

CHAPTER 2

Purpose and Need

Currently, I-70 between I-25 and Tower Road is one of the most heavily traveled and congested highway corridors in the region and state. The corridor provides a number of important transportation functions including interstate and intrastate travel along I-70, regional access from downtown Denver and the metropolitan area to Denver International Airport (DIA), linkage as an inner beltway between I-225 and I-270, and access to adjacent employment areas, neighborhoods, and new development centers. Using input from scoping, data gathering, and technical analysis, the project purpose and need was developed.

2.1 PROJECT PURPOSE

The purpose of the project is to implement a transportation solution that improves safety, access, and mobility and addresses congestion on I-70.

2.2 NEED FOR THE ACTION

The need for this project results from the following issues:

- Increased transportation demand.
- Limited transportation capacity.
- Safety concerns.
- Transportation infrastructure deficiencies.

2.2.1 Increased Transportation Demand

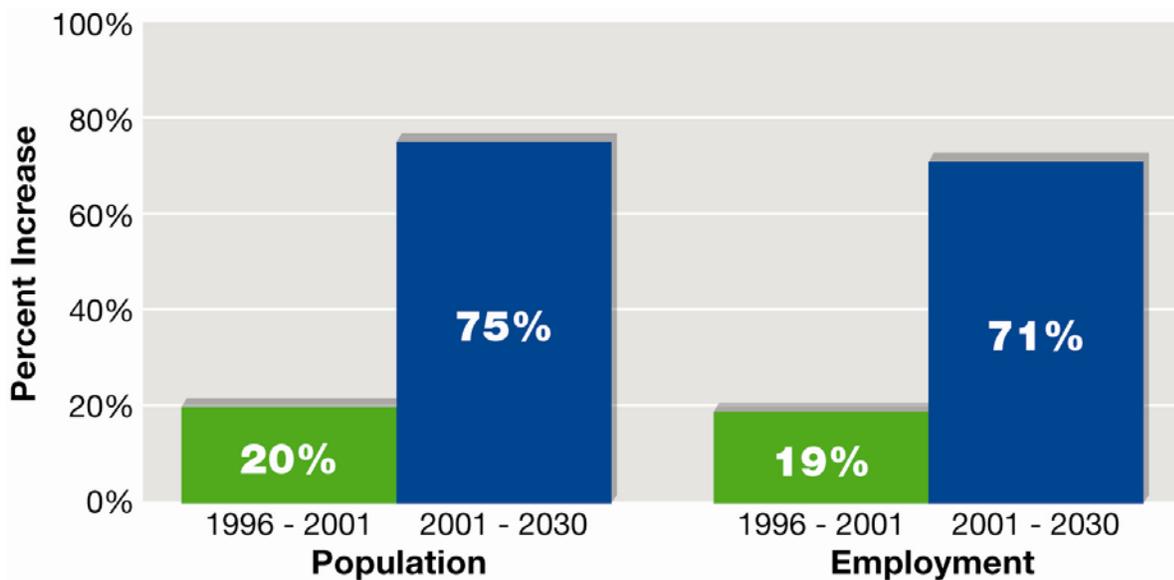
The project area is experiencing rapid growth and development. This includes new development areas and redevelopment areas with substantial residential populations and business activity. In addition to the established neighborhoods on the western end of the corridor, substantial new residential and business growth is occurring including:

- Downtown Denver – According to *Blueprint Denver* (City and County of Denver [CCD], 2002a) (the land use/transportation plan for the city), downtown Denver will add over 21,000 new housing units and 47,000 new jobs by 2020.
- Stapleton – Redevelopment of the old Stapleton Airport began in 2001 and at build-out is projected to have over 30,000 residents and over 35,000 new jobs.
- Gateway Area – The Gateway Area, north of I-70 and west of Chambers Road, is projected to have over 15,000 housing units and 23 million square feet of commercial space at build out.
- Denver International Airport – DIA is expected to add an additional 13,500 jobs by 2030 as it continues to grow and expand.

