North Denver CIRCULATOR STUDY
Prepared By:

Nelson\Nygaard Consulting Associates

For:

RiNo Art District

With thanks to all who contributed their time and energy to this study, including community stakeholders, RTD, the City and County of Denver, and RiNo board members.

August 2021
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CHAPTER 1

ABOUT THE STUDY
In 2018, the RiNo Art District contracted with transportation planning firm Nelson\Nygaard to conduct a comprehensive mobility study that examined parking supply and policy, multimodal infrastructure, and travel patterns within the district. The study included robust community participation and culminated in an action plan that recommended a transit circulator to improve mobility in the district.

In 2020, the RiNo Art District commissioned Nelson\Nygaard to carry out a deeper dive into the market demand and community interest for a transit circulator. This report summarizes the key findings, community feedback, and recommendations of the North Denver Circulator Study.
The North Denver Circulator Study kicked off in September 2020 with RiNo, City of Denver, and RTD representatives convening to discuss key opportunities, establish project goals, and identify key stakeholders.

The first phase of the study included a comprehensive analysis of existing market and transportation conditions within the study area. This phase also included a review of transit circulators successfully implemented in Denver and other cities.

The second phase of the study focused on the development of route alternatives based on phase one findings. Several stakeholder meetings were held to better understand community needs and preferences. After multiple iterations of refining route alignments, a preferred alternative emerged, consisting of two routes.

The final phase of the study focused on identifying circulator stop locations, potential partners, and implementation steps.

Figure 1: Study Timeline
CHAPTER 2
EXISTING CONDITIONS
EXISTING CONDITIONS

LAND USE

The study area has a diverse and evolving combination of land uses. Many warehouses have been repurposed into studios, breweries, offices, and residences. Despite such adaptive reuses, transportation infrastructure such as highways, railyards, and mega parking lots remain significant barriers for residents, employees, and visitors of the study area.
EXISTING CONDITIONS

POPULATION

The study area continues to transform and densify with rapid condo and apartment development, most prominently along Brighton Boulevard, Broadway, Blake Street, Walnut Street, and Larimer Street.

Ongoing and planned residential projects in the study area will further increase population density and the need for frequent transit options.
EXISTING CONDITIONS

EMPLOYMENT

Employment density within the study area is highest along Blake, Walnut, and Larimer Streets.

Major employers in the study area include RTD and Pepsi Bottling Company.

National Western Center is expected to generate significant new employment over the next several years at the Triangle, a 65-acre redevelopment project between the South Platte River and RTD’s 48th & Brighton N Line Station.
EXISTING CONDITIONS

COMMUNITY DESTINATIONS

A variety of local and regional destinations are scattered across the study area.

Destinations range from community facilities, such as libraries and parks, to food halls, museums, music venues, and major event centers.
One of the driving forces behind the popularity and rapid redevelopment of the RiNo area has been its restaurants and breweries, the highest concentration of which are located along Larimer Street between 26th and 34th Streets.
EXISTING CONDITIONS

TRANSIT

RTD bus and rail lines traverse the study area, providing expansive coverage yet infrequent service levels on several corridors.

Larimer Street is served by Route 44, which runs every 60 minutes.

Brighton Boulevard is served by Route 48 which runs every 30 minutes.
In 2018, the City of Denver began allowing dockless e-scooters and bikes (collectively referred to as micromobility) to operate in the public right-of-way. Five companies are licensed to operate micromobility programs. E-scooters vastly outnumber dockless bikes.

Micromobility usage was popular in the study area prior to COVID-19, with a significant trip patterns between Five Points and the Central Business District.
EXISTING CONDITIONS

SIDEWALKS

The study area is generally walkable with sidewalks on most street segments. However, many mobility challenges exist, including sidewalk gaps, missing crosswalks, and infrastructure barriers.
EXISTING CONDITIONS

BIKE FACILITIES

The study area has seen several bicycle infrastructure improvements in recent years, including protected bicycle lanes along on Brighton Boulevard between 29th and 44th Streets, as well as the South Platte River multi-use trail.
CHAPTER 3
BEST PRACTICES
BEST PRACTICES
DOWNTOWN AND DISTRICT TRANSIT CIRCULATORS

Transit circulators implemented in six different cities were reviewed to gain an understanding of their design characteristics, service profiles, ridership, funding, and management.

