

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

Project Setting and Description

The Arizona Department of Transportation (ADOT) is studying design concepts and environmental impacts for system improvements on State Route 101L (SR 101L) at the traffic interchange (TI) with Interstate 10 (I-10). The project would extend north on SR 101L from milepost (MP) 0.0 to Indian School Road (MP 4.0) and on I-10 from Avondale Boulevard (MP 131.5) to east of 83rd Avenue (MP 136.2). The SR 101L and I-10 System TI is located within the limits of the City of Phoenix, the Town of Tolleson, and the City of Avondale in Maricopa County (Figure 1 – State Map and Figure 2 – Vicinity Map). The Project would occur within existing ADOT right-of-way (ROW) and may also require new ROW and temporary construction easements.

The West Valley is experiencing some of the fastest growth in the region, and with this growth comes an increase in traffic. During peak demand, the existing SR 101L and I-10 TI cannot handle the flow of traffic and experiences significant delays and backups, frustrating drivers. These backups extend in all directions and impact the local roadways and service TIs. Increased congestion requires motorists to more frequently change lanes and adjust speeds to contend with the complexity of traffic patterns on the roadways. With numerous commercial and industrial developments in the vicinity, ADOT, Maricopa Association of Governments (MAG), and West Valley cities recognize the need to improve freeway operations, mobility, and local access in this area.

The typical roadways consist of a divided highway with a closed median. Each direction of travel includes four 12-foot travel lanes and 12-foot outside and 10-foot inside shoulders. Narrower shoulders exist in some locations throughout the corridor. As a result of previous studies conducted by MAG, two components are being evaluated for this System TI: (1) a new Direct High-Occupancy Vehicle (DHOV) ramp and (2) a new connection between southbound SR 101L and 91st Avenue. The proposed DHOV ramp will accommodate travel to/from the north along SR 101L and to/from the east along I-10. The proposed connection between SR 101L and 91st Avenue will supplement the I-10/SR 101L system TI ramps and I-10/91st Avenue service TI ramps. Improvements in traffic flow at crossroads within the Project limits would also be evaluated.

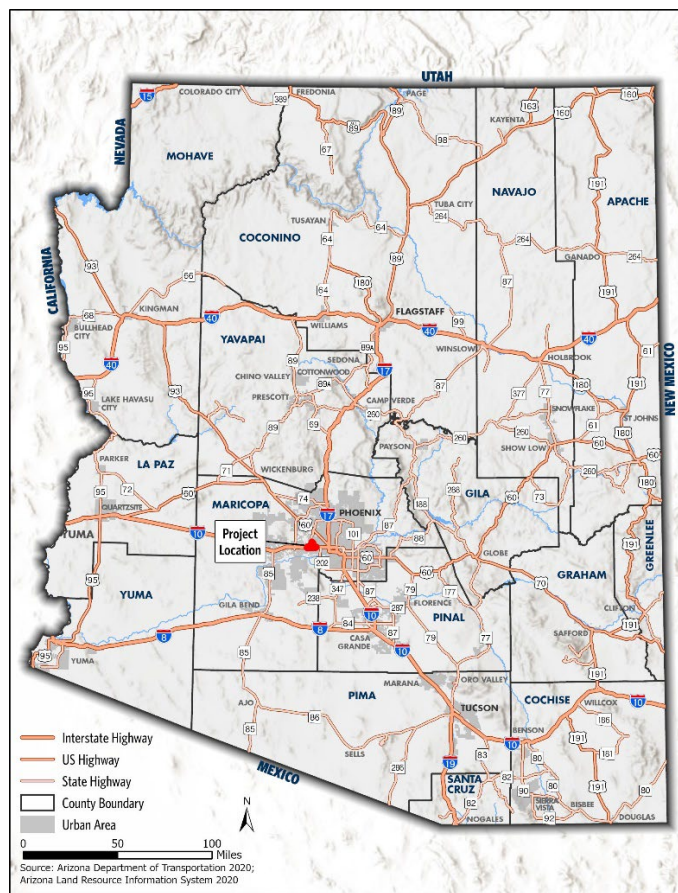


Figure 1: State Map Showing Project Location

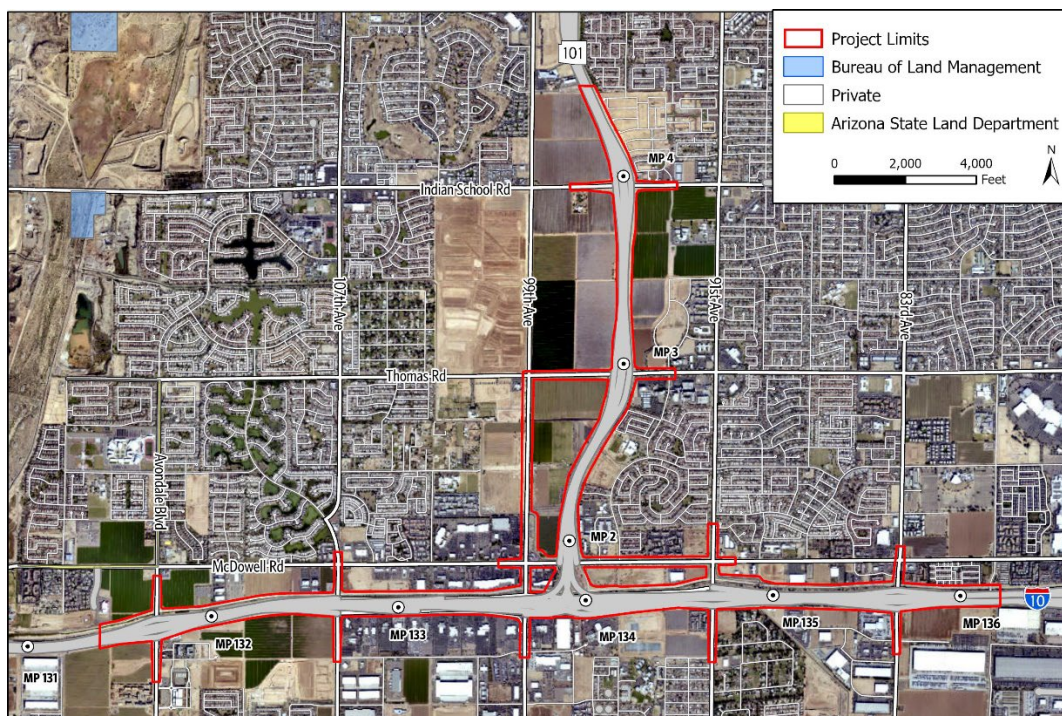


Figure 2: Project Vicinity Map

The purpose of the project is to mitigate existing weaving and safety issues, improve connectivity, and enhance regional travel to support economic development for the I-10 and SR 101L Interchange.

The project includes the following proposed improvements:

- Construction of a DHOV lane from I-10 to the median of SR 101L between McDowell Road and Indian School Road. DHOV would convey southbound SR 101L HOV traffic to eastbound I-10 and westbound I-10 HOV traffic to northbound SR 101L
- Additional travel lane on both north- and southbound SR 101L between McDowell Road and Indian School Road, providing four general-purpose travel lanes and one HOV lane in each direction of travel
- Construction of a two lane exit ramp from northbound SR 101L to Thomas Road
- Construction of a two lane exit ramp from eastbound I-10 to 83rd Avenue
- Construction of crossroad, ramp, and bridge improvements between McDowell Road and Indian School Road on SR 101L
- Construction of crossroad and ramp improvements between Avondale Boulevard and east of 83rd Avenue on I-10
- Extension of the auxiliary lane from southbound SR 101L to eastbound I-10 entrance ramp onto I-10 to east of the 83rd Avenue eastbound exit ramp
- Construction of an eastbound auxiliary lane on I-10 between the 91st Avenue entrance ramp and the 83rd Avenue exit ramp
- Construction of an exit ramp from the southbound SR 101L to eastbound I-10 ramp to the I-10 eastbound to 91st Avenue Ramp B
- Construction of a new exit ramp from southbound SR 101L to McDowell Road
- Construction of a southbound right-turn lane at the I-10/Avondale Boulevard TI
- Construction of a northbound right-turn lane at the I-10/107th Avenue TI
- Construction of a northbound right-turn lane and a southbound right-turn lane at the I-10/99th Avenue TI
- Modifications to the left turn lanes on 91st Avenue at the I-10 TI
- Modifications to the left turn lanes on 83rd Avenue at the I-10 TI
- Widening of McDowell Road at the SR 101L/McDowell Road TI
- Widening of Thomas Road at the SR 101L/Thomas Road TI
- Installation of new permanent signage, pavement markings, lighting, traffic signals, and ITS infrastructure
- Construction of new pavement, barriers, bridges, and walls
- Adjustment of existing drainage facilities to accommodate improvements
- Installation of irrigation system and landscaping

- Relocation or modification of impacted utilities
- Placement of advance traffic control signs on spring stands on I-10, SR 101L, and local roads

The project is in an area designated nonattainment for PM₁₀. The project is included in the *Maricopa Association of Governments (MAG) Momentum 2050 Regional Transportation Plan (MAG 2021)* and the *FY 2022-2025 MAG Transportation Improvement Program (TIP)*. The most recent Federal Highway Administration and Federal Transit Administration Finding of Conformity for the Momentum 2050 and the 2022-2025 TIP was issued on February 14, 2023.

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 PM₁₀ 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 *PM_{2.5} and PM₁₀ Hot-Spot Analyses in Project-Level Transportation Conformity Determinations for the New PM_{2.5} 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 used as the baseline for determining if the project is a project of air quality concern.

Of the five project types listed in 40 CFR 93.123(b) above, types i and ii are relevant to the evaluation of this project.

New Highway Capacity

Is this a new highway project that has a significant number of diesel vehicles?

Example: total traffic volumes $\geq 125,000$ annual average daily traffic (AADT) and truck volumes $\geq 10,000$ 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.

NO – This project will not cause significant increase in the number of diesel vehicles. The project would construct a new DHOV ramp and a new connection between southbound SR 101L and 91st Avenue. The project will improve connectivity and enhance regional travel to support economic development for the I-10 and SR 101L Interchange. The Recommended Alternative for the project would not induce a significant amount of diesel traffic into the project area.

Table 1 summarizes the average daily traffic (ADT) along the I-10 and SR 101L in the project area for the existing condition in 2022, the No Build Alternative in 2050, and the Recommended Alternative in 2050. These data were obtained from the traffic study of the Draft Initial Design Concept Report (Jacobs 2023).

The truck percentages on I-10 and SR 101L were estimated to be 10% and 5%, respectively, under the existing condition on the general-purpose lanes. These truck percentages were conservatively used for the total highway traffic that includes both general purpose lanes and HOV lanes. The project would not introduce additional diesel truck traffic to the project area, therefore, the truck percentages in future years would remain the same as the existing condition. As shown in Table 1, ADT for the Recommended Alternative would be slightly higher than the No Build Alternative. However, the increases in truck ADT are minimal on all segments of the I-10 and SR 101L in the project area, ranging between 70 to 285 trucks per day depending on the locations of the highway segments analyzed. The truck ADT of the Recommended Alternative are approximately 0.2% to 2.2% more than the truck ADT of the No Build Alternative. The segments with more than 1% truck increases are on SR 101L, likely due to the added traffic lanes, and redistribution of the vehicle volume on the mainline, HOV, and ramps. Therefore, this project will not cause a significant increase in the number of diesel vehicles.

Table 1: ADT and Truck Volume Increase of the Project

	2022 Existing		2050 No Build		2050 Recommended Alternative		Difference (Recommended Alternative to No Build)	
	ADT	Truck%	ADT	Truck%	ADT	Truck%	ADT	Truck ADT
I-10 at 107 Ave	247,369	10%	315,500	10%	316,200	10%	700	70
I-10 107 Ave to 99th Ave	228,138	10%	295,900	10%	296,600	10%	700	70
I-10 at 91st Ave	279,021	10%	345,800	10%	347,600	10%	1,800	180
I-10 91st Ave to 83 Ave	297,125	10%	367,200	10%	369,800	10%	2,600	260
I-10 83th Ave to 75th Ave at 79th Ave	296,516	10%	357,200	10%	359,600	10%	2,400	240
SR 101L McDowell Rd to Thomas Rd	172,394	5%	256,400	5%	262,100	5%	5,700	285
SR 101L Thomas Rd to Indian School Rd	192,683	5%	285,500	5%	289,000	5%	3,500	175

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?

NO - The project would not affect intersections with significantly increased amount of diesel truck traffic. The purpose of the project is to improve connectivity by adding direct ramps to HOV lanes and connectors to local streets. These improvements would relief congestion at intersections near the I-10 and SR101L interchange. As shown in Table 2, LOS and delay would improve at most of the intersections under the Recommended Alternative in 2050 when compared to No Build Alternative. Although peak hour LOS would be at D or worst at some of the intersections for the Recommended Alternative, none of these intersections would have significant number of trucks or truck increases, because the project will not induce additional diesel traffic to the project area.

Table 2: Intersection LOS and Delay

Intersections	2022 Existing Condition		2050 No Build		2050 Recommend Alternative	
	AM	PM	AM	PM	AM	PM
	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)
I-10 EB Ramps / Avondale Blvd South	D (37.5)	D (40.6)	E (60.6)	E (63.5)	B (19.2)	C (22)
I-10 WB Ramps / Avondale Blvd North	C (26.6)	D (38)	D (37.1)	E (78.5)	B (19.6)	C (27.7)
I-10 EB Ramps / 107th Ave South	C (26.7)	C (24.3)	C (22.8)	C (20.2)	B (19.4)	B (19.5)
I-10 WB Ramps / 107th Ave North	B (16.8)	C (23.8)	C (21.2)	D (41.3)	C (21.3)	C (32.9)
I-10 EB Ramps / 99th Ave South	C (31)	D (46.7)	C (24.9)	F (81)	C (20.3)	C (25)
I-10 WB Ramps / 99th Ave North	D (35.9)	D (41.2)	D (35.9)	E (63.9)	C (24.8)	C (29.8)

Dealer Dr / 99th Ave	A (8.4)	B (16.4)	A (9.1)	C (34.8)	A (8.6)	C (33.2)
McDowell Rd / 99th Ave	D (37.5)	F (80.8)	D (46.3)	F (131.9)	D (45.1)	E (67.9)
McDowell Rd West / SR101 SB Ramp	B (17.9)	B (19.8)	C (26.4)	D (48.2)	C (26.7)	B (19.5)
McDowell Rd East / SR101 NB Ramp	B (17.6)	D (45.8)	B (19.8)	D (53.6)	B (18.9)	C (28)
I-10 EB Ramps / 91st Ave South	C (20.8)	B (19.7)	C (21.4)	C (20.7)	C (33.5)	D (36.6)
I-10 WB Ramps / 91st Ave North	C (21.1)	C (25)	D (47.3)	C (30.3)	C (22.1)	C (24.5)
Latham St / 91st Ave	A (5.4)	A (6.1)	B (16.2)	B (16.9)	B (18.5)	C (28.8)
McDowell Rd / 91st Ave	D (37.8)	D (50.7)	E (67)	F (100.6)	C (32.2)	D (45.1)
I-10 EB Ramps / 83rd Ave South	C (25)	C (34)	C (34.4)	D (36.2)	C (29.8)	D (39.8)
I-10 WB Ramps / 83rd Ave North	C (26.6)	C (31.6)	C (27.2)	C (25)	C (31.3)	C (24.7)
Thomas Rd / SR101 SB Ramp	C (32.3)	C (29.4)	E (57.6)	E (56.3)	B (18.2)	C (32.2)
Thomas Rd / SR101 NB Ramp	B (18.2)	C (34.3)	E (72.8)	E (77.1)	C (23.4)	B (19.5)
Thomas Rd / 99th Ave	B (19)	C (28.1)	E (57)	E (68)	C (26.9)	C (35)
Indian School Rd / SR101 SB Ramp	C (28.1)	C (26.1)	C (27.8)	D (35.3)	C (28.3)	D (36.2)
Indian School Rd / SR101 NB Ramp	C (25.7)	C (28.4)	C (33.3)	C (33.1)	C (32.3)	C (32.9)

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 – The project does not involve the construction of a bus or rail terminal.

