ROARING FORK TRANSPORTATION AUTHORITY

Glenwood Springs BRT Extension Alternatives Analysis

WWW.RFTA.COM

Scope of Alternatives Analysis

Glenwood Springs

Parking, Bike and Pedestrian, Traffic, Local Transit

Transit Parking Access

Where to locate expanded parking access to BRT

BRT Extension

What alignment to extend BRT to and through downtown Glenwood Springs

BRT Stations

Location of BRT stations between 27th Street and Downtown Glenwood

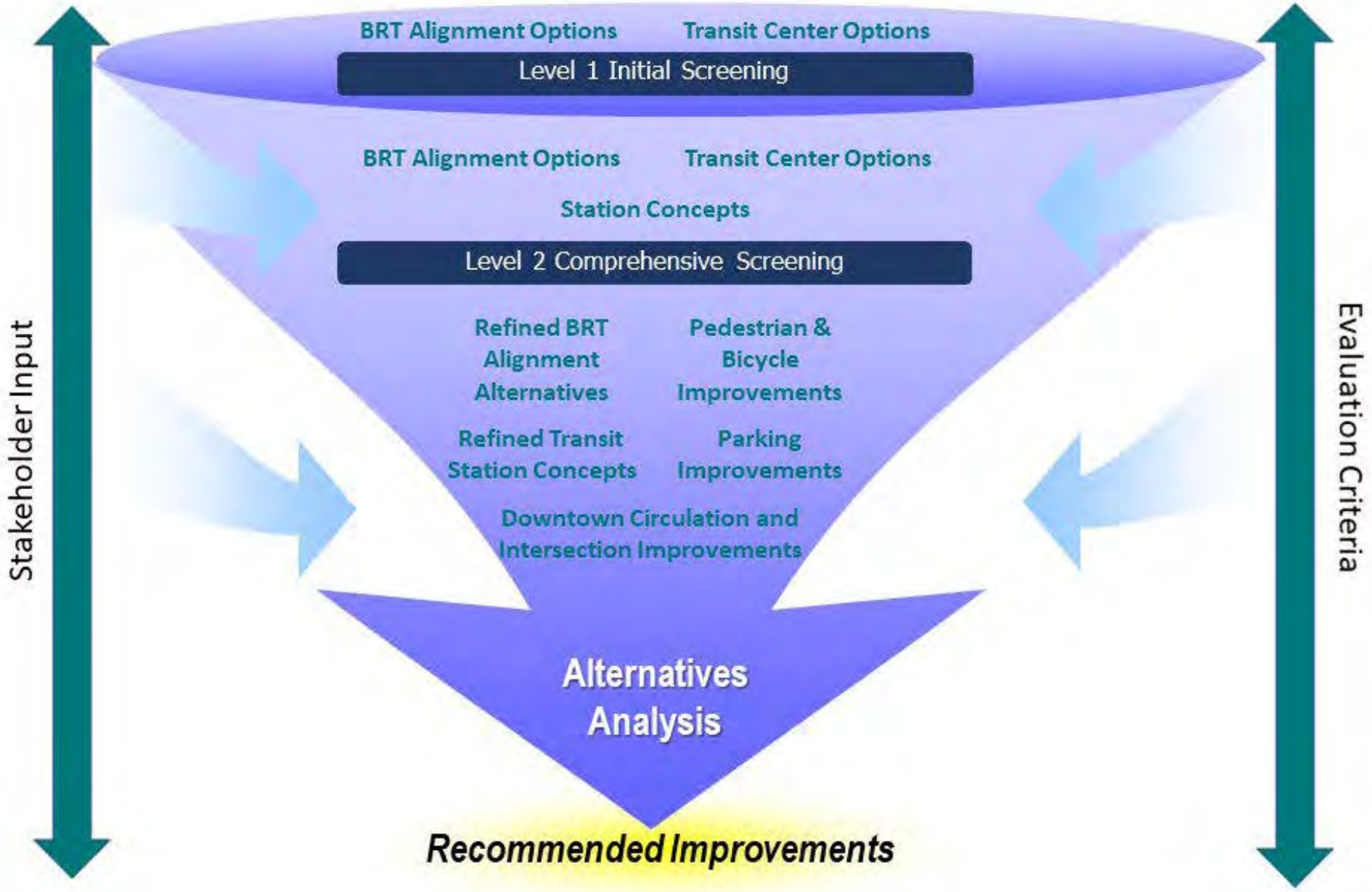
