Air Quality Project-Level Analysis Guidance

Version 1
February 2019

COLORADO
Department of Transportation

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

This *Air Quality Project-Level Analysis Guidance* (AQ-PLAG) document is intended to assist the Colorado Department of Transportation (CDOT), its consultants, and other potential users in the completion of project-level air quality analyses for road improvement projects in Colorado. This AQ-PLAG provides basic information and standards for preparing an air quality analysis for CDOT and summarizes the relevant regulations and procedures used in the analysis of air quality impacts resulting from transportation projects.

The primary goals of this AQ-PLAG are to:

- Enhance the development of and standardize the processes involved with analyzing and reporting potential air quality impacts resulting from transportation projects in Colorado;
- Ensure transportation conformity rule requirements are met for CDOT projects;
- Facilitate cooperation between CDOT, other federal and state agencies, transportation planning organizations, businesses, and the public; and
- Support the improvement of air quality in Colorado.

Federal air quality regulations include a transportation conformity rule and a general conformity rule. This AQ-PLAG focuses on the transportation conformity rule (Conformity Rule[1]), which applies to Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) projects[2] and requires that transportation plans, programs, and projects conform to State Implementation Plan (SIP) goals. General conformity applies to other actions in nonattainment or maintenance[3] areas taken by Federal agencies (e.g., leasing Federal land, granting a permit, construction of Federal office buildings[4]) that do not include FHWA or FTA projects. Unless this AQ-PLAG specifically refers to general conformity, the word "conformity" refers to transportation conformity.

Multimodal projects may require both a transportation conformity determination and a general conformity determination. For example, if an airport expansion project includes widening the airport access road and a runway extension, transportation conformity requirements may apply to the road widening action and general conformity requirements may apply to the overall project. The United States (US) Army Corps of Engineers may also need to make a general conformity determination to

[1] Conformity Rules are outlined in United States Code Title 42 Part 7401 (42 USC Part 7401) and are further detailed in Parts 51 and 93 of Title 40 of the Code of Federal Regulations (CFR) (CFR Parts 51 and 93).

[2] "FHWA/FTA projects" are defined in 40 CFR 93.101 as "any highway or transit project which is proposed to receive funding assistance and approval through the Federal Aid Highway program or the Federal mass transit program, or requires Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) approval for some aspect of the project, such as connection to an Interstate highway or deviation from applicable design standards on the interstate system."

[3] An area that was a nonattainment area in the past and has not yet been redesignated by the US Environmental Protection Agency as an attainment area may be referred to by several terms, such as "attainment/maintenance area," "attainment area that has a maintenance plan," and "maintenance area." This AQ-PLAQ uses the term "maintenance area."

[4] More information about general conformity applicability can be found at 40 CFR 93.153 and at https://cfpub.epa.gov/oarwebadmin/sipman/sipman/mContent.cfm?chap=3&filePos=12

support its approval of permits for a highway project, but this typically occurs after the National Environmental Policy Act (NEPA) process.

The guidance herein is not an adjudication or regulation and the use of this document is not a regulatory requirement. This AQ-PLAG will be updated as needed, for example to incorporate changes in regulations and/or guidance.

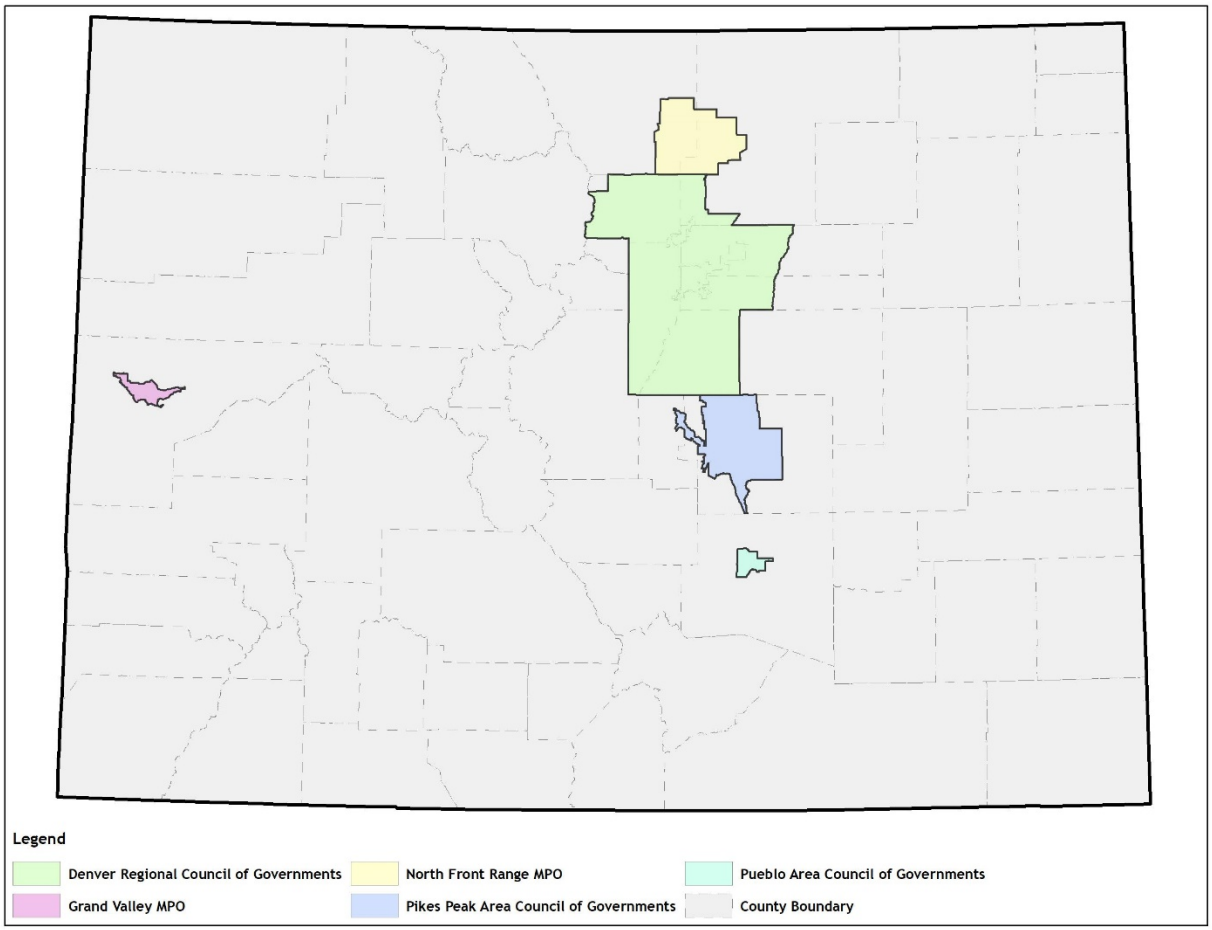
1.1 Supporting Agencies and Organizations

The following agencies and organizations are involved in the air quality analysis process. Roles and responsibilities include:

- **CDOT:** Headquarters and Region offices are involved with the administration and review of project-level analyses throughout the state; makes initial project-level conformity determinations on transportation projects prior to submitting them to FHWA or FTA for the final conformity determination; and initiates interagency consultations as described in this AQ-PLAG.
- **FHWA:** Coordinates the federal review process; facilitates additional consultation, as necessary if adverse comments are received; provides technical guidance and advice on conformity issues; reviews air quality documentation; and issues final conformity determinations.
- **US Environmental Protection Agency (EPA):** EPA promulgates conformity rules; designates areas as attainment, nonattainment or maintenance; approves SIPs and motor vehicle emission budgets (MVEBs); and provides technical guidance and advice on conformity.
- **Colorado Department of Public Health and Environment (CDPHE), Air Pollution Control Division (APCD):** Coordinates development of MVEBs; develops SIPs, including the Conformity SIP; reviews project-level air quality conformity determinations for some transportation projects; and maintains State and Local Air Monitoring Stations (SLAMS)[5].
- **Metropolitan Planning Organizations (MPOs):** Responsible for meeting regional Conformity Rule requirements within their planning areas; MPO boards make an initial conformity determination on their Regional Transportation Plans (RTPs) and Transportation Improvement Programs (TIPs) prior to submitting them to FHWA or FTA for the final conformity determination; and can provide traffic data for quantitative air quality studies. Colorado has five MPOs, but only the following three MPOs have maintenance or nonattainment areas within their planning areas: Denver Regional Council of Governments (DRCOG), North Front Range MPO (NFRMPO), and Pikes Peak Area Council of Governments (PPACG). To determine the MPO for a specific project, see Figure 1.

[5] SLAMS is a monitoring station network established by the Clean Air Act. APCD operates many of the stations, but some are operated by federal agencies (e.g. Bureau of Land Management and National Park Service) or counties (e.g., Mesa, Montezuma, and Pitkin).

Figure 1: Colorado Metropolitan Planning Organizations



1.2 CDOT Support and Review

Any questions or comments about this AQ-PLAG should be directed to an air quality specialist at Environmental Programs Branch of CDOT.

Air quality technical reports must be submitted for review electronically to a CDOT air quality specialist. Hard copies shall be submitted upon request. The agency, company, or analyst performing the analysis must also retain copies of the plans, traffic, air quality models, and all other related information and documentation in accordance with the associated contract.

1.3 Consultant Qualifications

Consultants performing air quality analyses for CDOT shall have the experience and training described in the most current CDOT Statewide Scope of Work. When the AQ-PLAG was written, the most current version was *CDOT Statewide Non-Project Specific Environmental & Traffic Modeling Engineering Services – FY 2019 – FY 2021 Scope of Work.* Air quality consultant requirements were listed under

Section Three ("As Needed" Services), Part C (Environmental Services), Part 6 (Air Quality and Conformity Evaluations) as follows:

- Experience with modeling, documentation, and technical report preparation
- Experience with conducting carbon monoxide (CO) and particulate matter of 10 microns in diameter or smaller (PM_{10}) hot spot analysis and modeling for transportation projects (using CAL3QHC[6], MOVES2014b or later model) in accordance with EPA guidance
- Familiarity with the Federal Transportation Conformity Regulations
- Ability to qualitatively assess air quality impacts for transportation related studies, reports and documents
- Familiarity with CDOT policies pertaining to air quality and experience with obtaining background emissions factors, idle and running emission factors
- Familiarity with the FHWA CO Categorical Hot-spot Finding for NEPA Hot-spot Analysis

[6] Although the current requirements do not specify experience with AERMOD, if AERMOD will be used for the analysis, the analyst must have experience with it.

2. TRANSPORTATION AIR QUALITY OVERVIEW

2.1 Air Quality Regulations

Air quality is primarily regulated under the 1970 Clean Air Act (CAA) (Title 42 United States Code [USC] Chapter 85) and amendments from 1977 and 1990) (hereafter, this document refers to any version of the CAA as the CAA regardless of when it was enacted). The purpose of the CAA is to protect and enhance air quality to promote public health, welfare, and the productive capacity of the nation. Six criteria air pollutants and a group of hazardous air pollutants (HAPs) are regulated under the CAA. A subset of HAPs is referred to as mobile source air toxics (MSAT). Greenhouse gases (GHGs) are covered by the CAA, as determined by the Supreme Court in 2007.

National Ambient Air Quality Standards (NAAQS) are federal standards that specify the maximum allowable ambient concentrations of criteria pollutants over specific averaging times, above which adverse effects on human health or welfare may occur. Criteria pollutant concentrations are monitored at several locations in Colorado. Primary NAAQS, which are human health-based, have been established for each criteria pollutant to protect public health with an adequate margin of safety, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary NAAQS, which are welfare-based, have been established for some criteria pollutants to protect public welfare and the environment (e.g., crops, vegetation, wildlife, buildings and national monuments, and visibility). NAAQS are periodically updated by the EPA.

Areas that violate the NAAQS are designated by the EPA as nonattainment areas. SIPs are created to improve or maintain the air quality within the states, including the nonattainment areas. To reach these air pollution reduction goals, SIPs typically place control requirements on emission sources. These sources are generally stationary or area sources but may include emissions from the transportation sector. Once air pollution concentrations fall below the NAAQS in the nonattainment area for at least three years, the area is eligible to be redesignated as a maintenance area[7] and a maintenance area plan is written. If the area stays below the NAAQS for 20 years, EPA will make a redetermination that the maintenance area can become an attainment area.

Transportation projects in nonattainment and maintenance areas are subject to the Conformity Rule, which directs that federally supported transportation activities must be consistent with (i.e., "conform to") the purposes of any applicable SIP. This may require that a project-level air quality conformity analysis be conducted. Transportation projects outside of nonattainment and maintenance areas are not subject to the Conformity Rule.

Project-level air quality analysis is also conducted under NEPA, which is a federal act that requires environmental review of any action that has the potential to affect the environment. Transportation projects using federal-aid funds and/or requiring FHWA approval actions must be evaluated for the

[7] A maintenance area is an area that was previously designated nonattainment and subsequently redesignated to attainment subject to the requirement to develop a maintenance plan under Section 175A of the CAA. Although this type of area is sometimes referred to as an attainment/maintenance area, this AQ-PLAG refers to such an area as a maintenance area.

potential impacts the actions will have on the natural and human environment. Air quality is one of several elements within the human environment to be considered as part of a NEPA evaluation.

A major difference between the Conformity Rule and NEPA is that the Conformity Rule applies to projects within specifically identified areas (nonattainment and maintenance areas), whereas NEPA applies to projects irrespective of location. Another difference is that the Conformity Rule requires a demonstration that concentrations of air pollutants near the project be below the NAAQS, but NEPA only requires disclosure and reasonable mitigation.

In addition to air quality analysis being required under NEPA, CDOT strives to meet the intent and requirements of NEPA for state transportation activities, regardless of whether the activities are federally funded. Therefore, CDOT conducts air quality evaluations for its projects not only to fulfill requirements of the CAA (i.e., Conformity Rule) and NEPA, but to comply with CDOT's Environmental Stewardship Guide, which ensures the statewide transportation system is constructed and maintained in an environmentally responsible, sustainable, and compliant manner. Therefore, conformity determinations may be required for State and Locally funded projects, as described in Section 2.2.

When this AQ-PLAG was issued, Colorado had one ozone nonattainment area, five CO maintenance areas, and seven PM_{10} maintenance areas[8]. The ozone nonattainment area[9] encompassed part of Larimer and Weld counties as well as the following counties: Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, and Jefferson. The CO and PM_{10} maintenance area boundaries were smaller than the ozone nonattainment area and did not match county borders. The areas[10] are listed in Table 1 and shown on Figure 2. The year that each area will have been designated as maintenance for 20 years is also listed in Table 1. Upon reaching the 20-year mark, transportation conformity is no longer expected to apply[11] in the area for that pollutant, but NEPA still applies.[12]

In addition to Federal regulations, air quality from Colorado transportation projects may be regulated by State regulations including the following Code of Colorado Regulations (CCRs) that were adopted by the Colorado Air Quality Control Commission (AQCC):

- Regulation Number 1 (5 CCR 1001-3): Emission Control for Particulate Matter, Smoke, Carbon Monoxide, and Sulfur Oxides
- Regulation Number 3 (5 CCR 1001-5): Stationary Source Permitting and Air Pollutant Emission Notice Requirements
- Regulation Number 10 (5 CCR 1001-12): Criteria for Analysis of Transportation Conformity

[8] EPA maintains a complete, current listing of nonattainment and maintenance areas designations on its website. This listing is referred to as the Green Book, which is available at https://www.epa.gov/green-book

[9] EPA's designation for the 2008 8-hour ozone NAAQS found in 40 CFR 81.306 identifies the ozone nonattainment area as "Denver-Boulder-Greeley-Fort Collins-Loveland." However, the EPA's designation for the 2015 8-hour ozone NAAQS found in 40 CFR 81.306 identifies the ozone nonattainment area as "Denver Metro/North Front Range." Because both the 2008 and 2015 8-hour ozone NAAQS nonattainment areas include the identical geographic boundary, and both NAAQS apply, it is acceptable to use either name. However, the more commonly used name is "Denver Metro/North Front Range."

[10] Full legal descriptions of the boundaries are available at 40 CFR 81.306.

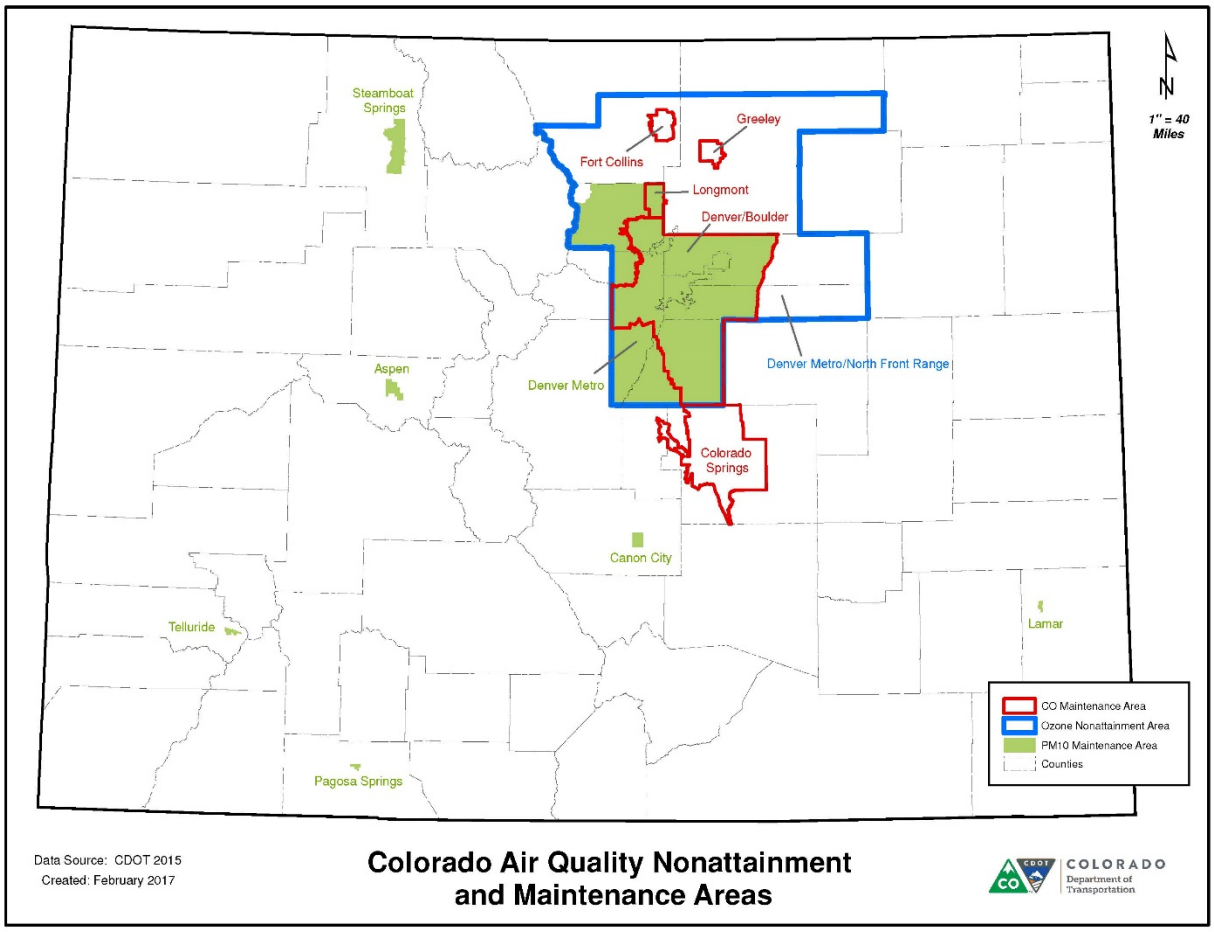
[11] EPA determines when transportation conformity no longer applies to a specific maintenance area. The end date may be later than the dates listed in Table 1.

[12] It is anticipated that this guidance will be updated when maintenance periods start to end. It should not be assumed that requirements will end at the same time that the maintenance period ends.

Table 1: Colorado's CO and PM_{10} Maintenance Areas (Possible End Year)

CO Maintenance Areas	PM_{10} Maintenance Areas
Colorado Springs (2020)	Aspen (2023)
Denver-Boulder Metropolitan Area (2021)	Cañon City (2020)
Fort Collins (2023)	Denver Metro (2022)
Greeley (2019)	Lamar (2025)
Longmont (2020)	Pagosa Springs (2021)
	Steamboat Springs (2024)
	Telluride (2021)

Figure 2: Colorado NAAQS Nonattainment and Maintenance Areas[13]



2.2 When to Initiate a Project-Level Air Quality Analysis

It is the responsibility of the project sponsor to ensure that a project-level analysis is initiated as required under NEPA, the Conformity Rule, and CDOT's NEPA Manual.

Under Federal law, NEPA applies to any proposed action or transportation project that has a federal nexus, including instances where:

- Federal funds or assistance will be used at some phase of project development
- Federal funding or assistance eligibility must be maintained

[13] A more detailed and interactive map of Colorado nonattainment and maintenance areas is available at CDOT's Online Transportation Information System: http://dtdapps.coloradodot.info/otis. Click on "Map View," zoom in on the area of interest, click on the "Environmental" CDOT layer (right side of page), open the "Environmental" sublayer by clicking on the arrow, click on the sublayer of interest ("Attainment/Maint – CO," "Attainment/Maint – PM10," and/or "NonAttainment – Ozone.")

- Federal permits or approvals are required (e.g., Clean Water Act – Section 404 Individual Permit, Endangered Species Act – Biological Opinion for Section 7, or Federal Lands are involved)
- There will be new or revised access to the interstate system, requiring FHWA approval
- There will be a design exception needed on the state system from FHWA (not all design exceptions require FHWA approval so please contact your FHWA representative for details)

Because many federal regulations, as well as state regulations, still apply even if NEPA does not, CDOT has a policy stated in the CDOT Environmental Stewardship Guide that encourages projects to follow the intent of NEPA, regardless of whether or not there is a federal nexus. CDOT's Policy Directive 1904.0 establishes the CDOT NEPA Manual as the method that shall be used for maintaining compliance with NEPA standards on CDOT projects. CDOT Region Planning and Environmental Manager or CDOT Region Environmental Manager have discretion on whether to follow the intent of NEPA when State funds are used versus what is done for formal NEPA projects.

2.3 Air Quality Guidance Documents

Each project-level analysis should be conducted to meet all applicable regulatory requirements and be consistent, as appropriate, with guidance that is in effect (following any applicable grace period) at the time that the analysis in initiated. This includes but is not limited to the specification of models, methods, and assumptions to be applied for project-level air quality analysis, as well as administrative, documentation, and process requirements.

This AQ-PLAG shall be used on projects that have a Scoping Date that is on or after the issuance date. Scoping Date is defined as the earliest of the following::

- Scoping meeting
- Environmental kick-off meeting
- EPB Environmental Clearance Request

The date the analysis was initiated and its trigger should be documented in the project file.

At the time of AQ-PLAG preparation, guidance for completing transportation air quality analyses included:

- **American Association of State Highway and Transportation Officials:** *Practitioner's Handbook: Addressing Air Quality Issues in the NEPA Process for Highway Projects*, June 2017
- **CDOT:** *NEPA Manual*, Chapter 9 – Resource Considerations, Section 9.2 (Air Quality), August 2017
- **CDOT:** Update to NEPA Manual, Appendix F – Standard Language (Global Climate Change Cumulative Effects Standard Language) (memorandum), February 2019
- **CDOT:** Transportation Conformity: Exempt Project Interpretations for 40 CFR 93.126 (memorandum), November 21, 2017
- **EPA:** Policy and technical guidance (This page contains policy guidance, technical guidance, and other resources issued by EPA to assist agencies in completing project-level conformity analyses, including particulate matter ($PM_{2.5}$ and PM_{10}) and CO "hot-spot" analyses)
- **EPA:** Guidelines on Air Quality Models (Appendix W), January 2017

- **EPA:** *Guidelines for Modeling Carbon Monoxide from Roadway Intersections*, November 1992 (EPA-454/R-92-005)
- **EPA:** *Transportation Conformity Guidance for Areas Reaching the End of the Maintenance Period*, October 2014 (EPA-420-B-14-093)
- **EPA:** *Using MOVES2014 in Project-Level Carbon Monoxide Analysis*, March 2015 (420-B-15-025) (Supersedes emission factor sections from 1992 Guidelines to reflect use of Motor Vehicle Emission Simulator (MOVES) emissions model for project-level CO analyses)
- **EPA:** User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections (Revised), September 1995 (EPA-454/R-92-006R)
- **EPA:** *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* and appendices, November 2015 (EPA-420-B-15-084)
- **EPA:** *PM Hot-spot Analyses: Frequently Asked Questions*, June 2018 (EPA-420-F-18-011)
- **FHWA:** *Technical Advisory T 6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, October 30, 1987
- **FHWA:** *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*, October 18, 2016
- **FHWA:** *Frequently Asked Questions (FAQ) Conducting Quantitative MSAT Analysis for FHWA NEPA Documents*
- **FHWA:** *Transportation Conformity: A Basic Guide for State & Local Officials*, February 2017 (FHWA-HEP-17-034)
- **FHWA:** *Updated Carbon Monoxide Categorical Hot-Spot Finding Memo*, July 17, 2017
- **National Cooperative Highway Research Program (NCHRP):** *Quick Reference Guide for Traffic Modelers for Generating Traffic and Activity Data for Project-Level Air Quality Analyses*, July 2018 (NCHRP 25-25/Task 96)

2.4 On-Road Transportation Sector Air Pollution

Motor vehicles are powered by burning fuel in an engine, electricity, or a combination of both. In 2019, most vehicles are still powered by burning fuel in the engine. The majority of emissions from vehicles that burn fuel are by-products of this combustion process. Emission sources are the tailpipe, fuel evaporation, air conditioning systems, and particulate matter (PM) creation or suspension.

