ABSTRACT

As part of the FasTracks program, the North Metro Corridor will be served by the North Metro Rail Line between Denver Union Station and Thornton. The project currently under construction with completion in 2018 is Phase 1 which has a northern terminus at 124th Avenue. A future Phase 2 would extend this rail line north to 162nd Avenue, but is currently unfunded.

In order to fully leverage the Phase 1 investment in the North Metro Corridor, this report evaluates market conditions and existing transit service network performance as a prerequisite to developing a transit service implementation plan for the study area. The study area includes eleven local bus routes, one SkyRide route, three Regional routes and one limited route. Existing demographic profiles, proposed station area development, travel patterns, and other local and regional factors are studied to provide context for local services, and inform the development of a modified transit network for the North Metro Corridor.
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As part of the overall FasTracks program to enhance rail connectivity in the Denver region, the upcoming North Metro Rail Line (N Line), is designed to provide an attractive option for commuters and other travelers in the North Metro area.

The project is expected to increase ridership within the North Metro Corridor transit network as well as stimulate residential, retail, and commercial growth. The North Metro Corridor Service Plan will develop an integrated bus network capable of meeting the mobility demand and needs generated by the new N Line commuter rail service. The recommendations for this study will be developed through a comprehensive assessment of existing conditions, service area demographics, transit market opportunities and needs, and route performance for transit services in the North Metro Corridor together with stakeholder input.¹

Study Area

The study area for the North Metro Corridor, as defined by RTD, borders I-25 on the west, I-76 on the east, E-470 in the north, and Denver Union Station in the south. Northglenn, Thornton, and Commerce City are the primary cities in the study area with parts of Federal Heights included as well. The study area also includes some unincorporated areas in Denver and Adams Counties.

Rail Line Project Description

The North Metro Corridor is an 18.5-mile electric commuter rail line between Denver Union Station (DUS) and 162nd Avenue in Adams County. As part of Phase one of the North Metro Corridor, the N Line will operate on a 13-mile segment between DUS and 124th Avenue Station at Eastlake. This segment with six stations is expected to open in 2018, with presently available funding. The remaining planned section from 124th Avenue Station to 162nd Avenue will have two stations and will be built and operated as Phase two of the North Metro Corridor though it is currently unfunded.

¹ Data used in the existing conditions analysis included stop level ridership, RTD financial data, RTD service performance data, and Census data.
Map 1: North Metro Corridor Study Area
RELEVANT STUDIES

North Area Origin and Destination Study (2014)

The RTD North Area Origin and Destination Study used a survey of all modes to analyze travel patterns of North Area Residents and workers, to determine origins and destinations for future trips, time of day travel for commuters, and barriers to transit usage. This online survey, in both English and Spanish, was made available for three weeks in March 2014. Community members were invited and encouraged to participate through email, survey link distribution by local governments, the RTD website, and social media. By the deadline 1,028 individuals responded.

Results from this study provide a background of transit usage patterns for North Area residents, useful in informing service design plans complimentary to the North Metro Corridor project.

The biggest barriers to transit usage were travel time concerns and service frequency, followed by proximity to stops. As can be seen in Figure 1 below, the most common transportation mode for commuting is a single occupancy vehicle, even though a large portion of the survey group used RTD for a portion of their trips. Additionally, as Figure 2 notes, probability of transit usage during weekdays coincided with RTD weekday peak service schedules, while on weekends midday service was most commonly used.

*Figure 1: Mode distribution in Percentage*
The station area masterplans summarize the potential development plans drafted by affected cities to leverage the station area for increased transit ridership and tax revenue. There is an overall goal of creating a symbiotic relationship between the station areas and sustainable transit usage, such that the stations themselves become attractive activity centers as well as broaden transit options in those areas.

All current station area plans are geared towards transit oriented development (TOD), and include residential-commercial mixed use development including mixed income housing. There is an emphasis on pedestrian friendly complete streets that are well connected through a grid street network, with multimodal street design and open space linkages. The plans envision the development to be well integrated with the existing character of the neighborhood, while also contributing to overall economic growth, as is evident in Figures 3 and 4 below. Increased infill, additional senior housing, and opportunities for institutional developments are also highlighted in the plans. Overall, the cities aim for these station areas to be vibrant, distinctive, and attractive for residents and visitors alike.
Figure 3: Planning Layout for Eastlake Station Area

Source: Eastlake Station Area Master Plan (2015)

Figure 4: Open Lands Development Plans for Eastlake

Source: Eastlake Station Area Master Plan (2015)
RTD Market Size, Usage, and Segmentation Study (2014)

The RTD Market Share, Usage, and Segmentation Study is a region-wide study focusing on District level transit usage patterns among residents. The study found that 61 percent of total respondents indicated RTD usage at least once in the past twelve months; 13 percent used RTD on a daily or near daily basis. Denver County had 24 percent of their respondents who categorized themselves as frequent riders and over half of the respondents (51 percent) indicated light rail preference over bus services. Approximately 15 percent of Adams County respondents indicated that they were frequent RTD riders.

Denver County had 33 percent of respondents suggesting no usage of RTD revenue service in the past 12 months while 53 percent of Adams County respondents indicated no usage of RTD in the past 12 months. The study did not break down market segments at a sub-county level, but this generally shows greater transit usage in the core of the metro area such as Denver, with significantly lower ridership in Adams County, which encompasses most of the North Metro Corridor area. Based on a broad conclusion of this study evident in Figure 5 below, the N Line has the potential to increase RTD usage with the introduction of additional rapid transit options.

Figure 5: Transit Usage in RTD Service Area in past 12 Months

RTD Market Segmentation Study (2014)

A similar but distinct RTD Segmentation study was conducted to help define groups of Denver area residents based on their attitude towards public transportation and their use of RTD services.
Results from this study will be instrumental in both designing “consumer-centric” transit and effectively communicating with consumers. Based on the response, RTD could group consumers into five categories, which are: Practical Travelers, No Hassle Travelers, Car Travelers, Avid RTD Users, and Conscientious RTD Users. As Figure 6 below shows, the largest group of respondents, 25 percent, was categorized as Avid RTD Users followed by Practical Travelers at 22 percent and No Hassle Travelers at 21 percent. Based on the results, the study recommended encouraging rail to those new to transit, using preferred media in every segment to communicate transit information, and customize communication towards the group’s attitude towards transit and RTD. With the introduction of the N Line, opportunities exist to attract infrequent users or non-riders into the RTD system through effective service design and targeted communication efforts.

Figure 6: Market Segments Identified by the Study


The downtown Denver Commuter Survey Report discusses various demographic characteristics and commuting patterns in downtown Denver. Commissioned by the Downtown Denver Partnership Inc., this report summarizes survey response data. The following graphic (Figure 7) illustrates commuter profiles, mode split, of the factors that influence commute choice, commute activity and other commuting trends and habits of downtown commuters, included in the report. As the N Line serves Denver Union Station in downtown Denver, this study can benefit from understanding commuting patterns and trends of downtown Denver commuters and highlight opportunities for future transit ridership gains.
RTD will open the G Line (Gold corridor) in 2017 and the B Line (Northwest corridor) opened in July 2016. These both are commuter rail services. The G Line will provide a connection between Union Station in downtown Denver and Wheat Ridge via northwest Denver, Adams County, and Arvada, while the B Line connects Union Station and Westminster. RTD implemented a bus service plan for the Gold and Northwest Corridors, in preparation for the new rail services (developed by TMD in collaboration with RTD). The plan evaluated the performance of existing transit, underlying demographics, and other market factors in order to develop recommendations for bus service that better leveraged the performance of the two new rail lines, as well as changing development patterns. A similar effort will be undertaken for the N Line in the North Metro Corridor.
Map 2: Gold and Northwest Corridor - Recommended Network Map

Source: www.Rtd-fastracks.com

The US-36 corridor Flatiron Flyer Bus Rapid Transit (BRT) provides regional transit service between Boulder and downtown Denver as of 2016, shown in Map 3. The commute shed that this service draws from overlaps partially with the commute shed of the N Line. Previously, the corridor was served by a total of 13 routes serving more than 10,000 average weekday boardings. The BRT Service Plan recommended rethinking the complicated route structure to simple, more uniform service patterns, as a strategy to make it more consumer friendly, increase ridership, and improve overall corridor service performance.

The primary focus of the plan sought to reduce travel times, both out-of-vehicle-wait times as well as in-vehicle-travel time. The plan also advocated for greater service reliability by enhancing station access, incrementally improving service frequencies, and maximizing the use of new managed lanes. The third strategy focused on increased customer accessibility of transit by consolidating service patterns and creating clearer, more uniform and more marketable service elements. After the rollout of the US-36 BRT service, the Flatiron Flyer, overall ridership in the corridor has increased significantly. Lessons learned from this rollout will inform the development of the N Line service plan, especially I-25 services such as Routes 120X and 122X.
Map 3: US-36 Corridor

Source: RTD
North Metro Corridor Transit Operations Plan (2016)

The North Metro Corridor Transit Operations Plan developed by the RTD Planning Department includes both rail and bus service between downtown Denver and North Thornton-Hwy 7, of the North Metro Corridor Project. This is an update of the initial draft plan published by RTD in 2011.

This plan highlights service details including corridor alignment, rolling stock requirements and specifications, travel durations, cycle times and service frequencies. The plan also details the locations for single and double track segments; it also discusses expected station Park-n-Ride requirements and locations for transit transfers, bus-to-bus, as well as bus-to-rail. The Denver Regional Travel Demand Model was used to estimate travel-demand, which guided understanding of route performance, mode of access for different stations, distribution of peak hour loads; as well as developing cost estimates, analysis for operation, and maintenance. The projected mode split and ridership estimates by station, as depicted in Figure 8 below, will help determine the unique station constraints moving forward, as well as the types of connecting services that will have the highest chances of success.

