DENVER UNION STATION-CHERRY CREEK-GLENDALE CORRIDOR FEASIBILITY STUDY
RECOMMENDATIONS REPORT

January 2014
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Purpose</td>
<td>4</td>
</tr>
<tr>
<td>Data Sources</td>
<td>5</td>
</tr>
<tr>
<td><strong>Existing Conditions</strong></td>
<td>5</td>
</tr>
<tr>
<td>Market Conditions</td>
<td>5</td>
</tr>
<tr>
<td>Cherry Creek</td>
<td>5</td>
</tr>
<tr>
<td>City of Glendale</td>
<td>6</td>
</tr>
<tr>
<td>Downtown Denver</td>
<td>7</td>
</tr>
<tr>
<td>Market Opportunities and the Role of Transit</td>
<td>8</td>
</tr>
<tr>
<td>Current Transit Service</td>
<td>8</td>
</tr>
<tr>
<td>Bus to Bus Connection</td>
<td>8</td>
</tr>
<tr>
<td>Bus to Rail Connection</td>
<td>14</td>
</tr>
<tr>
<td><strong>Stakeholder Input and Data</strong></td>
<td>17</td>
</tr>
<tr>
<td>Stakeholder Outreach</td>
<td>17</td>
</tr>
<tr>
<td>Key Discussion Points</td>
<td>17</td>
</tr>
<tr>
<td>Additional Stakeholder Data</td>
<td>18</td>
</tr>
<tr>
<td>Cherry Creek North Survey</td>
<td>18</td>
</tr>
<tr>
<td><strong>Future Impacts to Transit</strong></td>
<td>19</td>
</tr>
<tr>
<td>Future Market Conditions</td>
<td>19</td>
</tr>
<tr>
<td>Future Service Impacts</td>
<td>20</td>
</tr>
<tr>
<td>Future Opportunities and the Role of Transit</td>
<td>21</td>
</tr>
<tr>
<td><strong>Transit Alternatives</strong></td>
<td>22</td>
</tr>
<tr>
<td>No Change</td>
<td>22</td>
</tr>
<tr>
<td>New Shuttle Route</td>
<td>22</td>
</tr>
<tr>
<td>Enhanced Transit Corridor</td>
<td>23</td>
</tr>
<tr>
<td>Recommendation</td>
<td>23</td>
</tr>
</tbody>
</table>
Alternative 1: Enhanced Transit Corridor (Preferred) 25

Service Elements 25
  Alignment 25
  Frequency and Service Span 26
  Branding 26
  Cost Projections 26

Alternative 2: New Shuttle Route 28

Service Elements 28
  Alignment 28
  Frequency and Service Span 29
  Branding 29
  Cost Projections 29

Stakeholder Feedback to Recommendations 30

Conclusion 33

Appendix 34
**STUDY PURPOSE**

The connection between Denver Union Station (DUS), Cherry Creek, and Glendale is a critical link for local and regional travel. The corridor connecting these areas provides access to key activity centers and employment hubs. Regional Transportation District (RTD) has commissioned a feasibility study to identify and evaluate options for transit service improvements within the study area bounded by DUS to the northwest and the City of Glendale to the southeast. The study will analyze current and future market opportunities for transit, the performance of existing services, as well as stakeholder input to identify effective transit alternatives for the corridor. Transportation Solutions, a nonprofit transportation management association that serves the Southeast Denver area, provided financial and direct technical assistance for this study.

MAP 1: PROJECT STUDY CORRIDOR
DATA SOURCES

The following data sources were utilized to inform the study:

- ART Shuttle in Englewood
- Cherry Creek North Visitor Survey (2011)
- Cherry Creek North BID Cumulative Traffic Study (2013)
- Cherry Creek Area Plan (2012)
- City of Denver Speer/Leetsdale Travel Shed
- Cultural Connection Trolley Services
- Denver Strategic Transportation Plan (2008)
- Downtown Denver Circulator (2010)
- Downtown Denver Mobility and Access Plan
- Stakeholder Meeting (July 2013 and December 2013)
- RTD Ridership

Regional travel demand data was not available for analysis.

EXISTING CONDITIONS

Market Conditions

Market factors such as population and employment density, development patterns, and proximity to popular destinations affect the demand for transit service and are critical considerations for transit planning. Together they identify what is necessary for transit to succeed within a market context and will be used to create a composite picture of where service is most likely to generate ridership.

Analyzing local market conditions will help with determining opportunities for transit, designing a service with an effective route alignment, and determining appropriate service levels to meet projected demand. Based on current market conditions, the study corridor presents a number of positive opportunities for transit. It plays a pivotal role in facilitating mobility throughout the metropolitan area, connecting the region to a number of popular destinations, employment hubs, and residential centers.

CHERRY CREEK

Cherry Creek, located about 3½ miles southeast of downtown Denver, hosts a number of retail, residential, and commercial destinations (see Map 2). The Cherry Creek Area Plan outlines strategies for continuing to shape Cherry Creek into a more vibrant and livable community that supports multi-modal mobility. The plan divides Cherry Creek into four sub-areas: Cherry Creek East, Cherry Creek North Neighborhood, Cherry Creek Shopping District, and Cherry Creek Triangle. The Cherry Creek Shopping District features two of the region’s retail attractions: Cherry Creek North shopping district and Cherry...
Creek Shopping Center. These upscale retail centers attract over 1.3 million visitors per month and contribute to the more than 14,000 jobs in the community. These larger developments are contiguous to existing higher frequency transit service located on 1st Avenue, a key mixed-use corridor that serves Cherry Creek as well as the region (becoming Speer Boulevard to the west).

Map 2: Cherry Creek Land Use

CITY OF GLENDALE

The City of Glendale contains a number of commercial establishments and houses Infinity Park, a world class rugby facility and events center. The park is about ⅓ mile from Colorado Boulevard, a primary gateway into Glendale. The city is also planning to develop the Riverwalk, a 1 million square foot entertainment district that aims to become a local, regional, and international destination. The project will include retail, hospitality, and entertainment space as well as multi-modal enhancements in the form of a bicycle and pedestrian path. In addition to generating additional tourism, the city is projected to experience a 50 percent growth in employment over the next 20 years.
DOWNTOWN DENVER

Downtown Denver is a high density employment hub in the metropolitan region, accounting for over 110,000 jobs. The current residential population in downtown Denver is 12,000 people, but this number is expected to grow by 100 percent within the next 20 years. In addition to traditional retail, dining, and commercial space, downtown Denver attracts visitors to destinations such as Coors Stadium, Denver Convention Center, Denver Botanic Gardens, Elitch Gardens, Golden Triangle Museum District, Kirkland Museum of Fine and Decorative Art, Molly Brown House Museum, Pepsi Center, and University of Colorado Denver. Local residents, tourists, and employees have access to Denver Union Station, Market Street Station\(^1\), and Civic Center Station for their transit mobility solutions, which are connected by the 16\(^{th}\) Street Free MallRide and the upcoming Free MetroRide.

