

General Conformity Training Module

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Introduction

The document is divided into four modules so you can go directly to the information you want on the General Conformity Regulations.

- **The Basics, for top agency managers and the general public.**
[Module I](#) provides an overview of the program purpose, content of the regulations, design of the program, legal requirements, and relationship to other environmental programs.
- **The Key Concepts, for program managers and others who need a working knowledge of the program.**
[Module II](#) provides information on determining the applicability of the regulations to federal actions, the requirements for determining conformity, and the review process for a determination
- **All The Details, for the individuals responsible for preparing the determination.**
[Module III](#) contains detailed information on evaluating conformity including emission calculations, requirements for associated programs and special situations.
- **State and tribal requirements and responsibilities, for state, tribal, and local air quality managers.**
[Module IV](#) provides information on state and tribal requirements and responsibilities in the evaluation of conformity for federal actions.

The regulations apply to actions taken by entities of the federal government. This document refers to the entities as “federal agencies.” Although the rules do not specifically apply to non-federal organizations, many federal agencies require applicants for grants, permits, approvals, etc., to provide the technical documentation and demonstrations necessary for the agencies to make the conformity determination. Individuals and organizations preparing technical documents and demonstrations for a federal agency should follow the directives of that agency. In this document, the term “federal agency” includes the non-federal organizations acting for the federal agency or preparing the information for a conformity evaluation. Likewise, the document refers to “federal facilities” to mean not only facilities owned by the federal agencies but also to facilities subject to routine federal actions such as airports and seaports.

In each Module, words that are initially shown in italics are defined in the Glossary.

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1.0 Module I

This Module is designed for those new to general conformity and who may have little to no experience with the General Conformity Regulations. This session provides an overview of the “what, where, who and how” of general conformity. Some general background information is provided in section 1.3 and links to more information are contained in section 1.4. More detailed and complex information is covered in Modules II-IV.

1.1 The Basics of General Conformity: What and Where

1.1.1. What is General Conformity?

General conformity is a process required by the ***Clean Air Act (CAA)***, which establishes the framework for improving air quality to protect public health and the environment. The goal of general conformity is to ensure that actions conducted or sponsored by ***federal agencies*** are consistent with State air quality goals. These air quality goals are tied to states meeting the ***National Ambient Air Quality Standards*** (NAAQS), requirements that are established by the U.S. Environmental Protection Agency (EPA) and are designed to protect human health and the environment.

Each state develops a ***State Implementation Plan***, or SIP, which includes the state’s strategy for attaining or maintaining the NAAQS, the modeling that demonstrates attainment or maintenance, and the various rules, regulations, and programs that provide the necessary air pollutant emissions reductions. On tribal lands, federally recognized Indian tribes can develop their own ***tribal implementation plans*** (TIPs), similar to SIPs. If the state or tribe fails to submit a required plan, EPA can promulgate a plan known as a ***federal implementation plan*** (FIP).

The conformity process ensures that emissions of air pollutants from planned federal activities would not affect the state’s or tribe’s ability to achieve the clean air goal of meeting the [NAAQS](#). The General Conformity Regulations are found at [40 CFR part 93, Subpart B](#). The EPA maintains a General Conformity website at www.epa.gov/air/genconform.

Specifically, section 176(c) of the CAA requires that federal projects conform to the purpose of the SIP, meaning that federal activities will not cause new violations of the NAAQS, increase the frequency or severity of NAAQS violations, or delay timely attainment of

the NAAQS or any interim milestone. Federal activities must also conform to tribal implementation plans (TIP) and federal implementation plans (FIP), where [applicable](#).

1.1.1.1 General conformity is mainly an emission-based system

The general conformity program is an emission-based system; i.e., the program requires emissions to be evaluated and addressed as necessary. The regulations require federal agencies taking or sponsoring an action in certain areas to ensure that increased air pollution emissions from that action conform with the current, approved SIP. This includes estimating both **direct** and **indirect emissions** that are likely to occur.

1.1.2 What actions are covered by General Conformity?

General conformity covers a wide variety of **federal activities**. A federal activity is generally an action that requires either federal funding and/or federal approval. Even if a project is not federally-funded, there may be federal approvals such as permits that are needed.

1.1.3 Where does General Conformity apply?

The General Conformity Regulations do not apply to every area of the country. Rather, the requirements only apply in [nonattainment and maintenance areas](#). A nonattainment area is an area designated by EPA as not meeting a NAAQS. A maintenance area is an area that was once designated as nonattainment but is currently meeting and maintaining the standard. EPA, in partnership with the states, is responsible for the designation of areas as nonattainment and redesignating them once they achieve the [NAAQS](#). Information on where nonattainment and maintenance areas are located can be found on EPA's [Green Book website](#). On the site, you can search by pollutant, designation status, or county. You can also contact your [EPA Regional office](#) for more information on nonattainment and maintenance areas in your state.

1.1.4 In what cases does General conformity not apply?

Some actions are exempt from the general conformity requirements, including actions:

- Affecting cars and buses (actions subject to [transportation conformity](#));
- Causing a small amount of emissions ([de minimis levels](#));
- That are [presumed to conform](#); and
- Specifically identified in the regulations as [exempt](#).

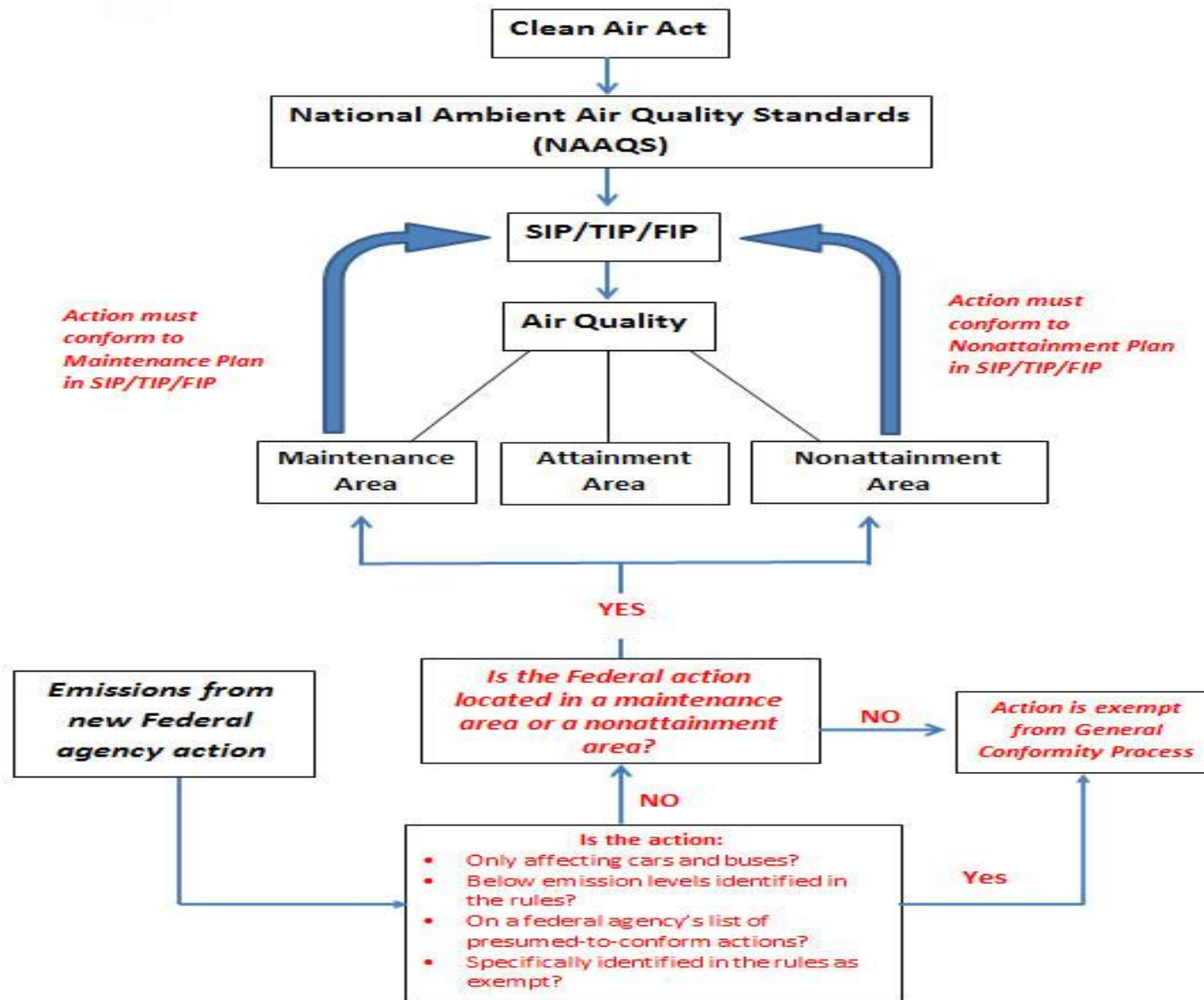


Figure 1 - What and Where

1.2 The Basics of General Conformity: Who and How (see [Figure 2](#) below)

1.2.1 Who makes the General Conformity Determination?

Federal agencies ensure conformity requirements are met before funding or approving federal projects. Each federal agency makes its own conformity determination in an open process. This process includes the opportunity to review the draft determination by the appropriate EPA, state, local, and/or tribal air quality agency, as well as the general public. The federal agency must consider any comments it receives before making a final determination. EPA has a consultation role in the conformity process and, in many cases, will review the conformity determinations and provide comment letters to Federal agencies. Of course, EPA is also responsible for enforcing/managing the conformity regulations and associated guidance documents. EPA regulations allow states to adopt their own conformity regulations. When a state adopts such regulations and EPA approves them, the federal agency must comply with those state regulations until those regulations are revised and approved by EPA.

1.2.2 How is General conformity determined?

The general conformity program is an emission-based system, meaning the program requires emissions to be evaluated and addressed [as necessary](#). The General Conformity Regulations identify several ways to [demonstrate conformity](#). As described in the regulations, conformity can be demonstrated if:

- The emissions are specifically identified and accounted for in the SIP;
- The state or tribal agency responsible for the SIP/TIP determines that the total emissions from the action, along with all other emissions in the area, will not exceed the SIP emission budget;
- The state or tribe makes a written commitment to revise the SIP/TIP to include the emissions from the action;
- The **Metropolitan Planning Organization** for the area determines that the emissions are included in the **transportation plan** or transportation improvement plan;
- The emissions are fully offset by the reduction of emissions in the same nonattainment or maintenance area, or nearby area of equal or higher classification if the emissions impact the nonattainment or maintenance area; or
- Air quality modeling demonstrates that the emissions will not cause or contribute to new violations of the standards or increase the frequency or severity of any existing violations of the standards.

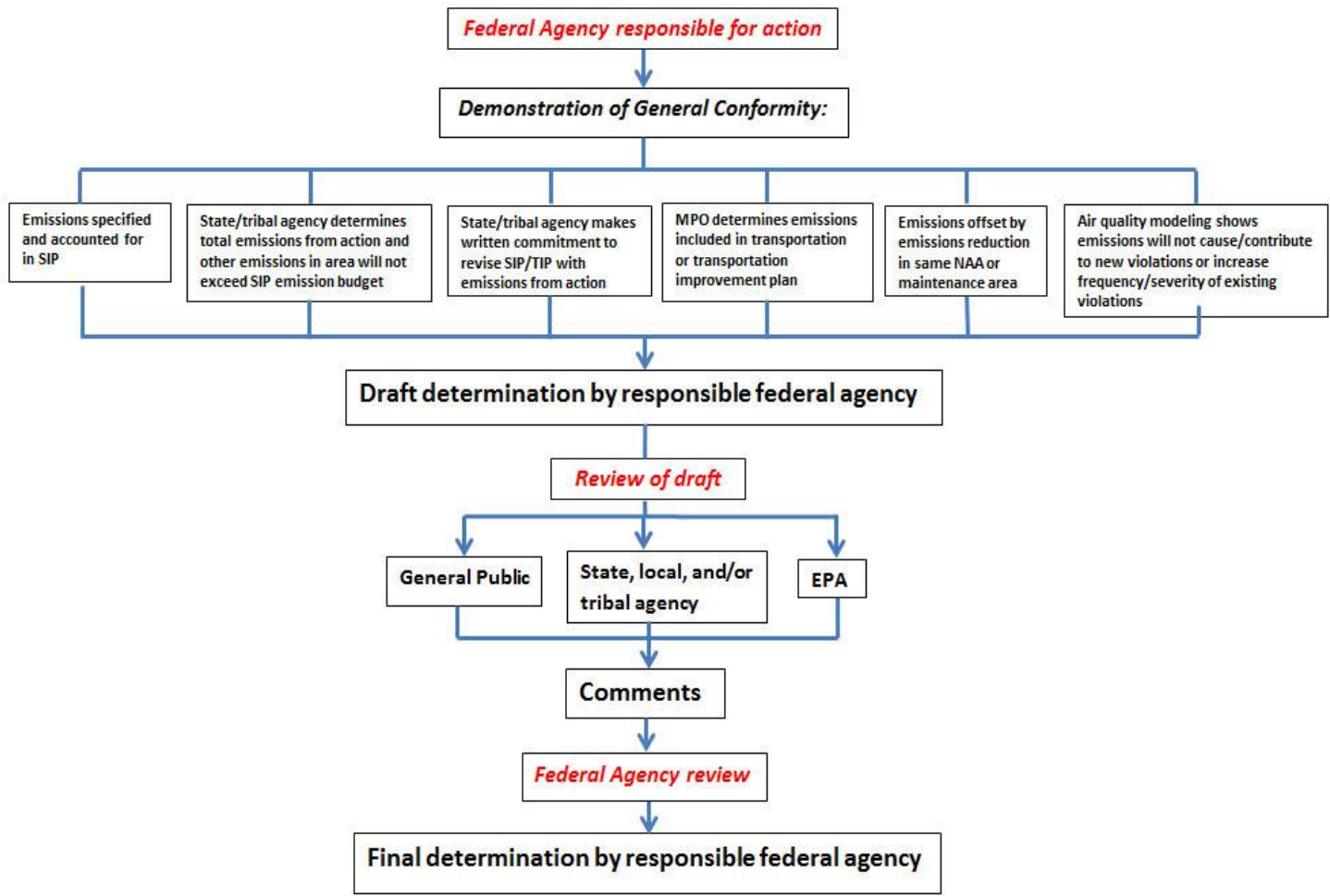


Figure 2 - Who and How

1.3 The Basics of General Conformity: Additional Information

1.3.1 Why Congress added General Conformity to the CAA

In 1977, Congress recognized that a number of federal actions could interfere with the state and local governments' ability to attain the NAAQS. For example, federal decisions on highway funding or the realignment of military bases could significantly affect the emissions in nonattainment and maintenance areas. To ensure that the federal government was not interfering with the state attainment planning process, Congress added [section 176\(c\)](#) to the CAA (codified in section 7506). This section prohibits federal agencies from taking any action which does not conform with the SIP to attain and maintain the NAAQS. However, the EPA interpreted this section as only addressing transit- and highway-related projects. In the CAA Amendments of 1990, Congress revised section 176(c) to clarify that it applied to all federal actions, not just to actions related to highways and mass transit.

1.3.2 Legal requirement for conformity

The legal requirement for the General conformity program is found in section 176(c) of the CAA. The CAA, as amended in 1990, prohibits departments, agencies and other instrumentalities of the federal government from taking any action which does not conform with the SIP. As a result, EPA, in 1993, promulgated two new sets of regulations. The transportation conformity regulations address actions taken under the Federal Highway Administration or Federal Transit Administration programs. All other actions are addressed by the General Conformity Regulations that were promulgated on November 30, 1993 and codified as 40 CFR 93.150 et seq (58FR63214).

1.3.3 Air Quality Management

1.3.3.1 National Ambient Air Quality Standards (NAAQS)

In order to protect public health and the environment, EPA has established NAAQS for six ***criteria pollutants***. These pollutants are found throughout the United States and can cause significant health problems, as well as cause damage to the environment and to property. The six pollutants are particle pollution (often referred to as particulate matter), ground-level ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, and lead. The limits established for these pollutants to protect public health are called primary standards. Limits intended to prevent environmental and property damage are called secondary standards.

