



Front Range
Commuter Bus Study

Final Report

FRONT RANGE COMMUTER BUS STUDY PHASE 2

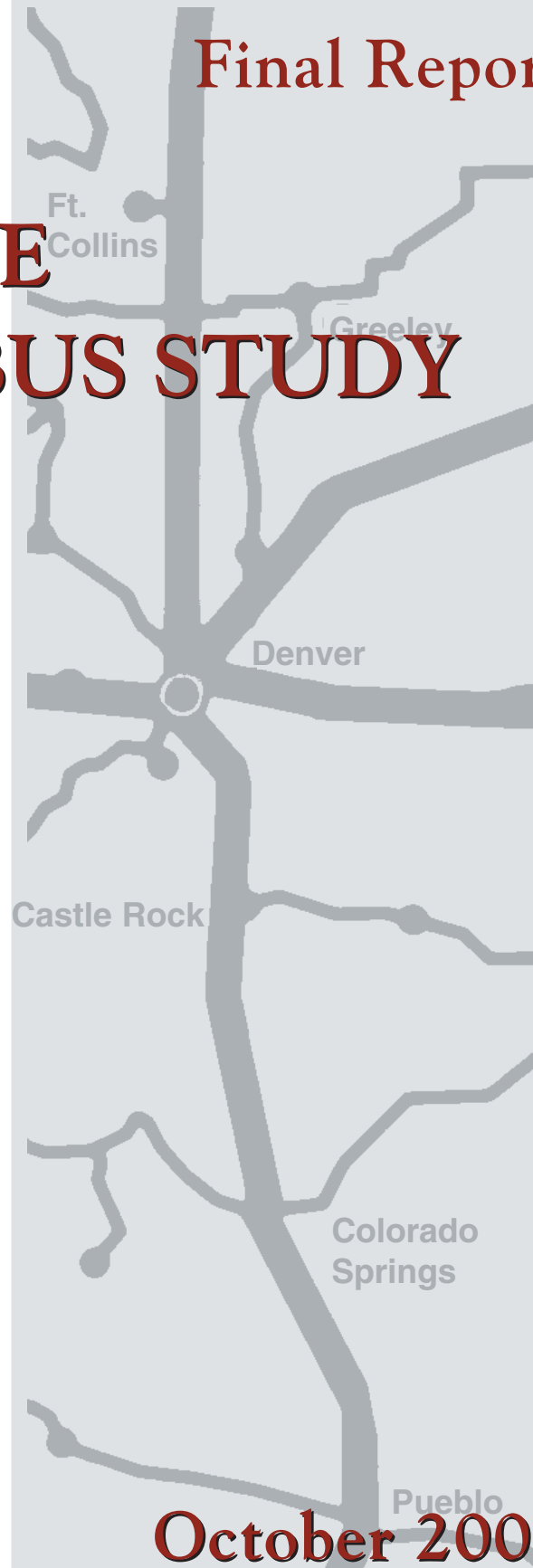
Prepared for:



Prepared by:



In association with:



October 2003

**FRONT RANGE
COMMUTER BUS STUDY
PHASE 2**

Final Report

Prepared for:

Colorado Department of Transportation
Division of Transportation Development
4201 E. Arkansas Avenue, B-606
Denver, CO 80222

Tom Mauser, Project Manager

Prepared by:

Felsburg Holt & Ullevig
7951 East Maplewood Avenue, Suite 200
Greenwood Village, CO 80111
303/721-1440

Project Manager: Robert W. Felsburg, P.E., C.C.E., Principal
Project Engineer: D. Holly Miller, P.E., Transportation Engineer

In association with:

TransitPlus
PO Box 637
Elizabeth, CO 80107

Suzanne O'Neill, Principal

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Technical Advisory Committee

Al Wonstolen, CATCO
Tom Mauser, CDOT
Sherre Ritenour, City of Colorado Springs
Rebecca Record, City of Denver
Gary Taylor, City of Greeley
Wayne King, City of Loveland Transit
Don Moore, Douglas County Planning
Lenore Bates, DRCOG
Larry Mugler, DRCOG
Mike Timlin, Greyhound Lines, Inc.
Vicky McLane, North Front Range MPO

Bill Moore, PACOG
Rob MacDonald, PPACG
Jeff Becker, RTD
Ryan Hiatt, Springs Transit
Larry Tenenholz, Springs Transit
Janice Hamilton, Southeast Business
Partnership
Bob Greenhill, TNM&O
Bob Watts, Town of Castle Rock
Garold Smith, TRANSFORT

Steering Committee

Jay Richards, Castle Rock
Bill Shaneyfelt, Castle Rock
Tom Mauser, CDOT
Dan Stuart, CDOT
Margaret Radford, Colorado Springs
Doug Brown, DRCOG

Marty Tharp, North Front Range MPO
Ted Lopez, PACOG
Rob MacDonald, PPACG
Mary Blue, RTD
O'Neill Quinlan, RTD



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EXECUTIVE SUMMARY

Phase 1 of the Front Range Commuter Bus Study preliminarily identified ridership demand projections for bus service, created potential schedules and identified fares for commuter bus service in the Front Range Corridor (Fort Collins/Greeley on the north end and Colorado Springs/Pueblo on the south end) with the intent of determining if it would be feasible to operate such service. The results of Phase 1 showed that service would be feasible and could even potentially be profitable between Colorado Springs, Castle Rock and Denver.

This report summarizes work conducted for Phase 2 of the Front Range Commuter Bus Study. Phase 2 refines the operating plan from Phase 1 and addresses financial and institutional issues surrounding implementation of service. Four Front Range corridors are included in this Phase 2 study. Figure 1 illustrates the study area and the four bus corridors. The four corridors are:

- ◆ Pueblo to Colorado Springs
- ◆ South I-25 – Colorado Springs, Castle Rock to Denver’s south I-25 business parks and to Downtown Denver
- ◆ North I-25 – Fort Collins, Loveland, Longmont to Downtown Denver
- ◆ Highway 85 – Greeley, Evans, La Salle, Platteville, Ft. Lupton to Downtown Denver

The goal of Front Range Commuter Bus service would be to provide a commuter bus service that would operate seamlessly with local transit systems and would be run through a partnership with each of the cities, CDOT, RTD and participating private providers. This service could be a precursor to commuter rail by demonstrating demand for the service and significant ridership.

Two committees were formed to assist with Phase 2 of the study, a Technical Advisory Committee (TAC) and a Steering Committee.

This report is summarized into the following three major sections:

- ◆ Operating Plan – This section describes ridership estimates, bus schedules that were used to develop cost estimates, park-and-ride facilities that would be needed, and equipment needed to operate service in each corridor.
- ◆ Financial Plan – This section describes the fare and zone structure used to estimate fare revenues in each corridor.
- ◆ Institutional Structure – This section describes a potential institutional structure for governing agencies to establish and operate this service.



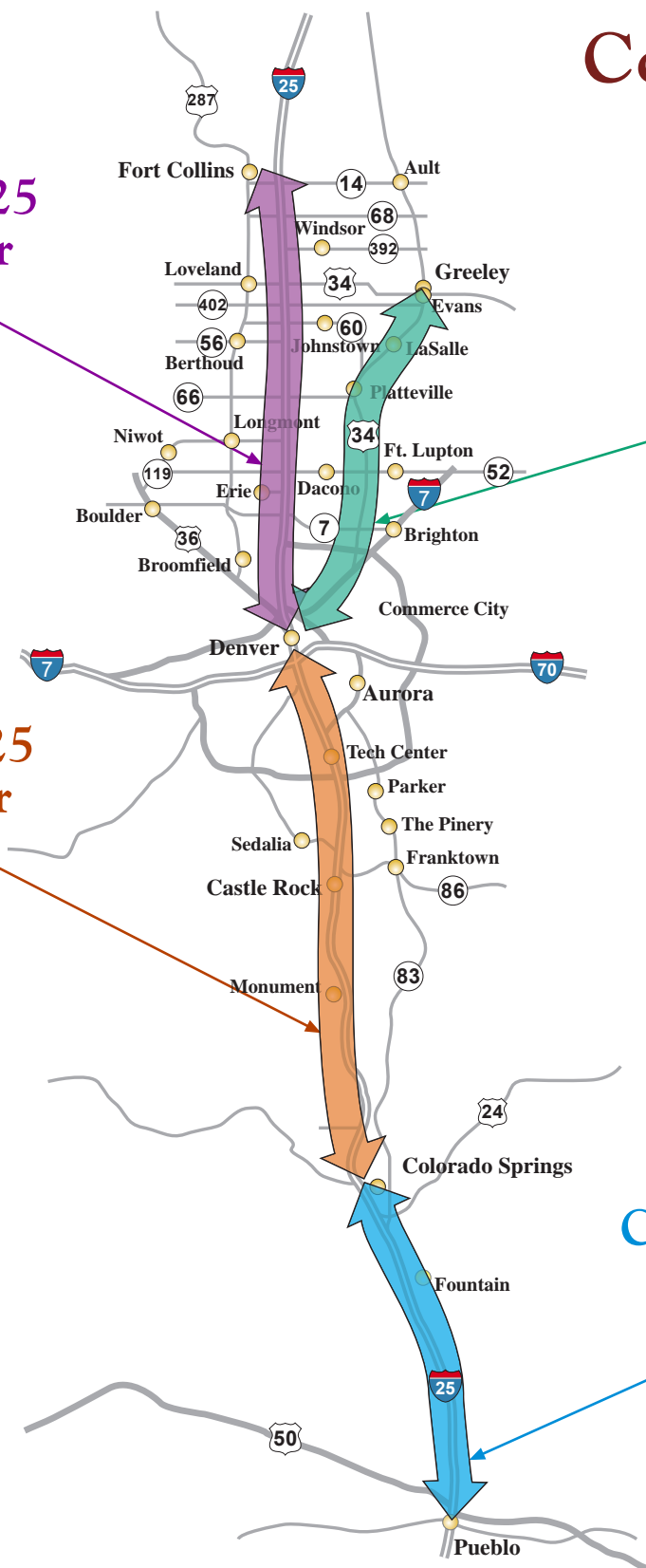
Corridor Map

North I-25
Corridor

Highway 85
Corridor

South I-25
Corridor

Pueblo -
Colorado Springs
Corridor



North

Figure ES-1



OPERATING PLAN

The operating plan includes development of ridership estimates, bus schedules, park-and-ride needs, and equipment needs to operate service in each corridor.

Demand and Ridership

Demand for a commuter bus service was estimated using Census data that identified the number of workers traveling between communities. The mode share percentage for each corridor was based on comparative data in the region and adjusted for travel time savings, length of trip, and ability to serve employment centers. Mode shares were also adjusted based on comments made by the Committee members. Applying the mode share to the total demand provided an estimate of ridership.

Schedules

Schedules were developed that reflect ridership estimates and comments from the focus groups that were held as part of the Phase I efforts. The schedules represent the initial level of service that could be considered for each corridor. Buses would operate in both directions to accommodate demand from the reverse commute.

There seems to be demand in the Front Range for mid-day and special event service, especially in the North and South I-25 corridors. Generally, service operated outside peak periods would generate relatively low revenues and require an on-going subsidy. However, contracting with a private sector firm that already operates in the corridor could provide access to limited mid-day or evening service. Until a long-term funding source is secured for the operation of regional service, it is not recommended that any service outside of peak commuter hours be planned unless that service can pay for itself or generate enough revenue to cover costs.

Equipment

Over-the-road coaches would be desired for this service for their ability to handle high speeds and for the comfort of the passengers. In addition, wheelchair accessibility would be required by the Americans with Disabilities Act. Access to equipment is one of the strengths of the private sector. For long-term financial planning, the purchase of this equipment with 80 percent federal dollars is an option. The desirability of purchasing equipment rather than having it provided by the private sector would be determined in part by the availability of funding.

Park-and-Ride Facilities

The Front Range Commuter Bus service would be very dependent on riders having adequate park-and-ride facilities. For each corridor, the existing, planned and temporary park-and-ride facilities were inventoried and compared to the projected need, which is based on the ridership estimates.



Summary

Key characteristics for the operating plan in each corridor are listed below.

Table ES 1. Operating Plan Summary

Corridor	Demand (Daily Riders)	Buses	Peak Period Trips	Additional Park-and- Ride Spaces Needed
Pueblo to Colorado Springs	114	3	3	55
South I-25	680	10	12	590*
North I-25	209	3	3	70
Highway 85	58	2	2	40

* 250 spaces under construction



FINANCIAL PLAN

The financial plan provides a reasonable starting point for estimating revenues and expenses, but will need to be refined as more information such as initial ridership demand, ridership growth and the cost for service becomes available.

Zones and Fares

Table ES 2 below reflects the zone structure used for generating the revenue estimates. In developing this structure, an effort was made to keep the same zone fare for everyone living in the same town and going to the same destination. Other “break points” can be considered, but this zone structure appeared to have the fewest inconsistencies.

Table ES 2. Zone Structure

Zone 1	<= 25 miles
Zone 2	26 - 40 miles
Zone 3	41-50 miles
Zone 4	51-65 miles

Fares are distance-based, with longer trips costing more than shorter ships. Table ES 3 below illustrates the cash fares, 10-ride ticket book and monthly pass costs associated with each of the fare zones. As service is implemented in each corridor, communities may wish to revise the fare and zone structure to more appropriately suit their community.

Table ES 3. Fares

	One-way Cash	10-Ride Ticket Book	Monthly Pass
Zone 1	\$3.75	\$30.00	\$99
Zone 2	\$8.00	\$64.00	\$122
Zone 3	\$9.00	\$72.00	\$174
Zone 4	\$12.00	\$96.00	\$222

Three-Year Budgets

Budget estimates include fare revenue estimates, revenue sharing, expense estimates, park-and-ride facility costs, and marketing and administration costs. A description of how each of these factors was developed follows. The Table below summarizes the key findings. Appendix C includes the three-year budgets in a detailed table format.

Fare revenues: The fare structure described in the previous section has been used to estimate revenues. Ridership is anticipated to meet 100 percent of the demand projections in year three.



Revenue sharing: In order to provide a seamless service, riders would purchase a single ticket to ride the Front Range Commuter Bus and would be able to transfer to RTD service to downtown Denver. Revenue sharing is calculated as an express service fare for each rider that transfers to RTD.

Expenses: Cost estimates were calculated at \$2.00 per mile and \$3.00 per mile. No increases have been included to account for inflation. Until the service is bid, the actual operating costs will not be known. Purchase of vehicles may significantly reduce ongoing costs once the service has proved successful. Additional expenses have been identified for marketing and contract administration.

Park-and-Ride Facilities: The cost of additional park-and-ride capacity has been calculated at a cost of \$6,000 per space¹. The capital investment required for park-and-ride construction is something that fares generally would not cover.

Summary

Table ES 4 summarizes the Front Range Commuter Bus finances based on the fare revenue and expense estimates described above.

Table ES 4. Financial Summary

Corridor	Annual Revenues Beyond yr 2	Annual Expenses Beyond yr 2	Annual Subsidy Surplus/(Deficit) Beyond yr 2	Initial Three-Year Startup Subsidy
Pueblo to Colorado Springs	\$225 K	\$260 K-\$370 K	\$40 K – \$145 K	\$240K - \$560K
South I-25	\$1,660 K	\$825 K-\$1,190 K	\$0	\$0 – \$445 K
North I-25	\$515 K	\$555 K- \$780 K	\$35 K-\$265 K	\$270 K- \$880 K
Highway 85	\$140 K	\$275 K-\$385 K	\$135 K- \$245 K	\$ 480 K-\$815 K

Note: Figures do not include cost to construct park and rides.

¹ Pikes Peak Regional Park and Ride Plan, David Evans Associates, March 2003.



Ongoing Funding

A primary funding source for initiating service is Congestion Mitigation / Air Quality (CMAQ) funding, such as is being used in the South I-25 Corridor.

Additional dollars that might be received through the Federal Transit Administration formula funding as a result of the extra miles operated by these vehicles. This could be a source of limited but ongoing funding for the service. Some communities that would be served by the commuter service may be eligible for Section 5311 funding, and again this could provide ongoing funding.

The Colorado Transit Coalition annual grant request for Federal Transit Administration Section 5309 discretionary funding could be considered to fund vehicles. The local match must be available for this funding source.

Both state/federal highway funds and local dollars are typically used for park-and-ride lots. Funding of lots with state/federal funds requires that the projects be included in the priorities in the Regional Transportation Plan.

INSTITUTIONAL ARRANGEMENTS

Various institutional arrangements were reviewed to determine which would be most appropriate for the Front Range Commuter Bus. Both of the study committees agreed that the service should be virtually self-supporting, indicating that the goal of the institutional arrangement chosen would not be to tax. An IGA would not provide a means of taxing but could be used to create an entity to operate the Front Range Commuter Bus service. An IGA would define participants and decision makers. It would also detail how finances, fares, contracts and equipment would be handled among the various members.

Figure ES-2 illustrates an institutional arrangement that could be used to operate and manage Front Range Commuter Bus service through an IGA. As shown, the arrangement consists of a Transit Board and an Advisory Group that could be set up for each of the corridors.

The Transit Board would consist of agencies in the corridor that financially contribute to the service and RTD. This Board would receive suggestions from the Advisory Group but would have the final deciding vote on all decisions made for the Front Range Commuter Bus.

