COLORADO
Department of Transportation
Division of Transportation Development

AIR QUALITY PROGRAM BOOK

MARCH 2015

Contents

List of Figures

Page

List of Tables

Page

1. Introduction

The Colorado Department of Transportation (CDOT) has several programs that address various aspects of air quality related to transportation in response to several statutory and regulatory mandates. These programs have an overarching goal of improving and maintaining air quality within the State of Colorado and are described below.

The overall purpose of CDOT's Air Quality Program Book is to provide a single-source reference that summarizes the major elements of CDOT's various Air Quality Programs. The Air Quality Program Book is intended to give the user the opportunity to assess their specific needs and to provide direction to additional information as needed.

The missions of CDOT's various Air Quality Programs are to:

- Ensure compliance with the transportation conformity requirements for CDOT projects.
- Ensure comprehensive evaluations of CDOT projects under the National Environmental Policy Act (NEPA).
- Research and promote innovative best management practices.
- Support improving the overall air quality in Colorado.
- Provide effective air quality education to CDOT staff and others.
- Facilitate cooperation between CDOT, regional transportation planning agencies, other state agencies, other air quality program managers, businesses and the public.

The Air Quality Program Book supports these missions by providing vital program information in a user friendly format, enabling users, regardless of prior experience with the CDOT Air Quality Programs, to identify the processes, roles and responsibilities that are integral to ensure compliance with the existing regulations.

Overall, the Air Quality Programs address a range of activities, from project planning and design to construction and maintenance facilities. This book summarizes the regulatory setting for each distinct air program, details the roles and responsibilities, tools and techniques, reporting requirements, and interrelationships with other elements of the Air Quality Programs.

The Air Quality Program Book is intended for use by CDOT staff, consultants, contractors and local entities involved in CDOT-administered projects. This Program Book is intended to aid the user in determining the actions required for a given situation with respect to air quality. While intended to provide some direction, this Program Book is not intended to be a technical guidance document and does not relieve the user of the responsibility to keep abreast of industry-specific changes and trends within the air quality regulatory structure.

1.1. Air Quality Program Book Organization

The remainder of the Air Quality Program Book is organized as follows:

- Section 2: Regulatory overview of the federal and state laws, regulations and mandates that apply to the overall Air Quality Program. (Note: relevant local regulations are rare.)
- Section 3: Summary of the Regional Air Quality Conformity Program.
- Section 4: Summary of the Project Level Air Quality Conformity Program.
- Section 5: Summary of the National Environmental Policy Act Air Program.
- Section 6: Summary of the Construction Air Quality Program.
- Section 7: Summary of the Air Research and Education Program.
- Section 8: Summary of the Greening Government and Climate Change Program.

- Section 9: Description of the required and/or available training for the air quality programs.
- Section 10: A list of available resources and references for air quality practitioners.

The sections pertaining to the specific air quality programs (Sections 3 through 8) include the following:

- Purpose: An explanation of the overall goals of the program.
- Regulatory Setting: A summary of the particular laws and regulations applicable to the program.
- Interrelationships: A description of the connections between the various CDOT air programs.
- Roles and Responsibilities: A list of the persons involved in the program, their typical roles and tasks required to fulfill the goals of the program.
- Tools and Techniques: A list of methods and resources available for the program.

1.2. Program Book Updates

CDOT will issue updates and changes to this Program Book on an as-needed basis, based on changes in the regulatory environments at the state and federal levels, as well as in response to user comments. Comments regarding the content of this document are welcome and should be addressed to:

Colorado Department of Transportation
Air Quality Program Manager
Shumate Building
4201 East Arkansas Avenue
Denver, CO 80222

2. Regulatory Setting and Programs Coordination

Air quality is a complex and technical environmental resource as related to transportation. There are a number of laws and regulations that are important to the various Air Quality Programs. In addition, there are several government agencies and organizations (other than CDOT) that may have substantial roles in an Air Quality Program. Consequently, coordination and liaisons among these agencies and individuals are important to the Air Quality Programs.

A major, fundamental focus of the Air Quality Programs is the emissions of air pollutants from transportation systems, which can be harmful to human health, the natural environment or the integrity of man-made materials. These emissions can also contribute to regional haze and degraded visibility. Some pollutants can contribute to atmospheric chemistry changes that deteriorate protective functions of the atmosphere, such as the protective screening provided by stratospheric ozone.

The major laws and regulations affecting the various Air Quality Programs are described in Table 2-1. The predominant federal law that drives many of the Air Quality Programs is the Clean Air Act and its amendments (CAAA). In short, the primary functions of the CAAA are to protect human health and the natural and man-made environments, and to preserve visibility of scenic vistas by preventing the degradation of air quality nationwide. Air quality regulation and analysis are dynamic situations, so the reader is cautioned that there may be revisions or additions to this list since the Program Book was last updated.

Table 2-1. Summary of Related Air Quality Laws, Regulations, Guidance and Initiatives

Law or Regulation	Description
Clean Air Act and Amendments: United States Code Title 42 Chapter 85 Sections 7401-7671 (42 USC 85 §7401-7671) and: ▪ Code of Federal Regulations Chapter 40 Part 93 (40 CFR 93)—Conformity ▪23 CFR 450—Regional Planning	These are the law and several regulations (relevant to transportation) that enact and implement the CAAA, respectively. CAAA is the comprehensive federal law that regulates air emissions from stationary and mobile sources and authorized the establishment of National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants. The purpose of the CAAA is to protect and enhance air quality to promote public health and welfare and the productive capacity of the nation. The CAAA addresses "criteria" air pollutants through the NAAQS, the Prevention of Significant Deterioration program, as well as hazardous air pollutant regulations. The CAAA provides the U.S. Environmental Protection Agency (EPA) the authority to designate NAAQS "nonattainment" areas. Areas that have been or are nonattainment are the subject of State Implementation Plans (SIPs) designed to move (or keep) the area into attainment of the NAAQS, which often places corrective requirements on the transportation sector and mobile-source pollutant sources. These areas are subject to the Transportation Conformity Rule (40 CFR 93.104), which directs that federally-supported transportation activities must be consistent with (i.e., "conform to") the purposes of a SIP. EPA has promulgated regulations to address regional haze under the CAAA.
40 CFR 81.306	Provides attainment status designations of areas in Colorado for air quality planning purposes.

Law or Regulation	Description
40 CFR 52 Subpart G	Provides approval and promulgation of Colorado's air quality implementation plan.
National Environmental Policy Act: 42 USC 55 §4321-4370 and 40 CFR 1500	These are the law and regulations that enact and implement NEPA, respectively. NEPA is the basic federal charter for protection of the environment. It establishes policies, sets goals, and provides means for carrying out the policies. It contains "action-forcing" provisions to ensure that federal agencies act according to the letter and spirit of NEPA. NEPA applies for all federal or federally-funded actions. NEPA can require air quality impact assessments in relevant cases.
Moving Ahead for Progress in the 21st Century (MAP-21) Public Law (PL) 112-141 **Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU):** Public Law (PL) 109-59 §1101 – 11167	Provisions of MAP-21 July 2012 – need update Provisions of SAFETEA-LU reauthorized the federal Congestion Mitigation and Air Quality (CMAQ) Improvement Program, which provides funding to areas that face the challenge of attaining or maintaining the NAAQS. It also amended 42 USC 85 §7506 (i.e., CAAA §176(c)) regarding transportation conformity. Specific changes made to the federal transportation conformity provisions included: • Reduced frequency of conformity determinations for regional transportation plans (RTPs) and transportation improvement programs (TIPs) from at least every three years to at least every four years. • Increased the time (two years instead of 18 months) available to make a conformity determination in response to a new motor vehicle emissions budget in a SIP. • Provided a 1-year grace period before the ramifications of a conformity lapse apply when certain conformity deadlines are missed. During the grace period, conformity determinations for certain projects can still be made. • Gave the flexibility to shorten the timeframe covered by a conformity determination, if the local transportation planning agency so chooses. • Streamlined the requirements for state conformity procedures (conformity SIPs). • Allowed substitution or addition of transportation control measures without a SIP revision.
Colorado Air Quality Control Commission (AQCC) Regulations	The AQCC has promulgated a number of air quality control regulations, several of which are relevant to transportation sources including: • **Regulation 3** (Code of Colorado Regulations Title 5 Part 1001-5 [5 CCR 1001-5])—sets requirements for an Air Pollution Emission Notice (APEN) and a permit for construction activities, stationary sources, etc. • **Regulation 10** (5 CCR 1001-12)—sets the criteria for analysis of transportation conformity for transportation plans, programs and projects; defines roles and responsibilities