Figure 8: Forecast Access/Egress Mode Split by Station

![Figure 8: Forecast Access/Egress Mode Split by Station](source: DRCOG Regional Model)
EXISTING CONDITIONS (2015)

Market Assessment

The market assessment provides an overview of the development, demographic, and geographic characteristics of the Denver North Metro Corridor sub region served by the new rail line and highlights opportunities for coordinated transit service and network changes to coincide with the opening of the N Line.

Population and Employment Density

Population

The distribution and concentration of population are two of many factors that influence the level of transit use in an area. Higher densities tend to lead to more passengers per unit of service due to the presence of a critical mass of potential riders and destinations within proximity. As shown in Map 4, very high population densities are concentrated in two pockets of the study area. The first is a residential area in Northglenn near East 117th Avenue. The second area is in Thornton between Coronado Parkway and North McElwain Boulevard. Outside of these two small pockets, the vast majority of the study area is comprised of low-density single-family housing with few institutional and commercial/retail locations interspersed. This makes it difficult to provide frequent bus services without having to sustain lower productivity and high passenger subsidies.

Employment

According to Longitudinal Employer Household Dynamics (LEHD) data, there are approximately 65,000 jobs in the N Line study area, most of which are concentrated near the I-25 corridor. Not all workers residing within the study area can stay local for work. Approximately 90,000 workers that reside in the region commute to jobs outside of the study area. This trend is typical of suburban communities, which have a net loss of workers on a daily basis. This trend will mean that there is likely to be greater demand traveling to jobs outside of the study area to job centers in the region such as downtown Denver, which are more easily accessed by transit. In the reverse direction, employment is not concentrated at the N Line station areas, and the connections near I-25 where jobs are concentrated are not as robust from the future commuter rail line. It is likely that additional public mobility options will be needed, for “first and last mile” connections beyond fixed route bus service to facilitate connections to and from the N Line stations.
Demographic Characteristics

Transit usage varies from neighborhood to neighborhood based on local conditions. The demographic characteristics of the area population, as well as local mobility options play a large part in determining customer preferences for transit. Certain demographic groups, like those with limited vehicle access or financial constraints, typically utilize transit service more often than others. Recognizing the geographic distribution of these population groups will enable RTD to better meet their mobility needs. In addition, this demographic analysis supports RTD’s responsibility to comply with Title VI Federal regulations, which require the identification and efforts to mitigate disproportionate burden and/or disparate service impacts to minority and low-income populations, as result of service changes.

Poverty

Individuals in poverty are much more frequent users of transit services and are an important consideration in developing an effective transit service network for the new N Line. According to 2014 Census data an individual with an annual income of $11,000 or less falls under the poverty line.

As is evident from Map 5, the study area predominantly consists of more affluent neighborhoods, with lower densities of individuals in poverty, especially northeast of the N Line. Sections of the study area with slightly higher concentrations of poverty are mainly dispersed to the southeast, east, and west of the N Line, towards Commerce City and in between 56th and 72nd Avenues bordering on Quebec Parkway. South of the N Line, closer to Denver Union Station in downtown Denver, also witnesses higher densities of poverty. Figure 9 illustrates the distribution of income groups by station area for the N Line. A station area is defined as a half-mile radius around each N Line station with Census block groups falling in that region being used for this analysis.
**Minurities**

Minorities are defined as all but non-Hispanic White individuals. As Map 6 shows, minority populations are concentrated east of the N Line, along East 120th Avenue, and further south in Commerce City. West of the N line, minorities are most concentrated in the communities of Federal Heights and Sherwood. In comparing this distribution with those in poverty, the study area includes minorities of all income groups.
Figure 10 illustrates the distribution of populations by race and ethnicity by station area for the N Line. It is evident from the figure that the most common groups in these station areas are Non-Hispanic White and Hispanic. The 48th Avenue and Brighton station has the highest proportion of minorities whereas Thornton and 88th Avenue has the lowest proportion. Overall, it is evident that there is significant demographic variation among the six new stations as part of the N Line.

*Figure 10: Ethnicity Distribution by Station Area (2015)*

![Race/ Ethnicity Distribution by Station Area](image)

**Source:** ACS 2010-14

**Zero Vehicle Households**

Zero vehicle households rely on transit and other alternative modes of transportation to complete daily trips. Within the N Line study area, most neighborhoods are characterized by single-family households with high vehicle access. However, in certain areas such as Northglenn east of I-25, west of Washington Street between 120th Avenue and 112th Avenue, and in Commerce City the concentration of zero vehicle households is more significant.

Figure 11 shows the breakdown of household vehicle access by station areas. The figure shows that the highest proportion of households have either one or two vehicles. Households with no vehicle access are very limited, with the lowest proportion of zero vehicle households around...
Eastlake and the highest around the 48th Avenue and Brighton station area. Future TOD in the station areas may increase the number of zero-vehicle households.

Seniors (Ages 65+)

The senior population, defined as persons age 65 and older, is generally more dependent on transit for shopping, medical, and other personal trips when compared with other age groups. Overall the study area has low to medium densities of senior individuals. Station areas near Thornton and 88th Avenue and Northglenn and 112th Avenue contain the highest density of seniors within the corridor. Map 8 below illustrates this distribution. As is provided elsewhere in the region, dedicated scheduled mobility is provided by senior facilities beyond the regular fixed route transit network.

Development Patterns

Most of the study area is planned on a grid street pattern and is dominated by single-family residential development with commercial/retail establishments concentrated just east of I-25. A few multi-family residential apartments are scattered in the study area along with public schools, medical facility, and other institutional centers, many of which can be good candidates for mobility connections to the N Line.
Most of the residential neighborhoods have cul-de-sac patterns due to the suburban automobile orientation of the region, making it much more difficult to establish transit connections in those...
areas. However, future development in areas such as Thornton will include more multifamily residential complexes and mixed use centers in addition to the traditional single family home neighborhood development facilitating effective public transit mobility. These proposed, approved, and active developments, especially those which provide an increase in housing densities can be targets for building transit connections with the N Line. These developments will also increase employment densities around the N Line, which will serve as a magnet for future transit ridership growth in the corridor.

Other parts of the study area include the historical Eastlake area which has many opportunities for redevelopment due to its proximity to the N Line. Additionally, Commerce City on the south east of the study area, contains many parcels that are lying vacant near the proposed rail station, which has been zoned, with more intensive land use densities in mind. This TOD is expected to attract riders and enhance the utility of the N Line.

**Market Typologies**

The general market typologies in the study area can be broken out into commercial core, industrial, and suburban areas. A large part of the study area is suburban in nature with low to medium densities and has an automobile-centric development pattern. These areas are characterized by large auto oriented streets and intersections, and limited pedestrian facilities. Additionally, the discontinuous street pattern outside the major corridors further limits access of transit into those neighborhoods. However, the ability to attract ridership will depend on the ability to compete with automobile travel times and parking availability and costs, to downtown Denver as well as to the surrounding areas with the multi-modal transit network.

There is limited diversity in land use in the study area. Outside of the large suburban residential developments, the region sees employment centers concentrated in parts along the eastern edges of I-25 and along the western edge of I-76. These facilities may have mobility needs during non-traditional hours and the demand would depend on parking availability and transit access near these locations. The retail employment centers have more potential for increased transit ridership and are located on major mixed-use corridors. In many of these instances, alternative last-mile public mobility may be more cost effective like station cars/vans, taxi/Transportation Network Companies, and casual station carpooling.

**Service Evaluation**

Evaluating existing transit service provides a greater understanding of the role individual routes serve within the larger transit network. Route performance is analyzed and benchmarked against established RTD service standard metrics. This assessment includes a ridership analysis, which helps in identifying trends and opportunities for route consolidation or service enhancements.
Transit Route Network

The fixed route bus services, which RTD offers are divided into different classes, which vary based on service type, operating regime, and frequency. The standards for each class are based on performance of all routes within each class. RTD evaluates performance indicators of subsidy per boarding and boardings per hour as a part of annual route review.

As categorized in the Table 1, RTD routes within the study area fall under all service classes: CBD Local, Urban Local, Suburban Local, Regional, and SkyRide. As defined above, CBD Local Routes offer one-seat rides into or through downtown Denver, however Urban Local routes connect the urban core to the greater RTD network in areas surrounding downtown and operate only on major streets. Suburban Local routes provide transit connectivity to lesser developed areas outside of the core service area. With Regional service, RTD focuses on meeting the peak-period demand between suburban communities and downtown Denver, while the SkyRide routes cater to passengers who pay premium fares and desire one-seat rides from transit nodes in the region to Denver International Airport (DIA).

The different service classes tend to have varying frequencies, with Local, Suburban, and Urban routes primarily operating on 30-minute peak frequencies and 30 or 60 minute off-peak frequencies. Additionally, the SkyRide service to DIA operates with a frequency of 60 minutes all day. Regional routes tend to have the much more focused service frequencies in the peak commute periods than other more locally focused services.

Table 1: N-Line Corridor Bus Routes

<table>
<thead>
<tr>
<th>Service Class</th>
<th>Routes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBD Local</td>
<td>8, 48</td>
</tr>
<tr>
<td>Urban Local</td>
<td>104, 120, 92, 88, 40</td>
</tr>
<tr>
<td>Suburban Local</td>
<td>112, 128, 72, 80</td>
</tr>
<tr>
<td>Regional</td>
<td>104X, 120X, 122X, RC/RX</td>
</tr>
<tr>
<td>SkyRide</td>
<td>AA</td>
</tr>
</tbody>
</table>
Fixed Route RTD Service Categories

- **Regional**: Includes routes providing high-speed service on limited access highways from suburban and outlying communities to downtown Denver, Denver International Airport and other metro, major employment centers, and provided at distances of approximately 6 miles or more.

- **Local CBD**: Local or Limited routes operating to/from the Denver Central Business District.

- **Local Urban**: Local or Limited routes that predominantly serve urban areas, which have high residential and/or employment densities. About 35% or more of route length within a ¼ mile buffer has population and employment density of 12 per acre or greater.

- **Local Suburban**: Local or Limited routes that predominantly serve suburban areas, which have low to medium residential densities, medium to large lots and homogeneous land uses. About 34% or less of route length within a ¼ mile buffer has population and employment density of 12 per acre or greater.

