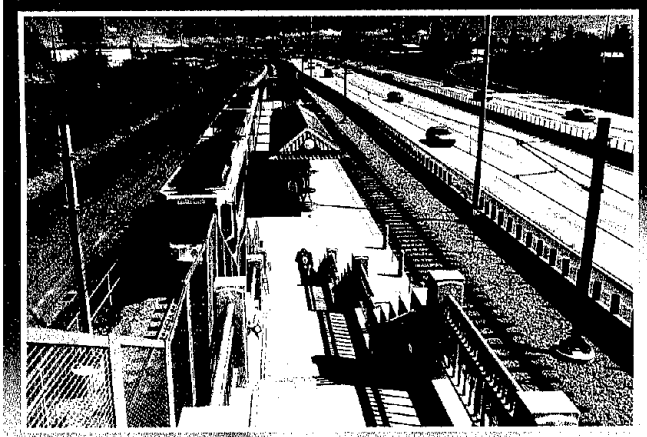
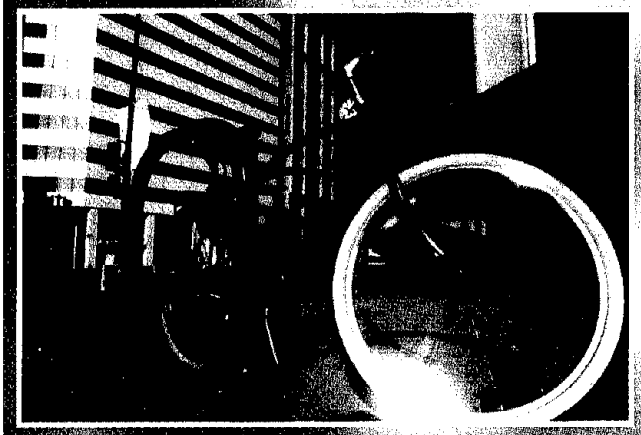
Transportation Conformity





& Local Officials

Revised 2000

Transportation Conformity:
A Basic Guide for State and Local Officials

Revised June 19, 2000

This guide was originally published in 1997. This updated version reflects the implementation of the Transportation Equity Act for the 21st Century, as well as the March 2, 1999 Decision by the U.S. Court of Appeals for the District of Columbia Circuit which affected certain conformity provisions.

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Executive Summary

The air quality provisions of the Clean Air Act (CAA) as amended, and the transportation planning provisions of Title 23 and Title 49 of United States Code[1] are intended to ensure that integrated transportation and air quality planning occurs in the areas designated by the U.S. Environmental Protection Agency (EPA) as nonattainment or maintenance areas.[2] The transportation conformity process establishes the major connection between transportation planning and emission reductions from transportation sources. To fully appreciate this connection, it is important to know about the key linkages between the CAA and Titles 23 and 49 U.S.C..

This guide discusses the basic provisions of the conformity process, including the following:

- A description of actions subject to conformity.
- Frequency of conformity determinations.
- Key components of a conformity determination.
- Consequences of a failure to make a conformity determination.
- Roles and responsibilities of public agency staff, management, policy officials, and decision makers in the conformity process.

Transportation Conformity Linked to Funding

Transportation conformity is an analytical process required of Metropolitan Planning Organizations (MPOs) and, in some cases, States, pursuant to the Clean Air Act Amendments of 1990. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) linked compliance with the conformity requirements to continued Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) funding of transportation plans, programs, and projects.

Under the metropolitan planning requirements of Titles 23 and 49 U.S.C., projects cannot be approved, funded, advanced through the planning process, or implemented unless those projects are in a fiscally constrained and conforming transportation plan and transportation improvement program (TIP).

Transportation Conformity Linked to Transportation Planning

In the past, a full assessment of the air quality impacts of transportation investments has not always been evident in State and MPO transportation plans, programs, and projects. Under the CAA, States and MPOs must demonstrate, through the conformity process, that the transportation investments, strategies and programs they choose, taken as a whole, have air quality impacts consistent with those contained in State Implementation Plans (SIPs) for achieving the National Ambient Air Quality Standards (NAAQS - hereafter referred to also as air quality standards) and that emissions do not exceed the SIP targets for emissions from mobile sources.

Options and Trade-offs Between Emission Reduction Strategies

State and local elected officials are responsible for deciding what transportation investments the State and/or MPOs will make and how the State will attain the air quality standards for various pollutants. Officials need to be aware of the options available and the trade-offs their decisions entail so they can balance the need for transportation investment with the need to attain air quality standards and thus achieve healthful air.

The options available to reduce emissions from motor vehicles and the health impacts of pollutants related to motor vehicle travel are discussed in the appendices.

It is hoped that by understanding the full array of options to reduce emissions, elected officials will appreciate the importance of transportation conformity as a tool that serves the twin goals of clean air and improved mobility.

CAA Linkages to Transportation Planning

The CAA requires that each State develop a SIP that addresses each pollutant for which the State fails to meet the air quality standards and indicates how the State intends to meet the standards on schedules prescribed in

[1] Title 23 and Title 49 of United States Code (U.S.C) codify various transportation laws including the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21). Transportation planning provisions that govern the programs of the Federal Highway Administration and the Federal Transit Administration are located in these two Titles.

[2] The National Highway System Designation Act of 1995 restricted the application of the conformity requirements to nonattainment and maintenance areas.

the CAA. The standards are usually expressed in terms of parts of pollutant per million parts of ambient air (ppm) and vary by pollutant type. The key transportation-related pollutants are ozone, carbon monoxide, and particulates. A region can be designated as a nonattainment or maintenance area for one or more pollutants and can have different classifications based upon the severity of violations for each pollutant.

Transportation officials are responsible for finding ways to reduce emissions from on-road mobile sources.

Pollution sources are generally classified into one of three different categories: stationary sources; area sources, and mobile sources. Stationary sources are relatively large, fixed sources of pollution, such as manufacturing facilities or power plants. Area sources consist of other fixed, but smaller facilities, such as gas stations or dry cleaners. Mobile sources include on-road sources of pollution, such as cars and trucks, and are linked to the highway and transportation infrastructure.

For each source category, the SIP assigns emission reduction targets. For the mobile source category, the emission reduction target is further refined into a regulatory limit on emissions, referred to as a "budget", as discussed below.

Emission reduction targets for mobile sources can be achieved through programs that address vehicle emissions (e.g., the use of reformulated gasoline, implementation of Inspection and Maintenance (I & M) programs); by changing how we travel (e.g., ridesharing or use of transit); or, from transportation investments to reduce congestion (e.g., signal synchronization programs).

Challenges for Transportation Officials

Transportation decision makers face two distinct challenges.