\(^1\) Market Street Station will be replaced by the new Denver Union Station bus center.
MARKET OPPORTUNITIES AND THE ROLE OF TRANSIT

The scale of development and the concentrated distribution of employment, housing, and activity centers within the three communities make a large portion of the study corridor sustainable. Sustainable communities allow people to reach their residential, occupational, and recreational destinations with a decreased dependence on the automobile. Transit will play a critical role in making active modes of transportation a sustainable lifestyle choice along the corridor as Glendale, Cherry Creek, and downtown Denver continue to intensify.

Transit plays an equally important role in supporting local economic activity throughout the corridor as evidenced by RTD’s current commute-based service towards downtown Denver. However, the corridor also contains important commercial, retail, and entertainment venues in Cherry Creek and Glendale that are not well served by this commute focused transit. Transit can help customers, visitors, and employees arrive at these other destinations without the use of a private vehicle, reducing the impact on parking requirements and increasing the flexibility of local land uses. The importance of transit is emphasized even more during peak retail periods where parking becomes a constraint. In order for transit to succeed in this role, all-day service to and from the retail centers and other hubs of economic activity will need to be of greater emphasis.

CURRENT TRANSIT SERVICE

While RTD operates a number of routes that vary in alignment and service level throughout the corridor, there is currently no single-seat ride connecting Cherry Creek or Glendale with Denver Union Station. That said, transit patrons do have one-seat access to Civic Center Station where they transfer to the very frequent Free MallRide and upcoming Free MetroRide to Union Station. A key question for this study will be whether a “one-seat” ride to DUS is necessary to support significantly increased transit riding.

BUS TO BUS CONNECTION

Routes 83L, 79L, and 3L offer passengers a direct connection from Cherry Creek and Glendale to downtown Denver with service to Civic Center Station (see Map 4). Once at Civic Center Station, passengers can complete their trip and connect to Denver Union Station using the FREE 16th Street MallRide, a frequent service operating as often as every 1½ minutes and the upcoming FREE MetroRide operating every 6 minutes during peak periods (see Map 5).

SERVICE DESIGN DECISIONS

The following service characteristics, alignment and frequency, are important design factors that impact service performance and how passengers utilize transit. The study describes the current service design decisions along the corridor and evaluates how they affect passengers and their experience on transit.

Alignment

The alignment of a route is the path that it takes to reach its destination. Direct alignments decrease travel times which improves the passenger experience and reduces operating costs. Routes 83L, 79L, and 3L travel along the same, linear corridor between Glendale and Civic Center Station in downtown
Denver. This is an effective corridor segment that provides direct service between key activity centers with minimal deviations.

The three routes branch out at Alameda Avenue/Leetsdale Drive. Although these routes share the same alignment for a significant length, they are branded as separate services. However, RTD does market Route 79L with Route 83L. Route 83L is an all-day service that operates between the study corridor and Nine Mile Station. Route 79L, a commute-oriented, peak period service, duplicates Route 83L’s alignment outside of the segment between Quebec Street and Nine Mile Station. Route 3L is also a peak period service and serves Aurora via Alameda Avenue. The FREE 16th Street MallRide connects the rest of the corridor from Civic Center Station to Denver Union Station along 16th Street.

MAP 4: BUS TO BUS CONNECTIONS
Frequency

Frequency refers to how often a bus operates. Spontaneous-use services that operate every 15 minutes or better reduce out-of-vehicle wait time and allow passengers to arrive at a bus stop without consulting a schedule. At these service levels, transit becomes more attractive and a more viable mobility solution in sustainable communities. Table 1 summarizes the current service levels of the three corridor routes terminating at Civic Center Station. Route 83L is the only route that serves the corridor all day. The other two routes are commute-based services operating during the peaks. Individually, the routes do not operate at spontaneous-use frequencies other than Route 83L in one peak direction. Routes 79L and 83L are coordinated for 15 minute reverse peak headways.

**Table 1: Bus to Bus Service Levels**

<table>
<thead>
<tr>
<th>Route</th>
<th>Peak Inbound</th>
<th>Peak Outbound</th>
<th>Off-peak Inbound</th>
<th>Off-peak Outbound</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>83L</td>
<td>15</td>
<td>20</td>
<td>30</td>
<td>30</td>
<td>5:00 AM</td>
<td>11:45 PM</td>
</tr>
<tr>
<td>79L</td>
<td>30</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>5:15 AM</td>
<td>7:15 PM</td>
</tr>
<tr>
<td>3L</td>
<td>20</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>5:45 AM</td>
<td>7:15 PM</td>
</tr>
</tbody>
</table>

2 Source: RTD.com
PASSenger Experience

This section details how the current design factors affect the passenger experience along the corridor between downtown Denver, Cherry Creek, and Glendale.

Combined Peak Service Levels

Routes 3L and 79L supplement 83L during the peak, adding between 2 and 6 additional trips along the corridor. Although no individual route operates better than every 15 minutes, the combined level of peak service on the corridor averages to be as much as every 7 to 8 minutes if services are evenly spaced. Figure 1 provides an example of the current peak frequencies for the three routes. A 7 to 8 minute peak frequency on the corridor is a high level of service, but the frequency is most effective when passengers understand that it exists. The current service design distributes the frequency across three separately branded routes and does not communicate the combined service levels along the corridor. Passengers who wish to utilize the frequent service to travel within the corridor will have to understand how the three routes supplement each other.

Additionally, the combined services on the corridor are inconsistently spaced. The service levels average to a trip every 7 to 8 minutes on the corridor, but the routes are not coordinated to arrive at even intervals. The Coordinated Schedule in Figure 1 shows how improved synchronization between the three routes can benefit service on the corridor without additional investments.

Figure 1: AM Westbound Frequency Comparison

![Frequency Comparison Graph]

Commute-Oriented Service

Figure 2 highlights the change in frequency between the peak and off-peak. Route 83L currently provides 30 minute off-peak frequency and is the only route operating during this period of time. This

---

3 Frequency comparison evaluated the frequency of buses by route at the 1st Ave and University Blvd bus stop
drop in off-peak frequency combined with additional service towards downtown Denver in the morning and outbound in the afternoon show the commute-oriented configuration of the current transit services along the corridor. The service is not positioned to effectively connect destinations in Cherry Creek and Glendale that generate demand for transit throughout the day. As the communities in the study area continue to develop in density and sustainability, the demand for all-day, bi-directional transit will increase. The feasibility study will incorporate findings from the analysis of current and future market conditions with the service performance data to identify the appropriate level of off-peak service.

**FIGURE 2: COMBINED PEAK AND OFF-PEAK FREQUENCY**

![Combined Service Level Graph]

**PERFORMANCE**

The following sections summarize the key findings from the individual route level analysis. Route profiles that provide additional details about individual routes are located in the appendix.

