



Calgary Transit Route 302 Southeast BRT Year One Review

2011 June

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2011 April

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1.0 Executive Summary

Route 302 – BRT SE/Downtown was introduced in 2009 August along with other bus route changes. These changes provide increased transit travel options for residents living and working in Southeast Calgary

Calgary Transit has promoted the BRT and revised southeast service with two marketing campaigns. A Rider's Guide was distributed to potential customers, prior to the implementation of Route 302, informing them of the new BRT service and revisions to local and express routes. Another campaign was undertaken in summer 2010 to inform customers of the new park and ride lots at McKenzie Towne and Douglas Glen with over 500 parking stalls at each facility.

From 2009 September to 2010 September, a period when system-wide transit ridership remained constant, ridership in Southeast Calgary increased by approximately 10 percent. The following is a summary of the transit service changes and results:

Local Routes

- Revised to provide transfer connections with Route 302 – BRT SE / Downtown.
- Improves customer travel to destinations within the southeast communities and employment areas.

Express Routes

- Most express bus trips were revised to travel along the same route as Route 302 to take advantage of signal priority measures and to serve additional destinations in Southeast Calgary.
- New express routing provides reliable travel times and improved schedule adherence compared to Deerfoot Trail.

Service Increase

- Transit service in Southeast Calgary increased by 27,600 annual hours (37%) with the implementation of SE BRT and other bus route changes.

Ridership

- A 10 percent increase in ridership in Southeast Calgary since the introduction of SE BRT (about 10,000 additional weekly transit trips in 2010 vs. 2009)
- Ridership on Route 302 is 2,410 customers per weekday, with an additional 670 customers per weekend (Saturday and Sunday combined). The total ridership per week is 12,720 in Spring 2010. Additional ridership growth has occurred in 2011.
- Slight decrease in ridership on local and express routes as customers shifted to BRT.

- Travel time savings and better transfer connections provide a much-needed improvement in transit service in Southeast Calgary.

Travel Time

- SE BRT travel time from McKenzie Towne to downtown is comparable with the previous southeast express bus services - and quicker than Cranston and Douglasdale express routes.
- The average travel speed of the BRT is 26 km/h, compared to 22 km/h for regular mainline routes (18 percent faster) and 35 km/h for LRT.
- Travel time to downtown (56 minutes) is impressive given that this service runs in mixed traffic and makes limited stops.
- Travel time to downtown is comparable for customers taking local feeder routes to Anderson Station and travelling by train to 7th Ave SW.
- Transit signal priority (TSP) has been implemented at key intersections along the SE BRT route. TSP reduces the number of times buses must stop at red signals and reduces the length of the red signal to allow buses to proceed sooner.
- Travel time is not affected greatly by the number of stops on the BRT route. Data shows buses stop for about 10-15 seconds at a stop when customers need to board or disembark.
- Calgary Transit continues to investigate methods to improve transit service in Southeast Calgary including:
 - Schedule adjustments to reduce delays and to improve transfers between local routes and Route 302.
 - Routing adjustments as new roads and communities are built.
 - Identifying and reducing bottlenecks or slow parts of the route.
- Construction work is progressing in East Village and as roads are re-opened and congestion eases all bus routes travelling in the area will benefit.
- Route 302 service will be extended to the new South Calgary Health Campus when it opens in late 2012 or early 2013.

2.0 Introduction

Calgary Transit's Southeast bus rapid transit (BRT) service, Route 302 - BRT SE/Downtown, was introduced on 2009 August 31. The route provides direct, two-way, limited-stop transit service between McKenzie Towne and the central business district, with opportunities for customers to travel by transit to additional destinations in the southeast.

BRT has been used successfully in Calgary to serve high demand corridors and to build transit ridership before the introduction of light rail in some. The SE BRT closely follows the Council-approved route of the future SE LRT and BRT stops are located close to future LRT stations. The introduction of this service should help to build ridership, shape customers' transit travel patterns and promote transit-supportive land-uses near future LRT stations.

Growth projections using current data and trends indicate southeast Calgary will double in population and jobs in the next 25 years when the population of Calgary is expected to reach approximately 1.25 million.

3.0 SE Transit Service Prior to 2009 August

Before the introduction of SE BRT residents and workers had limited transit travel options to reach communities and employment centres in the southeast. The historical development of the area, with low-density residential communities and homogenous land uses make it difficult to effectively provide transit service without long travel times and distances between residences/jobs and additional origins/destinations. Linear barriers, such as the Bow River, Fish Creek Park, heavy rail right-of-ways and Deerfoot Trail constrain the points of access and egress to southeast communities.

