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1.0 PURPOSE AND NEED

INTRODUCTION

The Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT), initiated an Environmental Impact Statement (EIS) in 2003 to study proposed transportation improvements in the Northwest Corridor of the Denver metropolitan area. The proposed action was identified as:

“an improved connection between the western terminus of the Northwest Parkway in Broomfield County and the SH 58, I-70, or C-470 freeway systems to the south in Jefferson County. This connection is considered necessary to address the need for system linkage, to provide for existing and projected transportation demand, to improve safety, and to enhance modal interrelationships, within the Northwestern Quadrant of the Denver Metropolitan Area.”

The notice also identified the alternatives under consideration, including but not limited to:

- 1) Taking no action
- 2) Construction of a new highway alignment
- 3) Improvement of the existing highway network
- 4) Improvement of the existing arterial system
- 5) Transit options
- 6) Expansion to the existing bus system

The Denver Regional Council of Governments (DRCOG) conducts a regional planning process every five years and produces a metro vision regional transportation plan. This plan forecasts future growth for the region’s population and employment to determine “...a long-range regional transportation plan that defines the integrated, multimodal, metropolitan transportation system”. DRCOG’s *2030 Metro Vision Regional Transportation Plan (2030 Metro Vision)* includes a conceptual alignment for the Northwest Corridor. The focus of the Northwest Corridor project is to solve inter-regional and regional travel problems.

CDOT determined that while transportation improvements in the northwest Denver metropolitan area are needed, federal, state, or other funds are not available to meet these needs in the near future. CDOT has decided to discontinue the NEPA process for the Northwest Corridor. To be able to use the information gathered for planning purposes, CDOT is releasing the information gathered during the process in this *Transportation and Environmental Planning Study* document that can serve as a foundation for future projects by CDOT or other entities.

1.1 SETTING

The Northwest Corridor study area (study area) extends from north of the Northwest Parkway and US 36 in Broomfield County, to south of US 6 and C-470 in Jefferson County. The study area also extends from west of SH 93 to east of Wadsworth Boulevard. It includes an interstate highway, several US and state highways, and numerous local roadways.

Both the Denver International Airport (DIA) and Rocky Mountain Metropolitan Airport (formerly the Jefferson County Airport), a reliever facility, have an increasing need for better access. The expansion of the E-470 tollway and the Northwest Parkway tollway has improved access to these airports, as well as serving other regional trips.

The study area at both the north and south ends is undergoing a transformation from a predominantly rural and open landscape to developments with residential, commercial, and light industrial land uses. In addition,



communities are experiencing an expansion of their boundaries to the west. These changes are occurring in an area that has a rich and diverse setting of natural resources that add to the quality of life for residents. Therefore, use of a thorough process must be used to determine an action that can minimize impacts to the natural environment while maintaining the vitality and lifestyle of the affected communities.

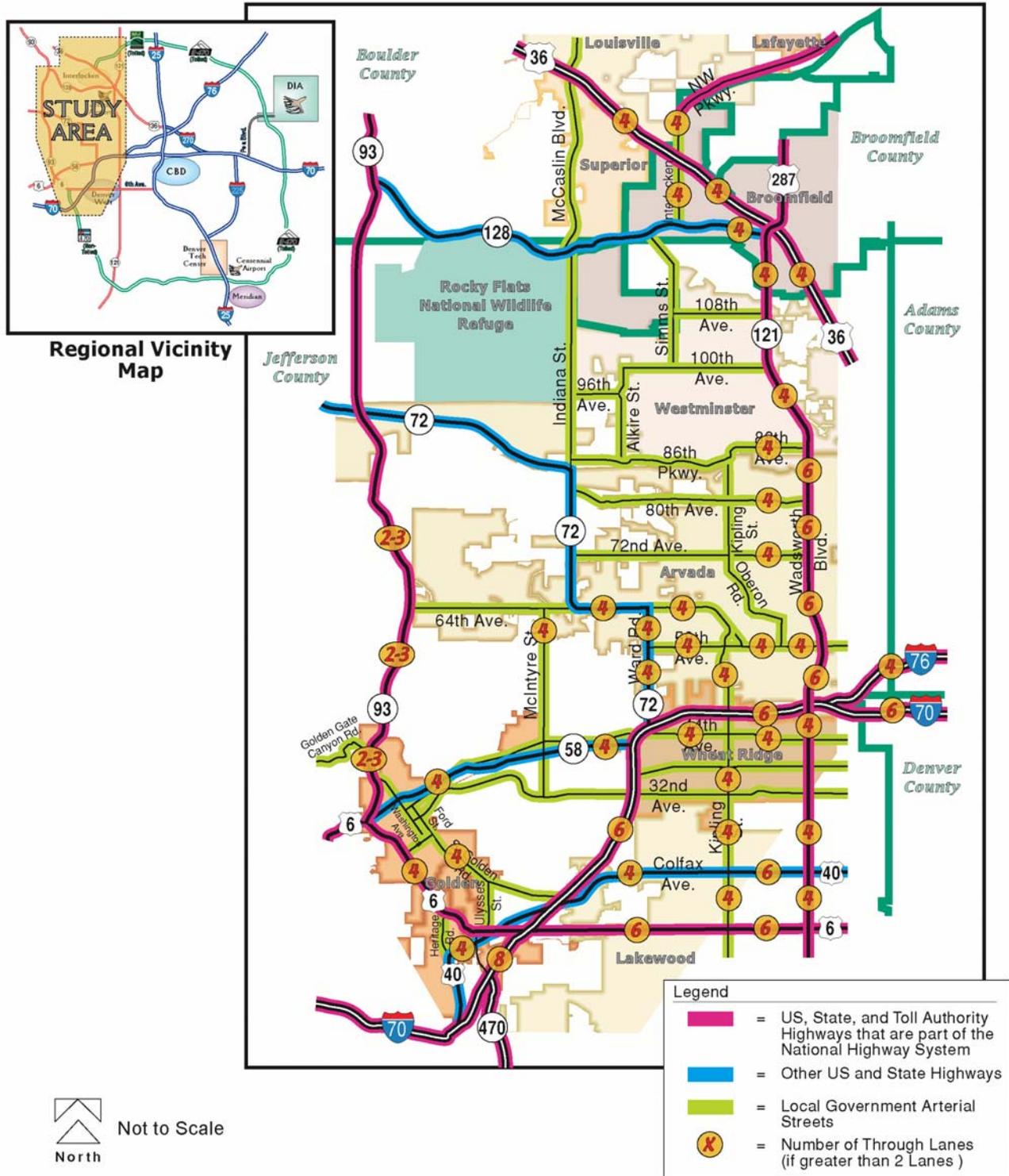
The study area contains U.S., State, and Toll Authority Highways that are part of the National Highway System. These highways connect with other state and local roads to define the study area's surface transportation system that contains a range of roadway laneage (see **Figure 1.1-1**).

