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Transportation Conformity Guidance for Qualitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas

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Office of Transportation and Air Quality
U.S. Environmental Protection Agency

Office of Natural and Human Environment
Federal Highway Administration

Office of Planning and Environment
Federal Transit Administration

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Chapter 1: Introduction

1.1. What is the purpose of this guidance?

On March 10, 2006, the Environmental Protection Agency (EPA) published a final rule that establishes the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas ("areas") (71 FR 12468). The final rule also provides flexibility so that state and local resources are used efficiently. The EPA and the Federal Highway Administration (FHWA) have developed this guidance to help state and local agencies meet the final rule's hot-spot analysis requirements.

Transportation conformity is required under Clean Air Act section 176(c) (42 U.S.C. 7506(c)) to ensure that federally supported highway and transit project activities are consistent with ("conform to") the purpose of the state air quality implementation plan (SIP). Conformity to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant national ambient air quality standards (NAAQS or "standards"). EPA's transportation conformity rule (40 CFR 51.390 and Part 93) establishes the criteria and procedures for determining whether transportation activities conform to the SIP.

From this date forward, future qualitative $PM_{2.5}$ and PM_{10} hot-spot analyses should be based on today's new guidance, which supersedes FHWA's existing September 12, 2001, "Guidance for Qualitative Project-Level 'Hot Spot' Analysis in PM_{10} Nonattainment and Maintenance Areas." However, any PM_{10} hot-spot analysis that was started prior to the release of EPA and FHWA's new guidance may be completed with the previous 2001 guidance. Any $PM_{2.5}$ hot-spot analysis that was started prior to the release of EPA and FHWA's new guidance must meet the March 2006 final rule's requirements, and should meet the new guidance whenever possible.

1.2. What is a hot-spot analysis?

A hot-spot analysis is defined in 40 CFR 93.101 as an estimation of likely future localized $PM_{2.5}$ or PM_{10} pollutant concentrations and a comparison of those concentrations to the relevant air quality standards. A hot-spot analysis assesses the air quality impacts on a scale smaller than an entire nonattainment or maintenance area, including for example, congested roadway intersections and highways or transit terminals. Such an analysis is a means of demonstrating that a transportation project meets Clean Air Act conformity requirements to support state and local air quality goals with respect to potential localized air quality impacts. When a hot-spot analysis is required, it is included within the project-level conformity determination that is made by FHWA or the Federal Transit Administration (FTA).

EPA and FHWA are issuing guidance at this time for qualitative hot-spot analyses. Quantitative $PM_{2.5}$ or PM_{10} hot-spot analyses will be required when appropriate methods and modeling

guidance are available. Qualitative hot-spot analyses involve more streamlined reviews of local factors such as local monitoring data near a proposed project location.

1.3. What projects in $PM_{2.5}$ and PM_{10} areas are addressed by this guidance?

This guidance provides information to meet hot-spot analysis requirements for projects in $PM_{2.5}$ and PM_{10} areas. See Chapter 2 and Appendix B for more specific information.

For $PM_{2.5}$ areas

For all $PM_{2.5}$ areas, this guidance would be used to complete qualitative $PM_{2.5}$ hot-spot analyses only for "projects of air quality concern" as defined in the final rule by 40 CFR 93.123(b)(1). The final rule specifies that projects of air quality concern are certain highway and transit projects that involve significant levels of diesel traffic, or any other project that is identified by the $PM_{2.5}$ SIP as a localized air quality concern.

A qualitative $PM_{2.5}$ hot-spot analysis is not required for projects that are not an air quality concern. For these types of projects, state and local project sponsors should briefly document in their project-level conformity determinations that Clean Air Act and 40 CFR 93.116 requirements were met without a hot-spot analysis, since such projects have been found to not be of air quality concern under 40 CFR 93.123(b)(1).

For PM_{10} areas without approved conformity SIPs

For these PM_{10} areas, this guidance would also be used to complete qualitative PM_{10} hot-spot analyses only for "projects of air quality concern" as defined by 40 CFR 93.123(b)(1).

A qualitative PM_{10} hot-spot analysis is not required for projects that are not an air quality concern. For these types of projects, state and local project sponsors should briefly document in their project-level conformity determination that Clean Air Act and 40 CFR 93.116 requirements were met without a hot-spot analysis, since such projects have been found to not be of air quality concern under 40 CFR 93.123(b)(1).

For PM_{10} areas with approved conformity SIPs

In areas where EPA has already approved conformity SIPs that include PM_{10} hot-spot provisions from previous conformity rulemakings, the revised PM_{10} hot-spot requirements in the March 10, 2006 final rule will only be effective when a state either:

- withdraws the existing provisions from its approved conformity SIP and EPA approves the withdrawal, or
- includes the revised PM_{10} hot-spot requirements in a SIP revision and EPA approves that SIP revision.

For more information on revising approved conformity SIPs, please see the February 14, 2006 EPA and DOT guidance entitled, "Interim Guidance for Implementing the Transportation Conformity Provisions in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)."[1]

Therefore, for all non-exempt federally funded or approved projects, PM_{10} areas with approved conformity SIPs must continue to follow the PM_{10} hot-spot procedures in their existing conformity SIPs until the SIP is updated and subsequently approved by EPA. PM_{10} areas with approved conformity SIPs most likely are required to complete a qualitative PM_{10} hot-spot analysis for every project-level conformity determination, since these were the federal conformity requirements prior to the March 10, 2006 final rule.

1.4. How is this guidance structured?

This guidance is in the form of questions and answers for basic components of $PM_{2.5}$ and PM_{10} hot-spot analyses. The guidance addresses many issues such as:

- What requirements must be met under the March 10, 2006 final rule?
- When must the analysis be performed?
- What are the different agencies involved in $PM_{2.5}$ and PM_{10} hot-spot analyses and project-level conformity determinations?
- What information should be included in a qualitative hot-spot analysis?

Following the question and answer section are three appendices that provide examples of:

- Projects that are or are not an air quality concern,
- Approaches for qualitative $PM_{2.5}$ and PM_{10} hot-spot analyses, and
- Potential project-level mitigation measures.

These examples demonstrate different levels of inquiry that may be used to qualitatively consider the local air quality impacts of projects in a given $PM_{2.5}$ or PM_{10} nonattainment or maintenance area. This guidance is not definitive for any specific project but rather is general guidance for all relevant projects.

Additional assistance is available from:

- EPA regional and headquarters offices,
- FHWA division and headquarters offices, and
- FTA regional and headquarters offices.

See Question 1.6 for specific contact information.

[1] SAFETEA-LU is Public Law 109-59. EPA and DOT's interim conformity guidance is available at either http://www.epa.gov/otaq/stateresources/transconf/420b06901.pdf, or http://www.fhwa.dot.gov/environment/conformity/sec6011guidmemo.htm.

