

Cumulative Impacts

I-270 Corridor Improvements

September 2022

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CDOT Region 1
2829 West Howard Place
Denver, CO 80204

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Acronyms and Abbreviations

Acronym	Definition
BRT	Bus Rapid Transit
CCR	Code of Colorado Regulations
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CO	carbon monoxide
COPD	chronic obstructive pulmonary disease
CWA	Clean Water Act
DM/NFR	Denver metropolitan area and North Front Range
DRCOG	Denver Regional Council of Governments
EA	environmental assessment
EIS	environmental impact statement
EJ	environmental justice
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration
GHG	greenhouse gas
HOT	high-occupancy toll
HOV	high-occupancy vehicle
I-25	Interstate 25
I-70	Interstate 70
I-270	Interstate 270
M&E	Monitoring and Evaluation
mph	mile(s) per hour
MS4	municipal separate storm sewer system
MVRTP	Metro Vision Regional Transportation Plan
NAAQS	National Ambient Air Quality Standards
NDCC	North Denver and Commerce City
NEPA	National Environmental Policy Act
NO _x	oxides of nitrogen
O ₃	ozone
PFAS	perfluoroalkyl and polyfluoroalkyl substances

Acronym	Definition
PM _{2.5}	particulate matter less than 2.5 microns in diameter
PM ₁₀	particulate matter less than 10 microns in diameter
RMA	Rocky Mountain Arsenal
RTD	Regional Transportation District
SH	state highway
SIP	state implementation plan
SO ₂	sulfur dioxide
TMDL	total maximum daily load
TRAP	traffic-related air pollution
VMT	vehicle miles traveled
VOC	volatile organic compounds

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1.0 Introduction

The Colorado Department of Transportation (CDOT) and the Federal Highway Administration (FHWA), in conjunction with local partners Adams County and Commerce City, are proposing improvements to 6 miles of Interstate 270 (I-270) in Adams County, Commerce City, and the City and County of Denver, Colorado, primarily between Interstate 25 (I-25) and Interstate 70 (I-70) (Figure 1-1). CDOT and FHWA are preparing an Environmental Assessment (EA) for this project, referred to as the I-270 Corridor Improvements project. Sections 1 and 2 of the EA and EA Appendix B2 contain the project setting and a detailed description of alternatives.

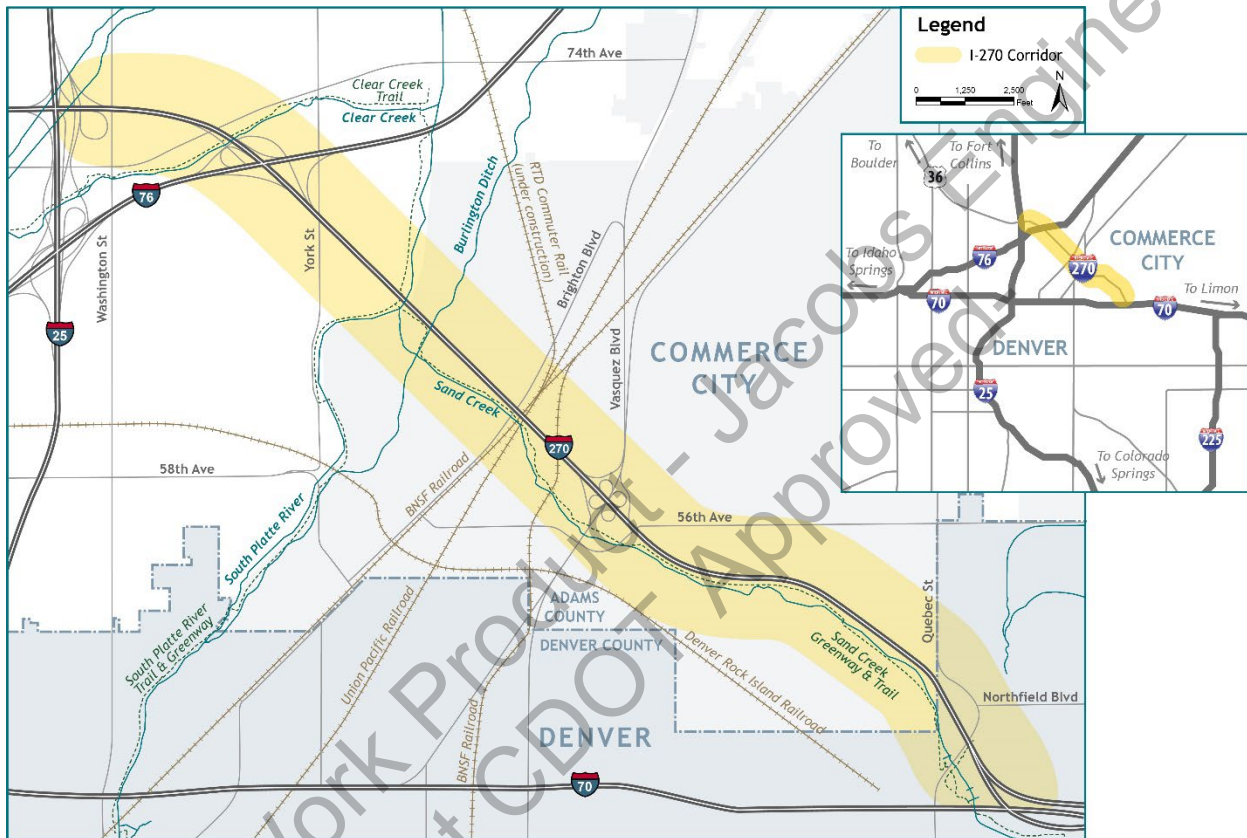


Figure 1-1. Project Location

Source: Jacobs

This report describes cumulative impacts to resources that are expected to experience adverse or beneficial impacts as a result of project implementation. A cumulative impacts analysis is an additive process that considers all aspects of the environment affected by project alternatives in the context of other past, present, and reasonably foreseeable future actions in a study area (Figure 1-2). “The cumulative impact analysis focuses on the combination of these impacts, and any resulting environmental degradation on its sustainability” (CDOT 2020a). The analysis describes how the Proposed Action may incrementally contribute to impacts to specific resources over time. If the Proposed Action would result in no direct or indirect impacts on a resource, then no cumulative impacts on that resource would occur. In addition, temporary impacts are not evaluated in a cumulative analysis because such impacts are short-term, and therefore would have no long-term additive effect.

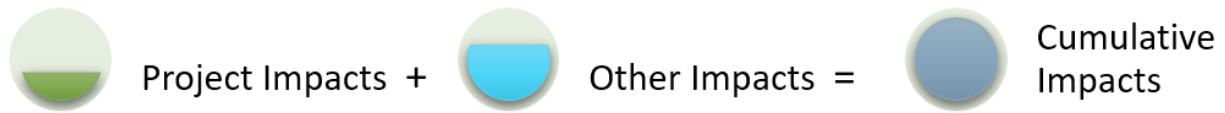


Figure 1-2. Cumulative Impacts Additive Process

Source: Jacobs

2.0 Regulatory Context

This analysis follows guidance described in the Council on Environmental Quality (CEQ) regulations and the *CDOT National Environmental Policy Act Manual* (CDOT 2020a).

2.1 Federal Regulations

The National Environmental Policy Act (NEPA) created CEQ in 1969 under the Executive Office of the President. CEQ “coordinates the federal government’s efforts to improve, preserve, and protect America’s public health and environment” (The White House n.d.). The CEQ *Regulations for Implementing NEPA* (Code of Federal Regulations Title 40 Sections 1500-1508) define cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (Code of Federal Regulations Title 40 Section 1508.7).¹

CEQ developed *Considering Cumulative Effects Under the National Environmental Policy Act* “to assist Federal agencies with analyzing cumulative effects during the NEPA process. It outlines general principles, common cumulative effects assessment methodologies, and resources for additional information and background data” (CEQ 1997).

2.2 State and Local Regulations

CDOT applies CEQ guidance to analysis of cumulative impacts. The *CDOT NEPA Manual* identifies the following main components in the cumulative impact analysis process (CDOT 2020a):

- Determine temporal and spatial boundaries depending on the magnitude of project impacts, the environmental setting, and specific resources. The boundaries for cumulative analyses are generally broader than those used in assessing direct or indirect impacts.
- Generate a list of planned projects or foreseeable activities that incrementally contribute to cumulative impacts, particularly those that contribute to current levels of degradation, cause impacts through ongoing activities, and contribute to trends that influence activities and impacts in the study area. CDOT defines reasonably foreseeable actions as “future activities that have been committed to or that are known proposals, which could take place within the defined planning horizon” (CDOT 2020a).
- Gather data to supplement the list of planned projects or reasonably foreseeable activities.

CDOT directs analysts to describe cumulative impacts in “somewhat general terms” and identify any cumulative benefits, as well as detriments. Also, the analysis should “describe the degree to which impacts from the proposed transportation project will contribute to the cumulative impacts” for a

¹ In 2017, in response to Executive Order 13807, Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects, CEQ “made wholesale revisions to the [NEPA] regulations” (86 Federal Register 55757) that went into effect September 14, 2020. The final rule eliminated the requirement to consider cumulative effects under a NEPA analysis. In October 2021, CEQ published a notice of proposed rulemaking to restore the cumulative impacts analysis requirement (86 Federal Register 55757). The final rule was made effective in May 2022 (87 Federal Register 23453).

resource. In addition, “The level of analysis and scope of the cumulative analysis should be commensurate with the potential impacts, resources affected, scale, and other relevant factors associated with the project” (CDOT 2020a).

3.0 Methods

This analysis identifies resources where the effects of the Proposed Action may contribute incrementally to impacts over time. Resources analyzed for cumulative impacts were identified based on the following:

- The degree to which the resources are impacted by the proposed project
- The potential for additive, incremental, and cumulative effects
- Public comment

3.1 Analysis Approach

The analysis considers how the proposed alternatives combine with other past, present, and reasonably foreseeable future actions to impact the affected resources. The specific steps in the cumulative analysis process follow those defined by CEQ (1997) and CDOT (2020a):

1. Identify resources analyzed in the EA that are expected to experience impacts when combined with the effects of other past, present, and reasonably foreseeable future actions. Evaluate only the resources that are expected to experience impacts under the Proposed Action (Section 4.0).
2. Develop temporal (timeframe) and spatial (geographic) study area boundaries for the resources analyzed based on the period of time that the impacts would persist and the natural boundaries of resources analyzed (as opposed to jurisdictional boundaries) (Section 5).

Generate a list of past, present, and reasonably foreseeable future actions with potential to affect the selected resources (Section 6.0). Briefly describe the effect these actions have had, are having, or are expected to have on each resource to establish a baseline for analysis (Section 7.0). Base the list on the following (CDOT 2020a):

- Proximity (spatially or temporally) to the Proposed Action’s study area
 - Probability of another action affecting the same environmental system as the Proposed Action
 - Likelihood another project leads to a range of impacts or other associated activity
 - Whether the other impacts are similar to those of the Proposed Action
 - Likelihood the other project will occur, and if it is imminent
3. Evaluate and describe cumulative impacts in general terms for each resource by adding the effects of the Proposed Action to those expected from other past, present, and reasonably foreseeable future actions. Consider the context of each resource’s current conditions and historic trends. Describe the degree to which impacts from the Proposed Action would contribute to cumulative impacts for each resource (Section 7.5.2).

3.2 Data Gathering

The following data were gathered to support this cumulative impacts analysis:

- A review of the resources expected to experience adverse impacts from the Proposed Action to select those analyzed for cumulative impacts.
- Data to define the cumulative impacts study area:
 - Information about past projects that have affected the resources analyzed to determine a general temporal starting point for analysis.
 - The Proposed Action’s design year to determine a temporal ending point for analysis.

- Geographic information system (GIS) data to identify the extent to which other actions have or may affect each resource to define a geographic boundary.
- The current degree of environmental degradation for the affected resources and the extent of ongoing activities causing environmental degradation.
- Trends related to activities and impacts in the study area.

