

AASHTO PRACTITIONER'S HANDBOOK

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ADDRESSING AIR QUALITY ISSUES IN THE NEPA PROCESS FOR HIGHWAY PROJECTS

This handbook is intended to assist practitioners in addressing air quality issues, including transportation conformity requirements, as part of the National Environmental Policy Act (NEPA) process for highway projects. The handbook summarizes key requirements under NEPA and the Clean Air Act and provides advice for documenting compliance with the Clean Air Act requirements as a part of the NEPA process.

The Background Briefing section of the handbook provides an overview of requirements and relevant terminology.

Topics addressed in the Practical Tips section of the handbook include:

- Determining if the project is subject to transportation conformity requirements
- Coordinating regional conformity determinations with the NEPA process
- Conducting hot-spot analyses and making project-level conformity determinations
- Considering mobile-source air toxics (MSAT) emissions
- Documenting air quality analyses and determinations in the NEPA process

The Practitioner's Handbooks are produced by the Center for Environmental Excellence by AASHTO. The Center's Handbooks provide practical advice on a range of environmental issues that arise during the planning, development, and operation of transportation projects.

The Handbooks are primarily intended for use by project managers and others who are responsible for coordinating compliance with a wide range of regulatory requirements. With their needs in mind, each Handbook includes:

- key issues to consider;
- a background briefing;
- practical tips for achieving compliance; and
- a list of reference materials.

In addition, key regulations, guidance materials, and sample documents for each Handbook are posted on the Center's web site at <http://environment.transportation.org>.



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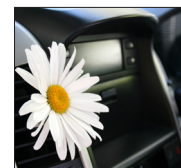
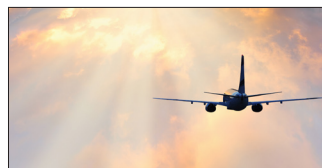
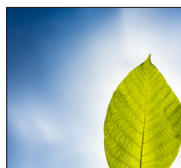
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Overview



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The Background Briefing section of the Handbook provides an overview of requirements and relevant terminology. Topics addressed in the Practical Tips section of the Handbook include:

- Determining if the project is subject to transportation conformity requirements
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Please note that this Handbook provides only a general introduction to transportation conformity requirements in relation to the analyses and decisions documented in the NEPA process; it is not a manual for carrying out air quality modeling or for making transportation conformity determinations. As such, this Handbook is likely to be most useful to practitioners who are experienced in NEPA but are not air quality specialists.

Background Briefing

This section provides an overview of key terms and concepts used in addressing air quality issues in the NEPA process for a highway project, including requirements for regional and project-level transportation conformity determinations under the Clean Air Act. Regional conformity requirements are addressed outside of the NEPA process as part of metropolitan planning, but they must be satisfied before the NEPA process is completed.

NEPA Requirements

The NEPA requirements applicable to an air quality analysis for a highway project are determined based on the Council on Environmental Quality (CEQ) regulations and the environmental review regulations issued by FHWA (23 CFR Part 771). These requirements are further explained in several FHWA guidance documents, as described below. Many state departments of transportation also have issued guidance documents with advice on preparing air quality analyses in NEPA documents.

CEQ Regulations. The CEQ regulations require consideration of the effects of a proposed action, including “ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.”¹ Consistent with the CEQ regulations, FHWA’s technical advisory on environmental documents requires consideration of air quality effects as part of NEPA compliance.²

Comparative Analysis of Effects on Air Quality. A comparative analysis of air quality impacts can be conducted as a part of compliance with NEPA. An EIS requires a comparative analysis of the environmental impacts of the alternatives,

¹ 40 CFR 1508.8.

² FHWA, Technical Advisory T6640.8A, “Guidance for Preparing and Processing Environmental and Section 4(f) Documents” (Oct. 30, 1987) (“Technical Advisory T6640.8A”).



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including where applicable the alternatives' air quality impacts.³ The requirements for an EA are more flexible both in terms of the number of alternatives considered and the level of detail in which impacts are analyzed. A categorical exclusion (CE) determination normally does not require an alternatives analysis.

Consideration of Air Quality Effects for Categorical Exclusions. Impacts on air quality should be considered when determining whether a project meets the criteria for a CE. The FHWA environmental regulations require a finding, as part of a CE determination, that the project will “not involve significant air, noise, or water quality impacts.”⁴

Documentation of Compliance with Other Requirements. The FHWA environmental regulations provide that a Final EIS or Finding of No Significant Impact (FONSI) “should document compliance with requirements of all applicable environmental laws and other requirements.”⁵ Accordingly, compliance with NEPA includes not only a discussion of air quality effects, but also documentation of compliance with transportation conformity requirements under the Clean Air Act.⁶ Normally, the conformity determination is documented in the Final EIS or FONSI. Where the conformity determination cannot be made in the Final EIS, FHWA guidance requires it to be made by the time the Record of Decision (ROD) is issued.

