Air Quality Impacts Technical Memorandum

I-25 Improvements Through the Colorado Springs Urbanized Area Project

CDOT Project No. IM 0252-316

Project Control No. 12210

Colorado Department of Transportation

February 2003
(Updated January 2004)

Contents

1.0 Project Description

1.1 Proposed Action

The Proposed Action would widen Interstate 25 (I-25) from South Academy Boulevard (Exit 135) to State Highway 105 (Exit 161, Monument), a distance of approximately 26 miles. Within these limits, a six-lane cross-section (three through-lanes in each direction) would be built south of the U.S. Highway 24 Bypass to South Academy and north of Briargate to SH 105. Additionally, for the 12-mile central portion from the US 24 Bypass (Exit 139) to Briargate Parkway (Exit 151), the Proposed Action consists of an eight-lane cross section (four through-lanes in each direction).

In the eight-lane cross-section, the inside (left-most) lane in each direction would be open to general traffic during off-peak hours; during morning and evening peak hours, this lane would be reserved for use by carpools and buses only. To accommodate this flexible use, the high-occupancy-vehicle (HOV) lane would not be barrier-separated from the general-purpose lanes, but would be demarcated by appropriate signage and striping.

The non-barrier HOV treatment also allows for decommissioning of the lanes back to general-purpose operation in the event that the lanes do not result in adequate peak-period usage to justify HOV operations. This will depend in part upon public willingness to fund expanded transit operations that would use the HOV lanes. The HOV lanes are projected to be marginally successful without transit system expansion, but could become solidly successful if used by buses on hypothetical future routes (currently unfunded). Express bus service between Colorado Springs and Monument began in 2002 as a 3-year "demonstration project."

In conjunction with the additional laneage, the Proposed Action includes interchange reconstruction at several locations. These include major reconstruction of existing interchanges at:

- Exit 141 – Cimarron (U.S. Highway 24)
- Exit 142 – Bijou Street
- Exit 145 – Fillmore
- Exit 147/148 – North Nevada Avenue and Rockrimmon Boulevard (consolidated)
- Exit 156 – North Gate Road, plus freeway-to-freeway ramps for Powers Boulevard
- Exit 158 – Baptist Road

For each of the interchange reconstruction projects, numerous design alternatives were considered and evaluated. These alternatives were presented for review and input at advertised public meetings.

Additionally, minor geometric changes will be made at Exit 146, Garden of the Gods Road. The existing southbound-only ramps at Exit 147 A (Corporate Centre Drive) will be closed, with access via a local street connection to the reconfigured Nevada/Rockrimmon interchange. In conjunction with freeway widening on U.S. Air Force Academy property, the Ackerman Overlook will be relocated to a safer location.

1.2 Objectives

The objectives of this Technical Report are to:

- Provide the results of the air quality analysis conducted for the I-25 Corridor.
- Discuss the tasks completed in preparation for determining the air quality impacts to the I-25 corridor evaluated in the I-25 Environmental Assessment (EA).
- Assess the conformity of the I-25 corridor project with the Colorado State Implementation Plan.

1.3 Coordination Process

Consultation with Jim DiLeo, Colorado Department of Public Health and Environment Air Pollution Control Division (APCD); Jerry Piffer, Colorado Department of Transportation Environmental Programs Branch (CDOT EPB); Ken Prather, Pikes Peak Area Council of Governments (PPACG); and comments from Larry Svoboda, U.S. Environmental Protection Agency (EPA) are the basis for development of the I-25 Improvements Air Quality Analysis Methodology presented in Attachment 1.

2.0 Existing Conditions

2.1 Regulatory Requirements

The EPA has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants to protect the public from the adverse health effects associated with air pollution. These six pollutants are carbon monoxide (CO), ground level ozone (O_3), oxides of nitrogen (NO_x), sulfur dioxide (SO_2), fine particulate matter (PM_{10}) and lead (Pb).

Section 176 (c) of the Clean Air Act (CAA), and related requirements of the Transportation Equity Act for the 21st Century (TEA-21) and the Federal Transit Act, requires that transportation plans, programs, and projects that are developed, funded, or approved by the U.S. Department of Transportation and by metropolitan planning organizations (MPOs) or other recipients of funds under TEA-21 or the Federal Transit Act must demonstrate and assure conformity of such activities to the applicable State Implementation Plan (SIP). [1] The provision related to conformity applies in all nonattainment and maintenance areas for transportation-related criteria pollutants for which the area is designated nonattainment or has a maintenance plan.[2]

A Regional Transportation Plan (RTP) is the official intermodal metropolitan transportation plan that is developed through the metropolitan planning process for the metropolitan planning area. A Transportation Improvement Program (TIP) is a staged, multi-year, intermodal program of transportation projects covering a metropolitan planning area,

[1] 40 CFR 51.390

[2] 40 CFR 51.394 (b)

which is consistent with the Metropolitan Transportation Plan.[3] The RTP must specifically describe the transportation system envisioned for certain future years.[4] The RTP must quantify and document the demographic and employment factors influencing expected transportation demand, including land use forecasts.[5] The additions and modifications to the transportation network also must be sufficiently specific to show that there is a reasonable relationship between expected land use and the envisioned transportation system.[6] It is a requirement that the RTP, TIP, and their approved projects respond to anticipated growth showing the relationship of these projects to land use, population growth, and employment. Therefore, projects in the approved plans and programs respond to but do not induce these growth factors.

Should the National Environmental Policy Act (NEPA) process result in a project with design concept and scope significantly different from that in the RTP or TIP, the project must meet the criteria for development of a conforming RTP and TIP before completion of the NEPA process.[7] In other words, it must be incorporated into the RTP and TIP and meet the same criteria as described above.

Colorado Air Quality Control Commission Regulation No. 10, "Criteria for Analysis of Conformity" requires that RTPs and TIPs must conform to the SIP. As part of the SIP development process, an emissions budget for CO is established for nonattainment and maintenance areas to maintain the NAAQS.

In addition, Regulation No. 10 sets the requirements for air quality analysis for regional and "hot-spot" air quality on a project level. This includes the requirements for modeling and screening analysis of the selected project. These requirements have been incorporated in this air quality analysis for the I-25 EA.

2.2 Meteorology and Climate

The geographical and meteorological characteristics of the study area contribute to the air quality conditions. The study area is located at the foot of the Piedmont east of the Rocky Mountains. It is in the subdrainage basin of Monument and Fountain Creeks, which drains into the Arkansas River south of the area.

The climate is moderate, with low humidity and with average daily maximum temperatures ranging from a low of 42°F in January to a 85°F in July. Prevailing winds are from the south at an average of 9.8 miles per hour (mph). The average annual precipitation is 16.2 inches.

---

[3] 40 CFR 51.392

[4] 40 CFR 51.404 (a)

[5] 40 CFR 51.404 (a) (2) (I)

[6] 40 CFR 51.404 (a) (2) (ii)

[7] 40 CFR 51.406

2.3 Current Air Quality Levels

The project study area is part of the Pikes Peak Air Quality Control Region, which includes El Paso, Teller, and Park Counties. The Pikes Peak Region is classified as attainment with the NAAQS for Pb, O_3, SO_2, NO_x, and PM_{10}. The Colorado Springs Urbanized Area is classified as an attainment/maintenance area for CO (previously nonattainment).

Because the Colorado Springs Urbanized Area is classified as an attainment/maintenance area for CO, the projected emissions of CO resulting from the TIP or RTP must not exceed the emissions budget of 270 tons per day as set forth in the SIP. Projected daily CO emissions from the 2025 Transportation Plan and the 2004-2009 TIP conformity analyses are shown in Table 2-1.