4.0 Resources Selected for Analysis

Environmental resource impacts for this project were reviewed to identify resources expected to experience adverse impacts from the Proposed Action, as well as from other past, present, and reasonably foreseeable future actions. Resources selected for the cumulative impacts analysis include:

- Air Quality: Air quality was analyzed because the study area is already adversely affected by air pollution from mobile and stationary sources and because of air quality concerns from the public expressed as part of the project's public outreach events. Refer to the *Air Quality Technical Report* (Appendix A4 of the EA) for more information.
- Water quality: Water quality was analyzed because past events and current land uses, including industrial development, have adversely affected water quality in the study area, resulting in the study area's waterways being designated as impaired under Clean Water Act (CWA) Section 303(d). Refer to the *Water Quality Technical Memorandum* (Appendix A9 of the EA) for more information.
- Transportation: Transportation was analyzed because several adjacent interstates and roads feed into I-270, which currently experiences substantial congestion. Recent and future growth rates are expected to increase traffic on these routes. Also, constructing an express lane on I-270 is another step toward the system of connected express lanes presented in the *Colorado Express Lane Master Plan* (CDOT 2020b). Refer to the *Traffic Technical Report* (Appendix A2 of the EA) for more information. Although multimodal transportation is a key component and consideration of the Project, this analysis focuses on cumulative effects to the highway system.
- Biology, Riparian Resources: Riparian resources were analyzed because few natural resources remain in the study area with the exception of riparian zones along Sand Creek, Clear Creek, and the South Platte River. Refer to the *Biological Resources Report* (Appendix A12 of the EA) for more information.
- Environmental justice (EJ): EJ was analyzed because the population within the study area is an EJ community that has expressed concerns about the effects of past and current development and transportation projects, on community health and quality of life. Refer to the *Community Understanding Report* (Appendix A3 of the EA) for more information.

5.0 Temporal and Geographic Study Area

Because the study area has been substantially affected by the large industries adjacent to I-270, the timeframe for the cumulative impacts analysis begins in 1930 to capture when most of these facilities were constructed. The ending timeframe is 2040, which is the design year for this project.

Separate study areas were defined for natural resources and social resources (Figure 5-1). The natural resources boundary, used for the biological and water quality cumulative analyses, was developed using a combination of watershed subbasin areas provided by Mile High Flood District and stream segments that are impaired under Section 303(d) of the CWA with roadway pollutants of concern. The social resources study area was used for the air quality, transportation, and EJ analyses; it includes the neighborhoods immediately surrounding I-270. Where neighborhood boundaries were not available, a 2-mile buffer from the Proposed Action's disturbance limits was used. These study areas were identified as being broad enough to encompass the anticipated cumulative impacts from the Proposed Action.

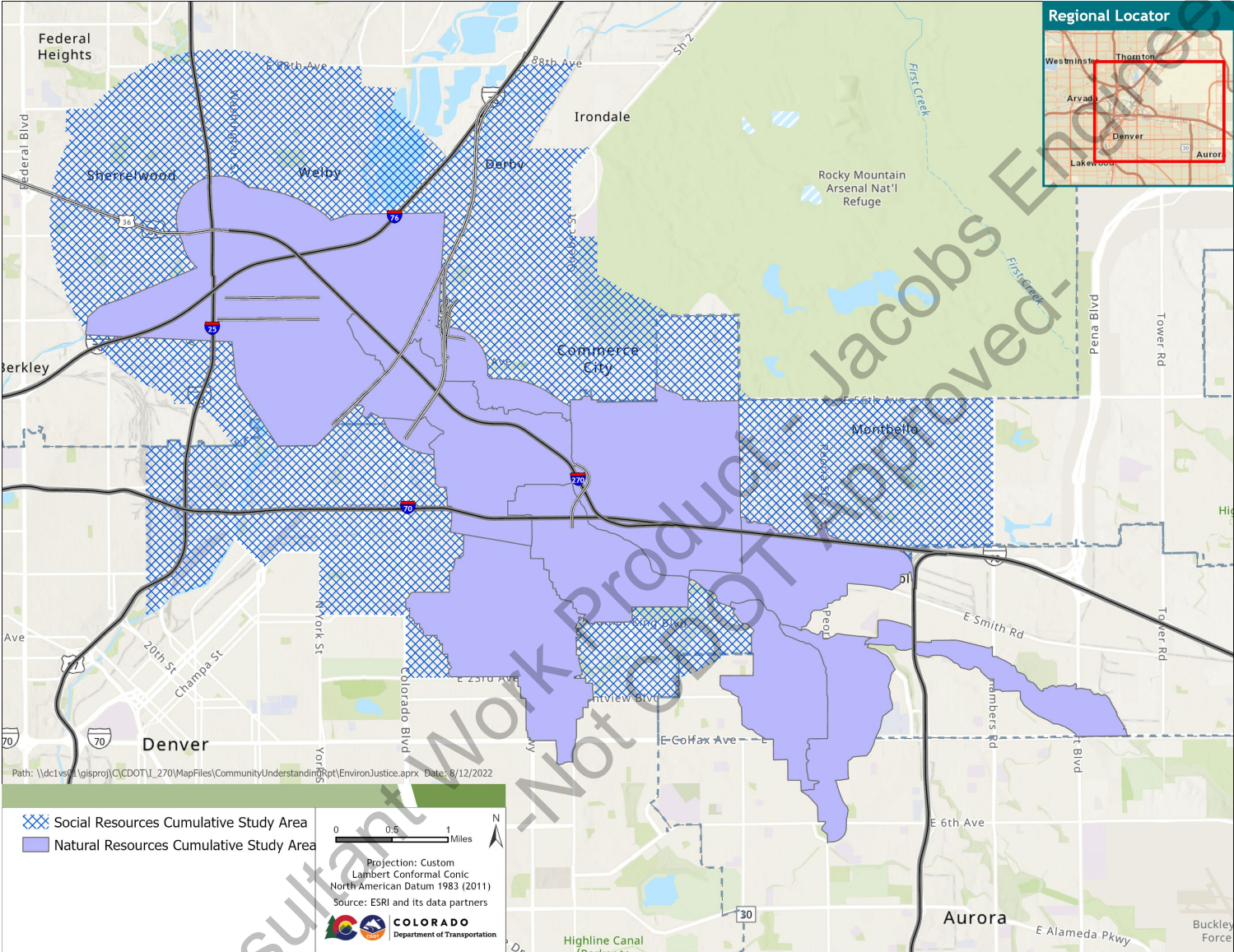


Figure 5-1. Cumulative Impacts Study Areas

Source: Jacobs

6.0 Past, Present, and Reasonably Foreseeable Future Actions

The purpose of describing past, present, and reasonably foreseeable future actions is to provide a reasonable characterization of projects that have affected, or may affect, resources being evaluated. However, this is not an exhaustive list of every project in the study area, but a focus on those that are likely to have had, are having, or will have the most impact on selected resources. As a starting point, these actions are separated into transportation (Table 6-1) and development (Table 6-2). Transportation and development projects are considered large-scale projects that change either the way people move or live, or dramatically change physical geography (for example, the development of previously unused land). Generally, present and reasonably foreseeable future transportation projects are those listed in either long-range transportation plans or capital improvement programs. Local and regional land use and other comprehensive planning documents generally identify foreseeable future development projects.

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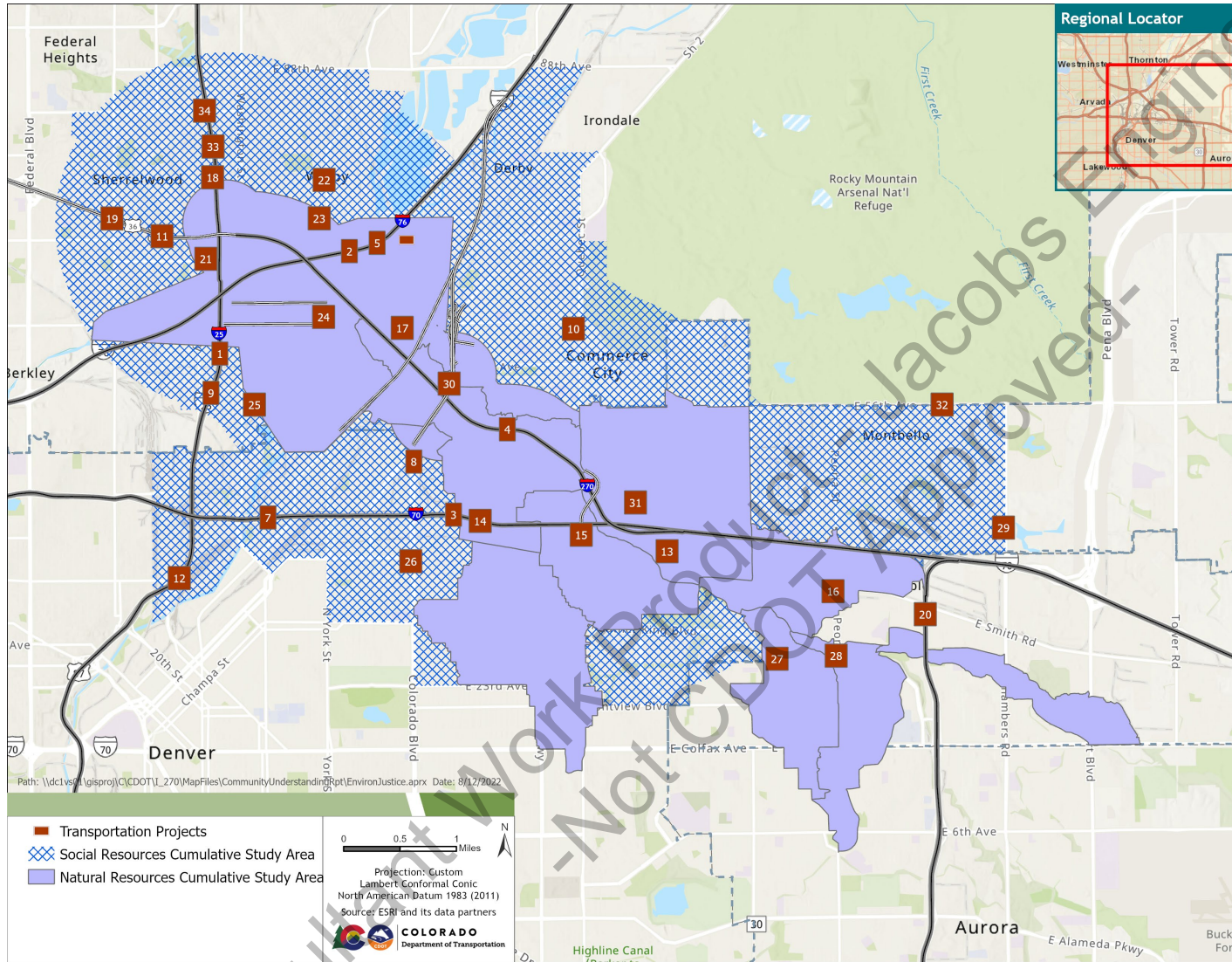


Figure 6-1. Past, Present, and Reasonably Foreseeable Future Transportation Projects

Source: Jacobs

Table 6-1. Past, Present, and Reasonably Foreseeable Future Transportation Projects

Map #	Event/Project	Timeframe	Description
1.	I-25 Construction and Operation	Past (1958-1969)	11.2 miles opened between 48 th Avenue to Evans Avenue; highway completed in Colorado in 1969 (CDOT 2021).
2.	I-76 (formerly I-80S)	Past (1958)	Construction begins on I-80 South, now I-76 (CDOT 2021c).
3.	I-70 Construction and Operation	Past (1961)	Opening of I-70 through Denver and Aurora.
4.	I-270 Construction and Operation	Past (1968)	Opening of I-270 between I-70 and I-25, adjacent to Sand Creek.
5.	I-76	Past (1976)	I-80 South is renumbered I-76; includes 179 miles in Colorado; 6 additional miles planned between I-70 and I-25 (CDOT 2021c).
6.	I-76	Past (1970s-2002), Present	Continued construction on I-76; new bridge structures, interchange with I-25, reconstruction of existing interchanges, addition of auxiliary lanes (CDOT 2021c, 2022c).
7.	I-70 Viaduct Replacement	Past (2003/2009)	Replace viaduct from Washington Street to Brighton Boulevard.
8.	Colorado Boulevard Bridge Replacement	Past (2005)	Safety and capacity improvement 0.8 mile north of I-70.
9.	I-25 High-occupancy Vehicle (HOV) Lane	Past (2006)	HOV lane conversion to HOV/toll – 20 th Street to US-36.
10.	Quebec Parkway	Past (2006)	Quebec Parkway opens in December (Commerce City Historical Society 2022b).
11.	US-36 Bus Rapid Transit (BRT) Corridor	Past (2010)	Highway widening, BRT, roadway improvements, commuter bikeway, and express lanes between Denver and Boulder along US-36.
12.	North I-25 EIS Projects	Present, Future	Multimodal improvements along 61 miles of I-25 from Wellington to Denver Union Station to address regional and inter-regional movement of people, goods, and services (CDOT 2011).
13.	Central Park Boulevard	Past (2012)	New I-70 interchange at Central Park Boulevard.
14.	I-70 East Projects	Past (2016)	Alternatives to implement a transportation solution from I-25 to Tower Road that improves safety, access, and mobility, and addresses congestion on I-70 (CDOT 2016a). The Central 70 Project is the first phase (I-25 to Chambers Road); construction started 2018, expected completion late 2022 (CDOT 2017a, 2021b).
15.	Regional Transportation District (RTD) East Corridor (Transit) (A Line)	Past (2016)	23-mile commuter rail line between Denver and Denver International Airport (RTD 2022c).
16.	Peoria Street-Smith Road Area Improvements	Past (date unknown)	Peoria Street-Smith Road commuter rail-related road, crossing, bike, and pedestrian access improvements (City of Aurora 2022).
17.	North Metro Commuter Rail (N Line), Segment One	Past (2020)	First 13-mile segment of the North Metro commuter rail line from Denver Union Station to 124 th Avenue in Northglenn; future 18.5-mile extension planned (RTD 2022d).

