



US 36 Bus Rapid Transit

MAX Program

**REGIONAL TRANSPORTATION
DISTRICT**
Denver, Colorado



Background US 36 BRT

- BRT part of 2004 voter-approved FasTracks program
- 18 Miles Freeway-Running BRT
- 6 Upgraded stations
 - New shelters
 - Station furniture
 - TVMs
 - Security enhancements
 - 1,278 new parking spaces
- Branded buses
- Frequent Service
 - 5-minute or better headways for many peak period / peak direction trips



General

- Two Termini in Denver:
 - Union Station (Northwest side of downtown)
 - Civic Center Station (Southeast side of downtown)



General

- Two Termini in Boulder:
 - Downtown Boulder (Route passes University of Colorado Campus)
 - Boulder Junction (East side of Boulder)



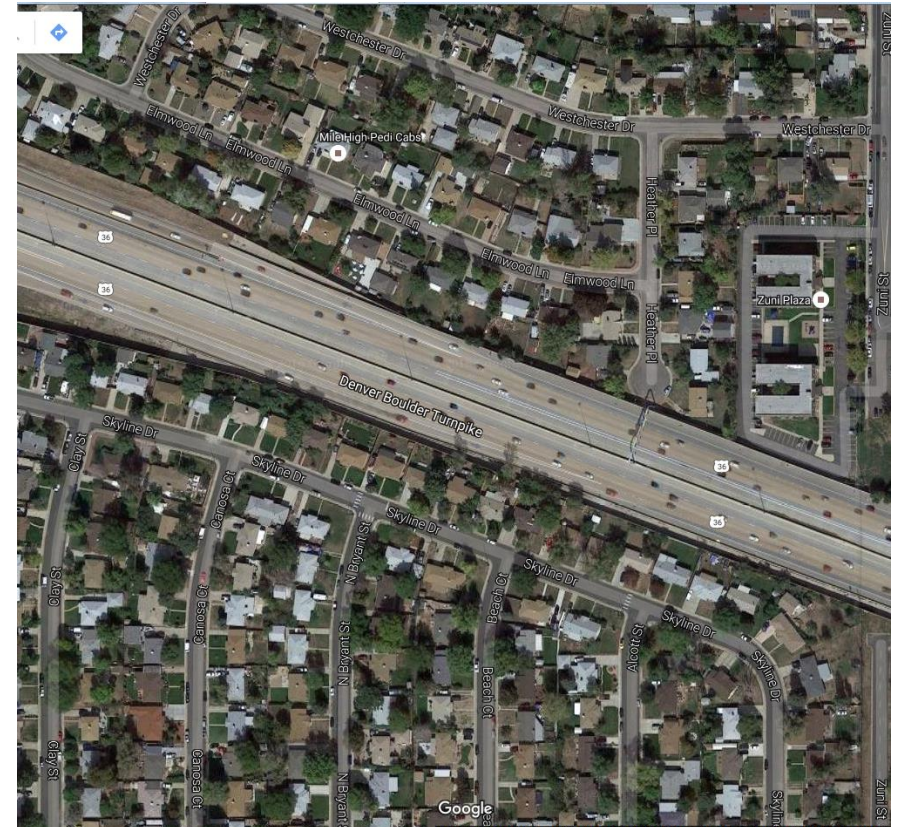
Initial Project Scope

- Envisioned:
 - In-line, median stations
 - Exclusive or Semi-exclusive bus lanes
 - Special vehicle
 - Upgraded, rail-like stations



Challenges

- Ultimately unable to provide median stations without substantial ROW impacts due to:
 - Space required for stations in median
 - Space required for passing lanes at stations
- ROW constraints most prominent in EJ section of corridor



