer Valley Rd & NB I-17
- Pinnacle Peak Rd & NB I-17
- Deer Valley Rd & SB I-17

The top three intersections ranked by LOS and delay are as follows:

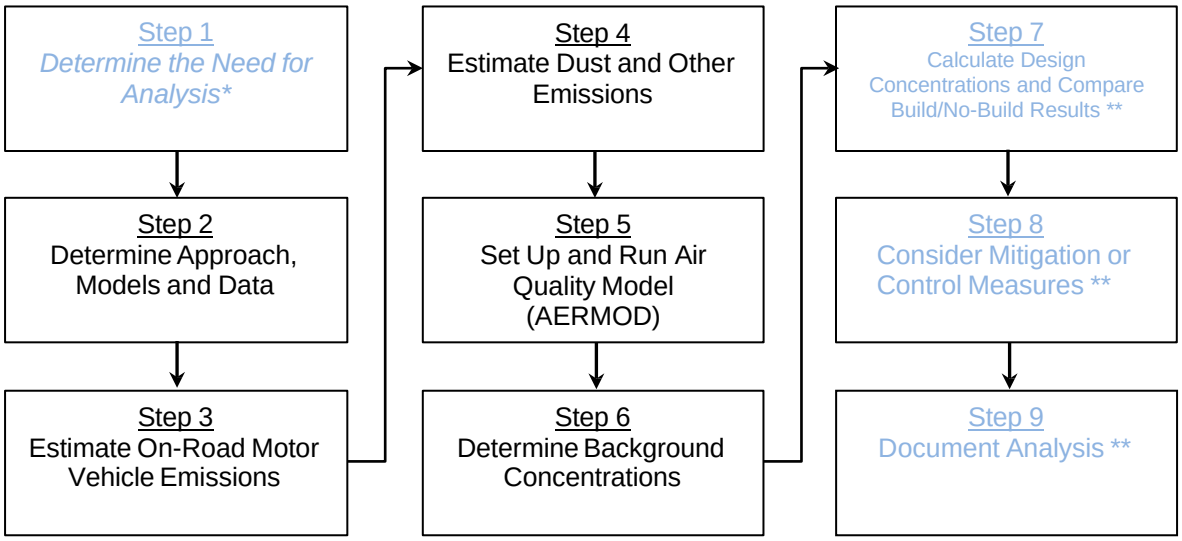
- Pinnacle Peak Rd & SB I-17
- Pinnacle Peak Rd & NB I-17
- Deer Valley Rd & NB I-17

Based on the top intersections ranked by volume and by LOS and delay, the intersection modeling analysis will be performed for the above four intersections. In addition, mainline segments between I-17 Rose Garden Ln and Deer Valley Rd, and between I-17 Deer Valley Rd and Pinnacle Peak Rd will be analyzed because of the largest I-17 mainline ADT volumes and truck ADT volumes.

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

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-21-037, October 2021.



* 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 Dust and Other Emissions

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: Set Up and Run Air Quality Model (AERMOD)

a. Obtain and input required site data (e.g., meteorological).
b. Input MOVES and AP-42 outputs (emission factors).
c. Determine 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 Concentrations and Compare Build/No-Build Results

a. Add step 5 results to background concentrations to obtain values for the Build scenario.
b. Determine if the design values allow the project to conform.

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 is including 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. If it has been determined that the project is a project of air quality concern, it is requested that consulted parties provide comments or questions on the methods, models, and assumptions within 30 business days, a non-response will be interpreted to mean that the party concurs with the planning assumptions as describe in the Table.

Please see the recommended methods, models and assumptions in Table 1 below and fill out the proposed inputs, parameters and data sources for the project in the following Table 2.

Table 1. Methods, Models and Assumptions

Estimate On-Road Motor Vehicle Emissions (Step 3) – Modeling highways and/or intersections for PM10 (Contact ADOT if modeling off-network data such as terminals and parking lots or performing a PM2.5 analysis)		
MOVES3.1	**Description**	**Reference**
Scale	*Onroad, Project Scale and Inventory*	EPA Hot Spot Guidance Section 4.4.2
Time Spans	*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 & 4.4.3
Geographic Bounds	*County (If a project spans multiple counties, see the EPA Guidance)*	EPA Hot Spot Guidance Section 4.4.4
Onroad Vehicles	*All Fuels and Source Use Types will be selected.*	EPA Hot Spot Guidance Section 4.4.5
Road Type	*Based on the project location*	EPA Hot Spot Guidance Section 4.4.6
Pollutants and Processes	*Primary Exhaust PM10-Total(for Running Exhaust and Crankcase Running Exhaust), Break Wear Particulate, Tire Wear Particulate*	EPA Hot Spot Guidance Sections 2.5 & 4.4.7
General Output and Output Emissions Detail	*Database will be created, Grams, Joules, Miles, Distance Traveled, Population will be selected. Output Aggregation is set to Hour and Link by default and the "for All Vehicle/Equipment Categories" and "Onroad" selections are optional in the Output Emissions Detail. After running MOVES3.1 for a particular hour/day/month scenario, the PM10_Grams_Per_Veh_Hour script (for Inventory mode) can be run on the output database.*	EPA Hot Spot Guidance Section 4.4.8, 4.4.9 & 4.6
Create Input Database	*Input database will be created and modified for Project level using required Regional Inputs from latest Regional Conformity Analysis.*	EPA Hot Spot Guidance Section 4.4.10 and See Project Data Manager below

Project Data Manager	*Database will be created and MOVES3.1 templates will be created to include local project data and information provided by xx, e.g., Fuel, Age Distribution, Meteorology Data, to be consistent with the regional model. Links and Link Source Type will be specific to project as provided by the traffic study, any missing information will use default MOVES3.1 data.*	EPA Hot Spot Guidance Sections 4.5 &Appendix D
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.*	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.*	EPA Hot Spot Guidance Section 4.5.2
Fuel	*Same for build and no-build scenarios. Fuel files should be consistent with those used in the latest SIP or regional conformity analysis if local information is available. Otherwise, MOVES default fuel supply and formulation information can be used.*	EPA Hot Spot Guidance Section 4.5.3, PM hot-spot training slides Module 2
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).*	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.*	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.*	EPA Hot Spot Guidance Section 4.5.8
Off-Network, Hotelling, Generic	*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
Estimate Dust and Other Emissions (Step 4) (AP-42 emission factors below should be based on SIP or Regional Conformity Analysis provided by ADEQ, MAG, PAG or YMPO depending on the project's location)		
AP-42, Fifth Edition, 2011	**Description**	**Reference**

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 MOVES3.1. 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	*If Construction Dust is temporary, it will not be included. If there are other sources (e.g., locomotives), they need to be considered.*	EPA Hot Spot Guidance Section 6.5
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
Set Up and Run Air Quality Model (AERMOD) (Step 5)		
AERMOD v.22112	**Description**	**Reference**
Model Setup (CO Pathway)	*Control Pathway defines the primary model settings.*	EPA Hot Spot Guidance Section 7.1, 7.2 & Appendix J, AERMOD User's Guide Section 2.3.2 & 3.2
TITLEONE	*Model title*	
MODELOPT	*CONC FLAT (Use IAC if modeling nearby elevated source)*	Modeling Concentrations and Flat Terrain
AVERTIME	*24*	Average across each 24-hour period from the available met data
URBANOPT	*Population for Urban Area*	
FLAGPOLE	*1.8*	
POLLUTID	*PM10*	
Source Types and Characters (SO Pathway)	*For highway and interaction sources, characterize area sources with the LINE source keyword (Use IAC if volume sources are needed).*	EPA Hot Spot Guidance Section 7.3, 7.4 & Appendix J.2, J.3, AERMOD User's Guide Section 2.3.3 & 3.3
LOCATION	*Srcid Srctyp (LINE)*	
SRCPARAM	*Srcid Lnemis Relhgt Width Szinit*	LINE Source parameters See EPA Hot Spot Guidance Appendix J.3.1
URBANSRC	*Srcid*	Urban source IDs
EMISFACT	*Emission rate=1, Use SEASHR*	Total 16 MOVES run=4 seasons x 4 time periods to 96 factors (4 seasons/24 hours) See PM hot-spot training slides (FHWA, 2022)
SRCGROUP	*GroupID or All*	
Meteorological Data (ME Pathway)	*The meteorological data will be based on the pre-processed met files from ADEQ or the met files produced by AERMET program.*	EPA Hot Spot Guidance Section 7.5, Appendix J.4, AERMOD User's Guide Section 2.3.5 & 3.5
SURFFILE	*Surface file name*	*.sfc
PROFFILE	*Profile (upper air) file name*	*.pfl

SURFDATA	*Surface data station*	
UAIRDATA	*Upper air data station*	
PROFBASE	*Met data station elevation*	
Run Met Pre-Processor	*If necessary*	AERMET User's Guide (for AERMOD)
Urban or Rural Sources	*Specifications for URBANOPT (CO Pathway) and URBANSRC (SO Pathway)*	EPA Hot Spot Guidance Section 7.5.5 & Appendix J.4, AERMOD Implementation Guide, Section 7.2.3 of Appendix W to 40 CFR Part 51
Receptors (RE Pathway)	*Receptors should begin 5 m from roadway edge, extending up to 105 m (or further if needed). Spacing of 25 m is typically sufficient.*	EPA Hot Spot Guidance Section 7.6, AERMOD User's Guide Section 2.3.4 & 3.4, Section 7.2.2 of Appendix W to 40 CFR Part 51, See PM hot-spot training slides
DISCCART	*X Y (Z)*	Z is optional if FLAGPOLE is already defined in CO Pathway.
GRIDCART	*Use a 3rd party program if available.*	e.g., AERMOD View
Output (OU Pathway)	*PLOTFILE and/or POSTFILE will be generated if necessary.*	EPA Hot Spot Guidance Appendix J.6, AERMOD User's Guide Section 2.3.6 & 3.7
RECTABLE	*24 6th*	Since PM should be one or less exceedance per year, with 5 years of met data, the 6th highest concentration at each receptor
PLOTFILE	*Optional*	
POSTFILE	*Optional*	
Model Runs	*Use AERMOD User's Guide Appendix B to decode and correct errors.*	EPA Hot Spot Guidance Section 7.7, AERMOD User's Guide Section 2.3.7, 2.3.8, 3.8 & Appendix B
Determine Background Concentrations (Step 6)		
Source Type	**Description**	**Reference**
Nearby Sources	*If necessary*	EPA Hot Spot Guidance Section 8.2

Other Sources (Ambient Monitoring Data)	*Using a Single Monitor (Most likely option) or Interpolating Between Several Monitors. When using a single monitor: Select a monitor with similar land use to the project, upwind from project, and isn't impacted by Exceptional Events. 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.*	EPA Hot Spot Guidance Section 8.3, PM hot-spot training slides Module 5 & 6

