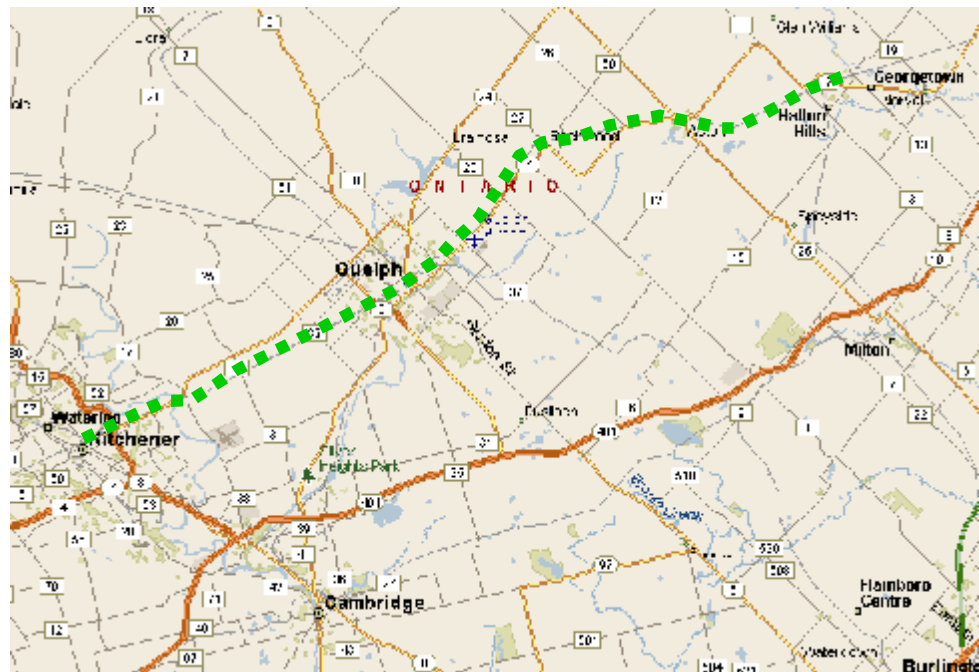




Appendix A
Ridership Forecasts Report (Paradigm
Transportation Solutions Ltd.)



GO Transit Georgetown to Kitchener Rail Expansion Feasibility Study Ridership Forecasts



Prepared for:
GO Transit
&
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November 2008

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PROJECT SUMMARY

PROJECT NAME: **GO TRANSIT GEORGETOWN TO KITCHENER
RAIL EXPANSION FEASIBILITY STUDY
RIDERSHIP FORECASTS**

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REPORT DATE: **NOVEMBER 2008**
PROJECT NUMBER: **080650**

EXECUTIVE SUMMARY

R J Burnside and Associates Ltd (Burnside) has been retained by GO Transit to conduct the Georgetown to Kitchener Rail Expansion Environmental Assessment and Preliminary Design Study. This study is a comprehensive investigation of the provision of GO Transit rail service to Guelph and the Region of Waterloo utilizing the Georgetown rail corridor. Paradigm Transportation Solutions Ltd. (Paradigm) has been retained by R J Burnside and Associates to assist with the assessment of travel patterns in the study corridor and prepare estimates of transit ridership that could be expected with future rail services. This report documents the investigations and findings carried out in the development of ridership estimates for the study.

Based on the investigations carried out, the report has reached the following conclusions:

