COLORADO
Department of Transportation
Division of Transit & Rail

Title: Transit and Rail Advisory Committee
Location: CDOT/HQ Auditorium
Date: Friday, October 28, 2016

Start	End	Time	Item #	Item	Presenter
1:00 PM	1:10 PM	0:10	1	Introductions/Meeting Overview/Welcome Approve July 29, 2016 TRAC Meeting Minutes	Ann Rajewski & Mark Imhoff
1:10 PM	1:10 PM	0:00	2	Sub-Committees	
1:10 PM	1:25 PM	0:15	a.	Rural Regional Bus Reconfiguration*	Michael Timlin
1:25 PM	1:45 PM	0:20	b.	5310 / 5311 Policy*	Jeff Sanders
1:45 PM	1:55 PM	0:10	3	SB228 Transit Projects - update*	Jeff Sanders
1:55 PM	2:00 PM	0:05	4	Transit Grants Quarterly Report*	David Krutsinger
2:00 PM	2:05 PM	0:05	5	Bustang - Quarterly Report*	Michael Timlin
2:05 PM	2:10 PM	0:05	6	Southwest Chief, TIGER VII & VIII update	David Krutsinger, Jim Souby, Pete Rickerhauser
2:10 PM	2:20 PM	0:10		*******Break	
2:20 PM	2:35 PM	0:15	7	CDOT Transit Policies*	Mark Imhoff
2:35 PM	2:45 PM	0:10	8	Parking Legislation / HPTE Enterprise	Mark Imhoff
2:45 PM	3:05 PM	0:20	9	Multimodal Freight Plan update/State Passenger & Freight Rail Plan*	Sharon Terranova
3:05 PM	3:20 PM	0:15	10	Bike Ped & Transit Investment*	Danny Katz
3:20 PM	3:30 PM	0:10	11	2017 TRAC Meeting Schedule and Membership*	Ann Rajewski
3:30 PM	3:40 PM	0:10	12	Questions / Round Table	Ann Rajewski
3:40 PM	3:40 PM	0:00	13	Adjourn	Ann Rajewski
Total Time		**2:40**			

1 Dial: 1- 877-820-7831
2 Participant Passcode: 418377# (be sure to enter the pound key as noted)
3 wait to be added to the meeting.

*Attachments

Agenda Items subject to change at chair's discretion

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STATEWIDE RURAL REGIONAL BUS NETWORK DEVELOPMENT

TRAC – October 28, 2016

Rural Regional Bus Network Development

- **Background**
  - The TRAC was last updated on Rural Regional Bus Network in July.
  - Points discussed:
    - ✓ Basis in adopted plans (Statewide Transit Plan, Intercity Bus Network Plan)
    - ✓ The purpose of the initiative (improved connectivity and mobility)
    - ✓ Goals (increased efficiency, increased utility)
    - ✓ General approach (branding, competitively bid operations)
    - ✓ Stakeholder outreach plan (TPR and MPO presentations)

Rural Regional Bus Network Development

Role of Bustang in the network is to provide much needed connectivity to Colorado's largest transit agencies along the I-25 Front Range Urban Corridor and the I-70 Mountain Corridor:

- Regional Transportation District (RTD)
- Transfort
- Mountain Metropolitan Transit (MMT)
- Roaring Fork Transportation Authority (RFTA)
- Eagle County Transit (ECO)
- Vail Transit
- Summit Stage

Initial phases of Rural Regional Network will expand on Bustang and provide additional connections to regional activity centers such as:

- Pueblo
- Grand Junction

Rural Regional Bus Network Development

Funding is fiscally constrained & is leveraging existing resources

Operations

- 5311(f) $1.6m in 2016 – estimated to be $1.7m in 2017, and $1.8m in 2018 due to modest increase in FAST act
- FASTER Regional Operating (estimated at $450k annually)

Capital

- SB228 will be used to purchase vehicles and upgrade or develop supporting infrastructure (primarily Park and Rides)

Public Outreach

The Rural Regional concept has had significant stakeholder outreach:

- All local transit entities through four Transit Town Hall meetings in March 2016
- Fifteen presentations to all TPRs and MPOs during April, May and June.
- A TRAC sub-committee has been involved over the past year in the development of the Rural Regional plan.

Input received has generally been very supportive with the following themes:

- Coverage valued over level of service (LOS)
- Fare structure similar to Bustang is acceptable
- Flexibility in service design (LOS, vehicle type, etc.) is looked upon favorably
- Desire to see CDOT support the existing providers in the corridors
- Look at other services where there are existing gaps
- Partnerships with Human Service Organizations will be important over the long haul.

Balancing Viewpoints:

- Two TPRs felt the funds could be better spent on rural roads.
- Other TPRs wanted additional routes and more funds spent on transit

CREATING THE MOST EFFECTIVE NETWORK

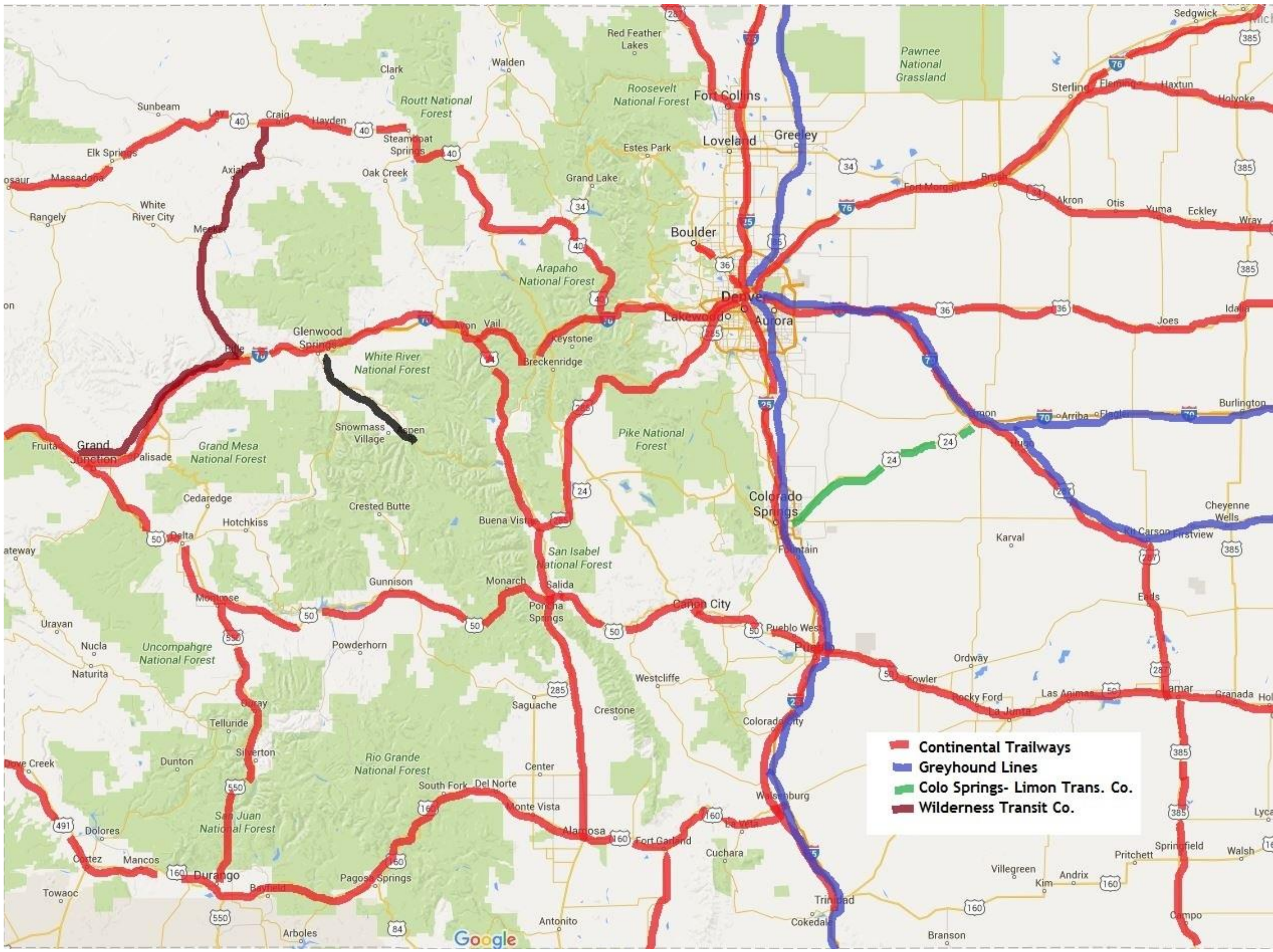
It is important to jointly view the statewide bus network concurrently. Bustang expansion (utilizing FASTER Statewide Bustang funds) and Rural Regional reconfiguration (utilizing 5311(f) funds).

The plan is broken into two phases:

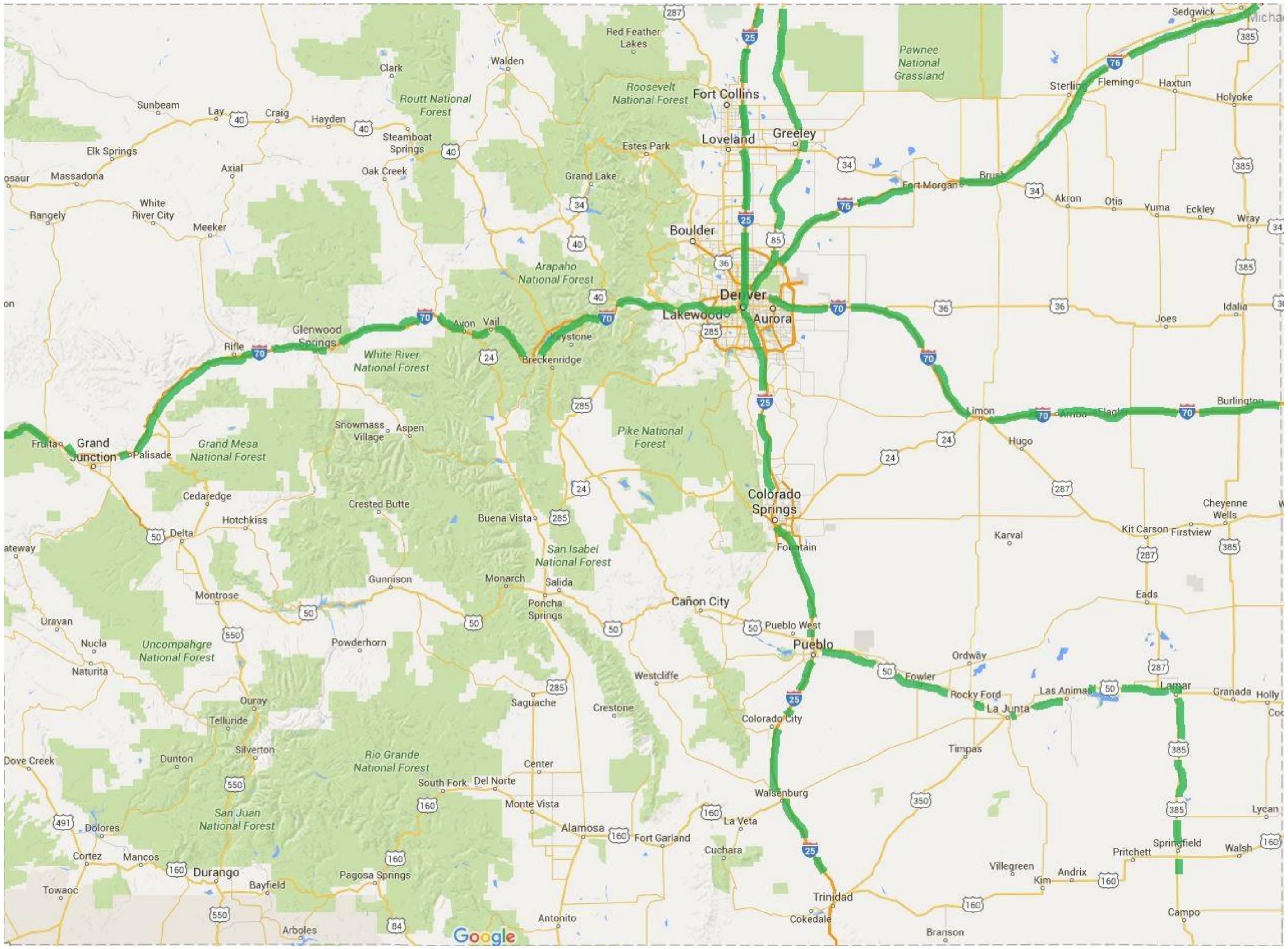
- **Phase 1 – FY 2016/17**
  Deploy three new Bustang coaches and begin the reconfiguration of the current 5311(f) routes into a branded integrated service network.

- **Phase 2 – FY 2017/18**
  Put the remainder of the current 5311(f) routes into a service package to be competitively procured and awarded to a private contract operator (similar to Bustang).

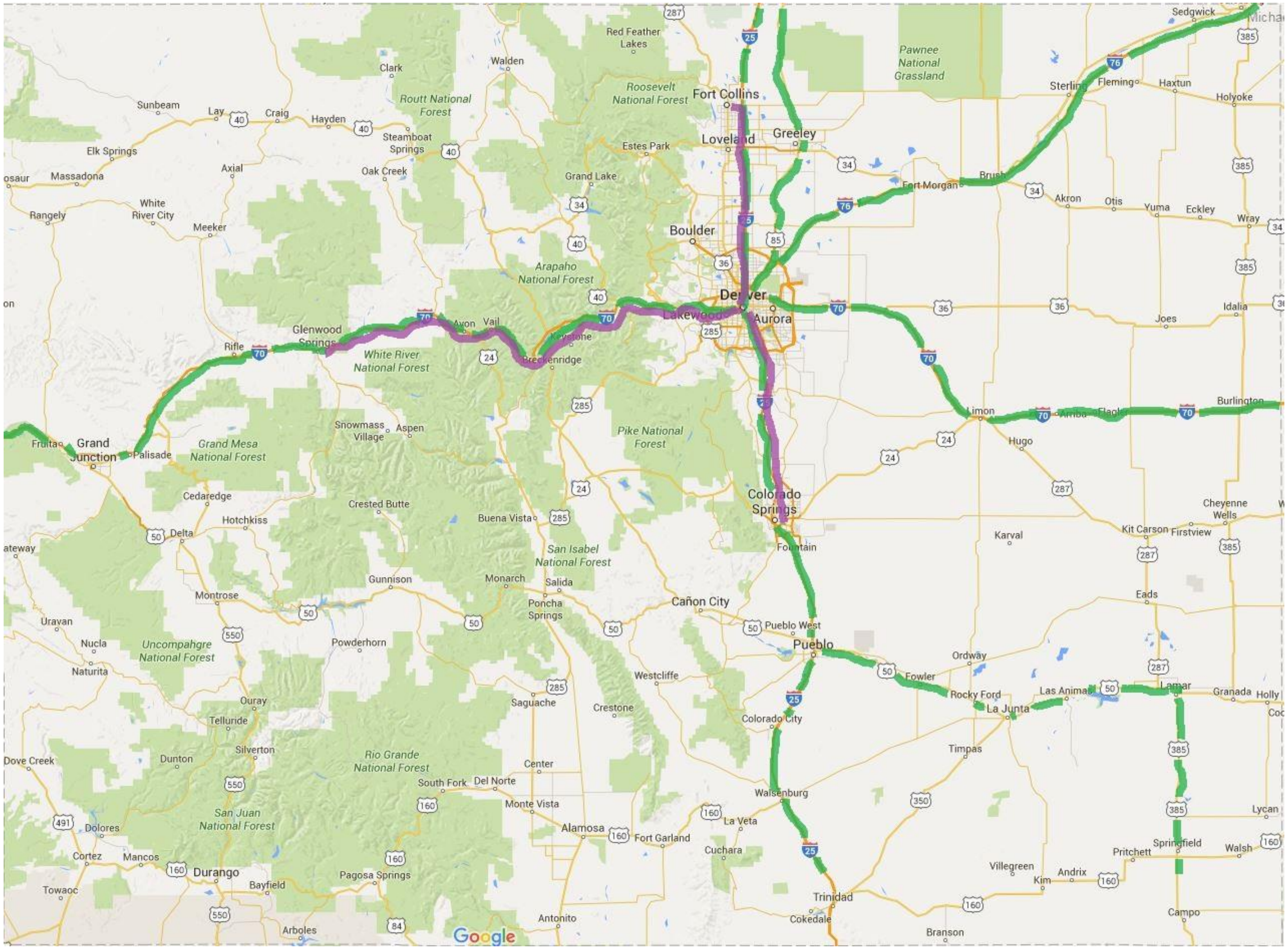
1976 Unsubsidized Intercity Bus



2016 Unsubsidized Intercity Bus



2016 Unsubsidized Intercity Bus with Bustang



Phase 1 Details – FY 2016/17

Funding is fiscally constrained and is leveraging existing sources

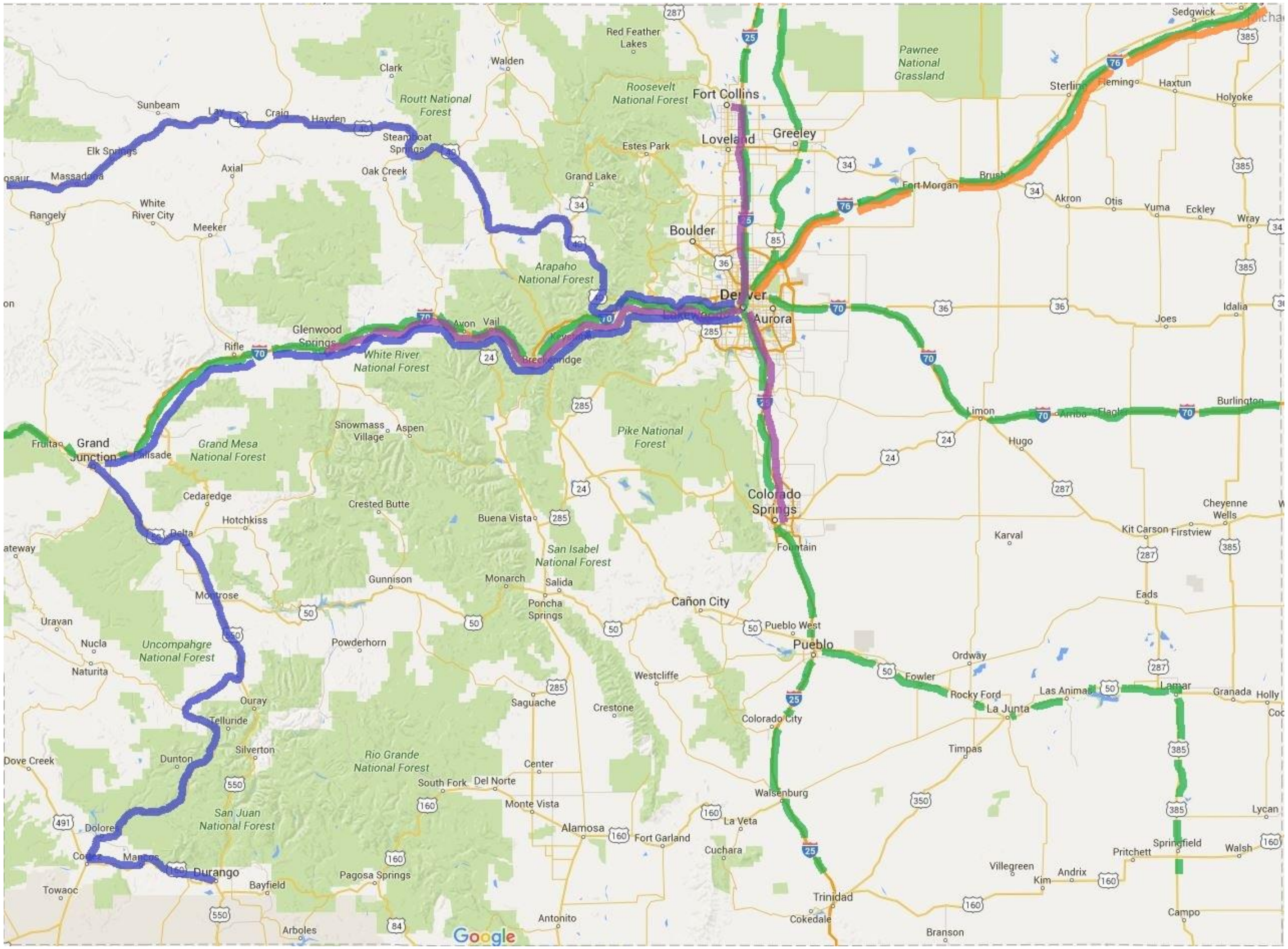
Operations

- Eliminate the 5311(f) subsidy to the I-76 Route
- Apply the 5311(f) "savings" to Phase 2
- Maintain the status quo on Denver – Salt Lake via Steamboat
- Co-brand the Greyhound I-70 to Grand Junction with Bustang
- Also add a Vail-Denver short-turn Bustang route
- Improve SUCAP Durango-Grand Junction service reliability

Capital

- Use three new Bustang coaches which arrived in June 2016
    - 1 for Gunnison - Denver
    - 1 for Vail-Denver
    - 1 for short-term loan to SUCAP for Durango-Grand Junction
- Order six smaller (30-35 foot) over-the-road coaches for Phase 2

Phase 1



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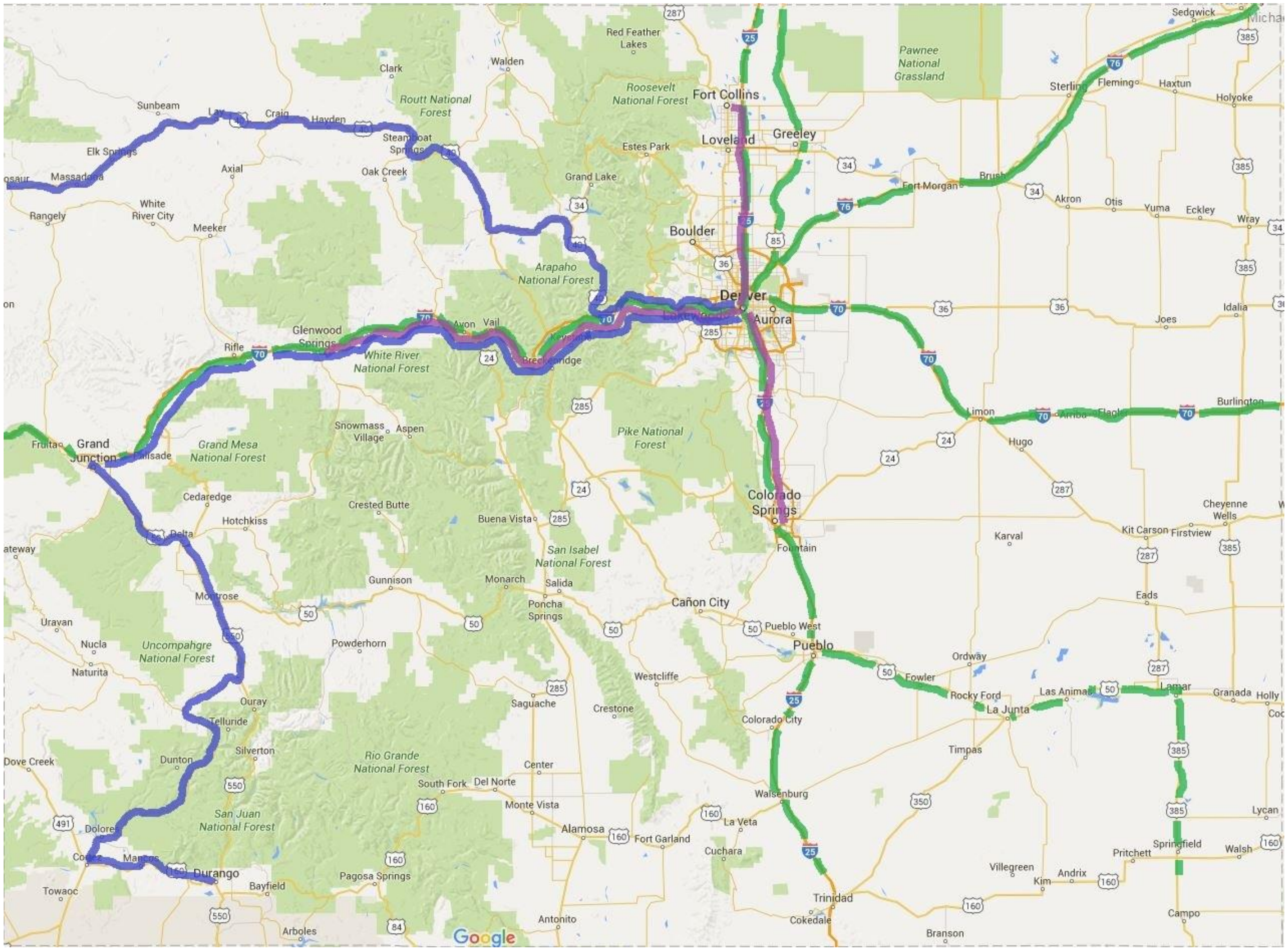
Phase 1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Phase 2 Details – FY 2017/18

Phase 2 will include implementation of the remaining elements from Phase 1 and two Bustang extensions:

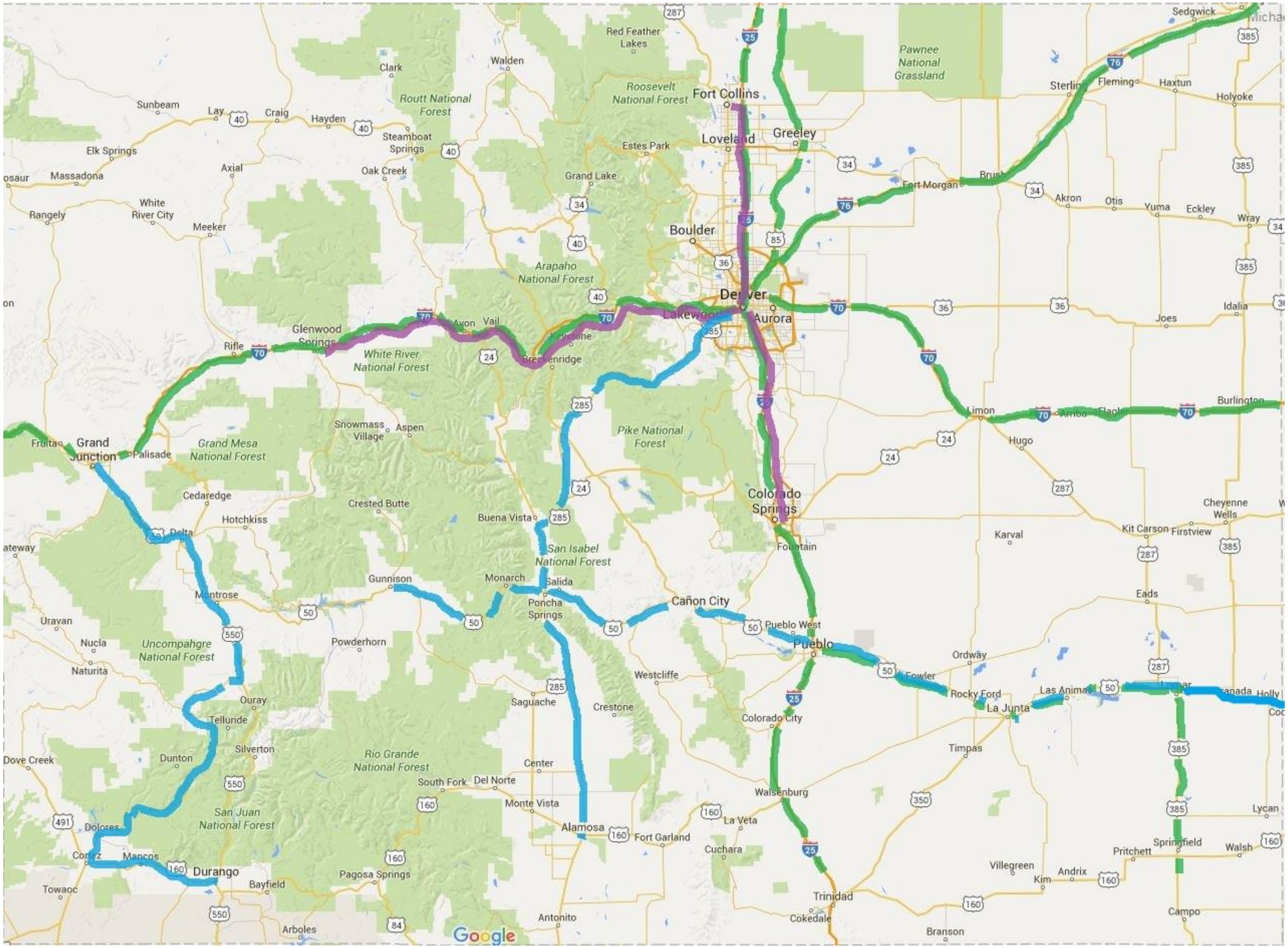
<u>Operations</u>

- Eliminate the subsidy for the Pueblo – Witchita Route
- Re-allocate funds to new Lamar – Pueblo Route
- Reconfigure existing Alamosa-Salida-Pueblo, Gunnison-Salida - Denver
- Add weekday round trip to the Bustang North Route
  - Requires return of Bustang coach on loan to SUCAP
- Add two round trips of Bustang South Route to Pueblo
  - One AM, one PM

<u>Capital</u>

- 2 new branded Rural Regional smaller over the road coaches to SUCAP for use Durango to Grand Junction route
- 4 new branded over the road coaches for supporting capital on southern Colorado routes: Gunnison-Denver, Alamosa – Pueblo, Pueblo-Lamar.

Phase 2



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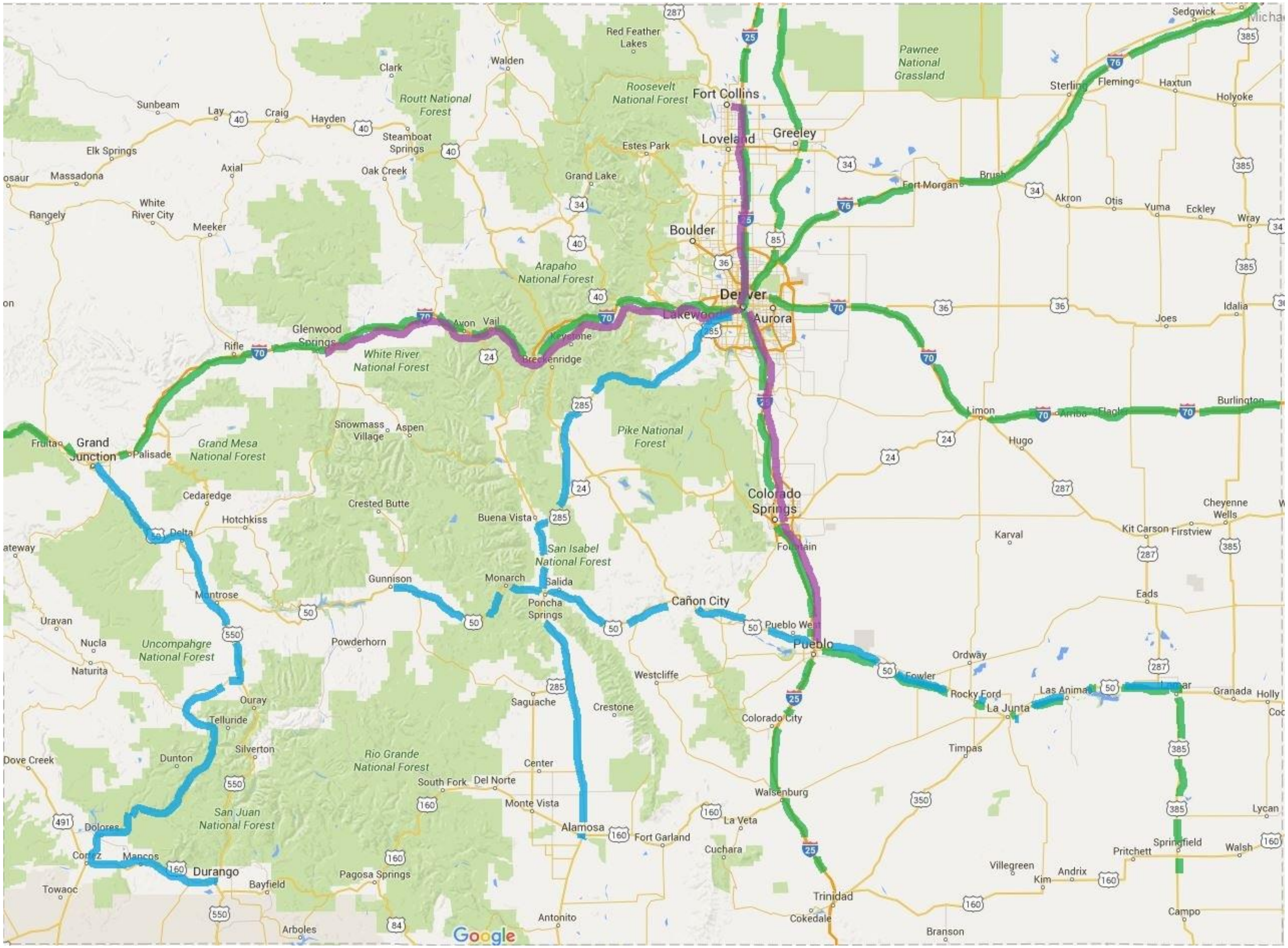
Phase 2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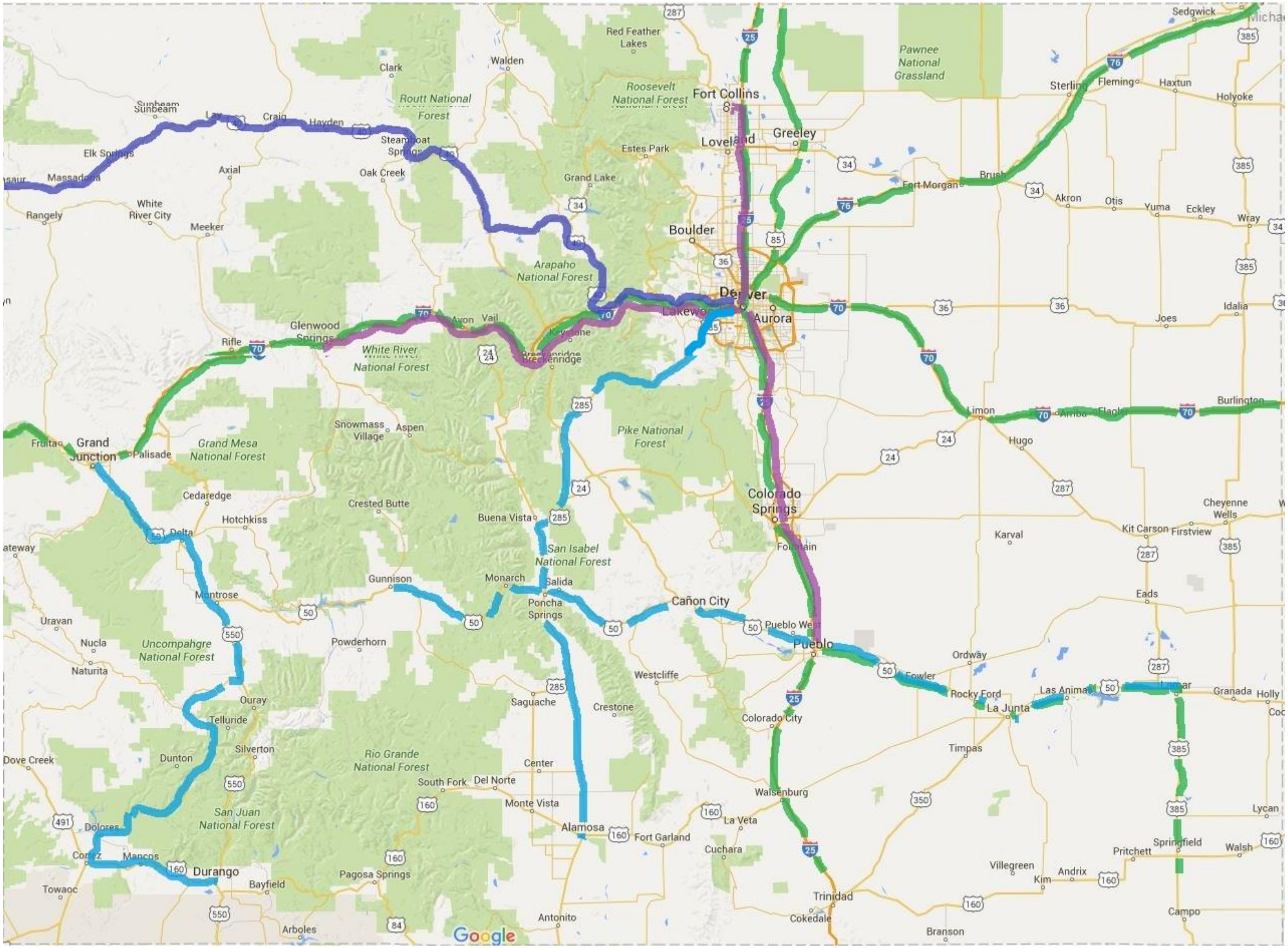
Phase 1 & 2



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La Junta
Walsenburg

Phase 3 Details – FY 2017/18 and FY 2018/19

After Phase 1 & 2 are complete, use any 5311(f) savings and the remaining FASTER Regional Operating Funds for new Rural Regional Services proposed by local transit agency partners

Proposed New Operations

- Steamboat Springs to Frisco
- Fort Morgan to Greeley
- Greeley to Fort Collins
- Gunnison to Montrose
- Dove Creek to Durango
- Limon to Colorado Springs
- Craig – Rifle – Grand Junction

Potential Co-Branding Opportunities with Existing Regional Services

- Fort Collins to Boulder (FLEX)
- Trinidad to Pueblo (SCCOG)
- Craig-Steamboat (SST)
- Leadville-Vail (ECO)
- Leadville-Frisco (Summit Stage)
- Rifle – Glenwood (RFTA)

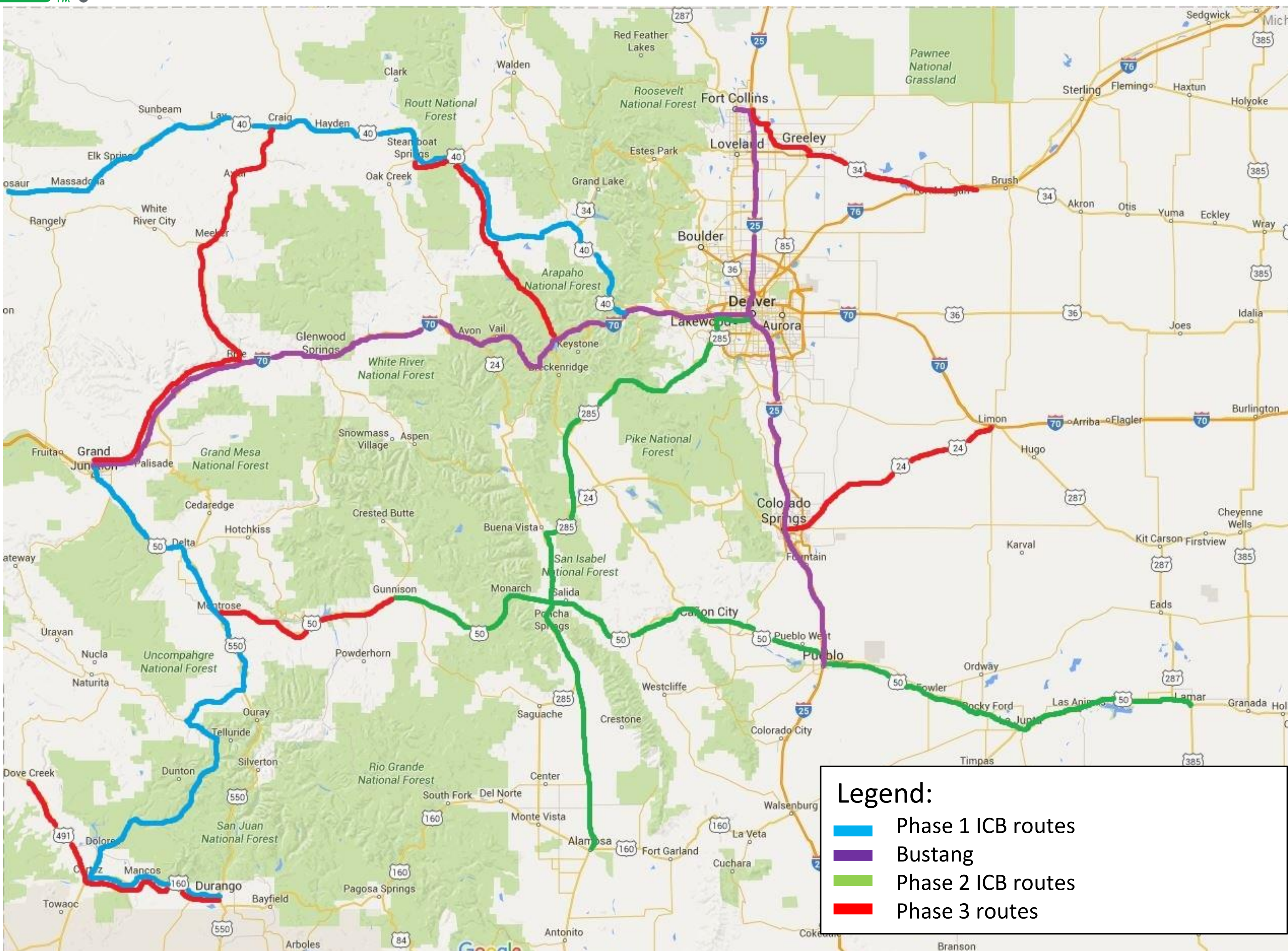
Capital

- Order up to 14 additional smaller, branded over-the-road buses using SB 228 funding