The combustion process results in tailpipe exhaust emissions made up of criteria pollutants and their precursors (e.g., volatile organic compounds [VOCs]), MSATs, and GHGs. Exhaust emissions occur in two vehicle operation modes:

1. **Start emissions:** Starting a vehicle and the first few minutes of driving generate higher emissions because emissions-control equipment has not yet reached its optimal operating temperature.
2. **Running exhaust emissions:** Pollutants are emitted from the vehicle's tailpipe while the vehicle is driven or idling.

Because vehicle exhaust systems have improved, evaporative emissions have become a larger component of total vehicle VOC emissions. VOCs escape into the atmosphere via fuel evaporation. Despite evaporative emissions controls, evaporative losses can still account, on hot days, for a majority of the total VOC pollution from current-model cars. Evaporative emissions occur in several ways:

1. **Running losses:** A hot engine and exhaust system can vaporize gasoline while the vehicle is running.
2. **Hotsoak:** Gasoline evaporates while a car is cooling down, after the engine has been turned off.
3. **Diurnal:** Even after an engine has cooled down, gasoline evaporates when atmospheric temperature increases.
4. **Refueling:** Gasoline vapors escape from the vehicle's fuel tank when the tank is being filled.

Older vehicles manufactured through the mid-1990s may have air conditioning systems that use stratospheric ozone-depleting substances such as Freon as a coolant. Coolants can be emitted through leaks or during repairs. Newer vehicles use non-ozone-depleting coolant. Some coolants in newer vehicles (e.g., hydrofluorocarbons) are GHGs.

Vehicles that do not combust fuels (i.e., electric vehicles) do not have tailpipe emissions. However, emissions are created at the power source (e.g., power plant). This AQ-PLAG does not address those upstream, non-transportation emissions.

PM emissions are created via brake wear, tire wear, and suspension of road dust. PM from brakes and tires can be created by abrasion, corrosion, and turbulence. All vehicles create these emissions, regardless of power source (e.g., burning fuel, electricity).

The following sections discuss transportation sector pollutants.

2.4.1 Criteria Pollutants

EPA identifies six criteria air pollutants: CO, ozone, PM, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. Four of these pollutants have substantive transportation-sector sources and are a concern to human health and the environment:

- **CO:** Colorless, odorless gas that is formed when carbon in fuel is not burned completely. CO production is affected by variations in temperature and vehicle speeds. CO reduces the flow of oxygen in the bloodstream and is particularly dangerous to people with heart disease. Exposure can impair visual perception, manual dexterity, learning ability, and performance of complex tasks.
- **PM:** Term used to describe particles in the air including dust, dirt, soot, smoke, and liquid droplets. Sources that directly emit PM include motor vehicles, construction activities, and unpaved roads. Sources of particles that form in the air from chemical processes involving sunlight and water vapor include fuel combustion in motor vehicles. PM_{10} is used as a measure of coarse particulate. Coarse particles of this size are typically formed by materials such as construction and re-entrained road dust and brake and tire wear. $PM_{2.5}$ is used as a measure of fine particulate (2.5 microns or less in diameter). Fine particles of this size are typically, but not exclusively, formed as a product of combustion. Particles may aggravate breathing difficulties, damage lung tissue, alter the body's defense against foreign materials, and can lead to premature death.
- **Ozone (i.e., ground-level photochemical smog):** Different from CO and PM in that it results from a chemical reaction between VOCs and nitrogen oxides (NO_X) in the presence of sunlight. Also, the concentration and dispersion of ozone is significantly affected by an area's meteorology and topography. Ozone can irritate the eyes, impair lungs, aggravate respiratory

problems, and cause chest pain, coughing, nausea, pulmonary congestion, and possible long-term lung damage.

- **NO_2:** One of the group of highly reactive gases known as NO_X. The EPA's NAAQS uses NO_2 as the indicator for the larger group of NO_X. Motor Vehicles emit NO_2. NO_2 is an ozone precursor. NO_2 impacts the respiratory system, causing a high incidence of acute respiratory diseases, and degrades visibility.

The criteria pollutant NAAQS are displayed in Table 2. Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume and micrograms per cubic meter of air ($\mu g/m^3$).

CO, PM_{10}, and ozone[14] are the only criteria pollutants to be addressed for conformity at the project-level in Colorado since they are the only transportation pollutants that have nonattainment or maintenance areas. CO and PM_{10} may require hot-spot analyses, but ozone does not since it is a regional pollutant. Regional emissions analyses are conducted by MPOs for as required by the Conformity Rule. The CO maintenance areas at Greeley, Fort Collins, and Colorado Springs have Limited Maintenance Plans (LMPs). If a maintenance area has a LMP for a pollutant, the MPO is not required to include that pollutant in the regional model.[15]

Table 2: National Ambient Air Quality Standards[16]

Pollutant [final rule]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3 month average[1]	0.15 $\mu g/m^3$	Not to be exceeded
Nitrogen Dioxide [77 FR 20218, Apr 3, 2012]		primary	1-hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb[2]	Annual Mean
Ozone [80 FR 65292, May 31, 2018]		primary and secondary	8-hour	0.070 ppm[3]	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution	$PM_{2.5}$	primary	1 year	12 $\mu g/m^3$	annual mean, averaged over 3 years
		secondary	1 year	15 $\mu g/m^3$	annual mean, averaged over 3 years

[14] Ozone precursors (NO_X and VOC) are analyzed in the regional ozone analysis.

[15] Despite it not being required, NFRMPO included CO in their regional model during the period between January 2016 and June 2018. As a result of a recommendation by the EPA, only ozone (via precursors) is included in NFRMPO's regional model beginning with the June 2018 FY2019-2022 TIP.

[16] Table and footnotes are excerpted from US Environmental Protection Agency website: https://www.epa.gov/criteria-air-pollutants/naaqs-table

[78 FR 3085, Jan 15, 2013]		primary and secondary	24-hour	35 $\mu g/m^3$	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010]		primary	1-hour	75 ppb[4]	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
[77 FR 20218, April 3, 2012]		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Notes:

1. In areas designated nonattainment for the lead standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 $\mu g/m^3$ as a calendar quarter average) also remain in effect.
2. The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.
3. Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) ozone standards additionally remain in effect in some areas. Revocation of the previous (2008) ozone standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
4. The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2)any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its SIP to demonstrate attainment of the required NAAQS.

2.4.2 Mobile Source Air Toxics

The EPA's National Air Toxics Assessment (NATA) is a technical report that identifies and prioritizes air toxics, emission source types, and locations that are of greatest potential concern in terms of contributing to population risk. The NATA lists 188 HAPs. The EPA assessed this expansive list in its rule on the *Control of Hazardous Air Pollutants from Mobile Sources* (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are part of EPA's Integrated Risk Information System (IRIS).[17] The EPA also identified a subset of this list that is now considered the nine priority MSATs: 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel PM, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. FHWA also considers these to be priority MSATs. The EPA has indicated that their lists are subject to change in the future.

MSATs are of concern because they are known or suspected to cause cancer or other serious health effects. Research efforts into the health effects of MSATs is an ongoing science and still requires further refinement before quantitative MSAT studies can be used to accurately estimate health impacts from MSAT emissions for a given area. The tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. Therefore, these limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

[17] https://www.epa.gov/iris

Here is a brief summary of the priority MSATs:

- **1,3-Butadiene:** Colorless gas with a mild gasoline-like odor. Made from the processing of petroleum and is found in automobile and diesel exhaust. Known to be a human carcinogen.
- **Acetaldehyde:** Colorless and flammable liquid found in gasoline and diesel exhaust. Reasonably anticipated to be a human carcinogen.
- **Acrolein:** Colorless or yellow liquid with an unpleasant odor. Little information is available to determine the carcinogenicity in humans.
- **Benzene:** Colorless or light yellow liquid at room temperature. Natural part of crude oil and gasoline. Known human carcinogen.
- **Diesel PM:** Component of diesel exhaust; includes soot particles made up primarily of carbon, ash, metallic abrasion particles, sulfates and silicates. More than 90 percent is less than 1 micrometer in diameter. Can increase the risk of cardiovascular, cardiopulmonary and respiratory disease and lung cancer.
- **Ethylbenzene:** Colorless, flammable liquid that smells like gasoline. Found in natural products including petroleum. Possibly carcinogenic to humans.
- **Formaldehyde:** Colorless, flammable gas at room temperature with a pungent odor. Known human carcinogen. Released in the air from automobile and diesel exhaust.
- **Naphthalene:** White solid that evaporates easily. Naturally occurring compound found in fossil fuels. Exposure to large amounts of naphthalene may cause damage or destroy red blood cells. Naphthalene is reasonably suspected to be a human carcinogen.
- **Polycyclic organic matter:** Broad class of compounds. Primarily formed from the incomplete burning of oil and gas. It is reasonably suspected to be a human carcinogen.

2.4.3 Greenhouse Gases

GHGs are generally believed to cause climate change, including the increased likelihood of more frequent and intense heat waves, more wildfires, degraded air quality, heavier downpours and flooding, increased drought, greater sea level rise, more intense storms, harm to water resources, harm to agriculture, and harm to wildlife and ecosystems. These cause negative effects on public health and welfare. Here is a brief summary of transportation-sector GHGs:

- **Carbon dioxide (CO_2):** Majority of GHG emissions from the transportation sector. Results from combustion of petroleum-based products, such as gasoline, in internal combustion engines.
- **Methane (CH_4):** Small amounts, relative to CO_2, are emitted during fuel combustion. However, CH_4 has Global Warming Potential (GWP) 28 to 36[18] times GWP of CO_2.
- **Nitrous oxide (N_2O):** Small amounts, relative to CO_2, are emitted during fuel combustion. However, N_2O has GWP 265 to 298[19] times GWP of CO_2.

[18] CH_4 GWP values came from EPA's website, accessed 12/22/17: https://www.epa.gov/ghgemissions/understanding-global-warming-potentials

[19] N_2O GWP values came from EPA's website, accessed 12/22/17: https://www.epa.gov/ghgemissions/understanding-global-warming-potentials

- **Hydrofluorocarbons**: Small amount are emitted from use of mobile air conditioners and refrigerated transport. However, hydrofluorocarbons GWP is 124 to 1,430[20] times GWP of CO_2.

2.5 Project-level Analysis Requirements

All projects are evaluated by CDOT or CDOT's consultants at the project level. The air quality analysis required as part of CDOT's NEPA process will vary in content and in level of detail from one project to another based on its size, geographic location, and anticipated impacts:

- **CO Project-level Conformity Analysis:** This analysis is not dependent on the project's NEPA class of action. This analysis applies to projects that are, in whole or in part, located within one or more CO maintenance areas. NEPA project air quality analyses have typically focused on CO as the primary indicator for vehicle-induced air pollution. Outdoor CO concentrations have dropped dramatically since the early 1970s due to national vehicle emission controls. The highest 1-hour concentration ever recorded at any of the state-operated monitors was 79.0 ppm, in 1968. Since 1996, no state-operated monitors have recorded a violation of the 8-hour NAAQS. In 2016, the highest statewide second maximum 1-hour and 8-hour concentrations were 3.2 ppm and 2.1 ppm, respectively, well below the NAAQS of 35 ppm and 9 ppm, respectively.[21] A detailed discussion of CO project-level conformity analyses can be found in Chapter 4.
- **PM_{10} Project-level Conformity Analysis:** This analysis is not dependent on the project's NEPA class of action. This analysis applies to projects that are, in whole or in part, located within one or more PM_{10} maintenance areas. On March 10, 2006, EPA published a final rule establishing conformity requirements for analyzing the local PM_{10} air quality impacts of transportation projects (71CFR 12468) in PM_{10} nonattainment or maintenance areas. Since December 20, 2012, a PM_{10} hot-spot analysis has been required for those projects that are identified as Projects of Air Quality Concern (POAQC) via an interagency consultation process. A detailed discussion of PM_{10} project-level conformity analyses can be found in Chapter 5.
- **Ozone Project-level Conformity Documentation:** This analysis is not dependent on the project's NEPA class of action. This analysis applies to projects that are, in whole or in part, located within the ozone nonattainment area. Ozone is a regional pollutant and thus does not require hot-spot analyses. Project-level ozone is addressed by showing that the regional emissions analysis for ozone was completed with the project included, as part of the regional conformity process (RTP/TIP), as described in Chapter 6.
- **Criteria Pollutant Project-level Analysis (Other Than Conformity Analysis):** This analysis could occur at any location within Colorado. Regardless of whether the Conformity Rule applies, some large projects (i.e., some Environmental Impact Statements [EISs] or, to a lesser extent, Environmental Assessments [EAs]) may include an emissions inventory analysis of the project study area (e.g., NEPA corridor analysis) for transportation-related criteria pollutants and pollutant precursors (e.g., NO_2 and VOCs, which are ozone precursors). This analysis would be done for NEPA purposes. A detailed discussion of these criteria pollutant project-level analyses can be found in Chapter 7.

[20] Hydrofluorocarbon GWP values came from EPA's website, accessed 12/22/17: https://www.epa.gov/sites/production/files/2015-09/documents/epa_hfc_passenger_vehicle_ac.pdf

[21] Data from CDPHE APCD's *2016 Air Quality Data Report*, which is available at https://www.colorado.gov/airquality/tech_doc_repository.aspx

- **MSAT Analysis:** This analysis is dependent on the project's NEPA class of action. This analysis could occur at any location within Colorado. Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA. Nonetheless, air toxics concerns continue to be raised on highway projects during the NEPA process. Even as the science emerges, the public and other agencies expect MSAT impacts to be addressed in environmental documents. The FHWA has outlined a tiered approach for analyzing MSATs in NEPA documents, with three tiers representing the levels of potential impacts from projects. A detailed discussion of MSAT project-level analyses can be found in Chapter 8.
- **GHG Analysis:** This analysis is dependent on the project's NEPA class of action. GHG analysis is a continuing area of research. As of 2019, there is not a Federal approved policy or guidance to assist in evaluation of GHGs. A discussion of project GHG emissions should be included in the air quality analysis for EAs and EISs. More information about this discussion can be found in Chapter 9.
- **Construction Analysis:** This analysis is dependent on the project's NEPA class of action. Most of CDOT's projects involve some form of construction. Construction emissions differ from regular traffic emissions in a number of ways. Construction activities may be sources of temporary emissions from fugitive dust or equipment exhaust. Properties near construction activities may be affected. This discussion is usually qualitative rather than quantitative and often includes a discussion of potential measures to minimize and mitigate construction emissions. More information about this discussion can be found in Chapter 10.

2.6 Regional Analysis Requirements

Regional conformity analyses are not dependent on the project's NEPA class of action. Colorado nonattainment and maintenance areas in urban Transportation Planning Regions (TPRs) are required to undergo regional air quality conformity analysis, also called a regional macro-scale modeling, for whichever pollutant(s) the area is in nonattainment or maintenance, unless the maintenance plan is a LMP. The analysis is conducted by the MPO and is applied to the MPO's planning process, which includes the development of metropolitan transportation plans[22] and metropolitan TIPs.

A regional air quality conformity analysis is ultimately a way to ensure that federal funding and approval are only given to those transportation plans, programs, and projects (in nonattainment and maintenance areas) that are consistent with the SIPs for meeting and maintaining the NAAQS. The Conformity Rule[23] requires that the fiscal constraint requirements of FHWA/FTA transportation planning regulations[24] be met prior to determining conformity on a RTP or TIP. The Conformity Rule specifies the analysis methodology and timing necessary for a regional conformity determination and ensure planned projects within the TIP do not degrade air quality.

[22] Transportation plans may be referred to as Metropolitan Transportation Plans or RTPs. Each of Colorado's 15 TPRs develop a Metropolitan Transportation Plan or RTP. All Metropolitan Transportation Plans and RTPs are included in the statewide Long Range Transportation Plan, which is also called the Long Range Transportation State Plan or Statewide Plan.

[23] 40 CFR 93.108

[24] 23 CFR 450

These conformity activities are not functions of CDOT or its consultants. CDOT's role is to coordinate with the MPOs on CDOT's relevant upcoming plans and projects in a timely manner so that the MPOs can incorporate them into their analyses.

The NEPA process requires documentation addressing the completion of a regional analysis and conformity determination. This includes, as applicable depending on the location of the project, a conformity determination by the applicable MPO, which assures that the project is in the MPO's RTP and TIP. A detailed discussion of the documentation requirements for the NEPA process can be found in Chapter 13 and Chapter 14. Regional air quality conformity analyses are conducted during the planning and programming process, not during the NEPA evaluation process; they are not specifically covered within this AQ-PLAG. However, a project-level conformity determination must address consistency with regional conformity determinations.

3. PROJECT SCOPING AND INTERAGENCY COORDINATION

Project scoping is the task of establishing and documenting a list of project goals, tasks, deliverables, and deadlines. A challenge sometimes experienced during the project delivery process is the failure to properly scope the level of analysis required for an air quality assessment in support of the NEPA document. As such, scoping information in Chapters 4 through 9 will help identify the appropriate level of analysis for documenting potential air quality impacts of transportation projects.[25]

CDOT conducts several types of scoping activities, including project scoping, Planning and Environmental Linkages (PEL) scoping, NEPA scoping, and air quality scoping. Project scoping is project specific to identify potential physical constraints and project goals, which may include operational changes to a road. However, environmental resources are only discussed at a high level. PEL scoping is done for a very high level of air quality evaluation; PELs would not model air quality. NEPA scoping[26] (agency and public) discusses environmental resources, including air quality. When warranted, a project may also have a formal air quality scoping meeting to discuss and determine technical aspects of the analysis.

For EAs and EISs, the Project Management Team holds project and NEPA scoping meetings for each proposed project to give other state and federal agencies an opportunity to inform on which project aspects are important to them, which laws are applicable, and how the agencies would like to be involved. FHWA is part of the Project Management Team. APCD and EPA are generally invited to NEPA agency scoping meetings, especially when the project triggers hot-spot modeling. Depending on the scope and complexity of the project, staff from other agencies, such as FTA, MPOs, and local governments, might also participate in the NEPA agency scoping meeting. It is generally determined at the NEPA agency scoping meeting whether an air quality scoping meeting is warranted.

For Categorical Exclusions (CatExs), the Project Management Team hosts a project kick-off meeting. During the meeting, it is determined if interagency coordination is needed for the project. Air quality scoping does not occur unless unique project-specific air quality issues are expected or arise. If a CatEx project requires a hot-spot analysis, the project must be classified as a non-programmatic CatEx[27].

During the air quality scoping meeting, agencies may determine that an air quality modeling protocol should be developed. If so, depending on the complexity of the project, it will be determined if an air quality modeling protocol memo shall be created or if email consultations will suffice. After the air quality scoping meeting, an email summarizing decisions made at the air quality scoping meeting may be sent to confirm that all decisions were adequately captured. The meeting summary and air quality modeling protocol, as applicable, will be sent at a minimum to:

- CDOT Project Management Team representative, as determined during scoping meeting

[25] Chapters 4, 5, and 6 refer to conformity regulation exemptions. In addition, 40 CFR 93.129 contains special exemptions from conformity requirements for pilot program areas. However, this exemption is not anticipated to be used and is not discussed in this AQ-PLAG.

[26] More information about NEPA scoping is available in Chapters 4 (EISs), 5 (CatExs), and 6 (EAs) of the *CDOT NEPA Manual*.

[27] Programmatic and non-programmatic CatExs are described in Chapter 5 of the CDOT *NEPA Manual*.

- CDOT air quality specialist representing the project
- APCD administrative contact; generally a planner from the Policy and Planning Program
- APCD technical contact from the Technical Services Program
- FHWA area engineer
- Consultant team, if relevant
- Any additional agencies that participated in the scoping
- Any agency that requests a review

Agencies shall respond to the applicable document (email and/or the air quality modeling protocol memo), within the timeframe agreed upon during the scoping meeting, which is generally 11 business days unless otherwise negotiated. Not providing a response within the specified time periods shall be interpreted as agreement.

4. CARBON MONOXIDE PROJECT-LEVEL CONFORMITY DETERMINATION

As described in 40 CFR 93.102, CO portions of the Conformity Rule apply to projects that are, in whole or in part, located within one or more CO nonattainment or maintenance area and have a Federal nexus. Figure 2 shows locations of Colorado CO maintenance areas. Colorado does not have any CO nonattainment areas.

A project-level CO conformity determination addresses consistency with regional conformity determinations, and, when necessary, addresses localized emissions. The project-level conformity determination demonstrates that:

1. The project is included in a current fiscally-constrained conforming transportation plan and TIP, and
2. As applicable, the project will not cause any localized exceedances of the NAAQS as determined by a project-specific hot-spot analysis.

4.1 Carbon Monoxide Project-level Scoping

A transportation project-level CO analysis can fall into one of four categories regarding the Conformity Rule:

1. Conformity Rule does not apply[28] (analysis not required)
2. Exempt from analysis per 40 CFR 93.126 or 40 CFR 93.128[29] (analysis not required);
3. Nonexempt but CO hot-spot analysis not required or CO Categorical Finding could be used (qualitative analysis); or
4. Nonexempt and requires CO hot-spot analysis (quantitative analysis).

See Step 1 of Section 4.3 for more information about each of these four categories.

4.2 Consistency with CO Regional Analyses

If the Conformity Rule applies, transportation projects need to be evaluated with respect to regional air quality concerns, unless exempt from the Conformity Rule or from regional analysis requirements of the Conformity Rule. A project is exempt from the Conformity Rule if it is a project type listed in Table 2 of 40 CFR 93.126 or covered by 40 CFR 93.128. A project is exempt from regional emissions analysis if it is a project type listed in Table 3 of 40 CFR 93.127. These exemptions do not apply if the project is determined by the area's MPO, in consultation with other agencies, to have potentially adverse regional impacts.

[28] The applicability section of the Conformity Rule is at 40 CFR 93.102. One example of when the Conformity Rule does not apply is when a project is not in any maintenance or nonattainment area. The CO related requirements, e.g., CO hot-spot analyses, do not apply to projects that are not in any CO maintenance areas.

[29] Projects categorized under 40 CFR 93.126 or 40 CFR 93.128 are exempt from the Conformity Rule and may proceed toward implementation even in the absence of a conforming transportation plan and TIP.

Table 3 of 40 CFR 93.127 project types are: intersection channelization project; an intersection signalization project at individual intersections; an interchange reconfiguration project; a project with changes in vertical and horizontal alignment; a truck size and weight inspection station; a bus terminal and transfer point. If the project is exempt from regional conformity, it can be concluded that the project will not have a significant adverse regional impact on air quality and the project may be grouped in one line item with other projects or identified individually in the TIP.

For projects that are not exempt from regional conformity, CO regional analysis requirements are different depending on the type of maintenance plan in the area. DRCOG includes CO in their regional models. Because NFRMPO's Fort Collins and Greeley and PPACG's Colorado Springs CO maintenance areas have LMPs, NFRMPO and PPACG are not required to perform regional modeling for CO.

If a non-exempt project is located in a CO maintenance area and it is not listed in the TIP and/or if the TIP project design concept and scope is significantly different than what was in the NEPA document, the project sponsor must request that the applicable MPO amend the project into the TIP. However, if the project is not regionally significant, the project does not need to be listed individually in the TIP or RTP, but it must be included in the TIP (either as an individual project or as a pool project).

If the project is not consistent with the long range RTP, an RTP Amendment is also required. Typically, the project will need to be included in the latest regional conformity analysis before amending the TIP and RTP, but if the maintenance area has a LMP, the regional emissions analysis is not required. The NEPA decision document (Record of Decision [ROD], Finding of No Significant Impact [FONSI], Form 128) cannot be signed until an element of the project is in an approved TIP with programmed funding.

If a project is consistent with the RTP and a regional emissions analysis is not required, the process to add a project to the TIP (known as a TIP Amendment) takes approximately two months to complete for DRCOG, NFRMPO, and PPACG. If a project needs to be amended into the RTP, the process runs concurrently with the TIP Amendment process and can take up to six months, including time for: allowing for public review and comments; committee and MPO Board/Council action (as needed); and receiving FHWA/FTA approval. For DRCOG and NFRMPO, if a project needs to be included in the regional emissions analysis, the TIP and RTP Amendment process takes at least six months, which includes time for the additional steps of updating the travel model, running the emissions analysis, and Council action on the positive conformity finding. Therefore, contact the MPO representative early in the NEPA process.

Chapter 13 describes information related to regional analysis that needs to be included in an air quality analysis, including air quality technical reports, when applicable. Chapter 14 describes the information that needs to be included in the NEPA document.