Map #	Event/Project	Timeframe	Description
18.	I-25 High-occupancy Toll (HOT): US-36 to 120 th Avenue	Past (2016)	HOT and BRT; two freeway-managed lanes (CDOT 2022a).
19.	US-36 HOT	Past (2016)	HOT and BRT multimodal project; replaced several bridges, built commuter bikeway, s, and installed Intelligent Transportation Systems (CDOT 2022b).
20.	I-225: Parker Road to A Line	Past (2017)	22-mile light rail transit (RTD 2022e).
21.	RTD Northwest Corridor (B Line), Segment One (Transit)	Past (2016), Present, Future	6-mile commuter rail line between Denver Union Station and Westminster. First segment to Westminster opened July 2016. RTD is evaluating extending service to Longmont as originally planned (RTD 2021, 2022b).
22.	York Street Phase II: 88 th Avenue to 78 th Avenue	Present, Future	Widen from two to four lanes; 2020-2029 100% locally funded (DRCOG 2021a).
23.	York Street Phase I: 78 th Avenue to SH-224	Present, Future	Widen from two to four lanes; 2020-2029 100% locally funded (DRCOG 2021a).
24.	York Street Phase III: SH-224 to 58 th Avenue	Present, Future	Widen from two to four lanes; 2020-2029 100% locally funded (DRCOG 2021a).
25.	58 th Avenue: Washington Street to York Street	Present, Future	Widen from two to four lanes; 2020-2029 100% locally funded (DRCOG 2021a).
26.	Colorado Boulevard; University of Colorado A Line to I-25	Present	Add BRT; 2020-2029 regionally funded (DRCOG 2021a).
27.	Martin Luther King Jr. Boulevard: Havana Street/lola Street to Peoria Street	Present	New four-lane roadway and widening from two to four lanes; 2020-2029 regionally funded; DRCOG-administered multimodal capital project (DRCOG 2021a).
28.	Peoria Street: Sand Creek Bridge	Present	Widen from four to six lanes; 2020-2029 regionally funded (DRCOG 2021a).
29.	Chambers Road: East 56 th Avenue to East 40 th Avenue	Present	Safety and operational improvements; 2020-2029 regionally funded (DRCOG 2021a).
30.	Vasquez Boulevard	Present, Future	60 th Avenue intersection improvements; safety and operational improvements; 2040-2044 regionally funded; CDOT-administered multimodal capital project (DRCOG 2021a).
31.	47 th Avenue/48 th Avenue	Future	Bridge reconstruction and multimodal improvements; 2040-2050 regionally funded (DRCOG 2021a).
32.	56 th Avenue: Havana Street to Pena Boulevard	Future	Widen from four to six lanes; 2030-2039 100% locally funded (DRCOG 2021a).
33.	North I-25: Union Station to State Highway 119 (SH-119)	Future	Add BRT; 2030-2039 regionally funded (DRCOG 2021a).
34.	I-25 North: 84 th Avenue to 104 th Avenue	Future	Safety and operational improvements; 2040-2050 regionally funded; DRCOG-administered multimodal capital project (DRCOG 2021a).

Source: CDOT 2016b unless otherwise indicated.

DRCOG = Denver Regional Council of Governments

N/A = Not applicable

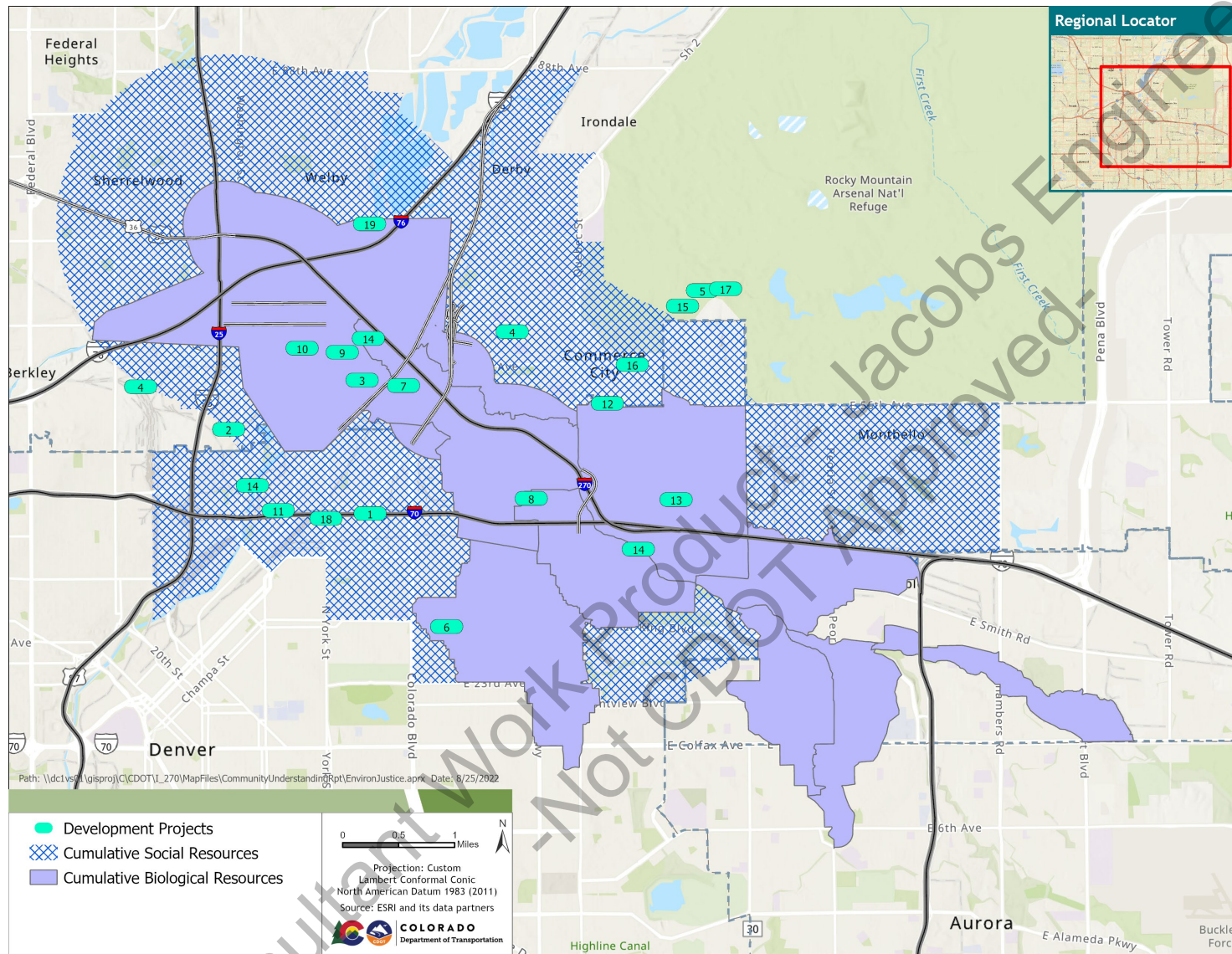


Figure 6-2. Past, Present, and Reasonably Foreseeable Future Development Projects

Source: Jacobs

Table 6-2. Past, Present, and Reasonably Foreseeable Future Development Projects

Map #	Event/Project	Timeframe	Description
1.	Vasquez Boulevard and I-70	Past (late 1800s)	Major smelting center for the Rocky Mountain West; heavy metals were deposited in area soils; groundwater was impacted at former smelter locations; listed on the U.S. Environmental Protection Agency (EPA) National Priorities list in 1999 (EPA 2021b).
2.	ASARCO (Globe Plant)	Late 1800s to 2006)	Metal and refining operations occurred from 1886 to 2006 at the ASARCO (Globe Plant); contaminated soil, sediment, groundwater and surface water (EPA 2022b, CDPHE 2022d).
3.	Continental Oil Refinery; Acquired by Suncor Refinery in 2003	Past (1930s); Present, Future	The Continental Oil Refinery was built south of the current I-270 location (DURA n.d.). Suncor acquires the Continental Oil Company in 2003 (Commerce City Historical Society 2022b).
4.	Grain Elevators	Past (1937)	A series of large grain elevators were built, starting the transition from an agricultural area to industrial (Commerce City Historical Society 2022a, Farm Ranch n.d., Google Maps 2022).
5.	Rocky Mountain Arsenal (RMA)	Past (1942-1992)	U.S. government established the RMA east of Quebec Street for the Chemical Headquarters for the U.S. Army, removing about 200 families from the land east of Derby (Commerce City Historical Society 2022b).
6.	Sand Creek Industrial Site	Past (1940s); Present, Future	Formation of a 550-acre site in Denver and Commerce City in a heavily industrial area; since the 1940s, several different types of businesses have operated at the site, including an oil refinery, a pesticide manufacturing facility, an herbicide chemical plant, and a landfill. Operation and maintenance activities are ongoing (EPA 2021a).
7.	Increasing Industrial Development	Past (1950s)	Industries in the 1950s included six oil refineries, two grain elevators, and a dozen other major manufacturing and freight-hauling businesses (Commerce City Historical Society 2022a).
8.	Chemical Sales Company	Past (1962); Present, Future	Used for storing and repackaging bulk chemicals. Contaminated water, placed on Superfund list 1990 (CDPHE 2021d, EPA 2022c).
9.	Robert W. Hite Wastewater Treatment Facility	Past (1966); Present, Future	Largest wastewater treatment facility in the Rocky Mountain West. Treats and reclaims approximately 130 million gallons per day, which is 85 percent of the South Platte River flow for 6 months of the year (Metro Water Recovery 2022).
10.	Cherokee Generating Station	Past (1968); Present, Future	Xcel Energy power plant initially built as coal-fired facility (Xcel Energy 2022).
11.	National Western Stock-show	Past (1973, 1991, 1995); Present, Future	Expansion of National Western Complex to more than 600,000 sf of developed facilities. Redevelopment and expansion of the 95-acre National Western Complex.
12.	Victory Crossing/Prairie Gateway Development	Past (2005); Present, Future	Commerce City Urban Renewal Authority project located at 60 th Avenue and Quebec Street, containing Dick's Sporting Goods Park, Civic Center, and community and youth soccer fields. Encompasses 917 acres; about 350 acres will eventually be developed (Commerce City Urban Renewal Authority 2011).