Table 2. Proposed Inputs, Parameters and Data Sources

Estimate On-Road Motor Vehicle Emissions (Step 3)		
MOVES3.1	**Input**	**Data Source/Detail**
Scale	*Onroad, Project Scale and Inventory*	*MAG Regional Conformity Data (July, 2022)*
Time Spans	*2050, 16 runs*	*4 seasons (Jan, Apr, July & Oct) x 4 weekday time periods (6-9AM, 9AM-4PM, 4-7PM & 7PM-6AM)*
Geographic Bounds	*Maricopa County*	*EPA Hot Spot Guidance Section 4.4.4*
Onroad Vehicles	*All Fuels and Source Use Types*	*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 PM10-Total(for Running Exhaust and Crankcase Running Exhaust), Break Wear Particulate, Tire Wear Particulate*	*EPA Hot Spot Guidance Sections 2.5, 4.4.7*
General Output and Output Emissions Detail	*Output Database TBD*	*EPA Hot Spot Guidance Section 4.4.8, 4.4.9 & 4.6*
Create Input Database	*Input database will be created and modified for Project level using required Regional Inputs from latest Regional Conformity Analysis.*	*MAG Regional Conformity Data (July, 2022)*
Project Data Manager	*Database will be created and MOVES3 templates will be created to include local project data and information provided by MAG, e.g., Fuel, Age Distribution, Meteorology Data, to be consistent with the regional model. Links and Link Source Type will be specific to project as provided by the traffic study, any missing information will use default MOVES3 data.*	*EPA Hot Spot Guidance Sections 4.5 &Appendix D*
Meteorology	*MAG local specific data*	*MAG Regional Conformity Data (July, 2022)*
Age Distribution	*MAG local specific data*	*MAG Regional Conformity Data (July, 2022)*
Fuel	*MOVES default*	*MAG Regional Conformity Data (July, 2022)*
I/M Programs	*MAG local specific data*	*MAG Regional Conformity Data (July, 2022)*
Retrofit Data	*Not used*	
Links	*Please see attached the link maps.*	
Link Source Types	*Option 2 in the EPA's PM Hot-spot Guidance Section 4.5.7 will be used.*	*MAG Regional Conformity Data (July, 2022)*
Link Drive Schedules, Operating Mode Distribution	*Options 1 in the EPA's PM Hot-spot Guidance Section 4.5.8 will be used. Average speeds and road types through the Links Importer will be used.*	

Off-Network, Hotelling	*Not used*	
Estimate Dust and Other Emissions (Step 4)		
AP-42, Fifth Edition, 2011	**Parameter**	**Data Source/Detail**
Average Weight Vehicles	*Freeways 3.83 tons in 2025, 3.87 tons in 2030, 3.97 tons in 2040, and 4.08 tons in 2050. Arterials 2.48 tons in 2025, 2.49 tons in 2030, 2.48 tons in 2040, and 2.48 tons in 2050*	*Conformity Analysis for the FY 2022-2025 MAG TIP and the Momentum 2050 RTP, dated December, 2021.*
Silt Loading	*Section 13.2.1 Paved Roads from AP 42 will be used, consistent with the Regional analysis from MAG. Emission factors for road and construction dust should be added to the emission factors generated for each link by MOVES. 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 will not be addressed because the construction of this project is not expected to last longer than 5 years. There are no other sources (e.g., locomotives) that need to be considered for most projects.*	*EPA Hot Spot Guidance Section 6.5*
Precipitation	*In 2008-2012 SIP/Regional Conformity used average of 32 days with at least .01 inch of precipitation County*	*The MAG 2012 Five Percent Plan for PM-10 (used for the Conformity Analysis for the FY 2022-2025 MAG TIP and the Momentum 2050 RTP, dated December, 2021).*
Set Up and Run Air Quality Model (AERMOD) (Step 5)		
AERMOD v.22112	**Parameter**	**Data Source/Detail**
Model Setup (CO Pathway)		*EPA Hot Spot Guidance Section 7.1, 7.2 & Appendix J, AERMOD User's Guide Section 2.3.2 & 3.2*
TITLEONE	*TBD*	
MODELOPT	*CONC FLAT*	*Modeling Concentrations and Flat Terrain*
AVERTIME	*24*	*Average across each 24-hour period from the available met data*
URBANOPT	*1,625,000*	*Population of Phoenix AZ*
FLAGPOLE	*1.8*	
POLLUTID	*PM10*	
Source Types and Characters (SO Pathway)		
LOCATION	*Srcid Srctyp (LINE)*	
SRCPARAM	*Srcid Lnemis Relhgt Width Szinit*	*LINE Source parameters See EPA Hot Spot Guidance Appendix J.3.1*
URBANSRC	*ALL*	*All urban source*
EMISFACT	*Emission rate=1, Use SEASHR*	*Total 16 MOVES run=4 seasons x 4 time periods to 96 factors (4*

		seasons/24 hours) *See PM hot-spot training slides (FHWA, 2022)*
SRCGROUP	*ALL*	
Meteorological Data (ME Pathway)		
SURFFILE	*Phoenix2017-2021.sfc*	*ADEQ Phoenix AERMET files*
PROFFILE	*Phoenix2017-2021.pfl*	*ADEQ Phoenix AERMET files*
SURFDATA	*23183 2017*	*ADEQ Phoenix AERMET files*
UAIRDATA	*23160 2017*	*ADEQ Phoenix AERMET files*
PROFBASE	*0*	*ADEQ Phoenix AERMET files*
Run Met Pre-Processor	*Not used*	
Urban or Rural Sources	*Specifications for URBANSRC (SO Pathway)*	*EPA Hot Spot Guidance Section 7.5.5 & Appendix J.4,* *AERMOD Implementation Guide, Section 7.2.3 of Appendix W to 40 CFR Part 51*
Receptors (RE Pathway)	*Please see attached receptor maps. Deer Valley TI were selected for PM hotspot analysis due to greater truck volumes increase on I-17 mainline. Receptor locations have been revised to be 25-meter apart.*	*EPA Hot Spot Guidance Section 7.6, AERMOD User's Guide Section 2.3.4 & 3.4,* *Section 7.2.2 of Appendix W to 40 CFR Part 51,* *See PM hot-spot training slides*
DISCCART	*X Y (Z)*	*Z is optional if FLAGPOLE is already defined in CO Pathway.*
GRIDCART	*TBD*	
Output (OU Pathway)		
RECTABLE	*24 6th*	*Since PM should be one or less exceedance per year, with 5 years of met data, the 6th highest concentration at each receptor*
PLOTFILE	*Not used*	
POSTFILE	*Not used*	
Model Runs		
Determine Background Concentrations (Step 6)		
Source Type	**Description**	**Data Source/Detail**
Nearby Sources	*"Nearby sources" refers to those sources that (1) are not part of the project but are affected by the project or (2) are sources in the project area whose emissions are not adequately captured by the selected background concentrations. Example nearby sources are locomotives at a nearby freight terminal or marine port). No nearby sources are available for this project.*	

Other Sources (Ambient Monitoring Data)	*Please see the selected monitor's location map and monitoring data with wind rose information. North Phoenix monitor (NP) was selected because of close proximity and similar land use to the project. Three years of monitoring data (2019-2021) using the 4th highest readings based on total number of sampling days of 1081 days, the 4th highest monitor value over these three years is 97 µg/m^3. 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 NP monitor. See pages 20– 24 for detailed monitor data, wind rose figures.* *The background concentration data of North Phoenix monitor are representative for the project area because:* *1. Similar characteristics between the monitor location and project area including density, emission sources, land use, terrain, etc.* *2. Distance of monitor from the project area. The NP monitor is the closest PM monitor to the project area and has concentration most similar to the project area.* *3. Wind patterns between the monitor and the project area. No monitors show significant upwind patterns within 10 miles from the project area.*	*EPA Hot Spot Guidance Section 8.3, PM hot-spot training slides Module 5 & 6*

References

PM Hot-spot guidance, EPA-420-B-21-037, October 2021.

User's Guide for the AMS/EPA Regulatory Model (AERMOD), EPA-454/B-21-001, April 2021.

AERMOD Implementation Guide, EPA-454/B-21-006, July 2021.

User's Guide for the AERMOD Meteorological Preprocessor (AERMET), EPA-454/B-22-006, June 2022.

Completing Quantitative PM Hot-spot Analyses: 3-Day Course, FHWA, October 2022.

Figure 1. PM Links and Receptors Placement for Air Quality Modeling
(Deer Valley Rd & I-17 TI)