- **Free Shuttle Services**: Free shuttle services, known as the MallRide and the MetroRide, operate in downtown Denver. The former travels on 16th Street between Union Station and Civic Center Station and the latter runs between Union Station and Civic Center Station along 18th and 19th Streets.

- **SkyRide**: The SkyRide routes prove direct connection to the airport from multiple points in the RTD service area.

Transit Service Levels

Transit service levels are measured, by frequency and span. Frequency indicates how often a route runs and span includes the hours and days of operation. These measures are dependent on several factors with actual usage (or market demand) being the most important. A higher demand for transit requires an equally high transit supply. The demand and supply gap is met through adjustments in frequencies, spans, and days of operation. Additional factors that affect transit service levels comprise network role, connectivity to popular destinations, historical precedent, regional significance, and operating agreements.

**Frequency**

The RTD network operates on one of three different “clock face” frequencies, i.e. spontaneous use (15 minutes or better), coordinated (30 minutes), and lifeline (60 minutes or more).

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2 Derived from RTD Service Standards (2016)
The purpose of spontaneous-use frequencies is to limit wait times for passengers and diminish the need to plan trips around the schedule ahead of time while responding to high usage. This results in more cost-effective routes as spontaneous frequencies attract higher number of riders. Typically, CBD Local and Urban Local routes operate with spontaneous use frequencies.

Routes that are unable to support spontaneous-use frequencies, however have sufficient demand to support higher service levels than lifeline frequencies, usually operate with coordinated frequencies. With coordinated frequencies, passengers have the ease of coordinating their trips ahead of time and schedule their arrival at the stops such that wait time is minimal and overall travel time decreases.

Areas that do not have the demand for higher frequencies are typically serviced by lifeline frequencies. These routes are planned to provide transit coverage to communities living outside of the developed core parts of the region. With these routes, RTD aims to not increase ridership but instead provide crucial lifeline mobility to vulnerable populations living in those areas. As a result, lifeline frequencies are found on Suburban Local routes associated with lower residential density and higher auto ownership.

Span

Service policy and ridership demand typically dictates the RTD span of service. The span of service for routes varies by service class. Wider service spans offer higher flexibility to customers for planning trips and boosting ridership, with associated increased operating costs.

Weekday service for CBD Local and Urban Local routes begins between 4:00 AM to 5:00 AM. The end of service is not generally fixed and varies with routes and their service areas, with some services ending as early as 8:00 pm and certain others as late as 2:00 AM.

Weekday service for Suburban Local routes usually begins between 5:00 AM and 6:00 AM and ends at between 7:00 PM and 11:00 PM.

Regional service generally operates only during peak hours, typically operating between 5:00 AM and 9:00 AM in the morning and between 3:00 PM and 7:00 PM in the evening. This span of service is allocated to accommodate commuter demand travelling to and from large employment centers. The exception is Route 120X which operates all day due to more consistent demand.
North Metro Corridor Service Plan

Existing RTD Bus Route Frequencies

Table 2: North Metro Corridor Transit Route Network (2018)

<table>
<thead>
<tr>
<th>Route</th>
<th>Name</th>
<th>Frequency (min.)</th>
<th>Service Span</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Weekday</td>
<td>Weekend (Peak/Off Peak)</td>
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<tr>
<td></td>
<td></td>
<td>Peak/Off Peak</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weekday</td>
<td>Weekend (Peak/Off Peak)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>North Broadway/Huron</td>
<td>30/60</td>
<td>60</td>
</tr>
<tr>
<td>12</td>
<td>Downing/N Washington</td>
<td>30/30</td>
<td>60</td>
</tr>
<tr>
<td>40</td>
<td>Colorado Boulevard</td>
<td>30/30</td>
<td>30</td>
</tr>
<tr>
<td>48</td>
<td>East 48th Avenue/Commerce City</td>
<td>30/30</td>
<td>30</td>
</tr>
<tr>
<td>72/72W</td>
<td>72nd Avenue</td>
<td>30/30</td>
<td>60</td>
</tr>
<tr>
<td>80/80L</td>
<td>80th Avenue</td>
<td>60/60</td>
<td></td>
</tr>
<tr>
<td>88</td>
<td>Northglenn/Commerce City/Stapleton</td>
<td>30/30</td>
<td>30</td>
</tr>
<tr>
<td>92</td>
<td>92nd Avenue</td>
<td>30/30</td>
<td>60</td>
</tr>
<tr>
<td>104</td>
<td>West 104th Avenue</td>
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<td></td>
</tr>
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<td>West 112th Avenue</td>
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</tr>
<tr>
<td>120</td>
<td>120th Avenue/Brighton</td>
<td>60/60</td>
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</tr>
<tr>
<td>128</td>
<td>Broomfield/Wagon Road</td>
<td>30/60</td>
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## Regional Routes

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<th>Name</th>
<th>Weekday Frequency (min.)</th>
<th>Service Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>104X</td>
<td>Commerce City/Denver Regional</td>
<td>30</td>
<td>6:02AM-5:57PM</td>
</tr>
<tr>
<td>120X</td>
<td>Thornton/Wagon Rd Regional</td>
<td>15/30</td>
<td>4:35AM-11:46PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30</td>
<td>7:20AM-11:47PM</td>
</tr>
<tr>
<td>122X</td>
<td>Wagon Road/Civic Center Regional</td>
<td>10</td>
<td>5:35AM-6:50PM</td>
</tr>
<tr>
<td>RC/RX</td>
<td>Brighton/Denver</td>
<td>30</td>
<td>5:22AM-7:53PM</td>
</tr>
</tbody>
</table>

## SkyRide Route

<table>
<thead>
<tr>
<th>Route</th>
<th>Name</th>
<th>Frequency (min.)</th>
<th>Service Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>Wagon Road/DIA</td>
<td>60</td>
<td>2:25AM-11:35PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
<td>3:31AM-11:25PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
<td>3:31AM-11:25PM</td>
</tr>
</tbody>
</table>

## Flex Ride Service

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thornton</td>
<td>Demand Responsive, Monday-Friday, 5:30 a.m. - 7:00 p.m.</td>
</tr>
<tr>
<td>Federal Heights</td>
<td>Demand Responsive, Monday-Friday, 5:30 a.m. - 7:00 p.m.</td>
</tr>
</tbody>
</table>

### Existing RTD Bus Ridership

#### Boardings per Hour

RTD also measures route performance through a boardings per revenue hour metric. Routes with higher boardings per hour characterize routes with higher productivity, i.e. where market demand is met more accurately by service supply. An increase in demand, with the supply remaining constant will increase productivity. However, if supply increases but the demand does not, it would result in a lower productivity measure. A good balance between market demand and service supply is ideal in that it can create a higher transit return on investment while lowering the associated subsidies.
## Table 3: Boardings per Revenue Hour (2018)

<table>
<thead>
<tr>
<th>Route</th>
<th>Service Class</th>
<th>Boardings Per Revenue Hour</th>
<th>Productivity Standard (10% min - 25% min)</th>
<th>Meets Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Urban Local</td>
<td>23.9</td>
<td>17.2 - 23.0</td>
<td>Yes</td>
</tr>
<tr>
<td>12</td>
<td>Urban Local</td>
<td>30.3</td>
<td>17.2 - 23.0</td>
<td>Yes</td>
</tr>
<tr>
<td>40</td>
<td>Urban Local</td>
<td>37.8</td>
<td>17.2 - 23.0</td>
<td>Yes</td>
</tr>
<tr>
<td>48</td>
<td>Urban Local</td>
<td>34.9</td>
<td>17.2 - 23.0</td>
<td>Yes</td>
</tr>
<tr>
<td>72/72W</td>
<td>Urban Local</td>
<td>19.4</td>
<td>17.2 - 23.0</td>
<td>Yes</td>
</tr>
<tr>
<td>80/80L</td>
<td>Urban Local</td>
<td>22.5</td>
<td>17.2 - 23.0</td>
<td>Yes</td>
</tr>
<tr>
<td>88</td>
<td>Urban Local</td>
<td>19.6</td>
<td>17.2 - 23.0</td>
<td>Yes</td>
</tr>
<tr>
<td>92</td>
<td>Urban Local</td>
<td>22.4</td>
<td>17.2 - 23.0</td>
<td>Yes</td>
</tr>
<tr>
<td>104</td>
<td>Suburban Local</td>
<td>13.5</td>
<td>11.9 - 16.1</td>
<td>Yes</td>
</tr>
<tr>
<td>112</td>
<td>Suburban Local</td>
<td>16.1</td>
<td>11.9 - 16.1</td>
<td>Yes</td>
</tr>
<tr>
<td>120</td>
<td>Suburban Local</td>
<td>14.7</td>
<td>11.9 - 16.1</td>
<td>Yes</td>
</tr>
<tr>
<td>128</td>
<td>Suburban Local</td>
<td>13.0</td>
<td>11.9 - 16.1</td>
<td>Yes</td>
</tr>
<tr>
<td>104X</td>
<td>Regional</td>
<td>25.4</td>
<td>7.9 - 18.0</td>
<td>Yes</td>
</tr>
<tr>
<td>120X</td>
<td>Regional</td>
<td>63.3</td>
<td>7.9 - 18.0</td>
<td>Yes</td>
</tr>
<tr>
<td>122X</td>
<td>Regional</td>
<td>80.1</td>
<td>7.9 - 18.0</td>
<td>Yes</td>
</tr>
<tr>
<td>AA</td>
<td>Regional</td>
<td>18.7</td>
<td>7.9 - 18.0</td>
<td>Yes</td>
</tr>
<tr>
<td>RC/RX</td>
<td>Regional</td>
<td>15.8</td>
<td>7.9 - 18.0</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: RTD Ridership Data (Jan 2018)
Figure 12: Boardings per Revenue Hour (2018)