**TABLE 2: BUS TO BUS ROUTE PERFORMANCE**

<table>
<thead>
<tr>
<th>Route</th>
<th>Revenue Hours</th>
<th>Boardings</th>
<th>Passengers per Revenue Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>83L</td>
<td>69</td>
<td>3,741</td>
<td>55</td>
</tr>
<tr>
<td>79L</td>
<td>23</td>
<td>765</td>
<td>34</td>
</tr>
<tr>
<td>3L</td>
<td>13</td>
<td>646</td>
<td>49</td>
</tr>
</tbody>
</table>

**Route 83L**

Route 83L is the most productive route of the three services connecting to Civic Center, generating 55 passenger boardings per revenue hour. About 36 percent of Route 83L’s total boardings and alightings occur between downtown Denver (Civic Center) and Cherry Creek (1st Ave/Fillmore Plaza). The route’s productivity is well above the system average which indicates a higher demand for service than is currently being supplied. Additionally, the route consistently attracts a high number of passengers during the midday, reinforcing the importance of off-peak service through the corridor.
Routes 79L

Route 79L achieves below average productivity while serving 765 passengers per weekday. The resulting performance may be due to the route’s duplicative alignment with 83L, the more frequent, all-day service. The unique segment of Route 79L does not generate enough ridership to increase its productivity to the route group average. About 45 percent of Route 79L passenger activity occurs between the Civic Center Station and Glendale along the study corridor.

Route 3L

Route 3L connects with park and ride facilities as well as transfer hubs. While 3L has the 10th highest productivity in the RTD bus network, it requires a high subsidy per passenger due to the peak directional orientation of the service. It runs few trips, so the number of boardings is small relative to a route such as 83L.
BUS TO RAIL CONNECTION

Passengers wishing to connect between downtown Denver, Cherry Creek, and Glendale can also use a combination of bus and rail services to access the corridor. RTD bus Routes 3, 40, and 46 connect directly to light rail at Colorado or Alameda Stations.

SERVICE DESIGN

Alignment

Routes 40 and 46 serve the Colorado station which is 2½ miles south of the Speer/1st/Leetsdale corridor. Passengers with origins or destinations along Colorado Boulevard or connecting to other transit routes will most likely use Route 40 over Route 46 due to its direct alignment to or from the station. Route 46 does serve the major destinations in both Glendale and Cherry Creek, but via a slow, circuitous route alignment. Regardless of choosing either Route 40 or 46 from rail, only travelers coming from the southeast Metro region would use this rail to bus connection to Glendale or Cherry Creek due to the much longer travel times from elsewhere in the region (e.g., DUS). Route 3 offers limited, hourly direct service between Glendale, Cherry Creek, and Alameda Station via its long line alignment. Alameda Station is about 2½ miles south of Civic Center Station but require less out-of-direction travel for most regional travelers. Passengers at Alameda Station can use Light Rail Lines C and E to reach DUS and complete their trip.
Frequency

The three routes serving rail stations run all day at fairly consistent service levels. Route 40’s service levels drop during the off-peak but the route still operates at a spontaneous-use frequency. Route 3 runs as often as every 15 minutes during the peak, but will only serve the study corridor about once an hour (see Table 3).

**Table 3: Bus to Rail Service Levels**

<table>
<thead>
<tr>
<th>Route</th>
<th>Peak</th>
<th>Off-peak</th>
<th>Span</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Northbound/ Eastbound</td>
<td>Southbound/ Westbound</td>
<td>Northbound/ Eastbound</td>
</tr>
<tr>
<td>40</td>
<td>10 min</td>
<td>10 min</td>
<td>15 min</td>
</tr>
<tr>
<td>46</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>3*</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

*Route 3 operates different trip patterns. The pattern that serves Cherry Creek and Glendale runs once an hour.
**Passenger Experience**

**Route 40 versus Route 46**

The two routes are currently branded separately but their service areas overlap between Cherry Creek and the rail station along Colorado Boulevard. Most passengers will use Route 40 to connect to Colorado LRT Station due to the higher frequency, direct alignment, and quicker travel times. The transit market that is unique to Route 46 is much more limited despite its connections to both Glendale and Cherry Creek.

**Connecting into Alameda Station**

The total travel time from Glendale to Denver Union Station via Route 3 and LRT Lines C or E at the Alameda Station is short, however, the Route 3 60 minute frequency limits the viability of this option when passengers have access to more frequent service options.

**Using Rail or FREE MallRide into DUS**

The estimated travel times for riding the corridor via bus or rail services are listed in the appendix. The overall times for connecting into DUS via corridor bus and the FREE MallRide is as fast or faster than the times for travelling via rail. The MallRide runs often enough to make the free transfer at Civic Center Station almost seamless.

**Performance**

**Route 40**

Route 40 operates on Colorado Boulevard, a key spine in the RTD network. The route’s importance to the overall transit network is reflected in its 6,000 daily boardings, the 6th highest in the system, and productivity of 46 passengers per revenue hour. Within the study area, Route 40 generates a significant amount of ridership in Glendale. The route attracts fewer riders in Cherry Creek which may be due to the community’s distance from Colorado Station, a key destination for the route. Passengers in Cherry Creek may pursue other transit alternatives to connect into downtown.

**Route 46**

A large amount of the Route 46’s total passenger activity, over 28 percent, occurs at Colorado Station. However, the route still performs below the system average because Route 40 often presents the more convenient alternative for passengers looking to connect into the rail lines at Colorado Station.

**Route 3**

Route 3 only provides 60 minute service to Cherry Creek and Glendale during the week. Overall Route 3 performs at an above average level, but the large majority of its ridership is generated outside of the study area. The segment through Cherry Creek and Glendale accounts for just 25 percent of the route’s passenger activity and primarily serves as a regional connection into the Centerpoint and Sable Transfer Center.
STAKEHOLDER INPUT AND DATA

STAKEHOLDER OUTREACH

A stakeholder meeting was held in Denver in July 2013 to discuss the feasibility study. The purpose of the meeting was to go over project objectives, solicit feedback, and identify additional data sources for conducting the study analysis. The following organizations were represented:

- Regional Transportation District
- Transportation Solutions
- Capitol Hill United Neighborhoods
- Charter Realty Group
- Cherry Creek Steering Committee
- City of Denver
- Denver Department of Public Works
- Downtown Denver Partnership
- Golden Triangle Museum District
- History Colorado
- The Oxford Hotel
- Visit Denver

KEY DISCUSSION POINTS

- **In order to design a service, it will be important to understand who the target customer is.** Transit can be designed to attract different market segments of customers based on passenger amenities, service alignment, and frequency. The current service is designed to target work commutes. Stakeholders brought up the importance of tourists and finding a way to make transit appeal to them.

- **Where do passengers want to go?** Employees/residents and tourists have different mobility needs. Stakeholders emphasized how regional visitors arrive into DUS wanting a one seat ride to Cherry Creek and Glendale. Is there one solution for both? Is there overlap between the market segments?

- **The last mile problem: How to get passengers to their final destination after taking transit?** This was raised as an issue for a number of potential destinations and origins like the Museum District, Infinity Park, and the Convention Center.