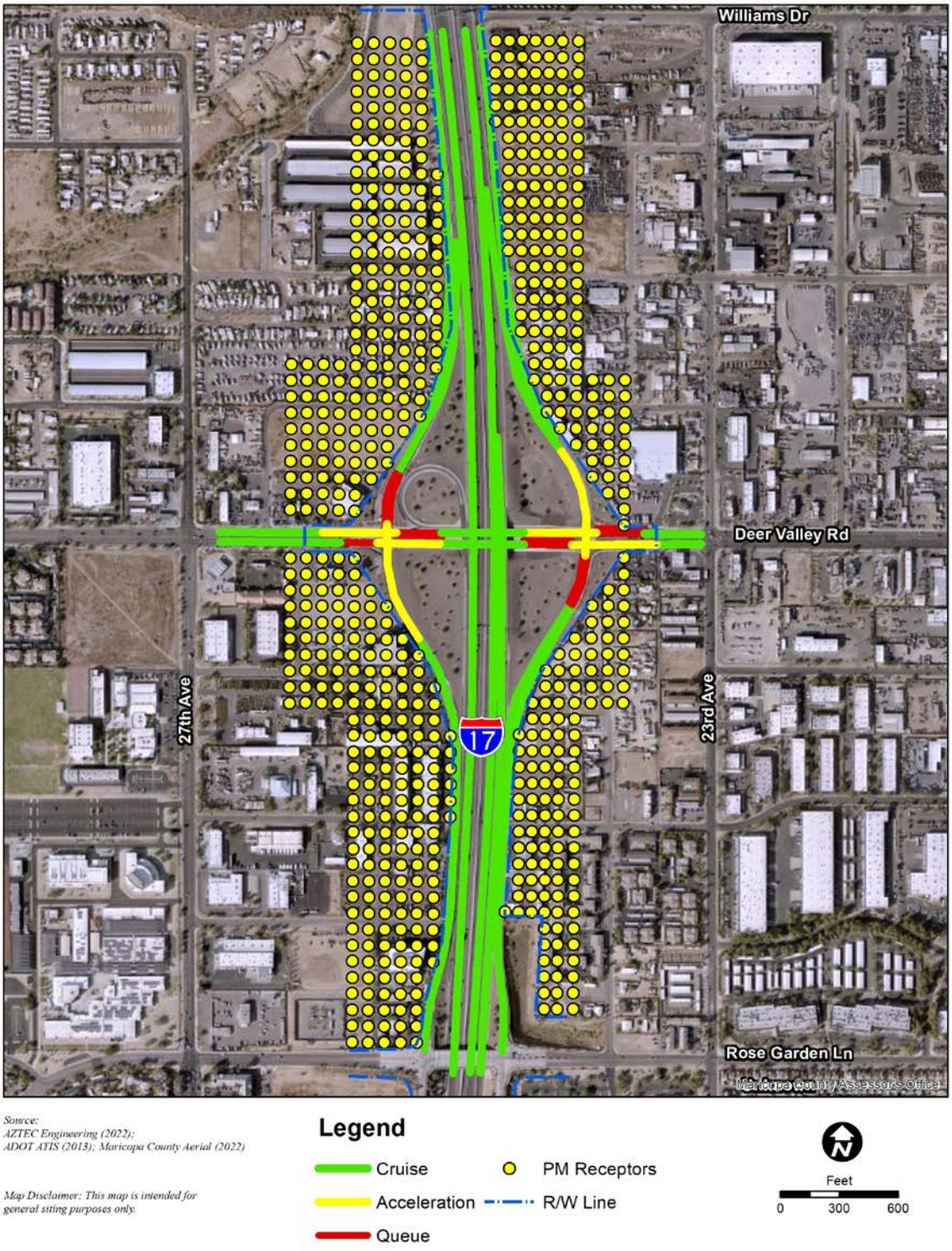
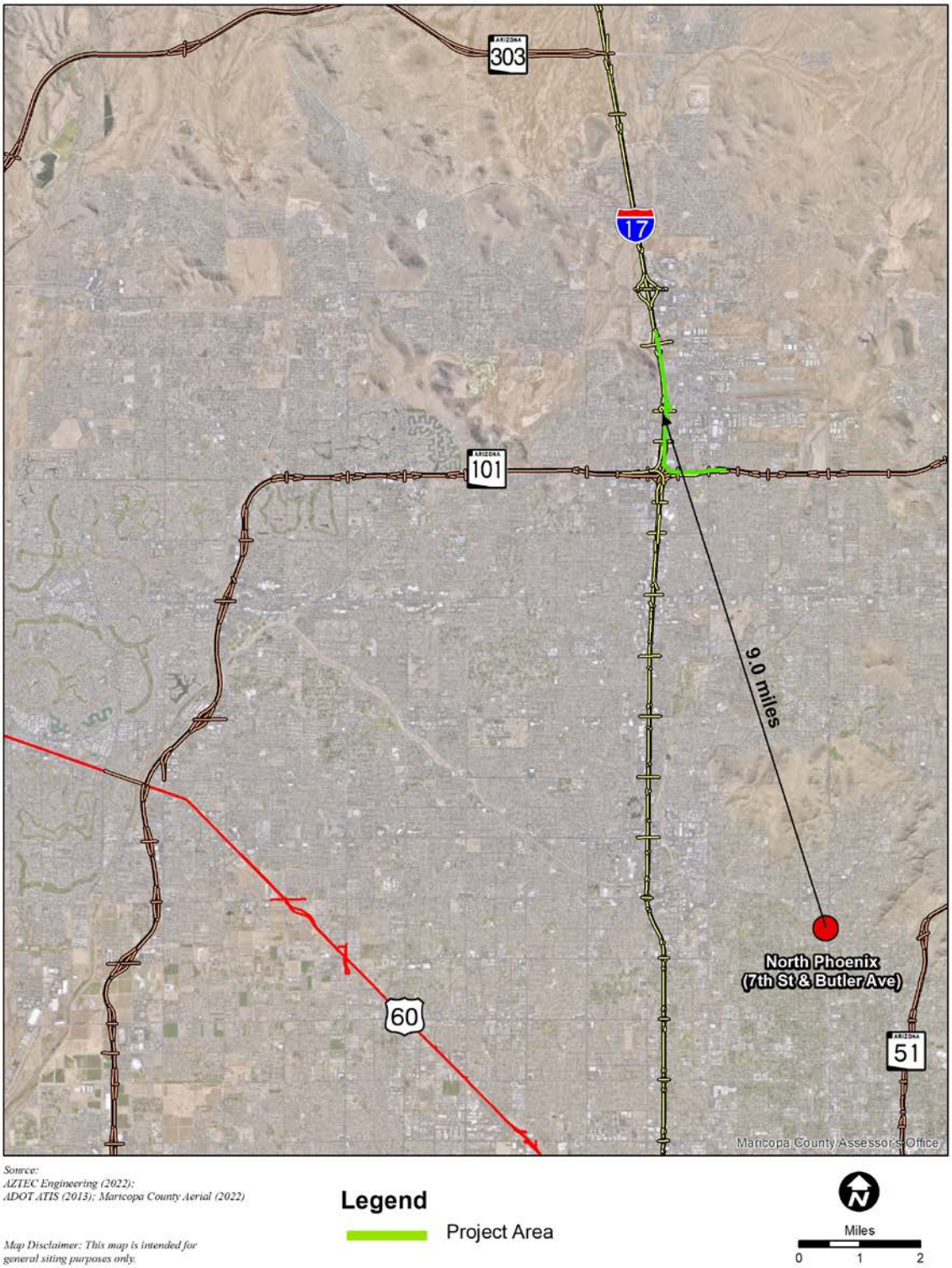


Figure 2. PM Links and Receptors Placement for Air Quality Modeling (Pinnacle Peak Rd & I-17 TI)

Figure 3. PM Monitoring Sites adjacent to the Project Area



North Phoenix (NP) (04-013-1004)

Site Location	7th St. & Butler Ave., Phoenix
Spatial Scale	Neighborhood
Site Type	Population Exposure for PM_{10} & $PM_{2.5}$; Max Concentration for O_3

Site Description: This site began operating in January 1975. This SLAMS location monitors for O_3, and PM_{10}, $PM_{2.5}$. Meteorological monitoring includes ambient temperature, barometric pressure, and wind speed/direction.

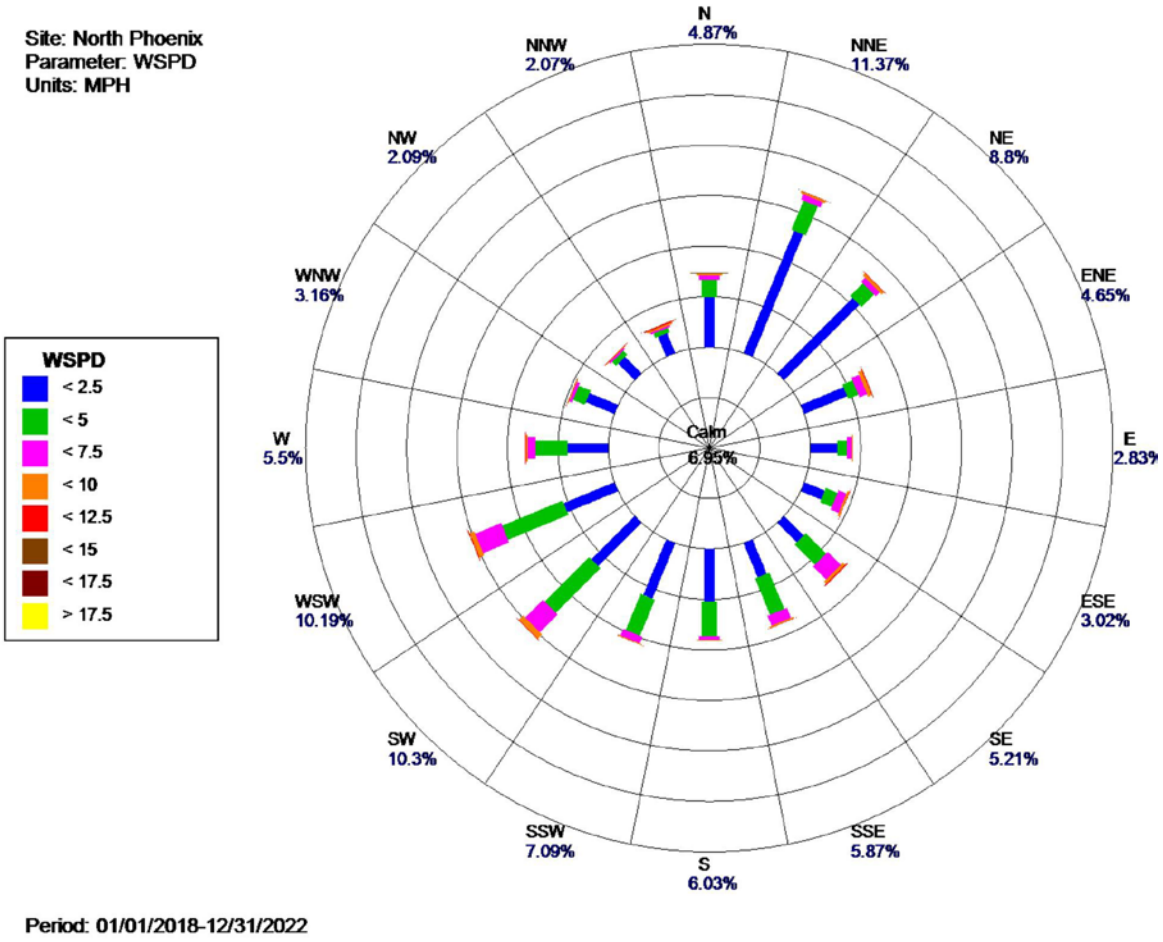
Number of complete monitoring days at North Phoenix:

2019	2020	2021	Total
362	366	353	1081

4th Highest 24-hour reading at North Phoenix is shown below. No atypical, extreme, or unrepresentative events occurred for NP monitor.

	2019	2020	2021
1	50	116	143
2	40	54	98
3	38	47	**97**
4	36	47	89

Source: https://www.epa.gov/outdoor-air-quality-data/download-daily-data


Site: North Phoenix
Parameter: WSPD
Units: MPH
WSPD
< 2.5
< 5
< 7.5
< 10
< 12.5
< 15
< 17.5
> 17.5
N
4.87%
NNE
11.37%
NE
8.8%
ENE
4.65%
E
2.83%
ESE
3.02%
SE
5.21%
SSE
5.87%
S
6.03%
SSW
7.09%
SW
10.3%
WSW
10.19%
W
5.5%
WNW
3.16%
NW
2.09%
NNW
2.07%
Calm
6.95%
Period: 01/01/2018-12/31/2022

Project Level CO Hot-Spot Analysis Questionnaire

Project Setting and Description

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being carried out by Arizona Department of Transportation (ADOT), pursuant to 23 U.S.C. 326 and a Memorandum of Understanding dated January 4, 2021, and executed by the Federal Highway Administration (FHWA) and ADOT. The Arizona Department of Transportation project [MAG TIP ID DOT23-014D, design ramp and turnbacks] is being present for interagency consultation in preparation for design for the addition of capacity to the I-17/SR 101L westbound-to-northbound ramp (Ramp WN) from approximately 19th Avenue on SR 101L to approximately Pinnacle Peak Road on I-17. The Ramp WN improvements are located within the city of Phoenix in Maricopa County, Arizona, within ADOT's Central District.

The Ramp WN improvements will convert the existing directional system TI Ramp WN from 1-lane to 2-lanes to reduce traffic congestion and improve Level of Service (LOS) for the movement from WB SR 101L to NB I-17.

Improvements to convert the ramp from 1-lane to 2-lanes include:

- Restriping the WB SR 101L beginning at the back of gore at the 19th Avenue exit ramp to provide a 3-lane exit from WB SR 101L to I-17 Ramp WN/WS.
- Restriping Ramp WN from two lanes to three from the split with Ramp WS to the merge with Ramp EN.
- Restripe the segment from the Ramp EN and Ramp WN merge to the NB Deer Valley Road exit ramp from 2-lanes to 3-lanes.
- Widen the Ramp EN and Ramp WN connector from the NB Deer Valley Road exit ramp to the Deer Valley overpass bridge to continue and drop 3-lanes to 2-lanes.
- Widen between the NB Deer Valley Entrance Ramp and NB Pinnacle Peak exit ramp to continue five travel lanes and shift and maintain the existing auxiliary lane.
- Widen between the NB Pinnacle Peak exit ramp and the NB Pinnacle Peak entrance ramp to continue and drop 5-lanes to 4-lanes.

