The Regional Transportation District (RTD) is exploring opportunities for Bus Rapid Transit (BRT), based on existing and anticipated travel demands. BRT offers the potential for mobility and access improvements at relatively modest capital and operating costs. The study’s primary goal is the identification and prioritization of corridor-based or fixed-guideway BRT projects within RTD’s service area.

**Outcomes**

- Develop BRT network
- Identify 3-5 BRT corridors for near-term investment
- Identify one or more projects ready for FTA Small Starts project development
Vision

A Bus Rapid Transit (BRT) network that enhances regional connectivity, supports future travel demand, and improves attractiveness of transit.

BRT Evaluation Principles

A set of evaluation principles were developed to guide corridor evaluation. The evaluation principles will ensure that analysis outcomes align with the needs and vision of the region.

- Provides connectivity and access
- Increases ridership
- Enhances expandability, equity, and sustainability
- Ensures cost-effectiveness
- Aligns with state and local agency recommendations
- Considers technological innovation/Smart Cities
- Adheres to FAST Act BRT definition
- Integrates engineering/operation feasibility/safety
- Acknowledges potential environmental impacts
- Capitalizes on financial resources
A tiered evaluation methodology was developed to guide the process and provide a data-driven approach to identify 3-5 corridors in the region for near-term BRT investment.
BRT Network Development

Based on input from stakeholders across the region, it became clear that many communities within the RTD are interested in BRT serving their community. While the focus of the Regional BRT Feasibility Study is to identify corridors that have the highest potential to improve regional mobility and compete for Federal Transit Administration funds, RTD also supports development of a regional BRT network that leverages FasTracks investments.

As a result, a BRT network was developed that includes:

- Corridors with the highest potential to support high quality, high frequency bus service
- Corridors in communities that have demonstrated substantial support through study, design, and/or financial commitment
- Corridors with high ridership potential that can operate on an existing semi-exclusive travelway (i.e., toll lanes, managed lanes, high-occupancy vehicle lanes) and can therefore be implemented more cost effectively

The proposed BRT network includes 23 routes for continued evaluation and development by local agencies with support from RTD.

Phasing. The table below provides a qualitative assessment of each corridor’s readiness for BRT deployment. Corridors identified for Phase 1 and 2 are those currently being evaluated in the Tier 4 evaluation. Corridors identified for Phase 3 were assigned to this phase largely on factors such as ease of implementation due to existing right-of-way, community support, and transit supportive policies. Phase 4 corridors have the most work to be completed prior to implementation of BRT, and as such are slated for Phase 4. RTD supports BRT investment throughout the District and is open to moving a corridor to an earlier phase when:

- High-priority, high-frequency bus service is expected to meet RTD’s minimum service standards
- A corridor study and/or BRT evaluation is complete
- Changes in land use warrant rapid transit

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Corridor Readiness for BRT Deployment</th>
<th>Potential FTA Eligible Corridors</th>
<th>Other Potential Rapid Transit Corridors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corridor Study/ Evaluation Complete</td>
<td>Existing Transit Supportive Land Use</td>
<td>Existing Partnerships/ Coordination</td>
</tr>
<tr>
<td>38th/Park Ave</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Alameda Ave</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Broadway/Lincoln</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Federal Blvd</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Havana St</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Quebec</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>North I-25</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Speer/Leetsdale</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>6th Ave</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>120th Ave</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Arapahoe Rd</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>S Boulder Rd</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Colorado Blvd</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Evans Ave</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Monaco</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>North E-470</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SH 7</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SH 42</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>South E-470</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SH 2</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Sheridan Blvd</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>University Blvd</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

*Phase 1 & 2 corridors are currently being evaluated in the Tier 4 Regional BRT Feasibility Analysis. Corridors that make it through Tier 4 will be the Phase 1 corridors, the remaining corridors will become Phase 2.

Note: Corridors are not prioritized within the phases.
NOTE: SH 119 between the cities of Boulder and Longmont and Colfax Avenue are two corridors that are currently planned for BRT service. Both are included in DRCOG’s 2040 Metro Vision Regional Transportation Plan and as such have not been included in this project evaluation. Both are also currently undergoing environmental review and preliminary engineering that will in part better define project costs. Accordingly, neither of these BRT projects is currently fully-funded. RTD has committed $30 million to the construction of SH 119 BRT and Denver’s bond program includes $55 million for Colfax BRT construction.
Candidate Corridor Identification

The initial step in identifying potential BRT corridors was to identify a set of candidate corridors to be included in the evaluation. The intent was to be as inclusive as possible, and as such all existing and planned roadways in the Denver Metro region were included.

Evaluation Metrics

• Community identified BRT corridors
• Existing RTD bus routes with >1 million annual boardings
• Roads with >40,000 vehicles per day in 2040
Tier 1 evaluated each segment of all Candidate Corridors using seven different metrics to identify segments with the highest ridership potential.