- First, they must work with State air quality officials to assess trade-offs between mobile and stationary source emission reduction programs and adopt a specific set of SIP strategies which enable them to demonstrate that the reductions needed to reach attainment can be achieved. Strategies vary in cost, effectiveness, and ease of implementation, and a host of factors need to be considered in deciding which strategies to select.
- Second, they need to adopt a transportation plan and Transportation Improvement Program (TIP) that will enable the nonattainment or maintenance area to stay within the SIP-adopted motor vehicle emissions budget. If the State and MPO cannot demonstrate that the selected strategies and their resulting emission reductions are consistent with the SIP, then transportation projects and programs can be halted. (See section on consequences of failing to make a conformity determination.)

The motor vehicle "emissions budget" included in the SIP represents the highest level (ceiling) of emissions allowed from all projects included in the 20-year regional transportation plan and TIP while demonstrating attainment of the air quality standards.

Even after an area attains the air quality standards, it cannot exceed this ceiling on emissions and must identify ways to offset any emissions increases due to population and employment growth, and expected increases in vehicle miles traveled. A limited number of nonattainment areas are exempted from the requirement to have a budget.

The State air quality agency assigns emission reductions to all pollution sources. Transportation officials should participate in decision making on the SIP and allocation of reductions to source categories. The State must seek EPA approval to revise SIP strategies and/or if it cannot meet its commitments to reduce emissions from EPA approved SIP strategies. It is important that the level of emission reductions assigned to each of the major source categories of pollution be achieved through the implementation of the selected strategies.

Interagency Consultation Requirements and Public Participation

The success of the conformity process depends upon Federal, State and local transportation and air quality agencies working together.

The conformity regulation requires that Federal, State and local agencies establish formal procedures to ensure interagency coordination on critical issues. Public participation in transportation and air quality planning is also discussed in this guide. Much progress has been made in integrating transportation and air quality planning. This guide is intended to further facilitate that coordination and integration.

Part One: The Basics of Transportation Conformity

Background

The concept of transportation conformity was introduced in the Clean Air Act (CAA) of 1977 which included a provision to ensure that transportation investments conform to the State Implementation Plan (SIP) for meeting the air quality standards. Conformity requirements were made substantially more rigorous in the CAA Amendments of 1990, and the transportation conformity regulation that details implementation of the new requirements was issued in November, 1993[3]. The regulation details the process for transportation agencies to demonstrate and ensure emission reductions from transportation sources of air pollution.

What Is Transportation Conformity?

Conformity is a way to ensure that Federal funding and approval are given to those transportation activities that are consistent with air quality goals.

It ensures that these transportation activities[4] do not worsen air quality or interfere with the "purpose" of the SIP, which is to meet the U.S. Environmental Protection Agency (EPA) standards for air quality. Meeting these standards often requires emission reductions from mobile sources.

According to the CAA, transportation plans, programs, and projects cannot:

- create new violations of the Federal air quality standards;
- increase the frequency or severity of existing violations of the standards; or
- delay attainment of the standards

[3]U.S Environmental Protectction Agency, Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Aproved Under Title 23 U.S.C or the Federal Transit Act, Title 40 C.F.R., Parts 51 and 93, November 24, 1993, as amended in August 1995, November 1995, and August 1997.

[4]Any activity (funded, approved, permitted, etc.) undertaken by Federal agencies, other than the FHWA and FTA, is governed by separate conformity regulations. Project level conformity is also required and , under certain circumstances localized emissions analysis is required. This requirement is discussed later in this document.

What Actions are Subject to Transportation Conformity?

Transportation Plans and Transportation Improvement Programs

The CAA requires that transportation plans, programs, and projects in nonattainment or maintenance areas that are funded *or approved* by the Federal Highway Administration (FHWA) or Federal Transit Agency (FTA) be in conformity with the SIPs through the process described in the EPA's transportation conformity regulation (See Figure 1).

Under Titles 23 and 49 of U.S.C., Metropolitan Planning Organizations (MPOs) must have transportation plans in place that present a 20-year perspective on transportation investments for their region. The transportation improvement program (TIP) is a multi-year prioritized list of projects (3 years at a minimum) proposed to be funded or approved by FHWA or FTA.

The TIP must be consistent with the conforming transportation plan, and the TIP must be found to conform to the SIP. Specifically, the transportation plan and TIP must result in emissions consistent with those allowed in the SIP.

Regionally significant[5] transportation projects that are not funded *or approved* by FHWA and/or FTA, but which are sponsored by traditional recipients of FHWA/FTA funds, must also be included in the Plan and TIP conformity analysis. In rural nonattainment or maintenance areas, the State must ensure that regionally significant projects conform to the SIP.

Project Level Conformity

FHWA/FTA projects must be found to conform before they are adopted, accepted, approved or funded. With some exceptions[6] (e.g. safety, landscaping, and other projects with neutral or minimal emissions

[5]"Regionally significant project" means a project that is on a facility which serves regional transportation needs and would normally be included in the modeling of a metropolitan area's transportation network, including, as a minimum, all principal arterial highways and all fixed guide way transit facilities that offer a significant alternative to regional highway travel.

[6]40 CFR §93.126 and §93.127

impacts), transportation projects must conform to the following criteria:

- They must come from a conforming transportation plan and TIP.
- The design concept and scope of the project that was in place at the time of the conformity finding must be maintained through implementation.
- The project design concept and scope must be sufficiently defined to determine emissions at the time of the conformity determination.

If a project does not meet the above three criteria, its emissions, when considered with the emissions projected for the conforming transportation plan and program, cannot cause the plan and program to exceed the emissions budget in the SIP. Areas that have carbon monoxide (CO) or particulate matter (PM-10) problems must also show that new localized violations of those pollutants will not result from project implementation.

Who Makes Conformity Determinations?

The MPO and U.S. Department of Transportation (DOT) through FHWA and FTA, have a responsibility to ensure that the transportation plan and program within the metropolitan planning boundaries conform to the SIP. In metropolitan areas, the policy board of each MPO must formally make a conformity determination on its transportation plan and TIP prior to submitting them to the U.S. DOT for an independent review and conformity determination. Conformity determinations for projects outside of these boundaries are the responsibility of the U.S. DOT and the project sponsor, which usually is the State DOT.

What Is the Frequency of Conformity Determinations?

Conformity determinations must be made at least every three years, or as changes are made to plans, TIPs, or projects. Certain events, such as SIP revisions that establish or revise a transportation-related emissions budget, or add or delete transportation control measures (TCMs), may also trigger new conformity determinations.

The Key Components of A Conformity Determination

The key components of the conformity determination include regional emissions analysis, project level analysis, and, if TCMs are part of the attainment demonstration, an assurance that TCMs are being implemented on schedule.

The foundation upon which a conformity determination is based is the motor vehicle emissions budget in an approved SIP or a SIP budget that has been found adequate by EPA. It is this budget which establishes the ceiling on aggregate emissions allowed for the transportation plan and TIP. The regional analysis must comply with specific modeling requirements included in the regulation.