The Advisory Group would include cities and counties in corridor, MPOs from all corridors, transit operators, and CDOT. The two study committees suggested that the Advisory Group cover a large geographic area and include members from all corridors. This would allow the different corridors to learn from each other and members could provide input on the implications to their corridor. The Advisory Group would provide recommendations on Front Range Commuter Bus matters to the Board

EXAMPLE STRUCTURE

Front Range Commuter Transit Board		Front Range Advisory Group				
SOUTH		SOUTH				
NORTH		NORTH				
Representatives	<ul style="list-style-type: none"> ● Colorado Springs ● Castle Rock ● PPACG ● DRCOG ● RTD ● PACOG* ● Pueblo* 	<ul style="list-style-type: none"> ● Loveland ● Fort Collins ● NFRMPO ● DRCOG ● RTD ● Greeley* 	<ul style="list-style-type: none"> ● Colorado Springs ● Castle Rock ● Monument ● Denver ● El Paso County ● Douglas County ● Pueblo ● RTD ● CDOT 	<ul style="list-style-type: none"> ● PACOG ● NFRMPO ● PPACG ● DRCOG ● CATCO ● Springs Transit ● Pueblo Transit 	<ul style="list-style-type: none"> ● RTD ● CDOT ● PACOG ● NFRMPO ● PPACG ● DRCOG ● Transfort ● The Bus ● COLT 	<ul style="list-style-type: none"> ● Loveland ● Fort Collins ● Rural Communities in the Corridor ● Denver ● Larimer County ● Weld County
	*Would become members with service expansion to Pueblo and Greeley					
Responsibilities	<ul style="list-style-type: none"> ● Service Plan <ul style="list-style-type: none"> - Routes - Schedules ● Fare Structure ● Funding ● Choice of Operator 		<ul style="list-style-type: none"> ● Coordination with Adjacent Services <ul style="list-style-type: none"> - Service Plans - Use of Equipment 			

Figure ES-2



INTRODUCTION

Phase 1 of the Front Range Commuter Bus Study, completed in June 2002, preliminarily identified ridership demand projections for bus service, created potential schedules and identified fares for commuter bus service in the Front Range Corridor (Fort Collins/Greeley on the north end and Colorado Springs/Pueblo on the south end) with the intent of determining if it would be feasible to operate such service. The results of Phase 1 showed that service would be feasible and could even potentially be profitable between Colorado Springs, Castle Rock and Denver. Phase I also recommended subsequent efforts to develop a more refined financial plan and to identify an appropriate institutional arrangement.

This report summarizes work conducted for Phase 2 of the Front Range Commuter Bus Study. Phase 2 refines the operating plan from Phase 1 and addresses financial and institutional issues surrounding implementation of service. Four Front Range corridors are included in this Phase 2 study. Figure 1 illustrates the study area and the four bus corridors. The four corridors are:

- ◆ Pueblo to Colorado Springs
- ◆ South I-25 – Colorado Springs, Castle Rock to Denver Tech Center and to Downtown Denver
- ◆ North I-25 – Fort Collins, Loveland, Longmont to Downtown Denver
- ◆ Highway 85 – Greeley, Evans, La Salle, Platteville, Ft. Lupton to Downtown Denver

The goal of Front Range Commuter Bus service would be to provide a commuter bus service that would operate seamlessly with local transit systems, and would be run through a partnership with each of the cities, CDOT, RTD and participating private providers. The Steering Committee agreed that this service could be a precursor to commuter rail by demonstrating demand for the service and significant ridership.

Two committees were formed to assist with Phase 2 of the study, a Technical Advisory Committee (TAC) and a Steering Committee. The TAC was comprised of technical representatives from interested municipalities, metropolitan planning organizations (MPO), public and private transit agencies in the study area and CDOT. This committee met four times throughout the study process. The Steering Committee was comprised of elected officials representing the municipalities and metropolitan planning organizations within the study area, as well as RTD and CDOT. This committee met three times throughout the study process.



This report is summarized into the following three major sections:

- ◆ Operating Plan – This section describes ridership estimates, bus schedules that were used to develop cost estimates, park-and-ride facilities that would be needed, and equipment needed to operate service in each corridor.
- ◆ Financial Plan – This section describes the fare and zone structure used to estimate fare revenues in each corridor.
- ◆ Institutional Structure – This section describes a potential institutional structure for governing agencies to establish and operate this service.

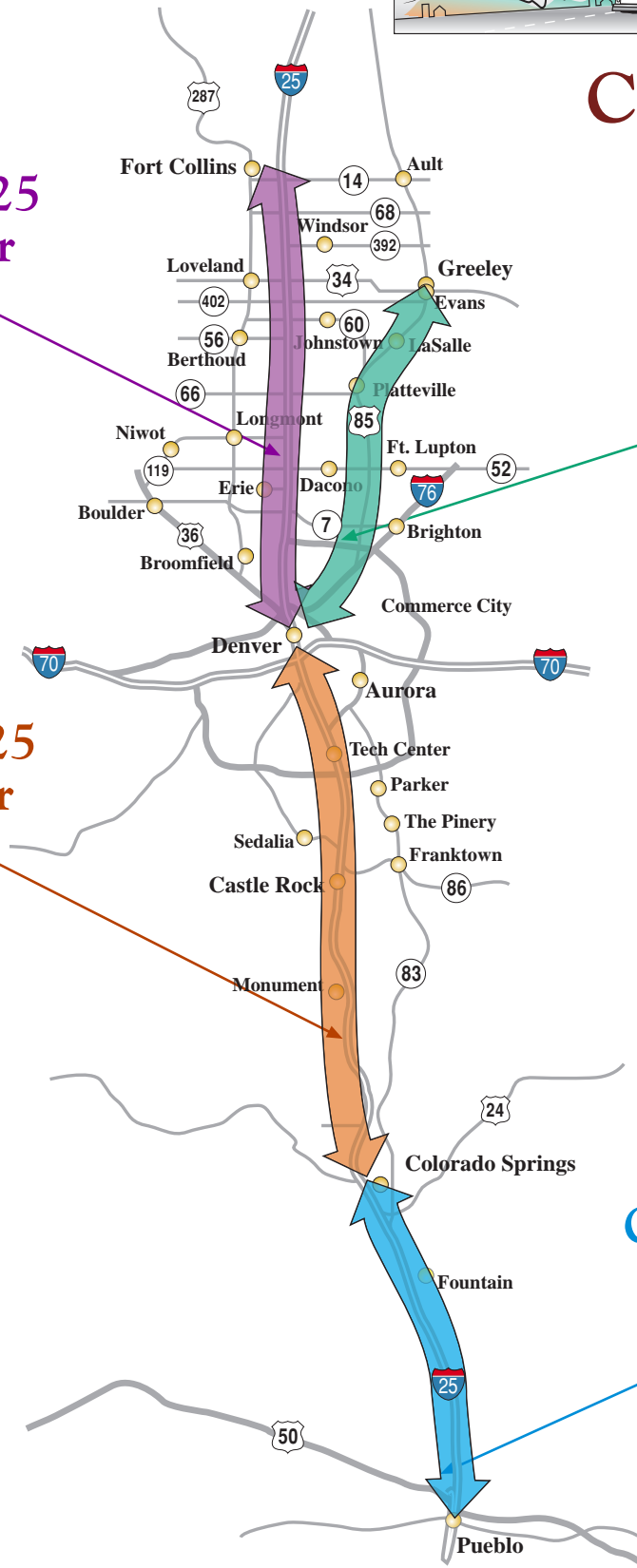
Corridor Map

North I-25
Corridor

Highway 85
Corridor

South I-25
Corridor

Pueblo -
Colorado Springs
Corridor



North

Figure 1



OPERATING PLAN

This section describes development of ridership estimates, bus schedules, park-and-ride needs, and equipment needed to operate service in each corridor. Each of these pieces of the operating plan is used in the next section to develop cost estimates. Information that applies to all corridors is presented first and then each corridor is discussed.

Methodology

Demand and Ridership

Demand estimates included in Phase 1 were updated to reflect significant increases in commuter traffic flows between counties in the Front Range as reflected in the 2000 Census. Ridership was determined by applying a mode share factor to the total worker demand traveling between communities as identified in the Census. The mode share factor represents the percentage of people that would opt to utilize a Front Range Commuter Bus service over another form of transportation such as driving their private auto. The mode share for each corridor was based on comparative data in the region and adjusted for travel time savings, length of trip, and ability to serve employment centers. Mode shares were also adjusted based on comments made by the Technical Advisory Committee members. A Front Range Commuter Bus service would also carry other trips such as students or people attending to personal business. These “other” trips have been calculated at 25 percent of the commuter trips. Additional information on the demand estimation process is included in Appendix A.

Schedules

Schedules have also been refined from those identified in Phase I, reflecting changes in demand estimation as well as comments from the focus groups that were held as part of the Phase I efforts.

Some general comments apply to all corridors:

- ◆ Each of the schedules was checked and adjusted to accommodate adequate recovery time. This will help drivers stay on schedule and provide short breaks between trip segments.
- ◆ In some corridors it may be more cost effective to return the drivers to the outlying community and have them work a split shift than to pay them to wait in Denver for the return trip. Revenue miles and hours have been calculated based on returning the bus to its base. It is assumed the vehicles will operate in service in both directions; however, schedules for the reverse commute have not been prepared.
- ◆ Finally, an effort was made to streamline the number of stops to provide quicker travel times.

The schedules listed in the following sections represent the initial level of service that could be considered for each corridor. Light rail is expected to become operational in the northern section of the South I-25 Corridor in three years. Because of this, service plans have been developed for the South I-25 Corridor for pre-light rail operation and post-light rail operation. Three of the four corridors studied have routes that would terminate in downtown Denver. Because of this, the City and County of Denver recommends that any further schedule and route planning, or implementation of service, be closely coordinated with Denver's Downtown Multi-Modal Access Plan (DMAP).

Mid-day and Special Event Service

There seems to be significant demand in the Front Range for mid-day service, especially in the North and South I-25 corridors. A review of mid-day and special event service options was requested by the Technical Advisory and Steering Committees.

The basic service design for this commuter bus operation is to serve the peak period commuter market and to operate vehicles that are relatively full (i.e. 30 or more passengers per trip) so the service can operate with low subsidies. If service were expanded beyond this to meet a broader range of travel needs – operating longer hours, in the mid-day, or even on weekends – a higher subsidy would be anticipated. Generally, service operated outside peak periods would generate relatively low revenues and require an on-going subsidy.

One of the important advantages of contracting with a private sector firm that already operates in the corridor (TNM&O/Greyhound or Shamrock Airport Express) is that limited mid-day or evening service could be accessed through the other trips run by that operator. This could provide the emergency service that might be needed through a "Guaranteed Ride Home" program.

The Americans with Disabilities Act allows service, such as that being proposed for the Front Range, to be operated without complementary paratransit service, but the service must fit the definition of commuter service. The Americans with Disabilities Act defines commuter bus service as fixed-route bus service, characterized by service predominantly in one direction during peak periods, limited stops, use of multi-ride tickets, and routes of extended length, usually between the central business district and outlying suburbs. Commuter bus service may also include other service, characterized by a limited route structure and a coordinated relationship to another mode of transportation.

Sound Transit, in Washington state's Puget Sound area, operates commuter services and provides midday service. As long as the ADA criteria are met, service is considered "commuter". The type and level of any midday service would need to be evaluated to assure that it still falls within the definition of commuter service.

It is important to recognize the demand for services in the mid-day and acknowledge this demand when planning for the service beyond the initial pilot period. However, until a long-term funding source is secured for the operation of regional service, it is not recommended that any service outside of peak commuter hours be planned unless that service can pay for itself or generate enough revenue to cover costs.



Consideration was also given to special-event service. If special-event service can meet three basic criteria, its operation is endorsed:

- ◆ The service pays for itself
- ◆ Vehicles are available
- ◆ The operation will have time to clean and service the vehicles for the next day.

Many football and baseball games occur on weekdays when the buses will be needed for scheduled service. Service to events on weekends would be more likely candidates for special event service.

Equipment

Over-the-road coaches would be desired for this service for their ability to handle high speeds and for the comfort of the passengers. In addition, wheelchair accessibility would be required by the Americans with Disabilities Act. Over-the-road coaches with a capacity of 50 to 55 passengers have been assumed for planning purposes.

In Phase I Study, it was envisioned that this service would be provided as a partnership between the public and private sectors, with the equipment being provided by the private sector partner. Access to equipment is one of the strengths of the private sector.

The ideal vehicles would be accessible over-the-road commuter coaches with electronic destination signs. Amenities that passengers appreciate are comfortable seats, plug-ins for electronic devices, and bicycle accommodations.

For long-term financial planning, the purchase of this equipment with 80 percent federal dollars is an option. The desirability of purchasing equipment rather than having it provided by the private sector would be determined in part by the availability of funding.

Park-and-Ride Facilities

The Front Range Commuter Bus service would be very dependent on riders having adequate park-and-ride facilities. For each corridor, the existing, planned and temporary park-and-ride facilities have been inventoried and compared to the projected need, which is based on the ridership estimates. Appendix B provides detailed information the existing park-and-ride facilities in the corridors. At a minimum, park-and-ride facilities should be paved, provide a sufficient number of handicap-accessible spaces, be well-lit, provide space for the bus to board and alight passengers, provide adequate space for the bus to conveniently ingress and egress, and provide a shelter for passengers waiting to board. Other amenities could include bike racks, lockers, and pay phones.



Corridor Analyses

Pueblo to Colorado Springs Corridor

In this corridor, the bus would serve the Eagle Ridge park-and-ride in Pueblo, the Fountain park-and-ride and the Bijou and Garden of the Gods exits in Colorado Springs.

Ridership

Table 1 illustrates estimated transit demand for the Pueblo to Colorado Springs corridor. As highlighted, only 3 percent of the work trips identified in the census as traveling between these two areas would be expected to utilize this service.

Table 1. Transit Demand – Pueblo to Colorado Springs Corridor¹

City	3% of Work Trips	5% of Work Trips	10% of Work Trips	Other Trips ²	Total Trips
Pueblo – Colorado Springs	68	113	226	17	85
Colorado Springs – Pueblo	19	32	64	5	24
Fountain – Pueblo	2	2	4	1	3
Pueblo – Fountain	2	3	6	0	2
Total	91	150	300	23	114

Notes:

1. The 1990 Census Transportation Planning Package data on employment trips has been increased to reflect the increase in number of work trips that occurred on the County levels in 2000. The 2000 data flows on trips between places are not yet available. Some totals may not add exactly due to rounding.
2. The "other" trips are calculated as 25% of the work trips. The shaded column for work trips reflects the mode share used for planning purposes. The other trips are calculated based on the shaded column for work trips.

Schedules

Table 2 illustrates the schedule developed for the Pueblo to Colorado Springs corridor to accommodate the anticipated ridership. This schedule includes one more peak trip than in the Phase I Study based on the growth reflected in the 2000 Census. The third trip would be added when warranted by ridership.

In Pueblo, many commuters live in Pueblo West and a single bus stop and park-and-ride would serve all of these commuters. This route would serve workers in both Pueblo and Colorado Springs, so two-way travel would be expected. However, one drawback is that work sites in both communities are dispersed.



Table 2. Schedule – Pueblo to Colorado Springs Corridor

Northbound Schedule – Morning				
	Pueblo	Fountain	Downtown	Garden of the Gods
Bus 1	6:15	6:40	7:00	7:15
Bus 3*	6:30	6:55	7:15	7:30
Bus 2	6:45	7:10	7:30	7:45
Southbound Schedule – Evening				
	Garden of the Gods	Downtown	Fountain	Pueblo
Bus 1	4:45	5:00	5:10	5:35
Bus 3*	5:00	5:15	5:25	5:50
Bus 2	5:15	5:30	5:40	6:10
* Third bus added when warranted by ridership.				

Park-and-Rides

Pueblo’s Eagle Ridge park-and-ride currently has a capacity of approximately 80 vehicles and is 50 percent utilized during a typical weekday. This leaves approximately 40 spaces for use by Front Range Commuter Bus riders. An additional 50 to 60 spaces would be necessary in Pueblo to comfortably accommodate the additional parking demand anticipated to be generated by the Front Range Commuter Bus service.



South I-25 Corridor

In this corridor the bus would serve Woodmen Road and Northgate in Colorado Springs, Monument, Castle Rock, the Denver Tech Center and downtown Denver.

Ridership

The demand estimates between Colorado Springs and Denver reflect significant growth between 1990 and 2000, with much of the growth in trips destined to the Tech Center and other south I-25 business parks.

Initially service from Castle Rock will only meet a portion of the anticipated demand to the south I-25 business parks because of limited bus service within the south I-25 business parks, particularly south of Arapahoe Road. Once light rail opens and more transit service is provided to all the south I-25 business parks, ridership from Castle Rock is anticipated to increase significantly.

Table 3 illustrates the transit demand estimates for the South I-25 Corridor for commuters traveling north. As shown, 10 percent of work trips to Denver are expected to utilize the service, while only 5 percent of work trips between Castle Rock and the south I-25 business parks are expected to utilize the service.

Table 3. Transit Demand – South I-25 Corridor to Denver ¹

City	5% of Work Trips	10% of Work Trips	15% of Work Trips	Other Trips ²	Total Trips
Colorado Springs	91	182	272	45	227
Woodmoor ³	14	14	21	4	18
Castle Rock to Denver	120	240	360	60	300
Castle Rock to Arapahoe park-n-Ride	43	86	129	11	54
Passengers Arriving at Arapahoe park-n-Ride	225	436	653		598
Passengers Alighting at Arapahoe park-n-Ride	62	123	185		124
Trips Continuing on to Denver CBD	163	312	468		474

Notes:

1. The 1990 Census Transportation Planning Package data on employment trips has been increased to reflect the increase in number of work trips that occurred on the county levels in 2000. The 2000 data flows on trips between places were not yet available. Some totals may not add exactly due to rounding.
2. The "other" trips are calculated as 25% of the work trips. The shaded column for work trips reflects the mode share used for planning purposes. The other trips are calculated based on the shaded column for work trips.
3. In the 1990 census tables, Monument was listed as part of a larger division. Because most of the population in the division would not be able to access the proposed service, this population was not included in the data used to project ridership. Woodmoor, the development east of I-25 at exit 160, was included as it was separately identified as a "Census Defined Place".



