
Project Level CO Hot-Spot Analysis Questionnaire

General Instructions: The general steps required to complete a quantitative CO hot-spot analysis are described in detail below using a similar questionnaire as the PM10 hot-spot.

The questionnaire is not required for a project that does not require a project-level hot spot analysis under these circumstances:

- *Is exempt pursuant to 40 CFR 93.126; or*
- *Is a traffic signal synchronization project under 40 CFR 93.128; or*
- *Uses no Federal funds AND requires no Federal approval*

Project Setting and Description

Should be the same description used in the PM Questionnaire in MAG Region, if applicable. Please describe in detail with the applicable rules and plans MAG Region.

- *Describe the general project scope and purpose;*
- *Include a Map of the project area*
- *Identify the applicable regional Transportation Improvement Plan (TIP), and State TIP (STIP), if applicable;*
- *Identify the relevant maintenance area(s) for CO;*
- *Identify the conformity status of the applicable State Implementation Plan (SIP) for the maintenance area(s).*

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).

Identify which of the above listed project types (i - iv) are relevant to the 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? ***Currently, no plan includes such areas (contact ADOT for update before proceeding)**

YES/NO – *discuss the location of sites of violation or potential violation, as identified in the applicable SIP or SIP submission(s), relative to the project location.*

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/NO – *discuss the LOS of intersections in the design year affected by the project and the total AADT and provide the following data (*provide the separate files):*

- *The latest traffic study for the project**
- *GIS shape files for projected no-build and build networks**
- *A summary table for the traffic data with the data sources (e.g., MAG special runs for the project):*

| AADT Volumes | | Existing AADT (not necessary if the project is a new highway) | Interim AADT (optional) | No-Build AADT | Build AADT | AADT Difference (Build - No-Build) |
|--------------|---|--|----------------------------|---------------|------------|---------------------------------------|
| Mainline | a | | | | | |
| | b | | | | | |
| | c | | | | | |
| | . | | | | | |
| Intersection | a | | | | | |
| | b | | | | | |
| | c | | | | | |
| | . | | | | | |

Source:

- *The LOS analysis files (e.g., Synchro or HCM model runs)**
- *A summary table for the LOS with the data sources:*

| Level of Service (LOS) | Existing | | Interim (optional) | | No-Build | | Build | |
|---|----------------------|-------------|--------------------|-------------|-------------|-------------|-------------|-------------|
| | AM Peak | PM Peak | AM Peak | PM Peak | AM Peak | PM Peak | AM Peak | PM Peak |
| | LOS (Delay-optional) | LOS (Delay) | LOS (Delay) | LOS (Delay) | LOS (Delay) | LOS (Delay) | LOS (Delay) | LOS (Delay) |
| Intersection LOS (overall, not for each link) | a | | | | | | | |
| | b | | | | | | | |
| | c | | | | | | | |
| | . | | | | | | | |

Source:

Projects Affecting Intersections with Highest Traffic Volumes

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

*Three Highest Intersections in Current Plans (contact ADOT for update before proceeding)

| |
|------------------------------------|
| 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

YES/NO – discuss the locations of intersections in the applicable implementation plan and traffic volumes affected by the project, including table of traffic volumes for existing, no-build, and all build scenarios.

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?

YES/NO – discuss the locations of intersections in the applicable implementation plan and the LOS of intersections affected by the project, including table of LOS for existing, no-build, and all build scenarios.

*Three Worst LOS Intersections in Current Plans (contact ADOT for update before proceeding)

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

¹Same as above

Project Assessment – Part B

Hot-Spot Determination

State whether the project requires a quantitative hot-spot analysis and summarize the response(s) above that support that determination. If modeling is required, document the relevant agencies that require interagency consultation on any input for the questionnaire from Federal, state, and local transportation and air agencies as necessary for this project per 40 CFR 93.105(c)(1)(i). This information will be included in subsequent air quality analysis and project level conformity determination reports.

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). *(Note: Any new CO hot-spot analyses for conformity purposes begun on or after January 9, 2023 may no longer rely on the July 2017 CO categorical hotspot finding.)*

Projects Fitting the Condition of the CO Categorical Hot-Spot Finding

Do the project’s parameters fall within the acceptable range of modeled parameters (Use “Table 1: Project Parameters and Acceptable Ranges for CO Categorical Hot-Spot Finding” or enter the project information into FHWA’s web based tool:

https://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance/cmcf_2017/tool.cfm)?

YES/NO – If yes, perform an analysis by utilizing the CO Categorical Hot-Spot Finding tools described above. If no, develop an appropriate quantitative analysis method for the project by the interagency consultation process described above.

Table 1: Project Parameters and Acceptable Ranges for CO Categorical Hot-Spot Finding for Urban Intersection

| Parameter | Acceptable Range |
|--|-------------------------------|
| Analysis year | Greater than or equal to 2017 |
| Angle of cross streets for intersection (degrees) | 90 |
| Maximum grade for the intersection (%) | Less than or equal to 2 |
| Maximum grade on cross street for the intersection (%) | 0 |
| Number of through lanes | Less than or equal to 4 |
| Number of left turn lanes | Less than or equal to 2 |
| Lane width (ft) | 12 |
| Median width (ft) | 0 |
| Peak hour average approach speed (mph) | Greater than or equal to 25 |
| Peak hour approach volume (vph) | Less than or equal to 2640 |
| Peak hour Level of Service | A through E |
| Ambient temperature (°F) | Greater than or equal to -10 |
| Heavy-duty trucks (%) | Greater than or equal to 5 |
| 1-hour background CO concentrations (ppm) | Less than or equal to 32.6 |
| 8-hour background CO concentrations (ppm) | Less than or equal to 7.3 |
| Persistence factor | Less than or equal to 0.7 |

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)