Map #	Event/Project	Timeframe	Description
13.	Central Park Redevelopment	Past (2001); Present, Future	Redevelopment of former Stapleton Airport site into mixed-use commercial and residential land uses; development ongoing (Forest City 1999, Brookfield Properties 2021).
14.	Regional Restoration Master Plan for the Northeast Greenway Corridor	Past (2012); Present, Future	Identifies 11 restoration projects covering more than 800 acres of riparian corridors, including 4 within the cumulative impacts study area. The Heron Pond project is expected to be complete by the end of 2023; the Sand Creek 1 and Sand Creek 2, and Westerly/Sand Creek Confluence projects are complete (City and County of Denver 2022, Northeast Greenway Corridor Advisory Committee 2012, Ferguson, pers. comm. 2022).
15.	Mile High Greyhound Park Redevelopment	Past (2020); Present, Future	Sixty-five acres owned by Commerce City Urban Renewal Authority for future development between 62 nd Avenue and 64 th Avenue, and between Dahlia Street and Holly Street (Commerce City 2022).
16.	RMA National Wildlife Refuge	Past (1992)	RMA National Refuge Act designated 27 square miles as national refuge (Commerce City Historical Society 2022b).
17.	Transit-Oriented Development at RTD North Line Station at East 72 nd /Colorado Boulevard	Past and future; opened 2020	The North Line station is located in Commerce City at Colorado Boulevard and East 72 nd Avenue (RTD 2022a). Commerce City approved a 100-unit affordable housing project near the station in 2022 but “more work needs to be done” before development can begin (Aguilar 2022).
18.	Nestle Purina	Past (1930s; Present, Future)	Nestle Purina established in the 1930s as a livestock feed producer and transitioned to a pet food-only manufacturer in 1972. The facility is located 4445 York Street and requires an air permit for stationary sources from CDPHE. (EPA 2015b, Nestle n.d.).
19.	South Platte River Trail	Future	Complete missing links and upgrade trail section; 2030-2039 regionally funded (DRCOG 2021a).

Source: CDOT 2016b unless otherwise indicated.

7.0 Cumulative Effects Assessment

In general, both study areas have been affected and shaped by railroad construction, industrial development, a scattered workforce and commercial development supporting local industries, and highway construction, particularly I-270, I-25, I-70, and I-76.

Colorado, Adams County, and Commerce City have grown considerably since construction of I-270, particularly from 2010 to 2020. Table 7-1 shows a substantial increase in Commerce City in particular. Increases in growth can lead to increased vehicular use of highways and roads, potentially affecting all resources analyzed.

Table 7-1. Population Change 2010-2030

Location	2010	2020	Percent Change 2010-2020	2030	Percent Change 2020-2030
Colorado	5,029,196	5,782,902	14.9%	6,499,620	12.4%
Adams County	441,603	520,076	17.8%	604,681	16.3%
Commerce City	46,142	62,699	35.9%	N/A	N/A

Source: Colorado Department of Local Affairs State Demography Office 2022

N/A = not available

Note: No data available beyond 2030.

Under the No Action Alternative, existing and anticipated future conditions generally would not change, with some exceptions. Traffic and vehicle miles traveled (VMT) would continue to increase due to economic and population growth. However, emissions of most pollutants would decrease due to implementation of stringent emission standards, improvement of fuel efficiency, and vehicle turnovers. Various programs, actions, and efforts to address water pollution, and plans to restore riparian areas along waterways in the study area, would result in beneficial impacts. Congestion and safety issues would persist and would continue into the future without improvements to I-270. The EJ community would continue to experience the effects of degraded air quality and worsening transportation issues. Overall, cumulative impacts to the resources discussed here would vary, ranging from beneficial to adverse.

The following sections describe existing conditions for all resources and how specific actions identified in Table 6-1 and Table 6-2 would affect or shape the existing environment for the resources analyzed.

7.1 Air Quality

7.1.1 Existing and Anticipated Future Conditions

Denver's location at the base of the Rocky Mountains makes it prone to temperature inversions that trap cooler air near the ground, preventing pollutants from rising into the atmosphere. From the 1970s into the late 1980s, the Denver area exceeded EPA National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO), particulate matter less than 10 microns in diameter (PM₁₀), and ozone (O₃). This resulted in EPA designating the Denver metropolitan area and North Front Range (DM/NFR) as nonattainment for O₃, the Denver metropolitan area as nonattainment for PM₁₀, and the Denver-Boulder area as nonattainment for CO. If monitored levels of any criteria pollutant violate the NAAQS in an area of the state, EPA will designate the area as "nonattainment" for that pollutant, and the state must prepare a state implementation plan (SIP) to establish, regulate, and enforce air quality standards (CDOT 2017b). Starting in the 1980s, stricter federal emission guidelines for motor vehicles led to several technological advancements in engine design, and industrial sources were required to install pollution controls and implement best practices. These efforts contributed to a reduction in air pollutants in the

Denver metropolitan area. In 2002, EPA redesignated the Denver-Boulder and Denver metropolitan areas as attainment/maintenance areas for the CO and PM₁₀ NAAQS, respectively. On January 14, 2022, the 20-year maintenance period for the Denver-Boulder CO attainment/maintenance area ended and it is in attainment. The 20-year maintenance period for the Denver Metro PM₁₀ attainment/maintenance area will end on October 16, 2022, and after that the area will be in attainment. However, O₃ continues to be a persistent problem during the summer; therefore, the DM/NFR remains a nonattainment area for O₃. Current activities are focused on reducing ground-level O₃ (City and County of Denver 2021a).

In 2008, the Colorado Air Quality Control Commission approved the *Ozone Action Plan* and revisions to the ozone SIP (RAQC 2008), which identified specific control measures to help bring the DM/NFR in compliance with the O₃ standard. The SIP identified a motor vehicle emissions budget for O₃, which specifies the total allowable emissions allocated to on-road mobile sources. In 2015, EPA lowered the standard for the 8-hour O₃ concentration from 0.075 parts per million to 0.070 parts per million (*Federal Register* Volume 80, Issue 206 - National Ambient Air Quality Standards for Ozone). Despite the air pollution challenges associated with increasing population, air quality in Colorado is improving, but not quickly enough to meet EPA's lowered 8-hour O₃ standard (City and County of Denver 2021b).

Sources of air pollution in the study area include mobile, classified as on-road and non-road vehicles (for example, aircraft, construction equipment), and stationary/point sources, classified as fixed-site producers of pollution (power and chemical plants, oil refineries, manufacturing facilities, small industrial processes, other industrial operations) (RAQC 2020). Large sources that have specific locations and release pollutants in quantities above a certain threshold are known as point sources (RAQC 2020). Table 6-1 lists several mobile sources, including highway and adjacent road construction, which contribute to air pollution in the study area. Other actions listed in Table 6-1 are expected to improve air quality, such as implementation of transit services and express lanes. Table 6-2 lists multiple stationary sources, some of which have greatly affected air quality in the study area, such as the Suncor refinery, and are described in more detail in this section. Other actions listed in Table 6-2 are expected to improve air quality, such as establishing transit-oriented development and the RMA Wildlife Refuge.

According to CDPHE, the Commerce City – North Denver area, which also includes portions of the I-270 cumulative study area, experiences higher than average levels of fine particle pollution. As shown on Figure 7-1, the largest sources of these are industrial activities, including Suncor and Cherokee Generating Station, which are located within the I-270 study area. Figure 7-1 also lists Other Industrial Sources as a large contributor to fine particle pollution, which could include areas within and outside of the I-270 cumulative study area. The Nestle Purina Petcare Company is also located within the I-270 cumulative study area, but is not a large contributor to fine particle pollution. Fine particles can travel into the lungs and enter the bloodstream, causing numerous health impacts, including trouble breathing, asthma attacks, and heart issues (CDPHE 2021a).

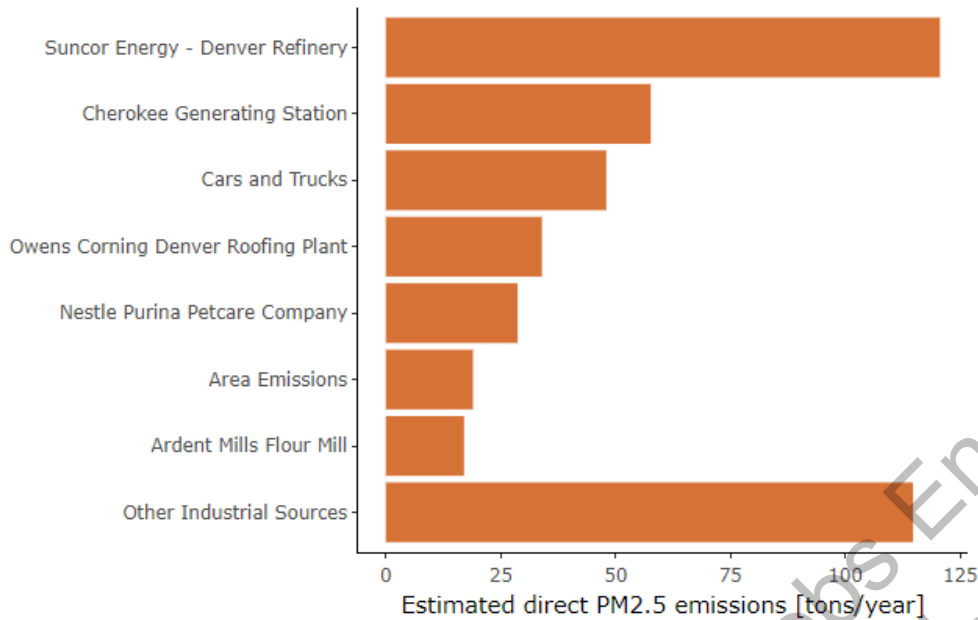


Figure 7-1. Largest Contributors to PM_{2.5}

Source: CDPHE 2021a

Note: Owen Corning and Ardent Mills facilities located near but outside of cumulative study area.

Although the Commerce City – North Denver area experiences higher than average levels of fine particle pollution, this area is designated as an attainment/maintenance area for the particulate matter less than 2.5 microns in diameter (PM_{2.5}) NAAQS. This means that PM_{2.5} emissions do not exceed the NAAQS, which is defined as clean air.

Regionally, future emissions would be lower than present emissions due to EPA's national control programs that are projected to reduce annual Mobile Source Air Toxic emissions by more than 90 percent between 2010 and 2050 (FHWA 2016).

As required by Colorado House Bill 19-1261 (Climate Action Plan to Reduce Pollution), Colorado established statewide GHG pollution reduction goals. To achieve these goals, the governor directed state agencies (through [HB19-1261](#)) to develop the Colorado Greenhouse Gas Pollution Reduction Roadmap. With the passage of Colorado Revised Statute 43-1-128 and the key recommendation from the roadmap to adopt a GHG rule, CDOT established a new GHG Planning Standard Title 2 of the Code of Colorado Regulations (CCR) 601-22. Section 8.03.1–8.03.12 has identified GHG mitigation measures to offset GHG emissions and demonstrate progress toward compliance with statewide GHG reduction goals.

The Proposed Action, as well as other transportation improvements, listed in the 2050 MVRTP (DRCOG 2021a), are included in the regional modeling conducted for the SIPs to show the area meets conformity requirements of the Clean Air Act. The regional conformity determination for ozone, CO, and particulate matter for the MVRTP was adopted in April 2021 (DRCOG 2021b).

Mobile Sources

Table 6-1 identifies past and current transportation developments that were and are air quality mobile sources of pollution. This section describes the most notable sources in more detail.

Several interstates (I-25, I-70, I-270, and I-76) and major roads (Vasquez Boulevard, Quebec Street, and Brighton Boulevard) cross the study area. Within the study area, I-270 is substantially congested, resulting in slower speeds and increased emissions. According to the Colorado Department of Public Health and Environment (CDPHE), motor vehicles are a substantial source of pollution in the DM/NFR

area (Figure 7-2). People are exposed to toxic air pollutants primarily through transportation, as motorists or passengers. Those who undergo prolonged exposure to toxic air pollutants at substantial concentrations may have an increased chance of experiencing serious health effects. Urban areas where motor vehicles and industries are concentrated experience the most impacts in Colorado. Emissions from motor vehicles (as well as industry) also contribute to ground-level O₃ formation, which can cause breathing difficulties and respiratory effects (CDPHE n.d.a).