- **What should the connection into DUS be, bus or rail?** Stakeholders discussed travel times between taking the bus, light rail, and driving. Stakeholders felt that public transit was fairly competitive with the private automobile with respect to travel times. The bus was discussed more often as an alternative for transit. Although Routes 83L and 46 operate in Cherry Creek and Glendale, the two routes fill different roles within the market.
- **Cherry Creek lacks a transit hub.** Cherry Creek is not connected to FasTraks and lacks an identifiable hub for transit.

- **The current service is not branded.** Branding makes tourists and other passengers aware of the options that are out there. The possible options are to brand the vehicle or the corridor, creating a gateway for transit in Cherry Creek and Glendale.

- **RTD’s previous experience with a branded shuttle service was not successful.** RTD created a branded shuttle 10 years ago. The agency bought rubber-tired trolleys that ran every hour. It wasn’t frequent, lacked marketing, generated little ridership and was not considered successful.

- **Current service does not have frequency.** Frequency is a very important issue for passengers. The current 83L service is not frequent enough and used to run more often.

- **Attracting families to transit will be difficult.** Transit is cost prohibitive for families. Driving and paying for parking is often the more affordable alternative.

- **Stakeholders want information on costs.** The costs for each alternative need to be provided.

- **Data needs for the feasibility study.** The feasibility study will benefit from data that details tourist and local travel behavior. Zip code data from stores, major retailers, or cultural destinations.

---

**ADDITIONAL STAKEHOLDER DATA**

**CHERRY CREEK NORTH SURVEY**

RRC Associates conducted a visitor survey for Cherry Creek North in Fall 2011. Survey respondents answered questions that dealt with issues such as trip purpose, trip origin, as well as mode of transportation (see Figure 3). Of the 1,400 visitors who completed a survey, more than 25 percent of them arrived at Cherry Creek by bicycle, bus, or walking. The high share of arrivals via sustainable travel modes is a positive indicator for Cherry Creek’s commitment to sustainability and the potential response to improved transit options.

**FIGURE 3: CHERRY CREEK NORTH MODE ACCESS**

Cherry Creek North Mode of Access

- 72% Automobile
- 19% Walk
- 3% Bus
- 2% Bicycle
- 1% B-Cycle Program
- 3% Other
The majority of visitors, 89 percent, lived within the Denver Metro area and more than 60 percent were from the City of Denver (see Table 4). Not surprisingly, local residents frequented Cherry Creek North more often than non-local residents (see Table 5). In order to increase the number of trips by transit to destinations in Cherry Creek and Glendale, it will be just as important to understand the mobility needs of local residents as it is to understand the needs of non-local visitors. Local residents make up a significant share of the retail customers in Cherry Creek, and their proximity to the area make them a key market for transit. This also emphasizes the importance of Speer Boulevard and 1st Avenue, key corridors that will connect downtown Denver with the key destinations in Glendale and Cherry Creek as well as the Alameda corridor connecting Aurora to the east.

**TABLE 4: PRIMARY RESIDENCE OF CHERRY CREEK NORTH VISITORS**

<table>
<thead>
<tr>
<th>City within the State of Colorado</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver</td>
<td>822</td>
<td>64%</td>
</tr>
<tr>
<td>Aurora</td>
<td>222</td>
<td>17%</td>
</tr>
<tr>
<td>All Other</td>
<td>116</td>
<td>9%</td>
</tr>
<tr>
<td>Centennial</td>
<td>43</td>
<td>3%</td>
</tr>
<tr>
<td>Cherry Hills</td>
<td>21</td>
<td>2%</td>
</tr>
<tr>
<td>Evergreen</td>
<td>19</td>
<td>2%</td>
</tr>
<tr>
<td>Arvada</td>
<td>15</td>
<td>1%</td>
</tr>
<tr>
<td>Boulder</td>
<td>15</td>
<td>1%</td>
</tr>
<tr>
<td>Littleton</td>
<td>15</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>1,289</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**TABLE 5: MEDIAN NUMBER OF VISITORS TO CHERRY CREEK PER MONTH**

<table>
<thead>
<tr>
<th>Median Number of Trips to Cherry Creek North per Month</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local resident</td>
<td>5</td>
</tr>
<tr>
<td>Colorado resident</td>
<td>2</td>
</tr>
<tr>
<td>Overall</td>
<td>4</td>
</tr>
</tbody>
</table>

**FUTURE IMPACTS TO TRANSIT**

**FUTURE MARKET CONDITIONS**

Future development over the next 10 years will bring over 4 million square feet of new commercial, retail, and residential uses along the study corridor. The study will highlight key developments in downtown Denver, Golden Triangle Museum District, Cherry Creek, and Glendale. Identifying these investments will be critical for understanding how the future market conditions will impact the demand for transit.
DENVER UNION STATION AND DOWNTOWN

Denver Union Station is currently under construction and is slated to open in 2014. The development will be a multimodal hub for Amtrak, FasTracks, and RTD services. It will feature a 22 bay bus complex that integrates local, regional, and express bus services. DUS will also include up to 2 million square feet of transit-oriented, mixed-use development in the form of residential, office, retail, and recreational space. The sustainable development supporting the DUS renovation will help increase transit’s role in local as well as regional mobility.

GOLDEN TRIANGLE MUSEUM DISTRICT

Located in the southern portion of downtown Denver, the Golden Triangle Museum District hosts the nationally recognized Denver Art Museum, high-rise condominium units, and civic establishments such as the central Denver Public Library and Lindsey-Flanigan Courthouse. The Golden Triangle Museum District will continue to build upon its housing density. The most notable residential infill projects are located at 1000 Speer Boulevard (20 stories) and 8th Street/Lincoln Street (7 stories).

CHERRY CREEK

Cherry Creek is set to add an additional one million square feet of development, namely in the Cherry Creek North Business Improvement District (BID). Eight projects have been approved and are under construction or close to groundbreaking with an additional eight more in the planning stages. Some of the plans include 250 Columbine, a mixed-use development which will house business space and residential units, the relocation of the Adolph Coors Foundation headquarters to Cherry Creek, and multiple high rise complexes that offer retail and commercial uses on the ground floor. All planned developments are within a half mile of the Speer/Leetsdale corridor, the walking distance range attracted to high quality bus or rail transit.

CITY OF GLENDALE

The City of Glendale has an economic development project underway called the Glendale RiverWalk Master Plan (GRMP), which will add over one million square feet of entertainment, retail, restaurant, hotel, and concert space. This development is projected to become a regional, national, and international destination. The Glendale RiverWalk development further emphasizes the need and opportunity for transit that is bi-directionally focused along the corridor.

