

# Meeting EPA's PM Hot-spot Requirements Qualitatively

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# Outline

- Project level conformity requirements under applicable laws and regulation
- Projects subject to a PM hot-spot analysis
- Qualitative PM hot-spot analysis guidance
- Experience of conducting qualitative PM hot-spot analysis

# Clean Air Act requirements

- The Clean Air Act requires that transportation projects may only be approved, accepted, or funded by US DOT if the project conforms to the purpose of State Implementation Plan
  - Will not cause new or worsen existing violations
  - Will not delay timely attainment of NAAQS
- Project level conformity determination
  - May require a hot-spot analysis

# What is a hot-spot analysis?

- Definition: An estimation of likely future localized pollutant concentrations and a comparison of those concentrations to the relevant air quality standard (40 CFR 93.101).

# Determining if PM hot-spot analysis applies

- **Exempt projects and non-federal projects:**
  - no project level conformity determination required
- **Projects of air quality concern:**
  - Project level conformity determination required, including hot-spot analysis
- **Nonexempt Federal projects not of air quality concern:**
  - Project level conformity determination still required, but no hot-spot analysis needed
    - Should document that project is not of type in 40 CFR 93.123(b)(1) in project level conformity determination

# What projects are subject to a PM hot-spot analysis?

## ● Federal Projects...

- ✓ Within a PM nonattainment or maintenance area
- ✓ Not exempt under either 40 CFR 93.126 or 93.128
- ✓ Fit criteria under 40 CFR 93.123(b)(1) – projects of local air quality concern...



# Projects of Air Quality Concern

- (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 LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volume from a significant number of diesel vehicles related to the project;
- (iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
- (iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
- (v) Projects in or affecting locations, areas, or categories of sites which are identified in the PM10 or PM2.5 applicable implementation plan or implementation plan submission as appropriate, as sites of violation or possible violation

# Projects not of air quality concern

- Projects not listed under 40 CFR 93.123(b)(1) as projects of air quality concern are NOT required to have a hotspot analysis.
  - These projects are presumed to meet Clean Air Act requirements without explicit hotspot analysis.

# Requirements for assessing local PM impacts

## The analysis must:

- Analyze total emissions burden of direct PM emissions which may result from implementing the project, together with background concentrations
  - Include the entire project; be performed only after the major design features have been identified
  - Use assumptions consistent with the regional emissions analysis
  - Assume mitigation only with written commitments
  - Consider emissions increases from construction-related activities as temporary if only during construction phase and last 5 years or less at any individual site
- Currently, only qualitative analysis is required

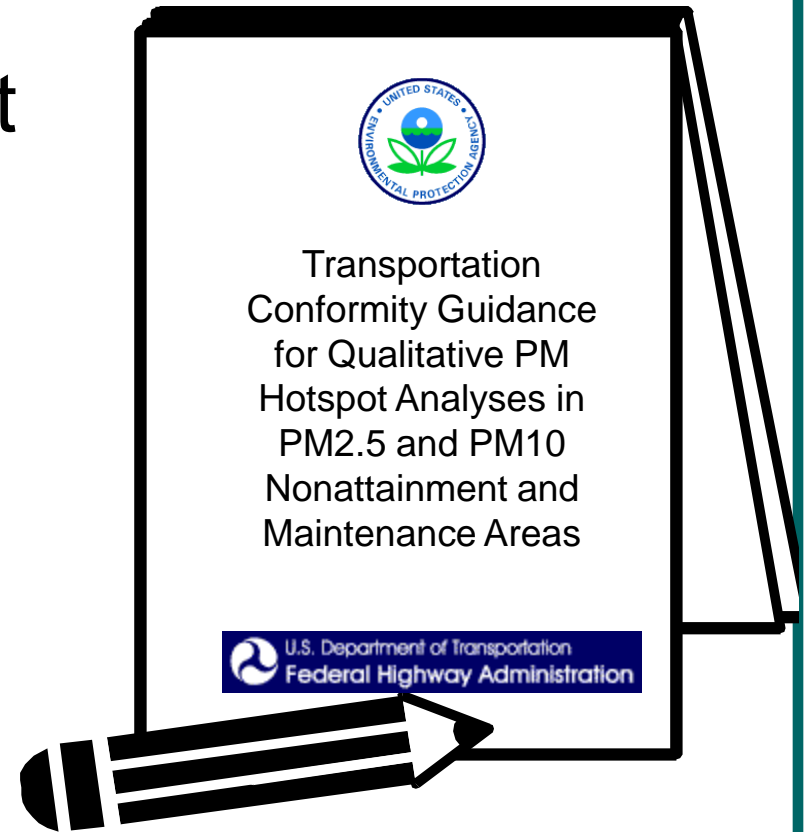
# Time frame and analysis years

- Consider the full time frame of an area's transportation plan (or regional emissions analysis for isolated rural areas)\*
- Examine the year(s) which peak emissions are expected
  - This is the year(s) a new violation or worsening of an existing violation would most likely occur.
  - Both the project's emissions as well as the background emission are considered when selected which year(s) to examine.
  - If no hotspot impacts are expected for the year of highest total emissions, then no adverse impacts would be expected in any other years within the timeframe of the plan/regional emissions analysis