Table 4 illustrates demand from Denver south along I-25 to Castle Rock and Colorado Springs.

Table 4. Transit Demand – South I-25 to Colorado Springs ¹

City	3% of Work Trips	5% of Work Trips	10% of Work Trips	Other Trips ²	Total Trips
Denver	14	33	66	4	18
Castle Rock	12	20	40	3	15
Woodmoor ³	34	57	115	14	48
Total	60	110	221	21	81

Notes:

1. The 1990 Census Transportation Planning Package data on employment trips has been increased to reflect the increase in number of work trips that occurred on the County levels in 2000. The 2000 data flows on trips between places were not yet available. Some totals may not add exactly due to rounding.
2. The "other" trips are calculated as 25% of the work trips. The shaded column for work trips reflects the mode share used for planning purposes. The other trips are calculated based on the shaded column for work trips.
3. In the 1990 census tables, Monument was listed as part of a larger division. Because most of the population in the division would not be able to access the proposed service, this population was not included in the data used to project ridership. Woodmoor, the development east of I-25 at exit 160, was included as it was separately identified as a "Census Defined Place".

Schedules

Colorado Springs–Denver from 2004 – Light Rail Opening (Fall 2006)

The initial schedule for this corridor includes ten buses providing twelve peak hour trips. In the morning, six trips would originate in Colorado Springs and six would originate in Castle Rock. In the evening, three trips would terminate in Castle Rock and the remaining nine would continue on to Colorado Springs.

With 50 seated passengers per trip, this service provides a capacity for 600 daily round-trip passengers, with 300 out of Castle Rock and 300 out of Colorado Springs. If additional capacity is needed as the service develops, three additional buses operating four additional peak hour trips could be added. This would increase capacity by 200 passengers each day.

Based on comments from TAC members, the service should operate in revenue service in the reverse direction. While hours and mileage estimates have been updated to reflect this, the actual reverse schedule has not been created. The participants in the South I-25 Corridor, including RTD, will develop reverse direction schedules. RTD will be asked to determine how best to utilize the additional service availability as the majority of the reverse direction travel demand falls within the RTD boundaries.

The schedule includes two peak hour trips from Castle Rock to the Mineral Light Rail Station. The primary reason for this is that one vehicle can make two trips within the peak period, increasing the capacity of the service. This is not based on passenger demand: focus group participants were clear that an express bus operated on I-25 would be preferable as the total travel time would be less. Light rail service from Mineral Station is also at capacity. Switching to one trip to downtown would either reduce capacity out of Castle Rock by 50 passengers or



require an additional bus. This issue will be addressed by the parties to the south I-25 service implementation.

Table 5. Schedule – South I-25 Corridor

NORTHBOUND						
	Woodmen Rd.	Monument	Castle Rock	Mineral Station	Arapahoe Station	Civic Center Station
Bus 1	---	---	6:00	▶	6:20	6:50
Bus 2	5:10	5:25	---	▶	6:15	6:45
Bus 3	---	---	6:15	6:45	---	---
Bus 4	5:25	5:40	6:15	▶	6:35	7:05
Bus 5-EX	5:40	5:55	---	▶	---	6:55
Bus 6	5:55	6:10	6:45	▶	7:05	7:35
Bus 7	---	---	6:35	▶	6:55	7:25
Bus 8	6:20	6:35	7:10	▶	7:30	8:00
Bus 9-EX	6:25	6:40	---	▶	---	7:40
Bus 10	---	---	7:05	▶	7:25	7:55
Bus 3	---	---	7:15	7:45	---	---
Bus 1	---	---	7:45	▶	8:05	8:35
SOUTHBOUND						
	Civic Center Station	Arapahoe Station	Mineral Station	Castle Rock	Monument	Woodmen Rd.
Bus 1		3:45	▶	4:00		
Bus 2	3:40	4:10	▶	4:30	5:05	5:20
Bus 3			4:15	4:45		
Bus 5	3:55	4:25	▶	4:45	5:20	5:35
Bus 6	4:10	4:40	▶	5:00	5:35	5:50
Bus 7-EX	4:10	---	▶	---	5:25	5:40
Bus 9	4:25	4:55	▶	5:15	5:50	6:05
Bus 8	4:40	5:10	▶	5:30	6:05	6:20
Bus 3			5:15	5:45		
Bus 1	4:55	5:25	▶	5:45	6:20	6:35
Bus 10	5:10	---	▶	5:55	6:30	6:45
Bus 4	5:25	5:55	▶	6:15	6:50	7:05
* Reverse trip would occur, but schedules have not been developed.						



There seems to be significant demand for mid-day service on the South I-25 Corridor. This is reflected in traffic volumes as well as public comment and comments from staff and elected officials. It is recognized that mid-day services are important and that demand for services outside the primary commute hours is likely to grow, especially in the South I-25 Corridor when light rail service becomes operational. Midday service is not included in the initial schedules but could be added as it becomes financially feasible.

Colorado Springs–Denver after Light Rail Opens in Southeast I-25 Corridor

Service in the Colorado Springs–Denver Corridor has been funded for up to three years through a CMAQ grant. Service is planned to begin in 2004. The southeast light rail line will become operational in late 2006, about two years after initiation of commuter service. At that time, the HOV lanes on I-25 will be discontinued. Commuters using light rail will thus have a considerable time savings over automobiles traveling to downtown Denver.

Service between Colorado Springs/Castle Rock and the light rail line was initially discussed assuming service to the end-of-the-line station. RTD requested consideration of operating service to Arapahoe Station instead of Lincoln Station. This would enable many people to get to their destination without transferring to light rail, as much of the employment base would be able to be accessed from the Arapahoe Station. Allowing for travel time, dwell time at stops and recovery time, it is estimated that about 65 minutes would be needed for traveling between Colorado Springs and the light rail line. Since the trip could not be made in under an hour, the additional four minutes needed to travel to the Arapahoe Station wouldn't measurably affect the number of vehicles required or trips that could be made. Hence, it is recommended that Arapahoe Station be used as a terminus. However, many residents of Castle Rock work at, or need to access services at, Lincoln Station. Consideration should be given to making a stop at Lincoln Station on at least half of the buses operating out of Castle Rock.

For planning purposes, a schedule that provides 15-minute service out of Colorado Springs from 5:00 a.m. to 8:00 a.m. (a total of 12 peak period trips) appears appropriate. An additional 12 trips are proposed to operate out of Castle Rock using vehicles based in Castle Rock. The service out of Colorado Springs would not need to stop in Castle Rock and could operate in an express mode. This would provide a total capacity of 600 seats out of each area, and it is anticipated that about 500 seats in each area would be filled.

This level of service would result in 84 hours of service each day or 21,420 hours per year. It would also result in 1,416 revenue miles per day, or 361,080 miles per year.

A schedule with service every 15 minutes and buses based out of both Castle Rock and Colorado Springs would require 13 peak vehicles (nine for Colorado Springs and four for Castle Rock). This is three more buses than required by the initial service plan for bus service.



Park-and-Rides

Along the South I-25 Corridor three stops for the Front Range Commuter Bus have been identified. The southern stop would be located at Woodmen Road, where there is a park-and-ride facility with approximately 60 spaces available. The second stop would be located at the Northgate interchange, where a future 290-space park-and-ride lot is planned. Initially, the third stop would be in Monument at the existing 60-space park-and-ride facility, which is nearly fully utilized. This park-and-ride lot is being relocated and expanded to 250 spaces as part of the Monument interchange project. It is expected to be completed in the beginning of 2005. Long-term, Colorado Springs will have adequate park-and-ride facilities available. However, in the initial two-year period, an additional 240 spaces will be needed to accommodate the anticipated demand. The City of Colorado Springs is currently approaching businesses in the corridor to determine if spaces could be leased prior to development of the planned park-and-ride lots.

Initially, approximately 350 park-and-ride spaces would be needed to accommodate demand in Castle Rock. Post light rail parking demand is expected to increase to approximately 600 spaces. Castle Rock is negotiating with businesses and land owners to develop interim spaces and long-term plans to construct facilities to serve this demand.



North I-25 Corridor

In this corridor the bus would serve Fort Collins at Harmony Road, the Highway 34 interchange area, the Highway 119 interchange area and downtown Denver.

Ridership

It is anticipated that this service could capture 10 percent of the work trips along the North I-25 Corridor. Table 6 illustrates anticipated transit ridership in this corridor. In the North I-25 Corridor, providing connecting service to Boulder would be important for regional connections. This would require a stop at Hwy 119 or Hwy 52 and a transfer connection to RTD service. At present, RTD regional service operates from Longmont to Boulder but does not stop at the Hwy 119/I-25 intersection as that is not within the District boundaries. A connection from I-25 to Longmont would be necessary. Based on the number of work trips and the location of residents in this corridor, a separate route from Fort Collins to Longmont might be the best option. This would keep the Fort Collins/Denver service in more of an express mode. It is recommended that an option for a connection to Boulder be considered as part of the implementation of service in the North I-25 corridor. Also, providing service or connections to Boulder County would greatly increase park-and-ride capacity requirements in Fort Collins and Loveland.

Table 6. Transit Demand – North I-25 Corridor ¹

City	5% of Work Trips	10% of Work Trips	15% of Work Trips	Other Trips ²	Total Trips
Fort Collins/Windsor	37	73	110	18	91
Loveland	25	51	76	13	64
Johnstown ³	12	25	37	6	31
Berthoud	9	18	27	5	23
Total	83	167	250	42	209

Notes:

1. The 1990 Census Transportation Planning Package data on employment trips has been increased to reflect the increase in number of work trips that occurred on the County levels in 2000. The 2000 data flows on trips between places are not yet available. Some totals may not add exactly due to rounding.
2. The "other" trips are calculated as 25% of the work trips. The shaded column for work trips reflects the mode share used for planning purposes. The other trips are calculated based on the shaded column for work trips.
3. Johnstown represents Census Division counts and includes the population of Johnstown, Milliken, Mead, and rural residents. The majority of the population is in the small towns; it is expected that others can drive to park-and-ride lots.



Schedules

Since the completion of Phase 1 of the study, a stop at Highway 119 has been added to the schedule and the stop at Johnstown has been deleted. One stop would be needed in southern Weld County. It could be at Hwy 119, Hwy 66, or Hwy 56. The decision where to locate the stop will depend on parking and the ability to coordinate with other services. RTD would need to obtain permission to stop at the I-25 and Hwy 119 park-and-ride, an area that is outside the District, in order to make it possible for people from Larimer County to get into Longmont or Boulder. No ridership has been added to the route because the service connection is not in place. It is recommended that RTD be requested to consider the possible change and that Weld and Larimer Counties support the PUC or legislative action that would be necessary to make a stop outside RTD’s current service area.

Members of both the Technical Advisory and Steering committees indicated that there would be a significant demand for midday service in the North I-25 Corridor especially by the student and elderly populations. It is recognized that midday services would be important and the demand for services outside the primary commute hours is likely to grow. However, it is not recommended that midday service be included until funding is secured for the operation of the commuter service because it is anticipated that midday service will require a significant subsidy.

Table 7. Schedule – North I-25 Corridor

	MMTC*	Harmony	Hwy 34	Hwy 119	Market
Southbound – Morning Schedule					
Bus 1		5:30	5:43	6:05	6:40
Bus 2		6:00	6:13	6:35	7:10
Bus 3	6:20	6:35	6:48	7:10	7:45
Northbound – Evening Schedule					
	Market	Hwy 119	Hwy 34	Harmony	MMTC*
Bus 1	4:15	4:50	5:12	5:25	5:40
Bus 2	4:45	5:20	5:42	5:55	6:10
Bus 3	5:15	5:50	6:12	6:25	6:40
* Fort Collins Multi-Modal Transfer Center					

Park-and-Rides

In the North I-25 Corridor, the expected stops would include Harmony Road multi-modal transfer facility in Fort Collins, the Highway 34 interchange area connecting to Loveland, and the Highway 119 interchange area connecting to Longmont. During observations in March 2003 it appeared that the Harmony Road multi-modal facility and the Highway 119 parking facility would have adequate parking capacity to accommodate the demand anticipated to be generated by the Front Range Commuter Bus. At the Harmony Road multi-modal facility 35 percent of the 257 spaces were occupied and at the Highway 119 lot 26 percent of the 102 spaces were occupied. However, the Highway 34 park-and-ride lot was fully occupied and would require an additional 70 parking spaces to accommodate the anticipated demand.



Highway 85 Corridor

Ridership

The Highway 85 corridor has tremendous potential that would be difficult to realize because without HOV lanes on Highway 85 and with frequent stops in small towns, bus travel times would be significantly longer than auto travel times. As a result, only a three percent mode share would be expected to utilize this service. A five percent mode share might be achieved over time. Table 8 illustrates the transit demand anticipated for the Highway 85 Corridor.

Table 8. Transit Demand – Highway 85 Corridor ¹

City	3% of Work Trips	5% of Work Trips	10% of Work Trips	Other Trips ²	Total Trips
Greeley/Evans	29	48	96	7	36
La Salle ³	3	5	10	1	4
Platteville ³	5	5	9	1	6
Fort Lupton	9	16	31	2	11
Total	47	73	146	11	58

Notes:

1. The 1990 Census Transportation Planning Package data on employment trips has been increased to reflect the increase in number of work trips that occurred on the County levels in 2000. The 2000 data flows on trips between places are not yet available. Some totals may not add exactly due to rounding.
2. The "other" trips are calculated as 25% of the work trips. The shaded column for work trips reflects the mode share used for planning purposes. The other trips are calculated based on the shaded column for work trips.
3. La Salle and Platteville represent Census Division counts. The majority of the population is in the small towns; it is expected that others can drive to park-and-ride lots.

Schedules

The schedule illustrated in Table 9 remains the same as in the Phase I Study.

Table 9. Schedule – Highway 85 Corridor

Southbound Schedule – Morning					
	Greeley	Evans	Platteville	Ft. Lupton	Market St. Station
Bus 1	5:45	5:50	6:05	6:25	6:55
Bus 2	6:15	6:20	6:35	6:55	7:25
Northbound Schedule – Evening					
	Market St. Station	Ft. Lupton	Platteville	Evans	Greeley
Bus 1	4:45	5:15	5:35	5:50	5:55
Bus 2	5:15	5:50	6:10	6:20	6:25

Park-and-Rides

Currently, there are no park-and-ride facilities available along the Highway 85 corridor. Demand in the Greeley/Evans area would require approximately 40 parking spaces. It is expected that on-street parking could be utilized in the smaller communities along the southern portion of the corridor.



Operating Plan Summary

The goal is to implement a commuter bus service that operates seamlessly with local transit providers and is run through a partnership with each of the cities, CDOT, RTD and participating private providers. Success of the service would be a way to demonstrate demand for potential commuter rail service. The service would have few stops and would focus on serving the commuter market needs. Key characteristics for the operating plan in each corridor are listed below.

Table 10. Operating Plan Summary

Corridor	Demand (Daily Riders)	Buses	Peak Period Trips	Additional Park-and- Ride Spaces Needed
Pueblo to Colorado Springs	114	3	3	55
South I-25	680	10	12	590*
North I-25	209	3	3	70
Highway 85	58	2	2	40

* 250 spaces are under construction.



FINANCIAL PLAN

This section begins with information on zones and fares, then presents three-year budgets for each of the corridors and concludes with a discussion of financial considerations and funding options.

The financial plan is an estimation based on what is known at this point in time. It provides a reasonable starting point, but will need to be refined as more information becomes available. There are many items that need to be monitored or refined, such as initial ridership demand, ridership growth and the cost for service if it is put out for bid as a contract or negotiated as a public-private partnership.

Zones and Fares

Basic assumptions in the development of the zone and fare structure include:

- ◆ The fares should be easy for passengers to use, with the ability to purchase a single fare that would enable the rider to both use the commuter service and connect to RTD light rail or other services.
- ◆ RTD would receive the full fare that is charged to all customers as part of the revenue sharing agreements. The fare paid by people who use RTD services does not cover the full cost of operating the service; therefore, it would be inappropriate to have a cost break that would result in RTD providing an increased subsidy to Front Range Commuter riders.
- ◆ The total fare charged to the customer for both the commuter service and the light rail service needs to be reasonable.
- ◆ Fares should reflect a balance between what the market will bear and the full cost of operating the service. In general, the communities along the corridors do not have funding available to provide measurable subsidies to commuter transit services.
- ◆ Fares should be distance-based, with longer trips costing more than shorter trips. Options for cash, tickets and monthly passes should be available, with significant discounts for regular riders using monthly passes.

Initial efforts to develop a fare structure were based on the current RTD fare structure for regional and express routes. However, this led to fares much lower than skyRide fares for long trips and the Greyhound/TNM&O fare structure. The RTD fare structure is a subsidized system while the aim of the commuter service would be to provide service that would be self-supporting. The TNM&O structure is a for-profit system and is structured based on a fairly limited number of trips and ridership. The refined fare structure is geared to the service objectives. Cash fares, anticipated to be used by the occasional rider, are relatively high and more comparable to TNM&O fares. Passes and tickets, anticipated to be used by most passengers, are lower, to encourage high ridership among commuters and other frequent riders. This fare structure supports the goal of carrying many passengers in peak travel periods and having fares cover the costs of service.



Table 11 reflects the recommended zone structure. In developing this structure, an effort was made to keep the same zone fare for everyone living in the same town and going to the same destination. Other “break points” can be considered, but this zone structure appeared to have the fewest inconsistencies.