4.3 Carbon Monoxide Project-Level Analyses

The EPA guidance specific to CO, which is listed in Section 2.3, should be consulted before initiating a CO project-level analysis. An analysis may include hot-spot modeling. This AQ-PLAG does not change or revise any recommendation provided in EPA guidance for conducting a hot-spot analysis. The following steps provide an overview of technical procedures for conducting a project-level CO analyses.

Step 1: Determine type of CO analysis needed

As described in Section 4.1, the appropriate level of CO analysis for a project may be none, qualitative, or quantitative (hot-spot). For EAs and EISs, which may have more than one alternative (e.g., Proposed

Action, No Action Alternative, Preferred Alternative(s), and/or Considered Alternative(s)), the level of analysis may differ between alternatives. CatExs typically only include a Proposed Action.

Project alternatives that meet at least one of the following conditions do not require a quantitative analysis:

- Exempt per Table 2 of 40 CFR 93.126[30] (analysis not required)
- Project type not specifically described in 40 CFR 93.123(a)(1) (requires qualitative analysis; e.g., level-of-service [LOS] is or will be A, B, or C or Categorical Finding can be used)

Otherwise, projects will need quantitative analysis. Types of projects that require a quantitative (hot-spot) CO analysis are defined in 40 CFR 93.123(a)(1) as being (italicized text is Conformity Rule; non-italicized text is informational):

i. For projects in or affecting locations, areas, or categories of sites which are identified in the applicable implementation plan as sites of violation or possible violation;

None of the applicable implementation plans, which are all maintenance plans, identify any locations, areas, or categories of sites as sites of violation or possible violation. Those plans are: Colorado Springs (December 17, 2009), Denver-Boulder (December 15, 2005), Fort Collins (December 16, 2010), Greeley (December 17, 2009), and Longmont (October 16, 2007). This is why, in Colorado, non-intersection locations do not need to be modeled for CO.

ii. For projects affecting intersections that are at Level-of-Service D, E, or F, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes related to the project;

This section of the Conformity Rule is the most common reason why CO hot-spot analyses are performed in Colorado. It only applies to intersections that are or will be signalized. Intersections that are only stop-sign controlled, both now and after the project, do not require a hot-spot analysis. The Highway Capacity Manual (HCM)[31] LOS should be used in the analysis. If the intersection is currently not signalized, the existing LOS does not need to be determined.

iii. For any project affecting one or more of the top three intersections in the nonattainment or maintenance area with highest traffic volumes, as identified in the applicable implementation plan; and

Of five CO maintenance plans in Colorado, only one identifies intersections with the highest traffic volumes: the Denver-Boulder CO maintenance area SIP. See Table 3 for a list of applicable intersections.

iv. For any project affecting one or more of the top three intersections in the nonattainment or maintenance area with the worst level of service, as identified in the applicable implementation plan.

[30] CDOT published a memo on November 21, 2017 that provides clarification as to whether four types of projects are exempt: road diets, auxiliary lanes, ramp metering, and pedestrian crossing lights. The memo title is "Transportation Conformity: Exempt Project Interpretations for 40 CFR 93.126" and it is located at https://www.codot.gov/programs/environmental/air-quality/exempt-project-interpretations-for-40-cfr-93.126

[31] Another type of LOS is Intersection Capacity Utilization LOS. However, the Intersection Capacity Utilization LOS cannot be used to determine whether conformity is triggered.

Of five CO maintenance plans in Colorado, only one identifies intersections with the worst LOS: the Denver-Boulder CO maintenance area SIP. See Table 3 for a list of applicable intersections.

Table 3: Denver-Boulder Carbon Monoxide Maintenance Area State Implementation Plan Intersections

Conformity Rule	Type of Intersection	Intersection
93.123(a)(1)(iii)	Highest Traffic Volume	University Avenue & 1st Avenue[1]
93.123(a)(1)(iii)	Highest Traffic Volume	Wadsworth Boulevard & Alameda Avenue[1]
93.123(a)(1)(iii)	Highest Traffic Volume	S. University Boulevard & Hampden Avenue[2, 3]
93.123(a)(1)(iii)	Highest Traffic Volume	S. University Boulevard & E. Arapahoe Road[2, 3]
93.123(a)(1)(iii) and 93.123(a)(1)(iv)	Highest Traffic Volume and Most Congested/Worst LOS	Foothills Parkway & Arapahoe Avenue [2, 1]
93.123(a)(1)(iii) and 93.123(a)(1)(iv)	Highest Traffic Volume and Most Congested/Worst LOS	S. University Boulevard & Belleview Avenue[1, 3]
93.123(a)(1)(iv)	Most Congested/Worst LOS	28th Street & Arapahoe Avenue[1, 4]

Notes:

1. Source: Carbon Monoxide Maintenance Plan for the Denver Metropolitan Area, December 2005, page 17
2. Source: Technical Support Document, Carbon Monoxide Maintenance Plan Revision for the Denver-Boulder Attainment Area, September 2005, Appendix A (CAL3QHC I/O Files), starting on page 313.
3. The source of this information referred to University Blvd; but it should have referred to S. University Blvd. It becomes S. University Blvd. south of E. Ellsworth Avenue.
4. The source of this information referred to an intersection of 28th Street and Arapahoe Road in Boulder, but it should have referred to Arapahoe Avenue. Arapahoe Avenue becomes Arapahoe Road approximately three miles east of this intersection.

The following describes the next analysis step, depending on the outcome of Step 1:

- Analysis not required: Go to Step 8
- Qualitative analysis: Go to Step 8[32]
- Quantitative analysis: Go to Step 2

Step 2: Determine if CO hot-spot categorical finding may be used

When this AQ-PLAG was published, the most current FHWA categorical hot-spot finding memo was from July 2017. It applies to urban highway projects that have one or more intersections in CO maintenance areas. If the criteria specified in the categorical hot-spot finding are met, the categorical hot-spot finding can be used instead of conducting a CO hot-spot analysis. However, a project-level conformity determination for CO still must be made, with interagency consultation and public involvement. This

[32] Per 40 CFR 93.123(a)(2), if a project is not one of the four categories described by 40 CFR 93.123(a)(1), the demonstration required by 40 CFR 93.116 can be either quantitative or qualitative. Generally, the demonstration is qualitative.

determination is essentially a finding that the categorical hot-spot determination applies to the project. Before using this memo, confirm it is the most current version.

The following describes the next analysis step, depending on the outcome of Step 2:

- Categorical finding may be used: Go to Step 8
- Categorical finding may not be used: Go to Step 3

Step 3: Determine approach, models, and data to be used

When it has been determined that a CO hot-spot analysis is required, the next step is to develop a suitable approach to the project. All analyses must consider the following regulatory requirements from 40 CFR 93.123(c) of the Conformity Rule:

- Estimate CO concentrations based on the project CO emissions and include the background CO concentration;
- Include the entire transportation project, after identifying the major design features that will significantly impact local concentrations;
- Use assumptions consistent with those used in regional emissions analyses for inputs required in both analyses (e.g. temperature, humidity);
- Assume mitigation or control measures only where written commitments have been obtained;
- Only model construction-related emissions in CO hot-spot analyses if such emissions are not considered temporary (i.e. the construction phase is expected to last more than 5 years at any individual site)[33].

The following air quality dispersion models are approved and recommended for use in CO hot-spot analyses:

- **CAL3QHC:** CAL3QHC is an EPA-approved mobile source dispersion model used to predict CO (and other inert pollutants) concentrations at sensitive locations adjacent to roadways and roadway intersections. It is an effective tool for predicting emissions from motor vehicles operating under free-flow conditions and from idling vehicles under stop-and-go conditions of signalized intersections. CAL3QHC is the primary CO screening model for CDOT.
- **CAL3QHCR:** CAL3QHCR is an EPA-approved mobile source dispersion model used to predict CO (and other inert pollutants) concentrations at sensitive locations adjacent to roadways and roadway intersections. It is an effective tool for predicting emissions from motor vehicles operating under free-flow conditions and from idling vehicles under stop-and-go conditions of signalized intersections. It uses one year of meteorological data. CAL3QHCR is a refined model. It can be used for refined models until May 22, 2020, which is three years after the effective date of the regulation requiring a transition to AERMOD[34]. Refined analyses for which air quality modeling was begun before the end of this 3-year transition period with a CALINE3-

[33] The 40 CFR 93.123(c)(5) reference to "Guideline" methods is a reference to EPA's *Guidelines on Air Quality Models (Appendix W)*

[34] Effective date of 82 FR 5182, Revisions to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter, which was published on 1/17/17, was originally 2/16/2017. However, it was extended to 5/22/2017 by 82 FR 14324, which was published on March 20, 2017.

based model can be completed after the end of the transition period with that model.[35] However, it may be determined via an interagency consultation that AERMOD should be used for refined CO analyses begun prior to May 22, 2020.

- **AERMOD:** AERMOD is a steady-state Gaussian dispersion model that represents the most current promulgated dispersion model from the EPA. AERMOD incorporates meteorological data and terrain profiles to calculate CO concentrations at receptor locations. It must be used for refined analyses for which CO air quality modeling began on or after May 22, 2020.

It is generally recommended that a CO screening model be performed first. If violations of the NAAQS are not modeled with the screening model, a refined model is not needed. If the screening model results indicate potential NAAQS violations, then a refined CO dispersion model will be required.

For the CO screening model, the year of highest emissions during the transportation plan time frame is analyzed. The time frame is often 20 years into the future. To cover the year of highest emissions and streamline the analysis, present day[36] motor vehicle emission factors and future[37] peak hour traffic volumes are modeled together. Emission factors for stationary vehicles idling and moving vehicles passing through the intersection at the future constrained speeds are needed. Constrained speeds are estimates of average vehicle speeds when vehicles can move through the intersection under the congested traffic conditions. These speeds should be calculated by the traffic engineer to be consistent with other traffic analyses. Selection of traffic analysis methods is beyond the scope of the AQ-PLAG and is left to qualified professionals supporting the project. One example method for speed and/or volume calculation is to use traffic microsimulation modeling tools (e.g., SimTraffic) that often are attached to intersection analysis tools (e.g., Synchro). Other appropriate methods may be available, which could include using the HCM delay result and acceleration/deceleration assumptions. Future peak hour traffic volumes can be obtained from a state or MPO regional travel demand model. Each traffic movement in the CO screening model (right turn, left turn, through movement or departure) will need to be included. Constrained speeds should be expected to be lower than posted speed limits. Screening models should use EPA's worst-case meteorological scenario[38].

Emission factors are used in the models to calculate emission rates. These emission rates and traffic volumes represent worst-case screening model parameters because present day motor vehicle emission rates are higher than future emission rates, while traffic volumes would be highest in the future year of the project and transportation plan. The traffic data generally comes from a project-specific traffic study.

Screening model parameters shall be selected according to the most recent EPA hot-spot modeling guidance and in consultation with CDOT and APCD through the scoping process. Depending on the scope and complexity of the project, staff from EPA, FHWA, FTA, MPOs, and local governments may also participate in the air quality scoping process.

If the project entails non-highway emissions sources (e.g., construction of a parking garage or transit terminal), the analyst will develop and document the proposed methodology in an air quality modeling

[35] 82 FR 5182, page 5192

[36] The present day year can be existing, or base, year or the project opening year. See Appendix B for more information about these timeframes.

[37] The future year can be either the design year or horizon year of the current, approved RTP, whichever is later. If traffic data is not available for either the design or horizon year, it is acceptable to use traffic data for the earlier year. See Appendix B for more information about these timeframes.

[38] EPA's worst-case meteorological scenario is essentially the most conservative conditions, including wind speed.

protocol that is made available for interagency review and comment, as described in Chapter 3. For projects where only on-road emissions are being considered, i.e., solely a signalized intersection or interchange, a protocol may not be required. If a project contains an off-network source (e.g., associated project facilities such as bus terminals or parking lots), the analyst will provide all data necessary to APCD so that APCD can use MOVES2014b to calculate emissions and emissions factors for the project.

If the project has more than one intersection that may need to be modeled, the decision of which intersection(s) need to be modeled shall be determined either via EPA guidance[39] or via interagency consultation, at APCD, CDOT, EPA, and/or FHWA's discretion.

Step 4: Obtain on-road vehicle emission factors and background CO concentrations

MOVES is the current, EPA-approved modeling program for estimating on-road vehicle emission factors, which are inputs for the CO hot-spot air quality dispersion models. MOVES replaced MOBILE versions of the software. The latest major upgrade to MOVES, MOVES2014, was approved for use on October 7, 2014 (FRL-9917-26-OAR). The EPA established a two-year grace period for using MOVES2010, which ended October 7, 2016. MOVES2014, including minor updates, is now required to be used for all conformity analyses. The model had a minor update in December 2017 (version 2014a) and again in August 2018 (version 2014b).

The MOVES2014 user guide is available for use and guides the user step-by-step through the MOVES program. The use of this guide is essential to understanding the MOVES Graphical User Interface and provides the user with all the necessary information and details on how to use the MOVES model to estimate air pollution emissions from cars, trucks, and non-highway mobile sources.

EPA's website should be consulted to identify the latest version of the software and its corresponding default database, to ensure that the correct version is being used and to state which version is being used in the air quality technical report. Periodic updates are expected to correct software bugs, revise emission standards, and to increase user flexibility and performance. The current version of the model, and associated guidance is available for download from EPA's web site.

APCD runs MOVES and develops emission factors for hot-spot analyses in Colorado. Air quality analysts should provide the following information to APCD when requesting emission factors to use in a screening model:

- Roadways that make up the intersection(s); include the functional class of each roadway (e.g., urban arterial, rural interstate)
- General location of project (e.g., nearest town)
- CDOT's project name, number, and subaccount code
- Description of project (e.g., a left turn lane will be added to *XX* Street; a third southbound lane will be added to *YY* Avenue)
- Pollutant(s) for which emission factors are being requested[40]
- Air dispersion model to which emission factors will be input

[39] Chapter 3 of EPA's 1992 "*Guideline for Modeling Carbon Monoxide from Roadway Intersections*" describes how to rank and select the intersections to be modeled when there are multiple potential intersections.

[40] If emission factors are requested for any pollutants besides CO, an interagency consultation shall be held and include, at a minimum, CDOT and APCD.

- Types of emission factors desired (i.e., moving and queuing/idling)
- Peak hour (constrained) speeds in units of miles per hour for each intersection leg (e.g., up to 16 speeds at each intersection: 12 approach and 4 departure)
- Year(s) for which emission factor(s) are requested
- Request for background CO concentration(s); provide needed years (e.g., present day and future)
- Request for CO 8-hour persistence factor, unless using EPA's default factor of 0.7

APCD provides 1-hour/8-hour background CO concentrations and can provide 8-hour CO persistence factors[41] for all CO hot-spot analyses. The background concentration should accurately represent the ambient CO concentration in a given project area. A background concentration is required in hot-spot analyses to calculate design values from the concentrations generated by the air quality dispersion model.

Step 5: Select air quality dispersion model data input and receptor locations

- The air quality dispersion model estimates ambient CO concentrations at receptor locations based on emission factors from MOVES for the analysis year and conditions considered. Receptors are specific points located in the project area. Receptors are selected using the criteria in the most recent EPA guidance (e.g., Section 2 of EPA's *Guidelines for Modeling Carbon Monoxide from Roadway Intersections* from November 1992). The air quality dispersion model uses a number of data sets including emission rates (see Step 4) and meteorological data.

Step 6: Calculate design values and evaluate conformity

The analyst runs dispersion models to calculate ambient CO concentrations for each receptor. Typically, models provide the average CO concentration for each receptor for one hour. Final CO concentrations used to evaluate the project are the sum of the modeled, project-related CO concentration added to the background CO concentrations. These CO design values (DVs) are calculated[42] for each receptor as follows:

$$\text{1-hour CO } DV_{\text{receptor i}} = \text{Modeled CO Concentration}_{\text{receptor i}} + \text{1-hour Background CO concentration}$$

$$\text{8-hour CO } DV_{\text{receptor i}}{}^{43} = \text{1-hour CO } DV_{\text{receptor i}} \times \text{Persistence Factor}$$

DVs are then compared to the relevant CO NAAQS in order to evaluate conformity. If all DVs are less than or equal to the CO NAAQS, then the project meets conformity requirements. If a DV is greater than the CO NAAQS, the project can still meet conformity requirements if the build DV(s) that exceed the CO NAAQS are less than or equal to the no-build DV(s) at the same receptor location(s). Otherwise, mitigation actions may be needed, as described in Step 7.

[41] When calculating the 8-hour concentration, either request and use the persistence factor from APCD or use EPA's default persistence factor of 0.7.

[42] Modeled results no longer need to be adjusted using an altitude adjustment factor because MOVES factors in altitude effects where appropriate for various emission rates of the pollutants of interest.

[43] As explained in Step 4, the 8-hour concentration can be either modeled (8-hour modeled concentration plus 8-hour background concentration) or calculated using the 1-hour modeled concentration multiplied by the persistence factor. Generally, the 8-hour concentration is calculated.

If an exceedance of the 8-hour CO NAAQS is modeled in the worst-case analysis, a refined hot-spot analysis may be completed. A refined analysis uses site-specific and area-specific data to predict more realistic CO concentrations under actual operating conditions. The analyst shall confer with CDOT, APCD, FHWA, and EPA before beginning a refined hot-spot analysis. Although EPA guidance allows for refined hot-spot modeling when the worst-case analysis predicts an exceedance of the 8-hour CO NAAQS, the parties shall agree that a refined hot-spot analysis is warranted and that it complies with all regulatory requirements. The refined model will include consideration of the 1-hour CO NAAQS.

Step 7: Consider mitigation or other control measures

If an exceedance of the 1-hour or 8-hour CO NAAQS is modeled in the refined analysis, which is unlikely to occur, a consultation with CDOT and APCD will be held to consider mitigation measures that could be implemented in order to comply with the NAAQS. Mitigation measures will be assumed in hot-spot analyses when the measures are included as mitigation commitments in the project environmental decision document (ROD, FONSI, or signed Form 128). They are also enforceable under Section V of Air Quality Control Commission's (AQCC's) Regulation Number 10. Per 40 CFR 93.125, mitigation and control measures can be added into the project at any time during the process and must include written commitments for implementation. Mitigation measures may include:

- Signal coordination and timing
- Improved intersection channelization
- Inclusion of intersection turning lanes
- Expansion of roadway by adding through lanes, if traffic volume increases do not offset impacts due to improved speeds
- Other site design measures that reduce the impacts of proximate CO through improved dispersion
- Traffic circulation changes that would re-route traffic around locations of high concentrations
- Travel demand management strategies
- Bike and pedestrian improvements
- Improved or additional transit service

Step 8: If applicable, complete the analysis (e.g., categorical finding). For all analyses, document the analysis results.

Chapter 13 describes information related to project-level analysis that needs to be included in an air quality analysis, including air quality technical reports, when applicable. Chapter 14 describes the information that needs to be included in the NEPA document.

Step 9: Provide notification and obtain concurrence, if applicable

FHWA reviews all projects except programmatic CatExs. A project that requires a CO hot-spot analysis does not meet the requirements of being a programmatic CatEx.

CDOT submits the air quality technical report to APCD and EPA as described below. For APCD, it is submitted to the administrative contact, generally a planner from the Policy and Planning Program, and a technical contact from the Technical Services Program. APCD and EPA provide responses, including concurrence when applicable for APCD, as follows:

- **CatExs:** Within 11 business days of receiving the request

- **EAs:** Generally within 11 business days of receiving the request, unless otherwise negotiated
- **EISs:** On a timeline as negotiated

If the report is submitted, it is either as notification or as a request for concurrence, depending on the NEPA class of action and level of analysis:

- **CatEx, exempt under Table 2 of 40 CFR 93.126:** Notification not provided to APCD or EPA; concurrence not needed from either agency
- **CatEx, qualitative analysis (Nonexempt but hot-spot analysis not required):** Notification provided to APCD; concurrence not needed from APCD; notification provided to EPA in special cases when determined via interagency consultation
- **CatEx, qualitative analysis (Categorical Finding could be used):** Notification provided to APCD; concurrence from APCD not needed that it was acceptable to use Categorical Finding; notification provided to EPA in special cases when determined via interagency consultation
- **CatEx, quantitative analysis:** Notification provided to APCD; concurrence from APCD not needed; notification provided to EPA in special cases when determined via interagency consultation
- **EA or EIS, exempt under Table 2 of 40 CFR 93.126:** Notification not provided to APCD or EPA; concurrence not needed from either agency
- **EA or EIS, qualitative analysis:** Notification provided to APCD and EPA; concurrence from APCD needed (if Categorical Finding was used, the concurrence shows that it was acceptable to use it)
- **EA or EIS, quantitative analysis:** Notification provided to APCD and EPA; concurrence needed from APCD

4.4 Public Involvement Requirements

In accordance with 40 CFR 93.105(e), agencies making conformity determinations on transportation plans, programs, and projects shall establish a proactive public involvement process. The requirements are specific to MPOs, such as those described in 23 CFR 450.316(a). The NEPA public involvement meeting is another opportunity for public review and comment of the air quality technical report, which includes the CO hot-spot analysis, if applicable.

5. PARTICULATE MATTER PROJECT-LEVEL CONFORMITY DETERMINATION

As described in 40 CFR 93.102, PM_{10} portions of the Conformity Rule apply to projects that are, in whole or in part, located within one or more PM_{10} nonattainment or maintenance area and have a Federal nexus. Figure 2 shows locations of Colorado PM_{10} maintenance areas. Colorado does not have any PM_{10} nonattainment areas.

A project-level PM_{10} conformity determination addresses consistency with regional conformity determinations, and, when necessary, addresses localized emissions. The project-level conformity determination demonstrates that:

1. The project is included in the currently conforming transportation plan and TIP[44]
2. Where applicable, the project will not cause any localized exceedances of the NAAQS as determined by a project-specific hot-spot analysis
3. The project complies with PM_{10} control measures in the SIP, per 40 CFR 93.117

5.1 PM_{10} Project-level Scoping

A transportation project-level PM_{10} analysis can fall into one of four categories regarding the Conformity Rule:

1. Conformity Rule does not apply[45] (analysis not required)
2. Exempt from analysis per 40 CFR 93.126 or 40 CFR 93.128[46] (analysis not required, requirements may apply[47]);
3. Nonexempt but PM_{10} hot-spot analysis is not required; or
4. Nonexempt and requires PM_{10} hot-spot analysis (quantitative analysis[48]).

See Step 1 of Section 5.3 for more information about each of these four categories.

[44] Isolated rural PM_{10} maintenance areas do not have TIPs. However, the project must be included in a regional emissions analysis meeting the requirements of 40 CFR 93.

[45] The applicability section of the Conformity Rule is at 40 CFR 93.102. One example of when the Conformity Rule does not apply is when a project is not in any maintenance or nonattainment area. The PM_{10} related requirements, e.g., PM_{10} hot-spot analyses, do not apply to projects that are not in any PM_{10} maintenance areas.

[46] Projects categorized under 40 CFR 93.126 or 40 CFR 93.128 are exempt from the Conformity Rule and may proceed toward implementation even in the absence of a conforming transportation plan and TIP.

[47] Per 40 CFR 93.126, if the project is located in a PM_{10} nonattainment or maintenance area, the project can only be exempt under 40 CFR 93.126 if it is in compliance with control measures in the applicable SIP. Note that the regulation here stipulates "control measures" and not "transportation control measures." Colorado SIPs do not contain any transportation control measures. However, they do contain control measures. Control measures for the Denver Metro PM_{10} maintenance area are listed in Appendix D. Please see the isolated rural PM_{10} maintenance area SIPs for those areas control measures.

[48] Unlike for CO, PM_{10} does not currently have a Categorical Finding. A similar provision for adding one is specified at 40 CFR 93.123(b)(3), so it is possible that a PM_{10} Categorical Finding could be developed by FHWA.

5.2 Consistency with PM_{10} Regional Analyses

If the Conformity Rule applies, transportation projects need to be evaluated with respect to regional air quality concerns, unless exempt from the Conformity Rule or from regional analysis requirements of the Conformity Rule. A project is exempt from the Conformity Rule if it is a project type listed in Table 2 of 40 CFR 93.126. A project is exempt from regional emissions analysis if it is a project type listed in Table 3 of 40 CFR 93.127. These two groups of exemptions do not apply if the project is determined by the area's MPO, in consultation with other agencies, to have potentially adverse regional impacts.

Table 3 of 40 CFR 93.127 project types are: intersection channelization project; an intersection signalization project at individual intersections; an interchange reconfiguration project; a project with changes in vertical and horizontal alignment; a truck size and weight inspection station; a bus terminal and transfer point. If the project is exempt from regional conformity, it can be concluded that the project will not have a significant adverse regional impact on air quality and the project may be grouped in one line item with other projects or identified individually in the TIP or Statewide Transportation Improvement Program (STIP).

For projects that are not exempt from regional conformity, PM_{10} regional analysis requirements are handled differently depending on whether the PM_{10} maintenance areas is isolated. Regional travel models are not conducted for isolated rural PM_{10} maintenance areas. If conformity applies in such an area, an interagency consultation must be held to determine how regional conformity will be determined. Only one PM_{10} maintenance area in Colorado is not an isolated rural maintenance area: the Denver Metro area, which is part of DRCOG's regional model. However, not all projects in a MPO's TIP are modeled. All Regionally Significant Projects must be modeled and some other projects are modeled. Only approximately ten percent of all projects in DRCOG's TIP are modeled.

