

6.0 FUTURE TRAFFIC CONDITIONS

To obtain an accurate representation of projected future traffic volumes and travel patterns, a thorough analysis of land use plans within the study area was conducted. Analysis of the study area land use data included confirming existing conditions, reviewing land use plans and information from all local agencies, and developing land use data for future conditions to assess differences. A consideration with this approach was that the potential land use values presented in the DRCOG's conformed datasets were not constrained.

Specifically, the DRCOG datasets for 2001, 2010, and 2025 that use the 1,530 zone TAZ system was used as a basis. Due to the rapid pace of change in some corridor areas between 2001 and today, it was necessary to update the existing land use data to accurately reflect current conditions; this was done by comparing the DRCOG 2001 dataset with the existing conditions in the area of influence. This comparison allowed the travel demand model to be accurately calibrated to land use inputs and provided a higher level of correlation between land use and traffic data.

Meetings with local agencies in the study area were then held to gather their land use plans, ideas for change, and other information relevant to potential land use changes. The information included not only the magnitude of developments but also the potential timeframe of build out of the developments. The data were then used to develop land use scenarios for 2010 and 2025; included was existing development and all development slated to occur by those timeframes. The study included inspecting of every TAZ in the area of influence for both 2010 and 2025 to determine the amount of development in each. These new datasets were then compared to DRCOG's conformed datasets for 2010 and 2025 to assess differences. It was determined that the developed datasets were generally similar to the DRCOG conformed datasets, except in the southern portion of the area of influence, south of C-470 in Douglas and Arapahoe counties.

The land use adjustments were then shared with local agencies to obtain concurrence with the process used and the results for their areas of jurisdiction. At the conclusion of this process, it was agreed that the developed datasets more accurately reflected current and planned development in the area of influence than the DRCOG conformed datasets. DRCOG planners were also consulted on the refinements made to the model; the planners concurred with, and approved, said refinements. The developed datasets were then used for travel demand modeling for the project.

6.1.1 Average Annual Daily Traffic

The travel demand model was used to generate projected average annual daily traffic (AADT) volumes for the 2025 design year for C-470 and major arterial roadways. The projected 2025 volumes show the highest volumes being on the eastern segment of the

corridor. The bi-directional ADT volumes along C-470 in the vicinity of Platte Canyon Road and Yosemite Street are approximately 120,000 and 150,000 vehicles, respectively. These figures show that the eastern segment of the corridor carries approximately 25 percent more vehicles daily than the western portion. The peak directional to non-peak directional distribution of traffic is predicted to be approximately 51 percent to 53 percent to 49 percent to 47 percent for future traffic conditions.

6.1.2 Peak Hours

The projected 2025 AM and PM peak hour volumes were generated by applying the projected growth rate for each TAZ to existing turning movement counts. Existing peak period patterns and durations were maintained without any peak spreading for the future conditions to enable a conservative analysis of the express lane ridership. These volumes are shown in Figures 6.1 and 6.2.

6.1.3 Travel Time Observations

Travel times along the C-470 corridor were obtained from the calibrated micro-simulation model for future conditions. Travel time data were collected for each segment between interchanges and later summed to obtain the total peak hour travel time along C-470 in both directions. This analysis indicated that the travel time on the express lanes from Kipling Parkway to I-25 is approximately 13 minutes, and travel time along the general purpose lane for the same stretch is approximately 27 to 34 minutes in the peak volume direction. The PM peak hour travel time observations are shown in Figure 6.3.

6.1.4 Levels of Service/Densities

A LOS analysis was conducted to assess the operations of the intersections, ramps, and freeway segments in the study area. LOS analysis was based on Highway Capacity Manual (HCM) prescribed procedures. The LOS analysis indicated that the express lanes operate at LOS D or better, while the non-toll or general purpose lanes operate at LOS E or F. Analysis of signalized intersections showed that 17 out of the total 67 intersections operate at LOS E or worse. Tables 6.1, 6.2, and 6.3 summarize the HCS analysis completed for the intersections and freeway segments for the AM and PM peak hours.

Figure 6.1
Projected AM Peak Hour Volumes