The following transit circulators were reviewed:

- **MallRide**
  - Denver, CO
  - Runs every 2-15 minutes

- **CBUS Circulator**
  - Columbus, OH
  - Runs every 10-20 minutes

- **The Hop**
  - Boulder, CO
  - Runs every 10-20 minutes

- **Cityline Shuttle**
  - West Hollywood, CA
  - Runs every 30 minutes

- **DC Circulator**
  - Washington, D.C.
  - Runs every 10 minutes

- **Greenlink**
  - Houston, TX
  - Runs every 7-10 minutes
After reviewing each circulator, several keys to success and potential pitfalls were identified. The review revealed that successful circulators possessed the following design characteristics:

- **Serve all type of users**
- **Connect multiple districts**
- **Operate as direct as possible**
- **Serve a variety of destinations**
- **Offer convenient and accessible stops**
- **Provide frequent and fast service**
- **Provide a last-mile connection from transit and/or affordable parking**
User experience is also important to the success of a transit circulator.

Cityline Shuttle in West Hollywood is known for its unique vehicles, which are distinctly wrapped with artwork created by different artists. The City of West Hollywood also partnered with the makers of the popular transit app NextBus to provide riders with real-time arrival information. The real-time data also allows the City to track on-time performance for Cityline Shuttle.

The DC Circulator has a characteristic brand, consisting of easily identifiable vehicles and easy-to-understand routes. Offering rides for $1.00, routes consistently run every 10 minutes, seven-days a week. The DC Circulator also offers extended service to major sporting events.

The CBUS Circulator in Columbus features several amenities that serve to draw and maintain ridership. All CBUS operators are required to complete Certified Tourism Ambassador training. Buses are wrapped with a “route map” that lists all destinations served.
The first steps of the route development process focused on comprehending underlying conditions of the study area, identifying circulator best practices, and establishing a design framework.

This was followed by stakeholder meetings in December 2020 to obtain input on community priorities and preferences. Initial route concepts were shared with stakeholders in March 2021.

The final steps of the process consisted of finalizing route and stops locations, refining cost estimates, identifying potential funding partners, and detailing implementation steps.
ROUTE DEVELOPMENT
INITIAL STAKEHOLDER INPUT

Two stakeholder meetings were held on December 8, 2020. Meeting attendees included residents, employees, business owners, and developers of the study area.

After a brief presentation by the project team, stakeholders participated in an interactive online poll. The following charts depict results for select questions.

In addition to the interactive online poll, the project team facilitated a discussion in which stakeholders detailed transportation challenges and important destinations.
ROUTE DEVELOPMENT

DESIGN GUIDELINES

After conducting initial stakeholder outreach, the project team established the following service design guidelines prior to developing route concepts:

• Focus service on Larimer Street and Brighton Boulevard corridors
• Improve connectivity between Globeville, Elyria-Swansea and Five Points
• Connect with RTD transit services at Union Station and 38th & Blake
• Operate as direct as possible to ensure frequent and reliable service
• Use RTD bus stops whenever possible to minimize capital costs
Incorporating existing conditions findings, best practices, stakeholder input and service design guidelines, the following seven route concepts were developed and evaluated.
The project team developed an evaluation criteria to measure the benefits and costs of the seven route options. Each route option was scored high, medium, or low based on the criteria. An hourly rate of $80 was used to estimate annual operating costs. This estimate also assumed 10-minute frequencies during most of the day and 20-minute frequencies during off-peak times.

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address mobility challenges</td>
<td>Does the route overcome barriers to safe and affordable mobility in North Denver?</td>
</tr>
<tr>
<td>Complement RTD network</td>
<td>Does the route provide connection opportunities with RTD bus routes?</td>
</tr>
<tr>
<td>Improve access to communities</td>
<td>How far into neighborhoods does the route go?</td>
</tr>
<tr>
<td>Potential partnerships</td>
<td>Will the route design persuade entities to help fund the service?</td>
</tr>
<tr>
<td>Ridership potential</td>
<td>Will the route generate sufficient usage to warrant investment?</td>
</tr>
<tr>
<td>Annual operating cost</td>
<td>Will the route be financially feasible to implement and sustain?</td>
</tr>
</tbody>
</table>
# ALIGNMENT OPTION A

## LARIMER

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address mobility challenges</td>
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<td>Complement RTD network</td>
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<td>Improve community access</td>
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<td>Potential partnerships</td>
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<tr>
<td>Ridership potential</td>
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<tr>
<td>Annual operating cost*</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
</table>

10 peak
20 off-peak

North Denver Circulator Study 27
## ALIGNMENT OPTION B
### BRIGHTON

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<th>Objectives</th>
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</tr>
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</table>