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 – The project does not involve the expansion of 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 PM₁₀ or PM_{2.5} applicable plan or implementation plan submissions, as appropriate, as sites of violation or potential violation?

NO – The State Implementation Plans (SIP), including implementation plan submission *2014 Maricopa County PM-10 Non-Attainment Area: Five Percent Plan for the Attainment of the 24-Hour PM-10 Standard* does not identify any specific sites or potential sites of violation; therefore, the project is not anticipated to affect any such sites.

POAQC Determination

The project complies with and will not interfere with the implementation of any control measures included in the MAG RTP, TIP, and other SIP documents. Truck percentages are predicted to remain relatively consistent between the Recommended Alternative and No Build conditions. The project would not significantly increase the number of diesel trucks along the project corridor in 2050. In addition, the project would not create LOS D or

worse conditions at intersections with a significant number of diesel vehicles. The project does not create an air quality concern but improves interchange connectivity and intersection LOS which are beneficial to the region's air quality.

Therefore, ADOT is presenting this project for interagency consultation per 40 CFR 93.105, as a project that is NOT of Air Quality Concern and thereby will not require a quantitative PM₁₀ hot-spot analysis for project level conformity demonstration. While this project does not require a hot-spot analysis, other conformity provisions apply and will be addressed in the project clearance.

Interagency Consultation Results

On May 30, 2023, ADOT provided a copy of this questionnaire, to the following consultation parties, EPA, Federal Highway Administration (FHWA), MAG, Arizona Department of Environmental Quality (ADEQ), and Maricopa County Air Quality Department as the local air agencies in Maricopa County. There were no objections to the project determination, a few minor corrections were suggested, ADOT also held meeting on June 8th for further discussions. On July 10, 2023 ADOT concluded Interagency Consultation by notifying interested parties that this project will proceed as a project that does not require a quantitative PM₁₀ hot-spot analysis under 40CFR 93.123(b).

Project Level CO Hot-Spot Analysis Questionnaire

Project Setting and Description

The Arizona Department of Transportation (ADOT) is studying design concepts and environmental impacts for system improvements on State Route 101L (SR 101L) at the traffic interchange (TI) with Interstate 10 (I-10). The Project would extend north on SR 101L from milepost (MP) 0.0 to Indian School Road (MP 4.0) and on I-10 from Avondale Boulevard (MP 131.5) to east of 83rd Avenue (MP 136.2). The SR 101L and I-10 System TI is located within the limits of the City of Phoenix, the City of Tolleson, and the City of Avondale in Maricopa County (Figure 1 – State Map and Figure 2 – Vicinity Map). The Project would occur within existing ADOT right-of-way (ROW) and may also require new ROW and temporary construction easements.

The West Valley is experiencing some of the fastest growth in the region, and with this growth comes an increase in traffic. During peak demand, the existing SR 101L and I-10 TI cannot handle the flow of traffic and experiences significant delays and backups, frustrating drivers. These backups extend in all directions and impact the local roadways and service TIs. Increased congestion requires motorists to more frequently change lanes and adjust speeds to contend with the complexity of traffic patterns on the roadways. With numerous commercial and industrial developments in the vicinity, ADOT, Maricopa Association of Governments (MAG), and West Valley cities recognize the need to improve freeway operations, mobility, and local access in this area.

The typical roadways consist of a divided highway with a closed median. Each direction of travel includes four 12-foot travel lanes and 12-foot outside and 10-foot inside shoulders. Narrower shoulders exist in some locations throughout the corridor. As a result of previous studies conducted by MAG, two components are being evaluated for this System TI: (1) a new Direct High-Occupancy Vehicle (DHOV) ramp and (2) a new connection between southbound SR 101L and 91st Avenue. The proposed DHOV ramp will accommodate travel to/from the north along SR 101L and to/from the east along I-10. The proposed connection between SR 101L and 91st Avenue will supplement the I-10/SR 101L system TI ramps and I-10/91st Avenue service TI ramps. Improvements in traffic flow at crossroads within the Project limits would also be evaluated.



The purpose of the project is to mitigate existing weaving and safety issues, improve connectivity, and enhance regional travel to support economic development for the I-10 and SR 101L Interchange.

The project includes the following proposed improvements:

- Construction of a DHOV lane from I-10 to the median of SR 101L between McDowell Road and Indian School Road. DHOV would convey southbound SR 101L HOV traffic to eastbound I-10 and westbound I-10 HOV traffic to northbound SR 101L
- Additional travel lane on both north- and southbound SR 101L between McDowell Road and Indian School Road, providing four general-purpose travel lanes and one HOV lane in each direction of travel
- Construction of a two lane exit ramp from northbound SR 101L to Thomas Road
- Construction of a two lane exit ramp from eastbound I-10 to 83rd Avenue
- Construction of crossroad, ramp, and bridge improvements between McDowell Road and Indian School Road on SR 101L
- Construction of crossroad and ramp improvements between Avondale Boulevard and east of 83rd Avenue on I-10
- Extension of the auxiliary lane from southbound SR 101L to eastbound I-10 entrance ramp onto I-10 to east of the 83rd Avenue eastbound exit ramp
- Construction of an eastbound auxiliary lane on I-10 between the 91st Avenue entrance ramp and the 83rd Avenue exit ramp
- Construction of an exit ramp from the southbound SR 101L to eastbound I-10 ramp to the I-10 eastbound to 91st Avenue Ramp B
- Construction of a new exit ramp from southbound SR 101L to McDowell Road
- Construction of a southbound right-turn lane at the I-10/Avondale Boulevard TI
- Construction of a northbound right-turn lane at the I-10/107th Avenue TI
- Construction of a northbound right-turn lane and a southbound right-turn lane at the I-10/99th Avenue TI
- Modifications to the left turn lanes on 91st Avenue at the I-10 TI
- Modifications to the left turn lanes on 83rd Avenue at the I-10 TI
- Widening of McDowell Road at the SR 101L/McDowell Road TI
- Widening of Thomas Road at the SR 101L/Thomas Road TI
- Installation of new permanent signage, pavement markings, lighting, traffic signals, and ITS infrastructure
- Construction of new pavement, barriers, bridges, and walls
- Adjustment of existing drainage facilities to accommodate improvements
- Installation of irrigation system and landscaping

- Relocation or modification of impacted utilities
- Placement of advance traffic control signs on spring stands on I-10, SR 101L, and local roads

The project is in an area designated as maintenance for CO. The project is included in the *Maricopa Association of Governments (MAG) Momentum 2050 Regional Transportation Plan (MAG 2021)* and the *FY 2022-2025 MAG Transportation Improvement Program (TIP)*. The most recent Federal Highway Administration and Federal Transit Administration Finding of Conformity for the Momentum 2050 and the 2022-2025 TIP was issued on February 14, 2023.

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).

Of the five project types listed in 40 CFR 93.123(a) above, type ii is relevant to this project.

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 – The 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area (MAG 2013) does not include any sites of violation or possible violation for the federal CO 8-hour standard.

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 - The project will impact one or more intersections that will operate at LOS D or worse in the Project area. Table 1 shows the average daily traffic (ADT) on mainline I-10 and SR 101L in the study area. Table 2 shows the affected intersection level of service (LOS) and delay. Information in Tables 1 and 2 were obtained from the traffic study for the Draft Initial Design Concept Report (Jacobs 2023).

Table 1: I-10/SR 101L Mainline ADT

	2022 Existing ADT	2050 No Build ADT	2050 Recommended Alternative ADT
I-10 at 107 Ave	247,369	315,500	316,200
I-10 107 Ave to 99th Ave	228,138	295,900	296,600
I-10 at 91st Ave	279,021	345,800	347,600
I-10 91th Ave to 83 Ave	297,125	367,200	369,800
I-10 83th Ave to 75th Ave at 79th Ave	296,516	357,200	359,600
SR 101L McDowell Rd to Thomas Rd	172,394	256,400	262,100
SR 101L Thomas Rd to Indian School Rd	192,683	285,500	289,000

Table 2: Intersection LOS and Delay

Intersections	2022 Existing Condition		2050 No Build		2050 Recommended Alternative	
	AM	PM	AM	PM	AM	PM
	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)
I-10 EB Ramps / Avondale Blvd South	D (37.5)	D (40.6)	E (60.6)	E (63.5)	B (19.2)	C (22)
I-10 WB Ramps / Avondale Blvd North	C (26.6)	D (38)	D (37.1)	E (78.5)	B (19.6)	C (27.7)
I-10 EB Ramps / 107th Ave South	C (26.7)	C (24.3)	C (22.8)	C (20.2)	B (19.4)	B (19.5)
I-10 WB Ramps / 107th Ave North	B (16.8)	C (23.8)	C (21.2)	D (41.3)	C (21.3)	C (32.9)
I-10 EB Ramps / 99th Ave South	C (31)	D (46.7)	C (24.9)	F (81)	C (20.3)	C (25)
I-10 WB Ramps / 99th Ave North	D (35.9)	D (41.2)	D (35.9)	E (63.9)	C (24.8)	C (29.8)
Dealer Dr / 99th Ave	A (8.4)	B (16.4)	A (9.1)	C (34.8)	A (8.6)	C (33.2)
McDowell Rd / 99th Ave	D (37.5)	F (80.8)	D (46.3)	F (131.9)	D (45.1)	E (67.9)
McDowell Rd West / SR101 SB Ramp	B (17.9)	B (19.8)	C (26.4)	D (48.2)	C (26.7)	B (19.5)
McDowell Rd East / SR101 NB Ramp	B (17.6)	D (45.8)	B (19.8)	D (53.6)	B (18.9)	C (28)
I-10 EB Ramps / 91st Ave South	C (20.8)	B (19.7)	C (21.4)	C (20.7)	C (33.5)	D (36.6)
I-10 WB Ramps / 91st Ave North	C (21.1)	C (25)	D (47.3)	C (30.3)	C (22.1)	C (24.5)
Latham St / 91st Ave	A (5.4)	A (6.1)	B (16.2)	B (16.9)	B (18.5)	C (28.8)
McDowell Rd / 91st Ave	D (37.8)	D (50.7)	E (67)	F (100.6)	C (32.2)	D (45.1)
I-10 EB Ramps / 83rd Ave South	C (25)	C (34)	C (34.4)	D (36.2)	C (29.8)	D (39.8)
I-10 WB Ramps / 83rd Ave North	C (26.6)	C (31.6)	C (27.2)	C (25)	C (31.3)	C (24.7)
Thomas Rd / SR101 SB Ramp	C (32.3)	C (29.4)	E (57.6)	E (56.3)	B (18.2)	C (32.2)
Thomas Rd / SR101 NB Ramp	B (18.2)	C (34.3)	E (72.8)	E (77.1)	C (23.4)	B (19.5)
Thomas Rd / 99th Ave	B (19)	C (28.1)	E (57)	E (68)	C (26.9)	C (35)
Indian School Rd / SR101 SB Ramp	C (28.1)	C (26.1)	C (27.8)	D (35.3)	C (28.3)	D (36.2)
Indian School Rd / SR101 NB Ramp	C (25.7)	C (28.4)	C (33.3)	C (33.1)	C (32.3)	C (32.9)

As shown in Table 2, while some of the intersections would still be at LOS D or E, LOS and delay at intersections under the Recommended Alternative would be better at most of the intersections in 2050 when compared to No Build Alternative.

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?

Table 3: Three Highest Intersections in Current Plans

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

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

NO – This project does not affect any of the top three intersections listed in Table 3, that were identified in the *MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area*. The closest intersection in Table 3 to the project area is the 107th Avenue and Grand Avenue intersection, which is approximately 7 miles northwest of the project area.

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?

Table 4: Three Worst LOS Intersections in Current Plans

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

¹Same as above

NO – This project does not affect any of the three worst LOS intersections listed in Table 4 that were identified in the *MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area*. The closest location to the project area is the Thomas Road and 27th Avenue intersection, which is approximately 6.5 miles northeast of the project area.

Project Assessment – Part B

Hot-Spot Determination

Because the project would affect intersections that are at Level-of-Service D, E, or F, a CO hot spot analysis is required.

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

Yes. The project intersections fit the conditions of the CO Categorical Hot-Spot Finding. Documentation of the Project's Recommended Alternative meeting the criteria of the CO Categorical Finding is in Attachment 1.

☐ 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)

Interagency Consultation Results

On May 30, 2023, ADOT provided a copy of this consultation document, to the following consultation parties, EPA, Federal Highway Administration (FHWA), MAG, Arizona Department of Environmental Quality (ADEQ), and Maricopa County Air Quality Department as the local air agencies in Maricopa County. There were no objections to the use of the categorical hot-spot finding for CO under 40 CFR 93.123(a)(3), a few project corrections were suggested, ADOT also held meeting on June 8th for further discussions. The FHWA Categorical hot-spot tool and data is included in the following attachment. On July 10, 2023 ADOT concluded Interagency Consultation by notifying interested parties that this project will proceed as a project that does not require a quantitative hot-spot by relying on the categorical finding under 40 CFR 93.123(a)(3).

Attachment 1

Documentation of the Project-Level Conformity Demonstration using 2023 FHWA's CO Categorical Finding

In January 2023, FHWA released the 2023 *Carbon Monoxide Categorical CO Hot Spot Finding* (CO Categorical Finding, FHWA 2023a). The CO Categorical Finding meets all the requirements under Clean Air Act section 176(c)(1)(B) and the transportation conformity rule at 40 CFR Part 93, Subpart A by showing that the project modeled would not cause or contribute to new or worsened air quality violations for the CO NAAQS or delay timely attainment or any required interim emission reductions or milestones. The modeling, analysis, documentation, and coordination activities to support the CO Categorical Finding were conducted following the conformity rule's requirements at 40 CFR 93.123(a)(1) and (c) as well as EPA's guidance documents "Using MOVES3 in Project-Level Carbon Monoxide Analyses" (EPA 2021) and "Guideline for Modeling Carbon Monoxide from Roadway Intersections" (EPA 1992). The analysis met all the requirements for a CO hot-spot analysis including 40 CFR 93.110, 93.111, 93.116(a), and 93.123 by using the latest versions of appropriate models (MOVES3 and CAL3QHC).

In order to rely on the CO Categorical Finding as part of a project-level conformity determination (40 CFR 93.116(a) and 93.123(a)), a project's parameters must fall within the acceptable ranges of modeled parameters. This attachment includes the documentation to demonstrate that the Project meets the criteria of FHWA's CO Categorical Finding for conformity determination.

1. Selection of Intersections to be Analyzed

A screening analysis was performed to identify which intersections in the study area will be included for CO hot-spot analysis. Intersections within the study area under the Project's Recommended Alternative were screened based on intersection volume, delay, and level of service (LOS). Intersections with LOS A, B, or C were considered to have insignificant impacts on air quality, and no further analysis was needed (EPA 1992). Following EPA's guideline, the three intersections with the highest volume and the three intersections with the highest delay would be selected for further analysis. Among the intersections with LOS D or worse, the top three intersections that have the highest volumes are also the top three intersections with the worst delay under the Recommended Alternative (see attached LOS and delay summary for intersections). Therefore, these three intersections were selected for further evaluation:

- McDowell Rd / 99th Ave (PM peak hour)
- McDowell Rd / 91st Ave (PM peak hour)
- I-10 East Bound Ramp / 83rd Ave South (PM peak hour)

2. Using FHWA CO Categorical Finding's Spreadsheet Tool

The traffic conditions at the 3 selected intersections of the Recommended Alternative were compared to the criteria in the CO Categorical Finding. Project information were entered into the CO Categorical Finding spreadsheet tool (FHWA 2023b). The spreadsheet tool was designed to assist project sponsors in applying the CO Categorical Finding to a project by selecting the appropriate scenario, ensuring all parameters fall within the acceptable ranges, and ensuring the sum of background concentrations and project contributions do not exceed the NAAQS for CO.