There are federal, state, and regional actions in and around the study area that may influence needs and opportunities in the Northwest Corridor, including:

- The Denver Regional Transportation District (RTD) FasTracks Plan—FasTracks is RTD's twelve-year comprehensive plan to build and operate rail lines and to expand and improve bus service and park-n-Rides throughout the region. The FasTracks plan includes two light rail corridors that will connect downtown Denver with the study area: the West Corridor which will terminate at the Jefferson County Government Center in Golden and the Gold Line which will terminate at I-70/SH 58 in Wheat Ridge. Additionally, suburb-to-suburb bus service enhancements are planned along SH 93 from Golden to Boulder, as well as routes using SH 72, Wadsworth Boulevard, Kipling Street and other study area streets.
- US 36 Environmental Studies—CDOT is preparing an EIS to identify and assess the impacts of roadway improvements along the US 36 corridor between Denver and Boulder. RTD is preparing a separate Environmental Assessment (EA) to identify and assess the impacts of transit improvements in the same corridor.
- C-470 Environmental Assessment (EA)—CDOT is conducting an environmental assessment to identify and assess impacts of roadway improvements along the C-470 corridor in the southwest metropolitan area.
- Rocky Flats National Wildlife Refuge Comprehensive Conservation Plan (CCP)/EIS—The Rocky Flats Environmental Technology Site has been converted from a former nuclear weapons facility under jurisdiction of the U.S. Department of Energy to a National Wildlife Refuge under the administration of the U.S. Fish and Wildlife Service. In April 2005, the Federal Register published the Record of Decision for the CCP/EIS. A 300-foot easement reserves land on the eastern boundary of the refuge for transportation use.
- I-70/32nd Avenue EA—CDOT and the City of Wheat Ridge are preparing an EA to identify and assess impacts of roadway facility upgrades to accommodate the proposed development southwest of the I-70/SH 58 interchange.



Figure 1.1-1 Project Study Area: 2005





1.2 PROJECT HISTORY

The following section presents a historic overview of the study area.

1.2.1 DENVER REGIONAL CONTEXT

In the late 1960s, the southwest part of the Denver metropolitan area experienced an emerging growth pattern. The Colorado Department of Highways (CDOH), now CDOT, recognized this trend and its relationship to the development and expansion of Martin Marietta, a major defense and space contracting organization. CDOT proposed I-470 to FHWA, a new southwest route to be a part of the interstate system. The general alignment connected I-70 near Colfax Avenue with I-25 near County Line Road to the south and east. One of the key connections would be with SH 75 to provide access to Martin Marietta. In 1968, I-470 was officially approved, but never built.

In 1975, I-470 was re-examined and was eventually withdrawn from the Interstate and Defense Access Highway System. The funding obtained for I-470 was to be used for other transportation projects as provided under federal law. As a result, the C-470 Parkway was completed from I-70 near 6th Avenue to I-25 near County Line Road in 1990.

In 1985, the E-470 Public Highway Authority was formed under Colorado statutes by the governmental jurisdictions of Adams, Arapahoe, and Douglas counties and the City of Aurora. This Authority pursued the development of a toll facility from I-25 near 160th Avenue on the north to I-25 at C-470 on the south. This toll facility was designated as E-470. DRCOG included all portions of E-470 in the *2010 Regional Transportation Plan*, adopted in 1987.

In 1987, the W-470 Public Highway Authority was created by the Counties of Adams and Jefferson, and the Cities of Arvada, Broomfield, Golden, Lafayette, Louisville, Superior and Westminster. This Authority pursued the development of a toll facility from I-25/E-470 near 160th Avenue to I-70/C-470. The proposed alignment generally followed the current Northwest Parkway alignment from I-25 to US 36 and 88th Avenue then followed Indiana Street, SH 72, SH 93, and US 6. DRCOG conducted the W-470 study with participation from most communities in the study area. In 1987, DRCOG officially designated W-470 as part of the *2010 Regional Transportation Plan* with the notation that the alignment and interchanges were under study and subject to change. The W-470 Public Highway Authority pursued a special election for a vehicle registration fee to fund the development process. The ballot issue was defeated, and the authority discontinued the study.

1.2.2 NORTHWEST METRO CONTEXT

During the period from 1987 to 1989, CDOT, the City of Golden, Jefferson County, and affected property owners collaborated on the planning, funding, and dedication of right-of-way for the construction of the SH 93 Bypass to the west of Golden. This facility was constructed in 1992 and extended SH 93 from Washington Avenue to the intersection of US 6 and SH 58.

In January 1995, the City of Golden proposed to extend C-470 to US 6 from I-70 which was consistent with the DRCOG *2015 Interim Regional Transportation Plan*. CDOT, Jefferson County, and the City of Golden entered into Intergovernmental Agreements in 1997 to fund and construct this extension. CDOT completed Phase I in 1999 and Phase II in 2005. This provides access to westbound I-70 from southbound C-470 and also provides access to northbound C-470 from eastbound I-70.