Law or Regulation	Description
	(Note: Regulation 10 has not formally been approved by EPA and has been in an interim status since 2008). • **Regulation 11** (5 CCR 1001-13)—regulates the motor vehicle emissions inspection programs. • **Regulation 16** (5 CCR 1001-18)—regulates street sanding programs. • **Air Quality Standards** (5 CCR 1001-14)—establishes the state air quality standards and the various SIP transportation-sector pollutant emission budgets. • **State Implementation Plan Specific Regulations** (5 CCR 1001-20)—defines specific requirements concerning air quality control strategies and contingency measures for nonattainment areas in the state, which can include motor-vehicle-related actions.
Colorado Revised Statutes (CRS)	Several Colorado statutes have been enacted that apply to air quality, including: • **CRS Title 25 Article 7** (CRS 25-7)—enacted to foster the health, welfare, convenience, and comfort of the inhabitants of the State of Colorado and to facilitate the enjoyment and use of the scenic and natural resources of the state, to achieve the maximum practical degree of air purity in every portion of the state, to attain and maintain the NAAQS, and to prevent the significant deterioration of air quality in those portions of the state where the air quality is better than the NAAQS. • **CRS 42-4**—enacted to implement the vehicle emissions inspection program. • **CRS 42-14**—set idling standard for diesel vehicles.
Colorado General Assembly	In 1974, the General Assembly enacted House Bill 74-1041, which further defined the authority of state and local governments in making planning decisions for matters of statewide interest. State and federal highways can be matters of statewide interest that fall under the "1041 powers." The 1041 powers allow local governments to identify, designate and regulate areas and activities of statewide interest through a local permitting process. The general intention of the 1041 powers is to allow local governments to maintain their control over particular development projects even where the development project has statewide impacts. Some local governments have enacted 1041 regulations that may affect highway planning or construction. Senate Bill 90-108, known as the FASTER legislation, includes specific line item direction to reduce greenhouse gas (GHG) emissions and to address emissions reductions in transportation project planning.

Law or Regulation	Description
Colorado Executive Orders	Several executive orders have been issued by Colorado governors affecting the Air Quality Programs, including: • **D 004 08—**sets the State's GHG reduction goals, directing the Colorado Department of Public Health and Environment (CDPHE) to develop regulations mandating the reporting of GHG emissions for major emitters, requesting the Public Utilities Commission to require utilities to submit electric resource plans for meeting GHG reduction goals, and directing CDPHE to propose regulations requiring reduced GHG emissions from passenger motor vehicles. • **B 002 09—**authorizes the Regional Air Quality Council as the lead air quality planning agency for the Denver metropolitan area. • **B 2011-002—**extends and amends the Regional Air Quality Council as lead air quality planning agency for the Denver metropolitan area. • **B 2010-006—**Greening of State Government is designed to lower energy use and costs by state government agencies.
Governor's Energy Office - Colorado Climate Action Plan	From Colorado Executive order D 004 08, the Colorado Climate Action Plan includes a profile of current emissions in Colorado, a discussion of the State's GHG reduction goal, and presents many Colorado climate initiatives, such as clean cars and greening of state government.
Colorado Department of Transportation	CDOT has several policies and guidelines that relate to air quality, including: • **Environmental Stewardship Guide—**this guide documents CDOT's environmental ethic and describes the process by which social, economic, environmental, and engineering considerations are integrated in all aspects of CDOT's decision-making. • **NEPA Manual—**this manual provides guidance on preparing and processing documents for CDOT that comply with NEPA and other applicable state and federal environmental laws affecting transportation projects in Colorado. • **Air Quality Procedures Manual—**derived from the NEPA manual; the procedures manual provides guidance on policies and technical procedures for air quality analysis for CDOT and CDOT-administered projects. • **Policy Directive 1901** (PD1901)–In response to Executive Order D 004 08, PD1901 outlines CDOT's policies on air quality and GHG emissions resulting from the development and management of the state transportation system. PD1901 also lists several strategies for implementation such as the development of educational materials for the public, evaluation of long term transportation plans, and research involving traffic control options and transportation infrastructure.

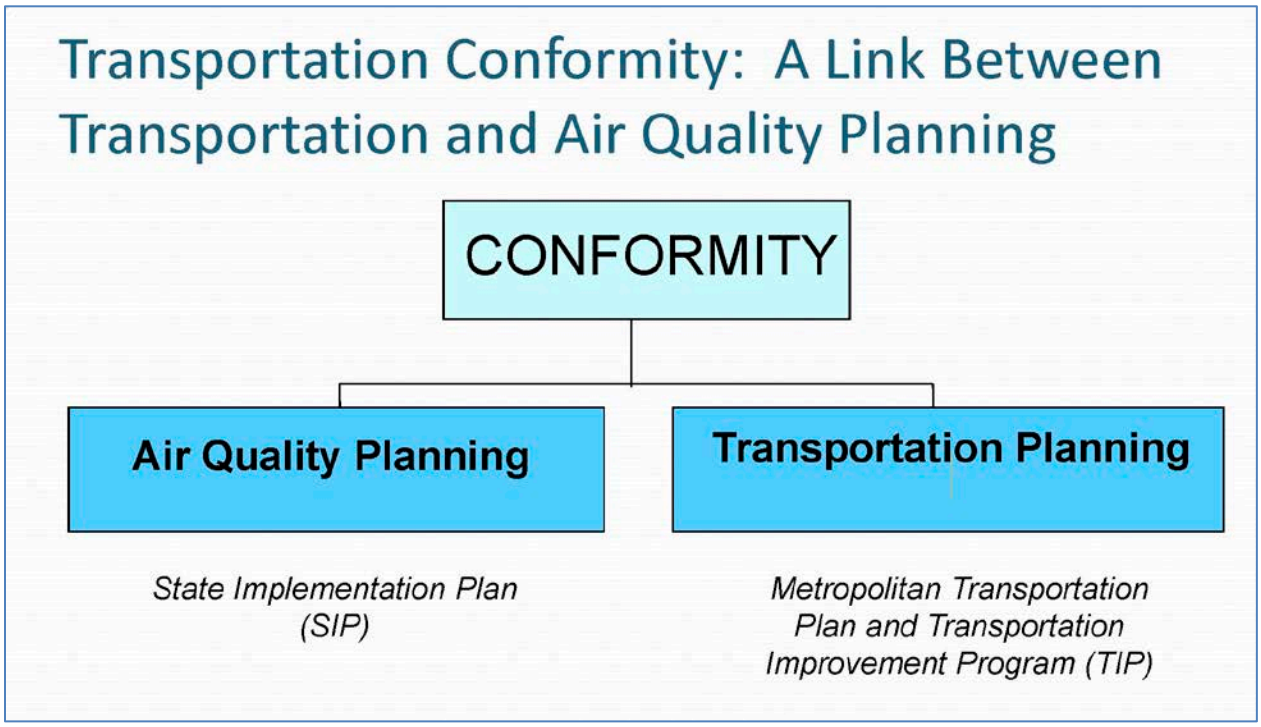
Law or Regulation	Description
	• **Air Quality Action Plan—**the Action Plan outlines the objectives and proposes strategies to develop, test and implement the PD1901 goals to reduce unregulated air pollutant emissions, primarily GHGs and mobile-source air toxics. Programs implemented through the Action Plan act as programmatic mitigation for air quality impacts and effects caused by transportation projects. • **Colorado Energy Smart Transportation Initiative—**The mission of the Energy Smart Transportation Initiative was to develop a framework for considering energy efficiency and GHG emissions in transportation decision-making. Improving the energy efficiency and reducing associated GHG emissions impacts of Colorado's transportation sector will: • Retain more dollars and jobs in the Colorado economy; • Address air quality issues, such as ozone and GHG emissions; • Improve the environment and the health of Coloradans; • Demonstrate that Colorado is a national leader in transportation innovation; and • Overall, enhance the quality of life for Colorado's citizens.