Table 11. Zone Structure

Zone		Location	Average Mileage
Zone 1	up to 25 mi.	Castle Rock – Tech Center	15
		Castle Rock – Mineral	20
Zone 2	26–40 miles	Fort Lupton – Downtown Denver	28
		Castle Rock – Downtown Denver	29
		Longmont (Hwy 119) – Downtown Denver	31
		Monument – Tech Center	36
		Platteville – Downtown Denver	38
Zone 3	41–50 miles	Pueblo (Eagle Ridge) – Colorado Springs (Bijou)	41
		Colorado Springs (Northgate) – Tech Center	41
		Pueblo (Eagle Ridge) – Colorado Springs (Garden of the Gods)	46
		Loveland (Hwy 34) – Downtown Denver	48
		Colorado Springs (Woodmen) – Tech Center	48
		La Salle – Downtown Denver	48
		Monument – Downtown Denver	50
Zone 4	51–65 miles	Colorado Springs (Northgate) – Downtown Denver	55
		Evans – Downtown Denver	55
		Fort Collins (Harmony and downtown MMTc) – Downtown Denver	61
		Greeley – Downtown Denver	60
		Colorado Springs (Woodmen) – Downtown Denver	62



Table 12 illustrates the cash fares, 10-ride ticket book and monthly pass costs associated with each of the fare zones.

Table 12. Fares

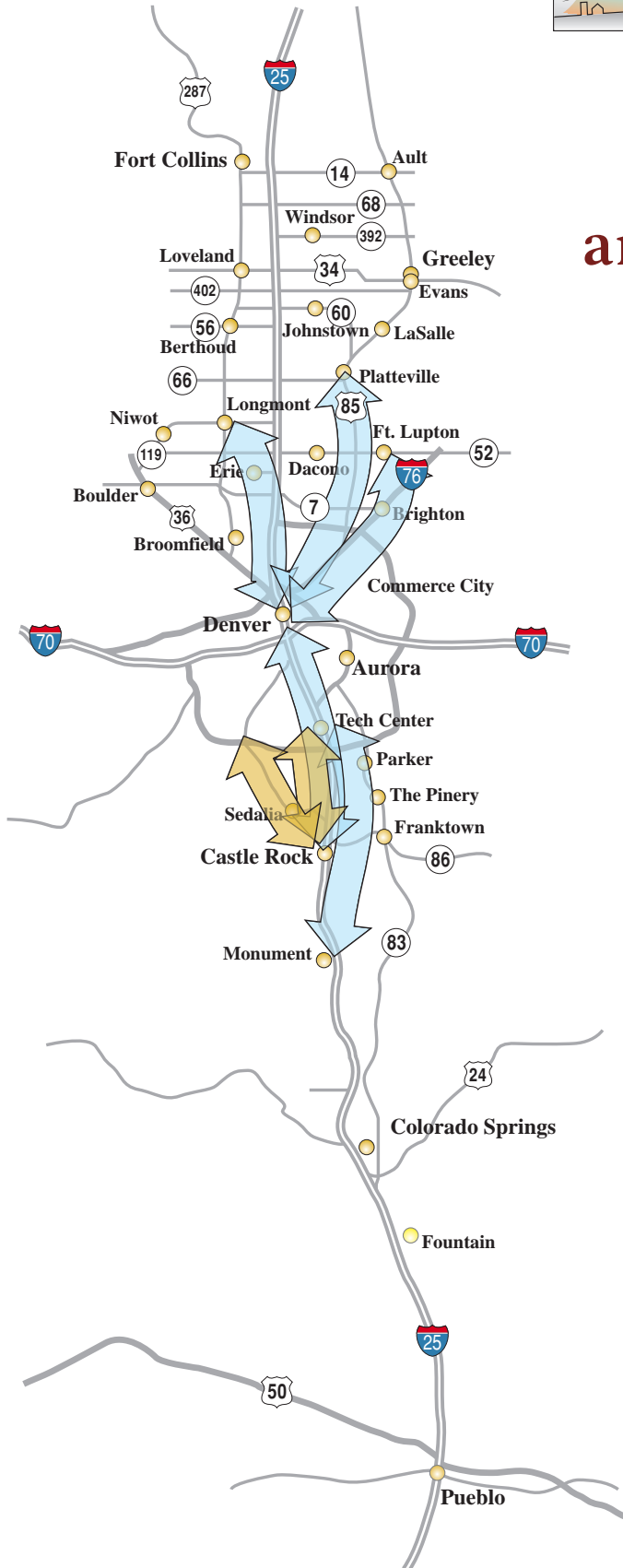
	One-way Cash	10-Ride Ticket Book	Monthly Pass
Zone 1	\$3.75	\$30.00	\$99
Zone 2	\$8.00	\$64.00	\$122
Zone 3	\$9.00	\$72.00	\$174
Zone 4	\$12.00	\$96.00	\$222

Cash fares have been increased over those assumed with the Phase 1 analysis, to more closely align with Greyhound/TNM&O fares for similar trips (although these prices vary depending on corridor and time of day) and to adjust for rates in Zone 2 that were very low on a per-mile basis. Ten-ride ticket prices are 80 percent of the cash fare prices.

Monthly Pass fares are based on an average of \$0.09 per mile. This pass fare results in Zone 4 trips with a cost of over \$200 per month, but provides reasonable level of fare revenues post light rail for those passengers who would transfer to the light rail service. Concern was expressed during the Phase 1 Study that fares over \$200 per month may be above what the market will bear. As service is implemented in each corridor, communities may wish to revisit the fare and zone structure. The fare and zone structures are illustrated in Figures 2, 3, and 4.



ZONES 1 & 2 Proposed Zone and Fare Structure



ZONE 1 (≤ 25 miles)

- Cash: \$3.75 / ride
- 10-Ride Book: \$30
- Pass: \$99 / month

Tech Center ↔ Castle Rock

Mineral ↔ Castle Rock

ZONE 2 (26-40 miles)

- Cash: \$8.00 / ride
- 10-Ride Book: \$64
- Pass: \$122 / month

Platteville ↔ Denver

Ft. Lupton ↔ Denver

Longmont ↔ Denver

Denver ↔ Castle Rock

Tech Center ↔ Monument

ZONE 3 (41-50 miles)

- Cash: \$9.00 / ride
- 10-Ride Book: \$72
- Pass: \$174 / month

ZONE 4 (51-65 miles)

- Cash: \$12.00 / ride
- 10-Ride Book: \$96
- Pass: \$222 / month

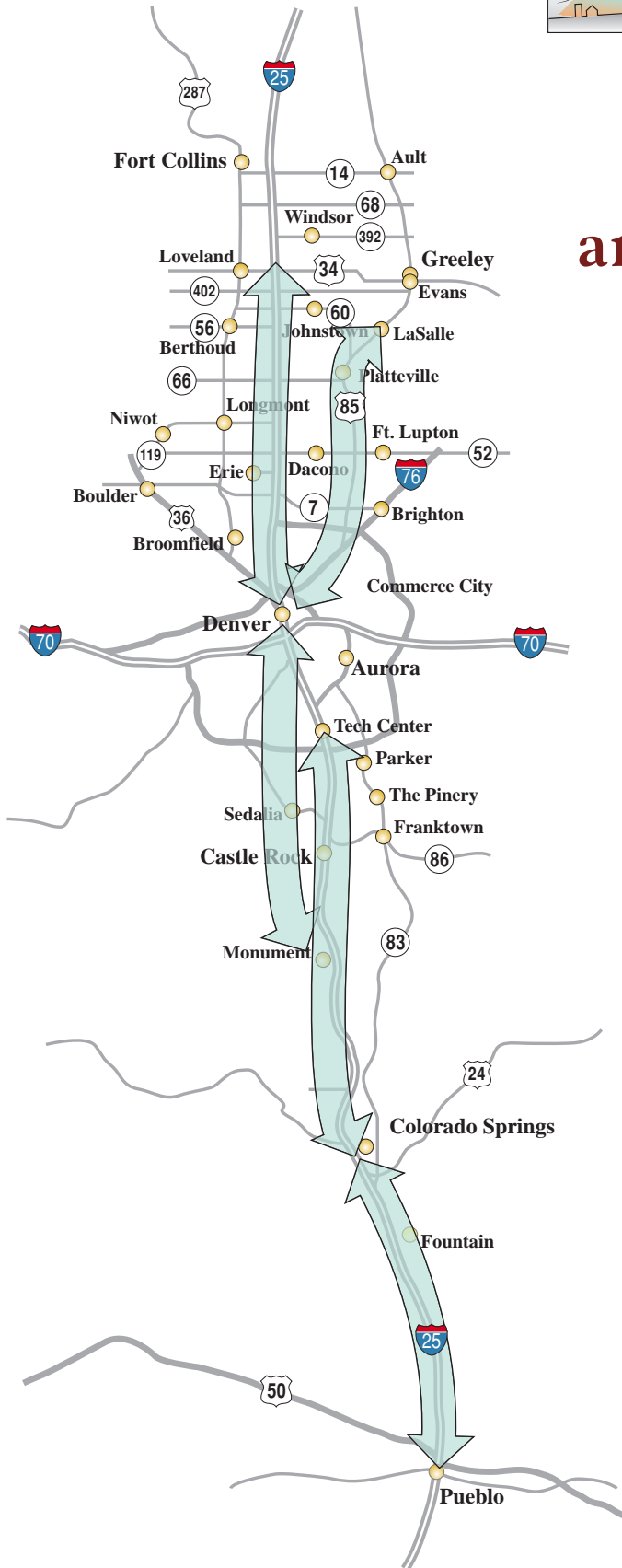


North

Figure 2



ZONE 3 Proposed Zone and Fare Structure



ZONE 1 (≤ 25 miles)

- Cash: \$3.75 / ride
- 10-Ride Book: \$30
- Pass: \$99 / month

ZONE 2 (26-40 miles)

- Cash: \$8.00 / ride
- 10-Ride Book: \$64
- Pass: \$122 / month

ZONE 3 (41-50 miles)

- Cash: \$9.00 / ride
- 10-Ride Book: \$72
- Pass: \$174 / month

Loveland ↔ Denver
 LaSalle ↔ Denver
 Denver ↔ Monument
 Tech Center ↔ Colorado Springs
 Colorado Springs ↔ Pueblo

ZONE 4 (51-65 miles)

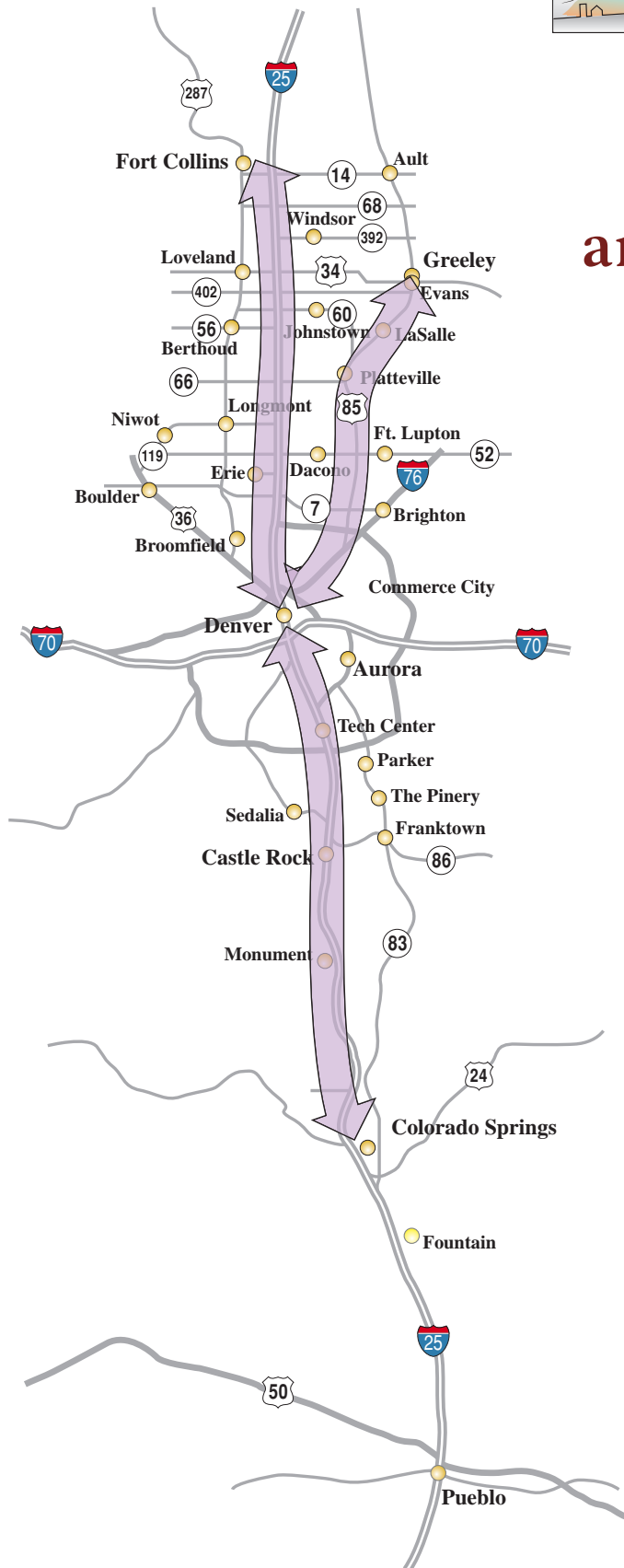
- Cash: \$12.00 / ride
- 10-Ride Book: \$96
- Pass: \$222 / month



Figure 3



ZONE 4 Proposed Zone and Fare Structure



<p>ZONE 1 (≤ 25 miles)</p> <ul style="list-style-type: none"> • Cash: \$3.75 / ride • 10-Ride Book: \$30 • Pass: \$99 / month
<p>ZONE 2 (26-40 miles)</p> <ul style="list-style-type: none"> • Cash: \$8.00 / ride • 10-Ride Book: \$64 • Pass: \$122 / month
<p>ZONE 3 (41-50 miles)</p> <ul style="list-style-type: none"> • Cash: \$9.00 / ride • 10-Ride Book: \$72 • Pass: \$174 / month

<p>ZONE 4 (51-65 miles)</p> <ul style="list-style-type: none"> • Cash: \$12.00 / ride • 10-Ride Book: \$96 • Pass: \$222 / month <p>Fort Collins ↔ Denver Greeley/Evans ↔ Denver Denver ↔ Colorado Springs</p>
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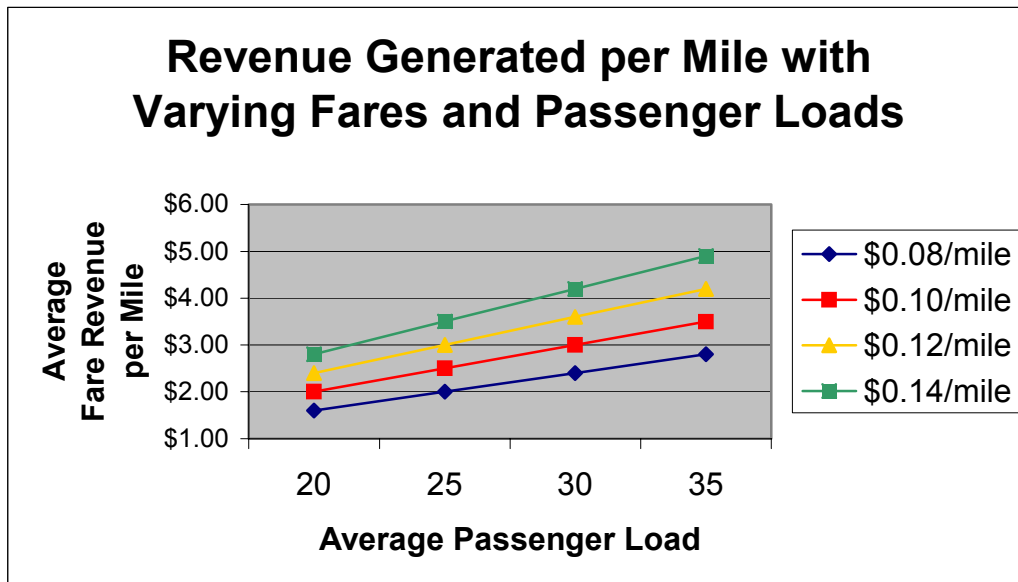


Figure 4



Figure 5 illustrates the average revenue that would be generated per mile with different levels of ridership and different average fares. For the service to operate without a subsidy, the fare revenues will need to cover the expenses on a per mile basis. If costs are close to \$3.00 per revenue mile, at an average fare of \$0.10 per revenue mile, the service would need to average 30 passengers per revenue mile to break even.

Figure 5. Revenue Generated per Mile



An important factor in establishing fares is the revenue sharing agreement with RTD. While this may not be a major issue until the southeast line opens in 2006, it is worth considering in setting initial fares as it is likely to have a major impact on the financial plan. Table 13 illustrates estimated revenues based on RTDs proposed 2004 fare structure. While most transfers will likely be for passengers traveling to downtown or other locations north of Hampden, with the commuter bus making only one major stop, many passengers going to the South I-25 business parks may also transfer for a short ride on light rail service.



Table 13. Net Monthly Pass Revenues for Passengers Transferring to Light Rail

	Commuter Bus Fare	Revenue paid to RTD	Net Revenue to Commuter Bus Service
CO Springs to Tech Center w/transfer to light rail	\$174	\$45	\$128
CO Springs to Downtown w/transfer to light rail	\$222	\$99	\$123
Castle Rock to Tech Center w/transfer to light rail	\$99	\$45	\$54
Castle Rock to Downtown w/transfer to light rail	\$122	\$99	\$23

Riders traveling from Colorado Springs to transfer to the light rail line would travel about 44 miles one-way, and the pass fare would equate to \$0.06–\$0.07 per mile under this proposal. While lower than might be desired, it may still be in the range that would enable the system to recover costs if passenger loads are high. Any additional increases in RTD fares would affect the net revenue to the commuter system and could impact the feasibility of the service.