Adding the lane between WB SR 101L to the NB Deer Valley Road exit ramp will be accomplished by restriping and reducing inside and outside shoulders and travel lanes.

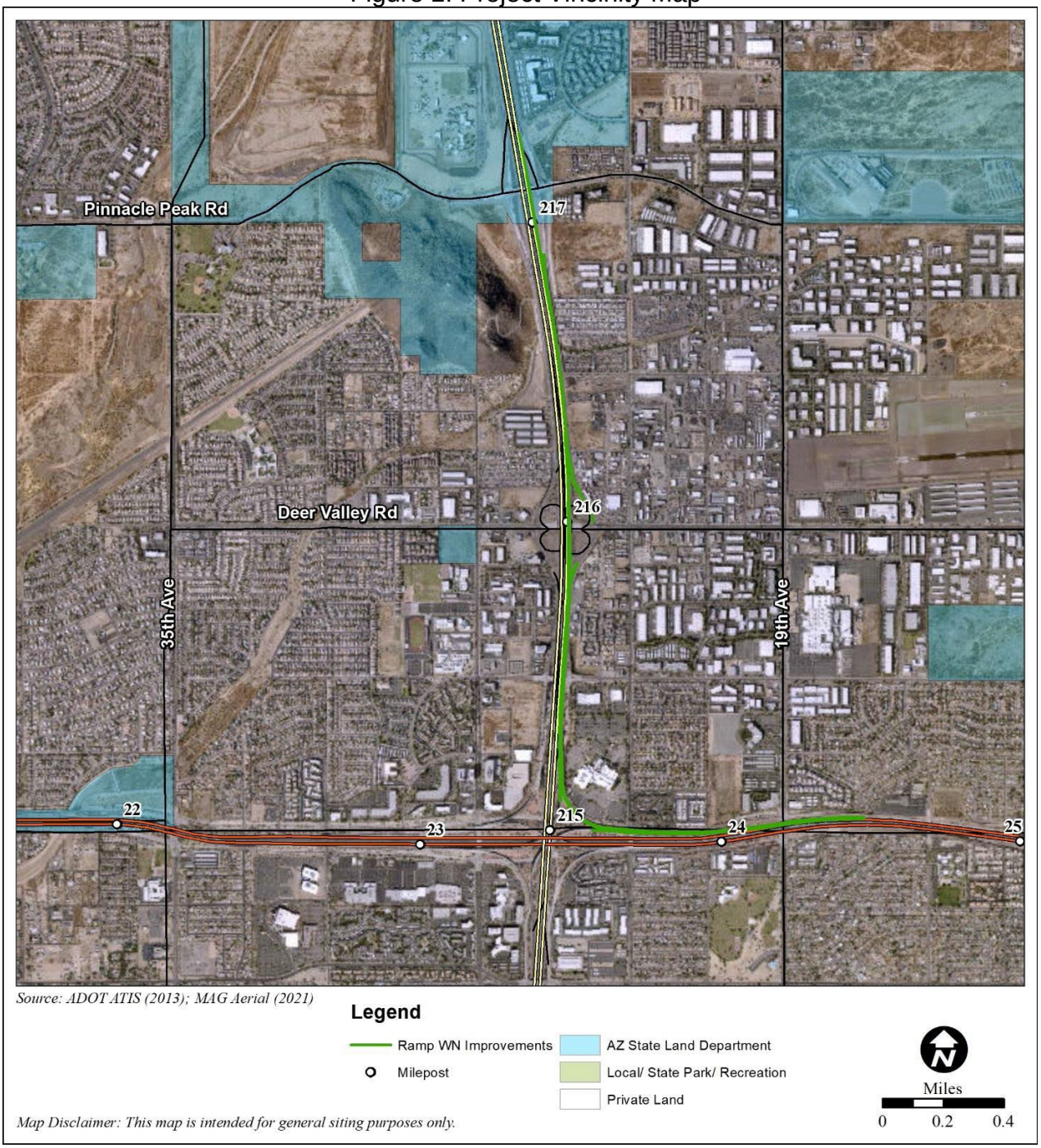
Adding the lane between the NB Deer Valley Road entrance ramp and NB Pinnacle Peak entrance ramp will be accomplished by widening the existing roadway.

Major work items associated with Ramp WN improvements include:

- Removing and replacing sign panels on overhead sign structures and ground mounted signs and posts.
- Obliterating and replacing pavement markings.
- Removing and replacing concrete barrier and curb and gutter.
- Placing new concrete pavement.
- Relocating an FMS cabinet and pull boxes.
- Removing and replacing I-17 NB in-pavement loop detector.
- Removing and replacing catch basins.

The project is in the Maricopa County (Phoenix) Nonattainment Area for particulates 10- microns in diameter or less (PM10), eight-hour ozone, maintenance area for carbon monoxide. The proposed project is included in the *Maricopa Association of Governments (MAG) Regional Transportation Plan (RTP) MOMENTUM 2050*. In addition, the project is included in the *FY 2022-2025 MAG Transportation Improvement Program*.

Figure 1. Project Vincinity Map



Project Assessment – Part A

The following questionnaire is used to compare the proposed project to a list of project types in 40 CFR 93.123(a) requiring a quantitative analysis of local CO emissions (Hot-spots) in nonattainment or maintenance areas, which include:

i) Projects in or affecting locations, areas, or categories of sites which are identified in the applicable implementation plan as sites of violation or possible violation;
ii) Projects affecting intersections that are at Level-of-Service D, E, or F, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes related to the project;
iii) Any project affecting one or more of the top three intersections in the nonattainment or maintenance area with highest traffic volumes, as identified in the applicable implementation plan; and
iv) Any project affecting one or more of the top three intersections in the nonattainment or maintenance area with the worst level of service, as identified in the applicable implementation plan.

If the project matches one of the listed project types in 40 CFR 93.123(a)(1) above, it is considered a project of local air quality concern and the hot-spot demonstration must be based on quantitative analysis methods in accordance to 40 CFR 93.116(a) and the consultation requirements of 40 CFR 93.105(c)(1)(i).

Project type ii) is relevant to this project because this project affects a congested intersection (LOS D or greater) that will change LOS to D or greater because of increased traffic volumes.

Projects Affecting CO Sites of Violation or Possible Violation

Does the project affect locations, areas or categories of sites that are identified in the CO applicable plan or implementation plan submissions, as appropriate, as sites of violation or potential violation?

NO – This project does not affect locations, areas or categories of sites that are identified in the MAG 2013 Carbon Monoxide Maintenance Plan for Maricopa County as sites of violation or potential violation.

Projects with Congested Intersections

Is this a project that affects a congested intersection (LOS D or greater) will change LOS to D or greater because of increased traffic volumes related to the project?

YES – Among the 4 intersections, 3 intersections in AM peak hour and 2 intersections in PM peak hour would result in LOS D or worse in the 2050 no build scenario. In the 2050 build scenario, there are 2 intersections in AM peak hour and 2 intersections in PM peak hour that would result in LOS D or worse. LOS at 1 intersection would become worse from 2050 no build scenario to 2050 build scenario. ADT volume increase at intersections range from -3,441 vehicles to 710 vehicles.

Table 1 – Freeway Mainline ADT and Truck ADT in Existing, No Build and Build Conditions

AADT and Truck Volumes		2020 Existing		2050 No-Build		2050 Build		Difference (Build - No- Build)		
		ADT	Truck (%)	ADT	Truck (%)	ADT	Truck (%)	ADT	Truck ADT	Truck (%)
Mainline	I-17, Rose Garden Ln to Deer Valley Rd	173,157	11.06%	263,911	16.09%	275,955	16.23%	12,044	2,337	0.14%
Mainline	I-17, Deer Valley Rd to Pinnacle Peak Rd	181,922	10.31%	280,634	14.98%	286,920	15.24%	6,286	1,677	0.26%
Intersection	Deer Valley Rd/NB I-17	51,158	6.64%	72,885	8.21%	73,595	8.85%	710	523	0.63%
Intersection	Deer Valley Rd/SB I-17	33,741	3.99%	46,468	4.40%	44,277	3.99%	-2,191	-279	-0.41%
Intersection	Pinnacle Peak Rd/NB-17	41,178	4.60%	54,738	5.25%	52,164	5.17%	-2,573	-177	-0.08%
Intersection	Pinnacle Peak Rd/SB-17	34,316	4.87%	45,222	5.13%	41,781	4.99%	-3,441	-237	-0.14%

Note: Truck% includes heavy truck and medium truck. AADT at intersections include volumes on approach lanes.
Source: MAG traffic demand model received from Stanley Consultants on November 1, 2022

Table 2 – Intersections LOS in the Project Area

Level of Service (LOS)		2020 Existing		2050 No-Build		2050 Build	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
		LOS (delay)	LOS (delay)	LOS (delay)	LOS (delay)	LOS (delay)	LOS (delay)
Overall Intersection LOS	Deer Valley Rd/NB I-17	C (22.7)	C (24.3)	C (20.7)	D (49.2)	C (23.9)	D (40.1)
Overall Intersection LOS	Deer Valley Rd/SB I-17	D (36.6)	C (28.9)	D (36.5)	C (27.7)	C (33.3)	C (29.6)
Overall Intersection LOS	Pinnacle Peak Rd/NB-17	E (64.4)	D (40.4)	E (65.8)	E (60.1)	E (56.3)	D (50.9)
Overall Intersection LOS	Pinnacle Peak Rd/SB-17	C (28.9)	C (22.9)	D (49.2)	C (26.3)	E (66.5)	C (25.1)

Notes:
Source: LOS data provided by Stanley Consultants. MAG traffic demand model received from Stanley Consultants on November 1, 2022

Projects Affecting Intersections with Highest Traffic Volumes

Does the project affect one or more of the top three intersections in the CO maintenance area with highest traffic volumes identified in the CO applicable implementation plan?

*Three Highest Intersections in Current Plans

MAG[1]
16th St & Camelback Rd
107th Ave & Grand Ave
Priest Dr & Southern Ave

1 MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area

NO. This project does not affect one or more of the top three intersection in the carbon monoxide maintenance area with the highest traffic volumes identified in the MAG 2013 Carbon Monoxide Maintenance Plan for Maricopa County.

Projects Affecting Intersections with the Worst Level of Services

Does the project affect one or more of the top three intersections in the CO maintenance area with the worst level of services identified in the CO applicable implementation plan?

NO – This project does not affect one or more of the top three intersections with the worst LOS in the MAG 2013 Carbon Monoxide Maintenance Plan for Maricopa County.

*Three Worst LOS Intersections in Current Plans

MAG[1]
7th Ave & Van Buren St
German Rd & Gilbert Rd
Thomas Rd & 27th Ave

[1]Same as above

Project Assessment – Part B Hot-Spot Determination

Decide which type of hot-spot analysis is required for the project by choosing a category below.