3. Regional Air Quality Conformity Program

This program supports regional-level air quality conformity analyses and reviews that are conducted for the long-term RTPs and short-term TIPs. This program centers on the transportation-related NAAQS pollutants and conformity with the related SIPs. This program applies in those areas of Colorado that are NAAQS attainment/maintenance or nonattainment areas for carbon monoxide (CO), particulate matter or ozone.

The overall objective of the federal Transportation Conformity Rule is to ensure that transportation plans and projects, and their associated air pollutant emissions, are consistent with the purpose, goals and methods of the relevant nonattainment and/or maintenance SIPs. These two branches of conformity (Figure 3-1) must work in concert in that planned transportation improvements must not have adverse air quality consequences and air quality improvements must be important considerations in planning transportation improvements. Note that the Transportation Conformity Rule applies in nonattainment and attainment/maintenance areas but not in attainment and unclassified areas.

Figure 3-1. Air Quality and Transportation Planning Connection



There are two levels of analysis needed to demonstrate conformity for roadway improvements. The first level defines the purpose of the Regional Air Quality Conformity Program: transportation improvements must be included in a fiscally-constrained, air-quality-conforming RTP and TIP to address potential long-term and regional air quality impacts from modifying the transportation system. This means that if, in total, the transportation-sector emissions within the SIP region with the proposed project(s) in place are calculated to be within their established SIP motor vehicle emission budgets, no adverse regional air quality impacts are expected to occur as a result of the planned project(s). Second, an individual

project cannot create new, increase the frequency of or exacerbate the severity of air quality violations (Section 4).

There are occasions when regional conformity actions for projects will not occur in the typical sequence. An example is when planning or NEPA evaluation for a proposed improvement project needs to occur before the project's construction funding is secured or identified. (Note: there are specific requirements for project funding for inclusion in a "fiscally constrained" transportation plan which must be met before transportation conformity of a project can be demonstrated.) In such cases, the planning/evaluation activities for the project may proceed with regional conformity evaluation coming later. However, when the project's funding is resolved, inclusion in a fiscally-constrained, air-quality-conforming RTP and TIP is still required to demonstrate conformity before construction-related activities (e.g., right-of-way purchases or construction) can occur. Often, these situations are addressed through the routine amendments made to the RTPs and TIPs:

- **Transportation Plan Amendments—**to be completed by CDOT.
- **Transportation Improvement Program Amendments—**to be completed by CDOT.

Regional transportation planning efforts within the SIP areas often include emissions reduction actions in an effort to support compliance with the NAAQS or attainment of general pollutant reduction goals. Frequently, the actions are implemented region-wide to provide as broad and as large a benefit as possible. These actions can be important considerations for regional planners in achieving and demonstrating regional conformity with the SIPs.

Several State of Colorado agencies have enacted programs and requirements that relate to air quality and are distinct from federal air quality requirements. These include climate change and GHG regulatory requirements, the FASTER legislation, several Executive Orders, and state emissions reduction strategies. Furthermore, some local governments have enacted ordinances that have air quality ramifications or have enacted "1041" regulations (Section 2) that may apply to highways.

3.1. Purpose

The purposes of the Regional Air Quality Conformity Program are:

- Support and assist in the regional air quality analyses and reviews for improvement projects proposed within applicable NAAQS nonattainment and attainment/maintenance areas during development or amendment of RTPs or TIPs
- Plan and prioritize the budgetary constraints on CDOT transportation projects by coordinating within and among metropolitan planning organizations (MPOs) and transportation planning regions (TPRs)
- Ensure awareness of and compliance with the various state and local initiatives that apply to air quality and may affect CDOT's development, operation and/or maintenance of the state transportation system

These purposes are driven by: mandates under the CAAA that planning for transportation systems be consistent with and conform to the relevant SIP(s); that neither the transportation system as a whole nor individual transportation projects cause new air quality violations or worsen existing violations; and, that State actions comply with relevant State goals and directives. These mainly apply in those areas that are nonattainment or attainment/maintenance areas for CO, particulate matter, ozone or nitrogen dioxide, which are the NAAQS pollutants primarily associated with motor vehicle emissions. (Note: there

currently are no nonattainment or attainment/maintenance areas for nitrogen dioxide in Colorado.) However, the State initiatives and directives apply statewide.

3.2. Program Regulatory Setting

Air quality is regulated primarily under the CAAA and supported by regional conformity regulations in 40 CFR 93 §106-115 and planning requirements in 23 CFR 450. Other relevant air quality legislation was included in SAFETEA-LU (PL 109-59 §1101 – 11167). The Regional Air Quality Conformity Program applies to mobile-source air pollutants for which NAAQS have been established. In general terms, the regulations include requirements that transportation systems and individual projects must conform to the relevant SIPs and may not worsen local air quality conditions. AQCC Regulation 10 provides an outline of roles and responsibilities for CDOT under transportation conformity rules specific to Colorado. AQCC Regulation 11 regulates the motor vehicle emissions inspection programs (typically part of a relevant SIP). AQCC Regulation 16 regulates street sanding programs (often part of particulate matter SIPs).

The state and local laws and ordinances relevant to this program are described in Section 2 and include:

- Several sections of the CRS
- Several Executive Orders including D 004 08 and B 2010-006
- Climate Action Plan
- Senate Bill 90-108 (i.e., FASTER)
- House Bill 74-1041
- Energy Smart Transportation Initiative
- CDOT PD1901

Some local governments have enacted ordinances for general construction activities that must be met within their jurisdiction, e.g., fugitive dust control plans. Also, local governments may enact "1041" regulations (Section 2) that may apply to highways and may have air quality aspects that require attention—this is highly variable and should be examined case by case.

3.3. Interrelationships

This program works in conjunction with other existing air quality programs, primarily the Project Level Air Quality Conformity Program (Section 4) and the NEPA Air Program (Section 5). The relationships are described in Table 3-1.

Table 3-1. Regional Air Quality Program Interrelationships with Other Programs

Project Level Air Quality Conformity Program
Projects proposed within nonattainment and attainment/maintenance areas must demonstrate conformity with the applicable SIP(s) under the Transportation Conformity Rule. Depending on the air pollutant, this can include conformity demonstrations at both the regional and project levels. For relevant project-level pollutants (i.e., CO and particulate matter) and geographic areas, successful conformity demonstrations for potential pollutant "hot spots" are also necessary to clear a project at the local level.
National Environmental Policy Act Air Program
CDOT's NEPA Air Program often includes evaluation of air quality effects from potential improvements in support of alternatives screening/selection, impacts evaluation, clearance for construction, etc. for NEPA projects. Regional level conformity evaluations prepared for RTPs and TIPs are required to document project compliance with fiscal constraint and local planning assumptions implicit in the SIP.

Air Research and Education Program
This program can have an indirect relationship to the Regional Air Quality Program. Outcomes and advancements produced by the research program could affect the regional program in the long term by changing the fundamental air quality conditions of a region.

3.4. Roles and Responsibilities

CDOT typically has a supporting role to other agencies in the regional conformity demonstrations and determinations for the relevant RTPs and TIPs. The primary conformity roles are with the relevant MPOs and TPRs for the SIP areas and with the CDPHE Air Pollution Control Division (APCD) staff (Figure 3-1). In general terms, the MPO/TPR staff are responsible for producing the future land development (i.e., stationary sources) and transportation (i.e., mobile sources) data for their RTP and TIP areas, which are then provided to APCD staff to generate the necessary pollutant emission factors and calculate the regional air pollutant emissions. The calculated pollutant emissions are then compared to the established SIP emission budgets to determine whether regional conformity has been demonstrated. Various regional, state and federal officials then must approve the formal finding.