- **Score Key**: ⬤ - High, ⬤ - Medium, ⬤ - Low

### Potential Partnerships
- **Ridership potential**: 10 peak, 20 off-peak

---

North Denver Circulator Study 28
## ALIGNMENT OPTION C

### BRANCH

<table>
<thead>
<tr>
<th>Objectives</th>
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<tbody>
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<td>Address mobility challenges</td>
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<td>Annual operating cost*</td>
<td>$2.0M</td>
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</table>

*Score Levels:
- High: 🏃️ ⛴️
- Medium: 🏡
- Low: 🧐

---

North Denver Circulator Study 29
### ALIGNMENT OPTION D

**LOOP**

<table>
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<td>Improve community access</td>
<td>🏡 🏡</td>
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<tr>
<td>Potential partnerships</td>
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<tr>
<td>Ridership potential</td>
<td>📚 📚</td>
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<td>Annual operating cost*</td>
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*Score levels: High, Medium, Low*
## ALIGNMENT OPTION E

### INTERSECT

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<td>Improve community access</td>
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<td>👤握手</td>
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<td>Ridership potential</td>
<td>📚</td>
</tr>
<tr>
<td>Annual operating cost*</td>
<td>$</td>
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</table>

### Map

- 10 peak 20 off-peak

### Intersect

- High
- Medium
- Low

North Denver Circulator Study 31
# ALIGNMENT OPTION F

**LOOP + BRIGHTON LONG**

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<td>Improve community access</td>
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<td>Potential partnerships</td>
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<td>Ridership potential</td>
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</tr>
<tr>
<td>Annual operating cost*</td>
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</table>

*High, Medium, Low scoring system*

## Ridership Potential

- **10 peak 20 off-peak**

---

North Denver Circulator Study 32
# ALIGNMENT OPTION G

**LOOP + BRIGHTON SHORT**

<table>
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<td>Complement RTD network</td>
<td>🚌</td>
</tr>
<tr>
<td>Improve community access</td>
<td>🏡</td>
</tr>
<tr>
<td>Potential partnerships</td>
<td>🙌</td>
</tr>
<tr>
<td>Ridership potential</td>
<td>📱</td>
</tr>
<tr>
<td>Annual operating cost*</td>
<td>$</td>
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</table>

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*Score ratings: High, Medium, Low*
Each route concept was scored high, medium, or low based on the six objectives.

A fully allocated hourly rate of $80 was used to estimate annual costs. This estimate also assumed 10-minute frequencies during most time periods and 20-minute frequencies during off-peak time periods such as weekend mornings.

<table>
<thead>
<tr>
<th>Objectives</th>
<th>A Larimer</th>
<th>B Brighton</th>
<th>C Branch</th>
<th>D Loop</th>
<th>E Intersect</th>
<th>F Loop + B Long</th>
<th>G Loop + B Short</th>
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<td>Address mobility challenges</td>
<td>★★★★★</td>
<td>★★★★★</td>
<td>★★★★★</td>
<td>★★★★★</td>
<td>★★★★★</td>
<td>★★★★★</td>
<td>★★★★★</td>
</tr>
<tr>
<td>Complement RTD network</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★</td>
<td>★★★★★</td>
<td>★★★★★</td>
<td>★★★★★</td>
<td>★★★★★</td>
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<tr>
<td>Improve community access</td>
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<td>★★★★★</td>
<td>★★★★★</td>
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<td>★★★★★</td>
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<td>★★★★★</td>
<td>★★★★★</td>
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<td>2.9M</td>
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</table>

★ High
★★ Medium
★★★ Low
The initial route alignments were presented to stakeholders on March 4, 2021. Stakeholders selected their preferred route alignment via interactive polling. Stakeholders also responded to an open-ended question of which potential circulator destinations are most important to serve. This exercise provided the project team with valuable feedback for finalizing routes and stops.
Alignment Option G was favored by most stakeholders and was therefore used as the base for the final alignment.

The project team also incorporated the following stakeholder and board member feedback into the final recommended route alignments:

• Provide bi-directional connectivity between the Globeville and Elyria-Swansea neighborhoods.

• Incorporate street closures along Larimer Street between 27th and 30th, implemented during summer 2020 and expected to continue beyond the COVID-19 pandemic.

• Ensure seamless connectivity between both routes.

• Design routes in a manner that allows future extension to CSU Spur Campus.
The proposed Larimer route would run between Union Station and National Western Center every 10-15 minutes. The route includes a deviation around the blocks of Larimer Street currently closed for outdoor dining (26th - 30th Streets).

The proposed Brighton route would run between the Denver Central Market and Globeville Landing Park every 15 minutes.