1.5. Which parts of this guidance apply to $PM_{2.5}$ hot-spot analyses and which parts of this guidance apply to PM_{10} hot-spot analyses?

The criteria and procedures for hot-spot analyses will be generally the same for both $PM_{2.5}$ and PM_{10} areas, except for PM_{10} areas with approved conformity SIPs as noted elsewhere in this guidance. Questions and answers in this guidance address $PM_{2.5}$ and PM_{10} together where the requirements or analytical methods and data are the same. Separate answers are provided where the answers differ.

1.6. Who can I contact for more information?

For specific questions concerning a particular nonattainment or maintenance area, please contact the transportation conformity staff person responsible for your state at the appropriate EPA regional office, FHWA division office, or FTA regional office.

- Contact information for EPA regional offices can be found at: http://www.epa.gov/otaq/stateresources/transconf/contacts.htm.
- Contact information for FHWA division offices can be found at: http://www.fhwa.dot.gov/field.html.
- Contact information for FTA regional offices can be found at: http://www.fta.dot.gov/about/offices/4978_ENG_HTML.htm.

General questions about this guidance can be directed to:

- Meg Patulski at EPA's Office of Transportation and Air Quality, patulski.meg@epa.gov, (734) 214-4842;
- Joe Pedelty at EPA's Office of Transportation and Air Quality, pedelty.joe@epa.gov, (734) 214-4410;
- Cecilia Ho at FHWA's Office of Natural and Human Environment, cecilia.ho@fhwa.dot.gov, (202) 366-9862; or
- Abbe Marner at FTA's Office of Planning and Environment, abbe.marner@fta.dot.gov, (202) 366-4317.

1.7. Does this guidance create new requirements?

No, this guidance explains how to implement the hot-spot analysis requirements of the March 10, 2006 final rule, and does not create any new requirements.

The regulations described in this document contain legally binding requirements. This document is not a substitute for those provisions or regulations, nor is it a regulation itself. Thus, it does not impose legally binding requirements on EPA, FHWA, FTA, states, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA, FHWA, and FTA retain the discretion to adopt approaches on a case-by-case basis that may differ from this guidance, but still comply with the Clean Air Act and the transportation conformity regulations. Any decisions regarding a particular conformity determination or hot-spot analysis will be made based on the statute and regulations, after appropriate public input. This guidance may be revised periodically without public notice.

Chapter 2: Overview of Transportation Conformity Requirements

2.1. What are the primary requirements for assessing the impacts of projects in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas?

Clean Air Act section 176(c)(1)(B) is the statutory criterion that must be met by all projects in nonattainment and maintenance areas that are subject to transportation conformity. Section 176(c)(1)(B) states that federally-supported transportation projects must not "cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area."

To meet statutory requirements, the March 10, 2006 final rule requires $PM_{2.5}$ and PM_{10} hot-spot analyses to be performed for projects of air quality concern. Qualitative hot-spot analyses would be done for these projects before appropriate methods and modeling guidance are available and quantitative $PM_{2.5}$ and PM_{10} hot-spot analyses are required under 40 CFR 93.123(b)(4). In addition, through the final rule, EPA determined that projects not identified in 40 CFR 93.123(b)(1) as projects of air quality concern have also met statutory requirements without any further hot-spot analyses (40 CFR 93.116(a)). Please see Questions 1.3 and 2.3 for information on when the new PM_{10} hot-spot analysis requirements can be used in PM_{10} areas with and without approved conformity SIPs.

2.2. What is a project of air quality concern?

EPA specified in 40 CFR 93.123(b)(1) of the final rule that projects of air quality concern are certain highway and transit projects that involve significant levels of diesel vehicle traffic, or any other project that is identified in the $PM_{2.5}$ or PM_{10} SIP as a localized air quality concern. See the preamble of the March 10, 2006 final rule for further information regarding how and why EPA defined projects of air quality concern (71 FR 12491-12493).

The final rule defines the projects of air quality concern that require a $PM_{2.5}$ or PM_{10} hot-spot analysis in 40 CFR 93.123(b)(1) as:

> "(i) New or expanded highway projects that have a significant number of or significant increase in 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 increased 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 $PM_{2.5}$ or PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Appendix A of this guidance includes the final rule's examples of projects that are most likely to be an air quality concern, as well as examples of projects that are not considered an air quality concern (and therefore do not require a $PM_{2.5}$ or PM_{10} hot-spot analysis). However, as described in Questions 1.3 and 2.3, a PM_{10} hot-spot analysis is required for any project-level conformity determination in PM_{10} areas with approved conformity SIPs, until such SIPs are revised and approved by EPA.

2.3. When is a $PM_{2.5}$ or PM_{10} hot-spot analysis required?

In general, a hot-spot analysis would be done for required projects when a project-level conformity determination is completed. This is typically done during the environmental review process for the National Environmental Policy Act (NEPA). There can be limited cases, as described below, when transportation conformity requirements initially apply in a nonattainment area after the NEPA process has been completed for a project, but a project-level conformity determination is required for a subsequent federal approval.

The following paragraphs provide more specific information for $PM_{2.5}$ and PM_{10} areas.

$PM_{2.5}$ areas

The March 10, 2006 final rule requires a qualitative $PM_{2.5}$ hot-spot analysis to be completed for project-level conformity determinations for projects of air quality concern completed on or after April 5, 2006, when $PM_{2.5}$ conformity requirements apply and the final rule is effective.[2]

Prior to April 5, 2006, FHWA or FTA could voluntarily make a project-level conformity determination that includes a $PM_{2.5}$ hot-spot analysis that meets the final rule's requirements.

If a project still requires a FHWA or FTA approval or authorization, a project-level conformity determination will be required prior to the first such action on or after April 5, 2006, even if the project has already completed the NEPA process. After project-level conformity is determined for a project, a new conformity determination is only required under the scenarios discussed in 40 CFR 93.104(d).[3]

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[2] On January 5, 2005 (70 FR 943), EPA designated areas as attainment and nonattainment for the $PM_{2.5}$ standards. These designations became effective on April 5, 2005. As a result, conformity for the $PM_{2.5}$ standards will apply to newly designated nonattainment areas on April 5, 2006.

[3] 40 CFR 93.104(d) states, "FHWA/FTA projects must be found to conform before they are adopted, accepted, approved, or funded. Conformity must be redetermined for any FHWA/FTA project if one of the following occurs: a significant change in the project's design concept and scope; three years elapse since the most recent major step to advance the project; or initiation of a supplemental environmental document for air quality purposes. Major steps include NEPA process completion; start of final design; acquisition of a significant portion of the right-of-way; and, construction (including Federal approval of plans, specifications and estimates)."

A project-level conformity determination and hot-spot analysis will not be required for projects that have already completed the NEPA process and require no further FHWA or FTA approval or authorization on or after April 5, 2006. A project-level conformity determination would only be required for such projects under the scenarios discussed in 40 CFR 93.104(d).