- ▶ The Guelph – Region of Waterloo area is a major urban area with a growing population, strong economy and strong links with the GTA. The current combined population is about 600,000 people and considerable population and employment growth is anticipated over the next 10 to 20 years. The primary urban areas are the cities of Guelph, Kitchener, Waterloo and Cambridge (G-K/W/C).
- ▶ The four cities have 4 major post-secondary educational institutions and have well established local transit services.
- ▶ The CN Rail line accommodates the GO Rail line as far as Georgetown and continues west through the centre of Guelph and Kitchener. The Georgetown GO rail corridor extends through Georgetown, Brampton and into the City of Toronto to Union Station. For travel demand analyses purposes, the primary study corridor is considered to include the Region of Waterloo, Guelph and south Wellington County, Halton Region, Peel Region and the City of Toronto.
- ▶ The primary transportation corridor connecting the study area to existing GO Transit services is the Highway 401 freeway corridor. Other highway connections to the GO services include Highway 7 to Georgetown and Highways 6 and 8 to Hamilton and Burlington.
- ▶ The existing travel demand characteristic in the study corridor is established based on the trip to work demand (i.e. Home-Based-Work or HBW) and the trip to school for post secondary students demand (Home Based School or HBSch) from 2006 Transportation Tomorrow Survey (TTS) travel data.
- ▶ The most significant travel activity occurs between Waterloo Region and Guelph with about 32,000 trips daily in each direction. This corridor has about 12,000 to 13,000 trips in the peak direction during the weekday peak period with the peak being eastbound in the AM and westbound in the PM. However, the non-peak direction travel is also significant.
- ▶ The travel demand generated by the Waterloo Region and Guelph urban areas in the study corridor tends to decrease towards Toronto, indicating that many of the inter-regional trips generated by these two areas are to and from the western GTA areas of Halton and Peel Regions.
- ▶ In the 2002/2003 academic year, the student double cohort plan created a significant increase in enrollment in post secondary institutions which increased traffic activities within the study area with four major universities and colleges. The increase in traffic between the Kitchener-Waterloo and Guelph-Wellington also suggest a strong employment and population growth in these areas.
- ▶ The TTS data indicates that private automobiles are currently the dominant mode of travel in the study

corridor with GO Rail trips to and from G-K/W/C amounting to less than 1% of the total trips in the corridor. This is related to the relatively long distance that needs to be traveled to reach GO Rail terminals from the study areas.

- ▶ The travel demand in the study corridor is forecast to increase by approximately 30% in the next 25 years. The corridor demand between Peel Region and Kitchener Waterloo Region and Guelph-Wellington is expected to increase significantly.
- ▶ Based on the future corridor trip demand in the study area and the existing GO Rail mode share rate in other similar corridors, the GO Rail passenger volumes in the study corridor are forecast to be about 2,300-5,000 daily trips in the short term (2011) and about 9,000-16,000 daily trips in the long term(2031). The low ridership estimates reflect an established peak period rail service operating in both directions while the high estimates reflect all day rail service operating on both directions.
- ▶ The low ridership estimates are consistent with the other estimates of ridership estimated in a report on this same rail corridor prepared by Dillon Consulting Ltd in February 2006. The high estimates may be somewhat optimistic (i.e., high) but it should also be recognized that the Guelph-Kitchener/Waterloo/Cambridge is a unique economic growth area that appears to have significant potential for considerable inter-regional transit ridership.
- ▶ Based on the forecast GO Rail ridership and the existing GO Rail passenger volume forecasts at other similar GO stations, the potential GO Rail trip origins and trip destinations by direction (i.e., Ons and Offs) to/from potential stations in Guelph-Wellington and Waterloo Region have been estimated. It is estimated that about 65 % of the passenger demand would be automobile oriented demand and is most likely to use the fringe stations with parking facilities while the remaining 35 % of the passenger demand would likely use downtown stations using local transit, walking or cycling access modes with some minor amount of kiss and ride access activity. The estimated passenger activity by potential station sites is provided in Table ES.1 below.

TABLE ES.1: POTENTIAL STATION RIDERSHIP ACTIVITY

Possible GO Rail Stations	2011 Potential Passenger Trips (Ons & Offs)	2031 Potential Passenger Trips (Ons & Offs)
Kitchener Downtown	1,290	4,330
Kitchener Fringe	2,390	7,200
Guelph Downtown	1,470	5,000
Guelph Fringe	1,330	4,160
Acton Station	610	850

- ▶ Based on the assesement of the overall parking demand at similar stations and assuming no parking is provided at the downtown stations, the parking demand at the potential fringe station has been estimated as shown in Table ES.2 below.