The FHWA Categorical Finding spreadsheet tool was filled out using the data sources and justifications as described in the following table:

Categorical Finding Criteria	FHWA Categorical Finding Spreadsheet Tool - Input Data Source/Justifications
Analysis Year	Project horizon year 2050
Area Type	Project is in urban area of Phoenix, AZ.
Road Grade	Road grade percentages were estimated based upon elevation data in Google Earth. The maximum grade of all of the lanes was used.
Truck Percent	The areas near the affected intersections are mixed residential, commercial, and industrial land use that do not attract or generate large amount of truck traffic on surface streets. Truck percentages at the intersections will be less than 20%. The input in the FHWA Categorical Finding Spreadsheet assumed a 10% truck percentage, which is an estimate based on the truck percentages on highways in the project area (I-10 and SR 101L) that are between 5% to 10%, as per Initial Traffic Report - SR101 at I-10 System TI.
Temperature	Average temperatures for January were obtained from National Weather Service. Average temperature monitored at Phoenix Airport is 56.9 in January, based on the data from 2000 to 2023. A summary of historical temperatures is attached. https://www.weather.gov/psr/local_climate
Speed	Speed data were obtained from posted speed limit signs of the non-ramp intersections. For the ramp intersection at 83rd Avenue, an average speed of 45 mph was assumed based on vehicles either slowing down at the offramp upon reaching intersection prior to turning movements or gradually accelerating at the onramp after the turning movements, and matching with the post speed limit on surface streets.
Peak Hour Approach Volume (veh/hr)	Peak hour approach volumes of the intersections were calculated using the turning movements from the SYNCHRO output files of the intersections. (Intersection SYNCHRO output files are attached)
Peak Hour Level-of-Service (LOS) - use drop down to select	Intersection level of service was obtained from the project's Design Concept Report (Jacobs, 2023)
Intersection Angle (degrees)	Intersection angles were measured based on design presented in project's Design Concept Report (Jacobs,2023).
Number of through lanes (one direction)	Number of through lanes were from the SYNCHRO output files of the intersections. Intersection SYNCHRO output files are attached.
Number of left turn lanes (one direction)	Number of left turn lanes were from the SYNCHRO output files of the intersections. Intersection SYNCHRO output files are attached.
Lane Width (feet)	Lane width of the roadways were measured using Google Earth. The lanes are standard design of 12 ft.
Median Width (feet)	Median width was measured using Google Earth for each intersection.

Persistence Factor	Default persistence factor (0.7) was selected from EPA 1992 CO Hotspot guidance
1-Hour Avg. CO Background Concentration (ppm)	The monitored 1-hour CO concentration during 2020-2022 from the EPA Monitor Values Report for the nearest CO monitoring station located at 3847 W. Earll Dr-West Phoenix Station (Site ID: 040130019) was used to derive the background concentration (https://www.epa.gov/outdoor-air-quality-data/monitor-values-report). Because the National Ambient Air Quality Standard for CO is defined as "not to be exceeded more than once per year", the worst-case second maximum 1-hour CO concentration of the 3 years was used as the 1-hour CO background concentration. Monitoring data summary and the map showing the intersection and monitoring station locations are attached.
8-Hour Avg. CO Background Concentration (ppm)	The monitored 8-hour CO concentration during 2020-2022 from the EPA Monitor Values Report for the nearest CO monitoring station located at 3847 W. Earll Dr-West Phoenix Station (Site ID: 040130019) was used to derive the background concentration (https://www.epa.gov/outdoor-air-quality-data/monitor-values-report). Because the National Ambient Air Quality Standard for CO is defined as "not to be exceeded more than once per year", the worst-case second maximum 1-hour CO concentration of the 3 years was used as the 1-hour CO background concentration. Monitoring data summary and the map showing the intersection and monitoring station locations are attached.

Parameters of the three selected intersections were entered in the FHWA CO Categorical Finding spreadsheet tool. Project data changed input cells of the spreadsheet tool to green, indicating the values provided for each of the three intersections under the Recommended Alternative fall within the acceptable ranges of the CO Categorical Finding. As such, the project-level conformity determination for CO for the Project relies on FHWA's CO Categorical Finding which has met all the requirements for a CO hot-spot analysis including 40 CFR 93.110, 93.111, 93.116(a), and 93.123. No additional project specific CO hot-spot analysis is required. The spreadsheets for each of the 3 intersections are attached.

3. References:

Federal Highway Administration (FHWA). 2023a. *2023 Carbon Monoxide Categorical CO Hot Spot Finding*

Federal Highway Administration (FHWA). 2023b. *CO Categorical Finding spreadsheet tool*.
https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.fhwa.dot.gov%2Fenvironment%2Fair_quality%2Fconformity%2Fpolicy_and_guidance%2Fcmcf_2023%2Fco_tool.xlsm&wdOrigin=BROWSELINK

Jacobs Engineering Group (Jacobs). 2023. *Design Concept Report, SR 101L at Interstate 10 System Traffic Interchange Improvements*

U.S. Environmental Protection Agency (EPA). 1992. *Guideline for Modeling Carbon Monoxide from Roadway Intersections*.

U.S. Environmental Protection Agency (EPA). 2021. *Using MOVES3 in Project-Level Carbon Monoxide Analyses*

Intersection data

Intersection	Recommended Alternative AM			Recommended Alternative PM		
	Intersection Volume	Intersection Delay (s)	Intersection LOS	Intersection Volume	Intersection Delay (s)	Intersection LOS
I-10 EB Ramps / Avondale Blvd South	4010	19.2	B	4950	22	C
I-10 WB Ramps / Avondale Blvd North	3400	19.6	B	4710	27.7	C
I-10 EB Ramps / 107th Ave South	2130	19.4	B	2447	19.5	B
I-10 WB Ramps / 107th Ave North	1800	21.3	C	2207	32.9	C
I-10 EB Ramps / 99th Ave South	3753	20.3	C	5179	25	C
I-10 WB Ramps / 99th Ave North	3844	24.8	C	5651	29.8	C
Dealer Dr / 99th Ave	3112	8.6	A	4397	33.2	C
McDowell Rd / 99th Ave	4935	45.1	D	7591	67.9	E
McDowell Rd West / SR101 SB Ramp	3370	26.7	C	4300	19.5	B
McDowell Rd East / SR101 NB Ramp	2868	18.9	B	3895	28	C
I-10 EB Ramps / 91st Ave South	3201	33.5	C	3554	36.6	D
I-10 WB Ramps / 91st Ave North	2684	22.1	C	3356	24.5	C
Latham St / 91st Ave	2723	18.5	B	3181	28.8	C
McDowell Rd / 91st Ave	4197	32.2	C	5272	45.1	D
I-10 EB Ramps / 83rd Ave South	3575	29.8	C	4465	39.8	D
I-10 WB Ramps / 83rd Ave North	3059	31.3	C	4430	24.7	C
Thomas Rd / SR101 SB Ramp	3151	18.2	B	3719	32.2	C
Thomas Rd / SR101 NB Ramp	3482	23.4	C	4120	19.5	B
Thomas Rd / 99th Ave	3185	26.9	C	4756	35	C
Indian School Rd / SR101 SB Ramp	3584	28.3	C	4150	36.2	D
Indian School Rd / SR101 NB Ramp	3398	32.3	C	3980	32.9	C

Source: Table 2-15 and Table 2-16 of the SR101L at I-10 System Traffic Interchange Improvements Design Concept Report (2023)

Federal Highway Administration (FHWA) 2023 Carbon Monoxide (CO) Categorical Hot-Spot Finding: Spreadsheet Tool Results

Parameter	Description	Acceptable Range	Input	Parameters that Vary by Scenario	Description	Acceptable Range (varies based on previous inputs)	Input
Analysis Year	The year when peak emissions are expected from the project when considered with background.	≥ 2022	2050	1-Hour Avg. CO Background Concentration (ppm)	1-hour average concentration in the project area due to other local sources, determined in most cases from local monitoring data as described in Section 4.7.3 of EPA's 1992 CO Guideline.	≤ 31.3	3.6
Area Type - use drop down to select	An urban area has a population of 5,000 or greater within the FHWA adjusted urban area boundary. All other areas are rural.	Urban or Rural	Urban	8-Hour Avg. CO Background Concentration (ppm)	8-hour average concentration in the project area due to other local sources, determined in most cases from local monitoring data as described in Section 4.7.3 of EPA's 1992 CO Guideline.	≤ 6.41	2.6
Road Grade (%)	The maximum grade along the approach, as measured from the stop line to a point 100 feet before the stop line along a line parallel to the direction of travel. Enter the maximum grade among the four approaches.	≤6	0	Output			
Truck Percent (%)	The percentage of the total traffic volume that is made up of single unit and combination trucks. Enter the highest truck percentage from all links at the project intersection.	≤20	5				
Temperature (°F)	Section 4.7.1 of EPA's 1992 CO Guideline allows two methods: 1) temperature corresponding to each of the ten highest non-overlapping 8-hour CO monitoring values for the last 3 years, or 2) average January temperature.	≤ 70	56.9				
Speed (mph)	The average speed approaching the intersection during the peak hour. All intersection approaches must be within the acceptable range.	15-45	45				
Peak Hour Approach Volume (veh/hr)	The volume approaching the intersection during the peak hour. Enter the maximum among the four approaches.	≤ 2640	2550	Scenario	Area Type	Roadway Contribution: 1-Hour CO Concentration (PPM)	Roadway Contribution: 8-Hour CO Concentration (PPM)
Peak Hour Level-of-Service (LOS) - use drop down to select	During the peak hour, the letter representing the quality of service for the entire intersection measured on an A-F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst.	A-E	E	Low Grade High Truck	Urban	3.7	2.59
Intersection Angle (degrees)	Enter the smallest angle between the two cross-streets of the intersection (90 degrees is perpendicular).	≥ 75	90	Prepared By: Jacobs Engineering			
Number of through lanes (one direction) - use drop down to select	The number of lanes approaching the intersection available for vehicles traveling through the intersection without turning. Enter the maximum among the four approaches.	≤ 4	3				
Number of left turn lanes (one direction) - use drop down to select	The number of lanes approaching the intersection that are designated for use only by vehicles making left turns. Enter the maximum among the four approaches.	≤ 2	2				
Lane Width (feet)	The lateral distance between stripes for a single lane. Enter the minimum among all lanes at the intersection.	≥ 10	12				
Median Width (feet)	The width of the area in the middle of a roadway separating opposing traffic flows.	Any (≥ 0)	6	Project Name: SR 101L System Interchange Improvements with I-10			
Persistence Factor	The factor used to calculate 8-hour concentration estimates from 1-hour concentration estimates, as determined by following Section 4.7.2 of EPA's 1992 CO Guideline.	0-1.0	0.7	Intersection Name: Intersection #21: 99th Ave and McDowell Rd			

Federal Highway Administration (FHWA) 2023 Carbon Monoxide (CO) Categorical Hot-Spot Finding: Spreadsheet Tool Results

Parameter	Description	Acceptable Range	Input	Parameters that Vary by Scenario	Description	Acceptable Range (varies based on previous inputs)	Input
Analysis Year	The year when peak emissions are expected from the project when considered with background.	≥ 2022	2050	1-Hour Avg. CO Background Concentration (ppm)	1-hour average concentration in the project area due to other local sources, determined in most cases from local monitoring data as described in Section 4.7.3 of EPA's 1992 CO Guideline.	≤ 31.3	3.6
Area Type - use drop down to select	An urban area has a population of 5,000 or greater within the FHWA adjusted urban area boundary. All other areas are rural.	Urban or Rural	Urban	8-Hour Avg. CO Background Concentration (ppm)	8-hour average concentration in the project area due to other local sources, determined in most cases from local monitoring data as described in Section 4.7.3 of EPA's 1992 CO Guideline.	≤ 6.41	2.6
Road Grade (%)	The maximum grade along the approach, as measured from the stop line to a point 100 feet before the stop line along a line parallel to the direction of travel. Enter the maximum grade among the four approaches.	≤6	1				
Truck Percent (%)	The percentage of the total traffic volume that is made up of single unit and combination trucks. Enter the highest truck percentage from all links at the project intersection.	≤20	5				
Temperature (°F)	Section 4.7.1 of EPA's 1992 CO Guideline allows two methods: 1) temperature corresponding to each of the ten highest non-overlapping 8-hour CO monitoring values for the last 3 years, or 2) average January temperature.	≤ 70	56.9				
Speed (mph)	The average speed approaching the intersection during the peak hour. All intersection approaches must be within the acceptable range.	15-45	45				
Peak Hour Approach Volume (veh/hr)	The volume approaching the intersection during the peak hour. Enter the maximum among the four approaches.	≤ 2640	1797				
Peak Hour Level-of-Service (LOS) - use drop down to select	During the peak hour, the letter representing the quality of service for the entire intersection measured on an A-F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst.	A-E	D				
Intersection Angle (degrees)	Enter the smallest angle between the two cross-streets of the intersection (90 degrees is perpendicular).	≥ 75	90				
Number of through lanes (one direction) - use drop down to select	The number of lanes approaching the intersection available for vehicles traveling through the intersection without turning. Enter the maximum among the four approaches.	≤ 4	3				
Number of left turn lanes (one direction) - use drop down to select	The number of lanes approaching the intersection that are designated for use only by vehicles making left turns. Enter the maximum among the four approaches.	≤ 2	2				
Lane Width (feet)	The lateral distance between stripes for a single lane. Enter the minimum among all lanes at the intersection.	≥ 10	12				
Median Width (feet)	The width of the area in the middle of a roadway separating opposing traffic flows.	Any (≥ 0)	0				
Persistence Factor	The factor used to calculate 8-hour concentration estimates from 1-hour concentration estimates, as determined by following Section 4.7.2 of EPA's 1992 CO Guideline.	0-1.0	0.7				

Output			
Scenario	Area Type	Roadway Contribution: 1-Hour CO Concentration (PPM)	Roadway Contribution: 8-Hour CO Concentration (PPM)
Low Grade High Truck	Urban	3.7	2.59

Prepared By:	Jacobs Engineering
Project Name:	SR 101L System Interchange Improvements with I-10
Intersection Name:	Intersection #25: 91st Ave and McDowell Rd

Federal Highway Administration (FHWA) 2023 Carbon Monoxide (CO) Categorical Hot-Spot Finding: Spreadsheet Tool Results