To show consistency with PM_{10} regional analysis, the analyst must either provide the rationale that makes the project exempt from regional analysis (i.e., Table 3 of 40 CFR 93.127) or provide the title of the applicable TIP and RTP and the TIP and/or RTP number for the project. If not exempt, confirm and state that the project design concept and scope, as described in the NEPA document, is not significantly different from that described in the TIP (or STIP for isolated rural PM_{10} maintenance areas).

If a non-exempt project is located in the PM_{10} maintenance area and it is not listed in the TIP and/or if the TIP project design concept and scope is significantly different than what is in the project NEPA document, the project sponsor must request that the applicable MPO[49] amend the project into the TIP.

If the project is not consistent with the long range RTP, an RTP Amendment is also required. The project will need to be included in the latest regional conformity analysis before amending the TIP and RTP. The NEPA decision document (ROD, FONSI, Form 128) cannot be signed until an element of the project is in an approved TIP with programmed funding.

If a project is consistent with the RTP and a regional emissions analysis is not required, the process to add a project to the TIP (known as a TIP Amendment) takes approximately two months to complete for DRCOG. If a project needs to be amended into the RTP, the process runs concurrently with the TIP Amendment process and can take up to six months, including time for: allowing for public review and comments; committee and MPO Board/Council action (as needed); and receiving FHWA/FTA approval.

[49] Per 40 CFR 93.109(g)(2)(i), when conformity requirements apply to isolated rural PM_{10} maintenance areas, references to MPOs in the Conformity Rule should be taken to mean CDOT.

For DRCOG, if a project needs to be included in the regional emissions analysis, the TIP and RTP Amendment process takes at least six months, which includes time for the additional steps of updating the travel model, running the emissions analysis, and Council action on the positive conformity finding. Therefore, contact the MPO representative early in the NEPA process.

In isolated rural PM_{10} maintenance areas, since there is no MPO regional emissions analysis, a regional emissions analysis must be conducted including the proposed project, existing roadways in the area, and any other proposed projects in the STIP for that area. As a practical matter, projects needing a conformity determination in the isolated rural PM_{10} areas are extremely rare. The AQ-PLAG does not define procedures for conducting this type of analysis, and the interagency consultation process should be used to identify a methodology for this analysis should the need arise.

Chapter 13 describes information related to regional analysis that needs to be included in an air quality analysis, including air quality technical reports, when applicable. Chapter 14 describes the information that needs to be included in the NEPA document.

5.3 PM_{10} Project-level Analyses

EPA guidance specific to PM_{10}, which is listed in Section 2.3, should be consulted before initiating a PM_{10} project-level analysis. This analysis may include hot-spot modeling. This AQ-PLAG does not change or revise any recommendation provided in EPA guidance for conducting a quantitative hot-spot analysis. The following steps provide an overview of technical procedures for conducting a project-level PM_{10} analysis.

Step 1: Determine type of PM_{10} analysis needed

As described in Section 5.1, the appropriate level of PM_{10} analysis for a project may be none or quantitative (hot-spot). Unlike with CO conformity analyses, a qualitative analysis is never required for PM_{10} conformity analyses. For EAs and EISs, which may have more than one alternative (e.g., Proposed Action, No Action Alternative, Preferred Alternative(s), and/or Considered Alternative(s)), the level of analysis may differ between alternatives. CatExs typically only have a Proposed Action.

Project alternatives that meet at least one of the following conditions do not require a quantitative analysis:

- Exempt per Table 2 of 40 CFR 93.126[50] (analysis not required)
- Project type not specifically described in 40 CFR 93.123(b)(1) (does not require analysis, but a conformity determination meeting the other applicable requirements of 40 CFR 93 is still required)

Other projects will need quantitative analysis. Types of projects that require a quantitative PM_{10} analysis are defined in 40 CFR 93.123(b)(1) as being (italicized text is Conformity Rule; non-italicized text is informational):

[50] CDOT published a memo on November 21, 2017 that provides clarification as to whether four types of projects are exempt: road diets, auxiliary lanes, ramp metering, and pedestrian crossing lights. The memo title is "Transportation Conformity: Exempt Project Interpretations for 40 CFR 93.126" and it is located at https://www.codot.gov/programs/environmental/air-quality/exempt-project-interpretations-for-40-cfr-93.126

i. *New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;*

ii. *Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;*

This section of the Conformity Rule only applies to intersections that are or will be signalized. Intersections that are only stop-sign controlled, both now and after the project, do not require a hot-spot analysis. The HCM LOS should be used. If the intersection is currently not signalized, the existing LOS does not need to be determined.

iii. *New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;*

iv. *Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location;*

v. *Projects in or affecting locations, areas, or categories of sites which are identified in the applicable PM_{10}, and $PM_{2.5}$ implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.*

None of the applicable implementation plans, which are all maintenance plans, identify any locations, areas, or categories of sites as sites of violation or possible violation. Those maintenance plans are: Aspen (December 16, 2010), Canon City (November 20, 2008), Denver Metro (December 15, 2005), Lamar (December 20, 2012), Pagosa Springs (November 19, 2009), Steamboat Springs (December 15, 2011), and Telluride (November 19, 2009).

"Significant" is not defined in 40 CFR 93. It is based on the POAQC definition, which is based on either the volume of diesel trucks or the type of project. EPA guidance[51] provides examples of projects that are and are not POAQC. For example, the following are POAQC: projects on a new highway that serve a significant volume of diesel traffic (e.g. for new highways, greater than 125,000 Annual Average Daily Traffic [AADT] and 8 percent diesel trucks, which is 10,000 trucks per day); expansion of an existing highway or facility that affects an intersection operated at LOS D, E, or F that has a significant increase in the number of diesel trucks; new exit ramps or other highway facility improvements to connect a highway to a major freight, bus, or intermodal terminal; or a project that may substantially increase the number of diesel transit buses and/or diesel trucks. The number of diesel vehicles is more important than the percentage, particularly if traffic volume is low.

Whether a project is a POAQC is determined during the interagency scoping process. The interagency consultation typically includes CDOT, APCD, EPA, and FHWA. In some instances, additional agencies are included (e.g., FTA and local MPOs). The interagency consultation considers traffic data within the project area and determines, based on overall design year average daily traffic (DYADT) volumes and diesel fleet volumes, whether a significant increase in diesel traffic will occur between the design year build and design year no-build scenarios that would warrant a hot-spot analysis per 40 CFR 93.123(b)(1).

When it is determined and documented via interagency consultation that a transportation project is a POAQC, a quantitative PM hot-spot analysis is required to determine project-level conformity and

[51] The POAQC definition is from Appendix B of EPA's November 2015 Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas.

ensure that the project will not cause or contribute to a new violation of the PM_{10} NAAQS, increase the frequency or severity of a violation, or delay timely attainment of the PM_{10} NAAQS.

The following describes the next analysis step, depending on the outcome of Step 1:

- Analysis not required: Got to Step 7
- Quantitative analysis: Go to Step 2

Step 2: Determine approach, models, and data to be used

When it has been determined that a quantitative PM hot-spot analysis is required, the next step is to develop a suitable approach for the analysis. All analyses must consider the following requirements, which are from 40 CFR 93.123(c) of the Conformity Rule:

- Estimate PM_{10} concentrations based on project PM_{10} emissions and include the background PM_{10} concentration;
- Include the entire transportation project, after identifying the major design features that will significantly impact local concentrations;
- Use assumptions consistent with those used in regional emissions analyses for inputs required in both analyses (e.g., temperature, humidity);
- Assume mitigation or control measures only where written commitments have been obtained;
- Only model construction-related emissions in PM_{10} hot-spot analyses if such emissions are not considered temporary (i.e., the construction phase is expected to last more than 5 years at any individual site)[52].

The following air quality dispersion models are approved and recommended for use in PM_{10} hot-spot analyses:

- **CAL3QHCR:** CAL3QHCR is an EPA-approved mobile source dispersion model used to predict PM_{10} (and other inert pollutants) concentrations at sensitive locations adjacent to roadways and roadway intersections. CAL3QHCR is a refined model. It can be used for PM_{10} analyses begun before May 22, 2020, which is three years after the effective date of the regulation requiring a transition to AERMOD[53]. Any analysis for which the air quality modeling has begun before the end of this 3-year transition period with a CALINE3-based model can be completed after the end of the transition period with that model.[54] However, it may be determined via an interagency consultation that AERMOD should be used for analyses begun prior to May 22, 2020.
- **AERMOD:** AERMOD is a steady-state Gaussian dispersion model that represents the most current promulgated dispersion model from the EPA. AERMOD incorporates meteorological data and terrain profiles to calculate PM_{10} concentrations at receptor locations. It must be used for any PM_{10} analyses for which air quality modeling was begun on or after May 22, 2020.

[52] The 40 CFR 93.123(c)(5) reference to "Guideline" methods is a reference to EPA's *Guidelines on Air Quality Models (Appendix W)*

[53] Effective date of 82 FR 5182, Revisions to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter, which was published on 1/17/17, was originally 2/16/2017. However, it was extended to 5/22/2017 by 82 FR 14324, which was published on March 20, 2017.

[54] 82 FR 5182, page 5192

The screening model method used for CO modeling is not used for PM_{10} modeling. To determine the year of highest emissions during the transportation plan time frame, the analysis will consider several years of regional emissions from present day to future years as determined via interagency consultation. This information may be available from an MPO's existing regional emissions analysis. Modeling parameters will be selected according to the most recent EPA hot-spot modeling guidance. See Step 4 for potential additional sources of PM_{10} that may need to be included.

Interagency consultation is used to determine the appropriate approach to the analysis including:

- Geographic location and limits of the project;
- Models to be used (e.g., MOVES2014b, AERMOD);
- Traffic data sets to be used for estimating on-road vehicle emissions;
- How to estimate road dust emissions[55];
- Whether or how to estimate construction dust emissions;
- Background monitors/concentrations selected and any interpolation methods used;
- Receptor locations and appropriateness to be compared to the PM_{10} NAAQS;
- Meteorological data to use in the models.

Agencies or analysts should contact a CDOT air quality specialist to initiate the interagency consultation process to discuss the appropriate approach to the analysis. This step should be documented for the project file.

Step 3: Obtain on-road vehicle emission factors and background PM_{10} concentrations

MOVES is the current, EPA-approved modeling program for estimating on-road vehicle emissions, which are inputs for the PM_{10} hot-spot air quality dispersion models. MOVES replaced MOBILE versions of the software. The latest major upgrade to MOVES, MOVES2014, was approved for use on October 7, 2014 (FRL-9917-26-OAR). The EPA established a two year grace period for using MOVES2010, which ended October 7, 2016. MOVES2014, including minor updates, is now required to be used for all conformity analyses. The model had a minor update in December 2017 (version 2014a) and again in August 2018 (version 2014b).

The MOVES2014 user guide is available for use and guides the user step-by-step through the MOVES program. The use of this guide is essential to understanding the MOVES graphical user interface and provides the user with all the necessary information and details on how to use the MOVES model to estimate air pollution emissions from cars, trucks, and non-highway mobile sources.

EPA's website should be consulted to identify the latest version of the software and its corresponding default database, to ensure that the correct version is being used. Periodic updates are expected to correct software bugs, revise emission standards, and to increase user flexibility and performance. The current version of the model, and associated guidance is available for download from EPA's web site.

[55] Note that per 40 CFR 93.102(b)(3) and 40 CFR 93.119(f)(8), emissions from re-entrained road dust should be considered in $PM_{2.5}$ hot-spot analyses if the EPA or APCD has made the decision that such emissions are a significant contributor to the local air quality concern in the applicable maintenance area. Because Colorado does not have any $PM_{2.5}$ maintenance areas, $PM_{2.5}$ re-entrained road dust emissions do not need to be calculated.

APCD runs MOVES to develop emissions factors for all hot-spot analyses in Colorado and provides motor vehicle running and idle emission factors. Information which may be similar to the information described in Step 4 of Section 4.3, depending on which air dispersion model will be used, will need to be provided to APCD when requesting emission factors.[56] The information needed will be determined via interagency consultation.

APCD also provides background concentrations for all PM_{10} hot-spot analyses. The background concentration should accurately represent the ambient PM_{10} concentration in a given project area. A background concentration is required in hot-spot analyses in order to calculate design values from the air quality model concentrations.

Step 4: Estimate emissions from construction activities and other sources adjacent to the study area (if applicable to the project)

Other sources of emissions may need to be estimated and included in the air quality model. The following emission sources should be discussed during interagency consultation to determine if it is necessary to include them in the air quality model:

- **Construction Activities:** As defined in 40 CFR 93.123(c)(5)[57], construction-related emissions are not required to be modeled in quantitative PM_{10} hot-spot analyses if such emissions are considered temporary (i.e., emissions occur during the construction phase and are expected to last less than 5 years at any site).
- **Other Nearby Sources:** Per 40 CFR 93.105(c)(1)(i), the evaluation and consideration of other nearby sources affected by the project that may have significant contributions to the local air quality for a given nonattainment or maintenance area must be completed through each area's interagency consultation procedures. Modeling of nearby source(s) is conducted following applicable regulations and (as appropriate) guidance. In general, nearby sources need to be included in air quality modeling only when those sources would be affected by the project.[58]

Step 5: Select air quality dispersion model data input and receptor locations

The air quality dispersion model estimates ambient PM_{10} concentrations at receptor locations based on emission factors from MOVES for the analysis year and conditions considered. Receptors are specific points located in the project area and are typically selected during the interagency consultation process to ensure the project area is accurately represented. Receptors are selected using criteria in the most recent EPA guidance (e.g., Section 7.6 of EPA's *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* from November 2015). The air quality dispersion model uses a number of data sets including emission rates (see Step 3) and meteorological data. APCD provides the meteorological data if it is available and agencies agree it is the best data to use. Otherwise, EPA's worst-case meteorological scenario is used.

[56] When sending the MOVES request to APCD, also request the background concentration(s) factor(s), which are described in Step 6.

[57] The 40 CFR 93.123(c)(5) reference to "Guideline" methods is a reference to EPA's *Guidelines on Air Quality Models (Appendix W)*.

[58] Section 8.2, Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas, EPA-420-B-15-084, November 2015.

Step 6: Calculate design values and evaluate conformity

The analyst runs dispersion models to calculate ambient PM_{10} concentrations for each receptor. DVs are calculated[59] per the requirements of EPA's guidance (e.g., Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas, EPA-420-B-15-084, November 2015).

DVs are then compared to the relevant PM_{10} NAAQS in order to evaluate conformity. If all DVs are less than or equal to the PM_{10} NAAQS, then the project meets conformity requirements. If a DV is greater than the PM_{10} NAAQS, the project can still conform if the build DV(s) that exceed the PM_{10} NAAQS are less than or equal to the no-build DV(s) at the same receptor location(s). Otherwise, mitigation actions may be needed, as described in Step 7.

Step 7: Consider mitigation or other control measures

All FHWA/FTA projects, even if exempt under Table 2 of 40 CFR 93.126, must comply with any PM_{10} control measures in the applicable SIP, per 40 CFR 93.117 and 40 CFR 93.126. This criterion is satisfied if the air quality technical report contains a written commitment from the project sponsor to include in the final plans, specifications, and estimates for the project those control measures (for the purpose of limiting PM_{10} emissions from the construction activities and/or normal use and operation associated with the project) that are contained in the applicable SIP.

If a non-exempt project does not meet conformity requirements, then modeling of mitigation or other control measures may need to be implemented to reduce the emissions and concentrations in the project area. Per 40 CFR 93.125, mitigation and control measures can be added into the project at any time during the process and must include written commitments for implementation. Examples of mitigation measures are provided in Section 10 of EPA's *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (EPA-420-B-15-084) and include:

- Retrofitting, replacing vehicles/engines, and using cleaner fuels
- Reduced idling programs
- Transportation project design revisions
- Fugitive dust control programs
- Addressing other source emissions
- Dedicated truck lanes

Step 8: Document the analysis results

Chapter 13 describes information related to project-level analysis that needs to be included in an air quality analysis, including air quality technical reports, when applicable. Chapter 14 describes the information that needs to be included in the NEPA document.

Step 9: Provide notification and obtain concurrence, if applicable

[59] Modeled results no longer need to be adjusted using an altitude adjustment factor because MOVES factors in altitude effects where appropriate for various emission rates of the pollutants of interest.

FHWA reviews all projects except programmatic CatExs. A project that requires a PM_{10} hot-spot analysis does not meet the requirements of being a programmatic CatEx.

CDOT submits the air quality technical report to APCD and EPA as described below. For APCD, it is submitted to the administrative contact, generally a planner from the Policy and Planning Program, and a technical contact from the Technical Services Program. APCD and EPA provide responses, including concurrence when applicable for APCD, as follows:

- **CatExs:** Within 11 business days of receiving the request.
- **EAs:** Generally within 11 business days of receiving the request, unless otherwise negotiated
- **EISs:** On a timeline as negotiated

If the report is submitted, it is either as notification or as a request for concurrence, depending on the NEPA class of action and level of analysis:

- **CatEx, exempt under Table 2 of 40 CFR 93.126:** Notification not provided to APCD or EPA; concurrence not needed from either agency
- **CatEx, quantitative analysis not required (Nonexempt but hot-spot analysis not needed):** Notification provided to APCD and EPA; concurrence not needed from either agency
- **CatEx, quantitative analysis:** Notification provided to APCD and EPA; concurrence from APCD needed
- **EA or EIS, exempt under Table 2 of 40 CFR 93.126:** Notification not provided to APCD or EPA; concurrence not needed from either agency
- **EA or EIS, quantitative analysis not required (Nonexempt but hot-spot analysis not needed):** Notification provided to APCD and EPA; concurrence from APCD needed
- **EA or EIS, quantitative analysis:** Notification provided to APCD and EPA; concurrence from APCD needed

5.4 Public Involvement Requirements

In accordance with 40 CFR 93.105(e), agencies making conformity determinations on transportation plans, programs, and projects shall establish a proactive public involvement process. The requirements are specific to MPOs, such as those described in 23 CFR 450.316(a). The NEPA public involvement meeting is another opportunity for public review and comment of the air quality technical report, which includes the PM_{10} hot-spot analysis, if applicable.

6. OZONE PROJECT-LEVEL CONFORMITY DETERMINATION

As described in 40 CFR 93.102, ozone portions of the Conformity Rule apply to projects that are, in whole or in part, located within one or more ozone nonattainment or maintenance area and have a Federal nexus. Figure 2 shows the location of the Colorado ozone nonattainment area. Colorado does not have any ozone maintenance areas.

6.1 Ozone Project-Level Scoping

Ozone is not modeled at the project level. Therefore, it is not necessary to scope ozone at the project level.

6.2 Consistency with Ozone Regional Analyses

If the Conformity Rule applies, transportation projects need to be evaluated with respect to regional air quality concerns, unless exempt from the Conformity Rule or from regional analysis requirements of the Conformity Rule. A project is exempt from the Conformity Rule if it is a project type listed in Table 2 of 40 CFR 93.126. A project is exempt from regional emissions analysis if it is a project type listed in Table 3 of 40 CFR 93.127. These two groups of exemptions do not apply if the project is determined by the area's MPO, in consultation with other agencies, to have potentially adverse regional impacts.

Table 3 of 40 CFR 93.127 project types are: intersection channelization project; an intersection signalization project at individual intersections; an interchange reconfiguration project; a project with changes in vertical and horizontal alignment; a truck size and weight inspection station; a bus terminal and transfer point. If the project is exempt from regional conformity, it can be concluded that the project will not have a significant adverse regional impact on air quality and the project may be grouped in one line item with other projects or identified individually in the TIP.

For projects that are not exempt from regional conformity, ozone regional analysis requirements are handled by DRCOG or NFRMPO, which split responsibility for Colorado's only ozone nonattainment area. Projects may be located within the ozone nonattainment boundary but outside either MPO's boundary. In those cases, the project is located in the Upper Front Range TPR (UFRTPR). Since UFRTPR does not have a MPO, NFRMPO takes responsibility for portions of the ozone nonattainment area that are north of the boundary between Larimer and Boulder counties (Northern Subarea) and DRCOG takes responsibility for the area south of the boundary (Southern Subarea). Ozone emissions analyses consider ozone precursors: VOCs and NO_X.

If a non-exempt project is located in an ozone nonattainment area and it is not listed in the TIP and/or if the TIP project design concept and scope is significantly different than what was in the NEPA document, the project sponsor must request that the applicable MPO amend the project in the TIP.

If the project is not consistent with the long range RTP, an RTP Amendment is also required. The project will need to be included in the latest regional conformity analysis before amending the TIP and RTP. The NEPA decision document (ROD, FONSI, Form 128) cannot be signed until an element of the project is in an approved TIP with programmed funding.

If a project is consistent with the RTP and a regional emissions analysis is not required, the process to add a project to the TIP (known as a TIP Amendment) takes approximately two months to complete for DRCOG and NFRMPO. If a project needs to be amended into the RTP, the process runs concurrently with the TIP Amendment process and can take up to six months, including time for: allowing for public review and comments; committee and MPO Board/Council action (as needed); and receiving FHWA/FTA approval. If a project needs to be included in the regional emissions analysis, the TIP and RTP Amendment process takes at least six months, which includes time for the additional steps of updating the travel model, running the emissions analysis, and Council action on the positive conformity finding. Therefore, contact the MPO representative early in the NEPA process.

Chapter 13 describes information related to regional analysis that needs to be included in an air quality analysis, including air quality technical reports, when applicable. Chapter 14 describes the information that needs to be included in the NEPA document.

6.3 Ozone Project-Level Documentation

Ozone air quality concerns are regional in nature and as such, meaningful evaluation on a project-by-project basis is not possible. A project-level ozone conformity determination addresses consistency with regional conformity determinations by showing that the project is included in the currently conforming transportation plan and TIP.

Chapter 13 describes information related to project-level analysis that needs to be included in an air quality analysis, including air quality technical reports, when applicable. Chapter 14 describes the information that needs to be included in the NEPA document.

6.4 Public Involvement Requirements

In accordance with 40 CFR 93.105(e), agencies making conformity determinations on transportation plans, programs, and projects shall establish a proactive public involvement process. The requirements are specific to MPOs, such as those described in 23 CFR 450.316(a). The NEPA public involvement meeting is another opportunity for public review and comment of the air quality technical report.

7. CRITERIA POLLUTANT ANALYSIS

Separate from the Conformity Rule, some large projects (i.e., some EISs and, to a lesser extent, EAs) may include an analysis of the project study area (NEPA corridor analysis) for transportation-related criteria pollutants (i.e., CO, NO_2, PM_{10}, $PM_{2.5}$, and ozone) and pollutant precursors (i.e., NO_X and VOCs, which are ozone precursors). This analysis is done for NEPA purposes and is not dependent on the project location. The analysis is generally an emissions inventory. An analysis done for multiple alternatives (comparative analysis) may help to inform the comparison of alternatives by showing whether there are notable differences among the alternatives in their emissions of criteria pollutants.

Chapter 13 describes the information that needs to be included in an air quality analysis, including air quality technical reports, when applicable. Chapter 14 describes the information that needs to be included in the NEPA document.

7.1 Criteria Pollutant Scoping

The need and procedures of a criteria pollutant analysis will be determined via interagency consultation as part of the scoping process (see Chapter 3).

7.2 Criteria Pollutant Analysis

The most common criteria pollutant analysis done for NEPA purposes is an emissions inventory. APCD calculates the inventory in units of tons per day for the project, essentially by multiplying vehicle miles traveled (VMT) by emission factors, which are obtained from MOVES. Typically, an average annual inventory would use the average of summer and winter temperatures. In some cases, the inventory may be broken out for summer and winter.

The specifics for each analysis will be identified through interagency consultations, but APCD is usually asked to develop pollutant emission factors and/or pollutant burdens. APCD has the vehicle age distributions, fuel supply data, vehicle type population, meteorological data, ramp fractions, and road type distribution. The analyst may need to provide the following information to APCD when requesting an inventory:

- General location of project (e.g., nearest town)
- Exact location of the project provided on a map
- CDOT's project name, number, and subaccount code
- Description of project
- Average speed distributions
- VMT data
- Geographic Information System (GIS) data file (for large projects involving an MPO) or spreadsheet (for other projects) with the traffic links being inventoried and hourly average annual daily traffic volumes by hour and speeds on each link. If submitting a spreadsheet, also list the length in miles of each link.

Air quality issues such as nitrogen deposition (including NO_2) or regional haze (PM) may need to be addressed in the air quality technical report. For example, nitrogen deposition may be a concern for certain sensitive, primarily alpine, ecosystems and regional haze may be an issue near federal Class I areas. This will be determined as part of the NEPA agency or air quality scoping.

8. MOBILE SOURCE AIR TOXICS ANALYSIS

FHWA, EPA, Health Effects Institute, and other agencies and stakeholders have funded and conducted research studies to more clearly define the potential risks from MSAT emissions associated with transportation projects. Although the science is incomplete and still emerging, MSAT impacts must be addressed in some NEPA documents; generally for EAs and EISs but not for CatExs. Unlike analyses required under the Conformity Rule, MSAT analysis applicability is not tied to a project location.

Chapter 13 describes the information that needs to be included in an air quality analysis, including air quality technical reports, when applicable. Chapter 14 describes the information that needs to be included in the NEPA document.