FUTURE SERVICE IMPACTS

18TH/19TH STREET FREE METRORIDE

RTD will begin operating the Free MetroRide in Spring 2014. The previously named Downtown Denver Circulator provides another connection between Civic Center Station and Denver Union Station (see Map 7). It will operate as a peak-based service that parallels the current FREE MallRide along 18th and 19th Streets. This new service will increase connectivity between Civic Center and DUS, which will benefit passengers who use 83L, 79L, and 3L to access DUS and other locations in downtown Denver.
FUTURE OPPORTUNITIES AND THE ROLE OF TRANSIT

The study area is expected to experience significant sustainable community growth in the future with over 4 million square feet of planned development occurring on or near the corridor. This higher density housing, mixed-use developments and regional attractors in downtown Denver, Cherry Creek, and Glendale will require that the transit focus shift away from a commute, downtown-based service to all-day, high frequency transit serving all trip types and consumers.

Transit will also continue to evolve in downtown Denver. In addition to the new Denver Union Station (DUS), RTD will initiate a second downtown shuttle, Free MetroRide, reinforcing the connection between DUS and Civic Center Station. Passengers who use Routes 83L, 79L, or 3L to connect into Civic Center Station will have more frequent service to DUS during the peak, making these services more attractive options for travelling the corridor. Two free high frequency connectors between Civic Center Station and DUS will offer an almost seamless “second seat” for persons traveling between downtown Denver and Cherry Creek/Glendale and do it in a high quality community “place.”
TRANSIT ALTERNATIVES

This section of the feasibility study evaluates transit alternatives for addressing the current and projected transit needs between Cherry Creek/Glendale and downtown Denver. The following set of transit alternatives are developed based on stakeholder input and performance analysis.4

1. No Change
2. New Shuttle Route
3. Enhanced Transit Corridor

The alternatives aim to create a more integrated and comprehensive transit experience along the Speer/Leetsdale corridor that, first meets that needs of the Cherry Creek and Glendale communities, and, second serves the mobility needs of Denver Metro residents, visitors, and commuters. Alternatives were developed that respond to the need for an affirmative transit experience for a broad range of consumers:

- Create a corridor that is easy to use and understand
- Support spontaneous use and a positive wait experience
- Establish fast and reliable travel times
- Connect service into a sustainable community experience

NO CHANGE

The first option maintains current service levels and alignment with minor changes in scheduling to provide the service more effectively. Routes 3L, 79L, and 83L combine to provide spontaneous-use frequencies during the peak, but the current timing between trips is not consistent. The minor adjustments in the low investment, no change alternative include establishing a more consistent frequency along the Speer/Leetsdale corridor. This would improve peak-period, peak-direction service on the corridor, but transit would still not be in the position to serve the growing demand for bi-directional service in Glendale and Cherry Creek. In addition, this alternative maintains the current off-peak frequencies which would keep transit commute-focused and limit its viability as an all-day mobility solution.

NEW SHUTTLE ROUTE

The New Shuttle Route alternative creates a one seat ride between DUS, Glendale, and Cherry Creek. This alternative is focused on the non-peak, non-commute service. The market for the new shuttle is oriented to very specific groups or transit non-users such as regional visitors, convention attendees, as well as residents and visitors from the Golden Triangle.

4 There are no recommended improvements for the connections to LRT. First, traveling from downtown Denver to either Cherry Creek or Glendale via LRT connecting to bus was not competitive with the more direct route via Speer/1st. Second, existing Route 40 on Colorado Boulevard is a spontaneous-use bus service that efficiently and effectively connects LRT to the study area for patrons from the Southeast Metro Region.
Being a fully separate shuttle brand, this alternative will have limited synergy with the existing RTD transit network. Its service connection duplicates two key services in Route 83L and the FREE MallRide. However, the shuttle’s duplicative alignment is not likely to decrease the productivity and effectiveness of existing Routes 3L, 79L, 83L, and MallRide, but rather reach a new audience for transit. Although the current service configuration forces a transfer in order to travel the entire corridor, the benefit of a one seat ride is minimized when the current transfer is made seamless via high frequency connections at Civic Center Station. The new shuttle will have to generate a high level ridership from its unique market segments in order to be cost-effective.

**Enhanced Transit Corridor**

The Enhanced Transit Corridor option establishes a branded corridor along Speer Boulevard and 1st Avenue. The services along the Speer/Leetsdale corridor offer the most direct alignment and maximize connectivity at Civic Center Station, where passengers can access DUS via two free, high frequency shuttles. In the Enhanced Transit Corridor alternative, the focus will be on the corridor and less on individual routes much like an arterial version of the US 36 BRT corridor. RTD will be able to run multiple services on the corridor and unify them through branding along the corridor. Branded shelters, pylons, or information kiosks act as signals for a high quality experience and inform passengers that they will be able to take any service on this corridor and reach the same destinations between Glendale and downtown Denver.

The Enhanced Transit Corridor leverages the existing network and ridership base, providing scalable, incremental change that does not exclude other enhancements on the corridor. The objective of this alternative is to invest in the corridor and coordinate services in order to achieve spontaneous-use frequencies. The high service levels and ease of use support sustainable development and attract passengers from a broad cross-section of market segments. The Enhanced Transit Corridor alternative does not limit expanding the brand onto other streets such as Leetsdale Drive as part of future scalability.

**Recommendation**

The Speer/Leetsdale corridor between downtown Denver, Cherry Creek, and Glendale offers transit service that must be designed to meet the varying needs of an increasingly diverse customer base. Three alternatives were considered for improving service along the study corridor. Based on analysis, the Enhanced Transit Corridor is the preferred transit alternative. This alternative addresses many of the issues with the current service configuration while positioning transit to successfully meet the future demand. However, the preferred Enhanced Transit Corridor alternative need not be the only improvement.

While it is not the preferred alternative, the New Shuttle can also serve, albeit in a more limited role, augmenting the Enhanced Transit Corridor. This more limited role would involve a private sector initiative (RTD funding is recommended only for the Enhanced Transit Corridor) that focuses on small market segments that have special mobility needs and opportunities. These can include Convention
Center activities or other special events that Cherry Creek and Glendale wish to leverage or special seasonal demand that generates enough demand to support the shuttle costs. The study will outline a pilot shuttle route using private funding as a second alternative for the corridor.
**ALTERNATIVE 1: ENHANCED TRANSIT CORRIDOR (PREFERRED)**

**SERVICE ELEMENTS**

**ALIGNMENT**

The proposed corridor for enhancement is the one that the routes 83L and 79L currently operate on between Glendale, Cherry Creek, and Civic Center Station: starting in Glendale where Leetsdale and Alameda converge, following Alameda Avenue, Cherry Creek North Drive, 1st Avenue, Speer Boulevard, and Lincoln/Broadway to Civic Center Station (see Map 8). A terminal for short line routes (Civic Center Station to Glendale) could be located behind the Glendale Target providing transit connections to Route 1, with nearby on-street connections to Routes 40 and 46.

**MAP 8: ENHANCED TRANSIT CORRIDOR ROUTE ALIGNMENT**
FREQUENCY AND SERVICE SPAN

The frequency should be set to a level that is consistent with sustainable, urban living standards. A 7½ minute peak frequency and 15 minute off-peak frequency will be established in both directions. Daily service operations would be consistent with the current 83L service span from 5:00am to 11:45pm.