Parameter	Description	Acceptable Range	Input	Parameters that Vary by Scenario	Description	Acceptable Range (varies based on previous inputs)	Input
Analysis Year	The year when peak emissions are expected from the project when considered with background.	≥ 2022	2050	1-Hour Avg. CO Background Concentration (ppm)	1-hour average concentration in the project area due to other local sources, determined in most cases from local monitoring data as described in Section 4.7.3 of EPA's 1992 CO Guideline.	≤ 29.8	3.6
Area Type - use drop down to select	An urban area has a population of 5,000 or greater within the FHWA adjusted urban area boundary. All other areas are rural.	Urban or Rural	Urban	8-Hour Avg. CO Background Concentration (ppm)	8-hour average concentration in the project area due to other local sources, determined in most cases from local monitoring data as described in Section 4.7.3 of EPA's 1992 CO Guideline.	≤ 5.36	2.6
Road Grade (%)	The maximum grade along the approach, as measured from the stop line to a point 100 feet before the stop line along a line parallel to the direction of travel. Enter the maximum grade among the four approaches.	≤6	5				
Truck Percent (%)	The percentage of the total traffic volume that is made up of single unit and combination trucks. Enter the highest truck percentage from all links at the project intersection.	≤20	5				
Temperature (°F)	Section 4.7.1 of EPA's 1992 CO Guideline allows two methods: 1) temperature corresponding to each of the ten highest non-overlapping 8-hour CO monitoring values for the last 3 years, or 2) average January temperature.	≤ 70	56.9				
Speed (mph)	The average speed approaching the intersection during the peak hour. All intersection approaches must be within the acceptable range.	15-45	45				
Peak Hour Approach Volume (veh/hr)	The volume approaching the intersection during the peak hour. Enter the maximum among the four approaches.	≤ 2640	2121				
Peak Hour Level-of-Service (LOS) - use drop down to select	During the peak hour, the letter representing the quality of service for the entire intersection measured on an A-F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst.	A-E	D				
Intersection Angle (degrees)	Enter the smallest angle between the two cross-streets of the intersection (90 degrees is perpendicular).	≥ 75	84				
Number of through lanes (one direction) - use drop down to select	The number of lanes approaching the intersection available for vehicles traveling through the intersection without turning. Enter the maximum among the four approaches.	≤ 4	4				
Number of left turn lanes (one direction) - use drop down to select	The number of lanes approaching the intersection that are designated for use only by vehicles making left turns. Enter the maximum among the four approaches.	≤ 2	2				
Lane Width (feet)	The lateral distance between stripes for a single lane. Enter the minimum among all lanes at the intersection.	≥ 10	12				
Median Width (feet)	The width of the area in the middle of a roadway separating opposing traffic flows.	Any (≥ 0)	25				
Persistence Factor	The factor used to calculate 8-hour concentration estimates from 1-hour concentration estimates, as determined by following Section 4.7.2 of EPA's 1992 CO Guideline.	0-1.0	0.7				

Output			
Scenario	Area Type	Roadway Contribution: 1-Hour CO Concentration (PPM)	Roadway Contribution: 8-Hour CO Concentration (PPM)
High Grade High Truck	Urban	5.2	3.64

Prepared By:	Jacobs Engineering
Project Name:	SR 101L System Interchange Improvements with I-10
Intersection Name:	Intersection #54: I-10 East Bound Ramps and 83rd Ave

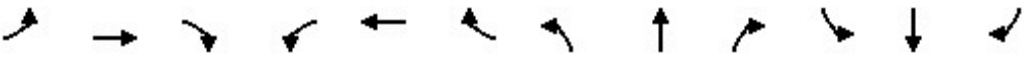
Monthly Mean Avg Temperature for PHOENIX AIRPORT, AZ

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2000	58.0	60.8	63.1	75.2	84.8	91.0	95.0	92.4	90.2	72.5	56.9	57.3	74.8
2001	54.1	56.9	65.6	71.7	86.9	92.0	94.4	94.7	92.2	79.4	68.4	53.8	75.8
2002	55.9	61.3	65.2	76.6	81.7	93.4	96.0	95.1	89.8	75.1	66.9	55.2	76.0
2003	62.0	59.4	64.7	70.2	83.3	91.7	97.6	94.6	90.7	82.7	61.9	56.8	76.3
2004	57.5	55.8	72.3	72.7	83.4	91.2	94.5	92.7	88.1	75.1	61.0	56.0	75.0
2005	57.8	59.2	63.9	72.2	82.7	90.4	97.2	92.2	89.6	78.2	66.3	56.8	75.5
2006	57.7	61.8	62.3	72.7	84.7	94.6	96.5	92.5	85.6	76.1	67.1	54.3	75.5
2007	52.9	59.9	68.7	73.7	84.6	92.7	95.8	96.2	90.4	78.2	70.0	53.2	76.4
2008	54.7	58.2	66.6	74.0	78.5	93.2	94.9	92.9	89.9	77.9	67.1	55.8	75.3
2009	58.7	60.7	67.5	71.4	86.1	88.7	98.3	95.2	90.0	74.4	67.4	53.7	76.0
2010	57.4	59.1	62.7	70.6	78.2	91.2	96.7	94.0	91.5	77.7	63.0	59.6	75.1
2011	55.7	55.2	67.8	74.3	78.8	90.8	95.2	98.3	91.4	78.8	63.5	53.2	75.3
2012	58.7	60.3	65.9	75.1	84.5	93.8	93.9	95.3	88.7	78.8	68.4	56.7	76.7
2013	53.6	57.1	69.5	75.3	83.9	94.8	95.7	94.7	88.7	74.5	66.7	56.3	75.9
2014	59.9	64.4	69.0	74.8	83.1	93.2	96.5	91.6	89.0	80.0	66.1	57.7	77.1
2015	58.6	65.6	72.2	74.3	78.7	94.0	94.7	96.6	89.9	79.4	62.1	54.2	76.7
2016	55.7	65.7	69.5	73.5	79.9	94.8	97.1	91.9	86.6	81.0	67.2	57.9	76.7
2017	55.1	61.9	70.7	75.3	81.8	94.7	95.0	94.0	87.9	80.5	71.2	59.1	77.3
2018	61.2	59.8	66.8	77.4	83.5	92.4	96.5	94.0	91.9	73.8	63.8	55.7	76.4
2019	56.0	54.1	65.6	75.3	76.2	91.1	96.7	96.8	89.1	75.8	66.4	56.1	74.9
2020	56.8	58.9	64.4	74.2	86.2	92.0	98.9	99.1	91.5	80.9	67.8	55.8	77.2
2021	56.3	61.0	64.1	76.7	83.1	95.3	93.7	92.6	89.2	74.8	70.1	59.2	76.3
2022	57.7	59.1	66.9	76.2	84.1	94.2	96.7	93.3	91.1	77.4	60.2	55.5	76.0
2023	53.9	57.1	61.8	74.3	M	M	M	M	M	M	M	M	61.8
Mean	56.9	59.7	66.5	74.1	82.6	92.7	96.0	94.4	89.7	77.5	65.6	56.1	75.4
Max	62.0 2003	65.7 2016	72.3 2004	77.4 2018	86.9 2001	95.3 2021	98.9 2020	99.1 2020	92.2 2001	82.7 2003	71.2 2017	59.6 2010	77.3
Min	52.9 2007	54.1 2019	61.8 2023	70.2 2003	76.2 2019	88.7 2009	93.7 2021	91.6 2014	85.6 2006	72.5 2000	56.9 2000	53.2 2011	61.8

HCM Signalized Intersection Capacity Analysis

21: 99th Ave & McDowell Rd

































03/23/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↑	↗	↔↔	↑↑↑	↗	↔↔	↑↑↑	↗	↔↔	↑↑↑	↗
Traffic Volume (vph)	180	920	510	568	1240	320	730	960	860	150	873	280
Future Volume (vph)	180	920	510	568	1240	320	730	960	860	150	873	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.5	6.5	5.5	6.5	6.5	5.0	6.5	5.5	5.0	6.5	6.5
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.88	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	2787	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	2787	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	196	1000	554	617	1348	348	793	1043	935	163	949	304
RTOR Reduction (vph)	0	0	262	0	0	135	0	0	495	0	0	120
Lane Group Flow (vph)	196	1000	292	617	1348	213	793	1043	440	163	949	184
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	custom	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			4			4
Actuated Green, G (s)	10.9	41.9	41.9	21.5	53.0	53.0	28.3	51.9	56.3	11.2	34.8	34.8
Effective Green, g (s)	10.9	41.9	41.9	21.5	53.0	53.0	28.3	51.9	56.3	11.2	34.8	34.8
Actuated g/C Ratio	0.07	0.28	0.28	0.14	0.35	0.35	0.19	0.35	0.38	0.07	0.23	0.23
Clearance Time (s)	5.0	6.5	6.5	5.5	6.5	6.5	5.0	6.5	5.5	5.0	6.5	6.5
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.5	3.5	3.0	3.0	3.5	3.5
Lane Grp Cap (vph)	249	1420	442	492	1796	559	647	1759	1148	256	1179	367
v/s Ratio Prot	0.06	c0.20		c0.18	c0.27		c0.23	0.21	0.05	0.05	c0.19	
v/s Ratio Perm			0.18			0.13			0.10			0.12
v/c Ratio	0.79	0.70	0.66	1.25	0.75	0.38	1.23	0.59	0.38	0.64	0.80	0.50
Uniform Delay, d1	68.4	48.5	47.8	64.2	42.7	36.2	60.9	40.4	34.2	67.4	54.4	50.1
Progression Factor	1.00	1.00	1.00	0.83	0.73	0.61	0.74	0.54	0.85	1.00	1.00	1.00
Incremental Delay, d2	15.1	3.0	7.6	126.6	2.2	1.5	111.1	0.4	0.1	5.1	4.2	1.3
Delay (s)	83.5	51.4	55.4	179.9	33.4	23.7	156.3	22.3	29.2	72.5	58.6	51.3
Level of Service	F	D	E	F	C	C	F	C	C	E	E	D
Approach Delay (s)		56.3			71.1			62.9			58.6	
Approach LOS		E			E			E			E	
Intersection Summary												
HCM 2000 Control Delay			63.1				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			23.5		
Intersection Capacity Utilization			91.3%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

25: 91st Ave & McDowell Rd

























04/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 		 	 	
Traffic Volume (vph)	150	775	260	320	1227	90	450	830	200	90	760	120
Future Volume (vph)	150	775	260	320	1227	90	450	830	200	90	760	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.1	6.1	4.0	6.1	6.1	4.0	6.1	6.1	4.0	6.1	6.1
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.11	1.00	1.00	0.20	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	209	5085	1583	369	5085	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	842	283	348	1334	98	489	902	217	98	826	130
RTOR Reduction (vph)	0	0	199	0	0	64	0	0	143	0	0	96
Lane Group Flow (vph)	163	842	84	348	1334	34	489	902	74	98	826	34
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Actuated Green, G (s)	45.8	35.7	35.7	55.5	41.4	41.4	17.0	40.7	40.7	7.6	31.3	31.3
Effective Green, g (s)	45.8	35.7	35.7	55.5	41.4	41.4	17.0	40.7	40.7	7.6	31.3	31.3
Actuated g/C Ratio	0.38	0.30	0.30	0.46	0.34	0.34	0.14	0.34	0.34	0.06	0.26	0.26
Clearance Time (s)	4.0	6.1	6.1	4.0	6.1	6.1	4.0	6.1	6.1	4.0	6.1	6.1
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	211	1512	470	355	1754	546	486	1200	536	217	923	412
v/s Ratio Prot	0.06	0.17		c0.13	0.26		c0.14	0.25		0.03	c0.23	
v/s Ratio Perm	0.23		0.05	c0.32		0.02			0.05			0.02
v/c Ratio	0.77	0.56	0.18	0.98	0.76	0.06	1.01	0.75	0.14	0.45	0.89	0.08
Uniform Delay, d1	27.4	35.5	31.3	23.9	34.9	26.3	51.5	35.2	27.5	54.2	42.8	33.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.80	1.15	1.00	1.00	1.00
Incremental Delay, d2	14.7	1.5	0.8	42.2	3.2	0.2	39.8	3.9	0.5	0.5	13.0	0.4
Delay (s)	42.1	37.0	32.1	66.1	38.1	26.5	77.9	32.1	32.0	54.7	55.8	33.9
Level of Service	D	D	C	E	D	C	E	C	C	D	E	C
Approach Delay (s)		36.6			42.9			46.0			53.0	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			44.2				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			20.2		
Intersection Capacity Utilization			83.4%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

54: 83rd Ave & I-10 EB Off Ramp

03/23/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  		  	  	
Traffic Volume (vph)	543	10	737	0	0	0	0	1578	400	340	847	0
Future Volume (vph)	543	10	737	0	0	0	0	1578	400	340	847	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3					5.3		6.5	5.3	
Lane Util. Factor	0.95	0.91	0.95					0.86		0.97	0.91	
Frt	1.00	0.89	0.85					0.97		1.00	1.00	
Flt Protected	0.95	0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1681	1486	1504					6213		3433	5085	
Flt Permitted	0.95	0.99	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1681	1486	1504					6213		3433	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	590	11	801	0	0	0	0	1715	435	370	921	0
RTOR Reduction (vph)	0	84	105	0	0	0	0	45	0	0	0	0
Lane Group Flow (vph)	490	379	344	0	0	0	0	2105	0	370	921	0
Turn Type	Perm	NA	Perm					NA		Prot	NA	
Protected Phases		1						2 3		4	2 3 4	
Permitted Phases	1		1									
Actuated Green, G (s)	31.5	31.5	31.5					34.2		16.2	55.7	
Effective Green, g (s)	31.5	31.5	31.5					34.2		16.2	55.7	
Actuated g/C Ratio	0.32	0.32	0.32					0.34		0.16	0.56	
Clearance Time (s)	6.3	6.3	6.3							6.5		
Vehicle Extension (s)	2.0	2.0	2.0							2.0		
Lane Grp Cap (vph)	529	468	473					2124		556	2832	
v/s Ratio Prot								c0.34		c0.11	0.18	
v/s Ratio Perm	c0.29	0.25	0.23									
v/c Ratio	0.93	0.81	0.73					0.99		0.67	0.33	
Uniform Delay, d1	33.1	31.5	30.4					32.7		39.4	12.0	
Progression Factor	1.00	1.00	1.00					0.76		1.05	0.68	
Incremental Delay, d2	22.0	9.4	4.7					4.1		1.6	0.0	
Delay (s)	55.1	40.9	35.1					28.9		43.1	8.2	
Level of Service	E	D	D					C		D	A	
Approach Delay (s)		44.0			0.0			28.9			18.2	
Approach LOS		D			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			30.4					HCM 2000 Level of Service		C		
HCM 2000 Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			100.0					Sum of lost time (s)		23.4		
Intersection Capacity Utilization			77.2%					ICU Level of Service		D		
Analysis Period (min)			15									
c Critical Lane Group												

CO Monitoring Data in 2020-2022

Phoenix-Mesa-Scottsdale, AZ

Address: 3847 W Earll Dr-West Phoenix Station (5.6 miles from the Project area)

Site ID: 40130019

Year	first_max_8hr (ppm)	second_max_8hr (ppm)	# observations	first_max_1hr (ppm)	second_max_1hr (ppm)
2020	3.0	2.5	8488	3.8	3.4
2021	3.5	2.6	8678	3.7	3.6
2022	2.2	2.1	8373	2.7	2.6