Consideration of MSAT Emissions. FHWA has issued and periodically updated interim guidance specifying the types of projects for which a NEPA document should include an analysis of MSAT emissions.⁷ This interim guidance identifies three categories of projects: those with “no potential,” “low potential,” and “higher potential” to have meaningful MSAT emissions. A different level of MSAT analysis is recommended for each category of projects. (See below, “Mobile Source Air Toxics Analysis in NEPA Documents”).

Consideration of Greenhouse Gas (GHG) Emissions. FHWA has not issued guidance addressing GHG emissions in NEPA reviews. As with other environmental impacts, EAs and EISs would address greenhouse gas emissions or climate change impacts depending on the significance or the degree of controversy of the issue for the particular action.

Current Practices. Air quality issues are normally considered as part of the environmental impacts analysis in a NEPA document for a highway project, but the particular approach to the air quality analysis—the level of detail and the topics addressed—is determined on a case-by-case basis. Depending on the project, the following topics may be included in the air quality analysis in a NEPA document:

- Consideration of GHG emissions
- Documentation of compliance with conformity requirements, including hot-spot analysis where applicable
- Comparative emissions analysis for pollutants with national standards (known as “criteria pollutants”)
- Comparative analysis of MSAT emissions
- Discussion of construction emissions and mitigation
- Discussions of indirect and cumulative impacts on air quality
- Documentation of interagency coordination and public involvement

Transportation Conformity—The Basics

Section 176(c) of the Clean Air Act prohibits Federal agencies from funding or approving activities that do not “conform to” an applicable State Implementation Plan (SIP) for achieving compliance with the National Ambient Air Quality Standards (NAAQS).⁸ The rationale for this requirement is that the Federal government’s actions should be consistent with states’ efforts to achieve and maintain compliance with Federally-established air quality standards.

3 40 CFR 1502.14. (An EIS “should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public.”)

4 23 CFR 771.117(a) and 771.118(a).

5 23 CFR 771.133. This regulation also states that “[i]f full compliance is not possible by the time the Final EIS or FONSI is prepared, the Final EIS or FONSI should reflect consultation with the appropriate agencies and provide reasonable assurance that the requirements will be met. Approval of the environmental document constitutes adoption of any Administration findings and determinations that are contained therein.”

6 FHWA, “Clarification of Transportation Conformity Requirements for FHWA/FTA Projects Requiring Environmental Impact Statements” (May 20, 2003).

7 FHWA, “Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents” (Oct. 18, 2016) (“MSAT Guidance”).

8 42 USC 7506(c).

A conformity determination typically involves analyses and findings made at both the regional and project level. Conformity requirements must be met prior to completion of the NEPA process, so any delay in satisfying those requirements could delay completion of the NEPA process. In addition, a NEPA document normally summarizes the applicable conformity requirements and shows that those requirements have been met. Therefore, a basic understanding of regional and project-level conformity is essential to preparing adequate NEPA documentation.

National Ambient Air Quality Standards (NAAQS). Established by the U.S. Environmental Protection Agency (EPA), the NAAQS specify the maximum allowable ambient concentrations for specific pollutants. To date, EPA has established NAAQS for six pollutants, commonly known as “criteria pollutants.”⁹ Transportation sources contribute to four of the six criteria pollutants:

- Particulate matter (PM_{2.5} and PM₁₀)
- Carbon monoxide (CO)
- Ozone
- Nitrogen dioxide (NO₂)¹⁰

There are multiple NAAQS for some pollutants. For example, for particulate matter, there are standards for PM₁₀ (inhalable particles with diameters that are generally 10 micrometers and smaller) and for PM_{2.5} (fine inhalable particles with diameters that are generally 2.5 micrometers and smaller). Furthermore, PM_{2.5} has both an annual standard and a 24-hour standard.

EPA is required to reassess each NAAQS for each pollutant periodically and update the standard if justified based on the latest scientific information regarding the effects of the pollutant on human health and welfare.¹¹ The process for updating a NAAQS typically takes several years and includes public notice and an opportunity for public comment.