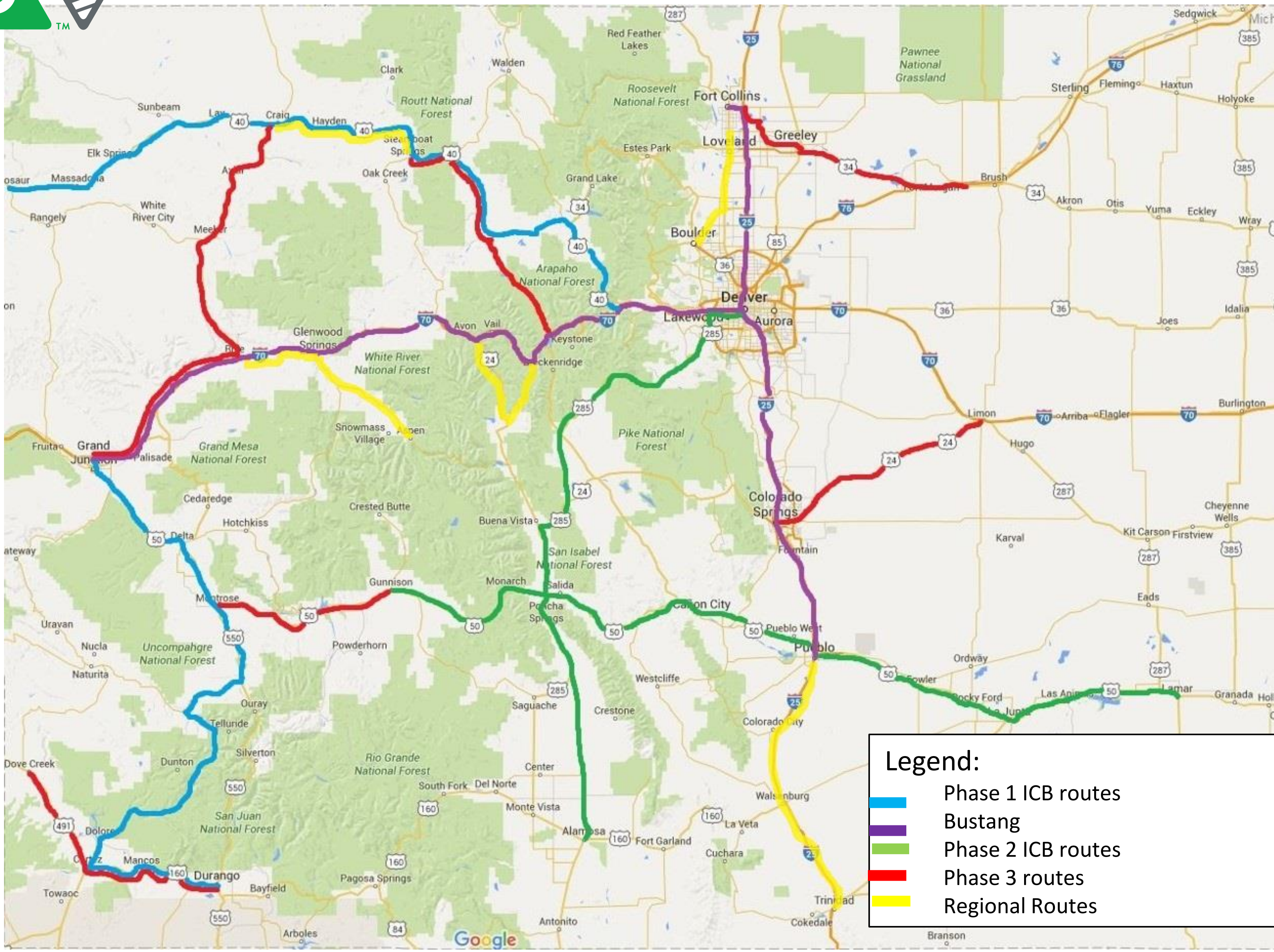
Phase 3


Legend:
Craig-Rifle-Grand Junction
Dove Creek-Durango
Montrose-Gunnison
Steamboat-Frisco
Greeley-Windsor-Fort Collins
Fort Morgan-Greeley
Limon-Colorado Springs

Phase 1, 2 & 3 combined



Phase 1, 2 & 3 & Regional Routes



Next Steps

- Complete Bus Procurement
- Phase 2 Operator RFP out for Bid Early 2017
    - Work with Procurement to figure out how to put out the bid without encumbering funds.
- Rural Regional Brand Development

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5310 and 5311 Funding Distribution Policy
TRAC, November 2016

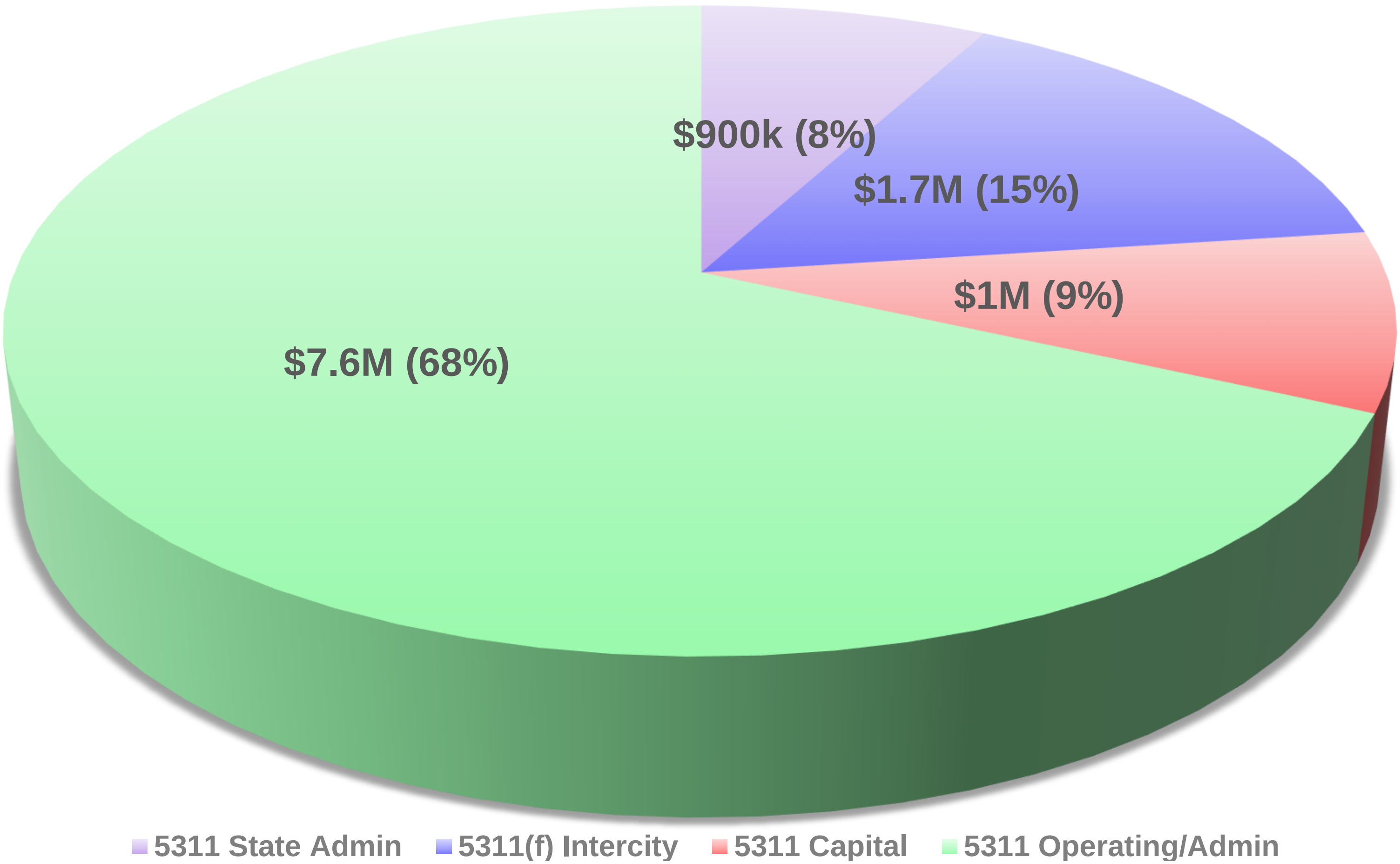
Overview of Project

- CDOT desires an equitable and simplified method for administering the 5310 and 5311 program.
- We initiated a process that included:
  - Notice of Proposed Policy Change in December 2015
  - Discussion at Transit Town Halls and CASTA in Spring 2016
  - Focused discussion groups to explore concepts (July, August, Sept)
- The process will continue through 2016 and most of 2017

Today's Purpose

- Provide background information on 5311 program
- Describe why CDOT is undertaking this project
- What have we done and learned so far
- Next steps

How CDOT Uses 5311 (FY2016)



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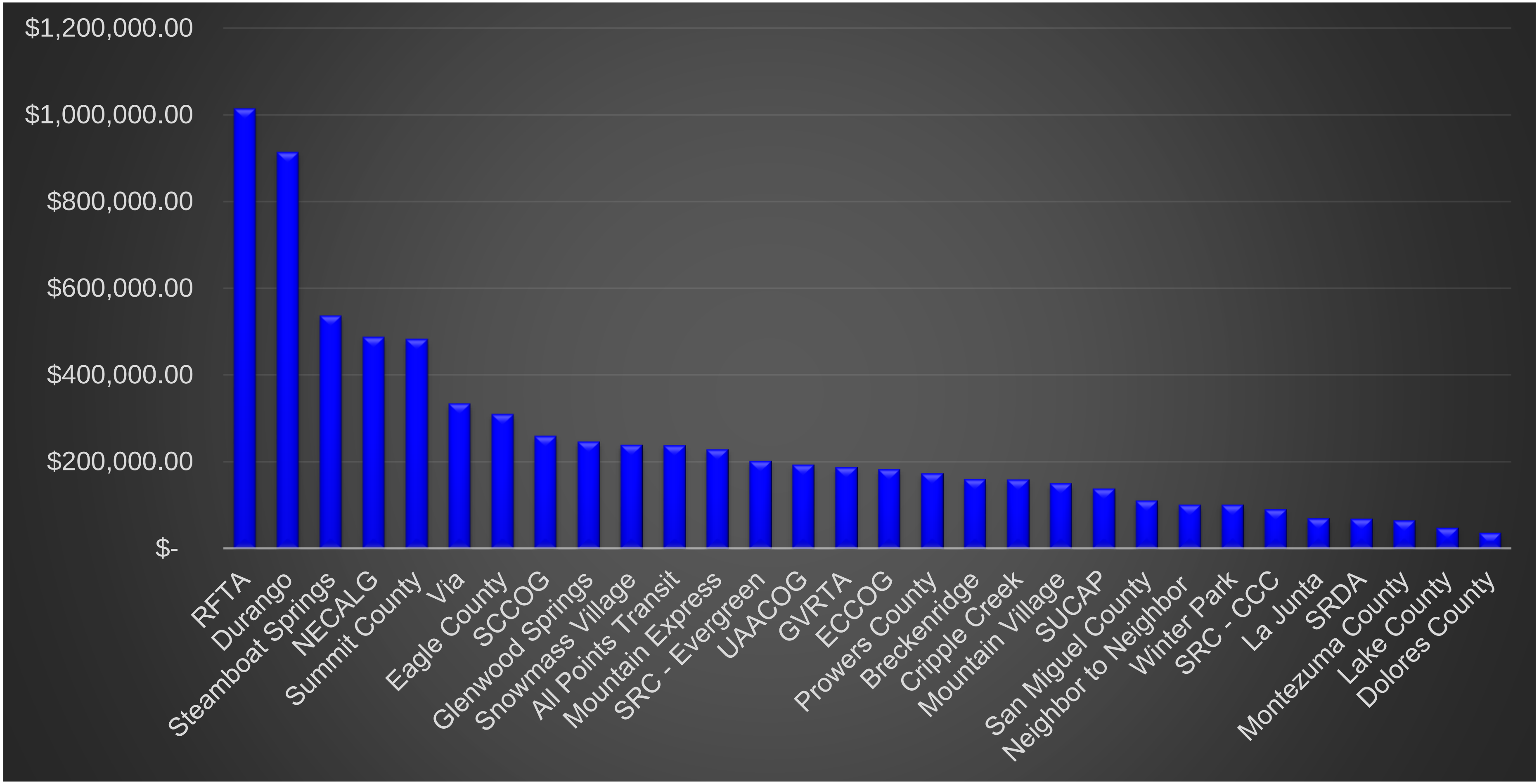
2016 Operating/Admin Grants



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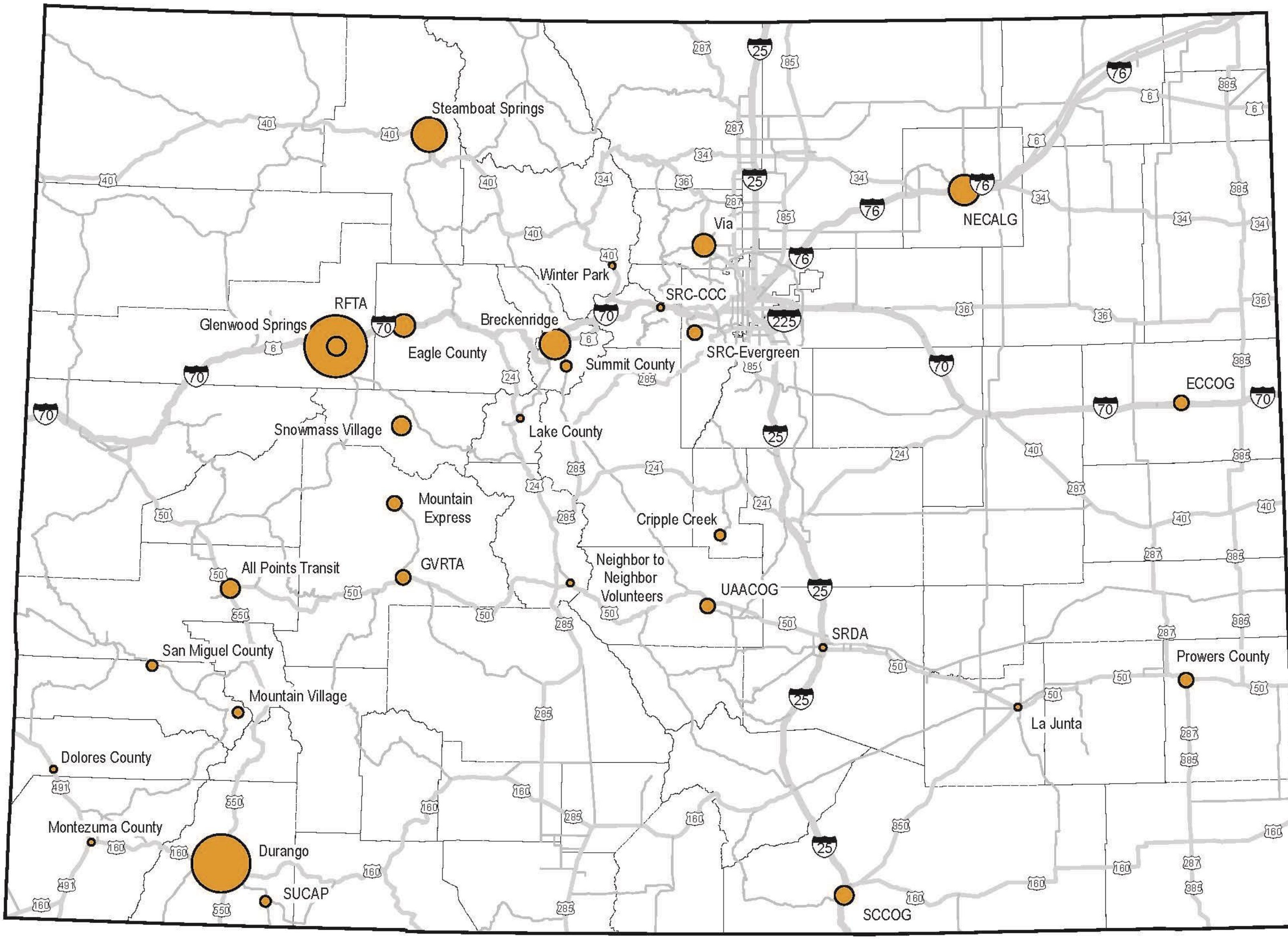


Why Is CDOT Doing This?

- Slow or no growth in federal funding
- Increased competition for funds
- Opportunity to introduce performance as a factor
- Limited or no funding for new entrants
  - Archuleta County
  - Telluride
  - Bent County
  - Estes Park
  - Woodland Park
  - Black Hawk
  - Rural Weld/Larimer County
- Limited transparency in current formula

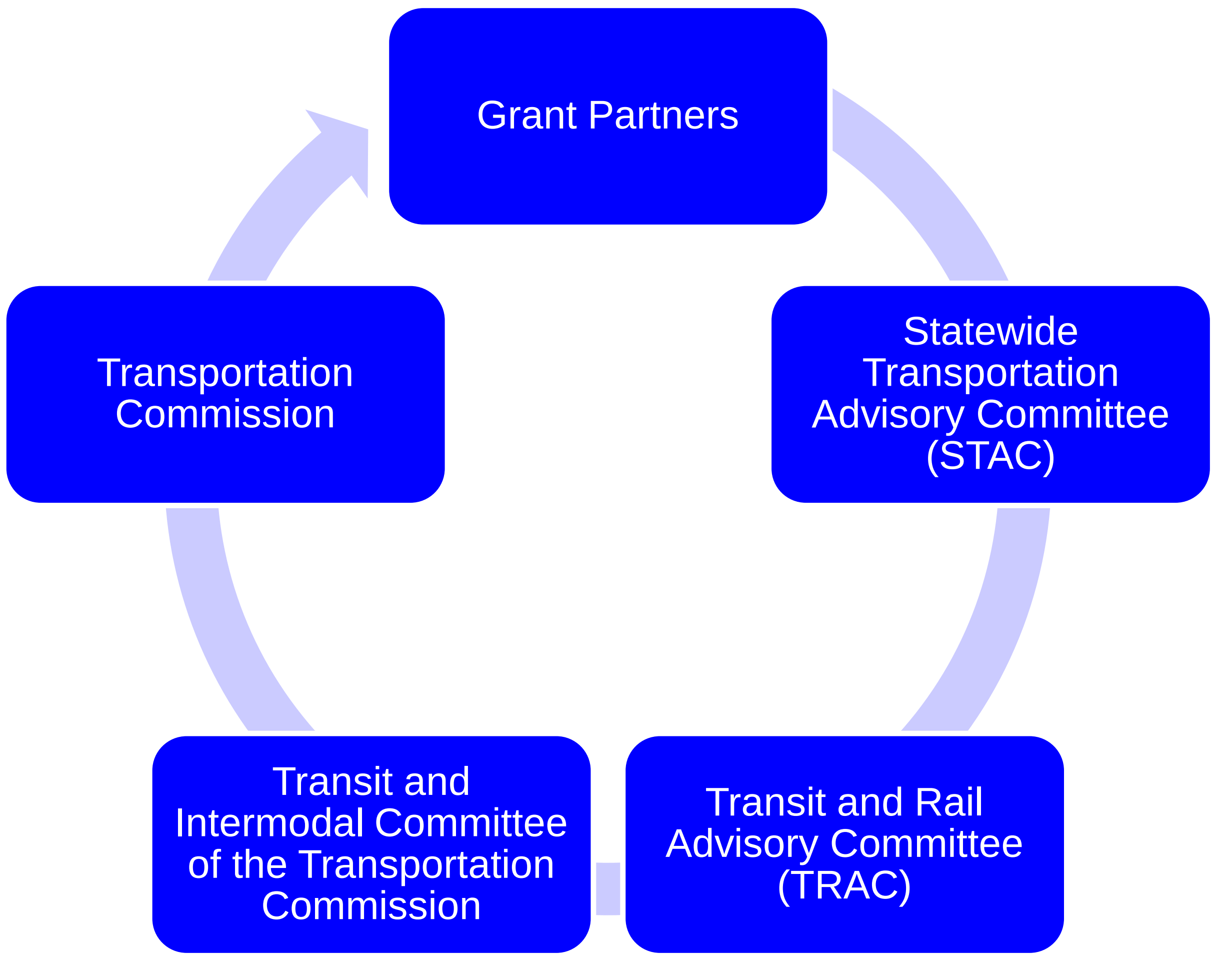
Limited Transparency

	Agency A	Agency B	Agency C
Agency Description	Fixed route service that transport recreational, workers, general public riders		
Vehicle Revenue Miles	1.4 million	2.1 million	620,000
Size of fleet (revenue vehicles)	35	35	25
Grant (2016)	$480,000	$309,000	$537,000

Limited Transparency

	Agency A	Agency B	Agency C
Agency Description	Demand-response service in a rural county		
Passenger Trips	40,000	14,200	30,000
Vehicle Hours	5,400	2,700	5,200
Grant (2016)	$258,000	$256,000	$440,000

What is the Approval Process?



Summary of 5311 Focus Groups

- July 11th – Background and issues
- August 11th – Criteria
- September 8th – Feedback on criteria and process

Approach To Date

- Issues
- Criteria
- Methodology (formula)
- Policy
- Transition

Scenario A (Based on national formula)	Scenario B1 and B2 (Variations on national formula)	Scenario C (Based on operating budget)	Scenario D (Various factors)
• Land • Population • Miles • Low Income Population	• Land • Population • Miles • Low Income Population • Performance	• Percentage of operating budget • Capped at $500,000	• Population • Miles • Hours • Passengers • Low Income Population • Performance

Where There is Consensus

- Criteria
  - Land area is not very useful, and it is hard to measure the actual service area of systems
  - There is solid support for performance measures, looking at both cost efficiency and service productivity.
  - Population is useful, but some consideration is needed for visitor populations in resort communities.
  - If population is used, it should reflect population of service area (not county)

Where There is Consensus

- Process
  - A transition is needed, particularly for areas that stand to lose funding.
    - Because funding is limited, this likely means a transition up to full funding levels for under-funded or new projects.
  - The process of making changes needs to make sure all voices are heard.

Next Steps

- Add up to another year to the project

Policy Framework

Criteria

Methodology (formula)

Transition

TRAC Subcommittee

- Committee consisting of TRAC members and others
  - Ann Rajewski, CASTA
  - Vince Rogalski, STAC rep
  - RFTA
  - GET
  - Durango Transit
  - Steamboat Springs Transit
  - All Points Transit
  - South Central COG
  - Via

Questions?

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4201 E. Arkansas Ave., Rm. 227
Denver, CO 80222

Update for TRAC - October 28, 2016 Meeting

DATE: July 20, 2016
TO: Transportation Commission/Transit & Intermodal Committeee
FROM: Mark Imhoff, Director - Division of Transit & Rail
SUBJECT: White Paper: SB228 Transit Recommendations

Purpose

This White Paper supplements the July 20 Transit & Intermodal memo, and gives a more comprehensive overview and project summaries for the SB 228 Transit recommendations for FY2016/17 (Phase 1) and FY2017/18 (Phase 2).

Background

In February 2015 the TC adopted PD 14 to guide future allocation of resources and investment decisions. Under "System Performance", the transit objectives are to increase rural transit ridership (Transit Utilization), and to maintain or increase the miles of regional and interregional service (Transit Connectivity). Bustang is CDOT's first attempt to provide interregional connectivity by connecting the six largest transit agencies over nearly 300 miles in the I-25 and I-70 corridors.

The Statewide Transit Plan was adopted by the TC a year ago, and one of the priority needs of rural communities across the state is for better rural to urban transit connections for essential services; i.e. medical, business, shopping, pleasure, connection to the intercity and interregional transit network, airports, etc. In response to that input, a performance measure was adopted within the Statewide Transit Plan that charges CDOT with working to improve the percentage of Colorado's rural population served by public transit.

Senate Bill 228 (SB 228) provides approximately $200M in new revenue for CDOT in FY 2016, and forecasts an additional $150M in expected new revenues in FY 2017; with at least 10% (approximately $35M) dedicated to transit. The SB 228 program must be used for TC approved strategic projects with statewide or regional significance.

Details

Table 1 identifies the recommended transit projects to utilize the SB228 funding, followed by a more descriptive listing of project descriptions. Transit has been allocated approximately $20M from FY2015/16; these funds are available for use now. Forecasts indicate an additional $15M for FY2016/17; available at the end of the fiscal year. The projects identified in Table 1 are listed in priority order, with associated conceptual cost estimates. The projects would be developed/implemented in series, such that construction or manufacture bids would be in place before committing to the next projects in the series. If bids are less than the conceptual estimates, more projects can be undertaken; if bids are more than the conceptual bids, fewer projects can be undertaken. Any projects not completed within the $35M allocation for transit will be included in the 10 Year Development Plan.

The first section of Table 1 contains the projects to be undertaken in FY2016/17; $20M. The second section contains projects to be undertaken in FY2017/18. The final section identifies the projects that would be undertaken if any funding remains, or if the forecast for FY2016/17 is increased.

Table 1: Recommended Transit Projects for SB 228 Funding

Cost	Project Description
Phase 1: State Fiscal Year 2016-2017	
$2.0 M	Program & Construction Management of all the Phase 1 Projects below
$1.5 M	Winter Park Express Platform (approved Apr. 2016)
$2.5 M	Six branded over-the-Road Coaches, 30-35 foot
$5.0 M	I-25 Managed Lanes Project: Kendall Parkway replacement / expansion of existing Loveland park-and-ride at US 34 / I-25
$3.0 M	Woodmen Road park-and-ride replacement / expansion in Colorado Springs
$1.5 M	Lawson / Telluride / San Miguel County park-and-ride
$2.5 M	Frisco Transit Center Expansion
$2.0 M	Rifle Park & Ride Relocation
$20.0 M	*Phase 1 Subtotal*
Phase 2: State Fiscal Year 2017-2018	
$1.5 M	Program & Construction Management of all the Phase 2 Projects Below
$4.0 M	Up to ten (10) Branded over-the-road Coaches for the Rural Regional System
$10.0 M	Outer Loop Park & Rides • Idaho Springs / Clear Creek County • Castle Rock / Douglas County • Frederick, Firestone, Dacono, Erie, Longmont / Weld County • Potential Denver Tech Center Stop
$15.5 M	*Phase 2 Subtotal*
$35.5 M	*Phases 1 + 2 Subtotal*
Phase 3: State Fiscal Year 2017-2018 and Beyond if Funds Available	
$4.0 M	Pueblo park & ride for Bustang service extension
$2.0 M	Brush Creek Park & Ride Expansion
$3.0 M	Glenwood Springs Maintenance Facility to include Bustang, USFS Shuttle, RFTA
$2.5 M	Harmony Road park-and-ride expansion
$2.0 M	Tejon park-and-ride expansion
$4.0 M	Monument park-and-ride access improvements, saving Bustang 10 minutes per trip, each direction
$17.5 M	*Phase 3 Subtotal*
$53.0 M	*Phase 1 + 2 + 3 Subtotal*

SB228 Projects for FY2016/17

- Project Development and Program/Construction Management (up to $2.0M for the $20M FY2016/17 program of projects) – AECOM is the program/construction management consultant retained by the Bridge Enterprise for technical assistance. They are available to assist with transit projects as well, and will be utilized on a project by project basis by task order.
- Winter Park Express Platform ($1.5M) – This project was approved by the Transporttion Commission at the April, 2016 meeting.
- Branded Over-The-Road-Coaches for the Rural Regional System ($2.5M for 6 buses) - A procurement solicitation will be offered for bid to cover the full Rural Regional Bus Plan. The solicitation will be structured for a minimum bus order (six for FY2016/17), and a fixed price for additional buses when needed. The bus fleet will be ordered in phases to align with the final implementation schedule.
- I-25 Managed Lanes Project From Loveland to Fort Collins/TIGER VIII ($5.0M) – The current Loveland Park & Ride at I-25/US34 utilized by Bustang is at/over capacity and has significant bus access/operation issues, and a replacement is needed. In partnership with Region 4 the I-25 Managed Lanes project includes a new Park & Ride at Kendall Parkway, including bus slip ramps and verticle connection. The Kendall Parkway Park & Ride will replace the current Loveland Park & Ride. If the I-25 Managed Lanes project does not happen, the $5M will be used to find a suitable replacement location. The $5M of SB228 transit funds was approved by the Commission at the April, 2016 meeting as part of the TIGER VIII commitment.
- Woodmen Road Park & Ride ($3.0M) – The Woodmen Road Park & Ride is the primary Bustang stop in Colorado Springs, and is at capacity. In partnership with Region 2 we are evaluating sites for an expanded Park & Ride. The existing site would be sold with the proceeds being applied to the new location.
- Lawson Park & Ride ($1.5M) – This will be a new Park & Ride in San Miguel County along SH145, outside Telluride. It will serve as a regional Park & Ride for the existing Road Runner interregional bus service between Durango and Grand Junction; and a key route in the Rural Regional network. San Miguel County is donating the land to the project.
- Frisco Transit Center Expansion ($2.5M) – Summit County and the Town of Frisco are expanding the multimodal transit hub, which includes Bustang. The SB228 funds will be utilized in the expansion to add parking and better bus access.
- Rifle Park & Ride Relocation ($2.0M) – The current Rifle Park & Ride is located near the downtown, a considerable distance from I-70. The relocation will be close to I-70 and therefore improve access for the current RFTA operations, and Bustang for the planned extension to Grand Junction.

SB228 Projects for FY2017/18

- Project Development and Program/Construction Management (up to $1.5M for the $15M FY2017/18 program of projects) – AECOM is the program/construction management consultant retained by the Bridge Enterprise for technical assistance. They are available to assist with transit projects as well, and will be utilized on a project by project basis by task order.
- Branded Over-The-Road-Coaches for the Rural Regional System ($4.0M for up to 10 buses) – Utilize the fixed price agreement for additional buses; the bus fleet will be ordered in phases to align with the final implementation schedule.
- Outer Loop Park & Rides (up to $10.0M) – Includes Idaho Springs, Castle Rock and SW Weld County, and would require inclusion/new stops in the Bustang service. These are communities that do not have local fixed route service to provide the first/last mile as an access option, and thus were excluded from the initial Bustang service plan. At the October T&I and November TC meeting staff was asked to explore the possibile opportunities to cost share new Park & Ride facilities with these communities. We have worked with Regions 1 and 4, and interest exists in all of these communities, but we are not yet at a point to commit or assign cost estimates. Therefore, a place holder amount of $10M has been designated until further negotiations can be held. In addition, also included in this category is the potential of adding a Bustang stop in the Denver Tech Center (DTC). We get numerous requests for a DTC stop, and we believe we would get increased ridership if a stop were added; however the current access time penalty is prohibitive. We are exploring the possibility of adding slip ramp type access to a current RTD light rail

station. Location and costs are unknown, and this potential project has been included in the Outer Loop Park & Ride category.

SB228 Projects for FY2017/18, if funds available

- Pueblo Park & Ride ($4.0M) – New Park & Ride for Bustang planned extension to Pueblo.
- Brush Creek Park & Ride Expansion ($2.0M) – RFTA VelociRFTA BRT Park & Ride is over capacity.
- Glenwood Springs Maintenance Facility (3.0M) – Facility expansion to include Bustang overnight storage, and Park & Ride for the Hanging Lake Shuttle.
- Harmony Road Park & Ride Expansion ($2.5M) – Primary Fort Collins Park & Ride is nearing capacity.
- Tejon Park & Ride Expansion ($2.0M) – South Colorado Springs Bustang Stop.
- Monument Park & Ride Access Improvements ($4.0M) – Would improve Bustang travel time by 10 minutes.

COLORADO
Department of Transportation
Division of Transit & Rail

4201 E. Arkansas Ave., Rm. 227
Denver, CO 80222

Information provided to TRAC – October 28, 2016

DATE: October 20, 2016
TO: Transit & Intermodal Committee
FROM: Mark Imhoff, Director - Division of Transit & Rail
SUBJECT: Transit Grants Quarterly Report

Purpose
The memo provides the Transit & Intermodal Committee a quarterly update on the Transit Grants Program.

Action
Review only. No action needed.

Background
Policy Directive 704 states that the T&I Committee shall receive a quarterly update on FASTER Transit grants. Because FASTER and FTA funds are managed together as a whole, and each individually is approximately half of the overall CDOT transit program, this report includes information about both revenue sources and grants.

Details
Policy Directive 704 states, that the T&I Committee shall review quarterly reports submitted by DTR which contain the expenditures and status of all FASTER funded projects and the reconciliation of FASTER funding. FTA Circular 5010.1D requires that CDOT, as a recipient of FTA funds, provide Federal Financial Reports (FFR's) and Milestone/Progress Reports (MPR's). This information is assembled by members of the Division of Transit & Rail (DTR), the Business Office within the Division of Acounting and Finance (DAF), and the Office of Financial Management & Budget (OFMB).

FASTER Update

FASTER revenues were allocated by state statute into "local" and "statewide" pools. In June 2014, a TC decision further sub-allocated "local" into two uses, and "statewide" into five uses. This was done to move FASTER transit funds towards better performance management, to respond to the increasing demand for vehicle replacements which are more routine decisions by age/mileage criteria, and to spend money on transit operations for the first time (Bustang and other Regional bus service). The seven total use categories are shown in Table 1.

The rest of Table 1 provides a status update on State Fiscal Year (SFY) 2014-2015; projects awarded two and a half years ago (Februray 2014), for which budget was available to write contracts (July 1 2014), and which are now 27 months into project completion since then. As compared to three months ago, these projects have moved further along toward being fully expended by $1.4 M ($11.9 M in June 30th vs $13.3 Sept. 30th).

Table 2 shows the update on SFY 2015-2016; projects awarded 18 months ago (February 2015), for which budget was availble to write contracts (July 1, 2015), and which are now 15 months into project contracting (+0.6 Million contracted since last quarter) and delivery. Contracted but unexpended projects are typically vehicles which have 6-24 month pre-order timelines. In the case of Bustang, it is a combination of vehicle orders, and the contract "year" being different from the fiscal year.

SFY 2016-2017 capital projects were awarded in February 2016, and budget became available July 1st of 2016 to begin contracting. A table for these projects will begin to appear in the January or April quarterly report.

In total for FASTER Transit funds, 2010-2016, $90.5 Million has been obligated for 240 projects around the state.

Table 1: FASTER Funding Available SFY 2015: July 2014 - June 2015
Status Report as of Sept 30, 2016
($Millions, rounded)

FASTER Pool	Annual Budget	Prior Year Roll Fwd	Total Available	Awarded But UnContracted	Contracted Unexpended	Contracted Expended	UnProg. Next Yr Roll Fwd
Local Pool	$5.0	$1.2	**$6.2**	$0.1	$4.0	$2.1	$0
Small Agency Capital Expenses	N/A	$0.0	N/A	N/A	N/A	N/A	N/A
Large Urban Capital Expenses (MMT, FT)	N/A	$0.0	N/A	N/A	N/A	N/A	N/A
Subtotal Local Pool	**$5.0**	**$1.2**	**$6.2**	**$0.1**	**$4.0**	**$2.1**	**$0.0**
Statewide Pool							
DTR Admin, Planning, Technical Assistance	$1.0	$0.3	$1.3	$0.0	$0.0	$0.6	$0.7
Bustang Interregional Express Service	$3.0	$10.0	$13.0	$0.0	$0.0	$8.6	$4.4
Regional Operating Assistance	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Large Urban Capital Expenses (RTD)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Statewide Competitive Capital Pool	$6.0	$0.5	$6.5	$0.0	$2.6	$2.0	$1.9
Subtotal Statewide Pool	**$10.0**	**$10.8**	**$20.8**	**$0.0**	**$2.6**	**$11.2**	**$7.0**
TOTAL	**$15.0**	**$12.0**	**$27.0**	**$0.1**	**$6.6**	**$13.3**	**$7.0**

Table 2: FASTER Funding Available SFY 2016: July 2015 - June 2016
Status Report as of Sept 30, 2016
($Millions, rounded)

FASTER Pool	Available Overall	Prior Year Roll Fwd	Total Available	Awarded But UnContracted	Contracted Unexpended	Contracted Expended	UnProg. Next Yr Roll Fwd
Local Pool							
Small Agency Capital Expenses	$4.1	$0.0	$4.1	$0.2	**$3.5**	$0.4	$0.0
Large Urban Capital Expenses (MMT, FT)	$0.9	$0.0	$0.9	$0.9	**$0.0**	$0.0	$0.0
Subtotal Local Pool	**$5.0**	**$0.0**	**$5.0**	**$1.1**	**$3.5**	**$0.4**	$0.0
Statewide Pool							
DTR Admin, Planning, Technical Assistance	$1.0	$0.7	$1.7	$0.0	**$0.6**	$0.7	$0.4
Bustang Interregional Express Service	$3.0	$4.4	$7.4	$0.0	**$4.1**	$2.5	$0.8
Regional Operating Assistance	$0.5	$0.0	$0.5	$0.1	**$0.3**	$0.2	-$0.1
Large Urban Capital Expenses (RTD)	$3.0	$0.0	$3.0	$0.8	**$2.2**	$0.0	$0.0
Statewide Competitive Capital Pool	$2.5	$1.9	$4.4	$0.1	**$1.6**	$0.8	$1.9
Subtotal Statewide Pool	**$10.0**	**$7.0**	**$17.0**	**$1.0**	**$8.8**	**$4.2**	**$3.1**
TOTAL	**$15.0**	**$7.0**	**$22.0**	**$2.1**	**$12.3**	**$4.6**	**$3.1**

FTA Update

Table 3 shows the federal fiscal year (FFY) 2014-2015 allocation of FTA dollars available to Colorado to sub-award to transit agencies around the state, and to use for CDOT administrative purposes. FFY was October 1, 2014 through September 30, 2015. In FFY14-15, $17.3 Million was available from FTA. Of the $17.3 Million, CDOT has now obligated and sub-awarded to transit agencies $16.7 Million of that (+1.1 Million since last quarter), and has $0.5 Million to administer the funds.

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Table 3: FTA Funding Available FFY 2015 Program Pools: October 2014 - September 2015
Status Report as of Sept 30, 2016
($Millions, rounded)

FTA Program	Annual Budget	Prior Year Roll Fwd	Total Available	Awarded But UnContracted	Contracted UnExpended	Contracted Expended	Available as CDOT Admin	UnProg. Next Yr Roll Fwd
5304 - State/Non-Urban Planning	$0.4	N/A	$0.4	$0.2	$0.1	$0.0	$0.1	$0.0
5310 - Senior/Disabled Large UZA	$1.6	$0.3	$1.9	$0.0	$0.8	$1.1	$0.0	$0.0
5310 - Senior/Disabled Small UZA	$1.0	N/A	$1.0	$0.0	$0.4	$0.6	$0.0	$0.0
5310 - Senior/Disabled Rural	$0.6	N/A	$0.6	$0.0	$0.3	$0.2	$0.0	$0.1
5311 - Rural Transportation	$11.1	N/A	$11.1	$0.0	$3.1	$7.3	$0.4	$0.3
5312 - Research & Technology	$0.2	N/A	$0.2	$0.0	$0.2	$0.0	$0.0	$0.0
5339 - Bus & Bus Facilities (Rural & Small UZA)	$2.4	N/A	$2.4	$0.2	$2.2	$0.0	$0.0	$0.0
TOTAL	**$17.3**		**$17.3**	**$0.4**	**$7.1**	**$9.2**	**$0.5**	**$0.4**

Table 4: FTA Funding Available FFY 2016 Program Pools: October 2015 - September 2016
Status Report as of Sept 30 , 2016
($Millions, rounded)

FTA Program	Annual Budget	Prior Year Roll Fwd	Total Available	Awarded But UnContracted	Contracts Un-Expended	Contracts Expended	Available as CDOT Admin	UnProg. Next Yr Roll Fwd
5304 - State/Non-Urban Planning	$0.4	$0.0	$0.4	$0.4	$0.0	$0.0	$0.0	$0.0
5310 - Senior/Disabled Large UZA	$1.6	$0.0	$1.6	$0.3	$0.7	$0.5	$0.1	$0.0
5310 - Senior/Disabled Small UZA	$1.0	$0.0	$1.0	$0.6	$0.3	$0.0	$0.1	$0.0
5310 - Senior/Disabled Rural	$0.5	$0.1	$0.6	$0.1	$0.4	$0.0	$0.1	$0.0
5311 - Rural Transportation	$11.2	$0.3	$11.5	$0.1	$3.3	$6.9	$0.9	$0.3
5312 - Research & Technology*	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
5339 - Bus & Bus Facilities	$2.7	$0.0	$2.7	$0.3	$2.4	$0.0	$0.0	$0.0
TOTAL	**$17.4**	**$0.4**	**$17.8**	**$1.8**	**$7.1**	**$7.4**	**$1.2**	**$0.3**

*Note: 5312 program is not a formula program, and therefore does not have consistent funding level from year to year.

Table 4 shows the federal fiscal year (FFY) 2015-2016 allocation of FTA dollars available to Colorado to sub-award to transit agencies around the state. Table 4 also shows how roll-forward dollars from the prior fiscal year are being programmed to new capital projects just awarded in February/March 2016. Of the total $17.8 Million, $16.3 Million of the funds are obligated for calendar-year Administrative & Operating grants. The capital has moved significantly from $6.2 Million awarded but uncontracted last quarter to only $1.8 Million awarded but uncontracted this quarter (Net: +$4.4 Million moved to "contracted" status).

Project Assistance / Lessons Learned

PD 704 asks DTR to more regularly identify projects that are experiencing significant changes to scope, schedule, or budget. Once identified, DTR staff then can apply more project management controls, offer more technical assistance, or it can serve as an advance notice to the T&I Committee that some projects may be subject to PD 703's rules regarding budget changes. Table 5 presents the highlights for relevant projects and agencies.