In areas where budgets are not required, emission reduction tests are used[7]. In addition, compliance with the planning requirements of Title 23 and 49 U.S.C. is integral to making a conformity determination. These requirements include demonstration of a fiscally-constrained plan and TIP and consideration of planning factors.

CAA Requirements

Regional Emissions Analysis

Consistency of transportation plans and TIPs with the motor vehicle emissions budget in the SIP is achieved by performing a regional emissions analysis. This analysis includes emissions resulting from:

- the entire transportation network in the nonattainment or maintenance area,
- all proposed regionally significant projects, and,
- the effects of any emission control program(s) already adopted by the enforcing jurisdiction (e.g. vehicle inspection and maintenance programs, reformulated gasoline programs).

Timely Implementation of TCMs

In areas where TCMs are included in the SIP, the MPO or State must ensure that all TCMs have funding priority consistent with the SIP schedule for implementation. This provision is incorporated into the conformity process partly to insure that TCMs are not

[7]Emission reduction tests include the "build/no-build" test and the "less than baseline year" test. The "build/no-build" test is a comparison of the emissions impacts of implementing the proposed plan and/or TIP to the emissions impacts of not implementing the plan and/or TIP. The "less than baseline year" test is a comparison of emissions impacts of the plan and/or TIP to the emissions in the baseline year. The "baseline" year is defined in the conformity regulations. See 40 CFR §93.119.

postponed due to lack of a funding commitment. This can be a useful tool in reinforcing the linkages between SIPs and transportation plans and TIPs, and may require local, regional, and State transportation officials to make investment trade-offs between projects to ensure TCMs are implemented.

Project Level Emissions Analysis

Project level emissions analysis (also known as hot spot analysis) applies to CO and PM-10 concentrations.[8] Hot spot analysis is based on quantitative analysis using appropriate air quality models. Areas can establish their own thresholds for quantitative analysis with EPA approval. In some cases, qualitative analysis can be used. Quantitative analysis is required for the types of projects listed below:

- Projects that are identified in the applicable SIP as sites of violation or possible violation.
- Any project affecting one or more of the top three intersections the with the highest traffic volumes, or worst level of service (LOS) in a nonattainment or maintenance area.
- Projects affecting intersections that are at LOS D, E, or F.

Emissions Sources

Emissions are generally classified in one of three categories: stationary sources, area sources, and mobile sources.

- Stationary sources are relatively large, fixed sources of emissions such as power plants, chemical process industries, and petroleum refineries.
- Area sources are small, stationary and non-transportation sources that collectively contribute to air pollution (e.g., dry cleaners, bakeries, etc.).
- Mobile sources include on-road sources such as cars, trucks, and buses, and off-road sources such as trains, ships, boats, airplanes, lawnmowers, and construction equipment.

There are also natural emissions, called biogenic, which come from the life processes of plants and animals; these are uncontrollable but also contribute to the formation of ozone.

Emissions Budgets

An emissions budget for motor vehicles is the total of all motor vehicle emissions identified in the SIP that an area can produce and still achieve the SIP's purpose which is to demonstrate attainment of the air quality standards or, in some cases, demonstrate maintenance of the standards.

In effect, motor vehicle emissions budgets are a quantification of the "carrying capacity" of the region for each pollutant type and are reduced gradually over time as the area nears its attainment deadline. Thus, the carrying capacity equals the budget.

Budgets are developed based upon the emissions inventory in the SIP and reflect effects of control measures included in the SIP. Motor vehicle emissions inventories are based upon the number of vehicles in the region, their age, the rate of fleet turnover to newer and cleaner vehicles, seasonal temperatures in the region, and other factors. The motor vehicle emissions budget in the SIP acts as a ceiling on transportation plan and TIP emissions.

Modeling

The conformity regulation specifies detailed modeling requirements. The CAA requires that the latest planning assumptions be used in the conformity analysis. In some cases, these are not the same assumptions that were used in the SIP development process.

- Travel demand models must be used in certain nonattainment and maintenance areas to estimate how much travel will occur in the region based on travel characteristics and growth assumptions.
- Emissions models must be used to estimate regional emissions (these estimates are derived from grams of pollutant per mile traveled) and are based upon the output of the travel demand model.
- Air quality dispersion models are used to evaluate localized impacts (project level impacts) due to CO emissions.

These requirements present challenges to transportation and air quality agencies and promising work is ongoing to improve modeling capabilities for both travel demand and emissions estimation

[8] PM-10 quantitative hotspot analysis will not be required until EPA releases modeling guidance on this issue in the *Federal Register*. However, qualitative analysis is required.

Transportation Planning Requirements

The planning framework of Titles 23 and 49 U.S.C., in addition to reinforcing CAA transportation requirements, incorporates two additional provisions that support the integration of air quality and transportation planning. MPO plans must demonstrate fiscal constraint and consideration of the various planning factors listed in Title 23 and 49 U.S.C..

Fiscal Constraint Requirements

In the first two years of the TIP, only projects that can be implemented with funds that are available or committed may be included. This fiscal constraint requirement helps to ensure that the projects included in transportation plans and TIPs, taken as a whole, are funded and implemented.

Under the provisions of Titles 23 and 49 U.S.C., nonattainment and maintenance areas must show in their regional transportation plan and in the TIP that funding identified beyond the second year of the TIP is reasonably expected to be available to maintain and operate the existing transportation system and to implement new projects and programs on schedule.

This provision is incorporated into the conformity process primarily to ensure that conformity findings are based on realistic plans and programs, and that TCMs and other projects which may be beneficial to air quality are given priority.

Consideration of Planning Factors

Titles 23 and 49 U.S.C. require that MPOs consider seven broad planning areas in their transportation plans to ensure that a comprehensive set of potential impacts are identified and considered prior to making investment decisions. These factors include environmental protection and enhancement, energy conservation, and quality of life improvement. This requirement also reinforces the importance of understanding linkages between transportation and air quality planning.

Consequences of a Failure to Make a Conformity Determination: Conformity Lapse

The conformity determination is a result of analysis undertaken to identify both the projected regional emissions impacts of plans and programs and the project level impacts of individual projects. If a transportation plan, program, or project does not meet conformity requirements, transportation officials have the following options:

- Modify the plan, program, or project to offset the expected emissions.
- Work with the appropriate State agency to modify the SIP to offset the plan, program, or project emissions.

If the above is not accomplished, and if a conformity determination cannot be made within certain time frames after amending the SIP, or if three years passes since the last conformity determination, conformity lapses and no new projects may advance until a new determination for the plan and TIP can be made. This affects transit as well as highway projects. There are exceptions however for specific categories of projects that are exempt from the conformity process (pursuant to 40 CFR Part 93) such as purchase of rail rolling stock and highway safety projects. Also TCMs that are included in approved SIPs, and projects that have received funding commitments for construction may proceed during a conformity lapse.