Boardings per route

Table 4: Average Weekday Boardings per Route

<table>
<thead>
<tr>
<th>Route</th>
<th>Average Weekday Boardings</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>Colorado Boulevard</td>
</tr>
<tr>
<td>12</td>
<td>Downing/N Washington</td>
</tr>
<tr>
<td>120X</td>
<td>Wagon Road/Thornton Regional</td>
</tr>
<tr>
<td>122X</td>
<td>Wagon Road/Civic Center Regional</td>
</tr>
<tr>
<td>48</td>
<td>East 48th Avenue/Commerce City</td>
</tr>
<tr>
<td>88</td>
<td>Northglenn/Commerce City</td>
</tr>
<tr>
<td>92</td>
<td>92nd Avenue</td>
</tr>
<tr>
<td>8</td>
<td>North Broadway/Huron</td>
</tr>
<tr>
<td>72/72W</td>
<td>72nd Avenue</td>
</tr>
<tr>
<td>120</td>
<td>120th Avenue/Brighton</td>
</tr>
<tr>
<td>AA</td>
<td>Wagon Road/DIA</td>
</tr>
<tr>
<td>112</td>
<td>West 112th Avenue</td>
</tr>
<tr>
<td>RX</td>
<td>Brighton/Denver</td>
</tr>
<tr>
<td>128</td>
<td>Broomfield/Wagon Road</td>
</tr>
<tr>
<td>80/80L</td>
<td>80th Avenue</td>
</tr>
<tr>
<td>Route</td>
<td>Average Weekday Boardings</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>104</td>
<td>West 104th Avenue</td>
</tr>
<tr>
<td>104X</td>
<td>Commerce City/Union Station</td>
</tr>
</tbody>
</table>

Source: RTD (2018)
Proposed North Metro Corridor from FasTracks

Table 5: FasTracks plan for stations. 2 (Jan. 2011)

| Table 4-13: North Metro Corridor – Station Bus Bays – Preferred Alternative |
|---|---|---|---|---|
| Station | Route | Service Type | Total Peak Buses per Hour | Minimum Bays Required |
| National Western Stock Show | 48 | Through | 4 | 2 |
| 72nd Avenue | 40 | Through | 4 | 1 |
| | 40 | Terminal | 2 | 1 |
| | 48 | Terminal | 2 | 1 |
| 88th Avenue | 88 | Through | 4 | 2 |
| | R | Through | 2 | 1 |
| 104th Avenue | 40 | Terminal | 2 | 1 |
| | 92 | Through | 4 | 2 |
| | 104 | Through | 4 | 1 |
| | 112 | Terminal | 2 | 1 |
| | AA | Through | 4 | 2 |
| 112th Avenue | 136 | Terminal | 2 | 1 |
| 124th Avenue Eastlake | 120 | Through | 4 | 1 |
| | 128 | Terminal | 2 | 1 |
| | 144 | Terminal | 2 | 1 |
| 144th Avenue | 144 | Through | 4 | 2 |
| 162nd Avenue | 92 | Through | 4 | 2 |
| | 100 | Through | 4 | 2 |
| | LX | Terminal | 2 | 1 |
| Total | | | 10 | 5 |

*Meets minimum FasTracks desired attendance.*

Framework and Strategies

Recommendations to align RTD’s bus network with the North Metro N Line have been tailored in accordance with RTD’s vision to ensure the most efficient service for passengers and the best possible resource utilization. This vision is focused towards enhancing mobility, linking economic opportunities, limiting congestion, and providing affordable commute options. Phase I of the
three-phase recommendation strategy maintains current resource levels in terms of peak buses and bus operators; while Phase II requires a more robust service investment and is proposed for future implementation based on potential demand growth from the market development within the first five years the N Line is in operation. Phase III is a potential longer term phase that is contingent on funding to extend the N Line to 162nd Avenue.

All recommendations have been developed to attract new ridership as well as retain existing customers, while improving operating efficiency and enhancing transit network effectiveness.

Results from service performance, ridership analysis and market conditions, were instrumental in developing the framework for the service plan recommendations. The framework and strategies shaped recommendations from both a top-down network effectiveness perspective, as well as a bottom-up route optimization perspective.

**Service Fundamentals for Transit Design**

Service fundamentals constitute two parts, Service Design Decisions and Performance Metrics. Service design decisions qualitatively describe in detail the reasons for individual route performance, while performance metrics quantify individual route performance. For individual route performance, no single metric will give a complete overview of market demand for service performance and evaluation of an entire network provides a clearer picture.

**Service Design Decisions**

Effective service design decisions can prove influential in steering customers to ride transit. The following section discusses the role of service design indicators like frequency, span, speed, reliability, route alignment, approachability, and network have on ridership levels.

**Service Frequency**

Service frequency is generally considered the most important service design characteristic for attracting new riders. Routes that have service every 15 minutes or better, (also known as spontaneous-use frequencies), prove beneficial to passengers, as they have less out-of-vehicle-wait times. Market research has shown that this frequency level encourages passengers to “just show up and ride” rather than timing their arrival at bus stops. Services with higher frequencies also provide more convenient and reliable network connections which will maximize overall ridership.

**Service Span**

Service span is the days and time at which a route operates. Service span relates directly to ridership as it defines when a passenger can travel and impacts both ends of a trip. A greater service span provides customers with increased travel flexibility, thus a better transit experience.
Conversely, a greater time span, similar to expanded geographic coverage may be unproductive depending upon the market served, and prove costly and inefficient to the transit agency.

**Service Speed**

A greater service speed benefits the customer by reducing in-vehicle travel times and benefits the transit agency by lowering resource requirements. A review of service speeds includes identification of deviations (out-of-direction travel), excessive stop dwell times (stops that are very closely spaced or result in long delays), traffic delays, and unsynchronized travel signal delay for potential improvements.

**Reliability**

Reliability is the key service factor that helps retain existing customers. A primary metric is transit on-time performance, which is essential for passenger reliance on the service in order to avoid extended waiting and to reach their destination at the desired time, consistently.

**Alignment**

Alignment refers to the path where a transit route operates. An alignment is best designed when it balances customer access (i.e. walk distance) with service directness (i.e. quick travel). Customers usually prefer direct service since it ensures shorter trips, higher reliability, and more efficient and effective service. A common impact of connecting buses to rail stations is having the bus leave the regular direct alignment to reach the station. A goal should be to minimize the nature of the required bus route diversion through good station location/access planning. The number of patrons riding through the station on the bus versus the potential ridership at the station must be both considered and are influenced by the length of the deviation (impact on through riders per new station rider)³.

**Route Spacing**

Effective route spacing is crucial to maximize network access. Placing services too close together or too far apart can affect network cost effectiveness adversely (unproductive competition) and create issues in network synergy. Where requisite densities are present, the usual route spacing

³ The industry best practice out-of-direction model measures the minutes of out-of-direction travel for the deviation times the number of through-riders divided by the number of new station riders. A ratio of 2 to 5 minutes is the acceptable range of impacts with 2 minutes a good trade-off and 5 minutes as the highest acceptable impact.
is no closer than ¼ a mile and no farther apart than 1 mile. Route spacing is strongly influenced by existing street networks and the mode and service level.4

**Round Trip Cycle Time**

Round trip cycle time, also known as revenue time, includes in-service running time plus terminal recovery time to ensure on-time departure for the next trip. The relationship between cycle time and frequency is crucial to higher efficiency. It is also desirable that route alignments and operating speed be designed to ensure that routes have efficient round trip cycle times whenever possible.

**Network Role**

As important as the design of individual routes is, the way they form a network is even more significant. If a network is effective and efficient, it will be successful in attracting transit use for a variety of trips and by a wide range of demographic groups.

**Approachability**

The approachability of a transit system highlights its ease of access and use by existing and potential customers. A system is considered “approachable” when patrons are comfortable using public transit and their uncertainty associated with it is reduced or limited. Extensive complexity and service variations in a transit system can adversely affect the customer perception/attraction of the network. Qualitative in nature, this assessment is utilized to address issues such as line branching, short/long lines, trippers, deviations, corridor alignments, service frequencies, proper signage, and simple user policies.

**Performance Metrics**

Indicators of performance assist in quantifying a route’s performance and assessing it relative to others in the system. These performance indicators serve as crucial route evaluation tools since they allow routes with varying boardings, service levels and costs to be compared directly with one another as a part of RTD’s service standards. Some of the performance metric inputs are defined as the following:

- **Boardings**: Unlinked passenger trips; includes transfers as boardings.
- **Revenue Hours**: In-service hours plus recovery time, not including non-revenue time (deadheading movements and pull-time to/from garage).

---

4 Industry best practice design recognizes that customers walk further for better transit with basic local bus service drawing 80% of its riders within ¼ mile while rail and better bus (Rapid/BRT) have larger customer walksheds with 80% coming from within ½ mile.
• **Operating Revenue**: Cash, tickets, electronic fares, and passes allocated by route by farebox recorded boardings plus other revenue directly attributable to service operation (e.g., vehicle and shelter advertising).

• **Operating Cost**: All operating, maintenance, and administrative costs for providing current service; RTD’s 2015 cost allocation model allocates costs to each route based on its miles, hours, and peak vehicles and varies between in-house and contracted operations. Individual accounting line items are assigned to the most relevant service unit variable by the model.

• **Subsidy per Boarding**: Operating revenue minus operating cost, divided by ridership;

## Network Design Strategy

The aim of the North Metro Corridor Service Plan is to create a more successful transit network that comprises individual bus routes and a new rail line that do well independently as well as collectively. Additionally, the plan seeks to encourage transit usage for commuters traveling from North Metro towards downtown Denver.

### Leverage North Line Operations

The construction of the N Line has provided an opportunity to rethink the regional and local bus transit network that connects the Denver North Metro area to downtown Denver, as well as to all areas between US-36 on the West and US-76 on the East. To obtain the maximum benefit of this new rail service, adjacent and intersecting bus routes in this area were incrementally adjusted to complement the rail service for maximum local and regional coverage where warranted. Duplicative and unproductive service was removed or reallocated, route alignments were adjusted, and bus schedules frequencies revised where feasible to better align with the frequency of the N Line.

