

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

### Project Setting and Description

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being carried out by Arizona Department of Transportation (ADOT), pursuant to 23 U.S.C. 326 and a Memorandum of Understanding dated January 3, 2018, and executed by the Federal Highway Administration (FHWA) and ADOT. ADOT is proposing to add an additional through lane along the selected section of westbound I-10. The proposed location is westbound I-10 from the existing mainline lane drop east of 67<sup>th</sup> Avenue to Avondale Boulevard which includes the I-10 system interchange with SR101.

In the existing condition, the number of lanes and the shoulder widths in 6.0 miles of westbound I-10 study area, varies between six lane freeway and five lane freeway section. A High Occupancy Vehicle (HOV) lane exists along the entire study section of WB I-10. The average pavement width for this freeway segment between the on and off ramps is 90 feet (measured from barrier to face of curb). While near the bridges the average pavement width measured from barrier to barrier is reduced to 80 feet. The narrowest pavement section in this study area, is a 550 feet segment, between the 75<sup>th</sup> Avenue bridge and the 75<sup>th</sup> Avenue on-ramp, where near the gore of the 75<sup>th</sup> Avenue on-ramp, the pavement width is 75 feet wide. Table 1 shows the comparison of existing and proposed lane configuration.

**Table 1. Existing and Proposed Lane Configuration**

WB I-10 Segment	Existing Conditions		Proposed Conditions	
	Lane Configuration	Shoulder Width (min)	Lane Configuration	Shoulder Width (min)
67 <sup>th</sup> Ave to 75 <sup>th</sup> Ave bridge	5+1 (HOV)	L:13'-15', R:12'	6+1 (HOV)	L:11', R:12'
75 <sup>th</sup> Ave bridge to 75 <sup>th</sup> Ave on-ramp	4+1 (HOV)	L: varies 12'-6', R: varies 9'-7'	5+1 (HOV)	L:3', R:4' (for a length of 500')
75 <sup>th</sup> Ave bridge to 79 <sup>th</sup> Ave bridge	4+1 (HOV)	L:6', R:8'	5+1 (HOV)	L:3', R:8'
79 <sup>th</sup> Ave bridge to 83 <sup>rd</sup> Ave on-ramp	5+1 (HOV)	L:8', R: varies 9'-10'	6+1 (HOV)	L:3', R:8'
83 <sup>rd</sup> Ave on-ramp to NB SR101 off-ramp	5+1 (HOV)	L:8', R: varies 8'-10'	6+1 (HOV)	L:3', R:8'
NB SR101 off-ramp to 99 <sup>th</sup> Ave off-ramp	4+1 (HOV)	L:11', R:10'	5+1 (HOV)	L:5', R:11'
99 <sup>th</sup> Ave off-ramp to SB SR101 on-ramp*	4+1 (HOV)	L:11', R:10'	4+1 (HOV)	L:5', varies R:10'-22'
SB SR101 on-ramp to Avondale Blvd off-ramp	5+1 (HOV)	L:11', R:10'	6+1 (HOV)	L:5', varies R:9'-11'
Avondale Blvd off-ramp to Avondale Blvd bridge	4+1 (HOV)	L:11', R:10'	5+1 (HOV) with lane drop	L:5', R:10'

\* Existing cross-section will remain at this location. No proposed lane addition.

At the system interchange of SR101 at I-10, the existing elevated southbound SR101 to westbound I-10 ramp is a one lane ramp with minimum 14-foot-wide lane and minimum 4-foot wide inside shoulder and 10-foot wide outside shoulder. ADOT is proposing to add an additional ramp lane on SB SR101 to WB I-10 ramp. This study area is divided into two sub segments to provide detail and ease of assessment (see Figure 1):

