3 Corridor Characteristics

Introduction

This section summarizes major demographic and transportation-related conditions in the study area, both current (roughly 2010) and future. For socioeconomic data, the analysis uses transportation analysis zones (TAZs) established by the Denver Regional Council of Governments (DRCOG) as the basis for data collection; the zones selected represent the study area as shown in Figure 2-1 as closely as possible.

Population, Employment, and Land Use

Population

Table 3-1 summarizes current and future population of the study area. The study area’s population is forecast to increase by approximately 25% between 2010 and 2035, a growth rate slightly slower than that of Denver as a whole and significantly slower than the City of Aurora and the entire Denver metro area. While a 25% growth rate is significant, this slower rate of growth (compared to the region) is primarily related to the highly developed nature of the East Colfax Avenue corridor; it is primarily an urban corridor with a significant amount of developed land on East Colfax Avenue itself and a significant residential population immediately surrounding East Colfax Avenue, providing limited opportunity for major new residential developments.

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2035</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Area</td>
<td>107,338</td>
<td>134,647</td>
<td>25%</td>
</tr>
<tr>
<td>Denver</td>
<td>600,673</td>
<td>776,346</td>
<td>29%</td>
</tr>
<tr>
<td>Aurora</td>
<td>327,639</td>
<td>520,628</td>
<td>60%</td>
</tr>
<tr>
<td>Region</td>
<td>2,885,083</td>
<td>4,348,739</td>
<td>51%</td>
</tr>
</tbody>
</table>

Source: DRCOG

Figure 3-1 illustrates the projected change in population density in the study area between 2010 and 2035. The figure shows that the area immediately around the East Colfax Avenue corridor itself is forecast to have modest population growth, with larger population increases shown in the Golden Triangle and Baker neighborhoods, Uptown, and downtown areas of Denver, and in Aurora near the Anschutz campus. As noted above, this analysis uses DRCOG TAZs selected to represent the study area shown in Figure 1-2 as closely as possible.
**Figure 3-1: Study Area Population Change 2010-2035**

![Population Chart](image)

Source: DRCOG

**Employment**

Table 3-2 shows projected changes in employment in the study area between 2010 and 2035. The table shows a significantly higher growth rate for employment compared with population in the study area. Employment in the study area is forecast to increase by two-thirds in the next 25 years, faster than that forecast for the City and County of Denver as a whole, and comparable to the Denver metro region, though lower than that forecast for the City of Aurora.

**Table 3-2: Employment Growth Comparison 2010-2035**

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2035</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Area</td>
<td>167,649</td>
<td>279,834</td>
<td>67%</td>
</tr>
<tr>
<td>Denver</td>
<td>477,004</td>
<td>713,492</td>
<td>50%</td>
</tr>
<tr>
<td>Aurora</td>
<td>132,130</td>
<td>284,885</td>
<td>116%</td>
</tr>
<tr>
<td>Region</td>
<td>1,561,412</td>
<td>2,575,941</td>
<td>65%</td>
</tr>
</tbody>
</table>

Source: DRCOG

Figure 3-2 illustrates the projected change in employment density in the study area between now and 2035. The figure shows significant employment growth at the Auraria campus and its environs; in downtown Denver; in the Golden Triangle, Baker, Capitol Hill, and Hale neighborhoods of Denver; and in the Delmar Parkway neighborhood and Anschutz Medical Campus areas of Aurora. As noted above, this
analysis uses DRCOG TAZs selected to represent the study area shown in Figure 1-2 as closely as possible.

Figure 3-2: Study Area Employment Change 2010 – 2035

Source: DRCOG
**Zoning**

Figure 3-3 illustrates current zoning in the study area. The figure shows the obvious institutional and commercial zoning on the Auraria campus and in downtown Denver, transitioning to mixed use in the Uptown and Capitol Hill areas east of downtown. East of York Street, the zoning map shows the preponderance of shallow-lot mixed use on East Colfax Avenue itself, bordered closely to the north and south by residential. Additional commercial uses are found in Aurora in the old downtown area, transitioning to mixed use east of Peoria Street in and around the Anschutz Medical Campus.