☒ **If answered "Yes" to any of the questions in the Project Assessment – Part A**

- A quantitative CO hot-spot analysis is required under 40 CFR 93.123(a)(1).

☒ Check **If** a formal air quality report for conformity is required for this project.

- The applicable air quality models, data bases, and other requirements specified in 40 CFR part 51, Appendix W (Guideline on Air Quality Models) should be completed using **"Project Level CO Quantitative Hot-Spot Analysis – Consultation Document"** circulated through interagency consultation for review and comments for 30 days prior to commencing any modeling activities.

- **Or**

□ Check **If** the project fits the condition of the "**CO Categorical Hot-Spot Finding"**. In the January 24, 2008, Transportation Conformity Rule Amendments, EPA included a provision at 40 CFR 93.123(a)(3) to allow the U.S. DOT, in consultation with EPA, to make categorical hot-spot findings in CO nonattainment and maintenance areas if appropriate modeling showed that a type of highway or transit project would not cause or contribute to a new or worsened air quality violation of the CO NAAQS or delay timely attainment of the NAAQS or required interim milestone(s), as required under 40 CFR 93.116(a).

Projects Fitting the Condition of the CO Categorical Hot-Spot Finding (Updated 2/1/23)
If the project's parameters fall within the acceptable range of modeled parameters, use FHWA 2023 CO Categorical Hot-Spot Finding Spreadsheet Tool: https://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance/cmcf_2023/index.cfm

NO – This project's parameters do not fall within the acceptable range of modeling parameters for a CO Categorical Hot-spot Finding.

□ **If answered "No" to all of the questions in the Project Assessment – Part A**

- A qualitative CO analysis is required under 40 CFR 93.123(a)(2). The demonstrations required by 40 CFR 93.116 Localized CO, PM10, and PM2.5 violations (hot-spots) may be based on either:
- **(i) Quantitative methods that represent reasonable and common professional practice;**

  □ Check **If** an Air Quality Report includes CO modeling for NEPA EA/EIS use this report to satisfy option (i)

- **Or**

- **(ii) A qualitative consideration of local factors, if this can provide a clear demonstration that the requirements of 40 CFR 93.116 are met.**

  □ Check **If** there is an Air Quality Report that does not include CO modeling for NEPA EA/EIS use this report to satisfy (ii)

  □ Check **If** the project is a CE under NEPA that does not require Air Quality Report for NEPA EA/EIS use this Questionnaire to add additional justification to satisfy (ii)

This project requires a quantitative hot-spot analysis for carbon monoxide. The intersections to be modeled were determined using EPA's Guideline for Modeling Carbon Monoxide from Roadway Intersections (EPA, 1992). The intersections with the highest volumes and longest delays were identified for the 2050 build alternative. The top three intersections ranked by volume are as follows:

- Deer Valley Rd & NB I-17
- Pinnacle Peak Rd & NB I-17
- Deer Valley Rd & SB I-17

The top three intersections ranked by LOS and delay are as follows:

- Pinnacle Peak Rd & SB I-17
- Pinnacle Peak Rd & NB I-17
- Deer Valley Rd & NB I-17

Based on the top intersections ranked by volume and by LOS and delay, the intersection modeling analysis will be performed for the following four intersections' peak hours of the days:

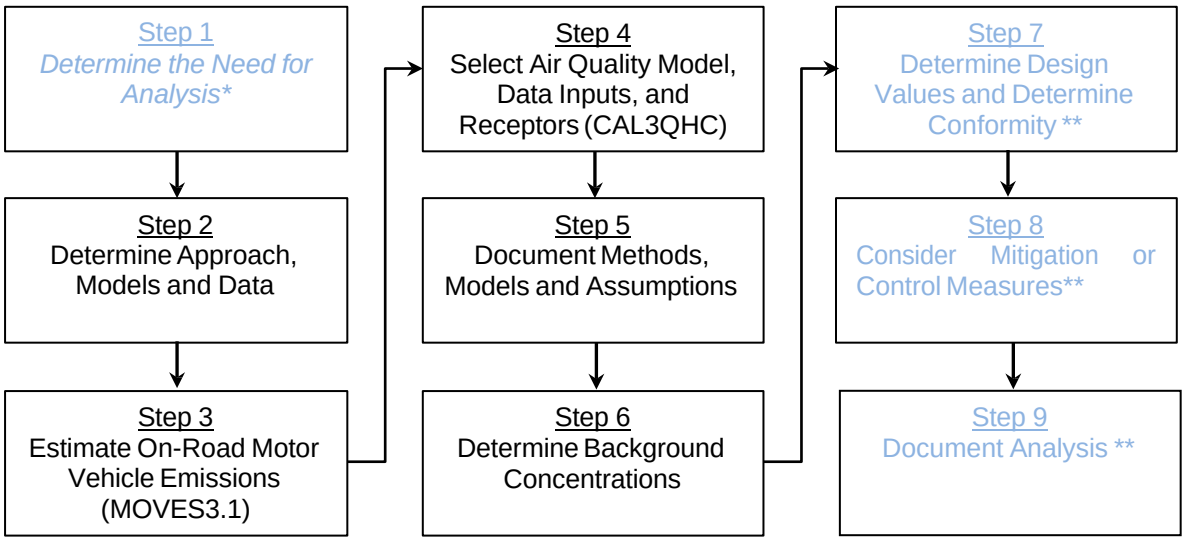
- Deer Valley Rd & NB I-17, AM Peak
- Deer Valley Rd & SB I-17, AM Peak
- Pinnacle Peak Rd & NB I-17, AM Peak
- Pinnacle Peak Rd & SB I-17, AM Peak

Modeling will be performed under the worst-case scenario using the 2030 MOVES emission rates (the highest CO emission rates) with the 2050 traffic data (the maximum traffic volumes). 2030 is selected because it is the closest regional conformity analysis year to the project opening year. It is assumed that if the selected worst-case intersections do not show an exceedance of the NAAQS, none of the intersections will. Refer to the enclosed supplemental traffic study.

Project Level CO Quantitative Hot-Spot Analysis – Consultation Document

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 MOVES3.1 in Project-Level Carbon Monoxide Analyses" EPA-420-B-21-047, December 2021, 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 MOVES3.1

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

Table 1. Methods, Models and Assumptions		
Estimate On-Road Motor Vehicle Emissions (Step 3)		
MOVES3.1	**Description**	**Data Source**
Scale	*On road, Project, Inventory*	EPA Using MOVES3 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: The worst case scenario using the January, weekdays, hours of 7:00- 7:59 in 2026 MOVES emission rates (the highest CO emission rates) with the 2050 traffic data (the maximum traffic volumes) will be selected.*	EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.3.3
Geographic Bounds	*Maricopa County*	EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.3.4
Onroad Vehicles	*All Fuels and Source Use Types will be selected*	EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.3.5
Road Type	*Urban Restricted and Urban Unrestricted access*	EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.3.6
Pollutants and Processes	*CO Running Exhaust, CO Crankcase Running Exhaust*	EPA Using MOVES3 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 MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.3.10
Project Data Manager	*Database and MOVES3.1 templates will be created to include local project data and information provided by MPO, e.g., MAG's or PAG's I/M programs, Age Distribution data which are consistent with the regional models. The average temperature and humidity in January for metrology data and the default MOVES fuel data will be used. Links and Link Source Type will be specific to project as provided by the traffic analysis, any missing information will use default MOVES3.1 data. After running MOVES, the MOVES CO_CAL3QHC_EF post-processing script is run.*	EPA 1992 Guideline, Section 4.7.1., Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.1, 2.4 for Links; the required data necessary to be consistent with regional emissions analysis (40 CFR 93.123(c)(3)). 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 will be developed using the inputs described in MOVES3.1 section above. The free flow and queue links defined for modeling with MOVES3.1 will be used as input into CAL3QHC.*	1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, EPA-454/R-92-005, November 1992. Section 3.2 & 4.2.3.1 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. Receptors are located along the R/W line and at sidewalks at the four corner of the intersection, and mid-block of approach and department links where the CO concentrations are likely to be the highest.*	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. Will use persistence factor of 0.7 because local measured monitored concentrations are not available.*	1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 4.7.2
Determine Background Concentrations (Step 6)		
Background Monitor	*The CO monitor located at Frye Rd & Ellis St in West Chandler has similar environment settings as the project corridor. Three years of monitoring data (2020--2022) show a maximum 8-hour value of 1.3 ppm. 1.9 ppm (which is the 8-hour concentration divided by a persistence factor of 0.7) will be added to the maximum modeled hourly concentration for comparison to the NAAQS. 1.3 ppm will be added to the maximum 8-hour modeled concentration. The same background values will be used for all analysis years.* *There are no CO monitors within 12 miles from the project area. CO monitor at Frye Rd and Ellis St in West Chandler is chosen for the background concentration. The background concentration data of this monitor are representative for the project area because:* *1.Similar characteristics between the monitor location and project area including density (developed area), mix of emission sources (two freeways nearby), land use (residential area & commercial, light industrial), terrain (relative flat), etc.*	1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, Section 4.7.3

Background Monitor	*2.Distance of monitor from the project area. The West Chandler monitor is located in the fringe area away from central Phoenix, similar to the project area.* *3.Wind patterns between the monitor and the project area. The West Chandler monitor does not show significant upwind patterns.*	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. The average temperature and humidity were determined by averaging all hourly temperature values for January 2019, 2020, and 2021. The average temperature of 55.8 degrees F and the average relative humidity of 46.2% were uses in all MOVES runs, regardless of analysis year or time of day.*	ADEQ, MPO EPA Using MOVES3 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: The latest local age distribution data from MAG regional CO conformity analysis (Approved July 2022) will be used. No change would be made.*	ADOT, MPO EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.4.2
Fuel	*Same for build and no-build scenarios. MOVES default fuel supply and formulation information will be used.*	MPO, MOVES defaults EPA Using MOVES3 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 data. If not available, may use the MOVES default I/M programs but review the details and make any necessary changes before use. Will use I/M local data from MAG AQ conformity analysis.*	MPO, MOVES defaults EPA Using MOVES3 in Project-Level 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 MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.4.5
Links	*Four selected intersections (Deer Valley Rd & I-17 NB, Deer Valley Road & I-17 SB, Pinnacle Peak Road & I-17 NB, and Pinnacle Peak Road & I-17 SB) will be divided into links and each link's length (in miles), traffic volume (vehicle per hour), average speed (miles per hour) and road grade (percent) will be specified. Other roadway segments within 1000 feet of the intersection will be included. (See attachment for graphical representation of model setup)*	Project specific modeling, ADOT, MPO EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.4.6
Link Source Types	*Option 2 in the EPA's CO MOVES3 Guidance Section 2.4.7 will be used.*	Project specific modeling, ADOT, MPO EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.4.7

Link Drive Schedules, Operating Mode	*Average speeds and road types through the Links Importer will be used. Option 1 was used because of data availability.*	Project specific modeling, ADOT, MPO EPA Using MOVES3 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. The RV park activities are not directly associated with the project and no traffic data is available for the RV park.*	EPA Using MOVES3 in Project-Level Carbon Monoxide Analyses, Section 2.4.10

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.