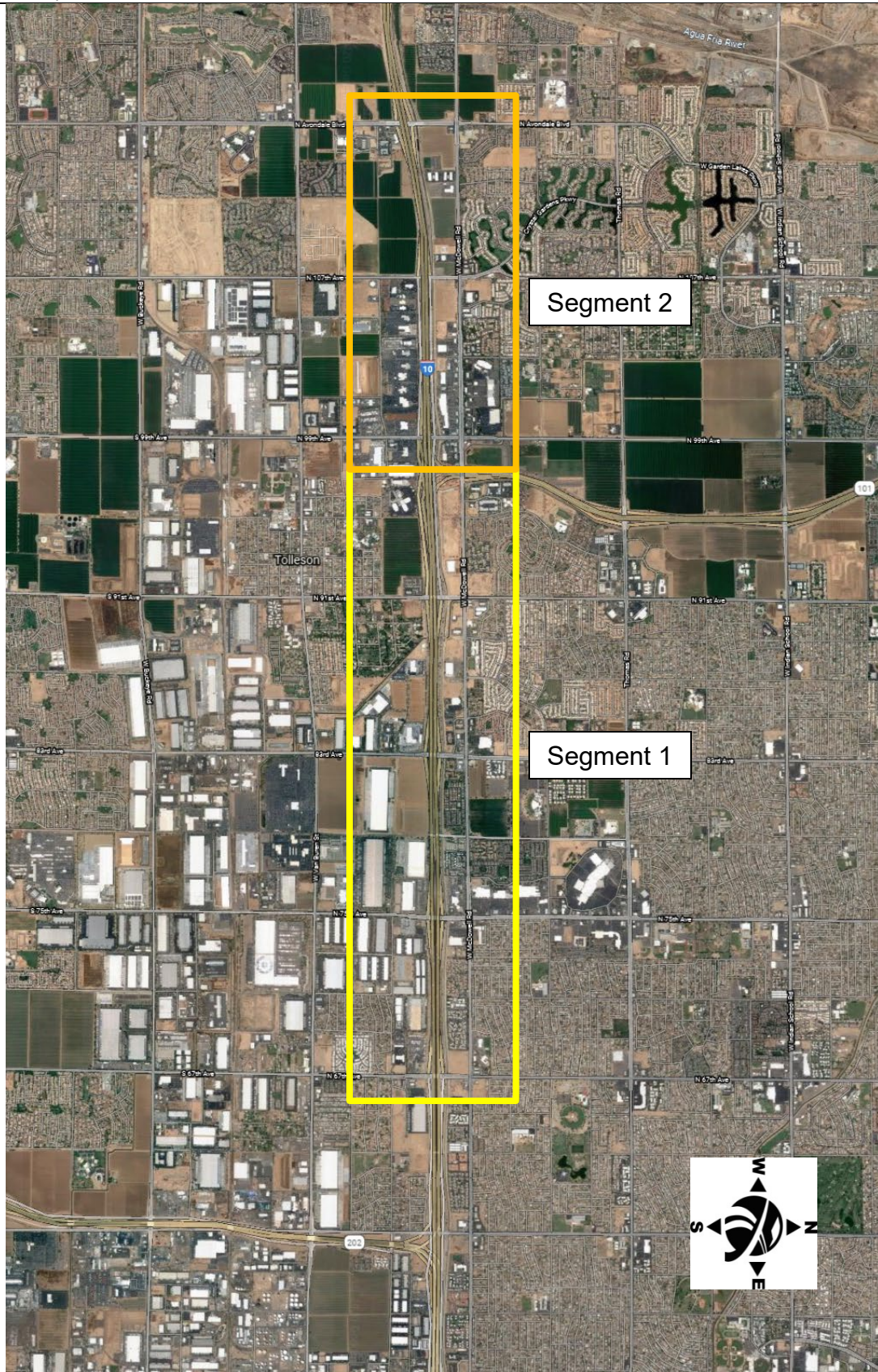
- Segment 1: WB I-10 from SR202 to SR101 – Mile post 136 through 133B
- Segment 2: WB I-10 from SR101 to Avondale Boulevard

The proposed project is located in the Maricopa County (Phoenix) Nonattainment Area for particulates 10-microns in diameter or less (PM10). The Maricopa Association of Governments (MAG) issued the 2012 Five Percent Plan for the Maricopa County Nonattainment Area, and the Arizona Department of Environmental Quality (ADEQ) submitted it to the US Environmental Protection Agency (EPA) on May 25, 2012. The US EPA approved this State Implementation Plan (SIP) Revision on May 30, 2014.