Recommendations are proposed in accordance with these actions and will attract additional riders, improve operations, and enhance regional and community mobility with each plan phase.

### Strengthen Bus Service Tiers

RTD operations on each service tier are defined by a target market and associated service demand. The service tiers prominent in the N Line service area are Urban Local and Suburban Local. Both these tiers fall in the “transit lifestyle” market in terms of land use and development densities influencing the service performance and coverage.

Another tier that may require service strengthening in this corridor is the Regional service tier which has approximately four routes and makes up a large portion of the demand travelling from the North Denver region to downtown Denver and other parts of the region.
The proposed recommendations focus on increasing transit usage in lifestyle transit areas by establishing connectivity with the N Line, while at the same time balancing existing and potential demand with the Regional service.

**Route Spacing and Prioritization**

In the process of strengthening the transit network in the Denver North region, route prioritization and consolidation were evaluated.

Route consolidation and prioritization provides an opportunity for RTD to direct limited resources towards other faster and more reliable services. An example of this in the North Line study area is Route AA (Wagon Road/Denver Airport). This service has a premium fare ($9.00 one-way cash and $8.75 one-way *My Ride* card), making it expensive for airport employees who are the primary riders. As a recommended alternative, this route can become an extension to Route 104, as 104L, with local fares.

Similar recommendations have been mentioned in the subsequent sections for areas where productive routes are operating on adjacent corridors. As these routes compete for the same riders, prioritizing would improve service effectiveness and reduce net service cost for each route.

**Route Design Strategies**

For optimum performance of a transit network accompanied by best resource utilization, a clear vision for the entire network is as essential as it is imperative for individual routes that to attract ridership. The following strategies have been used as guiding principles to inform recommendations for study area bus routes. This framework is expected to result in routes with both improved operating efficiency and customer attractiveness.

**Route Streamlining**

Routes designed with extensive deviations tend to result in a higher operating cost and lower ridership. While deviations may reduce walking distance making transit more attractive for a small number of riders, they result in a degradation of service for a larger number of riders who travel on the main corridor by creating access gaps and increasing travel time for the majority of customers.

The N Line service plan aims to eliminate deviations unless they add value for significant numbers of riders by serving major destinations, transit hubs, and rail stations falling within the corridor. Additionally, the proposed recommendations look at streamlining bus transit to increase efficiency and productivity, while facilitating network integration with the N Line.

**Stop Consolidation**

Even though closely spaced stops may appear to enhance service accessibility for riders, tight stop spacing makes the service less attractive to people on the bus and may increase operating costs.
by slowing service speed. Dwell time at bus stops is one of the major contributors to operating delays and lower on-time performance, as it significantly impacts service reliability and operating speed. A balance between efficient stop spacing to maintain convenient access to transit and reducing unnecessary delay leads to improvements in transit service effectiveness. Even though stop consolidation is not proposed in Phase I of the North Metro Corridor project, it is recommended that RTD continue this program throughout the bus network.

**Corridor Segment Consolidation**

**Route Segmentation**

In some cases, certain routes perform much better in specific segments. This trend may be a result of a very long route serving large geographic areas, parts of which may not be as well suited for transit. In such cases, separating the route into two distinct routes not only improves adherence to set schedules, but improves efficiency. In the North Metro Corridor, Route 92 is an example of a route with relatively low ridership from Washington Street/88th Avenue to Summit Grove Parkway, and higher ridership for rest of the route. This service is a candidate for route segmentation.

**Low Performing Service Replacement**

In areas where a route or route segment performs poorly and has limited scope of improvement in performance, alternatives to fixed route service are considered. These alternative mobility options include Flex Rides, special shuttles, service routes (tailored for specific trip making, e.g. seniors), or commute oriented programs (e.g. station vans, car/bike sharing). These options maintain service coverage as well as reduce RTD’s net subsidy.

**Rail Service**

Per most recent simulation from LTK consultants (June 2019), operating plan consists of a 20-minute peak and 30-minute off-peak headway. This includes the same vehicles, schedule margin, station dwell times, minimum turn times at terminals, and three added signal restrictions. In addition, the A Line has priority in the Denver Union Station (DUS) throat and a southbound N Line train may experience delays, due to a westbound A Line train operating behind schedule.
Bus Service Recommendations

Map 10: Proposed Bus Network at Start of N-Line
### Table 6: Proposed Bus Routes by North Metro Station

<table>
<thead>
<tr>
<th>North Metro Commuter Rail Station</th>
<th>Proposed Bus Route Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastlake at 124&lt;sup&gt;th&lt;/sup&gt; Avenue</td>
<td>120, 120L, 128, FlexRide</td>
</tr>
<tr>
<td>Northglenn at 112&lt;sup&gt;th&lt;/sup&gt; Avenue</td>
<td>12, 112, FlexRide</td>
</tr>
<tr>
<td>Thornton Crossroads at 104&lt;sup&gt;th&lt;/sup&gt; Avenue</td>
<td>93L, 104, 104L, FlexRide</td>
</tr>
<tr>
<td>Original Thornton at 88&lt;sup&gt;th&lt;/sup&gt; Avenue</td>
<td>80, 88L, 92, FlexRide</td>
</tr>
<tr>
<td>Commerce City at 72&lt;sup&gt;nd&lt;/sup&gt; Avenue</td>
<td>41L, 49, 72, 88, 88L</td>
</tr>
<tr>
<td>48&lt;sup&gt;th&lt;/sup&gt; Avenue &amp; Brighton Boulevard at National Western Center</td>
<td>48 (on-street)</td>
</tr>
</tbody>
</table>

The approved North Metro Commuter Rail Corridor Rail Operations Plan calls for base bus service connections to/from the new corridor stations. Included in this plan are routes 12, 48, 49 (former northern part of Route 48), 72, 80, 88, 88L (former northern part of route 88), 92, 93L (former eastern part of route 92), 104, 112, 114 (NEW), 120, 120L (former part of route 120), 128, 520 (former part of route 120 within Brighton), 104L (former AA), RX, as well as 41L (former southern part of route RC).

In order to serve the new stations with connections to/from base bus service, most of these routes will require adjustments, in order to optimize the overall bus service network. Most of these connections will result in the need for and cost of additional vehicles and in-service hours.

**Routes 104X and RX** are proposed to remain on their current routing, without deviating or extending into any of the N Line stations, yet still are considered part of the overall bus operations network for the N Line Corridor. However, Route RX would terminate at the northern end at US85 & Bridge Street Park-n-Ride, rather than its current terminal at the Adams County Justice Center. There would be no changes to Route 104X. The following describes these changes in more detail:

- **Route 104X** – no route changes to current routing
- **Route RX** – discontinuation of routing within City of Brighton; northern terminal would be US85 & Bridge Street Park-n-Ride; route replacement via Route 520 (former 120)

The following routes are proposed to deviate from their current routing into at least one station each, along the North Metro Commuter Rail Corridor:

- **Route 12** – deviate north from current terminal at 106<sup>th</sup> & Melody Transfer Hub to Northglenn at 112<sup>th</sup> Avenue; would require one additional all-day bus (wk)
Route 48 – minor route adjustments; removal of deviation into Platte Garage, adding deviation along Brighton Boulevard to access 48th Avenue and Brighton Blvd at National Western Center Station, routing via Race, E 48th/York/47th for better community access; no additional bus (wk/Sat/Sun); new northern terminal would be 60th/ Dahlia Transfer Center

Route 49 – would replace current northern portion of Route 48, as of 60th/Dahlia Transfer Center; Route 49 would operate from 40th & Colorado Station (University of Colorado A Line) via 60th/Dahlia and then deviate into its terminal at Commerce City at 72nd Ave Station rather than current terminal at US85 & 72nd Avenue Park-n-Ride

Route 72 – deviate south into Commerce City at 72nd Ave Station; would require one additional all-day bus (Wk)

Route 80 – deviate north into Original Thornton at 88th Ave Station; would require one additional all-day bus (Wk)

Route 88 – deviate/reroute from Thornton PnR into Commerce City at 72nd Ave Station;

Route 88L – operate from Commerce City at 72nd Ave Station to Original Thornton at 88th Ave Station, replacing the current Route 88 northern route portion; would require one additional all-day bus (Sat/Sun)

Route 104L – (to be converted from SkyRide (AA) to Limited (104L) with opening of North Metro Commuter Rail Corridor) - deviate into Thornton Crossroads at 104th Ave Station; would require one additional all-day bus (Sat/Sun)

The following routes are proposed to have route extensions into at least one station each, along the North Metro Commuter Rail Corridor:

Route 92 – extend route into Thornton Crossroads at 104th Ave Station; no cost; would also include discontinuing route north of 104th/Colorado due to low ridership (Wk/Sat/Sun) and replacing route portion with new route 93L

Route 93L – operate between Thornton Park-n-Ride, via Thornton Crossroads at 104th Station, and current route 92 northern terminal at Summit Grove Parkway and Colorado Blvd

Routes 104/ 114 – discontinue current Route 104 routing between US36 & Sheridan and US36 & Church Ranch Stations. New west-end terminal at US36 & Church Ranch Station. New Route 114, in the peaks, between US36 & Church Ranch Station and Wagon Road Park-n-Ride, along 104th, Westminster Blvd, 112th, Federal, 120th to Wagon Road Park-n-Ride. All current Route 104 trips would extend into Thornton
Crossroads at 104th Ave Station (could stay on-street at 104th if need be); would require one additional all-day bus (Wk)

Route 112 – extend route into Northglenn at 112th Ave Station; would require one additional all-day bus (Wk/Sat/Sun)

Route 120 – current short-turn trips between Us36 & Broomfield Station and Wagon Road PnR would be extended into Eastlake at 124th Ave Station; would require one additional AM and PM peak bus each (Wk); break route east of the station into 120L (to US85/Bridge St) and 520 (within Brighton only)

Route 120L – would replace current Route 120 between roughly 120th & Washington and US85 & Bridge Street Park-n-Ride

Route 520 – would replace current Route 120 between US85 & Bridge Street Park-n-Ride and Prairie Center Mall