Table 5: Projects Experiencing Significant Changes

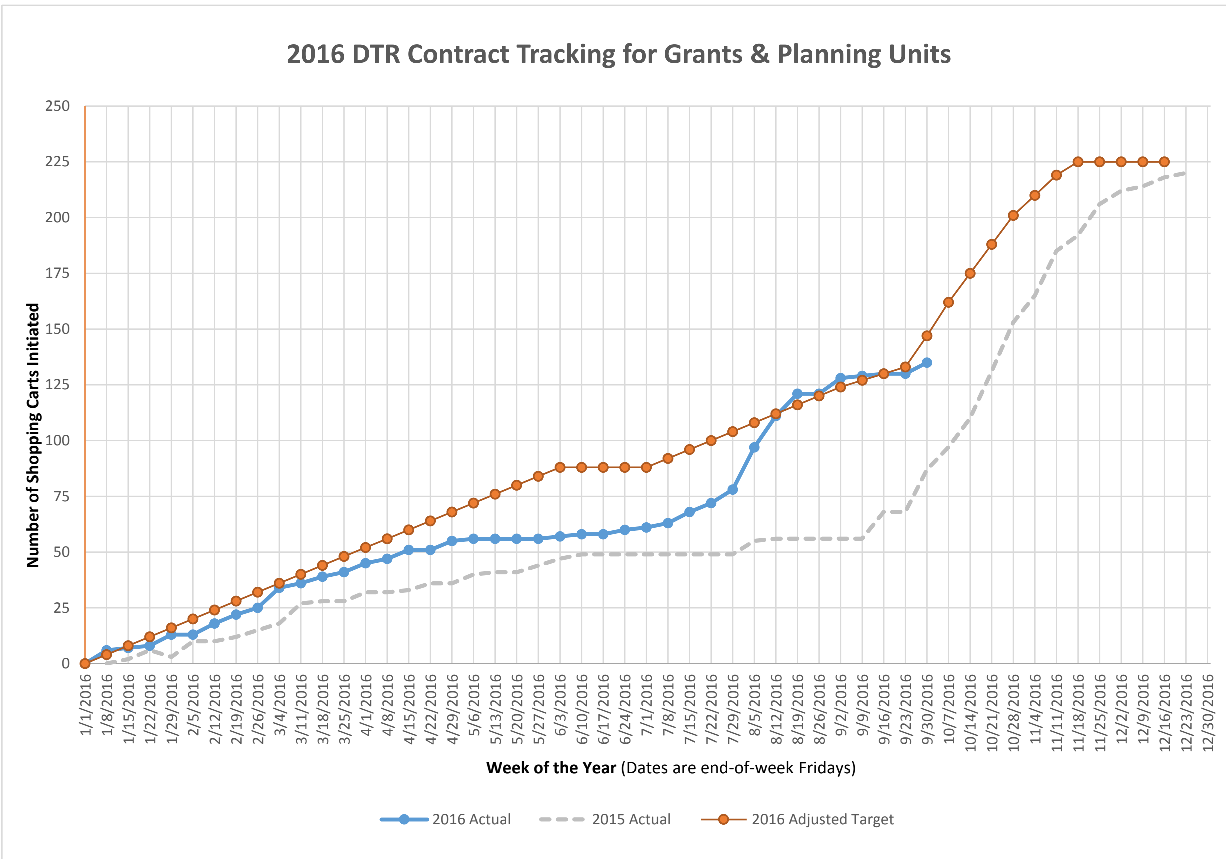
Project	Change being Experienced	Description / Response
Trinidad Multimodal Station - FASTER Funds 2011 - FASTER Funds 2013 - $330,920 FASTER	The project has been withdrawn from the City of Trinidad. A down-scaled passenger shelter will be completed with Amtrak to close the mitigation obligations incurred by CDOT when I-25 was reconstructed.	The City of Trinidad decided against an expanded multi-modal vision for the shelter. The down-scaled shelter will still serve passengers, and will cost significantly less than the original vision.
Winter Park Express - SB 228 Funds 2016 - $1.5 Million	This project was approved for funding in April 2016 on a very tight schedule. Environmental clearances and contracts were completed in early August.	A construction contractor was selected in early August and the project is under way. The Winter Park Express platform is scheduled to be completed by the end of 2016.
ECO Transit/ECRTA 5304 Planning Study - FASTER Funds 2015 - $32,000	ECO decided to withdraw this project in favor of a larger effort. This larger effort is a locally funded study that will include transit elements and pedestrian connectivity. Due to this plan and its scope, ECRTA felt it was best not to duplicate efforts and instead focus on the larger TDP.	CDOT will re-program the funds for award to another project. New 5304 applications are currently being evaluated.
Adams County 5304 Planning Study - FASTER Funds 2015 - $40,000	Staffing changes at the County meant that a qualified project manager was not available as expected. Adams County is returning the funds now, though it may later choose to re-apply.	CDOT will re-program the funds for award to another project. New 5304 applications are currently being evaluated.
RTD Church Ranch/104th @ US 36 Park-And-Ride - FASTER 2015 - $1.3 Million	Engineering findings during design resulted in higher cost estimates. RTD could neither afford the cost escalation, nor find a meaningful phasing solution.	Project withdrawn by RTD. CDOT reprogrammed the funds to State Transit Plan Implementation ($1.0 M) and to the next capital call for capital projects ($0.3 M)

Transit Grant Contracting & Invoicing Performance

Table 6 below summarizes the year-over-year progress, showing significant, sustained improvement. Figure 1 provides graphic representation of the timely contracts goal. The top line (circle markers) is the target trend line. The middle line (diamond markers) is 2016 progress from January 1 through September 30, 2016. The 2016 progress stands at 135 of 235 contracts delivered so far (+75 contracts last quarter), and is 48 contracts or agreements ahead of last year's line (bottom line). DTR has taken steps in pre-contracting work with scope-writing that also have positioned the delivery of remaining contracts to stay ahead of last year's effort, and to reach targeted levels.

Table 6: Summary of Grant Contracting & Invoicing Performance	
Goal Area	**Results**
Timely Contracts	Normal Year: 150 to 175 Grant Agreements & Contracts (excluding Bustang) 2015 Goal: 210 Contracts by Thanksgiving. Met goal. Finished with 228 for the year. 2016 Goal: 235 Contracts <u>and</u> complete most (~200) a month earlier by mid-October.
Timely Payments (Average Days ≤ 30 Days)	45 days to payment, average for SFY Jul 1 2013 - Jun 30 2014 35 days to payment, average for SFY July 1 2014 - Jun 30 2015 29 days to payment, average for SFY July 1 2015 - Jun 30 2016 27 days to payment year-to-date for SFY 2016-2017
No Statutory Violations	12 Statutory Violations occurred in 2014 2 Statutory Violation in 2015 2 Statutory Violations to-date in calendar 2016

Figure 1: Timely Contracts Tracking, Goal vs. Actual for Calendar Year 2016



Data Source: SAP Shopping Cart Monitor, Updated through 10/3/2016

<u>Next Steps</u>

The next quarterly report will be available for the January 2017 meeting. The January 2017 meeting will include the first quarterly progress report on SB 228 transit-funded projects.

<u>Attachments</u>:

None

COLORADO
Department of Transportation
Division of Transit & Rail

4201 E. Arkansas Ave., Rm. 227
Denver, CO 80222

Information provided to TRAC - October 28, 2016

DATE: October 20, 2016
TO: Transit & Intermodal Committee
FROM: Mark Imhoff, Director - Division of Transit & Rail
SUBJECT: Bustang Quarterly Update

Purpose

The purpose of this memo is to provide the Transit & Intermodal Committee the Quarterly Bustang Update on operational and performance measures.

Action

No action is required.

Background

The Bustang interregional express bus service went into operation July 13, 2015. PD 1605 requires the Director of DTR to report operational and performance measures to the Committee on a quarterly basis, by route based on the fiscal year. This quarterly update covers the first quarter of FY 2016/17, July 2016 to September 2016.

Details for first quarter FY2016/17 vs. FY2015/16

First Quarter Bustang Year over Year Comparison

	Q1 : Jul-Sep 2015	Q1: Jul - Sep 2016	Variance	% +/-	July 2016	August 2016	September 2016
Bustang System							
Revenue riders	17,576	35,683	18,107	103%	10,509	12,940	12,234
Revenue	$ 172,660	$ 356,958	$ 184,298	107%	$ 103,492	$ 130,718	$ 122,748
Cumulative Avg. Fare	$ 9.82	$ 10.00	$ 0.18	2%	$ 9.98	$ 10.10	$ 10.03
Load Factor	23%	37%	15%	65%	35%	38%	39%
Farebox Recovery Ratio	28%	54%	26%	93%	50%	57%	53%
South Route							
Revenue riders	7,206	13,691	6,485	90%	4,037	4,891	4,763
Revenue	$ 63,897	$ 126,959	$ 63,062	99%	$ 37,835	$ 45,931	$ 43,193
Cumulative Avg. Fare	$ 8.87	$ 9.27	$ 0.41	5%	$ 9.31	$ 9.39	$ 9.07
Load Factor	19%	30%	11%	58%	28%	30%	33%
Farebox Recovery Ratio	21%	44%	23%	110%	42%	44%	45%
North Route							
Revenue riders	8,062	15,512	7,450	92%	4,443	5699	5,370
Revenue	$ 68,909	$ 119,238	$ 50,329	73%	$ 31,376	$ 44,710	$ 43,152
Cumulative Avg. Fare	$ 8.55	$ 7.69	$ (0.86)	-10%	$ 7.06	$ 7.85	$ 8.04
Load Factor	23%	40%	17%	74%	36%	40%	44%
Farebox Recovery Ratio	32%	51%	19%	59%	45%	57%	58%
West Route							
Revenue riders	2,636	6,480	3,844	146%	2,029	2,350	2,101
Revenue	$ 43,470	$ 110,759	$ 67,289	155%	$ 34,281	$ 40,076	$ 36,402
Cumulative Avg. Fare	$ 16.49	$ 17.09	$ 0.60	4%	$ 16.90	$ 17.05	$ 17.33
Load Factor	48%	60%	12%	25%	64%	74%	41%
Farebox Recovery Ratio	41%	79%	38%	93%	72%	87%	61%

Notes- West route operated Monday - Friday in July - September 2015, also Vail - Denver additional run launched September 11, 2016.

Attachment A – Bustang operational measure graphs.

Friday September 2, 2016 – With the Rocky Mountain Showdown (CSU versus CU at Mile High Stadium), Bustang experienced the highest single day ridership on the North Line with 310 passengers; plus a record day for RamsRoute with 93 passengers, for a grand total of 403 passengers. Ramsroute sold out 2 buses, plus 2 regular Bustang runs operated 1 extra bus each due to overloads due to the Rocky Mountain Showdown.

Quarterly Safety/Collisions – In July we reported that for fiscal 2016 there were 31 collisions of which 17 were rated preventable for a cummulative accident frequency rate for FY2015/16 of 2.6 collisions per 100,000 miles. This rate was high, unacceptable and needed action. Under new Safety Management, Ace Express launched their six (6) point safety plan called Get Out And Look (G.O.A.L.) in July 2016. Their plan includes:

1. Place G.O.A.L. Goal Stickers on mirrors of coaches- Conduct training on G.O.A.L.- Road supervisors to monitor along with random video monitoring.
2. Drivers must pass a skills course three times per year.
3. Weekly and monthly training training excercises,
4. Communication of weekly safety messages
5. Visualize progress by charts
6. Develop new driver safety incentive program.

In addition Ace Express is planning to install "DriveCam", a powerful video service that monitors driver behavior and provides immediate feedback allowing driver management to monitor and correct deficient driving habits.

For 2016/17 Quarter 1 (July 2016 – September 2016) the collision frequency rate is 1.9 collisions per 100,000 miles vs. 2015/16 Quarter 4 of 3.6 collisions per 100,000 miles. This represents a 47% reduction over the previous quarter. While this is a positive start to the new fiscal year, staff will continue to monitor for continous improvement.

All collisions for the quarter were "preventable" accidents:
8/30/16 – bus 38006 – Driver missed the tire stop pulling into the gate at the Denver Bus Center making contact with the gate sign – Fixed object accident rated preventable
8/31/16 – Bus 38005 – Driver made contact with a sign on 22nd & California in Denver. – Fixed object accident rated preventable
9/19/16 – Bus 38012 – Driver made contact with a construction fence at 18 th and Wewatta in Denver. This was "right turn squeeze" accident rated preventable.

Quarterly Other Incidents/Issues –

- July 19, 2016- Bus 38010 – Chevrolet pick-up truck in front of bus on I-25 in Douglas County lost his right front quarter panel causing a near collision. No damage was found on the coach. This is considered an alleged collision.
- July 26,2016 – Bus 38010 – while loading a disabled passenger passenger and wheel chair, it scuffed the wheel chair lift door.
- July 28, 2016 -A severe hail storm in Colorado Springs damaged 5 coaches – 38002, 38005, 38007, 38009, & 38011. Ace Express filed claims on all 5 and their insurance company has settled the claims. Total damage amounted to $175,000. All safety related repairs were completed immediately following the storm, non-safety related body damage repairs are either completed or scheduled.

Quarterly On-Time Performance -Departures:

- System – 99.9%
- West Line – 98.94%
- North Line – 100%
- South Line –100%

RamsRoute -RamsRoute for the CSU 2016/17 academic year launched the weekend of August 26 – 28. The Fort Collins Downtown Transit Center stop was added to the CSU campus stop. Ridership in August and September has seen dramatic increases in load factors over academic year 2015/16. On September 2 two full buses were sold out.

RamsRoute			
	Aug-16	*Sep-16*	*Totals Fall Semester*
# of Revenue Trips	2	11	13
Revenue riders	77	463	540
Revenue	$ 729	$ 4,426	$ 5,155
Cumulative Avg. Fare	$ 9.47	$ 9.56	$ 9.51
Load Factor	75%	83%	81%
Farebox Recovery Ratio	119%	129%	128%
* Note - not included in Bustang statistics.			

Ticket Sales/Fareboxes Issues - SPX Genfare has installed the software to fix the QR Code "Bad Listing" issue with printed tickets. It is being phased in over a period of a few weeks to ensure all "used" QR Code tickets are being denied.

Schedule Changes – The new West Route Vail – Denver run launched on September 11. In addition, minor schedule adjustments were effective on August 21, 2016.

Bustang to Broncos –In collaboration with RTD and the Denver Broncos, Bustang is pilot testing two Denver Broncos games in October with one bus from Colorado Springs/Monument and one bus from Fort Collins/Loveland. The fare is $30 round trip and seating is guaranteed. Success of this pilot is a break even fare box recovery or 37 passengers per bus. If successful, a committment to RTD and the Denver Broncos is to continue operating one bus from each direction for the balance of the season. After RTD launches the balance of their 2016 rail lines, RTD will be eliminating more BroncosRide routes, allowing Bustang more lanes for multiple buses from each direction for next season. Both the Colorado Springs and Fort Collins Bustang to Broncos buses sold out for the October 9 game with a farebox recovery of 110%.

Social Media Update:

- Web site averaged 967 hits per day in July 2016; 1,067 hits per day in August 2016, and 1,174 hits per day in September 2016, average of 35,219 web page visitors per month
- Twitter followers have grown from 441 in July 2016 to 463 in September 2016
- FaceBook likes grew from 1187 in July to 1288 in September. Daily average FaceBook – 330/day.
- FaceBook rating (1 to 5 stars) grew from 4.4 last quarter to 4.5 this quarter.

Public Comment

- Request for south metro (DTC) stop
- Weekend service on North and South lines.
- Many posts liking the Bustang to Broncos
- Add service to Pueblo
- Add service to Steamboat Springs
- Requesting Bustang to accept EcoPass
- Add service to Grand Junction
- Service questions from two German visitors, one from Berlin, and one from Nuremberg.

Next Steps

January 15, 2016

- Next Schedule change – Minor time changes only.

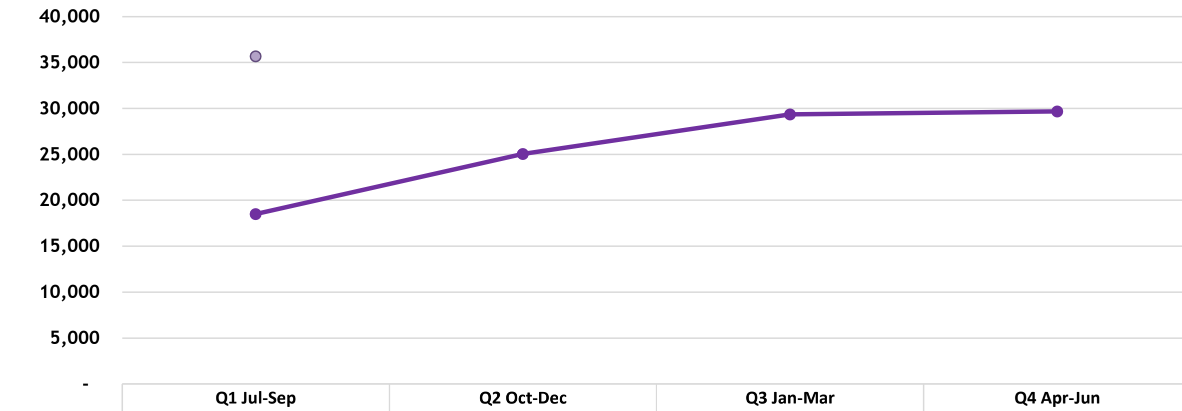
RTD/INIT Intellegent Transportation System Integration:

- Final Scope of Work ready to submit to INIT for review and quotation.
- Draft Service Level Agreement with INIT, RTD and Ace Express is going through review.

Attachments

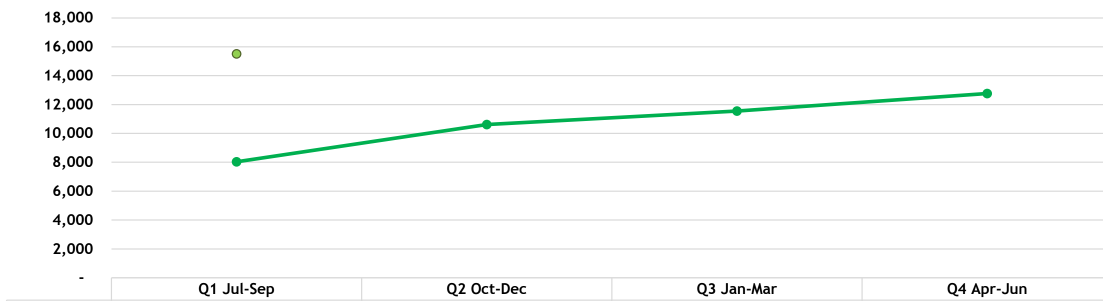
Attachment A – Bustang operational measure graphs.

BUSTANG SYSTEM RIDERSHIP BY QUARTER FY15/16 VS FY16/17



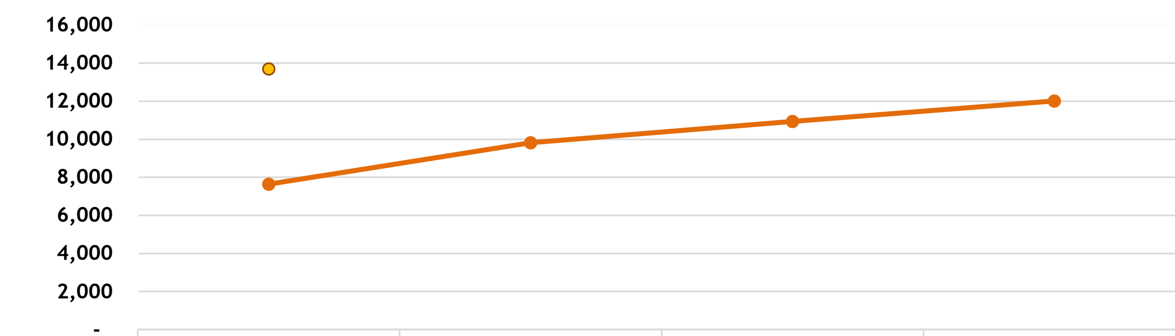
	Q1 Jul-Sep	Q2 Oct-Dec	Q3 Jan-Mar	Q4 Apr-Jun
FY15/16	18,497	25,035	29,363	29,682
FY16/17	35,683			

NORTH ROUTE RIDERSHIP BY QUARTER FY15/16 VS FY16/17



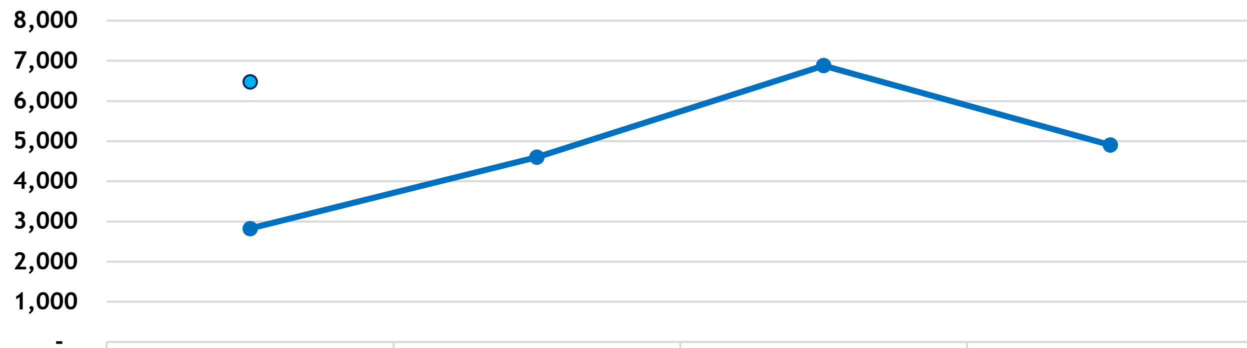
	Q1 Jul-Sep	Q2 Oct-Dec	Q3 Jan-Mar	Q4 Apr-Jun
FY15/16	8,036	10,612	11,549	12,762
FY16/17	15,512			

SOUTH ROUTE RIDERSHIP BY QUARTER FY15/16 VS FY16/17



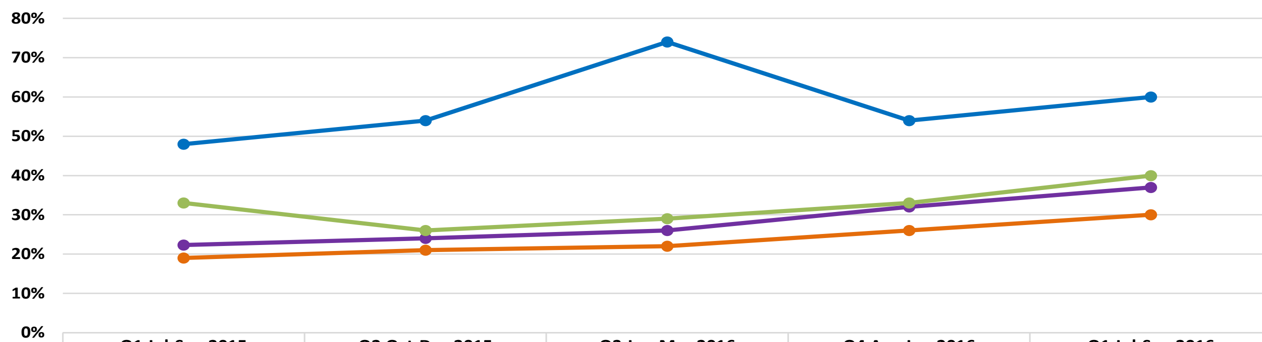
	Q1 Jul-Sep	Q2 Oct-Dec	Q3 Jan-Mar	Q4 Apr-Jun
FY15/16	7,636	9,822	10,934	12,012
FY16/17	13,691			

WEST ROUTE RIDERSHIP BY QUARTER FY15/16 VS FY16/17



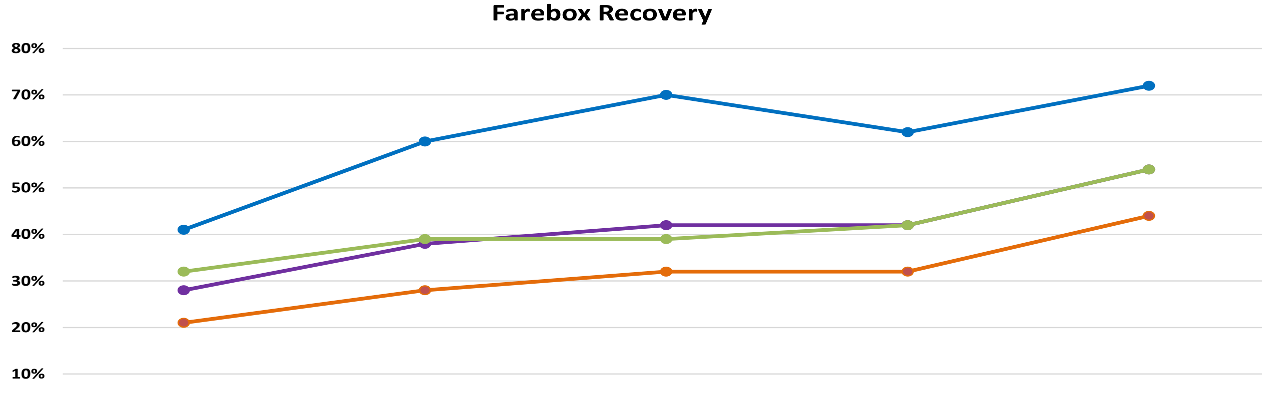
	Q1 Jul-Sep	Q2 Oct-Dec	Q3 Jan-Mar	Q4 Apr-Jun
FY15/16	2,825	4,601	6,880	4,908
FY16/17	6,480			

Load Factor by Route



	Q1 Jul-Sep 2015	Q2 Oct-Dec 2015	Q3 Jan-Mar 2016	Q4 Apr-Jun 2016	Q1 Jul-Sep 2016
System	22%	24%	26%	32%	37%
South	19%	21%	22%	26%	30%
North	33%	26%	29%	33%	40%
West	48%	54%	74%	54%	60%

Farebox Recovery



	Q1 Jul-Sep 2015	Q2 Oct-Dec 2015	Q3 Jan-Mar 2016	Q4 Apr-Jun 2016	Q1 Jul-Sep 2016
System	28%	38%	42%	42%	54%
South	21%	28%	32%	32%	44%
North	32%	39%	39%	42%	54%
West	41%	60%	70%	62%	72%

COLORADO
Department of Transportation
Division of Transit & Rail

4201 E. Arkansas Ave., Rm. 227
Denver, CO 80222
Presented to TRAC - October 28, 2016

DATE: September 14, 2016
TO: Transportation Commission
FROM: Mark Imhoff, Director - Division of Transit & Rail
SUBJECT: Transit Program Overview (1 of 2)

Purpose
The purpose of this memo is to provide the Transportation Commission with an overview of the CDOT Transit Program. The overview will be presented at the September Commission meeting as the first of two workshops; a follow-on workshop is planned for the October Commission meeting.

Action
No action is required.

Background

Statutory and Regulatory Function of the CDOT Transit Program:

- State SB09-094: The planning, development, operation, and integration of transit and rail, including, where appropriate, advanced guideway systems, into the statewide transportation system; and in coordination with other transit and rail providers, plan, promote and implement investments in transit and rail services statewide.
- Federal FTA Circular 5010: CDOT serves as the state grant recipient of Federal Transit Administration (FTA) formula funds designated for large urban, small urban and rural areas throughout the state. CDOT administers operating, capital and planning grant agreements with sub-recipients (Grant Partners) around the state to assist the local entities in providing local transit service.

Transit Performance Measures: The CDOT mission is "to provide the best multi modal transportation system"; and a focus of the three peaks is on a healthy multi modal system. Like other areas of CDOT, the transit program has measures as well:

- PD 14 was adopted in February, 2015 to guide future allocation of resources and investment decisions. Under "System Performance", the transit objectives include Transit Utilization and Transit Connectivity, and Transit Asset Management is also covered.
- The Statewide Transit Plan adopted by the Commission in March, 2015 was developed around the purpose statement to "establish a framework for creating an integrated statewide transit system that meets the mobility needs of Coloradans, while minimizing duplication of services and leveraging limited funds". To accomplish the above CDOT receives approximately $30M/year in federal and state funding (FY 2015/16 $30.2M).

Different Size Areas Receive Federal Transit Funds in Different Ways:

- Large urban areas, greater than 200,000 in population, receive their FTA funding directly from FTA; Denver RTD, Colorado Springs Mountain Metro, and Fort Collins TransFort. From the federal standpoint, CDOT has little to do with federal funding to these agencies.
- Small urban areas, less than 200,000 but greater than 50,000 in population, receive some of their FTA funding direct from FTA, and some through CDOT. These areas include: Boulder, Grand Junction, Greeley, Lafayette-Louisville-Erie, Longmont, and Pueblo.

- Rural areas, less than 50,000 in population, receive all of their FTA funding through CDOT. There are approximately 100 rural transit agencies that are currently eligible to receive some type of federal pass through funds from CDOT; Durango Transit is an example.

Types of Federal Funding: You'll often hear of federal transit funds being referred to by a number. The number is the section of the US Code where the grant program is outlined. For the funds passed through CDOT, the department serves as FTA's agent to insure that federal funding pools are distributed and administered within federal guidelines. Definitions for the various FTA programs administered by CDOT are given below, along with the Colorado funding for federal fiscal year 2016 ($15.2M total):

FTA FFY 2016 formula funds:

- 5310 Enhanced Mobility for Seniors & Persons with Disabilities; $3.2 M in formula funds for administration, capital and operating.
- 5311 Rural Transit Program; $9.4 M (85% of $11.0 M) for administration, capital, and operating.
- 5311(f) Intercity Bus Program; $1.6 M (15% of $11.0 M) for capital and operating needs to connect rural areas to the intercity bus network.
- 5339 Bus & Bus Facilities; $0.6 M for capital needs.
- 5304 Statewide & Non-metropolitan Planning; $0.4 M for planning studies.
- 5307 Urbanized Area Formula funds; $0 for CDOT to manage, but CDOT must concur with the FTA allocation of $12.8 Million among Small Urbanized Areas (Boulder, Grand Junction, Greeley, Lafayette-Louisville-Erie, Longmont, and Pueblo).
- FTA Discretionary Programs; DTR submits applications on behalf of its Grant Partners for various FTA discretionary programs such as the Low or No Emission Vehicle Program and the Bus and Bus Facility Program. In 2016, DTR has submitted applications for 20 projects that totaled $23 million.

Types of State Funding: State funds are less complicated, but do have intended uses:

- *FASTER Transit Funds:*
  - FASTER Statewide; $10M/year dedicated for transit initiatives of statewide or regional significance.
  - FASTER Local; $5M/year dedicated for local transit initiatives.
- *SB 228;* at least 10% for transit projects of statewide or regional significance. Currently, $20M has been approved by the Commission for FY2016/17; and another $15M is forecast for FY2017/18 is in development.
- Other funding opportunities as they arise.

Philosophy and Distribution Strategy

The statewide transit system is analogous to the statewide roadway system. Local entities are responsible for local roads, and local transit service. CDOT is responsible for the interstates, US highways and state highways that connect the local roadway networks. Similarly, CDOT is also responsible for the transit linkages and connections between local transit systems; i.e. interregional and regional service.

The discontinued FREX service that ran between Colorado Springs and Denver was an example of a local jurisdiction (Colorado Springs) attempting to provide interregional bus service without the financial backing of Denver. Castle Rock as a financial partner to FREX curtailed their funding support after a few years of operation. With Bustang there is a stable, sustainable funding source (FASTER Statewide) and CDOT can operate without the vulnerability of local funding contributions. Several local entities have proven successful in operating shorter range regional commuter service, tapping a larger employment base in the surrounding areas.

CDOT has utilized the goals and objectives of the Statewide Transit Plan in conjunction with the performance goals of PD 14, to structure the transit program toward developing, integrating and implementing a statewide system as funds become available:

- Local transit systems. Local transit systems are controlled and operated by local jurisdictions and/or non-profit organizations. FTA funds (various, see above) are utilized for operating assistance and capital needs; and FASTER

Local funds are utilized for additional capital needs. Both FTA and FASTER funds are granted to local entities (Grant Partners) and matched with local funds.

- Statewide, interregional and regional system. The statewide network is linked and integrated by connecting the local transit systems. Bustang is CDOT's first attempt to provide interregional connectivity by connecting the six largest transit agencies over nearly 300 miles in the I-25 and I-70 corridors; $3M/year FASTER Statewide. Some local entities offer regional service through their local systems, and the Statewide FASTER Transit pool allocates up to $1M/year in operating assistance for regional service provided by a local entity. In addition the 5311(f) program provides approximately $1.6M/year in operating assistance for rural to urban routes that make a meaningful connection to the interstate bus (Greyhound and others) and passenger rail (Amtrak) network.
- Intercity bus network. The intercity bus companies are all private for-profit entities with major hubs in the Denver metro area, and primarily operating along the interstate system. Bustang and rural regional trips are scheduled to compliment, not compete, with the intercity bus schedules. ▫ Amtrak long distance routes. Amtrak long distance routes are federally funded with no state requirements. Traversing Colorado are two Amtrak long distance routes. The California Zephyr operates one trip/day between Chicago to Oakland, California, with Colorado stops in Fort Morgan, Denver Union Station, Fraser, Granby, Glenwood Springs, and Grand Junction. The Southwest Chief operates one trip/day between Chicago and Los Angeles, with Colorado stops in Lamar, La Junta and Trinidad.

Effort towards Efficiency, the Consolidated Call for Projects: In the past, calls for capital projects were made for each funding source on irregular timelines which caused confusion, duplication and inefficiencies for application, award, contracting and delivery. Two years ago DTR moved to an annual Consolidated Call for Capital Projects for both Local and Statewide projects. This has been a success, and allows a local entity or a CDOT Region to submit their applications one time, in the fall of each year. DTR then awards the projects by best matching the project eligibility with the appropriate fund source (FTA or FASTER).

FTA 5311 and 5310 operating assistance awards to rural providers function on a two year cycle based on calendar year. For example, we are currently in the 2016/2017 cycle. Full applications for the two years were made in the spring of 2015; awards were made in September, 2015 for calendar year 2016; Grant Partners were then allowed to update any pertinent information in the spring of 2016 and awards for calendar year 2017 were just made this past August.

Transit Asset Management Plan Requirement Shifts Priorities: Under MAP-21 CDOT was been given a new responsibility to create a statewide transit asset management system in an effort to insure a well maintained fleet and facilities that provide safe and reliable service, and maximize the useful life. For this reason CDOT has given a higher priority to vehicle replacements at the end of their useful lives, above transit facility and construction projects.

Local Match Required: CDOT requires local match for all local operating and capital awards; 50% for operating awards, and 20% for bus purchase, mobility management and construction awards; exceptions may be given in economically depressed situations. As with local roads, the local commitment to the mobility needs of the local community through funding for the local transit options is critical. By holding to the local match guidelines, the pool of funds is better able to serve all entities around the state. It has been suggested that more state funds could be utilized at the local level, however that would diminish the ability for CDOT to fulfill its responsibility to provide connectivity throughout the statewide network. In an attempt to facilitate more options at the local level, SB13-048 was passed in 2013 allowing local jurisdictions to flex their HUTF funding to transit.

Rural Regional Service Plan: The FTA Section 5311 program has a sub-element 5311(f) which requires 15% of the 5311 pool to be utilized on service that connects rural populations to the intercity bus network; $1.6M annually for Colorado. CDOT, utilizing the annual 5311(f) funds, currently allows public and private providers to apply by route for subsidies/funding to operate rural connection routes. The current practice has benefits, but it is not coordinated into a state network, includes amortized capital in the reimbursed operating costs, and is not branded as an integrated product. A reconfiguration is being planned to better serve the rural communities, increase productivity, and remain financially constrained. The reconfiguration will utilize SB 228 funds to provide the capital needs, i.e. buses and park & rides. Smaller buses, sized to rural demand levels, will be procured and utilized for the rural regional routes. The plan optimizes the usage of limited operating funds by leveraging other available sources of capital funding.

Rail Transit: The DTR enabling legislation (SB 94-094) contains a significant amount of language pertaining to passenger rail, advanced guideway, and high-speed rail. The legislation gives CDOT the power and responsibility to plan, develop, operate and integrate passenger rail service; to coordinate and negotiate with the railroads; and to pursue federal funding. However, the state funding that is available at this time (FASTER Statewide; $10M/year) is inadequate to advance beyond the planning stage. DTR monitors rail transit and passenger rail interests and activities, and is engaged in the update to the Statewide Freight & Passenger Rail Plan. If and when political will and funding opportunities are secured, the planning efforts are in place to move forward.

(Note: If the Commission is interested in learning more about CDOT's rail program, including past studies and current plans, staff is happy to schedule a workshop to cover these topics.)

Funds Distribution

FASTER Distribution Methodology: In June, 2014 (Resolution 3167) the Commission took action to modify the distribution methodology for FASTER Local and Statewide funds. A key element was the allotments granted to the large metropolitan area transit systems; Denver RTD, Colorado Springs Mountain Metro, and Fort Collins TransFort. The FASTER funds are generated through vehicle registration fees. If these three local systems were allotted percentage shares commensurate with their populations, they would consume 70-80% of the FASTER Local pool, and leave the rest to be divided amongst the rest of the transit entities. The size and magnitude of RTD posed a challenge for consideration in the Local pool. A compromise was reached where by definition RTD is designated a "regional" provider, and granted an annual allotment ($3M) out of the Statewide pool, leaving the entire Local pool for the remainder of the local entities. Similarly, annual allotments are granted to Mountain Metro and Transfort out of the Local pool. The FASTER distribution pools are shown below:

- *FASTER Local ($5M/year)*
    - $700K/year fixed allotment to Mountain Metro
    - $200K/year fixed allotment to TransFort
    - $4.1M/year competitive process, through the Consolidated Call for Capital Projects, for the remainder of local projects.
- FASTER Statewide ($10M/year)
    - $3M/year fixed allotment to RTD
    - $3M/year fixed allotment to Bustang
    - $1M/year competitive for operating assistance to local entities that operate regional service. Any unused funds are added to the competitive capital pool below. Currently $530K are utilized for operating assistance.
    - $2M/year competitive for capital projects with statewide or regional significance, through the Consolidated Call for Capital Projects.
    - $1M/year for the administration of DTR

FTA 5310 and 5311 Operating Assistance and Capital Distribution Methodology: The 5310 and 5311 capital and operating assistance distribution methodology has not been evaluated or updated in over 10 years. With total funds steady and slightly rising every year, the recent practice has been to use the previous year's distribution as a base, review new or special circumstances and apply some of the increase appropriately, and apply the remainder of the increase proportionally to all recipients. This practice has worked satisfactorily, however there are limitations:

- It does not specifically provide for new qualified entities to enter the system. The annual growth in the total pool used to be larger, so in the past a few new entrants could be accommodated without having negative impact on others. Recent years have had minimal increases, and accommodating new entrants would negatively affect others. This year two new applicants were denied for a 2017 award, citing mid-term of the two year cycle; they were encouraged to apply next year at the beginning of the 2018/19 cycle.
- It does not specifically provide for current system expansions.
- The transit entities with the longest tenure have had the most compounded increases.

The 2017 awards for the 2016/2017 cycle were made in August, and it is hoped that a new methodology can be developed and accepted by the transit community, with criteria approved by the Transportation Commission in time for the 2018/2019 cycle applications.

Focus groups, made up of a wide range of transit entities, are being utilized to assist in the development of proposed criteria, and ultimately a proposed methodology. CASTA, STAC and TRAC will be used as review and endorsement entities prior to coming to the Commission, first through the Transit & Intermodal Committee.

(Note: The Transit Overview Workshop this month will focus a bit more on the status of the 5311 redistribution effort.)

<u>Current Initiatives</u>: DTR has a number of initiatives on-going to support and advance the statewide transit program:

- Continued refinement of the Transit Grant Program, including further development of the COTRAMS management tool. Deliverable: Transit Grants Quarterly Report.
- Completion of the 5310 and 5311 distribution methodology analysis. Deliverable: TC approval by March, 2017.
- Delivery of the SB 228 program of projects. Deliverable: SB 228 Quarterly Report (first edition) by January, 2017.
- Reconfiguration of the 5311(f) rural regional bus system. Deliverable: planned first quarter, 2018.
- Continue delivery of the Bustang service, including the West Route new run September 11 (Vail to DUS). Deliverable: Bustang Quarterly Report.
- Completion of the update to the Statewide Freight & Passenger Rail Plan. Deliverable: December, 2017.

<u>October Transit Overview Workshop (2 of 2):</u> The memo above and the presentation that will be given at the September workshop are meant to be an overview of the entire transit program. It is anticipated, and requested, that topics for further discussion will come out of the September workshop. The October workshop will be a follow-on to the September workshop. The topics that will be presented and discussed in October will be a result of the questions and requests that are made during the September workshop.

COLORADO
Department of Transportation
Division of Transit & Rail

4201 E. Arkansas Ave., Rm. 227
Denver, CO 80222
Presented at TRAC - October 28, 2016

DATE: October 19, 2016
TO: Transportation Commission
FROM: Mark Imhoff, Director - Division of Transit & Rail
SUBJECT: Transit Program/Policy Overview (2 of 2)

Purpose
The purpose of this memo is to provide the Transportation Commission with a policy overview of the CDOT Transit Program, as requested at the September Transit Overview Workshop (1 of 2).

Action
No action is required.

Background

At the September Transportation Commission meetings a Transit Overview Workshop was given. A follow-up Workshop was requested to provide a more descriptive overview of the current CDOT transit policies.

The current CDOT Transit Program is structured around the guiding principles and policy direction given in the following documents:

- Division of Transit & Rail enabling legislation 9; SB09-094/CRS 43-1-117.5
- Statewide Transit Plan; adopted March, 2015. The Executive Summary is provided at: http://coloradotransportationmatters.com/other-cdot-plans/transit/plan-documents/
- Policy Directive 14 (Policy Guiding Statewide Plan Development); revised October, 2016 (pending)
- State Management Plan; revised draft submitted to FTA March, 2016 (approval pending): https://www.codot.gov/programs/transitandrail/transit/state-management-plan-draft-2015
- Colorado State Freight & Passenger Rail Plan, adopted March, 2012: https://www.codot.gov/projects/PassengerFreightRailPlan/SPRP-Final

SB09-094 assigns responsibility to CDOT/DTR for the transit elements of the statewide transportation system. The Statewide Transit Plan established the vision, policy context and framework for transit in Colorado. PD14 provides guidance for CDOT transit investment. The State Management Plan (SMP), a requirement of FTA, provides a structural framework for the administration and management of FTA program funds that flow through the state; CDOT opted to also include the FASTER Transit program in the SMP to have a comprehensive program document. The State Freight & Passenger Rail Plan, currently being updated, is required by FRA and also includes priorities and policy guidance for rail transit.

A summary of the current CDOT transit policies is provided in the attached table. The table is structured first by the categories (or values) as presented in the Statewide Transit Plan, and followed by other (or functional) categories. Each "value" or "functional" area is accompanied by an associated goal and objectives, relevant performance measures, current CDOT policies, and policy origins. The table is long, and is an attempt to compile all current policies. The discussion below attempts to group and summarize the CDOT transit philosophy and policy direction.

CDOT Transit Philosophy and Policy Direction

The CDOT transit mission, as captured in the Division of Transit & Rail enabling legislation (SB09-094/CRS 43-1-117.5), is to develop a statewide transit system. The Statewide Transit Plan and PD14 provide the policy framework and direction to advance the mission. There are many funding pots (colors of money), both FTA programs and the FASTER Transit Program, and all of them relatively small with many eligible recipients. An overarching policy goal of the CDOT Transit Program is to view, portray and manage the program as a whole; and then to track and account for the "colors of money" to achieve compliance. The whole is greater than the sum of the parts is a core belief.

Local communities are responsible for their local transit systems. FTA funds are distributed, with CDOT as the conduit, to augment the local programs; FASTER Transit Local funds add to this effort. A policy practice is to balance the capital and operating needs of the local entities.

To complete the statewide transit system, CDOT policy direction is to deliver the interregional and regional network to connect and integrate the local systems and provide mobility throughout the state. Bustang is the interregional service, and the developing reconfiguration of the Rural Regional network (with FTA funds) is the core of the regional system, augmented by local systems that provide regional service. The table below shows the split of transit funds throughout the state for FY2016/17.

