Metro Amherst-Buffalo Corridor

TRAVEL DEMAND FORECAST

"Technical Memorandum"

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1 INTRODUCTION

The purpose of this technical memorandum is to document the travel demand forecasting process for the Buffalo-Amherst Alternative Analysis LRT and BRT Alternatives. This project used the Federal Transit Administration travel demand forecasting tool: STOPS (Simplified Trips-on-Project Software). It is a limited implementation of the conventional four step model where trip generation and trip distribution is replaced by Census data to describe the travel markets. It also uses GTFS (General Transit Feed Specification) transit schedule data to replace the traditional coded transit network.

Two different methodologies using STOPS were used to forecast ridership for this region. First, for the commuter market, a STOPS application was developed. For the University of Buffalo market, TAZs in the North Campus area were divided to be able to better model travel patterns. Them a process using STOPS skims used in conjunction with a university trip table was created to estimate ridership for each alternative. Finally, the forecasts were combined and an annual ridership was estimated based on the number of business days and academic days.

2 METHODOLOGY

For the purpose for quickly developing order of magnitude forecasts for this alternative, AECOM used STOPS version 1.03 to evaluate the market potential for the alternatives. When the Federal Transit Administration released STOPS version 1.50, the scenarios were re-run using the new software. The new version has improved features and outputs more accurate results, some of those major changes were refinement of Non Home Bound and Zero Car Household trips generation, and new capabilities to better represent impedances for fixed guideway stations

For input data, daily station survey data from the current LRT system was used to calibrate the existing station boardings. STOPS also requires that parameters representing the ratios of several trip purposes be set. For this project, STOPS default values were used, which are based on the national averages. The value of 93,677 weekday unlinked regional bus and rail trips was used and retrieved from the National Transit Database for the year 2011.

To validate the results, LRT and regional bus routes results for the base year (2012) no build scenario were compared to the counts, as seen in Table 1.

Table 1: Average Weekday Boardings by Route

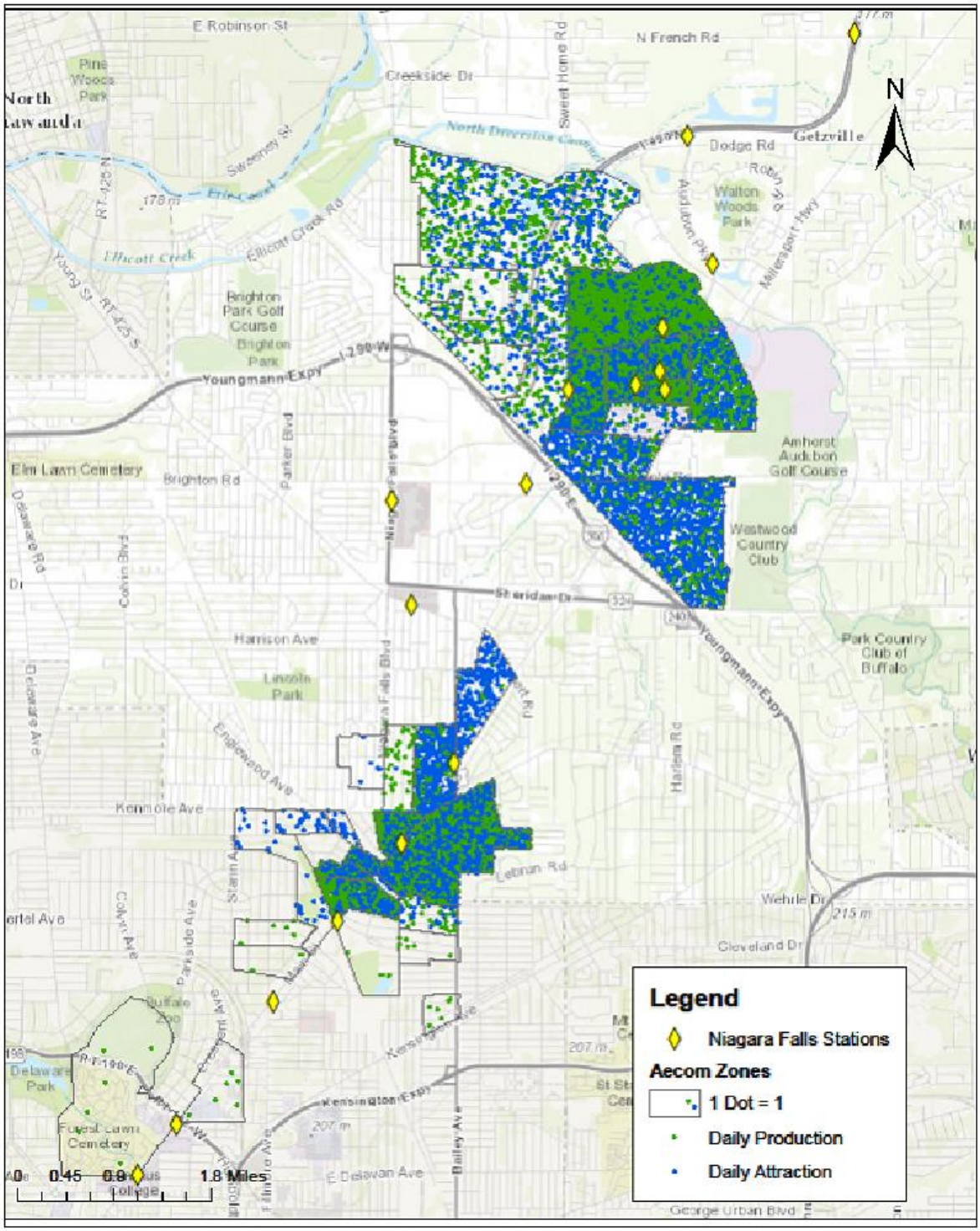
Route	Counts	2012 No Build Boardings
METRO RAIL	21,564	21,597
1-WILLIAM	1,637	1,388
11-COLVIN	992	2,577
12-UTICA	5,604	5,228
13-KENSINGTON	3,396	1,507
14-ABBOTT	1,815	3,017
15-SENECA	2,090	2,639
16-SOUTH PARK	1,954	2,256
18-JEFFERSON	758	169
19-BAILEY	4,503	4,096
2-CLINTON	1,597	2,047
20-ELMWOOD	5,109	3,502
204-AIRPORT -DOWNTOWN EXPRES	130	209
206-BUFFALO STATE CIRCULATOR	42	0
22-PORTER-BEST	1,171	255
23-FILLMORE-HERTEL	4,915	5,803
24-GENESEE	3,106	3,098
25-DELAWARE	3,177	4,575
26-DELAVAN	3,257	2,559
27-WENDE	88	172
29-WOHLERS	170	0
3-GRANT	5,858	4,950
32-AMHERST	3,170	2,256
34-NIAGARA FALLS BLVD.	1,647	1,981
35-SHERIDAN	778	1,259
36-HAMBURG	736	895
4-BROADWAY	2,818	2,053
40-GRAND ISLAND	1,271	943
42-LACKAWANNA	138	44
44-LOCKPORT	747	1,754
46-LANCASTER	265	908
47-YOUNGS ROAD	512	737
48-WILLIAMSVILLE	940	1,765
49-MILLARD SUBURBAN	154	412
5-NIAGARA-KENMORE	6,855	5,546
50-MAIN - NIAGARA	495	649
52-HYDE PARK	306	316
54-MILITARY	121	24
55-PINE AVENUE	1,175	1,361
57-TONAWANDAS	105	510
6-SYCAMORE	2,768	3,662
60-NIAGARA FALLS	85	25
61-NORTH TONAWANDA	52	107
64-LOCKPORT	67	63
66-WILLIAMSVILLE	97	192
67-CLEVELAND HILL	71	32
68-GEORGE URBAN	26	73