Route 128 – extend route into Eastlake at 124th Ave Station; would require one additional all-day bus (Wk)

The following route is proposed to be curtailed and rerouted into at least one station along the North Metro Commuter Rail Corridor:

Route RC (New 41L) – curtail RC trips to Commerce City at 72nd Ave Station; use saved in-service hours for 3 additional AM and PM peak trips each, peak direction; these peak trips would operate bi-directional, between Civic Center Station, via Central Park Station (A-Line Connection) to Commerce City at 72nd Avenue Station; no cost (Wk)

Federal Heights FlexRide – no changes

Thornton FlexRide – would serve Thornton Crossroads at 104th Avenue Station
### Table 7. Existing and proposed service frequencies

<table>
<thead>
<tr>
<th>Route</th>
<th>New Route or Route replacement</th>
<th>Route Name</th>
<th>Existing</th>
<th>Opening Day Proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Peak Frequency</td>
<td>Off-Peak Frequency</td>
</tr>
<tr>
<td>12</td>
<td>N/A</td>
<td>Downing/N Washington</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>41L</td>
<td>Replaces part of Route RC</td>
<td>Commerce City/72nd</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>48</td>
<td>N/A</td>
<td>E48th/Commerce City</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>49</td>
<td>Replaces northern portion of Route 48</td>
<td>E 48th/Commerce City</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>72/72W</td>
<td>N/A</td>
<td>72nd Avenue</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>80/80L</td>
<td>N/A</td>
<td>80th Avenue</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>88</td>
<td>N/A</td>
<td>Thornton/Commerce City</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>88L</td>
<td>Replaces northern portion of Route 88</td>
<td>Commerce City</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>92</td>
<td>N/A</td>
<td>92nd Avenue</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>93</td>
<td>Replaces portion of Route 92 east of Thornton PnR</td>
<td>E 92nd Avenue</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>104</td>
<td>N/A</td>
<td>West 104th Avenue</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>104L</td>
<td>Replaces current Route AA</td>
<td>Wagon Road/DIA</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>112</td>
<td>N/A</td>
<td>W 112th Avenue</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>114</td>
<td>New routing between US36 &amp; Church Ranch Station and Wagon Rd</td>
<td>US36 &amp; Church Ranch Station /Wagon Rd</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>120</td>
<td>Current route between US36 &amp; Broomfield Station and Wagon Rd PnR</td>
<td>120th Avenue/Brighton</td>
<td>30</td>
<td>60</td>
</tr>
</tbody>
</table>
Cont: Table 7. Existing and proposed service frequencies

<table>
<thead>
<tr>
<th>Route</th>
<th>New Route or Route replacement</th>
<th>Route Name</th>
<th>Existing Peak Frequency</th>
<th>Opening Day Proposal Peak Frequency</th>
<th>Existing Off-Peak Frequency</th>
<th>Opening Day Proposal Off-Peak Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>120L</td>
<td>Replaces current Route 120 between 124th &amp; Eastlake Station (current Wagon Rd PnR) and US85 &amp; Bridge St PnR</td>
<td>E 120th/Brighton</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>520</td>
<td>Replaces current Route 120 between US85 &amp; Bridge St PnR and Prairie Center Mall; will also use current Route RX in-service hours w/in Brighton for increased peak service levels</td>
<td>Brighton Crosstown</td>
<td>60</td>
<td>60</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>RX</td>
<td>N/A</td>
<td>Brighton/Denver</td>
<td>30</td>
<td>N/A</td>
<td>30</td>
<td>N/A</td>
</tr>
<tr>
<td>AA</td>
<td>N/A</td>
<td>Wagon Road/DIA</td>
<td>60</td>
<td>60</td>
<td>To be replaced by Route 104L</td>
<td></td>
</tr>
</tbody>
</table>

We understand that currently several of the routes listed above are not exhibiting a strong ridership; however, all but route 104 are within the acceptable passengers/hr range for their current level of operations. Route 104, as described above, is proposed to be restructured so that it can have multi-purpose and noticeable potential for increased and steady ridership. Thus, there essentially are no vehicles or in-service hours to ‘harvest’ in order to address the above listed operational shortfall needs.

In addition, since parking availability, overall along the North Metro Commuter Rail corridor has been curtailed substantially, from the original anticipated design, it will be vital to the rail line to have effective and efficient bus route feeder service, in order to provide the needed access to it. As no budget is assigned within FasTracks to cover these additional bus requirements and in-service hours (resources), Service Development has designed a bus operations plan, for the upcoming opening of the North Metro Commuter Rail Corridor, which is overall revenue neutral. Additional vehicle needs will be met through regular service change adjustments prior to the opening of the corridor.
Table 8: Additional bus requirements and platform hours with opening of North Metro Corridor

<table>
<thead>
<tr>
<th>Route</th>
<th>Additional Bus Requirements</th>
<th>Additional Platform Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weekday AM</td>
<td>PM</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>41L (RC)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>48</td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>49</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>72</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>80</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>88</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td>88L</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>92</td>
<td>-2</td>
<td>-2</td>
</tr>
<tr>
<td>93L</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>104</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>104L (AA)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>112</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>114</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>120</td>
<td>-2</td>
<td>-2</td>
</tr>
<tr>
<td>120L</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>128</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>520</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>RX</td>
<td>-1</td>
<td>-4</td>
</tr>
<tr>
<td>Total Additional Resource Needs</td>
<td>12</td>
<td>9</td>
</tr>
</tbody>
</table>

Conclusion

The introduction of the North Metro Corridor (N Line) presents an opportunity to maximize the investment by tailoring complementary service that matches market demand, and accommodates the changing urban landscape in the study area. Currently, many of the communities served by N Line stations are lower density and suburban in nature. Travel demand shows a significant number of commuters travel south for work, which presents an opening for the N Line to facilitate that movement. Outside of the popular I-25 bus routes (120X/122X), most of the routes within the study area provide basic levels of service and the corridors they operate on are not yet suitable for high frequencies. The Service Plan recommendations evaluate the best
use of limited resources, for transit in the study area and will fully leverage the new N Line, as well as the well-utilized I-25 bus routes.

**SUMMARY**

The North Metro Corridor Draft Service Plan presents the proposed changes in the existing RTD bus service network for N Line opening in Spring 2020. The Plan includes opportunities for improving bus transit in Phase I (initial opening of N Line) and Phase II (a 3 – 5 year period subsequent to N Line opening, based on resource availability), as markets and mobility needs evolve.

Presently being suburban and low density, with employment concentrated near the highways, the study area is transitioning from an area with overall low transit usage to an increasing focus on sustainable mobility. The two I-25 Regional routes (120X and 122X) have high ridership and productivity indicating significant demand for transit commuting from the north to downtown Denver. The North Metro Corridor Draft Service Plan focuses on adjusting the bus network to complement the new N Line while minimizing adverse impacts to existing customers and maintaining the constraint on added operating resources.

A number of existing bus routes, especially west of the I-25, to stations on the N Line, have been incrementally extended to stimulate further demand (e.g., routes like 104 that do not connect with the I-25 Regional transit). These extensions are also geared to provide direct east-west service and enhance connectivity between neighborhoods in Federal Heights, Westminster, Thornton, and Northglenn. Routes east of I-25, within the study area, were not altered significantly to complement the N Line. Significant transit demand is observed south of US-76, in Commerce City where routes would be adjusted for improved coverage and alignment with the N Line.

The objective of minimizing rider impacts is met with only 1.1 percent now walking more than a convenient ¼-mile (5-minute) and just 0.3 percent walking more than the reasonable ½-mile (10-minute).

Further consideration of bus service revisions, in a potential long term Phase II, currently unfunded option, extending the N Line to 164th Avenue were not formally analyzed as part of this study. However, it is reasonable to presume that RTD regular fixed route service would perform in the much-lower density of the suburban areas north of the current 124th Avenue terminus, in a similar fashion to existing low-density areas and have difficulty in meeting minimum productivity thresholds. Consequently, it is suggested that local mobility connections to the future 144th Avenue and 164th Avenue stations, on the extended N Line would be best provided by microtransit/TNC (e.g., Uber, Lyft, Bridj), or autonomous vehicle services in the future. The
availability of such affordable and reliable first-mile and last-mile services is likely to also reduce the need for station Park-n-Ride capacity, with fewer people driving personal vehicles to the new stations.
Appendix A: Proposed Bus Route Changes – Route Maps and Turn – by – Turn Directions
Downing Street/North Washington

**Local & Lrt Routes**

**NORTHBOUND**
From: Englewood Phsy
To: Northglenn - 112th Station

1. R - Floyd Ave
2. L - Hal Ik
3. L - Englewood Phsy
4. C - Straight thru traffic circle
5. C - Englewood Phsy
6. C - Girard Ave
7. R - Sherman St
8. L - Hampden Ave
9. L - Downing St
10. L - Iowa Ave
11. R - Pearl St
12. R - Louisiana Ave
13. L - Downing St
14. C - (L) Downing St
15. R - Lawrence St
16. C - (L) Market St
17. G - (L) 38th St
18. C - Washington St
19. L - Eppinger Blvd
20. R - Grant St
21. R - 104th Ave
26. L - Washington St
27. R - 112th Ave
29. L - York St
30. L - Info Station
31. To assigned gate

**SOUTHBOUND**
From: Northglenn - 112th Station
To: Englewood Station

31. East Station
32. R - York St
33. R - 112th St
34. L - Washington St
35. R - 104th Ave
40. L - Grant St
41. L - Eppinger Blvd
42. R - Washington St
43. C - 38th St
44. R - Walnut St
45. L - Downing St
51. R - Louisiana Ave
52. L - Pearl St
53. L - Iowa Ave
54. R - Downing St
55. R - Hampden Ave
56. R - Lincoln St
57. L - Girard Ave
58. C - Englewood Phsy
59. C - Straight thru traffic circle
60. C - Englewood Phsy
61. R - Hal Ik
62. L - Floyd Ave
63. L - Englewood Station
64. To Terminal
NEW ROUTE