8.1 MSAT Scoping

On October 18, 2016, FHWA published Interim Guidance for the analysis of MSATs within the NEPA process for highways. This guidance was originally developed in February 2006 and had been updated in September 2009 and December 2012 prior to the 2016 update. It is anticipated that the FHWA guidance will be updated again in 2019. This AQ-PLAG represents the most current version available at the time of release, the 2016 version.

The FHWA 2016 Interim Guidance includes a tiered approach for determining which projects are exempt from MSAT analysis requirements and which may require a qualitative or quantitative analysis. If it is unclear what level of MSAT analysis is required for a project, a CDOT air quality specialist shall be consulted. This tiered approach has three categories with differing levels of analysis:

1. **Category 1:** No analysis; projects with no potential for meaningful impacts

   It is assumed that the following project types do not have the potential for meaningful MSAT impacts:

   - Projects qualifying as a CatEx under 23 CFR 771.117;
   - Projects exempt under the Conformity Rule under 40 CFR 93.126; or
   - Other projects with no meaningful impacts on traffic volumes or vehicle mix.

2. **Category 2:** Qualitative analysis; projects with low potential MSAT effects

   The FHWA anticipates that most highway projects requiring an MSAT analysis will require a qualitative analysis because most highway projects have low potential for MSAT effects. These projects generally either improve highway operations without adding substantial new capacity or create a facility that is not likely to meaningfully increase MSAT emissions. Examples include minor widening projects (capacity adding), new interchanges, replacing a signalized intersection on a surface street, making minor improvements or expansions to an existing intermodal center, and projects in which design year traffic is projected to be less than 140,000 to 150,000 AADT.

3. **Category 3:** Quantitative analysis; projects with higher potential MSAT effects

   The FHWA anticipates that a limited number of highway projects will require a quantitative MSAT analysis. FHWA requires a quantitative analysis for highway projects that are proposed to be in proximity to populated areas and meet the following criteria:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel PM in a single location, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles for expansion projects; or
- Create new capacity or add significant capacity to urban highways such as Interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000 or greater by the design year;

Defining the affected transportation network requires available project-specific information from technical traffic analyses. Interagency consultation, which will include CDOT and FHWA, and may include EPA and APCD, will determine if a project meets the criteria for a quantitative MSAT analysis. The analyst should work with a CDOT air quality specialist and FHWA Colorado Division to coordinate communication with FHWA Headquarters for assistance in developing a specific project approach for assessing impacts. Written agreement that a quantitative MSAT analysis is required must be provided by a CDOT air quality specialist or FHWA prior to moving forward with the analysis.

8.2 MSAT Project-level Analyses

FHWA guidance specific to MSATs, which is listed in Section 2.3, should be consulted before initiating a MSAT project-level analysis. This AQ-PLAG does not change or revise any recommendation provided in FHWA guidance for conducting a MSAT analysis. The following steps provide an overview of technical procedures for conducting a project-level MSAT analysis.

Step 1: Determine type of MSAT analysis needed

The appropriate level of analysis may be none, qualitative, or quantitative. Projects that meet at least one of the following conditions do not require a quantitative analysis:

- **Category 1:** Projects with no potential for meaningful impacts (analysis not required)
- **Category 2:** Projects with low potential MSAT effects (requires qualitative analysis)

A qualitative analysis provides an assessment of MSAT emissions in a narrative form; modeling is not needed. A qualitative assessment compares the expected effect of the project on traffic volumes, vehicle mix, and traffic routing, and the associated changes in MSAT emissions for the project alternatives, including the No Action Alternative, based on VMT, vehicle mix, and speed.

The purpose of a quantitative MSAT analysis is to describe the changes in MSAT emissions as a result of a proposed project and compare the emission quantities between the project alternatives. The technical information provided in this chapter is based on recommendations from FHWA, available online in FHWA's *Frequently Asked Questions (FAQ) Conducting Quantitative MSAT Analysis for FHWA NEPA Documents*. FHWA's *Quantitative Mobile Source Air Toxics Analysis for a Hypothetical Transportation Project* should also be consulted.

The following describes which step is next, depending on the outcome of Step 1:

- Analysis not required: Got to Step 6
- Qualitative analysis: Go to Step 6
- Quantitative analysis: Go to Step 2

Step 2: Identify and Define the Project Area

Identifying the project area and project limits will typically be defined via interagency consultation. In most cases, this is typically referred to as the "affected network." The project area usually includes all segments associated with the project plus those segments expecting meaningful changes in MSAT emissions. A meaningful change in MSAT emissions, for example, could potentially include:

1. Changes of ± 5 percent or more in AADT on congested highway links of LOS D, E, or F;
2. Changes of ± 10 percent or more in AADT on uncongested highway links of LOS A, B, or C;
3. Changes of ± 10 percent or more in travel time; or
4. Changes of ± 10 percent or more in intersection delay

Identify the CDOT project name, number, and subaccount code. Prepare a project description. Include a determination that the project is consistent with the appropriate transportation plans (e.g., RTP, TIP, STIP).

Step 3: Develop the Modeling Approach

When a project requires that a quantitative MSAT analysis be completed, a specific modeling approach to the project must be developed. Coordinate with a CDOT air quality specialist and/or FHWA to streamline the process and to ensure all project requirements are met. Factors that should be discussed include the years to be analyzed (base and design year, and in some cases an interim year) and available and applicable monitoring data.

Step 4: Gather the Applicable Traffic Data

The following traffic information and MOVES inputs are typically required to develop a MOVES run specification and complete a quantitative MSAT analysis. APCD has the vehicle age distributions, fuel supply data, vehicle type population, meteorological data, ramp fractions, and road type distribution. The analyst should expect the following information to be needed by APCD when requesting MSAT results:

- General location of project (e.g., nearest town)
- Exact location of the project provided on a map
- CDOT's project name, number, and subaccount code
- Description of project (e.g., a left turn lane will be added to *XX* Street; a third southbound lane will be added to *YY* Avenue)
- Average speed distributions
- VMT data
- GIS data file (for large projects having an MPO) or spreadsheet (for other projects) with the links being inventoried and hourly average annual daily traffic volumes by hour and speeds on each link. If submitting a spreadsheet, also list the length in miles of each link.

Step 5: Process the Traffic Data in MOVES

APCD runs MOVES for all MSAT analyses in Colorado. The current version of MOVES2014b is the recommended modeling program for estimating MSAT emissions from highway networks.

Step 6: Document Results in a Report

Chapter 13 describes the information that needs to be included in an air quality analysis, including air quality technical reports, when applicable. Chapter 14 describes the information that needs to be included in the NEPA document.

Step 7: Provide notification and obtain concurrence, if applicable

CDOT submits the air quality technical report to APCD and EPA as described below. It is submitted to the administrative contact, generally a planner from the Policy and Planning Program, and a technical contact from the Technical Services Program. APCD provides a response as to whether or not they concur with the analysis within 11 business days of receiving the request, if applicable. If the report is submitted, it is either as notification or as a request for concurrence, depending on the NEPA class of action and level of analysis:

- **CatEx:** These projects do not require MSAT analysis. Therefore, notification not provided; concurrence not needed.
- **EA or EIS, Category 1 and Category 2 projects (analysis not needed or qualitative analysis performed):** Notification to APCD and EPA not provided unless notification provided due to other analyses (e.g., CO hot-spot analysis was also done for project); concurrence not needed for qualitative analysis.
- **EA or EIS, Category 3 project (quantitative analysis performed):** Notification provided to APCD and EPA; concurrence needed from APCD.

9. GREENHOUSE GAS ANALYSIS

Climate change is an important national and global concern. While the earth has gone through many natural changes in climate in its history, there is general agreement that the earth's climate is currently changing at an accelerated rate and will continue to do so for the foreseeable future. Anthropogenic (human-caused) GHG emissions contribute to this rapid change. Unlike analyses required under the Conformity Rule, GHG analysis applicability is not tied to a project location.

Chapter 13 describes the information that needs to be included in air quality technical reports. Chapter 14 describes the information that needs to be included in the NEPA document.

9.1 GHG Project-level Scoping

Formal scoping generally is not required for a GHG analysis. The analysis is either qualitative or semi-quantitative, depending on the nature of the project.

Appendix F[60] of CDOT's *NEPA Manual* contains GHG template language. The first section, which is six paragraphs, should be included in EA and EIS air quality technical reports. The second section, which includes a project-specific table, should be included for EISs. The language should generally[61] not be included for CatEx projects.

9.2 GHG Project-level Analysis

The analysis for EAs is qualitative and is not project specific. The analysis for EISs is semi-quantitative and involves project-specific emission calculations. Template text is available in Appendix F[59] of CDOT's *NEPA Manual* for both EAs and EISs. EISs require more GHG text than EAs and completion of a project-specific table[62] like the following (note: text in red is to be modified as appropriate for specific projects and the numbers provided are examples, not actual results):

[60] At the time this AQ-PLAG was published, Appendix F had not yet been updated with the 2019 GHG template language. Therefore, a memo was published to CDOT's air quality website in February 2019 containing the new template language.

[61] GHG template language only needs to be included in a CatEx air quality analysis when directed by CDOT, which is not common. For cases when it is included, only the first section, six paragraphs, would be included.

[62] The process and data needed for a GHG emissions analysis are the same as those for a MSAT analysis.

Table 4: Emissions of Greenhouse Gases with Alternatives [A1] and [B1] in the [name of project] Study Area in 2040 (with example values)

Greenhouse Gas	2019	2040		
	Existing Conditions Emissions (tpy)	No-Action Alternative Emissions (tpy)	Emissions (tpy) and Percent Change from No-Action Alternative	
			Alternative [A1]	*Alternative [B1]*
Methane (CH_4)	10.208	7.528	7.645 (+1.55%)	7.684 (+2.07%)
Nitrous oxide (N_2O)	2.461	2.154	2.144 (-0.46%)	2.150 (-0.19%)
Atmospheric CO_2	519,121	489,027	498,140 (+1.86%)	500,884 (+2.42%)
Total	**519,134**	**489,037**	**498,150 (+1.86%)**	**500,894 (+2.42%)**

10. CONSTRUCTION EMISSION ANALYSIS

Most of CDOT's projects involve some form of construction. Construction emissions differ from regular traffic emissions in a number of ways. Construction activities may be sources of temporary emissions from fugitive dust or equipment exhausts. Adjoining properties in the project area near construction activities when the proposed project is built may be affected. Analyses of construction emissions tend to be qualitative rather than quantitative.

Air quality impacts resulting from roadway construction activities are typically not a concern when contractors utilize appropriate control measures. Contractors shall perform all construction activities and operations in accordance with Colorado AQCC Regulation Numbers 1 (*5 CCR 1001-3, Emission Control for Particulate Matter, Smoke, Carbon Monoxide, and Sulfur Oxides*) and 3 (*5 CCR 1001-5, Stationary Source Permitting and Air Pollutant Emission Notice Requirements*) to ensure adequate control measures are in place.

Chapter 13 describes the information that needs to be included in air quality technical reports. Chapter 14 describes the information that needs to be included in the NEPA document.

10.1 Construction Emission Project-level Scoping

CO and PM_{10} hot-spot analyses must consider emissions increases from construction-related activities only if the construction phase lasts more than five years at any individual site, as discussed in Step 3 of Section 4.3 (CO) and Step 2 of Section 5.3 (PM_{10}). For most projects, construction emissions are not included in CO or PM_{10} hot-spot analyses because construction at an individual location is typically completed in less than five years.

Interagency consultation will determine if a project meets the criteria for a quantitative conformity construction emission analysis. Written agreement that a quantitative conformity construction emission analysis is required must be provided by a CDOT air quality specialist or FHWA prior to moving forward with the analysis.

Per Section V.G.23 of FHWA Technical Advisory T 6640.8A, draft EISs, regardless of project location, should discuss the potential adverse air quality impacts associated with construction of each alternative and identify appropriate mitigation measures. Also, if impacts of obtaining borrow or disposal of waste material are important issues, they should be discussed in the draft EIS along with any proposed measures to minimize these impacts. The final EIS should identify any proposed mitigation for the preferred alternative.

10.2 Construction Emission Project-level Analysis

If construction emissions must be considered, the analysis nature and scope will be defined through consultations. EPA PM_{10} guidance for quantitative hot-spot analyses (see Section 2.3) provides the methods and procedures for estimating emissions from construction.

11. CUMULATIVE AND INDIRECT EFFECTS ANALYSIS

Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions." Cumulative effects can result from individually minor but collectively significant actions taking place over time. Indirect effects are changes not caused as part of the proposed action, but are reasonably foreseeable and can be linked to estimate future consequences, such as incremental population growth or land use changes.

Cumulative impacts are considered in accordance with the Council on Environmental Quality (CEQ) regulation described in 40 CFR 1500 to 1508. Section 9.26 of CDOT's *NEPA Manual* addresses cumulative and indirect effects analyses. This language is based on the American Association of State Highway and Transportation Officials Practitioner's Handbook, which was published in August 2016 (*Assessing Indirect Effects and Cumulative Impacts Under NEPA*).

11.1 Cumulative and Indirect Effects Project-level Scoping

Cumulative and indirect effects are not considered for CatExs. Air quality should be considered, along with other environmental impacts, when developing an analysis of indirect and cumulative impacts for EAs and EISs. The decision about whether to address air quality specifically in the cumulative and indirect effects technical report should be made on a case-by-case basis. For example, if a project is expected to induce development, and that development will generate additional air pollutant emissions, those emissions could be considered an indirect effect of the project. In addition, if a project is located in an area where air quality is being adversely affected by several other past, present, or reasonably foreseeable planned projects that will be implemented in the same time frame, the combined effects of those projects should be addressed in the cumulative impacts analysis.

11.2 Cumulative and Indirect Effects Project-level Analysis

Assessments of cumulative impacts and indirect effects can be conducted as part of the transportation planning process and then—under certain conditions—adopted in the NEPA process for an individual project. This approach is allowed under the FHWA and FTA's transportation planning regulations (23 CFR Part 450 Appendix A) and under 23 USC 168 (Section 168). The planning process can be used to develop air quality and emissions forecasts. Therefore, cumulative impacts and indirect effects of project alternatives, except the no-build alternative, and the other transportation and land development projects are accounted for cumulatively in the RTP.

More information is available in the cumulative impacts and indirect effects technical report, which is a separate report and not part of the air quality technical report. The analysis may be either quantitative or qualitative.

12. REEVALUATIONS AND REDETERMINATIONS

Consult with a CDOT air quality specialist to determine how to handle a NEPA reevaluation and/or conformity redetermination. The CDOT air quality specialist may consult with FHWA. General guidance for each is provided in the next two sections.

12.1 NEPA Reevaluations

NEPA reevaluation criteria are listed in 23 CFR 771.129. FHWA provided guidance about reevaluations in the Spring and Summer 2009 *The Environmental Quarterly*[63]. FHWA makes the decision of whether an air quality analysis reevaluation is required. NEPA reevaluations may or may not require a conformity redetermination. If conformity must be redetermined, a NEPA reevaluation must be done. Other situations that may require a NEPA reevaluation include:

- Large changes in traffic or LOS
- Large changes in ambient air pollution background concentrations
- Large changes in project design that would negatively impact air quality (e.g., would need to redo a hot-spot analysis if the original design used a roundabout but the new design used a traffic signal, but would not need to redo the hot-spot analysis if the design change went from a traffic signal to a roundabout)
- When a new model is required to be used

12.2 Conformity Redeterminations

Conformity redetermination criteria are listed in 40 CFR 93.104(d):

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

If three years have elapsed but the project has not changed, the MPO would not need to redetermine regional conformity but a project-level hot-spot analysis may need to be redone (e.g., if MOVES or the air dispersion model used in the analysis had been updated since the analysis was originally done).

[63] The Spring 2009 issue is available at https://www.fhwa.dot.gov/resourcecenter/teams/environment/vol5iss2.pdf. The Summer 2009 issue is available at https://www.fhwa.dot.gov/resourcecenter/teams/environment/vol5iss3.pdf

13. AIR QUALITY TECHNICAL REPORT REQUIREMENTS

This chapter describes information that should be included in the air quality technical report for transportation projects, unless it is determined via interagency consultation that specific information is not required for a project. Information that should be in the NEPA document is described in Chapter 14.

Requirements that are stated in more than one section only need to be provided once. For example, if the Conformity Rule does not apply to a project, Sections 13.3, 13.4, and 13.5 all require an explanation why the Conformity Rule does not apply, but this explanation only needs to be provided once in the report.

All EAs and EISs require an air quality technical report. CatExs require an air quality technical report unless the Conformity Rule did not apply or if the Conformity Rule applied but the project was exempt from conformity requirements under Table 2 of 40 CFR 93. CatExs are documented via clearance letters, which are generally written by CDOT air quality specialists[64]. If a CatEx project has an air quality technical report, the report is attached to the clearance letter.

For CatExs that do not require an air quality technical report but for which the project has a unique situation that should be documented in the project file, an air quality memo may be written to explain the unique situation. The memo is attached to the clearance letter. The memo is not required to follow the requirements stated in this chapter.

If a NEPA reevaluation triggered a change to the air quality analysis, the changes are generally described in an addendum to the original air quality technical report. The addendum should describe what is different and need not follow the requirements stated in this chapter. However, if a new model was run and/or if there were large changes to the analysis results, a new air quality technical report may need to be written. If so, it should generally follow the requirements stated in this chapter, as determined by a CDOT air quality specialist and/or FHWA.

13.1 Introductory Information (Report)

Introductory information that should be included in an air quality technical report includes:

- Project name, number, and subaccount code (report cover page)
- NEPA class of action (CatEx, EA, EIS; if reevaluation, include that) (report cover page)
- Report date (month, day[65], year) (report cover page)
- CDOT region and address for which report prepared (report cover page)
- Consulting company name, address, and phone number that prepared report (report cover page)
- Project description, including the project sponsor, the NEPA project description, and CDOT's fiscal year(s) for construction

[64] Clearance letters include text such as that described in Section 13.3 for Category 1 and 2 projects. Generally, the clearance letter, with or without attachments, is the only documentation that is needed for a CatEx project.

[65] The exact day of the month is provided primarily to differentiate between different draft versions

- Project purpose and need (EAs and EISs; provide for CatExs, if available)
- Project alternative descriptions; state if alternatives other than the Proposed Action were not considered (does not apply for CatExs, which do not have a No-Build or other alternatives)
- Project location, both general and specific, including a figure
- List applicable CAA and NEPA regulations and describe how they were met
- List applicable guidance documents, including the versions and/or dates of publication
- Introduce and briefly explain key terms and concepts, such as criteria pollutants, NAAQS, SIPs, nonattainment and maintenance areas. For EAs and EISs, also include MSATs and GHGs.
- Summary of level of analysis required for each pollutant. State if qualitative or quantitative analysis was done for each analysis for CO, PM_{10}, ozone, other criteria pollutants, MSATs, and GHGs. Identify which analyses were performed for transportation conformity purposes, and which were performed for NEPA purposes only.
- Summarize interagency consultation activities, including those related to the conformity analysis. Provide dates of key meetings, events, and correspondence (e.g., date of APCD's signature on concurrence letter). Consultations primarily apply for EAs and EISs, but may apply to CatExs. If consultation(s) did not occur, include a statement that says consultations were not conducted and provide a justification.

13.2 Affected Environment (Report)

Describe existing conditions data for the project location. Existing conditions data include the general project setting, regional NAAQS status, weather data (if modeled), and nearby NAAQS pollutant monitoring data. These data are needed to characterize the general project setting with an emphasis on air quality aspects likely to be impacted by the project.

13.2.1 General Project Setting

Identify the local setting of the project with respect to air quality. For example, identify if the project is in an urban versus a rural area and identify the land uses within the study area (e.g., residential, commercial, light industrial, heavy industrial, agricultural).

If CO and/or PM_{10} hot-spots were modeled, discuss types of receptors[66] that are within 500 meters of the project study area that may be sensitive to air quality conditions (e.g., homes, schools, licensed daycare facilities, elderly care facilities, nearby federal Class I areas).

13.2.2 Regional NAAQS Status

Provide a project-specific table with the following for each transportation related criteria pollutant:

- Pollutant (CO, PM_{10}, $PM_{2.5}$, NO_2, and ozone)
- NAAQS and its units (e.g., ppm)
- NAAQS status (attainment, maintenance, or nonattainment)
- NAAQS classification (e.g., "severe," "moderate") ("Not Applicable" for attainment areas)

[66] This is a qualitative description of receptors; receptors are only included in the air dispersion model if they are close to the roadway.

- Year of standard for which area is maintenance or nonattainment (e.g., 2008 and 2015 for ozone) ("Not Applicable" for attainment areas)
- Anticipated year(s) that the 20-year maintenance period(s) will end ("Not Applicable" for nonattainment or attainment areas), if the 20-year period will end prior to the NEPA decision document being signed
- Title and date of each SIP for each pollutant for which the project area is in nonattainment or maintenance ("Not Applicable" for attainment areas), if the 20-year period will end prior to the NEPA decision document being signed

The project area NAAQS status can be determined by checking various sources, including the EPA Green Book (https://www.epa.gov/green-book) and APCD's website (https://www.colorado.gov/airquality/ss_map_wm.aspx).

Obtain the current NAAQS and NAAQS status at the time of the analysis; area designations and classifications may have recently changed. For example, the classification may change (e.g., "marginal" to "moderate"); the EPA may have made a redetermination that the maintenance area had become an attainment area after the 20-year maintenance period, in which case, a project-level conformity analysis may not be necessary; or areas could have been recently designated nonattainment for a new NAAQS (e.g., the 2015 ozone NAAQS). If doing a reevaluation, state if the NAAQS and/or NAAQS status has changed since the original analysis was performed.

Anticipated years that the 20-year maintenance periods will end for each Colorado maintenance area are listed in Table 1. Include these years in the table but include a footnote that the years of attainment are anticipated to be as listed in the table; however, the year may change.

If an area's designation is listed as attainment/maintenance that means that it is a maintenance area, with a SIP in place and procedures to ensure continued attainment must be followed until the EPA makes a determination that the maintenance area can become an attainment area.

13.2.3 Weather Data

Describe the weather data used for pollutant dispersion modeling, if the project was modeled.

13.2.4 NAAQS Pollutant Monitoring Data Summary

Using a table, provide monitoring data from the station(s) that best represents the project area for pollutants for which the project has nonattainment and/or maintenance areas. It may be determined during an interagency consultation that data for additional pollutants should be included. If the project has an air quality protocol (Chapter 3), specific data to be reported would be determined by agencies involved in the air quality scoping. Data decisions include the station location(s), pollutant(s) of interest, and timeframe data represents. Provide the source(s) of data and the rationale for station selection.

Generally, three years of air quality data for the nearest air quality monitor(s) should be used as a demonstration of the air quality trends. CDPHE's Annual Air Quality Data Reports include just one year of data. Although monitoring data can be obtained from CDPHE's Annual Air Quality Data Reports and Annual Network Plans, those reports do not usually include the most recent full year of data. The Annual Network Plans include the most recent three-year design value, which is the average value for three years of data that EPA uses for NAAQS determinations and are the values that should generally be used for NEPA purposes.

Alternatively, to obtain air quality monitoring data from EPA's database, go to https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality-monitors. At the time of AQ-PLAG publication, data could be obtained as follows: Click on the link on the map to launch AirData Map App and search for desired area by county or city or town (or the closest available location). In the top right corner above the map, click on the "Select Layer" icon and select applicable pollutant or pollutants to choose an air monitor. Only select "Active" monitors. Pin points will appear on the map. Click on a point and select "Annual Data Download (links)" for desired years. The most recent three years is an appropriate evaluation timeframe as that is used by EPA for NAAQS determinations. Do not select a current year, as those data will not be complete or certified.

13.3 CO Conformity Determination (Report)

The information and level of detail in the air quality technical report regarding CO conformity falls into one of four categories:

1. Conformity Rule does not apply[67] (analysis not required)
2. Exempt from analysis per 40 CFR 93.126 or 40 CFR 93.128[68] (analysis not required);
3. Nonexempt but CO hot-spot analysis not required (qualitative analysis); or
4. Nonexempt and uses CO Categorical Finding or requires CO hot-spot analysis (quantitative analysis).

For Category 1, when the Conformity Rule does not apply, a statement of the non-applicability status should be included in the air quality technical report. Two examples are:

- **Geographic Applicability:** "The project area is not in any nonattainment or maintenance areas for any criteria pollutants. Therefore, conformity requirements under Part 93 of Title 40 of the Code of Federal Regulations (CFR) (40 CFR 93) do not apply pursuant to Section 93.102(b)."
- **Action Applicability and not Regionally Significant:** "Pursuant to Section 93.102(a)(1)(iii), projects that do not require or have FHWA/FTA approval, funding, or implementation do not require conformity determinations, which is true of this project. Therefore, conformity requirements under Part 93 of Title 40 of the Code of Federal Regulations (CFR) (40 CFR 93) do not apply. Pursuant to Section 93.102(a)(2), non-federal projects that are regionally significant must comply with Section 93.121 (Requirements for Adoption of Approval of Projects by Other Recipients of Funds Designated Under Title 23 USC or the Federal Transit Laws). However, this project is not regionally significant and Section 93.121 does not apply."