The Northwest Parkway Public Highway Authority was formed by Broomfield County, Weld County, and the City of Lafayette in June 1999 as a result of the Colorado Public Highway Authority Act. The objective of this project was to improve access and mobility in the northwest metropolitan area. The Northwest Parkway tollway opened on November 24, 2003. It extends from E-470 at I-25 to the north and west, circling southward to just north of US 36 at the current 96th Street/US 36 interchange. It provides access to the



recently developed Flatiron Crossing retail center, Interlocken Technology Park, and areas to the north near Louisville. It also improves regional access to DIA and the Rocky Mountain Metropolitan Airport (formerly the Jefferson County Airport).

Jefferson County and the Cities of Arvada, Golden, Lakewood, Westminster, and Wheat Ridge commissioned the *Northwest Quadrant Feasibility Study* (NWQFS). The purpose of the study was to develop transportation improvements, both regional and local, that would increase mobility, improve safety, and provide a reliable transportation system for the year 2020. This study provided the initial step for the implementation of transportation improvement projects in the northwest Denver metropolitan area. On January 31, 2001, the NWQFS recommended a set of transportation improvements for implementation:

- Adoption of improvements and inclusion in master planning processes by all participating cities and Jefferson County
- Recommendation for DRCOG and CDOT to include of improvements in the long-range plan, TIP, and other planning processes
- Coordination of state highway improvements with CDOT, and request for environmental and preliminary engineering funding. This includes the potential realignment of SH 72 between Indiana Street and SH 93
- Completion of project level feasibility studies for SH 93, SH 72, and Indiana Street to address future interchange locations
- Preparation of access control plans for right-of-way preservation corridors along SH 93, SH 72, and Indiana Street.

In August 2002, the City of Golden commissioned a study titled *Golden's Plan for the Highway 6 & 93 Corridor* (commonly referred to as the Muller Study). This study developed improvements to US 6 and SH 93 through Golden that would implement the recommendations of the NWQFS and still maintain the natural and historic charm of the community. The purpose of the study was to accommodate community goals, address community concerns, and keep costs reasonable (\$35 million or less per mile).

In 2003, Jefferson County, the City and County of Broomfield, and the City of Arvada created The Jefferson Parkway Not for Profit entity to examine the benefits and impacts of completing a toll facility from SH 128 near Interlocken Loop to SH 93 near 64th Parkway.

In November 2003, CDOT began a formal EIS process to study transportation improvements that would provide a connection between the Northwest Parkway and C-470. Public participation was encouraged to assist transportation agencies in making informed decisions. A conceptual alignment for the proposed Northwest Corridor was included in DRCOG's *Metro Vision 2030 Plan* adopted in November 2004. Funding has not been identified for the Northwest Corridor transportation improvements.

In June 2004, the City of Arvada conducted a separate analysis titled *Tollway Corridor Investigation Study* to assess the feasibility of a tolled roadway between SH 128 and SH 93 at 64th Parkway. This was a limited analysis that studied only a portion of the corridor and was not associated with the EIS.

In November 2004, RTD's FasTracks initiative was passed to fund several transit corridors throughout the Denver metropolitan area. Transit corridors along US 36 and US 6 will connect the Denver central business district with the study area. These planned transit corridors are part of the Northwest Corridor "No Action" scenario.



1.3 PURPOSE OF THE PROJECT

The purpose of transportation improvements in the Northwest Corridor is to enhance the connectivity, functionality, and capacity of the inter-regional and regional system from the vicinity of US 36 and the Northwest Parkway to the vicinity of SH 58, I-70, or C-470. This enhanced system will better accommodate the movement of people, goods, and services.

1.4 NEED FOR THE PROJECT

Deficiencies in the current roadway system create the need for better system connectivity, capacity, reliability, and intermodal connections. An explanation of these deficiencies, as they exist in the study area, support this proposed action.

1.4.1 SYSTEM CONNECTIVITY/FUNCTIONALITY

Enhance the corridor's inter-regional and regional system for a more direct, well connected, and functional roadway system.

An inter-regional and regional transportation system provides a series of distinct trip stages. The six recognizable stages are main movement, transition, distribution, collection, access, and termination. Each of these stages is typically handled by a separate facility designed specifically for its function. A functionally complete transportation system creates a connected network that benefits the traveling public by providing efficient movement. This study area lacks the main movement stage for the longer inter-regional and regional trips.

The existing roadway system is not direct, well-connected, or easily understood by long-distance or unfamiliar travelers. Principal or minor arterial roadways with relatively low-speed and low capacity provide north and south travel within the study area. Regional travelers' choices are limited to one of three arterial facilities: SH 93, Indiana Street/McIntyre Street, and Wadsworth Boulevard. The regional transportation planning process has identified the need for a connection to enhance the connectivity and functionality of this regional transportation network.

1.4.1.1 ACCESSIBILITY

The change in land use within the study area has resulted in different trip purposes. The study area lacks an effective transportation system for needed access and movement to support inter-regional, regional, and local trips. Maintenance of local accessibility is important in the corridor.

1.4.2 TRAVEL DEMAND/CAPACITY

Expand and enhance the system capacity to respond to future demand increases and improve inter-regional and regional movements of people, goods, and services.

1.4.2.1 SOCIOECONOMICS AND GROWTH IN THE CORRIDOR

Economic and growth projections indicate that the existing transportation system is unable to accommodate forecasted capacity. Therefore, there is a need to increase the capacity of the regional transportation system in the study area. From 1990 to 2005, the Denver metro area experienced a population increase of about 783,000. DRCOG forecasts that the metropolitan population will increase by 1,339,000 people between 2005 and 2030, an increase of 51 percent.

Forecasts indicate that population and employment within the study area will increase by 25 percent (83,000 people) and 42 percent (69,000 people) respectively, between 2005 and 2030. The Rock Creek residential area, the Flatiron Crossing retail center, Interlocken Technology Park, Colorado Mills retail center, and numerous



new residential developments all contribute to the population and employment growth. Long-established businesses such as Coors Brewing Company and Coors Ceramic Company continue to influence the employment base.