TABLE 2-1
Projected Daily Mobile-Source Carbon Monoxide Emissions With Implementation of the 2025 Regional Transportation Plan

Year	CO Emissions
2007	205.9
2015	227.8
2025	266.0

Source: Pikes Peak Area Council of Governments

3.0 Methodology

At the consultation meeting held on February 13, 2002, the I-25 Improvements Air Quality Analysis Methodology (see the Attachment to this Technical Memorandum) was presented and concurrence obtained by all parties involved with the methodology.

4.0 Direct Impacts of Proposed Action and No-Action Alternatives

4.1 Corridor-Level Emission Impacts

Corridor-level impacts were based on the daily vehicle miles traveled (VMT), average vehicle speed, and the emission factors using MOBILE 6 provided by the Air Pollution Control Division of the Colorado Department of Public Health and Environment. Corridor level emissions for the years 2007, 2015, and 2025 were compared to determine the difference in emissions between the No-Action and Proposed Action alternatives. A comparison was also made to show the difference in emissions between the HOV option and the general-purpose lane option for Phase 3 of the corridor project.

The average weekday VMT for the I-25 corridor are estimated as shown in Table 4-1.

TABLE 4-1
Average Weekday Vehicle Miles Traveled in the Pikes Peak Region

Year	No-Action Alternative	Proposed Alternative (HOV in 2025 only)	General Purpose Alternative
2007	2,399,145	2,368,774	2,368,774
2015	2,632,093	2,895,479	2,895,479
2025	2,723,752	3,458,667	3,495,239

The air pollution emissions on a corridor basis are shown in Table 4-2.

TABLE 4-2
Projected Pollutant Emissions

	HC (tons/day)			CO (tons/day)			NO_x (tons/day)			Tailpipe PM_{10} (tons/day)		
Alternative	**2007**	**2015**	**2025**	**2007**	**2015**	**2025**	**2007**	**2015**	**2025**	**2007**	**2015**	**2025**
No-Action	2.60	1.42	1.19	65.11	50.17	43.67	5.81	2.62	1.33	1.85	2.03	2.10
Proposed Action	2.57	1.57	1.32	64.29	57.86	58.36	5.74	3.11	1.82	1.83	2.27	2.67
General Purpose	2.57	1.57	1.33	64.29	57.86	58.98	5.74	3.11	1.84	1.83	2.27	2.70
Difference between No-Action and Proposed	-0.03	0.15	0.13	-0.82	7.69	14.69	-0.07	0.49	0.49	-0.02	0.24	0.57
Difference between No-Action and General Purpose	-0.03	0.15	0.14	-0.82	7.69	15.31	-0.07	0.49	0.51	-0.02	0.24	0.60
Difference between Proposed and General Purpose	0.0	0.0	0.01	0.0	0.0	0.62	0.0	0.0	0.02	0.0	0.0	0.03

These results show only a comparison of the alternatives and do not reflect the total emissions of the Colorado Springs Urbanized Area transportation network. The build alternatives will induce traffic from the rest of the transportation network because these improved systems are more efficient than the No-Action alternative. The difference in traffic volume between the No-Action and the Proposed Action alternatives reflects the amount of traffic that would utilize the less efficient arterial and city streets if the No-Action Alternative were accepted. This would result in higher regional CO emissions.

The comparison shows that the general purpose and the HOV scenarios differ by less than 1 percent, which is within the error margin of the transportation model used to determine the traffic volumes.

The results of the conformity analysis of the project, as part of the Pikes Peak Area Council of Governments (PPACG) Long-Range ("Destination 2025") Transportation Plan and the PPACG 2004-2009 Transportation Improvement Program demonstrate compliance with the carbon monoxide NAAQS on a regional basis.

4.2 Carbon Monoxide (CO) "Hot Spot" Screening Analysis for Selected Intersections

Table 4-3 shows all the intersections that were analyzed for peak-hour level-of-service (LOS) using the SYNCHRO model. EPA has determined that intersections operating at LOS C or better are unlikely to cause or contribute to an exceedance of carbon monoxide NAAQS, therefore, hot spot modeling is not required.[8] For those intersections operating at LOS of D, E, or F, or change to D, E, or F because of increased traffic volumes, "hot spot" modeling was performed.[9] The CO LOS screening analysis is detailed in Table 4-3.

TABLE 4-3
CO Peak-Hour LOS Screening Analysis

Location	2007		2015		2025	
	NA	PA	NA	PA	NA	PA
Exit 161, SH 105 NB Ramp AM Peak	B	B	C	B	C	B
Exit 161, SH 105 NB Ramp PM Peak	C	C	**F**	**D**	**D**	**D**
Exit 161, SH 105 SB Ramp AM Peak	C	C	C	C	C	C
Exit 161, SH 105 SB Ramp PM Peak	C	C	C	C	C	C
Exit 158, Baptist Road NB Ramp AM Peak	**E**	**E**	**F**	**F**	**F**	**F**
Exit 158, Baptist Road NB Ramp PM Peak	**F**	**F**	**F**	**F**	**F**	**F**
Exit 158, Baptist Road SB Ramp AM Peak	**F**	**F**	**F**	**F**	**F**	**F**
Exit 158, Baptist Road SB Ramp PM Peak	C	C	**F**	**F**	**F**	**F**
Exit 158, Baptist Road and Jackson AM Peak	B	B	B	B	**D**	**D**
Exit 158, Baptist Road and Jackson PM Peak	C	C	C	C	C	C
Exit 156, Powers Boulevard/Voyager Parkway WB Ramp AM Peak	n/a	n/a	n/a	n/a	n/a	A
Exit 156, Powers Boulevard/Voyager Parkway WB Ramp PM Peak	n/a	n/a	n/a	n/a	n/a	A
Exit 156, Powers Boulevard/Voyager Parkway EB Ramp AM Peak	n/a	n/a	n/a	n/a	n/a	A
Exit 156, Powers Boulevard/Voyager Parkway EB Ramp PM Peak	n/a	n/a	n/a	n/a	n/a	A
Exit 153, Interquest Parkway and SH 83 AM Peak	C	B	C	C	D	C
Exit 153, Interquest Parkway and SH 83 PM Peak	B	B	C	B	C	C
Exit 151, Briargate Parkway and SH 83 AM Peak	C	C	C	C	**E**	C
Exit 151, Briargate Parkway and SH 83 PM Peak	C	C	**D**	C	**F**	**D**
Exit 150, North Academy Boulevard NB Ramp AM Peak	B	A	B	A	A	B
Exit 150, North Academy Boulevard NB Ramp PM Peak	B	B	B	B	C	B
Exit 150, North Academy Boulevard SB Ramp AM Peak	B	A	B	B	A	B

[8] 40 CFR 51.454 (a) (2)
[9] 40 CFR 51.454 (a)