The land use and development trends within the corridor will result in additional demands on the transportation system. Providing access and maximizing travel to, through, and within the corridor is critical to maintaining economic viability. This includes maintaining and enhancing connections between major activity centers within close proximity to the corridor.

Recent population and employment growth within the Denver region has resulted in increased travel demand in the corridor. Population and employment growth in the project area has been heavily influenced by the development of DIA and other areas, and has increased by about 20 percent between 1996 and 2001, an annual growth rate of five percent. Development in the project area is projected to continue in the future as population is expected to increase 75 percent and employment is expected to increase 71 percent from 2001 to 2030, with annual growth rates of 2.5 percent and 2.4 percent, respectively. The slowing of the growth rate in the future reflects that most of the developable land in the central and eastern parts of the project area will approach build-out by 2030. Population and employment growth is shown in Exhibit 2-1.

**Exhibit 2-1
Project Area Population and Employment Growth (1996 – 2030)**



Source: 1996, 2001, 2030 DRCOG travel demand models

Based on the population and employment projections for 2030, access to activity centers, residential areas, and employment will become more difficult. Access to and from I-70 is provided through the existing interchanges. The interchanges at Vasquez Boulevard, Peoria Street, and Chambers Road currently have traffic and congestion issues and with the continued growth, these issues will worsen. A significant number of the people traveling on I-70, from 50 to 70 percent, begin or end their trip within the project area. I-70 also serves as a gateway to Aurora and Commerce City, provides regional access to the Stapleton Redevelopment Area and the developing northeast portion of the project area, and is a critical link for travel to DIA. In addition to accommodating airport and inter-city travel, the I-70 Corridor is home to many industrial and warehousing businesses. These businesses account for much of the trucking and freight operations located in the corridor. Between 7 and 14 percent of the traffic on I-70 is truck traffic. East of Peña Boulevard, truck traffic accounts for approximately 14 percent of the total traffic. Truck access to these established areas and future activity centers is important for future economic development.

2.2.2 Limited Transportation Capacity

I-70 serves a growing number of users ranging from commuters and tourists from outlying areas and DIA to regional trucking and local traffic. The demand from these various users is exceeding the existing design capacity of I-70 and associated interchanges.

I-70 within the project area is currently near or over capacity. I-70 currently carries between 35,000 to 195,000 vehicles per day (average daily traffic), depending on the location in the corridor. Forecasted traffic for the year 2030 shows that traffic on I-70 will increase substantially, carrying from 120,000 to 267,000 vehicles per day, depending on the location in the corridor. This increase in traffic will result in more hours of congestion, longer delays, and increased potential for crashes. Existing and future traffic volumes are shown in Exhibit 2-2. Comparative daily capacity is also shown for those same sections. More detailed discussions of existing and future traffic conditions are included in Chapter 4, Transportation Impacts and Mitigation Measures.

**Exhibit 2-2
Traffic Capacity and Volumes**

Highway Section	Existing Number of Lanes	Daily Traffic Volumes (average daily traffic, vehicles per day) ¹		Daily Capacity (vehicles per day) ²
		Existing (2001)	Future (2030)	
I-25 to Brighton Boulevard	6	135,000	210,000	90,000 – 130,000
Brighton Boulevard to Colorado Boulevard	6	120,000 – 145,000	189,000 – 223,000	130,000
Colorado Boulevard to I-270	6	105,000 – 125,000	171,000 – 200,000	130,000
I-270 to I-225	8	125,000 – 195,000	254,000 – 267,000	180,000
I-225 to Peña Boulevard	6	125,000	254,000	130,000
Peña Boulevard to Tower Road	4	35,000 – 55,000	120,000 – 129,000	90,000

1. Traffic volumes represent the range of daily volumes between interchanges within each section. Future (2030) volumes are based on the No-Action Alternative.

2. Daily capacity based on 2,200 vehicles per hour per lane, nine percent of daily traffic in peak hour, and 55 percent of peak hour traffic in the peak direction.