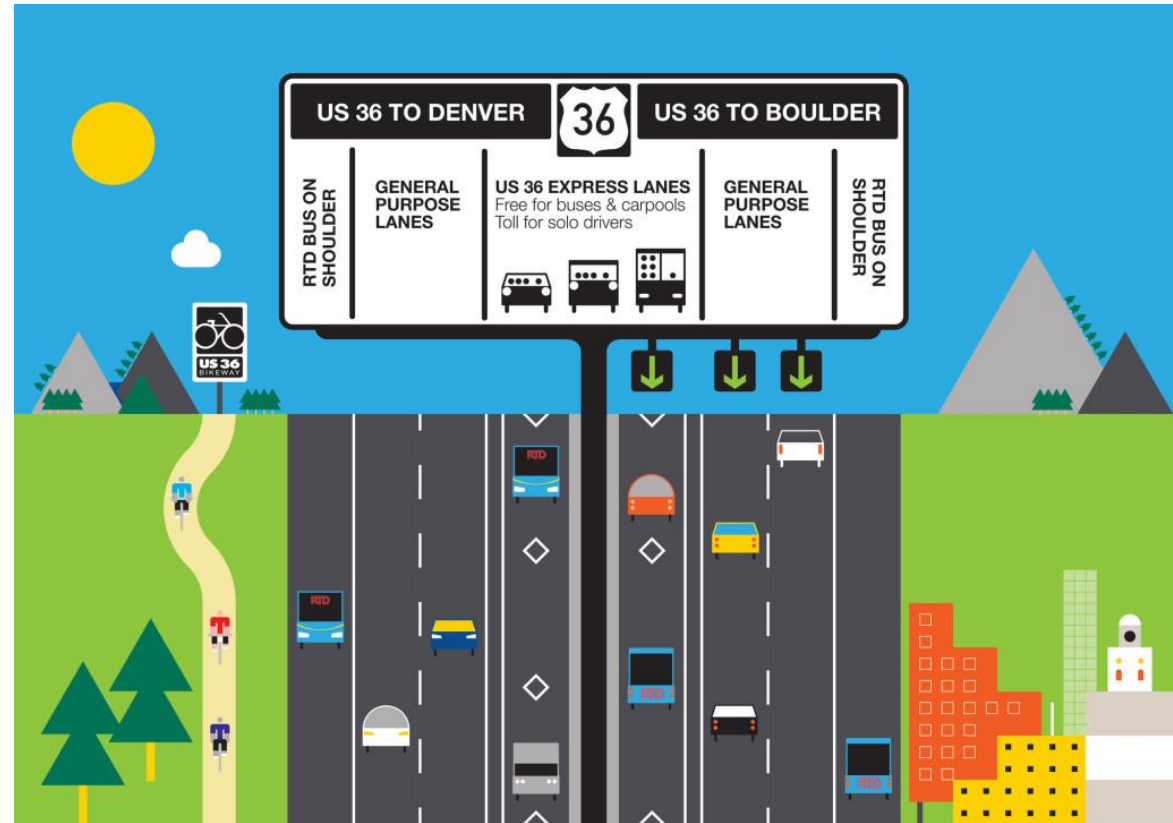
Challenges

- Ultimately unable to procure low-floor vehicle capable of:
 - Climbing the steep grades along the corridor;
and
 - Providing comfortable ride at high speeds



Challenges

- All-stop service challenged in weaving from outside-lane stations while using inside-lane express lanes



Challenges

- Marketing: Difficult to market corridor when changes occur incrementally
- Corridor officially opened January 2016
 - However, corridor improvements began in 2006



Final Project Scope

- Managed Lane (Bus/HOV/HOT) with Bus Priority (for Express Services)



Final Project Scope

- Upgraded Stations
 - New shelters
 - Station furniture
 - Ticket Vending Machines
 - Security enhancements (cameras, lighting)
 - Increased Parking