TABLE 4-3
CO Peak-Hour LOS Screening Analysis

Location	2007		2015		2025	
	NA	PA	NA	PA	NA	PA
Exit 150, North Academy Boulevard SB Ramp PM Peak	B	B	C	B	C	B
Exit 149, Woodmen Road NB Ramp AM Peak	C	C	**D**	**D**	**E**	E
Exit 149, Woodmen Road NB Ramp PM Peak	**D**	**D**	**D**	**E**	**F**	F
Exit 149, Woodmen Road SB Ramp AM Peak	C	B	B	B	B	B
Exit 149, Woodmen Road SB Ramp PM Peak	B	B	B	B	B	B
Exit 148a, N. Nevada Avenue and Garden of the Gods Road AM Peak	**E**	**E**	**F**	**E**	**F**	**F**
Exit 148a, N. Nevada Avenue and Garden of the Gods Road PM Peak	**F**	**F**	**F**	**F**	**F**	**F**
Exit 148, North Nevada Avenue NB Ramp AM Peak	n/a	A	n/a	A	n/a	A
Exit 148, North Nevada Avenue NB Ramp PM Peak	n/a	A	n/a	B	n/a	A
Exit 148, North Nevada Avenue SB Ramp AM Peak	n/a	A	n/a	A	n/a	B
Exit 148, North Nevada Avenue SB Ramp PM Peak	n/a	A	n/a	A	n/a	A
Exit 148, North Nevada Avenue and East Frontage Road AM Peak	n/a	A	n/a	A	n/a	A
Exit 148, North Nevada Avenue and East Frontage Road AM Peak	n/a	A	n/a	A	n/a	A
Exit 148, Rockrimmon Boulevard NB Ramp AM Peak	n/a	A	n/a	A	n/a	A
Exit 148, Rockrimmon Boulevard NB Ramp PM Peak	n/a	A	n/a	A	n/a	A
Exit 148, Rockrimmon Boulevard SB Ramp AM Peak	n/a	A	n/a	B	n/a	A
Exit 148, Rockrimmon Boulevard SB Ramp PM Peak	n/a	B	n/a	C	n/a	**D**
Exit 147, Rockrimmon Boulevard and Mark Dabling Boulevard AM Peak	**E**	B	**F**	B	**F**	B
Exit 147, Rockrimmon Boulevard and Mark Dabling Boulevard PM Peak	C	B	**D**	B	**F**	C
Exit 146, Garden of the Gods SPUI AM Peak	**D**	**D**	**D**	**D**	**D**	**D**
Exit 146, Garden of the Gods SPUI PM Peak	**D**	**D**	**D**	**D**	**D**	**D**
Exit 145, Fillmore NB Ramp AM Peak	C	n/a	**D**	n/a	**D**	n/a
Exit 145, Fillmore NB Ramp PM Peak	C	n/a	**E**	n/a	**F**	n/a
Exit 145, Fillmore SB Ramp AM Peak	**D**	n/a	**D**	n/a	**F**	n/a
Exit 145, Fillmore SB Ramp PM Peak	**F**	n/a	**F**	n/a	**F**	n/a
Exit 145, Fillmore Single-Point Urban Interchange, AM Peak	n/a	C	n/a	C	n/a	C
Exit 145, Fillmore Single-Point Urban Interchange, PM Peak	n/a	C	n/a	C	n/a	**D**
Exit 145, Fillmore and Chestnut AM Peak	C	C	**E**	C	**F**	C
Exit 145, Fillmore and Chestnut PM Peak	C	**D**	**F**	**D**	**F**	**D**
Exit 144, Fontenaro NB Ramp AM Peak	n/a	n/a	B	B	B	n/a
Exit 144, Fontenaro NB Ramp PM Peak	n/a	n/a	A	A	B	n/a
Exit 144, Fontenaro SB Ramp AM Peak	n/a	n/a	B	B	A	n/a
Exit 144, Fontenaro SB Ramp PM Peak	n/a	n/a	B	B	C	n/a
Exit 143, Uintah Street NB Ramp AM Peak	C	C	C	C	C	B
Exit 143, Uintah Street NB Ramp PM Peak	B	B	B	B	B	B
Exit 143, Uintah Street SB Ramp AM Peak	B	B	C	B	C	C

TABLE 4-3
CO Peak-Hour LOS Screening Analysis

Location	2007		2015		2025	
	NA	PA	NA	PA	NA	PA
Exit 143, Uintah Street SB Ramp PM Peak	C	B	C	B	C	C
Exit 143, Uintah Street and Walnut Street AM Peak	B	C	C	C	C	C
Exit 143, Uintah Street and Walnut Street PM Peak	C	C	C	C	C	C
Exit 143, Uintah Street and Glen Avenue AM Peak	C	C	C	C	C	C
Exit 143, Uintah Street and Glen Avenue PM Peak	B	C	B	B	C	C
Exit 142, Bijou NB Ramp AM Peak	B	C	C	C	**D**	B
Exit 142, Bijou NB Ramp PM Peak	C	A	C	A	**F**	**D**
Exit 142, Bijou SB Ramp AM Peak	C	B	C	B	**F**	C
Exit 142, Bijou SB Ramp PM Peak	C	A	C	A	C	B
Exit 141, Cimarron NB Ramp AM Peak	B	A	B	B	C	C
Exit 141, Cimarron NB Ramp PM Peak	C	B	C	B	**E**	**D**
Exit 141, Cimarron SB Ramp AM Peak	B	B	B	C	**D**	B
Exit 141, Cimarron SB Ramp PM Peak	A	B	B	**D**	**D**	A
Exit 140, Tejon Street NB Ramp AM Peak	C	C	C	C	C	**C**
Exit 140, Tejon Street NB Ramp PM Peak	C	C	C	C	C	**E**
Exit 140, Nevada Avenue NB Ramp AM Peak	B	B	**D**	B	B	**D**
Exit 140, Nevada Avenue NB Ramp PM Peak	C	C	C	C	C	**D**
Exit 140, Nevada and Arvada AM Peak	C	C	C	C	C	C
Exit 140, Nevada and Arvada PM Peak	C	C	C	C	C	E
Exit 140, Tejon and Arvada AM Peak	C	C	C	C	C	C
Exit 140, Tejon and Arvada PM Peak	C	C	C	C	C	C
Exit 138, Circle Drive NB Ramp AM Peak	B	B	B	B	B	B
Exit 138, Circle Drive NB Ramp PM Peak	B	B	B	B	C	C
Exit 138, Circle Drive SB Ramp AM Peak	C	C	**D**	C	C	C
Exit 138, Circle Drive SB Ramp PM Peak	C	B	C	C	**D**	**D**
Exit 135, South Academy Boulevard NB Ramp AM Peak	B	B	C	B	B	C
Exit 135, South Academy Boulevard NB Ramp PM Peak	B	B	C	B	**D**	B
Exit 135, South Academy Boulevard SB Ramp AM Peak	B	B	B	B	B	B
Exit 135, South Academy Boulevard SB Ramp PM Peak	C	C	C	C	**E**	**E**
South Academy Boulevard at PPCC AM Peak	A	A	A	A	C	A
South Academy Boulevard at PPCC PM Peak	B	A	B	B	**D**	B

NA = No-Action Alternative
PA = Proposed Action Alternative
n/a = not applicable

As a result of the LOS screening analysis, the intersections that are in the shaded areas require "hot spot" modeling. These intersections include the following:

2007 No-Action Alternative

Exit 158, Baptist Road NB Ramp AM Peak

Exit 158, Baptist Road NB Ramp PM Peak

Exit 158, Baptist Road SB Ramp AM Peak

Exit 149, Woodmen Road NB Ramp PM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road AM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road PM Peak

Exit 148, Rockrimmon Boulevard and Mark Dabling Boulevard AM Peak

Exit 146, Garden of the Gods Road SPUI AM Peak

Exit 146, Garden of the Gods Road SPUI PM Peak

Exit 145, Fillmore SB Ramp AM Peak

Exit 145, Fillmore SB Ramp PM Peak

2007 Proposed Action

Exit 158, Baptist Road NB Ramp AM Peak

Exit 158, Baptist Road NB Ramp PM Peak

Exit 158, Baptist Road SB Ramp AM Peak

Exit 149, Woodmen Road NB Ramp PM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road AM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road PM Peak