On December 2, 2020, the MAG Regional Council approved amendment to the Fiscal Year (FY) 2020-2024 MAG Transportation Improvement Program (TIP). 2040 MAG RTP and associated regional conformity analysis included this project to add (restripe) an additional lane on Interstate-10 between Loop 202 (South Mountain Freeway) and 99th Avenue for approximately four miles. FHWA subsequently issued a Conformity Finding on December 16, 2020.

The following agencies would be included on interagency consultation and provide input to the POAQC Questionnaire: EPA, ADEQ, MAG and Maricopa Air Quality Department.

**Figure 1. Project Area Map**



## Project Assessment

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

- i) New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;
- ii) Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of an increase in traffic volumes from a significant number of diesel vehicles related to the project;
- iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
- iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
- v) Projects in or affecting locations, areas, or categories of sites which are identified in the PM<sub>10</sub> or PM<sub>2.5</sub> 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 or 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<sub>2.5</sub> and PM<sub>10</sub> Hot-Spot Analyses in Project-Level Transportation Conformity Determinations for the New PM<sub>2.5</sub> and Existing PM<sub>10</sub> 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.

### **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 is not an expanded highway project that would cause a significant increase in the number of diesel vehicles. Table 2 summarizes the average daily traffic and truck traffic data which was provided by MAG. The average difference of the total traffic volumes for all the segments between the build and the no-build conditions were projected to be about 5.9%. The increases in the AADT would be due to rerouting of traffic as well fulfillment of latent demands caused by better accessibility between some origins and destinations as a result of capacity increases. These AADT increases corresponding to such capacity increases look reasonable. However, the daily truck volume increase for each road segment would be in the range of 1,800 to 2,018 vpd, and the truck percent of AADT would be almost the same when comparing the build to the no-build scenario, which indicates that the truck traffic volumes would not increase significantly by the project.

**Table 2. Traffic Projections for WB I-10 between 67<sup>th</sup> Ave. and Avondale Blvd.**

WB I-10 Segment	2020 Existing			2040 No-Build			2040 Build			Difference between Build and No-Build	
	AADT	Truck		AADT	Truck		AADT	Truck		AADT	Truck Volume
		Volume	%		Volume	%		Volume	%		
67 <sup>th</sup> Ave to 75 <sup>th</sup> Ave	159,259	24,833	15.6	178,925	28,293	15.8	186,574	30,151	16.2	7,650	1,857
75 <sup>th</sup> Ave to 79 <sup>th</sup> Ave	145,662	23,593	16.2	163,353	26,735	16.4	170,655	28,577	16.7	7,302	1,842
79 <sup>th</sup> Ave to 83 <sup>rd</sup> Ave	139,667	22,942	16.4	159,873	26,240	16.4	168,132	28,124	16.7	8,259	1,884
83 <sup>rd</sup> Ave to 91 <sup>st</sup> Ave	147,159	23,448	15.9	169,845	26,870	15.8	179,662	28,808	16.0	9,817	1,939
91 <sup>st</sup> Ave to NB SR101 off-ramp	138,626	22,811	16.5	159,173	26,240	16.5	170,519	28,259	16.6	11,346	2,018
NB SR101 off-ramp to 99 <sup>th</sup> Ave	101,181	17,535	17.3	111,312	19,412	17.4	120,750	21,211	17.6	9,438	1,800
99 <sup>th</sup> Ave to SB SR101 on-ramp	88,013	16,347	18.6	97,301	18,456	19.0	104,369	20,146	19.3	7,068	1,690
SB SR101 on-ramp to 107 <sup>th</sup>	125,530	20,422	16.3	148,846	24,527	16.5	156,113	26,364	16.9	7,267	1,837

Ave											
107 <sup>th</sup> Ave to Avondale Blvd	132,465	20,850	15.7	157,208	25,021	15.9	164,959	26,937	16.3	7,751	1,916

Source: MAG Travel Demand Model; 2020, 2040 No Build, 2040 Build.

### 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 increase traffic volumes for significant number of diesel trucks related to the project?