During a conformity lapse, FHWA and FTA can only make approvals or grants for:

- Projects that are exempt from the conformity process (pursuant to §93.126 and §93.127 of the conformity rule) such as safety projects, and
- Transportation control measures (TCMs) that are included in approved SIPs.

Only those projects which have received approval of PS&E (plans, specifications, and estimates), and transit projects that have received a full funding grant agreement (FFGA), or equivalent approvals, prior to the conformity lapse may proceed during a conformity lapse. In addition, Federal-aid funds cannot be used to fund active design and right-of-way acquisition projects (with minor exceptions) during a lapse.

Non-federal Regionally Significant Projects

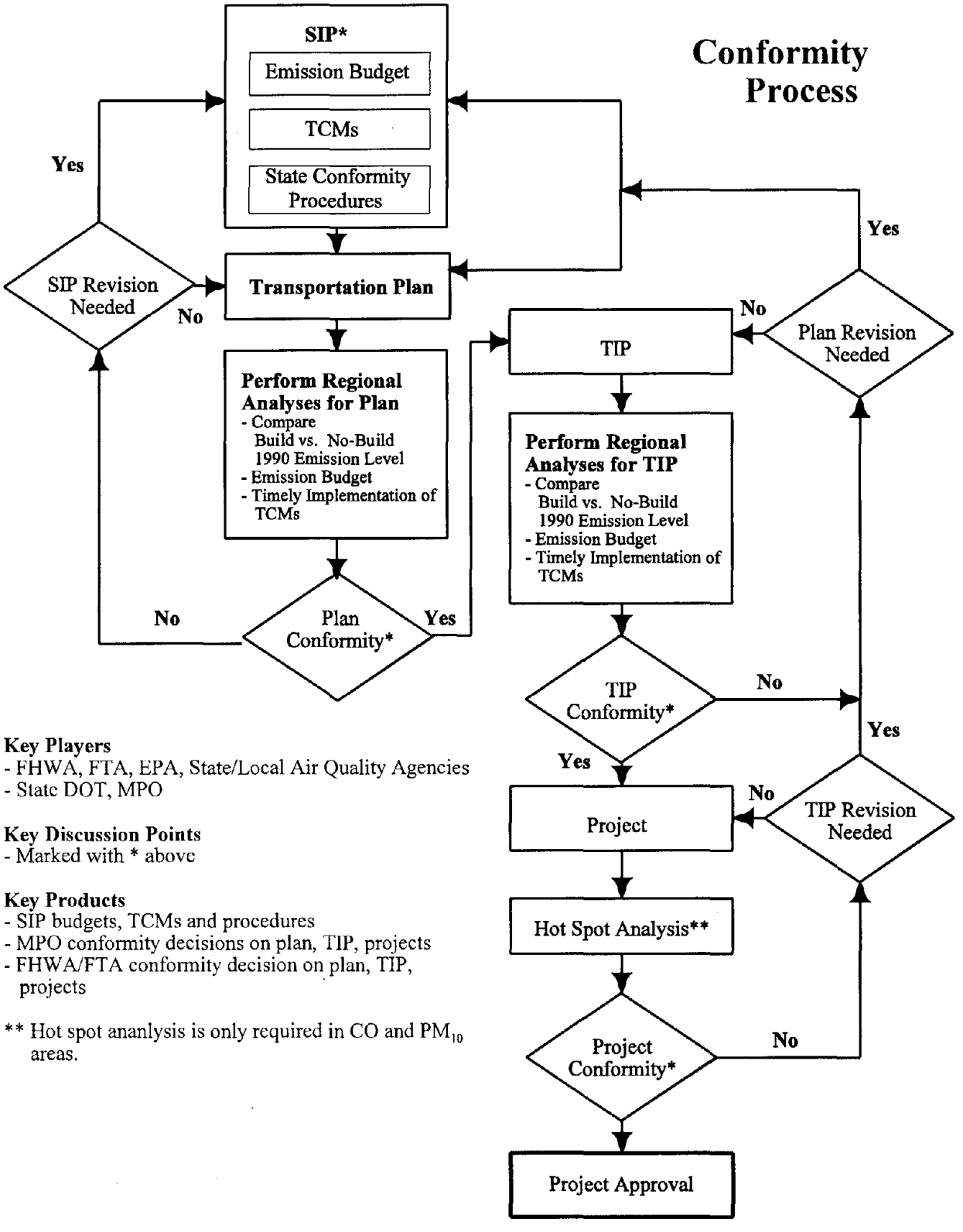
Certain projects which do not involve federal funds or approvals are also effected by a conformity lapse. State and local transportation agencies that routinely receive federal highway or transit funds in their programs cannot take actions that commit the State or local agency to proceed with regionally significant non-federal projects unless the project had already received full approval or authorization for funding before the lapse.

Trade-offs

Given the possible consequences of a failure to make a conformity finding, elected officials and decision makers need to be prepared to make difficult choices should they be faced with this situation.

In considering trade-offs, an understanding of the options to reducing mobile sources of emissions is important and is discussed in Appendix A.

Figure 1



Key Players
- FHWA, FTA, EPA, State/Local Air Quality Agencies
- State DOT, MPO

Key Discussion Points
- Marked with * above

Key Products
- SIP budgets, TCMs and procedures
- MPO conformity decisions on plan, TIP, projects
- FHWA/FTA conformity decision on plan, TIP, projects

** Hot spot ananlysis is only required in CO and PM_{10} areas.

Part TWO: Roles and Responsibilities for the Conformity Determination

Numerous agencies are involved in the conformity process and extensive coordination and cooperation between them is necessary to comply with the conformity regulation.

This section of the guide discusses the coordination requirements, public involvement in the process, and the respective roles and responsibilities of the various entities and officials in making a conformity determination (See Figure 2).

Interagency Consultation

A formal interagency process is required in each nonattainment and maintenance area to establish procedures for consultation between MPOs, EPA, FHWA, FTA, and State and local transportation and air quality agencies.

These procedures apply to the development of the SIP, the transportation plan, the TIP, and conformity determinations. The SIP must establish interagency consultation procedures for all coordinating agencies and include specific schedules for implementation of all strategies.

Once EPA approves the element of the SIP that describes the interagency consultation process (the conformity SIP), it is enforceable by EPA as a Federal regulation. Nonattainment and maintenance areas can choose to adopt a Memorandum of Understanding (MOU) or a regulation to satisfy this requirement.

Written interagency consultation procedures include general and specific processes, such as:

- Identification of the roles and responsibilities of each agency at each stage in the SIP development and transportation planning process, including technical meetings.
- A process for circulating documents (or draft documents) and supporting materials for comment before formal adoption or publication.

Public Participation: Access for Stakeholders and Citizens

Title 23 and 49 of U.S.C. emphasize public participation and require proactive efforts be made to involve the public in transportation planning. These requirements also apply to the transportation conformity process. Public participation might include input to environmental analysis conducted under the National Environmental Policy Act (NEPA), and social, economic, and environmental factors that metropolitan areas must address in their long term planning efforts.