Source: <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>

Locations of Project Intersections and the CO Monitoring Station

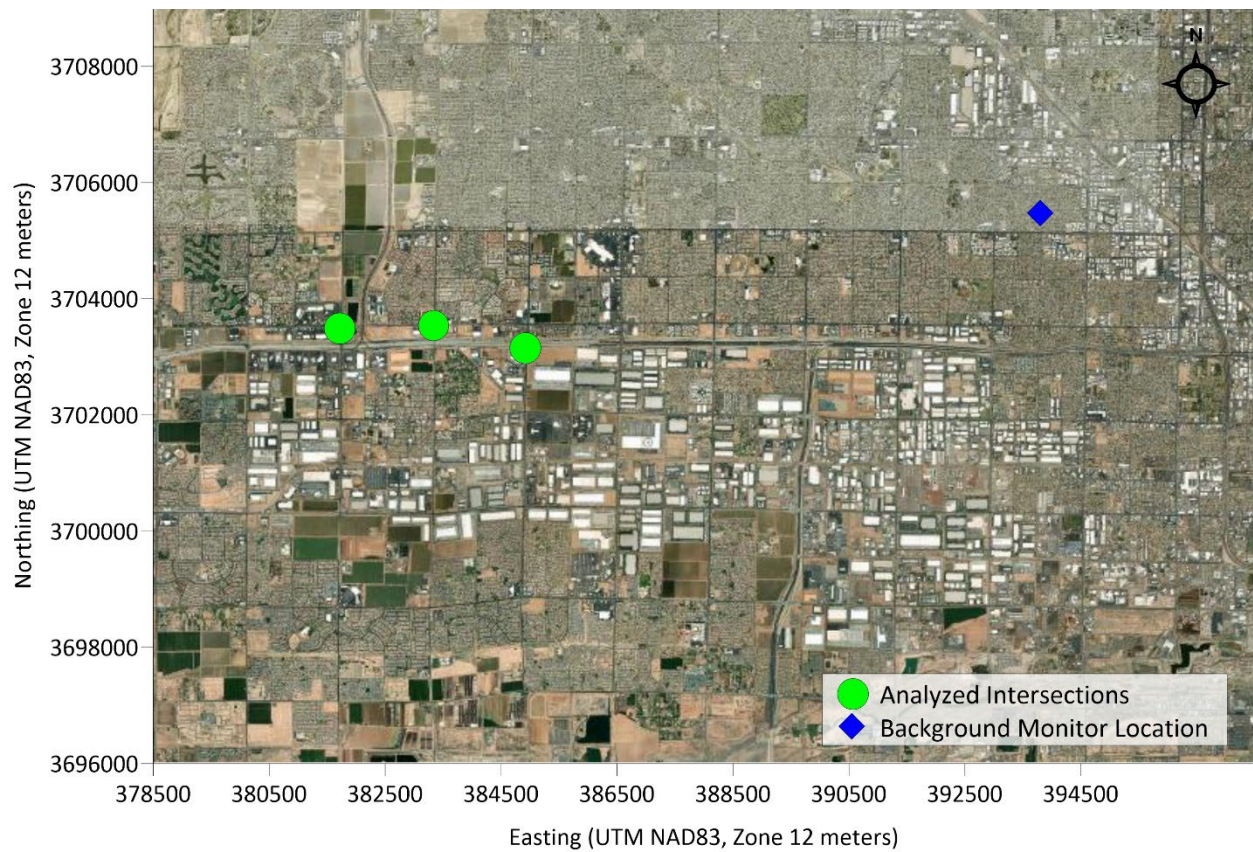


Table 2. Traffic Signal Maintenance

Intersection	Maintained By	Intersection	Maintained By
Avondale Blvd and McDowell Rd	City of Avondale	83rd Ave and McDowell Rd	City of Phoenix
Avondale Blvd and I-10 TI	City of Avondale	83rd Ave and I-10 TI	ADOT
Avondale Blvd and Roosevelt Pkwy	City of Avondale	83rd Ave and Roosevelt St	City of Phoenix
107th Ave and McDowell Rd	City of Avondale	McDowell Rd and SR 101 TI	City of Phoenix
107th Ave and I-10 TI	ADOT	99th Ave and Thomas Rd	City of Phoenix
107th Ave and Van Buren St	City of Avondale	Thomas Road and SR 101 TI	City of Phoenix
99th Ave and McDowell Rd	City of Avondale	93rd Ave and Thomas Rd	City of Phoenix
99th Ave and I-10 TI	ADOT	91st Ave and Thomas Rd	City of Phoenix
99th Ave and Dealer Dr	Tolleson	99th Ave and Indian School Rd	MCDOT
91st Ave and McDowell Rd	City of Phoenix	Indian School Rd and SR 101 TI	City of Phoenix
91st Ave and I-10 TI	ADOT	91st Ave and Indian School Rd	City of Phoenix
91st Ave and Latham St	Tolleson		

Truck Data

Heavy vehicle counts were collected along all ML and arterial streets and provided to the team from UCG. The truck percentages were processed and compared to the posted truck percentage on ML I-10 and ML SR101L that ADOT has posted. Throughout the entire study area, a truck percentage of 10% was used. This was determined based on the posted ADOT truck percentages along the ML corridors on I-10 and SR101L (I-10:8%-10%; SR 101:5%-7%), as well as the average of the calculated truck percentages from the obtained traffic count data (I-10:8%-12%; SR 101:5%-6%), A conservative 10% was therefore utilized due to the high industrial area surrounding the project corridors.

Field Observations

Field observations were used to verify speed limits, traffic signal timing, lane configurations, and travel times along the I-10 ML and SR101L ML. Travel time runs were collected for the AM and PM Peak hours for all ML segments. Multiple travel time runs for the AM peak period were conducted on Wednesday, October 28, 2022, between 6:30 AM and 9:00 AM to understand the locations where congestion develops A total of 3 eastbound, 3 westbound, 2 northbound, and 2 southbound travel time runs were collected. It was observed that the eastbound direction was the primary peak direction of travel.

Furthermore, travel time runs for the PM peak period were conducted on Tuesday, November 4, 2022, with the same number of runs observed (3 eastbound, 3 westbound, 2 northbound, and 2 southbound travel time runs). The observed runs were collected between 3:00 PM and 6:30 PM with intentions to capture the peak hour travel times and monitor the congestion backup in the project corridor due to upstream and downstream travel patterns. The observed peak direction was westbound I-10.

The AECOM team also verified the intersection geometry, signal phasing, and other key traffic operation elements (right-turn-on-red, flashing yellow arrows, permitted/protected phasing, freeway ramp-meter locations) during field visits the same days.

The field visit documentation was then used to assist in the model calibration process.

Calibration Goals

The goal of calibration is to ensure that the calibrated model performs reasonably close to current field conditions. Model outputs of volume and travel time were used to evaluate the calibration targets. FHWA Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software (April 2019) were followed to determine the targets. The calibration target for travel time values is within 10% of the field travel time. The calibration target for volumes were for each segment of ML and model intersection to serve at least 95% and 90% of the field observed volume, respectively.

Table 3 shows the calibrated values for the travel times. Table 4 and Table 5 reflect the volume and percent served values at each intersection during AM and PM peak hour, respectively. The calibration goals were met for both travel time and volume served in every case.

Simulation queue lengths were compared qualitatively to observed queue lengths in the field observation notes (attached to this memo). A primary area of concern on the ML, based on field observation, was the queue build-up due to SR101L Direct Connector (DC) merging area onto I-10 ML in the AM peak hour. Additionally, a primary concern on the arterials, based on field observation, was the NB queue along 99th Avenue between McDowell Road and Van Buren Street in the PM peak hour. The calibration parameters were adjusted to accurately reflect the observed field behavior at these and other locations.

Table 3. Travel Time Calibration Results

Peak Period	Corridor	Distance (mi)	Model Average Travel Time (min)	Field Average Travel Time (min)	Difference (%)
AM	I-10 EB ML between Avondale Blvd Exit Ramp to 75th Ave Exit Ramp	5.0	8.2	7.8	4.9%
	I-10 WB ML between 67th Ave to Avondale Blvd Entrance Ramp	6.8	6.0	5.5	8.9%
	SR 101 NB ML between McDowell Rd to Indian School Rd Entrance Ramp	2.1	1.9	1.9	1.3%
	SR 101 SB ML between Indian School Rd Exit Ramp to I-10 DC	2.5	3.1	3.0	2.5%
PM	I-10 EB ML between Avondale Blvd Exit Ramp to 75th Ave Exit Ramp	5.0	5.2	5.4	3.4%
	I-10 WB ML between 67th Ave to Avondale Blvd Entrance Ramp	6.8	10.8	10.1	7.1%
	SR 101 NB ML between McDowell Rd to Indian School Rd Entrance Ramp	2.1	2.0	2.0	0.6%
	SR 101 SB ML between Indian School Rd Exit Ramp to I-10 DC	2.5	2.9	2.9	0.6%

ADOT Email Responses to comments from email and meetings

Comment Resolution with additional excerpt(s) of changes



Beverly Chenausky <bchenausky@azdot.gov>

Response to comments_F0475 I-10 SR 101L System Interchange Improvements_June 15, 2023

1 message

Ivan Racic <iracic@azdot.gov>

Thu, Jun 15, 2023 at 4:58 PM

To: "Yedlin, Rebecca (FHWA)" <Rebecca.Yedlin@dot.gov>, Ledezma.Ernesto@epa.gov

Cc: Beverly Chenausky <bchenausky@azdot.gov>, Joo Joonwon <jjoo@azdot.gov>, ADOTAirNoise - ADOT <adotairnoise@azdot.gov>, OConnor.Karina@epa.gov, "Perez, Idalia (she/her/hers)" <Perez.Idalia@epa.gov>, "Oesterling, Leigh (FHWA)" <leigh.oesterling@dot.gov>, Rashidul Haque <rhaque@azdot.gov>

Dear Rebecca and Ernesto,

Thank you for your comments and for doing it so promptly. I hope you will have time to go through the documents attached as we have made an attempt to respond to all comments received to the best of our ability.

Not sure if it is a good idea, but we made a **comment response matrix** before going through the updated questionnaires, that have track changes on for easier reference.

In the matrix, we have provided more detailed information as to the selection of the intersections, but please feel free to reach out with any questions or concerns.

If I may kindly ask you, please note the last column is for the reviewers, FHWA and EPA, to provide one of the options as a response; Please put (**Y**) for Agree, or (**N**) to revert to original comment, or provide (**AR**) -Alternative Resolution.

Thank you all for your efforts!

Ivan Racic

Acoustics, Air and Energy Specialist

205 S 17th Ave
Phoenix, AZ 85007


480.773.8497

www.azdot.gov




4 attachments

 **1 CO Questionnaire_Attachment 1_part 1_06132023_tracked.docx**
30K

 **F0457 air quality IAC comment response matrix v2 061523.xlsx**
593K

 **2 CO Questionnaire_Attachment 1_part 2_06132023_tracked.pdf**
1766K

 **0 CO POAQC Questionnaire_I-10_SR101L_06132023_tracked.docx**
963K

**RE: Response to comments_F0475 I-10 SR 101L System Interchange Improvements_June 15, 2023**

1 message

Yedlin, Rebecca (FHWA) <Rebecca.Yedlin@dot.gov>

Wed, Jun 28, 2023 at 6:07 AM

To: Ivan Racic <iracic@azdot.gov>, "Ledezma.Ernesto@epa.gov" <Ledezma.Ernesto@epa.gov>

Cc: "bchenausky azdot.gov" <bchenausky@azdot.gov>, Joo Joonwon <jjoo@azdot.gov>, ADOTAirNoise - ADOT <adotairnoise@azdot.gov>, "OConnor.Karina@epa.gov" <OConnor.Karina@epa.gov>, "Perez, Idalia (she/her/hers)" <Perez.Idalia@epa.gov>, "Oesterling, Leigh (FHWA)" <Leigh.Oesterling@dot.gov>, Rashidul Haque <rhaque@azdot.gov>, "Halle, Greta (FHWA)" <greta.halle@dot.gov>

Good morning,

FHWA is ok with the comment resolution provided for this project. Thanks, Rebecca

From: Ivan Racic <iracic@azdot.gov>**Sent:** Thursday, June 15, 2023 4:59 PM**To:** Yedlin, Rebecca (FHWA) <Rebecca.Yedlin@dot.gov>; Ledezma.Ernesto@epa.gov**Cc:** bchenausky azdot.gov <bchenausky@azdot.gov>; Joo Joonwon <jjoo@azdot.gov>; ADOTAirNoise - ADOT <adotairnoise@azdot.gov>; OConnor.Karina@epa.gov; Perez, Idalia (she/her/hers) <Perez.Idalia@epa.gov>; Oesterling, Leigh (FHWA) <Leigh.Oesterling@dot.gov>; Rashidul Haque <rhaque@azdot.gov>**Subject:** Response to comments_F0475 I-10 SR 101L System Interchange Improvements_June 15, 2023**CAUTION:** This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear Rebecca and Ernesto,

Thank you for your comments and for doing it so promptly. I hope you will have time to go through the documents attached as we have made an attempt to respond to all comments received to the best of our ability.

Not sure if it is a good idea, but we made a **comment response matrix** before going through the updated questionnaires, that have track changes on for easier reference.

In the matrix, we have provided more detailed information as to the selection of the intersections, but please feel free to reach out with any questions or concerns.

If I may kindly ask you, please note the last column is for the reviewers, FHWA and EPA, to provide one of the options as a response; Please put **(Y)** for Agree, or **(N)** to revert to original comment, or provide **(AR)** -Alternative Resolution.

Thank you all for your efforts!

Ivan Racic
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F0475 SR 101L System Interchange Improvements with I-10 - Response to EPA/FHWA Comments from June 8, 2023 IAC					
No.	Reviewer	Comment	Response	Action	(Y) Agree or (N) Alternative Resolution
		Project of Air Quality Concern (POAQC) Determination for PM10 Hot-Spots:	ADOT/Jacobs	ADOT/Jacobs	IAC
1	EPA	Upon reviewing F0475_PM Consultation_I-10_SR 101L_05302023.pdf, we have determined that this project should not be considered a project of air quality concern for PM10, and therefore will not require a quantitative PM10 hot-spot analysis.	Agree w/comment	None	
2	FHWA	FHWA concurs that the F0475 SR 101L_I10 project is not a project of air quality concern requiring a PM hot-spot analysis, based on the traffic data provided.	Agree w/comment	None	
		POAQC Determination for CO Hot-Spots:	ADOT/Jacobs	ADOT/Jacobs	IAC
3	EPA	Upon reviewing F0475_CO Consultation_I-10_SR101L_05302023.pdf, we have determined that while this project should be considered a POAQC for CO, the three (3) intersections with a higher level of service (LOS) identified in the document fall within the acceptable range of modeled parameters for a CO Categorical Hotspot Finding. Therefore, the project will not require a quantitative CO hot-spot analysis.	Agree w/comment	None	
4	EPA	We did have the following comment while reviewing F0475_CO Consultation_I-10_SR101L_05302023.pdf. We noticed that for all three (3) CO Categorical Hot-Spot Finding spreadsheets for 99th & McDowell Rd, 91st & McDowell Rd, and I-10 East Bound Ramps and 83 rd Avenue, five percent was used in the Truck Percent (%) input box. However, looking at the truck percentages for the I-10 intersection with SR101L, a truck percent of 10% is most pervasive. In the future, please justify the use of five percent rather than ten percent in the "FHWA Categorical Finding Spreadsheet Tool - Input Data Source/Justifications" table for each intersection.	The 10% trucks were identified for the I-10 mainline. Lacking a project-specific truck percentage for the service TI ramps and local cross-streets, an assumption of 5% was made based on traffic count data recorded during noise measurements for the project. Counts recorded on McDowell Road were around 3%, so 5% trucks was used. To be conservative, the truck percentage in the FHWA's CO Categorical Finding spreadsheet tool is revised from 5% to 10% as commented.	The truck percentage in the FHWA's CO Categorical Finding spreadsheet tool is revised from 5% to 10% as commented.	
5	FHWA	FHWA concurs that a CO Hot-spot analysis is required for this project. However, the CO Consultation memo incorrectly states that "the top three intersections that have the highest volumes are also the top three intersections with the worst delay under the intersections with the worst delay under the Recommended Alternative. . ." (see page 10, "Selection of Recommended Alternative Intersections to be Analyzed").	As discussed in the Project Level CO Hot-Spot Analysis Questionnaire, Attachment 1, only the intersections with LOS D or worse were ranked for further analysis. Intersections with LOS A, B, or C were considered to have insignificant impacts on air quality, and no further analysis was needed. This approach is consistent with EPA's Guideline for Modeling Carbon Monoxide from Roadway Intersections (1992). Additional clarifications are added to the CO Questionnaire and the Attachment. Please see responses to comments #6 to #8 for details of the ranking and selection of the intersections.	Additional clarifications are added to the CO Questionnaire and the Attachment.	
6	FHWA	The top three intersections by delay are: 1. McDowell Rd/99th Ave North (PM) 2. McDowell Rd/91st Ave (PM) 3. McDowell Rd/99th Ave (AM)	- The "1. McDowell Road/99th Avenue North (PM)" in the comment should be "1. McDowell Road/99th Avenue (PM)" without the "North" in the intersection name, as shown in the Intersection Data of the CO Questionnaire. - The two intersections ranked in the comment, the "3. McDowell Rd/99th Ave (AM)" and the "1. McDowell Road/99th Avenue North (PM)", refer to the same intersection. The PM condition has higher volume, higher delay, and worse LOS than the AM condition at this intersection. Therefore, the PM traffic condition was used to represent the intersection in the analysis. Although traffic volumes at the McDowell Road/99th Avenue intersection under AM peak hour conditions are higher than some of the other intersections in the project area, its conformity would be demonstrated through the analysis of the PM conditions. Therefore, a third distinct intersection (3) I-10 EB Ramps/83rd Avenue South operating at LOS D with the next highest traffic volumes and delay was selected for the analysis to avoid redundant results. - As discussed above, rather than evaluating the McDowell Road/99th Avenue intersection AM condition with a lower volume and a better LOS than the PM condition, the intersection with the next highest volume and delay was included in the analysis, which is I-10 EB Ramp/83rd Avenue South. Therefore, the top 3 intersections with the highest delay are: 1. McDowell Rd/99th Ave North (PM) 2. McDowell Rd/91st Ave (PM), and 3. I-10 EB Ramps/83rd Avenue South (PM)	Additional clarifications are added to the CO Questionnaire and the Attachment.	