Route	Counts	2012 No Build Boardings
69-ALDEN	63	178
7-BAYNES-RICHMOND	350	218
70-EAST AURORA	62	89
72-ORCHARD PARK	48	160
74-HAMBURG	123	576
75-WEST SENECA	65	182
76-LOTUS BAY	146	778
79-TONAWANDA	28	74
8-MAIN	1,318	1,041
81-EASTSIDE	51	97
Total	**100,586**	**102,640**

A similar process was used to validade the university market. The University of Buffalo (UB) operates several bus routes in their campuses. Some of them are circular local campus routes (Elliot and North Campus), while the Stampede route connects the South and North campuses.

Figure 1 shows UB productions and attractions. It also shows where the stations would be located for the LRT Niagara Falls alternatives.

Figure 1: UB Daily Productions/Attractions



The survey data was used in conjunction with STOPS to model those trips. With the UB Shuttle and NFTA Transit schedules, STOPS was used to generate transit skims. That skim matrix was used together a trip table, generated from the UB survey, to select the best route for each production – attraction pair. It was assumed that the best route for each production attraction pair would be the route selected for the trip. To validate the results, the 2012 no build ridership was compared to the University of Buffalo survey information. Table 2 has the survey trips and the trips assigned by the process for each transit route.

Table 2: Average Weekday Boardings by Route for the University Market

	Survey Trips			2012 No Build		
Route	**Peak**	**Off-Peak**	**Total**	**Peak**	**Off-Peak**	**Total**
UB Stampede	5,482	4,372	9,855	5,836	4,923	10,759
UB Ellicott	1,574	1,780	3,354	-	-	-
UB North Campus	1,045	928	1,973	1,602	1,696	3,298
Unassigned Trips	-	-	-	466	308	775
Total Assigned Trips	**8,102**	**7,080**	**15,182**	**7,905**	**6,927**	**14,832**

Inspecting the validation tables, both for the commuter and university market, the results generated by STOPS for the No Build alternative are fairly similar to the counts. Thus, it is reasonable to conclude that the model has a good understanding of both markets.

3 ALTERNATIVES SIMULATED

In this section each LRT and BRT alternative will be described:

A. LRT/BRT Niagara Falls 1: This alternative extends the existing NFTA Metrorail service from the existing north-end terminal at University Station (South Campus of the University of Buffalo) to Crosspoint area via the North Campus of the University of Buffalo.
B. LRT/BRT Niagara Falls 2: This alternative has the same alignment as the previous one, but after the UB North Campus the alignment moves onto Millersport Highway to get into the Crosspoint Business Park.
C. LRT Niagara Falls 7: This alternative is similar to Niagara Falls 1, but instead of turning onto Maple Road from Boulevard Mall, it continues north and turns onto Meyer Road and crosses under I-290 to get to Sweet Home at Rensch Road.
D. LRT/BRT Bailey Avenue 1: The extension alignment is via Bailey Ave to Maple Road to Sweet Home Road to Rensch through UB North onto Lee Entrance to North Campus Blvd/John James Audubon Parkway onto I-990 into the Crosspoint Business Park at its northwest quadrant onto Crosspoint Parkway with a terminal Station at Millersport Highway. This alternative shares a similar alignment with Niagara Falls 1, the only difference in essence is their alignment is how the two traverse around Boulevard Mall.
E. LRT/BRT Bailey Avenue 2: The extension alignment is via Bailey Ave to Maple Road to Sweet Home Road to Rensch through UB North onto Lee Entrance to North Campus Blvd/John James Audubon Parkway to Millersport Highway into the Crosspoint Business Park.
F. LRT/BRT Millersport Highway 1: The extension alignment is via Bailey Avenue to Grover Cleveland Highway to Millersport Highway to Flint Road to Flint Entrance into UB North onto John James Audubon Parkway onto Sylvan Parkway onto Millersport Highway and into Crosspoint Business Park.

Overall, LRT and BRT alternatives shares similar alignment, mostly differing on the number of stations. All of them connect both UB campuses, and it is assumed that for the Build Alternatives the UB's Stampede route would be cancelled. Headways of 10 minute peak and 12 minute off-peak were used.