CDOT's primary involvement is through programming and providing the planned changes to its roadway network and any necessary supporting traffic data to the relevant MPOs/TPRs. These data are incorporated by the MPOs/TPRs into their regional transportation and planning models, along with other data from partnering cities, counties, etc.

CDOT also supports and cooperates with APCD in their efforts to fulfill roadside monitoring requirements for nitrogen dioxide under a recently promulgated EPA rule. The monitors are generally intended to be indicative of near-road air quality conditions.

Several individuals play roles in the Regional Air Quality Conformity Program within CDOT, including:

- **CDOT Division of Transportation Development (DTD) Planning and Performance Branch Staff—**act as liaison to MPOs/TPRs to ensure the planning process is followed and complies with federal and state (CDOT, 2012) rules. Coordinate with Information Management staff. Provide document review of RTPs and TIPs. Monitor the RTP/TIP processes and conformity. Support and review the conformity analyses/findings of the MPOs/TPRs. Review demographic and road data for conformity findings. Administer and support the CMAQ program, as needed. Support implementation of the State's transportation air quality initiatives (FASTER, GHG reduction, etc.).
- **CDOT DTD Environmental Programs Branch (EPB) Air Quality Manager or Specialist—** provide input on APCD-recommended county designations. Coordinate information dissemination to TPRs, MPOs, local agencies and communities. Provide technical review of emissions budget calculations. Provide document review of RTPs and TIPs. Provide CMAQ support as needed. Provide non-MPO transportation data through CDOT Mobility Group. Support development and implementation of transportation strategies to regional air quality control agencies.
- **CDOT Regional Air Quality Specialist—**may coordinate information dissemination to TPRs, MPOs, local agencies and communities. Provide technical review of emissions budget calculations as needed. May provide document review of RTPs and TIPs. Provide CMAQ support as needed. Support development and implementation of transportation strategies to regional air quality control agencies.

- **CDOT Regional Planner—**develop information on CDOT's planned improvement projects and provide to the MPOs/TPRs for inclusion in the relevant TIPs.
- **CDOT Information Management Staff—**provide traffic volume, signal timing, etc. data for CDOT's highways to the MPOs/TPRs as needed for the regional modeling. Coordinate with Planning and Performance Branch staff.
- **Planning Process—**to be completed by CDOT Planning staff.

An important consideration for this program is AQCC Regulation 10, which defines roles and responsibilities within conformity activities.

3.5. Tools and Techniques

CDOT staff generally has a supporting role to other agencies through the Regional Air Quality Conformity Program; therefore, there are not primary technical tools that CDOT specifically utilizes for this program. The MPOs, TPRs and APCD generally have the primary responsibilities for the technical tasks associated with regional conformity, such as regional transportation modeling and regional air pollutant emissions calculations. There are specific technical tools used by those agencies to fulfill their responsibilities that can be identified by contacting those agencies.

CDOT's primary role is to communicate the planned and programmed changes to its jurisdictional roadways to the other relevant agencies in a regular and timely manner. This is typically accomplished through established coordination/liaison relationships with each of these agencies—this can vary by agency.

Another CDOT responsibility can be to review technical documents produced by other agencies in support of transportation planning and/or air quality conformity determinations. This relies on the technical expertise of the CDOT staff to comment on the methodology and findings documented in the technical reports. Tasks can include identifying staging years for projects and coordination with project staff for potential RTP or TIP amendments.

4. Project Level Air Quality Conformity Program

This program involves project-level air quality conformity analysis and review, which may be necessary for environmental clearance of proposed road improvement projects. This program applies to relevant mobile-source pollutants for which NAAQS have been established and project-level analytical methods (i.e., localized or "hot spot" tools) have been defined. This program affects some projects within some NAAQS nonattainment or attainment/maintenance areas.

The overall objective of the federal Transportation Conformity Rule is to ensure that transportation plans and projects, and their associated air pollutant emissions, are consistent with the purpose, goals and methods of the relevant nonattainment and/or maintenance SIPs. This means the Transportation Conformity Rule applies in nonattainment and attainment/maintenance areas but not in attainment and unclassified areas.

There are two levels of analysis to demonstrate conformity for roadway improvements. First, the improvements must be included in a fiscally-constrained, air-quality-conforming RTP and TIP to address potential regional air quality impacts from modifying the transportation system (Section 3). Second, an individual project cannot create new, increase the frequency of or exacerbate the severity of air quality violations, which is the primary function of the Project Level Air Quality Conformity Program. Note that the Project Level Air Quality Conformity Program is an internal CDOT program that is not used for development of the Statewide Transportation Improvement Program or the various regional TIPs.

CDOT's Project Level Air Quality Conformity Program and NEPA Air Program (Section 5) share some similarities and have some technical methodology overlaps, but they are different programs serving different purposes. The Project Level Air Quality Conformity Program focuses on the micro-scale dispersion analyses needed to assure NAAQS compliance of individual projects under the CAAA. The NEPA Air Program may include similar analyses for evaluation of potential impacts from alternatives under a project's NEPA process, but may also include other analyses (e.g., mobile-source air toxics or GHG emissions) needed for a robust NEPA process.

4.1. Purpose

The purpose of this CDOT program is to implement relevant local-scale air quality analyses and project reviews for projects proposed within applicable nonattainment and attainment/maintenance areas for NAAQS pollutants. This is driven by mandates under the CAAA that a project must not:

- cause new violations of a NAAQS
- increase the frequency or severity of existing violations of a NAAQS
- delay timely attainment of a NAAQS

Due to the nature of some NAAQS pollutants—e.g., CO, particulate matter less than 10 microns in diameter (PM10) and particulate matter less than 2.5 microns in diameter (PM2.5)—this may require examining potential pollutant hot spots in addition to the regional analyses conducted for regional conformity (Section 3). Hot spots are locations where roadway configuration and traffic conditions can cause more intense vehicle emissions, leading to build up of pollutant concentrations. EPA has published screening and analytical guidance for identifying the types of facilities that may be pollutant hot spot concerns (EPA, 2010; EPA, 2010a).

4.2. Program Regulatory Setting

Air quality is regulated nationally under the CAAA and supported by project conformity regulations in 40 CFR 93 §116-129. Other relevant air quality legislation is included in SAFETEA-LU (PL 109-59 §1101 – 11167). AQCC Regulation 10 provides an outline of roles and responsibilities for CDOT under transportation conformity rules specific to Colorado. In general terms, these all include requirements that transportation projects may not worsen local air quality conditions. Sections 40 CFR 93.126 and 93.127 address project and regional conformity exemptions, respectively.

4.3. Interrelationships

This program works in conjunction with other existing air quality programs, primarily the Regional Air Quality Conformity Program (Section 3) and the NEPA Air Program (Section 5). The relationships are described in Table 4-1.

Table 4-1. Project Level Air Quality Conformity Program Interrelationships with Other Programs

EPA/FHWA Guidance
As new NAAQS or analytical requirements are promulgated, CDOT must respond with education, expertise development and development of new tools and resources to implement the changes for the Project Level Air Quality Conformity Program.
Regional Air Quality Conformity Program
Projects proposed within nonattainment and attainment/maintenance areas must demonstrate conformity with the applicable SIP(s) under the Transportation Conformity Rule. Depending on the air pollutant, this can include conformity demonstrations at both the regional and project levels. For the relevant pollutants and geographic areas, successful conformity demonstrations for the RTP and TIP are necessary to clear a project at the regional level.
National Environmental Policy Act Air Program
CDOT's NEPA Air Program often includes evaluation of air quality effects from potential improvements in support of alternatives screening/selection, impacts evaluation, clearance for construction, etc. Project-level conformity evaluations are often important parts of the air quality analysis for CDOT's NEPA projects.
Air Research and Education Program
This program can have an indirect relationship to the Project Level Air Quality Conformity Program. Outcomes and advancements produced by the research program could affect the project level program in the long term by changing the fundamental air quality conditions.
Greening Government and Climate Change Program
Emissions reduction actions can have an indirect relationship with the Project Level Air Quality Conformity Program. Outcomes and advancements produced by emissions reduction actions could affect the project level program in the long term by changing the fundamental air quality conditions.