Each proposed route would have several intermediate stops in both inbound and outbound directions.
ROUTE DEVELOPMENT
SECOND ROUND OF STAKEHOLDER INPUT

Following the findings and feedback received from the first round of stakeholder input, the project team provided a recommended route alignment that was shown on the previous page. These route alignments were shared with the stakeholder groups for their feedback.

From their comments, these are the top findings that were inferred by the project team:

• Two-way travel between Elyria-Swansea and Globeville is important.

• The groups are interested in a direct connection to 38th and Blake Station from Larimer St and Brighton Blvd.

• Lastly, there also needs to be a direct connection to Union Station from Larimer St and Brighton Blvd.
ROUTE DEVELOPMENT
BRIGHTON ALIGNMENT ALTERNATIVES

Following the second stakeholder consultation, the project team explored two potential route alignments for Brighton route. One that was a direct connection to 38th and Blake Station, whereas the second route provided a connection to the pedestrian bridge on Wazee St instead.

Both the alignments and their corresponding scorecards are shown on the following pages. As seen there, the first alternative would be significantly costlier to operate. Additionally, in the first alternative, the loop at 38th and Blake Station would add 10 more minutes to the total route time, since it will require the vehicle to take a deviation in order to make that turn.

Whereas the second alternative will save those additional minutes, and still provide a connection to the station. The walk from the pedestrian bridge to the station is only 5 minutes for the rider.

For these reasons, the second alternative is recommended by the project team.
# ROUTE DEVELOPMENT

**FIRST ALTERNATIVE FOR BRIGTON ROUTE ALIGNMENT**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address mobility challenges</td>
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</tr>
<tr>
<td>Complement RTD network</td>
<td>🚌✅✅✅</td>
</tr>
<tr>
<td>Improve community access</td>
<td>🏡✅✅✅</td>
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<tr>
<td>Potential partnerships</td>
<td>👤✅✅✅</td>
</tr>
<tr>
<td>Ridership potential</td>
<td>💼✅✅✅</td>
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<tr>
<td>Annual operating cost*</td>
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</table>

<table>
<thead>
<tr>
<th>High</th>
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*Final alignment to be determined after Larimer St road closures get finalized.*
## ROUTE DEVELOPMENT
### SECOND ALTERNATIVE FOR BRIGTON ROUTE ALIGNMENT

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Score</th>
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<tr>
<td>Address mobility challenges</td>
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<tr>
<td>Complement RTD network</td>
<td>✅✅✅</td>
</tr>
<tr>
<td>Improve community access</td>
<td>✅✅✅</td>
</tr>
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<td>Potential partnerships</td>
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<tr>
<td>Annual operating cost*</td>
<td>$3.8M</td>
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</tbody>
</table>

- **High**
- **Medium**
- **Low**

---

ROUTE DEVELOPMENT
SECOND ALTERNATIVE FOR BRIGTON ROUTE ALIGNMENT

- **Larimer Route**
- **Brighton Route**
- **Larimer Route Stops**
- **Brighton Route Stops**

**High**
- **Medium**
- **Low**

**Final alignment to be determined after Larimer St road closures get finalized.**

![Map of route development](image-url)
CHAPTER 5
RECOMMENDATIONS
Two circulator routes are recommended to improve mobility and connectivity between RiNo and adjacent districts. The Larimer route would run between Union Station to Denver Central Market, further connecting north to Globeville and Elyria-Swansea every 15 minutes. The route includes a deviation around the blocks of Larimer St currently closed for outdoor dining (26th St-30th St).

The Brighton route would run between the Union Station and Globeville Landing Park via The Mission Ballroom every 15 minutes. The route includes a stop at the pedestrian bridge to 38th & Blake station.

Each proposed route would have several intermediate stops in both inbound and outbound directions.
RECOMMENDATIONS

LARIMER ROUTE

Stops: 16
Route Length: 7.8 miles
Round Trip Time: 60 minutes
Frequency: 15 minutes
Vehicles: 4