Glenwood Transit Center

Location of a Glenwood Springs Transit Center

Glenwood Springs Existing Transit Service

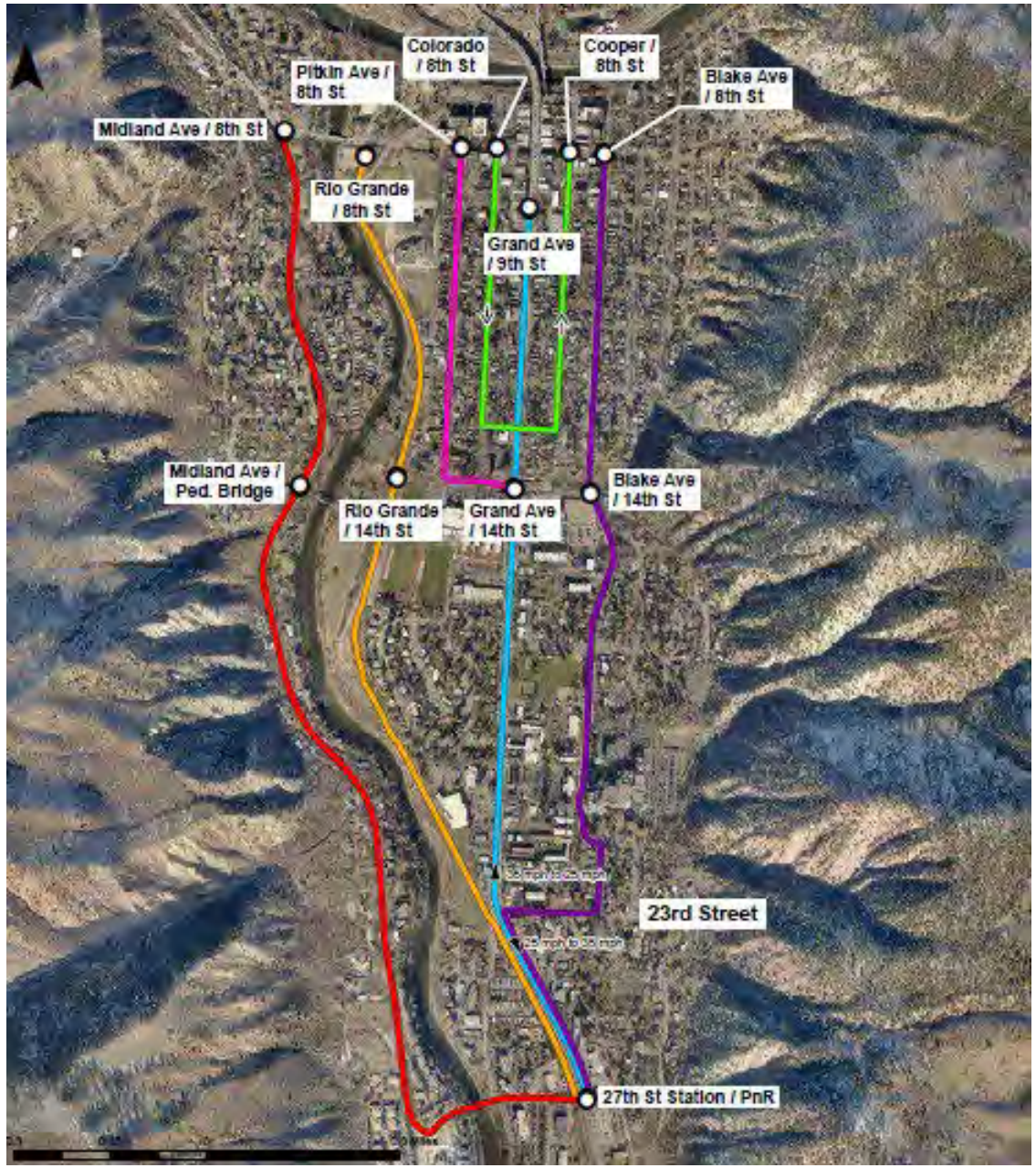
- Ride Glenwood Springs
- RFTA Valley Local
- Hogback
- Peak Hour BRT
- Off-Peak Hour BRT
- 27th Street Transit Station
- West Glenwood Park and Ride

Process to Evaluate Alternatives



BRT Alignment Options

- Midland Ave.
- Rio Grande Rail Corridor
- Pitkin Ave.
- Colorado
- Grand Avenue/SH-82
- Cooper
- Blake Ave.