Exit 146, Garden of the Gods Road SPUI AM Peak

Exit 146, Garden of the Gods Road SPUI PM Peak

Exit 145, Fillmore and Chestnut PM Peak

2015 No-Action Alternative

Exit 161, SH 105 NB Ramp PM Peak

Exit 158, Baptist Road NB Ramp AM Peak

Exit 158, Baptist Road NB Ramp PM Peak

Exit 158, Baptist Road SB Ramp AM Peak

Exit 158, Baptist Road SB Ramp PM Peak

Exit 151, Briargate Parkway and SH 83 PM Peak

Exit 149, Woodmen Road NB Ramp AM Peak

Exit 149, Woodmen Road NB Ramp PM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road AM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road PM Peak

Exit 148, Rockrimmon Boulevard and Mark Dabling Boulevard AM Peak

Exit 148, Rockrimmon Boulevard and Mark Dabling Boulevard PM Peak

Exit 146, Garden of the Gods Road SPUI AM Peak

Exit 146, Garden of the Gods Road SPUI PM Peak

Exit 145, Fillmore NB Ramp AM Peak

Exit 145, Fillmore NB Ramp PM Peak

Exit 145, Fillmore SB Ramp AM Peak

Exit 145, Fillmore SB Ramp PM Peak

Exit 145, Fillmore and Chestnut AM Peak

Exit 145, Fillmore and Chestnut PM Peak

Exit 140, South Nevada Avenue NB Ramp AM Peak

Exit 138, Circle Drive SB Ramp AM Peak

2015 Proposed Action

Exit 161, SH 105 NB Ramp PM Peak

Exit 158, Baptist Road NB Ramp AM Peak

Exit 158, Baptist Road NB Ramp PM Peak

Exit 158, Baptist Road SB Ramp AM Peak

Exit 158, Baptist Road SB Ramp PM Peak

Exit 149, Woodmen Road NB Ramp AM Peak

Exit 149, Woodmen Road NB Ramp PM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road AM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road PM Peak

Exit 146, Garden of the Gods Road SPUI AM Peak

Exit 146, Garden of the Gods Road SPUI PM Peak

Exit 145, Fillmore and Chestnut PM Peak

Exit 141, Cimarron SB Ramp PM Peak

2025 No-Action Alternative

Exit 161, SH 105 NB Ramp PM Peak

Exit 158, Baptist Road NB Ramp AM Peak

Exit 158, Baptist Road NB Ramp PM Peak

Exit 158, Baptist Road SB Ramp AM Peak

Exit 158, Baptist Road SB Ramp PM Peak

Exit 158 Baptist Road and Jackson AM Peak

Exit 153, Interquest Parkway and SH 83 AM Peak

Exit 151, Briargate Parkway and SH 83 AM Peak

Exit 151, Briargate Parkway and SH 83 PM Peak

Exit 149, Woodmen Road NB Ramp AM Peak

Exit 149, Woodmen Road NB Ramp PM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road AM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road PM Peak

Exit 148, Rockrimmon Boulevard and Mark Dabling Boulevard AM Peak

Exit 148, Rockrimmon Boulevard and Mark Dabling Boulevard PM Peak

Exit 146, Garden of the Gods Road SPUI AM Peak

Exit 146, Garden of the Gods Road SPUI PM Peak

Exit 145, Fillmore NB Ramp AM Peak

Exit 145, Fillmore NB Ramp PM Peak

Exit 145, Fillmore SB Ramp AM Peak

Exit 145, Fillmore SB Ramp PM Peak

Exit 145, Fillmore and Chestnut AM Peak

Exit 145, Fillmore and Chestnut PM Peak

Exit 142, Bijou NB Ramp AM Peak

Exit 142, Bijou NB Ramp PM Peak

Exit 142, Bijou SB Ramp AM Peak

Exit 141, Cimarron NB Ramp PM Peak

Exit 141, Cimarron SB Ramp AM Peak

Exit 141, Cimarron SB Ramp PM Peak

Exit 138, Circle Drive SB Ramp PM Peak

Exit 135, South Academy Boulevard NB Ramp PM Peak

Exit 135, South Academy Boulevard SB Ramp PM Peak

Exit 135, South Academy Boulevard at PPCC PM Peak

2025 Proposed Action

Exit 161, SH 105 NB Ramp PM Peak

Exit 158, Baptist Road NB Ramp AM Peak

Exit 158, Baptist Road NB Ramp PM Peak

Exit 158, Baptist Road SB Ramp AM Peak

Exit 158, Baptist Road SB Ramp PM Peak

Exit 158 Baptist Road and Jackson AM Peak

Exit 151, Briargate Parkway and SH 83 PM Peak

Exit 149, Woodmen Road NB Ramp AM Peak

Exit 149, Woodmen Road NB Ramp PM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road AM Peak

Exit 148a, North Nevada Avenue and Garden of the Gods Road PM Peak

Exit 148, Rockrimmon Boulevard SB Ramp PM Peak

Exit 146, Garden of the Gods Road SPUI AM Peak

Exit 146, Garden of the Gods Road SPUI PM Peak

Exit 145, Fillmore SPUI PM Peak

Exit 145, Fillmore and Chestnut PM Peak

Exit 142, Bijou NB Ramp PM Peak

Exit 141, Cimarron NB Ramp PM Peak

Exit 140, Tejon Street NB Ramp PM Peak

Exit 140, South Nevada Avenue NB Ramp AM Peak

Exit 140, South Nevada Avenue NB Ramp PM Peak

Exit 138, Circle Drive SB Ramp PM Peak

Exit 135, South Academy Boulevard SB Ramp PM Peak

All other intersections are at LOS C or better and are considered to meet the CO NAAQS; therefore, no further analysis is needed.

4.3 Carbon Monoxide (CO) "Hot Spot" Modeling Analysis for Selected Intersections

A CO "hot spot" analysis was conducted for each intersection that operated at LOS of D, E, or F during peak hours.[10] The definition of a "hot spot" violation is when modeled CO concentrations result in a new exceedance or worsen an existing exceedance of CO NAAQS. The NAAQS for CO are as follows:

1-hour Standard 35 ppm

8-hour Standard 9 ppm

If the CO "hot spot" analysis results in no new or worsened violations of the CO NAAQS, then it can be concluded that no violations will occur for any other scenario at these locations and that there are no significant air quality impacts on a localized level.[11]

The intersections that operate at LOS of D, E, or F were modeled using CAL3QHC for the "hot spot" analysis and MOBILE6 for motor vehicle emission factors, both of which are approved models in accordance with 40 CFR 51 Appendix W, "Guidelines on Air Quality Models (Revised)".[12] Table 4-4 presents the highest modeled 8-hour average CO concentration for each modeled intersection.