1.3.3.1.1 Designations and Classifications

The CAA directs EPA to designate areas based on ambient air quality data and other information as to whether or not the area is attaining the standard. In addition, the CAA also requires EPA to classify areas based upon the severity of the pollution problem for certain pollutants. The CAA ties the stringency of the control measures to the area's classification. For example, areas with higher classifications (e.g., severe) have more stringent requirements. The designation and classification of the areas are codified in 40 CFR part 81. The information is also available on EPA's [Green Book website](#).

1.3.3.1.2 Nonattainment and Maintenance Areas

The EPA designates an area as nonattainment generally based upon air quality monitoring data or modeling studies that show the area violates, or contributes to violations of the national standard. Where the data do not make such a showing, EPA designates the area as attainment/unclassifiable. After a nonattainment area's air quality improves so that it is no longer violating or contributing to violations of the standard, and the state or tribe adopts an EPA-approved plan to maintain the standard, EPA can redesignate the area as attainment. These areas are known as maintenance areas. Maintenance areas retain that classification for 20 years after they are designated as attainment. The CAA and EPA regulations impose special requirements to help improve and maintain the air quality of nonattainment and maintenance areas.

1.3.3.2 State, Tribal, and Federal Implementation Plans

SIPs are developed and adopted by states and are designed to improve air quality in nonattainment and maintenance areas. State and local governments are responsible for developing and implementing the SIPs, which are submitted to EPA and, upon approval, become federally enforceable. The SIPs are complicated documents which include area-specific information such as the existing air quality, an inventory of the emission sources, projected growth, a strategy to improve the air quality, laws and regulations needed to implement the strategy and a demonstration that the area will attain the standard. On tribal lands, federally recognized Indian tribes can develop their own TIPs similar to SIPs. If the state or tribe fails to submit a required plan, EPA can promulgate a plan known as a FIP.

1.3.3.3 Federal Compliance

Section 176(c) requires federal agencies to comply with the General Conformity Regulations and demonstrate conformity for projects in nonattainment or maintenance areas or the projects cannot proceed. Federal agencies are required to provide notice of its draft conformity determination to the EPA Regional Office, the state and local air quality agencies, federally recognized Indian tribes in the

area, the local Metropolitan Planning Organization, and the local or federal land manager for a 30-day comment period. The General Conformity Regulations also require that notice of the draft conformity determination be placed in a daily newspaper in the area affected and to allow for a 30-day comment period. These notifications are also required when the federal agency makes its final conformity determination.

1.3.4 How is General Conformity related to other programs?

1.3.4.1 Transportation Conformity

Transportation conformity ensures that transportation activities meet air quality goals by only approving and funding those activities that meet those goals. Transportation conformity applies to transportation plans, transportation improvement programs, or Federal Highway Administration or Federal Transit Administration projects in areas that do not meet air quality standards for the NAAQS (i.e., nonattainment areas or maintenance areas). Projects subject to Transportation conformity are exempt from the General Conformity program.

1.3.4.2 National Environmental Policy Act

The National Environmental Policy Act (NEPA), passed in 1969, requires federal agencies to consider how “major” federal actions, including the use of federal funds, lands, or permits, may impact the human environment. The human environment includes natural, cultural, and socioeconomic resources. NEPA also requires that decisions include public input and involvement. Additional information on NEPA can be found at <http://www.epa.gov/compliance/basics/nepa.html>.

If convenient, a conformity determination may be integrated with the NEPA process. However, this is not required and the two may be separated. The federal agency determines the most appropriate way, given the individual situation, to integrate the conformity and NEPA processes. There are certain requirements for NEPA, such as the development of alternative actions, that are not required under conformity. Therefore, it may not make sense to perform a conformity analysis for all alternatives, but only for the one actually selected. At a minimum, at the point in the NEPA process when the specific action is determined, the air quality analyses for conformity should be done. Another point at which the two processes might overlap is during the joint notification and public participation process (assuring that the requirements for each regulation are met).

1.4 The Basics of General Conformity: More Information

1.4.1 Revisions to the General Conformity Regulations

EPA initially promulgated the General Conformity rule in 1993. Subsequently EPA collected information from other federal agencies on how to maintain the same environmental protections while streamlining the General Conformity implementation process. This information was used to develop and propose revisions to the General Conformity rule. After soliciting comments on these revisions from the public, EPA issued a final rule revision on April 5, 2010. This [revised rule](#) improves the process federal entities use to demonstrate that their actions will not contribute to a NAAQS violation, provides tools to encourage better communication and air quality planning between states and federal agencies, and encourages both the federal agencies and the states to take early actions to ensure projects will conform to the state's plans to implement the NAAQS. The revised General Conformity rule and additional information are available on EPA's General Conformity website at www.epa.gov/air/genconform.

1.4.2 General Conformity Questions and Answers

On June 05, 2006, EPA released a memorandum noting recent revisions to EPA's general conformity regulations questions and answers document. The memo is available on EPA's General Conformity website, www.epa.gov/air/genconform, under "Regulatory Actions."

1.4.3 General Conformity: Airports

On September 30, 2004 and September 25, 2002, the Federal Aviation Administration and EPA released documents regarding General Conformity Regulations as applied to airports. These documents are available on EPA's General Conformity website, www.epa.gov/air/genconform, under "Basic Information."

1.4.4 General Conformity: Contact Information

You can learn more about how General Conformity affects your area by contacting your local or state air quality office or the EPA Regional Office. Links to these air quality offices can be found at <http://www.epa.gov/epahome/whereyoulive.htm>.

1.4.5 Where can I get more information on General conformity?

The General conformity regulations, initially published on November 30, 1993 and revised on March 24, 2010, are found at [40 CFR part 93, subpart B](#).

For a list of nonattainment and maintenance areas click [here](#).

2.0 Module II

This module provides information on evaluating the applicability of the regulations to federal actions, the requirements for determining conformity, and the review process for a determination and is designed for the program managers and others who need a working knowledge of the program. Detailed information on the steps to conduct conformity evaluations are found in [Module III](#).

2.1 Applicability Process (See [Figure 3](#))

2.1.1 Prohibition and geographic areas

Section 176(c) of the **Clean Air Act (CAA)** prohibits **federal agencies** from taking actions in **nonattainment and maintenance areas** unless the emissions from the actions conform to the **State or tribal implementation plan (SIP/TIP)** for the area. Based on air quality data and other information, EPA, states and tribes identify specific areas as not meeting a **national ambient air quality standard (NAAQS)** and EPA designates those areas as nonattainment. In addition to designating areas as nonattainment, EPA, for some pollutants, also classifies areas based on the severity of the pollution problem. EPA publishes the designations and classifications in 40 CFR Part 81. When the air quality in the nonattainment area improves so that the area is meeting the NAAQS, and the state or tribe develops a plan to maintain the air quality, the area can be re-designated as attainment. These areas are known as maintenance areas. The CAA requires federal agencies to demonstrate that the emissions caused by their actions will not interfere with the plans to attain or maintain the NAAQS in both nonattainment and maintenance areas.

The CAA recognizes that ozone and its **precursors** can be transported over long distances and can impact large regions. To address that concern, the CAA permits the establishment of Ozone Transport Regions and Commissions to coordinate the control of ozone precursors in the region. Of particular concern is the northeast portion of the United States, from Northern Virginia to New England. At present, EPA has not approved any other ozone transport regions. The General Conformity Regulations recognize the potential need to have consistent pollution control requirements throughout the ozone transport region and thus establish more restrictive **de minimis** emission levels for the lower classification nonattainment and maintenance areas in ozone transport regions.

Section 176(c)(5) of the Clean Air Act limits the application of the conformity regulations to nonattainment and maintenance areas. Therefore, pollutants caused by a **federal action** and emitted in attainment (not maintenance areas) or undesignated areas are not subject to the requirements of the General Conformity Regulations, even though the emissions may impact a nonattainment or maintenance area.

2.1.2 De minimis emission levels

In promulgating the General Conformity Regulations, EPA recognized that the many entities of federal government take thousands of actions every day, most of which do not result in significant increases in emissions in nonattainment and maintenance areas. Therefore, EPA promulgated de minimis emissions levels for each of the NAAQS pollutants. If the **total direct and indirect emissions** from the action are below the de minimis levels, the action is exempt. The de minimis levels are based on an area's designation and classification and are described in [Table 1](#).

If a federal agency determines that its action will result in total direct and indirect emissions in a nonattainment or maintenance area, it must compare the projected emissions to the de minimis levels for that area. The total direct and indirect emissions are the net emission increases in the nonattainment or maintenance area caused by the action. The emissions must be **reasonably foreseeable** at the time the conformity determination is made. For indirect emissions the federal agency also must be able to **practicably control** the emissions based upon the agency's **continuing program responsibility**.

The emissions from the total action are used to determine if they exceed the de minimis levels. The action cannot be segmented to create several smaller projects with the emissions from each compared to the de minimis levels.

2.1.3 Presumed to conform

In addition to the activities that EPA listed, individual federal agencies are permitted to develop their own list of additional activities that are [presumed to conform](#). The list must meet specific criteria and undergo a public review process. Generally, a federal agency must show that the emissions from that type of action are below the **de minimis** levels or otherwise will conform with the SIP/TIP. The list can be area specific and does not have to apply to the entire country. An agency taking an action that includes several of these activities is only allowed to claim one activity as a presumed to conform activity. A [new provision in the regulations](#) allows states to develop a list of activities that are presumed to conform in that state or portion of that state.

2.1.4 Other exemptions

Since agencies of the federal government make numerous decisions and take numerous actions every day and very few have the potential to cause significant increased emissions in nonattainment or maintenance areas, EPA's General Conformity Regulations list a number of categories of actions that are presumed to conform, have insignificant emissions, or have emissions that are not reasonably foreseeable (see [Table 2](#) below).

Figure 3. Applicability Analysis
 (Click for links to relevant sections)

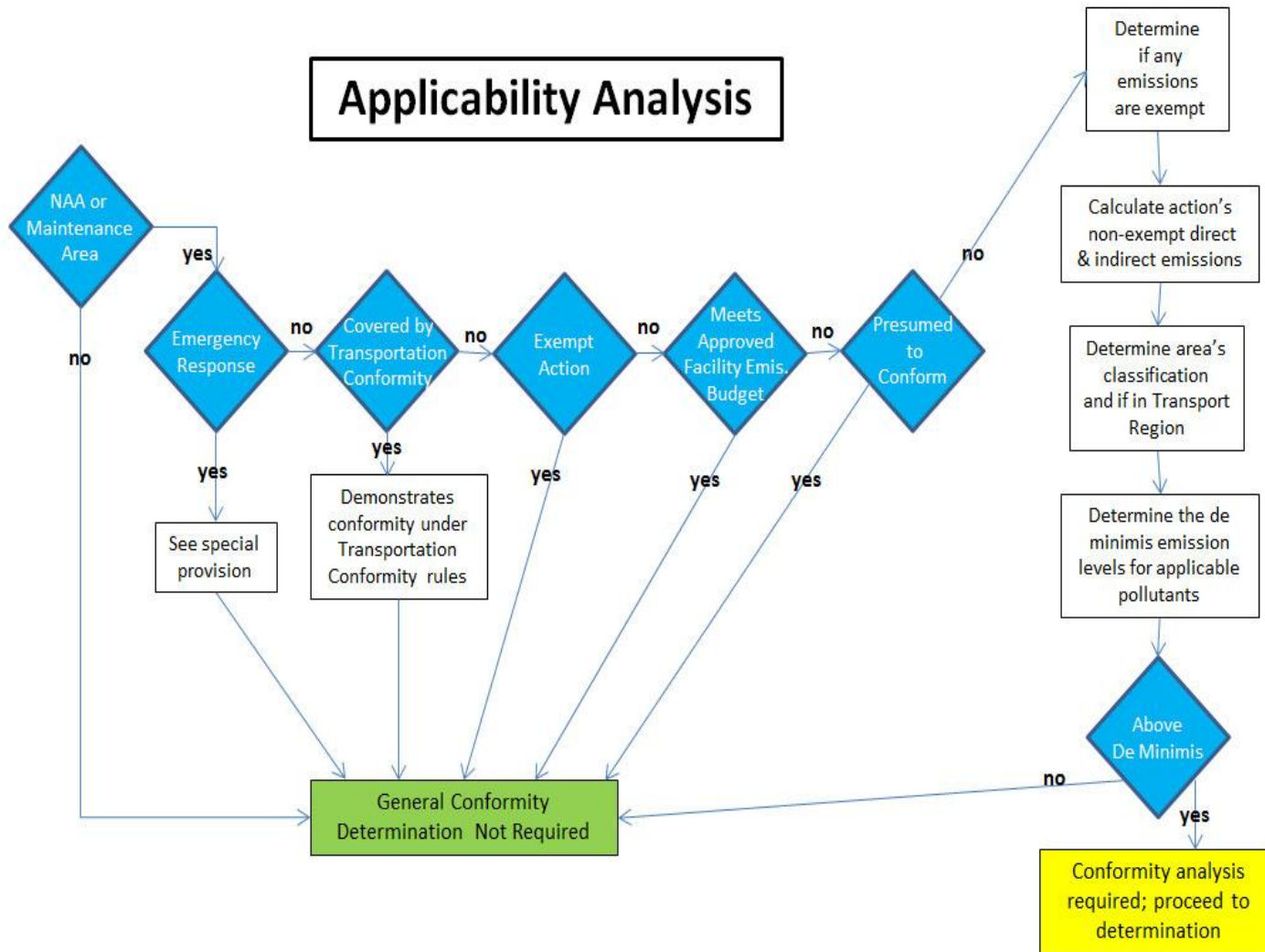


Table 1. *De minimis* Emission Levels

Pollutant	Precursor	Designation	Classification/ Location	<i>De minimis</i> level (tons/year)
O3	VOC or NOX	Nonattainment	Serious	50
O3	VOC or NOX	Nonattainment	Severe	25
O3	VOC or NOX	Nonattainment	Extreme	10
O3	VOC or NOX	Nonattainment	Other outside an OTR*	100
O3	VOC	Nonattainment	Other inside an OTR	50
O3	NOX	Nonattainment	Other inside an OTR	100
CO	-	Nonattainment	All NAA's	100
SO2	-	Nonattainment	All NAA's	100
NO2	-	Nonattainment	All NAA's	100
PM10	-	Nonattainment	Moderate	100
PM10	-	Nonattainment	Serious	70
PM2.5	Direct Emissions	Nonattainment	All NAA's	100
PM2.5	SO2	Nonattainment	All NAA's	100
PM2.5	NOX†	Nonattainment	All NAA's	100
PM2.5	VOC or NH3§	Nonattainment	All NAA's	100
Pb	-	Nonattainment	All NAA's	25
O3	NOX, or	Maintenance	All Maintenance Areas	100

O3	VOC	Maintenance	Inside OTR	50
O3	VOC	Maintenance	Outside OTR	100
CO, SO2, NO2, and PM10	-	Maintenance	All Maintenance Areas	100
PM2.5	Direct Emissions	Maintenance	All Maintenance Areas	100
PM2.5	SO2	Maintenance	All Maintenance Areas	100
PM2.5	NOX	Maintenance	All Maintenance Areas	100
PM2.5	VOC	Maintenance	All Maintenance Areas	100
Pb	-	Maintenance	All Maintenance Areas	25
† - Unless determined not to be a significant precursor § - If determined to be significant precursors * - Ozone Transport Region				