Level 1 Screening Criteria for BRT Alignments

Table 4 - Level 1 Screening Criteria

1	**Improve BRT Travel Time Reliability (8th Street to 27th)**: percentage of alignment in dedicated lanes	BRT extensions
2	**BRT Travel Time:** One-way transit travel time of the BRT before and after dedicated lanes. Current time / Projected	BRT extensions
3	**BRT Travel Time Savings:** One-way transit travel time savings of the BRT based on average speed with proposed dedicated lanes, compared with Grand Avenue with dedicated lanes.	BRT extensions
4	**Number of on-street parking spaces displaced**	BRT extensions
5	**Community/Environmental Impact**	BRT extensions

Level 1 Screening Criteria for BRT Alignments

Evaluation	Criteria	No Build	Grand Avenue	Rio Grande Corridor	Blake Avenue	Cooper/Colorado One-way Couplet	Pitkin Avenue	Midland Avenue
1	Improve BRT Travel Time Reliability (8th Street to 27th): percentage of alignment in dedicated lanes	1.6 miles in mixed flow (0%) dedicated lanes (1)	1.6 miles total; 0.4 mile (25%) semi-dedicated lanes* (2)	1.7 miles total; 100% dedicated lanes (3)	1.7 miles total; 1.2 miles (70%) dedicated lanes (3)	1.6 miles total; 0.4 mile (25%) dedicated lanes (2)	1.7 miles total; 0.5 mile (29%) dedicated lanes (2)	2 miles in mixed flow, 0% dedicated (1)
2	BRT Travel Time: One-way transit travel time of the BRT before and after dedicated lanes. Current time / Projected	8.0 / 8.0 (1)	8.0 / 7.1 (2)	NA / 4.6 (3)	10.6 / 7.9 (1)	8.0 / 7.2 (2)	9.4 / 8.2 (1)	8.0/8.0 (1)
3	BRT Travel Time Savings: One-way transit travel time savings of the BRT based on average speed with proposed dedicated lanes, compared with Grand Avenue with dedicated lanes.	0.9 min. slower (1)	0.9 min. faster than current (2)	2.5 min. faster (3)	0.8 min. slower (1)	0.1 min slower (1)	1.1 min. slower (1)	.9 min slower (1)
4	Number of on-street parking spaces displaced	0 (3)	140 spaces between 8th and 13th (2)	0 (3)	278 spaces between 23rd and 8th (1)	140 spaces on Cooper/Colorado combined between 13th and 8th (2)	161 spaces between 8th and 14th (2)	0 (3)
5	Community/Environmental Impact	No Impact (3)	Moderate Impact (downtown community feel) (2)	High Impact (trail) (1)	High Impact (residential parking) (1)	High Impact (residential parking) (1)	High Impact (residential parking) (1)	Moderate Impact (residential street) (2)
TOTAL	SCORE	9	10	13	7	8	7	8

*Business access/transit lanes that are semi-dedicated to BRT but also allow right-turning vehicles

Level 2 Screening for Grand Avenue and Rio Grande Rail Corridor Alignments

Level 2 Screening for Grand Avenue Alignment

Legend

- Existing Striping Layout
- Existing Bus Lane
- Existing Rio Grande Trail
- Proposed Bus Lanes
- VelociRFTA BRT Station
- Remove Parking Lane (Relocate Curb and Gutter)
- Optional Proposed Bus Lane W/ Parking Lane Removal
- Remove Pedestrian Bulb Outs & Relocate Curb, Gutter, & Traffic Signals

Level 2 Screening for Grand Avenue Alignment

Level 2 Screening for Grand Avenue Alignment

Dedicated BRT lanes on Grand Avenue

Level 2 Screening for Grand Avenue Alignment

Existing Conditions on Grand Avenue North of 13th street

Level 2 Screening for Grand Avenue Alignment

Bus Only lanes on Grand Avenue North of 13th street

Level 2 Screening for Rio Grande Rail Corridor Alignment

Legend

- Rio Grande Trail (w/ relocations where necessary)
- Proposed RFTA BRT Busway
- Natural Surface Footpath
- Trail Access
- VelociRFTA BRT Station

