STATE HIGHWAY 119

BUS RAPID TRANSIT STUDY

SH 119 BRT Corridor Project Update & Bikeway Development

Public Meetings February 2019
Project Partners
Given inadequate funding for Northwest Rail in the near term, RTD initiated the NAMS in April 2013.

Purpose was to develop consensus among RTD, CDOT, and Northwest-area stakeholders on cost-effective mobility improvements.

Stakeholders developed “Final Consensus Statement” to establish priorities for Northwest area.

One of highest priorities was to establish Bus Rapid Transit (BRT) in the SH 119 Corridor from Longmont to Boulder.

RTD Board approved resolution accepting Final Consensus Statement in June 2014.

Next Step: advance NAMS recommendation for SH 119 BRT
What is Bus Rapid Transit (BRT)

- Premium, branded, high-capacity transit service
- Frequent, fast, efficient, safe, and reliable
- Limited stops to improve speed and reduce travel time
- Dedicated bus lanes, or queue jump lanes and Transit Signal Priority (TSP)
- Comfortable vehicles and enhanced stations
- Pedestrian, bicycle, and rideshare access to stations
Examples of BRT Projects

sbX in San Bernardino, CA

US 36 BRT, Boulder - Denver

HealthLine in Cleveland, OH

VIVA in Ontario, Canada

SDX in Las Vegas, NV
SH 119 BRT Study & Proposed Improvements Schedule

SH 119 BRT Project Timeline

2019 DRCOG TIP Grant Approval for:
- Business and transit (BAT) lanes for buses in Boulder
- Coffman Street dedicated BRT lanes in Longmont
- Queue jump/bypass lanes for BRT at SH 119 and SH 52

Public Meetings

Alternatives Analysis, Environmental Clearance, & Preliminary Engineering

April: RTDSelects Preferred Alternative

Pursue Additional Funding Options

Final Design

Construction Begins
SH 119 BRT Study Process

1. DESIRED OUTCOME OF THE STUDY
   - Create reliable BRT service
   - Optimize BRT to attract the most riders
   - Address first/last mile connectivity
   - Advance a cost effective BRT option

2. ANALYZE EXISTING AND FUTURE CONDITIONS
   - What BRT route and service level saves travel time?
   - Can BRT serve multi-modal needs?
   - Does the BRT route connect to local transit?

3. DEVELOP ALTERNATIVES
   - Route
   - Service
   - Physical Improvements

4. EVALUATE ALTERNATIVES
   - Travel time savings?
   - Improve transit travel time reliability?
   - Generate high amount of riders?
   - How many bus service hours?
   - Is the BRT option cost effective?
   - Is there funding available?

5. CHOOSE PREFERRED ALTERNATIVE
   - Complete Preliminary Design
   - Complete Environmental Process
Service / Route Alternatives

EXISTING

Bus Frequency

15 (Peak Hour) 30-60 (Off-Timetable)

1,480

NOTES: Existing BRT & service have 60 stops in each direction

EXPANDED

Bus Frequency

15 (Peak Hour) 30-60 (Off-Timetable)

2,160

NOTES: Existing BRT & service have 60 stops in each direction

1 BRT PATTERN

Bus Frequency

15

2,000

2 BRT PATTERNS

Bus Frequency

15

30

2,250

4 BRT PATTERNS

Bus Frequency

15

30

30

30

2,780
Purpose of Alternatives Evaluation

Three bus routes/patterns x three physical configuration options = 9 separate alternatives
Physical Configuration Examples

Bus-on-Shoulder

BRT Bypass Lanes

RTD and CDOT coordinating on all highway improvement options.

BRT / Managed Lanes: US 36
Evaluation Process

**Scoring Criteria**
- BRT travel time savings
- Total person trip throughput
- BRT travel time reliability
- BRT ridership
- BRT boardings per hour
- O&M cost per boarding

**Informational Criteria**
- Travel time comparison
- BRT service hours
- Local transit service hours
- Local transit ridership
- Total transit ridership
- BRT O&M cost
- Funding availability
- Capital cost
- Opportunity for future mobility options, e.g., AV

3 BRT Route / Service Alternatives

3 Physical Configuration Alternatives

Locally Preferred Alternative with Environmental Clearance
Travel Time Savings of BRT Route Options Compared to BOLT Travel Time

- **Existing/Expanded BOLT/J Service in Mixed Flow Traffic**
  - BUS ON OUTSIDE SHOULDER OPTION: 40 Minute Travel Time (26 Minutes Saved)
  - TRANSIT SIGNAL PRIORITY & BRT BYPASS/QUEUE JUMP OPTION: 38 Minute Travel Time (28 Minutes Saved)
  - INSIDE BRT/MANAGED LANE OPTION: 37 Minute Travel Time (29 Minutes Saved)