PM_{10} areas without approved conformity SIPs

The revised PM_{10} hot-spot requirements in the final rule are not effective until April 5, 2006. A qualitative PM_{10} hot-spot analysis that meets the final rule's requirements must be completed for project-level determinations for projects of air quality concern completed on or after April 5, 2006.

Prior to April 5, 2006, any project-level conformity determination made by FHWA or FTA in these PM_{10} nonattainment and maintenance areas must meet the previous conformity rule's requirements for PM_{10} hot-spot analyses.

PM_{10} areas with approved conformity SIPs

As described above, PM_{10} areas that have approved conformity SIPs that include PM_{10} hot-spot provisions from previous rulemakings cannot take advantage of the March 10, 2006 final rule until the conformity SIP is revised and approved by EPA.

Prior to that time, all project-level conformity determinations in these PM_{10} areas must include a PM_{10} hot-spot analysis that meets the requirements in the approved conformity SIP.

2.4. What air quality standards are evaluated in $PM_{2.5}$ or PM_{10} hot-spot analyses?

The Clean Air Act and transportation conformity regulation require that conformity be met for all national ambient air quality standards (NAAQS or "standards") for a given pollutant. Therefore, a conformity determination must address all relevant standards for a given pollutant, unless meeting conformity for the controlling standard would ensure that Clean Air Act requirements are met for all standards. This conformity approach is consistent with how SIPs are developed for pollutants with multiple standards.

The following paragraphs provide more specific information on the current 24-hour and annual standards that must be addressed in respective $PM_{2.5}$ and PM_{10} hot-spot analyses. [4]

$PM_{2.5}$ areas

$PM_{2.5}$ nonattainment and maintenance areas are required to attain and maintain two standards:

4 This guidance document implements conformity under the current $PM_{2.5}$ and PM_{10} air quality standards. EPA proposed revisions to the current $PM_{2.5}$ and PM_{10} air quality standards on January 17, 2006 (71 FR 2620).

- 24-hour standard – 65 $\mu g/m^3$, and
- annual standard – 15.0 $\mu g/m^3$

The current 24-hour standard is based on a 3-year average of the 98th percentile of 24-hour $PM_{2.5}$ concentrations; the current annual standard is based on a 3-year average of annual mean $PM_{2.5}$ concentrations.

A $PM_{2.5}$ hot-spot analysis must consider both standards, unless it is determined for a given area that meeting the controlling standard would ensure that Clean Air Act requirements are met for both standards. The interagency consultation process should be used to discuss how the qualitative $PM_{2.5}$ hot-spot analysis meets statutory and regulatory requirements for both $PM_{2.5}$ standards, depending on the factors that are evaluated for a given project.

PM_{10} areas

PM_{10} nonattainment and maintenance areas are required to attain and maintain two standards as well:

- 24-hour standard – 150 $\mu g/m^3$, and
- Annual standard – 50 $\mu g/m^3$

The 24-hour PM_{10} standard is attained when the average number of exceedances in the past three calendar years is less than or equal to 1.0. An exceedance occurs when a 24-hour concentration of 155 $\mu g/m^3$ or greater is measured at a site. The annual PM_{10} standard is attained if the average of the annual arithmetic means for the past three calendar years is less than or equal to 50 $\mu g/m^3$.

A PM_{10} hot-spot analysis must consider both standards, unless it is determined for a given area that meeting the controlling standard would ensure that Clean Air Act requirements are met for both standards. The interagency consultation process should be used to discuss how the qualitative PM_{10} hot-spot analysis meets statutory and regulatory requirements for both PM_{10} standards, depending on the factors that are evaluated for a given project.

2.5. What is the definition of causing a new violation or increasing the frequency or severity of an existing air quality violation?

A $PM_{2.5}$ or PM_{10} hot-spot analysis assesses potential new or worsened future violations due to the project in combination with changes in background air quality concentrations. The interagency consultation process would be used to determine if new violations or increases in the frequency or severity of existing violations are anticipated based on the hot-spot analysis.

40 CFR 93.101 already defines when a new or worsened air quality violation is determined to occur:

> "*Cause or contribute to a new violation* for a project means:

(1) To cause or contribute to a new violation of a standard in the area substantially affected by the project or over a region which would otherwise not be in violation of the standard during the future period in question, if the project were not implemented; or

(2) To contribute to a new violation in a manner that would increase the frequency or severity of a new violation of a standard in such area."

"*Increase the frequency of severity* means to cause a location or region to exceed a standard more often or to cause a violation at a greater concentration than previously existed and/or would otherwise exist during the future period in question, if the project were not implemented."

These definitions apply whether air quality information at the project location is used or when a monitor not in the geographic area of the project is used because it is located near a different project with similar characteristics (i.e., a "surrogate").

In addition, as discussed in the preamble to the November 24, 1993, transportation conformity rule, EPA believes that "a seemingly new violation may be considered to be a relocation and reduction of an existing violation only if it were in the area substantially affected by the project and if the predicted [future] design value for the "new" site would be less than the design value at the "old" site without the project – that is, if there would be a net air quality benefit" (58 FR 62213).

2.6. What are the interagency consultation requirements for $PM_{2.5}$ and PM_{10} hot-spot analyses?

The interagency consultation process is an important tool to completing project-level conformity determinations and hot-spot analyses.[5] Interagency consultation must also be used to evaluate and choose associated methods and assumptions to be used in $PM_{2.5}$ and PM_{10} hot-spot analyses (40 CFR 93.105(c)(1)(i)).

The different agencies that can be involved in the interagency consultation process include the project sponsor, other state and local transportation and air quality agencies, EPA, FHWA, and FTA.

2.7. What are the roles and responsibilities of different agencies in project-level conformity determinations?

Roles and responsibilities of different agencies for meeting the transportation conformity requirements are addressed in 40 CFR 93.105 or in the approved conformity SIP. The following

[5] Throughout this document, the term "interagency consultation process" is intended to mean that process required by 40 CFR 93.105 for transportation conformity determinations.

paragraphs provide more information on the potential roles and responsibilities in implementing the $PM_{2.5}$ and PM_{10} hot-spot analysis requirements.

Project Sponsor

The project sponsor is the agency responsible for implementing the project. Typically, the project sponsor is a local government, transit operator, or state department of transportation. The project sponsor is responsible for providing the $PM_{2.5}$ and/or PM_{10} qualitative hot-spot analysis addressed in this guidance and meeting consultation requirements described in 40 CFR 93.105 or the approved conformity SIP. The interagency consultation process is critical to completing project-level conformity determinations and qualitative $PM_{2.5}$ and PM_{10} hot-spot analyses. The project sponsor, in cooperation with federal agencies, is also responsible for conducting the environmental analysis and review to comply with NEPA as required by the Council on Environmental Quality regulations (40 CFR 1500-1508) and the FHWA/FTA Environmental Impact and Related Procedures (23 CFR Part 771).