\* Not affected by SAFETEA-LU allowance to elect a change in time horizons for plan/TIP conformity determinations

# Qualitative PM Hot-spot Analysis Guidance

- Qualitative PM Hotspot Guidance released by EPA and FHWA:
  - Conformity Requirements
  - Analytical Requirements
  - Prepare a Qualitative Hotspot Analysis



# Qualitative PM Hotspot Analysis Guidance

- Jointly Issued by EPA and FHWA, March 2006

<http://www.fhwa.dot.gov/environment/conformity/pmhotspotguidmemo.htm>

- FHWA issued clarification in June 2009
  - Factors or information to consider in selecting the appropriate monitors

<http://www.fhwa.dot.gov/environment/conformity/tcgfinal.pdf>

# Qualitative estimation techniques

- **Comparison to another location with similar characteristics**
  - **Review existing highway/transit facilities built in location similar to proposed project**
    - If possible, near an air quality monitor
  - **Should discuss similarities and differences between “surrogate” and proposed project location**
  - **Document reasons for selecting “surrogate”**
  - **Use interagency consultation to determine appropriate “surrogate” and air quality monitor(s)**

# Qualitative estimation techniques

- **Air quality study approach**
  - **Use available air quality information/studies (state/local air agencies, universities, etc.)**
  - **Use information in SIP (PM10) or preliminary data (PM2.5) for the area that may be relevant**
  - **Document air quality information used, and its appropriateness**
  - **Use interagency consultation to determine appropriate air quality information for assessing air quality impacts of proposed project**

# Conducting Qualitative PM Hot-spot Analysis Experience

# Two basic questions

- What is the process to determine project of air quality concern?
- What constitutes a “good” qualitative analysis?

# Examples of Transportation Conformity Practices Website

- Easily searchable repository of examples of transportation conformity documents and processes that could be replicated in other areas of the country
- Technical assistance and information sharing

*<http://www.fhwa.dot.gov/environment/conformity/practices/index.cfm>*

# What is on the site?

- PM2.5 and PM10 project level hot-spot analyses completed after March 10, 2006;
- State and local procedures developed after March 10, 2006, for determining whether PM2.5 or PM10 hot-spot analyses are required for a project; and
- On-road mobile source strategies included in State Implementation Plans (SIPs), especially those that relieve congestion
- CO project-level modeling protocol from several States (recently added)

# PM2.5/PM10 Hot-Spot Procedures

## Examples of Transportation Conformity Practices

Visit the [Transportation Conformity Community of Practice](#) site to post questions and receive feedback concerning these documents.

### Select Document Type:

- PM2.5/PM10 Qualitative Hot-Spot Analyses
- PM2.5/PM10 Hot-Spot Procedures
- SIPs with On-Road Mobile Source Measures

Select

All Documents

Return all 4 PM2.5/PM10 Hot-Spot Procedures

Select from the parameter(s) below to filter the documents that are returned. Use the <CTRL> key to select/deselect multiple items.

NOTE: Parameter values are limited to those associated with documents in the repository.

Pollutant  
---  
PM10  
PM2.5

State  
---  
Georgia  
Kentucky  
Montana

Clear

Search

### Search Results:

To view PDF files, you need the [Acrobat® Reader®](#).

- [Georgia: PM2.5 Project Level Procedures](#) (or [PDF](#), 38 KB)
- [Kentucky: PM2.5 Project Level Checklist](#) (or [PDF](#), 52 KB)
- [Montana: PM2.5 and PM10 Initial Site Assessment](#) (or [PDF](#), 27 KB)
- [North Carolina: PM2.5 Hot Spot Procedures](#) (or [PDF](#), 104 KB)

*The PM hot-spot screening procedures and analyses posted on this website are offered as examples only. Users will need to tailor their efforts to meet the needs and circumstances of their particular situations. Please refer to the EPA/FHWA guidance document, "[Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas](#)" for guidance concerning specific requirements regarding determining whether or not a project may be a "project of air quality concern" and guidance concerning the requirements for conducting a qualitative PM hot-spot analysis. In particular, refer to question 4.2 for what should be documented in a hot-spot analysis.*