Level 2 Screening for Rio Grande Rail Corridor Alignment

Level 2 Screening for Rio Grande Rail Corridor Alignment

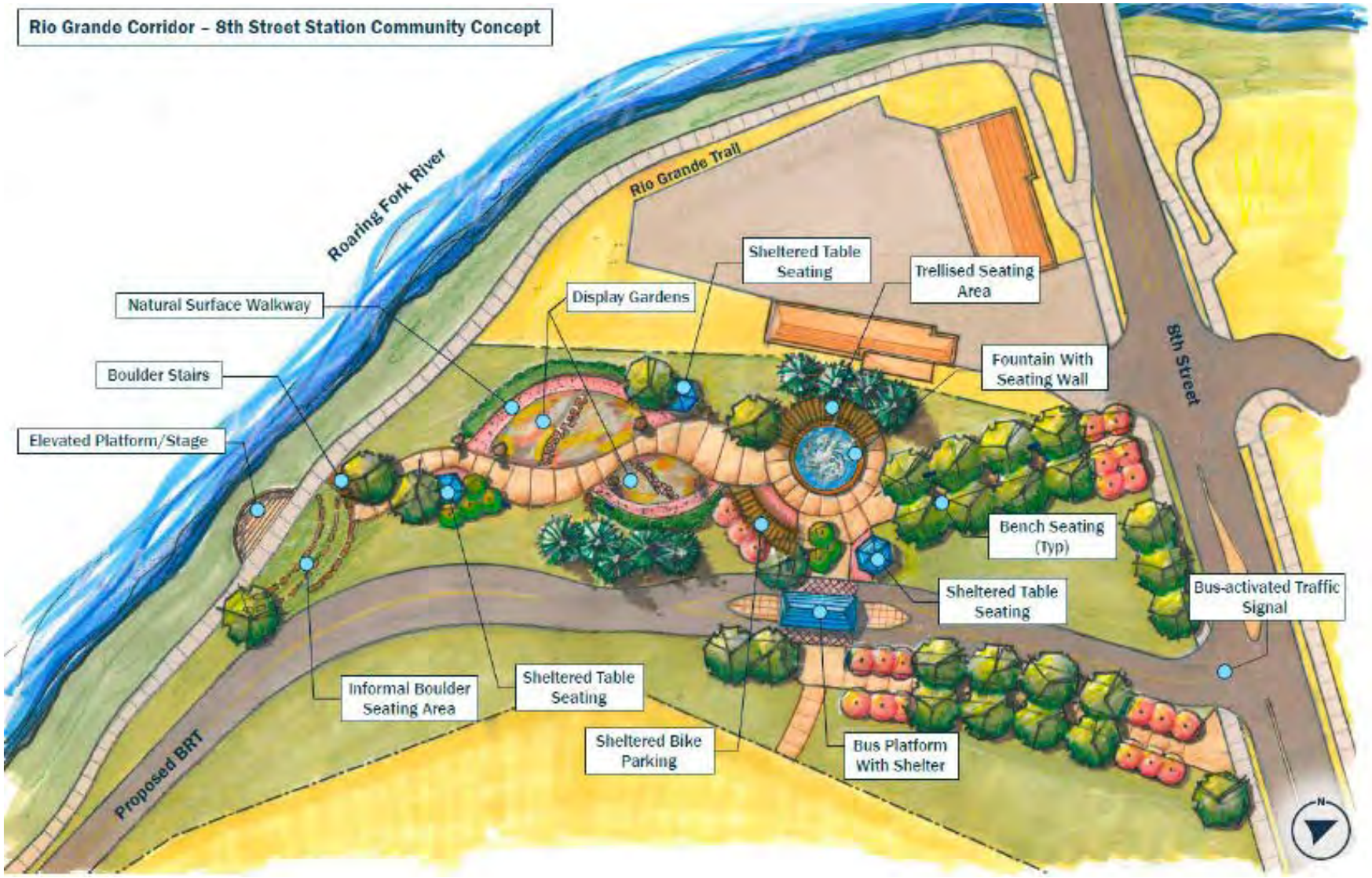
Level 2 Screening for Rio Grande Rail Corridor Alignment

Existing Conditions of Rio Grande Rail Corridor

Level 2 Screening for Rio Grande Rail Corridor Alignment

Proposed BRT Runningway within Rail Corridor

Level 2 Screening for Rio Grande Rail Corridor Alignment



Proposed BRT Station at Rio Grande and 8th Street

Level 2 Screening Criteria for BRT Alignments

Level 2 Evaluation Criteria
Transit Performance
Transit Service Hours
Costs
Automobile Travel Time Improvement
Multimodal Ease and Safety
Preliminary Business Parking Displacement
Impacts on Community Amenities
Construction Challenges/Duration
Ridership

Level 2 Screening Criteria for BRT Alignments

Evaluation Criteria	Basic Alternative BRT Alignments after Level 1 Screening			Refined Alternative BRT Alignments				
	No Build: Existing Mixed Flow BRT service with 14th Street and 8th Street stops	Grand Avenue BAT Lanes 13th to 8th (with 2 stops); 24 hours	Rio Grande Corridor BRT Lanes 27th to 8th (with 2 stops); 24 hours	Hybrid: Grand Ave to North RGC at 14th to 8th (with 2 stops); 24 hours	Hybrid: Grand Ave 27th-14th and RGC 14th to 8th peak hours only	Grand Ave: BAT lanes, both directions, peak hours only (7:30 -8:30 AM and 4:30-5:30 PM)	Grand Ave: BAT lane peak direction only (AM SB / PM NB); peak hours only	Rio Grande Corridor: 2 exclusive lanes peak hours only; minimal construction option
TOTAL SCORE	30	34	38	34	34	34	35	37
	No Build	Grand Ave	Rio Grande	Rio Hybrid	Rio Hybrid Peak	Grand 2 lanes peak	Grand 1 lane peak	Rio Peak