1.4.2.2 TRAVEL DEMAND FORECASTS

The travel demand forecasting process uses future population and employment predictions to address transportation needs that are not constrained by financial resources. The Fiscally Constrained Plan, also referred to as the Regional Transportation Plan (RTP), identifies the priority improvements that could be built using anticipated revenue sources over the planning period. The RTP is the basis for DRCOG's 2030 regional travel demand model used for this study. The Metro Vision Transportation Plan (the latest version is 2030) publishes these potential transportation improvements.

A No-Action Alternative was carried through the analysis. This alternative consists of the existing roadway system as well as projects with committed funding. The six-year Transportation Improvement Plan (TIP), a subset of the RTP, or local capital improvement programs identifies these committed projects. These improvements include RTD's FasTracks transit system. The performance of the transportation system with the No Action Alternative sets a baseline for comparison to the performance of the transportation system with each build alternative.

1.4.2.3 CORRIDOR CAPACITY

Analyses show that, based on 2030 forecasting, corridor travel demand is projected to exceed the capacity of the existing roadway system, especially the north-south travel patterns. Therefore, there is a need to expand corridor capacity within the study area.

A comparison between the 2030 No Action daily traffic forecast and the existing daily traffic volumes demonstrates the need for an improved roadway network (see **Figure 1.4-1**). PM peak-hour traffic volumes/roadway capacity (V/C) ratios for the regional roadway system within the study area have been calculated (see **Figure 1.4-2**). A V/C ratio of 1.0 indicates that traffic volumes are approximately equal to the capacity of the road. Thus, segments of road indicated in red, with V/C ratios greater than 1.2, have highly congested conditions with traffic forecasts in excess of 120 percent the roadway capacity. Indicated in pink, are segments of roads with V/C greater than 1.0, but less than 1.2. These segments are congested, but not nearly as congested as the red segments. The figure reveals that most of the SH 93, Indiana Street, and Wadsworth Boulevard corridors will have V/C greater than 1.0, indicating a major capacity deficiency for north-south travel through the study area.

A comparison of existing traffic volumes to the No Action Alternative traffic forecast demonstrates an increase in volume associated with minor improvements to the roadway network (see **Figure 1.4-1**). A traffic comparison of the No Action Alternative to the DRCOG *MetroVision 2030 Plan* demonstrates that the inclusion of a conceptual Northwest Corridor alignment, as well as an improved roadway network, better accommodates the greater traffic volumes in 2030 (see **Figure 1.4-3**).

Four screenlines: North, Middle, Middle-South, and South, measure total north-south travel demand on major roadways in the study area (see **Figure 1.4-4**). Predicted screenline traffic volumes are compared for existing conditions, the 2030 forecast with the No Action Alternative network, and the 2030 forecast with the fiscally constrained *MetroVision* roadway network. North-south travel across all screenlines will increase 20 to more than 50 percent from the existing network to the 2030 No Action Alternative network. The fiscally constrained 2030 *Metro Vision* network forecasts are 20 to more than 40 percent higher than the 2030 No Action Alternative network (see **Table 1.4-1**).