Before 2009, transit service in the area consisted primarily of feeder routes that would take customers to the south LRT. Travel between communities was often lengthy and difficult involving multiple transfers to/from bus and train routes. Express services were available, but they only served downtown commuters during the morning and afternoon weekday peak period and did not offer any transfer opportunities for customers.

A detailed analysis of ridership and service hour changes is discussed later in this report.

4.0 Transit Service Changes

Southeast BRT service will be provided in two separate phases. Phase one, providing service between McKenzie Towne and the CBD, was implemented on 2009 August 31. Phase two will be implemented with the opening of the new South Hospital in Seton, which is expected by mid-2012.

Park and ride lots at McKenzie Towne and Douglas Glen opened in 2010 August. The new lots, financially supported by the municipal, provincial and federal governments, provide approximately 1050 parking stalls (combined in the two lots) and offer customers the option to drive to and from the BRT and park free of charge.

The BRT provides mainline service for travel between residential communities the CBD and destinations throughout the southeast. Travel within the southeast is improved with more direct travel and improved connections to multiple local and express routes. Service is provided on all days of the week, using high capacity articulated buses and traffic signal priority at major intersections. The new route provides frequent service to the CBD from communities east of the Bow River and south of 50 Avenue with convenient transfers to routes serving southeast destinations

Residential communities served by Route 302 are: Auburn Bay, Cranston, Mahogany, McKenzie Towne, McKenzie Lake, Copperfield, New Brighton, Prestwick, Douglasdale, Douglas Glen, Riverbend, Ogden, Lynnwood, Millican, Ramsay, Inglewood and East Village. Seton will be served when the route is extended to the South Hospital. The Ogden-Foothills, Shepard and Bonnybrook Industrial Parks are also served by Route 302.

Local service had minor route adjustments to provide transfers to and from Southeast BRT. Service frequency for local routes was unchanged during weekdays; however weekend service frequency was increased. Two local routes (90 and 416) were discontinued as they were providing duplicate service after other routes had been extended. The service changes resulted in a net annual service increase of 37 percent in southeast Calgary.

Express routes were realigned to operate along the BRT route to take advantage of transit signal priority and allow transfers to additional routes and destinations. Selected early morning express trips remain on Deerfoot Trail - this decision was made after customer requests and analysis of schedule reliability. It was found that the early morning trips generally did not experience the congestion and delays that occur later in the morning rush on Deerfoot Trail.

The service revisions are designed to provide more convenient travel for work, social, recreational and personal business trips for southeast residents. The revisions also alleviate many of the issues that exist in the southeast - local transfer points created more direct and reliable connections and travel to additional destinations are possible outside of peak periods. Transit facilities such as park and ride lots were constructed at two major transit nodes to generate transit trips. These lots will be integrated into the design of future LRT stations.

Revenue operating hours increased by 37 percent with the implementation of the SE BRT and non-revenue operating hours increased 33 percent. Total route kilometres for services in the southeast (local and express combined) was reduced by 52 kilometres, even with the addition of the 48.2 kilometre BRT.

5.0 Ridership

The year to date system-wide Calgary Transit ridership in 2010 September was approximately 0.2 percent lower than same period in 2009 September. During this same time period ridership in the southeast (on all routes included in this analysis) increased by 10 percent.

Ridership on Route 302 is 12,720 passengers per week in 2010 September. Although there has been a slight decline in ridership on local and express routes the BRT service is more than compensating for the ridership which may have shifted to new routes.

Ridership on Route 92 - McKenzie Towne increased by 400 percent between 2009 and 2010. Ridership also increased on Route 96 - McKenzie (61 percent), Route 153 (32 percent) and Route 409 (10 percent). Ridership decreased on Route 23 - Foothills Industrial (four percent) and Route 24 - Ogden (two percent).

Route 133 - Cranston was the only express route which experienced increased ridership (61 percent). Ridership decreased on the following express services: Route 110 (31 percent); Route 103 (17 percent); Route 176 (16 percent); Route 151 (15 percent); Route 102 (15 percent) and Route 117 (10 percent). Ridership was unchanged on Route 75. Ridership changes on the express routes are not as drastic as the percentages indicate: because of the limited time-periods that express service is offered they generally carry far fewer customers than local routes. Ridership on local routes is approximately five times greater than the express routes, meaning a small change in absolute ridership numbers on express routes translates into a large percentage change.

The forecast population of the communities served by Route 302 is expected to increase from 67,300 in 2010 to 112,700 in 2019, an increase of 67 per cent. Increasing population and higher densities in newer communities, such as Mahogany, will drive the demand for more transit service in the future.