BRANDING

Enhanced branding along the corridor will make transit easier to use. Branding focuses customer attention on the corridor and the high frequency connection between Glendale, Cherry Creek, and downtown Denver rather than individual routes. RTD, along with stakeholder input, will need to develop a branding scheme that compliments the local communities.

While a new RTD enhanced service brand needs to be on all of the passenger facilities to communicate with customers, those facilities can be tailored to enhance individual community “placemaking.” Branded infrastructure and improvements can include enhanced shelters with next trip displays, information pylons, bicycle storage, pavement and sidewalk markings, and priority treatments like transit-only lanes and transit signal priority technology.

RTD should also explore the idea of rebranding the three routes on the corridor to unify them. Routes 83L, 79L, and 3L share similar alignments but they are branded as separate routes. Passengers will have to work to understand their similarities. Branding the routes with a similar prefix will continue to shift the customer focus onto the corridor. As an example, the three routes can be branded as 83P (Parker), 83Q (Quebec), and 83A (Alameda). Under this scheme passengers will know that route with an 83 will provide them the same service between Glendale and downtown Denver. Passengers who wish to travel outside of the corridor will not have to learn any more information than passengers utilizing the existing service configuration.

COST PROJECTIONS

The projected operating costs for this preferred alternative will cost approximately $960,000 annually without capital improvements. This total is in addition to the cost of running the existing service levels. Cost estimates are based on an $80 per hour cost for directly operated bus service. Transit priority investments can improve bus operating speeds enough so that the time savings can be re-invested to run the additional service and offset some of the costs. Additional fare revenue from increased ridership
is also expected to offset part of the new expenses.\textsuperscript{5} RTD has also discussed repurposing funds from existing, under-productive routes such as Route 46 to fund the service investments.

Table 6: Enhanced Transit Corridor – WEEKDAY COST

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Additional Buses</th>
<th>Hours of Service</th>
<th>Revenue Hours</th>
<th>Operating Cost $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>480</td>
</tr>
<tr>
<td>Midday</td>
<td>3</td>
<td>6</td>
<td>18</td>
<td>1,440</td>
</tr>
<tr>
<td>Evening</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>720</td>
</tr>
<tr>
<td>Daily</td>
<td></td>
<td></td>
<td>33</td>
<td>2,640</td>
</tr>
</tbody>
</table>

Table 7: Enhanced Transit Corridor – WEEKEND COST

<table>
<thead>
<tr>
<th>Day Type</th>
<th>Additional Buses</th>
<th>Hours of Service</th>
<th>Revenue Hours</th>
<th>Operating Cost $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday</td>
<td>3</td>
<td>11</td>
<td>33</td>
<td>2,640</td>
</tr>
<tr>
<td>Sunday</td>
<td>3</td>
<td>11</td>
<td>33</td>
<td>2,640</td>
</tr>
</tbody>
</table>

Table 8: Enhanced Transit Corridor – ANNUAL COST

<table>
<thead>
<tr>
<th>Day Type</th>
<th>Additional Buses</th>
<th>Revenue Hours</th>
<th>Operating Cost $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday</td>
<td>3</td>
<td>8,415</td>
<td>673,200</td>
</tr>
<tr>
<td>Weekend</td>
<td>3</td>
<td>3,630</td>
<td>290,400</td>
</tr>
<tr>
<td>Annual</td>
<td>3</td>
<td>12,045</td>
<td>963,600</td>
</tr>
</tbody>
</table>

\textsuperscript{5} If the additional revenue hours are half as productive (i.e., 50% frequency elasticity), this proposed route would generate approximately $240,000 at today’s average fare.

\textsuperscript{6} All Enhanced Transit Corridor operating costs calculated at $80 per revenue hour for direct operation.
ALTERNATIVE 2: NEW SHUTTLE ROUTE

SERVICE ELEMENTS

ALIGNMENT

The New Shuttle Route alternative provides a one-seat ride from DUS to Cherry Creek and Glendale. The new shuttle shares its alignment with services along the enhanced transit corridor east of Broadway and Lincoln Street. Although the shuttle can arrive at DUS via different alignments, the study proposes two possible routes. Alternative A uses Speer Boulevard to connect with DUS which minimizes duplication with existing RTD services. Alternative B provides service along Broadway and Lincoln Street before travelling into and out of downtown via one way couplets, 14th and 15th Streets, which provide direct access to the Convention Center.

MAP 9: NEW SHUTTLE ROUTE ALIGNMENT
FREQUENCY AND SERVICE SPAN

The dedicated new shuttle route targets non-commuters during the off-peak and PM peak hours. The suggested minimum level of service for this travel market would be every 30 minutes. The suggested operating hours are from 9:00AM to 9:00PM daily in order to provide service to the retail, dining, and entertainment destinations.

BRANDING

The shuttle branding will be an opportunity to represent the parties who fund the shuttle and the communities it serves. The shuttle vehicle will typically be smaller than standard local buses.

COST PROJECTIONS

The 30 minute service levels would require 2 vehicles to operate. The project annual operating cost for the dedicated route would total $438,000 a year or $36,500 a month at a contracted hourly rate of $50 per hour. A potential pilot service could be implemented during the holiday season to target the higher levels of retail activity or during a series of large conventions. Funding from external sources such as local businesses and other organizations that benefit from providing a shuttle would be needed to operate the service. Farebox revenue is not expected due to the target market audience for this route.

Table 9: New Shuttle Route Cost

<table>
<thead>
<tr>
<th></th>
<th>Vehicle Requirement</th>
<th>Hours of Service</th>
<th>Revenue Hours</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>2</td>
<td>12</td>
<td>24</td>
<td>$1,200</td>
</tr>
<tr>
<td>Monthly</td>
<td>2</td>
<td>360</td>
<td>720</td>
<td>$36,000</td>
</tr>
<tr>
<td>Annually</td>
<td>2</td>
<td>4,380</td>
<td>8,760</td>
<td>$438,000</td>
</tr>
</tbody>
</table>

Macy’s at Miami Int’l Mall
STAKEHOLDER FEEDBACK TO RECOMMENDATIONS

The findings and draft recommendations were presented to stakeholders in November 2013. The stakeholders had an overall positive response to the recommendations. The subsequent comments were provided during the meeting and through e-mail in response to the draft recommendations. Relevant responses follow the stakeholder comments. The following organizations were in attendance:

- Regional Transportation District
- Transportation Solutions
- Capitol Hill United Neighborhoods
- Cherry Creek East
- Cherry Creek North
- Cherry Creek Steering Committee
- Cherry Creek Shopping Center
- City of Denver
- City of Glendale
- Denver Department of Public Works
- Downtown Denver Partnership
- Golden Triangle Museum District
- INC
- Visit Denver

General Feedback

Comments

- It will be important to understand the purpose of the service enhancements. What is the objective: to address a mobility need, an economic development need, or serve a specific market?
- The existing service currently does a good job serving commuters but misses the other markets.