Nonattainment and Maintenance Areas. For each NAAQS, EPA designates specific geographic areas—known as “nonattainment areas”—in which air quality conditions exceed the level specified by that NAAQS.¹² If a nonattainment area comes into compliance with a NAAQS, the state can request EPA to redesignate it as attainment. If redesignated as attainment, the area is required to develop a plan to maintain the standard for 20 years. Once redesignated, the area is then called a “maintenance area.”¹³ As with the NAAQS themselves, EPA makes nonattainment and maintenance designations through a public notice-and-comment process. Designations of nonattainment and maintenance areas are made separately for each criteria pollutant and each NAAQS. Therefore, the same region may be in “nonattainment” status for one pollutant, “maintenance” for another, and attainment (or unclassified) for others. In addition, there may be multiple NAAQS for the same pollutant, so the same region could be in nonattainment for one NAAQS and in attainment for another NAAQS for the same pollutant.

State Implementation Plan (SIP). For each nonattainment area, the state must prepare a State Implementation Plan (SIP) that includes specific actions for achieving the applicable NAAQS.¹⁴ States also are required to prepare SIPs for maintenance areas, demonstrating how the state will continue to maintain compliance with the NAAQS.¹⁵ A separate SIP is prepared for each pollutant for which the area is in nonattainment or maintenance. As a result, a state may have multiple SIPs for the same geographic area, and at any given time, the SIPs may be in various stages of EPA approval process.¹⁶ The state air quality agency is responsible for preparing the SIP, and each SIP must be approved by EPA. For each pollutant, the SIP includes a motor vehicle emissions budget and may also include transportation control measures:

- **Motor vehicle emissions budget.** The SIP defines the total allowable level of emissions of a specific pollutant, and then allocates a portion of that total to emissions from highway and transit vehicles.¹⁷ The allowable emissions level set for highway and transit vehicles is known as the motor vehicle emissions budget.

9 Current NAAQS are available at: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

10 The other two criteria pollutants are sulfur dioxide (SO₂) and lead.

11 42 USC 7408(c), 7409(d).

12 42 USC 7407(d).

13 42 USC 7505A.

14 42 USC 7407(a).

15 42 USC 7505A.

16 EPA lists the status of each state's SIPs on its web site: https://www3.epa.gov/airquality/urbanair/sipstatus/reports/map_s.html.

17 40 CFR 93.101.

- **Transportation control measures.** The SIP may include specific projects and programs that the state has committed to implement to reduce emissions from transportation sources—for example, improving public transportation or adding high occupancy vehicle (HOV) lanes.¹⁸ These commitments are known as transportation control measures (TCMs).

States also develop another type of SIP called a “conformity SIP.”¹⁹ A conformity SIP includes the interagency consultation processes and procedures that must be used in the development of transportation conformity determinations. Certain elements of the air quality analyses and project-level conformity determination are defined by those procedures.

Conformity Requirement. Federal agencies are required to make a conformity determination before adopting, accepting, approving, or funding an activity or project located in a nonattainment or maintenance area. A conformity determination is a finding that the activity or project (1) conforms to the SIP’s purpose of “eliminating or reducing the severity and number of violations” of the NAAQS and “achieving expeditious attainment of the NAAQS” and (2) the project or activity will 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 other milestones in any area.²⁰

Transportation Conformity. The Clean Air Act establishes a distinct set of conformity requirements for metropolitan transportation plans, transportation improvement programs (TIPs), and transportation projects. Projects funded or approved by FHWA must satisfy these “transportation conformity” requirements in nonattainment and maintenance areas for the transportation-related pollutants (ozone, carbon monoxide, particulate matter, and nitrogen dioxide). The Federal Transit Administration (FTA) is subject to the same transportation conformity requirements as FHWA. Transportation conformity regulations are found in 40 CFR Part 93, Subpart A²¹ and 40 CFR 51.390.

Transportation Conformity Determinations for Metropolitan Transportation Plans and TIPs

Transportation conformity requirements apply when metropolitan transportation plans and TIPs in nonattainment and maintenance areas are adopted or updated by a metropolitan planning organization (MPO). The conformity determination for a metropolitan transportation plan or TIP is based on a regional emissions analysis showing that the total emissions projected for the metropolitan area—assuming implementation of all projects in the plan or TIP—conform to the emissions levels allowed for that pollutant in the SIP. Other emission tests are used when there is no SIP for the area.

Project-level analysis must be coordinated with regional conformity determinations in nonattainment and maintenance areas. Also, for a project-level conformity determination to be made, the project must come from a conforming plan and TIP. Therefore, NEPA practitioners should understand the following points regarding regional conformity determinations for plans and TIPs:

Metropolitan Transportation Plans and TIPs. Federal law requires each MPO to carry out a transportation planning process, which includes preparation of a transportation plan and TIP for the metropolitan area.²² For transportation conformity purposes, it is important to understand a few basic facts about the metropolitan planning process:

- The MPO’s transportation plan typically has a time horizon of at least 20 years, while the TIP is required to cover only the first four years of that period.
- The plan and TIP must be updated at least once every four years in nonattainment and maintenance areas and can be amended at any time. An update involves a comprehensive review, whereas an amendment may involve a more limited change, sometimes involving just a single project.
- The plan and the TIP must be consistent with one another. Therefore, updates and amendments to the plan and TIP generally occur at the same time.
- A new conformity determination is required each time a plan or TIP is updated or amended, unless the amendment solely involves exempt projects. (See Exempt Projects, below.)