<table>
<thead>
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<th>ID</th>
<th>Northbound Stops</th>
<th>ID</th>
<th>Southbound Stops</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>18th St &amp; Wazee St*</td>
<td>9</td>
<td>47th St &amp; Baldwin Ct</td>
</tr>
<tr>
<td>2</td>
<td>Walnut St &amp; 27th St</td>
<td>10</td>
<td>Washington St &amp; 47th St</td>
</tr>
<tr>
<td>3</td>
<td>Larimer St &amp; 30th St</td>
<td>11</td>
<td>Washington St &amp; 45th Ave*</td>
</tr>
<tr>
<td>4</td>
<td>Larimer St &amp; 33rd St</td>
<td>12</td>
<td>38th St &amp; Brighton Blvd*</td>
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<tr>
<td>5</td>
<td>Walnut St &amp; 38th St</td>
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<td>Walnut St &amp; 38th St*</td>
</tr>
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<td>6</td>
<td>38th St &amp; Brighton Blvd*</td>
<td>14</td>
<td>Larimer St &amp; 33rd St</td>
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<td>7</td>
<td>Washington St &amp; 45th Ave*</td>
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<td>Larimer St &amp; 30th St</td>
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<tr>
<td>8</td>
<td>Washington St &amp; 47th St</td>
<td>16</td>
<td>Larimer St &amp; 27th St</td>
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* Existing RTD Stops, no additional infrastructure required.
RECOMMENDATIONS

BRIGHTON ROUTE

Stops: 10
Route Length: 6.4 miles
Round Trip Time: 45 minutes
Frequency: 15 minutes
Vehicles: 3

<table>
<thead>
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<th>ID</th>
<th>Northbound Stops</th>
<th>ID</th>
<th>Southbound Stops</th>
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</thead>
<tbody>
<tr>
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<td>18th St &amp; Wazee St*</td>
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<td>Arkins Ct &amp; McFarland Dr @ Globeville</td>
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<td></td>
<td></td>
<td></td>
<td>Landing Park</td>
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<td>Brighton Blvd &amp; 31st St*</td>
<td>23</td>
<td>Brighton Blvd &amp; 38th St*</td>
</tr>
<tr>
<td>19</td>
<td>Pedestrian Bridge on Wazee St</td>
<td>24</td>
<td>Pedestrian Bridge on Wazee St</td>
</tr>
<tr>
<td>20</td>
<td>Brighton Blvd &amp; 38th St*</td>
<td>25</td>
<td>Brighton Blvd &amp; 35th St*</td>
</tr>
<tr>
<td>21</td>
<td>Brighton Blvd &amp; 43rd St* @ The Mission Ballroom</td>
<td>26</td>
<td>Brighton Blvd &amp; 31st St*</td>
</tr>
</tbody>
</table>

*Existing RTD Stops, no additional infrastructure required.*
RECOMMENDATIONS

RIDER PROFILES

In addition to incorporating stakeholder’s feedback and comments into the final alignment, the project team also considered major rider groups and their riding patterns. This process reiterated the recommended alignment’s potential user groups and their routes.

As part of this exercise, the team looked at the following rider profiles:

• Out of town tourists
• Local visitors who are traveling in groups
• Locally based families who are visiting the area
• People who work on Brighton Blvd and/or are commuting to Brighton
• People who live on Brighton Blvd and are out for grocery shopping
• Residents of Elyria-Swansea, Globleville, or Cole
• Residents of Five Points and/or students at CSU
• Visitors at National Western
• People traveling to/from the airport
**RECOMMENDATIONS**

**RIDER PROFILES**

Out of Town Tourists

Local Visitors: Groups

Local Visitors: Family

Brighton Office Worker/Commuter

Brighton Resident or Grocery Shopper
RECOMMENDATIONS
RIDER PROFILES

Elyria-Swansea-Globeville-Cole Residents

Five Points Resident, Student at CSU

National Western Visitors

Going to and coming from Airport
RECOMMENDATIONS
HOURS OF SERVICE AND FREQUENCIES

Recommended hours of operation and frequencies (in minutes) are depicted in the following chart. Service levels can be adjusted by day and time period, based on demand, and have the flexibility to increase during major events.

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday - Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00 AM</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>12:00 AM</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Larimer Route
Brighton Route
Operating costs are based on service hours and assume that RiNo will contract with a private transportation provider that owns, operates, and maintains the circulator vehicles. A rate of $80 per service hour was used to estimate annual operating costs, detailed in the following table. The hourly rate covers vehicle leases, operation and supervision, fuel, maintenance, insurance, etc.