7	FHWA	<p>The top three intersections by volume are:</p> <p>4. McDowell Rd/99th Ave North (PM)</p> <p>5. McDowell Rd/91st Ave (PM)</p> <p>6. I-10 WB Ramps/99th Ave North (PM)</p>	<p>While the intersection "6. I-10 WB Ramps/99th Ave North (PM)" has higher traffic volume than some of the intersections evaluated in the analysis, this intersection operates at LOS C. According to EPA Guidance (1992), intersections with LOS A, B, or C were considered to have insignificant impacts on air quality, and no further analysis is needed. Therefore, intersections with LOS A, B, or C were not included in the ranking for further analysis. The top 3 intersections with the highest volume are:</p> <p>1. McDowell Rd/99th Ave North (PM)</p> <p>2. McDowell Rd/91st Ave (PM), and</p> <p>3. I-10 EB Ramps/83rd Avenue South (PM)</p>	<p>Additional clarifications are added to the CO Questionnaire and the Attachment.</p>	
8	FHWA	<p>Therefore, the intersections that should be analyzed are:</p> <p>1. McDowell Rd/99th Ave North (PM)</p> <p>2. McDowell Rd/91st Ave (PM)</p> <p>3. McDowell Rd/99th Ave North (AM)</p> <p>4. I-10 WB Ramps/99th Ave North (PM)</p>	<p>For the reasons stated in response to comment #6 and #7 above, the 3 intersections selected for analysis are:</p> <p>1. McDowell Rd/99th Ave North (PM)</p> <p>2. McDowell Rd/91st Ave (PM), and</p> <p>3. I-10 EB Ramps/83rd Avenue South</p>	<p>Additional clarifications are added to the CO Questionnaire and the Attachment.</p>	
9	FHWA	<p>The CO Categorical Finding is likely still appropriate for the added intersections (#3 and #4 above). But the parameters should be appropriately documented, as with the other intersections.</p>	<p>There would be no change to the intersections selected for analysis.</p>	<p>None</p>	

The purpose of the project is to mitigate existing weaving and safety issues, improve connectivity, and enhance regional travel to support economic development for the I-10 and SR 101L Interchange.

The project includes the following proposed improvements:

- Construction of a DHOV lane from I-10 to the median of SR 101L between McDowell Road and Indian School Road. DHOV would convey southbound SR 101L HOV traffic to eastbound I-10 and westbound I-10 HOV traffic to northbound SR 101L
- Additional travel lane on both north- and southbound SR 101L between McDowell Road and Indian School Road, providing four general-purpose travel lanes and one HOV lane in each direction of travel
- Construction of a two lane exit ramp from northbound SR 101L to Thomas Road
- Construction of a two lane exit ramp from eastbound I-10 to 83rd Avenue
- Construction of crossroad, ramp, and bridge improvements between McDowell Road and Indian School Road on SR 101L
- Construction of crossroad and ramp improvements between Avondale Boulevard and east of 83rd Avenue on I-10
- Extension of the auxiliary lane from southbound SR 101L to eastbound I-10 entrance ramp onto I-10 to east of the 83rd Avenue eastbound exit ramp
- Construction of an eastbound auxiliary lane on I-10 between the 91st Avenue entrance ramp and the 83rd Avenue exit ramp
- Construction of an exit ramp from the southbound SR 101L to eastbound I-10 ramp to the I-10 eastbound to 91st Avenue Ramp B
- Construction of a new exit ramp from southbound SR 101L to McDowell Road
- Construction of a southbound right-turn lane at the I-10/Avondale Boulevard TI
- Construction of a northbound right-turn lane at the I-10/107th Avenue TI
- Construction of a northbound right-turn lane and a southbound right-turn lane at the I-10/99th Avenue TI
- Modifications to the left turn lanes on 91st Avenue at the I-10 TI
- Modifications to the left turn lanes on 83rd Avenue at the I-10 TI
- Widening of [Thomas-McDowell](#) Road at the SR 101L/McDowell Road TI
- Widening of Thomas Road at the SR 101L/Thomas Road TI
- Installation of new permanent signage, pavement markings, lighting, traffic signals, and ITS infrastructure
- Construction of new pavement, barriers, bridges, and walls
- Adjustment of existing drainage facilities to accommodate improvements
- Installation of irrigation system and landscaping

- Relocation or modification of impacted utilities
- Placement of advance traffic control signs on spring stands on I-10, SR 101L, and local roads

The project is in an area designated as [maintenance for CO](#). [nonattainment for PM10](#).

The project is included in the Maricopa Association of Governments (MAG) Momentum 2050 Regional Transportation Plan (MAG 2021) and the FY [2020–2022-2025](#) MAG Transportation Improvement Program (TIP). [The most recent](#) Federal Highway Administration and Federal Transit Administration Finding of Conformity for the Momentum 2050 and the [2020 2022-2025 TIP was issued on February 14, 2023](#).

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 PM₁₀ 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 *PM_{2.5} and PM₁₀ Hot-Spot Analyses in Project-Level Transportation Conformity Determinations for the New PM_{2.5} 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

The purpose of the project is to mitigate existing weaving and safety issues, improve connectivity, and enhance regional travel to support economic development for the I-10 and SR 101L Interchange.

The project includes the following proposed improvements:

- Construction of a DHOV lane from I-10 to the median of SR 101L between McDowell Road and Indian School Road. DHOV would convey southbound SR 101L HOV traffic to eastbound I-10 and westbound I-10 HOV traffic to northbound SR 101L
- Additional travel lane on both north- and southbound SR 101L between McDowell Road and Indian School Road, providing four general-purpose travel lanes and one HOV lane in each direction of travel
- Construction of a two lane exit ramp from northbound SR 101L to Thomas Road
- Construction of a two lane exit ramp from eastbound I-10 to 83rd Avenue
- Construction of crossroad, ramp, and bridge improvements between McDowell Road and Indian School Road on SR 101L
- Construction of crossroad and ramp improvements between Avondale Boulevard and east of 83rd Avenue on I-10
- Extension of the auxiliary lane from southbound SR 101L to eastbound I-10 entrance ramp onto I-10 to east of the 83rd Avenue eastbound exit ramp
- Construction of an eastbound auxiliary lane on I-10 between the 91st Avenue entrance ramp and the 83rd Avenue exit ramp
- Construction of an exit ramp from the southbound SR 101L to eastbound I-10 ramp to the I-10 eastbound to 91st Avenue Ramp B
- Construction of a new exit ramp from southbound SR 101L to McDowell Road
- Construction of a southbound right-turn lane at the I-10/Avondale Boulevard TI
- Construction of a northbound right-turn lane at the I-10/107th Avenue TI
- Construction of a northbound right-turn lane and a southbound right-turn lane at the I-10/99th Avenue TI
- Modifications to the left turn lanes on 91st Avenue at the I-10 TI
- Modifications to the left turn lanes on 83rd Avenue at the I-10 TI
- Widening of ~~Thomas~~ [McDowell](#) Road at the SR 101L/McDowell Road TI
- Widening of Thomas Road at the SR 101L/Thomas Road TI
- Installation of new permanent signage, pavement markings, lighting, traffic signals, and ITS infrastructure
- Construction of new pavement, barriers, bridges, and walls
- Adjustment of existing drainage facilities to accommodate improvements
- Installation of irrigation system and landscaping

- Relocation or modification of impacted utilities
- Placement of advance traffic control signs on spring stands on I-10, SR 101L, and local roads

The project is in an area designated as maintenance for CO. The project is included in the *Maricopa Association of Governments (MAG) Momentum 2050 Regional Transportation Plan* (MAG 2021) and the FY 202~~20~~²⁹-2025 MAG Transportation Improvement Program (TIP). The [most recent](#) Federal Highway Administration and Federal Transit Administration ~~issued a~~ Finding of Conformity for the Momentum 2050 and the 202~~20~~²⁹-2025 TIP [was issued on February 14, 2023, on December 15, 2021.](#)

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).

Of the five project types listed in 40 CFR 93.123(a) above, type ii is relevant to this project.

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 - The 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area (MAG 2013) does not include any sites of violation or possible violation for the federal CO 8-hour standard.

As shown in Table 2, while some of the intersections would still be at LOS D or E, LOS and delay at intersections under the Recommended Alternative would be better at most of the intersections in 2050 when compared to No Build Alternative.

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?

Table 3: Three Highest Intersections in Current Plans

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

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

NO – This project does not affect any of the top three intersections listed in Table 3, that were identified in the *MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area*. The closest intersection in Table 3 to the project area is the 107th Avenue and Grand Avenue intersection, which is approximately 7 miles northwest of the project area.

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?

Table 4: Three Worst LOS Intersections in Current Plans

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

¹Same as above

NO – This project does not affect any of the three worst LOS intersections listed in Table 4 that were identified in the *MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area*. The closest location to the project area is the Thomas Road and 27th Avenue intersection, which is approximately 6.5 miles northeast of the project area.

Project Assessment – Part B

Hot-Spot Determination

Because the project would affect intersections that are at Level-of-Service D, E, or F, a ~~quantitative~~ CO hot spot analysis is required. ~~Methodologies of the CO hot spot modeling are provided in the attached Project Level CO Quantitative Hot Spot Analysis—Consultation Document.~~

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

Yes. The project intersections fit the conditions of the CO Categorical Hot-Spot Finding. Documentation of the Project’s Recommended Alternative meeting the criteria of the CO Categorical Finding is in Attachment 1.

☐ **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.**

As shown in Table 2, while some of the intersections would still be at LOS D or E, LOS and delay at intersections under the Recommended Alternative would be better at most of the intersections in 2050 when compared to No Build Alternative.

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?

Table 3: Three Highest Intersections in Current Plans

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

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

NO – This project does not affect any of the top three intersections listed in Table 3, that were identified in the *MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area*. The closest intersection in Table 3 to the project area is the 107th Avenue and Grand Avenue intersection, which is approximately 7 miles northwest of the project area.

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?

Table 4: Three Worst LOS Intersections in Current Plans

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

¹Same as above

NO – This project does not affect any of the three worst LOS intersections listed in Table 4 that were identified in the *MAG 2013 Carbon Monoxide Maintenance Plan for the Maricopa County Area*. The closest location to the project area is the Thomas Road and 27th Avenue intersection, which is approximately 6.5 miles northeast of the project area.

Project Assessment – Part B

Hot-Spot Determination

Because the project would affect intersections that are at Level-of-Service D, E, or F, a ~~quantitative~~ CO hot spot analysis is required. ~~Methodologies of the CO hot spot modeling are provided in the attached Project Level CO Quantitative Hot Spot Analysis—Consultation Document.~~

Attachment 1

Documentation of the Project-Level Conformity Demonstration using 2023 FHWA's CO Categorical Finding

In January 2023, FHWA released the 2023 *Carbon Monoxide Categorical CO Hot Spot Finding* (CO Categorical Finding, FHWA 2023a). The CO Categorical Finding meets all the requirements under Clean Air Act section 176(c)(1)(B) and the transportation conformity rule at 40 CFR Part 93, Subpart A by showing that the project modeled would not cause or contribute to new or worsened air quality violations for the CO NAAQS or delay timely attainment or any required interim emission reductions or milestones. The modeling, analysis, documentation, and coordination activities to support the CO Categorical Finding were conducted following the conformity rule's requirements at 40 CFR 93.123(a)(1) and (c) as well as EPA's guidance documents "Using MOVES3 in Project-Level Carbon Monoxide Analyses" (EPA 2021) and "Guideline for Modeling Carbon Monoxide from Roadway Intersections" (EPA 1992). The analysis met all the requirements for a CO hot-spot analysis including 40 CFR 93.110, 93.111, 93.116(a), and 93.123 by using the latest versions of appropriate models (MOVES3 and CAL3QHC).

In order to rely on the CO Categorical Finding as part of a project-level conformity determination (40 CFR 93.116(a) and 93.123(a)), a project's parameters must fall within the acceptable ranges of modeled parameters. This attachment includes the documentation to demonstrate that the Project meets the criteria of FHWA's CO Categorical Finding for conformity determination.

1. Selection of Intersections to be Analyzed

A screening analysis was performed to identify which intersections in the study area will be included for CO hot-spot analysis. Intersections within the study area under the Project's Recommended Alternative were screened based on intersection volume, delay, and level of service (LOS). Intersections with LOS A, B, or C were considered to have insignificant impacts on air quality, and no further analysis was needed (EPA 1992). Following EPA's guideline, the three intersections with the highest volume and the three intersections with the highest delay would be selected for further analysis. Among the intersections with LOS D or worse, the top three intersections that have the highest volumes and highest delay are:

McDowell Rd / 99th Ave (PM peak hour)

McDowell Rd / 91st Ave (PM peak hour)

McDowell Rd / 99th Ave (AM peak hour)

The PM peak hour traffic condition at McDowell Rd/99th Ave. has higher volume, higher delay, and worse LOS than the AM condition at this intersection. Therefore, the PM peak hour condition was used to represent the intersection in the analysis. Although traffic volumes at the McDowell Road/99th Avenue intersection under AM peak hour conditions are higher than some of the other intersections in the project area, its conformity would be demonstrated through the analysis of the PM peak hour conditions. Therefore, a third distinct intersection at I-10 EB Ramps/83rd Avenue South operating at LOS D with the next highest traffic volumes and delay was selected for the analysis to avoid redundant results.

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~~also the top three intersections with the worst delay under the Recommended Alternative (see attached LOS and delay summary for intersections).~~ Therefore, ~~these~~ the following three intersections were selected for further evaluation:

McDowell Rd / 99th Ave (PM peak hour)
 McDowell Rd / 91st Ave (PM peak hour)
 I-10 East Bound Ramp / 83rd Ave South (PM peak hour)

2. Using FHWA CO Categorical Finding's Spreadsheet Tool

The traffic conditions at the 3 selected intersections of the Recommended Alternative were compared to the criteria in the CO Categorical Finding. Project information were entered into the CO Categorical Finding spreadsheet tool (FHWA 2023b). The spreadsheet tool was designed to assist project sponsors in applying the CO Categorical Finding to a project by selecting the appropriate scenario, ensuring all parameters fall within the acceptable ranges, and ensuring the sum of background concentrations and project contributions do not exceed the NAAQS for CO.