41 Ltd
Civic Center Station/Commerce City
### Civic Center Station/Commerce City

#### 41 Ltd

<table>
<thead>
<tr>
<th>Northbound</th>
<th>From: Civic Center Station</th>
<th>To: Commerce City - 72nd Station</th>
<th>Via: Colorado Boulevard Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>L - Broadway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>L - Colfax Ave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>L - Colorado Blvd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>L - 40th Ave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>R - Jackson St</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>L - Info Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>To designated gate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Exit Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>L - 47th Ave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>R - Jackson St</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>L - 40th Ave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>L - Colorado Blvd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>C - US 40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>L - 72nd Ave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Info Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>To assigned gate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Southbound</th>
<th>From: Commerce City - 72nd Station</th>
<th>To: Civic Center Station</th>
<th>Via: Colorado Boulevard Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.</td>
<td>Exit Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>C - 72nd Ave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>R - To US 40 (SB)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>C - Colorado Blvd (SB)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>R - 40th Ave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>R - Jackson St</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>L - Info Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>To designated gate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Exit Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>R - Colorado Blvd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>R - Colfax Ave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>R - Lincoln St</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>L - 40th St</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>L - Broadway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>L - Civic Center Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>To assigned gate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NEW
ROUTE
Replacing northern portion of current Route 48
72/72w
72nd Avenue Crosstown

Local & LRT Routes

Westmins
The Plaza at Westminster
Westminster Senior Center
Westminster High School
Wadsworth Bypass
Wadsworth Marketplace

Old Town Arvada Station
G Line
52 55 76

Westbound
From: Commerce City - 72nd Avenue Station
To: 63rd/Wright

1. C - 63rd Ave
2. R - York Way
3. R - 46th Ave
4. R - (F) Ralston Rd
5. L - 57th Ave
6. R - Carr St
7. L - 52nd Ave
8. L - Allison St
9. R - 55th Ave
10. L - Old Wadsworth Blvd
11. R - Old Town Arvada Station
12. C - thru station
13. R - Vance St
14. L - 56th Ave
15. L - Marshall St
16. C - Lamar St
17. R - 72nd Ave
18. R - Hooker St
19. L - 70th Ave
20. R - Grove St (to assigned gate)
21. C - Clockwise thru bus gates
22. L - 70th Ave
23. R - Hooker St
24. R - 72nd Ave
25. R - Peoria St
26. L - 70th Ave
27. C - CO Hwy 224
28. L - 74th Ave
29. R - Colorado Blvd
30. L - 72nd Ave
31. Info Station
32. To assigned Gate
33. R - Clockwise thru bus gates
34. L - 70th Ave
35. R - Hooker St
36. C - CO Hwy 224
37. L - 70th Ave
38. R - Peoria St
39. L - 72nd Ave
40. L - Hooker St
41. L - 70th Ave
42. R - Grove St (to assigned gate)
43. C - Clockwise thru bus gates
44. L - 70th Ave
45. R - Hooker St
46. L - 72nd Ave
47. L - Lamar St
48. C - Marshall St
49. R - 55th Ave
50. L - Wadsworth Bypass

Eastbound
From: 63rd/Wright
To: Commerce City - 72nd Station

1. C - 63rd Ave
2. R - York Way
3. R - 46th Ave
4. C - (F) Ralston Rd
5. L - 57th Ave
6. R - Carr St
7. L - 52nd Ave
8. L - Allison St
9. R - 55th Ave
10. L - Old Wadsworth Blvd
11. R - Old Town Arvada Station
12. C - Thru Station
13. R - Vance St
14. L - 56th Ave
15. L - Marshall St
16. C - Lamar St
17. R - 72nd Ave
18. R - Hooker St
19. L - 70th Ave
20. R - Grove St (to assigned gate)
21. C - Clockwise thru bus gates
22. L - 70th Ave
23. R - Hooker St
24. R - 72nd Ave
25. R - Peoria St
26. L - 70th Ave
27. C - CO Hwy 224
28. L - 74th Ave
29. R - Colorado Blvd
30. L - 72nd Ave
31. Info Station
32. To assigned Gate
33. R - Clockwise thru bus gates
34. L - 70th Ave
35. L - 74th Ave
36. C - CO Hwy 224
37. C - 70th Ave
38. L - Peoria St
39. L - 72nd Ave
40. L - Hooker St
41. L - 70th Ave
42. R - Grove St (to assigned gate)
43. C - Clockwise thru bus gates
44. L - 70th Ave
45. R - Hooker St
46. L - 72nd Ave
47. L - Lamar St
48. C - Marshall St
49. R - 55th Ave
50. L - Wadsworth Bypass
### Thornton/Commerce City/Central Park

#### NORTHBOUND
From: Central Park Station
To: Commerce City at 72nd Station
1. Exit Station (south exit)
2. L - 27th Av
3. L - Unita St
4. L - 30th Ave ( SB)
5. L - Central Park Blvd
6. L - 40th Ave (Northfield Blvd)
7. R - Quebec St
8. L - 56th Ave
9. R - Holly St
10. L - 56th Ave
11. R - Dahlia St
12. R - 66th Ave
13. L - Monaco St
14. L - 22nd Ave
15. L - Colorado Blvd
16. R - Info Station
17. G - To assigned Gate

#### SOUTHBOUND
From: Commerce City at 72nd Station
To: Central Park Station
18. Exit Station
19. L - Colorado Blvd
20. R - 27th Ave
21. L - Cross over Highway 2
22. R - Monaco St
23. R - 66th Ave
24. L - Dahlia St
25. L - (G) 56th Ave
26. R - Holly St
27. L - 56th Ave
28. R - Quebec St
29. L - Northfield Blvd
30. R - Central Park Blvd
31. R - 36th Ave
32. R - Unita St
33. R - 37th Pl
34. L - Info Station
35. To assigned Gate
NEW ROUTE
Replacing northern portion of current Route 88
**Thornton/Commerce City 88Ld**

**NORTHBOUND**
From: Commerce City at 72nd Station
To: Original Thornton at 88th Station
1. L - Colorado Blvd
2. R - 73rd Ave
3. L - Ivy St
4. C - (R) 72nd Ave
5. G - (L) Kearney St
6. R - 70th Ave
7. L - Monaco St
8. L - 80th Ave
9. R - Brighton Rd
10. L - 80th Ave
11. R - Welby Rd
12. Into Station
13. To assigned Gate

**SOUTHBOUND**
From: Original Thornton - 88th Station
To: Commerce City at 72nd Station
14. Exit Station
15. R - Welby Rd
16. L - 80th Ave
17. R - Brighton Rd
18. L - 80th Ave
19. R - Monaco St
20. R - 70th Ave
21. L - Kearney St
22. C - (R) 73rd Ave
23. G - (L) Ivy St
24. R - 73rd Ave
25. L - Colorado Blvd
26. R - into Station
27. To assigned Gate
NEW ROUTE
Replacing northern portion of current Route 92
### NORTHBOUND
**From:** Thornton PkR  
**To:** 138th Ave/Garfield  
- 1. Exit Station  
- 2. L - Grant St  
- 3. R - 85th Ave  
- 4. L - Washington St  
- 5. R - Eppinger Pl/way  
- 6. L - Gaylord St  
- 7. L - 96th Ave  
- 8. L - Vine St, continue around park  
- 9. R - Thornton Pkway  
- 10. L - York St  
- 11. R - 100th Ave  
- 12. L - Colorado Blvd  
- 13. L - Thornton Crossroads - 104th Station  
- 14. L - Colorado Blvd  
- 15. R - 120th Ave  
- 16. L - Holly St  
- 17. L - 128th Ave  
- 18. R - Colorado Blvd  
- 19. L - 138th Ave  
- 20. To Terminal  

### SOUTHBOUND
**From:** 138th Ave/Garfield  
**To:** Thornton PkR  
- 21. L - Garfield St  
- 22. L - 135th Ave  
- 23. R - Colorado Blvd  
- 24. L - 129th Ave  
- 25. R - Holly St  
- 26. R - 130th Ave  
- 27. L - Colorado Blvd  
- 28. R - Thornton Crossroads - 104th Station  
- 29. R - Colorado Blvd  
- 30. R - 100th Ave  
- 31. L - York St  
- 32. R - Thornton Pkway  
- 33. L - Vine St  
- 34. C - Amrapel park  
- 35. R - Gaylord St  
- 36. R - Eppinger Blvd  
- 37. L - Washington St  
- 38. R - 88th Ave  
- 39. L - Grant St  
- 40. R - Thornton PkR  
- 41. Circle east side  
  - counter clockwise  
- 42. To Terminal
NEW ROUTE
Replacing current Route AA

EASTBOUND
From: Wagon Rd/DIA
To: Denver Airport Station
(See Denver Airport Diagrams)
Use turns 1 - 12

10. C - (R) to Hotel Deliveries
11. R - Hotel Deliveries thru AM Access
12. To assigned gate
13. Exit Immediate (R) past Gate 10
14. C - (R) to Pena Blvd
15. C - (L) to Return to Terminal
16. Exit (R) - Commercial Vehicle Holding Area
17. To Terminal

WESTBOUND
From: Commercial Vehicle Holding Area
To: Denver Airport Station
(See Denver Airport Diagrams)
Use turns 1 - 12

26. Exit Immediate (R) past Gate 10
27. C - (R) to Pena Blvd
28. C - (R) Airport Exit via Pena Blvd (S8)
29. To E-470 (R8) (Tailway)
30. Exit (L) - 164th Ave
31. R - To I-25 (NB)
32. Exit (R) - Wagon Rd/DIA Ramp
33. To Terminal

From: Wagon Rd/DIA
To: Denver Airport Station
(See Denver Airport Diagrams)
Use turns 1 - 12

1. C - (R) to Hotel Deliveries
2. R - Hotel Deliveries thru AM Access
3. To assigned gate
4. Exit Immediate (R) past Gate 10
5. C - (R) to Pena Blvd
6. C - (R) to Return to Terminal
7. C - (R) to Hotel Deliveries
8. C - (R) to AM Access & Hotel Deliveries
9. C - (R) to AM Access & Hotel Deliveries
NEW ROUTE