4.4. Roles and Responsibilities

Many individuals have substantive roles in the Project Level Air Quality Conformity Program, both within and outside CDOT. Those persons include:

- **CDOT DTD EPB Air Quality Manager and/or Specialist—**has primary responsibility for executing this program, although responsibility may be delegated to Region staff when appropriate. May perform primary technical review role (for CDOT Region or consultant-

prepared analyses) or technical analysis role. Responsible for scoping, guidance, coordination and consultation discussions on applicable projects. May perform the required air quality modeling and calculations. May review the required air quality modeling performed by external staff. Prepares and/or reviews technical reports and findings. Prepares documentation for and acquires concurrence of transportation project conformity concurrence from APCD. Coordinates formal conformity findings and documentation with APCD staff.

- **CDOT Regional Air Quality Specialist—**may be delegated primary responsibility for a project from EPB staff. May perform primary technical analysis role or technical review role (for external/consultant analyses). Responsible for scoping, guidance, coordination and consultation discussions on all applicable projects. May perform the required air quality modeling and calculations. May review the required air quality modeling performed by external staff. Prepares and/or reviews technical reports and findings. May prepare documentation for and acquire concurrence of transportation project conformity concurrence from APCD.
- **APCD Staff—**technically responsible for conformity evaluations, but has delegated project-level analytical authority to CDOT for relevant transportation projects through a Memorandum of Agreement (CDPHE, 2002). Responsible for emission factors and inventory modeling for the State. Provides vehicle emission factors, pollutant persistence factors and pollutant background concentrations for the relevant analysis years to the primary technical analyst. Participates in interagency scoping, guidance, coordination and consultation discussions on applicable projects. Reviews technical reports and findings for conformity and provides the formal conformity findings/documentation to CDOT staff.
- **CDOT Information Management Staff—**provide the detailed traffic volume, roadway links, facility types, vehicle speed, fleet mix, signal timing, etc. data required for the air quality modeling and calculations, for each year and situation being analyzed.
- **CDOT Engineering Design Staff—**provide the detailed future (and existing if needed) roadway layouts and design data required for the air quality modeling and calculations, for each year and situation being analyzed.

An important consideration for this is AQCC Regulation 10, which defines roles and responsibilities within conformity activities.

4.5. Tools and Techniques

For detailed information on the requirements of project level conformity analyses, please refer to the current CDOT and related technical guidance (see below). The recommended tools and techniques are specific and complex and can be found in several guidance documents. This Program involves technical calculations and complex computer modeling of air pollutant concentrations and emissions, which are not discussed in detail in this Program Book to avoid potentially conflicting statements with the formal guidance.

Currently, the software tools most relevant for project level analyses include: CAL3QHC; CAL3QHC-R; AERMOD; and, MOVES2010b. Most of this software is free and can be downloaded from EPA's website. At the time of writing, the most relevant project-level analysis guidance documents include:

- CDOT NEPA manual (CDOT, 2014)
- Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas (EPA, 2013)

- Using MOVES2014 in Project-Level Carbon Monoxide Analyses (EPA, 2015)
- CO Categorical Hot-Spot Finding for Intersection Projects (FHWA, 2014)
- FHWA air quality conformity website: http://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance/

The hot spot evaluation process is based in part on a Memorandum of Agreement between APCD and CDOT (CDPHE, 2002). APCD is responsible for providing appropriate vehicle emission factors for projects, and these data need to be consistent with data/assumptions used by APCD and the MPOs/TPRs in preparation of the conformity determinations for the relevant RTP and TIP. The request for emission data from APCD must include germane traffic and roadway data outlined in the APCD emissions protocol paper (CDPHE, 2002).

EPA's quantitative hot spot analysis guidance for CO (EPA, 2015) and particulate matter (EPA, 2013) provides a foundation for performing these analyses. This is a relatively new requirement and CDOT intends to prepare technical guidance for performing these analyses under this program.

5. National Environmental Policy Act Air Program

This program involves evaluations and clearances of air quality effects for projects as required under NEPA and other relevant federal and state mandates. NEPA and its implementing regulations (40 CFR 1500) mandate that transportation decisions involving a federal nexus or federal funds adhere to these regulations. NEPA requires that federal agencies use a systematic, interdisciplinary approach to decision-making when federal actions may affect the quality of the human environment. In addition, CDOT has committed to complying with the intent and requirements of NEPA for state transportation activities, regardless of whether or not these activities are federally funded.

There are three classes of NEPA actions: Categorical Exclusions, Environmental Assessments (EAs) and Environmental Impact Statements (EISs). NEPA actions involve comprehensive, multi-resource examinations of the potential environmental and social impacts from proposed federal or federal-aid actions. These examinations include air quality, to the extent appropriate for the project and project area.

This program could affect projects anywhere in Colorado, depending on the characteristics of the project, due to CDOT's internal NEPA-compliance policy. Often, the program affects projects within a NAAQS nonattainment or attainment/maintenance areas.

CDOT's Project Level Air Quality Conformity and NEPA Air Programs share some analytical similarities and have some apparent reporting overlaps, but they are different programs serving different purposes. The Project Level Air Quality Conformity Program focuses on the conformity micro-scale analyses needed for compliance of individual projects under the CAAA. The NEPA Air Program may include similar analyses for evaluation of potential impacts from alternatives under a project's NEPA process, but may also include other analyses needed for a robust NEPA process. Several non-NAAQS pollutants (e.g., mobile source air toxics emissions and GHGs) are subject to scrutiny under NEPA projects due to recent guidance from EPA and FHWA, as well as from several Colorado initiatives (Section 2).

Often, examination of energy resources is included in NEPA projects and is frequently associated with the air quality analysis. There is not specific technical guidance for energy analysis, and examination of energy resources is not included in the NEPA Air Program.

5.1. Purpose

The purpose of NEPA generally was to declare a national policy that would:

- Encourage productive and enjoyable harmony between man and his environment
- Promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man
- Enrich the understanding of the ecological systems and natural resources important to the nation
- Establish the Council on Environmental Quality (CEQ)

The purposes of CDOT's NEPA Air Program are to facilitate compliance with the CEQ regulations (40 CFR 1500) regarding air quality for CDOT/CDOT-administered projects and to ensure complete air quality analyses are conducted for projects. CDOT conducts air quality evaluations for its projects for a variety of reasons, including:

- To protect the state's air quality
- To ensure compliance with the CAAA

- To comply with CDOT's environmental stewardship policy, which ensures the statewide transportation system is constructed and maintained in an environmentally responsible, sustainable, and compliant manner

The overall level of effort and examination required is variable under the NEPA Air Program and dependent on the nature and characteristics of the specific project.

5.2. Program Regulatory Setting

This program primarily is regulated under the CEQ regulations in 40 CFR 1500. In support of those regulations, some technical guidance has been published for some aspects of air quality that describes how to comply with the regulations (Section 4.5). Note that the NAAQS pollutants are the primary air quality focus for most NEPA projects, but that some projects may involve calculations or analyses for unregulated pollutants and processes (e.g., mobile source air toxics, GHGs or nitrogen deposition).

Federal and federal-aid actions must comply with the requirements of NEPA. In addition, CDOT has committed to follow NEPA for its non-federal actions; the process for this is described in Chapter 9 of the CDOT NEPA Manual (CDOT, 2014).

CDOT has enacted PD1901, relating to air quality and GHGs from the state's transportation systems. FHWA guidance suggests examining some non-NAAQS pollutants (e.g., mobile source air toxics and GHGs) for NEPA projects. The Air Quality Action Plan can be utilized as programmatic mitigation for transportation-related air quality impacts on CDOT projects. These should be considerations for NEPA evaluations for most CDOT projects.

5.3. Interrelationships

This program works in conjunction with other existing air quality programs, primarily the Regional Air Quality Conformity Program (Section 3) and the Project Level Air Quality Conformity Program (Section 4). The relationships are described in Table 5-1.