TABLE 4-4
CO "Hot Spot" Analysis
Peak 8-Hour Concentrations

Location	2007		2015		2025	
	NA	PA	NA	PA	NA	PA
Exit 161, SH 105 NB Ramp PM Peak	n/a	n/a	**4.6**	**4.8**	**4.4**	**4.4**
Exit 158, Baptist Road NB Ramp AM Peak	**4.2**	**4.2**	**4.2**	**4.2**	**4.7**	**4.7**
Exit 158, Baptist Road NB Ramp PM Peak	**4.8**	**4.8**	**4.2**	**4.2**	**4.9**	**4.9**
Exit 158, Baptist Road SB Ramp AM Peak	**4.4**	**4.4**	**4.7**	**4.7**	**4.6**	**4.6**
Exit 158, Baptist Road SB Ramp PM Peak	n/a	n/a	**4.7**	**4.7**	**4.1**	**4.1**

[10] 40 CFR 51.454 (a) (2)
[11] 40 CFR 424 (a)
[12] 40 CFR 51.454 (a)

TABLE 4-4
CO "Hot Spot" Analysis
Peak 8-Hour Concentrations

Location	2007		2015		2025	
	NA	PA	NA	PA	NA	PA
Exit 158, Baptist Road and Jackson AM Peak	n/a	n/a	N/a	n/a	**4.1**	**4.1**
Exit 153, Interquest Parkway and SH 83 AM Peak	n/a	n/a	N/a	n/a	**4.8**	n/a
Exit 151, Briargate Parkway and SH 83 AM Peak	n/a	n/a	N/a	n/a	**6.0**	n/a
Exit 151, Briargate Parkway and SH 83 PM Peak	n/a	n/a	**5.2**	n/a	**6.6**	**6.4**
Exit 149, Woodmen Road NB Ramp AM Peak	n/a	n/a	**5.8**	**7.3**	**5.9**	**5.9**
Exit 149, Woodmen Road NB Ramp PM Peak	**6.6**	**6.6**	**6.2**	**5.6**	**6.2**	**6.3**
Exit 148a, North Nevada Avenue and Garden of the Gods Road AM Peak	**7.7**	**7.5**	**6.4**	**6.2**	**6.2**	**6.2**
Exit 148a, N. Nevada Avenue and Garden of the Gods Road PM Peak	**7.8**	**7.8**	**6.8**	**7.5**	**6.4**	**7.5**
Exit 148, Rockrimmon Boulevard SB Ramp PM Peak	n/a	n/a	n/a	n/a	n/a	**4.8**
Exit 148, Rockrimmon Boulevard and Mark Dabling Boulevard AM Peak	**6.6**	n/a	**5.3**	n/a	**4.8**	n/a
Exit 148, Rockrimmon Boulevard and Mark Dabling Boulevard PM Peak	n/a	n/a	**5.6**	n/a	**5.3**	n/a
Exit 146, Garden of the Gods SPUI AM Peak	**6.4**	**6.6**	**5.2**	**5.4**	**4.8**	**5.0**
Exit 146, Garden of the Gods SPUI PM Peak	**7.7**	**7.7**	**6.6**	**6.2**	**6.2**	**6.4**
Exit 145, Fillmore NB Ramp AM Peak	n/a	n/a	**4.6**	n/a	**4.7**	n/a
Exit 145, Fillmore NB Ramp PM Peak	n/a	n/a	**4.9**	n/a	**5.2**	n/a
Exit 145, Fillmore SB Ramp AM Peak	**6.2**	n/a	**5.0**	n/a	**5.0**	n/a
Exit 145, Fillmore SB Ramp PM Peak	**6.5**	n/a	**5.0**	n/a	**5.2**	n/a
Exit 145, Fillmore SPUI PM Peak	n/a	n/a	n/a	n/a	n/a	**5.0**
Exit 145, Fillmore and Chestnut AM Peak	n/a	n/a	**5.0**	N/a	**5.0**	n/a
Exit 145, Fillmore and Chestnut PM Peak	n/a	**5.6**	**4.5**	**4.5**	**5.2**	**4.3**
Exit 142, Bijou NB Ramp AM Peak	n/a	n/a	n/a	n/a	**7.7**	n/a
Exit 142, Bijou NB Ramp PM Peak	n/a	n/a	n/a	n/a	**7.6**	**8.5**
Exit 142, Bijou SB Ramp AM Peak	n/a	n/a	n/a	n/a	**7.4**	n/a
Exit 141, Cimarron NB Ramp PM Peak	n/a	n/a	n/a	N/a	**7.7**	**8.8**
Exit 141, Cimarron SB Ramp AM Peak	n/a	n/a	n/a	N/a	**8.2**	n/a
Exit 141, Cimarron SB Ramp PM Peak	n/a	n/a	n/a	**8.4**	**7.7**	n/a
Exit 140, Tejon Street NB Ramp AM Peak	n/a	n/a	n/a	n/a	n/a	**7.4**
Exit 140, Nevada Avenue NB Ramp AM Peak	n/a	n/a	**7.1**	n/a	n/a	**8.1**
Exit 140, Nevada Avenue NB Ramp PM Peak	n/a	n/a	n/a	n/a	n/a	**7.5**
Exit 138, Circle Drive SB Ramp AM Peak	n/a	n/a	**6.2**	n/a	n/a	n/a
Exit 138, Circle Drive SB Ramp PM Peak	n/a	n/a	n/a	n/a	**7.8**	**7.8**

TABLE 4-4
CO "Hot Spot" Analysis
Peak 8-Hour Concentrations

Location	2007		2015		2025	
	NA	PA	NA	PA	NA	PA
Exit 135, South Academy Boulevard NB Ramp PM Peak	n/a	n/a	n/a	n/a	**5.6**	n/a
Exit 135, South Academy Boulevard SB Ramp PM Peak	n/a	n/a	n/a	n/a	**6.3**	**5.5**
Exit 135, South Academy Boulevard at PPCC PM Peak	n/a	n/a	n/a	n/a	**5.2**	n/a

NA = No-Action Alternative
PA = Proposed Action Alternative
n/a = not applicable because intersection operated at LOS A,B, or C

Table 4-5 presents the highest modeled 8-hour average CO concentrations predicted for intersections in the I-25 corridor for both the No-Action and Proposed Action alternatives for the years 2007, 2015 and 2025. These years correspond to the scenarios that were modeled for the air quality conformity determination for the PPACG Destination 2025 Regional Transportation Plan. The location of the highest concentration is not necessarily the same from year to year, for both the No-Action and Proposed Action Alternatives. Five of the six results shown are for the evening peak period. In all cases, no intersection is predicted to have a concentration that would exceed the 8-hour average carbon monoxide standard of 9.0 parts per million.

TABLE 4-5
Highest Modeled 8-Hour Average Carbon Monoxide
Concentration at Intersections in the I-25 Corridor*

Year	No-Action Alternative	Proposed Action**
2007	7.8	7.8
2015	7.1	8.4
2025	8.2	8.8
National air quality standard is 9.0 ppm		

*Eight-hour average carbon monoxide concentrations in parts per million (ppm)

** Highest values modeled for the Proposed Action are for different time periods and/or different locations than for the No-Action Alternative; to avoid an "apples and oranges" comparison, the results should be compared only to the national standard, and not to each other.

For the year 2007, carbon monoxide concentrations were modeled for twelve congested intersections along the I-25 corridor. The highest modeled eight-hour average carbon monoxide concentration, 7.8 ppm, occurred in the evening peak period at the intersection of Garden of the Gods Road and North Nevada Avenue), for both the No-Action Alternative and the Proposed Action. This congested intersection of two principal arterial roadways is located approximately 0.6 mile east of I-25 Exit 146 and 1.5 miles south of I-25 Exit 148.

For the year 2015, carbon monoxide concentrations were modeled for 23 congested intersections along the I-25 corridor. More congested intersections are predicted for 2015 than for 2007 because traffic congestion throughout the region is expected to increase over time. The highest modeled eight-hour average carbon monoxide concentrations, 7.1 ppm for No-Action and 8.4 ppm for the Proposed Action, were modeled at I-25/South Nevada (northbound ramp in the morning peak) and I-25/Cimarron (southbound ramp, evening peak), respectively.

For the year 2025, carbon monoxide concentrations were modeled for 38 congested intersections along the I-25 corridor. More congested intersections are predicted for 2025 than for 2015 because traffic volumes and congestion throughout the region will continue to increase over time. The highest modeled eight-hour average carbon monoxide concentrations, 8.2 ppm for No-Action and 8.8 ppm for the Proposed Action, were both modeled at I-25/Cimarron: for the southbound ramp the morning peak, and for the northbound ramp, evening peak, respectively.