Table 2: EPA Exempt Actions		
Sub Section of 93.153	Exemption	Comment
a.	Transportation plans, programs and projects	Conformity for these actions are covered under the Transportation Conformity Regulations
c.1.	Total emissions below the <i>de minimis</i> levels	See Table I for the <i>de minimis</i> emission levels
c.2.	Actions which would result in no emissions increases in non-attainment or maintenance areas	
c.2.i.	Judicial and legislative proceedings	
c.2.ii.	Continuing and recurring activities such as permit renewals where activities conducted will be similar in scope and operations to activities currently being conducted	Conformity evaluation may be required if the size, scope or frequency of the activity increases.
c.2.iii.	Rulemaking and policy development and issuance	The process of rulemaking or policy development is exempt however if the resulting rule or policy increases emissions above the <i>de minimis</i> levels in any non-attainment or maintenance area then a conformity determination is required for the rule or policy. See the ruling from the US 9th Circuit Court of Appeals.
c.2.iv.	Routine maintenance and repair activities, including repair and maintenance of administrative sites, roads, trails and facilities.	
c.2.v.	Civil and criminal enforcement activities, such as investigations, audits, inspections, examinations, prosecutions, and the training of law enforcement personnel	
c.2.vi.	Administrative actions	
c.2.vii.	The routine, recurring transportation of materials	The quantity and frequency of the activity remains

	and personnel	constant.
c.2.viii.	Routine movement of mobile assets	
c.2.ix.	Maintenance dredging and debris disposal where no new depths are required, applicable permits are secured, and disposal will be at an approved disposal site.	Increasing the depth or width of the channel requires an evaluation.
c.2.x.	Future activities similar in scope to current activities	
c.2.xi.	Granting licenses and leases for activities similar to ongoing activities	
c.2.xii.	Planning, studies, and provision of technical assistance	This is similar to rulemaking and policy development; planning, studies and provisions are exempt, however, if the following actions by the federal agency may require a conformity determination.
c.2.xiii.	Routine operation	
c.2.xiv.	Transfers of ownership, interests, and titles in land, facilities, and real and personal properties, regardless of the form or method of the transfer	
c.2.xv.	Designation of empowerment zones, enterprise communities, or viticulture areas	
c.2.xvi.	Actions by any of the federal banking agencies or the Federal Reserve Banks	
c.2.xvii.	Actions by the Board of Governors of the Federal Reserve System or any Federal Reserve Bank necessary to effect monetary or exchange rate policy	
c.2.xviii.	Actions that implement a foreign affairs function of the United States	
c.2.xix.	Actions associated with transfer of land,	

	facilities, title, and real properties through an enforceable contract or lease agreement where the delivery of the deed is required to occur promptly after a specific, reasonable condition is met	
c.2.xx.	Transfer of real property, including land, facilities, and related personal property from one federal entity to another	
c.2.xxi.	Actions by the Department of the Treasury to effect fiscal policy and to exercise the borrowing authority of the United States	
c.2.xxii.	Air traffic above the mixing height for the area	The federal agency must use the mixing height specified in the SIP/TIP. If no mixing height is specified, the federal agencies can use the 3,000 feet above ground level as a default mixing height unless the agency demonstrates that a different height is appropriate. Because the change in emissions at and above the that height cause by the federal action is <i>de minimis</i> .
c.3.	Actions where the emissions are not reasonably foreseeable	
c.3.i.	Initial outer continental shelf lease sales	
c.3.ii.	Electric power marketing	
c.4.	Actions which implement a decision to conduct or carry out a conforming program	
d.1.	NSR or PSD permitted emissions	Both major and minor sources are now exempt. An operating permit does not exempt a facility from the requirements. However, if the action is covered by the permit and the federal agency can use compliance with it, in the conformity demonstration.
d.2.	Response to emergency events or natural disasters	Response to the event or disaster in the first 6 months does not require any conformity evaluation. The exemption can

		be extended in 6-month increments, provided the federal agency makes a determination, is made that it is impractical to prepare the conformity analyses due to concerns for public health and welfare as well as national security and foreign policy commitment. The exemption cannot be extended beyond 2 years after the event or disaster.
d.3.	Research or training that causes no detrimental effects on the environment	
d.4.	Action as a result of an environmental regulation	
d.5.	Emissions resulting from Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions; must comply with PSD/NSR program or otherwise be exempt from other environmental regulations under provisions of CERCLA	

2.2. Emissions and Review

2.2.1 Estimation of the emissions caused by the action

Direct emissions are caused by the action itself, such as the emissions from the construction of a facility on government property. Indirect emissions are also caused by the action but are removed from the action in either time or space. For example, emissions from employees commuting to a government facility are indirect emissions. Both direct and indirect emissions have to be reasonably foreseeable, meaning that the emissions can be estimated based on acceptable techniques using reasonable assumptions about the type and quantity of equipment used.

For indirect emissions, the emissions must be of the type that “the agency can practically control” and for which “the agency has continuing program responsibility. A continuing program responsibility means that the agency has an oversight role over the activities generating the emissions or has the ability to limit the emissions. For example, an agency would have the ability to limit the emissions by specifying requirements in a contract or by conditioning a permit.

The “total direct and indirect emissions” is defined as the net emissions increase caused by the action considering all the emission increases and decreases that are projected to occur. For example, if a federal agency takes an action to replace an operation at a facility with a different type of operation, the total direct and indirect emissions would be the difference between the emissions from the two operations. The portion of emissions which are exempt or presumed to conform are not included in the “total of direct and indirect emissions.”

The *de minimis* emission levels are based upon the total annual emissions. Therefore, the total direct and indirect emissions include all of the annual emissions, even if some of the emissions occur outside of the season associated with the pollutant. Seasonal emissions can be considered when demonstrating conformity. The emissions from the total action are used to determine if they exceed the *de minimis* levels. The action cannot be segmented to create several smaller projects with the emissions from each compared to the *de minimis* levels. If an action involves more than one of the activities that are listed as presumed to conform, EPA regulations allow federal agencies to exempt a combination of presumed to conform actions that does not equal or exceed *de minimis* levels. The emissions from the other activities would be added into the total of the direct and indirect emissions for the *de minimis* level evaluation.

2.2.2 Requirements for re-evaluation

General conformity evaluation is designed to be a one-time occurrence. The agency taking the action determines if the emissions are below the *de minimis* levels or if the action is otherwise exempt. If not, the agency demonstrates that the action conforms to the SIP/TIP. If the agency takes the action in a timely manner and does not modify the action so that emissions are increased, then the agency does not have to re-evaluate the conformity for the action. However, if the agency does not start a continuing program to implement the action within five years or if the action is modified resulting in an increase in emissions, a re-evaluation is required.

The General Conformity Regulations include a 5-year limit on the time to start the action to ensure that the conditions used to demonstrate conformity have not changed. If the agency does not start the action within five years, it is possible that the status of the nonattainment or maintenance area could have changed, or that the emission offset or mitigation measures may have been included in the SIP/TIP. A revised SIP/TIP is required to be submitted to EPA within 18 months. If the state or tribe is in the process of developing a new SIP/TIP and makes a written commitment to include the emissions in the new SIP/TIP and the SIP/TIP will be submitted within 18 months, then the federal agency can rely upon the state or tribe commitment for the demonstration.

2.2.3 Special Situations

Prescribed fires under EPA regulations are presumed to conform provided they are identified and conducted in accordance with an approved smoke management plan. These plans are approved by the state and their emissions should be included in the SIP/TIP.

Generally water and waste water projects funded by the EPA do not require a conformity evaluation if the project is not increasing the capacity of the facility or if the projected growth served by the project is consistent with the growth estimates in the SIP/TIP.

In the General Conformity Regulations, EPA provides an exemption for the process of rulemaking. However, that exemption does not apply to the rule itself. Therefore, if the substance of the rule would cause an increase in emissions in nonattainment or maintenance areas, then the rule needs to be evaluated for conformity.

2.2.4 Review of *de minimis* applicability determination

The General Conformity Regulations do not require any official review or reporting of a determination that the total direct and indirect emission are below the *de minimis* levels or are otherwise exempt. However, because the information is often discussed in the NEPA documents, environmental agencies and the public can learn about the analysis.

Although not required by the General Conformity Regulations, many federal agencies have found it helpful to include in their file a “record of decision” (ROD) or “record of non-applicability” (RONA) documenting the analysis that the action was below the *de minimis* level or was otherwise exempt. Such documentation is most helpful when the annual emissions are close to the *de minimis* level or for controversial actions that may be challenged. Since many of the actions are subject to the National Environmental Policy Act (NEPA) and must conduct either an Environmental Analysis or an Environmental Impact Statement, this documentation is often included in those activities. \

2.3 Demonstrating conformity (see [Figure 4](#))

2.3.1 Overview

If a federal agency determines that the emissions from an action are above the *de minimis* levels and the action is not otherwise exempt, then the agency must demonstrate that the action will conform with the SIP/TIP.

First, **federal agencies** must demonstrate that the action will meet SIP/TIP requirements and milestones including reasonable further emission reduction requirements. Such a demonstration can be made by comparing the emissions from the action to the inventory of emissions in the SIP/TIP, and by working with the state or tribal agency responsible for air quality control in the area.

There are six basic methods for demonstrating conformity:

- 1) Document that the emissions from the action are identified and accounted for in the SIP/TIP;
- 2) Obtain a statement from the applicable state, tribal, or local air quality agency that the emissions from the action along with all other emissions in the area do not exceed the budget for those emissions in the SIP/TIP;
- 3) Have the local **Metropolitan Planning Organization** (MPO) provide a statement that the emissions are included in transportation plan modeling;
- 4) Have the state or tribe agree to include the emissions in the SIP/TIP;
- 5) Conduct air quality modeling to demonstrate that the emissions will not cause or contribute to a violation of the NAAQS; this modeling option is not available for O₃, NO₂ and some PM_{2.5} areas; or

6) Mitigate or offset the increase in emissions.

In addition, EPA has developed two alternative approaches for demonstrating conformity:

- The emission reduction credits approach; and
- The facility emission budget approach.

These programs allow the **federal facilities** affected by the General Conformity Regulations to manage the emissions to limit their need to demonstrate conformity for individual projects.

2.3.2 Mitigation of emissions

Federal agencies can mitigate or offset the emissions caused by the action by (a) redesigning the action to reduce the emissions, (b) reducing the same type of emissions elsewhere at the facility, or (c) by securing offsets in the same nonattainment or maintenance area or adjacent area with an equal or higher classification. The mitigation measures and offsets must meet certain requirements:

- First, the mitigation measures must be in place before the project starts. Any agreement for the reduction of the emissions must be signed and included with the conformity demonstration;
- The reduction in the emissions must at least equal the increase in emissions caused by the action. In a recent revision to the regulations, EPA added a provision to allow federal agencies under certain conditions and, with the approval of the state or tribe, to use long-term offsets for short-term increases in emissions;
- The offset must be:
 - Quantifiable – The federal agency must be able to quantify the emissions reduced by the measure using standard techniques for determining emission reductions;
 - A surplus – The emission reduction measure must not be required by the SIP, TIP, or other environmental laws or regulations;
 - Enforceable – EPA or the state, tribe or local agency must have the ability to enforce the emission reduction measure. This can be done by including the measure in an operating permit or similar mechanism or by including the reductions in the SIP/TIP;
 - Permanent – The emission reductions must be permanent within the timeframe of the emission increases caused by the action. For example, if the action will result in construction emissions over a 5-year period, then the emission reduction measure must reduce the emissions over the same 5-year period; and

- Adequately supported – The federal agency must show that there are adequate resources to implement the emission reduction measure;
- The mitigation measures can be modified after the federal agency has completed its conformity demonstration by following the procedures used to establish the original measures;
- EPA, states, tribes and local agencies will enforce the requirements of the emission reduction measures used as an offset. If a third party fails to meet its commitment in implementing the measures, the enforcement will generally be against the third party and not the federal agency.

2.3.3 Demonstrating conformity in the absence of an approved SIP

A federal agency may be taking actions in a nonattainment area where EPA has not approved the SIP/TIP for the area. In such a case, the federal agency's options for demonstrating conformity for the action are limited. Since there is no SIP/TIP, the federal agency can secure a commitment from the state or tribe to include the emissions into the future SIP/TIP. The federal agency may still conduct modeling to demonstrate conformity or it may secure emission reductions to mitigate or offset the emission increases.

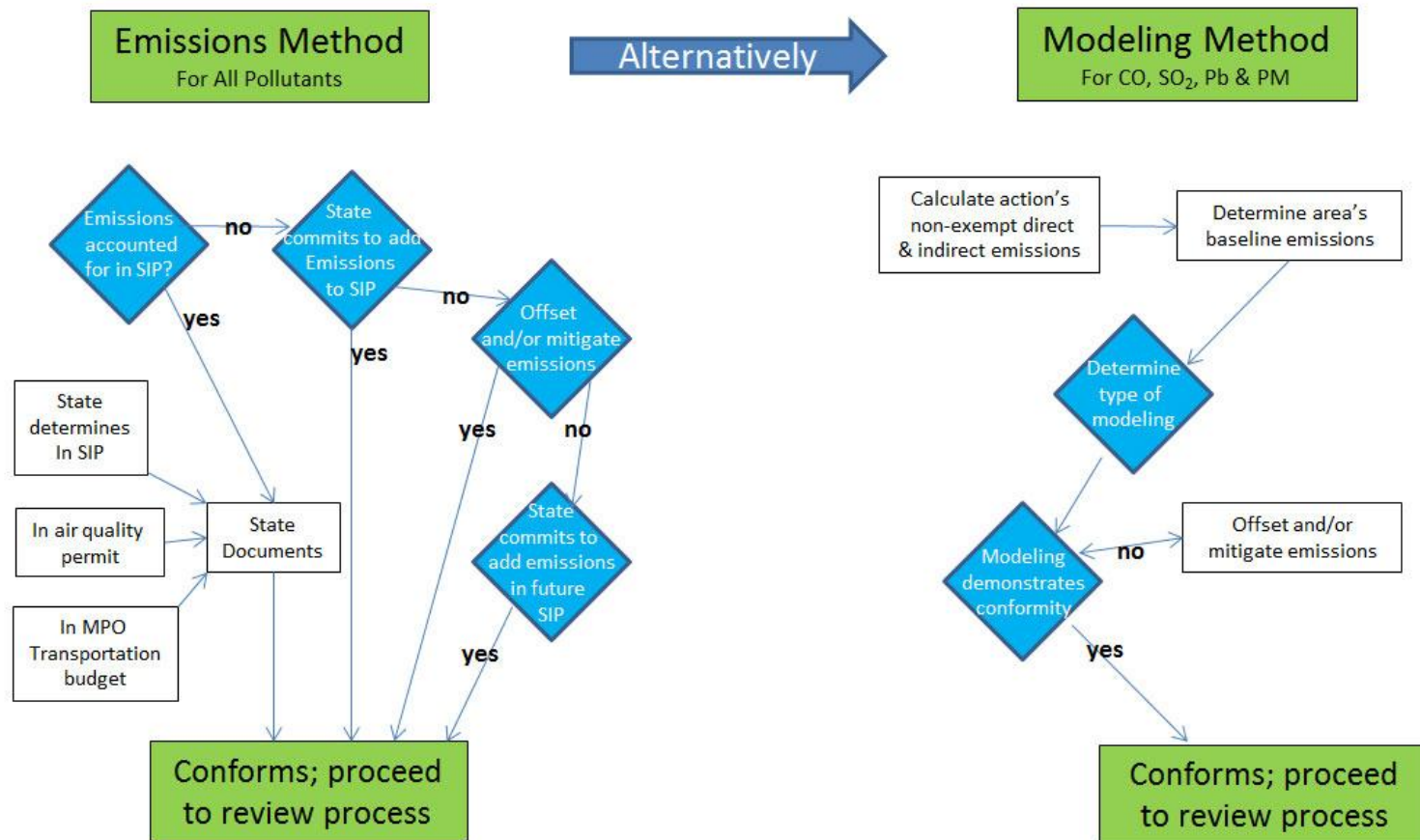
A second case of a federal agency addressing conformity in the absence of a SIP/TIP occurs when the emissions from a federal action will occur after the time period covered by the SIP/TIP. In this case, the federal agency can demonstrate conformity for the last budget in the SIP/TIP and assume that the future SIP/TIP will allow that quantity of emissions. The state, tribe or local agency would be responsible for developing the SIP/TIP to account for the emissions from the action. If the emissions from the action are greater than the emissions allowed in the last budget in the SIP/TIP, then the federal agency can secure a commitment from the state or tribe to include the emission in the future SIP/TIP.

2.3.4 Required analysis years

Federal agencies can choose to demonstrate conformity on a worst-case basis or on a year-to-year basis. Under the worst-case approach, the federal agency would show that the maximum emissions from the action would conform with the most stringent budget in the SIP/TIP. Under the year-to-year approach, the federal agency would demonstrate that each year the emissions for the action would conform with the SIP/TIP. The year-to-year approach may be useful for actions with specific end dates or with widely varying emissions such as construction projects.