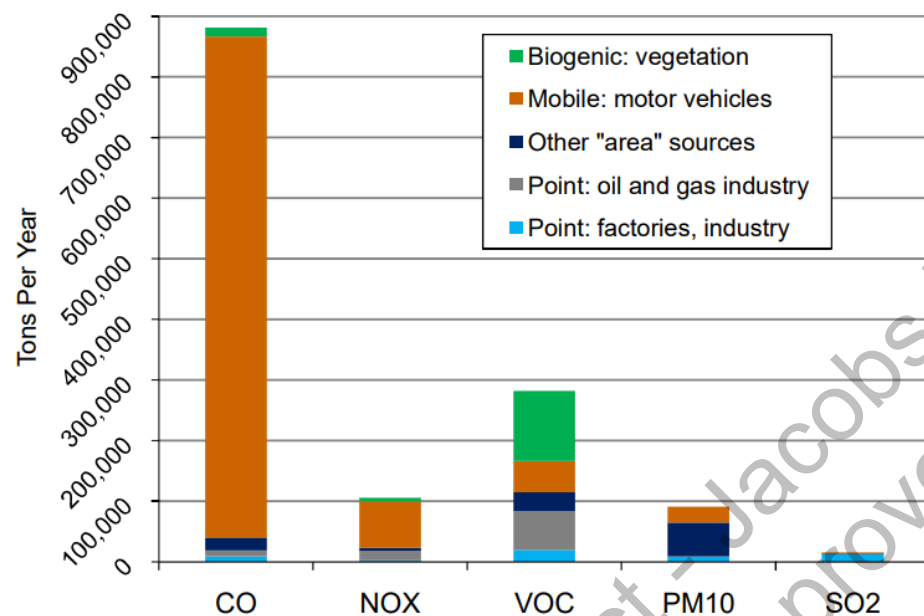


Figure 7-2. Denver/North Front Range Air Pollution Sources

Source: CDPHE n.d.a

NO_x: oxides of nitrogen; VOC: volatile organic compounds; SO₂: sulfur dioxide

The introduction of transit routes and express lanes along interstates within the study area—such as BRT on US-36, RTD’s A, G, and N transit lines, and HOV and express lanes—have helped reduce impacts to air quality by vehicles from roadways that presumably would have been used without these options. Other actions—such as EPA’s national control programs, statewide GHG pollution reduction goals, and CDOT’s policy to reduce air pollution from the state’s transportation sector—are also expected to help reduce emissions from mobile sources. In addition, the Colorado Energy Office states that “More zero emission vehicles...on Colorado roads will provide compelling air quality, health and economic benefits across the state. Multiple studies confirm Colorado will see ... significant reductions in ozone and GHG. Transportation is the second largest source of GHG emissions in the state—and as Colorado’s electricity sector decarbonizes, transportation will become the greatest contributor of harmful, climate-altering pollution” (2022). To support this transition, the Colorado Energy Office is offering zero emission vehicle tax credits for the purchase, lease and conversion of light, medium and heavy duty alternative fueled vehicles (2022).

Stationary/Point Sources

Table 6-2 identifies past and current developments that were and are air quality stationary point sources of pollution. This section describes the most notable sources in more detail.

According to CDPHE, “Commerce City - North Denver has higher fine particle pollution and more serious respiratory problems than the rest of the state. Several major industries contribute to the current pollution burden. Additionally, places like the RMA and former smelting plants are historic sources of pollution. These and other sites have participated in federal programs aimed at reducing exposure to pollution” (2021a). CDPHE states, “Companies that are no longer in business can leave sources of

pollution behind. Some of these sites have completed or are working on cleanup activities through the Superfund and Brownfields programs.” The following sites have affected air quality in the study area. Per the CDPHE, “these sites were cleaned up to environmental health standards set at the time of site designation” (CDPHE n.d.b):

- The 550-acre Sand Creek Industrial site is located in Denver and Commerce City, roughly bordered by Vasquez and Colorado boulevards to the west, I-270 to the north, Ivy Street to the east, and East 48th Avenue to the south. Since the 1940s, several different types of businesses have operated at the site, including an oil refinery, a pesticide manufacturing facility, an herbicide chemical plant, and a landfill. Site operations, waste management practices, and spills and explosions at the site contaminated the air and other resources with hazardous chemicals. Following cleanup, EPA removed the site from the Superfund program’s National Priorities List in 1996. Operation and maintenance activities are ongoing (EPA 2021a).
- The 89-acre ASARCO – Globe Plant is a proposed Superfund hazardous waste site located at East 51st Avenue and Washington Street in north Denver and south Adams County. The plant is a high-purity metals refining facility that has been processing various heavy metals since the 1880s. According to CDPHE, “Residents may be exposed to metals through ... inhalation of re-suspended or airborne particles.” Remedies identified in 1993 include measures to reduce toxic air emissions from the plant. Medical monitoring was provided to over 1,500 participants (CDPHE 2021b).
- The Vasquez Boulevard and I-70 Superfund site is located in the City and County of Denver south and west of I-270, roughly bordered by the South Platte River to the west, 49th and 52nd avenues to the north, Vasquez and Colorado boulevards to the east, and Martin Luther King Boulevard to the south. Historically, the area was a major smelting center. Two smelting plants—Omaha & Grant and Argo—operated at the site for various lengths of time. In 1992, CDPHE evaluated heavy metal contamination in the groundwater, soils, and air in the vicinity of the Omaha & Grant Smelter Site. After all contaminated soil and debris were disposed of, the City and County of Denver conducted air and dust sampling for particle count PM₁₀, metals, and asbestos at the site boundaries, and EPA also conducted periodic particulate air monitoring at the site. Results indicated that dust suppression activities were effective at minimizing dust emissions (PM₁₀). (EPA 2021b).
- RMA is located north of the former Stapleton Airport and west of Denver International Airport in Adams County. The U.S. Army constructed the arsenal in 1942 to develop chemical weapons on 17,000 acres of farmland. After World War II, some of the facilities were leased to private companies, including Shell Oil Company, for the production of agricultural chemicals. The U.S. Army later reactivated the facilities for Cold War weapons production and demilitarization. All production at the site stopped in 1982, and environmental cleanup and restoration began. In 1987, the site was placed on the Superfund National Priorities List. As cleanup actions were completed, the land was transferred to the U.S. Fish and Wildlife Service to create the RMA National Wildlife Refuge. The U.S. Army will permanently retain and manage about 1,000 acres of arsenal land (U.S. Army n.d.).

Air monitoring was conducted within the arsenal and surrounding communities during several decades of cleanup, which “showed the cleanup was protective of public health,” according to CDPHE. CDPHE further states, “When the cleanup was completed, it was clear that no Arsenal chemicals had been released into the air that exceeded the health-protective levels established for the site since the environmental cleanup began in October 1997.” Air monitoring continued until the end of July 2009 (CDPHE 2021c).

The following two sites are currently in operation and are considered major sources of air pollution:

Suncor Refinery

The Suncor refinery, located on Brighton Boulevard near Sand Creek in Commerce City, is Colorado's only major petroleum refinery. The refinery is a major supplier of gasoline, diesel fuel, and jet fuel, and is the state's primary producer of paving-grade asphalt. As a Clean Air Act Title V Major Source of air pollution, "the facility is frequently a subject of significant public attention" (CDPHE 2022a). Some of the pollutants Suncor produces include PM, NO_x, VOC, SO₂, and CO (CDPHE 2022c). CDPHE notes, "Industrial activities, including Suncor, are the largest sources of fine particle pollution in Commerce City - North Denver" (2021a). At a public meeting in March 2022, the Director of CDPHE's Air Pollution Control Division said, "The Suncor Refinery presents a monumental and complex environmental challenge for area residents and the state as a whole. It is the largest single source of air pollutants in the Denver metro area, emitting close to 2,000 tons of harmful air emissions per year and nearly 1 million tons of greenhouse gasses" (CDPHE 2022b).

Considering this, the operation and permitting of the Suncor facility is expected to heavily influence future air quality conditions in the study area. Suncor consists of two refineries with two separate operating permits: one for Plant 2, and another for Plants 1 and 3. In 2011, Suncor applied to renew its Plant 2 operating permit. Adams County and EPA have submitted comments to CDPHE's Air Pollution Control Division regarding the permit renewal. EPA comments included concerns related to EJ and Civil Rights Act Title VI issues. As of this writing, CDPHE is reviewing the permit and addressing these comments (EPA 2022a).

Suncor applied for an operating permit renewal in 2021 for Plants 1 and 3, incorporating approximately 23 modifications. The draft permit renewal incorporates increases to PM/PM₁₀/PM_{2.5}, NO_x, VOC, and CO, with a decrease in SO₂ (Adams County 2022). CDPHE drafted the air quality permit for Plants 1 and 3 to contain more stringent requirements, including new monitoring, testing, recordkeeping, and reporting requirements. The permit also includes new regulations that became effective since CDPHE last renewed the permit. Public meetings were scheduled to be held in July 2022, after which CDPHE may modify the permit before submitting it to EPA for review. As of this writing, no further information was readily available on the CDPHE website about this permit (CDPHE 2022c).

On March 6, 2020, CDPHE announced a \$9 million settlement for state and federal air pollution violations at the Suncor refinery. The settlement addresses multiple events when Suncor emitted pollutants over established limits, as well as violations relating to facilities operations and monitoring requirements. These events began July 2017, and include "a significant increase in violations that occurred during the period from January through June 2019," according to Adams County. The settlement also includes penalties for an "operational upset" and other violations that happened in December 2019. Of the total amount of the settlement, \$2,624,100 will be used for the state's Supplemental Environmental Projects to benefit the surrounding communities (Adams County 2021).

Xcel Energy Cherokee Generating Station

Xcel Energy's Cherokee Generating Station is located south of 64th Avenue between Franklin and York streets. CDPHE filed a petition in 2010 objecting to continuation of the station's permit "due to its failure to ... address violations of applicable requirements under the Clean Air Act." The petition refers to the station as a "major stationary source of air pollution located in Denver." According to the petition, the "785-megawatt power plant consists of four coal-fired boilers that generate steam to produce electricity... [and] releases massive amounts of air pollution known to be harmful to public health and the environment." The petition lists the amount of annual pollutant releases from the station, including 222.29 tons of PM₁₀. (CDPHE 2010).

In 2004, Colorado passed its first Renewable Energy Standard, requiring clean energy by 2050 for utilities serving 500,000 or more customers (National Conference of State Legislatures 2021). This

standard has since been updated to require that “all electric utilities derive their energy from one hundred percent renewable sources by 2035.” The revision also “Allows a utility to obtain energy efficiency credits equal in value to renewable energy credits based on any energy efficiency upgrades made for a low-income residential customer” (Colorado General Assembly 2018). In response, Xcel Energy prepared a plan to transition “to a more sustainable energy future, powered by less carbon-intensive fuel sources” (Xcel Energy 2021). Xcel converted the Cherokee Station’s coal-fired generators to natural gas in 2017 (EIA 2020). The U.S. Energy Information Administration states that “burning natural gas for energy results in fewer emissions of nearly all types of air pollutants and carbon dioxide than burning coal or petroleum products to produce an equal amount of energy” (EIA 2021).

7.1.2 Cumulative Impacts

Recent actions to address area pollution emitters and sources has, and will, result in some beneficial impacts. However, the area still experiences adverse air pollution impacts, and is expected to do so in the future given the extent of current and anticipated future emissions.

Implementation of express lanes and other improvements under the Proposed Action would generally improve these conditions by adding capacity and reducing congestion. The following impacts to air quality would result from the Proposed Action:

- Although the Proposed Action would result in higher VMT, most of the criteria pollutants (except PM₁₀ and PM_{2.5}) and Mobile Source Air Toxics would be lower than the No Action Alternative.
- PM₁₀ and PM_{2.5} emissions would slightly increase compared to the No Action Alternative, with approximately 75 to 80 percent of the total PM₁₀ and PM_{2.5} emissions attributed to re-entrained road dust (refer to the Air Quality Technical Report, Appendix A4 of the EA for details).
- GHGs would be slightly (1 percent) higher compared to the No Action Alternative due to induced demand or higher VMT.
- Further decreases in most air emissions in the study area would likely result from emissions reductions from reduced congestion and increased vehicle speeds compared to the No Action Alternative, and implementation of stringent emission standards, improvement of fuel efficiency, and vehicle turnover.

These project effects, along with air quality emissions from other projects included in DRCOG’s 2050 Metro Vision Regional Transportation Plan (MVRTP) (2021a), are accounted for in DRCOG’s conformity modeling and plans.² An emissions inventory was conducted as part of the project-level air quality analysis (refer to the Air Quality Technical Report, Appendix A4 of the EA for details). Table 7-2 and Table 7-3 summarize the existing and future VMT and estimated emissions along the I-270 corridor compared to the Denver region VMT and estimated emissions in the 2050 DRCOG conformity determination, respectively.