4.4 PM_{10} "Hot-Spot" Analysis

The requirements for performing a PM_{10} quantitative "hot-spot" analysis will not take effect until EPA releases modeling guidance on this subject and announces in the Federal Register that these requirements are in effect. As of January 2004, EPA has not released its modeling guidance; therefore, these requirements are not in effect for this project. A quantitative PM_{10} "hot-spot" analysis was not conducted.

4.5 Impacts of Construction

The majority of air emissions during construction will be fugitive dust (PM_{10}) from the excavation of soil and backfill. All contractors will be required to obtain a construction permit and develop a fugitive emissions particulate emissions control plan to be implemented during construction in accordance with the Colorado Air Quality Control Commission Regulation No. 1, Part 3D, and Regulation No. 3, Applicable Permit Requirements.

5.0 Cumulative and Indirect Impacts

A Regional Transportation Plan, or RTP, is the official intermodal metropolitan transportation plan that is developed through the metropolitan planning process for the metropolitan planning area. A Transportation Improvement Program (TIP) is a staged, multi-year, intermodal program of transportation projects covering a metropolitan planning area, which is consistent with the metropolitan transportation plan.[13] The RTP must specifically describe the transportation system envisioned for certain future years.[14] The RTP must quantify and document the demographic and employment factors influencing

[13] 40 CFR 51.392

[14] 40 CFR 51.404 (a)

expected transportation demand, including land use forecasts.[15] The additions and modifications to the transportation network also must be sufficiently specific to show that there is a reasonable relationship between expected land use and the envisioned transportation system.[16] It is a requirement that the RTP, TIP, and their approved projects respond to anticipated growth showing the relationship of these projects to land use, population growth, and employment. Therefore, projects in the approved plans and programs respond to but do not induce these growth factors.

The direct air quality cumulative impacts from other past, present, and foreseeable future transportation projects are accounted for during the conformity analysis of the RTP. The indirect air quality cumulative impacts are accounted for in the development and federal approval of the State Implementation Plan (SIP), which incorporates the analyses of transportation (direct) and non-transportation (indirect) related emissions, and ensures compliance with the National Ambient Air Quality Standards (NAAQS).

5.1 Regional Haze/Visibility

Emissions from mobile sources—including highway motor vehicles, trains, aircraft, and non-road vehicles such as snowmobiles and all-terrain vehicles (ATVs)—contribute to visibility degradation in the United States. Although the relative contribution of mobile source emissions is not as great as contributions from other sources, direct emissions and re-entrained road dust from motor vehicles contribute significantly to urban emissions plumes that are transported for long distances. For example, emissions from the Denver metro area have been shown to impact air quality in Rocky Mountain National Park.

The Clean Air Act requires states to protect visibility and reduce visibility impairment in 156 "Class I" areas in the United States. Class I areas are defined in the Act as national parks and wilderness areas over a certain size that were in existence as of August 1997. There are 12 Class I areas in Colorado; the closest areas to this project are the Great Sand Dunes National Park and Rocky Mountain National Park. Because of the distance, location, and terrain between these areas and the project area, there would be no measurable visibility or regional haze impairment resulting from the project. The Clean Air Act and EPA's 1999 Regional Haze Rule require States to develop plans to improve visibility in 10-year increments, with the goal of reaching natural background conditions within 60 years. The Colorado Department of Public Health and Environment is currently developing its first 10-year plan and is coordinating with the Colorado Department of Transportation and the urban area metropolitan planning organizations to ensure that these agencies' long-range travel forecasts are incorporated into the plan.

With respect to this project, the emissions from travel on I-25 in future years will be incorporated into the State's visibility plan, which is required by federal law to demonstrate the necessary visibility improvements in Class I areas. Given the small incremental impact of this project and the large-scale nature of visibility transport, it is not practical to attempt

[15] 40 CFR 51.404 (a) (2) (I)

[16] 40 CFR 51.404 (a) (2) (ii)

to model the visibility impacts of the project alternatives. However, EPA-mandated improvements in vehicle emissions technology over the next 20 years will reduce emissions regardless of the alternative chosen, resulting in visibility improvements statewide.

5.2 Urban Air Toxics

In addition to the NAAQS set forth by EPA for the six criteria pollutants, EPA has also established a list of 33 urban air toxics. Urban air toxics, also known as hazardous air pollutants, are those pollutants that cause or may cause cancer or other serious health effects or adverse environmental and ecological effects. Most air toxics originate from human-made sources, including on-road mobile sources (e.g., cars, trucks, buses), non-road mobile sources (e.g., airplanes, lawnmowers, etc.) and stationary sources (e.g., factories, refineries, power-plants), as well as indoor sources (e.g., building materials). Some air toxics are also released from natural sources such as volcanic eruptions and forest fires.

These pollutants are in our atmosphere as a result of our industrialized society, but science has been providing more evidence about the risks they pose to human health. The health risks for people exposed to urban air toxics at sufficiently high concentrations or lengthy durations include an increased risk for getting cancer or experiencing other serious health effects. These health effects can include damage to the immune system, as well as neurological, reproductive, developmental, respiratory and other health problems.

To better understand the harmful effects road sources of urban air toxics have on human health, in 1996 the EPA developed a list of 22 mobile source air toxics (MSATs), such as acetaldehyde, benzene, formaldehyde, diesel exhaust, acrolein and 1,3-butadiene, and assessed the risks of various kinds of exposures to these pollutants on human health. In July 1999, the EPA published a strategy to reduce urban air toxics. In March 2001, the EPA issued regulations for the producers of urban air toxics to decrease the amounts of these pollutants by target dates in 2007 and 2020. Under these regulations, between 1990 and 2020, on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde will be reduced by 67 to 76 percent, and on-highway diesel particulate matter emissions will be reduced by 90 percent. These reductions are due to the impacts of national mobile source control programs, including the reformulated gasoline program, a new cap on the toxics content of gasoline, the national low emission vehicle standards, the Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and the heavy-duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. These are net emission reductions, that is, the reductions that will be experienced even after growth in VMT is taken into account.

The EPA has not yet determined how best to evaluate the impact of future roads and intersections on the ambient concentrations of urban air toxics. There are no standards for MSATs and there are no tools to determine the significance of localized concentrations or of increases or decreases in emissions. Without the necessary standards and guidance, CDOT and FHWA cannot analyze the impacts of urban air toxics associated with this project. With the information currently available, CDOT and FHWA can conclude is that (1) there are

likely to be localized concentrations of urban air toxics along the I-25 alignment that are similar to those experienced by existing residences at similar distances from similar corridors, and (2) regardless of the alternative chosen, emissions of mobile source air toxics in the project area will decrease over time due to EPA's national control programs.

6.0 Mitigation

Because there are no adverse air quality impacts as a result of the Proposed Action, further design or operational mitigation is not required.

The Proposed Action includes provision of through lanes that will be reserved for High Occupancy Vehicles (buses and carpools) during peak commuter periods. This approach is consistent with regional land use and transportation plan policies that call for reduced reliance on single-occupant use of motor vehicles. Air quality plans for the region currently do not include or rely upon HOV lanes for any emissions reduction credit.

Implementation of dust control practices during construction will be required, in accordance with Colorado Air Quality Control Commission Regulation No. 1 regarding fugitive emissions.