When considering CO conformity, it is possible that a project is not in a CO maintenance area but is in either a PM_{10} maintenance area or the ozone nonattainment area. In that case, the sample language can be modified to explain why CO conformity does not apply to the project although PM_{10} and/or ozone conformity does apply.

[67] The applicability section of the Conformity Rule is at 40 CFR 93.102. One example of when the Conformity Rule does not apply is when a project is not in any maintenance or nonattainment area. The CO related requirements, e.g., CO Hot-Spot analyses, do not apply to Colorado projects that are not in any CO maintenance areas.

[68] Projects categorized under 40 CFR 93.126 or 40 CFR 93.128 are exempt from the transportation Conformity Rule and may proceed toward implementation even in the absence of a conforming transportation plan and TIP.

For Category 2, when projects are exempt from the Conformity Rule per Table 2 of 40 CFR 93.126 or 40 CFR 93.128, a statement of the exemption status, including the type(s) of exemption, should be included in the air quality technical report. For example:

> "The project is in the Denver-Boulder carbon monoxide (CO) maintenance area. Because the project is in at least one nonattainment or maintenance area, conformity requirements under Part 93 of Title 40 of the Code of Federal Regulations (CFR) (40 CFR 93) apply.
>
> However, the project is exempt from conformity requirements pursuant to Section 93.126, Table 2 of the final conformity rule (62 FR 43816, August 15, 1997; most recently amended 73 FR441 on January 24, 2008) because it is a safety project that will correct, improve, or eliminate a hazardous location or feature and an air quality project affecting bicycle and pedestrian facilities. It can therefore be concluded that the project will not have a significant adverse impact on air quality. Note that this exemption would not apply if the project had been determined to have potentially adverse emission impacts by Denver Regional Council of Governments in consultation with other agencies. Because the project is exempt, further air quality analysis (e.g., a project-level hot spot analysis) is not required and it is not necessary to show whether it is in a conforming plan or if was included in the regional model."

For Category 3, when projects are not exempt from the Conformity Rule but only require a qualitative analysis, air quality technical reports should include the following:

1. **Statement of Conformity Rule Applicability:** See first example paragraph for Category 2 projects
2. **Consistency with CO Regional Analysis:** Provide rationale that makes the project exempt from regional analysis, if applicable. If regional conformity applies, include the TIP and RTP information and confirm and state that the project design concept and scope, as described in the NEPA document, is not significantly different from that described in the TIP. Some example statements follow.

   Regional analysis consistency example for a project that is in Denver (three nonattainment or maintenance areas) but is exempt from regional conformity:

   > *"Ozone, CO, and PM_{10} are modeled on a regional basis. However, the project is exempt from regional emissions analysis pursuant to Section 93.127, Table 3 of the final conformity rule (58 FR 62235, Nov. 24, 1993, as amended at 71 FR 12511, Mar. 10, 2006) because it is an intersection channelization project. It can therefore be concluded that the project will not have a significant adverse regional impact on air quality. Note that this exemption would not apply if the project had been determined to have potentially adverse regional impacts by Denver Regional Council of Governments in consultation with other agencies. Because the project is exempt from regional emissions analysis, it may be grouped in one line item with other projects or identified individually in the TIP and it may be absent from the TIP and RTP."*

   Applying the first example to the Fort Collins and Greeley CO maintenance areas, revise text as needed and add the following sentence after the first sentence:

   > *"North Front Range Metropolitan Planning Organization is not required to include CO in their regional emissions analysis for their RTP and TIP because the [Fort Collins or Greeley] maintenance area has a Limited Maintenance Plan for CO."*

Applying the first example to the Colorado Springs CO maintenance area, revise text as needed and add the following sentences after the first sentence:

> *"Pikes Peak Area Council of Governments is not required to conduct a regional emissions analysis for their RTP and TIP. It only has one maintenance area: the Colorado Springs CO maintenance area, which has a Limited Maintenance Plan."*

Regional analysis consistency example for a project that is not exempt from regional conformity but is in the Colorado Springs CO maintenance area:

> *"CO can be modeled on a regional basis. However, Pikes Peak Area Council of Governments is not required to conduct a regional model because Colorado Springs has a Limited Maintenance Plan for CO and does not have any other maintenance or nonattainment areas that would trigger a regional model. This project is in the (provide title of the TIP) TIP (TIP number xxxxxx) and (provide title of the RTP) RTP (RTP number xxxxxx). The project design concept and scope, as described in the NEPA document, are not significantly different from that described in the TIP."*

Regional analysis consistency example for a project that is not exempt from regional conformity and is in the Denver-Boulder CO maintenance area:

> *"Ozone, CO, and PM_{10} are modeled on a regional basis. This project is in the [provide title of the TIP] TIP (TIP number [xxxxxx]) and [provide title of the RTP] RTP (RTP number [xxxxxx]). The project design concept and scope, as described in the NEPA document, are not significantly different from that described in the TIP."*

3. **Basis for Determination That Qualitative Analysis was Warranted:** List the four types of projects that must be modeled with a CO hot-spot analysis per 40 CFR 93.123(a)(1) and state that the project is not any of those types (see Step 1 of Section 4.3). If the project had to be evaluated to determine whether a trigger in 40 CFR 93.123(a)(1) may have been met, include text that explains why it was not. For example:

   > *"The project doesn't meet any of the triggers listed in 40 CFR 93.123(a)(1). The intersection(s) of interest is/are [list intersection(s) here]. As described in Attachment 1, the current intersection performance is LOS C for both AM and PM peak periods. Upon project completion, the projected LOS is LOS B for the AM peak period and C for the PM peak period. Both periods meet the LOS requirements for signalized intersections; therefore, a hot-spot analysis is not required. Based on the LOS screening, the project will not result in an exceedance of the 1-hour or 8-hour National Ambient Air Quality Standards for carbon monoxide."*

   Attachment 1 contains the LOS information (e.g., Synchro output); it should be attached to the air quality analysis. If the project has more than one intersection of interest, it is recommended that LOS summary information be presented in a table instead of in paragraph form.

4. **Discussion of Why Project Is Not Likely to Cause CO NAAQS violation:** Include a discussion of why the project is not likely to cause violations of the CO NAAQS. Examples include: the project will improve travel speeds, which results in lower per-vehicle emissions rates; the project will reduce delay at signalized intersections or improve merge operations; the project has safety benefits that will reduce episodic delay from incidents.

For Category 4, when projects are not exempt from the Conformity Rule, either the Categorical Finding is used, if the project meets the requirements, or a quantitative analysis is performed (i.e., hot-spot analysis). Air quality technical reports should include the following for both Categorical Findings and hot-spot analyses:

1. **Statement of Conformity Rule Applicability:** See first example paragraph for Category 2 projects.
2. **Consistency with CO Regional Analysis:** Provide rationale that makes the project exempt from regional analysis, if applicable. If regional conformity applies, include the TIP and RTP information and confirm that the project design concept and scope, as described in the NEPA document, are not significantly different from that described in the STIP or TIP. (See examples provided for Category 3 projects.)
3. **Basis for Determination That Quantitative Analysis was Warranted:** State which of the four types of projects from 40 CFR 93.123(a)(1) describe the project (see Step 1 of Section 4.3). For projects that require quantitative analysis because of the LOS, provide the present day and future year LOS for each signalized intersection that was considered in the air quality analysis.
4. **Traffic Information:** Identify the source of traffic data, the date of traffic study or report, and the forecasting tool(s) used (e.g., State or MPO regional travel demand model). Include the LOS source report (e.g., Synchro output). Provide a reference to the traffic report.

If the Categorical Finding was used, provide the following:

1. **Explanation of Categorical Finding:** Provide an overview of the Categorical Finding; see FHWA's July 2017 memo and Finding. Explain that instead of running a project-specific hot-spot analysis as part of the project-level conformity determination, FHWA's CO categorical hot-spot finding was used.
2. **Determination:** State the basis for determining that the Categorical Finding is applicable and how it met all the requirements for a CO hot-spot analysis including 40 CFR 93.110, 93.111, 93.116(a), and 93.123. Either include the results from FHWA's web based tool showing all green checks for each approach for the intersection(s) analyzed or include the table from FHWA's Categorical Finding appendix, titled "Project Parameters and Acceptable Ranges for CO Categorical Hot-Spot Finding," and add and complete a column titled "Project Parameters." For example, the first row is "Analysis Year" and the "Acceptable Range" column shows "Greater than or equal to 2017." Therefore, the year in the added third column must be 2017 or later.
3. **References for Determination:** Include references for where project information can be found to support data used to populate FHWA's web based tool or demonstrate that the project parameters fall within acceptable the ranges.
4. **Consultation:** State if this project involved an interagency consultation and/or public involvement process that was specific to the project-level CO analysis. Provide dates of key meetings and events, if applicable. Include correspondence between interagency consultation and/or with APCD, if applicable.
5. **Conclusion:** State the following:

   "The 2017 CO categorical hot-spot finding meets all the requirements under Clean Air Act section 176(c)(1)(B) and the transportation conformity rule at 40 CFR Part 93, Subpart A by showing that the project modeled would not cause or contribute to new or worsened

air quality violations or delay timely attainment or any required interim emission reductions or milestones."

If a hot-spot analysis was conducted, provide the air quality dispersion model output report. Also provide any of the following information if it is not clearly identified elsewhere in the report:

1. **Analysis Years:** State the years used in the analysis (e.g., existing year for emission factors and future year for traffic). If a refined model was used, state the analysis years and describe factors considered in determining the year(s) of peak emissions.
2. **Geographic Area:** Discussion of the geographic area of the analysis
3. **Emissions model:** State which emissions model and version was used (e.g., MOVES2014b). Provide the emissions factor(s) that were obtained from APCD. Describe how the project was characterized in terms of links. Any unusual, difficult, or contentious issues regarding the model or methodology should be explained. For example, if a new emissions model or new data was available but was not used, explain why it was not used (e.g., because it had not yet been approved for use in a project-level analysis). In electronic form, provide to CDOT all files necessary for an independent analyst to duplicate the modeling from start to finish, including 1) traffic data[69] and other supporting data[70] for inputs to the MOVES model; 2) spreadsheets containing MOVES inputs[71]; and 3) MOVES runspecs, input databases and output databases[72].
4. **Other Emissions:** Modeling inputs and results for estimating construction emissions[73] and other nearby source emissions, if applicable to the project.
5. **Air Quality Dispersion Model:** State which air quality dispersion model was used (e.g., CAL3QHC, CAL3QHCR, or AERMOD and version), including which version, and describe the receptors and rational used to place the receptors used in the analysis. Any unusual, difficult, or contentious issues regarding the model or methodology should be explained. Provide a figure(s) that shows roadway links and receptor locations in sufficient detail for reviewers to evaluate whether they are properly sited. In electronic form, provide to CDOT all files necessary for an independent analyst to duplicate the modeling from start to finish, including 1) traffic data and other supporting data for inputs to the dispersion model; 2) spreadsheets containing dispersion model inputs; 3) dispersion model input and output files; and 4) spreadsheets used to post-process model results for presentation in the air quality technical report, if used.
6. **Background Concentration:** Value(s) of background concentration(s) and source of concentration(s). The source would generally be a monitoring station or a model. If it is a monitoring station, state which was used. The source includes from where the background concentration was obtained (i.e., APCD).

[69] For CO hot-spots that use CAL3QHC, traffic data refers to peak hour speeds as described in Step 4 of Section 4.3. If using other air quality dispersion models, additional traffic data is needed.

[70] If APCD is running MOVES for a transportation project, "other supporting data" refers to information that was submitted to APCD (e.g., as described in Step 4 of Section 4.3)

[71] APCD generally runs MOVES for transportation projects in Colorado. If APCD ran MOVES for the project, APCD will provide the spreadsheets containing MOVES inputs to CDOT, if developed. These spreadsheets are used for post-processing.

[72] APCD generally runs MOVES for transportation projects in Colorado. If APCD ran MOVES for the project, APCD will provide the MOVES runspecs, input databases, and output databases to CDOT.

[73] 40 CFR 93.123(c)(5)

7. **Mitigation:** Discussion of mitigation or control measures that will be implemented in the project, if applicable. Include the methods and assumptions used to quantify their expected effects and associated written commitments. Modeling must show that the project meets conformity. If it does not, mitigation or control measures must be implemented until the model does show conformity is met.
8. **Consultation and Public Participation:** State if this project included an interagency consultation and/or public involvement process that was specific to the project-level CO analysis. Provide dates of key meetings and events, if applicable. Include correspondence between interagency consultation and/or with APCD, if applicable.
9. **Conclusion:** The conclusion should summarize the results of the analysis; see Section 13.6

13.4 PM_{10} Conformity Determination (Report)

The information and level of detail in the air quality technical report regarding PM_{10} conformity falls into one of four categories:

1. Conformity Rule does not apply[74] (analysis not required)
2. Exempt from analysis per 40 CFR 93.126 or 40 CFR 93.128[75] (analysis not required);
3. Nonexempt but PM_{10} hot-spot analysis not required; or
4. Nonexempt and requires CO hot-spot analysis (quantitative analysis).

For Category 1, when the Conformity Rule does not apply, a statement of the non-applicability status should be included in the air quality technical report. Two examples are:

- **Geographic Applicability:** "The project area is not in any nonattainment or maintenance areas for any criteria pollutants. Therefore, conformity requirements under Part 93 of Title 40 of the Code of Federal Regulations (CFR) (40 CFR 93) do not apply pursuant to Section 93.102(b)."
- **Action Applicability and not Regionally Significant:** "Pursuant to Section 93.102(a)(1)(iii), projects that do not require or have FHWA/FTA approval, funding, or implementation do not require conformity determinations, which is true of this project. Therefore, conformity requirements under Part 93 of Title 40 of the Code of Federal Regulations (CFR) (40 CFR 93) do not apply. Pursuant to Section 93.102(a)(2), non-federal projects that are regionally significant must comply with Section 93.121 (Requirements for Adoption of Approval of Projects by Other Recipients of Funds Designated Under Title 23 USC or the Federal Transit Laws). However, this project is not regionally significant and Section 93.121 does not apply."

When considering PM_{10} conformity, it is possible that a project is not in a PM_{10} maintenance area but is in either a CO maintenance area or the ozone nonattainment area. In that case, the sample language can be modified to explain why PM_{10} conformity does not apply to the project although CO and/or ozone conformity does apply.

[74] The applicability section of the Conformity Rule is at 40 CFR 93.102. One example of when the Conformity Rule does not apply is when a project is not in any maintenance or nonattainment area. The PM_{10} related requirements, e.g., PM_{10} Hot-Spot analyses, do not apply to Colorado projects that are not in any PM_{10} maintenance areas.

[75] Projects categorized under 40 CFR 93.126 or 40 CFR 93.128 are exempt from the transportation Conformity Rule and may proceed toward implementation even in the absence of a conforming transportation plan and TIP.

For Category 2, when projects are exempt from the Conformity Rule per Table 2 of 40 CFR 93.126 or 40 CFR 93.128, a statement of the exemption status, including the type(s) of exemption(s) should be included in the air quality technical report. For example:

> *"The project is in the Denver Metro particulate matter of 10 microns in diameter or smaller (PM_{10}) maintenance area. Because the project is in at least one nonattainment or maintenance area, conformity requirements under Part 93 of Title 40 of the Code of Federal Regulations (CFR) (40 CFR 93) apply.*
>
> *However, the project is exempt from conformity requirements pursuant to Section 93.126, Table 2 of the final conformity rule (62 FR 43816, August 15, 1997; most recently amended 73 FR441 on January 24, 2008) because it is a safety project that will correct, improve, or eliminate a hazardous location or feature and an air quality project affecting bicycle and pedestrian facilities. It can therefore be concluded that the project will not have a significant adverse impact on air quality. Note that this exemption would not apply if the project had been determined to have potentially adverse emission impacts by Denver Regional Council of Governments in consultation with other agencies.*
>
> *Because the project is exempt, further air quality analysis (e.g., a project-level hot spot analysis) is not required and it is not necessary to show whether it is in a conforming plan or if was included in the regional model.*

For Category 3, when projects are not exempt from the Conformity Rule but do not require a quantitative analysis, air quality technical reports should include the following:

1. **Statement of Conformity Rule Applicability:** See first example paragraph for Category 2 projects.
2. **Consistency with PM_{10} Regional Analysis:** Provide rationale that makes the project exempt from regional analysis, if applicable. If regional conformity applies, include the TIP or STIP and RTP information and confirm and state that the project design concept and scope, as described in the NEPA document, are not significantly different from that described in the TIP or STIP. Some example statements follow.

   Regional analysis consistency example for a project that is in Denver (three nonattainment or maintenance areas) but is exempt from regional conformity:

   > *"Ozone, CO, and PM_{10} are modeled on a regional basis. However, the project is exempt from regional emissions analysis pursuant to Section 93.127, Table 3 of the final conformity rule (58 FR 62235, Nov. 24, 1993, as amended at 71 FR 12511, Mar. 10, 2006) because it is an intersection channelization project. It can therefore be concluded that the project will not have a significant adverse regional impact on air quality. Note that this exemption would not apply if the project had been determined to have potentially adverse regional impacts by Denver Regional Council of Governments in consultation with other agencies. Because the project is exempt from regional emissions analysis, it may be grouped in one line item with other projects or identified individually in the TIP or STIP and it may be absent from the TIP or STIP and RTP."*

   Regional analysis consistency example for a project that is in an isolated rural PM_{10} maintenance area but is exempt from regional conformity:

   > *"PM_{10} is not modeled in isolated rural maintenance areas. Besides, the project is exempt from regional emissions analysis pursuant to Section 93.127, Table 3 of the final*

conformity rule (58 FR 62235, Nov. 24, 1993, as amended at 71 FR 12511, Mar. 10, 2006) because the project is a change in horizontal alignment. It can therefore be concluded that the project will not have a significant adverse regional impact on air quality. Because the project is exempt from regional emissions analysis, it is not necessary for the project to be in a conforming transportation plan or STIP."

Regional analysis consistency example for a project that is not exempt from regional conformity and is in the Denver Metro PM_{10} maintenance area:

"Ozone, CO, and PM_{10} are modeled on a regional basis. This project is in the [provide title of the TIP] TIP (TIP number [xxxxxx]) and [provide title of the RTP] RTP (RTP number [xxxxxx]). The project design concept and scope, as described in the NEPA document, are not significantly different from that described in the TIP."

For a project that is not exempt from regional conformity and is in an isolated rural PM_{10} maintenance area, the air quality technical report would document the regional emissions analysis that was performed for the project.

3. **Basis for Determination That Quantitative Analysis was not Required:** List the five types of projects that must be modeled with a PM_{10} hot-spot analysis per 40 CFR 93.123(b)(1) and state that the project is not any of those types (see Step 1 of Section 5.3). If the project had to be evaluated to determine whether a trigger in 40 CFR 93.123(b)(1) may have been met, include text that explains why it was not. For example:

   "The project does not meet any of the triggers listed in 40 CFR 93.123(b)(1). Although the project is a highway expansion, the largest future year increase of diesel vehicles associated with the project (927 daily diesel trucks/1 percent increase on I-25 between 84th Avenue and Thornton Parkway) is not significant. In addition, as shown in Table XX, all existing and future year LOS for project intersections are A, B, or C."

4. **Compliance with PM_{10} Control Measures:** Written commitment from the project sponsor to include in the final plans, specifications, and estimates for the project those control measures (for the purpose of limiting PM_{10} emissions from the construction activities and/or normal use and operation associated with the project) that are contained in the applicable SIP.

For Category 4, when projects are not exempt from the Conformity Rule and at least one section of 40 CFR 93.123(b)(1) is triggered, a quantitative analysis is needed via a hot-spot analysis. Air quality technical reports should include the following for hot-spot analyses, unless otherwise determined via interagency consultation:

1. **Statement of Conformity Rule Applicability:** See first example paragraph for Category 2 projects.
2. **Consistency with PM_{10} Regional Analysis:** Provide rationale that makes the project exempt from regional analysis, if applicable. If regional conformity applies, include the TIP or STIP and RTP information and confirm that the project design concept and scope, as described in the NEPA document, are not significantly different from that described in the STIP or TIP. (See examples given for Category 3 projects.)
3. **Basis for Determination That Quantitative Analysis was Warranted:** State which of the five types of projects from 40 CFR 93.123(b)(1) describe the project (see Step 1 of Section 5.3). For projects that require quantitative analysis in part because of the LOS, provide the present day

and future year LOS for each signalized intersection that was considered in the air quality analysis.

4. **Traffic Information:** Specify traffic conditions and congestion levels (i.e., LOS). Include AADT traffic volumes and number of diesel vehicles. Provide locations of any truck idling (e.g., rest stops, intermodal centers), if applicable. Identify the source of traffic data, the date of traffic study or report, and the forecasting tool(s) used (e.g., State or MPO regional travel demand model). Include the LOS source report (e.g., Synchro report). This section should include AADT traffic volumes for present day year and future year no-build/build.
5. **Analysis Years:** State the analysis years, which would have been determined via interagency consultation. Describe factors considered in determining the year(s) of peak emissions.
6. **Geographic Area:** Discussion of the geographic area of the analysis
7. **Emissions model:** State which emissions model and version was used (e.g., MOVES2014b). Provide the emissions factor(s) that were obtained from APCD. Describe how the project was characterized in terms of links. Any unusual, difficult, or contentious issues regarding the model or methodology should be explained. For example, if a new emissions model or new data was available but was not used, explain why it was not used (e.g., because it had not yet been approved for use in a project-level analysis). In electronic form, provide to CDOT all files necessary for an independent analyst to duplicate the modeling from start to finish, including 1) traffic data and other supporting data for inputs to the MOVES model; 2) spreadsheets containing MOVES inputs[76]; and 3) MOVES runspecs, input databases and output databases[77].
8. **Other Emissions:** Modeling inputs and results for estimating construction emissions[78] and other nearby source emissions, if applicable to the project.
9. **Air Quality Dispersion Model:** State which air quality dispersion model was used (e.g., CAL3QHCR or AERMOD), including the version, and describe the receptors and rational used to place the receptors used in the analysis. Any unusual, difficult, or contentious issues regarding the model or methodology should be explained. Provide figure that shows roadway link and receptor locations in sufficient detail that reviewers can determine whether applicable requirements were complied with. In electronic form, provide to CDOT all files necessary for an independent analyst to duplicate the modeling from start to finish, including 1) traffic data and other supporting data for inputs to the dispersion model; 2) spreadsheets containing dispersion model inputs; 3) dispersion model input and output files; and 5) spreadsheets used to post-process model results for presentation in the air quality technical report, if used.
10. **Background Concentration:** Value(s) of background concentration(s) and source of concentration(s). The source would generally be a monitoring station or a model. If it is a monitoring station, state which was used. The source includes from where the background concentration was obtained (i.e., APCD).
11. **Compliance with PM_{10} Control Measures:** Written commitment from the project sponsor to include in the final plans, specifications, and estimates for the project those control measures

[76] APCD generally runs MOVES for transportation projects in Colorado. If APCD ran MOVES for the project, APCD will provide the spreadsheets containing MOVES inputs to CDOT, if developed. These spreadsheets are used for post-processing.

[77] APCD generally runs MOVES for transportation projects in Colorado. If APCD ran MOVES for the project, APCD will provide the MOVES runspecs, input databases, and output databases to CDOT.

[78] 40 CFR 93.123(c)(5)

(for the purpose of limiting PM_{10} emissions from the construction activities and/or normal use and operation associated with the project) that are contained in the applicable SIP.

12. **Mitigation:** Discussion of mitigation or control measures implemented in the project, if applicable. Include the methods and assumptions used to quantify their expected effects and associated written commitments. Modeling must show that the project meets conformity. If it does not, mitigation or control measures must be implemented until the model does show conformity is met.
13. **Consultation and Public Participation:** State if this project involved an interagency consultation and/or public involvement process that was specific to the project-level PM_{10} analysis. Provide dates of key meetings and events, if applicable. Include correspondence between interagency consultation and/or with APCD, if applicable.
14. **Conclusion:** The conclusion should summarize the results of the analysis; see Section 13.6.

13.5 Ozone Conformity Determination (Report)

Information and level of detail in air quality technical reports regarding ozone conformity falls into one of three categories:

1. Conformity Rule does not apply[79] (analysis not required)
2. Exempt from conformity per 40 CFR 93.126 or 40 CFR 93.128[80] (analysis not required);
3. Nonexempt (project-level analysis not required; regional analysis done by MPO)

For Category 1, when the Conformity Rule does not apply, a statement of the non-applicability status should be included in the air quality technical report. Two examples are:

- **Geographic Applicability:** "The project area is not in any nonattainment or maintenance areas for any criteria pollutants. Therefore, conformity requirements under Part 93 of Title 40 of the Code of Federal Regulations (CFR) (40 CFR 93) do not apply pursuant to Section 93.102(b)."
- **Action Applicability and not Regionally Significant**: "Pursuant to Section 93.102(a)(1)(iii), projects that do not require or have FHWA/FTA approval, funding, or implementation do not require conformity determinations, which is true of this project. Therefore, conformity requirements under Part 93 of Title 40 of the Code of Federal Regulations (CFR) (40 CFR 93) do not apply. Pursuant to Section 93.102(a)(2), non-federal projects that are regionally significant must comply with Section 93.121 (Requirements for Adoption of Approval of Projects by Other Recipients of Funds Designated Under Title 23 USC or the Federal Transit Laws). However, this project is not regionally significant and Section 93.121 does not apply."