Figure 1.4-1 Traffic Forecast Comparison—2030 No Action vs. Existing Traffic

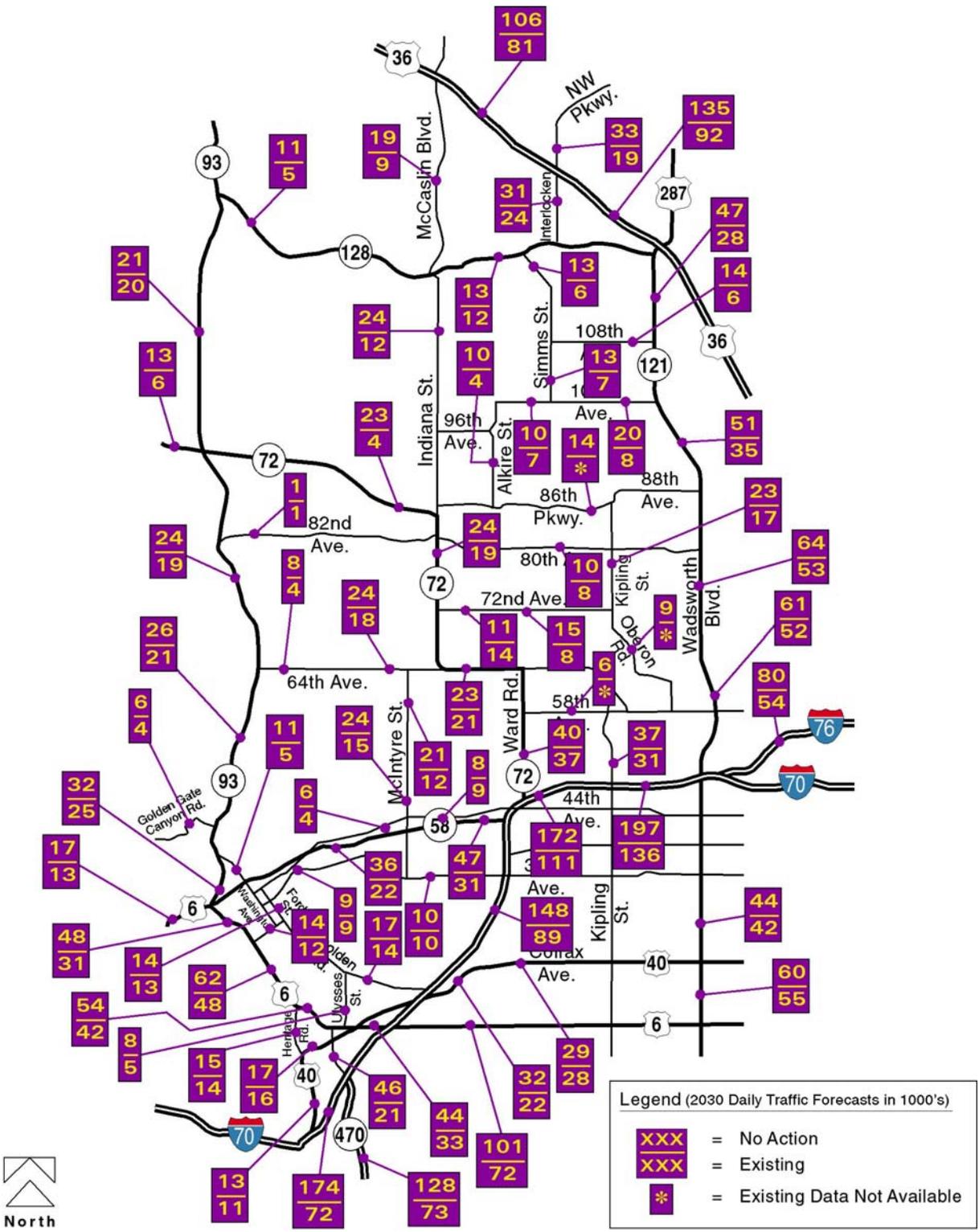


Figure 1.4-2 Study Area Inter-regional/Regional System 2030 PM Volume to Capacity Ratios—No Action