7.0 Conformity Determination

The Proposed Action is included in the conforming 2025 Regional Transportation Plan for the Colorado Springs Urbanizing Area (*Destination 2025 Plan*) and the PPACG 2004-2009 Transportation Improvement Program (TIP) as TIP Project No. 7 and STIP Project No. SP4027-2, described as I-25 South Corridor – Denver to Co Spgs – Region 2 Portion. In addition to the funding that is shown in the State Transportation Improvement Program, the Colorado Transportation Commission on June 19, 2003 approved the allocation of $120 million for this project from proposed upcoming revenue bonding actions.

8.0 Attachments

Attachment: I-25 Improvements Air Quality Analysis Methodology

ATTACHMENT 1

I-25 Improvements
Air Quality Analysis Methodology

I-25 IMPROVEMENTS

AIR QUALITY ANALYSIS METHODOLOGY

COORDINATION PROCESS

Consultation with Jim DiLeo, Colorado Department of Public Health and Environment Air Pollution Control Division (APCD), Jerry Piffer, Colorado Department of Transportation Environmental Programs Branch (CDOT EPB), Ken Prather, Pikes Peak Area Council of Governments (PPACG) and comments from Larry Svoboda, U.S. Environmental Protection Agency (EPA) is the basis for development of the I-25 Improvements Air Quality Analysis Methodology.

PROJECT DESCRIPTION

The proposed improvement strategy for Interstate 25 is focused on multi-phase, multi-modal improvements. The strategy calls for three phases of capacity improvements, which will maintain flexibility to include future transportation options:

Phase 1: Widen I-25 to six lanes between South Circle Drive and Briargate Parkway.

Phase 2: Widen I-25 to six lanes from Briargate Parkway to Monument Interchange.

Phase 3: Construct HOV lanes between US 24 Bypass and Briargate Parkway, widen I-25 to six lanes from US 24 Bypass to South Academy Blvd., acceleration/deceleration one acceleration and on deceleration lane between U.S. 24 Bypass and Circle Drive.

Park-and-Ride lots, freeway ramp metering, and provision for non-motorized modes are also included. See Figure ES-3.

Project funding in the PPACG 2025 Plan is as follows:

- 2007 – Construction of all improved interchanges will be completed.
- 2015 – Construction of six lanes from South Academy to SH 105 will be complete.
- 2025 – Construction of HOV lanes from U.S. 24 Bypass to Briargate Parkway with acceleration/deceleration lanes between U.S. 24 Bypass and Circle Drive.

CURRENT CONDITIONS

The status of the current air quality conditions and relationship to the Colorado State Implementation Plan (SIP) will be documented. Air quality conditions in the Colorado Springs Urbanized Area will be assessed to determine the relative change in emissions as compared to the future Proposed Action and No-Action Alternatives. The status of conformity determinations for the PPACG Transportation Improvement Program (TIP) and the 2025 Regional Transportation Plan (RTP) will be described.

A discussion of the Preferred Alternative and it relationship to the 2025 RTP and TIP will be prepared. This Preferred Alternative will describe the improvements to I-25 to improve mobility and reduce congestion on the already congested interstate highway.

AIR QUALITY IMPACTS

The study area for the air quality analysis includes the I-25 Improvements and other arterials affected by the interstate operation.

The pollutants of concern in this analysis are carbon monoxide (CO), oxides of nitrogen (NO_x), hydrocarbons (HC), and particulate matter (PM_{10}). The air quality analysis will include the following elements:

1. Daily corridor-level emissions of CO, NO_x, HC, and PM_{10}.
2. CO "hot spot" screening analysis for selected intersections.
3. CO "hot spot" modeling at selected intersections.

Corridor-Level Emission Estimates

Pollutant emissions (CO, NO_x, HC, and PM_{10}) will be analyzed for all vehicles in the study area. Daily corridor-level emission estimates will be calculated for the following scenarios:

- 2007 Proposed Action and No-Action Alternative
- 2015 Proposed Action and No-Action Alternative
- 2025 Proposed Action and No-Action Alternative

The land use assumptions will be those as described in the PPACG 2025 Transportation Plan. The traffic volumes will be based on the PPACG TRANPLAN model. The pollutant emissions analysis will compare vehicle miles traveled (VMT) for all vehicles in the study area under the Proposed Action and No-Action Alternative. Corridor-level CO emissions estimates will be quantified using the VMT and vehicular emissions factors. The emission factors will be generated by APCD using MOBILE 6.

The I-25 improvements will be located in various land use areas in the 26 miles of the project. Therefore, the CO background values will be assigned according to the change in land use. The CO background values and land use designation will be as follows:

Location (Mile Marker)	**Landuse**	**CO Background (ppm)**	
		1-hr	**8-hr**
135-138	Residential	4	2
138-140	Other Business District	7	4
140-143	Central Business District Fringe	9	5
143-150	Residential	4	2
150-156	Rural	3	2
156-161	Residential	4	2

Finally, an assessment will be made comparing the projected emissions with the current corridor-level emissions.

"Hot Spot" Screening Analysis for Selected Intersections

Selected signalized intersections will be analyzed for level of service (LOS) using the SYNCHRO model. Any intersection operating at LOS C or better is considered to be in compliance with the National Ambient Air Quality Standards (NAAQS) and no further analysis is required. For those intersections operating at LOS D, E, or F, or those that will change to D, E, or F because of increased traffic volumes, carbon monoxide "hot spot" modeling will be preformed.

The following signalized intersections will be analyzed for the No-Action Alternative and Proposed Action for 2007, 2015, and 2025:

No-Action Alternative (All study years)

Exit 161 (I-25 and SH 105)

SH 105 NB Ramp

SH 105 SB Ramp

Exit 158 (I-25 and Baptist Road)

(No signalized intersections in No-Action Alternative)

Exit 156 (I-25 and North Gate Road)

(No signalized intersections in No-Action Alternative)

Exit 153 (I-25 and Interquest Boulevard)

Interquest parkway and SH 83

Exit 151 (I-25 and Briargate Boulevard)

Briargate Parkway and SH 83

Exit 150 (I-25 and North Academy Boulevard)

North Academy Boulevard NB Ramp

North Academy Boulevard SB Ramp

Exit 149 (I-25 and Woodmen Road)

Woodmen Road NB Ramp

Woodmen Road SB Ramp

Exit 148 b (I-25 and Corporate Drive)

(No signalized intersections in No-Action Alternative)

Exit 148a (I-25 and North Nevada Avenue)

Nevada Avenue and Garden of the Gods Road

Exit 147 (I-25 and Rockrimmon Boulevard)

Rockrimmon Boulevard and Mark Dabling Boulevard

Exit 146 (I-25 and Garden of the Gods Road)

Garden of the Gods Single Point Urban Intersection

Exit 145 (I-25 and Fillmore Street)

Fillmore Street NB Ramp

Fillmore Street SB Ramp – Including Fillmore Street and Chestnut

Exit 144 (I-25 and Fontanero Street)

(No signalized intersections in No-Action Alternative)

Exit 143 (I-25 and Uintah Street)

Uintah NB Ramp

Uintah SB Ramp

Uintah Street and Walnut Street

Uintah Street and Glen Avenue

Exit 142 (I-25 and Bijou)

Bijou NB Ramp

Bijou SB Ramp

Exit 141 (I-25 and Cimarron Street)

Cimarron NB Ramp

Cimarron SB Ramp

Exit 140 (I-25 and Tejon Street and Nevada Avenue)

Tejon Street NB Ramp

Nevada Avenue NB Ramp

Tejon Street and Arvada

Nevada Avenue and Arvada

Exit 139 (I-25 and US 24 Bypass Interchange)

(No signalized intersections in all scenarios)

Exit 138 (I-25 and Circle Drive)

Circle Drive NB Ramp

Circle Drive SB Ramp

Exit 135 (I-25 and South Academy Boulevard)