6.0 Conclusion

The introduction of Route 302 - SE BRT provides increased transit travel options for customers living and/or working in the southeast. The new route and accompanying changes to existing routes offer customers more direct travel to various locations, reducing travel distance and travel times.

From 2009 September to 2010 September, a period when system-wide ridership remained constant, ridership in the southeast increased by 10 percent. This increase in the southeast is due to the introduction of Route 302 and the revision of local and express routes.

Local routes were revised to provide transfer connections with SE BRT and improve customer travel to destinations within the southeast communities and industrial areas. With the new service there are approximately 950 fewer weekly riders (down one percent) on the local routes. However, Route 92 - McKenzie Towne had a 400 percent increase in ridership, while the remaining routes mostly had smaller increases and two routes had slight declines in ridership.

Most express trips were revised to travel along the same route as 302 to take advantage of the signal priority measures that had been installed, to enhance schedule adherence and improve travel destinations. Also, during the peak of the morning and afternoon rush Deerfoot Trail is congested to the point where travel times are unreliable. Putting the express buses on the same route as the BRT provides reliable travel times and improved schedule adherence. Initially, all express trips were travelling along the BRT route, but with customer input and further analysis it was shown that early morning trips could travel along Deerfoot Trail without delays due to congestion. Later trips continue to travel along the BRT route. Ridership on the express routes is down eight percent, but because of the limited time periods and relatively lower ridership on these routes, the absolute number of weekly riders only decreased by 1,250.

The lower ridership on local and express routes is most likely due to transit customers choosing to use the Route 302 - SE BRT. The travel time savings and transfer connections provided by this new route provide a much-needed improvement in transit service in the southeast.

7.0 Appendix

7.1 Appendix A: Bus Service in the Study Area (2009)

2009 Local Bus Service										
Conventional Bus					Shuttle Bus					
Bus Route	Passengers/ Week	Operating Hours/Week		Passengers/ Revenue Op. Hour	Passengers/ Week	Operating Hours/Week		Passengers/ Revenue Op. Hour	Combined Passengers/ Week	Round Trip Distance (km)
		Revenue	Non-revenue			Revenue	Non-revenue			
23	44,060	909.2	106.2	48					44,060	63.7
24	19,660	685.3	45	29					19,660	60.4
90	850	14.7	8	58					850	48.0
92	1,600	89.5	1.4	18	330	59.7	1.7	6	1,930	24.0
96	4,150	172.8	9	24	1,440	111.0	13.8	13	5,590	35.0
153	3,150	102	14.5	31	1,620	202.3	20.5	8	4,770	26.2
409	2,550	132.9	7.3	19	1,240	156.7	9.3	8	3,790	43.7
416	2,850	89.2	6.2	32	3,790	250.3	33.3	15	6,640	33.8
Total	78,870	2,196	197.6	32	8,420	780.0	78.6	10	87,290	334.8
2009 Express Bus Service										
Conventional Bus					Shuttle Bus					
Bus Route	Passengers/ Week	Operating Hours/Week		Passengers/ Revenue Op. Hour	Passengers/ Week	Operating Hours/Week		Passengers/ Revenue Op. Hour	Combined Passengers/ Week	Round Trip Distance (km)
		Revenue	Non-revenue			Revenue	Non-revenue			
75	1,300	17.9	18	73					1,300	21.1
102	1,700	32.1	22.9	53					1,700	24.9
103	3,450	64.9	49.2	53					3,450	30.3
110	800	14.5	11	55					800	24.2
117	3,350	63.1	49	53					3,350	32.7
133	1,150	25	13.8	46					1,150	30.1
151	1,650	25.9	20.1	64					1,650	28.8
176	1,550	35.1	24.2	44					1,550	25.6
Total	14,950	278.5	208.2	55	-	-	-	-	14,950	217.7
2009 Total	93,820	2,474	405.8	-	8,420	780.0	78.6	-	102,240	552.5