The majority of the revenue from riders traveling from Castle Rock would go to RTD. The revenues would equate to only about \$0.03 per mile. At this level, each passenger trip would likely require a subsidy, even with full buses.

The long-term ability to cover costs will depend on the actual ridership, the destinations they travel to, and the number of riders who transfer to RTD services. Because of the impact of revenue sharing costs, the recommended initial fares are set at a fairly high level.



Three-Year Budgets

Three-year budgets have been prepared to provide a snapshot of how revenues and expenses might develop over time. While the numbers are only rough estimates, this budget provides an initial look at what it would take to establish service in each corridor and what may be necessary to maintain it over a period of time. These budgets are based on commuter services only; no mid-day, evening or special event service is included. Special event service could readily be added as long as the fees covered the cost of operating such service.

Budget estimates include fare revenue estimates, revenue sharing, expense estimates, park-and-ride facility costs, and marketing and administration costs. A description of how each of these factors was developed follows. Appendix C includes the three-year budgets in a detailed table format.

Fare revenues: The fare structure described in the previous section has been used to estimate revenues. Ridership is anticipated to begin at 50 percent of the demand levels and to grow in a straight-line over a two-year period until it meets 100 percent of the demand projections in year three. The market response to the fares will determine both initial ridership and total ridership as ridership levels out.

Revenue sharing: In order to provide a seamless service, riders would purchase a single ticket to ride the Front Range Commuter Bus and would be able to transfer to RTD service to downtown Denver. Revenue sharing is calculated as an express service fare for each rider that transfers to RTD. While not a large number initially, as only two vehicles travel to Mineral Station, this would become a significant factor in the Colorado Springs-Denver corridor once light rail opens. No revenue sharing has been calculated for the other corridors, as it is expected to be only a minor amount.

Expenses: While costs were estimated at \$1.60 per mile in the Phase 1 report, the private sector participants indicate that, based on final schedules, equipment requirements, and increases in fuel and insurance, the costs could be significantly higher than originally estimated. The consultant team calculated direct costs based on operating costs at Springs Transit and leasing of equipment at a cost of \$4,000 per month. These costs are close to \$3.00 per mile. As a result, a range of \$2.00 per mile to \$3.00 per mile has been presented for expenses. No increases have been included to account for inflation, so the costs are stable except when service levels change. Until the service is bid, the actual operating costs will not be known.

Purchase of vehicles may significantly reduce ongoing costs once the service has proved successful. Equipment costs average between 30 and 50 percent of total costs. If vehicles can be purchased with 80 percent Federal funds, ongoing expenses can be reduced significantly.

Additional expenses have been identified for marketing and contract administration. This amount will vary depending on whether or not more than one corridor is combined for the purposes of administration and marketing. Also, the structure of the administration could affect costs.



Park-and-Ride Facilities: The cost of additional park-and-ride capacity has been calculated at a cost of \$6,000 per space¹. The financial estimates below provide three methods of looking at the park-and-ride costs. The first method looks at the park-and-rides if they are not paid for by the bus service but instead paid for through a grant or as part of an interchange improvement project. In that case, there would be no cost to the service. The second method looks at the park-and-ride costs if they are paid for as a lump sum in the first year of operation. The third method looks at the park-and-ride costs if they are amortized over a 12-year period.

¹ Pikes Peak Regional Park and Ride Plan, David Evans Associates, March 2003.



Corridor Analyses

Pueblo to Colorado Springs Corridor

Figure 6 illustrates the revenues and expense estimates for the Pueblo to Colorado Springs Corridor for the first three years of operation. As shown, it would require a subsidy of between \$240,000 and \$550,000 over the first three years of operation not including any park-and-ride expenses.

Amortizing the cost of the park-and-ride over 12 years would add \$110,000 to the expenses in the first three years. If park-and-ride costs are paid for in the first year of operation the park-and-ride would add a cost of \$330,000 to the first three years of operation. Subsidy for the first three years of operation would increase to between \$340,000 and \$880,000 if the cost of building park-and-rides is included in the expenses.

Figure 6. Three-Year Budget Summary – Pueblo to Colorado Springs

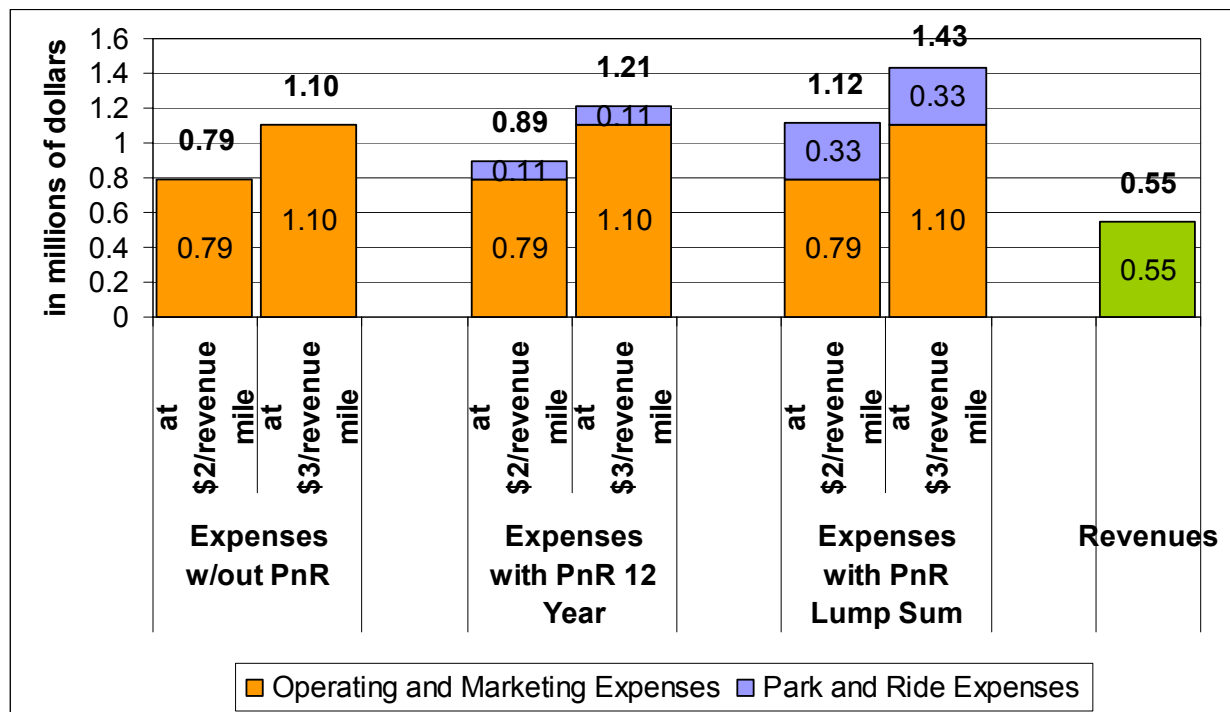
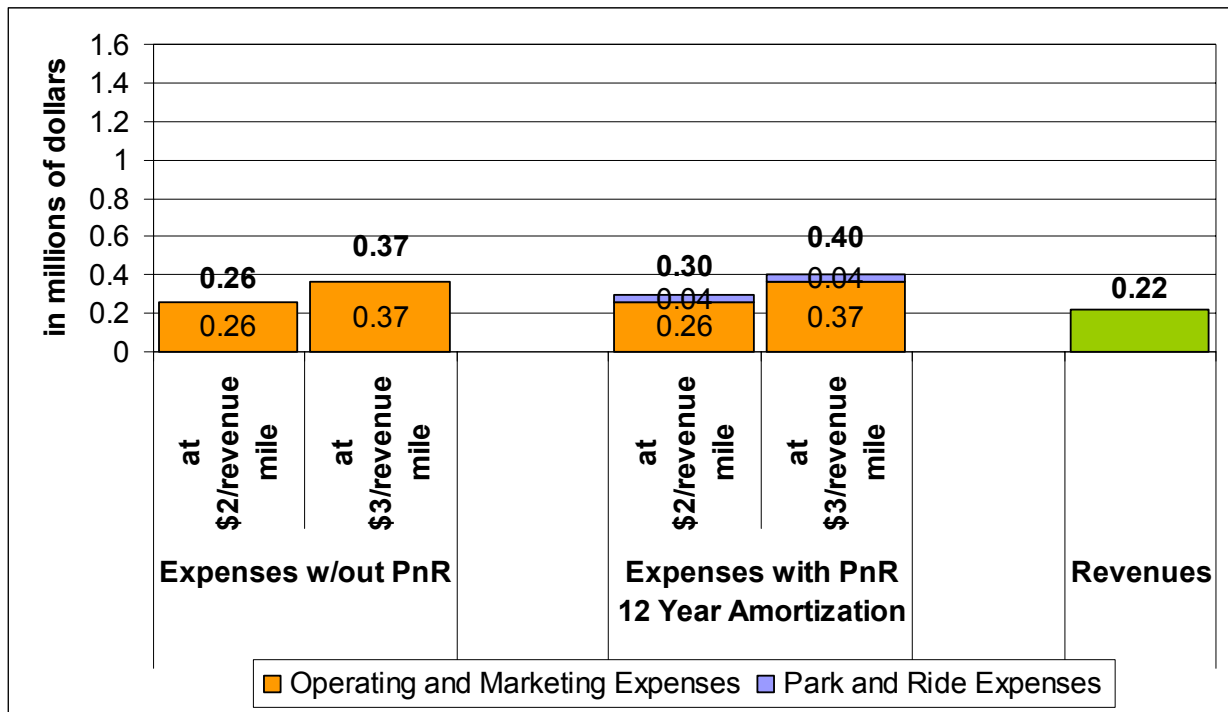




Figure 7 illustrates the estimated annual revenues and expenses after full ridership is achieved in year three. As shown, the route comes very close to paying for itself at a cost of \$2 per revenue mile with an operating loss of less than \$40,000 per year. However, at a cost of \$3.00 per revenue mile, the operating loss would be four times more with nearly a \$150,000 loss annually. Amortization of the park-and-ride costs would add approximately \$40,000 annually to the expenses for 12 years.

Figure 7. Pueblo to Colorado Springs Annual Revenues and Expenses Beyond Year Two





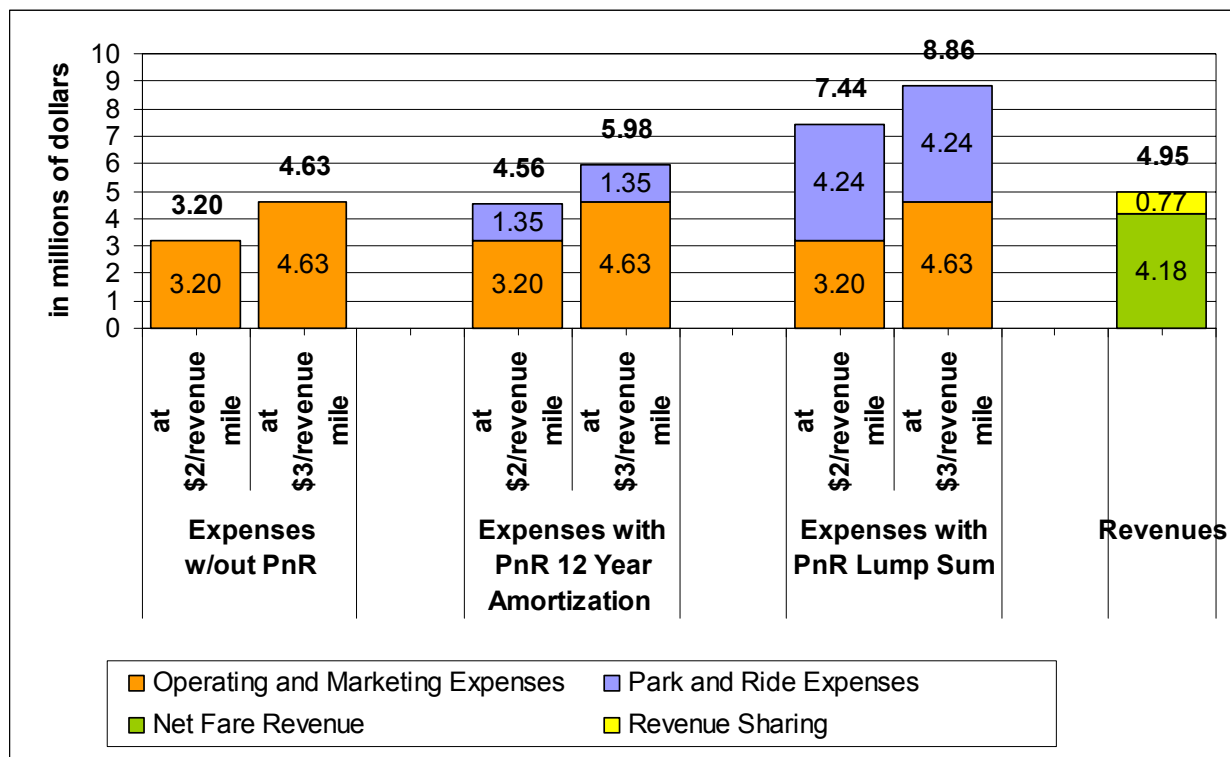
South I-25 Corridor

This corridor would start with bus service to the Tech Center and into downtown Denver, and in 2006 when light rail opens the service would terminate at the Arapahoe park-n-Ride in the Tech Center. As shown in Figure 8, the cost for implementing service in the South I-25 Corridor, without any provision for park-and-ride lots, is estimated at between \$3.2 and \$4.63 million for the three-year period. It is estimated that \$4.95 million in fare revenues would be collected with \$770,000 going to RTD for revenue sharing. Depending on the cost of service, this would result in a surplus of approximately \$900,000 or a deficit of \$500,000 to implement the first three years of service. This surplus/deficit will be more well-defined once the service is put out for bid and the cost per revenue mile has been identified.

Colorado Springs has secured a CMAQ grant and is proceeding to implement the service in this corridor. Castle Rock is applying for Section 5311 funding through CDOT to assist in funding of this route.

Expenses for park-and-ride lots in the South I-25 Corridor have been estimated using the same three methods described above. However, the Monument park-and-ride lot will be built in conjunction with the interchange improvements and is expected to be complete in the summer of 2004 and CMAQ funding has been identified for the I-25/Northgate lot. While there is a short-term need for park-and-ride spaces, utilizing the planned lots would result in low long-term park-and-ride costs.

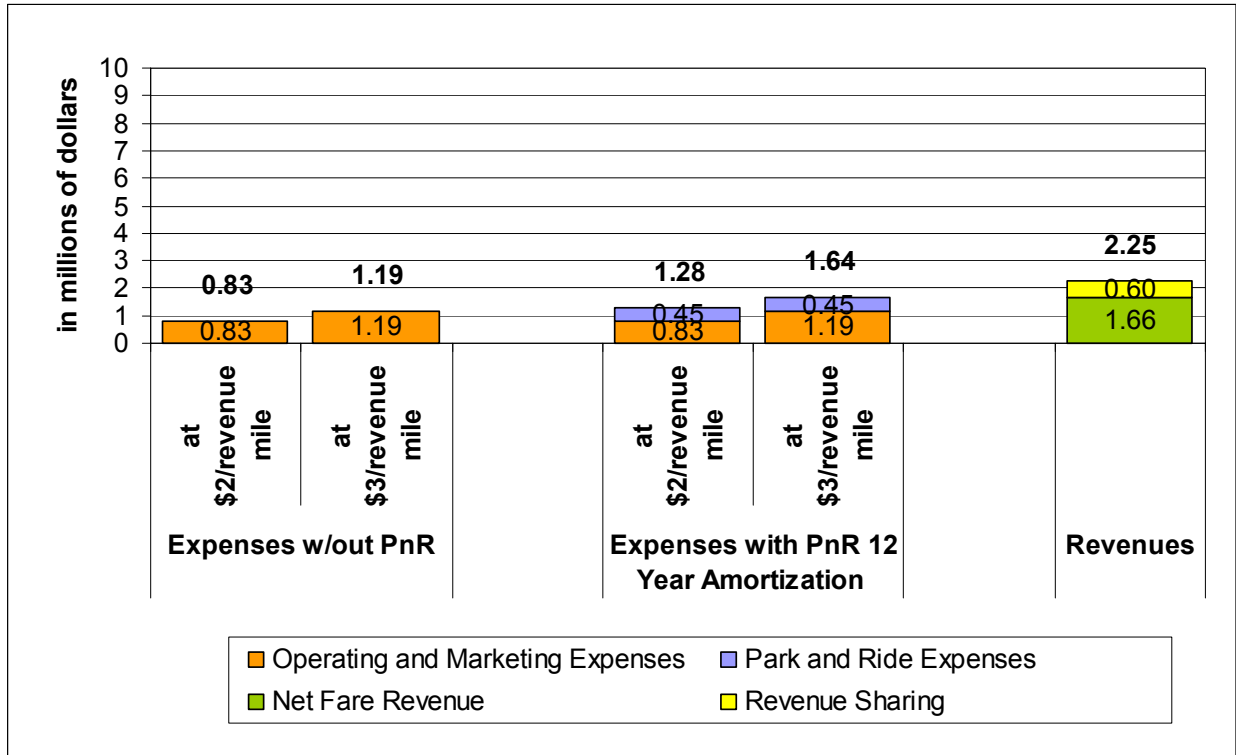
Figure 8. Three-Year Budget Summary – South I-25 Corridor





With the exception of park and ride costs, estimates show that annual revenues in this corridor would be adequate to cover expenses. As shown in Figure 9, it is anticipated that a surplus of between \$470,000 and \$830,000 would be generated annually after the second year of operation, once the light rail is in service.