Table 7-2. Existing and Future VMT along I-270 and in the Denver Region

I-270 (Study Area) VMT			Denver Region VMT		% of VMT along I-270 compared to Denver Region	
Existing 2016	No Action 2050	Proposed Action 2050	Existing 2020	Future 2050	Existing 2020	Future 2050 ^a
1,393,148	1,606,823	1,942,340	91,373,242	130,534,879	1.52%	1.48%

Source: DRCOG 2021a

^a Compared to future Proposed Action 2050

² Regional conformity is accounted for in the 2050 MVRTP (DRCOG 2021a) and the 2022-2025 TIP (DRCOG 2020), specifically referenced by Transportation Improvement Program number 2020-068.

Table 7-3. Existing and Future Emissions along I-270 and in the Denver Region

Pollutants	I-270 (Study Area) Emissions (tpd)			Denver Region Emissions (tpd)			% of Emissions along I-270 compared to Denver Region	
	Existing 2016	No Action 2050	Proposed Action 2050	Existing 2020 ^a	Future 2050	SIP Budgets	Existing 2020 ^a	Future 2050 ^b
VOC	0.104	0.021	0.022	35	21	47	0.29%	0.10%
NO _x	0.742	0.099	0.087	35	16	61	2.1%	0.54%
CO	4.669	1.332	1.329	405	187	1600	1.2%	0.71%
PM ₁₀	0.247	0.316	0.318	28	37	55	0.88%	0.86%

^a Years range from 2021-2023 depending on the pollutant

^b Compared to future Proposed Action 2050

tpd=ton(s) per day

Table 7-2 and Table 7-3 show that small differences are expected between the No Action Alternative and the Proposed Action Alternative. These differences are extremely minor in the context of overall Denver region VMT and emissions. Although VMT would increase in future years due to economic and population growth, emissions of most pollutants would decrease due to implementation of stringent emission standards, improvement of fuel efficiency, and vehicle turnovers. Also, transportation control measures included as part of the PM₁₀ SIP that relate to I-270, such as street sanding and sweeping activities, would continue to be implemented according to Colorado Air Quality Control Commission Regulation 16 (5 CCR 1001-18, Street Sanding Emissions).

7.1.3 Summary

When added to the effects of past, present, and reasonably foreseeable future actions, impacts from the Proposed Action would not measurably contribute to cumulative impacts.

7.2 Water Quality

7.2.1 Existing and Anticipated Future Conditions

The study area is located within the South Platte River Basin, which drains all of the water in the Denver metropolitan and surrounding areas (USGS 2000). In addition to the South Platte River, surface waters in the study area include Clear Creek and Sand Creek.

Past development and transportation projects listed in Table 6-1 and Table 6-2 have resulted in point and nonpoint source pollution and degraded water quality in study area streams. All three of these surface waters (Clear Creek, Sand Creek, and South Platte River) are on the CWA Section 303(d) impaired waters list (CDPHE 2022e), with impairment sources being E. coli and heavy metals (Table 7-4) (CDPHE 2021e). A total maximum daily load (TMDL) assessment must be developed for each water body included on the 303(d) List. A TMDL quantifies the amount of a pollutant that an impaired water body can assimilate without violating applicable water quality standards. Colorado's Monitoring and Evaluation (M&E) List identifies waterbodies with suspected, but uncertain, water quality problems. The M&E List is not subject to EPA approval (EPA 2011, CDPHE 2021e).

Table 7-4. 303(d) Status of Waters within the Study Area

Water Body ID	Waterway Description	Stream Impairments	Roadway Pollutants of Concern	Listing
COSPUS16i.B	Mainstem Sand Creek from the confluence with Westerly Creek to the confluence with the South Platte River	<i>E. coli</i> , selenium (dissolved)	None	303(d)
COSPUS15.B	Mainstem of the South Platte River from the Burlington Ditch diversion in Denver, Colorado to Sand Creek	Temperature	None	M&E
		TMDL: Cadmium-D, sulfate, <i>E. coli</i>	Cadmium, sulfate	303(d)
COSPCL15.C	Mainstem of Clear Creek from Wadsworth Boulevard to the confluence with the South Platte River	Temperature, <i>E. coli</i> , arsenic, manganese (dissolved), organic sediment	Manganese	303(d)

Source: CDPHE 2020c, 2022

E. coli = *Escherichia coli*

TMDLs have been developed only for the South Platte River within the study area (CDPHE 2020c). Data indicate that a groundwater plume originating under or near the Globeville ASARCO Facility and Argo site is the main source of cadmium loading. The Xcel Cherokee power plant is the only other cadmium point-source discharge, but contributes to a lesser degree and has not been discharging at or near design capacity (EPA 2011).

The following point-source facilities, listed briefly in Table 6-1 and Table 6-2, have affected water quality in the study area and are described in more detail in this section.

- The Sand Creek Industrial site contaminated groundwater and surface water with hazardous chemicals. EPA removed the site from the Superfund list in 1996, but operation and maintenance activities are ongoing. EPA concluded that migration of contaminated groundwater is stabilized and there is no unacceptable discharge to surface water. The agency will conduct monitoring to confirm that affected groundwater remains in the original area of contamination (EPA 2021a).
- The Chemical Sales Company site covers 5 square miles and forms an elongated north-south area from I-70, across I-270, and north to 84th Avenue. The site was developed in 1962 and used for storing and repackaging bulk chemicals. Drinking water samples taken in 1981 identified organic chemicals in groundwater attributed to this site as the main source of contamination. A plume of groundwater contamination extended from north of Sand Creek to Quebec Street on the east, Holly Street on the west, and East 86th Avenue on the north. The site was placed on the Superfund list in 1990. Since treatment systems were implemented, monitoring has shown a downward trend in contaminant concentrations (CDPHE 2021d).
- The Vasquez Boulevard and I-70 Superfund site contaminated groundwater in the vicinity of the Omaha & Grant Smelter Site. The area was a major smelting center for the Rocky Mountain West. The two smelting plants operated for varying lengths of time, beginning as early as the 1870s. Heavy metals were deposited in area soils at levels that, in some cases, posed a health risk to people living there. Groundwater was also impacted at the former smelter locations. Environmental investigations continue at the former smelter location. EPA expects that sampling will start in 2022 (EPA 2021b).
- CDPHE is monitoring groundwater at the former 48th and Holly Landfill (part of the Sand Creek Industrial site), located at the northwest corner of 48th Avenue and Ivy Street. Results of monitoring conducted in 2013 indicate that “groundwater conditions are stable and steadily improving in both upgradient and downgradient wells at the landfill” (CDPHE 2013).

- The RMA contaminated groundwater, which was first discovered to have migrated off the arsenal in the mid-1950s. According to the U.S. Army, “decades of chemical and agricultural production led to contamination of some of the soil, structures and groundwater.” Groundwater cleanup began in 1996. Contaminated groundwater and surface water that still exist in and around RMA continue to be actively monitored (U.S. Army n.d., CDPHE 2021c).
- Suncor has been identified as releasing a large amount of the perfluoroalkyl and polyfluoroalkyl substances (PFAS) found in Sand Creek and the South Platte River. PFAS have been linked to adverse health effects from consuming drinking water and food containing very low PFAS concentrations. PFAS compounds can travel long distances in surface water and groundwater and can accumulate in animal and plant tissue (Westwater Hydrology LLC 2022).
- The ASARCO (Globe Plant) is located in Globeville near the South Platte River. Metal and refining operations occurred from 1886 to 2006, and it contaminated soil, sediment, groundwater and surface water with metals and other chemicals. The plant currently produces lead oxide, bismuth oxide, and test lead, and it refines high-purity metals. The site contains a groundwater contaminant plume flowing to the northeast, an unlined waste pile that contributes to groundwater contamination, and soil contaminated with arsenic, cadmium and lead both on and off the plant property. Site remediation includes “reducing contamination of and treatment of groundwater” and cleaning ditches (EPA 2022b, CDPHE 2022d).

Nonpoint sources of water pollution are more dispersed and include runoff from impervious surfaces, such as roads, entering surface waters. Roads are major nonpoint pollution sources, especially during precipitation events, because stormwater runoff contains chemicals from road materials, chemicals applied to roads, contaminants from vehicles, and heavy metals from the deterioration of vehicle parts (Schuler and Relyea 2018). The existing I-270 drainage conditions include direct conveyance from I-270 into the three adjacent surface waters (refer to the *Water Quality Technical Memorandum*, Appendix A9 of the EA). As shown in Table 7-4, three roadway pollutants of concern contribute to the impaired status of the waterbodies in the study area: cadmium, sulfate, and manganese. Cadmium and manganese are two of the heavy metals that most commonly accumulate adjacent to roads, which can then be mobilized by road salts into adjacent waters. However, in urban areas, sources such as the siding of buildings can contribute more cadmium than vehicles (Schuler and Relyea 2018). Sulfate particles are part of PM_{2.5} and form sulfuric acid when dissolved in water (California Air Resources Board 2022).

Foreseeable future development along I-270 is limited because the corridor is already a highly developed industrial area, meaning little natural surface areas are left to convert to impervious surface. Most of the remaining natural surface is located within the Sand Creek and South Platte River floodplains.

Local, state, and federal regulations enacted over the past 50 years have produced positive results in water quality despite the general trend toward development and increases in impervious surface. Ordinances have strengthened over time, beginning with the federal Water Pollution Control Act of 1972, and later in 1974 with the passage of the Safe Drinking Water Act. The resulting National Pollutant Discharge Elimination System (NPDES) permit program places limits on the amount of pollutants that may be discharged from point sources. The EPA granted Colorado the authority to issue and manage these permits through the Colorado Discharge Permit System Regulations. These regulations require operators of large municipal storm sewer systems—such as City and County of Denver, Adams County, and Commerce City—to obtain permits and develop stormwater management programs. The study area crosses through or is adjacent to the following municipal separate storm sewer systems (MS4) permit areas: CDOT, City and County of Denver, Adams County, and Commerce City. These programs include issuance of construction and maintenance best management practices for preventing harmful pollutants from entering stormwater systems. Construction projects 1 acre or larger are required to secure a Colorado Discharge Permit System permit for stormwater discharges (EPA 2018).

The 2020 *South Platte River Vision and Implementation Plan Grant Application* notes that the South Platte River from Commerce City to Brighton “is highly impacted by channelization and damaging adjacent land uses, such as heavy industry and mining operations, which have caused ... high levels of pollution.” The document also states that the river “can be returned to health and full functioning,” and identifies several tasks focused on “restoring 17 miles of the South Platte River running through Adams County” (Colorado Water Conservation Board 2020).

7.2.2 Cumulative Impacts

The Proposed Action would improve water quality conditions in the I-270 corridor compared to the No Action Alternative through modernization of the corridor’s drainage infrastructure as follows:

- Undersized and disconnected infiltration facilities would be replaced with a system of new inlets, pipes, and ditches.
- Outfalls to adjacent surface waters would be consolidated in some areas to reduce the number of control measures and reduce future maintenance needs.
- Water quality control measures would be included to capture and treat stormwater runoff.

Approximately 33 acres of impervious surface would be added under the Proposed Action. Slight increases in PM_{2.5} emissions, which contain sulfate particles, would negligibly contribute to sulfate in the South Platte River. Impacts will be mitigated using permanent water quality features that also meet CDOT’s MS4 permit capture and treatment volumes. The increased roadway runoff will be captured and treated before entering adjacent streams, providing a level of filtration that does not currently exist. The Proposed Action also would improve water quality conditions in the I-270 corridor through modernization of the corridor’s drainage infrastructure, a beneficial impact compared to existing conditions. Therefore, the Proposed Action is not expected to contribute to 303(d) impairment in the study area.

Similar to air quality, past and present actions have resulted in substantial impacts to water quality in the study area, which may continue due to the need for monitoring and possible remediation. However, implementation of water quality regulations and permit requirements have addressed, and will continue to address, water quality through remediation and monitoring. Future remediation actions, such as those identified at the Globe Plant and potentially included in the South Platte River Vision and Implementation Plan, would result in beneficial impacts to water quality. Because the study area is largely built out and MS4 requirements apply, future actions are not expected to greatly impair water quality compared to existing conditions.

7.2.3 Summary

When the Proposed Action is combined with effects of past, present, and reasonably foreseeable future actions, particularly adding control measures that do not currently exist, cumulative impacts to water quality would be negligible. Cumulative impacts would remain adverse as a result of other past actions, but could improve over time with implementation of proposed remediation measures and possible delisting of impaired waters.