FHWA and FTA

FHWA and FTA are responsible for determining that the requirements of the transportation conformity rule are met. $PM_{2.5}$ or PM_{10} hot-spot analyses would generally be included in documents prepared to meet NEPA requirements. Such documents may include:

- an Environmental Impact Statement (EIS) with a Record of Decision (ROD);
- an Environmental Assessment (EA) with a Finding of No Significant Impact (FONSI); or
- a Categorical Exclusion (CE) determination.

It is the responsibility of either FHWA or FTA to review and approve these NEPA documents for their certain actions.

EPA

EPA is responsible for promulgating transportation conformity regulations and related guidance, and as such, provides general and specific policy and technical assistance to federal, state, and local conformity implementers. EPA is also an active member of the interagency consultation process regarding conformity determinations. Additionally, EPA reviews submitted SIPs and makes adequacy or other findings as appropriate for conformity purposes, and provides policy and technical support with air quality modeling and monitoring issues.

State and local air agencies

State and local air quality agencies are part of the interagency consultation process and aid in air quality and transportation modeling. These agencies may provide much of the data required to perform a qualitative $PM_{2.5}$ or PM_{10} hot-spot analysis, as described in Questions 4.4 and 4.5). The state air quality agency also operates the air quality monitoring network and is responsible for developing SIPs for $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas.

2.8. What are the public participation requirements for $PM_{2.5}$ and PM_{10} hot-spot analyses?

Affected agencies developing project-level conformity determinations (and any associated $PM_{2.5}$ or PM_{10} hot-spot analysis) need to establish a proactive public involvement process that provides opportunity for public review and comment. The NEPA public involvement process can be used to satisfy these public participation requirements, since project-level conformity determinations are usually conducted as part of the NEPA process. If a project-level conformity determination that includes an associated hot-spot analysis is done after NEPA is completed, as described in Question 2.3, a public comment period is also to be provided.

Chapter 3: Analytical Requirements

3.1. What are the general analytical requirements for $PM_{2.5}$ and PM_{10} hot-spot analyses?

In the March 2006 final rule, EPA retained for PM_{10} areas and extended for $PM_{2.5}$ areas the general requirements in 40 CFR 93.123(c) for all hot-spot analyses (71 FR 12496-12497). These requirements are as follows:

- Analyzing the total emissions burden of direct $PM_{2.5}$ or PM_{10} emissions which may result from the implementation of the projects (including re-entrained road dust and construction emissions as appropriate, as described below), summed together with future background concentrations;
- Analyzing the entire transportation project, after the identification of major design features which will significantly impact local concentrations;
- Using consistent assumptions with those used in regional emissions analyses for inputs that are required for both analyses (e.g., temperature, humidity);
- Assuming the implementation of mitigation or control measures only where written commitments for such measures have been obtained (40 CFR 93.125(c)); and
- Not considering temporary emissions increases from construction-related activities which occur only during the construction phase and last five years or less at any individual site.

For a project-level conformity determination, the design concept and scope of the project must be consistent with that included in the conforming transportation plan and transportation improvement program (TIP). Any significant change in a project's design concept or scope will require a reevaluation of regional emissions (i.e., a new plan/TIP conformity determination) and a new project-level conformity determination and hot-spot analysis.

$PM_{2.5}$ and PM_{10} hot-spot analyses must also be based on the latest planning assumptions. In addition, FHWA or FTA, as applicable, must obtain from the project sponsor and/or operator enforceable written commitments to implement any required project-level control or mitigation measures, prior to making a project-level conformity determination (40 CFR 93.125(c)).

3.2. What emissions are considered in $PM_{2.5}$ and PM_{10} hot-spot analyses?

Hot-spot analyses under this guidance must be based only on directly emitted $PM_{2.5}$ or PM_{10} emissions. Tailpipe, break wear, and tire wear $PM_{2.5}$ or PM_{10} would always be considered in a project's hot-spot analysis. See Questions 3.3 and 3.4 for further information regarding when re-entrained road dust and construction emissions would be considered in a $PM_{2.5}$ or PM_{10} hot-spot analysis.

$PM_{2.5}$ and PM_{10} precursors are not considered in respective hot-spot analyses. Secondary particles formed through $PM_{2.5}$ and PM_{10} precursor emissions from a transportation project take several hours to form in the atmosphere giving emissions time to disperse beyond the immediate project area of concern for localized analyses.

3.3. When is re-entrained road dust considered in $PM_{2.5}$ or PM_{10} hot-spot analyses?

For $PM_{2.5}$ nonattainment and maintenance areas

Re-entrained road dust must only be considered in $PM_{2.5}$ hot-spot analyses if EPA or the state air agency has made a finding that such emissions are a significant contributor to the $PM_{2.5}$ air quality problem in a given area (40 CFR 93.102(b)(3)). See the July 1, 2004 final conformity rule for further information (69 FR 40004). Please refer to the EPA regional office for information on whether a finding of significance for re-entrained road dust was made for a given $PM_{2.5}$ nonattainment or maintenance area.

For PM_{10} nonattainment and maintenance areas

Re-entrained road dust must be included in all PM_{10} hot-spot analyses. EPA has historically required road dust emissions to be included in all conformity analyses of direct PM_{10} emissions -- including hot-spot analyses. See the March 2006 final conformity rule for further background (71 FR 12496).

3.4. When are construction emissions considered in $PM_{2.5}$ or PM_{10} hot-spot analyses?

Construction-related $PM_{2.5}$ or PM_{10} emissions due to a particular project are not required to be included in hot-spot analyses, if such emissions are considered temporary as defined in 40 CFR 93.123(c)(5) (i.e., emissions which occur only during the construction phase and last five years or less at any individual site).

While, for most projects, it is anticipated that construction emissions would not be included in $PM_{2.5}$ or PM_{10} hot-spot analyses, there may be limited cases where a large project is constructed over a longer time period where it may be appropriate to include construction emissions, when an analysis year is chosen during project construction. For example, $PM_{2.5}$ or PM_{10} emissions, as applicable, would be considered for projects that take more than five years to build at any individual site. See Question 3.5 for further information on analysis years for $PM_{2.5}$ or PM_{10} hot-spot analyses.

3.5. What time frame and analysis years should be used in hot-spot analyses?

The March 2006 final rule does not change the time frame and analysis years required when $PM_{2.5}$ or PM_{10} hot-spot analyses are conducted. As discussed in the July 1, 2004, final conformity rule (69 FR 40056-40058), hot-spot analyses in metropolitan nonattainment and maintenance areas must consider the full time frame of an area's transportation plan at the time the analysis is conducted. Hot-spot analyses for projects in isolated rural nonattainment and maintenance areas must consider the full time frame of the area's 20-year regional emissions

analysis since these areas are not required to develop a transportation plan under DOT's statewide transportation planning regulations. Although SAFETEA-LU and Clean Air Act section 176(c)(7) now allow the election of changes to the time horizons for transportation plan and TIP conformity determinations, these changes to do not affect the time frame and analysis requirements for hot-spot analyses.