114 US36 & Church Ranch/Wagon Road

Local & Ltd Routes

US 36 & Church Ranch Station
Platform Turnpike
Shops at Hanging Century
Parking
Ranch Marketplace
Community College

Local Stops

Intersecting Routes

North

B178
US36 & Church Ranch/Wagon Road

**EASTBOUND**
From: US 36 & Church Ranch Station
To: Wagon Road PnR
1. From Terminal
2. L - Reed St
3. C - Reed St through roundabout
4. L - Church Ranch Blvd
5. L - Sheridan Blvd
6. R - 112th Ave
7. L - Fedgal Blvd
8. R - 121st Ave
9. R - Info PnR
10. To assigned Gate

**WESTBOUND**
From: Wagon Road PnR
To: US 36 & Church Ranch Station
10. Exit & L - 123rd Ave
11. L - Federal Blvd
12. R - 113th Ave
13. L - Sheridan Blvd
14. R - 116th Ave
15. C - Church Ranch Blvd
16. R - Reed St
17. C - Roundabout
18. L - Pkwy
19. C - 120th St
20. L - To assigned Gate
120th Avenue West

**Local & Ltd Routes**

**EASTBOUND**
From: US 36 & Broomfield Station
To: Eastlake - 124th Station
1. L - Through Poll
2. C - Transit Way
3. L - Uptown Ave
4. C - 112th Ave
5. L - Main St
6. R - 120th Ave
7. L - Claudie Ct
8. L - Eastlake Ave
9. R - Claudie Ct
10. R - Info Station
11. To assigned Gate

**WESTBOUND**
From: Eastlake - 124th Station
To: US 36 & Broomfield Station
12. L - Claudie Ct
13. L - Eastlake Ave
14. R - Claudie Ct
15. R - 120th Ave
16. L - Main St
17. R - 112th Ave
18. C - Uptown Ave
19. R - Transit Way
20. C - (R) - To Terminal
Broomfield/Eastlake 128

Local & Ltd Routes

Westbound
From Eastlake - 124th Station
To: US 36 & Broomfield Station
21. Exit Station
22. L - Clark Ct
23. L - 124th Ave
24. L - York St
25. L - 128th Ave
26. G - Midway Blvd
27. L - Spaders Way
28. R - 3rd Ave
29. R - Main St
30. L - Midway Blvd
31. L - Nickel St
32. L - Commerce St
33. L - 110th St
34. L - Wadsworth Blvd
35. L - Sth 128th
36. L - Westview Dr
37. L - Upham Ave
38. L - Transit Way
39. To Terminal
NEW ROUTE
Segment of current Route 120

520 Brighton Crosstown

Local & Ltd Routes

NEW ROUTE Segment of current Route 120
Brighton Crosstown

**EASTBOUND**
From: US 65 / Bridge St PnR
To: Prairie Center Mall
1. L - Eghert St
2. L - 4th Ave
3. R - Bridge St
4. R - 50th Ave
5. R - Frontage Rd
6. Oops! & (W) - Bromley Ln
7. L - Prairie Center Pkwy
8. L - Platte Valley Medical Center driveway
9. L - 1st driveway (NB)
10. L - Exit Platte Valley Medical Center
11. L - Prairie Center Pkwy
12. C - Prairie Center Pkwy
13. R - 4th Road (road just past Kohl's)
14. L - 1st Road (Mall Ring Road)
15. To Terminal

**WESTBOUND**
From: Prairie Center Mall
To: US 65 / Bridge St PnR
16. L - 1st Road
17. L - Prairie Center Pkwy
18. C - Prairie Center Pkwy
19. R - Platte Valley Medical Center driveway
20. L - 1st driveway (NB)
21. L - Exit Platte Valley Medical Center
22. R - Prairie Center Pkwy
23. R - Bromley Ln
24. L - Frontage Rd via Traffic Circle (3rd Exit)
25. L - 50th Ave
26. L - Bridge St
27. L - 4th Ave
28. R - Bush St
29. L - US 65 & Bridge St PnR
**North Metro Corridor Proposed Bus Operations Service Plan (July 2019)**

**Regional Routes**

<table>
<thead>
<tr>
<th>Brighton/Denver Express (RX)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NORTHBOUND</strong></td>
</tr>
<tr>
<td>From: Adams County Justice Center</td>
</tr>
<tr>
<td>To: Adams County Justice Center</td>
</tr>
<tr>
<td><strong>East Metro Pull-Outs</strong></td>
</tr>
<tr>
<td>To: Adams County Justice Center</td>
</tr>
<tr>
<td>Using turns 51-53</td>
</tr>
<tr>
<td>To 1st St (SB)</td>
</tr>
<tr>
<td>Exit &amp; (R) 70 Ave (SB) (St 22)</td>
</tr>
<tr>
<td>Exit &amp; (L) Park Ave West</td>
</tr>
<tr>
<td>R - Blake</td>
</tr>
<tr>
<td>L - 10th St</td>
</tr>
<tr>
<td>To turns 70-72</td>
</tr>
</tbody>
</table>

| **SOUTHBOUND**              |
| From: Adams County Justice Center |
| To: Adams County Justice Center |
| **East Metro Pull-Outs**     |
| To: Adams County Justice Center |
| Using turns 51-53  |
| To 1st St (SB) |
| Exit & (R) 70 Ave (SB) (St 22) |
| Exit & (L) Park Ave West |
| R - Blake |
| L - 10th St |
| To turns 70-72 |

**Terminals**

- Adams County Justice Center
  - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Attorney's Office
  - Civic Center Station
    - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Civic Center Station

**Destination Signs**

- Adams County Justice Center
  - Civic Center Station
    - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Civic Center Station

**Restrooms**

- Adams County Justice Center
  - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Civic Center Station

<table>
<thead>
<tr>
<th><strong>Platte</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Pull - Out</strong></td>
</tr>
<tr>
<td>To: Adams County Justice Center</td>
</tr>
<tr>
<td>L - 33rd St</td>
</tr>
<tr>
<td>R - Adams Ct</td>
</tr>
<tr>
<td>L - 30th St</td>
</tr>
<tr>
<td>R - Washington St</td>
</tr>
<tr>
<td>L - To 1st St (SB)</td>
</tr>
<tr>
<td>L - To 2nd St (SB)</td>
</tr>
<tr>
<td>Exit &amp; (L) - Brookfield Lane</td>
</tr>
<tr>
<td>L - Judicial Center Dr</td>
</tr>
<tr>
<td>U-turn first driveway</td>
</tr>
<tr>
<td>To Terminal</td>
</tr>
</tbody>
</table>

| **Pull - Ins**               |
| To: Adams County Justice Center |
| L - 33rd St |
| R - Adams Ct |
| L - 30th St |
| R - Washington St |
| L - To 1st St (SB) |
| L - To 2nd St (SB) |
| Exit & (L) - Brookfield Lane |
| L - Judicial Center Dr |
| U-turn first driveway |
| To Terminal |

| **From: Adams County Justice Center** |
| L - 30th St |
| R - Washington St |
| L - To 1st St (SB) |
| L - To 2nd St (SB) |
| Exit & (L) - Brookfield Lane |
| L - Judicial Center Dr |
| U-turn first driveway |
| To Terminal |

**From: Adams County Justice Center**

- Civic Center Station
  - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Civic Center Station

**Terminals**

- Adams County Justice Center
  - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Attorney's Office

- Civic Center Station
  - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Civic Center Station

**Destination Signs**

- Adams County Justice Center
  - Civic Center Station
    - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Civic Center Station

**Restrooms**

- Adams County Justice Center
  - Civic Center Station
    - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Civic Center Station

<table>
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<td><strong>Pull - Ins</strong></td>
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<tr>
<td>U-turn first driveway</td>
</tr>
<tr>
<td>To Terminal</td>
</tr>
</tbody>
</table>

| **From: Adams County Justice Center** |
| L - 30th St |
| R - Washington St |
| L - To 1st St (SB) |
| L - To 2nd St (SB) |
| Exit & (L) - Brookfield Lane |
| L - Judicial Center Dr |
| U-turn first driveway |
| To Terminal |

**From: Civic Center Station**

- At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Civic Center Station

**Restrooms**

- Adams County Justice Center
  - Civic Center Station
    - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Civic Center Station

**From: Adams County Justice Center**

- Civic Center Station
  - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Civic Center Station

**Restrooms**

- Adams County Justice Center
  - Civic Center Station
    - At bus stop on Judicial Center Dr
  - Headed north, northwest of<br>  - Civic Center Station
Federal Heights FlexRide

FHFX

- Trips may be scheduled with driver up to two weeks in advance at 303.404.3472.

- **Hours of service:**
  Weekdays - 5:30 a.m. - 7:00 p.m.
  No service is available on weekends or holidays.
Thornton FlexRide

TNFX

- Trips may also be scheduled up to two weeks in advance by calling 303.434.4247 or 303.591.1389.

Hours of service:

Weekdays - 5:30a.m. - 7:00p.m.
No service is available on weekends or holidays.
Appendix B: Station Diagrams
Original Thornton & 88th Station

<table>
<thead>
<tr>
<th>Route</th>
<th>Gate</th>
<th>Route</th>
<th>Gate</th>
<th>Route</th>
<th>Gate</th>
<th>Route</th>
<th>Gate</th>
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</thead>
<tbody>
<tr>
<td>80</td>
<td>C</td>
<td>88L</td>
<td>A</td>
<td>92</td>
<td>B</td>
<td>Drop Off Only</td>
<td>D</td>
</tr>
</tbody>
</table>

Lines Serving this Station
N-Line
Appendix C. Updated Demographic Maps
Map 2: Low Income Density Per Square Mile (2018)
Map 3: Low Income Density Per Census Track (2018)
Map 5: Minority Density Per Census Track (2018)
Map 6: Senior Density Per Square Mile (2018)
Map 7: Senior Density Per Census Track (2018)