**Tier 1 BRT Evaluation Outcomes**

**Evaluation Metrics**
- Population + job densities greater than 17 per acre in 2040 (½ mile buffer)
- Highest 25% population per corridor mile in 2040 (½ mile buffer)
- Highest 25% population growth per corridor mile 2020 to 2040
- Highest 25% employment per corridor mile in 2040 (½ mile buffer)
- Highest employment growth per corridor mile 2020 to 2040
- Potential to serve regional destination or transit connections
- Presence of managed lane facility
Tier 1 BRT Results

Tier 1 route segments that scored high in any of the seven categories evaluated were considered to have potential for high BRT ridership. Each segment was reviewed, compared to RTD’s existing route network, major origin/destination patterns, and proximity to RTD’s existing and planned rapid transit network to develop a set of BRT corridors for evaluation in Tier 2. The figure below illustrates the 29 BRT routes developed for further evaluation.
Tier 2 evaluated the 29 Corridors developed in Tier 1 to determine which corridors have the most potential for travel time and reliability improvement. These are the locations where congestion is precluding competitive transit travel times and improving the travel time has the opportunity to capture higher ridership. Tier 2 evaluation relied heavily on metrics provided by RTD’s regional travel model.

**Evaluation Metrics**
- BRT boardings per revenue mile
- BRT passenger-miles traveled per revenue mile
- Percent of corridor that is severely congested

*Other Metrics considered but not included in the analysis include:*
- Boardings
- New system-wide boardings
- Line load compared to congested roadway

**NOTE:** Dot size relates to BRT Passenger-Miles Traveled (PMT) per Revenue-Mile Quartiles
Tier 2 BRT Results
TIER 3 Identify Viability of Capital Investment

The two primary evaluation criteria for Tier 3 were community support for BRT and the potential physical viability of a corridor for BRT investment.

Evaluation Metrics

Community Support

Community support for transit was informed in two ways –inventorying transit supportive local policies/plans and identifying community support for BRT through an online survey distributed to local agencies impacted by the potential BRT routes.

<table>
<thead>
<tr>
<th>DOES YOUR COMMUNITY HAVE AN:</th>
<th>WHAT IS YOUR COMMUNITY’S LIKELIHOOD OF:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adopted Complete Streets Plans, Policies, and/or Guidelines</td>
<td></td>
</tr>
<tr>
<td>Arvada</td>
<td>✔️</td>
</tr>
<tr>
<td>Aurora</td>
<td>✔️</td>
</tr>
<tr>
<td>Broomfield</td>
<td>✔️</td>
</tr>
<tr>
<td>Centennial</td>
<td>✔️</td>
</tr>
<tr>
<td>Denver</td>
<td>✔️</td>
</tr>
<tr>
<td>Greenwood Village</td>
<td>✔️</td>
</tr>
<tr>
<td>Mountain View</td>
<td>✔️</td>
</tr>
<tr>
<td>Northglenn</td>
<td>✔️</td>
</tr>
<tr>
<td>Sheridan</td>
<td>✔️</td>
</tr>
<tr>
<td>Westminster</td>
<td>✔️</td>
</tr>
<tr>
<td>Wheat Ridge</td>
<td>✔️</td>
</tr>
<tr>
<td>Adams County</td>
<td>✔️</td>
</tr>
</tbody>
</table>

Source: RTD Regional BRT Local Agency Community Support Survey, February 2019
Survey responses not received from Cherry Hills Village, Edgewater, Englewood, Federal Heights, Glendale, Lakewood, Littleton, Thornton, Arapahoe County, Douglas County, Jefferson County

Physical Viability

An extensive data collection effort informed the potential of repurposing existing ROW and/or acquiring ROW for BRT along each of the 14 corridors. Data collected to inform the analysis included:

- Roadway characteristics (existing ROW, drive lanes, turn lanes, medians, parking, bike lanes, sidewalks, access control)
- Improvements identified in the Regional Transportation Plan
- Current and 2040 traffic volumes
Tier 3 BRT Results

Routes moving to Tier 4 for further evaluation include:

- North I-25
- Federal Blvd
- Park Ave/ 38th Ave
- Speer/Leetsdale/Parker
- Broadway/Lincoln
- Quebec St
- Alameda Ave
- Havana St/ Hampden Ave
TIER 4

Final Evaluation

The Tier 4 evaluation identifies the corridors with the highest potential for near-term BRT deployment.

Evaluation Metrics

- Suitability for dedicated transit facilities
- Connectivity to multimodal facilities
- Local financial support
- Neighborhood buy-in
- Support economic development goals
- Travel time savings
- Operating cost
- Ridership
- Annualized cost
- Vulnerable and protected populations served
- Potential to address safety concerns
Tier 4 BRT Results

In Development...
Contacts

Brian Welch, AICP
Senior Manager, Planning Technical Services
Regional Transportation District
brian.welch@rtd-Denver.com
(303) 299-2404

Holly Buck, PE, PTP
Project Manager
Felsburg Holt & Ullevig
holly.buck@fhueng.com
(303) 721-1440