Figure 4. Conformity Determination Process
 (Click for links to relevant sections)

Conformity Determination Process



2.4 Review process

Federal agencies are public bodies and conformity determination is an open process. The General Conformity Regulations require that the federal agencies provide copies of the draft demonstration to EPA and other affected federal agencies, states, tribe, local agencies and local MPOs and allow them a minimum of 30 days to comment on the draft demonstration. In addition, the federal agency must provide the public an opportunity to comment on the draft demonstration.

The EPA's Regional Office responsible for the affected nonattainment or maintenance area(s) generally handles the review of the draft demonstration. The list of EPA's Regional Offices is available on the [General Conformity website](#) under "Contact Us." If the action would affect three or more EPA Regions, then the federal agency can coordinate the review through EPA's Office of Air Quality Planning and Standards.

The state, tribal or local agency review of the draft demonstration is generally handled by the organization responsible for the implementation of the SIP in the nonattainment or maintenance area. The MPO's review of the draft demonstration is generally handled by the transportation organization for the area. The specific contact can be obtained by contacting the state or local air quality agency. EPA's Regional Offices can also provide assistance in locating the appropriate contact.

The revised General Conformity Regulations have included provisions to allow tribes in affected nonattainment and maintenance areas to review and comment on the draft demonstration. A link to the list of tribes in nonattainment and maintenance areas is available on EPA's [General Conformity website](#).

In addition to the above organizations, the federal agency must provide copies of the draft demonstration to the federal agency or federal official charged with the direct responsibility of designated Class I areas (i.e., national parks and wildernesses) within 100 km of the action and allow them a minimum of 30 days to comment on the draft demonstration. EPA Regional Offices can provide information on the location of the Class I areas and the responsible agency.

The federal agency must notify the public of the draft demonstration by placing a notice in a daily newspaper of general circulation in the area affected by the action. The federal agency must make the draft demonstration available for review and allow a minimum of 30 days for the public to comment. In many cases, federal agencies coordinate the public review process for the General Conformity demonstration with the public review required under the National Environmental Policy Act (NEPA).

Nothing in the General Conformity Regulations requires or authorizes the release of confidential business information or classified materials or information to any unauthorized person or organization. Actions involving such information or materials should be coordinated with the EPA Regional Office or EPA's Office of Air Quality Planning and Standards.

Within 30 days of making its final determination, the federal agency must notify the reviewer and the public of the determination. The notice is to be made in the same manner as used to notify the reviewers and public of the draft demonstration.

Since a conformity determination is a final action by an agency, it may be subject to judicial review. Federal agencies should document their evaluations to ensure that their decision can withstand a judicial challenge.

2.5 Proactive role for federal agencies

EPA recommends that federal agencies take a proactive role in working with the state, tribes, and local agencies to ensure that the SIP/TIP for the area addresses the federal facilities and the potential future action. Federal agencies and third parties affected by the General Conformity Regulations should inventory their existing emissions and potential for emission reductions from current activities. During the SIP development process, the federal agencies should provide the state, tribes, and local agencies with information about their existing emissions and potential future actions. Such efforts will allow the state, tribes, and local agencies to include the relevant federal facilities and future actions into the SIP/TIP.

Taking a proactive role will allow the federal agency to more effectively participate in newly promulgated programs under the General Conformity Regulations, such as the emission reduction credits and the emission budgets programs.

2.6 April 5, 2010 Revisions to the Conformity Regulations

In the [2010 revisions](#) to the General Conformity Regulations, EPA identified a number of potential provisions to improve the effectiveness of the regulations while at the same time streamline their implementation. Under the revisions, the basic conformity process remains essentially the same. The revisions deleted unnecessary provisions, provided more options for federal agencies to demonstrate conformity, recognized the status of Indian tribes, and clarified some procedural requirements.

2.6.1 Applicability analyses

EPA revised the following provisions that affect the applicability analyses:

- Deleted the test for exempt actions or actions that have emissions below the *de minimis* levels to determine if the emissions are regionally significant. When EPA promulgated the original General Conformity Regulations in 1993, it included a provision that required exempted actions and actions with emissions below the *de minimis* levels but considered regionally significant emissions, defined as above 10 percent of the area’s emission inventory, to conduct a full conformity determination. Although federal agencies and third parties routinely evaluated exempt actions and actions with emissions below the *de minimis* levels, none of the actions were determined to be regionally significant;
- Included exemption for minor sources with new source review (NSR) permits. The original regulations provided an exemption for major NSR sources but not minor sources;
- Identified the following as presumed to conform actions:
 - Prescribed fires conducted in accordance with an approved smoke management plan,
 - Emissions within a facility emission budget where the budget has been adopted by the state in accordance with the regulations, and
 - Actions listed by a state agency as presumed to conform.
- Established a program to allow early emission reductions to create emission reduction credits (ERCs) that can be used to reduce the emissions from future actions; and
- Established a grace period of one year after an area is designated as nonattainment before conformity is required.

2.6.2 Conformity demonstrations

EPA is adding a new section that allows alternate schedules for mitigating emissions increases. The mitigation timing approach allows some flexibility for federal agencies and states or tribes to negotiate a program for some emissions mitigation to occur in future years. This approach can be used to accommodate short-term increases in emissions if substantial long-term reduction in emissions will result.

2.6.3 Reporting Requirements

The revised regulations establish the rights of federally recognized Indian tribes to participate in the conformity process and require the federal agency to provide the draft demonstration to any such tribe in a nonattainment or maintenance area.

2.6.4 Procedural requirements

EPA included the following provisions in the revised regulations to clarify the process:

- Development of the presumed to conform list;
- Exemption for the rulemaking process;
- Extension of the **emergency** events exemption;
- Demonstrating conformity beyond the time frame in the SIP/TIP; and
- Allowing but not requiring states and tribes to adopt a conformity SIP/TIP.

3.0 Module III

This module provides detailed information on evaluating conformity including emission calculations, requirements for associated programs and special situations, and is designed for the individuals responsible for preparing the demonstration.

3.1 Applicability analyses

3.1.1 Nonattainment and maintenance areas

The [2010 revisions](#) to the Conformity Regulations apply only to pollutants or their *precursors* that are emitted in designated **nonattainment or maintenance areas**. **Federal actions** that cause emissions only in areas not designated as nonattainment or maintenance, such as attainment or unclassified areas, are not required to evaluate conformity for the action even though the emissions may impact a nonattainment or maintenance area.

The official record of the area's attainment status is in Title 40 of the Code of Federal Regulations, [part 81](#). EPA periodically revises the designations or classifications by publishing the revisions in the *Federal Register*. In addition, EPA makes the attainment status of areas available by publishing a document known as the "Green book," which is also available on the [EPA Green Book web site](#). Specific details about the nonattainment or maintenance area can also be obtained by contacting the state, tribal, or local air quality agencies responsible for the area. Additional assistance may be obtained at the EPA Regional Office. The list of EPA's Regional Offices is available on the [General Conformity website](#) under "Contact Us."

The boundaries of the nonattainment and maintenance areas are generally defined in the designations. In most cases the boundaries are political boundaries such as county lines or are physical features (such as streets or rivers). However, in some cases the boundaries may not be well defined. For coastal areas, EPA interprets the nonattainment or maintenance area boundary to extend to the state's seaward boundary, which for most of the United States, is 3 miles. The exceptions are Florida and Texas where the boundary is 3 leagues, approximately 9 miles. Federal agencies should consult with the state, tribal or local air quality agency about specific questions concerning the boundaries of the nonattainment or maintenance area. Under EPA's Outer Continental Shelf (OCS) Air Regulations, ([40 CFR 55](#)), sources within 25 miles of the state's seaward boundary and that are attached to the seabed must comply with the same regulations as if the sources were onshore. Therefore, those sources would also require a conformity evaluation. The OCS Air Regulations are applicable to all coastal waters except for the Western Gulf of Mexico (west of 87° 30', or the Florida/Alabama border).

Some federal actions involve emissions from aircraft at various elevations. The designations do not define the vertical height of the nonattainment or maintenance areas. Generally the area's mixing height is used in air quality analyses; however, the mixing height is not constant and varies with meteorological conditions. If a specific mixing height is not defined by the state or tribe, EPA recommends that federal agencies use an average mixing height or a default height of 3000 feet above ground level. Federal agencies should consult with the state, tribal or local air quality agency about specific questions concerning the height of a nonattainment or maintenance area.

Besides designating nonattainment and maintenance areas, EPA also designates ozone transport regions (OTR). At the present time, EPA has only designated one OTR, which extends from Northern Virginia to New England. The purpose of the OTR is to coordinate the control of ozone precursors across the area. To that end, EPA has established special requirements for actions that cause emissions in the OTR. For example, EPA has established more restrictive *de minimis* emissions levels for lower classified nonattainment and maintenance areas in the OTR. Further information can be obtained from the [Ozone Transport Commission](#), the individual states or EPA Regional Offices in [Boston](#), [New York](#) and [Philadelphia](#).

On occasion, federal agencies will take actions that will cause emissions in more than one nonattainment or maintenance area. These actions could affect two areas, such as an expansion of an airport that crosses the boundary between the two areas or could be national in scope affecting all of the areas. Since the SIPs and TIPs are designed for each area separately, the conformity evaluation is completed separately for each area. Emissions from the action are estimated for each area and compared with that area's *de minimis* levels. If conformity demonstrations are necessary, they should show that for each area that exceeds the *de minimis* emission levels, the emissions conform with the SIP/TIP. Although each area is evaluated separately, the federal agency can combine the review and public notification process, provided the agency publishes notices in each area affected and notifies all affected states and tribes.

3.1.2 Transportation projects

Federal actions covered by [Transportation Conformity](#) are exempt from the General Conformity requirements. Actions by some federal agencies could involve transportation-related projects such that a portion of the emissions caused by the action would be subject to the requirements of the Transportation Conformity Regulations and the remainder by the General Conformity Regulations. For example:

- The local mass transit authority seeks approval to operate a commuter rail service over leased tracks owned or controlled by a federal agency. The agency can exclude any emissions that were included in the transportation planning process;

- The local airport is seeking approval from the Federal Aviation Administration (FAA) for a plan to provide light rail service to the airport. The train station and a portion of the rail line will be on the airport property. The project is to be partially funded under the Federal Transit Act and has been included in the area's transportation plan. Since the construction of the line and station are on the airport property and FAA approval is required, FAA would have to determine if the emissions from that portion of the project were above the *de minimis* levels. If so, the FAA would have to make a conformity determination before the approval could be granted. The emissions related to the operation of the line would be included in the Transportation Conformity analysis and FAA would not include them in their analysis;
- As part of a new highway system, a bridge is to be constructed over navigable waters requiring the approval of the US Coast Guard. The Coast Guard approval is related to the location of the piers, the height of the span, and the navigation lights required on the bridge. Since the emissions from the construction of the bridge are not included in the Transportation Conformity, the Coast Guard would have to consider them in its General Conformity analysis. The emissions related to the traffic using the bridge would be included in the Transportation Conformity analysis and Coast Guard would not include them in their analysis.

3.1.3 Exempt actions

The EPA has identified a number of actions that are determined to be below the *de minimis* emission levels or otherwise are presumed to conform. [Table 2](#) lists those exemptions and identifies any guidance that EPA has provided on the exemption. Federal agencies can also develop their own list of presumed to conform actions. The development of such a list is discussed in [section 3.4](#). Questions about the exemptions should be addressed to the General Conformity contact in the EPA Region where the emissions are projected to occur.

3.1.4 Conformity on tribal lands

Under the *Clean Air Act*, federally recognized Indian tribes are treated the same as states. Therefore, EPA has made a provision in the General Conformity Regulations for the tribal authority to review and comment on the draft demonstrations in the nonattainment or maintenance areas where the tribe is located. To assist the federal agencies in determining the appropriate contacts for the review, EPA has provided a link on its [General Conformity website](#) to a list of the tribes in each nonattainment area. EPA regional general conformity contacts are also available to assist the federal agencies in locating the appropriate tribal contacts.

In most cases for tribal lands, either the tribe has developed a *tribal implementation plan* (TIP) for the area or EPA has promulgated a *federal implementation plan* (FIP) for the area. These plans generally take precedence over any *state implementation plan* (SIP) for the area. Federal agencies should consult with EPA regional general conformity contacts about the applicable plan for tribal lands.

Where EPA has approved a TIP, the tribal authority can provide documentation that the emissions for the proposed action are included in the TIP or can commit to including the emissions in existing or future TIPs. For the tribal areas where EPA has not approved the TIP and has promulgated a FIP for the area, EPA will perform those functions. Questions concerning the authority for TIP statements should be addressed to EPA's regional general conformity contacts.

3.1.5 Grace period for new nonattainment designation

The regulations allow a one-year grace period before the conformity requirements apply to the area after the area is newly designated as nonattainment. When EPA publishes the designation of nonattainment for an area, it also identifies an effective date of the designation. The conformity requirements apply one year after the effective date of the designations. Actions that commence before that date do not have to meet the new conformity requirements. However, actions that commence on or after that date will have to meet the requirements for the area's new designation. Since EPA proposes the designations before it publishes the final designations, federal agencies have more than a year to take the action before they would be required to demonstrate conformity.

3.1.6 Revisions to the General Conformity Regulations

When EPA revises its General Conformity Regulations, it also identifies an effective date for those revisions. Usually, the effective date of the regulations is 30 to 60 days after the publication of the promulgation final revisions in the *Federal Register*. Actions that commence before the effective date of the regulatory revisions do not have to meet the new requirements. However, actions that commence after the effective date of the revisions will have to meet any new requirement. Since EPA proposes the revisions before it promulgates the final revisions, federal agencies have more than 30-60 days to take the action before they would be required to meet any new requirement.

3.2 Emission calculations

Federal agencies must evaluate the ***total direct and indirect emissions*** caused by their actions. In determining the total direct and indirect emissions caused by the action, agencies must project the future emissions in the area with the action versus the future emissions without the action, what the National Environmental Policy Act (NEPA) entitles "the no build option." The total direct and indirect emissions is the net emissions considering all emission increases and decreases and must be ***reasonably foreseeable*** at the time that the conformity evaluation is conducted and that the agency has ***continuing program responsibility***.

The term "reasonably foreseeable" means that the emissions can be estimated using standard emission techniques, assuming activity levels are consistent with the projected use. The projected use should consider any limits on the operation of the facility imposed by

physical or legal constraints. This includes use of emission control equipment and operational limitations. The term includes reasonable growth rates, but does not mean that the projects must assume the maximum use of a facility unless the growth rates would justify that level of activity within the timeframe of the analysis.

“***Practicably controllable***” means the ability of the federal agency to regulate, in some way, the emissions caused by the federal action. The ability to regulate may include having the authority to establish emissions reduction programs, or having the authority to include conditions in permits, approvals or contracts to limit the emissions from certain activities. For example, a federal agency could practicably control the level of vehicle emissions by controlling the size of the parking facility and setting requirements for employee trip reductions. The agency could also condition a permit, approval or contract to require the use of low emitting vehicles during construction or for operations. The term “continuing program responsibility” means that the agency retains some oversight authority over the activity such as operational control, enforcement of permit conditions, contract review, or leasing authority. The federal agency does not have to conduct these activities itself; the agency just has the authority to conduct them. For example, two federal agencies may be approving the construction of a pipeline across a wetland. One agency may be responsible for approving the permit to fill the wetland. That agency would be responsible to ensure that the construction emissions conform to the SIP/TIP. Once the wetland construction is complete, the agency would not have responsibility for the operational emissions, since the agency would not have a continuing program responsibility. The other agency with responsibility for overseeing the safe operation of the pipeline must ensure that both the construction and operational emissions conform to the SIP/TIP.

The degree of detail in the emissions analysis for determining if the emissions are below the *de minimis* levels depends upon how close the total emissions are to the *de minimis* levels. If the emissions are significantly below the *de minimis* levels, only the rough but conservative estimates are needed. However, if the total emissions are close to the *de minimis* levels, then a more detailed study is called for. Controversial actions may require more detailed studies to avoid challenges to the determination. Historical analysis of similar actions could be used in cases where the proposed projects are similar in size and scope to previous projects. More complex projects may require more detailed activity analyses to determine whether emissions exceed *de minimis* levels. The NEPA analyses may provide the necessary emissions studies.