NO - As shown in Table 3 and 4, the MAG LOS analysis indicates that this project would have no effect on any LOS of the intersections within the project limits. The LOS figures provided separately by the ADOT Sharefile System (F0233 LOS Analysis.zip) show that most of the intersection road segments in the 2040 build conditions would have the same LOS values as in the 2040 No-build conditions. As shown in Table 3, only seven of all the road segments would be affected by the project and four of them would be worsened. Comparing the Build and No-build truck traffic volumes for the selected four segments in Table 4, the truck traffic volumes would decrease or increase by the minimal numbers. The traffic projections and the LOS analysis indicate that the project is not supposed to impact the LOS at any intersections by the changes of the truck traffic volumes.

**Table 3. LOS at I-10 Intersections between 67<sup>th</sup> Ave. and Avondale Blvd.**

Segment at I-10 Intersections	2020 Existing		2040 No-build		2040 Build	
	AM Peak LOS	PM Peak LOS	AM Peak LOS	PM Peak LOS	AM Peak LOS	PM Peak LOS
<b>83rd Ave NB Bridge</b>	<b>A</b>	<b>B</b>	<b>D</b>	<b>D</b>	<b>D</b>	<b>E</b>
83rd Ave SB at I-10 EB off-ramp	D	C	E	E	E	D
91st Ave SB Bridge	D	C	F	F	F	E
<b>99th Ave SB at I-10 EB off-ramp</b>	<b>E</b>	<b>D</b>	<b>F</b>	<b>E</b>	<b>F</b>	<b>F</b>
<b>107th Ave SB at I-10 WB on-ramp</b>	<b>A</b>	<b>A</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>D</b>
<b>Avondale Blvd SB at I-10 WB on-ramp</b>	<b>A</b>	<b>A</b>	<b>D</b>	<b>C</b>	<b>D</b>	<b>D</b>
Avondale Blvd SB to I-10 WB on-ramp	A	A	D	E	D	D
Avondale Blvd NB Bridge	A	B	D	E	D	D

Source: MAG Travel Demand Model and HCM Model; 2020, 2040 No Build, 2040 Build.

**Table 4. LOS of Selected Segments**

Selected Segment	2040 No-build		2040 Build		Difference from Build and No-Build	
	PM Peak Total Volume	PM Peak Truck Volume	PM Peak Total Volume	PM Peak Truck Volume	PM Peak Total Volume	PM Peak Truck Volume
83rd Ave NB Bridge	6,202	301	6,324	304	122	3
99th Ave SB at I-10 EB off-ramp	7,304	524	7,633	518	329	-6

107th Ave SB at I-10 WB on-ramp	3,459	84	3,609	89	150	5
Avondale Blvd SB at I-10 WB on-ramp	3,437	147	3,617	163	180	16

Source: MAG Travel Demand Model and HCM Model; 2020, 2040 No Build, 2040 Build.

### **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 construction of a new bus or intermodal 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 an existing bus or intermodal terminal.

### **Projects Affecting PM Sites of Violation or Possible Violation**

Does the project affect locations, areas or categories of sites that are identified in the PM<sub>10</sub> or PM<sub>2.5</sub> applicable plan or implementation plan submissions, as appropriate, as sites of violation or potential violation?

NO – The PM<sub>10</sub> State Implementation Plan (SIP) did not identify any specific sites or potential sites of violation. Therefore, no specific sites or potential sites of violation are identified.

### **POAQC Determination**

The I-10 Restriping Project is not a Project of Air Quality Concern. The project complies with and will not interfere with the implementation of any control measures included in the MAG 2020-2024 TIP. The project would not create LOS D conditions or worsen conditions at intersections with a significant number of truck/diesel vehicles, and the project would not significantly increase the number of diesel trucks in the 2040 design year compared to the no-build. The project does not create an air quality concern but improves circulation and LOS which contributes to an improvement in both air quality and congestion.

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 PM<sub>10</sub> hot-spot analysis. 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 December 23, 2020 ADOT provided a copy of this questionnaire, to the following consultation parties, EPA, 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 and on January 11, 2021 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).