Tables 3 to 13 have station to station and cumulative travel time information for each alternative. A short description for each table is below:

A. Table 3: LRT Niagara Falls 1, has 14 new stations and a total travel time of 49 minutes.
B. Table 4: LRT Niagara Falls 2, has 12 new stations and a total travel time of 47 minutes.
C. Table 5: LRT Niagara Falls 7, has 14 new stations and a total travel time of 48 minutes.
D. Table 6: LRT Bailey Avenue 1, has 14 new stations and a total travel time of 47 minutes.
E. Table 7: LRT Bailey Avenue 2 , has 12 new stations and a total travel time of 45 minutes.
F. Table 8: LRT Millersport Hwy 1, has 11 new stations and a total travel time of 44 minutes.
G. Table 9: BRT Niagara Falls 1, has 21 new stations and a total travel time of 43 minutes.
H. Table 10: BRT Niagara Falls 2, has 21 new stations and a total travel time of 51 minutes.
I. Table 11: BRT Bailey Avenue 1, has 18 new stations and a total travel time of 35 minutes.
J. Table 12: BRT Bailey Avenue 2, has 18 new stations and a total travel time of 35 minutes.
K. Table 13: BRT Millersport Hwy 1, has 15 new stations and a total travel time of 31 minutes.

Table 3: LRT Niagara Falls 1: Simulated Station-To-Station Travel Times

Station	Travel Time to Next Station (min)	Cumulative Travel Time (min)
Erie Canal-Harbor	2	0
Seneca	2	2
Church	1	4
Lafayette	2	5
Fountain Plaza	4	7
Allen-Medical Campus	1	11
Summer-Best	1	12
Utica	2	13
Delavan/Canisius College	1	15
Humboldt	2	16
Amherst	2	18
LaSalle	1	20
University	2	21
Bailey Ave at Grover Cleveland Highway (New Station)	3	23
Eggert Road and Margaret Road (New Station)	2	26
Boulevard Mall (New Station)	2	28
Maple at Sweet Home (New & PNR Station)	2	30
Sweet Home at Rensch Entrance Road (New Station)	2	32
UB North Campus – Capen Hall (New Station)	1	34
UB North - Library (New Station)	1	35
UB North Commons Building(New Station)	1	36
UB North - Greiner Hall(New Station)	1	37
Sylvan Parkway Home (New & PNR Station)	2	38
I-990 Interchange Home (New & PNR Station)	4	40
North French Road Home (New & PNR Station)	4	44
Crosspoint Business (New Station)	1	48
Millersport Highway Home (New & PNR Station)	0	49

Table 4: LRT Niagara Falls 2: Simulated Station-To-Station Travel Times

Station	Travel Time to Next Station (min)	Cumulative Travel Time (min)
Erie Canal-Harbor	2	0
Seneca	2	2
Church	1	4
Lafayette	2	5
Fountain Plaza	4	7
Allen-Medical Campus	1	11
Summer-Best	1	12
Utica	2	13
Delavan/Canisius College	1	15
Humboldt	2	16
Amherst	2	18
LaSalle	1	20
University	2	21
Bailey Ave at Grover Cleveland Highway (New Station)	3	23
Eggert Road and Margaret Road (New Station)	2	26
Boulevard Mall (New Station)	2	28
Maple at Sweet Home Home (New & PNR Station)	2	30
Sweet Home at Rensch Entrance Road (New Station)	2	32
UB North Campus – Capen Hall (New Station)	1	34
UB North - Library (New Station)	1	35
UB North Commons Building (New Station)	1	36
UB North - Greiner Hall (New Station)	1	37
Sylvan Parkway Home (New & PNR Station)	7	38
North French Road Home (New & PNR Station)	1	45
Crosspoint Business (New Station)	0	47

Table 5: LRT Niagara Falls 7: Simulated Station-To-Station Travel Times

Station	Travel Time to Next Station (min)	Cumulative Travel Time (min)
Erie Canal-Harbor	2	0
Seneca	2	2
Church	1	4
Lafayette	2	5
Fountain Plaza	4	7
Allen-Medical Campus	1	11
Summer-Best	1	12
Utica	2	13
Delavan/Canisius College	1	15
Humboldt	2	16
Amherst	2	18
LaSalle	1	20
University	2	21
Bailey Ave at Grover Cleveland Highway (New Station)	3	23
Eggert Road and Carmen Road (New Station)	2	26
Boulevard Mall (New Station)	1	28
Meyer at N. Bailey Avenue (New Station)	2	29
Sweet Home at Rensch Entrance Road (New Station)	2	31
UB North Campus – Capen Hall (New Station)	1	33
UB North - Library (New Station)	1	34
UB North Commons Building (New Station)	1	35
UB North - Greiner Hall (New Station)	1	36
Sylvan Parkway (New & PNR Station)	2	37
I-990 Interchange (New & PNR Station)	4	39
North French Road (New & PNR Station)	4	43
Crosspoint Business (New Station)	1	47
Millersport Highway (New & PNR Station)	0	48

Table 6: LRT Bailey 1: Simulated Station-To-Station Travel Times

Station	Travel Time to Next Station (min)	Cumulative Travel Time (min)
Erie Canal-Harbor	2	0
Seneca	2	2
Church	1	4
Lafayette	2	5
Fountain Plaza	4	7
Allen-Medical Campus	1	11
Summer-Best	1	12
Utica	2	13
Delavan/Canisius College	1	15
Humboldt	2	16
Amherst	2	18
LaSalle	1	20
University	2	21
Bailey Ave at Grover Cleveland Highway (New Station)	2	23
Eggert Road / Sheridan Drive – Northtown Plaza (New Station)	2	25
On Bailey at Maple Road (New Station)	2	27
Maple at Sweet Home (PNR Station)	2	29
Sweet Home at Rensch Entrance Road (New Station)	2	31
UB North Campus – Capen Hall (New Station)	1	33
UB North - Library (New Station)	1	34
UB North Commons Building (New Station)	1	35
UB North - Greiner Hall (New Station)	1	36
Sylvan Parkway (New & PNR Station)	2	37
I-990 Interchange (New & PNR Station)	4	39
North French Road (New & PNR Station)	3	43
Crosspoint Business (New Station)	1	46
Millersport Highway (New & PNR Station)	0	47