Preliminary Link Configurations and Receptor Placements for CO Hot-Spot Analysis

The following graphics present the preliminary link configurations and receptor placements for the four intersections that will be modeled as part of the CO hot-spot analysis in CAL3QHC. The following applies to all figures:

- Free flow links extend 1000 feet away from center of signalized intersection
- Graphic representation of free flow links includes 10 foot mixing zone
- Traffic activity within 1000 feet from intersections are included
- Yellow circles are receptors located on the existing R/W (more than 10 feet from the edge of roadway).
- Receptors are spaced at 25-meter intervals at the height of 1.8 meters outside of the mixing zone.
- Receptor location coordinates will be provided by a separate file

Figure 1. I-17 and Deer Valley Road TI Receptors and Roadway Links

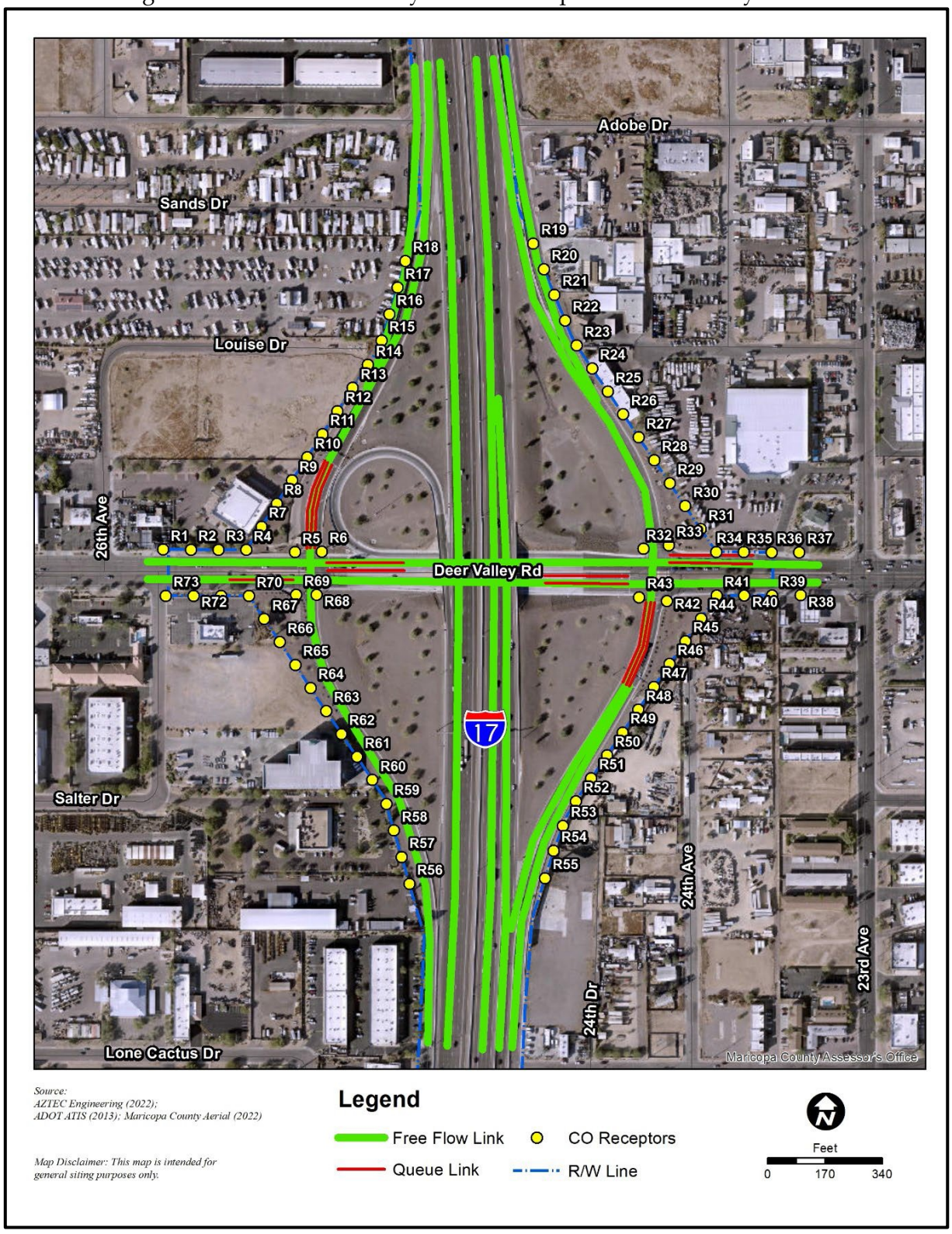
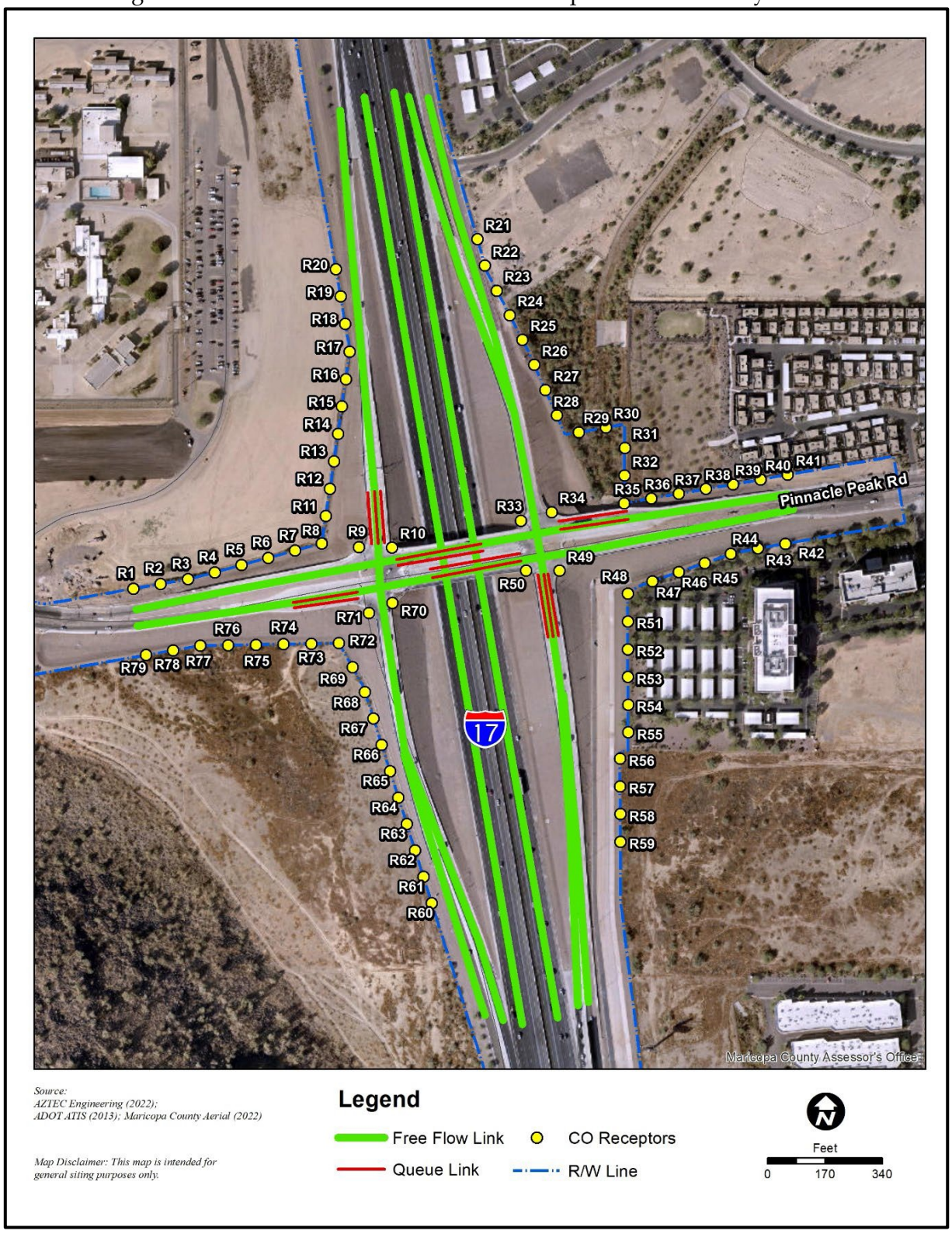


Figure 2. I-17 and Pinnacle Peak Road TI Receptors and Roadway Links



West Chandler (WC) (04-013-4004)

Site Location	Frye Rd. & Ellis St., Chandler
Spatial Scale	Neighborhood
Site Type	Population Exposure

Site Description: This site began operating in January 1995, This SLAMS location monitors for CO, O_3, and PM_{10}. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

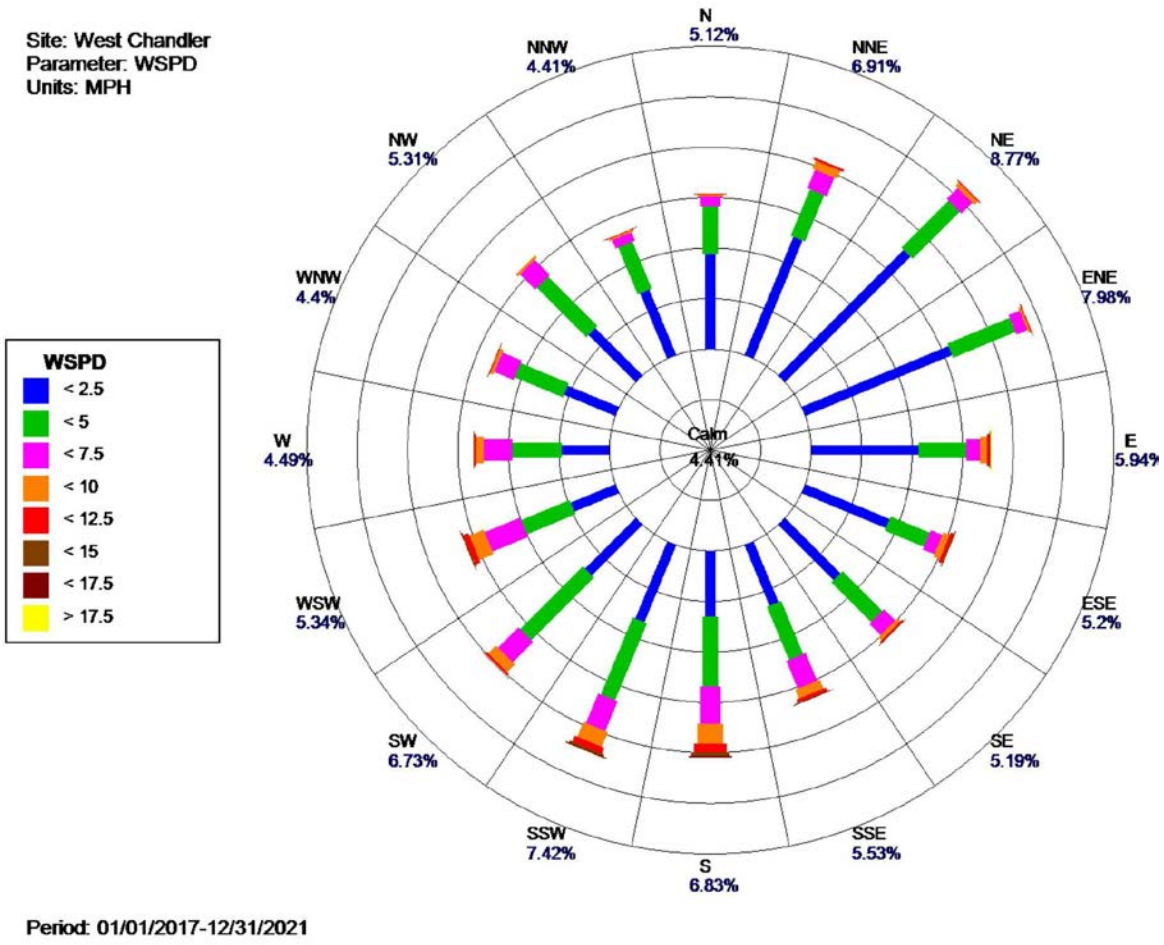
The site is surrounded by residential, agricultural, and heavy industrial operations, such as semiconductor manufacturing plants and liquid air storage. The PM_{10} monitor's scale of representativeness was first established as middle scale, but it was changed to neighborhood in June 2019 to better reflect land use currently surrounding the site and to match general monitoring requirements found in *40 CFR Part 58 Appendix D, Table D-1.*