**Figure 3-3: Study Area Zoning**

![Zoning Map](image)

Source: City and County of Denver; City of Aurora

**Parks and Open Space**

Proximity and impacts to parks and open space can be a significant environmental evaluation factor for major new transportation investments. They can also be destinations served by those new investments. Figure 3-3 above also shows open space and major parks in the study area. The figure shows that there are not significant numbers of tracts of open space directly adjacent to the study area, which is not unexpected given the urban nature of the study area. The study area is bordered by large and significant open space areas in Denver including Cheesman Park (number 1 on the map) and City Park (2), and by smaller more neighborhood-focused parks in Aurora, including Generals Park (3) at the corner of East Colfax Avenue and Peoria Street near the Anschutz Medical Campus.
**Community Centers**

New transportation investments can create impacts in addition to benefits to community centers such as schools, hospitals, and churches. For example, potential impacts could include noise and vibration, and potential benefits include better access to community services and activities. Figure 3-4 illustrates the location of community centers in the study area. The figure shows a relatively large number of churches located on or very near East Colfax Avenue, but with the majority of facilities (including schools) located in adjacent neighborhoods. The central libraries of both Denver and Aurora are located on or near East Colfax Avenue, as are some police and fire facilities. Other major community centers as noted earlier are hospitals (including National Jewish and the Anschutz Medical Campus).

**Figure 3-4: Study Area Community Centers**

![Community Centers Map](image)

Source: DRCOG; City and County of Denver; City of Aurora

**Commercial Property**

Proximity to commercial property and businesses can be an important factor in the performance of a major transportation investment, which can be evaluated as to its ability to effectively serve those properties and their employees. Figure 3-5 shows the location of different types of commercial properties in the study area. The figure shows major concentrations of retail properties on or directly adjacent to East Colfax Avenue throughout the length of the study area. Additional concentrations of commercial activity include multi-unit housing (especially in the Capitol Hill area of Denver and in
western and central Aurora), and a high concentration of office development in the Uptown and Capitol Hill neighborhoods of Denver north of East Colfax Avenue.

**Figure 3-5: Study Area Commercial Property**

Source: Xceligent

**Why is This Important?**

The population and employment maps and tables show moderate population growth along the East Colfax Avenue corridor but significant employment growth. Much of this new employment is driven by growth at the Auraria campus and near downtown Denver and near National Jewish Health, and in Aurora near the Anschutz Medical Campus. Any new transportation investment in the corridor should be designed to accommodate the needs of that rapidly growing employment base, much of it institutional in nature and often not matching typical peak-period commute patterns.

In addition, an examination of other socioeconomic factors can play an important role in the development and evaluation of alternatives for a major transportation investment. In the case of a transportation investment proposed for East Colfax Avenue, a few major points are worth noting:

- Neighborhood character is an important consideration when evaluating major transportation investments. In the case of the East Colfax study area, its preponderance of residential zoning on streets immediately adjacent to East Colfax Avenue, combined with its concentration of retail and
other commercial activity directly on or adjacent to East Colfax, makes it more likely to be appropriate for a major transportation investment when compared with adjacent streets.

- In addition, a lack of major concentrations of parks and community facilities directly on East Colfax Avenue means that those types of community amenities would likely not be directly affected or impacted by a major transportation investment. Potential alignments that use streets other than East Colfax Avenue could potentially have higher impacts, especially to parks and open space. However, the existence of medical facilities on East Colfax Avenue (primarily National Jewish and the Anschutz Medical Campus) could result in both benefits (for employee and patient access) and impacts (primarily related to noise and vibration).

Transportation Conditions

**Person Trips**

Figure 3-6a summarizes 2010 total daily person trips within (originating and ending in) the DRCOG TAZs comprising the study area, and Figure 3-6b summarizes trip data for 2035. For purposes of this analysis, the study area is broken down into four sub-areas:

- The Downtown sub-area encompasses all of downtown Denver including the Auraria campus and parts of the Baker and Golden Triangle neighborhoods
- The Urban sub-area encompasses TAZs from Broadway to Colorado Boulevard, including portions of the Capitol Hill, Uptown, and Congress Park neighborhoods
- The Mid sub-area encompasses the remainder of the Denver portion of the study area, from Colorado Boulevard to the Denver-Aurora border at Yosemite Street
- The Aurora sub-area encompasses all portions of Aurora in the study area from Yosemite Street to I-225
Figure 3-6a: Daily Study Area Person Trips, 2010