Table 7: LRT Bailey 2: Simulated Station-To-Station Travel Times

Station	Travel Time to Next Station (min)	Cumulative Travel Time (min)
Erie Canal-Harbor	2	0
Seneca	2	2
Church	1	4
Lafayette	2	5
Fountain Plaza	4	7
Allen-Medical Campus	1	11
Summer-Best	1	12
Utica	2	13
Delavan/Canisius College	1	15
Humboldt	2	16
Amherst	2	18
LaSalle	1	20
University	2	21
Bailey Ave at Grover Cleveland Highway (New Station)	2	23
Eggert Road / Sheridan Drive – Northtown Plaza (New Station)	2	25
On Bailey at Maple Road (New Station)	2	27
Maple at Sweet Home (New & PNR Station)	2	29
Sweet Home at Rensch Entrance Road (New Station)	2	31
UB North Campus – Capen Hall (New Station)	1	33
UB North - Library (New Station)	1	34
UB North Commons Building (New Station)	1	35
UB North - Greiner Hall (New Station)	1	36
Sylvan Parkway (New & PNR Station) (New Station)	6	37
North French Road (New & PNR Station)	2	43
Crosspoint Business (New Station)	0	45

Table 8: LRT Millersport Hwy: Simulated Station-To-Station Travel Times

Station	Travel Time to Next Station (min)	Cumulative Travel Time (min)
Erie Canal-Harbor	2	0
Seneca	2	2
Church	1	4
Lafayette	2	5
Fountain Plaza	4	7
Allen-Medical Campus	1	11
Summer-Best	1	12
Utica	2	13
Delavan/Canisius College	1	15
Humboldt	2	16
Amherst	2	18
LaSalle	1	20
University	2	21
Bailey Ave at Grover Cleveland Highway (New Station)	1	23
Eggert Road at Millersport Hwy (New Station)	1	24
Sheridan Drive at Millersport Hwy (New Station)	2	25
Millersport Highway at Flint Road (New & PNR Station)	4	27
UB North Campus – Capen Hall (New Station)	1	31
UB North - Library (New Station)	1	32
UB North Commons Building (New Station)	1	33
UB North - Greiner Hall (New Station)	1	34
Sylvan Parkway (New & PNR Station)	7	35
North French Road (New & PNR Station)	2	42
Crosspoint Business (New Station)	0	44

Table 9: BRT Niagara Falls 1: Simulated Station-To-Station Travel Times

Station	Travel Time to Next Station (min)	Cumulative Travel Time (min)
University At Buffalo - South Campus	2	0
Niagara Falls Blvd at Kenmore Ave	2	2
Niagara Falls Blvd at Cambridge Ave	2	4
Niagara Falls Blvd at Decatur Rd	2	6
Niagara Falls Blvd At Eggert Rd Station	2	8
Niagara Falls Blvd At Mall 1	1	10
Niagara Falls Blvd At Mall 2	2	11
Niagara Falls Blvd at Romney Rd	2	13
Ridge Lea Station	2	15
Ridge Lea at Meyer Rd Station	2	17
Bailey at Maple	2	19
Maple At Sweet Home Station (PNR Location)	2	21
Sweet Home at Rensch Station	2	23
UB North Campus – Capen Hall	2	25
UB North - Library	2	27
UB North Commons Building	2	29
UB North - Greiner Hall	2	31
J.J.A. Parkway At Sylvan Parkway Station (PNR Location)	3	33
I-990 Interchange Station (PNR Location)	4	36
North French Road Station (PNR Location)	3	40
Crosspoint Business Park Station	0	43

Table 10: BRT Niagara Falls 2: Simulated Station-To-Station Travel Times

Station	Travel Time to Next Station (min)	Cumulative Travel Time (min)
University At Buffalo - South Campus	3	0
Niagara Falls Blvd at Kenmore Ave	2	3
Niagara Falls Blvd at Cambridge Ave	2	5
Niagara Falls Blvd at Decatur Rd	3	7
Niagara Falls Blvd At Eggert Rd Station	3	10
Niagara Falls Blvd At Mall 1	2	13
Niagara Falls Blvd At Mall 2	2	15
Niagara Falls Blvd at Romney Rd	2	17
Ridge Lea Station	2	19
Ridge Lea at Meyer Rd Station	2	21
Bailey at Maple	2	23
Maple At Sweet Home Station (PNR Location)	3	25
Sweet Home at Rensch Station	3	28
UB North Campus – Capen Hall	2	31
UB North - Library	2	33
UB North Commons Building	3	35
UB North - Greiner Hall	2	38
J.J.A. Parkway At Sylvan Parkway Station (PNR Location)	3	40
Millersport Hwy Station	5	43
North French Road Station (PNR Location)	3	48
Crosspoint Business Park Station	0	51

Table 11: BRT Bailey Avenue 1: Simulated Station-To-Station Travel Times

Station	Travel Time to Next Station (min)	Cumulative Travel Time (min)
University At Buffalo - South Campus	1	0
Bailey At Loop Station	2	1
Bailey At Grover Cleveland Highway Station	2	3
Bailey At Cambridge Rd Station	2	5
Bailey At Eggert Station	1	7
Bailey At Sheridan Station	2	8
Bailey At Emerson Dr Station	2	10
Bailey at Maple Station	2	12
Maple At Sweet Home Station (PNR Location)	2	14
Sweet Home at Rensch Station	2	16
UB North Campus – Capen Hall	2	18
UB North - Library	1	20
UB North Commons Building	2	21
UB North - Greiner Hall	2	23
J.J.A. Parkway At Sylvan Parkway Station (PNR Location)	3	25
I-990 Interchange Station (PNR Location)	4	29
North French Road Station (PNR Location)	3	32
Crosspoint Business Park Station	0	35

Table 12: BRT Bailey Avenue 2: Simulated Station-To-Station Travel Times

Station	Travel Time to Next Station (min)	Cumulative Travel Time (min)
University At Buffalo - South Campus	1	0
Bailey At Loop Station	2	1
Bailey At Grover Cleveland Highway Station	2	3
Bailey At Cambridge Rd Station	2	5
Bailey At Eggert Station	1	7
Bailey At Sheridan Station	2	8
Bailey At Emerson Dr Station	2	10
Bailey at Maple Station	2	12
Maple At Sweet Home Station (PNR Location)	3	14
Sweet Home at Rensch Station	2	17
UB North Campus – Capen Hall	2	19
UB North - Library	1	21
UB North Commons Building	1	22
UB North - Greiner Hall	2	23
J.J.A. Parkway At Sylvan Parkway Station	3	25
Millersport Hwy Station	4	28
North French Road Station	3	32
Crosspoint Business Park Station	0	35