In short, the public must have an opportunity for early and continuing involvement in decisions. This includes citizens, affected public agencies, and other parties interested in the development of plans, TIPs, and all other elements of the planning process.

Figure 2

Roles and Responsibilities of Federal, State, and Local Transportation and Air Quality Agencies in Transportation Conformity and SIP Development Process*

(*This figure outlines general requirements and typical roles and responsibilities of the various involved agencies. Specific States and metropolitan areas may have negotiated different assignments of responsibility tailored to local conditions.)

Agencies	Action Required	When
MPO	• conduct conformity analysis on regional plan/TIP and projects • incorporate latest emissions factors and planning assumptions, and emissions models • circulate draft plan/TIP for interagency and public comment • ensure public involvement procedures are followed • respond to significant comments on plan/TIP conformity documents • review and approve conformity determination on plan/TIP/projects • in CO and PM_{10} nonattainment areas, conduct "hot-spot" analysis as part of the NEPA process. • consult with agencies throughout the conformity determination • ensure timely implementation of TCMs • review and comment on draft and related mobile source SIPs	• at least every three years; when a new plan, TIP, or amendments to a plan or TIP are proposed; or as needed based on project approval or SIP submittal
State Transportation Agency	• consult with agencies throughout the conformity process • conduct regional conformity analysis on projects not in metropolitan areas, based on interagency consultation • review and comment on draft and related mobile source SIPs • in CO and PM_{10} nonattainment areas, conduct "hot-spot" analysis as part of the NEPA process • provide for public involvement/respond to significant comments • ensure timely implementation of TCMs • review and approve staff regional and hot-spot analysis	• as needed • as needed • as needed • as needed • as needed • as needed • as needed
State Air Quality/ Environmental Agency	• prepare SIP for each relevant pollutant • hold public hearings prior to SIP adoption • ensure SIPs are complete and control measures enforceable under the 1990 CAA, prior to board approval action • ensure latest emissions factors and planning assumptions are used for SIP development • interagency involvement during SIP development • review and approve staff recommendation, forward to EPA for Federal approval • forward SIP to EPA for Federal approval • ensure timely implementation of TCMs	• as needed • as needed • as needed • as needed • as needed • as needed • as needed • as needed
State Legislature	• adopt State legislation to develop and enforce applicable CAA provisions • ensure funding available for implementation of programs	• as needed • as needed
U.S. DOT-FHWA/FTA	• make joint conformity determinations on MPO plans/TIPs, amendments and projects • provide input as part of the interagency consultation process for plan/TIP/SIP development • ensure timely implementation of TCMs • ensure adequate public involvement as part of the metropolitan planning process • ensure that all other conformity and transportation planning requirements are met • involvment as part of interagency consultation meetintgs for MPO plan/TIP development • develop technical guidance on traffic demand and forecasting, and Federal-aid program guidance	• at least every 3 years for each conformity determination or as needed • for each plan/TIP or plan/TIP amendment conformity determination • as needed • as needed • as needed • as needed • as needed
U.S. EPA	• review submitted SIP budgets for adequacy • provide technical guidance on TCMs and SIP development • review and comment on draft and submitted control strategy and maintenance SIPs • review, comment, and approve SIPs • interagency consultation involvement during SIP and plan/TIP development • review and comment on proposed conformity determinations • designates approved emissions models for use in SIP development and conformity determinations • designates "guideline" dispersion models for project level emissions analysis	• as needed • as needed • as needed • as needed • as needed • as needed • as needed • as needed

Conclusion

The CAA's transportation conformity process requirement has changed the way transportation agencies develop plans and projects for funding. It has also enhanced the level of cooperation and communication between air quality and transportation agencies at all levels of government. Most importantly, the conformity requirements have been a key factor in ensuring that transportation and air quality planning are integrated at the metropolitan and State levels and that the SIP and transportation plans and programs are consistent in identifying and implementing strategies to reduce emissions from mobile sources.

State and local officials and decision makers make the key decisions on how transportation funding is expended in their States and metropolitan areas. They are also responsible for meeting National environmental objectives such as attaining the National Ambient Air Quality Standards.

At the same time, they have a responsibility to their constituents who also want improved mobility, quality of life, and economic vitality in their communities. These goals can all be addressed through a combination of good transportation planning and development of air quality plans that reflect an understanding of investment and emission reduction trade-offs and their impacts on regional, State, and National objectives.

Conformity is one tool to ensure the integration of transportation and air quality planning, and it has had an impact on funding decisions.

It is important that State and local officials be fully informed about transportation and air quality choices and that they are actively engaged in key decisions. Informed decision making will enable officials to balance the important objectives of clean air, the economic well-being of communities, and improved mobility.

APPENDIX A: Options to Reduce Emissions from Motor Vehicles

The CAA identifies actions to be taken to reduce emissions from mobile sources. While some of the measures are not the responsibility of State and local transportation officials, it is beneficial for officials to be familiar with the transportation measures being taken by other public agencies (e.g. motor vehicle departments, environmental agencies), automobile manufacturers, and fuel suppliers to reduce emissions; and to understand the trade-offs between those measures and the transportation strategies and TCMs they might include in their transportation plans and programs. Having an understanding of the costs and benefits of all available options to achieve emission reductions is also useful to officials in advance of being asked to make decisions on specific strategies for implementation.

Vehicle controls

Emission reductions resulting from the implementation of nationwide vehicle emission control strategies have been the most substantial to date in efforts to improve air quality and reduce mobile source emissions. The reductions from these strategies allowed for a doubling of vehicles miles traveled (VMT) nationwide between 1970 and 1990 while making substantial improvements in air quality. Tailpipe emission standards for cars and light-duty trucks were tightened in the CAA and, as of 1996, apply to all new vehicles sold nationwide. In addition, heavy-duty trucks have to meet new NOx emission standards after 1998. Urban transit buses also have to meet tighter emissions standards under the CAA. In addition, EPA has adopted a new combined emission standard for Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOC) for model year 2004 and later heavy-duty diesel engines used in trucks and buses. And most recently, EPA has issued tougher tailpipe emissions standards, known as Tier II, that take effect beginning in 2004. Under these standards both cars and light-duty trucks are subject to the same national pollution control system.

Fuel-based standards

In addition to these vehicle-related measures, stricter fuel volatility requirements (the rate at which fuel evaporates) may be required in some areas and can be useful in others. The use of reformulated gasoline (containing a different mix of ingredients than conventional gasoline) is mandated in the Nation's most serious ozone areas, although EPA now allows for an "opting out" of the requirements under certain conditions. This is a measure which officials may want to consider because it is possible that all light-duty vehicles operating in the nonattainment or maintenance area could be using cleaner fuels, whereas certain other strategies apply only to limited numbers of vehicles and trips (e.g., commute trips). Oxygenated gasoline is also required during the winter months in areas with serious carbon monoxide pollution, and where low-sulfur content diesel fuel was required beginning in 1993.