Source: DRCOG Focus Model

Figure 3-6b: Daily Study Area Person Trips, 2035

Source: DRCOG Focus Model
The figures show several trends related to person trips in the study area:

- Total daily person trips to, from, through, and within the study area increase from 1,005,000 in 2010 to 1,275,800 in 2035, an increase of 27%.
- Total daily person trips within (originating and ending) in the study area increase from 168,455 in 2010 to 209,285 in 2035, an increase of 24%.
- The two sub-areas with the most internal trips (downtown Denver and Aurora) show major increases in daily person trips between 2010 and 2035. Trips within the downtown Denver sub-area grow from 47,000 in 2010 to almost 71,000 in 2035, an increase of just over 50%. Trips within the Aurora sub-area grow from 25,000 to 34,000 an increase of more than 35%.
- The largest number of daily sub-area to sub-area trips occurs between the downtown Denver and adjacent Urban sub-areas. Those trips grow from almost 32,000 in 2010 (19% of all trips) to just over 34,000 in 2035 (16% of all trips).
- The tables and figures show that a relatively small proportion of daily person trips is made from end to end in the corridor. In 2010, for example, only 5,050 (or 3%) of all trips are made between the downtown Denver and Aurora zones; that proportion decreases slightly in 2035.

**Existing and Future Transit in the Study Area**

**Transit Services**

Figure 3-7 illustrates the existing primary bus and rail services and future rail services in the study area.

**Figure 3-7: Study Area Existing Transit Services**

The figure shows that the study area is served by a large number of east-west and north-south bus routes, with the 15 and 15L bus routes serving as the ‘spine’ of bus service in the study area along East Colfax Avenue. The other primary east-west bus routes are the 20 (running on 17th/18th Avenues out of downtown and on 23rd and 20th Avenues east of City Park, and the 10 (running on 10th Avenue out of downtown and on 12th and 11th Avenues into Aurora). North-south routes traverse the East Colfax Corridor along Downing/Corona (route 12), York Street (route 24), Colorado Boulevard (route 32), Monaco Parkway (route 65), Quebec Street (route 73), Havana Street (route 105), and Peoria Street (route 121). In addition, buses running on the East Colfax Corridor provide direct connections to the RTD central light rail lines in and near downtown, and will connect with the new I-225 light rail line in Aurora upon its opening in 2016.
Table 3-3 shows existing and future daily ridership for the primary east-west bus routes in the study area: the 15 (local stops on Colfax), the 15L (limited stops on Colfax), the 10, and the 20.

Table 3-3: Daily Bus Ridership on Primary East-West Routes in Study Area, 2010 and 2035

<table>
<thead>
<tr>
<th></th>
<th>Route 15</th>
<th>Route 15L</th>
<th>Route 10</th>
<th>Route 20</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>9,539</td>
<td>11,967</td>
<td>3,390</td>
<td>3,198</td>
<td>28,094</td>
</tr>
<tr>
<td>2035</td>
<td>9,593</td>
<td>16,572</td>
<td>3,352</td>
<td>4,363</td>
<td>33,880</td>
</tr>
<tr>
<td>% increase</td>
<td>0.6%</td>
<td>21.7%</td>
<td>-1.1%</td>
<td>36.4%</td>
<td>20.6%</td>
</tr>
</tbody>
</table>

Source: 2010: RTD; 2035: DRCOG Focus Model

The table shows that total transit ridership on the primary east-west bus routes in the study area is forecast to increase by almost 21% between 2010 and 2035, with the largest percentage increase occurring on Route 15L (which grows by approximately 4,500 daily riders, or 21.7%). Both Routes 15 and 10 show negligible or even slightly negative growth. Figure 3-8 illustrates the distributions of transit boardings and alightings along the major east-west bus routes in the East Colfax Corridor in 2010, analyzed by sub-areas and by direction. Note that the boardings numbers are rounded and the totals do not exactly match the 2010 totals shown in Table 3-3.