Table 13: BRT Millersport Highway 1: Simulated Station-To-Station Travel Times

Station	Travel Time to Next Station (min)	Cumulative Travel Time (min)
University At Buffalo - South Campus	1	0
Bailey At Loop Station	2	1
Bailey At Grover Cleveland Highway Station	2	3
Rosedale Blvd. At Millersport Highway	1	5
Eggert At Millersport Highway	2	6
Sheridan Drive At Millersport Highway	2	8
Millersport Highway At Flint Road (PNR Location)	4	10
UB North Campus – Capen Hall	2	14
UB North - Library	1	16
UB North Commons Building	2	17
UB North - Greiner Hall	2	19
J.J.A. Parkway At Sylvan Parkway Station	3	21
Millersport Hwy Station	4	24
North French Road Station (PNR Location)	3	28
Crosspoint Business Park Station	0	31

4 FORECAST RESULTS

In the following tables, we present the forecasting results for both the commute and university markets, for each alternative. Several statistics are shown, which include project boardings by market and by station, linked transit trips by districts, incremental linked transit trips and incremental passenger miles travelled (PMT) and vehicles miles travelled (VMT).

Tables 14, 15 and 16 shows the average academic day project boardings for each market for the LRT alternatives.

Table 14: 2012 LRT Average Academic Day Project Boardings

Statistics	Niagara Falls 1	Niagara Falls 2	Niagara Falls 7	Bailey Ave 1	Bailey Ave 2	Millersport Hwy 1
Traditional Market	7,400	7,800	8,000	7,300	6,700	6,600
University Market	13,300	13,200	13,300	13,400	13,400	12,700
Total	**20,700**	**21,000**	**21,300**	**20,700**	**20,100**	**19,300**

Table 15: 2025 LRT Average Academic Day Project Boardings

Statistics	Niagara Falls 1	Niagara Falls 2	Niagara Falls 7	Bailey Ave 1	Bailey Ave 2	Millersport Hwy 1
Traditional Market	8,200	8,600	8,900	8,300	7,700	7,600
University Market	13,300	13,200	13,300	13,400	13,400	12,700
Total	**21,500**	**21,800**	**22,200**	**21,700**	**21,100**	**20,300**

Table 16: 2035 LRT Average Academic Day Project Boardings

Statistics	Niagara Falls 1	Niagara Falls 2	Niagara Falls 7	Bailey Ave 1	Bailey Ave 2	Millersport Hwy 1
Traditional Market	9,300	9,700	10,000	9,200	8,600	8,200
University Market	13,300	13,200	13,300	13,400	13,400	12,700
Total	**22,600**	**22,900**	**23,300**	**22,600**	**22,000**	**20,900**

Tables 17, 18 and 19 shows the average academic day project boardings for each market for the BRT alternatives.

Table 17: 2012 BRT Average Academic Day Project Boardings

Statistics	Niagara Falls 1	Niagara Falls 2	Niagara Falls 7	Bailey Ave 1	Bailey Ave 2
Traditional Market	5,800	5,300	5,100	5,000	4,200
University Market	12,900	12,900	12,800	11,800	12,500
Total	**18,700**	**18,200**	**17,900**	**16,800**	**16,700**

Table 18: 2025 BRT Average Academic Day Project Boardings

Statistics	Niagara Falls 1	Niagara Falls 2	Niagara Falls 7	Bailey Ave 1	Bailey Ave 2
Traditional Market	6,100	5,600	5,500	5,400	4,700
University Market	12,900	12,900	12,800	11,800	12,500
Total	**18,700**	**18,200**	**17,900**	**16,800**	**16,700**

Table 19: 2035 BRT Average Academic Day Project Boardings

Statistics	Niagara Falls 1	Niagara Falls 2	Niagara Falls 7	Bailey Ave 1	Bailey Ave 2
Traditional Market	7,100	6,500	6,300	6,200	5,200
University Market	12,900	12,900	12,800	11,800	12,500
Total	**20,000**	**19,400**	**19,100**	**18,000**	**17,700**

To see the area represented by each district, please see Figure 2. Tables 20, 21, 22 and 23 show the number of academic day linked trips generated by each district.