To ensure that conformity requirements are being satisfied, areas should examine the year(s) within the transportation plan or regional emissions analysis, as appropriate, during which:

- peak emissions from the project are expected, and
- a new violation or worsening of an existing violation would most likely occur due to the cumulative impacts of the project and background concentrations in the project area.

EPA believes that conformity requirements are met if areas demonstrate that no new or worsened violations occur in the year(s) of highest expected emissions – which includes the project's emissions in addition to background regional emissions. If such a demonstration occurs, then no adverse impacts would be expected to occur in any other years within the time frame of the transportation plan or regional emissions analysis. See the July 2004 final rule for further information on this topic.

Chapter 4: Developing a Qualitative $PM_{2.5}$ or PM_{10} Hot-spot Analysis

This chapter provides general information on the methods and data that can be used to meet qualitative $PM_{2.5}$ and PM_{10} hot-spot requirements. The interagency consultation process would be used to determine what is needed for a particular project.

4.1. What methods can be used for performing qualitative $PM_{2.5}$ and PM_{10} hot-spot analyses?

This guidance highlights two methods for completing qualitative $PM_{2.5}$ and PM_{10} hot-spot analyses. These methods are provided as examples only, and there may be other methods. Elements of both methods may also be combined for a given hot-spot analysis. The method chosen will be affected by the characteristics of a particular project, the project location, and available information.

The data and method used, whether one of those below or an alternate method, must be selected and documented through the interagency consultation process (40 CFR 93.105(c)(1)(i)).

A. Comparison to another location with similar characteristics

This method is a simple approach for demonstrating that a new project will meet statutory conformity requirements. It involves reviewing existing highway or transit facilities that were constructed in the past and built in locations similar to the proposed project and, whenever possible, near an air quality monitor (a "surrogate") to allow a comparison of $PM_{2.5}$ or PM_{10} air quality concentrations. See Examples A, C, and D in Appendix B for suggestions of when this method can be used.

The interagency consultation process would be used to determine what project(s) and air quality monitor(s) are appropriate to be used as a surrogate for the air quality impacts of the proposed project. The project sponsor would document in the project-level conformity determination the reasons for picking a surrogate project and air quality monitor, including similarities to and differences between the surrogate and proposed project and location. See Question 4.3 for more information on what other documentation should be included for a hot-spot analysis.

B. Air quality studies for the proposed project location

Air quality information from many sources may be available for the proposed project's location. See Examples B, C, and D in Appendix B for suggestions of when this method can be used.

The SIP can be an important tool to be referenced when conducting qualitative hot-spot analyses, especially for PM_{10} nonattainment and maintenance areas that already have SIPs in place. $PM_{2.5}$ nonattainment areas may use, as appropriate, any preliminary data or modeling from a $PM_{2.5}$ SIP under development. The SIP contains specific information on the air quality conditions of a given nonattainment or maintenance area. Such information may include monitoring data and

modeling data for past or future years at or near a project's location. Even if a state has not yet begun work on its $PM_{2.5}$ SIP, the air agency would be able to supply data from air quality monitors that may be useful in a given hot-spot analysis.

In some cases, the state or local air agency or a university may also have performed an air quality study near the location of a proposed project. In addition, other scientific studies may be appropriate to understand the potential air quality impact from certain projects.[6]

The interagency consultation process would be used to determine what air quality information from a SIP or other air quality study is appropriate for assessing the air quality impacts of the proposed project. The project sponsor would document within the project-level conformity determination the air quality information used and why it is appropriate. See Question 4.3 for more information on what other documentation should be included for a hot-spot analysis.

4.2. What should be documented for a qualitative $PM_{2.5}$ or PM_{10} hot-spot analysis?

The hot-spot analysis should include sufficient documentation to justify the conclusion that a proposed project meets conformity hot-spot analysis requirements in 40 CFR 93.116 and 93.123. The amount of documentation needed and method of analysis chosen will vary depending on individual circumstances (e.g., local background $PM_{2.5}$ or PM_{10} concentrations, the size and nature of the project, etc.).

The hot-spot analysis should include a summary of the method and data that were used, such as:

- A description of the proposed project,[7] including where the project is located, the project's scope (adding an interchange, widening a highway, expanding a major bus terminal, etc.), when the project is expected to be open to traffic, and what part of 40 CFR 93.123(b)(1) is applicable.
- A description of the method chosen to conduct the hot-spot analysis (see Question 4.1);
- A description of the type of $PM_{2.5}$ or PM_{10} emissions from the proposed project that are considered in the qualitative hot-spot analysis (see Questions 3.2, 3.3, and 3.4).
- A description of existing conditions pertaining to the project and project location (see list of factors that may be considered in Question 4.3).
- A description of the changes in these factors that will result from the project for future scenarios, including changes in the surrounding environment that will affect $PM_{2.5}$ or PM_{10} air quality, changes in traffic and emissions trends (see Question 4.4);
- A description of the analysis year(s) that is examined (see Question 3.5).
- A discussion of any mitigation measures that will be implemented and their expected effects; and

[6] EPA will be providing a summary of scientific studies that have been completed on the potential impacts of transportation projects. See EPA's website for further information: http://www.epa.gov/otaq/stateresources/transconf/policy.htm.

[7] The appropriate section of the NEPA document can also be referenced when relevant.

- A conclusion for how the proposed project meets 40 CFR 93.116 and 93.123 conformity requirements for the $PM_{2.5}$ and/or PM_{10} air quality standards.

4.3. What are some of the factors that may be considered in describing existing conditions absent the proposed project?

An accurate description of existing conditions and factors that may influence $PM_{2.5}$ or PM_{10} concentrations in the proposed project area should be provided. Analysis of those conditions and how they are projected to change over time with the addition of the proposed project is the basis of the hot-spot analysis.