The CAA includes a clean-fuel fleet program for serious ozone nonattainment areas with a population of more than 250,000 in 1980. These areas were required to adopt a clean-fuel vehicle program for centrally-fueled fleets of 10 or more vehicles by May 15, 1994. By requiring fleet owners (public and private) to convert to clean-fueled vehicles, it is hoped that the market for such vehicles will increase and broad based public acceptance of clean fueled vehicles will increase.

An intermediate measure between mobile source controls and stationary source controls is to reduce VOC emissions by mechanical means, rather than by reducing the volatility of the fuel. In many areas, emissions from tanker truck delivery of fuel to gasoline stations are already controlled by what is known as "Stage 1" vapor recovery. This can be taken a step farther with "Stage II" vapor recovery nozzles that reduce VOC emissions from fueling individual vehicles by capturing them at the pump. Automobile manufacturers will soon begin incorporating on-board vapor recovery controls into new vehicles, but the Stage II controls could provide benefits until on-board controls are fully integrated into the vehicle fleet, in about 25 years.

Inspection and Maintenance Programs

The CAA requires inspection and maintenance programs to be adopted in certain ozone and carbon monoxide (CO) nonattainment areas. The requirements of the program vary depending upon the severity of pollution in the nonattainment areas in each State. The emission reduction potential of inspection and maintenance programs is substantial and is critical to many areas achieving the emission reductions required from mobile sources.

Transportation Control Measures

Another set of options to control and reduce emissions from motor vehicles comes under the category of TCMs. Implementation of these measures is typically within the purview of transportation agencies, and TCMs are usually funded with FHWA/FTA or State and local transportation funds. The emission reduction potential of conventional TCMs, such as ridesharing and bicycling programs is not likely to be as substantial as the transportation measures discussed above. Nevertheless, TCMs can be useful in reducing congestion and may be needed in some areas in order to demonstrate attainment of the NAAQS. TCMs, such as expanded transit services, can provide and enhance travel options and increase travel choices.

The CAA requires that for ozone nonattainment areas classified as severe or extreme, the State must identify and adopt specific transportation control strategies and TCMs to offset any projected growth in emissions from growth in vehicle miles traveled. States and MPOs should consider the CAA list of TCMs (Section 108(f)(1)(A), for strategies they might include in the SIP. These 16 TCMs (with the exception of programs to encourage the removal of pre-1980 vehicles), also form the basis for funding eligibility in the Congestion Mitigation and Air Quality Improvement Program (CMAQ). Below is the list of TCMs included in the CAA. There is overlap between some of the measures, and the descriptions listed illustrate types of projects that might be considered in nonattainment areas to reduce mobile source emissions or to increase overall vehicle occupancy.

CAA Section 108(f)(1)(A) Transportation Control Measures

(i) programs for improved public transit;
(ii) restriction of certain roads or lanes to, or construction of such roads or lanes for use by, passenger buses or high-occupancy vehicles (HOV);
(iii) employer-based transportation management plans, including incentives;
(iv) trip-reduction ordinances;
(v) traffic flow improvement programs that achieve emissions reductions;
(vi) fringe and transportation corridor parking facilities serving multiple-occupancy vehicle programs or transit service;
(vii) programs to limit or restrict vehicle use in downtown areas or other areas of emission concentration particularly during periods of peak use;
(viii) programs for the provision of all forms of high-occupancy, shared-ride services;
(ix) programs to limit portions of road surfaces or certain sections of the metropolitan area to the use of non-motorized vehicles or pedestrian use, both as to time and place;
(x) programs for secure bicycle storage facilities and other facilities, including bicycle lanes, for the convenience and protection of bicyclists, in both public and private areas;
(xi) programs to control extended idling of vehicles;
(xii) reducing emissions from extreme cold-start conditions;
(xiii) employer-sponsored programs to permit flexible work schedules;
(xiv) programs and ordinances to facilitate non-automobile travel, provision and utilization of mass transit, and to generally reduce the need for single-occupant vehicle travel, as part of transportation planning and development efforts of a locality, including programs and ordinances applicable to new shopping centers, special events, and other centers of vehicle activity;
(xv) programs for new construction and major reconstruction of paths, tracks, or areas solely for use by pedestrian or non-motorized vehicles when economically feasible and in the public interest. For purposes of this clause, the Administrator shall also consult with the Secretary of the Interior;
(xvi) programs to encourage removal of pre-1980 vehicles.

Market-Based Transportation Control Measures

In addition to conventional TCMs, work is underway in nonattainment areas to explore options to reduce mobile source emissions, using market-based TCMs such as road pricing, congestion pricing, VMT fees, and parking pricing. These mechanisms can be relatively cost-effective and *can* be designed to impact vehicles at either certain times of the day (e.g., peak-period pricing), or at all times. In addition, these measures, in combination with traditional

TCMs, have the potential to address other public policy objectives such as congestion reduction and energy conservation.

Public acceptance of market-based TCMs has been slow due to practical and political considerations. Implementation of market-based measures usually requires State legislation and may require a voter referendum. Therefore, regardless of the potential merits and cost-effectiveness of these measures, the implementation of market-based TCMs is likely to occur gradually. While it is too soon to predict whether widespread use of market-based measures will occur in the future, experts generally agree that this is one option available to make substantial reductions in emissions from on-road mobile sources.

APPENDIX B: Health Effects of Pollutants

EPA has established Standards for four transportation-related pollutants: ground level ozone formed by volatile organic compounds (VOCs) and oxides of nitrogen (NOx), the primary ingredients of smog; carbon monoxide(CO); particulate matter (PM); and nitrogen dioxide (NO_2). The Standards are based upon EPA's assessment of the health risks associated with each of the pollutants on at-risk populations. These assessments are based upon short and long-term scientific studies by noted health professionals and medical research institutions. At-risk groups include children, the elderly, persons with respiratory illnesses, and even healthy people who exercise outdoors.

Air pollution is a phenomenon involving a complex set of chemical reactions including combinations of pollutants and other factors such as weather and geography. Each pollutant type plays a different role in the overall air quality in any given geographic area. Below is a brief overview of the four pollutants of most concern that must be monitored and reduced if they exceed the Standards.

According to EPA, in typical urban areas, about one-third of the pollutants that create ozone (which is a combination of pollutants as discussed below) come from on-road sources such as cars, trucks, and buses. In addition, there are significant off-road sources such as construction vehicles and boats. Research indicates that large portions of the population may be at-risk due to exposure at high pollution concentrations, and under certain circumstances, health impacts can be significant. Due to concern about the health effects of air pollutants on people and the proportion of pollutants that come from cars, trucks, and buses, the provisions of the CAA relating to transportation projects, plans, and programs were made substantially more stringent than in earlier Clean Air Acts.