Figure 3-8: Daily Study Area Bus Boardings and Alightings by Sub-Area, 2010

Source: RTD
The figure shows that the downtown Denver sub-area has the largest number of bus boardings and alightings, owing to its having the largest employment base in the study area. The Urban sub-area between downtown and Colorado Boulevard has the second-highest number of boardings and alightings, followed by the Aurora sub-area.

**High-Activity Transit Boarding Locations**

Figure 3-9 summarizes major transit boarding data for current bus routes in the East Colfax study area (Routes 15, 15L, 10, and 20). The figure shows both the Route 15 and 15L stops along East Colfax Avenue with the highest total daily boarding totals (eastbound and westbound) in addition to the maximum load points for all four bus routes (defined as the points along the routes with the largest combined passenger loads throughout the day) based on direction of travel.

**Figure 3-9: Study Area High-Activity Bus Stops and Maximum Load Points**

Source: RTD

The figure shows that the largest total daily boarding points for the Routes 15 and 15L are primarily at points with major north-south crossing routes (Broadway, Downing Street, York Street, Colorado Boulevard, Monaco Parkway, Quebec Street, Havana Street, and Peoria Street). The only high-activity boarding point without a major north-south crossing route is at Yosemite Street at the Denver-Aurora border. The figure also shows that the maximum load points for the three local routes in the study area (10, 15, and 20) are concentrated in the area between Lincoln/Broadway and Downing Street; the maximum load points for the 15L (limited service) are at Quebec Street and Monaco Parkway.

**Traffic Operations**

**Traffic Volumes**

As shown earlier in the study area map in Figure 2-1, the Colfax Corridor Connections study area consists of several major roadways that are heavily traveled. It is flanked on the west by I-25, the major north-south interstate freeway in the Denver metro area, and on the east by I-225, a radial interstate.
freeway that connects I-70 (the major east-west freeway in the Denver metro area) with I-25 in the southern portion of the metro area. East Colfax itself is also a US highway (US 40) that is a major east-west arterial in the region, flanked by other well-used arterials such as the 13th/14th Avenue one-way pairs on the south and the by 17th and 18th Avenues on the north, with major north-south arterials (such as York/Josephine Streets, Colorado Boulevard, Monaco Parkway, Quebec Street, Yosemite Street, and Peoria Street) crossing at key points along the corridor.

During the past few years, several agencies have conducted traffic counts in the study area. The counts documented by those agencies (including the Colorado Department of Transportation or CDOT, DRCOG, the City and County of Denver, and the City of Aurora) are relatively consistent with each other and provide a good snapshot of traffic volumes along major streets in the study area. Figure 3-9a summarizes recent-year traffic volumes from counts provided by the four agencies.

**Figure 3-9a: East Colfax Avenue Current Daily Traffic Volumes**

The figure shows the areas of East Colfax Avenue with the highest daily traffic volumes to be near the intersection with Speer Boulevard (approximately 40,000 vehicles per day), between Lincoln and Washington Streets (approximately 30,000 vehicles per day), between Downing and York Streets (approximately 35,000 vehicles per day), just east of Colorado Boulevard (approximately 32,000 vehicles per day), between Dayton and Peoria Streets (approximately 32,000 vehicles per day), and between Peoria Street and I-225 (approximately 36,000 vehicles per day).

Figure 3-9b shows forecast (2035) average daily volume/capacity (v/c) ratios for major roadways in the study area. A v/c ratio greater than 1 indicates the volume on a roadway segment potentially exceeds the facility’s capacity. The information in this figure is based on the 2035 DRCOG Focus Model estimates.
**Intersections**

Intersection Level of Service (LOS) is an indicator of overall intersection congestion and delay, calculated by the number of seconds of traffic delay based on volumes passing through the intersection during the PM peak hour. Table 3-4 shows the 2013 and 2035 PM peak hour intersection LOS for streets intersecting East Colfax Avenue.
Table 3-4: Study Current and Future Intersection Levels of Service (PM Peak Hour)