Revenue Use	FASTER Transit	FTA Programs	Combined
Program Administration	$1.0 M (6.7%)	$1.4 M (8.0%)	$2.4 M (7.5%)
Planning / Tech Assist	$0.3 M (2.0%)	$0.4 M (2.4%)	$0.7 M (2.2%)
Intercity, Inter-Regional, Regional, & Bustang Operating	$4.0 M (26.7%)	$1.7 M (10.0%)	$5.7 M (17.8%)
Capital Projects: Vehicles, Equipment, Park-and-Rides, other Transit Facilities	$9.7 M (64.7%)	$2.4 M (14.1%)	$12.1 M (37.8%)
Local Operating, Agency Administration, Mobility Mgmt, Coordinating Councils	$0 M (0.0%)	$11.1 M (65.3%)	$11.1 M (34.7%)
Totals	**$15.0 M**	**$17.0 M**	**$32.0 M**
Note: All numbers may vary slightly due to rounding, based on actual federal apportionments, and based on actual project-level decisions.			

The value categories captured in the Statewide Transit Plan include System Preservation & Expansion, Mobility & Accessibility, Partnership Development, Environmental Stewardship, Economic Vitality, and Safety & Security. The goals and associated policies from these values overlap and largely comprise the goals and policies associated with the functional categories as shown in the attached table.

<u>Transit Fund Distribution.</u> FTA and CDOT policy practice of fair and equitable distribution is the primary goal (5310/CRS 43-1-601; 5311/CRS 43-1-701; and 5304/CRS 43-1-901). A transparent process that provides a stable, sustainable base, provides for all eligible recipients and rewards performance is also encapsulated in the overarching distribution policy. The FASTER Distribution process was approved by the Commission in June, 2014 (TC Resolution 3167) and provides the relevant specific policies. The FTA Distribution processes and policy practices are very old and outdated; they are currently being evaluated with policy framework and criteria recommendations coming to the Commission next year.

<u>Transit Program Efficiency and Effectiveness.</u> This functional policy area strives for streamlined processes, stretching funds to reach all eligible recipients, leveraging state funds to secure additional federal funds, and efficient administration. The majority of these policy practices are covered in the State Management Plan. Commission action is required for the pursuit of additional federal funds; e.g. the North I-25 managed lanes TIGER VIII award includes a major Park & Ride with bus slip ramps.

<u>Interregional and Regional Bus System.</u> Bustang is CDOT's interregional express bus service, which was approved by the Commission in January, 2014 (TC Resolution 3133), and includes a number of policies and guidelines. Further policies were established with PD1605 (August, 2014) which outlines the roles and responsibilities of the Commission, the Transit & Intermodal Committee and the Division of Transit & Rail.

The CDOT transit mission (SB09-094) and Policy Directive 14 objectives and performance measures are guiding the development and reconfiguration of the Rural Regional bus network into a branded service to better integrate into the statewide network; planned implementation in 2018. FTA funds are currently being used for this service, and will continue to be used for the reconfigured service. Operating costs will be reduced by CDOT owning and providing the branded fleet (6 buses); SB228 project approved by the Commission in August, 2016.

Rail Transit. There are no formal CDOT policies regarding the advancement of rail transit initiatives, however the State Freight & Passenger Rail Study (updated every five years) identifies goals and priorities. The current policy practice is that rail transit implementation initiatives are largely on hold due to lack of funding. Rail transit planning efforts have been completed identifying needs, benefits, corridors and technologies. DTR continues to monitor and participate in corridor study efforts that include rail transit in the mix of alternatives, and to position CDOT for federal funds.

Non-Permanent State Funds. Periodically CDOT receives allotments of state funding from which transit gets a piece; the current example is SB228 with at least 10% for transit. Typically state funding pools, such as SB228, come with defined guidelines prescribing the intended use, and the Commission provides policy guidance. SB228 is to be used for projects of statewide or regional significance and projects, enhance mobility and economic vitality, and must be completed within five years. These policy guidelines were vetted with the Commission for the SB228 program as a whole, and included transit. The first years SB228 transit project list was approved by the Commission in August, 2016.

Attachment

CDOT Transit Policies Matrix

Statewide Transit Plan Category (Values) TC adopted March, 2015	Goal/Objective	Performance Measures	CDOT Policies	CDOT Policy Origin
System Preservation & Expansion	**Goal:** Establish public transit as an important element within an integrated multimodal transportation system. • Preserve existing infrastructure and protect future infrastructure and right-of-way • Expand transit services based on a prioritization process • Allocate resources toward both preservation and expansion • Identify grant and other funding opportunities to sustain and further transit services statewide • Develop and leverage private sector investments	• Portion of CDOT grantees with Asset Management Plans in place for state or federally funded vehicles, buildings, and equipment by 2017 • Percentage of vehicles in rural Colorado transit fleet in fair, good, or excellent condition, per FTA definitions • Annual revenue service miles of regional, interregional, and intercity passenger service	• CDOT completion of a group transit asset management plan, with the involvement and participation of CDOT transit grantees, by December 2017 • Maintain the percentage of vehicles in the rural Colorado transit fleet at no less than 65% operating in fair, good, or excellent condition, per FTA guidelines • Maintain or increase the total number of revenue service miles of CDOT-funded regional, interregional, and inter-city passenger service over that recorded for 2012.	• Policy Directive 14 (revised October 2016) • Policy Directive 14 (revised October 2016) • Policy Directive 14 (revised October 2016) ○ Bustang implementation; TC Resolution 3133 ○ Rural Regional reconfiguration (pending)
Mobility/Accessibility	**Goal:** Improve travel opportunities within and between communities. • Make transit more time competitive with automobile travel • Create a passenger-friendly environment, including information about available services • Support multimodal connectivity and services • Enhance connectivity among local, intercity and regional transit services and other modes • Strive to provide convenient transit opportunities for all populations	• Percentage of rural population served by public transit • Annual revenue service miles of regional, interregional, and intercity passenger service • Percentage of agencies providing up-to-date online map/schedule information • Annual small urban and rural transit grantee ridership compared to five-year rolling average	• No policy • Maintain or increase the total number of revenue service miles of CDOT-funded regional, interregional, and inter-city passenger service over that recorded for 2012. • No policy • Increase ridership of small urban and rural transit grantees by at least 1.5% per year, statewide over a five year period beginning in 2012	• N/A • Policy Directive 14 (revised October 2016) ○ Bustang implementation; TC Resolution 3133 ○ Rural Regional reconfiguration (pending) • N/A • Policy Directive 14 (revised October 2016)
Transit System & Partnerships Development	**Goal:** Increase communication, collaboration, and coordination within the statewide transportation network. • Meet travelers' needs • Remove barriers to service • Develop and leverage key partnerships • Encourage coordination of services to enhance system efficiency	• Percentage of grantee agencies reporting active involvement in local/regional coordinating councils or other transit coordinating agencies	• Governor's State Coordinating Council - policy development initiated	• Governor initiative
Environmental Stewardship	**Goal:** Develop a framework of a transit system that is environmentally beneficial over time. • Reduce auto vehicle miles traveled and greenhouse gas emissions • Support energy efficient facilities and amenities	• Percentage of statewide grantee fleet using compressed natural gas, hybrid electric, or clean diesel vehicles or other low emission vehicles • Passenger miles traveled on fixed-route transit	• Purchase Bustang clean diesel vehicles ○ Purchase SB228 Rural Regional clean diesel buses • No policy	• Bustang Implementation; TC Resolution 3133 ○ Rural Regional reconfiguration (pending) • N/A

Statewide Transit Plan Category (Values) TC adopted March, 2015	Goal/Objective	Performance Measures	CDOT Policies	CDOT Policy Origin
Economic Vitality	**Goal:** Create a transit system that will contribute to the economic vitality of the state, its regions, and its communities to reduce transportation costs for residents, businesses, and visitors. • Increase the availability and attractiveness of transit • Inform the public about transit opportunities locally, regionally, and statewide • Further integrate transit service into land use planning and development	• Percentage of major employment and activity centers served by public transit	• Bustang to connect local transit systems ○ Rural Regional to connect rural areas to urban centers	• Bustang Implementation; TC Resolution 3133 ○ Rural Regional reconfiguration (pending)
Safety & Security	**Goal:** Create a transit system in which travelers feel safe and secure and in which transit facilities are protected. • Help agencies maintain safer fleets, facilities, and service • Provide guidance on safety and security measures for transit systems	• Percentage of vehicles in rural Colorado transit fleet in fair, good, or excellent condition, per FTA definitions • Number of fatalities involving transit vehicles per 100,000 transit vehicle miles • Percentage of grantees that have certified CDOT Safety and Security Plans that meet FTA guidance	• Maintain the percentage of vehicles in the rural Colorado transit fleet at no less than 65% operating in fair, good, or excellent condition, per FTA guidelines • No policy • Follow FTA Requirements	• Policy Directive 14 (revised October 2016) • N/A • State Management Plan (revised 2016)

Other Categories (Functional)	Goal/Objective	Performance Measure	CDOT Policies	CDOT Policy Origin
FASTER Transit Distribution	**Goal:** Fair and equitable distribution of Statewide and Local pools to further the goals & objectives of the Transit Plan • Create interregional service • Encourage regional service at the local level • Maximize the impact to rural transit agencies • Enhance a safe rural transit fleet	• Implement FASTER distribution allocation and process • Percentage of rural population served by public transit • Annual revenue service miles of regional, interregional, and intercity passenger service • Percentage of vehicles in rural Colorado transit fleet in fair, good, or excellent condition, per FTA definitions • Portion of CDOT grantees with Asset Management Plans in place for state	• Dedicate Bustang operating funds and regional operating funds to local agencies; create set-asides for RTD, Mountain Metro and TransFort • No Policy • Maintain or increase the total number of revenue service miles of CDOT-funded regional, interregional, and inter-city passenger service over that recorded for 2012. • Maintain the percentage of vehicles in the rural Colorado transit fleet at no less than 65% operating in fair, good, or excellent condition, per FTA guidelines • CDOT completion of a group transit asset management plan, with the involvement and participation of	• FASTER Distribution; TC Resolution 3167 • N/A • Policy Directive 14 (revised October 2016) ○ Bustang implementation; TC Resolution 3133 ○ Rural Regional reconfiguration (pending) • Policy Directive 14 (revised October 2016) • Policy Directive 14 (revised October 2016)

Other Categories (Functional)	Goal/Objective	Performance Measure	CDOT Policies	CDOT Policy Origin
FASTER Transit Distribution (continued)		or federally funded vehicles, buildings, and equipment by 2017	CDOT transit grantees, by December 2017	
FTA Formula Fund Distribution	**Goal:** Fair and equitable distribution of FTA formula funds, assisting local agencies to further the goals & objectives of the Transit Plan. • Stable, sustainable annual base • Transparent process • Funds available for all eligible recipients • Reward performance	• Annual small urban and rural transit grantee ridership compared to five-year rolling average • Percentage of rural population served by public transit • Percentage of FTA formula funds awarded annually	• Increase ridership of small urban and rural transit grantees by at least 1.5% per year, statewide over a five year period beginning in 2012 • No Policy • Equitably distribute all available FTA funds to eligible recipients	• Policy Directive 14 (revised October 2016) • N/A • State Management Plan (revised 2016)

Transit Program Efficiency and Effectiveness	**Goal:** Manage the CDOT Transit Program as a whole, utilizing all available funding sources.
	• Streamline process for Grant Partners
	• Maximize pool coverage
	• Attain Grant Partner (customer) satisfaction
		• Percentage of all available FTA and FASTER funds awarded annually
		• Efficient administration
		• Leverage state funds to secure additional federal funds/grants
		• Define and meet annual contracts execution timeline
		• Pay invoices (aka reimbursement requests) in 30 days or less
			• Consolidated Call for Capital Projects & awards; biannual call for operating projects & awards
			• Local match required to maximize distribution pool
			  ○ 50/50 operating; 80/20 capital
			• DTR administration and technical assistance – 8% of FTA funds (10% allowable)
			• DTR administration - $1M/year FASTER Statewide
			• Pursue federal grant opportunities:
			  ○ TIGER VIII - North I-25 Managed Lanes; Kendall Parkway bus slip ramps and park & ride
			  ○ TIGER VII – La Junta/SWC
			  ○ CMAQ – US36 Managed Lanes; RTD BRT elements
			• Develop/utilize COTRAMS program management system
			• Develop/utilize COTRAMS program management system
				• State Management Plan (revised 2016)
				• Past practice (>6 years)
				• FASTER Distribution; TC Resolution 3167
				• Statewide Transit Plan; Statewide Freight & Passenger Rail Plan; Miscellaneous, project specific
				• DTR/DAF practice; evolving
				• 2 CFR 200 (aka SuperCircular, and aka Uniform Guidance); 30 day provision

Interregional Express (Bustang) Operations	**Goal:** Operate interregional express bus service providing mode choices to travelers along the I-25 and I-70 corridors. • Start small; establish success • Relieve peak period congestion • Privatize service • Do not compete with private operators	• Implement Bustang service	• Focus on commuter and essential service trip purposes • No local match required; connect local transit systems • Express service with few stops • Service expansion funded through fare revenues	• Bustang implementation; TC Resolution 3133

Other Categories (Functional)	Goal/Objective	Performance Measure	CDOT Policies	CDOT Policy Origin

Interregional Express (Bustang) Operations (continued)	• Meet or exceed industry standard for farebox recovery
	• High level of customer satisfaction
		• Bustang transparency and accountability
		• Farebox recovery of at least 20% within 2 years; strive for 40% thereafter
		• On-Time Performance, Cleanliness of Buses
		• Monitor expenses within annual budget
		• Annual revenue service miles of regional, interregional, and intercity passenger service
			• Park & Rides are CDOT Region assets or locally owned
			  ○ Local entity trash pick-up and plowing
			• Bustang roles & responsibilities
			  ○ TC – approve budget above annual allocation
			  ○ T&I – monitor & evaluate progress
			  ○ DTR - Bustang Quarterly Reporting
			• Farebox recovery above the industry standard
			• Maintain high level of customer satisfaction
			• Fixed budget of $3M/year FASTER Statewide funds
			• Maintain or increase the total number of revenue service miles of CDOT-funded regional, interregional, and inter-city passenger service over that recorded for 2012.
				• IX Express Bus Service Program; PD 1605
				• Lead/Lag measures
				• Lead/Lag measures
				• FASTER Distribution; TC Resolution 3167
				• Policy Directive 14 (revised October 2016)

Rail Transit (Statewide Freight & Passenger Rail Study, March, 2012; 5 year update in process)	**Goal:** The Colorado rail system will improve the movement of (*freight and*) passengers in a safe, efficient, coordinated and reliable manner. • Create a balanced transportation system • Provide for the safety of people, infrastructure, (*and goods*) • Expand rail infrastructure and (*freight and*) passenger rail services to meet future demand • Promote through education the energy efficiency, environmental and economic benefits of (*freight and*) passenger rail transportation • Use the efficiencies of (*freight and*) passenger rail to develop livable communities which enhance economic growth	• Enhancing existing Amtrak services and stations and preserve existing Amtrak trains in Colorado • Completion of RTD's commuter rail elements of FasTracks • Completion of the Interregional Connectivity Study (ICS), January 2014 • Completion of the Advanced Guideway System (AGS) Feasibility Study, August 2014 • Develop commuter rail service from the Denver Metro Area to Fort Collins • Remain eligible for future FRA funds • Maximize the use of existing infrastructure and monitor to ensure future corridor preservation	• House and serve as an advisor on the SW Chief Commission • Amtrak long distance trains are a federal responsibility; commit local match ($1M each) for local TIGER VII & VIII applications. • State Freight & Passenger Rail Plan - 2012 • Front Range High Speed Rail defined (Fort Collins to Pueblo); no funding available • AGS not financially feasible at this time; no funding available • North I-25 EIS preferred alternative (long range, no funding identified) • Update the Statewide Freight & Passenger Rail Plan every 5 years • ID and preserve rail corridors of state interest for future passenger (*and/or freight)* use	• Create SWC Commission; HB 14-1161 • TC Resolutions 15-5-1 (TIGER VII match) and 16-3-16 (TIGER VIII match) • Adopt SF&PRP; TC Resolution 2073 • TC/T&I Committee briefings January, March, April, & October 2014 • TC/T&I Committee briefings January, March, & April 2014 • DTR update to capital costs and right-of-way requirements, May 2015 • FRA requirement • Rail Corridor Preservation; PD 1607 • SB 37 / CRS 43-1-1303 Rail Abandonment Report to TLRC

Multimodal Freight Plan and State Freight and Passenger Rail Plan Development

Transit and Rail Advisory Committee

October 28, 2016

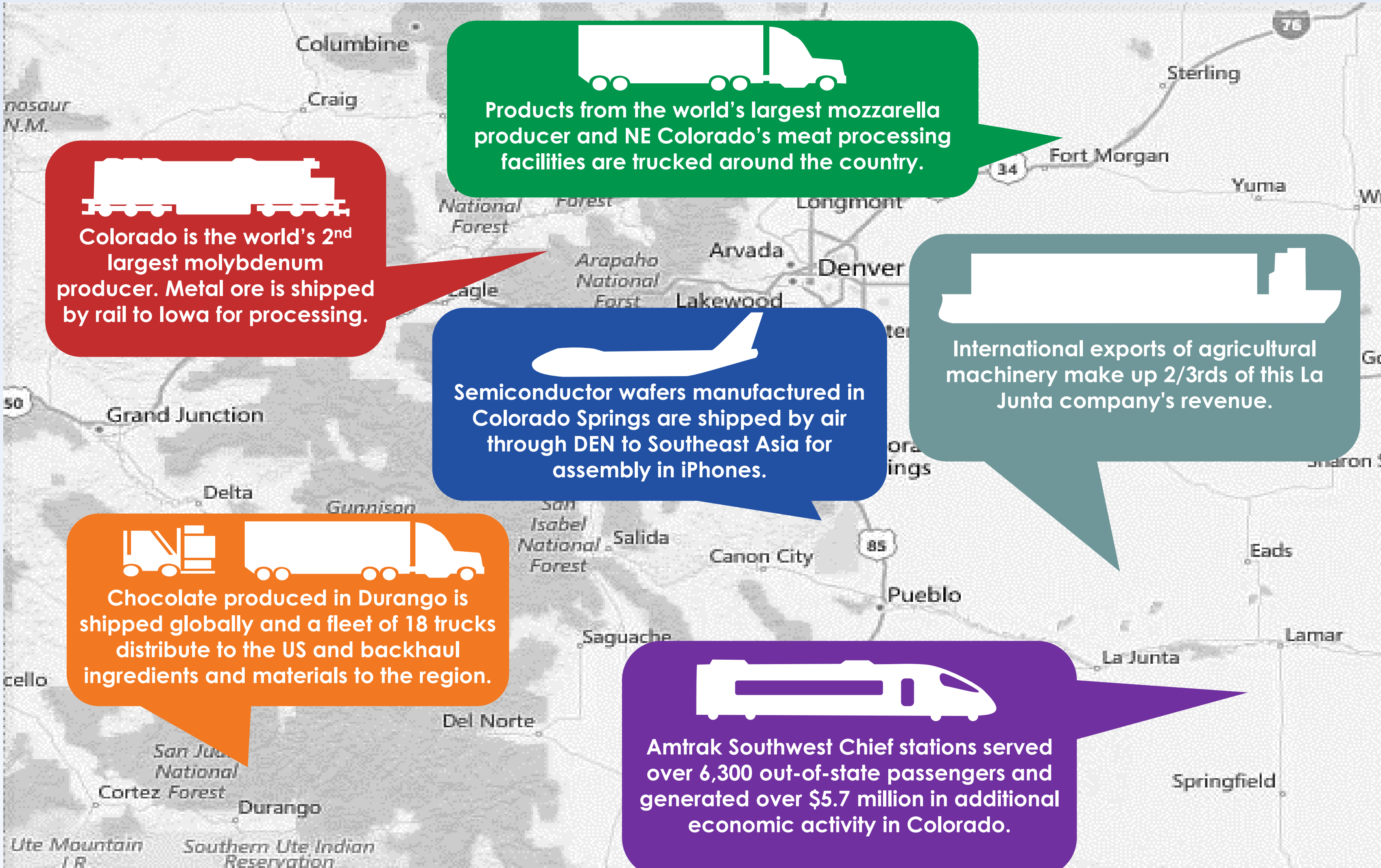
Agenda

- Guiding Principles
- Project Approach
- Schedule and Milestones
- Coordination Approach
- Questions/Feedback

Guiding Principles

- ***Comply*** **with PRIIA and FAST Act requirements**
- ***Consider*** **all modes and key industries**
- ***Engage*** **stakeholders and committees**
- ***Align*** **with CDOT plans and processes**
- ***Leverage*** **existing resources and data**
- ***Utilize*** **data to drive decisions and performance**
- ***Illustrate*** **economic impacts and benefits**
- ***Identify*** **and prioritize projects**
- ***Develop*** **strategies to implement plans and projects**
- ***Position*** **CDOT and partners for future opportunities**

Freight and Rail in Colorado



Project Approach

Phased Approach

1. Setting The Stage	1. Introduction and Purpose	2. The Role of Rail and Freight in CO	
2. Why is This Important?	12. Stakeholder Participation	13. Public Involvement	14. Coordination
3. Where Are We Going?	3. Existing Conditions	4. Future Conditions	
4. Why Does This Matter?	5. Economic Analyses		
5. What Are We Facing?	6. Network Issues, Needs, and Opportunities		
6. How Should We Invest?	7. Objectives for Freight and Rail	8. Multimodal Selection Framework	
7. Where Should We Invest?	9. Rail Improvements	10. Freight Improvements	11. Investment Program
8. What Can We Accomplish?	15. Vision, Goals, and Strategies	16. Performance	17. Implementation
9. Telling The Story	18. Plan Development	19. Plan Documentation	

Phased Approach (cont.)

1. Setting the stage

- Provide background on freight and passenger rail in Colorado
- Review and identify potential funding opportunities
- Examine institutional governance structure of rail programs

2. Why is this important ?

- Develop vision for multimodal freight and rail system
- Establish direction for future freight and rail investments
- Leverage opportunities to engage stakeholders and public

Phased Approach (cont.)

3. Where are we going?

- Profile highway and rail freight, air cargo and passenger rail movements
- Develop future forecasts of key freight and rail drivers
- Validate and confirm data and information with stakeholders

4. Why does this matter?

- Estimate economic impact of freight and passenger rail
- Use data to inform investment decisions and develop strategies
- Establish message about importance of freight and rail to the economy

Phased Approach (cont.)

5. What are we facing?

- Identify key issues, needs, challenges, and opportunities
- Compile and analyze freight and rail network data/information
- Gather input and validate information with key stakeholders

6. How should we invest?

- Identify future investment opportunities and funding mechanisms
- Establish consensus for project selection criteria and process
- Develop future framework for freight and rail project selection

Phased Approach (cont.)

7. Where should we invest?

- Leverage existing studies and current efforts
- Identify and prioritize freight, freight rail, and passenger rail investments
- Develop Colorado’s Rail Service and Investment Program

8. What can we accomplish?

- Craft strategies to support vision, goals, and objectives
- Utilize project selection criteria to identify future investments
- Monitor and report progress of plans through performance metrics
- Conduct continual planning process

Phased Approach (cont.)

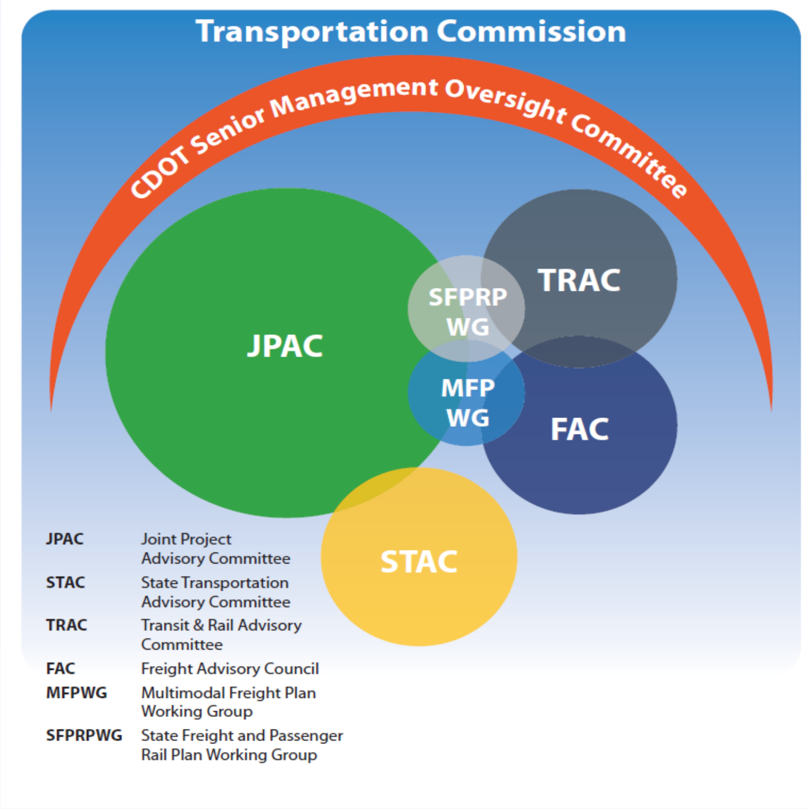
9. Telling the story

- Create information, data, resources, and visuals for future use
- Document planning process with technical memoranda and materials
- Develop plan(s) for review and comment
  - Multimodal Freight Plan (Draft and Final)
  - State Freight and Passenger Rail Plan (Draft and Final)

Coordination

Joint Project Advisory Committee

- Advisory committee of public and private stakeholders
- Responsible for guiding plan development
- Multi-modal, regional, and connected to CDOT standing committees
- JPAC will meet throughout plan development to:
  - Develop strategic direction, vision, and goals
  - Review plan methodologies and approaches
  - Act as liaisons and public champions



JPAC Members*

- Motor Carriers/FAC
- Freight Rail/TRAC
- Passenger Rail/TRAC
- Air Cargo
- Shipping Companies
- Eastern Colorado/STAC
- Western Colorado/FAC
- NFRMPO
- DRCOG
- COEDIT
- FHWA
- FRA
- CDOT DTD
- CDOT DTR

**List of invited members*

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Rail Working Group

- **Plan Development Working Groups will support JPAC and committees to:**
  - Provide input to CDOT, project team, JPAC and connections to committees
  - Address ongoing issues, data challenges, and other items
  - Support stakeholder outreach with industry and constituents

Rail Working Group Members*

- Sara Cassidy, Union Pacific RR
- Bill DeWitt, Denver University - Transportation Institute
- Sarod Dhuru, BNSF
- Rob Eaton, Amtrak
- Steve Gregory, Iowa Pacific / San Luis and Rio Grande
- Matthew Helfant, Denver Regional Council of Governments
- Michael Klaus, International Rail Expert
- Mike Ogborn, Omnitrax
- Pete Rickershauser, BNSF
- Vince Rogalski, Montrose/STAC
- Jim Souby, Colorado Rail Passenger Association
- Brian Welch, RTD
- CDOT DTR, DTD, and Project Support staff
- Evan Kirby, FHU

**List of invited members*

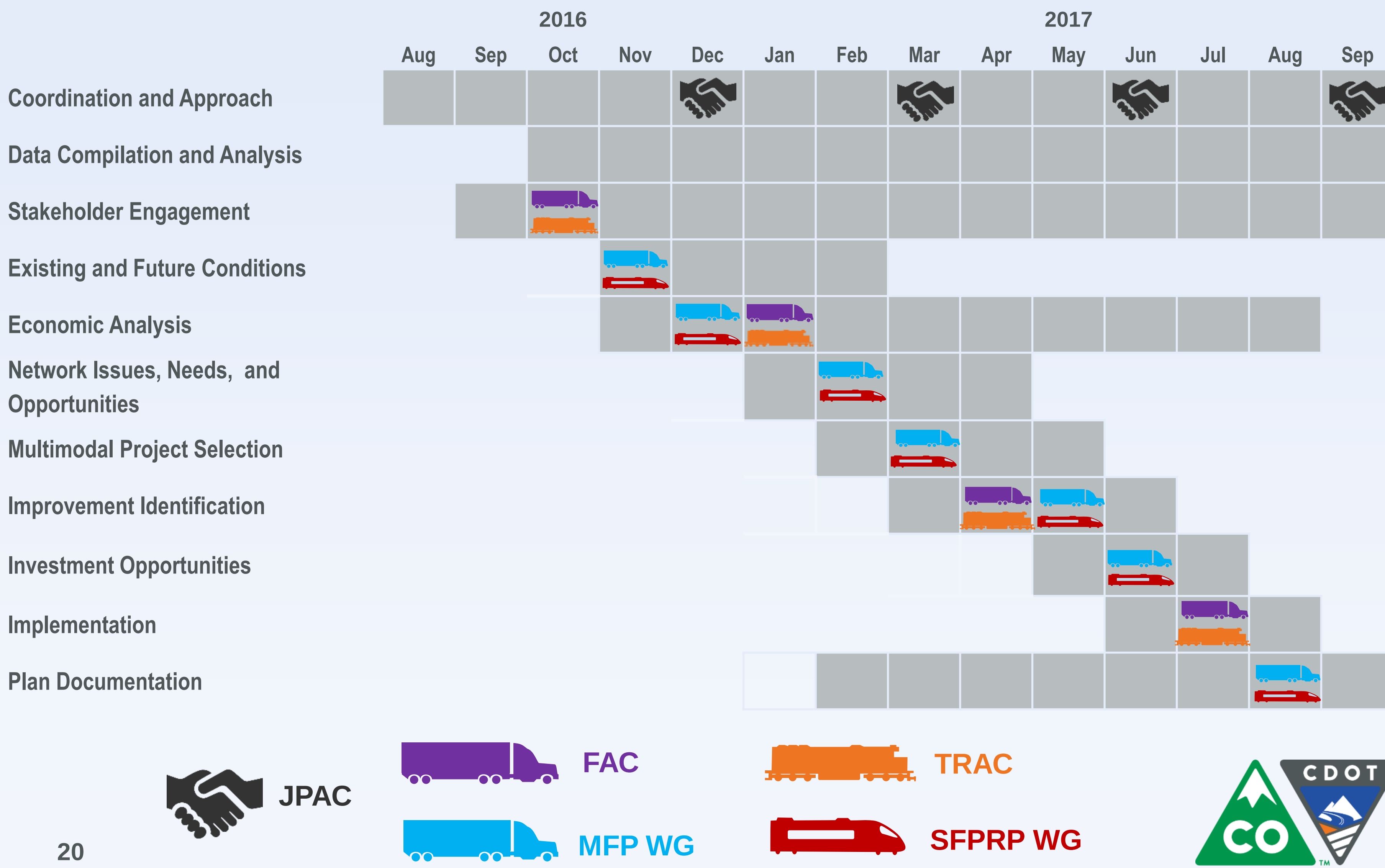
Engagement

Engagement Opportunities

- **Conduct stakeholder interviews and town halls**
  - Identify key individuals and groups
- **Organize issues workshops**
  - Coordinate with organizations on themed focus groups
- **Launch partner and business surveys**
  - Partner to push out survey and leverage Together We Go
- **Present at standing meetings and events**
  - e.g. TRAC/STAC/FAC, CMCA and AAR Research annual meetings

Schedule

Plan Schedule and Milestones



What will we be doing and when?

- **Fall 2016**
  - Help set vision and goals
  - Assist with outreach and engagement
  - Vet methodologies and data approaches
- **Winter 2016**
  - Identify existing issues and future opportunities
  - Input on economic analyses
  - Review initial synthesis and forecasts
- **Spring 2017**
  - Review selection and investment recommendations
- **Summer 2017**
  - Review and comment on draft plan components
- **Fall 2017**
  - Approve MFP/SFPRP plans
  - Plan for implementation

Questions/Feedback?

Multimodal Freight Plan

Project Manager

Michelle Scheuerman

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State Freight and Passenger Rail Plan

Project Manager

Sharon Terranova

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AUGUST 2016

Colorado's Transit, Biking & Walking Needs Over The Next 25 Years

How Much Colorado Needs To Invest & Why It Is The Right Path Forward

CoPIRG Foundation

SWEEP
SOUTHWEST ENERGY EFFICIENCY PROJECT

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CONTENTS

(continued)

CoPIRG Foundation's mission is to deliver persistent, results-oriented public interest activism that protects consumers, encourages a fair, sustainable economy, and fosters responsive, democratic government. CoPIRG Foundation, a 501 (c)(3) corporation, works to educate the public through the media, generate grassroots support around timely issues, mobilize citizens to vote, build coalitions, foster increased civic awareness and engagement, and provide policy expertise so that we can achieve concrete results that positively impact the lives of Coloradans. For more information about the CoPIRG Foundation or for additional copies of this report, please visit www.copirgfoundation.org.

The Southwest Energy Efficiency Project (SWEEP) is a public interest organization promoting greater energy efficiency in Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming. SWEEP focuses on utility energy efficiency policy and programs, combined heat and power system, buildings and transportation. For more information about SWEEP, please visit www.swenergy.org.

Report Design: Cecily Anderson / Anagramist.com

CONTENTS *(continued)*


Bicycle Colorado and David Budd

Bike path in front Denver's City and County Building

TRANSIT, WALKING AND BIKING are critical components of a 21st century transportation system in Colorado but have been underfunded for decades. Without significant investments in transit, biking and pedestrian services and infrastructure, Colorado will not be able to meet the demands and challenges of our shifting demographics and growing population, and will miss out on the many benefits transit, walking and biking provide.

- Colorado needs to increase investments in transit, walking and biking by $1.05 billion dollars per year over the next 25 years to ensure every Coloradan in our towns and cities experiences the multitude of benefits that come from good access to adequate sidewalks, safe bicycle infrastructure including safe shoulders on rural highways, and good transit service within cities as well as a comprehensive statewide, bus-based, intercity transit system.

The benefits of this investment are immense. Transit, walking, and biking are critical to increase the safety, accessibility, and affordability of our transportation system and reduce the negative impacts on our health, local economy, environment and quality of life from a mostly single-mode, car-oriented transportation system.

Coloradans from all backgrounds and all parts of the state will benefit whether it is a family in Denver who can ride a bus to the ski areas; or an aging resident of Craig who needs to get to a critical medical appointment 100 miles away without a car; or for a child in Greeley to safely walk to school; or for a bicyclist in Longmont to commute to Boulder; or for residents of Aurora to have access to employment opportunities from Louisville to Highlands Ranch riding fast and frequent bus rapid transit.

An increased investment in transit, biking and walking can save a Coloradan thousands of dollars each year by providing more affordable options for travel and reducing the need to own a car. Expanded and improved transit service combined with bike and walking investments increase the accessibility of employment opportunities, schools, medical services, grocery stores and entertainment for the nearly 10% of Coloradans of driving age who do not have a driver's license and the hundreds of thousands of additional Coloradans who want to get around without car.

Traveling as a pedestrian, bicyclist or transit rider provides significant health benefits by reducing air pollution like greenhouse gas emissions and smog forming particulates. These modes of travel also offer a way to combat obesity and improve individual health by providing active transportation options. Transit, walking, and biking can play a big role in shorter trips of 3 miles or less, which make up a majority of the total trips along the Colorado Front Range.

Walkability, bikeability and transit-oriented areas provide benefits to local businesses. Better pedestrian, bicycle, and transit services and infrastructure are critical tools for eliminating transportation-related crashes and fatalities.

With 2.4 million more people pouring into Colorado in the next 25 years, transit, biking and walking are important transportation options to combat congestion.

Finally, we need to increase investments in transit, walking and biking because that is what Coloradans say they want in polls and surveys, whether it is the swelling Millennial population or the aging Baby Boomers who are found not just in urban areas but in rural communities across the state.

This will require a partnership between local, state and federal government and the private sector to both reallocate existing funds and generate new money for multimodal transportation needs.

Transit, Biking and Walking Investments Needed Over the Next 25 Years

An additional $1.05 billion dollars per year in transit, walking and biking builds a complete sidewalk system in cities and towns across Colorado; brings intracity bike infrastructure up to the standards of the best communities in Colorado and adds regional bicycle connections and safer biking options along rural highway shoulders; and would bring good transit service to the major Colorado population centers, provide fare-free service in the Denver metro area, complete over a dozen local bus rapid transit lines, and build out a comprehensive statewide, intercity transit system including dozens of buses from Denver to ski areas and demand response bus service to meet the growing rural transit needs.

RTD

The D Line, part of RTD's light-rail system.

$1.05 billion per year: Colorado needs to increase investment in transit, bicycle, and pedestrian investments by $1.05 billion per year in the following ways:

$243.6 million per year for **walking infrastructure:**

- $133.9 million to build the 6,000 miles of **missing sidewalks** and to repair 8,600 miles of **inadequate sidewalks** in Colorado urbanized areas
- $109.7 million to **maintain** the entire system

$229.5 million per year for bicycle infrastructure:

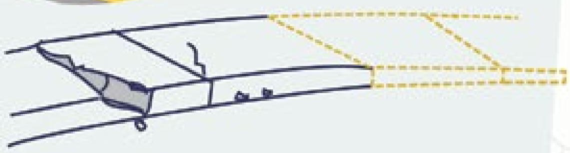
- $100.8 million to bring the **biking infrastructure** in every city up to the standards of the best communities in Colorado
- $17.4 million to **build regional bicycle routes** that connect cities and towns across the state
- $100 million to ensure we have **safe shoulders on rural roads** to allow safe bike travel
- $11.3 million to **expand bike share programs** to increase access to biking options

$573.6 million per year for transit, including:

- $341.6 million for the Denver metro region
  - $134.6 million to **launch 14 bus rapid transit (BRT) lines** that provide efficient and convenient cross community service along some of the busiest corridors
  - $20 million to complete the **North Metro Rail Line** as well as the Central and Southwest Rail Extensions
  - $187 million to offer **fare-free access** to RTD's current services, increasing ridership by 100 million trips.
- $113.1 million to increase the **quality of city-run transit services** outside of the Denver metro area including:
  - $15 million per year in Colorado Springs
  - $29.6 million per year in the North Front Range including:
    - $12.9 million in Fort Collins
    - $2.7 million in Berthoud, Greeley-Evans and Loveland
    - $14 million for regional service
  - $12 million per year in Pueblo
  - $8 million per year in Mesa County
  - $36 million per year in the Intermountain Transportation Planning Region (IMTPR) encompassing Eagle, Garfield, Lake, Pitkin and Summit Counties
  - $12.5 million per year for the rest of the smaller transit providers
- $3.3 million in annual operating costs and $3 million in one-time capital costs to **expand Bustang**, the statewide bus service
- $25.6 million per year to provide **recreational bus service** along the I-70 mountain corridor including buses leaving for five different destinations every 20 minutes during weekends
- $17 million per year to **provide BRT service** in managed lanes between Denver and Fort Collins
- $43.2 million per year to meet the growing **rural regional transit needs** including routes from Lamar, from Walsenburg, from Greeley along U.S. 85 and along the U.S. 40 corridor in northwest Colorado
- $29.8 million per year to meet the growing demand for **specialized rural transit** service

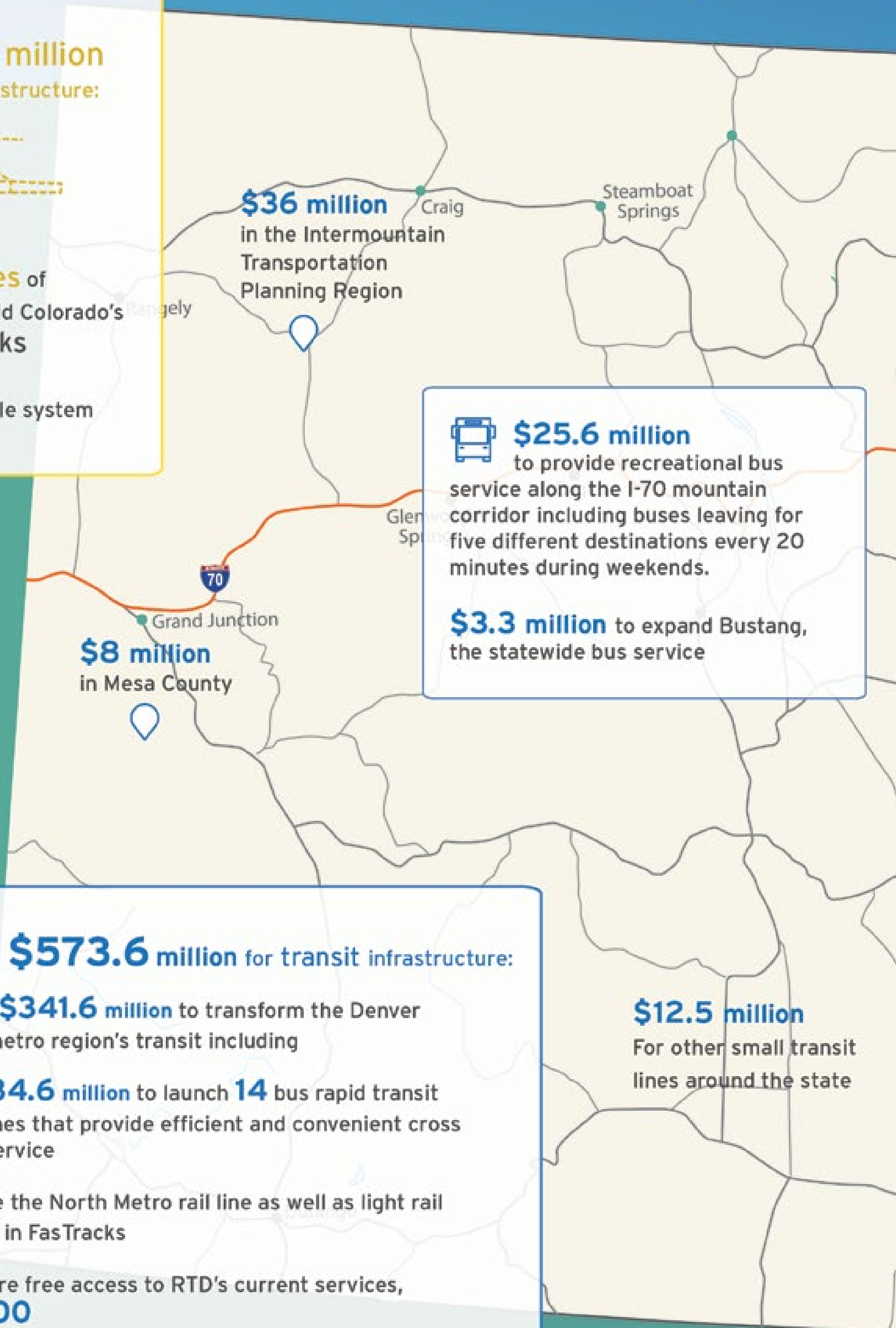
How much will it cost per year to bring Colorado up to 21st c

$243.6 million for walking infrastructure:



$133.9 million to fix **8,600 miles** of sidewalks in need of **repair** and to build Colorado's **6,000 miles** of **missing sidewalks**

$109.7 million to maintain the whole system



$36 million in the Intermountain Transportation Planning Region

$73 million to meet growing **rural regional transit needs** including routes from Lamar, Walsenburg, and Greeley, and along theUS-85 and western US-40 corridors

$8 million in Mesa County

$25.6 million to provide recreational bus service along the I-70 mountain corridor including buses leaving for five different destinations every 20 minutes during weekends.