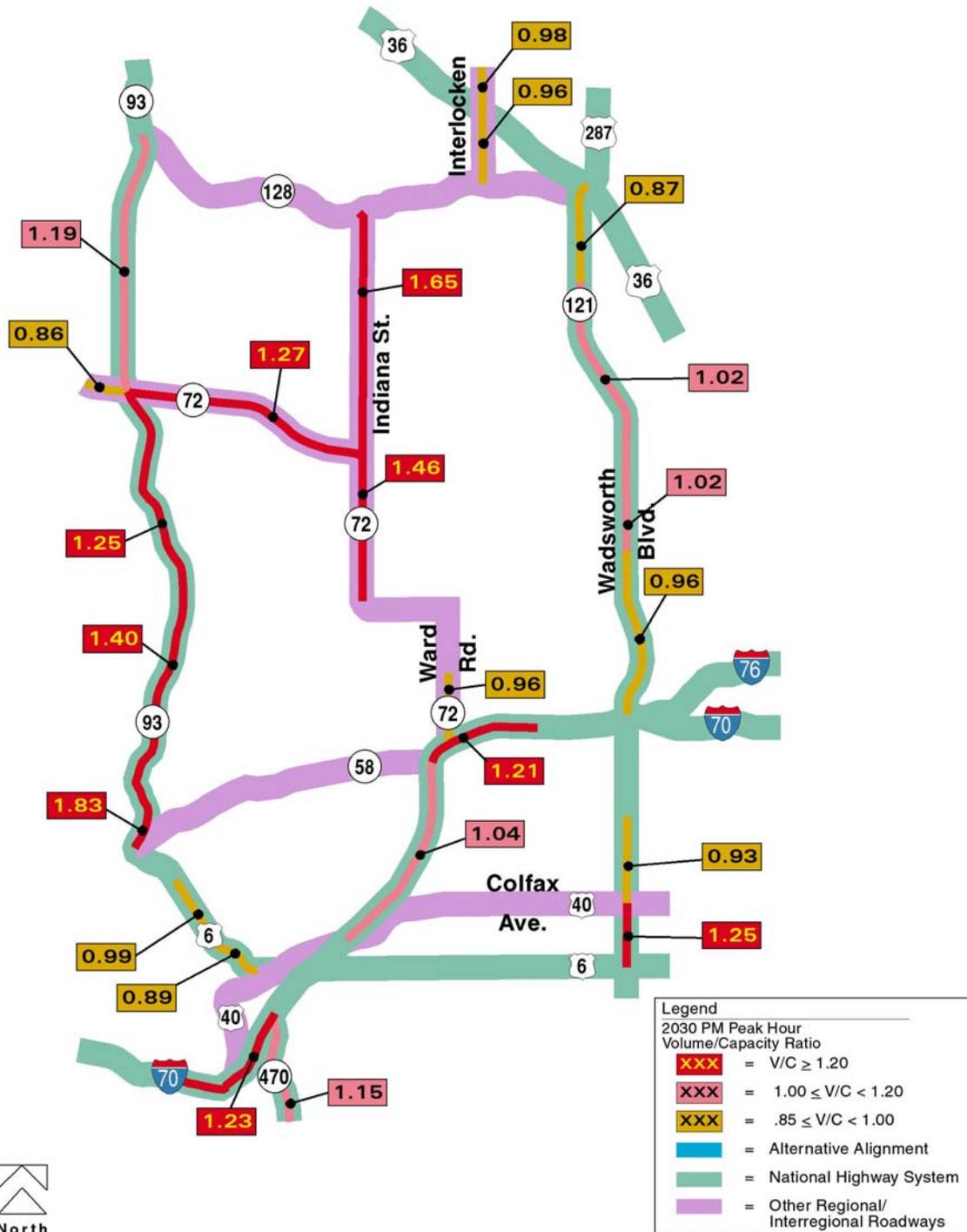




Figure 1.4-4 Screenline Locations

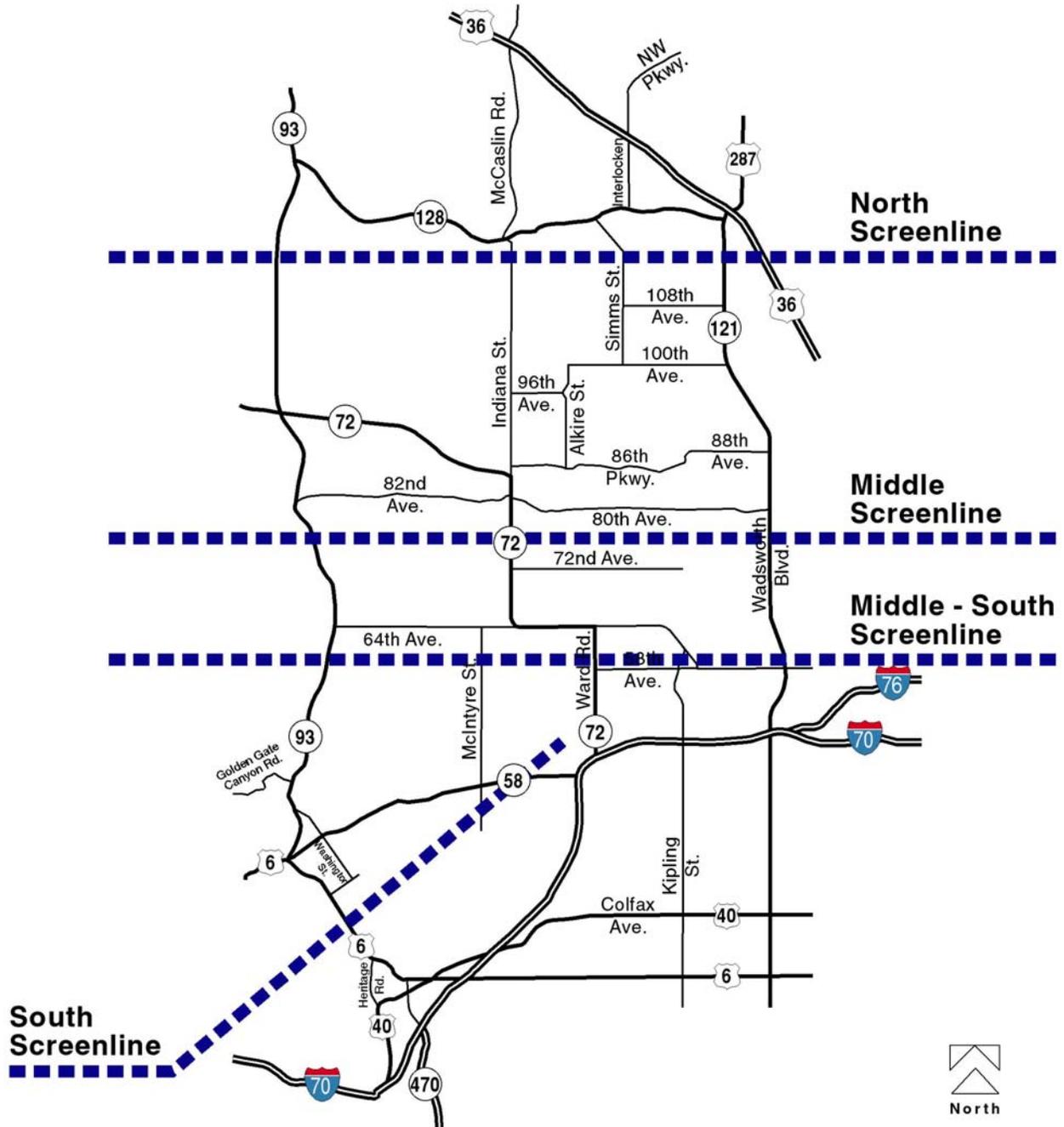




Table 1.4-1 North-South Screenline Daily Traffic Volume Comparisons

Screenline Location	Existing Network	2030 No Action Alternative Network	2030 Metro Vision Network
North Screenline (South of SH 128/120 th Avenue)	66,000	100,000	153,000
Middle Screenline (South of SH 72/ 80 th Avenue)	108,000	135,000	168,000
Middle South Screenline (South of 64 th Avenue)	153,000	185,000	228,000
South Screenline (South of 19 th Street/North of I-70)	79,000	109,000	138,000

1.4.2.4 INTER-REGIONAL AND REGIONAL DEMAND

Travel demand analysis shows a substantial amount of trips along the north-south arterials are inter-regional or regional. Inter-regional and regional trips are those that begin and/or end outside of the study area. The distinction between “inter-regional” and “regional” trips is that inter-regional trips are those that travel outside of the DRCOG model area. Regional trips are those that travel into or out of the study area, but remain within the DRCOG model area. Three major continuous north-south arterials—SH 93, Indiana Street/McIntyre Street, and Wadsworth Boulevard—were selected for analysis of the inter-regional/regional forecasted travel demand. Two locations on each of these three north-south roads were examined, one north of SH 72 and the other south of 64th Avenue. The locations of these selected links and the associated local areas can be found in **Chapter 3** (see **Figure 3.2-16**).

After analysis of the traffic model on these select links, the data shows that with the No Action Alternative network, a majority (66 percent) of trips on the three north-south arterials north of SH 72 are inter-regional or regional. A greater majority (75 percent) of trips on the three north-south arterials south of 64th Avenue are inter-regional or regional (see **Table 1.4-2**, **Figure 1.4-5**, and **Figure 1.4-6**). The improved roadway capacity associated with the *2030 Metro Vision* network increases the inter-regional and regional traffic within the study area, including on the three select links.

A substantial demand exists for the transport of goods in the study area. Vehicle classification counts were conducted on selected state highway segments in the study area. Data shows the percentage of trucks (including both single-unit and multi-unit trucks) range between six and 11 percent of total traffic volumes on segments of US 6, SH 93, SH 128, and Wadsworth Boulevard. These percentages are typical ranges of truck movements within an urbanized area. Additional detail on this vehicle classification data is provided in **Chapter 3** (see **Table 3.1-1**).