18 40 CFR 93.101.

19 40 CFR 51.390, 40 CFR 93.105. See also EPA’s “Guidance for Developing Transportation Conformity SIPs” (Jan. 2009).

20 42 USC 7506(c).

21 Other Federal agencies, including the Federal Railroad Administration and Federal Aviation Administration, must comply with a different set of conformity requirements, known as “general conformity.” See 40 CFR Part 93, Subpart B.

22 See 23 CFR Part 450.

Projects Included in Regional Emissions Analysis. A regional emissions analysis for a transportation plan or TIP must include emissions from all “FHWA/FTA projects” (projects funded or approved by FHWA or FTA) as well as any other “regionally significant projects” regardless of funding source.²³ A regionally significant project is a project on a facility that “serves regional transportation needs” 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.”²⁴

Pollutants Considered. A regional emissions analysis is required for each transportation-related criteria pollutant and NAAQS for which the region is in nonattainment or maintenance status. For example, if the region has been designated nonattainment for the 2008 ozone standard and maintenance for the 2006 PM_{2.5} standard, the regional conformity analysis would be required for both of those pollutants and NAAQS.

Interagency Coordination Process. The transportation conformity regulations require an interagency coordination process, which includes EPA and the state agency responsible for air quality, as well as FHWA and FTA, the state DOT, the MPO, and others.²⁵ This coordination process addresses issues concerning the technical aspects of the regional emissions analysis, including modeling, methodology, and population growth assumptions. Interagency consultation procedures must be carried out in accordance with consultation procedures adopted by the state in its conformity SIP; the procedures must meet criteria specified in the transportation conformity regulations.

Regional Emissions Analysis. In general, a regional conformity determination requires analysis showing that on-road mobile-source emissions of a pollutant—taking into account all of the projects in the plan and TIP, together with the existing transportation network—will not exceed the motor vehicle emissions budget established in the applicable SIP for that pollutant and NAAQS. In situations where an approved SIP is not in place, a regional conformity determination can be based on an analysis showing that implementation of the projects in the plan and TIP will not worsen emissions of the pollutant by comparison to a baseline scenario in which those projects were not implemented.²⁶ A conformity determination also requires a finding that the state is implementing any TCMs in accordance with the SIP and that the interagency procedures were followed.

Responsibility for Conformity Determination. The regional conformity determination for a metropolitan plan and TIP is made initially by the MPO; the final determination is made jointly by FHWA and FTA.

Frequency. A regional conformity determination must be made for a plan and TIP at least once every four years.²⁷ This regional conformity determination typically occurs concurrently with the update to a transportation plan and TIP, which also must occur at least once every four year years in nonattainment and maintenance areas. As noted above, a conformity determination is also required whenever plans and TIPs are amended with nonexempt projects.²⁸ Many MPOs make conformity determinations annually or even more often in connection with plan and TIP amendments.²⁹

Latest Planning Assumptions. A regional conformity determination must be based on the latest planning assumptions in effect at the time the conformity analysis begins, as determined through the interagency consultation process.³⁰ Planning assumptions involve issues such as population, employment, travel, public transit usage, and implementation of measures to reduce transportation-related emissions.

Latest Emissions Model. A regional conformity determination also must be based on the latest emissions model specified by EPA for use in conformity analyses.³¹ When a new model is introduced, EPA provides a grace period before that model is required to be used in conformity analyses. As of publication of this Handbook, the current EPA-approved emissions model for on-road mobile sources is the MOVES model, except in California, where a different model (EMFAC, short for Emissions FACtor) is used.

23 40 CFR 93.122.

24 40 CFR 93.101.

25 See 40 CFR 93.105.

26 40 CFR 93.119.

27 40 CFR 93.104(a).

28 The term “nonexempt” refers to projects for which a conformity determination is required. Projects exempt from all conformity requirements are listed in 40 CFR 93.126. Projects exempt from regional but not project-level conformity requirements are listed in 40 CFR 93.127.

29 An “administrative modification” to a transportation plan or TIP does not require a conformity determination. For a definition of the term “administrative modification,” refer to 23 CFR 450.104.

30 40 CFR 93.110.

31 40 CFR 93.110.