Table 8. 2021 8-hour CO Average Data Summary

Site	CO 8-hour Average Maximum (ppm)	CO 8-hour Average 2nd Maximum (ppm)
Buckeye	0.6	0.6
Central Phoenix	2.0	2.0
Eastwood	1.0	1.0
Mesa	1.1	1.1
South Phoenix	1.7	1.6
*Thirty-Third	2.3	1.9
West Chandler	1.2	1.1
West Phoenix	3.5	2.6

* - Site temporarily monitoring for CO in 2021

Source: EPA AQS database – *2021 Quicklook Criteria Report (AMP450)*



Source: email from Ron Pope (AQD) Thu, Dec 1, 2022

5	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	b. For the row labeled "Receptor Locations," the descriptions provided in this row and on Page 13 are consistent with the 1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections, but more detail should be provided on the receptor placement. For sidewalks, receptors should be located at least near intersection corners and at mid-block. Please explain in more detail how the receptor placement is consistent with Section 2.2 of the Guideline.	Receptors are located along the R/W line and at sidewalks at the four corner of the intersection, and mid block of approach and department links where the CO concentrations are likely to be the highest.
6	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	c. For the row labeled "Traffic and Geometric Design," please provide the values that will be used for each of these parameters	Will provide for review when the input files are ready.
7	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	d. For the row labeled "Meteorology," on page 11, please provide the values that will be used for each of these parameters	Will provide for review when the input files are ready.
8	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	e. For the row labeled, "Persistence factor," please indicate whether the default or the local persistence factor will be used prior to modeling.	Will use default persistence factor of 0.7 because local measured 1-hour CO concentrations are not available.
9	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	f. For the row labeled, "Background monitor," i. Please explain in more detail why the CO monitor at Frye Rd and Ellis St in West Chandler is chosen for the background concentration. This monitor should be representative of background concentrations at the project area.	There are no CO monitors within 12 miles from the project area. CO monitor at Frye Rd and Ellis St in West Chandler is chosen for the background concentration. The background concentration data of this monitor are representative for the project area because: 1. Similar characteristics between the monitor location and project area including density (developed area), mix of emission sources (two freeways nearby), land use (residential area & commercial, light industrial), terrain (relative flat), etc. 2. Distance of monitor from the project area. The West Chandler monitor is located in the fringe area away from central Phoenix, similar to the project area. 3. Wind patterns between the monitor and the project area. The West Chandler monitor does not show significant upwind patterns.
10	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	ii. From the Guideline document, the persistence factor is generally used to estimate 8-hour concentrations from 1-hour concentration estimates. If there is 1-hour monitoring data available, that is preferred. Furthermore, it is unclear if the persistence factor of 0.7 is based on monitoring data. It is the recommended value in the absence of monitoring data, but the persistence factor should be calculated from monitoring data if they are available. There should also be some explanation of how the background monitored data is adjusted for the future.	Will use default persistence factor of 0.7 because local measured 1-hour CO concentrations are not available.
11	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	5. EPA had the following comments in regards to Table 2. Project Data Manager Inputs a. For the row labeled "Meteorology," is there data available from 2022 that could be used?	There is no data available from 2022 that could be used. The latest data ADEQ provided is up to 2021.
12	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	b. For the row labeled, "Age Distribution," Please indicate if the project will lead to a change in the age distribution of the project.	latest local age distribution data from MAG regional CO conformity analysis will be used. No change would be made.

13	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	c. For the row labeled "I/M Programs," what is meant by projects in Area A and B? How are these areas defined? Will MPO data be used or will the MOVES3.1 defaults?	Area A includes sections of Maricopa, Pinal, and Yavapai Counties. Area B includes a section of Pima County. Will use I/M local data from MAG AQ conformity analysis.
14	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	d. For the row labeled "Links," please provide the values that will be used for each link for each parameter listed before modeling	Will provide for review when the input files are ready.
15	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	e. For the row labeled "Link Source Types," It is unclear why a ratio of options 1 and 2 is taken. These two options correspond to two separate scenarios so only one should be chosen. Please revise accordingly.	Option 2 (link source types from the regional emission anlaysis) will be used.
16	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	f. For the row labeled "Link Drive Schedules, Operating Mode Distribution," i. Please explain why Option 1 of the three options listed in Section 2.4.9 of the Guideline is chosen. As stated in this section, this approach provides the least resolution when analyzing the emission impact of a project. Furthermore, "EPA encourages the development of validated methods for collecting verifiable vehicle Op-Mode distribution data at locations and in traffic conditions representative of different projects covered by this guidance. However, the user should determine the most robust activity dataset that can be reasonably collected while still achieving the goal of determining an accurate assessment of the CO air quality impacts from a given project." There should be more discussion on the choice listed here based on the data available and the type of vehicle activity.	Option 1 was used because of data availability.
17	Lindsay Wickersham, EPA	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	g. For the row labeled as "Off-network, Hoteling," i. There appears to be an RV park adjacent to this project. Please provide an explanation on why or why not this RV park will be included in the hot-spot analysis	The RV park activities are not directly associated with the project and no traffic data is available for the RV park.
18	Lindsay Wickersham, EPA	F0316_PM10- Project Determination	1. I see that the language on page 3 referring to the examples provided in § 93.123(b)(1)(i) and (ii) was updated! Thank you for making this	Thank you.
19	Lindsay Wickersham, EPA	F0316_PM10- Project Determination Consultation_20230213.pdf	2. On page 4, ADOT states that they are requesting comments on the if the increase of diesel vehicles would be a consider significant. a. EPA thinks that the 2,337 truck increase in the 1-18, Rose Garden Ln to Deer Valley Road, should be considered a significant increase in the number of diesel vehicles. This project has a similar increase in trucks to that of the SR 101 project from Princess Drive to Shea Blvd (2,366 trucks), which also was considered a project of air quality concern (POAQC) and required a PM hot spot analysis.	Will do a PM hotspot analysis for Rose Garden to Deer Valley Rd.
20	Lindsay Wickersham, EPA	F0316_PM10- Project Determination Consultation_20230213.pdf	3. On page 4, under the heading "Projects with Congested Intersections" ADOT determines that this is not a project that affects a congested intersection of LOS D or will change LOS to D or greater which has a significant number of diesel trucks. a. EPA recommends that this be changed to "Yes." i. The Deer Valley Rd/NB 1-17 IT has 6514 trucks in the build scenario which is considered a significant number and the LOS decreases from C to D in the PM Peak	Will do a PM hotspot analyiss for Deear Valley Rd TI

21	Lindsay Wickersham, EPA	F0316_PM10- Project Determination Consultation_20230213.pdf	ii. Pinnacle Peak Rd/NB-17 has 2,697 trucks in the build scenario, which is considered a significant number and is affecting a congested intersection with levels E and D of service in the AM and PM peak respectively.	Will do a PM hotspot analysis for Pinnacle Peak Rd TI
22	Lindsay Wickersham, EPA	F0316_PM10- Project Determination Consultation_20230213.pdf	4. EPA noticed that the modeling parameter portion of this document is very similar to the one submitted for the Pima Freeway hot spot analyses. We highly encourage ADOT to resubmit this document with detailed parameters specifically for this project for our review. If we can review the parameters before they are modeled, we can catch any mistakes that may otherwise lead to the potential to re-run the model and project delays. a. In addition to our previously submitted comments, EPA had the following comments on Table 1, for the row labeled "Time Spans" i. Since this is an expanded highway project that affects intersections, this project does not include start activity from gasoline vehicles. Therefore, four runs (morning peak, midday, evening peak, and overnight) should be done for the month with the seasonal fuel that results in the highest PM emissions. The vehicle miles traveled (VMT) input should be from the month where VMT is the highest, per Section 4.3.1 and 4.3.2 of the PM Hot-spot Guidance. As also stated in Section 4.3.1 of the Guidance, "Modelers have the choice to run MOVES more times, e.g., for four different seasons, or for additional time periods of the day, to better represent variation in VMT across seasons and across the day if they choose."	Will model four different seaons and four runs for the day (morning peak, midday, evening peak, and overnight). Default fuel for four seasons will be used.
23	Lindsay Wickersham, EPA	F0316_PM10- Project Determination Consultation_20230213.pdf	5. In addition to our previously submitted comments as discussed in 4 above, EPA had the following comments on Table 2: a. Table 2, Step 3, Link Source Types: It is unclear why a ratio of options 1 and 2 is taken. These two options correspond to two separate scenarios so only one should be chosen. Please revise accordingly.	Option 2 is chosen to use for link source type
24	Lindsay Wickersham, EPA	F0316_PM10- Project Determination Consultation_20230213.pdf	b. Table 2, Step 3, Off-Network, Hotelling: Please include a discussion of off-network activity. There are nearby RV parks and a school parking lot by the northern end of the project, which are areas where vehicles are starting their engines. Please explain why these sources are or are not included.	Per EPA guidance, off-network sources are used for transit and other terminal projects, such as a bus terminal or intermodal freight terminal. The RV park and a school parking lot are not considered as transit and terminal projects, as a result, they are not modeled. In addtion, there is no traffic data available for the RV park and school parking lot.
25	Lindsay Wickersham, EPA	F0316_PM10- Project Determination	c. Table 2, Step 5: It would be helpful to define variable names (for example, EMISFACT, SEASHR, and RECTABLE). Also, please explain the	Will provide AERMOD input files for review when ready.
26	Lindsay Wickersham, EPA	F0316_PM10- Project Determination	d. Table 2, Step 5, Receptors (RE Pathway): Please include receptors elsewhere along the project from 19th Avenue to Pinnacle Peak Road	Pinnacle Peak Road intersections will be included for analysis. No actural construction work would occur from 19th Avenue. No
27	Lindsay Wickersham, EPA	F0316_PM10- Project Determination Consultation_20230213.pdf	e. Table 2, Step 5, Receptors (RE Pathway): Most receptors appear to be more than 25 meters apart. Please change the receptor spacing to be 25 meters apart if they are further than that. Furthermore, please verbally describe the spacing of the receptors as Figure 1 shows some receptors more densely packed than others.	In response to this comment, receptors locations have been revised to be 25 meter apart.
28	Lindsay Wickersham, EPA	F0316_PM10- Project Determination	f. Table 2, Step 6, Nearby Sources: Please include a discussion of nearby sources and whether they should be explicitly modeled	Will discuss nearby sources.