7.3 Transportation

7.3.1 Existing and Anticipated Future Conditions

Construction of interstates through the study area (I-25, I-70, I-270, and I-76) have allowed for high-speed highway travel through and to Denver’s metropolitan area. However, these interstates have become congested as growth has increased traffic on the roadway network. The I-270 corridor is currently operating at or near capacity, and drivers experience substantial travel delays during peak travel periods, which adversely affect freight movement and multimodal travel. As noted in the Purpose

and Need section of the EA (Section 2), the I-270 corridor experiences several transportation safety issues:

- A greater than average crash rate and frequency compared to expected crash rates for urban four-lane freeways in Colorado.
- Increasing crash trends.
- An overrepresentation of truck crashes due to large truck volumes.
- Level of Service of Safety (LOSS) III and IV, defined as safety hot spots that experience higher than average crashes, at five eastbound and westbound locations, totaling 2.93 miles.
- A total of 1,584 total crashes from 2014 to 2018 along the I-270 mainline, including 6 fatal crashes and 369 injury crashes.

In addition, I-270 currently suffers from traffic congestion and other issues that increase travel times and cause delays. During peak hours, travel times can be up to 3.5 times higher than free-flow conditions, considerably slowing commuter, freight, and other interstate travel. Congestion along I-270 can form and dissipate quickly, particularly at safety hot spots, often resulting in unreliable travel times.

The Central 70 Project is currently reconstructing a 10-mile section of I-70 between Brighton Boulevard and Chambers Road, which will add one new express lane in each direction, remove the aging 57-year-old viaduct, lower the interstate between Brighton and Colorado Boulevards, and construct a 4-acre park over a section of the lowered interstate (CDOT 2021b). This section of I-70 encompasses 1,200 businesses, provides the regional connection to Denver International Airport, and carries more than 200,000 vehicles per day, providing east-west access for commuters, freight, transit, and general purpose traffic (CDOT 2021b, 2016a). Once completed, the project is expected to reduce congestion, improve safety, and better accommodate future growth (CDOT 2019).

I-25 between Denver Union Station and Wellington is a major link in the nationwide interstate highway system that serves long-distance travel, and is a critical element of the Western Transportation Trade Network. This network is a system of highway and rail routes through 14 western states, and carries the majority of freight through the western United States. Very high rates of residential and commercial growth contributes, and will continue to contribute, to increasing traffic volumes on I-25. CDOT prepared an EIS in 2011 identifying improvements to this segment of I-25 to address regional and inter-regional movement of people, goods, and services. The improvements are being implemented in phases and focus on mobility, accessibility, safety, and aging infrastructure problems, and the need to provide for a greater variety of transportation choices (CDOT 2011).

More recently, the Colorado Transportation Investment Office (formerly Colorado High Performance Transportation Enterprise) conducted a study to create a statewide express lane master plan in conjunction with other regional partners. The study found a systematic need for express lanes throughout the Denver metropolitan area. The *Colorado Express Lane Master Plan* (CHPTE 2020) establishes a three-tier system that prioritizes the plan for express lane roadway segments. Tier 1 is the highest priority, and Tier 3 is a lower priority. Within the tiers, a ranking score was averaged between the sum of the corridor mobility and financial scores for each priority segment. The entirety of I-270 was included in the master plan as a Tier 1 priority, with an overall ranking of 4. Three other Tier 1 projects ranked ahead of I-270 (green segments on Figure 7-3). I-270 between I-25 and I-70 is a critical link to provide users more reliable travel times system-wide as travel demand continues to grow throughout the Denver area (CHPTE 2020).

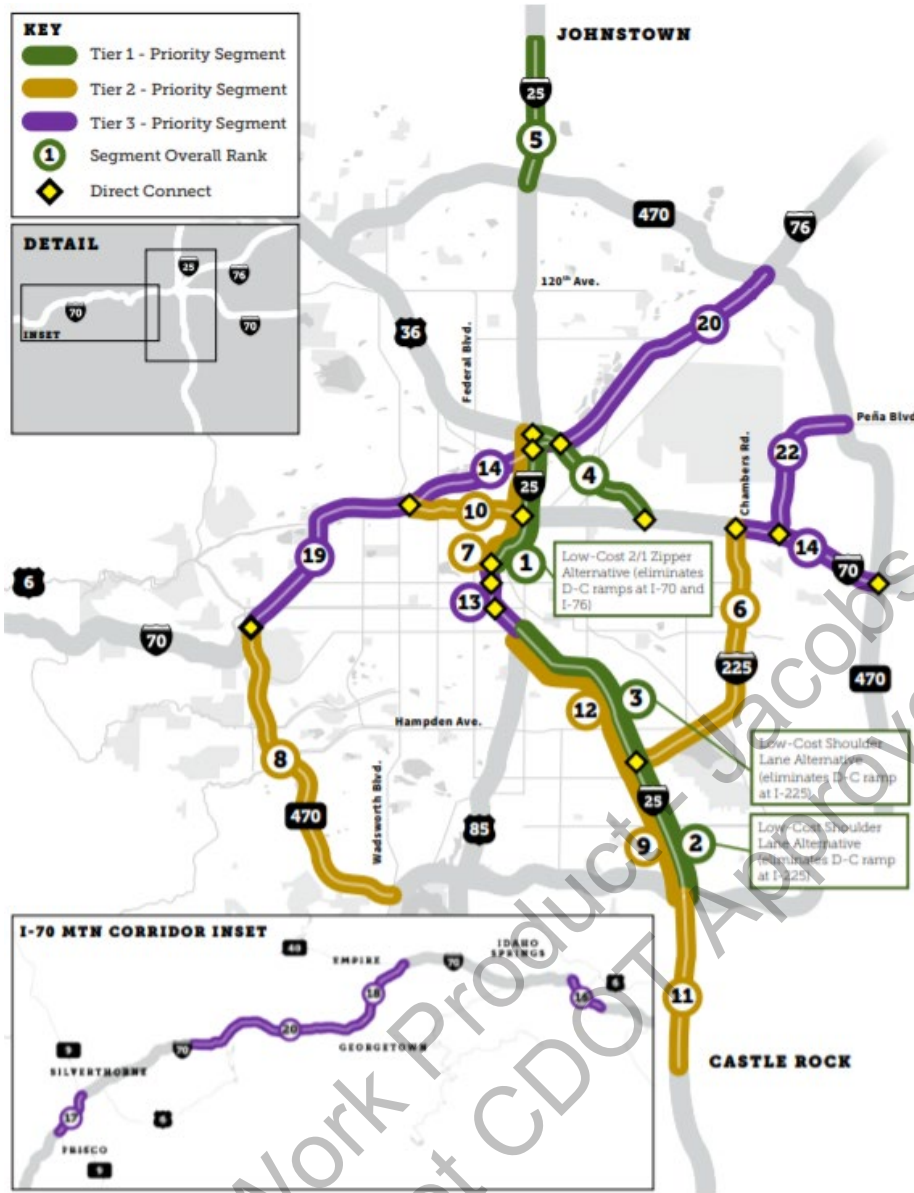


Figure 7-3. Express Lane Segment Prioritization within the Denver Metropolitan Area
 Source: CHPTE 2020

7.3.2 Cumulative Impacts

The Proposed Action would address safety, travel reliability, and other transportation needs compared to the No Action Alternative, providing the following benefits to travelers during peak periods:

- Westbound travelers on average would spend nearly 39 percent less travel time in the general purpose lanes and 59 percent less in the express lanes
- Eastbound travelers on average would spend nearly 54 percent less travel time in the general purpose lanes and 60 percent less in the express lane
- Westbound average speeds in the corridor would be approximately 11 miles per hour (mph) higher in the general purpose lanes and 26 mph higher in the express lane
- Eastbound average speeds in the corridor would be approximately 23 mph higher in the general purpose lanes and 31 mph higher in the express lane

- Total vehicle delay in hours on the corridor would decrease approximately 44 percent for westbound and 67 percent for eastbound
- Total VMT on the corridor would increase approximately 54 percent for westbound and 43 percent for eastbound

Continued development and population growth in the study area will drive transportation demand. Current and future projects listed in Table 6-1 are expected to alleviate congestion, improve regional connections, improve safety, and accommodate future growth. Beneficial impacts are also expected from past and present actions to improve I-76, such as replacing interchanges. In addition, the more recent transportation projects listed in Table 6-1, such as new HOV and BRT lanes, new highway interchanges, and new transit services, have resulted in beneficial effects to the traveling public in the study area, and are expected to continue.

The Proposed Action would substantially improve travel time and speed, which would reduce delays along I-270. Also, the traffic analysis conducted for the project confirmed that the Proposed Action would not result in adverse traffic effects on nearby highways, notably I-25 and I-70. VMT would increase due to the additional capacity and accommodation of additional travelers. The addition of express lanes would be part of a larger plan to implement express lanes on the urban corridors in Denver (refer to Section 7.3). The express lane network would provide substantial reliability benefits to users during peak periods and improve travel times in non-tolled, general purpose lanes.

The DRCOG 2040 travel demand model shows how the Proposed Action, along with past, present, and programmed projects would help accommodate future demand on the study area's transportation network compared to the No Action Alternative. The model shows that the Proposed Action would help reduce the vehicle hours traveled and vehicle hours of delay on the study corridor, as well as in the larger cumulative study area. The Proposed Action would also help increase the mobility, with a higher number of vehicles and persons being served, with increased VMT and increased person miles traveled. Table 7-5 shows and compares traffic data for the 2040 No Action Alternative and the Proposed Action from the DRCOG model.

Table 7-5. 2040 Traffic Data Comparison for the Cumulative Impact Study Area

Alternative	Vehicle Miles Traveled (miles)	Vehicle Hours Traveled (hours)	Vehicle Hours of Delay (hours)	Person Miles Traveled (miles)
2040 No Action Alternative				
Daily	9,347,000	272,000	87,000	11,169,000
A.M. Peak	1,603,000	52,000	20,000	1,820,000
P.M. Peak	2,797,000	104,000	47,000	3,369,000
Off-Peak	4,947,000	115,000	20,000	5,980,000
2040 Proposed Action				
Daily	9,432,000	267,000	82,000	11,293,000
A.M. Peak	1,611,000	51,000	19,000	1,833,000
P.M. Peak	2,821,000	102,000	45,000	3,409,000
Off-Peak	5,000,000	114,000	19,000	6,051,000

Alternative	Vehicle Miles Traveled (miles)	Vehicle Hours Traveled (hours)	Vehicle Hours of Delay (hours)	Person Miles Traveled (miles)
Percent of Change				
Daily	0.9%	-1.8%	-5.7%	1.1%
A.M. Peak	0.5%	-1.9%	-5.0%	0.7%
P.M. Peak	0.9%	-1.9%	-4.3%	1.2%
Off-Peak	1.1%	-0.9%	-5.0%	0.2%

Source: Jacobs

Note: Results modeled using DRCOG Focus 2.3.

7.3.3 Summary

When combined with the beneficial impacts of other past, present, and reasonably foreseeable future actions to improve transportation in the study area, the Proposed Action is expected to have a beneficial effect to the transportation network.

7.4 Biological: Riparian

7.4.1 Existing and Anticipated Future Conditions

I-270 is a highly developed industrial corridor, meaning little natural habitat exists. The cumulative analysis study area also contains densely arranged residential land use surrounding the industrial facilities. The exceptions are the riparian corridors along Sand Creek, Clear Creek, and the South Platte River. Given the close proximity of industrial uses and roadways adjacent to these waterways, it is likely the riparian areas associated with them have been diminished and/or disturbed (viewed on Google Maps). The South Platte River, in particular, is a highly manipulated stream (refer to the *Biological Resources Report*, Appendix A12 of the EA).

Along I-270, much of Sand Creek is heavily incised with steep, unstable banks created from heavy stormwater influxes from development. A major flood event in September 2013 likely scoured the channel, leading to stressed riparian habitat and invasion of weed species (EA Appendix A12). Close to I-270, the banks of the South Platte River are very steep, which limits the riparian and wetland zone to a narrow strip at the stream's ordinary high-water mark (EA Appendix A12). Aerial photography shows the banks more level with the water and lined with vegetation north and south of I-270 (viewed on Google Maps).