7.3 Appendix B: Bus Service in the Study Area (2010)

2010 Local Bus Service											
Conventional Bus						Shuttle Bus					
Bus Route	Passengers/Week	Operating Hours/Week		Passengers/Revenue Op. Hour	Passengers/Week	Operating Hours/Week		Passengers/Revenue Op. Hour	Combined Passengers/Week	Round Trip Distance (km)	Passengers/Week Change from 2009 (%)
		Revenue	Non-revenue			Revenue	Non-revenue				
23	42,390	913.2	117.5	46					42,390	63.7	-3.8
24	19,230	567.1	56.6	34					19,230	64.5	-2.2
92	8,010	307.5	28.1	26					8,010	21.8	400.6
96	6,700	342.3	11.1	20					6,700	29.3	61.4
153	4,150	92.7	18.2	45	1,590	116.9	14.1	14	5,740	29.4	31.7
409	2,800	130.5	9.3	21	1,470	181.7	18.9	8	4,270	38.2	9.8
Total	83,280	2,353	240.8	32	3,060	298.6	33	11	86,340	246.9	-
2010 Express Bus Service											
Conventional Bus						Shuttle Bus					
Bus Route	Passengers/Week	Operating Hours/Week		Passengers/Revenue Op. Hour	Passengers/Week	Operating Hours/Week		Passengers/Revenue Op. Hour	Combined Passengers/Week	Round Trip Distance (km)	Passengers/Week Change from 2009 (%)
		Revenue	Non-revenue			Revenue	Non-revenue				
75	1,300	19.7	18.3	66					1,300	21.1	0.0
102	1,450	36.9	24.9	39					1,450	24.9	-14.7
103	2,850	69.6	47.2	41					2,850	30.3	-17.4
110	550	14.1	12	39					550	24.2	-31.3
117	3,000	65.7	47.9	46					3,000	30.3	-10.4
133	1,850	26.3	14.6	70					1,850	31.4	60.9
151	1,400	37	25.4	38					1,400	30.0	-15.2
176	1,300	41.4	22.3	31					1,300	25.6	-16.1
Total	13,700	310.7	212.6	46	-	-	-	-	13,700	217.8	-
2010 BRT Bus Service											
Articulated Bus											
Bus Route	Passengers/Week	Operating Hours/Week		Passengers/Revenue Op. Hour	Passengers/Week	Operating Hours/Week		Passengers/Revenue Op. Hour	Combined Passengers/Week	Round Trip Distance (km)	
		Revenue	Non-revenue			Revenue	Non-revenue				
302	12,720	732.9	86.9	17	-	-	-	-	12,720	48.2	
2010 Total	109,700	3,397	540.3	-	3,060	298.6	33	-	112,760	512.9	

7.4 Appendix C: Comparison of Transit Service in the Study Area (2009 to 2010)

	Passengers/ Week	Operating Hours/Week		Passengers/R evenue Op. Hour	Round Trip Distance (km)
		Revenue	Non-revenue		
2009 Total	102,240	3,254	484.4	31.4	553
2010 Total	112,760	3,696	573.3	30.5	513
Change (%)	10.3	13.6	18.4	-2.9	-7.2

7.5 Appendix D: Routes in the Study Area Prior to the Introduction of Route 302

Local Bus Routes

- Route 14 - Bridlewood/Cranston *
- Route 24 - Ogden
- Route 36/41 - Riverbend/Lynnwood *
- Route 72/73 - Circle Route
- Route 90 - Foothills North
- Route 92 - Douglasdale
- Route 96 - McKenzie
- Route 136 - Riverbend *
- Route 153 - Copperfield
- Route 406 - Auburn Bay *
- Route 409 - Douglas Glen
- Route 416 - McKenzie Towne

* These routes will remain unchanged until BRT service is extended south of Marquis of Lorne Trail/Highway 22X.

Express Bus Routes

- Route 75 - Riverbend Express
- Route 102 - Douglasdale Express
- Route 103 - McKenzie Express
- Route 110 - Douglas Glen Express
- Route 117 - McKenzie Towne Express
- Route 133 - Cranston Express
- Route 151 - New Brighton Express
- Route 176 - 52 Street Express

7.6 Appendix E: Overview of Southeast Transit Service Revisions

BRT Route	Route Name	Route Changes
302	Southeast/Downtown	New limited-stop service to provide direct connections throughout SE Calgary destinations and the downtown with service throughout the day
Local Route	Route Name	Route Changes
23	Foothills Industrial	No route changes, replaces 90 - Foothills North
24	Ogden	Shortened with a revised alignment to service Douglasdale
90	Foothills North	Discontinued; Replaced with Route 23
92	McKenzie Towne	Extended service to McKenzie Towne and combined with Route 416
96	McKenzie	Revised alignment to service Douglasdale
153	Copperfield	Revised alignment to connect with SE BRT
409	Douglas Glen	Shortened with a revised alignment to service Douglasdale
416	McKenzie Towne	Discontinued; Replaced with extended Route 92
Express Route	Route Name	Route Changes
75	Riverbend Express	Revised alignment and selected early morning trips remain on Deerfoot Trail
102	Douglasdale Express	
103	McKenzie Express	
110	Douglas Glen Express	
117	McKenzie Towne Express	
133	Cranston Express	
151	New Brighton Express	
176	52 Street Express	Extended to connect with SE BRT