$3.3 million to expand Bustang, the statewide bus service

$573.6 million for transit infrastructure:

$341.6 million to transform the Denver metro region's transit including

$134.6 million to launch **14** bus rapid transit (BRT) lines that provide efficient and convenient cross community service

$20 million to complete the North Metro rail line as well as light rail line extensions contained in FasTracks

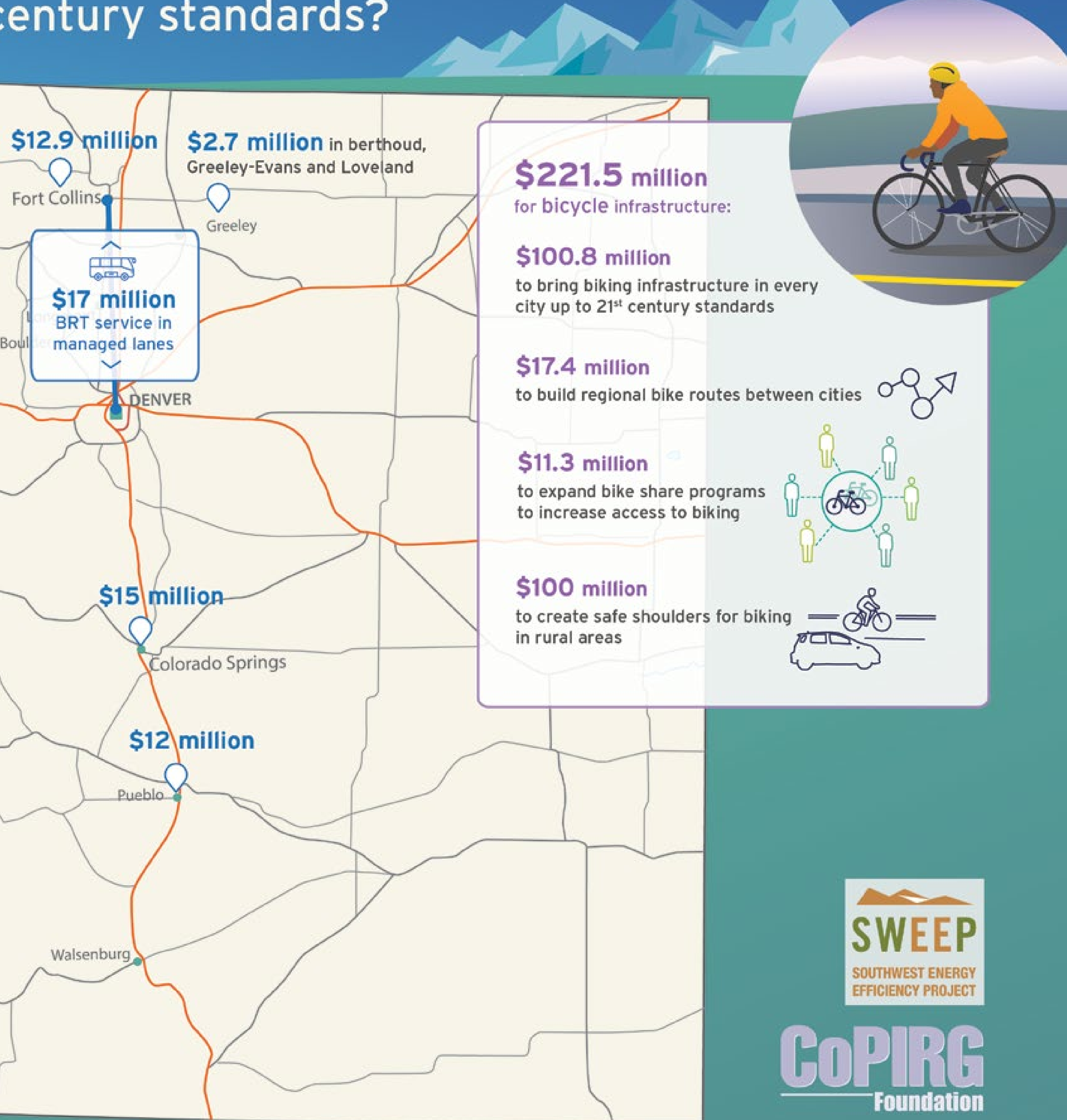
$187 million to offer fare free access to RTD's current services, increasing ridership by **100**

$12.5 million For other small transit lines around the state

» At least $

FIGURE 1

o's walking, biking & transit infrastructure
century standards?



SWEEP
SOUTHWEST ENERGY EFFICIENCY PROJECT

CoPIRG Foundation

1.05 billion annually for the next 25 years

Additional Transit Investments That Should Be Considered

There are more transit investments that Colorado decision makers should consider beyond the basic $573.6 million in investments that Colorado needs. These additional investments would increase transit service even more and therefore offer the opportunity to realize even bigger benefits.

Specifically, an additional $219 million per year over the next 25 years could bring transit services in cities across the state to an even higher level of service and complete a commuter rail system along I-25:

- **$59 million per year in additional local transit service investment**
  - **$56 million in Colorado Springs**
  - **$3 million in Berthoud, Greeley-Evans and Loveland.**
- **$1.2 billion ($48 million annually) to build a commuter rail service along I-25 from Denver to Fort Collins.**
- **$2.8 billion ($112 million annually) for a commuter rail service between Denver, Colorado Springs and Pueblo[1]**

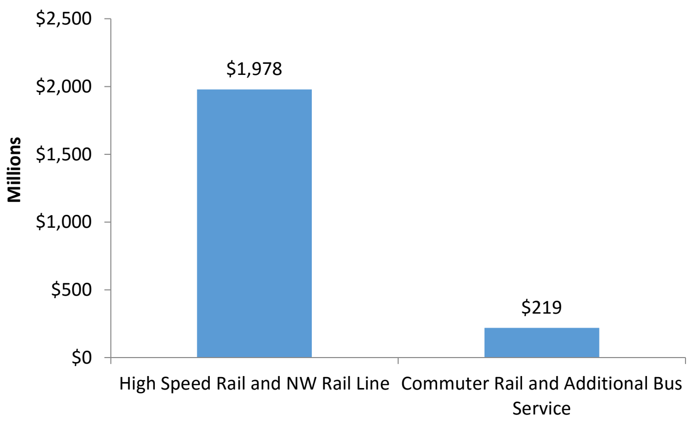
Additional Transit Investments That Could Be Considered

If funding opportunities presented themselves, there are two other major rail investments that Colorado could consider. They will take significant more capital, will likely need a more long-term approach, and therefore are not included in the recommended $573.6 million annual investment in this report. However, these investments could offer increased benefits to Coloradans and are worth considering.

The state could invest an additional $1.978 billion per year over the next 25 years to build a rail line connecting Denver to Longmont via Louisville and Boulder and add high speed rail service along I-25 and I-70. Specifically:

- **$1.3 billion total ($52 million annually) for Northwest rail from Denver to Longmont**
- **$1.062 billion annually on high speed rail service along the I-25 corridor[2]**
- **$864 million annually on high speed rail service into the mountains connecting Denver (and the I-25 high speed rail service) with Summit County and Eagle County[3]**

FIGURE 2. ADDITIONAL TRANSIT INVESTMENTS FOR CONSIDERATION



Policy Recommendations

To meet the needs of transit, walking and biking in Colorado over the next 25 years, policy-makers should:

- **Ensure that existing state transportation funding is flexible and can be used to address the particular transportation needs of a corridor, rather than being arbitrarily limited to only one mode of transportation.** Currently, state law restricts the Colorado Department of Transportation's (CDOT) use of the vast majority of state transportation funding to highway and road projects. In 2013, the legislature removed this restriction from cities and counties through the passage of SB 13-048. The legislature should give the same flexibility to CDOT.

- **Require that toll revenues be used to support transit service in the same corridor.** Increasingly, the state has turned to toll lanes as both a way to finance highway expansion and a way to manage congestion in those lanes, by charging a higher toll during congested periods. In order to make sure that these projects serve all income ranges and support Colorado's multimodal needs, the state should require that a portion of toll revenues be invested in public transit in these corridors.

- **The state and every regional planning partner should conduct the same level of analysis to identify funding gaps for transit, bicycle, and pedestrian infrastructure as they do for roads and highways.** The state and the regional planning organizations currently develop detailed projections of funding needs for both maintenance and expansion of highways. These plans don't just show what can be done with existing funding, but identify funding gaps. This level of analysis should be fully extended to transit, bicycle and pedestrian infrastructure.

- **New state funding sources for transportation should be designed to provide Coloradans with options to meet the broad multimodal transportation needs of our residents.** While the state is not solely responsible for transportation investment – local and federal funding play a big role – it is a crucial partner for implementing good public transit, bicycle and pedestrian infrastructure, in addition to highways. In 2016, the two proposals to increase state funding that received the most attention were a proposal to issue $3.5 billion in bonds and another to raise the state sales tax by $670 million per year. Unfortunately, these proposals provided either zero or minimal funding for transit, walking or biking..

- **Colorado's Metropolitan Planning Organizations (MPOs) should use the funding that comes to them to support the broad range of multimodal needs.** MPOs such as the Denver Regional Council of Governments (DRCOG), the Pikes Peak Council of Governments and the North Front Range MPO are the lead agencies for programming how federal transportation funds get invested in their regions. Many of these federal funding streams are flexible dollars that can be used for all modes of transportation. While some MPOs have used this flexibility, others spend the vast majority of flexible funds on roadway projects. MPOs should more robustly fund multimodal investments needed to serve their regions.

- **Cities and counties should adequately fund sidewalks, safe crossings, and local bicycle infrastructure, in addition to partnering with transit agencies to provide adequate transit to their residents.** Local funds, typically generated from sales taxes, property taxes and fees on development, are an important source of transportation dollars in Colorado.

Wheat Ridge pedestrian-activated crossing

The Benefits of Transit, Biking & Walking to Colorado's Transportation System

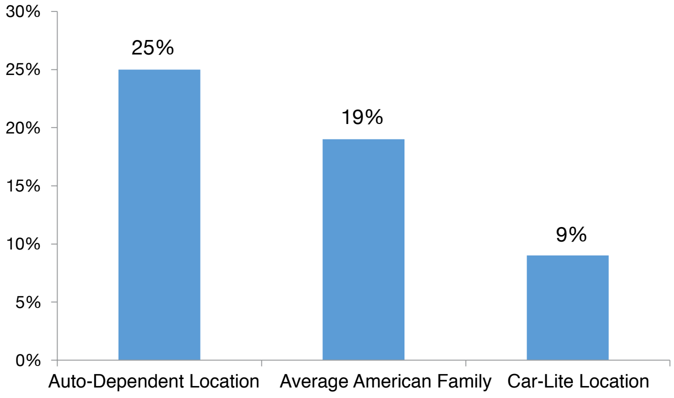
TRANSIT, WALKING, AND BIKING BRING IMMENSE BENEFITS when prioritized within a transportation system. They can increase affordability and accessibility, improve health opportunities, reduce air pollution, provide economic benefits to communities, reduce transportation-related crashes, injuries and deaths, and increase the overall efficiency of our transportation system.

Increasing Affordability and Accessibility

Combating High Housing Costs

For most households, transportation is the second largest cost after housing.[4] While the percent of household income that is spent on transportation varies depending on where you live, households in auto-dependent communities can spend as much as 25 percent of their household income on transportation versus 9 percent for a household that is close to employment, shopping and other needs and amenities (figure 3).[5]

FIGURE 3. PERCENT OF INCOME SPENT ON TRANSPORTATION BASED ON TYPE OF PLACE YOU LIVE



Source: Federal Highway Administration Livability Initiative[6]

It is important to note that low-income households can feel an even bigger financial squeeze from high transportation costs because their overall household income is lower, forcing them to forego other basic needs. Therefore reducing transportation costs is a particularly important and necessary public policy strategy for low-income households.

The main cost driving transportation expenses is owning and operating a vehicle. AAA's annual "Your Driving Costs" report estimates the annual cost at $8,698 for the average American in 2015.[7] The significant cost of owning and operating a vehicle, much less two or three in a household, explains why the Federal Highway Administration reports that a household can cut their total cost of housing and transportation in half by living in a community where they can reduce the number of cars they own by one.[8]

Given the incredible savings that a family can realize by managing their transportation costs when options are available, it is possible that a family could actually save money by living in a more expensive home or apartment with access to biking, walking and transit than in a less expensive home or apartment in a car-dependent community because they can reduce or eliminate vehicle expenses. In fact, when taking transportation costs and savings into consideration many cities that are often viewed as unaffordable like New York City and San Francisco, can appear more affordable than sprawling cities like Riverside, CA and Miami, FL due to the additional driving-related expenses.[9]

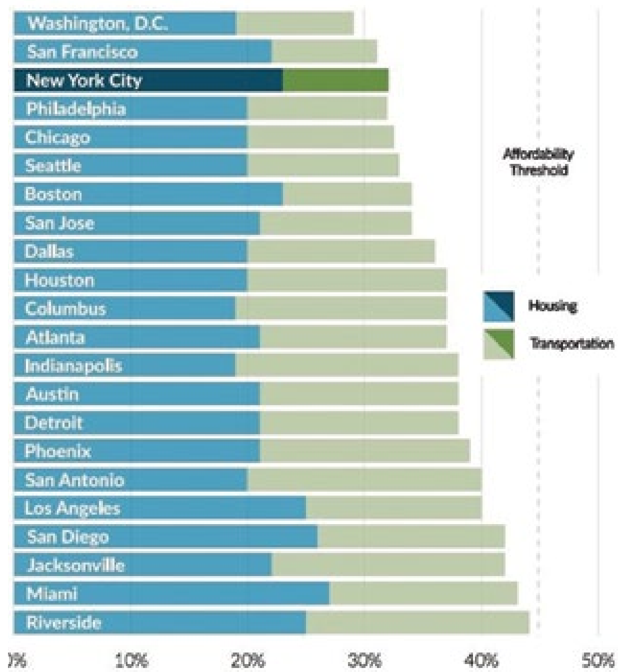
For low-income families, the same conclusions can hold true. When you consider housing and transportation costs together, like the Citizens Budget Commission did in a 2014 report, the top five cities for location affordability for low-income families (defined as making half of the HUD area median) include San Francisco (42%), Washington D.C. (43%), and New York (47%), all cities with high housing costs.[10]

The bottom line: Low transportation costs can help cities remain more affordable and help offset higher housing costs.[11]

The data is particularly compelling when you reverse the list. The five worst cities in terms of location affordability for low-income families are San Antonio (71%),

FIGURE 4. HOUSING AND TRANSPORTATION COSTS AS A PERCENT OF INCOME FOR A TYPICAL HOUSEHOLD

Source – Citizens Budget Commission [12]



Riverside (71%), Jacksonville (64%), San Diego (62%), and Phoenix (61%)—all car-reliant places with high annual transportation costs, low transit share and very few zero-vehicle households. Eric Jaffe from the Atlantic's CityLab concludes, "In the case of San Antonio, the high cost of transportation is enough to make the metro area unaffordable to low-income families even though it's the cheapest in terms of annual rent."[13]

Smart Growth America came to a similar conclusion in a George Washington University School of Business report that compares the walkability of America's largest metro areas to a social equity index that they created.[14] The social equity index combined the costs of housing and transportation in the selected metro areas.

Cities like New York and San Francisco, with high walkability, also ranked high on the social equity index despite residents having a larger percent of their incomes going to housing costs because the percent of income going to transportation costs was lower than most cities and helped make up the difference.[15] They also found those residents had better access to jobs. Denver ranked 9th for both walkability and social equity, with slightly lower housing costs than the other top cities but slightly higher transportation costs.[16]

Colorado needs to pay particularly close attention to this data because the state's housing prices are not only growing at a fast rate but many of the housing markets in Colorado have experienced price increases locally. According to CoreLogic, home prices in Colorado rose 9.8 percent between February 2014 and February 2015, the fastest rise in the country.[17] A study by Zillow in 2014 found that Denver-area rent has skyrocketed so much that a renter would need to make approximately 4.5 times the minimum wage to afford a median-priced rental.[18] In addition, Housing Colorado, a nonprofit that advocates for affordable housing, estimates that one in four renters in Colorado spend 50 percent or more on housing costs.[19]

With housing costs increasing in the state, it is good public policy for Colorado to act to offset these expenses by providing residents with a range of low-cost transportation options that can make going car-free or car-lite easier. In practice, this means providing residents with improved and expanded transit options, increased investment in walking infrastructure, and expanded biking options that allow Coloradans to reduce transportation costs by reducing driving or foregoing car ownership. This is just as true in rural areas as it is in urban areas, since transportation costs can erode any savings a household gains from living in an area with lower housing costs.

Increasing Accessibility to Employment

High individual transportation costs not only puts a strain on a household's budget, but it can also create substantial barriers to employment. According to the Leadership Conference Education Fund, "As jobs move to auto-dependent suburbs, those without access to cars—including low-income workers and people with disabilities—lose out on employment opportunities. Many workers without access to a car spend hours on multiple buses traveling to remote work places; some are unable to get to these jobs at all."[20]

Keeping Transit Affordable

While providing some level of transit service is good, transit fares and inadequate or inconvenient service are barriers to accessibility. Typically, higher fares make transit less affordable and fewer people use it. For example, raising transit fares by 10% can lead to a 3% decrease in transit ridership.[21]

Moreover, while some people have multiple transportation options and can choose to not use transit if it becomes more expensive, some Coloradans are transit-dependent and will be forced to pay the higher fares or forego making essential trips. Therefore, just because people continue to choose to ride transit after a fare increase does not mean it is affordable – they may not have any other adequate option.

High transit fares mean more income goes to transportation at the expense of other needs or amenities. To combat this challenge, many communities across Colorado have made the decision to invest in fare-free transit, including Summit County, Steamboat Springs and the towns of Nederland, Lyons, and (for local trips) the City of Longmont.

Keeping Transit Accessible

Unsafe or inaccessible bus stops and the areas that lead from bus stops to final destinations, often referred to as "first and final mile," can also be a barrier to transit use. Since every transit user is a pedestrian or bicyclist at some part in their trip, focusing dollars on walking and biking will enhance current and future transit investments. For example, a Health Impact Assessment conducted in southwest Adams County found that over half of the blocks along a 20-block stretch of Federal Boulevard, that includes two new RTD rail stations, lacked sidewalks.[22] Motor vehicle crashes along the corridor are not uncommon and a higher proportion result in injury when compared to the rest of Adams County.[23]

Transit Provides Accessibility, Especially in Rural Areas

While total ridership on transit in urban areas is higher than in rural areas, transit provides a lifeline for many people in rural parts of Colorado to get to medical appointments, employment, groceries and other needs and is an important tool to service aging populations. Currently the rural population of

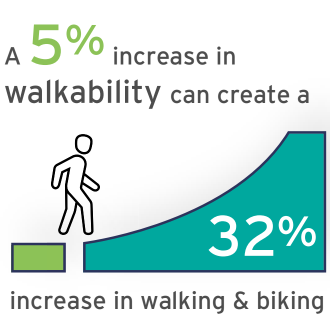
Colorado is set to grow from approximately 900,000 to 1.3 million by 2040, while the percentage of that population over the age of 75 (the age at which people typically require additional transportation options) is set to grow to 11.4% or approximately 160,000 rural Coloradans.[24] This number does not take into account the people under the age of 75 who, because of a disability, income, health, or other restrictions, are unable to drive a personal vehicle the often long distances to get to necessary services.

Tackling Obesity and Living A Healthier Life

While Colorado may be the healthiest state in the nation that has not stopped our obesity rate from sky-rocketing along with the rest of the country. In fact, Colorado is more obese now (21 percent) than the most obese state was in 1995, Mississippi (20 percent in 1995 vs 35 percent in 2015).[25]

Active transportation, such as riding a bike, walking or even taking transit, which almost always requires some walking to get to and from the bus stop, can be an impactful way to improve health by replacing excessive travel in vehicles. For example, one study of automobile commuters in Texas, published in the American Journal of Preventive Medicine, found that longer trips to and from work correlated with various indicators of poor health including decreased cardiorespiratory fitness, increased weight, high cholesterol, and elevated blood pressure.[26] It also found that commuters driving more than 15 miles each way were less likely to meet recommendations for "moderate to vigorous" physical activity and were more likely to be obese.[27]

Just providing options can go a long way to increasing health. In Seattle, researchers found that every 5 percent increase in the overall level of walkability



Not All Improvements Take Significant New Investments

This report focuses on the needs for new investments in our transit, walking and biking infrastructure and services. But some major improvements can be achieved without significant new investments. For example, the lack of real time location information for buses and the need to purchase paper tickets or passes, often at a physical location that is nowhere near where you would board or disembark a bus or train, lead many people to opt-out of riding transit. Infrequent or slow transit service and poorly designed routes can remove transit as a viable travel option too.

Technology has provided a number of ways to break down these barriers, creating real-time location mobile apps, paperless ticketing options and mobile-phone based transportation like bikeshare and car-share programs to fill in the first and final mile gaps. Most transit agencies and cities are just scratching the surface in fully realizing the ridership benefits of these tools.

More also can be done to reconfigure transit routes and shift services to combat infrequent and inconvenient operations. While some of this requires increased funding, which is addressed in the transit section below, some can be done by better utilizing existing funding. For example, in the 1990s, Boulder County rebranded buses and simplified bus routes with a redesigned bus network, most of which required simply spending existing money in new ways. In less than a decade, transit ridership quadrupled while the population only grew by 13%.

was associated with a 32 percent increase in minutes of walking or biking and a reduction in Body Mass Index.[28]

Another study in the American Journal of Preventive Medicine suggests that adding active transportation to your day is important even for people who fit in time to exercise after work.[29] An earlier study by researchers at the University of Sydney's School of Public Health supports the thesis that leisure-time exercise alone is often not enough to prevent obesity and the authors recommend using active transportation like biking and walking for trips.[30]

Increasing Access to Healthy Food and Services

Investing in biking, walking and transit can also break down barriers for people so they can access healthy food and critical medical services, especially for the 115,000 households in Colorado that have no vehicle available.[31] Too often, these Coloradans live in areas where the only store they can walk to is a corner store, which might carry more brands of cigarettes than types of vegetables or fruit. Good transit and biking options increase the distance they can travel and can be the difference between having healthy food options and necessary medical services, or going without.

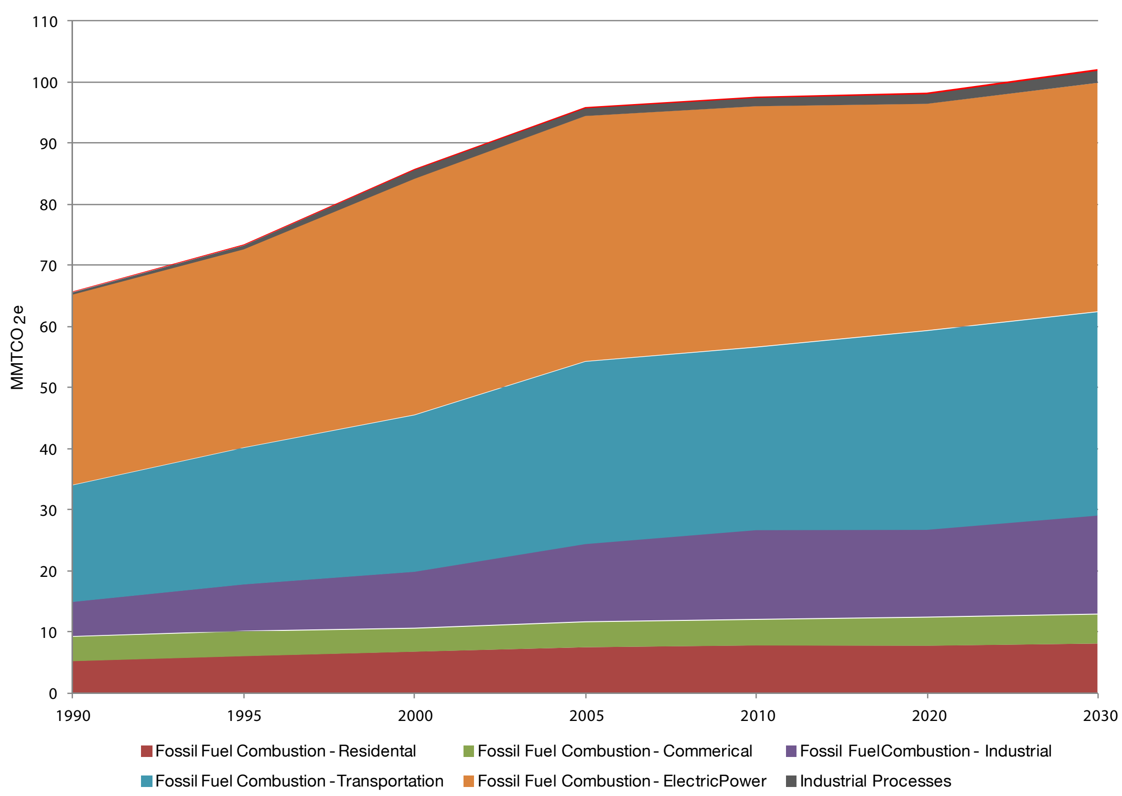
Reducing Air Pollution and Tackling Climate Change

Transit, walking and biking provide important tools for reducing air pollution in the transportation sector since car-generated pollutants have negative impacts on our health and our environment.

According to a study by the Massachusetts Institute of Technology's Laboratory for Aviation and the Environment, emissions from road transportation cause nearly 53,000 premature deaths a year.[32]

In addition, the Colorado Greenhouse Inventory Report found that in 2010 the transportation sector in Colorado accounted for 24% of the state's

FIGURE 5. GREENHOUSE GAS EMISSIONS BY SOURCE IN COLORADO[34]



Rick Kimpel

Smog in Denver

greenhouse emissions, the second-most of any sector, contributing more than all of the greenhouse gases emitted by residential, commercial and industrial fuel use, and only slightly less than the total emissions from all of the coal-fired power plants in the state.[33]

Not only do vehicles make a significant contribution to climate change, which can also speed up the requisite chemical reactions that create smog, but they also emit harmful pollutants that can lead to and exacerbate respiratory ailments like asthma and bronchitis, and heighten the risk of life-threatening conditions like cancer. According to the Union of Concerned Scientists, in 2013, transportation contributed more than half of the carbon monoxide and nitrogen oxides, and almost a quarter of the hydrocarbons emitted into our air.[35]

One example of a pollutant that harms Coloradans and the environment is ground-level ozone pollution. Ozone, produced when vehicle emissions come in contact with sunlight, contributes to asthma, lung disease, and premature death, and is most dangerous to children, teens and the elderly.[36] Unfortunately, the Denver metro area and the North Front Range are currently out of attainment with the current federal ozone pollution standard of 75 ppb (parts per billion), which is designed to protect public health. The Environmental Protection Agency's scientific advisory committee concluded that the level most protective of human health would be 60 ppb. Therefore, the region should aim to not just meet but exceed the federal standards.

The major contributors to ozone pollution are emissions of Nitrogen Oxides (NOx) and Volatile Organic compounds (VOCs). The Regional Air Quality Council in Denver projects that in 2017, 32% of NOx emissions and 16% of VOC emissions will be from on-road vehicles.[37] While federal vehicle standards are making cars cleaner over time and the move towards electric vehicles will further help reduce pollution, transit, walking and biking will need to play a big role.

Beyond just reducing overall pollutant totals, transit, walking and biking can have a big impact in reducing pollution that disproportionately impacts specific communities. Citing a Health Effects Institute study, the American Lung Association points out that an estimated 30 to 45 percent of the people in North American cities live or work close enough to high-traffic roadways to experience significantly higher levels of pollution. In addition, "poor and disadvantaged communities often bear a disproportionate burden of transportation emissions because many major transportation facilities (major highways, rail yards, freight depots, and ports) are located in and near their neighborhoods."[38]

Increasing Economic Vitality

As cities and towns have increasingly embraced the need to become more walkable and bikeable, they have experienced a positive impact on their economic vitality. People for Bikes reports a number of success stories across the country. For example, on Broadway Street in Salt Lake City, they found that businesses realized an increase in retail sales after they replaced parking spots with protected bike lanes.[39] Specifically, the general street upgrade removed 30 percent of the auto parking from nine blocks but improved cross-walks, sidewalks and added protected bike lanes.[40] In the first six months of the next year, retail sales were up 8.8 percent over the first six months of the prior year, compared to a 7 percent increase citywide.[41]

In addition, a recent Brookings Institute report found that places with high walkability, on average, generate 80 percent more in retail sales as compared to a place with fair walkability, holding household income levels constant.[42]

These success stories lead employers to locate businesses in places that are walkable and bikeable. This in turn changes travel patterns, providing an economic boost to other businesses and residences located not only near large employers but with easy and safe multimodal access that makes the whole area benefit from the overall walkability, bikeability and transit-oriented infrastructure.

Beyond the immediate bottom line benefit that employers and businesses are seeing from more walkable, bikeable and transit-oriented communities, multimodal-oriented communities provide greater access to a wide range of destinations to residents whether for employment, shopping areas, schools or medical centers.

For years our planning and building strategies have

Transit and smart land use can save Colorado billions of dollars

Combing investments in transit with smart growth strategies that locate jobs and homes near transit lines can make the whole region function better – and save billions of dollars in public investment.

When DRCOG developed its Metro Vision 2035 Plan, setting forth a 25-year vision for land use and for transportation investments, the region was not content simply to project out current trends. Instead, DRCOG developed alternative scenarios to explore which approaches would produce the most desirable outcomes. This led to a scenario planning effort that combined different land use futures (some were more sprawling, some focused development along transit), and different transportation futures (ranging from focusing most investment on expanding highways to focusing on transit). In each case, the modelers assumed the same total growth in population and in jobs. They ran these scenarios through regional models that predicted traffic levels, water use, air quality impacts, access to employment, and other impacts on the economy and quality of life.

The results were striking. The scenario that combined transit with transit-oriented land use performed better on every single metric that DRCOG looked at – lower water use, less traffic congestion, better access to jobs, and lower infrastructure spending. This scenario needed $5 billion less in regional spending on infrastructure than the highway-oriented scenario, while having less traffic congestion.[45]

Pedestrian infrastructure in Denver; New York City[49]

focused on increasing vehicle travel speeds and increasing the number of people that can drive from point A to point B. But with limited space to expand streets and add parking, especially in urban areas, transit, biking, and walking provide greater access to the jobs, shops, and residents that one can reach, which in turn drives the economic vitality of a community. This benefit is augmented when that access allows households to reduce transportation costs by foregoing owning a car.

Recent research for Colorado Springs' transit system found that the system reaps annual economic benefits for the region of $5.4 million due to reduced congestion, vehicle operating cost savings, reduced emissions, fewer accidents, additional economic activity and job creation.[43]

The Roaring Fork Transportation Authority (serving the corridor along Highway 82 and I-70 between Aspen and Glenwood Springs) contributed $63.4 million in annual benefits from transit corresponding to vehicle operating cost savings, reduced congestion, avoided parking lot costs and the provision of access to jobs for people without access to their own car.[44]

Reducing Crashes, Saving Lives

Investments to improve transit, walking and biking options will be a good tool for reducing traffic crashes and saving lives. In 2014, 32,675 people died from motor vehicle crashes in the United States, with 488 deaths in Colorado.[46] Of the 488 deaths, 63 pedestrians and 10 bicyclists died in vehicle crashes.[47] With Colorado's population set to grow by 2.4 million in the next 25 years, it is imperative that we improve the safety of our transportation system to save lives. Education of drivers, bicyclists and pedestrians; continued development of safety features in vehicles; and enforcement of current traffic laws will all play a large role in reducing fatalities. Over time, the movement towards autonomous vehicles will likely help too. But this is not enough. Colorado needs to change street designs and implement new infrastructure to reach any vision of zero transportation fatalities in the future.

Sweden provides a guide to gauge how increased transit, walking and biking can reduce fatalities. Nicole Gelinas from the Manhattan Institute observed that over the last 15 years Sweden has reduced pedestrian deaths by 31% and overall traffic deaths by 45%.[48]

According to Gelinas, one key strategy was to redesign streets so the priority is not on making them faster for cars but safer for pedestrians. Some of this comes from changing speed limits but a lot of the strategy revolves around adding bike lanes, pedestrian plazas and reconfiguring streets.

New York City cut fatalities by a third since 2005 by employing a similar strategy. For example, they focused on redesigning intersections that had the most fatalities.[50]

A review of studies in the Crash Modification Factors Clearinghouse website found that reducing mean speed by 15% reduced fatal crashes by 44%.[51]

488

Number of traffic related deaths in Colorado last year.


Walk Denver

Aaron Schultz

Problematic bus stops in Denver; Broomfield, CO.

Underinvesting in Colorado's Transit, Walking and Biking System for Years

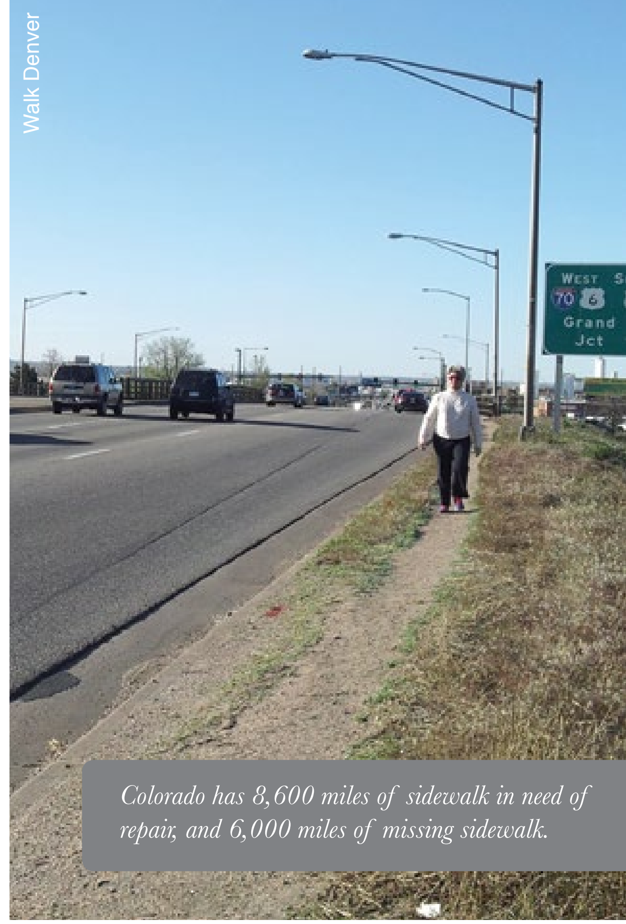
ONE REASON COLORADO has so many unmet transit needs is that the state, through the Colorado Department of Transportation, has historically invested very little state money into transit. Colorado also spends very little state transportation revenue on bicycle and pedestrian infrastructure.

The major source of state funding for the Colorado Department of Transportation is the state gas tax, which has not increased in over 20 years. Under current state law, this funding is limited to highway expenditures and cannot be used for transit.[52] However, nationwide, there are 20 states in which gas taxes are used to support public transit.[53]

The only consistent state source of transit revenue in Colorado is $15 million per year coming from vehicle registration fees that was established as part of the 2009 FASTER state legislation. This is a fixed level of funding, rather than a percentage of the total collected, so each year it declines in buying power due to inflation. Compounding the published values for the consumer price index in the Denver-Boulder area, the buying power of FASTER transit revenues has declined by 13% since the legislation passed in 2009.[54]

In addition, FASTER authorized the state to use toll revenues from a highway corridor to support all transportation modes in that corridor. To date, the state's High Performance Transportation Enterprise (HPTE), which administers toll lanes, has not spent any toll revenues to support transit. The HPTE has signed a Memo of Understanding (MOU) with local governments along the U.S. 36 corridor committing that transit will be eligible for funding from toll revenues once the revenue hits certain targets, but that date is undetermined.

Besides FASTER, there are also temporary sources

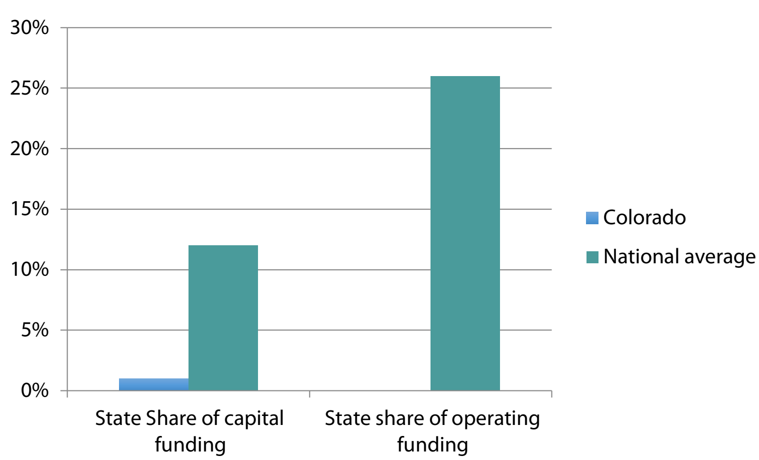


Colorado has 8,600 miles of sidewalk in need of repair, and 6,000 miles of missing sidewalk.

of state funds for transit. In 2009, the Legislature passed SB 09-228 authorizing a transfer of up to $200 million a year of funds from the general fund to CDOT under certain conditions and requires that a minimum of 10% be used for public transit.[55] However, there has only been one year since 2009 that the conditions have been met to allow the transfer and future transfers are uncertain. The maximum amount that this could generate for transit in a single year is $20 million.

Compared to other states, the level of state support for public transit in Colorado is one of the worst in the country. In Colorado's Statewide Transit Plan, CDOT used information from the 2012 National Transit Database to compare Colorado's state funding for both capital and operating to the nation as a whole. For the nation as a whole, including states that do not provide any support for transit, states provide 26% of the operating costs for transit, and 12% of the capital costs. In Colorado, in 2012 the state provided no operating funding and 1% of transit capital funding. Since then, investment in each has gone up but remains behind other states.

FIGURE 6 – 2012 STATE INVESTMENTS IN TRANSIT ACROSS THE COUNTRY [56]



RTD

New free bus service along 17th and 18th Streets in downtown Denver.

Richard Masoner

Transit, Walking and Biking: Necessary Tools to Meet the Challenges of a Growing and Changing Colorado

AS ONE OF THE FASTEST growing states in the country, with significant increases in Millennials and a large and aging Baby Boomer population, good transit, walking and biking options will increasingly be necessary to meet our growing transportation demand and to meet the changing travel trends of the overall population.

A Fast Growing Population

Between April 1, 2010 and July 1, 2015, Colorado's population grew by 8.5 percent, the fourth fastest out of the 50 states and the District of Columbia. During these 63 months, Colorado's population grew from a little over 5 million to just under 5.5 million.[57] In 2015 alone, Colorado gained approximately 101,000 people, a growth rate second only to North Dakota.[58]

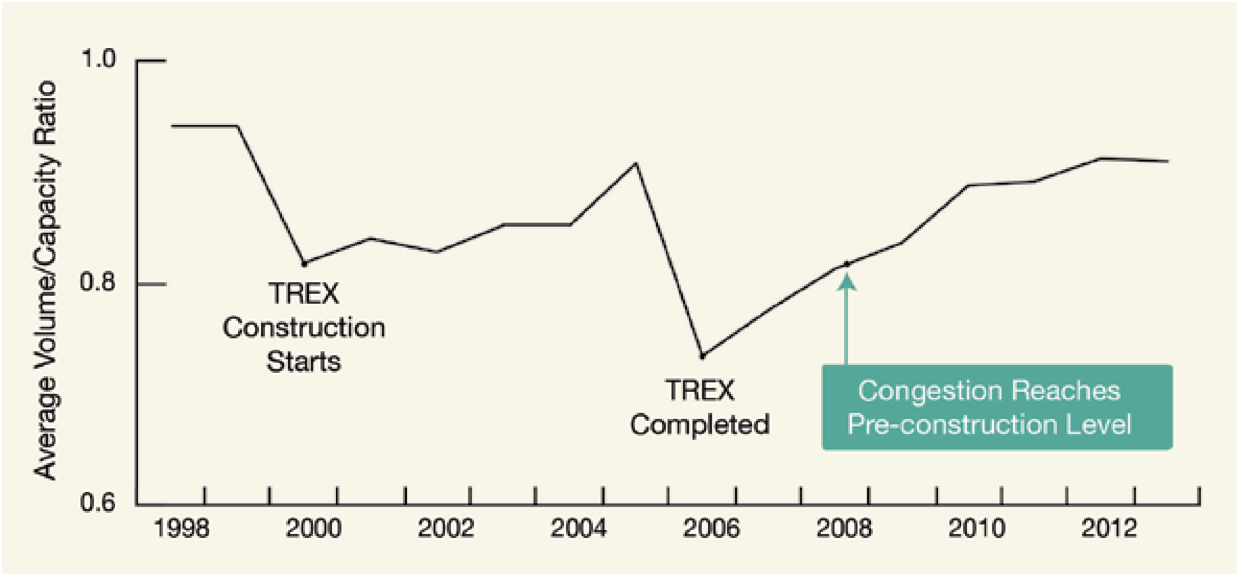
According to the Colorado State Demography Office, Colorado's population is projected to grow to 7.9 million, or an additional 2.4 million people, in the next 25 years.[59]

Transit, Walking and Biking Needed to Meet Demand

With a net growth of 2.4 million people in Colorado in 25 years, providing robust transit, walking and biking options will be critical. Research demonstrates that building additional highway capacity – whether by widening existing roads or building new thoroughfares – does not solve congestion, but rather creates more traffic, in which more drivers spend more time behind the wheel.[60] A 2016 report by the CoPIRG Foundation and Frontier Group highlighted numerous examples of highway widening projects around

FIGURE 7 – CONGESTION LEVELS ON I-25 IN SOUTH DENVER 1998-2013

Source: Southwest Energy Efficiency Project



the country that failed to address congestion including the Katy Highway in Texas, which was expanded to 26 lanes – the world's widest highway – in 2012 but by 2014, 85 percent of commutes along that highway took longer than they had in 2011.[61]

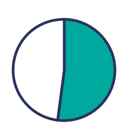
In Colorado, congestion along I-25 through south Denver reached pre-construction congestion levels within five years of completing the widening project know as T-REX. The chart above shows the volume/capacity ratio, a common measure of congestion, on this section of I-25. The state spent $1.2 billion on this road widening, with no long-term benefit in lowered congestion.

Congestion is already a problem for intercity trips during peak periods and the congestion on interstates like I-70 and I-25 are expected to get even worse with the projected population expansion. The mountain corridors already suffer capacity failure several weekends each year.