Responses

- The current service configuration is commute-oriented. However, the development patterns along the study corridor are generating new mobility needs and opportunities for transit as well as walking and biking. The demand for high frequency, all-day transit service will increase as this type of development continues to shape the corridor.

Enhanced Transit Corridor

Comments

- Branding Broadway is not feasible because many other routes operate on it. However, there is the potential to brand it as the Golden Triangle.
- Communication is critical for the success of the service and its branding.
• There is an opportunity to integrate the branded shelters with the community aesthetic.
• This alternative will allow people to travel both ways.
• Branding the trunk of the corridor through unified route names is an excellent idea.
• The alternative will be successful if it makes transit simple for other people to use.
• The alternative makes sense, especially for more frequent off-peak service. A pilot should be developed to determine feasibility. Prior to the pilot, the following steps should be taken:
  – Civic Center Station should be more recognizable. The signage is poor at the station. There should be a next trip display at the loop where people get off the shuttle which would include information for trips to the Cherry Creek-Glendale corridor.
  – Consider a stop at Grant Street and Washington Street. Evaluate the stop at Speer and Lafayette.
  – Consider a short line route that travels between Civic Center and Glendale or Cherry Creek.
• The concept of a branded corridor will create opportunities for a public-private partnership that pairs high-quality, frequent transit service with high quality stops. The ability to create incremental change makes for short and long term actions that can better service an expanding market for transit.

Responses

• Branding the Broadway/Lincoln segment of the corridor as the Golden Triangle is a good idea for further discussion. If the community supports the concept, branded kiosks or pylons can provide relevant transit and wayfinding information.
• Appropriate information about service to Cherry Creek and Glendale should be provided at the Civic Center Station.
• A short line segment between Civic Center and Glendale was considered. The current enhanced transit corridor recommendation can achieve 7½ minute service during the peak without a short line route, however, it remains a scalable future option if needed.

New Shuttle Route

Comments

• The proposed alignment on 14th and 15th Streets features high levels of density.
• DUS is the logical destination for the private shuttle.
• Regional visitors who travel to DUS usually go to destinations such as the Denver Convention Center. They go to Cherry Creek Mall on the second day of their visit.
• If private parties fund the shuttle, then they will control where the shuttle stops. This will require extra coordination with RTD to ensure compatibility with RTD stops.
• Local organizations are currently in discussions to develop a privately funded shuttle.
• The emphasis for this alternative is to get riders from DUS to Cherry Creek or Glendale, but it is doubtful that riders arriving at DUS will be interested in going directly to Cherry Creek. It is more likely that they will be going to the Convention Center, hotels, or other cultural attractions. The same goes for the reverse direction. Riders originating in Cherry Creek or Glendale are unlikely headed directly to DUS but to destinations short of DUS.
• Speed is not an emphasis as non-commuters are not concerned about making connections. Many of the target riders are not familiar with the RTD system and will need a unique service that takes them to their destination. These passengers will not be concerned with speed but with making sure that they reach their destination.

• Use 14th and 15th Street to travel to and from DUS. The route includes Convention Center, the Plex, major hotels, the cultural center, the Museum of Contemporary Art, and shopping. Denver has invested in both 14th and 15th Streets which are becoming more important corridors. Running the shuttle on these streets can also help attract the Convention Center and Visitor Center as sponsors.

• Consider connecting downtown, Cherry Creek, and Glendale via some more dense residential areas rather than Speer Boulevard.

• Consider using smaller, distinctive vehicles similar to those used by San Antonio or Georgetown. Smaller vehicles are less intimidating.

• The concept of a private shuttle service is promising.

Responses

• The final alignment and stop list of a privately funded shuttle will require a discussion with the funders and RTD. 14th and 15th Streets have positive market conditions. The service coverage overlap with the FREE MallRide would likely have a negative effect on ridership for the new shuttle within downtown.

• A majority of regional passengers arriving into DUS will not connect into Cherry Creek and Glendale as their first destination. The market for a one-seat ride between DUS, Cherry Creek, and Glendale is limited and is best served via private entities.

• An enhanced transit corridor can make transit service as easy to use as a one-seat shuttle ride.
CONCLUSION

The Denver Union Station/Cherry Creek/Glendale transit corridor plays a key role in facilitating local and regional mobility. The corridor hosts a number of civic establishments, employment hubs, retail centers, and entertainment destinations that generate millions of visits per year. The development patterns and concentration of key destinations within the three communities make the corridor a good candidate for enhanced transit. In this environment, transit can play a key role in supporting centers of economic activity and promoting sustainable lifestyles. However, the current transit service within the corridor is focused around the work commute towards downtown Denver. Regional Transportation District (RTD) commissioned a feasibility study to evaluate the current service configuration and identify opportunities for improvements.

After evaluating existing and future market conditions, service performance, and stakeholder feedback, the study proposed three alternatives: No Change, New Shuttle Route, and Enhanced Transit Corridor. Of the three, the Enhanced Transit Corridor was identified as the preferred alternative. This alternative creates a branded corridor where passengers can connect to downtown Denver and Glendale every 7½ and 15 minutes during the peak and off-peak, respectively. The targeted transit enhancements make the service easier to use and understand, making transit a more attractive option for all-day travel between the communities. The preferred alternative addresses short-term mobility needs while positioning the corridor to successfully meet long-term demand through scalable improvement.

The New Shuttle Route serves a limited market, but is recommended for consideration as a privately funded service. The one-seat ride between DUS and Glendale is designed to attract non-commuters and regional visitors who arrive into DUS. While the service is projected to generate lower levels of ridership due to duplication with existing RTD services and limited demand for the connection, a pilot project can be implemented during the holiday season to capture the demand for service to the retail centers along the corridor. The shuttle’s performance during this time should be used to determine the feasibility of a year-round or seasonal service.
### APPENDIX

#### Existing Travel Time

The following tables provide a representative sample of alternative travel options to DUS from Cherry Creek and Glendale. Once passengers board a route, it will should take them between 30 to 40 minutes to travel the length of the project corridor. The scheduled speeds on the corridor are about 15 miles per hour.