While the following list is not intended to be exhaustive or prescriptive, factors that are relevant to $PM_{2.5}$ or PM_{10} levels may include:

A. Air Quality

Existing and future air quality information should be considered to assess the probability of the project causing or contributing to an air quality violation. Analysts and reviewers should be aware of the existing air quality conditions so that they can understand the relative impact that the proposed project is likely to have. The description of existing air quality information may include the following:

- Summarize $PM_{2.5}$ or PM_{10} design values from nearby monitors in the nonattainment or maintenance area. Determine if a monitoring station is near the project that will provide data on local air quality conditions, including $PM_{2.5}$ and PM_{10} concentrations. Monitors closer to the project location, but still within the nonattainment or maintenance area are preferable to those further away. In the absence of a nearby monitor, other appropriate monitors in the nonattainment or maintenance area can also be used. Interagency consultation would be used to select appropriate monitors for a given project, when monitoring information is necessary for a hot-spot analysis.
- Consider reviewing data from monitoring stations located in other $PM_{2.5}$ or PM_{10} nonattainment or maintenance areas that may have similar traffic and environmental conditions to the proposed project and location.
- Describe future estimated air quality for the attainment year, years beyond the attainment year, and any changes in $PM_{2.5}$ or PM_{10} concentrations needed to meet attainment and maintenance schedules. Expected changes in air quality at the project location may result in changes in the background concentration and the likelihood that a given project may create or worsen an air quality problem.
- Consider $PM_{2.5}$ or PM_{10} source apportionment studies when available.
- Consider future emissions trends that could affect air quality concentrations at the project's location, such as a stationary source, port, or other new source of $PM_{2.5}$ or PM_{10} emissions.
- It is appropriate to also cite published scientific studies or other information regarding regional or local trend data on $PM_{2.5}$ or PM_{10} concentrations, when such data is available and applicable to a given project and location.

Sources: State/local air quality agencies or public health departments would have monitoring data and modeling results included in a nonattainment or maintenance area's SIP or recent monitoring, modeling, or other data. Universities or other sources may have completed independent air quality studies for the project or similar location. Air quality information may also be useful from other nonattainment and maintenance areas with similar types of projects and locations.

B. Transportation and traffic conditions

Available traffic information such as current volumes and expected volumes should be included, including any information regarding the types of percentages of diesel and other vehicles on the affected roadway(s). Planned or expected development that will affect traffic volume growth rates should be taken into consideration.

Understanding whether vehicle miles traveled (VMT) are increasing or decreasing, or how a project would change the mix of vehicles on the road will assist in judging the project's air quality impacts. For example, it would be important to consider the $PM_{2.5}$ or PM_{10} air quality impacts of any increase in diesel truck or bus traffic due to the proposed project or other activities at the project location. Also, increased VMT and how re-entrained road dust emissions are impacted would be considered in PM_{10} areas and $PM_{2.5}$ areas where re-entrained road dust is found to be significant (40 CFR 93.102(b)(3)).

Other relevant information may include transportation modes, volumes, speed, congestion, trends, etc. When the project analysis is incorporated in a NEPA document, this description should largely reference other sections of the NEPA document that address traffic and transportation issues in greater depth.

Sources: Project sponsor, state department of transportation, local planning agency or metropolitan planning organization.

C. Built and natural environment

This description would include whether the character of the project area is urban, suburban or rural, and whether adjacent buildings or topography create barriers to dispersal of $PM_{2.5}$ or PM_{10}. Relevant development trends and land use patterns should be addressed if they have a bearing on potential $PM_{2.5}$ or PM_{10} emissions and concentrations in the vicinity of the project (e.g., a new area or stationary emissions source, increased rail traffic resulting from a rail terminal, increased truck traffic due to a port or intermodal freight terminal, or due to industrial or agricultural purposes).

Sources: State department of transportation, the project sponsor, local planning agency or metropolitan planning organization.

D. Meteorology, climate and seasonal data

This description could address atmospheric inversions, prevailing wind direction and speed, as they impact $PM_{2.5}$ or PM_{10} concentrations in the project area, if appropriate.

Sources: State/local air quality agencies, review of the applicable $PM_{2.5}$ or PM_{10} SIP, and the National Weather Service.

E. Retrofit, anti-idling or other adopted emission control measures

Emission control measures, such as retrofit or anti-idling measures, may mitigate any potential increase in $PM_{2.5}$ or PM_{10} emissions at the proposed project's location. The impact of phase-in of national rules and regulations that EPA has promulgated, such as heavy-duty diesel rules, that are currently being implemented should also be considered.

Source: State/local air agency, EPA, review of the applicable PM_{10} or $PM_{2.5}$ SIP.

4.4. How would changes in existing conditions be evaluated for future scenarios with the proposed project?

Many factors may change air quality in the future and whether increases or decreases in $PM_{2.5}$ or PM_{10} levels are expected should be documented in the project-level conformity determination. Examples of changes in factors that may lead to changes in $PM_{2.5}$ or PM_{10} concentrations in the project are listed below. Potential sources for this type of information are similar to those in Question 4.4.

$PM_{2.5}$ and PM_{10}

- Changes in traffic volumes and VMT, broken out by estimated diesel fraction and diesel vehicle class;
- Changes in traffic congestion and traffic flow;
- Changes in diesel truck or bus routes;
- Changes in truck weight limits;
- Retrofit projects, idling policies, truck hoteling electrification infrastructure, or other emission reduction policies;
- Date the project is expected to open;
- Effect on phase-in of heavy-duty diesel emission; and
- Changes in the built and natural environment that may change existing $PM_{2.5}$ or PM_{10} dispersion patterns.

PM_{10} (unless fugitive dust is included in a $PM_{2.5}$ area – see Questions 3.3 and 3.4)

- street sanding/sweeping practices.

As described in Question 3.5, the future (build) scenario should consider whether the proposed project would be expected to increase or decrease $PM_{2.5}$ or PM_{10} concentrations at the project location over the time frame of the area's transportation plan or, in the case of an isolated rural area, over the 20-year period covered by the area's regional emissions analysis. The hot-spot analysis should address the expected air quality changes resulting from the proposed project, and address whether the build scenario(s) would be expected to result in new or worsened air quality violations of the $PM_{2.5}$ or PM_{10} standards.

4.5. What are the potential measures to mitigate $PM_{2.5}$ or PM_{10} air quality concerns?

Where the proposed project may lead to a potential new $PM_{2.5}$ or PM_{10} violation or increase the severity or frequency of an existing $PM_{2.5}$ or PM_{10} violation, mitigation measures would be considered to reduce project emissions and any local air quality impact. In these cases, written commitments for project-level mitigation or control measures must be obtained from the project sponsor and/or operator prior to making a project-level conformity determination (40 CFR 93.125(a)). A table including a menu of available options is included in Appendix C; however, many others may be possible.

APPENDIX A

EXAMPLES OF PROJECTS OF AIR QUALITY CONCERN

Examples of Projects of Air Quality Concern

Note: EPA noted in the March 2006 final rule that the examples below are considered to be the most likely projects that would be covered by 40 CFR 93.123(b)(1) and require a $PM_{2.5}$ or PM_{10} hot-spot analysis (71 FR 12491).

Some examples of projects of air quality concern that would be covered by 40 CFR 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[8] of such AADT is diesel truck traffic;
- New exit ramps and other highway facility improvements to connect a highway or expressway to a major freight, bus, or intermodal terminal;
- 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; and,
- Similar highway projects that involve a significant increase in the number of diesel transit busses and/or diesel trucks.