The FHWA Categorical Finding spreadsheet tool was filled out using the data sources and justifications as described in the following table:

Categorical Finding Criteria	FHWA Categorical Finding Spreadsheet Tool - Input Data Source/Justifications
Analysis Year	Project horizon year 2050
Area Type	Project is in urban area of Phoenix, AZ.
Road Grade	Road grade percentages were estimated based upon elevation data in Google Earth. The maximum grade of all of the lanes was used.
Truck Percent	The areas near the affected intersections are mixed residential, commercial, and industrial land use that do not attract or generate large amount of truck traffic on surface streets. Truck percentages at the intersections will be less than 20%. The input in the FHWA Categorical Finding Spreadsheet assumed a 5 <u>10</u> % truck percentage, which is an estimate based on the truck percentages on highways in the project area (I-10 and SR 101L) that are between 5% to 10%.
Temperature	Average temperatures for January were obtained from National Weather Service. Average temperature monitored at Phoenix Airport is 56.9 in January, based on the data from 2000 to 2023. A summary of historical temperatures is attached. https://www.weather.gov/psr/local_climate
Speed	Speed data were obtained from posted speed limit signs of the non-ramp intersections. For the ramp intersection at 83rd Avenue, an average speed of 45 mph was assumed based on vehicles either slowing down at the offramp upon reaching intersection prior to turning movements or gradually accelerating at the onramp after the turning movements, and matching with the post speed limit on surface streets.

Table 2. Traffic Signal Maintenance

Intersection	Maintained By	Intersection	Maintained By
Avondale Blvd and McDowell Rd	City of Avondale	83rd Ave and McDowell Rd	City of Phoenix
Avondale Blvd and I-10 TI	City of Avondale	83rd Ave and I-10 TI	ADOT
Avondale Blvd and Roosevelt Pkwy	City of Avondale	83rd Ave and Roosevelt St	City of Phoenix
107th Ave and McDowell Rd	City of Avondale	McDowell Rd and SR 101 TI	City of Phoenix
107th Ave and I-10 TI	ADOT	99th Ave and Thomas Rd	City of Phoenix
107th Ave and Van Buren St	City of Avondale	Thomas Road and SR 101 TI	City of Phoenix
99th Ave and McDowell Rd	City of Avondale	93rd Ave and Thomas Rd	City of Phoenix
99th Ave and I-10 TI	ADOT	91st Ave and Thomas Rd	City of Phoenix
99th Ave and Dealer Dr	Tolleson	99th Ave and Indian School Rd	MCDOT
91st Ave and McDowell Rd	City of Phoenix	Indian School Rd and SR 101 TI	City of Phoenix
91st Ave and I-10 TI	ADOT	91st Ave and Indian School Rd	City of Phoenix
91st Ave and Latham St	Tolleson		

Truck Data

Heavy vehicle counts were collected along all ML and arterial streets and provided to the team from UCG. The truck percentages were processed and compared to the posted truck percentage on ML I-10 and ML SR101L that ADOT has posted. Throughout the entire study area, a truck percentage of 10% was used. This was determined based on the posted ADOT truck percentages along the ML corridors on I-10 and SR101L (I-10:8%-10%; SR 101:5%-7%), as well as the average of the calculated truck percentages from the obtained traffic count data (I-10:8%-12%; SR 101:5%-6%), A conservative 10% was therefore utilized due to the high industrial area surrounding the project corridors.

Field Observations

Field observations were used to verify speed limits, traffic signal timing, lane configurations, and travel times along the I-10 ML and SR101L ML. Travel time runs were collected for the AM and PM Peak hours for all ML segments. Multiple travel time runs for the AM peak period were conducted on Wednesday, October 28, 2022, between 6:30 AM and 9:00 AM to understand the locations where congestion develops A total of 3 eastbound, 3 westbound, 2 northbound, and 2 southbound travel time runs were collected. It was observed that the eastbound direction was the primary peak direction of travel.

Furthermore, travel time runs for the PM peak period were conducted on Tuesday, November 4, 2022, with the same number of runs observed (3 eastbound, 3 westbound, 2 northbound, and 2 southbound travel time runs). The observed runs were collected between 3:00 PM and 6:30 PM with intentions to capture the peak hour travel times and monitor the congestion backup in the project corridor due to upstream and downstream travel patterns. The observed peak direction was westbound I-10.

The AECOM team also verified the intersection geometry, signal phasing, and other key traffic operation elements (right-turn-on-red, flashing yellow arrows, permitted/protected phasing, freeway ramp-meter locations) during field visits the same days.

The field visit documentation was then used to assist in the model calibration process.

Calibration Goals

The goal of calibration is to ensure that the calibrated model performs reasonably close to current field conditions. Model outputs of volume and travel time were used to evaluate the calibration targets. FHWA Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software (April 2019) were followed to determine the targets. The calibration target for travel time values is within 10% of the field travel time. The calibration target for volumes were for each segment of ML and model intersection to serve at least 95% and 90% of the field observed volume, respectively.

Table 3 shows the calibrated values for the travel times. Table 4 and Table 5 reflect the volume and percent served values at each intersection during AM and PM peak hour, respectively. The calibration goals were met for both travel time and volume served in every case.

Simulation queue lengths were compared qualitatively to observed queue lengths in the field observation notes (attached to this memo). A primary area of concern on the ML, based on field observation, was the queue build-up due to SR101L Direct Connector (DC) merging area onto I-10 ML in the AM peak hour. Additionally, a primary concern on the arterials, based on field observation, was the NB queue along 99th Avenue between McDowell Road and Van Buren Street in the PM peak hour. The calibration parameters were adjusted to accurately reflect the observed field behavior at these and other locations.

Table 3. Travel Time Calibration Results

Peak Period	Corridor	Distance (mi)	Model Average Travel Time (min)	Field Average Travel Time (min)	Difference (%)
AM	I-10 EB ML between Avondale Blvd Exit Ramp to 75th Ave Exit Ramp	5.0	8.2	7.8	4.9%
	I-10 WB ML between 67th Ave to Avondale Blvd Entrance Ramp	6.8	6.0	5.5	8.9%
	SR 101 NB ML between McDowell Rd to Indian School Rd Entrance Ramp	2.1	1.9	1.9	1.3%
	SR 101 SB ML between Indian School Rd Exit Ramp to I-10 DC	2.5	3.1	3.0	2.5%
PM	I-10 EB ML between Avondale Blvd Exit Ramp to 75th Ave Exit Ramp	5.0	5.2	5.4	3.4%
	I-10 WB ML between 67th Ave to Avondale Blvd Entrance Ramp	6.8	10.8	10.1	7.1%
	SR 101 NB ML between McDowell Rd to Indian School Rd Entrance Ramp	2.1	2.0	2.0	0.6%
	SR 101 SB ML between Indian School Rd Exit Ramp to I-10 DC	2.5	2.9	2.9	0.6%

Formal Comments Received from May 30th Consulation

**Fwd: Interagency Consultation: 101-A(218) | F0475 State Route 101L at the traffic interchange with Interstate 10**

1 message

Beverly Chenausky <bchenausky@azdot.gov>

Tue, May 30, 2023 at 12:13 PM

To: Tim Franquist <tfranquist@azmag.gov>, "Johanna Kuspert (AQD)" <Johanna.Kuspert@maricopa.gov>, "Wickersham, Lindsay (she/her)" <wickersham.lindsay@epa.gov>, Transportationconformity <transportationconformity@azdeq.gov>, Rebecca Yedlin <rebecca.yedlin@dot.gov>

Cc: ADOTAirNoise - ADOT <adotairnoise@azdot.gov>, "Halle, Greta (FHWA)" <greta.halle@dot.gov>, Dean Giles <dgiles@azmag.gov>, Joonwon Joo <jjoo@azdot.gov>, Michael Carlson <mcarlson@azdot.gov>, Rashidul Haque <rhaque@azdot.gov>, Clifton Meek <meek.clifton@epa.gov>, Karina O'Conner <oconnor.karina@epa.gov>, "Berry, Laura" <berry.laura@epa.gov>

To All:

ADOT is presenting the following project, **State Route 101L (SR 101L) at the traffic interchange (TI) with Interstate 10 (I-10)**, for interagency consultation, per 40 CFR 93.105, with the recommendation that this project is **not** a project of Air Quality Concern and thereby **will not** require a PM10 hot-spot analysis. ADOT is requesting responses to the attached *F0475_PM Consultation_I-10_SR101L_05302023.pdf* within **10 business days**; a non-response will be interpreted as concurrence that 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 PM 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.

Additionally, ADOT has determined that the project is eligible to utilize the [FHWA 2023 CO Categorical Hot-Spot Finding](#), refer to "Attachment 1 Documentation of the Project-Level Conformity Demonstration using 2023 FHWA's CO Categorical Finding" in the attached in document *F0475_CO Consultation_I-10_SR101L_05302023.pdf*. 40 CFR 93.123(a)(3) states, "DOT, in consultation with EPA, may also choose to make a categorical hot-spot finding that §93.116(a) is met without further hot-spot analysis for any project described in paragraphs (a)(1) and (a)(2) of this section based on appropriate modeling." It is requested that the consulted parties provide comments on the use of this CO Categorical Finding within **10 days**, a non-response will be interpreted as concurrence with the approach as described in the attached CO Consultation document.

The project team will be available for any additional discussions at ADOT's standing monthly air quality project meeting, for those interested.

Air Quality Monthly Meeting

Thursday, June 8 · 10:00 – 11:00am

Time zone: America/Phoenix

Google Meet joining info

Video call link: <https://meet.google.com/kbp-jojp-cmk>

Or dial: (US) +1 209-850-2317 PIN: 483 772 939#

More phone numbers: <https://tel.meet/kbp-jojp-cmk?pin=8376833655633>

Thanks,

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

2 attachments

 **F0475_PM Consultation_I-10_SR 101L_05302023.pdf**
914K

 **F0475_CO Consultation_I-10_SR101L_05302023.pdf**
2072K

**RE: Interagency Consultation: 101-A(218) | F0475 State Route 101L at the traffic interchange with Interstate 10**

1 message

Yedlin, Rebecca (FHWA) <Rebecca.Yedlin@dot.gov>

Thu, Jun 8, 2023 at 1:32 PM

To: "bchenausky azdot.gov" <bchenausky@azdot.gov>, Tim Franquist <tfranquist@azmag.gov>, "Johanna Kuspert (AQD)" <Johanna.Kuspert@maricopa.gov>, "Wickersham.Lindsay@epa.gov" <Wickersham.Lindsay@epa.gov>, Transportationconformity <transportationconformity@azdeq.gov>

Cc: ADOTAirNoise - ADOT <adotairnoise@azdot.gov>, "Halle, Greta (FHWA)" <greta.halle@dot.gov>, Dean Giles <dgiles@azmag.gov>, Joonwon Joo <jjoo@azdot.gov>, Michael Carlson <mcarlson@azdot.gov>, Rashidul Haque <rhaque@azdot.gov>, Clifton Meek <meek.clifton@epa.gov>, Karina O'Conner <oconnor.karina@epa.gov>, "Berry, Laura" <berry.laura@epa.gov>

FHWA has the following comments on the documentation provided:

- FHWA concurs that the F0475 SR 101L_110 project is not a project of air quality concern requiring a PM hot-spot analysis, based on the traffic data provided.
- FHWA concurs that a CO Hot-spot analysis is required for this project. However, the CO Consultation memo incorrectly states that "*the top three intersections that have the highest volumes are also the top three intersections with the worst delay under the Recommended Alternative. . .*" (see page 10, "Selection of Intersections to be Analyzed").

According to the traffic data provided on page 13,

The top three intersections by delay are:

1. McDowell Rd/99th Ave North (PM)
2. McDowell Rd/91st Ave (PM)
3. McDowell Rd/99th Ave (AM)

The top three intersections by volume are:

4. McDowell Rd/99th Ave North (PM)
5. McDowell Rd/91st Ave (PM)
6. I-10 WB Ramps/99th Ave North (PM)

Therefore, the intersections that should be analyzed are:

1. McDowell Rd/99th Ave North(PM)
2. McDowell Rd/91st Ave (PM)
3. McDowell Rd/99th Ave North (AM)
4. I-10 WB Ramps/99th Ave North (PM)

The CO Categorical Finding is likely still appropriate for the added intersections (#3 and #4 above). But the parameters should be appropriately documented, as with the other intersections.

Please let me know if you have any questions or would like to discuss the comments provided above. Thanks, Rebecca

From: Beverly Chenausky <bchenausky@azdot.gov>

Sent: Tuesday, May 30, 2023 12:13 PM

To: Tim Franquist <tfranquist@azmag.gov>; Johanna Kuspert (AQD) <Johanna.Kuspert@maricopa.gov>; Wickersham.Lindsay@epa.gov; Transportationconformity <transportationconformity@azdeq.gov>; Yedlin, Rebecca (FHWA) <Rebecca.Yedlin@dot.gov>

Cc: ADOTAirNoise - ADOT <adotairnoise@azdot.gov>; Halle, Greta (FHWA) <greta.halle@dot.gov>; Dean Giles <dgiles@azmag.gov>; Joonwon Joo <jjoo@azdot.gov>; Michael Carlson <mcarlson@azdot.gov>; Rashidul Haque <rhaque@azdot.gov>; Clifton Meek <meek.clifton@epa.gov>; Karina O'Conner <oconnor.karina@epa.gov>; Berry, Laura <berry.laura@epa.gov>

Subject: Fwd: Interagency Consultation: 101-A(218) | F0475 State Route 101L at the traffic interchange with Interstate 10

CAUTION: This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To All:

ADOT is presenting the following project, **State Route 101L (SR 101L) at the traffic interchange (TI) with Interstate 10 (I-10)**, for interagency consultation, per 40 CFR 93.105, with the recommendation that this project is **not** a project of Air Quality Concern and thereby **will not** require a PM10 hot-spot analysis. ADOT is requesting responses to the attached *F0475_PM Consultation_I-10_SR101L_05302023.pdf* within **10 business days**; a non-response will be interpreted as concurrence that 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 PM 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.

Additionally, ADOT has determined that the project is eligible to utilize the [FHWA 2023 CO Categorical Hot-Spot Finding](#), refer to "Attachment 1 Documentation of the Project-Level Conformity Demonstration using 2023 FHWA's CO Categorical Finding" in the attached in document *F0475_CO Consultation_I-10_SR101L_05302023.pdf*. 40 CFR 93.123(a)(3) states, "DOT, in consultation with EPA, may also choose to make a categorical hot-spot finding that §93.116(a) is met without further hot-spot analysis for any project described in paragraphs (a)(1) and (a)(2) of this section based on appropriate modeling." It is requested that the consulted parties provide comments on the use of this CO Categorical Finding within **10 days**, a non-response will be interpreted as concurrence with the approach as described in the attached CO Consultation document.

The project team will be available for any additional discussions at ADOT's standing monthly air quality project meeting, for those interested.