Figure 9. South I-25 Corridor Annual Revenues and Expenses Beyond Year Two

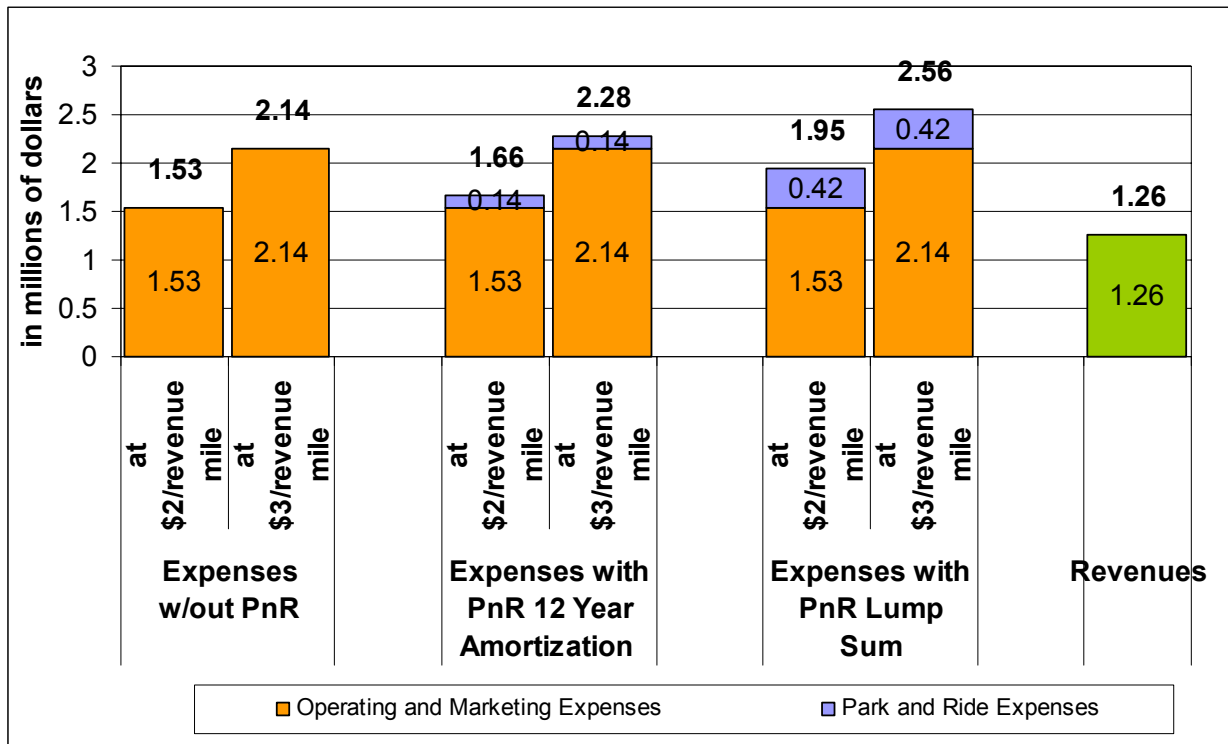




North I-25 Corridor

The North I-25 Corridor is estimated to require between \$1.53 million and \$2.14 million to implement for the first three years without the cost of constructing park-and ride spaces. With revenue estimates at \$1.26 million, the North I-25 Corridor would require a subsidy of \$270,000 to \$880,000 over the first three years. The construction of 70 park-and-ride spaces at the intersection of Highway 34 and I-25 in Loveland would add an additional \$140,000 if amortized over 12 years or \$420,000 if paid for in a single year.

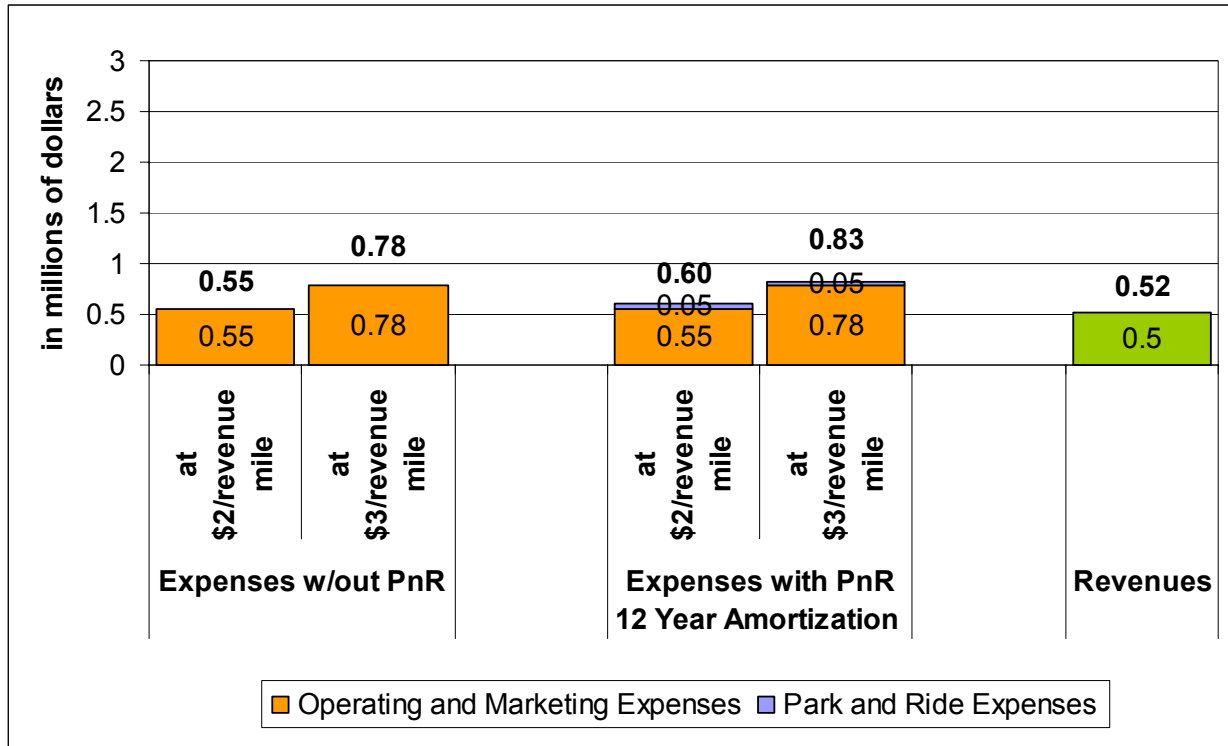
Figure 10. Three-Year Budget Summary – North I-25 Corridor





As shown in Figure 11, after full ridership has been achieved, there would be an ongoing subsidy required for this service, in the range of \$50,000 to \$280,000 annually. This is a subsidy of \$0.20 to \$2.80 per trip. This is a relatively low subsidy and would warrant careful examination as to how to keep costs low and the potential for increasing fare rates to cover the costs.

Figure 11. North I-25 Corridor Annual Revenues and Expenses Beyond Year Two





Highway 85 Corridor

The Highway 85 Corridor is one with high potential but relatively low ridership because the service would take longer than the same trip by automobile. There are no high occupancy vehicle lanes on Highway 85 to speed transit vehicles past the traffic congestion. Highway 85 also has numerous small towns and traffic signals that would slow the trip.

As shown in Figure 12, this service would have expenses between \$820,000 and \$1,160,000 over the first three-year period. Fare revenues would only generate approximately \$340,000 during this period. This means the service would require a subsidy of \$480,000 to \$820,000 in the first three-year period. In addition to the subsidy required to operate the service, the corridor would require a 40-space parking facility in Greeley or Evans.

Figure 12. Three-Year Budget Summary – Highway 85 Corridor

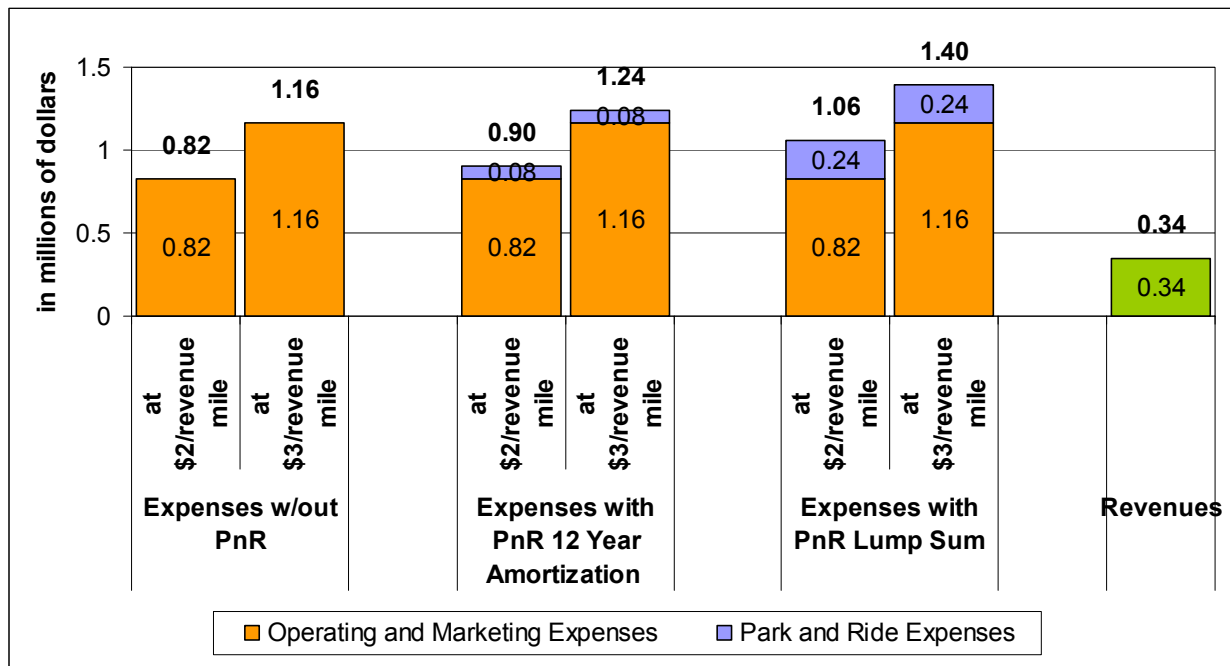
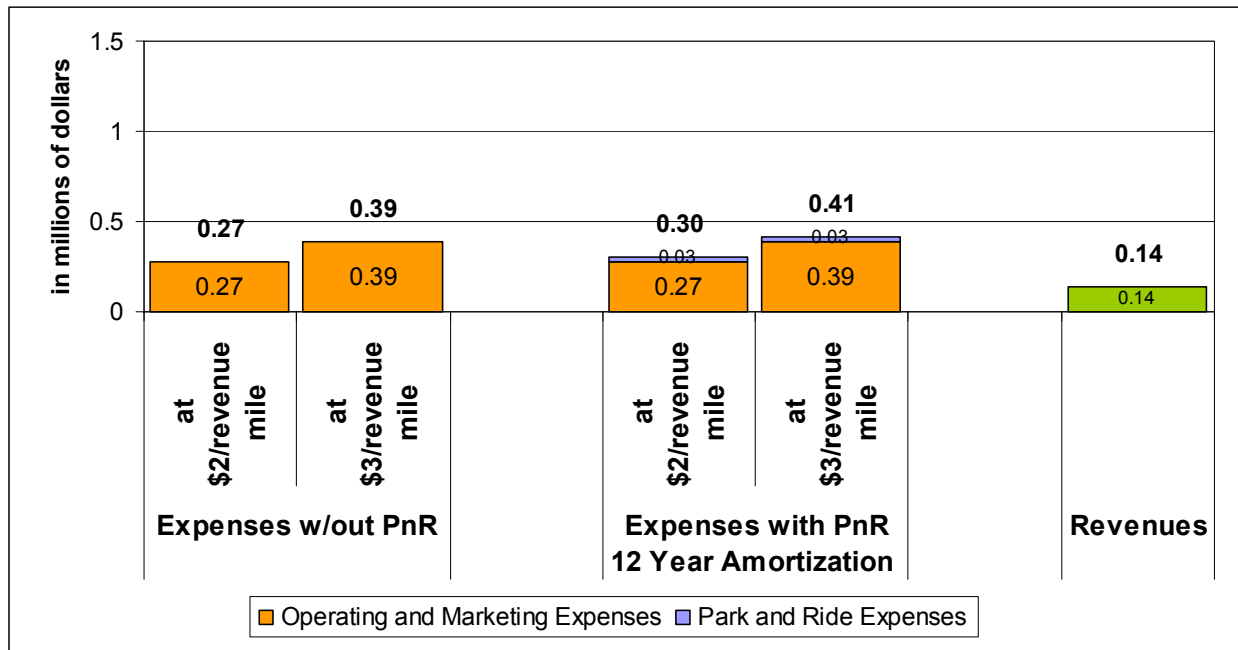




Figure 13 illustrates the annual revenues and expenses for operation of the Front Range Commuter Bus in this corridor. Like the North I-25 Corridor, the Highway 85 corridor would result in an ongoing subsidy of between about \$130,000 and \$250,000 annually.

Figure 13. Annual Revenues and Expenses – Highway 85 Corridor Beyond Year Two



This corridor needs some attention to possible ways to operate service in a cost-effective manner. A close look needs to be taken to see where in Weld County the commuters live and the best way to serve them. It is likely that service in this corridor would build slowly and require more management attention to establish so that it could be operated without a large subsidy. A first step would likely be to build a pool of commuters who use van pool service. Because of the high potential in this corridor, it could be an important segment in the regional service network.



Financial Findings

The three-year budgets provide a perspective on how the service may function over time. It appears that the Pueblo to Colorado Springs Corridor, the South I-25 Corridor and the North I-25 Corridor services would be close to breaking even for operating and vehicle costs. The capital investment required for park-and-ride construction is something that fares generally would not cover.

Expenses

Policies that would keep expenses to a minimum will be important. Pursuing opportunities to partner with the private sector may enable these services to be operated without an ongoing subsidy. Traditionally, when transit service is contracted to the private sector, the public sector retains all control, assumes all risk, and pays the total cost of service. One option to consider would be to put the service out to bid and see how the costs come in.

A second option would be to actively partner with the private sector and to look for ways to take advantage of the services and equipment that are already running in the corridors. This may result in some cost savings. Partnering with the private sector would likely result in some loss of control, but not necessarily lower service quality. It may be the key to initiating service. Ideally, in a shared risk, shared reward modal, the private sector would be compensated for marginal cost of operating the additional service, and profit on the venture would be very low unless ridership was strong. This would result in both public and private sectors having an incentive to build ridership, and in public sector costs being lower than in a traditional contract. It is recommended that options to partner with the private sector be pursued. Opportunities have been identified that could be pursued. These include:

- ◆ **South I-25 Corridor** - Two options to reduce the number of peak vehicles that are needed are:
 - TNM&O could partner to operate service that could be used by both commuters and intercity bus passengers.
 - Front Range Commuter services could be integrated with RTD services to provide “reverse commute” services to the south I-25 business parks in the two years before light rail is operated, resulting in better utilization of equipment and therefore lower equipment costs.
- ◆ **North I-25 and Greeley Corridors:**
 - TNM&O could partner to operate commuter service and restructure their intercity service between Denver, Loveland, Fort Collins, and Greeley. The improved service could result in increased ridership. The cost of restructuring might be off-set by revenues paid to operate the commuter trips. It is possible that the total number of vehicles required would be less than for each service operated separately.



- Shamrock Airport Express could restructure their airport service to integrate both operations. (Note that accessible vehicles would be required, so the existing vehicles may not be able to be used for commuter services.)

Revenues

It will be important to monitor and adjust service to actual ridership levels and to the market's response to the fare structure. The initiation of services in the South I-25 Corridor will provide the first testing of the ridership estimates and market response. The experience in this corridor can then be applied to the remaining corridors.

Operate Limited Service

It will be necessary to maintain strict controls on service levels and to adjust them to match the ridership levels. Most systems have ridership standards that indicate when additional trips will be added. The standards may need to be higher than in a system such as RTD to assure that the service will not be operating with much empty capacity. On the other hand, it would be inappropriate to carry standees on vehicles that travel at high speeds. The system will need to operate with the understanding that service is limited and, on some trips, passengers may be turned away and requested to wait for the next vehicle.

It is not recommended that midday service be operated until it is financially feasible.

Seek Initial and Ongoing Funding

A primary funding source for initiating service is Congestion Mitigation / Air Quality (CMAQ) funding, such as is being used in the South I-25 Corridor. This funding is ideal in that it can be used for up to three years to pay for the initial costs of implementing service in urbanized areas with over 200,000 people.

The North Front Range MPO has suggested using the additional dollars that might be received through the Federal Transit Administration Section 5307 formula funding¹ as a result of the extra miles operated by these vehicles. This could be a source of limited but ongoing funding for the service. Some rural communities that would be served by the commuter service may be eligible for Section 5311 funding, and again this could provide ongoing funding. Castle Rock is one such community—it is outside an urbanized area and is under 50,000 in population. Several such communities would be served on the Greeley/Highway 85 route and some on the Fort Collins/North I-25 route. The funds that would be justified and available through the Section 5311 program are not large as they would only cover the costs for those riders who are residents of non-urbanized communities. However, it could make the difference in being able to operate this service.

Seeking capital funding for vehicles is recommended. The Colorado Transit Coalition annual grant request for Federal Transit Administration Section 5309 discretionary funding could be considered. The local match must be available for this funding source.

¹ Allocated to urbanized areas over 50,000 in population.



Attention also needs to be given to funding of park-and-ride lots, as this is a major expense. Both state/federal highway funds and local dollars are typically used for park-and-ride lots. Funding of lots with state/federal funds requires that the projects be included in the priorities in the appropriate Regional Transportation Plan.