Figure 2: Districts

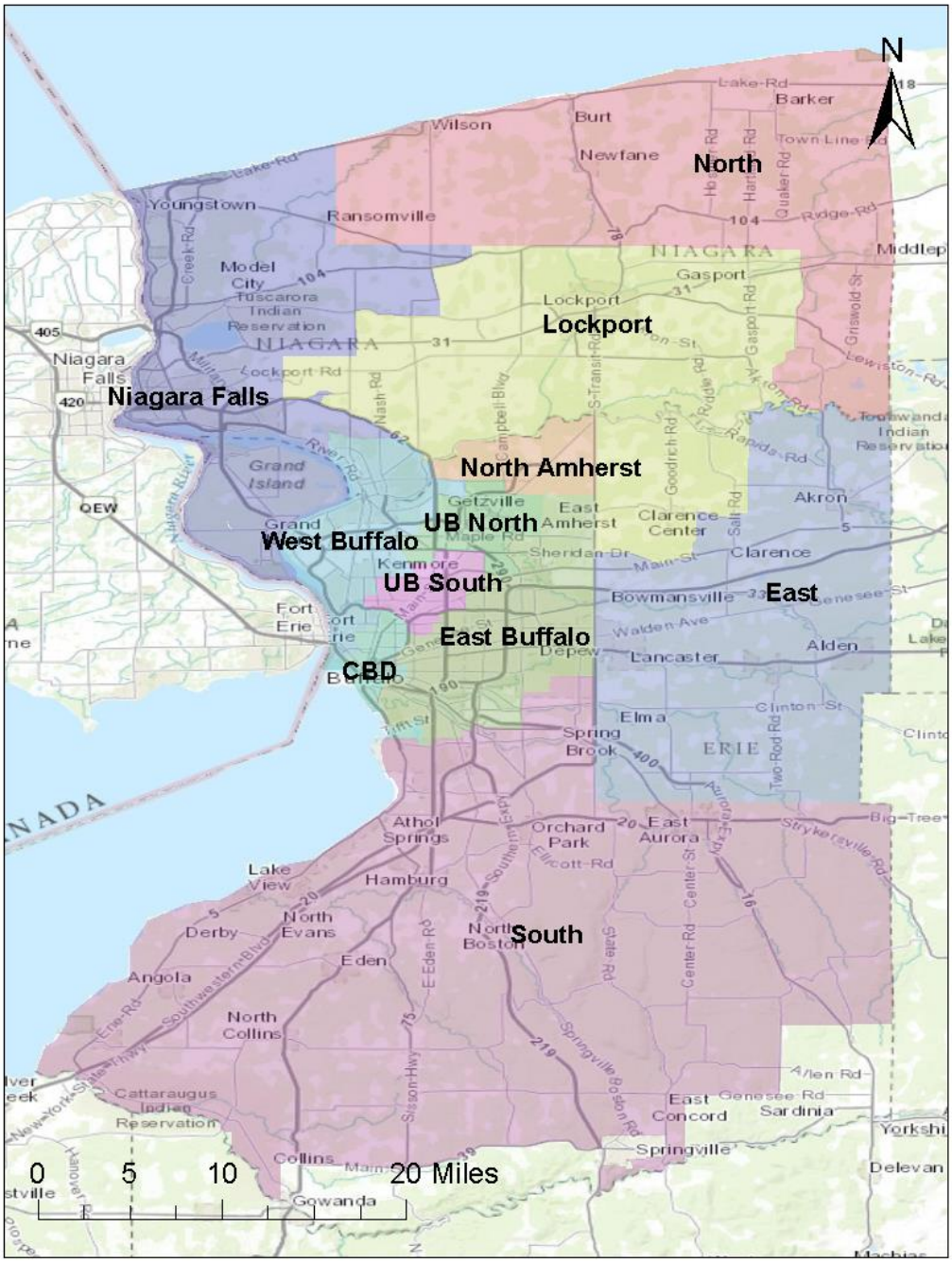


Table 20: LRT Academic Day Linked Transit Trips (Niagara Falls 1, 2 and 7)

	Niagara Falls 1			Niagara Falls 2			Niagara Falls 7		
District	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**
CBD	14,998	16,264	16,713	15,035	16,326	17,316	14,895	16,163	17,145
UB South	18,070	19,650	18,302	17,907	19,473	18,798	17,800	19,342	18,667
UB North	13,406	9,733	9,733	9,700	9,700	9,700	9,798	9,798	9,798
North Amherst	561	709	736	551	697	738	544	690	729
West Buffalo	14,525	14,938	14,513	14,361	14,778	14,709	14,266	14,667	14,592
Niagara Falls	3,195	3,542	3,465	3,140	3,479	3,433	3,136	3,475	3,428
Lockport	909	1,101	1,120	872	1,045	1,089	861	1,030	1,071
North	38	50	48	23	26	26	23	26	26
East	1,067	1,360	1,269	1,021	1,287	1,240	1,023	1,292	1,242
East Buffalo	21,276	23,107	21,734	21,166	23,041	22,131	21,139	23,006	22,091
South	4751	5,473	5,279	4,721	5,458	5,339	4,712	5,445	5,329
Other	0	0	0	0	0	0	0	0	0
Total	**92,797**	**95,928**	**92,913**	**88,498**	**95,311**	**94,520**	**88,198**	**94,934**	**94,119**

Table 21: LRT Academic Day Linked Transit Trips (Bailey Ave 1,2 and Millersport Hwy 1)

	Bailey Avenue 1			Bailey Avenue 2			Millersport Hwy		
District	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**
CBD	14,985	16,260	17,258	14,895	16,163	17,145	14,811	16,081	17,037
UB South	17,801	19,354	18,679	17,737	19,279	18,604	17,750	19,311	18,608
UB North	9,957	9,957	9,957	9,957	9,957	9,957	9,222	9,222	9,222
North Amherst	559	707	752	544	690	729	544	694	727
West Buffalo	14,380	14,796	14,730	14,266	14,667	14,592	14,246	14,655	14,570
Niagara Falls	3,163	3,508	3,465	3,136	3,475	3,428	3,132	3,472	3,423
Lockport	889	1,074	1,116	861	1,030	1,071	859	1,029	1,067
North	37	49	48	23	26	26	23	26	26
East	1,055	1,348	1,294	1,023	1,292	1,242	1,027	1,296	1,247
East Buffalo	21,216	23,103	22,194	21,139	23,006	22,091	21,148	23,021	22,097
South	4,736	5,480	5,361	4,712	5,445	5,329	4,700	5,424	5,311
Other	0	0	0	0	0	0	0	0	0
Total	**88,778**	**95,636**	**94,854**	**88,293**	**95,030**	**94,214**	**87,462**	**94,231**	**93,335**

Table 22: BRT Academic Day Linked Transit Trips (Niagara Falls 1 and 2)

	Niagara Falls 1			Niagara Falls 2		
District	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**
CBD	15,457	16,851	17,836	15,435	16,831	17,808
UB South	17,986	19,596	18,834	17,871	19,481	18,714
UB North	9,527	9,527	9,527	9,527	9,527	9,527
North Amherst	496	642	682	500	646	687
West Buffalo	14,545	15,022	14,885	14,515	14,989	14,851
Niagara Falls	3,146	3,487	3,435	3,150	3,492	3,441
Lockport	838	1,001	1,037	858	1,026	1,067
North	23	26	25	29	37	36
East	1,016	1,277	1,226	1,029	1,301	1,247
East Buffalo	21,251	23,124	22,144	21,239	23,110	22,130
South	4,672	5,360	5,236	4,675	5,366	5,240
Other	0	0	0	0	0	0
Total	**88,957**	**95,913**	**94,867**	**88,828**	**95,806**	**94,748**

Table 23: BRT Academic Day Linked Transit Trips (Bailey Ave 1,2 and Millersport Hwy 1)