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More phone numbers: <https://tel.meet/kbp-jojp-cmk?pin=8376833655633>

Thanks,

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



ADOTAirNoise - ADOT <adotairnoise@azdot.gov>

RE: Interagency Consultation: 101-A(218) | F0475 State Route 101L at the traffic interchange with Interstate 10

1 message

Ledezma, Ernesto (he/him/his) <Ledezma.Ernesto@epa.gov>

Wed, Jun 7, 2023 at 10:00 AM

To: Beverly Chenausky <bchenausky@azdot.gov>

Cc: Joonwon Joo <jjoo@azdot.gov>, Ivan Racic <iracic@azdot.gov>, ADOTAirNoise - ADOT <adotairnoise@azdot.gov>, "Oconnor, Karina (she/her/hers)" <OConnor.Karina@epa.gov>, "Wickersham, Lindsay (she/her/hers)" <wickersham.lindsay@epa.gov>, "Perez, Idalia (she/her/hers)" <Perez.Idalia@epa.gov>

Hello Beverly,

I hope you and your team are doing well. I appreciate the opportunity to review the State Route 101L (SR 101L) at the traffic interchange (TI) with Interstate 10 (I-10) project for interagency consultation. At this time, we have reviewed the PM10 and CO consultations and wanted to share a few comments.

Project of Air Quality Concern (POAQC) Determination for PM10 Hotspots:

Upon reviewing *F0475_PM Consultation_I-10_SR 101L_05302023.pdf*, we have determined that this project **should not** be considered a project of air quality concern for PM10, and therefore **will not require** a quantitative PM10 hot-spot analysis.

POAQC for CO Hotspots:

Upon reviewing *F0475_CO Consultation_I-10_SR101L_05302023.pdf*, we have determined that while this project **should** be considered a POAQC for CO, the three (3) intersections with a higher level of service (LOS) identified in the document fall within the acceptable range of modeled parameters for a CO Categorical Hotspot Finding. Therefore, the project **will not require** a quantitative CO hot-spot analysis.

We did have the following comment while reviewing *F0475_CO Consultation_I-10_SR101L_05302023.pdf*. We noticed that for all three (3) CO Categorical Hot-Spot Finding spreadsheets for 99th & McDowell Rd, 91st & McDowell Rd, and I-10 East Bound Ramps and 83rd Avenue, five percent was used in the Truck Percent (%) input box. However, looking at the truck percentages for the I-10 intersection with SR101L, a truck percent of 10% is most pervasive. In the future, please justify the use of five percent rather than ten percent in the "FHWA Categorical Finding Spreadsheet Tool - Input Data Source/Justifications" table for each intersection.

Please let me know if you have any questions, comments, or concerns regarding this finding. Thank you for the inter-agency consultation on this project, I look forward to working with you and your team in the future.

Thanks,



Andrew Ledezma (He/him/his)

Environmental Engineer

Planning & Analysis Branch

Planning Section (AIR 2-1)

Environmental Protection Agency, Region IX

(415) 972-3985

From: Ledezma, Ernesto (he/him/his)
Sent: Thursday, June 1, 2023 8:02 AM
To: Beverly Chenausky <bchenausky@azdot.gov>

Cc: Joonwon Joo <jjoo@azdot.gov>; Ivan Racic <iracic@azdot.gov>; ADOTAirNoise - ADOT <adotairnoise@azdot.gov>

Subject: RE: Interagency Consultation: 101-A(218) | F0475 State Route 101L at the traffic interchange with Interstate 10

Hi Beverly,

Enjoy your vacation!

Yes, I am available for the Air Quality Monthly on June 8th, I look forward to seeing you there. I will ask Joonwon and Ivan any questions that I have in the interim.

Thanks,



Andrew Ledezma (He/him/his)

Environmental Engineer

Planning & Analysis Branch

Planning Section (AIR 2-1)

Environmental Protection Agency, Region IX

(415) 972-3985

From: Beverly Chenausky <bchenausky@azdot.gov>

Sent: Wednesday, May 31, 2023 10:21 AM

To: Ledezma, Ernesto (he/him/his) <Ledezma.Ernesto@epa.gov>

Cc: Joonwon Joo <jjoo@azdot.gov>; Ivan Racic <iracic@azdot.gov>; ADOTAirNoise - ADOT <adotairnoise@azdot.gov>

Subject: Re: Interagency Consultation: 101-A(218) | F0475 State Route 101L at the traffic interchange with Interstate 10

Welcome Andrew. I will be on vacation the next couple of weeks, but if you are available on June 8th for the meeting noted in the email you can ask any questions about the material provide. You can also contact me, Joonwon or Ivan all included in this email, thanks.

On Tue, May 30, 2023 at 2:49 PM Ledezma, Ernesto (he/him/his) <Ledezma.Ernesto@epa.gov> wrote:

Hi Beverly,

I am looking forward to working with you, and will let you know if I have any questions, comments, or concerns regarding the State Route 101L (SR 101L) at the traffic interchange (TI) with Interstate 10 (I-10) project.

Thanks,



Andrew Ledezma (He/him/his)

Environmental Engineer

Planning & Analysis Branch

Planning Section (AIR 2-1)

Environmental Protection Agency, Region IX

(415) 972-3985

From: Wickersham, Lindsay (she/her/hers) <wickersham.lindsay@epa.gov>

Sent: Tuesday, May 30, 2023 1:24 PM

To: Beverly Chenausky <bchenausky@azdot.gov>

Cc: Ledezma, Ernesto (he/him/his) <Ledezma.Ernesto@epa.gov>; Meek, Clifton <meek.clifton@epa.gov>; rebecca.yedlin@dot.gov

Subject: RE: Interagency Consultation: 101-A(218) | F0475 State Route 101L at the traffic interchange with Interstate 10

Hi Beverly,

Thank you for sharing this consultation with us!

I wanted to introduce my colleague Andrew (Cc'd here as Ernesto) who will be the point of contact for this project. Feel free to keep me Cc'd but he will be the one providing comments and representing EPA during consultation for this project.

Thanks,

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: Tuesday, May 30, 2023 12:13 PM

To: Tim Franquist <tfranquist@azmag.gov>; Johanna.Kuspert@maricopa.gov; Wickersham, Lindsay (she/her/hers) <wickersham.lindsay@epa.gov>; Transportationconformity <transportationconformity@azdeq.gov>; rebecca.yedlin@dot.gov

Cc: ADOTAirNoise - ADOT <adotairnoise@azdot.gov>; Halle, Greta (FHWA) <greta.halle@dot.gov>; Dean Giles <dgiles@azmag.gov>; Joonwon Joo <jjoo@azdot.gov>; Michael Carlson <mcarlson@azdot.gov>; Rashidul Haque <rhaque@azdot.gov>; Meek, Clifton <meek.clifton@epa.gov>; Oconnor, Karina (she/her/hers) <OConnor.Karina@epa.gov>; Berry, Laura <berry.laura@epa.gov>

Subject: Fwd: Interagency Consultation: 101-A(218) | F0475 State Route 101L at the traffic interchange with Interstate 10

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Or dial: (US) +1 209-850-2317 PIN: 483 772 939#
More phone numbers: <https://tel.meet/kbp-jojp-cmk?pin=8376833655633>

Thanks,

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

Meeting(s) on the project consultation, June 8th, June 23rd



Air Quality Monthly Meeting

Created by: Julia Voight · Your response: ✓ Yes, I'm going

Time

10am - 11am (Mountain Standard
Time - Phoenix)

Date

Thu Jun 8, 2023

My Notes

Guests

- ✓ Beverly Chenausky
- ✓ Berwyn Wilbrink
- ✓ Zachary Dorn
- ✓ greta.halle@dot.gov
- ✓ Ivan Racic
- ✓ Katie Rodriguez
- ✓ leigh.oesterling@dot.gov
- ✓ rebecca.yedlin@dot.gov
- ✓ Steve Boschen
- ✓ Steve O'Brien
- ✓ wickersham.lindsay@epa.gov
- ✗ Paul O'brien
 - Declined because I am out of office
 - alan.hansen@dot.gov
 - greg.fly@wsp.com
 - Joonwon Joo
 - kay.rynda@epa.gov
 - rebecca.frohning@wsp.com
 - tsui.william@epa.gov



F0475 I-10 SR101 Interchange - CO Consultation Comments

Created by: Beverly Chenausky · Your response: ✓Yes, I'm going

Time

12:30pm - 1pm (Pacific Time - Los Angeles)

Guests

✓ Beverly Chenausky
Joonwon Joo

Date

Fri Jun 23, 2023

Where

Microsoft Teams Meeting

Description

Hi Ivan,

Hoping to have a quick chat about the F0475 - I-10 SR101 Interchange project. More specifically, I was hoping to see the truck percentage data for 99th & McDowell, and hoping to talk a little bit about adding an attachment to future CO Consultation documents to justify truck percentages.

Ivan, please feel free to forward this invitation to anyone else who would like to join at ADOT.

Thanks,

Microsoft Teams meeting

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76aacbeca6a7%22%2c%22Oid%22%3a%
22a312aa42-94b9-4996-93e8-bfb895d2dc88%22%
7d>

Meeting ID: 276 053 008 854

Passcode: XTW88m

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76aacbeca6a7&threadId=19_meeting_MjYwZGY1YmEtY2ViMi00Y2E1LWFjZjQtZDcwMjFIYTI5YTg3@thread.v2&messageId=0&language=en-US>

Interagency Consultation Concluded July 10, 2023

**Re: Interagency Consultation: 101-A(218) | F0475 State Route 101L at the traffic interchange with Interstate 10**

1 message

Beverly Chenausky <bchenausky@azdot.gov>

Mon, Jul 10, 2023 at 3:44 PM

To: "Yedlin, Rebecca (FHWA)" <Rebecca.Yedlin@dot.gov>, Tim Franquist <tfranquist@azmag.gov>, "Johanna Kuspert (AQD)" <johanna.kuspert@maricopa.gov>, "Ledezman, Ernesto (he/him/his)" <Ledezman.Ernesto@epa.gov>, Transportationconformity <transportationconformity@azdeq.gov>

Cc: ADOTAirNoise - ADOT <adotairnoise@azdot.gov>, "Halle, Greta (FHWA)" <greta.halle@dot.gov>, Dean Giles <dgiles@azmag.gov>, Joonwon Joo <jjoo@azdot.gov>, Michael Carlson <mcarlson@azdot.gov>, Rashidul Haque <rhaque@azdot.gov>, Clifton Meek <meek.clifton@epa.gov>, Karina O'Conner <oconnor.karina@epa.gov>, "Berry, Laura" <berry.laura@epa.gov>

To All:

Attached you will find a response to agencies comments along with the revised CO and PM10 consultation document(s). Thank you for your time in reviewing the materials. The May 30th, interagency consultation has concluded with the determination that the project is not a project of air quality concern for PM10 under 93.123(b) and with the use of the categorical hot-spot finding for CO under 40 CFR 93.123(a)(3).

Documents attached:

F0475_ADOT formal_ Interagency Consultation_ July Revisions to May 30 2023.pdf - This document contains a comment response summary with excerpts of the pages corrected.

F0475_PM Consultation_I-10_SR 101L_July 10 Revised.pdf - This document is the revised PM10 Consultation document.

F0475_CO Consultation_I-10_SR 101L_July 10th revised.pdf - This document is the revised CO Consultation document with the categorical hot-spot finding using the [FHWA 2023 CO Categorical Hot-Spot Finding Spreadsheet Tool](#)

Please let me know if you have any additional questions or concerns.

Beverly

On Thu, Jun 8, 2023 at 1:32 PM Yedlin, Rebecca (FHWA) <Rebecca.Yedlin@dot.gov> wrote:

FHWA has the following comments on the documentation provided:

- FHWA concurs that the F0475 SR [101L_I10](#) project is not a project of air quality concern requiring a PM hot-spot analysis, based on the traffic data provided.
- FHWA concurs that a CO Hot-spot analysis is required for this project. However, the CO Consultation memo incorrectly states that "*the top three intersections that have the highest volumes are also the top three intersections with the worst delay under the Recommended Alternative. . .*" (see page 10, "Selection of Intersections to be Analyzed").

According to the traffic data provided on page 13,

The top three intersections by delay are:

1. McDowell Rd/99th Ave North (PM)
2. McDowell Rd/91st Ave (PM)
3. McDowell Rd/99th Ave (AM)

The top three intersections by volume are:

4. McDowell Rd/99th Ave North (PM)
5. McDowell Rd/91st Ave (PM)
6. I-10 WB Ramps/99th Ave North (PM)

Therefore, the intersections that should be analyzed are:

1. McDowell Rd/99th Ave North(PM)
2. McDowell Rd/91st Ave (PM)
3. McDowell Rd/99th Ave North (AM)
4. I-10 WB Ramps/99th Ave North (PM)

The CO Categorical Finding is likely still appropriate for the added intersections (#3 and #4 above). But the parameters should be appropriately documented, as with the other intersections.

Please let me know if you have any questions or would like to discuss the comments provided above. Thanks, Rebecca

From: Beverly Chenausky <bchenausky@azdot.gov>

Sent: Tuesday, May 30, 2023 12:13 PM

To: Tim Franquist <tfranquist@azmag.gov>; Johanna Kuspert (AQD) <Johanna.Kuspert@maricopa.gov>; Wickersham.Lindsay@epa.gov; Transportationconformity <transportationconformity@azdeq.gov>; Yedlin, Rebecca (FHWA) <Rebecca.Yedlin@dot.gov>

Cc: ADOTAirNoise - ADOT <adotairnoise@azdot.gov>; Halle, Greta (FHWA) <greta.halle@dot.gov>; Dean Giles <dgiles@azmag.gov>; Joonwon Joo <jjoo@azdot.gov>; Michael Carlson <mcarlson@azdot.gov>; Rashidul Haque <rhaque@azdot.gov>; Clifton Meek <meek.clifton@epa.gov>; Karina O'Conner <oconnor.karina@epa.gov>; Berry, Laura <berry.laura@epa.gov>

Subject: Fwd: Interagency Consultation: 101-A(218) | F0475 State Route 101L at the traffic interchange with Interstate 10

CAUTION: This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To All:

ADOT is presenting the following project, **State Route 101L (SR 101L) at the traffic interchange (TI) with Interstate 10 (I-10)**, for interagency consultation, per 40 CFR 93.105, with the recommendation that this project is **not** a project of Air Quality Concern and thereby **will not** require a PM10 hot-spot analysis. ADOT is requesting responses to the attached *F0475_PM Consultation_I-10_SR101L_05302023.pdf* within **10 business days**; a non-response will be interpreted as concurrence that 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 PM 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.

Additionally, ADOT has determined that the project is eligible to utilize the [FHWA 2023 CO Categorical Hot-Spot Finding](#), refer to "Attachment 1 Documentation of the Project-Level Conformity Demonstration using 2023 FHWA's CO Categorical Finding" in the attached in document *F0475_CO Consultation_I-10_SR101L_05302023.pdf*. 40 CFR 93.123(a)(3) states, "DOT, in consultation with EPA, may also choose to make a categorical hot-spot finding that §93.116(a) is met without further hot-spot analysis for any project described in paragraphs (a)(1) and (a)(2) of this section based on appropriate modeling." It is requested that the consulted parties provide comments on the use of this CO Categorical Finding within **10 days**, a non-response will be interpreted as concurrence with the approach as described in the attached CO Consultation document.

The project team will be available for any additional discussions at ADOT's standing monthly air quality project meeting, for those interested.

Air Quality Monthly Meeting
Thursday, June 8 · 10:00 – 11:00am
Time zone: America/Phoenix
Google Meet joining info
Video call link: <https://meet.google.com/kbp-jojp-cmk>
Or dial: (US) +1 209-850-2317 PIN: 483 772 939#
More phone numbers: <https://tel.meet/kbp-jojp-cmk?pin=8376833655633>

Thanks,

Beverly T. Chenausky

Assistant Environmental Administrator

Air & Noise, Hazmat and Standards & Training

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azdot.gov

3 attachments



F0475_ADOT formal_ Interagency Consultation_ July Revisions to May 30 2023.pdf
1229K



F0475_PM Consulation_I-10_SR 101L_July 10 Revised.pdf
773K



F0475_CO Consulation_ I-10 SR 101L_July 10th_revised.pdf
1924K