The principal transportation related pollutants addressed in the CAA are listed below.

Ozone and Volatile Organic Compounds (VOCs): VOCs come from vehicle exhaust, paint thinners, solvents and other petroleum-based products. VOCs and nitrogen oxides react in the presence of sunlight to form ozone. Ozone irritates the eyes, impairs the lungs, and aggravates respiratory problems. Ozone can cause chest pain, coughing, nausea, pulmonary congestion, and possible long term lung damage. A number of exhaust VOCs are also toxic, with the potential to cause cancer.

Nitrogen Oxides (NOx): Under the high pressure and temperature conditions in an engine, nitrogen and oxygen atoms in the air react to form various nitrogen oxides, collectively known as NOx. NOx, like hydrocarbons, is a precursor to the formation of ozone and also contributes to the formation of acid rain. NOx impacts the respiratory system, causing a high incidence of acute respiratory diseases. Pre-school children are especially at risk. NOx also degrades visibility due to its brownish color and its conversion to nitrate particles.

Carbon Monoxide(CO): Carbon monoxide is a product of incomplete combustion and occurs when carbon in the fuel is partially oxidized rather than fully oxidized to carbon dioxide (CO_2). Carbon monoxide reduces the flow of oxygen in the bloodstream and is particularly dangerous to persons with heart disease. Exposure to carbon monoxide impairs visual perception, manual dexterity, learning ability, and performance of complex tasks.

Particulate Matter (PM): These are tiny particles of dust which cause irritation and damage to the respiratory system. This can result in difficulty breathing, induce bronchitis and aggravate existing respiratory disease. Exposure to particulates impacts individuals with chronic pulmonary or cardiovascular disease, people with influenza or asthma, children and elderly persons. Particulates aggravate breathing difficulties, damage lung tissue, alter the body's defense against foreign materials, and can lead to premature mortality.

APPENDIX C: Resource Agencies Contact List

Below is a listing of organizations that may be contacted in order to find out what agencies are responsible for the conformity process in any given geographic area.

For State Departments of Transportation

American Association of State Highway and Transportation Officials
444 N. Capitol St. N.W.
Washington, D.C. 20001
Telephone: 202-624-5800
Website: www.aashto.org

For Transit Agencies

American Public Transportation Association
1201 New York Avenue, N.W.
Washington, D.C. 20005
Telephone: 202-898-4000
Website: www.apta.com

For Metropolitan Planning Organizations or Councils of Government

National Association of Regional Councils
1700 K. St. N.W.
Washington, D.C. 20006
Telephone: 202-457-0710
Website: www.narc.org

For State or Local Air Agencies

State and Territorial Air Pollution Program Administrators/
Association of Local Air Pollution Control Officials
444 North Capitol St. N.W.
Washington, D.C. 20001
Telephone: 202-624-7864
Website: www.4cleanair.org

For Federal Highway Administration

Contact the FHWA Division Office in each state. Phone numbers and addresses for the Division Offices can be found at: www.fhwa.dot.gov/keyfield/famc.htm. Additional technical assistance can be obtained by contacting one of the FHWA Resource Centers that are staffed with Air Quality Specialists.

Eastern Resource Center:	Baltimore, Maryland	Telephone: 410-962-0093
Southern Resource Center:	Atlanta, Georgia	Telephone: 404-562-3570
Midwestern Resource Center:	Olympia Fields, Illinois	Telephone: 708-283-3510
Western Resource Center:	San Francisco, California	Telephone: 415-744-3102

Website: www.fhwa.dot.gov/environment/aq.htm

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For Federal Transit Administration Regional Offices

Region 1: Cambridge, Massachusetts	Telephone: 617-494-2055
Region 2: New York, New York	Telephone: 212-668-2170
Region 3: Philadelphia, Pennsylvania	Telephone: 215-656-7100
Region 4: Atlanta, Georgia	Telephone: 404-562-3500
Region 5: Chicago, Illinois	Telephone: 312-353-2789
Region 6: Forth Worth, Texas	Telephone: 817-978-0550
Region 7: Kansas City, Missouri	Telephone: 816-329-3920
Region 8: Denver, Colorado	Telephone: 303-844-3242
Region 9: San Francisco, California	Telephone: 415-744-3133
Region 10: Seattle, Washington	Telephone: 206-220-7954
Website: www.fta.dot.gov	

For Environmental Protection Agency Contacts:

Information on transportation conformity or a current listing of nonattainment and maintenance areas can be found at: www.epa.gov/otaq or www.epa.gov/oar/oaqps/greenbk
or contact the appropriate EPA Regional Office:

Office	Name	Phone	Fax
Region 1	Jeff Butensky (RI ,CT) Don Cooke (MA,ME,VT,NH)	617-918-1665 617-918-1668	617-918-1505
Region 2	Rudy Kapichak Matt Cairns	212-637-3804 212-637-3895	212-637-3901
Region 3	Larry Budney (PA, DE) Paul Wentworth (DC, MD)	215-814-2184 215-814-2183	215-814-2101
Region 4	Rob Goodwin (KY) Lynorae Benjamin (SC) Kelly Sheckler (GA,NC) Alan Powell (FL,TN)	404-562-9044 404-562-9040 404-562-9042 404-562-9045	404-562-9019 404-562-9045
Region 5	Pat Morris (IL,OH) Mike Leslie (MN, MI, WI) Ryan Bahr (IN)	312-353-8656 312-353-6680 312-353-4366	312-886-5824 312-886-0617 312-886-5824
Region 6	Jahan Behnam	214-665-7247	214-665-7263
Region 7	Lee Daniels	913-551-7651	913-551-7844
Region 8	Jeff Houk	303-312-6446	303-312-6064
Region 9	Mark Brucker Karina O'Connor Charnjit Bhullar	415-744-1231 415-744-1247 415-744-1153	415-744-1076
Region 10	Wayne Elson	206-553-1463	206-553-0110