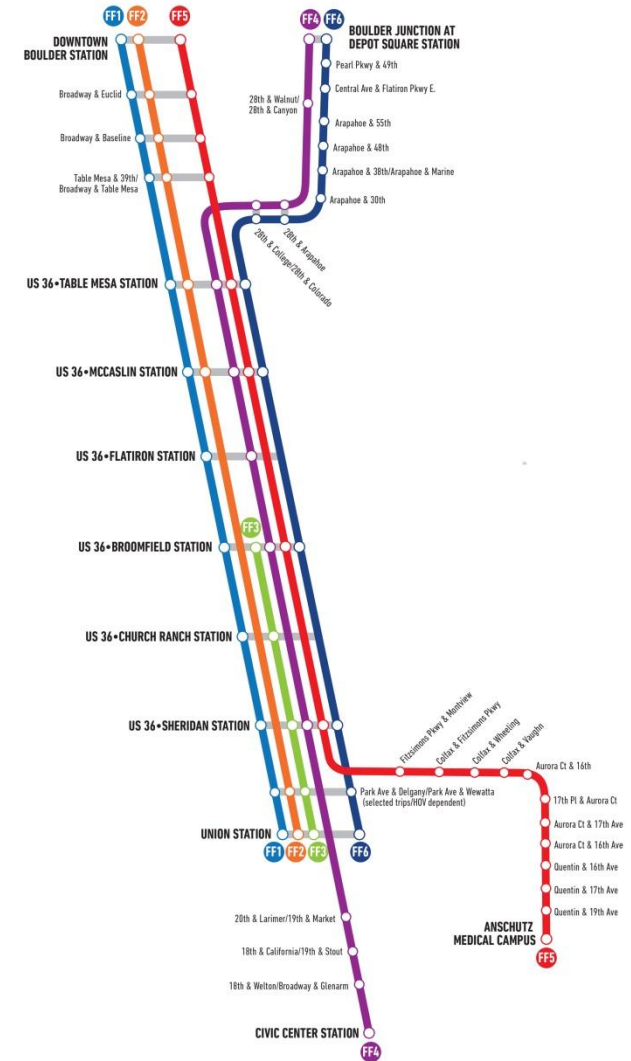
Final Project Scope

- New, branded buses (not low-floor)



Final Project Scope

- Branded, simplified route structure
- Multiple patterns including express trips
- 15 minute or better bi-directional service all day
- **5 minute or better** headways for many peak period / peak direction trips



Criticism

- Criticized as not “True” BRT”
 - Guideway
 - Shared HOT Lane or shoulder: “not BRT”
 - Coach buses: “not BRT”
 - Some stations off-line from facility: “not BRT”



Results:

- Despite not “true” BRT, results have been positive.



Results: Equitable Service

- Reallocated existing service hours to provide more “all-stop” service to intermediate points along the corridor
- As employment has increased in both Denver and Boulder, housing affordability has decreased.
 - Additional service to more affordable communities along the corridor has provided better access to jobs

Results: Reliability

- RTD agreement with CDOT provides highest priority to buses in tolled managed lanes.
 - Toll rates adjusted to deter congestion
- Bus-on-Shoulder allows for all-stop service when general purpose lanes become congested

Results: Upgraded Stations

- Enhanced station amenities
 - New station furniture
 - New canopies
 - Ticket Vending Machines
 - Security upgrades
 - Increased parking



Results TOD

- Arista Village, Broomfield
 - 290,000 square feet office space
 - 140 hotel rooms
 - 1,800 residences
 - 6,500-seat special even center
 - 80,000 square feet UCHealth Hospital
 - Shared parking with transit
 - Development focused around transit station



Results: TOD

- Boulder Junction
 - Underground bus facility
 - 150-suite Hyatt Place Hotel above bus facility
 - 319 residential units (71 permanently affordable units)
 - Google Campus
 - Additional future development planned



US 36 BRT Results

- Flatiron Flyer grand opening: January 3, 2016
- Flatiron Flyer ridership: **28% increase in ridership** with < 5% increase in service hours.*

**August 2015 to January 2016*



US 36 BRT Challenges / Lessons Learned

- Vehicle Technology / Availability
 - Comfort
 - Accessibility
 - Power
- Marketing
 - Difficult to market grand opening for corridor when changes occur incrementally
- Partnerships
 - CDOT / RTD partnership allowed combined managed lanes / BRT project to be built much sooner than if each agency had pursued construction independently



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