- **Combined 66 Minutes Travel Time**
Projected Number of People Traveling Through the Corridor in All Modes: buses, vehicles, express tolls, bicyclists, and carpoolers

Existing/Expanded BOLT/J Service in Mixed Flow Traffic

<table>
<thead>
<tr>
<th>Option</th>
<th>Projected Number of People Traveling Through the Corridor</th>
<th>Percentage Increase Compared to BOLT/J</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS ON OUTSIDE SHOULDER OPTION</td>
<td>5,820 – 5,860 people traveling through the corridor</td>
<td>2% increase</td>
</tr>
<tr>
<td>TRANSIT SIGNAL PRIORITY &amp; BRT BYPASS/QUEUE JUMP OPTION</td>
<td>5,840 – 5,880 people traveling through the corridor</td>
<td>2% increase</td>
</tr>
<tr>
<td>INSIDE BRT/MANAGED LANE OPTION</td>
<td>7,620 – 7,640 people traveling through the corridor</td>
<td>33% increase</td>
</tr>
</tbody>
</table>
Improve Transit Travel Time Reliability

Existing/Expanded BOLT/J Service in Mixed Flow Traffic

1. Poor Reliability
2. Better Reliability
3. Best Reliability
Forecasted BRT Annual Ridership (2040)

1. Existing/Expanded BOLT/J Service in Mixed Flow Traffic: 648,000
2. Bus on Outside Shoulder Option: 675,000
3. Inside BRT/Managed Lane Option: 687,000
4. Transit Signal Priority & BRT Bypass/Queue Jump Option: 702,000
Capital Costs* of BRT Options with 2-Route Pattern

**BUS ON OUTSIDE SHOULDER OPTION**

$143-147M

**TRANSIT SIGNAL PRIORITY & BRT BYPASS/QUEUE JUMP OPTION**

$153-156M

**INSIDE BRT/MANAGED LANE OPTION**

$214-218M

*in 2023 year-of-expenditure dollars

Includes all project elements: roadway improvements, BRT vehicles, stations, park-n-rides, Coffman St. busway in Longmont, BAT lanes in Boulder, and commuter bikeway
Evaluation Key Findings

• **BRT/Managed Lanes provide:**
  • Highest travel time savings
  • Best transit service reliability
  • Higher transit ridership
  • Greatest number of travel options and benefits for all users: vehicles, transit, carpool, express tolls, and bicyclists while reducing congestion
  • Improvements can be phased over time as funding becomes available

• **2-4 route pattern provides:**
  • Excellent service coverage in both cities, similar to BOLT/J
  • More direct, one-seat rides than single route
  • Increase in service hours and O&M cost can be phased over time as warranted and as funding becomes available
Community Outreach

- 1,000+ people involved to date
- Onboard Survey
  - 228 Responses
  - October 2018
- 400 + Comments & Responses via Webpage
- 4 public meetings, 8 events, 9 presentations = 21 input opportunities
- Online Questionnaire
  - 1,343 responses
  - Fall 2018 through Jan. 2019

BOLT/J Onboard Survey Key Findings

Conducted - Thursday, Oct. 25, 2018
- 855 surveys distributed by operators to BOLT/J passengers
- 228 surveys returned - 27% response rate, slightly higher than other RTD onboard surveys

- Most riders use the BOLT/J to commute to/from work.
- BOLT/J riders travel an average of 50 minutes to complete a trip.
- On-time performance, frequency of service, and total travel time are the most important aspects riders consider when choosing to ride the bus.
- 78% of BOLT and J riders indicated that they prefer an upgraded Transit Service (expanded BOLT/J, 1 Route BRT, 2 Route BRT, or 4 Route BRT).
**Online Questionnaire Key Findings**

**Conducted - Fall 2018 to January 31, 2019**
- 1,343 people accessed the questionnaire
- Asked the same questions as Onboard Survey

- 79% indicated that they have used RTD Public Transit in the last 12 months
- On-time performance, frequency of service, and total travel time are the most important aspects riders consider when choosing to ride the bus.
- 75% of respondents indicated that they prefer an upgraded Transit Service.