With careful attention to keeping costs under control and with active solicitation of funding, it is possible that services could be operated in each of the major corridors. These services would need to be considered at the local level for inclusion in regional transportation plans. They would then need to compete with other local or regional projects for available revenues and be included in or consistent with the Fiscally Constrained Regional Transportation Plans.

INSTITUTIONAL ARRANGEMENTS

Various institutional arrangements were reviewed to determine which would be most appropriate for a Front Range Commuter Bus service. These included Rural Transportation Authorities (RTA), overlay districts and inter-governmental agreements (IGA). Both the RTA and the overlay district could be used as a taxing mechanism to raise funds to operate the service. However, both of the study committees agreed that the service should be virtually self-supporting, indicating that the goal of the institutional arrangement chosen would not be to tax. An IGA would not provide a means of taxing but could be used to create an entity to operate the Front Range Commuter Bus service.

Figure 14 illustrates an institutional arrangement that could be used to operate and manage Front Range Commuter Bus service through an IGA. As shown, the arrangement consists of a commuter transit board and an advisory group that could be set up for each of the corridors.

The Commuter Transit Board would consist of agencies in the corridor contributing to the service financially and RTD. The Board would be responsible for reviewing and voting to adopt the corridor service plan and fare structure. They would also be responsible for pursuing funding and choosing an operator if the service were put out for bid. This Board would receive suggestions from the Advisory Group but would have the final deciding vote on all decisions made for their Front Range Commuter Bus service.

The Advisory Group would include cities and counties in the corridor, MPOs from all corridors, transit operators, and CDOT. The two study committees suggested that the Advisory Group cover a large geographic area and include members from all corridors. This would allow the different corridors to learn from each other and members could provide input on the implications to their corridor. The Advisory Group would provide recommendations on Front Range Commuter Bus matters to the Board.

The following section describes the items that would need to be addressed in the IGA developed to operate a Front Range Commuter Bus service.

EXAMPLE STRUCTURE

	Front Range Commuter Transit Board		Front Range Advisory Group			
	SOUTH	NORTH	SOUTH	NORTH		
Representatives	<ul style="list-style-type: none"> ● Colorado Springs ● Castle Rock ● PPACG ● DRCOG ● RTD ● PACOG* ● Pueblo* 	<ul style="list-style-type: none"> ● Loveland ● Fort Collins ● NFRMPO ● DRCOG ● RTD ● Greeley* 	<ul style="list-style-type: none"> ● Colorado Springs ● Castle Rock ● Monument ● Denver ● El Paso County ● Douglas County ● Pueblo ● RTD ● CDOT 	<ul style="list-style-type: none"> ● PACOG ● NFRMPO ● PPACG ● DRCOG ● CATCO ● Springs Transit ● Pueblo Transit 	<ul style="list-style-type: none"> ● RTD ● CDOT ● PACOG ● NFRMPO ● PPACG ● DRCOG ● Transfort ● The Bus ● COLT 	<ul style="list-style-type: none"> ● Loveland ● Fort Collins ● Rural Communities in the Corridor ● Denver ● Larimer County ● Weld County
	<p>*Would become members with service expansion to Pueblo and Greeley</p>					
Responsibilities	<ul style="list-style-type: none"> ● Service Plan <ul style="list-style-type: none"> - Routes - Schedules ● Fare Structure ● Funding ● Choice of Operator 			<ul style="list-style-type: none"> ● Coordination with Adjacent Services <ul style="list-style-type: none"> - Service Plans - Use of Equipment 		

Figure 14



IGA and Contract Issues

In establishing service, an inter-governmental agreement is recommended to establish the relationships between the entities. In addition, it is likely that service contracts will exist and define the specifics of the services that are purchased or provided in partnership with a private sector company. The following issues should be considered in establishing an inter-governmental agreement:

Members and Voting – The IGA will define who participates and votes on all matters. In general, the voting members should be those that are financially responsible for the service. Non-voting members may also be asked to participate to assist in coordination efforts. This may be done through a non-voting member on the Board or through the Advisory Committee. If an advisory committee is used, its membership and role should be clearly defined. Provisions should be made for expansion of the Board.

Finances – The Board will be responsible for establishing a budget, collecting revenues, making expenditures and monitoring expenditures. An annual budget will need to be agreed upon by the parties that are funding the service. In turn, the parties will need to secure approval for any operating funds that are required to carry out the activities under the IGA. If more revenues are received than expenditures, authority will be needed to expend the excess revenues or to return them to the parties in a proportional share. The following provisions should be considered:

- a. Public agencies can fund services for only one year at a time. A provision will be needed for annually setting a budget.
- b. A time schedule will need to be set that allows the parties to go to their individual boards or councils for authority to commit to the annual budget.
- c. A framework for deciding who is responsible for what costs and who is eligible for what revenues will need to be determined. This is commonly done on the basis of revenue miles or passenger boardings.
- d. Decisions will need to be made regarding assets - identify the entity that will own any assets including cash in the bank. As a demonstration service, the Board may not wish to own any assets. As the service is institutionalized, it may be desirable to own and manage assets. An example would be using federal funds to purchase vehicles so up to 80 percent of the cost is covered with federal dollars.
- e. Revenues will likely be collected at multiple points as passes will be sold at several locations. Issues that may need to be addressed in the IGAs area: how revenues are allocated to different entities or portions of service, cash control, revenue sharing with other entities, and how revenues will be counted against eligible operating expenses when services are grant-funded. If services are operated as part of a public/private partnership, the private firm may be responsible for fare sales.



- f. Grant funding will likely be an initial part of the service in each of the corridors. The IGA needs to include the provisions required to assure that all federal requirements are met and that expenditures, revenues and ridership are monitored.

Set and adjust service levels – Setting and adjusting service levels should be identified as a responsibility of the Board. These service levels will then be defined in any service contracts.

New service can be more volatile than well-established service. Initial decisions will need to be made on how much service to operate, and the Board will need the flexibility and authority to adjust it up or down in response to ridership or other factors.

Set and adjust fares – Setting and adjusting fares should be identified as a responsibility of the Board.

The fare structure will be integral to the success of this service. Initially it will need to be set; it may need to be adjusted up (to increase revenues) or down (to increase ridership). The Board will need to make decisions on discounts or promotions as well as establish any revenue sharing agreements or mechanisms to make the system “seamless” for the customer.

Contract for services – The IGA will define who contracts for services, how decisions are made on Requests for Proposals for service or other items, how they are evaluated, and how contracts are awarded. Procurement guidelines would be desirable.

The Board would likely contract for transit services—with a private sector entity or possibly a public sector entity. Transit service contracts are generally multi-year contracts with a clause for annual funding. Service contracts will need to comply with all applicable federal provisions. The Board may also need to contract for park-and-ride maintenance/security services or perhaps for ticketing services.

Equipment – Except as provided under finances, equipment issues are expected to be primarily handled in the service agreements. Equipment may be provided by the contractor, by a member agency, or may be leased.



APPENDIX A DETAILED INFORMATION ON DEMAND ESTIMATION

Demand estimates for Phase I of the project used the detailed tabulations from the 1990 Census Transportation Planning Package. Because the census information was ten years old, the number of trips was generally increased by 35 percent to reflect the increase in vehicle miles traveled throughout the Denver metropolitan area over the decade. An exception to this was the trips from Castle Rock to the Denver metropolitan area; these trips were increased by 160 percent to reflect the population growth in Castle Rock.

The following sections present the methodology used to update those estimates for the Phase II planning effort.

A. 2000 Census Transportation Planning Package Data Releases

Two products have been released from the 2000 Census Transportation Planning Package (CTPP) that are helpful in updating the demand projections. These are the County Profiles and County Trip Flows. These data have been reviewed as part of updating the demand for travel on the proposed Front Range Commuter Bus service. The detailed community travel patterns that enable one to target the trips to the major employment centers are not yet available, but the county flow data and the increases in long-distance trips can assist in identifying the growth projections that are appropriate for each community.

The county profiles illustrate a variety of demographic and travel characteristics. Table A-1 illustrates those characteristics that are most important for estimating changes in travel patterns.

Table A-1. Comparison of County Characteristics – 1990 to 2000

		Pueblo	El Paso	Douglas	Larimer	Weld
Population	1990	123,051	397,014	60,391	186,136	131,821
	2000	141,472	516,929	175,766	251,494	180,936
Percent Change, 1990–2000		15%	30%	191%	35%	37%
Workers 16+	1990	46,573	197,436	32,415	92,809	61,935
	2000	58,749	263,805	96,165	134,615	86,210
Percent Change, 1990–2000		26%	34%	197%	45%	39%
Travel Time: percent increase in trips taking						
30–44 minutes		84%	82%	169%	73%	73%
45 or more minutes		79%	94%	236%	81%	92%

The estimate of 35 percent growth used in the Phase I report matched the population growth in El Paso, Larimer, and Weld counties. Pueblo County was below this at 15 percent, and Douglas County was far above this at 191 percent growth in population.

The workers aged 16+ increased more rapidly than the population. The difference stands out in Pueblo County and Larimer County. The remaining three counties had workers increasing just slightly more than their populations.



Most of the trips served by the proposed commuter buses would be those that take 45 minutes or more. The two categories “30 to 44 minutes” and “45 or more minutes” are illustrated. In every case the growth in people commuting 45 minutes or more exceeded the growth in the workforce and population. In Pueblo and El Paso counties the percent of people with the longest commutes was three times higher than the increase in the workforce. In Larimer and Weld counties it was close to two times higher.¹ This suggests that more people are commuting longer distances to work.

The county-to-county trip flows provide some information on where these trips are occurring. Remember that they are total trips for the counties. There is no indication as to which residences would be close to the commuter bus stops and which work locations would be served by the commuter bus. At the same time, this information reinforces the development patterns that have been observed.

A detailed trip table, Table A-2, identifies the number of work trips taken in 1990 and 2000 between counties, along with the percent increase in trips. It includes counties that are outside the main study area because this perspective is helpful in understanding the travel patterns as a whole. In this section only those flows into counties the commuter bus is proposed to serve are discussed in detail.

There are three counties that can be served by the commuter bus and that attract employment trips: Denver, Arapahoe, and El Paso. The Arapahoe County employment trips that can be served are in Greenwood Village and to a lesser extent, the business parks between Arapahoe Road and County Line Road. These southern work sites will not have adequate local circulation services until the light rail line is in place. El Paso County primarily attracts trips from Monument, Fountain and Pueblo.

Trips from Larimer County into Denver County increased 44 percent, matching the growth in workforce. Trips from Weld County into Denver County increased 63 percent, with a 40 percent increase in workforce. Both counties had larger percentage increases in trips to Arapahoe County (Larimer = 108 percent increase, 787 trips to Arapahoe County; Weld = 73 percent increase, 991 trips to Arapahoe County).

The regional trip flows stand out in 2000 even stronger than they did in 1990. While Larimer County has 2,021 workers commuting to Denver and Weld County has 3,702 workers commuting to Denver, there are higher volumes shown in trip flows between Weld, Larimer and Boulder Counties.

¹

The documentation released with the 2000 CTPP data noted that there is a difference between how the 45 or more minute commutes were measured in 1990 and 2000 that, on a nationwide basis, accounts for a 9% increase in the number of commute trips falling into this category. The balance would reflect changes in commuting patterns.



**Table A-2 Residence County to Workplace County Flows for Colorado
Sorted by Workplace State and County**

Residence State-County Name	Workplace State-County Name	2000 Count	1990 Count	Change
To Arapahoe County				
Adams Co. CO	Arapahoe Co. CO	13,884	10,391	34%
Arapahoe Co. CO	Arapahoe Co. CO	130,435	104,230	25%
Boulder Co. CO	Arapahoe Co. CO	2,496	2,238	12%
Denver Co. CO	Arapahoe Co. CO	47,190	37,085	27%
Douglas Co. CO	Arapahoe Co. CO	32,217	11,516	180%
El Paso Co. CO	Arapahoe Co. CO	1,851	820	126%
Larimer Co. CO	Arapahoe Co. CO	787	379	108%
Pueblo Co. CO	Arapahoe Co. CO	22	n/a	n/a
Weld Co. CO	Arapahoe Co. CO	991	573	73%
To Boulder County				
Adams Co. CO	Boulder Co. CO	17,009	7,898	115%
Arapahoe Co. CO	Boulder Co. CO	2,333	1,712	36%
Boulder Co. CO	Boulder Co. CO	127,692	93,181	37%
Denver Co. CO	Boulder Co. CO	5,395	3,155	71%
Douglas Co. CO	Boulder Co. CO	711	93	665%
El Paso Co. CO	Boulder Co. CO	184	141	30%
Larimer Co. CO	Boulder Co. CO	7,855	3,981	97%
Pueblo Co. CO	Boulder Co. CO	14	25	-44%
Weld Co. CO	Boulder Co. CO	7,771	3,432	126%
To Denver County				
Adams Co. CO	Denver Co. CO	49,339	43,262	14%
Arapahoe Co. CO	Denver Co. CO	84,795	75,551	12%
Boulder Co. CO	Denver Co. CO	10,783	10,902	-1%
Denver Co. CO	Denver Co. CO	176,750	156,628	13%
Douglas Co. CO	Denver Co. CO	20,901	7,838	167%
El Paso Co. CO	Denver Co. CO	2,149	1,361	58%
Larimer Co. CO	Denver Co. CO	2,021	1,402	44%
Pueblo Co. CO	Denver Co. CO	250	69	262%
Weld Co. CO	Denver Co. CO	3,702	2,269	63%
To Douglas County				
Arapahoe Co. CO	Douglas Co. CO	12,281	2,694	356%
Boulder Co. CO	Douglas Co. CO	277	38	629%
Denver Co. CO	Douglas Co. CO	6,107	1,020	499%
Douglas Co. CO	Douglas Co. CO	30,157	8,507	254%
El Paso Co. CO	Douglas Co. CO	1,155	268	331%
Larimer Co. CO	Douglas Co. CO	132	25	428%
Pueblo Co. CO	Douglas Co. CO	24	n/a	n/a
Weld Co. CO	Douglas Co. CO	209	71	194%



Residence State-County Name	Workplace State-County Name	2000 Count	1990 Count	Change
To El Paso County				
Adams Co. CO	El Paso Co. CO	198	110	80%
Arapahoe Co. CO	El Paso Co. CO	586	335	75%
Boulder Co. CO	El Paso Co. CO	124	74	68%
Denver Co. CO	El Paso Co. CO	553	297	86%
Douglas Co. CO	El Paso Co. CO	1,377	507	172%
El Paso Co. CO	El Paso Co. CO	251,105	189,442	33%
Larimer Co. CO	El Paso Co. CO	105	23	357%
Pueblo Co. CO	El Paso Co. CO	3,137	1,524	106%
Weld Co. CO	El Paso Co. CO	41	24	71%
To Larimer County				
Adams Co. CO	Larimer Co. CO	688	318	116%
Arapahoe Co. CO	Larimer Co. CO	276	276	0%
Boulder Co. CO	Larimer Co. CO	1,465	1,096	34%
Denver Co. CO	Larimer Co. CO	207	230	-10%
Douglas Co. CO	Larimer Co. CO	98	18	444%
El Paso Co. CO	Larimer Co. CO	114	82	39%
Larimer Co. CO	Larimer Co. CO	113,409	80,195	41%
Pueblo Co. CO	Larimer Co. CO	7	14	-50%
Weld Co. CO	Larimer Co. CO	8,475	2,996	183%
Laramie Co. WY	Larimer Co. CO	527	n/a	n/a
To Pueblo County				
Adams Co. CO	Pueblo Co. CO	42	12	250%
Arapahoe Co. CO	Pueblo Co. CO	110	166	-34%
Boulder Co. CO	Pueblo Co. CO	3	15	-80%
Denver Co. CO	Pueblo Co. CO	135	54	150%
Douglas Co. CO	Pueblo Co. CO	47	22	114%
El Paso Co. CO	Pueblo Co. CO	1,249	881	42%
Larimer Co. CO	Pueblo Co. CO	40	28	43%
Pueblo Co. CO	Pueblo Co. CO	52,721	43,505	21%
To Weld County				
Arapahoe Co. CO	Weld Co. CO	369	208	77%
Boulder Co. CO	Weld Co. CO	2,419	1,149	111%
Denver Co. CO	Weld Co. CO	799	327	144%
Douglas Co. CO	Weld Co. CO	84	15	460%
El Paso Co. CO	Weld Co. CO	59	49	20%
Larimer Co. CO	Weld Co. CO	6,290	4,215	49%
Pueblo Co. CO	Weld Co. CO	17	n/a	n/a
Weld Co. CO	Weld Co. CO	57,777	47,671	21%
Laramie Co. WY	Weld Co. CO	240	n/a	n/a



Trips from Weld County to Larimer County have increased 183 percent to 8,475 daily trips. Trips from Larimer County to Weld County have increased 49 percent to 6,290 daily trips. The distance between Larimer and Weld counties is moderate and employment sites somewhat dispersed and, therefore, more difficult to serve. However, the total daily flow of nearly 15,000 trips in both directions is about the same as the flow between Denver and Boulder counties—in 2000 there were 16,000 commute trips between Denver and Boulder.

The other regional travel flows of interest are between Larimer, Weld, and Boulder Counties. Trips from Larimer County to Boulder County have increased 97 percent, and trips from Weld County to Boulder County have increased 126 percent. There are nearly 8,000 daily trips each to Boulder County from Larimer and Weld Counties. These trip flows show that a network of regional service may be an important goal and considered in planning the commuter schedules, stops, and park-and-ride capacity.

Table A-3. County Trip Flows in North Front Range

From:	To:		
	Larimer	Weld	Boulder
Larimer	—	6,290	7,855
Weld	8,475	—	7,771
Boulder	1,465	2,419	—

In the southern corridor, trips from El Paso County to Arapahoe County increased more than trips to Denver County and significantly more than the 34 percent growth in workforce. The increases from Douglas County were somewhat less than the 197 percent workforce growth in the County.