Table 5-1. NEPA Air Program Interrelationships with Other Programs

Regional Air Quality Conformity Program
Transportation planning and project clearance actions under NEPA must be able to show that transportation improvement projects will comply with the CAAA; therefore, the Transportation Conformity Rule is an important consideration for the NEPA Air Program. Projects proposed within nonattainment and attainment/maintenance areas must demonstrate conformity with the applicable SIP(s) through inclusion in the fiscally-constrained, air-quality-conforming RTP and TIP. In cases with incomplete project funding, preliminary regional conformity evaluations may be appropriate for the NEPA document.
Project Level Air Quality Conformity Program
Transportation planning and project clearance actions under NEPA must be able to show that transportation improvement projects will comply with the CAAA; therefore, the Transportation Conformity Rule is an important consideration for the NEPA Air Program. Projects proposed within nonattainment and attainment/maintenance areas must demonstrate conformity with the applicable SIP(s). For relevant pollutants (i.e., CO and particulate matter) and geographic areas, successful conformity demonstrations for the relevant potential localized pollutant "hot spots" are also necessary.
Greening Government and Climate Change Program
Emissions reduction actions can have an indirect relationship to the NEPA Air Program. Outcomes and advancements produced by emissions reduction actions could affect the NEPA program in the long term by changing the fundamental air quality conditions.

5.4. Roles and Responsibilities

Many individuals have substantive roles in the NEPA Air Program, both within and outside CDOT. The participants and roles previously described for the Regional Air Quality Conformity Program and the Project Level Air Quality Conformity Program in Sections 3.4 and 4.4, respectively, are typically repeated under the NEPA Air Program. Please note that the NEPA Air Program does not drive the Regional Air Quality Conformity Program; rather, the NEPA Air Program utilizes existing regional conformity decisions or may be a cause for updates to the regional data for future regional conformity decisions.

CDOT staff may have primary technical analyst roles or supporting document review roles in NEPA projects, depending on the organization of each project. The NEPA Air Program participants may include:

- **CDOT DTD EPB Air Quality Manager or Specialist—**may coordinate information dissemination to regulatory agencies, TPRs, MPOs, local agencies and communities. Calculate or provide technical review of calculations (hot spot modeling, daily pollutant emission burdens, etc.) as primary technical analyst or technical reviewer (for CDOT Region or consultant-prepared analyses), respectively. Provide NEPA document review. Responsible for scoping, guidance, coordination and consultation discussions on applicable projects. Coordinate formal conformity findings and documentation with APCD staff. Participate in project public outreach and education, as needed.
- **CDOT Regional Air Quality Specialist—**may coordinate information dissemination to regulatory agencies, CDOT headquarters, TPRs, MPOs, local agencies and communities. Calculate or provide technical review of calculations (hot spot modeling, daily pollutant emission burdens, etc.) as primary technical analyst or technical reviewer (for consultant-prepared analyses), respectively, as needed. Provide preliminary (final for Categorical Exclusion documentation) NEPA document review. Responsible for scoping, guidance, coordination and consultation discussions on applicable projects. Participate in project public outreach and education, as needed.
- **APCD Staff—**provides vehicle emission factors, pollutant persistence factors and pollutant background concentrations for the relevant analysis years to the primary technical analyst. Participates in interagency scoping, guidance, coordination and consultation discussions on applicable projects, as needed. May be primary analyst for MOVES2010a calculations (e.g., corridor daily mobile-source pollutant burdens) or evaluations (e.g., regional modeling), as coordinated with CDOT staff. Reviews technical reports and findings for conformity and provides the formal conformity findings and documentation to CDOT staff.
- **CDOT Information Management Staff—**provide the detailed traffic volume, roadway links, facility types, vehicle speed, fleet mix, signal timing, etc. data required for the air quality modeling and calculations, for each year and situation being analyzed.
- **CDOT Engineering Design Staff—**provide the detailed future (and existing if needed) roadway layouts and design data required for the air quality modeling and calculations, for each year and situation being analyzed.
- **MPO/TPR Staff—**for some projects, provide regional transportation demand model data for the study area (usually to APCD staff) to support regional air quality calculations, for each year and situation being analyzed.

5.5. Tools and Techniques

NEPA is a process-driven statute, so adherence to correct and appropriate methods and procedures is critical for program success. Often, multiple partnering agencies or affected parties participate in a NEPA project, so clear and timely communication among the participants is also critical. NEPA mandates certain public participation requirements, so the proper opportunities for public input are important. An understanding of these general NEPA project concepts is vital to the project technical analyses, including air quality.

CDOT invests considerable resources, time and talent in compiling detailed information about environmental issues, conducting environmental analysis, and preparing documents to comply with NEPA. For those reasons, CDOT has prepared the NEPA Manual as a resource for CDOT staff, local agency representatives and consultants engaged in these efforts. The NEPA Manual (CDOT, 2014) is the guidebook for completing NEPA projects by CDOT and should be referenced for up-to-date policies and procedures affecting the NEPA Air Program. Note that air quality is described in Chapter 9.2 of the current NEPA Manual. Air quality is not a resource that requires detailed examination for every NEPA project in Colorado.

The CDOT Air Quality Action Plan provides an implementation plan and current status for air quality emissions reduction and related air quality programs designed as programmatic mitigation for unregulated and co-benefitting pollutants in NEPA transportation projects.

Regional and/or local conformity considerations are often required for NEPA projects. In that regard, there is often overlap in the tools and techniques for the NEPA Air Program with the Regional Air Quality Conformity Program and the Project Level Air Quality Conformity Program. The tools for the Regional and Project Level Conformity Programs are described in Sections 3.5 and 4.5, respectively, and these are also relevant for the NEPA Air Program.

Additional air quality modeling tools include fugitive dust model (AP-42), GREET (Argonne National Laboratory's Greenhouse Gases, Regulated Emissions, and EERPAT (the Energy Use in Transportation greenhouse gas model), and the Energy and Emissions Reduction Policy Analysis Tool, FHWA's preferred greenhouse gas calculation system). CDOT has a proprietary greenhouse gas inventory and scenario planning tool, this tool is limited to in-house use only at this time because of reliance on sensitive data sources.

6. Construction Air Quality Program

The Construction Air Quality Program relates to the construction activities undertaken in support of CDOT projects to improve or maintain transportation facilities. Ground disturbances or concentrations of heavy equipment operations can trigger air quality obligations for a project or can raise potential air quality concerns that must be addressed. Typically, the potential impacts are temporary and last only for the duration of the construction element.

Often, CDOT selects independent, private contractors to perform the construction activities and the contractors usually are given responsibility for construction air quality compliance. However, CDOT does perform some construction and maintenance activities in-house, where CDOT would retain responsibility for air quality compliance in these cases. Even in the cases when CDOT is not directly responsible for a construction project, the project may have air quality aspects that CDOT staff may review or coordinate, and it is in CDOT's interest to ensure that relevant construction air quality obligations for its projects are met and monitored.

6.1. Purpose

The purpose of CDOT's Construction Air Quality Program is to facilitate and ensure compliance with construction-related air quality obligations from the State and/or local governments. The level of effort required is variable, depending on the location, nature and characteristics of the specific construction activity.

6.2. Program Regulatory Setting

This program is primarily regulated under State and local regulations. Larger and long-lasting construction projects may have APEN obligations under AQCC Regulation 3 that must be coordinated with APCD. Large-scale ground disturbance may be of concern for the potential of fugitive dust, but certain temporary facilities (e.g., asphalt batch plant) may also entail APEN obligations. The potential need for APEN activities should be evaluated case by case.

In some cases, NEPA may be relevant to construction. Potential air quality impacts from construction of proposed improvements may be evaluated as part of a NEPA analysis. A NEPA decision may include recommendations or mitigations for air quality during construction that requires attention or coordination. Each project should be reviewed for these commitments.

The large number of governments or agencies that may have some oversight of CDOT construction projects at some time makes the potential regulatory settings highly variable and dynamic. Actions that were appropriate for one project and jurisdiction may not be appropriate for the next project. These tend to be local issues and should be researched and addressed for each project on a case by case basis.