**Preferred Option (1,041 responses)**

- Existing BOLT/J Service: 3%
- Expanded BOLT/J Service: 6%
- 1 BRT Pattern Alternative: 13%
- 2 BRT Patterns Alternative: 29%
- 4 BRT Patterns Alternative: 27%
- No preference: 8%
- Not sure: 13%
DRAFT Recommended BRT Project Definition
Improved Local Service Connections to the BRT
• Improved transit travel time with:
  • Frequent service (15-min. peak / 30-min. off-peak)
  • Limited stop BRT service
  • Transit Signal Priority (TSP)

• BRT/Managed lanes along SH 119 median

• Improved local bus connections in Longmont, Boulder, & Gunbarrel

• 20 enhanced, safe and comfortable stations with BRT branding, real time passenger information

• Off-board fare collection with improved loading and unloading

• 5 Park-n-Ride facilities

• New commuter bike path along SH 119
Project Purpose and Goals

Purpose:
• To develop and evaluate alternatives to provide a safe and efficient shared-use facility along SH 119, that interfaces with the proposed BRT improvements, and enhances bicycle and pedestrian usage in the corridor.

Project Goals:
• Provide continuous and direct shared-use facility
• Improve safety
• Connect to future BRT system
• Connect to existing trail network
• Encourage multi-modal transportation in the SH 119 Corridor
• Develop conceptual design and cost estimate
• Study Background
  • Began Study Summer 2018
    • Information Gathering: Field review, traffic counts, existing infrastructure
    • Existing Conditions Report Submitted Fall of 2019
    • Developed Screening Criteria Framework
    • Developed and screened different alignments

• Stakeholder and Public Involvement
  • Met with RTD/Parsons Team
  • Met with Local Agencies
  • Brings us to today!
Study Limits
• Foothills Pkwy/SH 119
• SH 119/Hover Rd

Segments and Alignments
• South, Middle and North
• West, Center Median and East

Critical Issues
• Connectivity at termini
• Intersection Crossings
• Integration with BRT
### Alternatives Evaluation Matrix

Evaluation of West, Center and East Alignments for SH 119 Shared-Use Path

<table>
<thead>
<tr>
<th>Segment</th>
<th>General Alignment</th>
<th>EVALUATION CATEGORIES</th>
<th>USERS SERVED/USER APPEAL</th>
<th>CONNECTIVITY/COMPATIBILITY</th>
<th>COMFORTABILITY/SAFETY</th>
<th>CONSTRUCTABILITY</th>
<th>IMPACTS</th>
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<tbody>
<tr>
<td><strong>North</strong></td>
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<tr>
<td>(Airport to Hover)</td>
<td>West</td>
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<td>Poor</td>
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<tr>
<td>(Jay to Airport)</td>
<td>West</td>
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<td>Poor</td>
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<td>Poor</td>
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<td>Center</td>
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<td><strong>South</strong></td>
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<tr>
<td>(47th to Jay)</td>
<td>West</td>
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<td>Poor</td>
<td>Poor</td>
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<td>Center</td>
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<td>East</td>
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<td>Poor</td>
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</tbody>
</table>

**Recommended Alignment**
- Poor
- Fair
- Good
Next Steps

• Gather Input From Public Meetings
• Refine Alignment
• Prepare Conceptual Plans
• Prepare Construction Cost Estimate
SH 119 BRT – Study Process

SH 119 BRT Study Process Pathway

Project Purpose & Need
- Scoping
- Project goals and objectives
- Evaluation criteria
- Alternatives Evaluation Tier 1 – Technology Comparison

Existing Conditions
- Existing transit ridership
- Traffic
- Pedestrian access and bicycle routes
- Travel patterns

BRT Alternatives Development
- Route alignments
- Configurations
- Stations

2nd BRT Alternatives Refinement
- Route alignments
- Station locations
- Refined service plan
- Refined capital costs
- Refined O & M costs

BRT Alternatives Evaluation – Tier 3
- Route alignments
- Configurations
- Stations
- Ridership – total and by station
- Environmental studies
- Funding options

3rd BRT Alternatives Refinement
- Route alignments
- Configurations
- Stations
- Refined service plan
- Refined capital costs
- Refined O & M costs
- Environmental studies
- Financial Plan

Preferred Project Definition
- Route Alignment
- Configuration
- Stations
- Final Service Plan
- 30% Design
- Capital and O & M Costs
- Final Financial Plan
- Environmental Clearance
- Implementation Phasing Plan

Route & Service
Environmental
Costs & Funding Plan
Stakeholder Input
Stakeholder Agreement

Green = Actions Completed
Blue = Actions Remaining
SH 119 BRT - Next Steps

Preferred Project Definition
- Route Alignment
- Configuration
- Stations
- Final Service Plan
- 30% Design
- Capital and O & M Costs
- Final Financial Plan
- Environmental Clearance
- Implementation Phasing Plan
What Do You Think of the Recommended Project?

What are the best elements?  What needs improvement?

Please give us your opinions on the board in the room