3.2.1 Baseline emissions

The baseline emissions for the future year are the projected emissions for that year considering the historic activity levels, expected growth without the federal action and the appropriate emission factors for the future year. The historic level is determined by the level of activity used in the SIP/TIP, or where EPA has not approved a SIP/TIP for the area, the most recent calendar year with a complete emission inventory available before the area was designated, unless EPA sets another year for determining the baseline.

If a federal agency is approving an action in an area with an approved SIP, then baseline emissions would be the emissions included in the SIP for the years being evaluated. However, if the area does not have an approved SIP or the SIP does not cover the years being evaluated, then the baseline emissions would need to be calculated. To calculate the emissions one must determine the appropriate activity level based upon historic activity levels, growth rates, and the appropriate emission factors for the type of equipment to be used. For examples, [click here](#).

For example, we will assume that a federal agency is approving a 5-year expansion of an airport in a nonattainment area without an approved SIP and the airport presently handles 100 flights per day but can safely handle 125 flights per day. The flights are a mixture of 80% regional jets and 20% medium size jets. For the past five years, the airport has seen a 5% growth in the number of passengers using its facilities. We will assume that the airport will reach capacity before the CAA mandated attainment. Since there is no SIP for the area, the baseline must be calculated upon historic activity levels growth rates and appropriate emission factors. Without the expansion the airport would reach its capacity of 125 flights per day and the activity level would be set at that number. However, to service the growth in the number of passengers, airlines would have to use more of the mid-size aircraft. Therefore, the appropriate emission factor would be based upon a different mixture of mid-size and regional jets.

3.2.2 Out of season emissions

Conformity evaluations are required for all actions covered by the regulations. The *de minimis* emission levels are established on a tons-per-year basis without regard for the time of year that the pollutant is emitted. Thus, annual emission rates per calendar year are used. However, if a conformity determination is required, then the season of the emissions may be relevant to determining if the emissions conform with the SIP/TIP. If the emissions from a federal action occur outside of the pollutant season, you should discuss this issue with the appropriate state, tribe or local air quality agency.

For example, a federal agency might fund or approve construction activities in a northern carbon dioxide nonattainment or maintenance area. The violations of the carbon monoxide (CO) standard only occur in the winter months and the SIP requirements and emission budgets only apply to those months. Because of the climate, most if not all of the construction activities cannot take place in the winter months. If the total direct and indirect emissions of CO exceeded the 100 tons per year *de minimis* level, then a full conformity determination would be required. However, a federal agency could legally limit the construction activities to non-winter months and get the state or tribe agree that the emissions are included in the SIP because they are only non-winter emissions.

3.2.3 Offsite emissions

In some cases, federal actions at a facility can cause increased emissions off the facility's property. These emissions would be considered indirect emissions if the agency could practicably control them through a program with continuing responsibility. For example, if a federal agency builds a new facility, it would include the emissions from personnel commuting to a facility since it could institute programs to limit the single vehicle commuting. The agency could then estimate the future emissions by assuming an average commute distance and future vehicle emission factors. However, the additional emissions from other off-facility activities of the employees such as shopping and recreational driving would not be included, since the agency would not have a responsibility for these activities. Emissions from vehicles servicing the facility are treated in the same manner as those from employee commuters.

3.2.4 Emission factors

An emissions factor is a representative value that relates the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. These factors are usually expressed as the weight of the pollutant divided by a unit weight, volume, distance, or duration of the activity emitting the pollutant (e.g., kilograms of particulate emitted per megagram of coal burned). Such factors facilitate estimation of emissions from various sources of air pollution. In most cases, these factors are simply averages of all available data of acceptable quality, and are generally assumed to be representative of long-term averages for all facilities in the source category (i.e., a population average).

The general equation for emissions estimation is:

$$E = A \times EF \times (1-ER/100)$$

where:

- E = emissions;
- A = activity rate;
- EF = emission factor, and
- ER = overall emission reduction efficiency, %

The EPA's Compilation of Emission Factors, known as AP-42, provides a wide range of emission factors. The emission factors for stationary and area sources and can be accessed through EPA's [TTN website](#). Besides providing the emission factors, AP-42 also provides information on the quality of the factors.

In cases where emission factors are unavailable or inappropriate, the federal agency should use the best available information. When using data on emission factors from sources other than AP-42, the federal agency should coordinate their use of such data and supplemental material with the EPA, and state, tribe and local air quality agencies.

In addition to the manual approach, EPA and other agencies have developed emission-estimating software that incorporates EPA emission factors. Some of the available software includes: MOBILE6 for on-road mobile sources, NONROAD2002a for off-road mobile sources, and EDMS airports and air bases. Mobile source models can be found [here](#).

Emission estimates for existing sources can also be obtained from emission test data. Source test information may have been collected by facilities as part of their efforts to demonstrate compliance with existing regulations. If such data are to be used, the federal agency should ensure that the conditions under which the data were collected represent the conditions being evaluated and the agency should coordinate the use of such data with the state or tribal air quality agency.

The appendix to this training manual provides additional information regarding emission factors and includes sample calculations from various source types.

3.2.5 Precursors of secondary pollutants

Secondary pollutants are ***criteria pollutants*** that are not emitted directly into the atmosphere. Instead, the precursors of those pollutants are emitted and, through atmospheric chemistry, are transformed into the criteria pollutants. For example, volatile organic compounds (VOC) combine with oxides of nitrogen (NO X) to form ozone. The SIPs and TIPs recognize the role of precursors and limit their emissions. The General Conformity Regulations also recognize their importance and establishes ***de minimis*** emission levels for precursors. In determining if the emissions exceed the ***de minimis*** levels, each precursor is analyzed separately. Federal agencies do not need to sum the total of the precursor. For example, if the ***de minimis*** emission levels for NO X is 100 tons per year and the ***de minimis*** emission levels for VOC is 100 tons per year and the total direct and indirect emissions from the action is 75 tons per year of VOC and 75 tons per year of NO X, the action would be below the ***de minimis*** emissions levels for the area. ***De minimis*** emission levels are available for precursors of ozone and fine particles – those are the only precursors for which federal agencies are required to evaluate in the conformity analysis. Although the precursors are analyzed separately for the ***de minimis*** emission level evaluation, if permitted by the SIP/TIP, the federal agency, with the concurrence of state or tribe, can reduce the emission of one precursor to offset or mitigate the increase in emission of another precursor of the same pollutant.

3.2.6 Construction emissions

Major federal actions often involve construction activities. The emissions from those activities can be either direct or indirect emissions. If the federal agency is controlling the construction activities or is approving the construction, then the emissions may be considered as direct emissions. Otherwise, the emissions would most likely be considered as indirect emissions. To do a detailed analysis of the construction emissions the federal agency would identify the type of equipment needed for the activity, the duration it is needed and when during the construction phase it would be used. The earth-moving phase of construction tends to produce the most emissions. The appendix to this training manual provides examples of the calculations of construction emissions.

3.3 Response to emergency events

Federal agencies often take action to respond to **emergencies** and do not have time to complete a review process before they need to take the actions. The General Conformity Regulations recognize this and provide for an initial 6-month exemption from the regulations with procedures for 6-month extensions of the exemption. EPA's regulations define emergency event as follows:

“Emergency means a situation where extremely quick action on the part of the federal agency involved is needed and where the timing of such federal activities makes it impractical to meet the requirements of the [regulations], such as natural disasters like hurricanes or earthquakes, civil disturbance such as terrorist attacks and military mobilizations.”

In most cases, the President of the United States or a governor will have declared a state of emergency or has issued orders regarding the emergency. However, federal agencies can also determine that the emergency exists. The responses to most emergencies, or at least the activities that cause significant emissions, are completed within six months.

The federal agency does not have to produce any paperwork to justify the initial response if it is taken in a matter of hours or days after the emergency event. The federal agencies responding to an emergency have broad latitude in taking actions. However, the longer the time period between the emergency event and the action taken by the federal agency, the greater the risk that the federal agency's action could be challenged.

To extend the exemption beyond the initial 6-month period the federal agency must make a written determination that it is impractical to prepare the conformity analysis that would otherwise be required. Copies of the written determination should be provided to the affected EPA Regional Office(s), states and tribes. If the federal agency wants to extend the exemption again, then it must provide a draft copy of the determination to affected EPA Regional Office(s), states and tribes for a 15-day comment period and publish a notice of the determination in a prominent advertisement in a daily newspaper of general circulation in the affected area. The agency can

extend the exemption for up to 6 months. Two additional extensions are permitted by following the same procedures. However, the agency must complete a conformity evaluation if the action would extend more than 2 years beyond the date of the event.

3.4 Federal agencies' own list of presumed to conform actions

In developing the list of exempt actions, EPA identified a number of actions that it believed would not result in foreseeable emissions above the *de minimis* levels. EPA realized that the list was not exhaustive and allowed federal agencies to develop their own list of actions that are presumed to conform. To publish a list of presumed to conform actions, the federal agency must show that the emissions meet at least one of the following criteria:

- The emissions from the action would be below the *de minimis* levels;
- The emissions from the type or category of action are included in the SIP/TIP; or
- Show that emissions from the type of action would not:
 - Cause or contribute to any new violation of any standard in any area;
 - Interfere with the applicable SIP/TIP for the maintenance of any standard;
 - Increase the frequency or severity of any existing violations of any standard in any state; or
 - Delay the timely attainment of any standard or any required interim emission reduction or other milestone in any area.

To create the final list, federal agencies would subject the draft list to a process similar to the review process for a conformity demonstration. This includes sharing the draft list with appropriate EPA offices and state and tribal agencies, publishing the list in the *Federal Register*, taking comment of the draft, and providing notice of the final list. The Federal Aviation Administration has published a list of actions that it presumed to conform ([72 FR 41565](#)).

The federal agency can also place limits on the type of actions that are presumed to conform. The agency could limit the size of the activity to ensure that the emissions are below the *de minimis* levels, or limit the geographic application of the action to ensure that the action is included in the SIP/TIP. The geographic limit could be a single nonattainment area or as small as a single facility.

If an action involves more than one of the activities that are listed as presumed to conform, EPA regulations allow federal agencies to exempt only one activity. The emissions from the other activities would be added into the total of the direct and indirect emissions for the *de minimis* level evaluation.

The EPA has established an alternate method for determining conformity at **federal facilities**. Under this approach, a federal facility would work with the state, tribal, or local air quality agency to set an emission budget for the facility. As long as the emissions at the facility remained within the budget, any action would be “presumed to conform.” If an action would result in the facility exceeding its emission budget, the action would have to undergo a standard conformity evaluation. Details of the facility emission budget approach are provided in a separate section below.

3.5 Demonstrating conformity

To conform, the total direct and indirect emissions caused by the action must be in compliance or consistent with all relevant requirements and milestones contained in the applicable SIP/TIP. These requirements and milestones include reasonable further progress schedules, assumptions specified in the attainment and maintenance demonstration, prohibitions, numerical emission limits and work practices. For example, some SIPs include construction work practices to control the emission of fugitive dust or prohibition of open burning in the nonattainment or maintenance area. Federal agencies should coordinate with the state, tribal, or local air quality agency to ensure that the emissions comply with this provision.

The method for determining conformity depends upon the pollutant and the circumstances surrounding the federal action. Most conformity demonstrations either mitigate the emission increases or demonstrate that the emissions have been or will be included in the SIP/TIP. Where EPA has not approved a SIP/TIP for the area, federal agencies can demonstrate conformity by conducting an air quality modeling study for pollutants other than nitrogen dioxide and ozone. Federal agencies can use a combination of methods to demonstrate conformity for an action. Regardless of the method or methods used to demonstrate conformity, the demonstration must address all the emissions increases caused by the action and not just the emissions above the *de minimis* levels.

The rule requires that conformity be analyzed for:

- The Clean Air Act mandated attainment year;
- The last year for which emissions are projected in a maintenance plan;
- The year with the greatest total direct and indirect emissions; and
- The year the applicable SIP/TIP specifies an emission budget.

A federal agency can demonstrate conformity either on a worst-case basis or on a year-to-year basis. Under the worst-case basis, the agency would show that the maximum emissions conform for each of the applicable years listed above. Under the year-to-year basis

the agency would show that the emissions would conform each year. The agency could use a combination showing conformity year-to-year for one phase of the action and show that the maximum emissions during another phase would conform.

3.5.1 Mitigation of emissions

To mitigate the emissions, the federal agency either reduces like emissions at the facility or in the same nonattainment or maintenance area. Emission reductions secured at other facilities are known as offsets. Mitigation measures need not be in place at the time that the conformity determinations are made. However, the measures must be described in detail in the conformity demonstration, including the process for implementation and enforcement, an explicit implementation schedule, written commitments for mitigation, and conditions on the approval of the action requiring implementation of the mitigation measure. Mitigation measures must be in place before emissions from the action start. The emission reductions used as mitigation measures must be (1) quantifiable, (2) consistent with the applicable SIP/TIP, (3) surplus to required emission reductions, (4) enforceable at both the state and federal levels, and (5) permanent within the timeframe specified by the program.

- The mitigation measures are quantifiable if they can be reliably calculated and if the method of calculation can be replicated. The federal agency would need to provide to the state air quality agency sufficient data and information to enable the agency to replicate the calculations if it chooses to do so.
- The mitigation measures would be consistent with the SIP/TIP if they are not prohibited and do not interfere with other measures in the SIP/TIP. For example, a SIP/TIP may include requirements on certain work practices, therefore if the mitigation measures involve those practices, then they would have to be consistent with those requirements.
- The mitigation measures and their emission reductions must be surplus, i.e., they cannot be required by any other federal, state, tribal or local environmental regulations, even if the measures are not specified on the SIP/TIP. However, early implementation of a measure could produce a temporary mitigation measure. For example, if the SIP/TIP required the implementation of a measure in three years and the source implements the measure after one year, then a federal agency could use the emissions reduction for the 2-year period until it is required by the SIP/TIP. Such measures may be useful for offsetting short-term emissions, such as from a construction project.
- The mitigation measure must be enforceable at the federal and state levels. The mitigation measure would generally be considered enforceable if they meet all of the following requirements:
- The measures are independently verifiable;

- A complete schedule to implement and verify approved measures has been adopted by the agency or a third party;
- Violations of mitigation measure requirements are practicably enforceable in accordance with the Clean Air Act and EPA regulations; and
- Liability for violations can be identified.

To make a measure enforceable, federal agencies may seek to have the measure included in the SIP/TIP or in a state, tribal or local air quality permit.

- Emission reductions from the mitigation measure are considered “permanent” if they continue to occur at the estimated level throughout the lifetime of the emissions increases caused by the action. Some measures inherently produce permanent emission reductions by design, such as infrastructure improvements, while other measures can produce permanent reductions if the equipment is used and maintained, such as the use of low emission vehicles. In the case of measures that require maintenance, the federal agencies are expected to require that the equipment be maintained and used for their useful life at the facility for which they were purchased. The same emission reductions cannot be used to mitigate more than one action, i.e., there can be no double counting of the reductions.

The General Conformity Regulations allow federal agencies to obtain offsets from not only the nonattainment or maintenance area where the action occurs, but also adjacent areas of equal or higher classification provided the emissions from that area would affect the area with the action. Generally, this may be done by showing that the general wind flow patterns would move the precursors of the pollutant into the area. However, for some primary pollutants (pollutants emitted directly into the atmosphere), this may require some air quality modeling.

To facilitate the availability of mitigation measures, EPA included in the regulations a provision for emission reduction credits (ERCs). Under this program, federal facilities would institute measures to reduce emissions and work with the state, tribal or local air quality agency to receive credit for those reductions towards future conformity evaluations. The requirements for the creation and use of the ERCs are discussed in a separate section.

3.5.2 Conformity with SIP or TIP

For any criteria pollutant, conformity can be demonstrated by showing through existing documentation that the total direct and indirect emissions caused by the action are specifically identified and accounted for in the SIP/TIP. Since states, tribes and local air

quality agencies may not be aware of future federal actions at the time of the SIP/TIP development, few federal actions requiring conformity have their emissions specifically identified and accounted for in the SIP/TIP. Where the actions are specifically identified and accounted for in the SIP/TIP, the conformity demonstration can be easy and straightforward – the federal agency would only have to document the information in the SIP/TIP.