454545 Table 1.4-2 Selected Links Results

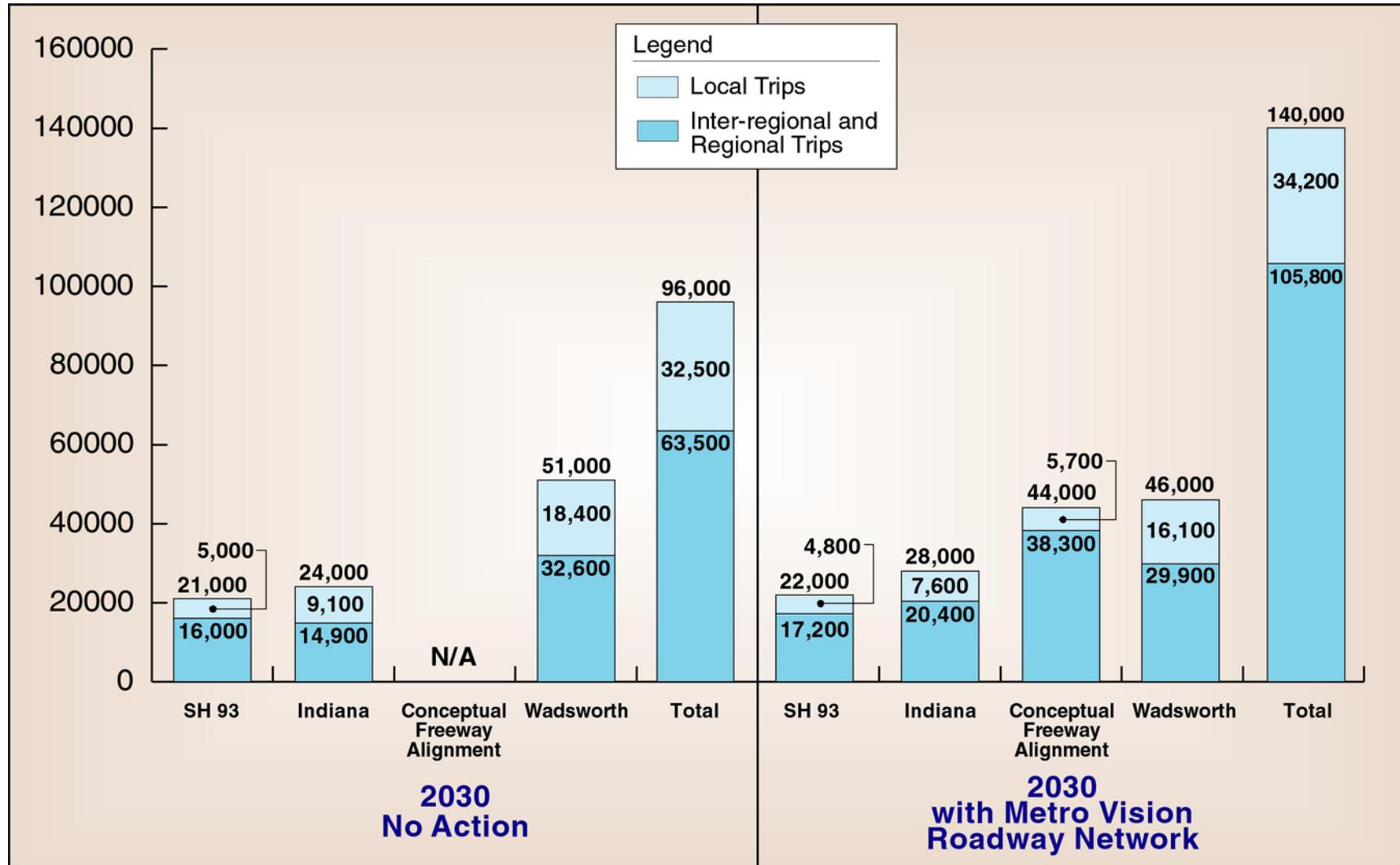
Selected Link	2030 Forecasts – No Action Alternative Network				2030 Forecasts – MetroVision Network			
	Inter-regional & Regional Trips	Local Trips	Total Trips	Percent Inter-regional & Regional Trips	Inter-regional & Regional Trips	Local Trips	Total Trips	Percent Inter-regional & Regional Trips
SH 93 (North of SH 72)	16,000	5,000	21,000	76%	17,200	4,800	22,000	78%
Indiana St. (North of SH 72)	14,900	9,100	24,000	62%	20,400	7,600	28,000	73%
Conceptual Freeway Alignment (North of SH 72)	NA	NA	NA	NA	38,300	5,700	44,000	87%
Wadsworth Blvd. (North of 88 th Ave.)	32,600	18,400	51,000	64%	29,900	16,100	46,000	65%
Subtotal (North of SH 72)	63,500	32,500	96,000	66%	105,800	34,200	140,000	75%
SH 93 (South of 64 th Parkway)	22,400	3,600	26,000	86%	53,100	7,900	61,000	87%
McIntyre St. (South of 64 th Ave.)	12,600	8,400	21,000	60%	18,300	10,700	29,000	63%
Wadsworth Blvd (South of 64 th Ave.)	45,800	15,200	61,000	75%	43,100	1,2900	56,000	77%
Subtotal (South of 64th Ave.)	80,800	27,200	108,000	75%	114,500	31,500	146,000	78%

Note: For the north select links, the boundary for inter-regional and regional trips is South Boulder Road, Sheridan Boulevard, I-70/SH 58, and traffic analysis zone (TAZ) boundaries west of SH 93. For the south select links, the boundary for inter-regional and regional trips is SH 128/120th Avenue, Sheridan Boulevard, US 6, and TAZ boundaries west of SH 93.

Selected link location volumes are approximated using point data within the general vicinity of the roadway link.