Since many of the 23,000 miles of highways in Colorado are in mountain corridors, the cost of expanding the footprint of these roads is significant. For example, one CDOT study estimates it would cost approximately $5 billion to add additional lanes along I-70 from Golden to Vail.[62]

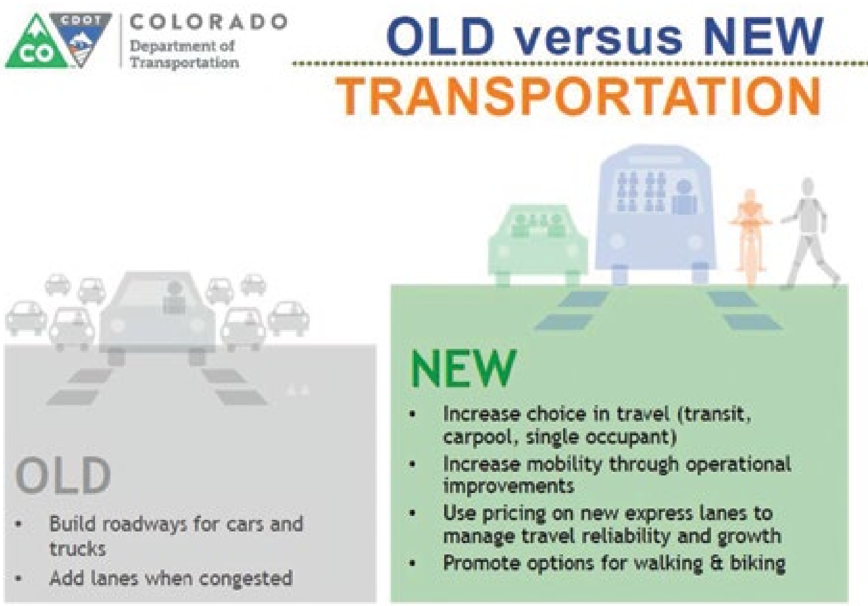
Given that traditional highway widening projects are hugely expensive, especially in tight urban and mountain corridors and can result in less efficient flow of traffic, Colorado should not try to build its way out of congestion by simply widening highways. Statewide investments in transit, biking and walking will help provide the options to keep Coloradans moving.

The Colorado Department of Transportation (CDOT) has begun to recognize the value and benefits that transit, walking and biking provides to our transportation system in Colorado. While CDOT still spends the vast majority of its funding on highways, it has re-written its mission to include choice, mobility, travel management, and biking and walking, as illustrated in figure 8 from a 2014 CDOT presentation.



52% of Coloradans say that **want to live** in a place where they **seldom need to use a car.**

FIGURE 8 – COLORADO DEPARTMENT OF TRANSPORTATION'S MISSION: OLD VERSUS NEW

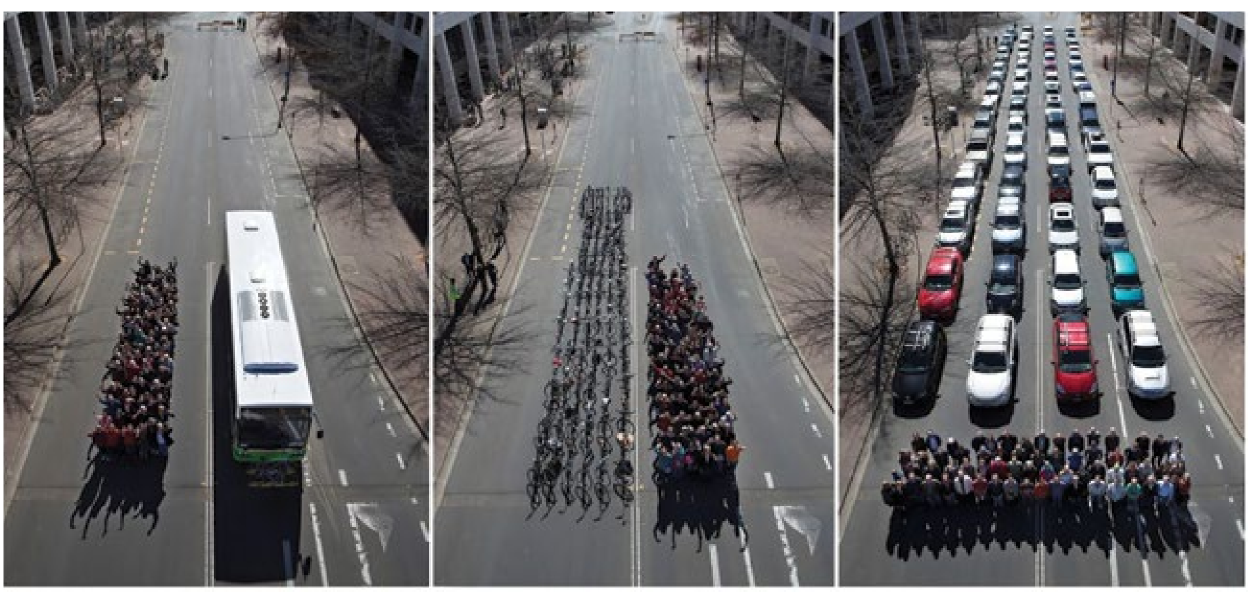


Source: CDOT

Similarly, many cities in Colorado, from Denver's urban core to the mountain towns, are also running out of space to widen streets to accommodate more and more cars. Local decision makers increasingly recognize that making communities more convenient and safe to walk, bike or take transit is the more efficient and cost effective way to accommodate increased growth – both for residences and businesses.

The Cycling Promotion Fund captures the concept of space related to different modes of travel in this photograph:

THE SPACE RELATED TO DIFFERENT MODES OF TRAVEL



Source: http://wearetraffic.org/node/7

Colorado's Not Just Growing; Coloradans Are Changing How They Travel

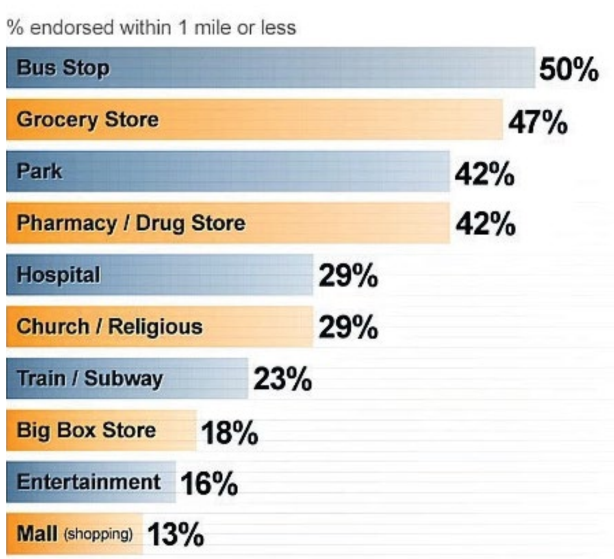
In addition to growing, Colorado's demographics are changing greatly and in ways that require an increased role for transit, walking and biking. For example, the state's total senior population is expected to see a significant increase. In 2000, there were approximately 400,000 Coloradans over the age of 65. By 2040, that number will be 1.5 million.[63]

360,000 or **9.2%** of Coloradans of driving age **do not have a driver's license**

As Baby Boomers age, they shift their travel patterns. While they fueled the Driving Boom of the late 20th century, now Baby Boomers are showing an increased preference for riding transit, walking, and biking. In 2014, the AARP Public Policy Institute surveyed 4,500 Americans over the age of 50 about their community needs. The top two requests in that survey were a bus stop within 1 mile or less of their house (50 percent) and a grocery store within 1 mile of their house (47 percent). In addition, the survey found that they ranked making streets more walkable and adding transportation for older adults and those with disabilities in their top five ways to improve their community (along with parks, schools and police).[64]

FIGURE 9

WHAT COMMUNITY AMENITIES DO OLDER ADULTS WANT CLOSE TO HOME?



Source: AARP Public Policy Institute

Millennials are also flooding into the state. According to the State Demography Office, between 2000 and 2010, the age group that increased the most in Colorado was 10 to 35 year olds.[65] Here in Colorado, the number of Coloradans age 15-34 will swell from 1.4 million in 2010 to 2 million by 2040.[66]

The rise of the Millennials in Colorado is significant because their behavior demonstrates that they will use our transportation system in vastly different ways than it was used in the 20th century when previous generations were their age.

The well-documented shift by Millennials away from driving their own cars as the primary mode of transportation is more than temporary.[67] Surveys of Millennials' consistently demonstrate a preference to drive less and use modes like transit, walking and biking more to get from point A to point B.[68]

The trend extends beyond Millennials. A 2014 Urban Land Institute report found 52% of Coloradans say that want to live in a place where they seldom need to use a car.[69] A year later, the Urban Land Institute reported over half of Colorado residents call walkable neighborhoods, with sidewalks, crosswalks and other pedestrian-friendly features a top or high priority.[70]

While travel patterns are shifting, driver licensure rates among both Americans under 19 and those 20 to 24 years old are declining significantly.[71] In total, 360,000 or 9.2% of Coloradans of driving age do not have a license and therefore need options to travel around their community and the state.[72]

Since technology-enhanced transportation options are

Surveys of Millennials' consistently demonstrate a **preference to drive less** and use modes like transit, walking and biking.

1.4 million

The number of Coloradans who will be aged 15-34 by 2040.

projected to increase in the coming years, we are only seeing the beginning of the impact of ride share, bike share and multimodal phone apps that make it increasingly easier to live a car-free or car-lite lifestyle.

Another example of the changing transportation desires by Coloradans can be seen in the recent polling done for MPACT 64. MPACT 64 was a broad statewide group convened between 2012 and 2014 to examine transportation funding. The group included the Metropolitan Mayors Caucus, Progressive 15, Action 22 and Club 20, representing a broad cross section of urban and rural Colorado. MPACT 64 recommended that at a minimum transportation funding should increase by $650 million per year, with 33% or $214.5 million allocated for public transit.

As part of the MPACT 64 process, a statewide poll was commissioned to better understand what transportation investments Colorado's voters believed were most important. This poll, conducted in January 2014, asked voters to rank how important it is to increase funding for a wide variety of improvements to Colorado's transportation system. As the following chart shows, voters' top priorities were Safe Routes to School for children, and a variety of aspects of public transportation, followed by bicycle and pedestrian improvements.

Isn't driving returning to the consistent increases seen from 1950-2000?

In January, the Federal Highway Administration released 2014 data that showed per-capita driving increased for the first time in a decade and total VMT increased for the third consecutive year. Therefore, some have theorized that this proves that ten years of reduced driving was a temporary blip and travel patterns will return to the 20th century "normal" of large annual increases. However, Frontier Group demonstrates that a deep dive into the data tells a different story.[73] Per-capita driving is still well below the peak reached in 2004 (6% lower) and below 1997 levels.[74] In addition, these increases came at a time of rock-bottom gas prices, ultra-low interest rates, and looser lending terms for new and used cars.[75] This confluence of factors is unlikely to be permanent and as referenced in this section a number of factors from shifting Millennial preferences to technology are helping increase car-lite lifestyles, thus indicating it is more likely that driving levels will not return to 20th century increases.

Over half of Colorado residents call **walkable neighborhoods**, with sidewalks, crosswalks and other pedestrian-friendly features **a top or high priority**.[70]

TABLE 1 – COLORADAN'S TRANSPORTATION PREFERENCES, JANUARY 2014 MPACT 64 POLL

	Very	Somewhat	Not very
Safe Routes To School programs to make it safe for kids to walk or bike to school	53%	30%	16%
Transit for the elderly, people with disabilities, and those unable to drive (asked in metro area)	50%	37%	22%
Transit for the elderly and disabled (asked in rural areas)	42%	41%	15%
Improved bus service accessing employment, shopping and schools	42%	32%	28%
Completing FasTracks (asked in metro area)	40%	35%	24%
Bicycle and pedestrian projects such as bike lanes and paths, underpasses, improved sidewalks, safer crosswalks	36%	36%	22%
Improved safety on rural roads, including the addition of turn lanes and shoulders (asked in rural areas only)	32%	45%	22%
Local transportation projects selected by your county or municipality	29%	49%	20%
Interregional transit service (asked in rural areas only)	27%	39%	31%
State road projects determined by the Colorado Transportation Commission	22%	50%	28%

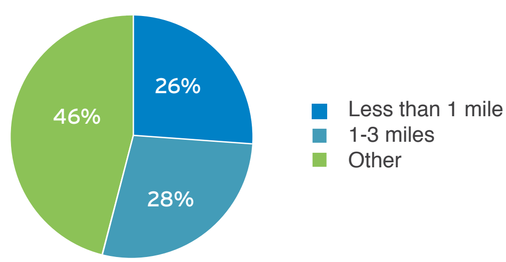
Many Trips Are Short and Easily Replaced with Biking and Walking

Transit, walking, and biking are important tools to meet the challenges of a growing population whose travel patterns are shifting because many trips in Colorado are short and can be easily replaced with good transit, biking and walking.

In a 2011 study, residents of Colorado's Front Range made a total of 14 million trips every day - 3.2 million were work related and the remaining 10.8 million trips were to school, the grocery store, medical appointments, entertainment, etc. The study found that 26 percent of the trips (3.7 million) were less than one mile in length. Another 28 percent of the trips (4.0 million) were between 1 and 3 miles.[76] Yet only 6.7% of trips were undertaken by walking or biking.[77]

Since an average person can walk a mile in about 25 minutes, many of the 3.7 million trips of less than a

FIGURE 10
DISTANCE OF DAILY TRIPS IN FRONT RANGE, 2011[78]



mile could be made by walking.[79]

For bike trips, Bikecitizens.net has an interactive map for measuring the distance someone can bike in 5, 10, 15, and 30 minutes. Accordingly, an individual should be able to bike 3 miles in 15 minutes and therefore many of the 7.7 million trips that are under 3 miles could be made on a bicycle.[80].

In Colorado, currently 1.3% of commuters (33,500 out of a total of 2,544,000) ride their bicycles to work

Bicycle Colorado and David Budd

Bicycle Colorado

and 3.0% walk to work (76,300).[81] But communities across Colorado show that these rates can significantly increase. If the state as a whole reached bike and pedestrian commuting levels currently seen in Fort Collins (6.5% biking, 3.5% walking) or Boulder (10.5% biking, 9.6 % walking), whose rates could also improve, this would increase the number of bicycle commuters to 254,000-514,000 assuming 2015 population numbers.[82]

TABLE 2
BICYCLE AND PEDESTRIAN COMMUTES STATEWIDE

	Percent of Bike and Pedestrian	Number of Bike and Pedestrian Commuters
Current Level	4.3%	110,000
At Fort Collins Level	10.0%	254,000
At Boulder Level	20.2%	514,000

In Summary: The Benefits of Transit, Walking and Biking

In summary, investments and improvements in transit, walking and biking in Colorado can have tremendous benefits and will help us meet a number of challenges. These investments will:

1. Increase the affordability of transportation with potentially big implications on the cost of living in a state with steeply increasing housing costs.
2. Increase accessibility for all Coloradans from urban cities to rural communities to reach jobs, school, medical appointments, grocery stores and other needs and amenities.
3. Reduce the impact of pollution from our transportation system on global climate change and local health.
4. Increase opportunities for exercise via active transportation and provide a great tool for tackling our obesity epidemic.
5. Enhance economic opportunities, especially in dense urban areas.
6. Reduce traffic fatalities and improve overall transportation safety.
7. Meet the demands of a growing state and tackle congestion by giving Coloradans options to travel without a car.
8. Provide the options that Coloradans are increasingly demanding and relying on.
9. Provide an efficient option for the approximately half of trips that are 3 miles or less.

Self-driving Vehicles and the Future of Colorado

Big changes are coming to automobile technology. Some automakers are already adding features such as adaptive cruise control and automated lane keeping, and major advances are being made that will likely lead to the market introduction of vehicles that drive themselves within the next few years. However, it will likely take many years for these to achieve deep penetration into the market. For example, Navigant Research projects that it will take until 2035 for self-driving vehicles to reach 75% of new vehicle sales.[83]

No one really knows what the impact of self-driving vehicles will be on driving. Some analysts predict, at least in urban areas, that personal vehicle ownership will largely go away and that people will instead access vehicles by using a cellphone app to hail a self-driving car when they need one, paying by the trip and avoiding all of the costs associated with car ownership. Under this scenario, total driving likely decreases – and the need for parking lots is largely eliminated, allowing more housing and jobs within existing towns and cities. Others believe that self-driving cars will make it easier to travel long distances and will accelerate urban sprawl and total driving. It is possible that both of these trends will exist in parallel.

One outcome is likely: The rise of self-driving cars are likely to reduce the need to expand highways, even if total vehicle miles travelled increases, because the self-driving vehicles will be able to travel in narrower lanes, travel more closely together, and will likely have fewer crashes and associated congestion.

It is also likely that the underlying trends leading to greater demand for walkable and bikeable communities will not be affected by the rise of self-driving cars, so the overall needs identified in this report are unlikely to be changed.

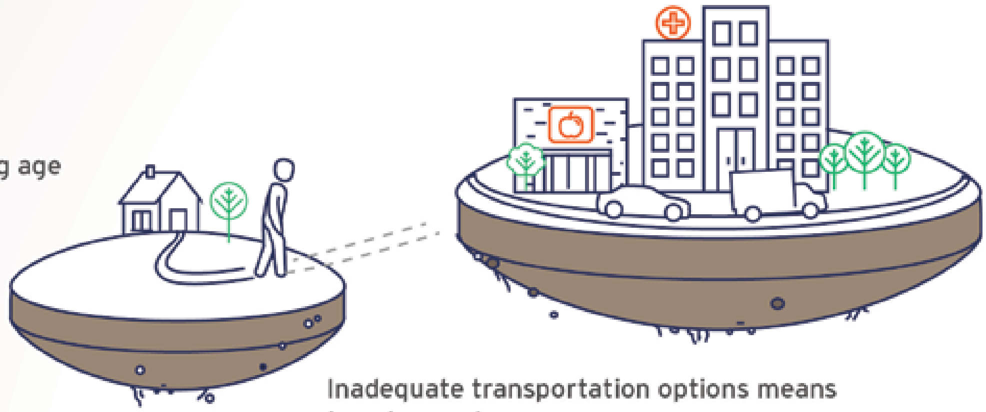
There is debate about the implications for public transit. Generally, people believe that high capacity transit like rail, bus rapid transit and regional bus service will be least affected, and in fact may become more attractive due to the use of self-driving vehicles for first and final mile connections to transit lines.

The impacts on the use of local bus service are much less clear. In some ways, self-driving cars are like the paratransit services we see today – on-call vehicles ready to take you where you need to go. Therefore, it is possible the bus service of today will not look like the bus service of tomorrow. However, because local bus service does not require large capital expenditures, and the lifetime of buses themselves is about a decade, investing in better bus service over the next 25 years does not lock us into old infrastructure – we can provide good bus service today, and then modify the service into the future.

Benefits of investing in transit, walking and biking i

IMPROVE PUBLIC HEALTH

360,000
Coloradans of driving age **do not have a driver's license.**

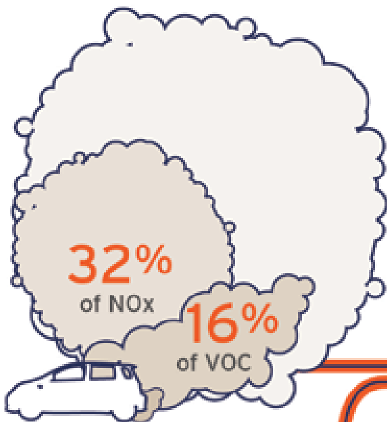


Improving transit walkability improves s

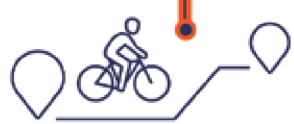
- healthy food
- medical care

Inadequate transportation options means **inadequate access** to services, goods and opportunities.

Percentages of the leading **pollutants** that trigger **asthma & respiratory illness** in Denver that will come from **on-road vehicles** in 2017.



Colorado's Transportation sector accounted for **one quarter** of **global warming pollution** emitted in the state in 2010.



Over half of all vehicle trips made along the Front Range are a distance of **3 miles or less.**

Yet **only 6.7%** of trips were made by walking or biking.

CoPIRG Foundation
SWEEP
SOUTHWEST ENERGY EFFICIENCY PROJECT

n Colorado

STRENGTHEN OUR ECONOMY

options, bikeability and people's access to:

- jobs
- education
- recreation & retail

Estimated Economic Value of Public Transportation

ROARING FORK REGION

$63.4 million each year

SOURCES OF BENEFITS:

- Vehicle operating cost savings
- Reduced congestion
- Avoided parking lot costs
- Provision of access to jobs for people without a car

$8,698

Average annual cost of owning and operating a vehicle

$ 50%

Total housing & transportation costs that can be saved where a household can reduce the number of cars it owns by one

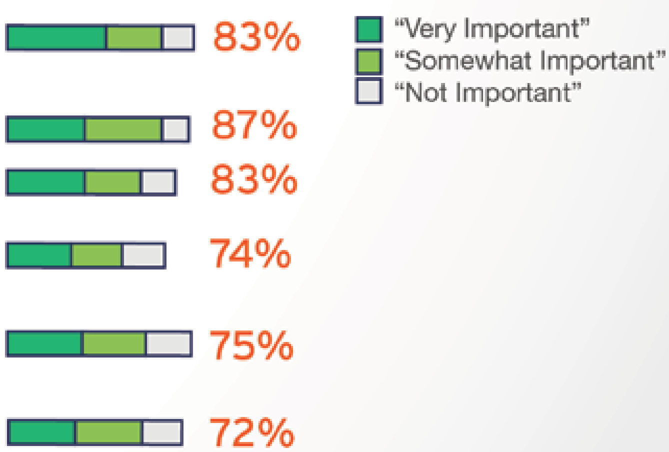
IT'S WHAT COLORADANS WANT

Coloradans ranked increased investment in public transit, walking and biking infrastructure as the most important transportation improvements needed in the state, according to statewide polling.

TOP TRANSPORTATION INVESTMENT CHOICES

1. Programs to make it safe for kids to walk or bike to school
2. Transit for the elderly, people with disabilities, and those unable to drive (in rural; metro areas)
3. Improved bus service accessing employment, shopping and schools
4. Completing FasTracks (asked in Denver metro area)
5. Bicycle and pedestrian projects such as bike lanes and paths, underpasses, improved sidewalks, safer crosswalks

% of respondants who ranked it Very or Somewhat important



Free bus service around town by the Black Hawk and Central City Tramway.; Regional bike path in Eagle County.

A Vision for Colorado's Transit, Walking and Biking Investments

Given all the benefits to our health, environment, safety, affordability, and accessibility of our transportation system, and the important role they play to meet the growing and changing needs of our state, it is time for Colorado to significantly expand investment in transit, walking and biking.

This report finds that Colorado needs to spend an additional $1.05 billion dollars per year on transit, biking and walking over the next 25 years to ensure our transportation system is safe, accessible, affordable, and enhances the quality of life in Colorado. That breaks down to:

- **$243.6 million** for walking infrastructure
- **$229.5 million** per year for bicycle infrastructure
- **$573.6 million** for transit infrastructure with long distance connections provided primarily with bus service.

The transit investment could rise to $219 million per year if additional transit and commuter rail is included and to $1.9 billion dollars per year if the transit investment includes high speed rail along the I-25 and I-70 corridors and the completion of a rail line from Denver to Longmont via Louisville and Boulder (FasTrack's Northwest Rail line).

These calculations are based on surveys, studies, and estimates that take into account the changing demographics of Colorado.

The Walking Needs in Colorado

Overall Capital Expense:
$243.6 million per year

- **$133.9 million** to **build the 6,000 miles of missing sidewalks** and to **repair 8,600 miles** of inadequate sidewalks in Colorado urbanized areas
- **$109.7 million** to maintain the entire system

Everyone is a pedestrian at some point.

Colorado needs a complete pedestrian network that makes walking safe and easy for pedestrians, people using wheelchairs and strollers. To meet this vision will require everything from specific pedestrian infrastructure like wide and protected sidewalks, streets with crosswalks and pedestrian-friendly intersections, and zoning and community designs like compact, mixed-use development that provides shopping, work and recreation within walking distance of residential areas.

Fundamentally, the basic building block of a pedestrian network that meets the needs of Colorado is sidewalks.

Unfortunately, the sidewalks in many Colorado communities are inadequate. Some communities have no sidewalks at all; some sidewalks end in the middle of a block; some sidewalks exist but are narrower than a wheelchair or stroller; and some sidewalks are cracked and crumbling, creating a hazard for pedestrians. In all of these instances, our incomplete sidewalk system forces pedestrians onto streets to continue walking to their destination or they stop walking altogether.

Since walking is often required to get to and from transit stops, the lack of adequate pedestrian infrastructure can undermine transit usage as well. In addition, some pedestrian infrastructure also serves as bicycle infrastructure, which, if inadequate, either eliminates biking as a transportation option or pits pedestrians and bicyclists against each other on dangerously narrow paths.

To understand the walking needs of Colorado over the next 25 years, our analysis focuses primarily on completing the sidewalk system in towns and cities across Colorado including installing new sidewalks to fill gaps and repairing existing sidewalks that are crumbling and/or unusable. While it is also important to redesign communities and roads to be pedestrian friendly, those specific expenses are not in this study because the costs associated with those types of improvements vary widely depending on local circumstances. Therefore, our calculations are conservative to gauge overall pedestrian needs. For detailed methodology, see Appendix A on page 67.

To ensure Colorado has a complete sidewalk system, our analysis concludes that we need to:

- Construct **6,000 new miles** of sidewalks to fill in the gaps that exist
- Repair and replace **8,600 miles** of sidewalks that have deteriorated, creating a safety hazard and accessibility challenges.

The cost of building the new sidewalks and repairing and replacing the inadequate sidewalks would be approximately **$3,348,700,000 or $133.9 million per year**. This breaks down as:

- Construction of concrete sidewalk - **$6.09 per square foot** = $36.54 for one linear foot of a 6 foot wide sidewalk
- Construction of curb and gutter - **$34.64 per linear foot** (assumed to be required in 50 percent of the cases when a new sidewalk is built).

We assumed an average sidewalk width of six feet. Five feet is a common minimum standard, and greater widths are recommended to allow two pedestrians to comfortably pass or walk side by side.

With this build out and upgrade, there would be **28,400** miles of sidewalk in Colorado. In order to maintain a system of sidewalks this large it would cost approximately **- $109,726,000 per year.**[84]

This is a conservative estimate of pedestrian infrastructure needs because it focuses exclusively on sidewalks and does not include other infrastructure such as enhanced pedestrian crossing treatments, pedestrian signals, and pedestrian bridges. Therefore, it should be assumed that communities will need to have additional funds to pay for these kinds of upgrades, the cost of which is often driven by the types of investments already made in the street.

For example, a raised pedestrian crossing that increases the safety for pedestrians crossing a four-lane street would cost tens of thousands of dollars. However, if that four-lane street is widened to six or even eight lanes, a pedestrian bridge may become necessary so pedestrians have time to cross the street, but would balloon the investment into the millions of dollars.[85] This is one more way that an imbalanced transportation system can lead to higher costs for all modes of travel.

The Biking Needs in Colorado

Overall Expense: $229.5 million per year

- $100.8 million to bring the biking infrastructure in every city up to the standards of the best communities in Colorado
- $17.4 million to build regional bicycle routes that connect cities and towns across the state
- $100 million to ensure we have safe shoulders on rural roads to allow safe bike travel
- $11.3 million to expand bike share programs to increase access to biking options

A complete bicycle network not only gives avid bicyclists safe and comfortable routes to get to where they need to go, it needs to give anyone who could use a bicycle a safe and comfortable way to travel. This includes many types of infrastructure such as painted bike lanes, protected bike lanes, wayfinding signage, secure bike parking at destinations, better shoulders on state highways, and bike-friendly intersections. Over half of the daily trips made along the Front Range are three miles or less, making biking a practical way to get around – if the infrastructure is there to make biking convenient, safe and pleasant.[86]

In addition, Colorado could save money on transportation through zoning and community development decisions that allow residents easy access to shopping, work and recreation, which would allow even more daily needs to be met on bicycle.

Unfortunately, bicycle infrastructure across Colorado is often inadequate including:

- Few protected or off-street bike paths
- Bike lanes often end unexpectedly and far from key destinations (i.e. transit stops)
- Intersections create right turn traps and other problems that can lead to vehicle-bicycle crashes
- Unclear or nonexistent wayfinding signage directing bicyclists to the safest routes

The lack of adequate bike infrastructure forces some bicyclists onto crowded roads with vehicles or to seek out alternative paths like alleys, sidewalks and dirt shoulders, which can create conflict with pedestrians and dangerous encounters with cars. Moreover, for many would-be bicyclists, these barriers to entry discourage them from riding a bike all together. The National Association of City Transportation Officials' (NACTO) Urban Street Design Guide is a great resource for understanding how streets can be designed to be safer for bicycling.[87]

To understand and accommodate the biking needs of Colorado over the next 25 years, we focused primarily on infrastructure that helps people bike between common destinations including home, work, school, shopping, and entertainment. While important for quality of life and economic reasons, we did not focus on infrastructure primarily used for recreational bicycling, such as non-paved trails. Therefore, communities should seek to fund these kinds of upgrades beyond the numbers presented in this report.

Current Unfunded Bike Requests Indicate Sizable Need

Most communities and regions in Colorado do not have enough money to fund all of the bicycle infrastructure projects they have prioritized. This is demonstrated by reviewing planning documents like Bicycle Master Plans and funding applications submitted to local MPOs or CDOT. Therefore the projects that are unfunded by these agencies and planning organizations provide an initial picture of the unmet need in Colorado.

While not every project that goes unfunded deserves funding, we know that many deserving projects are not even proposed to the MPOs or CDOT because communities assume that there are limited resources available. Accordingly, these lists are just a starting point and do not represent the full bike needs of a community.

In the Denver metro area, the Denver Regional Council of Government's (DRCOG) is the transportation planning organization responsible for allocating federal transportation funds amongst 56 member governments. DRCOG's Transportation Improvement Program (TIP) identifies all the projects receiving federal funding over a six-year period.

Local governments and agencies apply for TIP funding for a variety of projects (roadway, transit, bike, pedestrian) and submitted projects are then scored and ranked with the top scoring projects in each category receiving funding. For DRCOG's most recent TIP, there was significantly more demand for bicycle/pedestrian projects than there was funding. For the years 2016 to 2021, there were $36.9 million of bicycle and bicycle/pedestrian projects that received funding, however there was $111 million of additional requests for bicycle and bicycle/pedestrian projects that were not funded.[88] Over the six years of the TIP, this comes to an **annual unmet funding need of $18.5 million** in the Denver metro area or $5.93 per person.

In DRCOG's 2040 Regional Transportation Plan (covering transportation projects from 2016 to 2040), $530 million worth of bike and pedestrian projects have been identified that have funding available. However, the total needs for new bike and pedestrian projects by 2040 is estimated at $1.26 billion, leaving $730 million of unfunded bike and pedestrian needs in the region. This comes to an **annual unmet demand of $29.2 million** or $7.86 per person.[89]

The Mesa County Regional Transportation Plan (2016 – 2040) identifies approximately $85 million worth of bicycle projects with only $14 million in expected funding, leaving an unmet need of $71 million over the next 25 years. This results in an **annual unmet need of $2.8 million** or approximately $15.08 per person for that region.

The Pikes Peak Area Council of Governments, as part of their Regional Non-Motorized Plan (part of the Moving Forward 2040 Regional Transportation Plan), identified bicycling corridors in their region that should be priorities for future funding.[90] The plan identified 68 corridors and then prioritized eleven of them based on ranking each corridor's mobility, connectivity, livability and deliverability. Planning level cost estimates were then developed, although costs such as right of way were not included, which could substantially increase a project's cost, making these estimates conservative. The average estimated cost to implement projects on all eleven corridors was $70.7 million. Over the 25 years of the plan that results in **$2.8 million in needs annually or $4.35 per capita**. If the average cost of the eleven prioritized projects ($6.4 million) was applied to all 68 corridors this would result in $435 million in needed funding. This would require the region to invest $26.92 per person per year.

Recognizing that investments in bicycling infrastructure to support commuting and other utilitarian (non-recreational) trips may be better focused on more urban areas, we have applied these

TABLE 3 - UNMET NEED FOR BICYCLING INFRASTRUCTURE BASED ON PROJECTS IDENTIFIED BY MPOS[92]

	Per Capita Annual Unmet Demand	Annual Statewide Funding Based on Extrapolating to Urbanized State Population (4,692,654)
DRCOG TIP	$5.93	$27.8 million
DRCOG RTP	$7.86	$36.8 million
Mesa County RTP	$15.08	$70.7 million
PPACG RTP (low)	$4.35	$20.4 million
PPACG RTP (high)	$26.92	$126.3 million

values to the population living in Colorado's urban areas as defined by the 2010 census.[91] This provides an estimate of the statewide demand for bicycling infrastructure might be.

While this approach provides an estimation of the funding required to implement existing plans, it does not provide the amount of funding required to bring high quality bicycle infrastructure to every urbanized area in the state because the state lacks a comprehensive bike-needs inventory of every community in Colorado.

Therefore, this report estimates the funding needs using the following strategies:

1. An analysis of the **per capita money spent** on bike infrastructure by some of the **top biking communities**;

2. An analysis of **additional unfunded biking needs.**

Current Needs Based on Leading Communities' Per Capita Spending: $100.8 million/year

Looking at unfunded projects at the regional level provides a data point; however it is incomplete. Much of the planning and provision of bicycling infrastructure takes place at a local level. Therefore, in order to better estimate unmet need, we also looked at what the top-ranked bicycle-friendly communities in Colorado spend and extrapolated their investments to the state's urban areas.

Many municipalities in Colorado have adopted Bicycle Master Plans and some of those include estimates of how much funding is needed to realize plan implementation. Aurora, Boulder, Denver, Durango, Fort Collins, Greeley and Loveland are examples of Colorado communities that provide details of what bicycling infrastructure they hope to provide and how much this level of infrastructure would cost. Because these plans are for communities of varying size and cover a different range of years, an effort was made to compare apples to apples by calculating the annual bike expenditure per person. For those plans which did not specify a timeline, implementation was assumed over a fifteen-year period.

TABLE 4 - BIKE INFRASTRUCTURE SPENDING BASED ON BICYCLING MASTER PLANS

	Cost of Bicycle Master Plan (full) Implementation (Millions of $)	Investment Per Year per Capita
Aurora	$12.6**	$2.39
Boulder	$13.6	$22.07
Denver	$119.0**	$11.95
Durango	$15.2	$42.67
Fort Collins	$40.4*	$43.12

**Fort Collins and Loveland both provide a low and high estimate of the costs. The average of the two is shown here.*
*** Implementation assumed over 15 years.*

Among the larger municipalities in the state, Boulder, Fort Collins, and Durango have made the largest commitments to funding cycling infrastructure and also have the highest level of bicycling in the state. Currently, just over 10 percent of Boulder's workers commute by bicycle, 6.5 percent of Fort Collins' commuters are cyclists, and 6.1 percent of Durango commuters bike.[93]

Fort Collins and Boulder have also earned the Platinum rating from the League of American Bicyclists.[94] Platinum is the highest possible community rating and only five communities across the US have earned this distinction.

In some smaller towns, the percent of commuters on bikes is even higher, reaching as high as 15 percent in Gunnison and 29 percent in Crested Butte.

In addition to the percent of commuters who bike, three municipalities were able to provide data on past expenditures for bicycling infrastructure. The City of Durango has spent $3.5 million ($700,000 annually) over the last five years on bicycle infrastructure. That's $39 per resident annually, which is in line with what they have proposed in their bike master plan.

Between 2013 and 2016, the City of Longmont spent $13.1 million or approximately $3.28 million per year. With a population of 90,237, Longmont has spent $36 per capita per year on bicycling infrastructure.

Bike lane in Fort Collins and path in Colorado Springs.

The City of Boulder was able to provide data for the previous 11 years. Between 2005 and 2015, Boulder annually spent between $668,000 and $3.9 million on cycling infrastructure in the city, which translates to between $7 and $37 per capita. Taking the average of these 11 years shows an average annual spending per capita of $25, which is in line with their projected spending in the future.

Based on these investments by leading Colorado cities, our analysis sets a goal of every Colorado community investing $25 per capita per year in bike infrastructure. That would require **$100.8 million in annual funding for all the urbanized areas of the state**, which comes to $2.5 billion over the next 25 years.[95]

TABLE 5 – INVESTING $25 PER PERSON IN URBANIZED AREAS IN COLORADO

Annually	Total Over 25 Years
$100.8 million	$2.5 billion

To place these numbers in an international perspective, in the Netherlands, where an estimated 30 percent of commuting trips are made by bicycle, approximately $28 per person is spent on cycling infrastructure annually.

Additional Areas for Bicycle Funding

Regional Connections: $17.4 million per year

In addition to creating bicycle networks within local municipalities, Colorado should also focus on connecting communities via regional bike infrastructure.

A recent example of regional bike infrastructure is the U.S. 36 Bikeway, which provides an eighteen mile separated bike path facility between Boulder and Westminster, passing through or by Superior, Louisville and Broomfield.[96] This path, which generally parallels the highway, cost $16.6 million or 3.8 percent of the total U.S. 36 project cost of $427 million.

In Colorado there are 628 miles of interstate or freeways and expressways that are located in urban areas (as identified by the Federal Highway Administration).[97] When CDOT and the local jurisdictions are considering these roadways for expansion or major reconstruction, the feasibility of adjacent but separated bicycle and multi-use paths should be examined. These paths may not be feasible for all major highways due to right of way constraints and other roads may already have some parallel biking infrastructure Applying the per mile costs of the U.S. 36 Bikeway to 75% of the state and federal roadways in urban areas (471 miles) yields an estimated cost of $434 million or **an annual investment of $17.4 million** over the next 25 years.

Rural Shoulders: $100 million per year

In rural parts of the state, the addition or expansion of shoulders along highways is a good way to accommodate bicyclists and improve safety for pedestrians, motorists, and farmers, especially when vehicles travel at higher speeds. In 2012, CDOT estimated that the cost to widen shoulders (along with other safety improvements) on all rural highways would cost **$100 million annually**, or $2.5 billion over 25 years. [98]

Rural parts of the state could also benefit from investment in other types of cycling infrastructure, such as designated bike paths, but we do not have sufficient data to make estimates of what level of investment would be necessary.

Bikeshare Expansion: $11.3 million per year

While improving roads and multi-use trails is the primary focus of improving cycling infrastructure, another important program that increases the feasibility of using bicycles for more trips is expanding bicycle sharing programs in municipalities throughout the state. As of 2016, Denver, Boulder, Fort Collins and Aspen have bike share programs. A report by the Institute for Transportation and Development Policy estimated that between 10 and 30 bikes per 1,000 residents are necessary for a successful bike sharing program.[100]

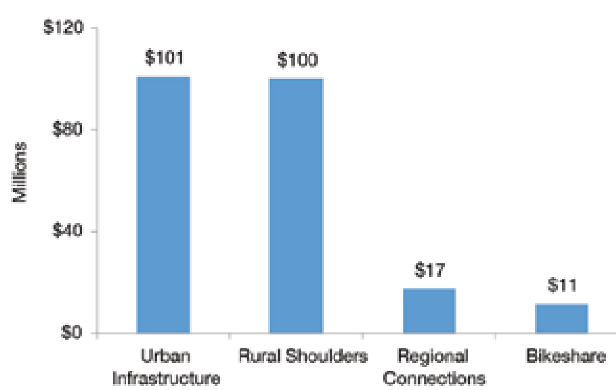
The capital costs to set up a bike share can range between $4,200 and $5,400 per bike.[101] Taking the midpoint of these ranges (20 bikes per 1,000 people and $4,800 per bike) and applying them to the populations of the largest and most bike-friendly cities in the state not already served by a bike share program would result in startup capital costs of $205 million.[102] Annual operating and maintenance costs of $150 per bike would mean an additional expenditure of $6.3 million. Spreading this cost over 25 years results in annual funding needs of $8.2 million of capital costs and an average operating cost of $3.1 million.[103]

The Transit Needs of Colorado

Overall Expense: $573.6 million per year

Colorado needs to spend $573.6 million annually to bring good transit service to the major Colorado population centers, provide fare-free service in the Denver metro area, complete over a dozen local bus rapid transit lines, and build out a comprehensive statewide intercity transit system including dozens of buses from Denver to the ski areas and demand response bus service to meet the growing rural transit needs.

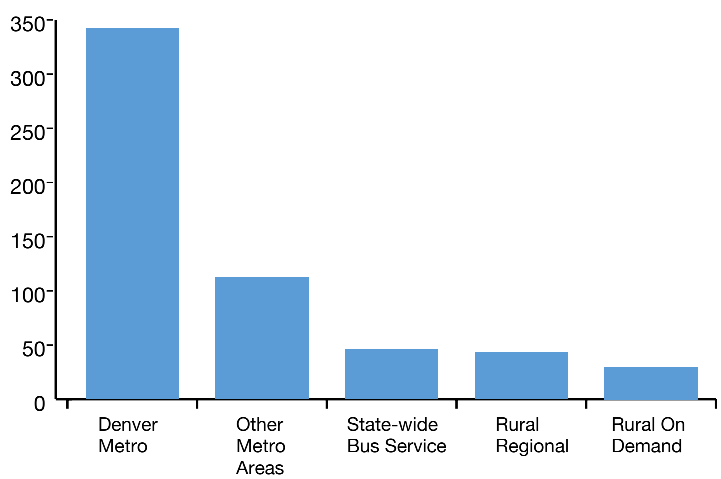
FIGURE 12 - ANNUAL BIKE FUNDING BY CATEGORY



Colorado needs to increase investment in transit by $573.6 million per year in the following ways:

- **$341.6 million** per year for the Denver metro region's transit:
  - $134.6 million per year to launch 14 bus rapid transit (BRT) lines that provide efficient and convenient cross community service along some of the busiest corridors
  - $20 million per year to complete the North Metro Rail Line as well as the Central and Southwest Rail Extensions
  - $187 million per year to offer fare-free access to RTD's current services, increasing ridership by 100 million trips
- **$113.1 million per year** to increase the quality of city-run transit services outside of the Denver metro area including:
  - $15 million per year in Colorado Springs
  - $29.6 million per year in the North Front Range including:
    - $12.9 million in Fort Collins
    - $2.7 million in Berthoud, Greeley-Evans and Loveland
    - $14 million for regional service
  - $12 million per year in Pueblo
  - $8 million per year in Mesa County
  - $36 million per year in the Intermountain Transportation Planning Region (IMTPR) encompassing Eagle, Garfield, Lake, Pitkin and Summit Counties
  - $12.5 million per year for the rest of the smaller transit providers.
- **$3.3 million** per year in annual operating costs and $3 million in one-time capital costs to expand Bustang, the statewide bus service
- **$25.6 million** per year to provide recreational bus service along the I-70 mountain corridor including buses leaving for five different destinations every 20 minutes during weekends
- **$17 million** per year to provide BRT service in managed lanes between Denver and Fort Collins
- **$43.2 million** per year to meet the growing rural regional transit needs including routes from Lamar, from Walsenburg, from Greeley along U.S. 85 and along the U.S. 40 corridor in northwest Colorado
- **$29.8 million** to meet the growing demand for specialized rural transit service.