6.3. Interrelationships

This program is often independent of the other air quality programs but may work in conjunction with other programs, such as the NEPA Air Program (Section 5). The potential relationships are described in Table 6-1.

Table 6-1. Construction Air Quality Program Interrelationships with Other Programs

National Environmental Policy Act Air Program
NEPA analyses of air quality are common for EAs and EISs. The air analysis often includes consideration or discussion of construction impacts. Relevant NEPA documents for a project should be examined for recommendations, commitments or specific mitigation actions for air quality that must be carried through construction.

6.4. Roles and Responsibilities

Several individuals may have roles in the Construction Air Quality Program, both within and outside CDOT. CDOT staff may have primary technical roles on internal CDOT projects, but contractor staff most likely will have primary responsibilities on contractor-led construction projects. The Construction Air Quality Program participants may include:

- **CDOT DTD EPB Air Quality Manager or Specialist—**may review or support CDOT regional staff or contractor-led construction air quality activities. May coordinate or support any programmatic agreements for road construction with APCD or local government agencies. May identify, review and track project NEPA air quality obligations.
- **CDOT Regional Air Quality Specialist—** may coordinate, review or support contractor-led construction air quality activities. May coordinate or support any programmatic agreements for road construction with local government agencies. May identify, review and track project NEPA air quality obligations.
- **Contractor/Consultant Air Quality Staff—**usually has primary responsibilities for identifying and executing construction air quality obligations on contractor-led construction projects. Applies for and executes APEN permits, technical plans (e.g., dust control) and reporting requirements. Participates in scoping, coordination and consultation discussions on applicable projects. Prepares technical reports and documentation, as needed. May be responsible for fulfilling project construction obligations and/or implementation of corrective action measures.
- **APCD Staff—**review and approve APEN applications, set permit conditions and may monitor permit performance. Participates in scoping, guidance, coordination and consultation discussions on applicable projects, as needed. May coordinate or support any programmatic agreements for road construction with CDOT.
- **Construction Management Staff—**ensure that construction-related air quality obligations for the project are known by field staff and being met. Fulfill any air quality permit reporting requirements.
- **Construction Field Staff—**be aware of and execute the construction air quality control measures or corrective actions for the project.
- **Design Engineering Staff—**design appropriate construction air quality control measures or corrective actions, as necessary.

6.5. Tools and Techniques

Given the range of government agencies that may have some authority over highway construction, the range of potential requirements affecting CDOT construction projects can be immense. However, highway construction, reconstruction and maintenance are fairly frequent and routine activities across the state, so past experience by CDOT staff can be a

rich resource for knowledge. Routine communication and mentoring among CDOT staff on best practices and lessons learned can be invaluable in avoiding pitfalls and aiding project streamlining—other CDOT staff and project experience can be important tools to draw upon.

CDOT has internal requirements, policies and procedures in place to guide its construction projects. In this vein, several internal CDOT documents can be valuable in locating relevant information and ensuring a robust Construction Air Quality Program, including:

- Standard Specifications for Road and Bridge Construction
- Environmental Stewardship Guide
- NEPA Manual
- Air Quality Analysis and Documentation Procedures
- Prior NEPA documents for the project

Each local government can set requirements for construction activities within their jurisdiction. Often, the local requirements do not directly affect air quality considerations specifically, but there are not simple tools or techniques that will address every possible situation everywhere in Colorado. This is a very broad and dynamic environment, so it is not practical to itemize all potentially relevant ordinances and regulations. A suggested technique to deal with these considerations is for the appropriate CDOT (or contractor) staff to consult with the appropriate local government staff prior to initiation of construction to discuss relevant construction air quality issues. Often, this can occur as part of the normal project consultation between CDOT and the local governments, who typically are partners or interested parties in the construction already. This can happen on a case by case basis, tuned to the specific needs of the project.

7. Air Research and Education Program

This program involves CDOT-sponsored research and education into transportation air quality issues to advance the general knowledge and the state-of-the-art practices in understanding and minimizing mobile-source air pollutant emissions. The research may be performed by CDOT staff or by outside parties through CDOT sponsorship.

The research funding may come from a variety of sources, and the available sources can change frequently so this can be dynamic. CDOT may dedicate a portion of its annual budget to research. For this funding, research project applications are solicited from across CDOT and then selected competitively for funding. Several other state funding sources may also be available, such as the waste tire fund from CDPHE. A variety of federal funding sources may be available, such as from the U.S. Department of Transportation. Each of these sources may have its own rules and requirements, so these must be reviewed and understood on a case by case basis.

7.1. Purpose

The primary purposes of the Air Research and Education Program are to advance the general knowledge and the state-of-the-art practices in understanding and minimizing mobile-source air pollutant emissions and their environmental effects. The research generally is funded through various grant programs, usually earmarked toward benefiting air quality.

7.2. Program Regulatory Setting

This program is primarily in support of the CAAA. Because several areas within Colorado have been or continue to be scrutinized for transportation-related NAAQS pollutants, efforts are ongoing by several agencies (including CDOT) to investigate practical ways reduce these pollutant emissions—both to achieve compliance with the NAAQS in nonattainment areas and to continue to improve general air quality in the attainment/maintenance areas as well as throughout the state.

In addition, several state initiatives have been enacted in support of environmental stewardship goals. CRS 25-7 codifies goals to improve air quality where poor, maintain good air quality where it exists, and aim for "better than NAAQS" conditions where practical. Executive Order D 004 08 includes the goal to reduce GHG emissions, including from motor vehicles, within the state. The Air Research and Education Program includes opportunities for examination of methods to reduce pollutant emissions from vehicles, which can facilitate achieving the goals of these initiatives.

7.3. Interrelationships

This program can affect other existing air quality programs, primarily the Regional Air Quality Conformity Program (Section 3) and the Greening Government and Climate Change Program (Section 8). For specific projects or funding sources, there may be cooperation or coordination needed with the sponsoring outside agencies, such as FHWA or the Transportation Research Board. The potential relationships with other CDOT programs are described in Table 7-1.

Table 7-1. Air Research and Education Program Interrelationships with Other Programs

Regional Air Quality Conformity Program
Regional transportation systems in the relevant areas must demonstrate conformity with the SIPs for transportation planning and project clearance actions. While pollutant emissions from individual vehicles generally are decreasing with time due to numerous federal regulations for new vehicles, current projections are that the overall numbers of vehicles and vehicle miles of travel will continue to increase for the foreseeable future. Research that leads to additional practical ways to reduce vehicle pollutant emissions can accelerate general improvements in air quality and reduce pressure in the future in meeting the SIP budgets for regional conformity.
Greening Government and Climate Change Program
Emissions reduction actions can have a relationship to the Air Research and Education Program. Research into pollutant elimination or minimization methods may lead to ideas for formal emissions reductions programs that could be implemented, or vice versa. This is most relevant for emissions in the nonattainment and attainment/maintenance areas affected by mobile source pollutants, but could also be important for prevention of significant deterioration in air quality and the general goal of providing the best air quality possible in Colorado.

7.4. Roles and Responsibilities

DTD EPB Branch Manager – work plan and fiscal approvals forwarded to Business Office.

DTD EPB AQ Program Manager and AQ Specialist – responsible for air quality program development, recommendations for educational outreach and work plan program development. Additionally, responsible for program implementation, including business office coordination, SAP purchase requisition and contracting of services. May conceive, lead or participate in CDOT-sponsored air quality research or educational projects. Participate in project public outreach and education, as needed.

Regional AQ Specialist – May conceive, lead or participate in CDOT-sponsored air quality research or educational projects. Participate in project public outreach and education, as needed.

DTD Business Office/ Manager – coordinates and gains approval of work plan spending items. Responsibility for approved purchase order invoice receipt and payment processing.

Procurement/HR Office staff - processes service contracts, SAP purchase requisitions, and generates purchase orders.

7.5. Tools and Techniques

AASHTO Community of Practice – Nationwide collaboration to address current Air Quality issues and research topics. This nationwide forum of DOTs includes publication of the **"State of the Practice"** – regular publication outlining best practices in air quality topics around the country.