	Bailey Avenue 1			Bailey Avenue 2			Millersport Hwy		
District	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**
CBD	14,985	16,351	17,287	15,015	16,349	17,284	15,456	16,877	17,816
UB South	17,942	19,534	18,813	17,898	19,474	18,752	18,169	19,839	19,053
UB North	9,154	9,154	9,154	8,174	8,174	8,174	11,927	12,234	12,564
North Amherst	559	683	722	550	704	745	572	738	773
West Buffalo	14,380	14,724	14,624	14,301	14,732	14,631	14,536	14,993	14,872
Niagara Falls	3,163	3,470	3,421	3,143	3,485	34,38	3,167	3,513	3,463
Lockport	889	1,023	1,065	897	1,083	1,129	911	1,107	1,148
North	37	27	27	35	47	45	37	49	47
East	1,055	1,253	1,208	1,029	1,306	1,255	1,061	1,353	1,296
East Buffalo	21,216	22,835	21,898	20,988	22,819	21,884	21,329	23,212	22,237
South	4,736	5,282	5,181	4,622	5,299	51,96	4,695	5,382	5,272
Other	0	23	22	18	23	22	18	24	22
Total	**88,115**	**94,358**	**93,421**	**86,670**	**93,495**	**92,555**	**91,878**	**99,321**	**98,563**

Tables 24 to 29 presents average academic day project boardings for the new stations.

Table 24: LRT Niagara Falls 1 & 2 Average Academic Day Station Project Boardings

	Niagara Falls 1			Niagara Falls 2		
Station	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**
Bailey Ave at Grover Cleveland Highway	1,373	1,570	1,532	1,504	1,720	1,688
Eggert Road and Margaret Road	303	327	370	320	341	388
Boulevard Mall	764	809	975	887	944	1,127
Maple at Sweet Home	1,348	1,417	1,515	1,354	1,422	1,529
Sweet Home at Rensch	1,536	1,538	1,567	1,534	1,537	1,564
UB North Campus – Capen Hall	2,795	2,803	2,848	2,966	2,958	3,048
UB North - Library	2,264	2,249	2,318	2,148	2,143	2,180
UB North Commons Building	599	598	601	587	587	587
UB North - Greiner Hall	2,107	2,107	2,107	2,107	2,107	2,107
Sylvan Parkway	408	418	516	508	524	659
I-990 Interchange	160	165	222	0	0	0
North French Road	256	257	390	189	208	274
Crosspoint Business	137	123	217	268	262	422
Millersport Highway	173	245	252	0	0	0
Existing LRT	6,393	6,855	7,100	6,593	7,050	7,326
Total	20,616	21,480	22,531	20,966	21,806	22,902

Table 25: LRT Niagara Falls 7 & Bailey Avenue 1 Average Academic Day Station Project Boardings

	Niagara Falls 7			Bailey Avenue 1		
Station	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**
Bailey Ave at Grover Cleveland Highway	1,531	1,751	1,719	1,315	1,505	1,461
Eggert Road/Sheridan				306	353	368
Eggert Road and Carmen Road	376	404	453			
Bailey at Maple Road				601	610	753
Boulevard Mall	889	947	1,132			
Maple at Sweet Home	1,119	1,112	1,200	1,322	1,437	1,502
Sweet Home at Rensch	1,488	1,484	1,506	1,756	1,761	1,794
UB North Campus – Capen Hall	3,045	3,036	3,132	3,030	3,022	3,112
UB North - Library	2,142	2,141	2,173	2,133	2,130	2,161
UB North Commons Building	587	587	587	587	587	587
UB North - Greiner Hall	2,107	2,107	2,107	2,107	2,107	2,107
Sylvan Parkway	526	564	669	429	439	541
I-990 Interchange	212	229	291	171	175	237
North French Road	216	225	322	210	218	313
Crosspoint Business	205	182	330	196	175	315
Millersport Highway	180	257	261	171	246	249
Existing LRT	6,690	7,163	7,444	6,433	6,925	7,161
Total	**21,314**	**22,190**	**23,326**	**20,767**	**21,690**	**22,662**

Table 26: LRT Bailey Avenue 2 & Millersport Hwy Average Academic Day Station Project Boardings

	Bailey Avenue 2			Millersport Hwy		
Station	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**
Bailey Ave at Grover Cleveland Highway	1,337	1,527	1,488	1,112	1,254	1,226
Eggert Road/Millersport				545	645	622
Eggert Road/Sheridan	250	291	301			
Sheridan Dr at Millersport				364	404	453
Bailey at Maple Road	555	555	696			
Millersport Hwy at Flint Rd				1,296	1,496	1,497
Maple at Sweet Home	1,319	1,432	1,498			
Sweet Home at Rensch	1,752	1,757	1,789	1,108	1,108	1,108
UB North Campus – Capen Hall	3,041	3,035	3,126	2,791	2,802	2,845
UB North - Library	2,125	2,123	2,152	2,204	2,184	2,267
UB North Commons Building	587	587	588	632	632	645
UB North - Greiner Hall	2,107	2,107	2,107	2,116	2,118	2,119
Sylvan Parkway	483	499	624	476	492	613
I-990 Interchange	0	0	0	0	0	0
North French Road	201	219	293	309	316	467
Crosspoint Business	249	250	390	80	98	118
Millersport Highway	0	0	0	0	0	0
Existing LRT	6,280	6,712	6,956	6,284	6,804	6,959
Total	**20,285**	**21,093**	**22,007**	**19,318**	**20,354**	**20,939**

Table 27: BRT Niagara Falls 1 & 2 Average Academic Day Station Project Boardings

	Niagara Falls 1			Niagara Falls 2		
Station	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**
Bailey at Maple Road	431	433	454	421	425	441
Maple at Sweet Home	904	916	963	906	912	965
NF Blvd at Cambridge	235	259	275	222	243	261
NF Blvd at Decatur Rd	161	167	220	163	172	219
NF Blvd At Eggert Rd	177	189	210	173	184	204
NF Blvd at Kenmore Ave	1,323	1,307	1,386	1,321	1,306	1,384
NF Blvd Mall 1	302	287	362	302	286	362
NF Blvd Mall 2	262	269	307	211	219	247
NF Blvd at Romney Rd	710	807	794	657	745	739
Ridge Lea Station	168	182	187	150	161	166
Ridge Lea at Meyer Rd	237	255	277	236	263	275
UB South Campus	4,112	4,319	4,473	3,858	4,043	4,177
Sweet Home at Rensch	1,230	1,227	1,241	1,229	1,226	1,239
UB North - Capen Hall	2,829	2,828	2,878	2,790	2,792	2,833
UB North - Library	2,184	2,179	2,210	2,178	2,172	2,201
UB North Commons	550	549	553	572	569	582
UB North - Greiner Hall	2,082	2,082	2,082	2,082	2,082	2,082
Sylvan Parkway Stati	296	297	375	310	300	407
I-990 Interchange	140	133	199	0	0	0
North French Road	245	226	385	71	68	112
Crosspoint Business	75	77	114	74	65	119
Millersport Highway	0	0	0	234	265	348
Total	**18,652**	**18,989**	**19,946**	**18,162**	**18,500**	**19,366**