<table>
<thead>
<tr>
<th>Route Option</th>
<th>Day</th>
<th>Annual Hours</th>
<th>Annual Operating Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larimer Route</td>
<td>Monday-Thursday</td>
<td>12,250</td>
<td>$980,000</td>
</tr>
<tr>
<td></td>
<td>Friday</td>
<td>4,500</td>
<td>$360,000</td>
</tr>
<tr>
<td></td>
<td>Saturday</td>
<td>3,000</td>
<td>$240,000</td>
</tr>
<tr>
<td></td>
<td>Sunday</td>
<td>2,500</td>
<td>$200,000</td>
</tr>
<tr>
<td></td>
<td>Larimer Route Total</td>
<td>22,250</td>
<td>1,780,000</td>
</tr>
<tr>
<td>Brighton Route</td>
<td>Monday-Thursday</td>
<td>9,000</td>
<td>$720,000</td>
</tr>
<tr>
<td></td>
<td>Friday</td>
<td>2,500</td>
<td>$200,000</td>
</tr>
<tr>
<td></td>
<td>Saturday</td>
<td>2,250</td>
<td>$180,000</td>
</tr>
<tr>
<td></td>
<td>Sunday</td>
<td>1,750</td>
<td>$140,000</td>
</tr>
<tr>
<td></td>
<td>Brighton Route Total</td>
<td>15,500</td>
<td>1,240,000</td>
</tr>
<tr>
<td>Both Routes</td>
<td>Total</td>
<td>37,750</td>
<td>$3,020,000</td>
</tr>
</tbody>
</table>
RECOMMENDATIONS

VEHICLES AND CONTRACTING

Light-duty shuttle buses are the recommended vehicle type for both circulator routes. These vehicles have adequate capacity (up to 14 passengers) for are typically outfitted with wheelchair ramps or lifts.

It is recommended that RiNo contracts with a private transportation provider, such as an airport shuttle company, to operate the service initially. This operating model would allow the circulator service to be implemented more quickly than contracting with RTD and waiting for the agency to purchase new vehicles.

The private transportation provider would own and maintain the vehicles, as well as train and supervise the drivers. RiNo would need to ensure that the contractor meets all state and federal safety requirements.
RECOMMENDATIONS

CAPITAL COSTS

RiNo should coordinate with RTD and City of Denver to use existing RTD bus stops whenever possible to minimize traffic impacts and capital costs. Still, several proposed circulator stops will require new signage to ensure a positive experience for riders. The cost of installing a single bus stop ranges from $250 for pole and signage to upwards of $15,000 for a shelter with lighting. As a result, RiNo should prioritize which stops, if any, warrant the investment of a shelter. Other capital startup costs are negligible.

<table>
<thead>
<tr>
<th>Upgrade or Action</th>
<th>Larimer Route</th>
<th>Brighton Route</th>
<th>Total Upgrades or Actions</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add route sticker to signage</td>
<td>6</td>
<td>8</td>
<td>14</td>
<td>$10</td>
<td>$140</td>
</tr>
<tr>
<td>Install new signage</td>
<td>10</td>
<td>3</td>
<td>13</td>
<td>$250</td>
<td>$3,250</td>
</tr>
<tr>
<td>Install Shelter</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>$15,000</td>
<td>TBD</td>
</tr>
<tr>
<td>Install or Relocate “No Parking” Signage</td>
<td>9</td>
<td>2</td>
<td>11</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Install concrete landing pad</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>$2,500</td>
<td>$7,500</td>
</tr>
</tbody>
</table>
The most critical element of a circulator is funding. Potential public and private funding partners and their type of funding contribution are listed in the table below. A staff position dedicated to the circulator system would be needed to develop partnerships, secure funding agreements, maintain relationships, and administer the operating contract with a transportation provider.

<table>
<thead>
<tr>
<th>Potential Funding Partner</th>
<th>Larimer Route</th>
<th>Brighton Route</th>
<th>Funding Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>RiNo Business Improvement District (BID)</td>
<td>○</td>
<td>○</td>
<td>Revenue allocation</td>
</tr>
<tr>
<td>RiNo General Improvement District (GID)</td>
<td>○</td>
<td>○</td>
<td>Revenue allocation</td>
</tr>
<tr>
<td>Regional Transportation District (RTD)</td>
<td>○</td>
<td>○</td>
<td>Revenue allocation</td>
</tr>
<tr>
<td>Downtown Denver Partnership</td>
<td>○</td>
<td></td>
<td>Revenue allocation</td>
</tr>
<tr>
<td>National Western Center</td>
<td>○</td>
<td></td>
<td>Annual contribution</td>
</tr>
<tr>
<td>Colorado State University (Spur Campus)</td>
<td>○</td>
<td></td>
<td>Annual contribution</td>
</tr>
<tr>
<td>City of Denver</td>
<td>○</td>
<td></td>
<td>Annual contribution</td>
</tr>
<tr>
<td>Denver Regional Council of Governments</td>
<td>○</td>
<td>○</td>
<td>TIP Funding</td>
</tr>
<tr>
<td>Event Management Companies</td>
<td>○</td>
<td>○</td>
<td>Ticket sales service fee</td>
</tr>
<tr>
<td>Neighborhood Associations</td>
<td>○</td>
<td>○</td>
<td>In-Kind Marketing</td>
</tr>
</tbody>
</table>
RECOMMENDATIONS