Some examples of projects of air quality concern that would be covered by 40 CFR 93.123(b)(1)(iii) and (iv) are:

- A major new bus or intermodal terminal that is considered to be a "regionally significant project" under 40 CFR 93.101[9]; and,
- An existing bus or intermodal terminal that has a large vehicle fleet where the number of diesel buses increases by 50% or more, as measured by bus arrivals.

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[8]This percentage is the national average of truck vehicle miles traveled (VMT) to total VMT, based on FHWA's Highway Statistics publication which can be found at: http://www.fhwa.dot.gov/policy/ohim/hs04/index.htm. EPA's MOBILE6.2 motor vehicle emissions model also uses 8% truck VMT as a national default.

[9]40 CFR 93.101 defines a "regionally significant project" as "a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel."

Examples of Projects of That Are Not an Air Quality Concern

Note: The March 2006 final rule also provided examples of projects that would not be covered by 40 CFR 93.123(b)(1) and would not require a $PM_{2.5}$ or PM_{10} hot-spot analysis (71 FR 12491). However, as noted elsewhere in this guidance, PM_{10} nonattainment and maintenance areas with approved conformity SIPs that include PM_{10} hot-spot provisions from previous rulemakings must continue to follow those approved conformity SIP provisions until the SIP is revised.

The following are examples of projects that are not an air quality concern under 40 CFR 93.123(b)(1)(i) and (ii):

- Any new or expanded highway project that primarily services gasoline vehicle traffic (i.e., does not involve a significant number or increase in the number of diesel vehicles), including such projects involving congested intersections operating at Level-of-Service D, E, or F;
- An intersection channelization project or interchange configuration project that involves either turn lanes or slots, or lanes or movements that are physically separated. These kinds of projects improve freeway operations by smoothing traffic flow and vehicle speeds by improving weave and merge operations, which would not be expected to create or worsen $PM_{2.5}$ or PM_{10} violations; and,
- Intersection channelization projects, traffic circles or roundabouts, intersection signalization projects at individual intersections, and interchange reconfiguration projects that are designed to improve traffic flow and vehicle speeds, and do not involve any increases in idling. Thus, they would be expected to have a neutral or positive influence on $PM_{2.5}$ or PM_{10} emissions.

Examples of projects that are not an air quality concern under 40 CFR 93.123(b)(1)(iii) and (iv) would be:

- A new or expanded bus terminal that is serviced by non-diesel vehicles (e.g., compressed natural gas) or hybrid-electric vehicles; and,
- A 50% increase in daily arrivals at a small terminal (e.g., a facility with 10 buses in the peak hour).

APPENDIX B

EXAMPLES OF QUALITATIVE $PM_{2.5}$ OR PM_{10} HOT-SPOT ANALYSES

Note: The information in Appendix B is intended to briefly summarize the types of methods and data that can be considered in qualitative $PM_{2.5}$ or PM_{10} hot-spot analyses. An actual qualitative $PM_{2.5}$ or PM_{10} hot-spot analysis would include more documentation regarding the proposed project, the analysis method and data considered, and the analysis' final conclusion.

Example A: Comparison of a New Bus Terminal to Another Site Based on Monitoring Data

Proposed project

- A new major bus terminal is proposed to be built along a public transit route in a rapidly growing suburban area. The proposed project would significantly increase diesel bus traffic at the project's location.
- The project would be located in a $PM_{2.5}$ nonattainment area.
- A $PM_{2.5}$ hot-spot analysis is required for this project since it is covered by 40 CFR 93.123(b)(1)(iii).

Analysis method

- The interagency consultation process is used to decide that the hot-spot analysis would rely on a comparison to an existing project with similar characteristics as the proposed project, as discussed in Question 4.2.

Data considered

- The hot-spot analysis would not consider $PM_{2.5}$ road dust emissions, since a finding of significance has not been made by EPA or the state air agency.
- A nearby air quality monitor indicates that the proposed project's location is significantly below the 24-hour $PM_{2.5}$ standard (50 $\mu g/m^3$) and close to the annual $PM_{2.5}$ standard (14.5 $\mu g/m^3$).
- A monitor in the vicinity of an existing bus terminal in another part of the $PM_{2.5}$ nonattainment area has recorded data near the 24-hour $PM_{2.5}$ standard (60 $\mu g/m^3$) and a violation of the annual $PM_{2.5}$ standard (15.1 $\mu g/m^3$).
- The existing bus terminal also has significant levels of diesel bus traffic and other similar traffic characteristics as the proposed project.
- Two measures were added to the project to mitigate potential local air quality impacts. These measures were an anti-idling policy for diesel buses and retrofitting older buses that were committed to be implemented at the project location.

Conclusion

- The interagency consultation process concluded that additional mitigation measures for the new bus terminal would be beneficial and should allow concentrations to be lower than the standards compared to the air quality monitoring data found by the existing terminal that did not have the mitigation measures that were near or slightly over the 24-hour and annual $PM_{2.5}$ standards.
- These measures allowed the project to meet the conformity hot-spot requirements in 40 CFR 93.116 and 93.123.

Example B: Consideration of a Highway Project and Nearby Monitoring Data

Proposed project

- The project entails a major modification to a highway interchange connecting a primary route to an interstate. A significant number of diesel vehicles are expected to use the interchange.
- The project would be located in a suburban portion of a larger metropolitan city. The project is located in a nonattainment area for $PM_{2.5}$ and PM_{10} standards.
- $PM_{2.5}$ and PM_{10} hot-spot analyses are required pursuant to 40 CFR 93.123(b)(1)(i).

Analysis method

- The interagency consultation process was used to decide that the hot-spot analysis would rely on air quality data at the proposed project location, as discussed in Question 4.2.

Data considered

- Air quality information supplied by the state air quality agency found the project's location did not have any current violations and was significantly below the annual and 24-hour $PM_{2.5}$ and PM_{10} standards. This information also showed that $PM_{2.5}$ and PM_{10} emissions from existing sources were decreasing in the project area into the future.
- The hot-spot analysis would not consider $PM_{2.5}$ road dust emissions, since a finding of significance has not been made by EPA or the state air agency. Road dust emissions would be considered for the PM_{10} hot-spot analysis.
- The traffic change resulting from the project was estimated. It was found to be consistent with VMT increases in the metropolitan area generally where no increase in $PM_{2.5}$ and PM_{10} emissions or concentrations has been noted.
- The meteorology at the project location can generally be categorized as variable, since the wind varies during the day. There is often some wind that acts to disperse $PM_{2.5}$ and PM_{10} emissions at the site. Temperature, humidity, and rainfall do not seem to influence the level of $PM_{2.5}$ and PM_{10} pollution at this site.
- A nearby monitor has not registered any violations, and through the consultation process, it was determined that emissions from the project would not result in a new violation as any increased emissions that might affect concentrations would be offset by the decreasing $PM_{2.5}$ and PM_{10} emissions and concentrations at the project location. In other words, any increase in the emissions due to traffic changes associated with the project, would be offset by decreases in the emissions from the transportation facility due to decreasing on-road vehicle emissions trends, as well as decreasing background concentrations. This conclusion was supported by scientific journal articles about the air quality impact of similar projects, which were discussed through the consultation process and cited in the final hot-spot analysis.