The Energy and Resources Institute (TERI) – national research organization focused on advanced energy and air quality issues.

CDOT MObile Source EmissionS model (MOVES) Training – In-house class designed to inform private sector consultants in the necessary data development standards and requirements that need to be met for the M.O.V.E.S. modeling software.

CDOT Air Quality Forum – Internal Air Quality staff information exchange.

Air Quality Coffee @ CDOT – Open forum event to answer questions and share information with internal staff and external consultants.

8. Greening Government and Climate Change Program

Several State of Colorado agencies have enacted programs and initiatives that relate to air quality and are distinct from federal air quality requirements (Section 2). These include climate change and GHG requirements, and State emissions reduction strategies.

8.1. Purpose

The purpose of this program is to ensure awareness of and compliance with the various state initiatives that apply to air quality and may affect CDOT's development, operation and/or maintenance of the state transportation system.

8.2. Regulatory Setting

The laws, orders, regulations and initiatives relevant to this program are described in Section 2 and include:

- Several sections of the CRS
- Several Executive Orders including D 004 08 and B 2010-006
- Climate Action Plan
- Senate Bill 90-108 (i.e., FASTER)
- House Bill 74-1041
- Energy Smart Transportation Initiative
- CDOT PD 1901

8.3. Interrelationships

Not yet formally developed.

8.4. Roles and Responsibilities

Not yet formally developed.

8.5. Tools and Techniques

Not yet formally developed.

9. Air Quality Training

By itself, the myriad of laws, regulations and agency relationships relating to air quality is large, complex and potentially overwhelming. CDOT's Air Quality Programs include several aspects and activities that are very technical and require specific knowledge and tools to implement correctly and efficiently. Some examples include the hot spot modeling under the Project Level Air Quality Conformity Program and corridor emissions calculations that can be needed under the NEPA Air Program. Specialized training is needed for the staff that will be engaged in these aspects of the air quality programs.

9.1. Air Quality Training Opportunities

Internally, CDOT has several mechanisms available for training. Novice staff that is new to any of the air quality topics can look to mentoring by more senior CDOT staff. This is often an informal process and should be customized to the needs of the personnel and subject area. Employees often accept new roles within CDOT over their careers and their accumulated technical knowledge might otherwise be lost, so it is important that CDOT as an institution maintain an awareness of where these potential mentors may be.

Other formal training opportunities within or by CDOT for air quality are limited. CDOT supports general environmental training sessions for interested CDOT staff at annual or special meetings and conferences. These tend to include broad coverage of a larger environmental topics list and are geared toward a general, non-specialist audience. CDOT does not have any established air quality technical training programs that are provided by CDOT staff to other CDOT staff—often the internal audience for such training would be quite small. However, CDOT headquarters staff is in the process of establishing technical training on the MOVES2010a emissions model targeted toward training CDOT specialists and consultants who conduct air quality analyses for CDOT projects (primarily under the NEPA Air Program); this training would be available to other CDOT staff as well, although this applicability may be limited.

Outside of CDOT there are a multitude of training opportunities on a variety of air quality topics available. A number of online/webinar classes are available along with more formal classroom training settings. These opportunities change along with the needs of the air quality community, so interested persons are advised to research online the various current offerings. CDOT may sponsor sessions for these technical programs to assist both its technical staff as well as the supporting consultant community. Other agencies and organizations that offer specialized air quality training (on a number of topics) include:

- U.S. Department of Transportation (FHWA, Federal Transit Administration, Volpe Center, etc.)
- FHWA Environmental Competency Building Program
- EPA
- National Highway Institute
- Transportation Research Board
- Professional organizations
- Universities

9.2. Staff Training Required for Air Quality Programs

To accurately and efficiently execute the various tasks described above for the various Air Quality Programs, the participating staff (either CDOT or external) must have an appropriate

level of technical training for the tasks they are assigned. The level and availability of training varies by the program and is summarized below.

For the Regional Air Quality Conformity Program, CDOT and external staff generally have a supporting role and, therefore, do not require the same level of technical training or knowledge as the lead agencies in conformity demonstrations. However, a working knowledge of conformity demonstrations and the Transportation Conformity Rule is needed, as is a working knowledge of the RTP and TIP processes for the MPOs and TPRs. An understanding of the primary technical tools used to support the conformity demonstrations, such as transportation demand models and pollutant emission models (e.g., MOVES2010a), is very helpful. CDOT planning or traffic staff may need detailed knowledge of transportation demand software to fully execute their internal evaluations of improvements for CDOT's jurisdictional roads.

For the Project Level Air Quality Conformity Program, the technical staff (CDOT and external) must have adequate training to complete the necessary modeling and emissions calculations tasks. At present, this includes the approved hot spot modeling software for CO and particulate matter (CAL3QHC and CAL3QHCR). In some cases, it may also be necessary for the staff to develop pollutant emission factors using the designated software (e.g., MOVES2010a).

For the NEPA Air Program, the same training for the technical staff is required as described above for the Regional Air Quality Conformity Program and the Project Level Air Quality Conformity Program. In addition, the staff must have knowledge of proper methods to perform other NEPA-type air quality analyses, such as total corridor or daily burden analyses, when required. Equally important is for the staff to have an understanding of the requirements and methods of NEPA, to ensure that a defensible process is followed.

For the Construction Air Quality Program, the staff (CDOT or external) should have an understanding of CDOT's standards and specifications, and best management practices in general, for highway construction. Any commitments from prior actions (e.g., NEPA) for a project must be known by the field staff and resolved. Any local government requirements for a specific project must also be known.

For the other air quality programs, no specific technical training is generally needed unless a specific project calls for it—this should be assessed on a case by case basis. General knowledge on the nature of air pollutants from mobile sources is needed and knowledge on air pollutant emissions software (e.g., MOVES2010b or most recent version) typically would be useful when estimating potential benefits from specific actions. Good general project management skills are needed.

10. Resources and References

Colorado Department of Public Health and Environment. 2002. Memorandum of Agreement for Air Quality and Transportation Integration between the Colorado Department of Public Health and Environment and the Colorado Department of Transportation. May.

Colorado Department of Public Health and Environment. 2008. Memorandum of Agreement for Transportation Conformity Evaluations Conducted Under the 8-Hour Ozone Standard. March.

Colorado Department of Transportation. 2014. National Environmental Policy Act Manual, Version 4. October.

Colorado Department of Transportation. 2012. Operating Manual for MPO Transportation Planning. February.

Federal Highway Administration. 2014. Carbon Monoxide Categorical Hot-Spot Finding. February.

State of Colorado, Governor's Energy Office. 2007. Colorado Climate Action Plan. November.

U.S. Environmental Protection Agency. 2013. Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas. November.

U.S. Environmental Protection Agency. 2015. Using MOVES2014 in Project-Level Carbon Monoxide Analyses. March.

11. Abbreviations

APCD	Colorado Department of Public Health and Environment—Air Pollution Control Division
APEN	Air Pollution Emission Notification
AQCC	Colorado Air Quality Control Commission
CAAA	Clean Air Act of 1970 and its subsequent amendments
CCR	Code of Colorado Regulations
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CEQ	U.S. Council on Environmental Quality
CFR	Code of Federal Regulations
CMAQ	Congestion Mitigation and Air Quality improvement program
CO	Carbon monoxide
CRS	Colorado Revised Statute
DTD	CDOT Division of Transportation Development
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
EPB	CDOT Environmental Programs Branch
FHWA	Federal Highway Administration
GHG	Greenhouse gas
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standard
NEPA	National Environmental Policy Act
PD	CDOT Policy Directive
PL	U.S. Public Law
PM10	Airborne particulate matter with an aerodynamic diameter less than 10 microns
PM2.5	Airborne particulate matter with an aerodynamic diameter less than 2.5 microns
RTP	Regional Transportation Plan
SAFTEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SIP	State Implementation Plan
TIP	Transportation Improvement Program
TPR	Transportation Planning Region
USC	United States Code