IMPLEMENTATION TIMELINE

Successful implementation of a new circulator service requires several key steps. The following implementation timelines summarizes high-level action items only. It is recommended that RiNo assign a staff member to manage implementation, which is expected to span 6-12 months.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Duration</th>
<th>Summary of High-Level Actions</th>
</tr>
</thead>
</table>
| 1     | 1-2 months | RiNo selects a preferred alignment and operating plan.  
|       |          | • Route(s)  
|       |          | • Stops  
|       |          | • Days of service  
|       |          | • Hours of operation  
|       |          | • Frequency of service  
|       |          | • Vehicle type |
| 2     | 2-4 months | RiNo builds a team of funding partners and develops a Memorandum of Understanding. |
| 3     | 3-6 months | RiNo contracts with a private transportation provider and prepares for implementation.  
|       |          | • Secure vehicles  
|       |          | • Finalize route schedules  
|       |          | • Develop branding and marketing materials  
|       |          | • Coordinate with City of Denver and RTD on parking changes and bus stop sharing  
|       |          | • Begin comprehensive marketing campaign |
| 4     | -        | RiNo implements new circulator service. |
APPENDIX A

RECOMMENDED STOPS
STOP LOCATION
LARIMER ROUTE

Stop ID 1 | Northbound
Stop Location: 18\textsuperscript{th} St & Wazee St
Actions: None - Existing RTD MetroRide stop
STOP LOCATION
LARIMER ROUTE

Stop ID 2 | Northbound
Stop Location: Walnut St & 27th St
Actions: Extend no parking zone 50’; close 3 on-street parking spaces
STOP LOCATION
LARIMER ROUTE

Stop ID 3 | Northbound
Stop Location: Larimer St & 30th St
Actions: Extend no parking zone 50’; close 3 on-street parking spaces
STOP LOCATION
LARIMER ROUTE

Stop ID 4 | Northbound
Stop Location: Larimer St & 33rd St
Actions: Establish 50’ no parking zone south of loading zone
STOP LOCATION

LARIMER ROUTE

Stop ID 5 | Northbound

Stop Location: Walnut St & 38th St

Actions: Establish 50’ no parking zone; add 4’x8’ concrete pad between curb and sidewalk
STOP LOCATION
LARIMER ROUTE

Stop ID 6 | Northbound
Stop Location: 38th St & Brighton Blvd
Actions: None - Existing RTD bus stop
STOP LOCATION
LARIMER ROUTE

Stop ID 7 | Northbound
Stop Location: Washington St & 45th Ave
Actions: None - Existing RTD bus stop
STOP LOCATION

LARIMER ROUTE

Stop ID 8 | Northbound
Stop Location: Washington St & 47th St
Actions: None
STOP LOCATION
LARIMER ROUTE

Stop ID 9 | Southbound

Stop Location: 47th St & Baldwin Ct - Events Center at National Western Center
Actions: Extend no parking zone 50’
STOP LOCATION
LARIMER ROUTE

Stop ID 10 | Southbound
Stop Location: Washington St & 47th St
Actions: None
STOP LOCATION
LARIMER ROUTE

Stop ID 11 | Southbound
Stop Location: Washington St & 45th Ave
Actions: None - Existing RTD bus stop
STOP LOCATION
LARIMER ROUTE

Stop ID 12 | Southbound
Stop Location: 38th St & Brighton Blvd
Actions: None - Existing RTD bus stop
STOP LOCATION

LARIMER ROUTE

Stop ID 13 | Southbound

Stop Location: Walnut St & 38th St
Actions: None - Existing RTD bus stop
STOP LOCATION
LARIMER ROUTE

Stop ID 14 | Southbound
Stop Location: Larimer St & 33rd St
Actions: Extend no parking zone 40'; close 2 on-street parking spaces
STOP LOCATION
LARIMER ROUTE

Stop ID 15 | Southbound
Stop Location: Larimer St & 30th St
Actions: Extend no parking zone 40’; close 2 on-street parking spaces
STOP LOCATION
LARIMER ROUTE

Stop ID 16 | Southbound

Stop Location: Larimer St & 27th St

Actions: Extend no parking zone; close 1 carshare parking space and 2 general parking spaces
STOP LOCATION
BRIGHTON ROUTE