29	Lindsay Wickersham, EPA	F0316_PM10- Project Determination Consultation_20230213.pdf	g. Table 2, Step 6, Other Sources (Ambient Monitoring Data): More information should be provided to justify the choice of this monitor. How does this station represent the background conditions of the project area? Is this the closest monitor with similar land use to the project? Is this monitor frequently upwind of the project area? It would be helpful to look at a wind rose at the project area as well if that information is available. What is the height of this monitor? These are some questions which may help determine the choice of a monitor, which should be representative of background concentrations at the project area. See PM Hot-spot Guidance Section 8.3.1 for more details.	Will expand discussion.
30	Lindsay Wickersham, EPA	F0316_PM10- Project Determination Consultation_20230213.pdf	h. Table 2, Step 6, Other Sources (Ambient Monitoring Data): This row appears to describe the design concentration, even though that is in Step 7, as described earlier in the document. For the design concentration, the highest sixth-highest value among all receptors should be added to the fourth highest background monitor value (Section 9.3.4 of PM Hot-spot Guidance). This is similar to the explanation provided here, but it should be stated that this is the design concentration, not the background concentration.	This row only describes ambient monitoring data, especially the fourth highest background monitor value. The design concentration would be calculated in the later steps.
31	Lindsay Wickersham, EPA	F0316_PM10- Project Determination Consultation_20230213.pdf	6. EPA had the following comments in regard to the AERMOD modeling portion of Table 2 (Step 5): a. Please include information to support urban option per Appendix W, Section 7.2.1.1(b) and Guidance Section 7.5.5. b. Please provide a justification for the surface and upper air meteorological stations used in AERMOD focusing on the representativeness of the data for this project location. Also include data completeness information. See Section 7.5.1 of the Hot Spot Guidance for additional information.	AERMOD input files will be provided for review when ready. ADOT has coordinated and confirmed with ADEQ for the surface and upper air meteorological data to be used in AERMOD.

32	Lindsay Wickersham, EPA	F0316_PM10- Project Determination Consultation_20230213.pdf	7. Any days excluded from the background monitor design value concentration that have not been concurred upon by EPA as Exceptional Events should include a justification for why the data is appropriate for exclusion under Appendix W and EPA's 2019 Clarification Memo on Data Modification Methods (see Data Modification: Clarification Memo on additional Methods, Determinations and Analyses to Modify Air Quality Beyond Exceptional Events (April 2019), on web page https://www.epa.gov/air-quality-analysis/clarification-memo-additional-methods-determinations-and-analyses-modify-air). Some days may warrant exclusion but should not be those influenced by "typical" local and/or regional anthropogenic emissions. For example, for fire exclusions, we would expect to see at a minimum: a. A list of days excluded b. Specific named fires, locations of the fires for those days c. Evidence of transport from the fires to the monitors (actual smoke maps and HYSPLIT trajectories) d. Evidence of impact on the ground (PM10 concentrations for each day and how they compare to historical PM10 concentrations for that season, e.g., what percentile are they). e. The less unique the concentration measured is (e.g., 99th percentile), the more justification may be needed to support exclusion. For example, additional speciation data, pollutant ratios, etc.	This is outside of PM hotspot analysis scope for this project. EPA, FHWA, ADEQ, and ADOT need further collaboration on this topic. The monitor selected that best represents the project area value is below the NAAQS.
33	Dean Giles, MAG	F0316_Project-Level-CO-Modeling	1. On Page 8, should the description in the first paragraph refer to "Using MOVES3 in Project-Level Carbon Monoxide Analyses" EPA-420-B	Will revise
34	Dean Giles, MAG	F0316_Project-Level-CO-Modeling Consultation_20230213.pdf	2. On Page 11, Table 2 indicates that for meteorological inputs the average temperature and humidity will be derived by averaging all hourly temperature values of January 2019, 2020, and 2021. The latest three year data of 2020, 2021, and 2022 are recommended for developing the average temperature and humidity inputs.	2022 meteorological data are not available from ADEQ AERMET data files at this time.
35	Dean Giles, MAG	F0316_Project-Level-CO-Modeling	3. On Page 11, Table 2, under fuel inputs, replace the previous reference guide "Using MOVES2014 in Project-Level Carbon Monoxide Analyses"	Will revise
36	Dean Giles, MAG	F0316_Project-Level-CO-Modeling	4. On Page 14, R29, R30, R31, and R32 receptors are not placed along the ramp. Are there any reasons for that?	Because they are within the ROW along the Ramp, no public access on edge of the ramp
37	Dean Giles, MAG	F0316_PM10- Project Determination Consultation_20230213.pdf	5. On Page 4, second paragraph, based on Table 1 the difference from the Build and No-Build in medium and heavy truck ADT on the mainline is 1,677 to 2,337 rather than -2,134 to 2,337.	Will revise
38	Dean Giles, MAG	F0316_PM10- Project Determination	5. On Page 6, should the description in the first paragraph refer to "PM Hot-spot Guidance Transportation Conformity Guidance for Quantitative	Will revise
39	Dean Giles, MAG	F0316_PM10- Project Determination Consultation_20230213.pdf	5. On Pages 10 and 13, in Step 5 please correct the AERMOD air quality model version number from v21112 to v22112.	Will revise

Re: Interagency Consultation: I-17: Design ramp and turnbacks

1 message

ADOTAirNoise - ADOT <adotairnoise@azdot.gov> Tue, May 2, 2023 at 4:43 PM
To: Beverly Chenausky <bchenausky@azdot.gov>
Cc: "Wickersham, Lindsay (she/her/hers)" <wickersham.lindsay@epa.gov>, Tim Franquist <tfranquist@azmag.gov>, Transportationconformity <transportationconformity@azdeq.gov>, "Johanna.Kuspert@maricopa.gov" <johanna.kuspert@maricopa.gov>, "Meek, Clifton" <meek.clifton@epa.gov>, Dean Giles <dgiles@azmag.gov>, "Oconnor, Karina (she/her/hers)" <OConnor.Karina@epa.gov>, "Tsui, William" <Tsui.William@epa.gov>, "Kay, Rynda (she/her/hers)" <Kay.Rynda@epa.gov>

The Draft Air Quality Report has been posted on the ADOT website, please provide comments on this report by May 22nd, thanks.
F0316-I-17-Ramp-WN-Draft-Public-AQ-Report-050223.pdf (azdot.gov)

Beverly

On Mon, Apr 17, 2023 at 1:59 PM Beverly Chenausky <bchenausky@azdot.gov> wrote:

> To All:
>
> Attached you will find a response to agencies comments along with the revised CO and PM10 modeling assumptions document(s). Thank you for your time in reviewing the materials, any additional suggested changes can be addressed when the draft air quality report is provided, as before supporting information will be provided via ShareFile notification. Please let me know if you have any questions or concerns.
>
> Beverly
>
> On Tue, Mar 14, 2023 at 3:26 PM Wickersham, Lindsay (she/her/hers) <wickersham.lindsay@epa.gov> wrote:
>
> > Hi Beverly,
> >
> > Thank you for the opportunity to review these documents related to the I-17 Ramp WN improvements. The EPA modelers and I have finished our review and have provided feedback and comments in the attached word document. We would be happy to set up a meeting to discuss any of these comments in more detail.
> >
> > Overall our comments are similar to our previous reviews in which we would like to see more specific values on what will be used when the modeling occurs. We understand that this document is meant as a resource for contractors, but with the absence of a modeling protocol we believe it would save both agencies time and back and forth if these parameters were provided in these documents in the future. Additionally we are requesting more detailed sections on the modeling parameters and why they were chosen (i.e. how the background monitor was chosen, placement of receptors, etc) .The more detail that can be provided on your thought process the less comments we will have requesting this information and hopefully we can have less iterations going back and forth (and a better chance of meeting deadlines!).
> >
> > I have provided an example to this email from another hot spot analysis that EPA Region 9 has reviewed and acted on. This is the level of detail and explanation we are hoping to see for the modeling parameters (See Section 4 starting on pdf p.10). I have abridged out the appendices so that it can be sent over email, but I can upload the whole version to the AZ drop box for you and your colleagues if you would like!
> >
> > Thank you again and have a great rest of the week,
> >
> > Lindsay
> >
> > Lindsay Wickersham (she/hers) | 415-947-4192
> >
> > Physical Scientist | Planning Section (AIR-2-1) | Air and Radiation Division | US EPA - Region 9
> >
> > ---
> >
> > **From:** Beverly Chenausky <bchenausky@azdot.gov>
> > **Sent:** Monday, February 13, 2023 4:05 PM
> > **To:** Wickersham, Lindsay (she/her/hers) <wickersham.lindsay@epa.gov>; Tim Franquist <tfranquist@azmag.gov>; Johanna.Kuspert@maricopa.gov; Transportationconformity <transportationconformity@azdeq.gov>
> > **Cc:** Meek, Clifton <meek.clifton@epa.gov>; Dean Giles <dgiles@azmag.gov>; ADOTAirNoise - ADOT <adotairnoise@azdot.gov>; Oconnor, Karina (she/her/hers) <OConnor.Karina@epa.gov>
> > **Subject:** Interagency Consultation: I-17: Design ramp and turnbacks
> >
> > To All:

ADOT is presenting the following project, **I-17 (Ramp WN Improvements)**, for interagency consultation, per 40 CFR 93.105, to determine if the project should be treated as a project of air quality concern or **not** as a project of Air Quality Concern and thereby **will not** require a PM10 hot-spot analysis. ADOT is requesting responses to the attached *F0316_PM10-Project Determination Consultation_20230213.pdf.* A non-response will be interpreted as the project is not a project of air quality concern and does not require a hot-spot analysis. If any consulted party believes this project should be treated as a project of air quality concern that requires a Quantitative PM10 hot-spot analysis, please document the appropriate section under 40 CFR 93.123 (b) that applies to the project and describe why the project should be treated as a project of air quality concern. If the project is determined to be a project of air quality concern, it is requested that the consulted parties provide comments or questions on the methods, models and assumptions within **30 days,** a non-response will be interpreted as concurrence with the planning assumptions as described in the attached PM10 document.

Additionally, ADOT has determined that the project may require a quantitative hot-spot analysis only for CO, the modeling assumptions are attached in document *F0316_Project-Level_CO Modeling Consulation_20230213.pdf.* 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, and 93.116. It is requested that the consulted parties provide comments or questions on the methods, models and assumptions within **30 days,** a non-response will be interpreted as concurrence with the planning assumptions as described in the attached CO modelings document.

The supplementation traffic study will be provided with ShareFile, please let me know if you have not received a notification, and or have questions about the project.

Beverly T. Chenausky

Assistant Environmental Administrator

Air & Noise, Hazmat and Standards & Training

205 South 17th Avenue, MD EM02
Phoenix, AZ 85007
C: 480.390.3417

azdot.gov