Factors for Consideration

Grand Avenue Alignment

- Lower cost,
- Can be built and implemented quicker
- Removes on-street parking, mature trees, and pedestrian bulb outs,
- Travel time savings and ridership are not as high as the other alternative.
- Travel times may degrade as congestion increases on Grand Avenue>

Rio Grande Rail Corridor Alignment

- Significantly better travel time and reliability
- Lower service hours and O&M costs
- Higher ridership (which may correlate to fewer cars traveling in and through Glenwood Springs) than the Grand Avenue alternative.
- Higher cost
- less construction impacts to Grand Ave. traffic

Alternatives Analysis Recommendations

Phase 1 Improvement Recommendations (Low/No Cost Immediate Recommendations)	
RFTA Parking	Better connect existing overflow lot, establish a more robust parking enforcement program

Phase 2 Improvement Recommendations (Higher Cost Recommendations)	
Local Transit	Implement one of three concepts developed in the study to improve coverage of North Glenwood. Thin number of stops along Grand Avenue for BRT and Hogback or consider a deviation of RGS to serve Blake Avenue instead of Grand Avenue.
RFTA Parking	Lease additional parking, purchase land for additional parking, formalize a kiss & ride area at the 27th Street station, improve multimodal connections.

Alternatives Analysis Recommendations

Option 1 - Phase 3 Improvement Recommendations Needed for BRT Extension (Grand Avenue Alignment)	
Local Transit	Option 1: Move Valley Local service to Blake Avenue, split Ride Glenwood Springs into two loops serving West Glenwood and South Glenwood. Option 2: Same as option 1 except Ride Glenwood Springs Increases existing vehicles to increase coverage.
Traffic and Safety	Extend Dedicated BRT lanes between 27th Street and 23 Street. Provide dedicated BRT lanes between 13th and 8th Street by removing pedestrian bulb outs, relocate curb and gutter and relocate traffic signals. Install queue jump lane signal head at northbound terminal of BAT lane.
Stations	West Glenwood Transit Center, 14th and Grand BRT Station, 9th and Grand BRT Station

Option 2 - Phase 3 Improvement Recommendations Needed for BRT Extension (Rio Grande Rail Corridor)	
Local Transit	Ride Glenwood Springs restructured to better penetrate West Glenwood Springs
Traffic and Safety	Install bus activated traffic signal on 8th Street where buses enter/leave RFTA property and Rio Grande Corridor
Stations	West Glenwood Transit Center, 14th and Rio BRT Station, 8th and Rio BRT Station

Glenwood Springs BRT Extension Along Grand Avenue

- Ride Glenwood Springs
- RFTA Valley Local
- Hogback
- BRT
- 27th Street Transit Station
- West Glenwood Transit Center
- BRT Station

Glenwood Springs BRT Extension Along Rio Grande Rail Corridor

- Ride Glenwood Springs
- RFTA Valley Local
- Hogback
- BRT
- 27th Street Transit Station
- West Glenwood Transit Center
- BRT Station

Glenwood Springs BRT Extension Along Grand Avenue with Hogback integration to BRT

- Ride Glenwood Springs
- RFTA Valley Local
- BRT
- 27th Street Transit Station
- West Glenwood Transit Center
- BRT Station

Glenwood Springs BRT Extension Along Rio Grande Rail Corridor With Hogback integration to BRT

- Ride Glenwood Springs
- RFTA Valley Local
- BRT
- 27th Street Transit Station
- West Glenwood Transit Center
- BRT Station

Recommendations and Ongoing Dialogue

Glenwood Springs

Parking, Bike and Pedestrian, Traffic, Local Transit

Transit Parking Access

Lease or Purchase additional land for expanded parking near 27th street Station.

BRT Extension - Ongoing

Two viable Alternatives of Grand Avenue and Rio Grande Rail Corridor.

BRT Stations - Ongoing

Grande Avenue: 14th/Grand and 9th/Grand
Rio Grande Corridor: 14th/Rio and 8th/Rio

Glenwood Transit Center

Recommendation for Glenwood Transit Center to be located at West Glenwood Park and Ride