#### CURRENT BUS TO BUS ROUTING OPTIONS

<table>
<thead>
<tr>
<th>Route</th>
<th>Running Time AM Peak - Inbound Glendale to DUS</th>
<th>Running Time</th>
<th>Transfer Time (mins)</th>
<th>Total Travel Time (mins)</th>
</tr>
</thead>
<tbody>
<tr>
<td>83L to MallRide</td>
<td>16</td>
<td>14.5</td>
<td>0.75</td>
<td>31.25</td>
</tr>
<tr>
<td>79L to MallRide</td>
<td>16</td>
<td>14.5</td>
<td>0.75</td>
<td>31.25</td>
</tr>
<tr>
<td>3L to MallRide</td>
<td>16</td>
<td>14.5</td>
<td>0.75</td>
<td>31.25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Route</th>
<th>Running Time PM Peak - Outbound DUS to Glendale</th>
<th>Running Time</th>
<th>Transfer Time (mins)</th>
<th>Total Travel Time (mins)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MallRide to 83L</td>
<td>14.5</td>
<td>23</td>
<td>7.5</td>
<td>45</td>
</tr>
<tr>
<td>MallRide to 79L</td>
<td>14.5</td>
<td>23</td>
<td>15</td>
<td>52.5</td>
</tr>
<tr>
<td>MallRide to 3L</td>
<td>14.5</td>
<td>23</td>
<td>15</td>
<td>52.5</td>
</tr>
</tbody>
</table>

#### CURRENT BUS TO RAIL ROUTING OPTIONS

<table>
<thead>
<tr>
<th>Route</th>
<th>Running Time AM Peak - Inbound Glendale to DUS</th>
<th>Running Time</th>
<th>Transfer Time (mins)</th>
<th>Total Travel Time (mins)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 to LRT</td>
<td>16</td>
<td>20</td>
<td>15</td>
<td>51</td>
</tr>
<tr>
<td>46 to LRT</td>
<td>19</td>
<td>20</td>
<td>15</td>
<td>54</td>
</tr>
<tr>
<td>3 to LRT</td>
<td>16</td>
<td>12</td>
<td>10</td>
<td>38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Route</th>
<th>Running Time PM Peak - Outbound DUS to Glendale</th>
<th>Running Time</th>
<th>Transfer Time (mins)</th>
<th>Total Travel Time (mins)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRT to 40</td>
<td>20</td>
<td>14</td>
<td>5</td>
<td>37</td>
</tr>
<tr>
<td>LRT to 46</td>
<td>20</td>
<td>20</td>
<td>15</td>
<td>43</td>
</tr>
<tr>
<td>LRT to 3</td>
<td>11</td>
<td>25</td>
<td>30</td>
<td>66</td>
</tr>
</tbody>
</table>

---

7 Trip is calculated based on in-vehicle time for the first and second routes plus the average wait time to transfer (½ of the second route frequency).
**Route Profiles**

The following pages include detailed route profiles and boarding maps that provide further insight into the operation and performance of individual routes.
ROUTE 83L
Cherry Creek - Parker Road

PERFORMANCE
Boardings

3,741 Weekday Boardings

Productivity

55 Passengers per Revenue Hour

System Average (Local/Limited Routes): 36 Passengers per Revenue Hour

PASSENGER ACTIVITY

By Region

By Trip Time

Findings
- Highly productive route, exceeds 150 percent of system average making it a candidate for enhancement
- 63% of total passenger activity occurs between Downtown and Cherry Creek
- Off-peak trips account for 50 percent of total passenger activity
ROUTE 79L
Cherry Creek - Dayton

PERFORMANCE
Boardings

765 Weekday Boardings

Productivity

34 Passengers per Revenue Hour

System Averages (Local/Limited Routes): 2,531 Boardings
System Average (Local/Limited Routes): 36 Passengers per Revenue Hour

PASSENGER ACTIVITY
By Region

Weekday Activity
Boarding
Alighting
Load

By Trip Time

Findings
• Peak only service with lower than average boardings and productivity
• 47% of passenger activity occurs between Civic Center and Glendale utilizing only 21% of total revenue hours
ROUTE 3L
East Alameda

PERFORMANCE

Boardings

646 Weekday Boardings

Local and Limited Routes

System Averages (Local/Limited Routes): 2,531 Boardings

Productivity

49 Passengers per Revenue Hour

Local and Limited Routes

System Average (Local/Limited Routes): 36 Passengers per Revenue Hour

PASSENGER ACTIVITY

By Region

Weekday Activity
- Boarding
- Alighting
- Load

Westbound

Ohio Dr
Sable
Transfer Ctr
Havana
P&R
CCSC
Civic Center
Downtown
Glendale

Eastbound

Civic Center
CCSC
Havana
P&R
Sable
Transfer Ctr
Ohio Dr

Weekday Activity
- Boarding
- Alighting
- Load

By Trip Time

AM Peak

5:48 AM
Westbound Trips
7:51 AM

PM Peak

3:35 PM
Eastbound Trips
6:20 PM

Findings

- Peak only service capturing 51% of passenger activity at four major transit nodes such as P&R’s or transfer centers
- Averages 8 boardings per trip during AM and PM peak service
- Overall low system wide boardings
ROUTE 40
Colorado Boulevard

PERFORMANCE
Boardings

![Graph showing Boardings]

6,034 Weekday Boardings

Local and Limited Routes

Productivity

![Graph showing Productivity]

46 Passengers per Revenue Hour

Local and Limited Routes

PASSENGER ACTIVITY

By Region

![Graph showing Weekday Activity by Region]

By Trip Time

![Graph showing Boardings by Trip Time]

AM Peak
PM Peak

Findings

- Highly productive route obtaining the 6th most boardings of the entire RTD transit system
- Shortline service from the Colorado Station to Bruce Randolph Avenue is most productive capturing 80% of all boardings
- Midday trips account for 37% of total boarding activity
ROUTE 46
South Dahlia

PERFORMANCE

Boardings

1,206 Weekday Boardings

Productivity

22 Passengers per Revenue Hour

System Averages (Local/Limited Routes): 2,531 Boardings

System Average (Local Routes): 36 Passengers per Revenue Hour

PASSENGER ACTIVITY

By Region

Northbound

Southbound

By Trip Time

AM Peak
PM Peak

AMI

PMI

Findings
• Regional trip activity is heavily destination oriented with Colorado Station obtaining 28% of total passenger activity
• Overall performance is far below the system wide average offering 28% of total passenger activity
• Route 40 operates in close proximity providing 10 minute peak and 15 minute off-peak frequencies
**Route 3**
Alameda Avenue

Inbound

**Service every 60 minutes**
Hours of operation: 4:30 AM – 1:00 AM

**Route 3**

Passenger Boarding & Alighting Weekday
Source: January 2013 Ridecheck

Ons Offs

- 800
- 400
- 200
- 100

* Service levels reference Cherry Creek area long line service, with shortline frequencies achieving 30 minute frequency ending at the Alameda rail station.
ROUTE 3
Alameda Avenue

PERFORMANCE
Boardings

4,445 Weekday Boardings

Productivity

42 Passengers per Revenue Hour

PASSENGER ACTIVITY
By Region

By Trip Time

Findings
• Higher than average boardings and productivity
• Shortline service from the Federal Station to Alameda Station is most productive capturing 75% of all passenger activity
• Midday trips account for 37% of total boarding activity
Boardings

Total boardings by individual route provides an important performance measurement, but overall ridership helps to evaluate performance on the. The map below provides the total weekday combined boardings by direction for Routes 3L, 79L and 83L. Offering peak commute only service, Routes 3L and 79L are much smaller in total boardings than 83L. The majority of service boardings occur along Route 83L due to all day service spans and increased service levels.