South Academy Boulevard NB Ramp

South Academy Boulevard SB Ramp

Academy Boulevard and PPCC

2007 Proposed Action scenario

Exit 161 (I-25 and SH 105)

SH 105 NB Ramp

SH 105 SB Ramp

Exit 158 (I-25 and Baptist Road)

Baptist Road NB Ramp

Baptist Road SB Ramp

Exit 156 (I-25 and Northgate Road)

North Gate Road NB Ramp

North Gate Road SB Ramp

Powers Boulevard and Voyager Parkway

Voyager Parkway WB Ramp

Voyager Parkway EB Ramp

Exit 153 (I-25 and Interquest Boulevard)

Interquest Parkway and SH 83

Exit 151 (I-25 and Briargate Boulevard)

Briargate Parkway and SH 83

Exit 150 (I-25 and North Academy Boulevard)

North Academy Boulevard NB Ramp

North Academy Boulevard SB Ramp

Exit 149 (I-25 and Woodmen Road)

Woodmen Road NB Ramp

Woodmen Road SB Ramp

Exit 148 (I-25 and North Nevada Avenue and Rockrimmon Boulevard)

North Nevada Avenue NB Ramp

Nevada Avenue and East Frontage Road

Rockrimmon Boulevard NB Ramp

North Nevada Avenue SB Ramp

Rockrimmon Boulevard SB Ramp

Rockrimmon Boulevard and Mark Dabling Boulevard

Exit 146 (I-25 and Garden of the Gods Road)

Garden of the Gods Single Point Urban Intersection

Exit 145 (I-25 and Fillmore Street)

Fillmore Street NB Ramp

Fillmore Street SB Ramp

Fillmore Street and Sinton Road

Exit 144 (I-25 and Fontanero Street)

Centennial Boulevard and Chestnut

Exit 143 (I-25 and Uintah Street)

Uintah NB Ramp

Uintah SB Ramp

Uintah Street and Walnut Street

Uintah Street and Glen Avenue

Exit 142 (I-25 and Bijou)

Bijou NB Ramp

Bijou SB Ramp

Exit 141 (I-25 and Cimarron Street)

Cimarron NB Ramp

Cimarron SB Ramp

Exit 140 (I-25 and Tejon Street and Nevada Avenue)

Tejon Street NB Ramp

Nevada Avenue NB Ramp

Tejon Street and Arvada

Nevada Avenue and Arvada

Exit 139 (I-25 and US 24 Bypass Interchange)

(No signalized intersections in all Proposed Action and No-Action Alternative scenarios)

Exit 138 (I-25 and Circle Drive)

Circle Drive NB Ramp

Circle Drive SB Ramp

Exit 135 (I-25 and South Academy Boulevard)

South Academy Boulevard NB Ramp

South Academy Boulevard SB Ramp

Academy Boulevard and PPCC

2015 and 2025 Proposed Action Scenarios

Exit 161 (I-25 and SH 105)

SH 105 NB Ramp

SH 105 SB Ramp

Exit 158 (I-25 and Baptist Road)

Baptist Road NB Ramp

Baptist Road SB Ramp

Exit 156 (I-25 and Northgate Road)

Northgate Road NB Ramp

Northgate Road SB Ramp

Powers Boulevard and Voyager Parkway

Voyager Parkway WB Ramp

Voyager Parkway EB Ramp

Exit 153 (I-25 and Interquest Boulevard)

Interquest Boulevard and SH83

Exit 151 (I-25 and Briargate Boulevard)

Briargate Boulevard and SH 83

Exit 150 (I-25 and North Academy Boulevard)

North Academy Boulevard NB Ramp

North Academy Boulevard SB Ramp

Exit 149 (I-25 and Woodmen Road)

Woodmen Road NB Ramp

Woodmen Road SB Ramp

Exit 148 (I-25 and North Nevada Avenue and Rockrimmon Boulevard)

- North Nevada Avenue NB Ramp
- Nevada Avenue and East Frontage Road
- Rockrimmon Boulevard NB Ramp
- North Nevada Avenue SB Ramp
- Rockrimmon Boulevard SB Ramp
- Rockrimmon Boulevard and Mark Dabling Boulevard

Exit 146 (I-25 and Garden of the Gods Road)

- Garden of the Gods Single Point Intersection

Exit 145 (I-25 and Fillmore Street)

- Fillmore Street NB Ramp
- Fillmore Street SB Ramp
- Fillmore Street and Sinton Road

Exit 144 (I-25 and Fontanero Street)

- Centennial Boulevard and Chestnut

Exit 143 (I-25 and Uintah Street)

- Uintah NB Ramp
- Uintah SB Ramp
- Uintah Street and Walnut Street
- Uintah Street and Glen Avenue

Exit 142 (I-25 and Bijou)

- Bijou NB Ramp
- Bijou SB Ramp

Exit 141 (I-25 and Cimarron Street)

- Cimarron NB Ramp
- Cimarron SB Ramp

Exit 140 (I-25 and Tejon Street and Nevada Avenue)

- Tejon Street NB Ramp
- Nevada Avenue NB Ramp
- Tejon Street SB Ramp

Nevada Avenue SB Ramp

Exit 139 (I-25 and US 24 Bypass Interchange)

(No signalized intersections in all Proposed Action and No-Action scenarios)

Exit 138 (I-25 and Circle Drive)

Circle Drive NB Ramp

Circle Drive SB Ramp

Exit 135 (I-25 and South Academy Boulevard)

South Academy Boulevard NB Ramp

South Academy Boulevard SB Ramp

Academy Boulevard and PPCC

PM_{10} "Hot Spot" Analysis for Selected Intersections

40 CFR 51.454 (d) requires that a PM_{10} "hot spot" analysis must be performed for projects which are located at sites at which violations have been verified by monitoring and at sites which have essentially identical vehicle and roadway emissions and dispersion characteristics (including sites near one at which a violation has been monitored). However, this requirement for quantitative "hot spot" analysis will not take effect until EPA releases modeling guidance on this subject and announces in the Federal Register that these requirements are in effect. To date, EPA has not released this modeling guidance, therefore the quantitative PM_{10} modeling analysis is not required.

CO "Hot Spot" Modeling at Selected Intersections

The CO "hot spot" modeling analysis using the CAL3QHC model will be conducted for each intersection of LOS D, E, or F. Background CO concentrations and MOBILE6 emission factors will be provided by APCD. The saturation through volume at each intersection will be 1700 vehicle per hour per lane, and the turn volume will be 1600 vehicles per hour per lane. The arrival rate will be 3.

The analysis will be conducted for the worst-case conditions during peak-hour with the highest traffic volume. The stability class for modeling purposes will be D in the urban areas and E in the rural areas. The ambient temperature for modeling purposes will be 35°F. Each intersection will be configured with a new reference point (0,0).

The definition of a CO "hot spot" violation is when modeled concentrations create a new exceedance or worsen an existing exceedance of the CO NAAQS which are as follows:

- 1-hour standard – 35 ppm
- 8-hour standard – 9 ppm

If the CO "hot spot" modeling analysis results in no new or worsened violations of the CO NAAQS, then it can be deduced that no violations will occur for any other scenario at these locations, and that the there are no significant air quality impacts on a localized level.

If the CO "hot spot" analysis results show a new or worsened violation of the CO NAAQS, then mitigation will be required. An engineering solution to the intersection configuration and/or operation will be developed to remedy the violation. The "hot spot" analysis will be rerun to determine the effect of the proposed solution. This process will be repeated until there are no new or worsened violations of the CO NAAQS.

Figure ES-3
PROPOSED I-25 CORRIDOR IMPROVEMENT STRATEGY