FIGURE 13 – INCREASES IN ANNUAL TRANSIT FUNDING (EXCLUDING MAJOR RAIL AND HIGH SPEED RAIL PROJECTS)



Additional Transit Investments That Should Be Considered

There are more transit investments that Colorado decision makers should consider beyond the basic $573.6 million in investments that Colorado needs. These additional investments would increase transit service even more and therefore offer the opportunity to realize even bigger benefits.

Specifically, an additional $219 million per year over the next 25 years could bring transit services in cities across the state to an even higher level of service and complete a commuter rail system along I-25:

- **$59 million** per year in additional local transit service investment
  - $56 million in Colorado Springs
  - $3 million in Berthoud, Greeley-Evans and Loveland.
- **$1.2 billion** ($48 million annually) to build a commuter rail service along I-25 from Denver to Fort Collins.
- **$2.8 billion** ($112 million annually) for a commuter rail service between Denver, Colorado Springs and Pueblo.[104]

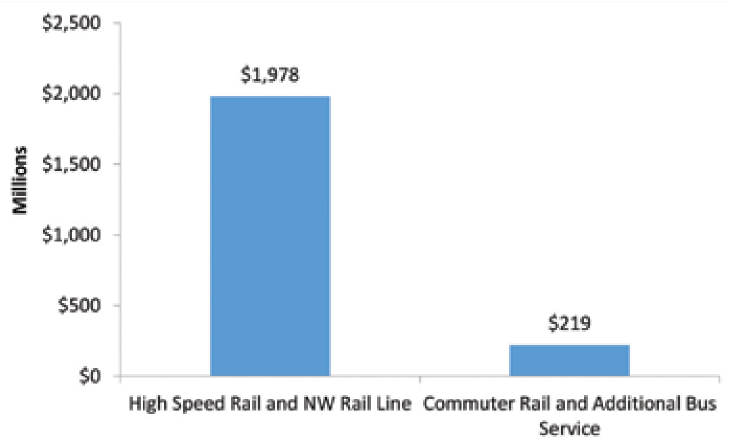
Additional Transit Investments That Could Be Considered

If funding opportunities presented themselves, there are two major rail investments that Colorado could consider. They will take significant more capital, will likely need a more long-term approach, and therefore are not included in the recommended $573.6 million annual investment in this report. However, these investments could offer increased benefits to Coloradans and are worth considering.

The state could invest an additional $1.978 billion per year over the next 25 years to build a rail line connecting Denver to Longmont via Louisville and Boulder and add high speed rail service along I-25 and I-70. Specifically:

- **$1.3 billion** total ($52 million annually) for Northwest rail from Denver to Longmont
- **$1.062** billion annually on high speed rail service along the I-25 corridor
- **$864 million** annually on high speed rail service into the mountains connecting Denver (and the I-25 high speed rail service) with Summit County and Eagle County.

FIGURE 14 - ADDITIONAL TRANSIT INVESTMENTS FOR CONSIDERATION



Bus stop in Colorado Springs.

Danny Katz

Local Transit Service

A complete transit system that provides affordable, efficient and accessible service to get between residences and shopping, school, medical services, work, grocery stores, and other needs and amenities, requires a number of key elements.

1. Service that connects people to all the places they need to go
2. Frequent and fast travel times that are competitive with cars
3. Affordable fares, especially for lower and moderate-income travelers
4. Safe stops and stations with safe and pleasant ways for people to walk or bike to the stops
5. Appropriate service for passengers who are either elderly, have physical or cognitive disabilities or both
6. Land use patterns that ensure housing and jobs are accessible along transit lines.

Based on these criteria, there are significant parts of the state that do not have adequate transit service. While some communities lack any transit service, a more widespread challenge is service that is too infrequent or slow.

The level of investment in local transit service varies among communities across Colorado. The best service tends to be in the central Denver metro area, university towns such as Fort Collins, and in mountain resort areas. Many rural communities struggle to provide trips beyond the basic lifeline and medical services for elderly and those with disabilities.

Most communities have a hard time providing first and final mile connections to transit stops and stations too. Bus stops can be unsafe and unpleasant – sometimes just a dirt patch right next to a road without even a sidewalk or concrete pad. The use of technology like paperless ticketing or real-time bus information are in their infancy and regional and statewide bus service is in the earliest stages of meeting the needs of communities across the state. Outside of the Denver metro area, rail is still in conceptual stages.

According to data from the 2015 State Transit Plan there is wide variation in the annual investment in transit and the ridership across the state.[105]

TABLE 6 – STATEWIDE INVESTMENT AND RIDERSHIP OF SELECT COLORADO COMMUNITIES

	Annual operating cost(millions)	Annual boardings	Population served	Per capita boardings	Per capita investment
Colorado Springs	$17.15	2,930,118	559,409	5.2	$31
Fort Collins	$8.3	2,306,969	143,986	16.0	$58
Loveland	$1.06	142,172	60,000	2.4	$18
Mesa County	$3.5	1,028,430	120,000	8.6	$29
Greeley	$2.7	538,143	93,000	5.8	$29
Pueblo	$4.7	1,134,984	105,000	10.8	$45
RTD (Denver)	$416	98,518,888	2,619,000	37.6	$159

Transit Levels of Investment

As the chart above shows, there is a strong correlation between levels of investment in a local transit system and the ridership on the system. As described in Appendix B, we group systems based on whether the community makes VERY LOW, LOW, MEDIUM, or HIGH levels of investment in transit service and identify the costs for communities to improve their transit service.

Denver Metro Area Local Transit Needs

- $341.6 per year for the Denver metro region's transit:
    - $134.6 million per year to launch 14 bus rapid transit (BRT) lines that provide efficient and convenient cross community service along some of the busiest corridors
    - $20 million per year to complete the North Metro Rail Line as well as the Central and Southwest Rail Extensions
    - $187 million per year to offer fare-free access to RTD's current services, increasing ridership by 100 million trips

While the Denver metro area has done more to implement transit than any other part of the state, it still has significant areas that need improvement including completing the regional rail network, adding bus rapid transit into major corridors, expanding bus service, and maximizing ridership.

Over the next 25 years, $341.6 million needs to be invested per year in transit to complete three currently unfunded rail lines, launch 14 BRT lines in some of the busiest corridors and increase ridership on the RTD transit system by 100 million trips by offering fare-free access.

If additional money was available, an additional $52 million could be invested per year to complete the Northwest Rail Line.

FasTracks Completion:

- $20 million annually total to complete the North Line, Central Extension, and Southeast Extension ($500 million total over 25 years)
- $72 million annually to complete Northwest Rail Line along with the North Line, Central Extension and Southeast Extension ($1.8 billion total over 25 years)

The Regional Transportation District (RTD) began building out a rapid transit system in the late 1990s connecting central Denver with the region's suburban communities, starting with the Southwest Light Rail Line, followed by the Southeast Line. In 2004, voters approved FasTracks, which added additional light rail, commuter rail and bus rapid transit lines. While much of the system will be built and operating by 2018, there is not enough revenue to complete it. There are four major elements that RTD currently projects it will not have enough revenue to complete by 2040 – the Northwest Rail Line past Westminster; the North Metro Rail Line north of 122nd Ave; and the Central and Southwest Rail Extensions. DRCOG estimates that the funding gap, in 2015 dollars, is $1.6 billion.[106] RTD is currently updating these estimates, and states that the cost is likely between $1.77 billion and $1.88 billion.[107] One of these corridors, the Northwest Rail Line, may be problematic, with right of way owned by a private railway company and relatively low projected ridership. The capital cost for Northwest Rail is approximately $1.3 billion. If Northwest Rail is removed, the deficit for the other lines is approximately **$500 million or $20 million per year.**[108]

Completing FasTracks would also bring annual operating costs. RTD estimates approximately $23 million for Northwest Rail; the operating costs for the extensions will be much lower. Some portion of operating would be covered by fares and it is also likely that the growth in sales tax over time in RTD's FasTracks sales tax of 0.4% would be able to absorb the operating costs, so we only show capital costs in the table below.

TABLE 7 – ADDITIONAL COSTS OF COMPLETING FASTRACKS

Northwest Rail	$ 1.3 billion
Completion of North Metro Rail	$ 200-250 million
Central Rail Extension	$ 120-130 million
Southwest Rail Extension	$ 150-200 million
Total	**$1.77-1.88 billion**
Total without Northwest Rail	**$470-580 million**

In the overall summation of needs in this report we show Northwest Rail as a possible investment but do not include it in our estimate of the immediate transit needs due to its high cost and low projected ridership. While Northwest Rail was included in the 2004 FasTracks ballot issue, since that time the projected costs have grown substantially and a robust additional study has been completed on the potential for Bus Rapid Transit (BRT) in the Northwest portion of the metro area. The Northwest Area Mobility Study, conducted by the Regional Transportation District and a consortium of local governments, identified a set of BRT improvements that are estimated to cost about four times less than Northwest Rail, while moving more than twice as many people. Thus, we do not include Northwest Rail in the estimated $573.6 million per year of needed statewide transit investments but do include the new BRT costs.

Bus Rapid Transit (BRT) in Denver:

- $134.6 million per yearto launch 14 new lines ($48.6 million in capital and $86 million in operating)

Bus Rapid Transit

Travel patterns have shifted so that many trips take place suburb to suburb, rather than commute trips from the suburbs to central Denver. Bus rapid transit or BRT can be an effective way to fill any gaps left by the current FasTracks system with high quality transit service, especially in the near future, where in most cases population and employment densities are not projected to be high enough to warrant additional rail build out. In many cases, the urban corridors in the most need could be retrofitted to add BRT at a

The Flatiron Flyer service along U.S. 36 between Denver and Boulder

much lower cost than a streetcar or rail line.

BRT combines several elements to give bus riders faster, more frequent, and more comfortable service. The best BRT systems offer many of the characteristics that we typically associate with rail service. BRT service can be provided both on highways linking communities and in the heart of urban areas. The U.S. 36 BRT service between Boulder and Denver, called Flatiron Flyer, which opened in early 2016, and the VelociRFTA service linking Glenwood Springs and Aspen are examples of the former; the MAX BRT in Fort Collins is an example of the latter.

The most important element of BRT is a right of way that allows buses to travel faster than general automobile traffic, giving a travel time advantage to transit. This can be achieved in a variety of ways. The best service will come from a dedicated BRT right of way for the length of the corridor. For example, the MAX BRT in Fort Collins operates on an old rail right of way that has been converted into a dedicated bus lane.

However, due to space limitations and the potential high cost of expanding urban roadways, it may not always be possible to create new capacity for BRT lanes. Even without using new capacity, it is possible to achieve meaningful travel time savings by incorporating BRT service into existing capacity in the following ways:

- Operating in High Occupancy Toll (HOT) lanes (U.S. 36 is an example)
- Operating on the shoulder of highways (often only during peak periods)
- Operating in a physically separated median
- Using dedicated right of way for portions of a corridor
- Using bidirectional lanes that share one lane for both directions
- Using peak hour only lanes where BRT uses a dedicated lane, but only during peak travel times (this is planned for Colfax Avenue in Denver)

Other roadway modifications that BRT service can incorporate to improve travel times over regular traffic include:

- Transit “queue jump” lanes that allow buses to bypass congestion at intersections
- Transit signal priority at signalized intersections
- Other elements of BRT service, which should not be exclusive to BRT, may include:
- High service frequencies
- Pre-paid fares to speed up boarding

- Level boarding platforms and multiple doors to speed up boarding
- Branded service and visible, branded stations
- Real time bus arrival information
- First and Final mile connections, such as bike share or car share services at stations.

Flatiron Flyer – The Denver Region's First Bus Rapid Transit Line

The Flatiron Flyer is the only BRT line built to date within the Denver metro area. It operates in a managed lane for the vast majority of the trip. CDOT is contractually obligated to maintain bus speeds in this lane – a minimum of 55 mph in most of the corridor – so it is considerably faster to take the bus than it is to drive in the general purpose lanes during rush hour. The service is also frequent, with buses once every six minutes on average during the morning and afternoon peak periods. The Flatiron Flyer opened in January 2016, and by the end of March ridership had grown by almost 50 percent compared to the previous bus service, from about 9,400 to 14,400 trips per day. It is currently projected to keep growing to nearly 19,000 trips.

A Vision for Bus Rapid Transit in the Denver Metro Region

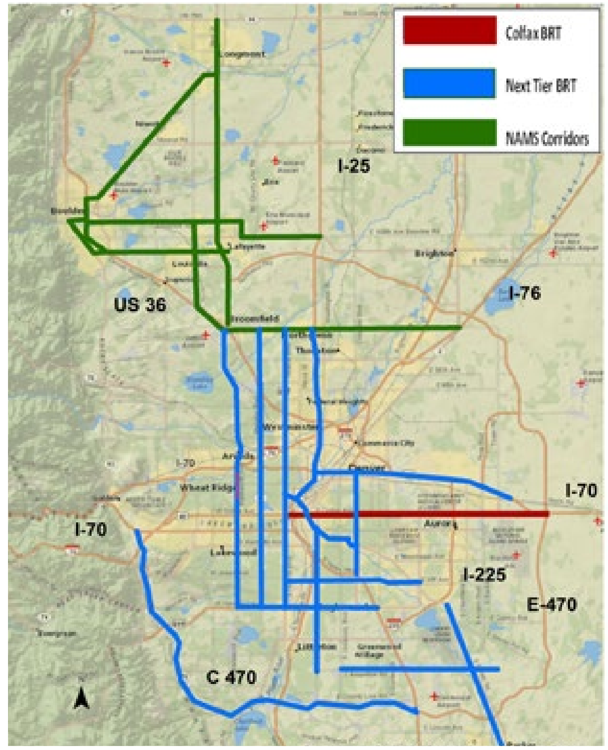
There are a number of corridors that are excellent candidates for BRT lines.

The Northwest Area Mobility (NAM) study identified six additional BRT corridors in the NW portion of the Denver metro area, at a cost of approximately $300 million in capital costs. These lines would run on arterial corridors linking the cities of Longmont, Broomfield, Lafayette, Erie and Boulder and are projected to carry nearly 29,000 trips per day.

In addition, DRCOG has identified potential corridors for BRT along Alameda, Hampden, Wadsworth, and C-470 and estimates these projects will cost approximately $800 million in capital costs in 2015 dollars.[109]

In addition, Denver has conducted an alternatives analysis and selected BRT as the preferred approach

FIGURE 15: FOURTEEN NEW BUS RAPID TRANSIT ROUTES FOR THE DENVER METRO AREA



Source: SWEEP

for Colfax Avenue/SH 40 through Denver, at a cost of $115 million. This would dedicate one travel lane in each direction to BRT service during the morning and afternoon peak periods. The City of Denver projects that this will shorten transit travel time by 11 minutes, carry over 40,000 people per day, and increase access to 280,000 jobs and 50 schools.

Another potential corridor is SH 2 from Denver to Brighton, which the North Area Transportation Evaluation by RTD and local partners concluded is the preferred approach.

There are other corridors in the Denver metro area that are also appropriate for BRT. A 2014 analysis by the Southwest Energy Efficiency Project identified 14 potential corridors, many of which we have already mentioned as shown in the map above.[110] RTD and DRCOG will partner to conduct a regional BRT planning-level analysis in 2017, which will identify the highest priority corridors and approximate costs and projected ridership. DRCOG has put a placeholder in the 2040 regional plan, titled "next tier rapid transit" of $800 million in capital costs in 2015 dollars. For the purposes of this report, we use this as an estimate for the cost of the highest priority BRT corridors beyond the NAMS and Colfax corridors.

The total capital costs for launching 14 new bus rapid transit lines would be $48.6 million per year.

TABLE 8 – BUS RAPID TRANSIT OPTIONS IN THE DENVER METRO AREA: TOTAL CAPITAL COSTS

NAMS BRT corridors (SH 119, SH7, SH 42, US 287, South Boulder Road, 120th Ave)	$300 million
Colfax BRT	$115 million
DRCOG's "Next tier" BRT	$800 million
Total	**$1.215 billion over 25 years ($48.6 million per year)**

The corridors will also have operating expenses. The Colfax alternatives assessment estimates an annual operating cost of $13 million, while the NAMS study estimates annual operating costs of approximately $23 million. [111]

No estimate is available on the operating cost associated with the other BRT listed above. If you assume a similar relationship between capital and operating costs for these projects compared to the others, operating costs would be about $50 million per year. Some portion of the operating cost will be covered by fares and some portion of it may be fundable due to the growth of the sales tax base in the existing RTD base funding of 0.6% sales tax. RTD currently projects cash flow availability beginning around 2027. However, this will also need to be used for enhancements to the base bus service in the region. Thus, unlike for the FasTracks elements shown above, we assume that incremental revenue is needed for the BRT operating costs.

An estimate of the operating costs associated with these BRT lines is $86 million per year.

First and Last Mile Investments to Maximize FasTracks and BRT

In addition to the costs of the transit lines themselves, so-called first and final mile improvements are important to make sure that there are convenient and safe ways for riders to get to and from the stations. These often involve improvements to make the areas surrounding stations more walkable and bikeable, adding bike-sharing and bicycle storage, and local bus service or shuttles to stations. In the future they may include technology-enabled programs such as autonomous vehicle shuttles.

A 2015 study by Walk Denver and Mile High Connects identified pedestrian and bicycle improvements as the highest priority for first and final mile improvements.[112] No comprehensive study has identified the total funding needed for first and final mile improvements. In this report we do not separately identify a cost, but the estimates in the biking and walking sections of this study likely address a portion of first and final mile needs, however money will likely be needed.

Fare Free RTD

- **Total cost: $187 million per year ($160 million to replace farebox, $27 million for added service)**

The estimates in the previous section are based on adopted plans and studies conducted by RTD and DRCOG. In this section, we propose a new approach that is not contained in any adopted plans but would complement the Denver area's transit investments by vastly increasing ridership on existing and new bus and rail lines.

One of the factors that affect public transit ridership is the cost of a fare. It is a very different structure than car ownership. When someone owns a car, they have a large fixed cost (the cost of purchasing the vehicle) and insurance costs that are usually unrelated to how much the vehicle is driven. The only variable costs that are visible to the driver are the costs of gas and occasionally tolls or parking. Therefore the perceived cost of the trip is usually lower than the actual cost.

By contrast, a transit rider has no fixed costs but has to pay for every trip, which leads to a perception of high costs. Transit riders (especially on local buses) are also, on average, lower-income than the population as a whole, so they are more price sensitive. [113] Thus, transit fares can be a barrier to transit ridership especially if people perceive transit as more expensive.

In the early 1990s, RTD created an "unlimited access" transit pass program (EcoPass), where every member of a population, such as employees of a company or business district or students at a university, receives a pass allowing them fare-free access to public transit. Since then, there has been an explosion in its usage.

Transit use tends to increase dramatically when unlimited access pass programs are introduced – one study found cases where transit ridership tripled after a population was given access to transit passes.[114]

The higher ridership associated with these passes can justify higher levels of transit service, which in turn support higher levels of ridership – a virtuous cycle instead of a vicious one. For example, when the University of Colorado developed a transit pass program in the early 1990s, the large increase in ridership then convinced RTD to expand service with routes such as the SKIP, which then led to still higher ridership, which justified more service.[115] Twenty years later, CU student ridership is over six times higher than before the pass program was created.

Transit pass programs also save individuals money because they are bought in bulk by a group and therefore tend to cost much less per person than an individual transit pass would.

Transit pass programs are a cost effective tool to maximize the use of existing transit service. Buses run whether they are filled or not. So while more people with transit passes increases the number of people riding buses, they are often filling empty seats. Therefore, doubling transit ridership by providing fare-free passes does not mean you need to double the amount of buses or routes.

Currently, the RTD EcoPass is primarily available to employees of participating businesses or to students at universities that participate in the college pass program. There are a few broader programs – the towns of Lyons and Nederland have created community wide pass programs, a few neighborhoods have programs where all neighborhood residents are eligible, and in downtown Boulder parking revenues are used to pay for EcoPasses for everyone who works downtown. But the vast majority of residents in the Denver metro region do not have access to one of these community EcoPass programs.

Creating a region-wide transit pass program, allowing everyone fare-free access to RTD's bus and rail system just by showing an ID via an "EcoPass for all" type program, would approximately double transit ridership.[116][117]

Because work trips are less responsive to fare changes since a person who needs to get to work is more likely to take the bus whatever the fare is, peak demand would not go up as rapidly as total ridership, which would result in much better use of existing transit service by filling empty seats. In addition, fare-free service vastly improves access for low-income residents.

The biggest cost of a fare-free system would be the foregone fare revenue. In 2016, RTD's total fare revenue is budgeted at approximately $160 million per year.[118]

In addition, there might be costs associated with new service to meet some of the new trips, though as was stated earlier, many of these new riders would fill existing seats with no new service needed.

Without a detailed route-by-route analysis of the likely ridership increases during peak and off-peak periods it is difficult to estimate the level of new service that would be required or the associated costs. However, a community EcoPass feasibility study conducted by Charlier and Associates and Nelson Nygaard for the City of Boulder and Boulder County provides an estimate.[119] In their analysis, the conclusion was that for a countywide EcoPass the costs of additional service would be about 17% of the lost revenue. If we apply that same percentage here, the additional annual service costs would be $27 million.

Thus, the total annual cost of a region-wide fare-free pass program would be roughly $187 million.

RTD currently provides about 100 million trips per year, so we would anticipate around **100 million new trips**. Since the total cost is $187 million, the cost per new trip would be only about $1.87 – much lower than the cost per new trip from system expansion. Note that adding 100 million trips per year would bring the metro area to approximately 75 trips per capita.

Small and Medium Size Cities

- Needed investment: $64.6 million per year – brings each community up one level of investment, and assures that every community meets at least the LOW level
- Higher investment: $123.6 million per year —brings every community up to a MEDIUM level of investment

Colorado Springs

- Next tier of planned improvements: $6 million per year
- Raising from VERY LOW to LOW investment level: $15 million per year
- Raising from VERY LOW to MEDIUM investment level: $71 million per year

Colorado Springs is the second largest metropolitan area in the state and their transit agency, Mountain Metro Transit, operates as a division of the Colorado Springs municipal government. Unfortunately, service levels are constrained by limited funding. Per capita funding for transit in Colorado Springs is 30 percent less than Pueblo, 50 percent less than Fort Collins, and 80 percent less than in the Denver metro area. The major sources of transportation funding are federal funds, sales tax revenues from the Pikes Peak Rural Transportation Authority, and an annual allocation from the city.

In their 2040 Transit Plan, Colorado Springs identified a set of peer cities including Madison, Minneapolis/St Paul, Ann Arbor, Grand Rapids, and Spokane. All of the peer cities made larger per capita expenditures on transit, and have substantially higher ridership. For example, Madison spends about six times more ($104 per person each year) on transit, and has per capita ridership that is seven times higher than Colorado Springs.

In their 2040 Transit Plan, the city identifies a set of improvements to bus service, with a cost of $13.8 million per year.[120] Approximately half of this could be funded with revenue increases based on anticipated growth of sales tax revenue, fares, and federal funds, leaving an **unmet need of $6 million per year.**[121]

Some of the issues identified in the 2040 plan include the need for higher frequencies of service along core routes, with a goal of daytime service every 15 minutes; improving connectivity among routes; and enhanced service to major medical facilities and the military bases.

The plan also identifies a long-term goal for higher capacity service along key corridors such as Academy Boulevard, Nevada Avenue, and Platte Avenue, probably through enhanced bus or bus rapid transit. There are no cost estimates given in the plan for these high capacity transit services.

Another approach to identifying the funding needs for transit in Colorado Springs is to look at population and per capita cost numbers to estimate what level of funding would be required to bring Colorado Springs from the current VERY LOW level of investment to a LOW or MEDIUM level of investment. That is, if we look at the per capita expenditures of $150 per year as MEDIUM and $58 per year for LOW, we calculate the additional expenditures that would be required for Colorado Springs to achieve these same levels.

- Planned unfunded needs: approximately $6 million per year
- LOW investment level $15 million per year
- MEDIUM investment level $71 million per year

North Front Range, Including the cities of Berthoud, Fort Collins, Greeley and Loveland

- North Front Range Regional Bus Service: $14 million per year for regional service
- Raising Fort Collins from LOW to MEDIUM investment level $12.9 million per year
- Berthoud, Greeley-Evans, Loveland local service:
  - Raise from VERY LOW to LOW investment level = $2.7 million per year
  - Raise from VERY LOW to MEDIUM investment level = $5.7 million per year

Source: TransFort

The cities and counties in the North Front Range have seen not only some of the fastest growth in the state, but in the country. Census data shows that between July 2013 and July 2014, the Fort Collins-Loveland metro area was the 12th fastest growing metro area in the country and Greeley was eighth.[122]

However, according to table 6, the North Front Range cities, with the exception of Fort Collins, have the lowest per capita expenditures on public transit, and the lowest levels of ridership of the larger urbanized areas. In addition, there is only one regional bus route, the FLEX bus service that connects Fort Collins to Longmont along U.S. 287 and offers some express service connecting Fort Collins to Boulder.

- **North Front Range Regional Bus Service: $14 million per year for regional service**

The North Front Range Metropolitan Planning Organization has developed a number of scenarios that look at expanding regional services between the cities within a rather constrained level of potential funding. Regional connections that should be studied are additional service along U.S. 287 and new service connecting Fort Collins, the Greeley/Evans area, Loveland, and Denver.

The 2040 plan does set out several scenarios for modestly expanding regional transit, with additional costs up to approximately $14 million per year. This would include bus service between Fort Collins and the Greeley/Evans area, between the Greeley/Evans area and Loveland, and between the Greeley/Evans area and Denver, as well as additional service and investment along the U.S. 287 corridor. This does not include the cost of rail or BRT connecting to Denver.

- **Fort Collins local service: Raising Fort Collins from MEDIUM investment level: $12.9 million per year**

Fort Collins operates its transit system, TransFort, as a division of the city. They have the highest per capita transit ridership of any urbanized area in Colorado outside of the RTD system. TransFort has developed a strong local system, including the MAX BRT line and a fare-free transit pass system for Colorado State University students.

The next phase of service expansion outlined in the Transfort strategic operation plan includes "additional transit growth in Fort Collins including longer service hours and limited Sunday transit service, as well as expansion of regional service to Denver, Boulder, Berthoud, and Longmont. This phase assumes the implementation of additional MAX services that extend outside of the Mason Corridor and completes the transition to a full grid network in Fort Collins."[123] Implementing this phase would bring their level of investment up to MEDIUM.

The plan identifies a funding gap of $11.25 million for local service and $2.4 million for regional service to meet their vision (these are in 2009 dollars).[124]
In order to avoid double counting with the regional needs identified by the North Front Range MPO, we

only include the local routes in this analysis.

Inflating the 2009 dollars to 2015, the annual cost would be $12.9 million.

- **Berthoud, Greeley-Evans, Loveland local service:**
    - **Raise from a VERY LOW to LOW investment level = $2.7 million per year**
    - **Raise from a VERY LOW to MEDIUM investment level = $5.7 million per year**

The transit service for the rest of the urbanized areas of the North Front Range is currently funded at a VERY LOW level. Given the lack of detailed plans available, we use the population and per capita cost estimates to project the level required to bring the investment to LOW or MEDIUM.

Since the current per capita ridership in Berthoud is less than one trip per year and in Loveland is just over two trips per year, either of these investment levels (a LOW is projected to generate 20 trips per capita per year, while MEDIUM is projected to generate 40) would represent enormous increases in transit ridership.

Pueblo

- **Raise from VERY LOW investment to MEDIUM investment: $12 million per year**

Their local long-range transportation plan discusses two modest sets of unfunded improvements to their transit system: expanding bus service to additional times and expanding bus service to major activity centers such as the University/Pueblo Mall and Pueblo West and the Airport Industrial Park.[125] The unfunded vision plan includes rail service along I-25.

We estimate an investment of $12 million per year would bring transit service up to a MEDIUM investment level, based on multiplying the population of Pueblo by the difference in per capita transit expenditures in Pueblo and in communities reaching this level of investment and ridership.

Mesa County

- **Raise from a VERY LOW to a LOW/MEDIUM level of investment= $8 million per year**

The long-range plan for Mesa County contains an unfunded transit vision with $209 million of need (in 2014 dollars) over a 25 year period, or approximately $8 million per year.[126] This would likely raise Mesa County to a level of investment of LOW/MEDIUM. The plan envisions many elements including increasing service frequency (currently once an hour on most routes) first to 30 minutes then to 15 minutes, improving pedestrian access to bus stops, and adding new service in areas such as Pear Park and F1/2 Road.

Intermountain Transportation Planning Region

- **$29 million per year operating including costs to maintain service**
- **$7 million per year capital**

The Intermountain Transportation Planning Region (IMTPR) encompasses Eagle, Garfield, Lake, Pitkin and Summit Counties, containing most of the major ski resorts in Colorado. Driven by the demands of commuting and tourism, the Intermountain TPR boasts some of the state's most well-developed transit systems. Although designated in federal statute as "rural," these systems provide levels of service typically seen in urban communities so we include this region in our analysis of urban systems. The largest transit system in the IMTPR is the Roaring Fork Transportation Authority (RFTA) but there are also substantial systems in Eagle County (ECO Transit) and in Summit County (the Summit Stage), as well as several municipal systems. Collectively, they provide 13.5 million trips per year.

This region is facing significant funding challenges just to maintain current levels of service. Many costs are higher in the mountains, leading to operating costs that are growing faster than revenues. Currently, the region predicts that annual operating expenses will exceed revenues by $25 million by 2020.[127]

In order to improve services, the IMTPR projects a need for $86 million in capital expenditures for bus stations, park-n-rides and other facilities over a 12-year time horizon, or approximately $7 million per year. They also project a need for approximately $4 million per year in increased bus service linking communities across the region.

The IMTPR also projects a need for approximately $20 million in bicycle and pedestrian improvements to support first and final mile connections to transit over the next six years, or about $3 million per year. For the purposes of this report, we do not include the bicycle and pedestrian improvements, assuming that these would be included in the additional bicycle and pedestrian needs identified in those sections of this report.

Smaller Transit Systems: $12.5 million per year

There are many more transit systems in small communities across the state including Montrose, Telluride, Durango, Cortez, Alamosa, Trinidad, Salida and Steamboat Springs, as well as communities launching new service like Winter Park. Assuming an investment of $150 per capita to move transit to MEDIUM service levels we calculate a cost of $12.5 million per year.[128]

First and Final Mile Connections

The expansion of transit service (like the buildout of the FasTracks system in the Denver metro area or the VelociRFTA and MAX BRT in the Roaring Fork Valley and Fort Collins respectively or the Bustang statewide bus service) is only the beginning of developing a successful and sustainable transportation system. First and Final mile connections (FFM) play an integral role in getting people from their home to transit stops and then to their final destination. To encourage people to walk and bike rather than driving their own car to get to a transit stop, adequate and attractive pedestrian and biking infrastructure needs to be in place. Areas lacking sidewalks, bike routes, or safe crossings for pedestrians and cyclists are unlikely to encourage potential transit riders. FFMs serve a critical role in making transit service accessible to those populations (disabled, low-income, youth, elderly) who lack access to a personal vehicle. Ultimately, improvements to FFMs will increase transit ridership and help maximize the benefits from the investment in transit. In addition to improved bike and pedestrian connections, there are many experiments across the country on how to effectively use services like Uber, Lyft, bike sharing and car sharing to access transit stations.

Unfortunately, there has not been any systematic work done to evaluate the funding needed across the state for FFM investments. For the purposes of this report, we assume that there will be some overlap, where pedestrian and bicycle investments that we recommend will address many FFM needs, and that the bus improvements we recommend will also help address FFM gaps. However, this overlap is not comprehensive and is likely missing some investments needed to address FFMs.

One recommendation we do offer is that any future BRT or rail planning efforts should identify FFM needs in the planning process and should fund these as a part of the transit project. Historically, at least in the RTD region, the transit projects have paid for the rail or BRT investment, but FFM has been left as an unfunded afterthought for the surrounding local government. This means that we make multi-billion dollar investments to create transit lines that act as a backbone for an overall system but often do not make the much smaller FFM investments that would maximize the investment through increased usage.

Statewide Transit

Currently, Colorado lacks a comprehensive transit system linking communities across the state. However, there is a growing urgency to address inter-regional transit, particularly on the congested corridors of I-25 along the Front Range and I-70 from Denver through the mountains. At the very least, Colorado needs to make the investments in the lower cost options of providing high quality bus connections and should consider additional investments in commuter rail and high speed rail that bring additional benefits but also have much higher costs.

Regional and State Transit - Bus

One of the quickest ways to improve regional and statewide transit options is to ramp up bus service.

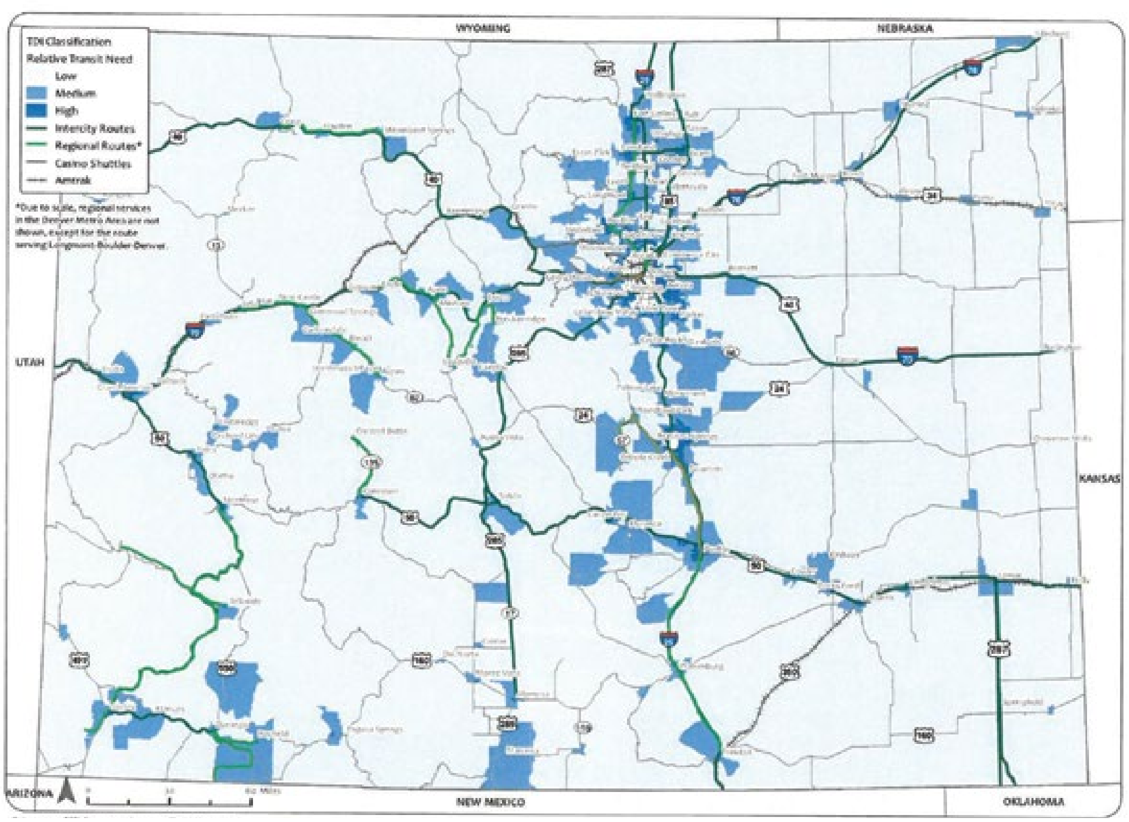
One type of regional transit is Intercity Bus Service, which provides scheduled and reliable service to more urban areas over long distances. It serves the general public, can transport passengers' baggage, and makes meaningful connections with other transit services like Bustang to get to more distant points.[129]

Another type of service is Regional Bus Service, which typically offers higher frequency, shorter distance trips. Some regional services are designed to serve specific markets such as resort employees or those needing transportation to regional airports. Other regional programs are designed to serve people who need to access government services and medical trips and designed to permit users to complete the trip in one day. An example of a regional provider is Eagle County Transit (ECO Transit) providing services along the I-70 corridor from Gypsum to Vail.

The last type is Demand Response Service, which provides service on an "on-demand" schedule. The routes are not fixed and without a set schedule they can pick people up and take them to where they need to go in real time. This type of service makes the most sense in less dense population centers where fixed route service would not be efficient.

Calculating the demand for transit service between communities depends on the size and density of

FIGURE 16 – TRANSIT DEPENDENT COMMUNITIES IN COLORADO BASED ON DENSITY



Colorado Department of Transportation, Statewide Intercity and Regional Bus Network Plan an area's population and on the demographic and economic characteristics of that population.

CDOT used data from the 2010 Census and the 2007 - 2011 American Community Survey (ACS) to identify four potentially transit-dependent population segments in Colorado:

1. Young Adults (age 18 to 34): college students, enlisted military personnel and other young adults, some of whom do not have access to an automobile. Individuals in this age range often make up the bulk of intercity and regional bus ridership.
2. Elderly (age 65 and above): advancing age can mean diminished ability or desire to drive (particularly on a long trip) and increased need for regular trips to medical facilities.
3. Low Income: Coloradans living in poverty are often precluded from owning or operating a car, or have only one car per household, making long-distance trips impossible.
4. Autoless households: More than 100,000 households in Colorado do not have a car and rely on transit services.

Figure 16 indicates the density of transit-dependent populations, overlaid with existing Intercity and Regional Bus Services.

Bustang Expansion: $3.3 million per year in annual operating costs and $3 million in one-time capital costs to expand Bustang

Bustang was launched in July 2015 by CDOT to provide bus service between regions. Bustang has provided more than 100,000 trips in the first year of operation. Currently Bustang operates three routes:

1. Denver to Fort Collins with stops along I-25 in Loveland and Windsor (five services daily and one weekend CSU Ram Route)

FIGURE 17 - EXPANDING BUSTANG

2. Denver to Colorado Springs with stops along I-25 in Monument (nine services daily, weekday only)
3. Denver to Glenwood Springs with stops along I-70 in Frisco, Vail and Eagle (one service daily)

Expanding Bustang service would be an easy way to increase statewide connectivity.

One way to expand the service would be to extend the existing routes to Grand Junction going west and to Pueblo going south. Adding Grand Junction to the I-70 route would add 180 miles for each roundtrip and adding Pueblo would add 88 miles for each roundtrip.

Operating costs for Bustang (at 2016 diesel prices) are approximately $4.25 per mile so adding Grand Junction and Pueblo would add $765 and $374 to each respective route's trip. Over the course of the year this would increase operating costs by $195,000 for the Grand Junction section (365 operating days) and $95,000 for the Pueblo corridor (255 operating days). If we assume that three of the daily Denver to Colorado Springs trips continue on to Pueblo that would add a daily cost of $1,122. Over the course of a year this would increase operating costs by $286,000. Annualizing the one daily roundtrip between Denver and Grand Junction would result in additional operating costs of $279,000.

TABLE 9 - EXTENDING CURRENT BUSTANG ROUTES

Extension	Additional Cost per Round Trip	Number of Daily Roundtrips	Total Cost for Extension
Glenwood Springs to Grand Junction	$765	1	$279,000
Colorado Springs to Pueblo	$374	3	$286,000

In addition to lengthening current routes, Bustang could increase the frequency of its service and offer more trips on the weekends. The table below estimates the costs of adding three roundtrips on Saturday and Sunday for the North and South routes and adding two additional roundtrips every day for the West line (which would require additional buses).

Roundtrip service could also be added between Denver and Greeley. New buses would need to be added to the Bustang fleet to accommodate this new service. If two daily roundtrips were added this would require at least two new buses, plus a backup, which would cost approximately $1.8 million total ($600,000 per bus). The operating costs would be approximately $800,000 for a two daily roundtrips.

The total new capital costs to expand Bustang service would be $3 million and the total new annual operating costs would be $3.3 million.

TABLE 10 – EXPANDING CURRENT BUSTANG SERVICE

	Cost to add an additional roundtrip	Number of Additional Weekly Roundtrips	Total Annual Operating Cost	Capital Cost for Additional Buses
Denver to Pueblo	$1,012	6	$315,588	-
Denver to Fort Collins	$553	6	$172,380	-
Denver to Grand Junction	$2,066	14	$1,504,048	$1.2 million
Denver to Greeley		2	$800,000	$1.8 million

Buses to Serve Recreational Demand on the I-70 Corridor: $25.6 million per year

The estimated capital cost for this system is approximately $100 million in 2000 dollars and breaks down as follows:[131]

- $40.6 million to purchase 116 buses ($350,000 each)
- $25 million to build transit centers
- $36 million in additional capital costs

As part of the Preferred Environmental Impact Statement (PEIS) for the I-70 corridor, CDOT modeled the impact of providing bus service mixed into the I-70 general purpose lanes. The analysis found that a bus traveling in mixed traffic (the Minimal Action scenario) would have a transit mode share of around four to five percent for winter weekends, which translates to an estimated 600 passengers per hour during peak periods or a little over 200 fewer cars per hour (See Appendix D for more information). At certain locations (at the Twin Tunnels for example) the percentage of transit users could increase to around nine to ten percent.[132] Weekday transit mode share in the Minimal Action scenario would be around two percent with an overall share of 3.3 percent for the entire corridor. This analysis was done prior to the opening of the I-70 Mountain Express Lane. This lane does not currently allow buses but if it did, it would give buses a travel time advantage over non-toll paying vehicles and thus increase ridership.

The system CDOT modeled (without the potential of buses using the new express lane) involved five different lines, all originating in Denver and running to the major ski and resort areas of Winter Park, Keystone, Silverthorne, Frisco, Breckenridge, Copper Mountain and Vail. During winter weekends, each line would have 20-minute headways resulting in 15 buses leaving each hour from RTD's W Rail station near Golden.[133]

The system also has an estimated annual operating cost of $14.8 million. All of these numbers come from an analysis done in 2000. To make them more comparable to the other numbers cited more recently, we should inflate them to 2013 dollars, bringing the capital costs to approximately $135 million and the annual operating costs to $20.2 million. Based on the ridership numbers from the

I-70 Mountain Express Lanes

Access to the mountains from the Front Range is a key factor in Colorado's quality of life, and congestion on I-70 is cited by major employers as a negative factor in locating new jobs in Colorado. Existing levels of congestion on the corridor during peak periods are already high and are expected to worsen significantly in future years as Colorado's population grows.