In the cases where the emissions caused by the action are not specifically identified in the SIP/TIP, but are included in an emission budget category, the federal agency can demonstrate conformity by having the applicable state, tribal or local air quality agency provide a written statement documenting that the emissions caused by the action along with all other emissions in the area will not exceed the budget for those emissions in the SIP/TIP. For example, a state could document that when the emissions from the construction phase of the action are combined with the emissions from all other construction activities in the area, the total will not exceed the SIP/TIP budget for construction emissions. In the case of vehicle emissions, the federal agency can obtain a statement from the appropriate **Metropolitan Planning Organization** (MPO) responsible for transportation planning in the area that the direct or indirect vehicular emissions caused by the action, or a portion thereof, are included in a conforming transportation plan and transportation improvement program.

3.5.3 Conformity without a SIP or TIP

Federal agencies have three options to demonstrate conformity in areas without an approved SIP/TIP or with a SIP/TIP that does not cover the time period of the projected emissions. First, they can mitigate the total direct and indirect emissions from the action. Second, they can make a modeling demonstration that the emissions will not cause or contribute to a new or existing violation of the standard, interfere with the timely attainment or maintenance of the standard. Third, they can have the state or tribe commit to include the emissions into the future SIP/TIP for the area. Each method is further discussed below.

The mitigation of the emissions needs to meet the requirements for mitigation measures and offset discussed in section 3.6.1.

For primary pollutants, conformity can be demonstrated through the use of air quality modeling. Localized pollutants such as CO and PM 10 are typically subject to modeling that must demonstrate that the emissions from the action will not cause or contribute to an increase in the severity or frequency of NAAQS violations. The modeling must be conducted in accordance with EPA's Guidelines for Air Quality Modeling (70 FR 68218). The state or tribal agency will determine whether local-, area-wide, or both types of modeling are appropriate. Therefore, before a federal agency proceeds with a modeling demonstration, it should discuss the protocol with the state, tribal, or local air quality agency and the EPA regional Office. Modeling demonstrations are not permitted for secondary pollutants (pollutants formed in the atmosphere) such as ozone, nitrogen dioxide, and fine particles.

EPA has defined “ambient air” as “that portion of the atmosphere, external to a building, to which the general public has access.” Under EPA’s policy, in order for an area to be excluded from “ambient air,” the public access to that area must be prevented by a fence or other physical barrier (from a letter from Administrator Douglas Costle to Senator Jennings Randolph, December 19, 1980). The secure area of an airport and military bases or areas that are not accessible to the general public would generally qualify for the exclusion; however, specific cases should be discussed with state, tribal or local air quality agencies and the appropriate EPA Regional Office. By classifying the air in the secure area as “not ambient air,” the ambient standards are not applicable within the fence line, but must be met at the fence line. With such a classification, modeling receptor sites would generally not be located within the fenced area.

Finally, the federal agency can work with the state or tribe and obtain a written commitment from the Governor, or the Governor’s designee for SIP or the tribal leader for TIP, to include the emissions in the SIP/TIP. If the emissions would occur during the time-period covered by an existing SIP/TIP, the regulations would treat this written commitment as an automatic call for a SIP/TIP revision, which must be submitted within 18 months. If the emissions would occur beyond the period covered by the SIP/TIP, then the state or tribe must submit a SIP/TIP revision committing to include the emissions in the future SIP/TIP when it is adopted.

3.5.4 Schedule for demonstration measures

The conformity demonstration must include a schedule for the adoption and implementation of the mitigation measures. Although the measures do not have to be in place at the time the conformity demonstration is finalized, the measure must be described in detail, a schedule for adoption and implementation must be included and the measures must be in place before any activities resulting in increase emissions commence. For example, if the emissions from construction activities are to be offset by using alternative fueled vehicles, then the vehicles must be in operation before the construction starts. The federal agency can develop a phase program to mitigate the emissions where the quantity of the offsets varies over time.

In general, the annual emission reductions from the mitigation measures must exceed the emission increases caused by the action. However, under certain conditions, federal agencies can negotiate with the state or tribe and EPA to create an alternative schedule that allows the federal agency to offset the emission increases over a longer time period. For example, the federal agency could adopt measures that reduce emissions by 100 tons per year over a 20-year period to offset an emission increase of 130 tons per year for 10 years. The regulations place two major restrictions on the use of this option. First, the total emission reductions must exceed total emission increases as follows:

Extreme areas 1.5:1

Severe areas 1.3:1

Serious areas 1.2:1

Moderate areas 1.15:1

All other areas 1.1:1.

Second, the time period for the reductions to compensate for the increases cannot exceed two times the period of time that the emissions result from the action. For example, if the mitigation measure is to offset construction emissions and the construction will take three years, then the mitigation must be completed in six years. In addition, the state or tribe is not relieved from any of its obligations to meet milestones or attainment deadlines. Therefore, the state or tribe must agree to the additional time for mitigation and it must be able to demonstrate that all relevant SIP/TIP requirements will be met during the period of increased emissions. The participation of the state or tribe is voluntary; they are not obligated to approve the additional time even if all requirements are met.

3.5.5 Enforcement of mitigation measures

There are several methods to ensure that the mitigation measures are enforceable by EPA and the state or tribe. Two of the most common are:

- For the state, tribal, or local air quality agency to include the emissions in the SIP/TIP; or
- For the state, tribe or local agency to issue a permit for the emissions under an approved SIP/TIP permitting program.

If the mitigation measures are not being implemented, the state, tribe or local agency and EPA will, in most cases, take enforcement action against the organization responsible for the emission reductions. For example, if the federal agency secures an emission offset from a local power plant, and that reduction is included in the SIP or an air quality permit but the power plant fails to implement the measures to produce the reductions, EPA would normally take action against the local power plant and not the federal agency.

3.5.6 Modification of mitigation measures

If a federal agency wants or needs to modify or replace a mitigation measure used in a conformity demonstration, it must demonstrate that the modified or substitute measure will provide the same level of reduction provided by the original measure. Any modified or substitute measure must receive the same the interagency and public review as required for a draft conformity demonstration.

3.5.7 Alternative approaches

3.5.7.1 Emission reduction credit program

The emission reduction credit (ERC) program is a joint effort between the federal facility and the state or tribe. Neither party is obligated to participate but both must participate in order for the program to be established. Therefore, a discussion between the parties before initiating action on the program would be prudent.

Under the program, the federal facility would identify a measure to reduce emissions. To receive credit for the measure, it has to meet the same criteria as an emission offset, i.e., it must be quantifiable, consistent with the applicable SIP/TIP, surplus to required emission reductions, enforceable at both the state and federal levels, and permanent within the timeframe specified by the program. In addition, EPA requires that the measure be adequately supported, meaning that the federal facility can demonstrate that sufficient resources are available to properly implement the measure.

The federal facility would present the information about the potential ERC to the state, tribal or local air quality agencies to determine the quantity of credits available for the measure. The state or tribe would provide the federal facility with a written estimate of the available ERCs from the measure. The federal facility would then implement the measure.

In some cases it may not be possible to reasonably estimate the emission reductions from innovative measures in advance. In such cases, the federal facility could implement the measure along with a monitoring program to determine the quantity of ERCs that could be created by the measure.

When the federal facility needs to conduct a conformity evaluation, it can request the state to grant the ERCs for the measure and use the reductions to determine the net total direct and indirect emissions from the action. The ERC measure would be considered as part of the design of the action.

The ERCs are only the emission reductions that occur during the year of their use. The reductions cannot be rolled over from one year to the next. State, tribal and local agencies can develop their own system for reviewing and granting ERCs.

3.5.7.2 Facility emission budget approach

The facility emission budget approach is also a joint effort between the federal facility and the state or tribe. Neither party is obligated to participate but both must participate in order for the program to be established. Therefore, a discussion between the parties before initiating action on the approach would be prudent.

This approach is designed for a federal agency that takes multiple actions at a facility. Under the approach the federal agency and the state, tribal or local air quality agency would determine an emission budget for the facility. The budget would be used in development and adoption of the SIP/TIP for the area. As long as the federal facility remained within the emission budget, no conformity evaluation would be necessary for any actions affecting the facility.

To initiate the emission budget process, the federal agency would develop an emission inventory for the facility. Once the budget has been established, the federal agency could develop programs to reduce emissions at the facility. This would allow the federal agency to take additional actions without the need to address conformity.

If the federal agency wants to take an action at the facility that would cause the emission from the facility to exceed the emission budget for the facility, then it would be required to conduct a standard conformity evaluation.

In establishing the facility emission budget, state, tribal and local air quality agencies can identify such things as construction activities conducted in accordance with approved work practices that are presumed to conform.

3.5.8 Special Situations

3.5.8.1 Prescribed and wild fire policy

Under the EPA regulations, responses to wildfires are considered emergency actions and, as such, are exempt from the conformity requirements. In some areas federal agencies have policies to let wild fires burn through wilderness areas and do not suppress the fires unless it moves out of the designated area. Such actions would be covered under the federal agency's response to an emergency and the agency would not have to conduct a conformity evaluation unless the burn continues beyond six months.

Prescribed fires, on the other hand, may require a conformity evaluation. If the prescribed fire is conducted under an approved smoke management plan, it is presumed to conform and no conformity determination is necessary. Generally, if the prescribed fire is not part of an approved smoke management plan a conformity evaluation would be required by the federal agency. The regulations recognize that the use of basic smoke management practices for some prescribed fires could be as protective and allows state and tribes to include such fires in their presumed-to-conform list. One of the criteria that federal agencies can use as a basis for a conformity determination is inclusion of the activity in the SIP/TIP. If the SIP/TIP includes emissions from prescribed fires, then the federal agency can rely on a state or tribal statement that the emissions are accounted for in the attainment demonstration.

If the prescribed burning program is part of an ongoing program where there are a set number of acres burned per year in the same general geographic area, an action to continue the program at or below the existing level would be considered continuation of a routine activity. However, if there are prescribed burning goals in a land management plan without a specific program of ongoing burns, or if the prescribed fires occur in a different geographic area, the action may not be continuing or recurring, and the federal agency may be required to conduct a conformity evaluation.

3.5.8.2 EPA water projects

The EPA's action to award the State Revolving Funds capitalization grant is considered a programmatic level decision whose emissions are not reasonably foreseeable and thus a conformity evaluation is not necessary. However, if the grant is for a specific project then a conformity determination is required.

If the action involves a regional wastewater project and the project is sized to meet only the needs of population projections that are in the applicable SIP/TIP, then the project conforms. However, if the current population projections used for the project are greater than those in the approved SIP, then one of the other criteria must be used to demonstrate conformity.

3.5.8.3 Conformity when the SIP or TIP is under revision

Federal agencies on occasion take actions in areas where the state, tribe or local air quality agency is in the process of revising the SIP/TIP. The federal agency must demonstrate conformity to the EPA approved SIP/TIP even if the state, tribe, or local agency is in the process of revising it. However, if the state or tribe is expected to submit the revised SIP/TIP to EPA within 18 months, then the federal agency could work with the state to include the emissions in the new plan and demonstrate conformity through the state or tribe commitment approach. The state or tribe would then submit a SIP/TIP revision committing to include the emissions in the future SIP/TIP.

3.5.8.4 Conformity for rulemaking actions

The rulemaking process itself is exempt from the General Conformity Regulations. However, if an agency promulgates a rule that increases emissions in any nonattainment or maintenance area, the rule itself must be evaluated for conformity. If the emissions in any area would exceed the *de minimis* levels for the area and the action is not otherwise exempt, then the agency must demonstrate conformity.

3.6 Proactive role for federal agencies

The conformity process works best when the federal agency coordinates with the applicable state, tribal, or local air quality agency to ensure that the emissions from the existing facility and actions are included in the SIP/TIP. The environmental officials at the federal agencies need to know the process for the development of the SIP/TIP in the area and the appropriate contacts. States, tribes, and local agencies can more effectively accommodate the future action by a federal agency if the agency provides information about the actions to the air quality agency when it is developing a SIP/TIP.

A key to the federal agency's ability to deal effectively with the state, tribe, or local air quality agency is its knowledge of its own emissions. Development of a comprehensive emission inventory for a federal facility provides the federal agency the information to ensure that all the emissions from a facility are included in the SIP/TIP. The comprehensive inventory can also help identify possible mitigation measures for future conformity demonstrations and ERCs.

4.0 Module IV

4.1 State, tribal, and local responsibilities

The state, tribal and local air quality agencies have a number of responsibilities under the General Conformity Regulations. Most of their responsibilities are connected to their duties as air quality program managers; the General Conformity program will assist the state, tribal and local agencies in meeting their air quality goals. Their responsibilities include:

- Identification of emissions in the **state or tribal implementation plan** (SIP/TIP). **Federal agencies** will request the state, tribal, or local air quality agency to make a statement that the emissions for the **federal action** are included in the SIP/TIP. In order to make such a statement, the agency must ensure that the emission from the action along with all other emissions in the area will not exceed the budget for that category of emission in the SIP/TIP;
- Review of draft determinations. Federal agencies are obligated to provide copies of their draft conformity demonstrations applicable to state air quality agency, any federally recognized tribe in the **nonattainment or maintenance area**, and the local **Metropolitan Planning Organization** (MPO). Those agencies have 30 days to comment on the draft demonstrations. Although the state, tribal, and local agencies are not required to comment on the draft demonstrations, they should review the demonstrations to ensure that the federal agency properly address the SIP/TIP issues and that any mitigation measures are appropriate;
- Commitment to include emissions in the SIP. One method of demonstrating conformity is to have the state or tribe commit to include the emissions caused by the action included in the SIP/TIP. The states and tribes are not obligated to make such a commitment; however, many may wish to do so in order for the federal agency to take the action. If a state or tribe makes such a commitment, then it has 18 months to submit a SIP/TIP revision to EPA. If the emission for the action would extend beyond the time period covered by the existing approved SIP/TIP and the new SIP/TIP is not to be submitted within 18 months, then the state or tribe must submit the commitment as a SIP/TIP revision;
- Inclusion of offsets or mitigation measures in the SIP/TIP. In order to ensure that the offset or mitigation measures are enforceable by EPA, state or appropriate tribe, the offset or mitigation measures can be included in the SIP/TIP. The state, tribe or local agency would be responsible for developing, adopting, and submitting the revisions to incorporate the measure into the SIP/TIP;

- Permits for offsets and mitigation measures. Another way that a state, tribe or local agency could make the offset or mitigation measure enforceable by themselves and EPA is to issue an air quality permit under a program that has been approved as part of the SIP/TIP. The state, tribe or local agency responsible for the permit program would have to issue the permit for the measure;
- Emission Reduction Credit (ERC) programs. The General Conformity Regulations allow federal agencies to work with states and tribes to create ERCs for a facility. The states and tribe are not obligated to participate in the program, but must be in order for the federal agency to create and use the ERCs;
- Development of emission budgets. A federal agency can request that the state, tribe, or local agency develop an emission budget for its facility to be used in the conformity process. The emission budget would be useful in the development and implementation of the SIP/TIP and would reduce the number of draft conformity demonstrations that the state, tribe or Local agency would have to review. The state, tribe, or local agency may want to track the federal agency's efforts in meeting the emission budget;
- Review of **emergency** event exemption extension. The General Conformity Regulations allow federal agencies to take actions in response to emergency events without conducting a conformity evaluation. If the response extends beyond six months, the federal agency must make a determination that it is impractical to conduct the conformity evaluation. The federal agency must allow the state or tribe 15 days to review the draft determination before it makes a final determination;
- Tracking of **de minimis actions**. Federal agencies are not required to report on actions with emissions below the *de minimis* levels. However, under the National Environmental Policy Act (NEPA), the federal agencies must evaluate their significant actions. Although not required by the regulations, states, tribes, and local agencies should review and comment as necessary on the **National Environmental Policy Act** (NEPA) statements as they relate to emissions below the *de minimis* levels. In addition, states and tribes may want to track the actions with emissions below the *de minimis* levels at federal facilities or in specific areas if a number of those actions are occurring; and
- Presumed to conform list. Federal agencies can add additional activities to the list of actions that are presumed to conform. As part of the procedure to create its own list, the federal agency must provide the appropriate states and tribes with the justification for its action and allow 30 days for their comments. In addition, the Regulations also allow state and tribes to create their own list that are presumed to conform in their area. \

4.2 State and tribal conformity implementation plans

States and tribes are allowed, but not required, to have their own conformity implementation plan. If a state or tribe adopts an implementation plan for the conformity program, the plan must be at least as stringent as the federal regulations and can be no more stringent than the federal regulations unless the requirements apply to non-federal sources as well. Unless the state or tribe has a program to ensure that all entities conform to the SIP/TIP, their implementation plan would be similar to the federal requirements. The state or tribe can use their own plan to identify the appropriate reviewing agencies and other procedural matters. States that already have approved general conformity SIP submit a revision rescinding the SIP and stating that 40 CFR part 93 will apply.