From these figures and others in the 2000 CTPP County Flow Data, one can see the effect the development of the business parks in Arapahoe and Douglas Counties is having. The employment base in Arapahoe and Douglas Counties is strengthening, while the Denver base is remaining fairly stable or showing only slight growth overall.

Table A-4. Increase in Work Trips in South Front Range

From:	To:	
	Arapahoe	Denver
El Paso	126%	58%
Douglas	180%	167%

At the southern end of the corridor, trips from Pueblo to El Paso County increased 106 percent, while workers commuting to Pueblo from El Paso County increased 42 percent.



B. Mode Share Information

Mode shares used in the Front Range Commuter Bus study were based on the comparison of ridership on RTD routes in 1990 with the 1990 Census Transportation Planning Package data. These data no longer reflect the magnitude of trips made from the selected communities because of population growth and changes in travel patterns. However, it is believed that the proportion of people who will choose to take transit continues to be a reasonable reflection of demand. As data become available from the 2000 Census, this can be updated.

Selected corridors were evaluated. Corridors that were selected each had data available for a narrowly described area. The transit mode shares averaged 9.9 percent for peak hour work trips and ranged from 1.7 percent to 19 percent. The transit mode shares averaged 5.7 percent for total work trips, and ranged from 1.0 percent to 10.9 percent. The numbers in the Front Range Commuter Bus study are based on total work trips in the corridors.

Many of the commuter routes are longer than RTD regional routes so the mode shares are likely to be at the high end, especially when a travel time savings would be available. At the same time, for those corridors in which the service levels are low, the mode share would be expected to be lower due to lack of departure and arrival time options. In general, a 10 percent mode share was used for long distance trips into downtown where there would be a travel time savings and a savings in parking. A 5 percent mode share was used for shorter trips (i.e., Castle Rock to Denver). A 3 percent mode share was used on routes with no travel time savings or serving areas with dispersed employment sites.

The same data were used to compare total ridership on the routes with the CTPP employment trips to determine how much ridership was for other purposes. Census work trips averaged 55.8 percent of the daily riders on RTD regional routes. The numbers ranged from 31.4 percent to 61 percent. A figure of 25 percent “other” trips was used—likely conservative based on RTD experience in other areas.

The data are presented in the table on the following page.



Mode Split of Peak Hour Work Trips in Corridors with Transit Service
Revised

Residence	Work Site	Total Work Trips	AM Peak Work Trips (6:30 a.m. to 8:30 a.m.)					RTD Avg. Weekday 1-way Trips	Work Trips as a % of 2-way Trips
			Total	Drove Alone	2 person Carpool	3+ person Carpool	Transit		
Boulder	Denver	4,572	2,611	1,635	203	49	597	2,769	61.0%
Denver	Boulder	2,206	1,220	806	107	61	161		
Louisville	Denver	798	520	338	88	0	86		
Denver	Louisville	140	82	71	3	8	0		
Corridor Total		7,716	4,433	2,850	401	118	844		
% Mode Split-Peak Hour				64.3%	9.0%	2.7%	19.0%		
%Mode Split - Total Work Trips							10.9%		
Longmont	Denver	1,423	706	488	109	11	62	395	31.4%
% Mode Split-Peak Hour				69.1%	15.4%	1.6%	8.8%		
%Mode Split - Total Work Trips							4.4%		
Longmont	Boulder	6,573	3,880	3,087	638	64	65	373	39.7%
Boulder	Longmont	721	509	456	40	0	9		
Corridor Total		7,294	4,389	3,543	678	64	74		
% Mode Split-Peak Hour				63.0%	9.3%	1.6%	1.7%		
%Mode Split - Total Work Trips							1.0%		
Parker	Denver	868	557	424	77	10	43	271	67.2%
Pinery	Denver	658	410	331	31	0	48		
Corridor Total		1,526	967	755	108	10	91		
% Mode Split-Peak Hour				78.1%	11.2%	1.0%	9.4%		
%Mode Split - Total Work Trips							6.0%		
Brighton	Denver	1,095	514	378	76	40	18	94	38.3%
% Mode Split-Peak Hour				73.5%	15.2%	7.8%	3.5%		
%Mode Split - Total Work Trips							1.6%		
Regional Total		19,054	11,009	8,014	1,372	243	1,089	3,902	55.8%
Regional % Mode Split - Peak Hour				72.8%	12.5%	2.2%	9.9%		
Regional % Mode Split - Total Work Trips							5.7%		

Sources: 1990 Census Transportation Planning Package and RTD 1990 Ridership Figures

Prepared by TransitPlus, Inc.



Front Range
Commuter Bus Study

APPENDIX B EXISTING PARK-AND-RIDES



LEGEND

- C = Concrete ● = Provided
- A = Asphalt ○ = Not Provided
- #H = # of Handicap Spaces

LOCATION on I-25, Denver - Pueblo	Quadrant	Spaces	Cars	Ownership	Lights	Shelter	Landscape, Trash Cans	Turn-Around	Signal to Exit	Bike Racks	Lockers	Transportation Uses	Base
Name : Alameda Station Cross Street : Alameda/Broadway	SW	689 8H	611	RTD/ Broadway Market Place	●	●	●	●	●	●	●	RTD BUS & LR	C & A
Name : Broadway Cross Street : Broadway	SW	1003	786	RTD/ Gates	●	●	●	●	●	●	●	RTD BUS & LR	C & A
Name : Southmoor Cross Street : Monaco/Hampden	SW	496	70	RTD	●	●	●	●	○	●	●	RTD	A
Name : Arapahoe Cross Street : Caley/Yosemite	SW	358	174	CDOT/ RTD	●	●	●	●	●	●	●	RTD The Link	A
Name : Happy Canyon Cross Street : Happy Canyon	NW	≈ 10	< 5	CDOT	○	○	○	○	○	○	○	Carpool	Dirt
Name : Monument Cross Street : Exit 160	NW	61 including 15 2hr.	42	CDOT	○	●	●	●	○	○	○	Springs Transit	A
Name : Woodman Road Cross Street : Woodman Road	SW	≈ 96	31	CDOT	On Adjacent Street	●	●	●	○	○	○	Springs Transit	A
Name : Fountain Cross Street : Royalty Place	NE	176 6H	Not Yet Open	CDOT	●	○	●	●	○	○	○	_____	A
Name : Pueblo Cross Street : Eagle Ridge	NE	50 Temporary	_____	_____								Pueblo Transit	Gravel

LEGEND

- C = Concrete ● = Provided
- A = Asphalt ○ = Not Provided
- #H = # of Handicap Spaces



LOCATION on I-25,
North of Denver

	Quadrant	Spaces	Cars	Ownership	Lights	Shelter	Landscape, Trash Cans	Turn-Around	Signal to Exit	Bike Racks	Lockers	Transportation Uses	Base
Name : Thornton Cross Street : 88th Ave.	SE & SW	552 10H	524	CDOT RTD Lease	●	●	●	●	○	●	●	RTD: 120X, 122X,120R, 80,92	C - West A - East
Name : Wagon Rd. Cross Street : 120th Ave.	SW	1540 30H	1375	CDOT RTD Lease	●	●	●	●	●	●	●	RTD: 128, 8, 7, 120X, 122X	C
Name : SH 7 Cross Street : SH 7	SE	≈ 30	16	CDOT	○	○	○	○	○	○	○	Carpool	Dirt
Name : Hwy 52 Cross Street : Hwy 52	NW	94 3H	26	CDOT	●	○	○	w/ Minor Modifi cations	○	○	○	Carpool	A
Name : Hwy 119 Cross Street : Hwy 119	SE	102 5H	27	CDOT	●	○	○	●	○	○	○	Carpool	A
Name : Hwy 66 Cross Street : Hwy 66	SW	52 2H	18	CDOT	●	○	○	○	○	○	○	Carpool	A
Name : Hwy 56 Cross Street : Hwy 56	SE	46 2H	13	CDOT	●	○	○	○	○	○	○	Carpool	A
Name : Hwy 60 Cross Street : Hwy 60	SE	32 2H	26	CDOT	On I-25 Off Ramp	○	○	○	○	○	○	Carpool	A
Name : Hwy 402 Cross Street : Hwy 402	SW	70 2H	48	CDOT	●	○	○	○	○	○	○	Carpool	A
Name : Hwy 34 Cross Street : Hwy 34	NW	116 2H	105	CDOT	●	○	○	○	○	○	○	Carpool	A
Name : Hwy 392 Cross Street : Hwy 392	SW	36 1H	36	CDOT	●	○	○	○	○	○	○	Carpool	A
Name : Harmony Transfer Center Cross Street : Harmony Rd.	NW	257 12H	90	Fort Collins	●	●	●	●	●	●	●	Carpool & Bus	A



APPENDIX C DETAILED BUDGET TABLES

Table C-1. Three-Year Budget – Pueblo–Colorado Springs Corridor

	Year 1	Year 2	Year 3	Three-Year Total
Annual Revenue Miles	106,080	106,080	106,080	318,240
Annual Expenses				
Operating Expenses at \$2.00/mile	\$212,200	\$212,200	\$212,200	\$636,600
Operating Expenses at \$3.00/mile	\$318,200	\$318,200	\$318,200	\$954,600
Marketing and Administration	\$50,000	\$50,000	\$50,000	\$150,000
Total Annual Expenses at \$2	\$262,200	\$262,200	\$262,200	\$786,600
Total Annual Expenses at \$3	\$368,200	\$368,200	\$368,200	\$1,104,600
Park-and-ride – Lump Sum	\$330,000			\$330,000
Park-and-ride – 12 years amortization	\$35,200	\$35,200	\$35,200	\$105,600
Annual Revenues				
Gross Fare Revenues	\$133,000	\$189,000	\$224,000	\$546,000
Revenue Sharing	\$0	\$0	\$0	\$0
Net Fare Revenues	\$133,000	\$189,000	\$224,000	\$546,000
Surplus/Deficit at \$2/mile no pnr	-\$129,200	-\$73,200	-\$38,200	-\$240,600
Surplus/Deficit at \$3/mile no pnr	-\$235,200	-\$179,200	-\$144,200	-\$558,600
Surplus/Deficit at \$2/mile yr 1 pnr	-\$459,200	-\$73,200	-\$38,200	-\$570,600
Surplus/Deficit at \$3/mile yr 1 pnr	-\$565,200	-\$179,200	-\$144,200	-\$888,600
Surplus/Deficit at \$2/mile 12-yr pnr	-\$164,400	-\$108,400	-\$73,400	-\$346,200
Surplus/Deficit at \$3/mile 12-yr pnr	-\$270,400	-\$214,400	-\$179,400	-\$664,200

No pnr = No park-and-ride costs included

Yr 1 pnr = All park-and-ride costs paid in the first year of operation

12-yr pnr = Park-and-ride costs amortized over a 12-year period



Table C-2 Three-Year Budget – South I-25 Corridor

	Pre Light Rail Transit		Post LRT	Three-Year
	Year 1	Year 2	Year 3	Total
Annual Revenue Miles	531,420	531,420	363,100	1,425,940
Annual Expenses				
Operating at \$2.00/mile	\$1,063,000	\$1,063,000	\$726,000	\$2,852,000
Operating at \$3.00/mile	\$1,594,000	\$1,594,000	\$1,089,000	\$4,277,000
Marketing and Administration	\$150,000	\$100,000	\$100,000	\$350,000
Total Annual Expenses at \$2	\$1,213,000	\$1,163,000	\$826,000	\$3,202,000
Total Annual Expense at \$3	\$1,744,000	\$1,694,000	\$1,189,000	\$4,627,000
Park and Rides Expenses				
Park-and-ride – Lump Sum	\$4,235,000			\$4,235,000
Park-and-ride – 12 years amortization	\$452,000	\$452,000	\$452,000	1,355,000
Annual Revenues				
Gross Fare Revenues	\$1,113,000	\$1,582,000	\$2,254,910	\$4,949,910
Revenue Sharing	\$71,000	\$100,000	\$596,000	\$767,000
Net Fare Revenues	\$1,042,000	\$1,482,000	\$1,658,910	\$4,182,910
Surplus/Deficit at \$2/mile no pnr	-\$171,000	\$319,000	\$832,910	\$980,910
Surplus/Deficit at \$3/mile no pnr	-\$702,000	-\$212,000	\$469,910	-\$444,090
Surplus/Deficit at \$2/mile yr 1 pnr	-\$4,406,400	\$319,000	\$832,910	-\$3,254,490
Surplus/Deficit at \$3/mile yr 1 pnr	-\$4,937,400	-\$212,000	\$469,910	-\$4,679,490
Surplus/Deficit at \$2/mile 12-yr pnr	-\$622,500	-\$132,500	\$381,410	-\$373,590
Surplus/Deficit at \$3/mile 12-yr pnr	-\$1,153,500	-\$663,500	\$18,410	-\$1,798,590

No pnr = No park-and-ride costs included

Yr 1 pnr = All park-and-ride costs paid in the first year of operation

12-yr pnr = Park-and-ride costs amortized over a 12-year period



Table C-3. Three-Year Budget – North I-25 Corridor

	Year 1	Year 2	Year 3	Three-Year Total
Annual Revenue Miles	160,140	226,950	226,950	614,040
Annual Expenses				
Operating Expenses at \$2.00/mile	\$320,300	\$453,900	\$453,900	\$1,228,100
Operating Expenses at \$3.00/mile	\$480,400	\$680,900	\$680,900	\$1,842,200
Marketing and Administration	\$100,000	\$100,000	\$100,000	\$300,000
Total Annual Expense at \$2	\$420,300	\$553,900	\$553,900	\$1,528,100
Total Annual Expense at \$3	\$580,400	\$780,900	\$780,900	\$2,142,200
Park-and-ride – Lump Sum	\$422,400			\$422,400
Park-and-ride – 12 years amortization	\$45,000	\$45,000	\$45,000	\$135,000
Annual Revenues				
Gross Fare Revenues	\$307,000	\$436,000	\$517,000	\$1,260,000
Revenue Sharing	\$0	\$0	\$0	\$0
Net Fare Revenues	\$307,000	\$436,000	\$517,000	\$1,260,000
Surplus/Deficit at \$2/mile no pnr	-\$113,300	-\$117,900	-\$36,900	-\$268,100
Surplus/Deficit at \$3/mile no pnr	-\$273,400	-\$344,900	-\$263,900	-\$882,200
Surplus/Deficit at \$2/mile yr 1 pnr	-\$535,700	-\$117,900	-\$36,900	-\$690,500
Surplus/Deficit at \$3/mile yr 1 pnr	-\$695,800	-\$344,900	-\$263,900	-\$1,304,600
Surplus/Deficit at \$2/mile 12-yr pnr	-\$158,300	-\$162,900	-\$81,900	-\$403,100
Surplus/Deficit at \$3/mile 12-yr pnr	-\$318,400	-\$389,900	-\$308,900	-\$1,017,200

No pnr = No park-and-ride costs included

Yr 1 pnr = All park-and-ride costs paid in the first year of operation

12-yr pnr = Park-and-ride costs amortized over a 12-year period



Table C-4. Three-Year Budget – Highway 85 Corridor

	Year 1	Year 2	Year 3	Three-Year Total
Annual Revenue Miles	112,200	112,200	112,200	336,600
Annual Expenses				
Operating Expenses at \$2.00/mile	\$224,400	\$224,400	\$224,400	\$673,200
Operating Expenses at \$3.00/mile	\$336,600	\$336,600	\$336,600	\$1,009,800
Marketing and Administration	\$50,000	\$50,000	\$50,000	\$150,000
Total Annual Expense at \$2	\$274,400	\$274,400	\$274,400	\$823,200
Total Annual Expense at \$3	\$386,600	\$386,600	\$386,600	\$1,159,800
Park-and-ride – Lump Sum	\$237,600			\$237,600
Park-and-ride – 12 years amortization	\$25,300	\$25,300	\$25,300	\$75,900
Annual Revenues				
Gross Fare Revenues	\$84,000	\$119,000	\$141,000	\$344,000
Revenue Sharing	\$0	\$0	\$0	\$0
Net Fare Revenues	\$84,000	\$119,000	\$141,000	\$344,000
Surplus/Deficit at \$2/mile no pnr	-\$190,400	-\$155,400	-\$133,400	-\$479,200
Surplus/Deficit at \$3/mile no pnr	-\$302,600	-\$267,600	-\$245,600	-\$815,800
Surplus/Deficit at \$2/mile yr 1 pnr	-\$428,000	-\$155,400	-\$133,400	-\$716,800
Surplus/Deficit at \$3/mile yr 1 pnr	-\$540,200	-\$267,600	-\$245,600	-\$1,053,400
Surplus/Deficit at \$2/mile 12-yr pnr	-\$215,700	-\$180,700	-\$158,700	-\$555,100
Surplus/Deficit at \$3/mile 12-yr pnr	-\$327,900	-\$292,900	-\$270,900	-\$891,700

No pnr = No park-and-ride costs included

Yr 1 pnr = All park-and-ride costs paid in the first year of operation

12-yr pnr = Park-and-ride costs amortized over a 12-year period



APPENDIX D LIST OF ACRONYMS

CATCO – Clean Air Transit Company

CDOT – Colorado Department of Transportation

COG – Council of Governments

DRCOG – Denver Regional Council of Governments

IGA – Inter-Governmental Agreement

MPO – Metropolitan Planning Organization

NFR – North Front Range

PACOG – Pueblo Area Council of Governments

PnR – Park-and-Ride

PPACG – Pike Peak Area Council of Governments

RTA – Rural Transportation Authority

RTD – Regional Transportation District