The increasing traffic cited above can be expected to lead to similar increases in the percent of the day that I-70 will operate in a congested state, as on an hour-by-hour basis, demand exceeds the available capacity of the roadway. Without improvements, hours of congestion experienced by travelers on I-70 in the corridor will continue to increase. Currently, some portions of the highway, including the section from I-270 to I-225, experience congestion for 12 percent of the day. As shown in Exhibit 2-3, I-70 will experience congestion between 20 and 42 percent of the day by 2030 without improvements.

Exhibit 2-3 Traffic Congestion

Highway Section	Percentage of Day Highway is Congested	
	Existing (2001)	Future (2030)
I-25 to York Street	3%	26%
York Street to Holly Street	7%	30%
Holly Street to I-270	3%	20%
I-270 to I-225	12%	42%
I-225 to Tower Road	0%	32%

Note: Future (2030) hours of congestion are based on the No-Action Alternative.

Source: 2001 and 2030 DRCOG travel demand models

2.2.3 Safety Concerns

I-70 in the project area generally experiences traffic crashes at rates higher than the state average for urban freeways. Crashes on I-70 cause traffic congestion that cannot be predicted or avoided and add to or worsen the daily hours of congestion that results from travel demand that exceeds the normal capacity of the roadway. The unpredictable nature of this non-recurring traffic congestion on I-70 is inconvenient to freight carriers, employers, manufacturing, and business interests in the region as well as commuters and residents that depend upon reliability for their daily travel.

According to the *I-70 East Corridor EIS Safety Evaluation* (Colorado Department of Transportation [CDOT], 2004), from 1999 through 2001 there were 3,764 crashes on I-70 within the project area. Of these crashes, 1,347 occurred on the I-70 interchange ramps and crossroads and 2,417 crashes occurred on mainline I-70. Over the three-year period, there were eight fatalities on this portion of I-70. Exhibit 2-4 compares the crash rates for I-70 in the project area to other comparable facilities across Colorado. As shown in the table, each of the five sections of I-70 have crash rates higher than the state average for urban freeways.

Exhibit 2-4 Crash Rates

Highway Section	Crash Rate (Total, 2003)
I-25 to Brighton Boulevard	4.07
Brighton Boulevard to Colorado Boulevard	2.69
Colorado Boulevard to I-270	2.35
I-270 to I-225	2.16
I-225 to Tower Road	2.22
State Average, (Urban Interstate)	1.85

Note: Crash rates represent the number of accidents per million vehicle miles traveled.

Source: CDOT Accident and Rates Book

Higher than average crash rates can often be attributed to roadway conditions that do not meet current design standards, such as those found on sections of I-70. Many of the deficiencies that contribute to higher crash rates on I-70 include:

- Inadequate acceleration and/or deceleration lane length.
- Insufficient sight distances at entrance and exit ramps.
- Ramp design speeds that are too low.
- Insufficient shoulder widths of only two feet.
- Interchange spacing of less than one mile that creates weaving issues for traffic entering and exiting the highway.
- Inadequate roadway drainage.
- Other geometric deficiencies.

Many of these deficiencies occur in the western half of the corridor, contributing to the highest crash rates in the corridor, and are associated with the aging viaduct between Brighton Boulevard and Colorado Boulevard. These deficiencies are described further in Chapter 3, Alternatives Considered.

2.2.4 Transportation Infrastructure Deficiencies

I-70 was constructed in the early 1960s with bridge and drainage structures designed to last for 30 years. Now past their anticipated life span, nine structures on the corridor are classified as either structurally deficient or functionally obsolete and in need of replacement, rehabilitation, or repair. The 1.2-mile portion of the viaduct between Brighton Boulevard and Colorado Boulevard was constructed in 1964. The current sufficiency rating of the viaduct is 44 out of a possible 100, which is considered structurally deficient, functionally obsolete, and requiring replacement.

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