Once the plan is adopted and approved by EPA as a SIP/TIP revision, federal agencies are obligated to meet the requirements of the state or tribal plan. Since the state and tribal programs are approved as part of the SIP/TIP for the area, they remain effect until EPA approves their revisions even though EPA revises the federal rules. States with an approved program must revise their plans before a federal agency can take advantage of any new provisions of the federal regulations. Since the federal regulations apply when the state or tribe does not have a program, deletion of a state or tribal program would not have an environmental effect.

Glossary

Clean Air Act (CAA)	The basis of clean air programs in the United States. The original CAA passed in 1970 and was amended in 1977 and 1990. It is comprised of nine sections or Titles that cover, in order, the National Ambient Air Quality Standards, mobile sources, hazardous air pollutants, acid-deposition control, stationary source operating permits, stratospheric ozone and global climate protection, enforcement, miscellaneous provisions, and clean air research.
Continuing Program Responsibility	Means a Federal agency has responsibility for emissions caused by: (1) Actions it takes itself; or (2) Actions of non-Federal entities that the Federal agency, in exercising its normal programs and authorities, approves, funds, licenses or permits, provided the agency can impose conditions on any portion of the action that could affect the emissions.
Criteria Pollutant	Any pollutant for which there is established a NAAQS at 40 CFR part 50.
<i>De Minimis</i>	When the total direct and indirect emissions resulting from a federal action are below the listed <i>de minimis</i> level, the action is not subject to a conformity determination. The creation of <i>de minimis</i> emission levels limited the need to conduct conformity determinations for federal actions that create minimal air pollution increases.
Direct Emissions	Those emissions of a criteria pollutant or its precursors that are caused or initiated by the Federal action and originate in a nonattainment or maintenance area and occur at the same time and place as the action and are reasonably foreseeable.
Emergency	A situation where extremely quick action on the part of the Federal agencies involved is needed and where the timing of such Federal activities makes it impractical to meet the requirements of this subpart, such as natural disasters like hurricanes or earthquakes, civil disturbances such as terrorist acts and military mobilizations.
Federal Action	Any activity engaged in by a department, agency, or instrumentality of the Federal government, or any activity that a department, agency or instrumentality of the Federal government supports in any way, provides financial assistance for, licenses, permits, or approves, other than activities related to transportation plans, programs, and projects developed, funded, or approved under title 23 U.S.C. or the Federal Transit Act (49 U.S.C. 1601 <i>et seq.</i>). Where the Federal action is a permit, license, or other approval for some aspect of a non-Federal undertaking, the relevant activity is the part, portion, or phase of the non-Federal undertaking that requires the Federal permit, license, or

	approval.
Federal Agencies	A Federal department, agency, or instrumentality of the Federal government.
Federal Facilities	Facilities owned by the federal agencies or facilities subject to routine federal actions such as airports and seaports.
Federal Implementation Plan	In the absence of an approved State Implementation Plan (SIP), a plan prepared by the EPA which provides measures needed to meet the requirements of the Clean Air Act.
Indirect Emissions	<p>Those emissions of a criteria pollutant or its precursors:</p> <p>(1) That are caused or initiated by the Federal action and originate in the same nonattainment or maintenance area but occur at a different time or place as the action;</p> <p>(2) That are reasonably foreseeable;</p> <p>(3) That the agency can practically control; and</p> <p>(4) For which the agency has continuing program responsibility.</p> <p>For the purposes of this definition, even if a Federal licensing, rulemaking or other approving action is a required initial step for a subsequent activity that causes emissions, such initial steps do not mean that a Federal agency can practically control any resulting emissions.</p>
Maintenance Area	An area that was designated as nonattainment and has been re-designated in 40 CFR part 81 to attainment, meeting the provisions of section 107(d)(3)(E) of the Act and has a maintenance plan approved under section 175A of the Act.
Metropolitan Planning Organization (MPO)	The policy board of an organization created as a result of the designation process in 23 U.S.C. 134(d).
National Ambient Air Quality Standards (NAAQS)	Those standards established pursuant to section 109 of the Act and include standards for carbon monoxide (CO ₂), lead (Pb), nitrogen dioxide (NO ₂), ozone, particulate matter (PM-10 and PM2.5), and sulfur dioxide (SO ₂).
Nonattainment Area	An area designated as nonattainment under section 107 of the Act and described in 40 CFR part 81.
Precursor Pollutants	<p>Are:</p> <p>(1) For ozone, nitrogen oxides (NO_x), unless an area is exempted from NO_x requirements under section 182(f) of the</p>

	<p>Act, and volatile organic compounds (VOC).</p> <p>(2) For PM-10, those pollutants described in the PM-10 nonattainment area applicable SIP as significant contributors to the PM-10 levels.</p> <p>(3) For PM_{2.5}:</p> <p>(i) Sulfur dioxide (SO₂) in all PM_{2.5} nonattainment and maintenance areas,</p> <p>(ii) Nitrogen oxides in all PM_{2.5} nonattainment and maintenance areas unless both the State and EPA determine that it is not a significant precursor, and</p> <p>(iii) Volatile organic compounds (VOC) and ammonia (NH₃) only in PM_{2.5} nonattainment or maintenance areas where either the State or EPA determines that they are significant precursors.</p>
Practicably Controllable	The ability of the federal agency to regulate in some way the emissions caused by the federal action.
Reasonably Foreseeable Emissions	Projected future direct and indirect emissions that are identified at the time the conformity determination is made; the location of such emissions is known and the emissions are quantifiable as described and documented by the Federal agency based on its own information and after reviewing any information presented to the Federal agency.
State Implementation Plan (SIP)	A plan developed by a State, including a set of programs and regulations designed to assure that the NAAQS are attained and maintained.
Total of Direct and Indirect Emissions	The sum of direct and indirect emissions increases and decreases caused by the Federal action; i.e., the “net” emissions considering all direct and indirect emissions. The portion of emissions which are exempt or presumed to conform under §93.153 (c), (d), (e), or (f) are not included in the “total of direct and indirect emissions.” The “total of direct and indirect emissions” includes emissions of criteria pollutants and emissions of precursors of criteria pollutants.
Transportation Conformity	Transportation conformity applies to transportation plans, transportation improvement programs, or Federal Highway Administration or Federal Transit Administration projects in areas that do not meet air quality standards for the NAAQS.
Transportation Plan	A plan developed by the Metropolitan Planning Organization.
Tribal Implementation Plan (TIP)	A plan to implement the national ambient air quality standards adopted and submitted by a federally recognized Indian tribal government determined to be eligible under 40 CFR 49.9 and the plan has been approved by EPA.

Links for General Conformity

The General Conformity Website

The General Conformity Regulations and additional information are available on EPA's General Conformity website at www.epa.gov/air/genconform.

EPA initially promulgated the General Conformity Regulations in 1993. EPA issued a final rule revision on April 5, 2010 ([revised rule](#)).

This web site contains the following information:

Basic Information: Explanation of the General Conformity Rule, including relevant statistics and links to both existing guidance and the current regulations.

Regulatory Actions: Links to regulatory documents and information explaining regulatory actions related to the General conformity Revisions.

Frequent Questions: Answers to the most common questions regarding the revision to the General Conformity Rule.

Further Information: Web sites of related programs and information from both within EPA and other agencies.

Glossary: A complete glossary of terms used on EPA websites.

Appendix A: General Conformity Sample Emissions Calculations

General Conformity Sample Emissions Calculations

1. External Combustion Sources

External combustion units such as boilers and space heaters provide heat for building HVAC systems, heating water, and generating steam. These units use natural gas, diesel, propane, coal, or other petroleum-based fuel.

Source test data pertain to specific equipment. Thus it is best to use these data to obtain the most accurate emissions. However, if source test data are not available, emission factors can be used to calculate annual emissions. AP-42 presents emission factors for external combustion sources based on the fuel type and size of the unit:

Section 1.1 Bituminous and Subbituminous Coal;

Section 1.2 Anthracite Coal;

Section 1.3 Fuel Oil;

Section 1.4 Natural Gas; and

Section 1.5 Liquefied Petroleum Gas.

Annual emissions from external combustion sources can be calculated using the following equation:

$$AE_i = EF_i \times Q \times (1 - CE_i/100)$$

Where,

AE_i = Annual emissions of chemical i ($lb\ i / yr$)

EF_i = Chemical i emission factor for fuel and unit size used ($lb\ i/MMscf$ fuel)

Q = Max potential or actual amount of fuel used ($MMscf$ fuel / yr)

CE_i = Chemical i emission control efficiency (*percent*)

100 = Factor for converting percent to a fraction

For example, actual annual carbon monoxide (CO) emissions from a 2.5 million British Thermal Units per hour (MMBtu/hr) natural gas-fired boiler which consumes 3.5 million standard cubic feet (MMscf) in one year is calculated as follows:

$$\begin{aligned}
 AE_{CO} &= \frac{84 \text{ lbs CO}}{\text{MMscf nat'l gas}} + \frac{3.5 \text{ MMcf nat'l gas}}{\text{yr}} \times (1 - 0/100) \\
 &= 294 \text{ lb CO/yr} \quad [\text{assuming no controls, CE}_i = 0]
 \end{aligned}$$

where emission factors for natural gas-fired boilers with a heat rating between 0.3 MMBtu/hr and 100 MMBtu/hr are obtained from Table AP-42, Section 1.4, Table 1.4-1.

2. Internal Combustion Sources

There are two methods for calculating annual emissions from internal combustion units. If the unit's brake horsepower (bhp) and annual hours of operation are available, the following equation can be used:

$$AE_i = EF_i \times \text{bhp} \times t$$

Where,

AE_i = Annual emissions of chemical i ($lb\ i/yr$)

EF_i = Chemical i emission factor ($lb\ i/bhp\text{-hr}$)

t = Total annual number of hours of operation (hr/yr)

bhp = Unit brake horse power (bhp)

The rated bhp can either be obtained from the manufacturer or the engine literature that came with the engine. Emission factors are also available from AP-42 Section 3.3 for gasoline and diesel-fired internal combustion engines. If criteria pollutant emission factors in lb/bhp-hr are available from the manufacturer, these should be used before applying general engine emission factors from AP-42.

For example, NO_x emissions of a diesel- powered 250 bhp internal combustion engine was run for 2,080 hours in a year and the emission factor are calculated as follows:

$$\begin{aligned}
 AE_{NO_x} &= \frac{0.031 \text{ lb NO}_x}{\text{bhp-hr}} \times 250 \text{ bhp} \times \frac{2,080 \text{ hr}}{\text{yr}} \\
 &= 16,120 \text{ lb NO}_x/\text{yr}
 \end{aligned}$$

An alternative method is used if fuel consumption is provided. First, the annual amount of heat input (MMBtu) using the following equation:

$$Q = U_{\max} \times H_v \times \rho \times t / (\text{efficiency} \times 10^6)$$

Where,

- Q = Annual heat input (*MMBtu*)
- U_{\max} = Maximum potential fuel usage of the engine (*gal fuel/hr*)
- H_v = Heating value of the fuel (*BTU/lb fuel*)
- ρ = Fuel density (*lb fuel/gal fuel*)
- t = Annual actual hours of operation (*hr/yr*)
- CE_i = Chemical *i* emission control efficiency (*percent (%)*)

Annual emissions can then be calculated by using the following equation:

$$AE_i = EF_i \times Q$$

Where,

- AE_i = Annual emissions of chemical *i* (*lb i/yr*)
- EF_i = Chemical *i* emission factor for fuel and unit size used (*lb i/MMBtu*)
- Q = Annual heat input from equation above (*MMBtu*)

For example, a diesel internal combustion engine with a maximum fuel usage of 18 gal/hr was run for 2,080 hr/yr and an estimated efficiency of 80 percent. The actual annual NO_x emissions are calculated by first finding the maximum heat value:

$$Q = \frac{18 \text{ gal/fuel}}{\text{hr}} + \frac{19,300 \text{ Btu}}{\text{lb fuel}} \times \frac{7.5 \text{ lb fuel}}{\text{gal fuel}} \times \frac{8,760 \text{ hr}}{\text{yr}} \times \frac{1 \text{ MMBtu}}{10^6 \text{ Btu}} \times \frac{1}{80 \% \text{ eff.}}$$

$$= 28,530 \text{ MMBtu}$$

$$AE_{\text{NO}_x} = \frac{4.41 \text{ lb NO}_x}{\text{MMBtu}} \times 28,530 \text{ MMBtu}$$

$$= 125,817 \text{ lb NO}_x/\text{yr}$$

3. Construction

Particulate emissions from building and road construction may substantially affect local air quality for a temporary period. Construction activities include land clearing, drilling and blasting, ground excavation, cut and fill operations (i.e., earth moving), and construction of a given facility. The amount of particulate emissions is proportional to the area of land being worked on and the level of construction activity. Equipment traffic is a major contributor of emissions. Particulate emission factors for construction activity operations are:

$$E = 2.69 \text{ megagrams (Mg)/hectare/month of activity}$$

$$E = 1.2 \text{ tons/acre/month of activity}$$

It is strongly recommended that when estimating emissions for a particular site, the construction process be broken down into component operations where each component involves traffic and material movements, and emission factors from other AP-42 sections are used to generate estimates. Table 13.2.3-1 lists the dust sources involved with construction, along with the recommended emission factors.

In addition to the on-site activities given in Table 13.2.3-1, substantial emissions are possible because of material tracked out from the site and deposited on adjacent paved streets. A secondary source of emissions occurs from traffic passing the site (i.e., not just that associated with the construction) can resuspend the deposited material and may be a far more important source than all dust activity within in the construction site.

The annual emissions of a chemical from construction activities can be calculated using the following equation:

$$AE_i = EF_i \times [\text{PR} \times (\text{LF}/100) \times \text{U} \times \text{H} \times \text{D}] \times 0.002205$$

Where,

AE_i = Annual emissions of chemical i ($lb\ i/yr$)
 EF_i = Chemical i emission factor ($g\ i/hp-hr$)
PR = Power rating (hp)
LF = Load factor (percent (%))
100 = Factor for converting percent to a fraction
U = Number of units
H = Hours of operation per day (hr/day)
D = Number of day of operation (day)
0.002205 = Conversion Factor ($lb\ i/g\ i$)

For example, a diesel-powered forklift with a power rating of 94 horsepower (hp) is used for construction activity six hours a day, and 31 work days, its actual PM_{10} emissions are:

$$AE_{PM_{10}} = \frac{.06\ g\ PM_{10}}{hp-hr} \times 94\ hp \times \frac{48}{100} \times 1\ unit \times \frac{6\ hr}{day} \times 31\ days \times \frac{.002205\ lb\ PM_{10}}{g\ PM_{10}}$$
$$= 1.11\ lb\ PM_{10}/yr$$

4. Fuel Storage

VOC emissions from fuel storage are calculated based on the methodologies presented in EPA's AP-42, Section 7. The EPA-established emission estimation equations for calculating emissions from fuel storage tanks were developed by the American Petroleum Institute (API). They are quite complex and are specific to the type of storage tank used. In general, the equations calculate the working and standing losses from storage tanks which are summed to provide the total emissions associated with a specific storage tank. Working losses refer to the emissions from receiving fuel. Standing losses are primarily due to temperature changes and refer to losses from the evaporation of the fuel from the storage tank. These emissions are generally released through vents or other mechanisms.