Table 28: BRT Bailey Avenue 1 & 2 Average Academic Day Station Project Boardings

	Bailey Avenue 1			Bailey Avenue 2		
Station	**2012**	**2025**	**2035**	**2012**	**2025**	**2035**
Bailey At Cambridge	571	579	692	567	571	685
Bailey At Eggert	180	198	211	171	190	201
Bailey At Emerson Dr	26	26	34	31	30	40
Bailey at Loop Station	686	769	821	658	738	789
Bailey at Maple Road	148	135	200	161	154	218
Bailey At Sheridan	38	40	44	40	43	47
Maple at Sweet Home	986	1,003	1,055	900	912	970
UB South Campus	4,656	4,854	4,970	4,584	4,793	4,899
Bailey Ave at Grover	808	915	868	787	889	844
Sweet Home at Rensch	1,301	1,305	1,327	1,266	1,270	1,294
UB North – Capen Hall	2,804	2,810	2,854	2,497	2,499	2,539
UB North - Library	2,210	2,202	2,239	2,001	1,993	2,026
UB North Commons	539	538	539	528	527	532
UB North - Greiner Hall	2,082	2,082	2,082	1,723	1,723	1,723
Sylvan Parkway	315	324	400	347	341	450
I-990 Interchange	146	141	207	0	0	0
North French Road	226	223	345	172	174	260
Crosspoint Business	122	120	191	110	97	177
Millersport Highway	0	0	0	203	280	292
Total	**17,844**	**18,262**	**19,077**	**16,746**	**17,223**	**17,984**

Table 29: BRT Millersport Hwy 1 Average Academic Day Station Project Boardings

	Millersport Hwy 1		
Station	**2012**	**2025**	**2035**
Bailey at Loop Station	523	535	592
Rosedale Blvd.	293	313	309
UB South Campus	4,594	4,859	4,900
Sheridan Dr	206	211	257
Millersport Hwy at Flint	916	940	959
Sweet Home at Rensch	1,053	1,053	1,053
UB North – Capen Hall	2,859	2,866	2,926
UB North - Library	2,133	2,122	2,171
UB North Commons	549	554	560
UB North - Greiner Hall	2,091	2,093	2,093
Sylvan Parkway	379	376	491
I-990 Interchange	0	0	0
North French Road	198	199	301
Crosspoint Business	66	61	105
Millersport Highway	216	303	309
Total	**16,076**	**16,170**	**16,470**

Table 30 shows the number of incremental linked transit trips for each LRT alternative, while Table 31 presents the same statistics for the BRT alternatives.

Table 30: LRT Academic Day Incremental Linked Transit Trips

	Niagara Falls 1	Niagara Falls 2	Niagara Falls 7	Bailey Ave 1	Bailey Ave 2	Millersport Hwy 1
2012	2,493	3,081	3,722	2,938	2,301	2,006
2025	2,498	3,216	4,009	3,083	2,323	2,070
2035	3,225	3,954	4,786	3,813	2,976	2,551

Table 31: BRT Academic Day Incremental Linked Transit Trips

	Niagara Falls 1	Niagara Falls 2	Bailey Ave 1	Bailey Ave 2	Millersport Hwy 1
2012	2,636	2,329	3,155	3,097	2,490
2025	2,819	2,528	3,620	3,616	2,806
2035	3,336	2,969	4,217	4,166	3,353

Tables 32 and 33, have information for incremental academic day automobile passenger miles travelled and vehicle miles travelled for LRT and BRT alternatives, respectively.

Table 32: LRT Academic Day Incremental PMT & VMT

	Year	Niagara Falls 1	Niagara Falls 2	Niagara Falls 7	Bailey Ave 1	Bailey Ave 2	Millersport Hwy
PMT	2012	-21,075	-23,616	-27,746	-23,320	-19,622	-18,235
	2025	-22,125	-24,746	-29,781	-24,995	-20,445	-19,768
	2035	-26,280	-29,172	-34,332	-29,323	-24,537	-22,968
VMT	2012	-17,563	-19,680	-23,122	-19,433	-16,352	-15,196
	2025	-18,438	-20,622	-24,818	-20,829	-17,038	-16,473
	2035	-21,900	-24,310	-28,610	-24,436	-20,448	-19,140

Table 33: BRT Academic Day Incremental PMT & VMT

	Year	Niagara Falls 1	Niagara Falls 2	Bailey Ave 1	Bailey Ave 2	Millersport Hwy
PMT	2012	-12,547	-9,982	-20,410	-20,061	-18,456
	2025	-13,887	-11,434	-22,181	-22,340	-18,485
	2035	-16,354	-13,434	-25,240	-25,156	-20,363
VMT	2012	-10,456	-8,318	-17,008	-16,718	-15,380
	2025	-11,573	-9,528	-18,484	-18,617	-15,404
	2035	-13,628	-11,195	-21,033	-20,963	-16,969

Being an extension of the current Metrorail and faster than BRT, the LRT alternatives have higher ridership. All LRT alternatives have similar total travel times; the difference in ridership between then is mostly in the different number of new stations. For example, the Niagara Fall 7 option, the one with the highest project boardings, has 15 new stations while Millersport Hwy, which is the one with the lowest project boardings, has only 11 new stations.

Overall the BRT alternatives have a greater number of stops compared to the LRT option. Because of that the ridership is not significantly lower than the LRT. There is robust ridership for all of the BRT alternatives, except Millersport. That alternative makes fewer stops as compared to the LRT, which drives the forecasts down when comparing LRT vs. BRT.