GLOSSARY

Area source	Small stationary and non-transportation pollution sources that are too small and/or numerous to be included as point sources but may collectively contribute significantly to air pollution (e.g., dry cleaners).
Arterials	A class of roads serving major traffic movements (high-speed, high volume) for travel between major points.
Attainment Area	An area with air quality that meets or exceeds the U.S. Environmental Protection Agency (EPA) health standards as stated in the Clean Air Act. Nonattainment areas are areas considered not to have met these standards for designated pollutants. An area may be an attainment area for one pollutant and a nonattainment area for others.
Carbon monoxide (CO)	A colorless, odor-less, tasteless gas formed in large part by incomplete combustion of fuel. Human activities (i.e., transportation or industrial processes) are largely the source for CO contamination.
Conformity	Process to assess the compliance of any transportation plan, program, or project with air quality implementation plans. The conformity process is defined by the Clean Air Act.
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	A categorical Federal-aid funding program created with the ISTEA. Directs funding to projects that contribute to meeting National air quality standards. CMAQ funds generally may not be used for projects that result in the construction of new capacity available to SOVs (single-occupant vehicles).
Emissions budget	The part of the State Implementation Plan (SIP) that identifies the allowable emissions levels, mandated by the National Ambient Air Quality Standards (NAAQS), for certain pollutants emitted from mobile, stationary, and area sources. The emissions levels are used for meeting emission reduction milestones, attainment, or maintenance demonstrations.
Emissions budget for motor vehicles	That portion of the total allowable emissions defined in a revision of the applicable State Implementation Plan (SIP), for a certain date for the purpose of meeting reasonable further progress milestones or attainment or maintenance demonstrations for any criteria pollutant or its precursors allocated by the applicable SIP to highway and transit vehicles.
Emissions inventory	A complete list of sources and amounts of pollutant emissions within a specific area and time interval.
Environmental Protection Agency (EPA)	The Federal regulatory agency responsible for administering and enforcement of Federal environmental laws including the Clean Air Act, the Clean Water Act, and others.
Federal Highway Administration (FHWA)	An agency of the U.S. Department of Transportation that funds highway planning and programs.

Federal Transit Administration (FTA)	An agency of the U.S. Department of Transportation that funds transit planning and programs. The federal law governing FTA's programs is found in Chapter 53 of Title 49, U.S.C.
Inspection and Maintenance Program (I/M)	An emissions testing and inspection program implemented by states to ensure that the catalytic or other emissions control devices on in-use vehicles are properly maintained.
Intermodal	The ability to connect, and connections between, modes of transportation.
Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)	Legislative initiative by the U.S. Congress that restructured funding for transportation programs. ISTEA authorized an increased role for regional planning commissions/MPOs in funding decisions. The Act also required comprehensive regional and Statewide long-term transportation plans and placed an increased emphasis on public participation and transportation alternatives.
Land Use	Refers to the manner in which portions of land or the structures on them are used, e.g., commercial, residential, retail, industrial, etc.
Level of Service (LOS)	Refers to a standard measurement used by transportation officials which reflects the relative ease of traffic flow on a scale of A to F with free-flow being rated LOS-A and congested conditions rated as LOS-F.
Long Term	In transportation planning, refers to a time span of, generally, 20 years. The transportation plans for metropolitan areas and for States should include projections for land use, population, and employment for the 20-year period.
Metropolitan Planning Organization (MPO)	The organizational entity designated by law with lead responsibility for developing transportation plans and programs for urbanized areas with populations of 50,000 or more. MPOs are established by agreement of the Governor and units of general purpose local government which together represent 75 percent of the affected population of an urbanized area.
Mobile source	Mobile sources include motor vehicles, aircraft, seagoing vessels, and other transportation m odes. The mobile source related pollutants are carbon monoxide (CO), volatile organic compounds (VOCs), nitrogen oxides (NOx), and small particulate matter (PM_{10}).
Mobility	The ability to move or be moved from place to place.
National Ambient Air Quality Standards (NAAQS)	Federal standards that set allowable concentrations and exposure limits for various pollutants. The EPA developed the standards in response to a requirement of the CAA.
National Environmental Policy Act (NEPA)	The National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.).

National Highway System (NHS)	The national transportation system designated by Congress that includes the Interstate Highway System and other nationally significant roads for interstate and interregional travel, national defense, intermodal connection, and international commerce.
Nonattainment area	A geographic region of the United States that the EPA has designated as not meeting the air quality standards.
Oxygenated gasoline	Gasoline enriched with oxygen-bearing liquids to reduce CO production by permitting more complete combustion.
Ozone (O_3)	A colorless gas with a sweet odor. Ozone is not a direct emission from transportation sources. It is a secondary pollutant formed when VOCs and NOx combine in the presence of sunlight. Ozone is associated with smog or haze conditions. Although the ozone in the upper atmosphere protects us from harmful ultraviolet rays, ground-level ozone produces an unhealthy environment in which to live. Ozone is created by human and natural sources.
Particulate matter (PM)	Any material that exists as solid or liquid in the atmosphere. Particulate matter may be in the form of fly ash, soot, dust, fog, fumes, etc.
Parts per million (ppm)	A measure of air pollutant concentrations.
Public Participation	The active and meaningful involvement of the public in the development of transportation plans and programs.
Reformulated gasoline (RFG)	Gasoline specifically developed to reduce undesirable combustion products.
Small particulate matter (PM_{10})	Particulate matter which is less than 10 microns in size. A micron is one millionth of a meter. Particulate matter this size is too small to be filtered by the nose and lungs.
State Implementation Plan (SIP)	A plan mandated by the CAA that contains procedures to monitor, control, maintain, and enforce compliance with the NAAQS.
Stationary source	Relatively large, fixed sources of emissions (i.e., power plants, chemical process industries, petroleum refining and petrochemical operations, or wood processing).
Transit	Generally refers to passenger service provide to the general public along established routes with fixed or variable schedules at published fares. Related terms include: public transit, mass transit, public transportation, urban transit, and paratransit.
Transportation Control Measures (TCMs)	Actions to adjust traffic patterns or reduce vehicle use to reduce air pollutant emissions. These may include HOV lanes, provision of bicycle facilities, ridesharing, telecommuting, etc. Such actions may be included in a SIP if needed to demonstrate attainment of the NAAQS.

Transportation Equity Act for the 21st Century (TEA-21)	Legislative initiative by the U.S. Congress that funds transportation programs for fiscal years 1998-2003. TEA-21 authorizes increased levels of highway and transportation funding and continues ISTEA planning and funding provisions with minor modifications.
Transportation Improvement Program (TIP)	Also known as a transportation program, a TIP is a program of transportation projects drawn from or consistent with the transportation plan and developed pursuant to Title 23, U.S.C. (United States Code) and the Federal Transit Act.
Transportation Plan	This is a long-range plan that identifies facilities that should function as an integrated transportation system, and developed pursuant to Title 23, U.S.C. (United States Code) and the Federal Transit Act. It gives emphasis to those facilities that serve important national and regional transportation functions, and includes a financial plan that demonstrates how the long-range plan can be implemented.
U.S. Department of Transportation (DOT)	The principal direct Federal funding agency for transportation facilities and programs. Includes the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the Federal Railroad Administration (FRA), and others.
Urbanized Area	Area which contains a city with a population of 50,000 or more plus incorporated surrounding areas meeting set size or density criteria.
Vehicle miles traveled (VMT)	The sum of distances traveled by all motor vehicles in a specified region.
Volatile Organic Compounds (VOCs)	VOCs come from vehicle exhaust, paint thinners, solvents, and other petroleum-based products. A number of exhaust VOCs are also toxic, with the potential to cause cancer.