Stop ID 17 | Northbound

Stop Location: 18th St & Wazee St
Actions: None - Existing RTD MetroRide stop
STOP LOCATION
BRIGHTON ROUTE

Stop ID 18 | Northbound
Stop Location: Brighton Blvd & 31st St
Actions: None - Existing RTD bus stop
STOP LOCATION

BRIGHTON ROUTE

Stop ID 19 | Northbound

Stop Location: Pedestrian Bridge Entrance on Wazee St

Actions: Install bus stop signage
STOP LOCATION

BRIGHTON ROUTE

Stop ID 20 | Northbound

Stop Location: Brighton Blvd & 38th St
Actions: None - Existing RTD bus stop
STOP LOCATION

BRIGHTON ROUTE

Stop ID 21 | Northbound

Stop Location: Brighton Blvd & 43rd St
Actions: None - Existing RTD bus stop
Stop ID 22 | Southbound

Stop Location: Arkins Ct & McFarland Dr - Globeville Landing Park
Actions: Extend no parking zone 130’; add 40’x4’ concrete pad between curb and sidewalk
STOP LOCATION
BRIGHTON ROUTE

Stop ID 23 | Southbound

Stop Location: Brighton Blvd & 38th St
Actions: None - Existing RTD bus stop
STOP LOCATION

BRIGHTON ROUTE

Stop ID 24 | Southbound
Stop Location: Pedestrian Bridge Entrance on Wazee St
Actions: Install bus stop signage
STOP LOCATION
BRIGHTON ROUTE

Stop ID 25 | Southbound
Stop Location: Brighton Blvd & 35th St
Actions: None - Existing RTD bus stop
STOP LOCATION
BRIGHTON ROUTE

Stop ID 26 | Southbound
Stop Location: Brighton Blvd & 31st St
Actions: None - Existing RTD bus stop
APPENDIX B
RTD ROUTE PROFILES
RTD RAIL
A LINE AND L LINE

RTD’s A Line is a heavy rail line connecting Union Station and Denver International Airport with six intermediate stations, including a station at 38th & Blake.

RTD’s L Line is a light rail line connecting the Central Business District with the Five Points Neighborhood.

Monday-Friday
Runs every 15 minutes

Saturday-Sunday
Runs every 30 minutes
RTD ROUTE 8
NORTH BROADWAY / HURON

RTD Route 8 operates between Civic Center in Downtown and Wagon Road Park-and-Ride in Westminster. Route 8 provides a connection between Globeville and Downtown.

Monday-Friday
Runs every 60 minutes

Saturday-Sunday
Runs every 60 minutes
RTD ROUTE 12
DOWNING / NORTH WASHINGTON

RTD Route 12 operates between the City Center Englewood and 112th Station in Northglenn. Within the study area, Route 12 serves Globeville, 38th & Blake Station, and Cole.

Monday-Friday
Runs every 30-60 minutes

Saturday-Sunday
Runs every 30-60 minutes
RTD ROUTE 28
28th AVENUE

RTD Route 28 operates between Lakewood and Central Park Station. Route 28 travel through Downtown and skirts the southern edge of the study area.

Monday-Friday
Runs every 60 minutes

Saturday-Sunday
Runs every 60 minutes
RTD ROUTE 34
BRUCE RANDOLPH AVE

RTD Route 34 operates between 30th & Downing Station and Central Park Station. Route 34 touches the eastern edge of the study area.

Monday-Friday
Runs every 30 minutes

Saturday-Sunday
Runs every 30-60 minutes
RTD ROUTE 43
MARTIN LUTHER KING BLVD

RTD Route 43 operates between Central Park Station and Auraria Campus in Downtown. Route 43 runs along Stout and California Streets at the south edge of the study area.

Monday-Friday
Runs every 15-30 minutes

Saturday-Sunday
Runs every 15-30 minutes
RTD ROUTE 44
44th AVENUE

RTD Route 44 operates between Wheat Ridge’s I-70 Park-and-Ride and 40th & Colorado Station in Central Park. Route 44 traverses the study area along Larimer and Lawrence Streets connecting Five Points with Downtown.

Monday-Friday
Runs every 60 minutes

Saturday-Sunday
Runs every 60 minutes
RTD ROUTE 48
EAST 48th AVE / COMMERCE CITY

RTD Route 48 operates between Civic Center Station in Downtown and Commerce City Park. Route 48 cuts through the center of the study area, running along Brighton Boulevard and connecting Five Points with Downtown.

Monday-Friday
Runs every 30-60 minutes

Saturday-Sunday
Runs every 30-60 minutes