A total of 19 state-designated noxious weeds were identified in the Proposed Action study area during 2019 field surveys. Canada thistle and common teasel were mainly found near wetland and riparian areas (EA Appendix A12). It is assumed that a similar number and type of weeds exist within the larger cumulative impacts study area, particularly along waterways.

The *Regional Restoration Master Plan for the Northeast Greenway Corridor* identifies 11 projects covering more than 800 acres of riparian corridors, including 4 within the cumulative impacts study area. The projects are funded from a settlement with the U.S. Army and Shell Oil Company as a result of natural resource damage incurred by chemical leaching from the RMA. The plan identifies three projects along Sand Creek: Sand Creek 1 and Sand Creek 2 (which comprise one project), Westerly/Sand Creek Confluence, and Heron Pond (adjacent to the South Platte River near Franklin Street and 51st Avenue) (Figure 6-2) (Northeast Greenway Corridor Advisory Committee 2012).

The plan also calls for removing invasive species along Sand Creek that out-compete native riparian vegetation. Between the South Platte River and Brighton Boulevard, the Sand Creek 1 project would acquire and restore an approximate 12-acre industrial site adjacent to the creek with native vegetation,

creating additional riparian habitat. The Sand Creek 2 project, located in the same area, would acquire another 20-acre site, remediating existing contamination and creating additional riparian habitat. The plan notes that the City and County of Denver plans to restore and enhance riparian habitat at the confluence of Westerly Creek and Sand Creek, stating that Denver has made “significant progress enhancing native habitat along Sand Creek...” in the area. The Westerly/Sand Creek Confluence project would establish a “broad and diverse riparian complex” at this location. The Heron Pond project would reconfigure and enhance a planned regional water detention facility with native plants to create 20 acres (15 acres of water) of diverse wetland and riparian habitat (Northeast Greenway Corridor Advisory Committee 2012). The Heron Pond project is expected to be complete by the end of 2023; the Sand Creek 1 and Sand Creek 2, and Westerly/Sand Creek Confluence projects are complete (City and County of Denver 2022, Sand Creek Regional Greenway Partnership 2019, Ferguson, pers. comm. 2022).

7.4.2 Cumulative Impacts

The following impacts to riparian resources would result from the Proposed Action compared to the No Action Alternative:

- Minor permanent riparian impacts could result from construction activities and vegetation removal.
- All disturbed riparian areas will be revegetated with appropriate native plant species to provide bank stabilization, erosion control, and habitat replacement.

Proposed wetland mitigation measures would seek to restore historic floodplain riparian zones and wetlands, thereby benefiting riparian habitat. As discussed in EA Appendix A10 (*Wetland & Aquatic Resources Technical Report, Attachment F*), two sites within the Sand Creek floodplain offer opportunities to restore historic floodplain wetlands. Other mitigation concepts include Sand Creek channel and riparian restoration near the Vasquez Boulevard bridge and wetland enhancement along Clear Creek.

These mitigation efforts would complement projects proposed under the *Regional Restoration Master Plan for the Northeast Greenway Corridor* (Northeast Greenway Corridor Advisory Committee 2012) and recently completed. Those projects would result in beneficial impacts to riparian corridors along Sand Creek and Heron Pond, particularly where they would remediate existing contamination and create additional riparian habitat.

Because the study area largely is built out and local floodplain regulations restrict further floodplain development, future actions are not expected to greatly alter riparian-area biological resources from existing conditions. However, continued development within the study area watersheds could increase stormwater flows and stream channelization.

7.4.3 Summary

When combined with the effects of other past, present, and reasonably foreseeable future actions, the Proposed Action’s contributions to impacts to riparian areas are expected to be both adverse and beneficial due to proposed mitigation measures. Impacts from the Proposed Action would not measurably contribute to cumulative impacts because the study area is already largely built out as a result of past actions.

7.5 Environmental Justice

Cumulative EJ impacts were determined by examining the cumulative resource impacts documented previously, as well as impacts documented in the *Community Understanding Report* (Appendix A3 of the EA).

7.5.1 Existing and Anticipated Future Conditions

Per CDOT policy, census block group data were obtained to conduct the EJ analysis for this project (see the *Community Understanding Report* in Appendix A3 to the EA). The data indicated that the block groups analyzed meet the criteria for minority and/or low income populations.

For several decades, the cumulative study area has been home to large industry, described in Sections 7.1 and 7.2. Emissions and chemical releases from these facilities have substantially contaminated air, water, and soil in the area. CDPHE conducted a health assessment of the North Denver and Commerce City (NDCC) areas, which includes the I-270 study area, to evaluate exposures to pollutants such as diesel, O₃, and particulate matter (CDPHE 2020). CDPHE's study determined that air pollution exposures in the NDCC area are high compared to other areas. Although I-270 did not bisect any communities, it did introduce a source of mobile air quality pollutants to the area, contributing to emissions. PM_{2.5} and traffic-related air pollution (TRAP) are some of the highest in the state. The resulting health burden consequences include notably high asthma, chronic obstructive pulmonary disease (COPD), heart attack hospitalizations, and higher asthma, diabetes, heart disease, and obesity prevalence (CDPHE 2020). Despite recent actions to address or minimize pollution impacts—such as installation of multiple transit lines, implementation of regulations aimed at emissions and GHG reductions, and conversion of the RMA to a wildlife refuge—the adverse effects of past pollution persist. In addition, major polluters continue to impact the environment, such as Suncor emitting pollutants over established limits as recently as 2019 (Adams County 2021).

Strong evidence exists for short-term O₃, NO_x, SO₂, PM_{2.5}, and TRAP exposure links to asthma and COPD symptoms. In addition, there is increasing evidence for a link between long-term exposure and new-onset asthma and COPD (especially from PM and TRAP) (CDPHE 2020). More recent data from CDPHE states that adults in the NDCC area have similar asthma levels to adults in other parts of Colorado. However, NDCC residents go to emergency departments for asthma much more often, possibly due to higher levels of air pollution (CDPHE 2021a).

See the *Community Understanding Report* (Appendix A3 to the EA) for more details about health issues.

The I-270 current configuration includes general purpose lanes, with no tolled or express lanes. I-25 includes tolled express lanes between downtown Denver near Speer Boulevard and 120th Avenue. Travelers are never forced to pay a toll and can always travel in the adjacent, free general purpose lanes. Motorcyclists and drivers who carpool with three or more passengers can use the lanes for free. The 2021 toll rates ranged from \$0.95 to \$10.25 depending on time of day, with peak rush hour being highest (CDOT 2021d). I-70 will also include tolled express lanes, which are currently under construction along 10 miles between I-25 and Chambers Road. Overhead signs will indicate current toll prices (CDOT 2021e).

A study conducted by FHWA on the impacts of tolling on low-income populations found that, “for the same number of annual trips, a low-income (poverty-level income) household will incur a toll cost that is a greater percentage of its annual income than a median income household” (FHWA 2017). However, regional model results showed that speeds in the non-tolled, general purpose lanes were projected to increase as drivers elect to pay the toll and enter the express lanes, removing their vehicles from traffic in the general purpose lanes. Buses and emergency response vehicles would also use the express lanes, benefiting local travelers. In addition, the study “identified changes in traffic movement on parallel routes and local roads as a result of tolling that would benefit the communities living in those areas, including the EJ populations identified. This is termed as encroachment alteration effects” (FHWA 2017). FHWA found that surveys of a “broad spectrum of income groups” expressed approval of tolled lanes because users are given a choice. FHWA further notes that “transit riders, many of whom are low-income users, actually experience faster and more reliable transit trips when lanes are managed with pricing,” as they benefit from reduced congestion (FHWA 2008).

7.5.2 Cumulative Impacts

Under the Proposed Action, adverse impacts would be predominantly borne by EJ or disproportionately impacted communities. However, these communities would also experience offsetting permanent, beneficial impacts. Table 7-6 shows anticipated impacts, both beneficial and adverse. If no adverse impact would occur there could be no *high* impact, and therefore these considerations are identified as N/A in Table 7-6.

Table 7-6. Summary of Environmental Justice Impacts under the Proposed Action

Impact Category	Direct Adverse and Beneficial Impacts Compared to No Action Alternative	If an Adverse Impact Would Occur, Is It High?	Beneficial Impact?
Bodily impairment, infirmity, illness, or death	Beneficial impacts resulting from reduced potential for vehicular or pedestrian crashes and decreased diesel and TRAP emissions.	N/A	Yes
Air, noise, and water pollution and soil contamination	Beneficial impacts because diesel and TRAP emissions would be less due to reduced congestion. GHGs would be slightly higher, but the differences would be less than 1 percent and would vary depending on the GHG. Slight adverse impacts from barely perceptible noise increases. Beneficial impacts from decreased water pollution resulting from water quality treatment and fewer outfalls to Sand Creek. Beneficial impacts from replacing contaminated soils excavated during construction with clean fill material.	No	Yes
Destruction or disruption of human-made or natural resources	Adverse impacts to wetlands and vegetation along Clear Creek and the South Platte River; however, impacts would be mitigated in accordance with CDOT and CWA permitting requirements. Beneficial impacts to human-made resources from improved bicycle and pedestrian connectivity.	No	Yes
Destruction or disruption of community cohesion or a community's economic vitality	Beneficial impacts to community connectivity resulting from new sidewalks and trails. Beneficial impacts from improved traffic flow supporting efficient freight movement and travel to area businesses.	N/A	Yes
Adverse employment effects	No relocation or elimination of any businesses, and no adverse employment effects. Beneficial impacts from increased access to retail and commercial areas.	N/A	Yes
Increased traffic congestion, isolation, exclusion, or separation of minority or low-income individuals within a given community or from the broader community	Beneficial impacts from reduced traffic congestion. No neighborhoods extend across I-270, so additional lanes would not create a new community barrier or increase the presence of an existing barrier. Beneficial impacts from improved pedestrian crossings and new multimodal connections to destinations within the study area.	N/A	Yes
Economic hardship due to the disproportionate economic burden of tolls	Although any toll price is higher relative to income for low-income users, tolls are not expected to be cost prohibitive. Beneficial impacts would result from improved travel times throughout the corridor, including for users of general purpose lanes. Tolloed express lanes would provide an additional choice for travelers when a faster, more reliable trip is necessary. CDOT will also establish a program to reduce or eliminate fares for lower-income residents. Transit riders on RTD's Flatiron Flyer route would experience improved reliability and travel times.	No	Yes

Source: I-270 Community Understanding Report (EA Appendix A3)

EJ populations were adversely and disproportionately affected by past actions compared to the larger Denver metropolitan area. Although I-270 did not bisect communities, it did introduce a mobile air quality pollutant source in the area, contributing to emissions (Section 7.1.2). Impacts to air quality would be cumulatively negligible, and emissions would decrease due to implementation of stringent emission standards, improvement of fuel efficiency, vehicle turnovers, and transition to more electric vehicles. The \$9 million settlement with Suncor will benefit the surrounding communities to the extent that future violations are avoided. Other present and reasonably foreseeable future actions discussed under Section 7.1 are expected to improve existing conditions. However, adverse impacts would continue without major land use changes that remove the biggest sources of pollution.

Tolled express lanes currently exist on I-25 and are being constructed on I-70 within the study area. Travelers are never forced to pay a toll and use the express lanes, and all travelers in the general purpose lanes benefit from reduced traffic and increased speeds. Creation of HOV and BRT lanes, as well as new transit lines, in the study area benefit all travelers. Transit riders, some of whom are likely to be low-income users, are expected to experience faster and more reliable transit trips, because buses will be able to use tolled express lanes. Therefore, the results of these past, present, and reasonably foreseeable future actions are primarily beneficial. To help mitigate the equity impacts and financial burden of using tolled express lanes, CDOT will establish a program to reduce or eliminate fares for lower-income residents of the community. Therefore, these residents would experience the benefits of tolled express lanes at a lower cost.

7.5.3 Summary

When combined with other past, present, and reasonably foreseeable future actions, and when considering offsetting benefits and mitigation measures, the Proposed Action is not expected to contribute to a cumulative adverse effect to disadvantaged communities compared to the No Action Alternative.

8.0 Mitigation Measures

Some adverse impacts to air quality and riparian resources are expected to result from the Proposed Action. However, these impacts would not measurably contribute to overall cumulative effects. Therefore, no adverse cumulative impacts from the Proposed Action are expected, and no mitigation for cumulative impacts is needed. Refer to the specific technical reports prepared for each resource for project-specific mitigation measures.

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