# Hot-spot procedure: example selection process

- PM2.5/PM10 hot-spot procedures
  - Approved Procedures
  - Followed EPA/USDOT qualitative guidance and transportation conformity rule
- Reviewed
  - 21 PM2.5 and/or PM10 hot-spot procedures
- Exemplary examples included on website
  - 4 PM2.5 and/or PM10 hot-spot procedures

# Hot-spot procedure: common features

- Examples: GA, MT, KY, NC
- Process clearly defined
- Follow definition of project of air quality concern in the conformity rule
- Use examples as guidelines
- Interagency consultation to discuss and make decision
- Clearly document decision
- Formal sign off of the procedure

# PM2.5/PM10 Qualitative Hot-Spot Analyses

## Examples of Transportation Conformity Practices

Visit the [Transportation Conformity Community of Practice](#) site to post questions and receive feedback concerning these documents.

### Select Document Type:

- PM2.5/PM10 Qualitative Hot-Spot Analyses
- PM2.5/PM10 Hot-Spot Procedures
- SIPs with On-Road Mobile Source Measures

Select

All Documents

Return all 6 PM2.5/PM10 Qualitative Hot-Spot Analyses

Select from the parameter(s) below to filter the documents that are returned. Use the <CTRL> key to select/deselect multiple items.

NOTE: Parameter values are limited to those associated with documents in the repository.

<b>Pollutant</b>	---
	PM10
	PM2.5
<b>State</b>	---
	Alabama
	District of Columbia
	Illinois
<b>Type of Methodology</b>	---
	Air quality study
	Comparison to another location
<b>Project Type</b>	---
	Expanded highway
	New highway

Clear

Search

### Search Results:

To view PDF files, you need the [Acrobat® Reader®](#).

- [PM10 Hot Spot Analysis for US 93 \(MT\)](#) (or [PDF](#), 29 KB)
- [PM2.5 Conformity Analysis for the Woodrow Wilson Bridge \(DC-MD-VA\)](#) (or [PDF](#), 1.4 MB)
- [PM2.5 Conformity Determination for the Baltimore Beltway I-695 \(MD\)](#) (or [PDF](#), 1.2 MB)
- [PM2.5 Project Level Conformity Analysis for the Ohio River Bridges \(KY\)](#) (or [PDF](#), 1.7 MB)
- [PM2.5 Project Level Conformity Determination for Corridor X \(AL\)](#) (or [PDF](#), 2.9 MB)
- [PM2.5 Project Level Hot Spot Analysis for the Prairie Parkway \(IL\)](#) (or [PDF](#), 1 MB)

*The PM hot-spot screening procedures and analyses posted on this website are offered as examples only. Users will need to tailor their efforts to meet the needs and circumstances of their particular situations. Please refer to the EPA/FHWA guidance document, "[Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas](#)" for guidance concerning specific requirements regarding determining whether or not a project may be a "project of air quality concern" and guidance concerning the requirements for conducting a qualitative PM hot-spot analysis. In particular, refer to question 4.2 for what should be documented in a hot-spot analysis.*

# Hot spot analysis: example selection process

- PM2.5/PM10 hot-spot analyses
  - FHWA Project level conformity determination
  - Followed EPA/USDOT qualitative guidance
- Reviewed
  - 43 PM2.5 and/or PM10 hot-spot analyses
- Exemplary examples included on website
  - 6 PM2.5 and/or PM10 hot-spot analyses [5 PM2.5 examples]

# PM2.5 qualitative analysis: common features

- Examples: DC, MD, AL, KY, IL
- Methodology: Comparison to other locations more popular (4); air quality research approach (1)
- Follow qualitative analysis guidance
- Clear and detailed documentation: background, data, methodology, conclusion

# What should be included in a qualitative PM hot-spot analysis?

- Project description, including location, scope, and opening date
- Applicable part of 40 CFR 93.123(b)(1)
- Description of hotspot analysis method chosen
- Description of emissions considered
- Factors that would influence emissions and concentrations from the project, including current conditions and how they would change in the future
- Analysis year(s) considered
- Mitigation strategies, if any, and expected effects
- Conclusion (how project meets 40 CFR 93.116 and 93.123)

# Prairie Parkway Study, IL

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# Need more information ?

- Qualitative PM Hot-spot Analysis Guidance:  
<http://www.fhwa.dot.gov/environment/conformity/pmhotspotguidmemo.htm>
- FHWA's Clarification to the Qualitative PM Hot-spot Analysis Guidance  
<http://www.fhwa.dot.gov/environment/conformity/tcgfinal.pdf>
- FHWA's Transportation Conformity website:  
<http://www.fhwa.dot.gov/environment/conform.htm>
- FHWA Resource Center Air Quality Technical Services Team  
<http://www.fhwa.dot.gov/resourcecenter/teams/airquality/index.cfm>

# Questions



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