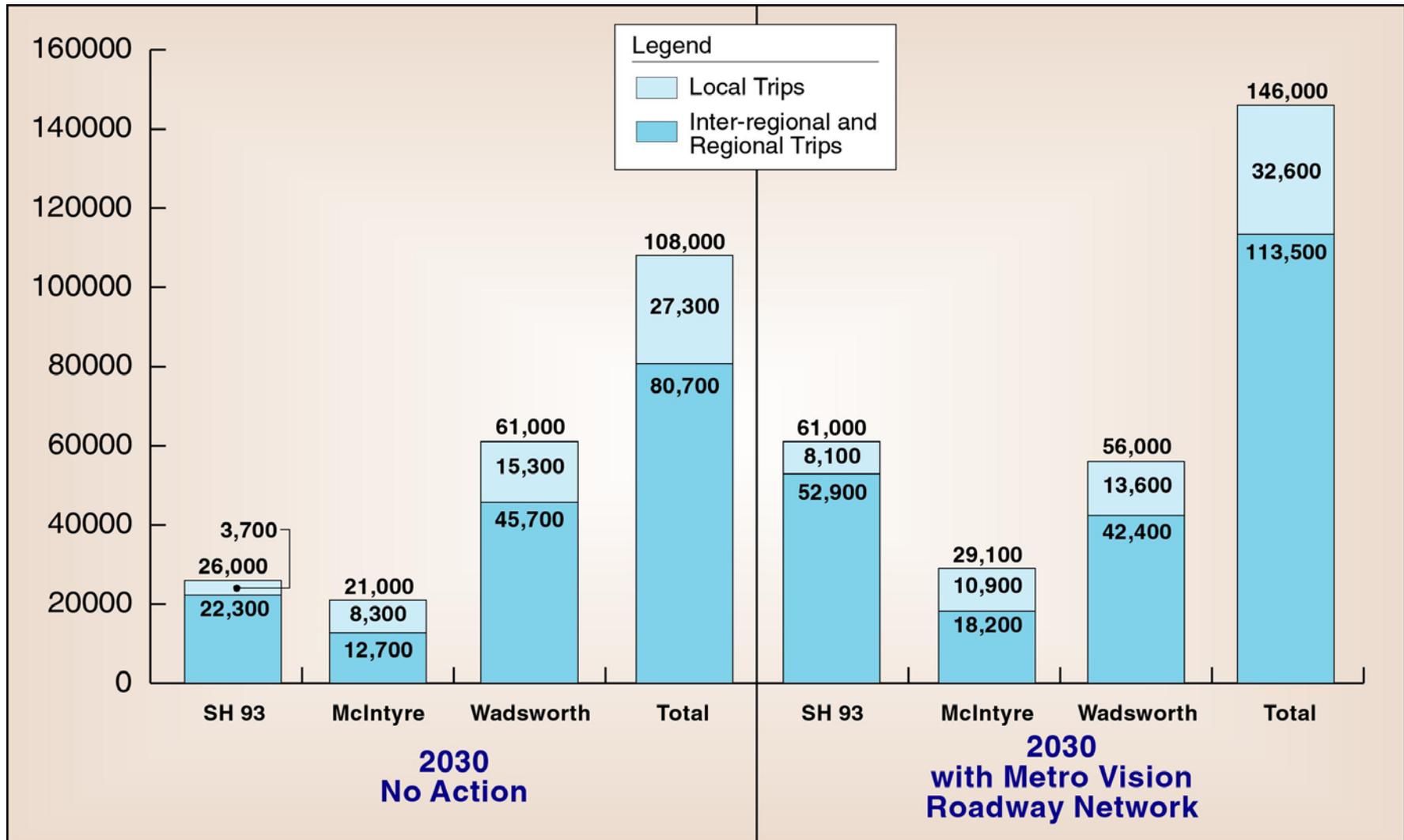
Source: NW Corridor EIS Travel Demand Modeling, Felsburg Holt & Ullevig

Figure 1.4-5 2030 Daily Trip Types at Selected Links North of SH 72–No Action and Metro Vision Network



Note: The boundary for inter-regional and regional trips is South Boulder Road, Sheridan Boulevard, I-70/SH 58, and TAZ boundaries west of SH 93. Local trips are those that remain within this boundary.

Figure 1.4-6 2030 Daily Trip Types at Selected Links South of 64th Avenue—No Action and Metro Vision Network



Note: The boundary for inter-regional and regional trips is SH 128/120th Avenue, Sheridan Boulevard, US 6, and TAZ boundaries west of SH 93. Local trips are those that remain within this boundary.



1.4.3 TRAVEL RELIABILITY

Reduce the variability of travel times and improve driver expectancy.

The regional 2030 traffic forecasts indicate increasing demand for inter-regional and regional trips on limited-capacity facilities in the study area. These additional trips will result in greater congestion and travel delays (see **Figure 1.4-2**). Traffic incidents and accidents, special events, work zones, bad weather, and day-to-day volume fluctuations affect travel time variability. Improvements to the transportation system can reduce the variability of travel times and improve predicted travel times.

Three continuous north-south arterials—SH 93, Indiana Street/McIntyre Street, and Wadsworth Boulevard—are all classified by DRCOG as principal arterial roadways (the third highest roadway classification). No high-speed, high-capacity facilities connect the vicinity of US 36/Northwest Parkway on the north and I-70/SH 58/C-470 on the south.

There are no existing, direct north-south routes between the US 36/Northwest Parkway and I-70/C-470 interchanges. Between these interchanges, travelers use Interlocken Loop, SH 128, Indiana Street, SH 72, SH 93, and US 6, which creates an approximate 23-mile trip, compared with an approximate 18-mile straight-line distance. A route using Wadsworth Boulevard and I-70 for inter-regional and regional travel while shorter in distance is unappealing because of the numerous traffic signals and the high volume of travelers making local trips to access businesses and neighborhoods along the route.

1.4.3.1 SYSTEM DEFICIENCIES

The transportation system contains several substandard features, such as narrow shoulders, that provide limited opportunity to manage incidents. This leads to a varying range of travel times through the area. Unfamiliar travelers do not easily understand the routing of inter-regional and regional trips through intersections with turning movements. Impediments to travel times include inadequate turning room at intersections for freight vehicles and cars, and roadways with limited sight distance.

Speed limits in the study area vary from 35 to 55 mph, which can affect driver expectancy and system reliability. The numerous points of access for residents and businesses and the full-movement, signalized intersections are the primary reasons for existing speed reductions. The inter-regional and regional roadway network in the study area requires improvements to system connectivity, route continuity, future travel demand, and access management.

1.4.4 MODAL INTER-RELATIONSHIPS

Expand highway systems to provide enhanced access to transit choices to improve mobility through intermodal connections.

1.4.4.1 OPPORTUNITIES FOR INTERMODAL CONNECTIONS

Future travel demand is creating a greater need for highway and transit choices to improve mobility. Four transit improvements are anticipated to extend between the Denver central business district and the study area: the West Corridor (light rail), the Gold Line (light rail), US 36 Bus Rapid Transit, and US 36 Commuter Rail. The build alternatives will enhance the movements between neighborhoods and transit stations. Implementation of a build alternative, along with awareness of future transit choices, could promote additional use of the transit corridors.