Conclusion

- For the reasons described above, future new or worsened $PM_{2.5}$ and PM_{10} violations of any standards are not anticipated, and therefore, the project meets the conformity hot-spot requirements in 40 CFR 93.116 and 93.123 for both $PM_{2.5}$ and PM_{10}.

Example C: Comparison of New Highway Project to Similar Project Location in the SIP

Proposed project

- A new 6-lane freeway interchange is proposed to be built at the edge of an urban area. This interchange would lead to a significant increase in diesel vehicle traffic from both additional travel on the new connecting road, and from commercial and industrial development planned for the vicinity of the interchange.
- The project would be located in a PM_{10} maintenance area.
- A PM_{10} hot-spot analysis is required for this project since it is covered by 40 CFR 93.123(b)(1)(i).

Analysis method

- The interagency consultation process is used to decide that the hot-spot analysis would rely on a hybrid of the two methods discussed in Question 4.2, which include a comparison to another location with similar characteristics and air quality studies.

Data considered

- Through the interagency consultation process, it was determined that the approved PM_{10} maintenance plan included a modeled demonstration of maintenance for the 24-hour PM_{10} standard extending out to the year 2015. The SIP also included a modeled demonstration that the annual PM_{10} standard would be met as long as the 24-hour PM_{10} standard was met. Therefore, consistent with the SIP's demonstration, conformity requirements can also be achieved by evaluating only the 24-hour PM_{10} standard in this particular area.
- The interagency consultation group decided to evaluate the new interchange by comparing it to an existing interchange that is within the PM_{10} maintenance plan's modeling domain. The interagency consultation group located an existing interchange that was located near another edge of the urban area that was similar in terms of meteorological conditions, and had higher diesel traffic volumes and more intensive surrounding development than that expected at the new interchange location.
- This existing interchange was within the PM_{10} maintenance plan's modeling grid that was predicted to experience concentrations of approximately 110 $\mu g/m^3$. The current 24-hour PM_{10} standard is 150 $\mu g/m^3$.

Conclusion

- Since this existing interchange was not predicted to experience new or worsened violations of the 24-hour and annual PM_{10} standards, and the new interchange would see lower traffic volumes and less development, the interagency consultation group concluded that the new interchange met the conformity hot-spot requirements in 40 CFR 93.116 and 93.123.

Example D: Determination of Screening Threshold for Multiple Projects

Proposed projects to be considered

- The state department of transportation (DOT) for a PM_{10} nonattainment area anticipates a large number of new highway interchange projects involving significant levels of diesel traffic that would require a qualitative PM_{10} hot-spot analysis in the next few years.
- These projects would be considered of air quality concern by 40 CFR 93.123(b)(1)(i).

Analysis method

- The interagency consultation process is used to decide that a screening method that would support future qualitative PM_{10} hot-spot analyses for such projects. The screening method is based on a hybrid of the two methods discussed in Question 4.2, which include a comparison to another location with similar characteristics and air quality studies.

Data considered

- The interagency consultation group agreed that it would be the most efficient use of their resources to develop an analysis for a hypothetical project to which individual projects could be compared.
- The state DOT retained a consultant to conduct an air quality analysis of some hypothetical interchange projects that were representative of those the State may wish to construct in the future. This PM_{10} nonattainment area's on-road mobile source inventory is dominated by re-entrained road dust.
- The consultant conducted an air quality modeling exercise, using typical project configurations and the highest background values typically experienced in the metropolitan area, and concluded that a project would have to generate 500,000 daily VMT within a one-square-mile area in order to cause a potential violation of the PM_{10} standard.
- After discussing the situation with the interagency consultation group, it was decided that certain projects, depending on their characteristics, could be constructed without triggering a violation of the PM_{10} standard.

Conclusion

- Any applicable future project would meet the conformity hot-spot requirements in 40 CFR 93.116 and 93.123 by referencing the study and providing project-specific information for comparison.
- Under this example, if a future project has less than 500,000 VMT/day, no further hot-spot analysis and no mitigation is required.
- If a future project has more than 500,000 VMT/day, further hot-spot analysis is required, and possibly mitigation measures.

APPENDIX C

POTENTIAL MITIGATION MEASURES

Potential $PM_{2.5}$ or PM_{10} Project-level Mitigation Measures: Diesel Emissions

Suspected Source of $PM_{2.5}$ or PM_{10} Problem	Type of PM primarily controlled	Options to Reduce PM Pollution	
		Mitigation Measure	Comments
Diesel emissions in general from a highway or transit facility	$PM_{2.5}$ or PM_{10}	Provide a "retrofit" program for older, higher emitting vehicles	Retrofits could be used on truck or bus fleets to install newer engines or technologies known to have lower emissions
		Anti-idling requirements or policies (e.g., restrictions on idling, truck stop electrification)	Anti-idling polices are relevant where significant numbers of diesel vehicles congregate for extended periods of time
		Routing existing traffic away from populated areas (e.g., truck restricted zone)	Routing traffic away from populated areas may change an area's VMT
		Replace a significant number of older buses with cleaner busses (e.g., those meeting 2007 heavy-duty diesel standards, as practical, hybrid-electric vehicles, etc.)	Cleaner buses will reduce localized $PM_{2.5}$ and PM_{10} emissions for these types of transit projects

Potential $PM_{2.5}$ or PM_{10} Project-level Mitigation Measures: Fugitive Dust Emissions

Suspected Source of $PM_{2.5}$ or PM_{10} Problem	Type of PM primarily controlled	Options to Reduce PM Pollution: Mitigation Measure	Options to Reduce PM Pollution: Comments
Fugitive Dust	PM_{10}	Truck cover laws	May require greater enforcement effort in some areas
	PM_{10}	Street cleaning program	Includes vacuuming and flushing
	PM_{10}	Site watering program	Regular program will reduce dust
	PM_{10}	Street and shoulder paving; Runoff and erosion control	Should reduce significant quantities of dust material
	PM_{10}	Changes in highway weight and length restrictions for trucks	May change an area's fugitive dust emissions or change the number of trucks on the road
Snow and Ice Control	PM_{10}	Reduce the quantity of sand	Use harder material that is not prone to grinding into finer particles or additional chemical treatments

Note: The above table focuses on measures for mitigating PM_{10} fugitive dust emissions because all PM_{10} areas must include these emissions in their PM_{10} hot-spot analyses. However, as described in Questions 3.3. and 3.4., there may be $PM_{2.5}$ areas that also could take advantage of the above measures if re-entrained road dust or construction dust is required for a $PM_{2.5}$ hot-spot analysis.