<table>
<thead>
<tr>
<th>Intersection w/East Colfax</th>
<th>2013 LOS</th>
<th>2035 LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB Speer Blvd.</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Cherokee St.</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Bannock St.</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>Lincoln St.</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Sherman St.</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Grant St.</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>Logan St.</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>Washington St.</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Clarkson St.</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Downing St.</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>York St.</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>Josephine St.</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Colorado Blvd.</td>
<td>E</td>
<td>D</td>
</tr>
<tr>
<td>Krameria St.</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>SB Monaco Pkwy.</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>NB Monaco Pkwy.</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Dayton St.</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Del Mar Pkwy.</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Peoria St.</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Potomac St.</td>
<td>E</td>
<td>E</td>
</tr>
</tbody>
</table>

Source: City and County of Denver and City of Aurora traffic counts; VISSIM Traffic Model; 2035 from DRCOG Focus Model

The table shows that the overall growth in traffic in the Colfax corridor will have an impact on intersection congestion delay. Note that the 2035 intersection LOS calculation is based on DRCOG Focus Model data. The Focus Model takes into account travel patterns based on future land use and development, and traffic growth. Therefore, some intersections experience an increase in traffic and some intersections experience a decrease in traffic congestion.
Bicycle and Pedestrian Facilities and Connectivity

Figure 3-10 shows the current and planned infrastructure in place for bicycling in the study area. The map shows that no major bicycle facilities are located on East Colfax Avenue. Instead, East Colfax Avenue is flanked by several parallel bicycle routes and is crossed by several others. Major observations include:

- Two major east-west parallel bicycle routes near East Colfax Avenue are located along 12th and 16th Avenues. 17th Avenue east of Colorado Boulevard is proposed for additional bicycle facilities under the City and County of Denver’s future plans, linking to the City of Aurora’s facility on 17th Avenue east of Yosemite Street.
- East Colfax Avenue is crossed by several north-south routes, with several sharrow routes between Broadway and Downing, and several signed routes and bicycle lanes along major roadways east of Downing Street.
- A number of additional new routes are proposed along several north-south arterials throughout the study area (shown as dashed lines in the map), aimed at mitigating or eliminating many gaps in the bicycle network.
- Denver’s B-Cycle network has recently expanded to include facilities on or near East Colfax Avenue as far east as Colorado Boulevard. However, no facilities are currently located east of Colorado Boulevard on East Colfax Avenue. B-Cycle staff reports that the organization is currently developing a five-year expansion plan, but no specific locations have been selected as of yet.
- Similarly, bicycle racks in public right-of-way are focused primarily in the western portion of the study area, indicating a potential need for additional facilities in the eastern portion of the study area along East Colfax Avenue.
Figure 3-10: Existing and Planned Bicycle Facilities in Study Area

Source: Denver Moves, Denver B-Cycle, City of Aurora Bicycle Plan
Why is This Important?

This review of transportation conditions and plans points out the transportation issues that a high-capacity transit investment in the East Colfax Corridor should be designed to address. Some of the major observations related to transportation conditions include:

- Total person trips to, from, through, and within the study area are expected to increase by 27% between 2010 and 2035, and total person trips within (originating and ending) the study area are expected to increase by 24%, in line with the roughly 20-30% increase in person trips forecast by Denver’s Strategic Transportation Plan.
- The two sub-areas with the most internal trips (downtown Denver and Aurora) show major increases in person trips between 2010 and 2035 (with internal downtown trips increasing by 50%, and internal Aurora trips increasing by more than 35%).
- A relatively small proportion of person trips is made from end to end in the corridor (roughly 3% of all trips travel between the Aurora section to downtown Denver), indicating a significant amount of local trip-making throughout the study corridor.
- Total transit ridership on the primary east-west bus routes in the study area is forecast to increase by almost 21% over the next two decades, roughly corresponding to the forecast increase in total person-trips.
- The peak loading points for local east-west bus transit routes in the study area are focused in the western portion of the area, between Lincoln/Broadway and Downing Street.
- Roadway congestion is forecast to generally worsen slightly throughout the study area.
- The ongoing implementation of a number of infrastructure and operational improvements aimed at facilitating and enhancing pedestrian and bicycle movement throughout the corridor can be a good “starting point” for additional improvements that may be examined to enhance connectivity to a potential high-capacity transit improvement along East Colfax Avenue.