EPA has developed the TANKS Model to help facilitate emission calculations from storage tanks. Emissions from fuel storage tanks are based on tank dimensions, product throughput, local climate, and the characteristics of the stored products. Using the TANKS Model, VOC emissions can be calculated based on actual annual usage data for each type of fuel.

5. Fuel Transfer

Fuel transfer operations involve the loading of fuel into fuel storage tanks, tanker trucks, aircraft, and vehicles and/or equipment. As liquid fuel is loaded into a source (e.g., into the main storage tanks, a tanker truck cargo tank, an aircraft tank, a vehicle/equipment tank, or a bowser), vapors are displaced and emitted into the atmosphere. The amount of emissions released is dependent on several factors such as the type of fuel being transferred, temperature, and the loading method as described below. Working losses will occur from fuel transfer during the loading of fuel storage tanks, tanker trucks, vehicles, equipment, and aircraft refueling.

6. On-Road Vehicles

On-road vehicles can be classified into eight vehicle categories according to vehicle type, gross vehicle weight (GVW), and fuel type. Table 1 lists the eight vehicle categories and a brief description of each.

Table 1. Vehicle Categories for On-road Vehicles

Vehicle Type Category	Description
LDGV	Light-duty gasoline-fueled vehicles (i.e., gasoline passenger cars)
LDGT1	Light-duty gasoline-fueled trucks, type 1 (includes gasoline pickup trucks, sport utility vehicles, and vans with a GVW of 6,000 pounds or less)
LDGT2	Light-duty gasoline-fueled trucks, type 2 (includes gasoline pickup trucks, sport utility vehicles, and vans with a GVW from 6,001 pounds to 8,500 pounds)
HDGV	Heavy-duty gasoline-fueled vehicles (includes all gasoline vehicles with a GVW exceeding 8,500 pounds)
LDDV	Light-duty diesel-powered vehicles (i.e., diesel passenger cars)
LDDT	Light-duty gasoline-fueled trucks (includes diesel pickup trucks, sport utility vehicles, and vans with a GVW of 8,500 pounds or less)
HDDV	Heavy-duty diesel-powered vehicles (includes diesel trucks and buses with a GVW exceeding 8,500 pounds)
MC	Motorcycles

In addition to vehicle category, emission factors for motor vehicles are dependent on several other variables such as model year, mileage, speed, temperature, altitude, fuel properties (e.g., additives, vapor pressure, sulfur content, etc.), possible tampering, possible inspection/maintenance programs, operating mode (i.e., percent operation in cold start, stabilized, and hot start modes), emission control system, etc. Emissions from on-road vehicles are usually calculated using “typical” (or “average”) emission factors. Typical emission factors for CO, NO, and non-methane hydrocarbons are found in Appendix H of AP-42, Volume II. The annual emissions from on-road vehicles can be calculated using the following formula:

$$AE_i = VMT \times EF_i \times 0.002205$$

Where,

AE_i = Annual emissions of chemical i ($lb\ i/yr$)

VMT = number of vehicle miles traveled per year ($miles/yr$)

EF_i = Chemical i emission factor ($g\ i/mile$)

0.002205 = Factor to convert grams to pounds ($lb\ i/g\ i$)

For example, in the category of light duty gasoline vehicles (LDGV), the total annual miles driven onsite is 12,972 miles; therefore, actual CO emissions are:

$$AE_{CO} = \frac{12,972\ miles}{yr} \times \frac{10.2\ g\ CO}{mile} \times \frac{0.0022\ lbs}{1\ g}$$

$$AE_{CO} = 291.09\ lb\ CO/yr$$

In order to calculate total emissions from all vehicles, emissions from each vehicle category are summed. If more specific emission calculations are required (e.g., emissions calculated based on different speeds, temperatures, operating modes, etc.), they can be performed using EPA Mobile Source computer programs. These programs can be obtained from the following internet address: <http://www.epa.gov/otaq/models.htm>. The most current EPA program for calculating CO, NO, and VOC emissions from on-road vehicles is MOBILE6.2.

The total direct and indirect emission for a project includes the emissions from vehicles at the federal facilities as well as emissions from vehicles servicing the facilities and employees commuting to the facilities. The on facilities VMT can be estimated based upon traffic data, or surveys. The off facility VMT for service vehicles can be estimated based upon the average distances to serviced centers in the nonattainment or maintenance area. The VMT for commuters should be based upon the average commuting distance within the nonattainment or maintenance area for employees at the facility.

7. Off-Road Vehicles and Equipment

Emissions from off-road vehicles and equipment used at an installation can be estimated based upon the type of off-road vehicles and equipment used. Engine rating, fuel use, and total operating time for off-road vehicles and equipment can be obtained from maintenance records or interviews with operating personnel. Emission factors for off-road vehicles and equipment can be obtained from EPA's NONROAD2008 model. For natural gas engines, emission factors for criteria pollutants and precursors can be obtained from AP-42, Section 3.2 Table 3.2-3 Gaseous Emission Factors for 4-Stroke Rich Burn Natural Gas Engines.

Method 1

When fuel usage data are not available, the emissions can be calculated using the estimated hours of operation. Actual emissions of criteria pollutants for the specific equipment type can be estimated by multiplying the estimated annual number of operational hours by their engine rating, equipment load factor, and respective emission factors. The load factor is the portion of available power at which the type of engine typically operates. The equation is as follows:

$$AE_i = EF_i \times [(PO \times (LF/100) \times OT)] \times 0.002205$$

Where,

AE_i = Annual emissions of chemical i ($lb\ i/yr$)
 EF_i = Chemical i emission factor ($g\ i/mile$)
 PO = Rated power output of the vehicle/equipment engine (hp)
 LF = Loading Factor ($\% \text{ of Maximum Power}$)
 100 = Factor for converting percent to a fraction
 0.002205 = Conversion Factor ($lb\ i/gi$)

For example, for the diesel-fired tractor tow support units with seven units, each with an engine ratings of 77 hp, operated at 56% of their maximum power, for a total of 1,297 hours in a given year; their actual annual VOC emissions are:

$$AE_{VOC} = \frac{0.451\ g\ VOC}{mile} \times 77\ hp \times (56/100) \times \frac{1,297\ hrs}{yr} \times \frac{.002205\ lb\ VOC}{g\ VOC}$$
$$= 55.62\ lb\ VOC/yr$$

Method 2

When the fuel usage data are not available the emissions can be calculated by converting the fuel usage into a power output (i.e., horsepower-hours). Actual emissions of criteria pollutants for the specific equipment type can be calculated by multiplying the annual power output by the applicable emission factors.

$$AE_i = EF_i \times [(FC \times FD)/BSFC] \times 0.002205$$

Where,

AE_i = Annual emissions of chemical i ($lb\ i/yr$)

EF_i = Chemical i emission factor ($g\ i/hp-hr$)

FC = Fuel consumption (gal/yr)

FD = Fuel density ($lb\ fuel/gal\ fuel$) [note default values include: 6.09 for gasoline, 7.11 for diesel, and 6.8 for JP-8 jet fuel]

$BSFC$ = Typical brake-specific fuel consumption for the vehicle/equipment ($lb\ fuel/hp-hr$)

0.002205 = Conversion Factor ($lb\ i/g\ i$)

For example, for the diesel-fired mower with a BSFC of 0.4 lb/hp-hr, which consumed 416 gallons of diesel fuel in a given year; its actual annual CO emissions are:

$$AE_{CO} = \frac{5.01\ g\ CO}{hp-hr} \times \frac{416\ gal\ fuel}{yr} \times \frac{7.11\ lbs\ fuel}{gal\ fuel} \times \frac{hp-hr}{0.4\ lbs} \times \frac{0.002205\ lbs\ CO}{g\ CO}$$
$$= 81.67\ lb\ CO/yr$$

Method 3

When the fuel usage data and the emission factors are available based on mass of pollutant per volume of fuel consumed, the following equation can be used:

$$AE_i = EF_i \times FC \times 0.002205$$

Where,

AE_i = Annual emissions of chemical i ($lb\ i/yr$)
 EF_i = Chemical i emission factor ($g\ i/hp-hr$)
FC = Fuel consumption ($gal\ fuel/yr$)
0.002205 = Conversion Factor ($lb\ i/g\ i$)

For example, the annual NO_x emissions of a 4,000 pound diesel-powered forklift using 21 gallons of diesel fuel in a particular year are:

$$AE_{NO_x} = \frac{4.502\ gNO_x}{hp-hr} \times \frac{21\ gal\ fuel}{yr} \times \frac{0.002205\ lb\ NO_x}{g\ NO_x}$$
$$= 0.21\ lb\ NO_x/yr$$

8. Aircraft Operations

Flying operations include landing and takeoff (LTO), touch and go (TGO), and low approach (LA). An LTO cycle includes taxiing between the hangar and the runway, taking off and climbing out, approach and descent from the local pattern, followed by a touch down and taxiing in. TGOs include only a takeoff, climbout, and an approach. LAs include only approach and climbout. Each of these activities has an actual duration and associated emission factors for criteria pollutants and precursors that are based on the engine power settings. Annual emissions from flight operations can be estimated using the FAA's Emission and dispersion Modeling System (EDMS). EDMS provides data on flight emissions and ground support equipment emission. In flight emissions can also be calculated using the following equation:

$$AE_i = EF_i \times (FFR/1000) \times (TIM/60) \times NE \times 0.002205$$

Where,

AE_i = Annual emissions of chemical i ($lb\ i/yr$)
 EF_i = Chemical i emission factor for the aircraft engine at a particular setting ($lb\ i/1000\ lb\ fuel$)
FFR = Fuel flow rate per engine ($lb\ fuel/yr$)
1000 = Factor for converting "lb/hr" to "1000 lb/hr"
TIM = Time in Mode ($min/cycle$)

60 = Factor for converting minutes to hours (*min/hr*)

NE = Number of engines on the aircraft

In-flight emissions only include emissions in the nonattainment or maintenance area. Emissions above the mixing height for the area or beyond the boundaries of the area are not included. Three thousand feet above ground level is used as a default mixing height when more specific data is not available.

As an example, CO emissions during the taxiing out mode for the C-130H aircraft with four T56-A-15 engines and 2,368 LTOs are calculated as follows:

$$AE_{CO} = \frac{3.84 \text{ lb CO}}{1,000 \text{ lb fuel}} \times \frac{1,200 \text{ lb fuel}}{\text{hr}} \times \frac{0.58 \text{ hr}}{\text{LTO}} \times \frac{2,368 \text{ LTOs}}{\text{yr}} \times \frac{4 \text{ engines}}{\text{aircraft}}$$
$$= 25,315 \text{ lbs CO/yr}$$

Emissions from all five operating modes of a specific engine in an LTO cycle are then added to obtain total annual emissions from LTO operations.

9. Paved Roads

Vehicle travel over a paved surface such as a road or parking lot produces particulate emissions. Direct particulate emissions include vehicle exhaust, brake wear, and tirewear. Resuspended loose materials from the road surface also contribute to particulate emissions. AP-42, Section 13.2.1 provides a paved road emission factor that only addresses particulate emissions from resuspended material. EPA's MOBILE6.2 or MOVES2010 model are used to estimate particulate emissions from vehicle exhaust, brake wear, and tire wear. The following equation can be used to calculate size-specific emission factors for vehicle travel over a paved surface:

$$EF_i = k (sL/2)^{0.98} (W/3)^{0.53} (S/30)^{0.16}$$

Where,

EF_i = Size-specific emission factor (units matching the units of k)

k = Particle size multiplier for particle size range and units of interest (see below)

sL = Road surface silt loading (g/m²)

W = Average weight of the vehicles traveling the road (tons)

S = Average vehicle speed of the vehicles traveling the road (mph)

The emission factor shown above only represents particulate emissions from resuspended surface material from vehicles traveling paved roads. To obtain an emission factor representing total particulate emissions, the emission factors for the exhaust, brake wear and tire wear obtained from either EPA's MOBILE6.2 or MOVES2010 model should be added to the emissions factor calculated from the empirical equation. Total particulate emissions can then be estimated with this aggregate emission factor.

In addition, when calculating the emission factor from the above equation, the average weight and speed for all vehicles traveling the road should be used. For example, if 99 percent of traffic on the road is 2-ton cars and trucks while the remaining 1 percent consists of 20-ton trucks, then the mean weight "W" is 2.2 tons.

10. Unpaved Roads

Particulate emissions result from vehicle travel over unpaved surfaces. Direct particulate emissions include vehicle exhaust, brake wear, and tire wear. Resuspended loose materials from the road surface also contribute to particulate emissions. AP-42, Section 13.2.2 provides an unpaved road emission factor that only addresses particulate emissions from resuspended material. EPA's MOBILE6.2 or MOVES2010 model are used to estimate particulate emissions from vehicle exhaust, brake wear, and tire wear. For vehicles traveling on unpaved surfaces at industrial sites, emissions are estimated from the following equation:

$$E = k (s/12)^a (W/3)^b$$

And, for vehicles traveling on publicly accessible roads, dominated by light duty vehicles, emissions can be estimated using the following equation:

$$E = \frac{k (s/12)^a (S/30)^d}{(M/0.5)^c} - C$$

Where k, a, b, c, and d are empirical constants (AP-42, Section 13.2.2, Table 13.2.2-2) and

E = Size-specific emission factor (lb/VMT)

- s = Surface material silt content (%)
- W = Mean vehicle weight (*tons*)
- M = Surface material moisture content (%)
- S = Mean vehicle speed (*mph*)
- C = Emission factor for 1980s vehicle fleet exhaust, brake wear and tire
Wear (*lb/VMT*).

Constants k, a, b, c, and d can be found in AP-42, Section 13.2.2, Table 13.2.2-2. Table 13.2.2-3 contains the range of values for surface material silt content, mean vehicle weight, surface material moisture content, and mean vehicle speed. Table 13.2.2-4 presents the emission factor for 1980s vehicle fleet exhaust, brake wear and tire wear.

The emission factor shown above only represents particulate emissions from resuspended surface material from vehicles traveling unpaved roads. To obtain an emission factor representing total particulate emissions, the emission factors for the exhaust, brake wear and tire wear obtained from either EPA’s MOBILE6.2 or MOVES2010 model should be added to the emissions factor calculated from the empirical equation. Total particulate emissions can then be estimated with this aggregate emission factor.

In estimating the particulate emission factor for resuspended material from vehicles traveling on unpaved surfaces, the average weight, speed, and number of wheels for all vehicles traveling the road is to be used. For example, if 98 percent of traffic on the road are 2-ton cars and trucks while the remaining 2 percent consists of 20-ton trucks, then the mean weight is 2.4 tons.

11. Storage Piles

Outdoor storage piles of minerals in aggregate form are usually left uncovered, partially because of the need for frequent material transfer into or out of storage. Particulate emissions arise from material loading onto the pile, wind, and loadout from the pile. Truck and equipment traffic also form dust emissions. Particulate emissions may be estimated by using one of the following equations:

$$EF_i = k(0.0016) \frac{\left[\frac{U}{2.2} \right]^{1.3}}{\left[\frac{M}{2} \right]^{1.4}} \quad (\text{kg/megagram [Mg]})$$

$$EF_i = k(0.0032) \frac{\left[\frac{U}{5} \right]^{1.3}}{\left[\frac{M}{2} \right]^{1.4}} \quad (\text{lb/ton})$$

Where,

EF_i = Emission factor

k = Particle size multiplier (dimensionless)

U = Mean wind speed, meters per second (m/s) (miles per hour [mph])

M = Material moisture content (%)

Section 13.2.4 of AP-42 provides a range of values for aerodynamic particle size multiplier (k), silt content (percent), moisture content (percent), and wind speed (m/s and mph) for calculating the emission factor from the equations above.

When estimating emissions from equipment traffic (trucks, front-end loaders, dozers, etc.) between or on piles, it is recommended that the equations for vehicle traffic on unpaved surfaces be used, which are listed in Section 13.2.2 of AP-42. For vehicle travel between storage piles, the silt value(s) for the areas among the piles (which may differ from the silt values for the stored materials) should be used.

Worst-case emissions from materials-handling operations typically occur under dry, windy conditions. The methodology on treatment of dry conditions for Section 13.2.2, vehicle traffic on unpaved roads, should be used.