When considering ozone conformity, it is possible that a project is not in an ozone area but is in either a CO or PM_{10} maintenance area. In that case, the sample language can be modified to explain why ozone conformity does not apply to the project although CO and/or PM_{10} conformity does apply.

[79] The applicability section of the Conformity Rule is at 40 CFR 93.102. One example of when the Conformity Rule does not apply is when a project is not in any maintenance or nonattainment area.

[80] Projects categorized under 40 CFR 93.126 or 40 CFR 93.128 are exempt from the transportation Conformity Rule and may proceed toward implementation even in the absence of a conforming transportation plan and TIP.

For Category 2, when projects are exempt from the Conformity Rule per Table 2 of 40 CFR 93.126 or 40 CFR 93.128, a statement of the exemption status, including the type and number of exemption should be included in the air quality technical report. For example:

> *"The project is in the Denver Metro/North Front Range ozone nonattainment area. Because the project is in at least one nonattainment or maintenance area, conformity requirements under Part 93 of Title 40 of the Code of Federal Regulations (CFR) (40 CFR 93) apply.*
>
> *However, the project is exempt from conformity requirements pursuant to Section 93.126, Table 2 of the final conformity rule (62 FR 43816, August 15, 1997; most recently amended 73 FR441 on January 24, 2008) because it is a safety project that will correct, improve, or eliminate a hazardous location or feature and an air quality project affecting bicycle and pedestrian facilities. It can therefore be concluded that the project will not have a significant adverse impact on air quality. Note that this exemption would not apply if the project had been determined to have potentially adverse emission impacts by Denver Regional Council of Governments in consultation with other agencies. Because the project is exempt, further air quality analysis is not required and it is not necessary to show whether it is in a conforming plan or if was included in the regional model."*

For Category 3, when projects are not exempt from the Conformity Rule, air quality technical reports should include the following:

1. **Statement of Conformity Rule Applicability:** See first example paragraph for Category 2 projects.
2. **Statement of Project-level Analysis Applicability:** State that ozone is not modeled at the project level.
3. **Consistency with Ozone Regional Analysis:** Either provide rationale that makes the project exempt from regional analysis or provide the applicable TIP and RTP title and number. If regional conformity applies, confirm and state that the project design concept and scope, as described in the NEPA document, are not significantly different from that described in the TIP. Some example statements follow.

   Regional analysis consistency example for a project that is in Denver (three nonattainment or maintenance areas) but is exempt from regional conformity:

   > *"Ozone, CO, and PM_{10} are modeled on a regional basis. However, the project is exempt from regional emissions analysis pursuant to Section 93.127, Table 3 of the final conformity rule (58 FR 62235, Nov. 24, 1993, as amended at 71 FR 12511, Mar. 10, 2006) because it is an intersection channelization project. It can therefore be concluded that the project will not have a significant adverse regional impact on air quality. Note that this exemption would not apply if the project had been determined to have potentially adverse regional impacts by Denver Regional Council of Governments in consultation with other agencies. Because the project is exempt from regional emissions analysis, it may be grouped in one line item with other projects or identified individually in the TIP and it may be absent from the TIP and RTP."*

   Regional analysis consistency example for a project that is not exempt from regional conformity, was included in the MPO model, and is in the Denver area:

"Ozone, CO, and PM_{10} are modeled on a regional basis. All regionally significant projects must be modeled; in addition, some other TIP projects are modeled. This project was included in DRCOG's regional model even though it's not regionally significant since it included adding a new travel lane. This project is in the [provide title of the TIP] TIP (TIP number [xxxxxx]) and [provide title of the RTP] RTP (RTP number [xxxxxx]). The project design concept and scope, as described in the NEPA document, are not significantly different from that described in the TIP."

4. **Statement from FHWA Technical Advisory T 6640.8A (EISs only):** For EISs, Section V.G.8.a of the Technical Advisory recommends referencing the air quality emissions inventories from the ozone SIP and describing the relationship of the project to the SIP by including one of two statements. Because the ozone SIP[81] does not contain any transportation control measures, the statement that would have applied was *"This project is in an area where the SIP does not contain any transportation control measures. Therefore, the conformity procedures of 23 CFR 770 do not apply to this project."* However, 23 CFR 770, "Air Quality Conformity and Priority Procedures for use in Federal-aid Highway and Federally Funded Transit Programs," was cancelled in 1993. Therefore, this statement should not be made.

13.6 Conformity Analyses Summary (Report)

The conformity summary section should summarize the results of the conformity analysis. For projects that are only in the ozone nonattainment area, state whether the project meets the Conformity Rule. For projects that are in one or more CO or PM_{10} maintenance area, include the CO and PM_{10} design values, as applicable, and state that the project meets conformity requirements per 40 CFR 93.116 by including language similar to:

"A project-level air quality hot-spot analysis for [CO and/or PM10] has been conducted and no receptor sites are predicted to experience concentrations in excess of the current [CO and/or PM10] NAAQS. Pursuant to the Section 93.116(a), this project will not:

(i) Cause or contribute to any new localized NAAQS violation;

(ii) Increase the frequency or severity of any existing NAAQS violation; or

(iii) Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in the maintenance area."

13.7 Criteria Pollutant Analyses (Report)

Describe how and why the analysis was performed and provide the emission totals for each pollutant for each alternative including the no-build alternative.

[81] When this AQ PLAG was published, the current ozone SIP in effect was "*Denver Metro Area & North Front Range Ozone Action Plan: Including Revisions to the State Implementation Plan*," which was approved by the AQCC on December 12, 2008. EPA published the Final Rule in the Federal Register, Vol. 76, No. 151, August 5, 2011. The update, "*Moderate Area 2008 8-Hour Ozone Standard State Implementation Plan,*" was approved by the AQCC on November 17, 2016 and submitted to the EPA in May 2017.

13.8 MSAT Analyses (Report)

The information and level of detail in the air quality technical report regarding MSATs falls into one of three categories:

1. No analysis; projects with no potential for meaningful impacts
2. Qualitative analysis; projects with low potential MSAT effects
3. Quantitative analysis; projects with higher potential MSAT effects

Category 1 projects, which do not have the potential for meaningful MSAT impacts, do not require an MSAT analysis or discussion, although documentation that demonstrates that the project qualifies as a CatEx and/or exempt project should be provided.

For projects that are EAs or EISs and are Category 1 projects with no or negligible impacts on traffic volumes or vehicle mix and which are not exempt under 40 CFR 93.126, the air quality technical report should document the basis for the determination of no meaningful potential impacts with a brief description of the factors considered. The FHWA Interim Guidance provides further information and example language that can be used in the air quality technical report, including in the Interim Guidance Appendix A.

Category 2 projects, which have a low potential of MSAT effects, require a qualitative analysis. Category 2 project air quality technical reports should include the following:

1. **Introduction/Background Information:** This section should include background information on MSATs, a discussion of national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations issued by EPA, and FHWA's MSAT emission trends figure (e.g., Figure 1: FHWA Projected National MSAT Emission Trends 2010-2050 for Vehicles Operating on Roadways Using EPA's MOVES2014a Model).
2. **Sensitive Locations**[82]: If applicable, this section should characterize the land-use type and include the geographic location of sensitive locations that are within approximately 500 feet of the project roadway. Include a figure that shows this area.
3. **Traffic Information:** State the future year traffic volume to show that it will be less than the quantitative threshold of 140,000 to 150,000 AADT (although a project may exceed that AADT and still qualify as only requiring a qualitative analysis, as determined by FHWA).
4. **Qualitative MSAT Discussion:** Prototype language is provided in Appendix B of FHWA's Interim Guidance for developing the appropriate qualitative analysis statement and summary. FHWA's Appendix B includes specific examples for four types of projects: (1) a minor widening project; (2) a new interchange connecting an existing roadway with a new roadway; (3) a new interchange connecting new roadways; and (4) minor improvements or expansions to intermodal centers or other projects that affect truck traffic. The Appendix B language must be modified to reflect the local and project-specific situation.
5. **Justification of Category:** If the project was considered as possibly having higher potential MSAT effects (e.g., AADT is projected to be in the range of 140,000 to 150,000 or greater by design year) but the project was ultimately determined to have low potential MSAT effects, include a discussion of the interagency consultation involved in the analysis and the determinations made during the process.

[82] The term "Sensitive Location" is defined in AQ-PLAG Appendix B.

6. **MSAT Health Effects Discussion:** This section is required and must be included to discuss the incomplete and/or unavailable information regarding the human and environmental health impacts from MSAT exposure, in compliance with the CEQ regulations (40 CFR 1502.22(b)). The discussion should include how air toxics analysis is an emerging field and current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts that would result from a transportation project in a way that would be useful to decision-makers. Prototype language is provided by FHWA and can be found in Appendix C and Appendix D of FHWA's Interim Guidance.
7. **Conclusion:** Include a summary of the MSAT discussion and include a discussion on the potential differences among MSAT emissions, if any, from the project alternatives.

Category 3 projects, which have higher potential for MSAT effects, require a quantitative analysis. Category 3 project air quality technical reports should include the following:

1. **Introduction/Background Information:** This section should include background information on MSATs, the overall objective of the analysis, a discussion of national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations issued by EPA, and FHWA's MSAT emission trends figure (e.g., Figure 1: FHWA Projected National MSAT Emission Trends 2010-2050 for Vehicles Operating on Roadways Using EPA's MOVES2014a Model).
2. **Sensitive Locations:** This section should characterize the land-use type and include the geographic location of sensitive locations that are within approximately 500 feet of the project roadway. Include a figure that shows this area.
3. **Traffic Information:** State the future year traffic volume to show that it will be more than the quantitative threshold of 140,000 to 150,000 AADT.
4. **Quantitative MSAT Analysis:** This section represents the technical section of the report. Specific methods, results and content may vary by project and will be determined through agency consultations. The report should generally include the following information:
   - Discussion of the interagency consultation involved in the analysis and the determinations made during the process;
   - Discussion of the geographic area considered in the analysis;
   - Discussion of the general analysis approach used and the analysis years considered for the project;
   - Discussion of the MSAT emission processes that were modeled in MOVES (e.g., running exhaust, crankcase running exhaust)
   - Version of model used in analysis
   - Discussion of the project-specific data used in the analysis;
   - Tables and/or figures that compare the differences in total MSAT emissions for each priority MSAT for each year evaluated between the no-build and build scenarios.
5. **MSAT Health Effects Discussion:** This section is required and must be included to discuss the incomplete and/or unavailable information regarding the human and environmental health impacts from MSAT exposure. Prototype language is provided by FHWA and can be found in Appendix C and Appendix D of FHWA's Interim Guidance.
6. **MSAT Mitigation Strategies:** This section aims to provide mitigation strategies for projects with substantial construction-related MSAT emissions and for post-construction scenarios where the

air quality analysis indicates potentially meaningful MSAT levels. Prototype language provided by FHWA is available for use and can be found in Appendix E of FHWA's Interim Guidance.

7. **Emission Factors:** Provide the emissions factor(s)[83] that were obtained from APCD.
8. **Conclusion:** Include a summary of the quantitative MSAT analysis results and a summary of the differences among MSAT emissions, if any, from the project alternatives.

13.9 Greenhouse Gas Analyses (Report)

The GHG analysis should be reported for EAs and EISs by copying the template language from Appendix F[84] of CDOT's *NEPA Manual*, adapted as necessary for the project, into the air quality technical report. For EISs, this includes completing project specific information that was identified in Appendix F[83] of CDOT's *NEPA Manual*. CatEx projects do not include a GHG analysis.

13.10 Construction Analyses (Report)

Discuss emission reduction commitments of construction, as applicable. Ambient PM_{10} monitoring may be required for large projects near sensitive receptors, as determined via interagency consultation. Construction emissions related to the conformity analysis, if applicable, are reported as part of the conformity analysis.

The construction discussion typically focuses on measures available during the construction phases, such as:

- Dust suppression during construction
- Equipment typically installed to reduce emissions from construction vehicles and vehicles using a project roadway
- Sand sweeping as part of winter maintenance practices

13.11 Air Quality Mitigation (Report)

Discuss project mitigation of the operation of the project, if applicable. These mitigation measures are done for a specific project. It is rare that a project requires this type of mitigation. Mitigation is required if the project cannot otherwise demonstrate conformity.

The air quality mitigation discussion typically should focus on mitigation measures available during the operation phase. Other types of mitigation that may be incorporated to improve air quality include control measures, which are any measures specifically identified to reduce emissions or concentrations of air pollutants from transportation sources. Control measures are typically targeted at reducing vehicle use or changing traffic flow or congestion conditions. Examples include:

- Traffic signal optimization projects designed to improve traffic flow

[83] If this is a large file(s), the file(s) may be submitted electronically and not included in the report. If a consultant obtains lookup tables of MOVES emission rates from APCD and calculates emissions, the emission calculations should be submitted electronically.

[84] At the time this AQ-PLAG was published, Appendix F had not yet been updated with the 2019 GHG template language. Therefore, a memo was published to CDOT's air quality website in February 2019 containing the new template language.

- Transportation demand management options such as High Occupancy Vehicle lanes
- Multimodal transportation options and programs to encourage their use
- Agreements with major corporations to promote flexible work schedules
- Fringe and transportation corridor parking facilities serving multiple-occupancy vehicle programs or transit service
- Actions intended to reduce the number of vehicles on the roads or improve the LOS by spreading the peak traffic volume over a longer time span

Some of these mitigation approaches may be incorporated into the project alternatives at the time of their design, while others, such as the transportation system management mitigation options, may be added as post-design mitigation or during project operation.

13.12 Cumulative and Indirect Effects (Report)

Include the following in the air quality technical report:

- Refer to the cumulative impacts and indirect effects technical report (e.g., provide the title and appendix number) and indicate whether the analysis was quantitative or qualitative.
- Explain that assessments of cumulative impacts and indirect effects can be conducted as part of the transportation planning process under FHWA and FTA's transportation planning regulations (23 CFR Part 450 Appendix A) and under 23 USC 168 (Section 168). Therefore, cumulative impacts and indirect effects of project alternatives, except the no-build alternative, are accounted for cumulatively in the RTP. Provide the names of the plans and the RTP project number.

13.13 Impacts and Mitigation Commitments (Report)

For non-programmatic CatEx, EA, and EIS air quality technical reports, include a table that describes impacts on air quality resources and another table that describes mitigation commitments for air quality resources. These mitigations are not the mitigations described in Section 13.11; for example, mitigation commitments to reduce impacts from construction exhaust and fugitive dust would be addressed in the mitigation table. These tables are generally to be copied into the NEPA document tables which list impacts and mitigation commitments for all resources.

14. NEPA DOCUMENT AIR QUALITY REQUIREMENTS

This chapter describes information that should be included in the NEPA document for transportation projects that are classified as EAs or EISs, unless it is determined via interagency consultation that specific information is not required for a project. CatExs are documented via CDOT's Form 128, which only contains high level information related to air quality. Information for the NEPA document is essentially a summary of the information that is in the air quality technical report.

Requirements that are stated in more than one section only need to be provided once. For example, if the Conformity Rule does not apply to a project, Sections 14.3.1, 14.3.2, and 14.3.3 all say to state that the Conformity Rule does not apply and provide the reason, but this information only needs to be provided once. Information that should be in the air quality technical report is described in Chapter 13.

14.1 Introduction (Document)

The NEPA document air quality introduction section should include:

- Applicable regulatory requirements; e.g., summarize applicable air quality regulatory requirements; introduce and briefly explain key terms and concepts such as criteria pollutants, NAAQS, SIPs, nonattainment and maintenance areas, MSATs, and GHGs
- Clearly identify which analyses were performed for conformity and which were performed for NEPA purposes only.
- Conclusions of the air quality analysis (e.g., whether the project will cause significant adverse impacts on air quality)
- Title of the RTP and TIP/STIP that includes the project.
- Date when RTP and TIP/STIP were adopted by and by whom and date when they were approved by FHWA or FTA
- Consultation(s) dates and participating agencies (if none, include a statement to that effect)[85]
- Reference to the conformity concurrence letter, if applicable[86]

14.2 Affected Environment (Document)

The NEPA document existing conditions section should include the air quality status of the project area, including identification of any nonattainment or maintenance area designations and any recent or

[85] After FHWA has determined that conformity is met and issues a formal conformity determination letter, the hot-spot analysis and supporting interagency consultation documentation (including FHWA's conformity determination letter) must be included in the final environmental document.

[86] For a project involving an EIS, the conformity analysis normally is included in the Final EIS and conformity must be determined before the ROD is issued. For a project involving an EA, the conformity determination normally is made before the FONSI is issued. For a project involving a CatEx, the conformity determination is normally documented concurrently with the approval of the CatEx. In any case, the project-level conformity determination must be made before the first time FHWA adopts, accepts, approves, or funds the project. It is preferable that the concurrence letter from APCD be included in the NEPA document appendix. If that is not possible, based on direction from CDOT, the concurrence letter must be included in a decision document appendix.

anticipated changes in status. (Be specific about which NAAQS the area has been designated. For example, use "2008 8-hour ozone standard" rather than "ozone standard.")

14.3 Environmental Consequences (Document)

The environmental consequences section content will vary with the scope of the project, its location, and the pollutants analyzed. At a minimum, the section should compare the air quality effects of each alternative carried forward for detailed analysis and address the topics described in the rest of this Section.

14.3.1 CO Conformity Determination

Include the following text in the NEPA document:

- When the Conformity Rule does not apply to a project, explain why. For example, see sample text from Section 13.3 for Category 1 projects.
- For projects in CO maintenance areas that are exempt from the Conformity Rule, explain why and the ramifications. For example, the following statement can be used: *"The project is in the [Denver-Boulder] CO maintenance area. Because the project is in at least one nonattainment or maintenance area, conformity requirements under 40 CFR 93 apply. However, the project is exempt from conformity requirements pursuant to Section 93.126, Table 2 because it is a [safety project that will correct, improve, or eliminate a hazardous location or feature]. It can therefore be concluded that the project will not have a significant adverse impact on air quality. Because the project is exempt, further air quality analysis (e.g., project-level hot spot analysis) is not required and it is not necessary to show whether the project is in a conforming plan or if was included in the regional model."*
- For projects that are not exempt from the Conformity Rule but only require a qualitative analysis, explain why and the ramifications. For example, the following statement can be used: *"The project is in the [Denver-Boulder] CO maintenance area. Because the project is in at least one nonattainment or maintenance area, conformity requirements under 40 CFR 93 apply. The project doesn't meet any of the triggers listed in 40 CFR 93.123(a)(1); therefore, a CO hot-spot analysis is not required and the project will not result in an exceedance of the 1-hour or 8-hour NAAQS for CO. Ozone, CO, and PM_{10} are modeled on a regional basis. This project is in the [provide title of the TIP] TIP (TIP number [xxxxxx]) and [provide title of the RTP] RTP (RTP number [xxxxxx]). The project design concept and scope, as described in the NEPA document, is not significantly different from that described in the TIP."*
- For projects that are not exempt from the Conformity Rule and require a quantitative analysis, explain why and the ramifications. For example, the following statement can be used: *"The project is in the [Denver-Boulder] CO maintenance area. Because the project is in at least one nonattainment or maintenance area, conformity requirements under 40 CFR 93 apply. A project-level air quality analysis for CO was conducted for the [subject] project. No receptor sites are predicted to experience concentrations in excess of the current 1-hour or 8-hour CO NAAQS. It can therefore be concluded that the project will not have significant adverse impacts on air quality as a result of CO emissions."*

14.3.2 PM_{10} Conformity Determination

Include summary level text in the NEPA document as described for CO in Section 14.3.1. Note that for PM_{10}, if an analysis is done, it is quantitative; qualitative analyses are not done for PM_{10}.

14.3.3 Ozone Conformity Determination

Include the following text in the NEPA document:

- When the Conformity Rule does not apply to a project, explain why. For example, see sample text from Section 13.5 for Category 1 projects.
- For projects in the ozone nonattainment area that are exempt from the Conformity Rule, explain why and the ramifications. For example, the following statement can be used: *"The project is in the Denver Metro/North Front Range ozone nonattainment area. Because the project is in at least one nonattainment or maintenance area, conformity requirements under 40 CFR 93 apply. However, the project is exempt from conformity requirements pursuant to Section 93.126, Table 2 because it is a [safety project that will correct, improve, or eliminate a hazardous location or feature]. It can therefore be concluded that the project will not have a significant adverse impact on air quality. Because the project is exempt, further air quality analysis is not required and it is not necessary to show whether the project is in a conforming plan or if was included in the regional model."*
- For projects that are not exempt from the Conformity Rule, explain why and the ramifications. For example, the following statement can be used: *"The project is in the Denver Metro/North Front Range ozone nonattainment area. Because the project is in at least one nonattainment or maintenance area, conformity requirements under 40 CFR 93 apply. Ozone is modeled on a regional basis. [All regionally significant projects must be modeled; in addition, some other TIP projects are modeled.] [This project was included in DRCOG's regional model even though it's not regionally significant since it included adding a new travel lane.] This project is in the [provide title of the TIP] TIP (TIP number [xxxxxx]) and [provide title of the RTP] RTP (RTP number [xxxxxx]). The project design concept and scope, as described in the NEPA document, is not significantly different from that described in the TIP."*

14.3.4 Criteria Pollutant Analysis

Provide the emission totals for each pollutant for each alternative including the no-build alternative. If it was determined via interagency consultation that a criteria pollutant analysis would not be required for the project, state this.

14.3.5 MSAT Analysis

For Category 1 projects, provide documentation that demonstrates that the project qualifies as an exempt project.

For Category 2 projects, which have low potential for meaningful MSAT emissions, include a qualitative discussion of MSAT emissions. This discussion should be a summary of the discussion in the air quality technical report.

For Category 3 projects, which have higher potential for MSAT emissions, the NEPA document should include a summary of the quantitative MSAT emissions analysis. Present the total MSAT emissions for each of the action alternatives and the "No Action" alternative. Include a general discussion of MSAT emission trends. This discussion should be a summary of the discussion in the air quality technical report.

14.3.6 Greenhouse Gas Analysis

State that the air quality technical report contains a qualitative analysis. For EISs, also include the project-specific table from CDOT's *NEPA Manual*, Appendix F[87].

14.3.7 Construction Emission Analysis

State whether and why construction emissions were or were not calculated. Summarize potential measures to minimize and mitigate construction emissions and refer to the more detailed list in the air quality technical report.

14.3.8 Cumulative and Indirect Effects

The air quality section of the NEPA document does not need to address cumulative impacts or indirect effects. These are discussed in the cumulative impacts section of the NEPA document, which considers and may specify air quality aspects of the impacts analysis. The NEPA document should include a summary table of impacts and mitigation at the end of the resource evaluation chapter.

[87] At the time this AQ-PLAG was published, Appendix F had not yet been updated with the 2019 GHG template language. Therefore, a memo was published to CDOT's air quality website in February 2019 containing the new template language.

COLORADO
Department of Transportation

APPENDIX A
ABBREVIATIONS AND ACRONYMS

ACRONYMS

AADT – Average Annual Daily Traffic

AERMOD – Atmospheric dispersion modeling system developed by the AERMIC (American Meteorological Society (AMS)/United States Environmental Protection Agency (EPA) Regulatory Model Improvement Committee)

APCD – Colorado Department of Public Health and Environment Air Pollution Control Division

AQCC – Air Quality Control Commission

AQ-PLAG – Air Quality Project-Level Analysis Guidance

CAA – Clean Air Act

CAAA – Clean Air Act Amendments

CAL3QHC – EPA's mobile-source pollutant dispersion model

CAL3QHCR – Enhanced version of CAL3QHC that can perform more complex calculations

CatEx – Categorical Exclusion (NEPA class of action)

CCR – Code of Colorado Regulations

CDOT – Colorado Department of Transportation

CEQ – United States Council on Environmental Quality

CFR – Code of Federal Regulations

CH_4 – Methane

CO – Carbon Monoxide

CO_2 – Carbon Dioxide

DRCOG – Denver Regional Council of Governments

DV – Design Value

DYADT – Design Year Average Daily Traffic

EA – Environmental Assessment (NEPA class of action)

EIS – Environmental Impact Statement (NEPA class of action)

EPA – United States Environmental Protection Agency

FAQ – Frequently Asked Question

FHWA – Federal Highway Administration

FONSI – Finding of No Significant Impact

FTA – Federal Transit Administration

FY – Fiscal Year

GHG – Greenhouse Gas

GIS - Geographic Information System

GWP – Global Warming Potential

HAP – Hazardous Air Pollutant

HCM – Highway Capacity Manual

IRIS – Integrated Risk Information System

LMP – Limited Maintenance Plan

LOS – Level-of-Service, a measure of traffic congestion

LRTP – Long Range Transportation Plan

LRTSP – Long Range Transportation State Plan

MOBILE – EPA's retired mobile-source emissions model

MOVES – Motor Vehicle Emission Simulator; EPA pollutant emissions model software

MOVES2014 – EPA's latest version of the MOVES model

MPO – Metropolitan Planning Organization

MSAT – Mobile Source Air Toxic

MVEB – Motor Vehicle Emissions Budget

NAAQS – National Ambient Air Quality Standard

NATA – National Scale Air Toxics Assessment

NCHRP – National Cooperative Highway Research Program

NEPA – National Environmental Policy Act of 1969

NFRMPO – North Front Range MPO

N_2O – Nitrous oxide

NO_2 – Nitrogen dioxide

NO_x – Oxides of nitrogen

PEL – Planning and Environmental Linkages

PM – Particulate matter

PM_{10} – Coarse particulate matter of 10 microns in diameter or smaller

$PM_{2.5}$ – Fine particulate matter of 2.5 microns in diameter or smaller

POAQC – Projects of Air Quality Concern, for PM

PPACG – Pikes Peak Area Council of Governments

ppb – parts per billion

ppm – parts per million

ROD – Record of Decision

RTP – Regional Transportation Plan

SIP – State Implementation Plan

SLAMS – State and Local Air Monitoring Stations

SO_2 – Sulfur dioxide

STIP – Statewide Transportation Improvement Program

TIP – Transportation Improvement Program

TPR – Transportation Planning Region

tpy – tons per year

ug/m^3 – micrograms per cubic meter

US – United States

USC – United States Code

UFRTPR – Upper Front Range TPR

VMT – vehicle miles traveled

VOC – volatile organic compound

COLORADO
Department of Transportation

APPENDIX B
GLOSSARY OF COMMON TERMS

GLOSSARY OF COMMON TERMS

Attainment Area – An area that meets the primary and secondary NAAQS for the pollutant. An area may be an attainment area for one pollutant and a nonattainment area or maintenance area for others. Because some pollutants have more than one NAAQS, a region may be a nonattainment area or maintenance area for one NAAQS and an attainment area for another NAAQS of the same pollutant.