The solutions proposed in the I-70 Mountain Corridor Programmatic Environmental Impact Statement such as an Advanced Guideway System (AGS) for transit or expansion of the interstate to three lanes of cars and trucks in each direction will take many years to complete. One relatively low cost solution that could be implemented much faster than highway expansion or an AGS would be to provide high-quality bus service in the corridor.

Given the critical role transit can play in this corridor, bus service impact could be maximized by expanding the I-70 Mountain Express Lanes (Peak Period Toll Lanes) and allowing bus use similar to U.S. 36's bus-oriented managed lanes. Currently, the tolled Mountain Express Lane (using the shoulder) covers 13 miles of the eastbound lane between Empire and the Twin Tunnels near Idaho Springs and operates during a limited number of days each year. If the Express Lane was safely extended to cover a larger section of the corridor and also developed on the Westbound lane, without negatively impacting the surrounding communities, this would provide the potential for buses to make a relatively congestion free trip along significant sections of the corridor.[130]

2000 study, this could transport 2.1 million people to and from the ski resorts and mountain towns.

If CDOT allowed these buses free access to the current and any future I-70 Express Lanes, transit would have an important travel time advantage for at least a portion of the corridor, increasing the value and usage of the service.

Additional InterCity Rural Service—Bus: $43.2 million annually

As Colorado invests in statewide transit to connect major population centers and major recreational areas, it should not ignore the need to connect more rural regions. Too many rural parts of Colorado lack regional transit options that carry them to government services, medical appointments, airports and transit centers, and other amenities in more urban areas.

Figure 16 demonstrated that communities with high relative need for transit services outside the major metro areas are located along major highways and with some notable exceptions, the existing bus network currently provides at least some service for almost all of these areas. More difficult to capture are those parts of the state that require a 200+ mile round-trip to reach a major medical, employment or retail center. To make the trip in one day and have 4-5 hours at the destination requires bus service that starts between 5 am and 6 am, and returns 12 or 14 hours later. Sufficient and well-timed service would avoid the necessity of staying overnight, which adds cost and hardship to the trip. Areas where modest improvements could yield significant benefit are:

- Lamar to Pueblo - regional route with same day service
- Trinidad/Walsenburg to Denver: regional services providing either same-day or a one-night stayover
- Greeley to Denver: service for towns on U.S. 85
- U.S. 40 Corridor to Denver: allows same-day service for those residents living fairly close in (such as Kremmling) and a one-night stay for those living at greater distances

The first three corridors have relatively high levels of service for single passengers, including Medicaid Non-Emergency Medical Transportation (NEMT), Veterans transportation, and general-purpose trips that are presently met by a mix of volunteer driver programs, county-based services, friends and family, and private providers. Because these single-passenger services are expensive, it may be possible to provide comprehensive services (open to all riders instead of each vehicle carrying only a single type of client) with little additional cost.

The regional routes provided by local entities have annual operating expenses of $14 million and carry over 2.6 million annual riders. The average corridor length is just over 31 miles. The average cost per passenger is $6.42.

TABLE 11 - FORECASTED DEMAND AND COSTS FOR REGIONAL TRIPS IN COLORADO

2014

Total Population (000)	Pct of Population 18-34 year olds[134]	Cost per Trip	Regional Trips (000)	Estimated Total Regional Cost (000)
5,050	24%	$6.42	2,618	$16,809

2040

Total Population	Pct of Population 18-34 year olds1	Cost per Trip	Regional Trips (000)	Estimated Total Regional Cost (000)
7,925	21.60%	$10.53	4,109	$43,268

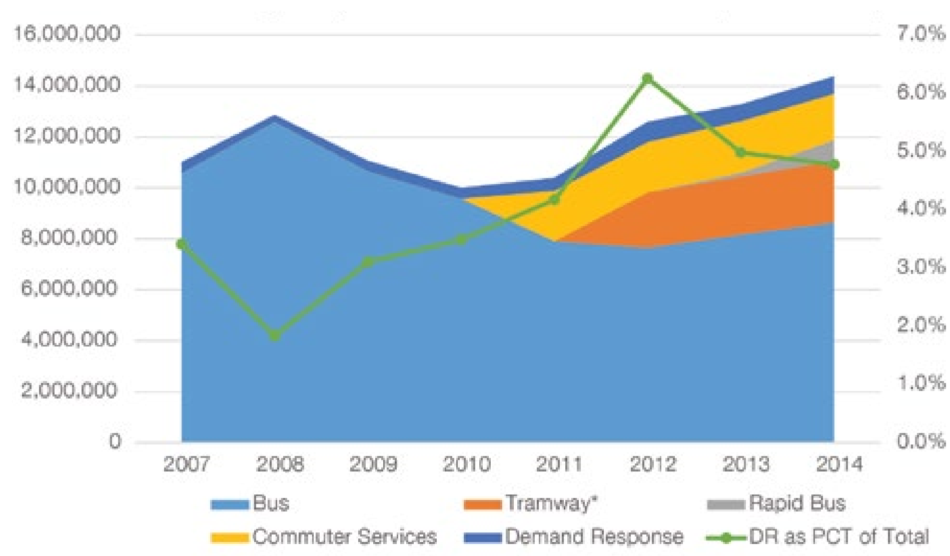
Based on population estimates and inflation rates, we calculate that the number of regional trips will increase to 4.5 million by 2050. This is calculated using the growth in Colorado's population as a whole and the slight decline in the percent of population by 18-34 year olds – the demographic most prevalent in regional and intercity trips. Estimated total cost rises to $43 million by 2040, based on a 2 percent inflation rate per year.

Demand Response Service in Rural Colorado—Bus: $29.8 million annually

Demand Response Service accounted for about 5% of the total trips offered in rural Colorado in 2014.

This figure is significantly lower in some areas of the state like the mountain communities since fewer people requiring specialized transit tend to live

FIGURE 18 –PASSENGER TRIPS BY MODE – RURAL COLORADO 2007-2014. SOURCE: NATIONAL TRANSIT DATABASE,[135]



in those areas. However, the Eastern Plain and Western Slope communities experience a higher than average percentage of trips dedicated to Demand Response Services. With the current data, we cannot distinguish between the very different profiles of mountain rural and non-resort rural communities.

The Colorado State Demography Office estimates that by 2040, the percentage of Coloradans over the age of 75 will increase significantly.[136] In rural communities, the percentage will increase from 6 percent in 2010 to 11 percent; urban areas will see an increase from the current 5 percent to 10 percent. These figures are regional averages – some counties will see much higher percentages, especially in rural counties that do not enjoy significant in-migration by younger age groups.

We estimated that the percentage of transit services required by the 75+ age group will increase disproportionately to the demand for transit services overall. If transit demand increases at the same rate that the population as a whole is expected to increase, the demand for specialized services will increase at a greater rate, given the aging population is more likely to utilize specialized services.

These calculations do not take into account the likelihood that the demand may increase at a faster rate as younger riders take advantage of greater service levels and convenience in urban areas.

TABLE 12 - DEMAND RESPONSE SERVICE TRIPS 2014 VERSUS 2040

2014

	Total Population (000)	Percent of Ppln 75+	Cost per Demand Response Trip	Demand Response Trips (000)	Total Demand Response Cost ($000)
Rural	911	5.8%	$17.31	686	11,883
Non Denver Urban	1,341	4.4%	$26.84	369	$9,915
Denver Region	2,798	4.8%	$37.85	1,270	48,087
Statewide	5,050	5.01%	$27.33	2,326	69,885

2040

	Total Population (000)	Percent of Ppln 75+	Cost per Demand Response Trip	Demand Response Trips (000)	Total Demand Response Cost ($000)
Rural	1,394	11.4%	$28.40	1,051	$29,859
Non Denver Urban	2,260	9.6%	$44.03	622	$27,398
Denver Region	4,271	10.1%	$62.10	1,939	$120,433
Statewide	7,925	10.4%	$44.84	3,613	$177,690

Based on current Demand Response Service trips, the percentage of the population over 75 (the age at which people typically require additional transportation options), and the current cost per trip, we estimated the demand for and cost of demand response trips in 2040. Population estimates indicate that the percentage of the population that is over 75 will double for all regions of the state, thereby effectively doubling the demand for specialized transit services. Cost per trip was inflated at 2 percent per year.

The national average for rural demand response trips is $17.31.[137] This is likely low for Colorado, where rural agencies typically have longer trip distances and/or harsher environmental conditions that increase both capital and operating costs. Nonetheless, using this figure we estimate that of the total transit expenditures in rural Colorado in 2014 – some $87 million – more than 14 percent or $12 million was spent on these types of trips.

However, these figures only cover the most basic of necessary trips – medical appointments, picking up prescriptions. In Jefferson County, the Seniors Resource Center found that when seniors were offered the option to use transit for non-medical trips (such as trips to the hair-dresser, shopping for more than just groceries, and trips to volunteer opportunities) the organization saw an increase in demand between 25 percent and 30 percent. A 20 percent increase in the figures cited would go a long way toward providing transit service that goes beyond necessary trips – service that would contribute significantly to the quality of life for those who do not participate in the transportation system via privately-owned cars.

Regional and Statewide Transit—Rail and Bus Rapid Transit

Commuter Rail along I-25:

- $1.2 billion ($48 million annually) to build a commuter rail service along I-25 from Denver to Fort Collins.
    - A lower cost alternative, if express lanes are added to North I-25, is the addition of BRT service in these lanes, at a capital cost of $126 million ($5 million annually) and an annual operating cost of $12 million.
- $2.8 billion ($112 million annually) for a commuter rail service between Denver, Colorado Springs and Pueblo.[138]

The Environmental Impact Statement (EIS) for the North I-25 corridor between Denver and Fort Collins, looked at the possibility of setting up commuter rail from Fort Collins that connected to Denver's FasTracks system. Specifically they studied service from Fort Collins to Denver via Longmont connecting to RTD's North Metro Rail line (no transfer necessary). The estimated cost for commuter rail was $1.2 billion.[139]

The North I-25 EIS also looked at the cost of bus rapid transit options between Fort Collins and Denver. The cost for BRT was $126 million, ($5 million annually) and the service would have an annual operating cost of $12 million annually, though this does not include the cost of building new express lanes for the bus to operate along with toll paying and high occupancy vehicles. The express lanes are estimated to cost $1.56 billion in 2009 dollars.

Over 25 years, that would be $17 million per year to offer BRT service in express lanes along I-25 between Fort Collins and Denver.

No similar study exists for the southern portion of I-25, however a rough estimate of the cost of similar commuter rail between Denver and Pueblo would be $25 million per mile. With a distance of 115 miles between the two cities, this gives a total cost of $2.8 billion for a southern commuter rail line.

TABLE 13 - COMPARING BUS AND COMMUTER RAIL SERVICE ALONG I-25[140]

	Capital	MPPSL Expansion	O&M costs	Ridership
North I-25 BRT	$126 million (without highway expenses)	-	$12 million	2.3 million
North I-25 Commuter Rail	$1.2 billion	-	$40 million	2.2 million

High speed rail along I-25 and I-70

- Capital cost of approximately $21-30 billion – $1.1-1.9 billion per year over 25 years (including bonding costs)
- Operating cost estimates range from $144-$450 million, but farebox revenue is projected to cover this cost, and generate excess revenue of $20-300 million per year that could help pay bond costs

While inter-regional commuter rail is one option for a statewide rail network, another option is high speed rail. Key differences between the two are cost, travel distance, speed and the tracks. High speed rail runs much faster, reaching speeds of over 300 mph, partly because it has its own dedicated tracks and rolling stock, and therefore can provide convenient connections over longer distances. Commuter rail is slower than high speed rail but still attains speeds that make it a faster alternative to driving over shorter distances, often between city centers and suburban communities from which people commute. Commuter rail can also cost much less because it can utilize pre-existing tracks and rail systems.

Two recent studies have examined the potential for high speed rail service along the I-25 and I-70 corridors in Colorado. In 2010, the Rocky Mountain Rail Authority's study estimated it would cost $21.2 billion in capital costs for both corridors. Total annual ridership was estimated at 34.5 million, a mode share of 16% for inter-urban trips. In 2014, CDOT published the Interregional Connectivity Study (ICS) and the Advanced Guideway Study (AGS). The ICS, which incorporated the work of the AGS, identified a high speed rail option for both corridors with capital costs of $30.1 billion and annual ridership of 18.3 million.

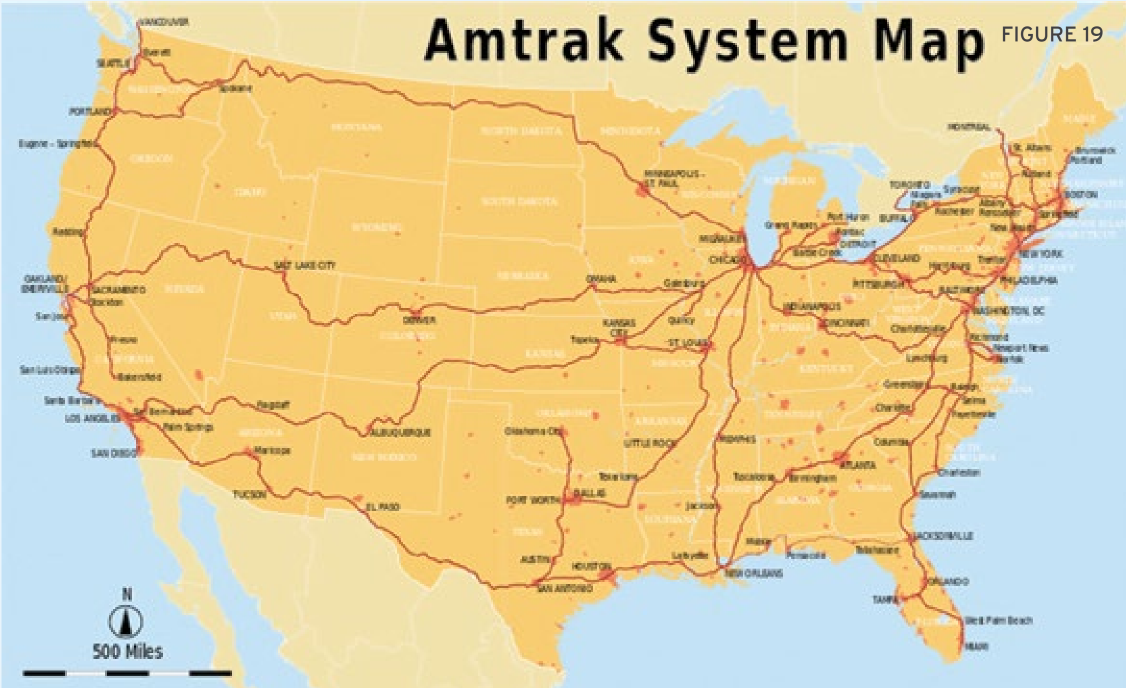
In order to raise the capital cost necessary to build out the high speed rail system, bonding would likely be necessary. With a bond rate of four percent and a term of 25 years, it is estimated that it would require annual payments of $1.9 billion to pay off $30.1 billion and annual payments of $1.3 billion to pay off $21.2 billion.

We do not include high speed rail in recommendations for immediate investments but instead show it as a potential additional investment that the state could make if funding were available.

TABLE 14 – HIGH SPEED RAIL COSTS AND RIDERSHIP ESTIMATES

	I-70 (Eagle to DIA) Capital Cost	I-25 (Pueblo to Fort Collins) Capital Cost	Annual O&M Costs	Annual Revenue (2035)	Estimated Transit Mode Share	Annual Ridership (2035)
Rocky Mountain Rail Authority	$13.8 billion[141]	$7.4 billion[142]	$450 million[143]	$754 million[144]	16%[145]	34.5 million[146]
Inter Connectivity Study (LPA Base Option)*	$13.5 billion[147]	$16.6 billion[148]	$144 million (I-25); $63 million (I-70)[149]	$344 million[150]	10%	18.3 million[151]

**Unless otherwise indicated the figures are for both corridors.*



Amtrak routes as of May 26, 2013 Photo credit: Wikimedia user Chumwa, CC BY-SA 2.5

The Southwest Chief and the Winter Park "Ski Train"

The National Railroad Passenger Corporation, also known as Amtrak, operates passenger railroad service over medium and long distances across the United States including two current routes through Colorado.

- California Zephyr from Chicago to the Bay Area with stops in Denver and Glenwood Springs.
- Southwest Chief from Chicago to Los Angeles with stops in Lamar, La Junta, and Trinidad.

Recently, Amtrak considered rerouting the Southwest Chief into Oklahoma and Texas, bypassing Colorado, unless a segment of tracks were repaired. Working together, local, state, and federal governments have secured the necessary funding to keep the Chief in Colorado for the immediate future. There is a proposal to extend the route to include a stop in Pueblo and a study of the potential costs of that extension will be completed this summer.

In addition to the two current routes, Amtrak also ran a train from Denver to Winter Park, commonly referred to as "the ski train." The train shared tracks with freight railroad but was generally able to make the trip in 2 hours and 15 minutes, depositing people approximately 100 yards from the lifts at Winter Park. The last regular service was in 2009, though it made a couple of special runs carrying 450 passengers for its 75th anniversary in 2015.[152] Approximately $3 million is currently allocated to update the boarding platform and make track safety improvements at which time Amtrak can consider continuing the service. Given that it is possible this service could operate again without additional state investments, no costs were included in this report's recommendations.

Current and Future Investments in Colorado Transportation

IN ORDER TO INVEST $1.05 billion annually to meet the needs of our transit, walking and biking infrastructure and services across the state, Colorado must look at both current and new funding sources.

Without any changes, well over $100 billion in local, state and federal funds will be spent on our transportation infrastructure and services in Colorado over the next 25 years.[153]

The largest source of funding currently is federal dollars, collected through a combination of federal gas taxes and general fund revenue and distributed to the state via the Colorado Department of Transportation (CDOT), local Metropolitan Planning Organizations (MPOs), and directly to local communities or transit agencies.

While some of this money will continue to come from the federal gas tax, if current trends continue federal transportation dollars will increasingly be made up of general tax revenue. Over the last decade, the share of federal transportation dollars coming from general tax revenue has increased to 42 percent, which means the average American household pays $597 per year in general taxes to cover transportation costs above and beyond the federal gas tax, which hasn't been raised since 1993.[154]

Colorado currently receives approximately $550 million per year in federal transportation funding that is distributed to CDOT, transit agencies, and local governments, and would be expected to receive approximately $14 billion over 25 years, with a little over half of this going directly to CDOT.[155]

A second major source of transportation funding is local revenue. Some communities have specific taxes, often approved by voters, which support local transportation infrastructure and services. A few communities use this money to fund regional connections and some use their general tax dollars to augment transportation specific dollars. We do not have an estimate for how much of this money is invested in transportation each year.

Every community in Colorado also receives a share of the state gas tax revenues, the Highway Users Tax Fund or HUTF, a portion of which can be used to support any mode of travel. The local share of the HUTF generates about $250 million per year, or about $6.25 billion over 25 years. This does not include the local tax revenues that go to transportation.

Local and regional funds are the largest source of funding for public transit in Colorado, providing over 75% of all transit funding in the state.[156]

The future of local transportation dollars is hard to predict. While the HUTF portion of local transportation dollars is projected to decrease as vehicles become more fuel efficient or transition from gasoline to electric and therefore pay less in gas tax, many communities have approved or increased local investments.

The final major source of transportation funding is state revenue that is collected by CDOT from the state gas tax, tolls and vehicle registration fees.[157] Adding in some limited money that comes from general state taxes, the total state money is approximately $500 million per year, or $13 billion over 25 years. Given that most of this money comes from state gas taxes, without a significant change in state transportation revenue, state investments is expected to plateau or even to decrease.

It is likely, given the broad consensus that exists on the need for more transportation investments, that transportation funding will be significantly increased in the future.

Given the historical underinvestment in Colorado's transit, biking and walking that was covered this report, we cannot take for granted that enough of these transportation dollars will be used to realize the multitude of benefits that come from significant investments in a multimodal transportation system.

Therefore it is imperative that Colorado fundamentally deepen the investment we make in transit, walking and biking, whether it is from current or increased transportation dollars, so we can meet the demands and challenges of the 21st century in Colorado in a way that ensures a high quality of life, access to jobs, safety, good health and a strong economy.

Colorado's Blue Ribbon Panel on Transportation

Back in 2008, the state commissioned a blue ribbon panel, known as the Colorado Transportation Finance and Implementation Panel. The panel's work was summarized in a Report to the Public published in 2008.[158] The panel graded Colorado's transportation infrastructure, grading existing urban and rural transit at C, and interregional transit at D. The report concluded that state funding of $317 million per year was needed to bring inter-regional transit up to a bare standard of C+; $72 million in annual state funds to match local investment in rural and urban transit to bring these up from a C to a B, in addition to $632 million per year to multimodal corridor projects that combine highway improvements with transit.

In the report's recommendation for $1.5 billion in additional transportation funding, $10 million was allocated for bicycle and pedestrian funding. While this information is older and is not included in our calculations of the needs of transit, biking and walking in the state, it is important to include to demonstrate that such a broad representative panel came to the conclusion that the level of state funding for transit, walking, and biking was far below the level needed. The 32-member panel included representatives from all across the state, including private-sector members, elected officials, and transportation experts.

The Co-Chairs:

- Douglas Aden – *Chairman of the Colorado Transportation Commission and a resident of Grand Junction*
- Cary Kennedy – *State Treasurer*
- Bob Tointon – *President, Phelps-Tointon, Inc.*

Members:

Ray Baker – *Colorado Commission on Higher Education*

Charles Bedford – *The Nature Conservancy*

Joe Blake – *Denver Metro Chamber of Commerce*

Mike Cheroutes – *Hogan & Hartson*

Ken Conyers – *Action 22*

Bill Elfenbein – *Regional Transportation District Board*

Cas Garcia – *Attorney*

Russell George – *Executive Director CDOT, (ex officio member)*

Neal Hall – *Colorado Building & Construction Trades Council*

James Hume – *citizen; agriculture perspective*

Mick Ireland – *Intermountain Transportation Planning Region*

Steve Johnson – *State Senator*

Joe Kiely – *Town of Limon*

Carl Maxey – *Maxey Company*

Mark Mehalko - *Move Colorado*

Tony Milo – *Colorado Contractors Association*

Dale Mingilton – *President First Bank*

Kevin O'Malley – *Clear Creek County Commissioner*

Michael Penny – *Frisco Town Manager*

Joe Rice – *State Representative*

Vince Rogalski – *Club 20*

Cathy Shull – *Progressive 15*

Paul Smith – *Smith Railway Consulting*

Vivian Stovall – *citizen; elderly and disabled perspective*

Dan Stuart – *Alpern Myers, Stuart, Scheuerman & Hickey*

Stephanie Takis – *State Senator*

Ed Tauer – *Mayor of Aurora*

Will Toor – *Boulder County Commissioner*

Glenn Vaad – *State Representative*

Melanie Worley – *Douglas County Commissioner*


Chris Brooks

Light-rail station at Union Station in Denver.

Recommendations for Moving Our Transportation System Forward

To meet the needs of transit, walking and biking in Colorado over the next 25 years, policymakers will need to make sure that planning adequately includes the full range of transportation modes, not just car-based travel; make existing funding sources more effective and more flexible; and will need to identify new sources of transportation funding.

We offer six recommendations that would help to achieve these changes.

- **Ensure that existing state transportation funding is flexible, and can be used to address the particular transportation needs of a corridor, rather than being arbitrarily limited to only one mode of transportation.** Currently, state law restricts the Colorado Department of Transportation's use of the vast majority of state transportation funding to highway and road projects. Under existing law, the use of state gas tax revenues and the vast majority of vehicle registration fees are limited to highway expenditures. The state gas tax generates about $350 million per year for CDOT, and about $250 million per year for local governments.

  Back in 2013 the legislature removed this restriction from cities and counties through the passage of SB 13-048 because they recognized that cities and counties should have the flexibility to examine their own particular corridor or neighborhood's needs and spend transportation dollars on the modes that best meet those needs instead of being arbitrarily limited to road-only projects.

  The same logic should apply to CDOT. On many corridors, the highest priority improvements may not be highway widening but adding sidewalks, building bicycle facilities, or improving transit service. CDOT should have the ability to invest in these whether as stand-alone projects or in concert with a highway project. This would bring Colorado in line with many states that allow much greater flexibility in the use of state gas tax revenues.

Require that toll revenues be used to support transit service in the same corridor. Increasingly, the state has turned to toll lanes as both a way to finance highway expansion and a way to manage congestion by charging a higher toll during congested periods. In order to make sure that these projects serve Coloradans of all income levels and support Colorado's multimodal needs, the state should require that a portion of toll revenues be invested in public transit in these corridors.

Demographic analysis of drivers who pay tolls and of transit users shows that regular toll users are overwhelmingly upper-income, while transit riders are much more diverse, including both low and high-income travelers.[159] Including funding in toll projects for express bus or bus rapid transit service would make the projects more equitable and would make them more effective transportation projects, carrying more people within the constraints of the current infrastructure.

The state and every regional planning partner should conduct the same level of analysis to identify funding gaps for transit, bicycle, and pedestrian infrastructure as they do for roads and highways. The state and the regional planning organizations currently develop detailed projections of funding needs for both maintenance and expansion of highways. These plans don't just show what can be done with existing funding, but identify funding gaps. However, it is unusual to see the same level of planning for other modes.

At the state level, the state transportation plan includes little information on funding needs for bicycle and pedestrian infrastructure. It does provide some information on needs for transit funding.

At the regional level, the Denver Regional Council of Governments and the Intermountain Transportation Planning Region appear to have the most well developed assessment of the funding and bicycle, pedestrian and transit infrastructure needs within their regional plans. If these modes are not fully incorporated into the planning process, informed decisions cannot be made regarding transportation funding priorities. The state and its planning partners should ensure that transit, walking and biking modes are incorporated into the next iteration of long-range transportation plans.

New state funding sources for transportation should be designed to provide Coloradans with options to meet the broad multimodal transportation needs of our residents. While the state is not solely responsible for transportation investment – local and federal funding play a big role – it is a crucial partner for implementing good public transit, bicycle and pedestrian infrastructure, in addition to highways.

In the last two years, there have been multiple pieces of legislation introduced and ballot issues proposed to increase transportation funding. In 2016, the two proposals to increase state funding that received the most attention were a proposal to issue $3.5 billion in bonds and another to raise the state sales tax by $670 million per year. Unfortunately, neither of these proposals provided significant funding for transit, walking or biking.

This type of highway-oriented funding will not adequately address the diverse transportation needs of Colorado. As this report demonstrates, there is a large gap between current funding levels and the needed investment in Colorado's pedestrian, bicycle and transit infrastructure and services. Any new transportation funding, whether implemented through legislation or by ballot, should include meaningful funding for these modes.

One way to ensure future funding is meeting the demands of Coloradans is to include a broad range of stakeholders and residents of Colorado in the processes used to develop future funding options. Polls and surveys are demonstrating this is what Coloradans want so decision makers need to find ways to have Coloradans raise their voices and then listen to them.

Colorado's Metropolitan Planning Organizations (MPOs) should use the funding that comes to them to support the broad range of multimodal needs. MPOs such as the Denver Regional Council of Governments (DRCOG), the Pikes Peak Council of Governments and the North Front Range MPO are the lead agencies for prioritizing how federal transportation funds get invested in their areas.

Many of these federal funding streams are flexible dollars that can be used for all modes of transportation. While some MPOs have used this flexibility, others spend the vast majority of flexible funds on highway projects. MPOs should fund the wide range of multimodal investments needed to serve their regions. In addition, CDOT should use the flexible federal funds that it does have to fund multimodal needs.

Cities and counties should adequately fund sidewalks, safe crossings, and local bicycle infrastructure, in addition to partnering with transit agencies to provide adequate transit to their residents. There are enormous variations across the state in the extent to which local governments invest in multimodal transportation. Some spend the vast majority of their funding on roadway projects. Others have developed priorities where pedestrian, bicycle and transit modes are the highest priorities for new projects, although even here most dollars get spent on maintaining existing roads. Many cities do not even take responsibility for funding or maintaining sidewalks, leaving property owners on the hook. Local street designs often emphasize car flow, leaving pedestrians and bicycle riders by the side of the road.

Local funds, generally generated from sales taxes, property taxes and fees on development, are an important source of transportation dollars in Colorado and local governments need to ensure that this funding as well as their design and planning offices see walking, biking, and transit on a level playing field as car and truck traffic.

Methodology

Appendix A – Walking Methodology

For the purpose of this study, we defined urbanized areas as incorporated municipalities with a population of 5,000 or greater located within micropolitan or metropolitan core based statistical areas (CBSAs). A CBSA is a U.S. geographic area defined by the Office of Management and Budget (OMB) that centers on an urban center of at least 10,000 people and adjacent areas that are socioeconomically tied to the urban center by commuting. Since sidewalks are not always appropriate in smaller, more rural or isolated communities, or along state highways crossing unincorporated county land where there is little pedestrian activity unless public transit is present, the focus on towns and cities excluded these areas and provides us a conservative assessment of the walking needs in Colorado.

Using CBSAs also excludes unincorporated areas that may be governed by a Homeowners Association. A large, unique example of this is Highlands Ranch, the largest Homeowners Association in the nation. However, since many Homeowners Associations exist in planned communities, like Highlands Ranch, they often have an existing, extensive sidewalk network, decreasing the impact of this exclusion.

Costs Methodology

Estimating Sidewalk Needs - To calculate the number of new or replacement sidewalks needed across the state of Colorado, we calculated the following metrics, at the census tract level:

- **Roadway Mileage**: Miles of roadway in the census tract.
- **Sidewalk Coverage:** Percent of road miles that have existing sidewalks.
- **Sidewalk Gap:** Percent of road miles without sidewalks.
- **Replacement Needed:** Percent of road miles that need sidewalk repair/replacement.
- **Ideal Coverage:** Percent of road miles that would have sidewalks in an ideal scenario. This considers that some cities may not need 100% of roadways to have sidewalks.

Road Mileage
Roadway data was obtained through the Colorado Department of Transportation's Online Transportation Information System's Data Catalog: Shapefiles used were local roads, major roads, and highways. These files provide baseline data for roadway mileage across the entire state of Colorado. These files were clipped to include only roads within urbanized areas as defined above, and filtered to exclude limited-access interstates. More details on roadway mileage calculations are available.

Because full sidewalk infrastructure would require sidewalks on two sides of every street, roadway mileage was doubled. This figure represents the maximum potential sidewalk mileage in urbanized areas across the state.

Sidewalk Coverage
There is very limited data on sidewalk needs: Public works officials in local municipalities lack reliable inventories of existing sidewalks, even in those cities with active repair programs.

Through its Regional Data Catalog, the Denver Regional Council of Governments (DRCOG) has recently released sidewalk data obtained through the Denver Regional Aerial Photography Project. Sidewalk centerline shapefiles provide the locations of sidewalks in the Denver metro area. DRCOG released data in phases as it became available; this project utilized data from all seven project delivery areas available in March 2016. This sidewalk mileage was calculated and compared to roadway mileage for each census tract studied that was located within the available delivery areas. Analyzing the data for 425 census tracts across 23 Denver region cities, average sidewalk coverage trends became apparent, based on the population density of the census tract. We utilized this data to estimate current sidewalk coverage in urbanized areas across the state. The sidewalk coverage percentages assigned to census tracts based on population density are below:

Population Density (persons per square mile)	**Sidewalk Coverage Assigned** (% of road miles)
0 to 1,000	55%
1,001 < 4,000	80%
4,001 < 7,000	90%
7,001 or greater	93%

These sidewalk coverage percentages were used to calculate the existing sidewalk infrastructure, at the census tract level.

Existing sidewalk mileage = roadway mileage x 2 x sidewalk coverage %.

Sidewalk Gap

Missing Sidewalk mileage = roadway mileage x 2 x (100% - sidewalk coverage).

Sidewalks Needing Replacement

Sidewalk Lifespan and Maintenance
Based on expert interviews, we assumed the average lifespan of a concrete sidewalk is 50 years. This means that 2% of sidewalk mileage needs to be repaired or replaced every year, if cities are regularly performing maintenance. Because most cities in Colorado do not have a city-run program to repair and replace sidewalks, with many cities assigning the maintenance responsibility to the property owner, sidewalks are frequently neglected and maintenance does not occur. We estimated that 50% of necessary maintenance has occurred since initial sidewalk installation, across the state.

To approximate the age of sidewalks, we used housing data, under the assumption that the sidewalk was built when the housing around it was built. We used the median year built of housing in census tracts, using five year averages from 2009-2014 American Community Survey results. Sidewalk age was assigned to each road segment, based on the census tract it is located in.

Sidewalk age = median housing year built subtracted from 2016.

Percent of existing sidewalks needing repairs = Sidewalk Age * 2% * 50%.

Based on expert interviews, we assumed a high level of sidewalk coverage is ideal for urbanized areas across the state. Specifically, we assumed an ideal of 100% coverage for municipalities with populations of 50,000 or more, and 95% for smaller municipalities.

Ongoing Maintenance - Once the full sidewalk network is built out, the total statewide inventory of sidewalks would be 28,400 miles. Assuming an average lifespan of 50 years, 2% of this network would need to be repaired or replaced each year, at an annual cost of $109,726,000 for maintenance of the sidewalk network.

Limitations - The major limitation of this study is the lack of comprehensive data on the existence, age, and condition of sidewalks throughout the state. By extrapolating from existing data available for the Denver metro area, and by using proxy measures such as age of housing stock and population density, we were able to generate an overall estimated need for urbanized areas across the state, while acknowledging that the need may vary greatly from one community to the next.

Our estimate focused specifically on urbanized areas, based on a general consensus among the experts we interviewed that a high level of sidewalk coverage in these areas is ideal. Communities outside of these areas are much more diverse in terms of the ideal sidewalk coverage. In some non-urbanized areas, sidewalks may not be appropriate due to topography or the rural nature of the community. Other communities, however, expressed a strong desire for a more comprehensive sidewalk network. Therefore our estimate based solely on urbanized areas is likely conservative.

Our estimate is also conservative because it does not include major additional costs that may arise when installing basic sidewalks, such as right-of-way acquisition and drainage improvements. Minor repairs needed before the end of the projected sidewalk lifecycle were not included in these estimates, either.

Finally, as mentioned above, our estimate of pedestrian infrastructure needs is conservative in that it focused exclusively on sidewalks, and did not include other infrastructure such as enhanced pedestrian crossing treatments, pedestrian signals, and pedestrian bridges. Therefore, it should be assumed that communities will need to dedicate additional funds to pay for these kinds of upgrades.

Appendix B - Transit Levels of Investment

We will rank urban transit systems based on per capita investment. For the urbanized areas, we will focus on what levels of funding would be required to generate higher levels of ridership. There are multiple measures of transit level of service.[160] A leading indicator of good service is high ridership. When we look at the data on annual per capita ridership and annual per capita investment, the two track quite closely.

We looked at transit systems across the country. There is a very top tier of systems in large, dense cities such as New York and San Francisco that have much higher levels of ridership, which we excluded because of the unique opportunities related to their size, geography and population density. There is a pretty strong correlation between per capita investment and per capita ridership. Therefore, we set a HIGH level of investment based on the level in communities with the highest per capita ridership among the small and mid-sized cities that are more analogous to Colorado's urbanized areas. Portland, OR and Seattle, WA both have per capita ridership of about 60 trips/year, which we set as a HIGH level, while setting Denver's current level of about 40 trips/year as a MEDIUM level, 20 trips/year as LOW, and 10 trips/year or less as VERY LOW.

Our study analyzes how much funding would be required to bring Colorado's urbanized areas up to the LOW, MEDIUM and HIGH levels, in addition to looking at the needs for inter-regional travel that are not captured by these urbanized area measures.

For RTD, Pueblo and Fort Collins transit, we primarily used the plans that were developed by the transit agencies, which include significant service increases that are high enough to bring the community to an overall higher level of service. For RTD, we added in a proposal to dramatically increase ridership through a community wide transit pass program. For Colorado Springs and the remaining Northern Colorado metropolitan areas, the existing plans were relatively constrained. For these communities we used broad estimates based upon an assumed per capita level of funding required to bring the community to a higher transit investment level. The way that we did this calculation was by looking at the per capita expenditures in the communities in Colorado that are achieving higher transit levels of investment, and then used this as an estimate of the level of funding required to achieve the same level of investment in these communities. This is clearly a rough estimate, but nonetheless gives some insight into the level of funding needed in order to develop robust transit service in these communities.

Appendix C – Elasticity of RTD service

What would happen if the region created a region-wide transit pass program, allowing everyone fare-free access to bus and rail service just by showing ID?

In order to answer this we need to estimate the elasticity of demand – that is, how much does the number of transit trips go up when the fare goes down by 1%? Based on national data, a reasonable estimate is 0.35%.[161]

For a large price change, the appropriate method for estimating demand is the midpoint arc elasticity formula[162]; for a final price of zero, as in an EcoPass program,

$$Fd=(1-\varepsilon)\frac{Fi}{1+\varepsilon}$$

Here *Fd* is the final ridership demand, *Fi* is the initial ridership demand, and ε is the elasticity of demand.

For an elasticity of -.35, this gives $Fd=2.08Fi$

Therefore it is reasonable to estimate that a communitywide EcoPass program would approximately double transit ridership.

During peak periods, elasticity of demand is lower, because work trips are less responsive to fare changes[163]. In other words, a person who needs to get to work, is more likely to take the bus whatever the fare is. Thus, peak demand would not go up as rapidly as total ridership, so much of the effect will be to fill up empty seats on existing routes. Note that this is a rough estimate. The Nederland community pass led to a 45% increase in transit use; the University of Colorado pass program led to a 200% increase.

The costs of a community-wide program would be primarily the foregone fare revenue. Currently, RTD's total fare revenue is budgeted at approximately $160 million/year.

Without a detailed route-by-route analysis of the likely ridership increases during peak and off-peak periods, it is difficult to estimate the level of new service that would be required or the associated costs. We can get some insight by looking at a community EcoPass feasibility study conducted by Charlier and Associates and Nelson Nygaard for the City of Boulder and Boulder County.[164] In this analysis, the conclusion was that for a county-wide EcoPass the costs for additional service would be about 17% of the costs of lost revenue. If we apply that same percentage here, the additional annual service costs would be $27 million.

Thus, the total annual cost would be roughly $187 million.

RTD currently has about 100 million trips per year, so we would anticipate around 100 million new trips. Since the total cost is $187 million, the cost per new trip would be only about $1.87 – much lower than the cost per new trip from system expansion. Note that adding 100 million trips per year would bring the metro area to approximately 75 trips per capita, well into the range of level A service.

There are two huge benefits of this approach: vastly improved access for low income residents, and much better use of existing transit service, by filling empty seats.

Total cost: $187 million/year ($160 million to replace farebox, $27 million for added service)

Appendix D – Cars Displaced on I-70 by transit

In 2035, Average Daily Traffic on a Winter Weekend is forecast to be 71,850 Eastbound and 78,350 Westbound for the segment of I-70 between Beaver Brook and C-470.[165] With average vehicle occupancy of 2.7 people per car this comes to 193,995 and 211,545 person trips a day. If transit makes up an estimated 4 percent of total trips,[166] this would come to 7,759 and 8,461 transit trips on a winter weekend. Using some hourly traffic distribution data from the RMRA study (Chapter 6) we estimated that peak vehicle traffic (volumes over 3,000 vehicles/hour) makes up 57% of total Eastbound volume and 62% of total Westbound volume and assumed that transit service would mirror peak vehicle times. Then the total number of peak hours in each direction (again when volumes were over 3,000) was factored in to determine how many of the transit trips would be taken during peak hours. Total Transit Trips * % of Trips During Peak Hours / Number of Peak Hours = Transit Trips During Peak Hours. Then the total number of transit trips during peak hours (632 Eastbound and 588 Westbound) was divided by 3 to determine how many peak hour vehicles would be displaced. This is then finally compared to the number of vehicles forecast in 2035 during peak hour on this segment in the I-70 Preferred Environmental Impact Statement (PEIS).

	Population Density (persons per square mile)	**Average Daily Traffic**	Vehicle Person Trips (ADT*3)	Transit Trips (4% of Total)	% of Trips During Peak Hours	Transit Trips during peak hours	Cars Displaced / peak hr.	Peak Hour Volume
Eastbound	0 to 1,000	71,850	193,995	7,759	57%	632	234	6,080
Westbound	1,001 < 4,000	78,350	211,545	8,461	62%	588	217	4,160

Notes

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92. Data on levels of unfunded bicycle and pedestrian projects was researched for the other MPOs in the state but generally data was unavailable or insufficient. Other MPOs with smaller TIP funding pools, may have only had one or two unfunded bicycle and pedestrian projects making it difficult to extrapolate regional demand. Other MPOs have a less formal call for projects so there is not a list of unfunded projects to evaluate. Regarding Regional Transportation Plans, only DRCOG, PPACG and Mesa County included a Vision Bike and Ped component with some information funding levels required to meet the Vision level of bike infrastructure. Pedestrian funding was also pulled out where identified

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98. Colorado Department of Transportation, State of Transportation in Colorado, March 2012.

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103. The $3.1 million annual maintenance number assume the buildout would happen over 25years and not all at once. Once all the bike shares are up and running in 2040 the totalmaintenance costs would be $6.3 million, but the average cost over that time comes out to $3.1million.

104. No reliable study has been done for commuter rail between Denver to Pueblo but a very rough estimate of $25 million per mile results in an estimated cost of $2.8 billion

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CoPIRG Foundation

SWEEP
SOUTHWEST ENERGY EFFICIENCY PROJECT

TRAC Meeting Schedule - proposed

2017

JANUARY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
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FEBRUARY

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MARCH

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APRIL

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MAY

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JUNE

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JULY

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AUGUST

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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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STAC 8:00 am - 12:30 pm
TRAC 1:00 pm - 4:00 pm

STAC 8:00 am - 12:30 pm

STAC Tentative 8:00 am - 12:30 pm

Transporation Commission Meeting

TRAC COMMITTEE
2016

#	Name	Affiliation
1	Terri Binder	Club 20
2	Craig Blewitt	Mountain Metro Transit
3	Sara Cassidy	Union Pacific RR
4	Rob Eaton	Amtrak
5	Matthew Helfant	DRCOG
6	Steve Hurlbert	I-70 Coalition / Local jurisdictions
7	Dave Johnson	Roaring Fork Transportation Authority
8	Will Jones	Greeley Evans Transit / Small urban areas
9	Danny Katz	CoPIRG
10	Mike Ogborn	Omnitrax
11	Ann Rajewski, Chair	CASTA
12	Kurt Ravenschlag	TransFort
13	Pete Rickershauser	Burlington Northern RR
14	Vince Rogalski	STAC
15	Jim Souby	Colo Rail
16	Bill Van Meter	RTD
17	Larry Worth	Rural transit