CAL3QHC – CAL3QHC is an EPA-approved mobile source dispersion model used to predict CO (and other inert pollutants) concentrations at sensitive locations adjacent to roadways and roadway intersections. The CAL3QHC model is an effective tool for predicting emissions due to motor vehicles operating under free-flow conditions, as well as from idling vehicles under stop-and-go conditions (at signalized intersections).

Clean Air Act and Clean Air Act Amendments (CAA and CAAA) – The Clean Air Act of 1970 (CAA) established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. It also required states to prepare and implement control plans to demonstrate that they could achieve the NAAQS. In 1990, the CAA was amended (CAAA) to include strategies to achieve and maintain the criteria air pollutant NAAQS, to reduce air pollutant and pollutant precursor emissions from mobile sources, and to provide enforcement sanctions for not achieving and maintaining the NAAQS.

Conformity Determination – A conformity determination demonstrates that implementation of the TIP or project will not cause any new violations of a NAAQS, increase the frequency or severity of violations of the NAAQS, or delay timely attainment of the NAAQS or any interim milestone. For TIP conformity, the determination shows that the total emissions from on-road travel on an area's transportation system are consistent with goals for air quality found in the SIP. For project-level conformity, a project must come from a conforming RTP and TIP or STIP, its design concept and scope must not have changed significantly from that in the RTP and TIP or STIP, and localized emission impacts should be evaluated via hot-spot analysis, if applicable.

Conformity SIP – A conformity SIP states how a state will meet certain elements of the Transportation Conformity Rule; it does not contain control strategies. It includes the interagency consultation processes and procedures that must be used in the development of transportation conformity determinations. States have flexibility to determine how to document the consultation procedures (e.g., state regulation, a memorandum of understanding, an air agency order or directive). Colorado's Conformity SIP is AQCC's Regulation Number 10.

Constrained Speeds – Congested vehicle speeds, which are the average speeds for vehicles through an intersection when the vehicles can move, via turning motions and through lanes. These speeds are generally calculated by traffic engineers via a microsimulation modeling. The speeds should take into account the volume to capacity ratio.

Environmental Assessment (EA) – A document prepared for federally-aided or 100 percent state-funded transportation projects that are not eligible for a CatEx evaluation and do not appear to be of significant magnitude to require an EIS. An EA provides the analysis and documentation to determine if an EIS or finding of no significant impact (FONSI) should be prepared.

Environmental Impact Statement (EIS) – A detailed written report that provides full and fair discussion of significant environmental impacts and informs decision-makers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment.

Exempt Project – Projects that are considered insignificant from an air quality conformity perspective, as per 40 CFR 93.126 or CDOT's November 21, 2017 memo titled "Transportation Conformity: Exempt Project Interpretations for 40 CFR 93.126".

Finding of No Significant Impact (FONSI) – A document presenting the reasons why an action will not have a significant effect on the human environment and for which an EIS therefore will not be prepared. It includes the EA or a summary of it and notes any other environmental documents related to it. If the EA is included, the FONSI need not repeat any of the discussion in the EA but may incorporate it by reference.

Free Flow Link – Used in a hot-spot model to model a straight segment of roadway having a constant width, height, traffic volume, travel speed, and vehicle emission factor. Also see "Queue Link."

Functional Class –The functional classification system, as defined by FHWA or the local MPO, is based on the grouping of highways into classes, or systems, according to the character of the service they are intended to provide. There are often seven classes: interstate (1); Principal Arterial, Other Freeways and Expressways (2); Principal Arterial, Other (3); Minor Arterial (4); Major Collector (5); Minor Collector (6); and Local (7). These are also broken out by being either urban or rural.

Future – Reference to the year of data that should be used in an air quality analysis. The future year can be either the design year or horizon year, whichever is later. If traffic data is not available for either the design or horizon year, it is acceptable to use traffic data for the other year. The design year is typically 20 years after the project opening year. The horizon year is the year of the current, approved RTP. For example, DRCOG's horizon year was 2040 in 2018.

Highway – Term applies to roads, streets, and parkways, and also includes rights-of-way, bridges, railroad crossings, tunnels, drainage structures, signs, guardrails, and protective structures in connection with highways.

Impacts – Positive or negative effects upon the natural or human environment resulting from transportation projects.

Level-of-Service (LOS) – A measure employed to describe roadway operational conditions in terms of speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six levels of LOS are defined for transportation facilities, designated as LOS A (best operating conditions) through LOS F (worst operating conditions).

Maintenance Area – Any geographical region of the United States previously designated as nonattainment for a specific pollutant pursuant to the CAAA, and subsequently redesignated to attainment at a later date. Government agencies are required to develop a maintenance plan under Section 175A of the CAA for these areas. Areas with maintenance status require regional and project-level conformity determinations for the specified pollutants until the area formally achieves attainment status, as redetermined by the EPA.

Metropolitan Planning Organizations (MPOs) – MPOs are transportation planning policy-making organizations made up of representatives from local government and transportation authorities. MPOs are an integral part of the transportation planning process, including regional conformity determination for pollutants of concern and review and certification of the TIP.

Motor Vehicle Emissions Budget (MVEB) – A SIP defines the total allowable level of emissions of a specific pollutant and then allocates a portion of that total to emissions from highway and transit vehicles. The allowable emissions level set for highway and transit vehicles is known as the MVEB.

Motor Vehicle Emission Simulator (MOVES) – MOVES is the EPA-approved mobile source emission model used to predict CO, PM, and other pollutant emission rates in terms of grams per mile or grams per hour under various operating parameters and atmospheric conditions.

Mobile Source Air Toxics (MSATs) – The CAA identified 188 air toxics referred to as hazardous air pollutants. The EPA assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are part of EPA's Integrated Risk Information System (IRIS).[88] The EPA also identified a subset of this list that is considered the nine priority MSATs: 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. Although these MSATs are considered the priority transportation air toxics, the EPA has indicated that the list is subject to change in future rules.

National Ambient Air Quality Standards (NAAQS) – The EPA's Office of Air Quality Planning Standards has established NAAQS for six pollutants, referred to as the criteria air pollutants. The pollutants are ozone, nitrogen dioxide, particulate matter ($PM_{2.5}$ and PM_{10}), sulfur oxides, carbon monoxide, and lead.

National Environmental Policy Act – The National Environmental Policy Act of 1969 (NEPA) is the basic national charter for the protection of the environment. It establishes environmental policy, provides an interdisciplinary framework to prevent undue environmental damage, and contains procedures to ensure that decision-makers consider environmental factors. The NEPA process evaluates alternative courses of action based on the dual purpose of environmental protection and transportation improvement goals. The range of alternatives analyzed encompasses a variety of factors including social, economic, and environmental effects.

Nonattainment Area – Any geographic region of the United States which has been designated as nonattainment under Section 107 of the CAAA for any pollutant for which an NAAQS has been established. These areas must take specific emission reduction measures to reach compliance with NAAQS.

Non-exempt Project – A project that does not appear in Table 2 of the EPA Final Conformity Rule or CDOT's November 21, 2017 memo titled "Transportation Conformity: Exempt Project Interpretations for 40 CFR 93.126" Typical non-exempt projects are projects that add capacity, add auxiliary lanes, build a new interchange, or build a new roadway on a new location.

Persistence Factor – A factor used to derive eight-hour pollutant concentrations from predicted worst-case, one-hour levels. The use of a persistence factor accounts for a combination of the variability in both traffic and meteorological conditions that typically occur over the eight-hour averaging periods.

Project-Level Conformity – All Federally-funded or approved highway and public transportation projects subject to conformity are required to meet project-level conformity requirements. To demonstrate project-level conformity, a project must come from a conforming RTP and TIP or STIP; its design concept and scope must not have changed significantly from that in the RTP and TIP or STIP; and the conformity analysis must have used the latest planning assumptions and latest emissions model. In CO and PM_{10} maintenance areas, an additional "hot-spot" analysis may be necessary to determine if a project has localized air quality impacts.

[88] https://www.epa.gov/iris

Qualitative Analysis – Non-modeled air quality analysis for projects that are determined to be insignificant from an air quality perspective and will not obviously impact local air quality. These analyses typically provide a general discussion as to why air quality impacts are not anticipated, based on characteristics of the proposed project, such as improved travel speeds, reduced delay at signalized intersections, improved merge operations, or safety benefits that will reduce episodic delay from incidents.

Quantitative Analysis – Detailed modeled air quality analysis where multiple factors are evaluated and compared by the use of measurable data and results. Typical quantitative air quality analyses rely on the air quality emission and dispersion models to predict total pollutant concentrations at specific locations. These concentrations are typically compared to the NAAQS to ensure the project would not lead to project-level air quality impacts.

Queue Link – Used in a hot-spot model to model a straight segment of roadway with a constant width and emission source strength, on which vehicles are stopped and idling for a specified period of time. Also see "Free Flow Link."

Present Day – Reference to the current year of data that should be used in an air quality analysis. It can be the existing, or base, year or the project opening year. The existing, or base, year occurs prior to the project opening year. For example, for an analysis being performed in 2019, the existing, or base, year might be 2018 or 2019. The project opening year is the year that the project construction is expected to be completed at the time that the analysis was done.

Regional Conformity – Regional conformity analyses are conducted to ensure that total emissions associated with transportation plans and programs are within regional emission budgets identified in the SIPs. Conformity is a way to ensure that federal funding and approval are only given to those transportation activities that are consistent with air quality goals for a given region, as identified in the SIP.

Regionally-Significant Project – The Conformity Rule defines a regionally-significant project as a transportation project other than an exempt project that is on a facility which serves regional transportation needs (such as access to and from the area outside of a region, major activity centers in the region, major planned developments such as retail malls or sports complexes, or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel. The Colorado Conformity SIP uses the same definition. Three MPOs have developed criteria to help determine if a project is regionally significant: DRCOG, NFRMPO, and PPACG.

Sensitive Locations – Locations where people tend to congregate, such as day care centers, schools, retirement homes, hospitals, or residences, that are close to a transportation project.

State Implementation Plan (SIP) – SIPs are agreements between the EPA and state Air Quality Agencies (e.g., APCD), developed to demonstrate how the state will comply with the CAA. It ensures that emissions associated with transportation activities do not worsen air quality or interfere with the attainment of EPA standards for pollutants of concern. A separate SIP is prepared for each pollutant for which an area is in nonattainment or maintenance.

Transportation Control Measure (TCM) – Any measure that is specifically identified and committed to in a SIP, including a substitute or additional TCM that is incorporated into a SIP through the process established in CAA Section 176(c)(8), that is either one of the types listed in Section 108 of the CAA, or

any other measure for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congested conditions. Vehicle technology-based, fuel-based, and maintenance-based measures which control the emissions from vehicles under fixed traffic conditions are not TCMs for the purpose of conformity. If an EPA-approved SIP includes any TCMs, the MPO must show, as part of the conformity determination, that the measures are being implemented on schedule and given priority for Federal funding. If a TCM is not included in an approved SIP, such measures are not TCMs for the purpose of conformity, and the MPO does not have to demonstrate their timely implementation. Although some Colorado SIPs contain control measures, they are not considered TCMs for conformity purposes. Colorado no longer has any TCMs in any SIPs.

Transportation Improvement Program (TIP) – The TIP is a prioritized, multi-year program for the implementation of regional transportation projects. It serves as a management tool to ensure the most effective use of funding for transportation improvements.

COLORADO
Department of Transportation

APPENDIX C
FREQUENTLY ASKED QUESTIONS

FREQUENTLY ASKED QUESTIONS (FAQS)

1. Q: Why must air quality be considered on CDOT projects?

   A: The Clean Air Act (CAA) requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for common air pollutants. The CAA requires each state to develop a State Implementation Plan (SIP). Federal actions must conform to the SIP's purpose. The SIP requires demonstration of conformity. Conformity means a project must not cause a new air quality violation, worsen an existing violation, or delay timely attainment. The Clean Air Act Amendments (CAAA) was enacted with the power to penalize states by taking Federal transportation monies away from projects if air quality standards are not met. In addition to conformity, some air quality analyses are conducted for NEPA purposes pursuant to FHWA and CDOT guidance, e.g., mobile source air toxics analysis.

2. Q: How is it determined if an air quality analysis is needed on a project?

   A: This AQ-PLAG should be followed in order to determine if air quality analysis is needed for a project. When it is uncertain if an air quality analysis is needed or not, consult with a CDOT air quality specialist.

3. Q: What are nonattainment and maintenance areas and what is the difference between the two?

   A: Nonattainment and maintenance areas are geographic areas that have specific air quality requirements including pollution controls, analysis, and programs. A nonattainment area is an area that does not meet the NAAQS. A maintenance area was formerly in nonattainment and was redesignated to attainment with a maintenance plan.

4. Q: Who determines where the nonattainment and maintenance areas are?

   A: EPA establishes national ambient air quality standards (NAAQS) for several pollutants. APCD proposes area designations for attainment and nonattainment based on 3 years of ambient air monitoring data for PM_{10} and ozone and 2 years of data for CO. EPA reviews this data and determines if the areas should be designated as attainment or nonattainment. Nonattainment areas achieve the NAAQS when 3 years of ambient air monitoring data is lower than the NAAQS. APCD then proposes to redesignate the area as attainment and proposes a maintenance plan for the area to maintain compliance with the NAAQS. The Clean Air Act requires states to develop a general plan to attain and maintain the NAAQS in all areas of each state and a specific plan to attain the standards for each area designated nonattainment for a NAAQS. These plans, known as SIPs, are developed by state and local air quality management agencies and submitted to EPA for approval.

5. Q: How can I find out if a project is located in a maintenance or nonattainment area?

   A: Visit *CDOT's OTIS website* (see "Map View"), visit *APCD's website* (click on "Designation Areas" under the map), see 40 CFR Part 81.306, or visit *USEPA's Green Book Nonattainment Areas* website.

6. Q: What is Transportation Conformity?

   A: Transportation conformity is a way to ensure that Federal funding and approval goes to those transportation activities that are consistent with air quality goals. It is the link between air quality and transportation planning.

7. Q: Where can I find more information on General Conformity Rules?

   A: More information on the General Conformity Rules can be found on EPA's website: *https://www.epa.gov/general-conformity* or on FHWA's website: *https://www.fhwa.dot.gov/ENVIRonment/air_quality/conformity/policy_and_guidance/faqs/genfaqsmemo.cfm*

8. Q: What type of CDOT project might be subject to the General Conformity Rule, instead of Transportation Conformity?

   A: The Transportation Conformity Rule applies only to federally-funded highway and transit projects. It is rare, but some non-traditional projects, such as intermodal freight projects (i.e. railroad), may be subject to the General Conformity Rule[89] instead of the Transportation Conformity Rule. For multimodal projects, both types of conformity may be required. For such projects, the project team should use the interagency consultation process to determine the steps needed to satisfy General Conformity, and if applicable, Transportation Conformity requirements.

9. Q: Do I need to consider ozone in a project-level air quality analysis?

   A: Yes. Although ozone is a criteria pollutant considered at the regional scale and not at a project-level scale, conformity with the regional analysis does need to be shown as part of a project-level conformity determination.

10. Q: What is a hot-spot analysis?

    A: A hot-spot analysis is defined in 40 CFR 93.101 as an estimation of likely future localized pollutant concentrations and a comparison of those concentrations to the relevant NAAQS.

11. Q: What should I do to determine if a particular roadway segment(s) should be included in the quantitative air quality analysis?

    A: Contact CDOT to initiate the interagency consultation process. The specifics on any quantitative air quality analysis, including project limits in this case, should be discussed between the agencies for an agreeable determination.

12. Q: What is dispersion modeling and when is it be required to be performed?

    A: Dispersion modeling is the method to estimate ground level concentration of pollutants from a source or road project and the modeling impact of emissions at defined receptor locations.

13. Q: What are the mitigation requirements for air quality impacts?

    A: Mitigation for air quality impacts has not been required in Colorado to date; however, if it becomes a requirement, the resource agencies should be consulted. Mitigation could potentially involve special activities performed during the roadway construction phase.

[89] See FHWA's "*Transportation and General Conformity Frequently Asked Questions*" (April 6, 2011)

COLORADO
Department of Transportation

APPENDIX D
DENVER METRO PM_{10} MAINTENANCE AREA CONTROL MEASURES

February 2019

DENVER METRO PM_{10} MAINTENANCE AREA CONTROL MEASURES

The following control measures are specified in Chapter 4 of the Denver Metropolitan PM_{10} SIP (December 15, 2005):

A. Maintenance Plan Control Measures

1. Control Measures Included in the Maintenance Plan

The Denver metropolitan area will rely on the control programs listed below to demonstrate maintenance of the 24-hour PM10 standard through 2022. No emission reduction credit has been taken in the maintenance demonstration for any other current State or local control programs and no other such programs, strategies, or regulations shall be incorporated or deemed as enforceable measures for the purposes of this maintenance demonstration.

This maintenance plan does not include any "transportation control measures", as that term is defined at 40 CFR 93.101. Although section VIII.D of the Colorado State Implementation Plan for Particulate Matter (PM10), Denver Metropolitan Nonattainment Area Element approved by the EPA in 1997 was entitled "TRANSPORTATION CONTROL MEASURES", the measures described in that section have not been incorporated into the SIP. Section VIII.D described the transportation network that was used to estimate the number of vehicle miles traveled in the nonattainment area, but it did not specify the inclusion of such measures in the SIP. In estimating the vehicle miles traveled for purposes of this maintenance plan, DRCOG made reasonable assumptions about the transportation network, but such assumptions are not codified as transportation control measures for incorporation into the SIP.

The maintenance plan takes credit for the following federally-enforceable control measures, which, except where otherwise noted, are included in the SIP:

a. Federal fuels and tailpipe standards and regulations

Credit is taken in this maintenance plan for current federal regulations concerning motor vehicles, fuels, small engines, diesels, and non-road mobile sources. While credit is taken for these federal requirements, they are not part of the Colorado SIP.

b. Woodburning

Air Quality Control Commission Regulation No. 4 covers wood stoves, conventional fireplaces and woodburning on high pollution days, as approved by EPA as part of the federal SIP in 1997. This maintenance plan makes no changes to Regulation No. 4.

Many local governments in the Denver region have adopted ordinances or resolutions regulating woodburning activities within their jurisdictions. In its 1997 approval of the Denver region's PM_{10} SIP, EPA incorporated by reference local woodburning ordinances and resolutions adopted by Arvada, Aurora, Boulder, Broomfield, Denver, Douglas County, Englewood, Federal Heights, Glendale, Greenwood Village, Jefferson County, Lafayette, Lakewood, Littleton, Longmont, Mountain View, Sheridan, Thornton, and Westminster. These ordinances and resolutions remain in the SIP, unless they are removed or revised through a SIP revision.

Residential woodburning emissions are based on data derived from the Metropolitan Denver Woodburning Survey (2002).

c. Street Sanding

Air Quality Regulation No. 16 covers street sanding and sweeping requirements. Revisions to this regulation were adopted on April 19, 2001 in conjunction with the previously approved maintenance plan. Regulation No. 16 remains in the SIP and this maintenance plan makes no revisions to the regulation.

Regulation No. 16 currently requires the following:

1. 30% emissions reduction region-wide (20% in the foothills),
2. 50% emissions reduction in the central Denver area (bounded by 38th Ave., Federal Blvd., Louisiana Ave., and Downing St.),
3. 54% reduction on I-25 between University and 6th Avenue; and
4. 72% emission reduction in the central business district (bounded by Colfax Avenue, Broadway, 20th Street, Wynkoop and Speer Boulevard).

All of these requirements remain effective, until they are removed or revised by a future SIP revision.

d. Stationary Sources

Emissions from stationary sources of pollution are regulated by several Air Quality Control Commission Regulations:

1. Regulation No. 1 regulates emissions of particulates, smoke, sulfur dioxide, and nitrogen oxides and establishes limits on these pollutants from covered sources. Sections I-IV, Sections VI-IX, and Appendices A and B are already included in the approved SIP. This maintenance plan incorporates the regulatory limits in calculations of maximum allowable emissions for stationary sources. No additional revisions are made to Regulation No. 1 as part of the maintenance plan revision.
2. Revisions to Regulation No. 1 also stipulate that Section VIII, Restrictions on the Use of Oil as a Backup Fuel, shall apply in the Denver PM10 attainment/maintenance area in the same manner as it did for the Denver PM10 nonattainment area.
3. Regulation No. 3 lays out provisions of the State of Colorado's stationary source permitting program. Parts A and B of Regulation No. 3 are already included in the approved SIP. Part C implements the federal operating permit program and this reference to Part C of Regulation No. 3 shall not be construed to mean that these regulations are included in the SIP.
4. Regulation No. 6 implements the federal standards of performance for new stationary sources. This maintenance plan makes no changes to this regulation. This reference to Regulation No. 6 shall not be construed to mean that these regulations are included in the SIP.
5. The Common Provisions Regulation contains general provision applicable to all emission sources in Colorado. This maintenance plans makes no changes to this regulation.

The emission inventories for stationary sources supporting the maintenance demonstration have followed all relevant EPA rules and guidance documents for calculating such emissions. Further information, including individual emissions calculations for major stationary sources, is contained in the Technical Support Document accompanying this maintenance plan.

As an attainment/maintenance area since September 16, 2002, the State and federal attainment PSD permitting requirements remain in effect in the Denver metro area. This program requires the application of Best Available Control Technology when constructing new or modified major stationary sources.

COLORADO
Department of Transportation

APPENDIX E
REFERENCES

REFERENCES

U.S. Department of Transportation, Federal Highway Administration. Guidance for Preparing and Processing Environmental and Section 4(F) Documents. FHWA Technical Advisory T 6640.81. October 30, 1987.

U.S. Department of Transportation, Federal Highway Administration. Interim Guidance Update on Mobile Source Air Toxics Analysis in NEPA. October 18, 2016.

U.S. Environmental Protection Agency. Clean Air Act. 42 USC §7401 et seq. (1970). As Amended Through P.L. 109-201, February 24, 2004.

U.S. Environmental Protection Agency. Guideline for Modeling Carbon Monoxide from Roadway Intersections. Report Number EPA-454/R-92-005. November 1992.

U.S. Environmental Protection Agency. $PM_{2.5}$ and PM_{10} Hot-Spot Analyses in Project-Level Transportation Conformity Determinations for the New $PM_{2.5}$ and Existing PM_{10} National Ambient Air Quality Standards; Final Rule (40 CFR Part 93). March 10, 2006.

U.S. Environmental Protection Agency, Office of Transportation and Air Quality. Motor Vehicle Emission Simulator (MOVES) User Guide for MOVES2014. Report Number EPA-420-B-14-055. July 2014.

U.S. Environmental Protection Agency. National Air Toxics Assessments. Retrieved from http://www.epa.gov/airtoxics/natamain/.

U.S. Environmental Protection Agency. National Ambient Air Quality Standards. Retrieved from https://www.epa.gov/national-air-toxics-assessment

U.S. Environmental Protection Agency. MOVES2014 User Interface Manual. Report Number EPA-420-B-14-057. July 2014.

U.S. Environmental Protection Agency. Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas. Report Number EPA-420-B-15-084. November 2015.

U.S. Environmental Protection Agency. MOVES2014 and MOVES2014a Technical Guidance: Using MOVES to Prepare Emission Inventories for State Implementation Plans and Transportation Conformity. Report Number EPA-420-B-15-093. November 2015.

U.S. Environmental Protection Agency. Using MOVES2014 in Project-Level Carbon Monoxide Analyses. Report Number EPA-420-B-15-028. March 2015.

U.S. Environmental Protection Agency. User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections. Report Number EPA-454/R-92-006 (Revised). September 1995.