TABLE ES.2: ESTIMATED PARKING DEMAND AT STATIONS

Potential Station Locations	Parking Demand (vehicles)	
	2011	2031
Kitchener Fringe Station (s)	670	2200
Guelph Fringe Station	210	670
Acton Station	140	200

CONTENTS

1.0 INTRODUCTION	1
1.1 OVERVIEW	1
1.2 BACKGROUND	1
1.4 STUDY AREA	1
2.0 EXISTING TRAVEL DEMAND	4
3.0 FUTURE TRAVEL DEMAND	19
3.1 FUTURE CORRIDOR DEMAND	19
4.0 FUTURE GO RAIL DEMAND	27
4.1 GO RAIL MODAL SHARE ESTIMATES	27
4.2 COMPARISON OF RIDERSHIP ESTIMATES WITH EXISTING GO RAIL EXPERIENCE	34
4.3 GO RAIL STATION DEMAND CHARACTERISTICS	36

APPENDICES

APPENDIX A – GO RAIL PASSENGER FORECASTS

FIGURES

FIGURE 1.1: GO RAIL EXPANSION AREA	3
FIGURE 1.1: GO RAIL EXPANSION AREA	3
FIGURE 2.1: TRAVEL DEMAND PRIMARY STUDY CORRIDOR	5
FIGURE 2.2: 2006 TEMPORAL TRAVEL DEMANDS (HBW + HBSCH)	6
FIGURE 2.3: 2006 CORRIDOR TRAVEL DEMANDS (HBW + HBSCH)	17
FIGURE 2.4: COMPARISON OF 2006 AND 1996 DAILY CORRIDOR TRAVEL DEMAND (HBW + HBSCH)	18
FIGURE 3.1: POPULATION AND EMPLOYMENT FORECAST	20
FIGURE 3.2: 2011 CORRIDOR TRAVEL DEMANDS (HBW + HBSCH)	24
FIGURE 3.3: 2021 CORRIDOR TRAVEL DEMANDS (HBW + HBSCH)	25
FIGURE 3.4: 2031 CORRIDOR TRAVEL DEMANDS (HBW + HBSCH)	26
FIGURE 4.1: 2011 CORRIDOR GO RAIL DEMANDS (HBW + HBSCH) (LOW ESTIMATES)	29
FIGURE 4.2: 2011 CORRIDOR GO RAIL DEMANDS (HBW + HBSCH) (HIGH ESTIMATES)	30
FIGURE 4.3: 2021 CORRIDOR GO RAIL DEMANDS (LOW ESTIMATES)	31
FIGURE 4.4: 2021 CORRIDOR GO RAIL DEMANDS (HIGH ESTIMATES)	32
FIGURE 4.5: 2031 CORRIDOR GO RAIL DEMANDS (LOW ESTIMATES)	33
FIGURE 4.6: 2031 CORRIDOR GO RAIL DEMANDS (HIGH ESTIMATES)	34

TABLES

TABLE 2.1: 2006 AM PEAK PERIOD HOME BASED WORK (HBW) DEMAND	7
TABLE 2.2: 2006 AM PEAK PERIOD HOME BASED SCHOOL (HBSCH) DEMAND	9
TABLE 2.3: 2006 PM PEAK PERIOD HOME BASED WORK (HBW) DEMAND	11
TABLE 2.4: 2006 PM PEAK PERIOD HOME BASED SCHOOL (HBSCH) DEMAND	12
TABLE 2.5: 2006 PM DAILY HOME BASED WORK (HBW) DEMAND	14
TABLE 2.6: 2006 PM DAILY HOME BASED SCHOOL (HBSCH) DEMAND	15
TABLE 2.7: 2006 DAILY MODE SHARE (HBW + HBSCH)	18
TABLE 3.1: 2005 REPORTED ADDRESS FOR POST SECONDARY STUDENTS	22
TABLE 4.1: 2006 DAILY MODE SHARE ESTIMATES	27
TABLE 4.2: GO RAIL MODAL SHARE ESTIMATES FOR KITCHENER WATERLOO – GUELPH-WELLINGTON CORRIDOR	28

1.0 INTRODUCTION

1.1 Overview

R J Burnside and Associates Ltd (Burnside) has been retained by GO Transit to conduct the Georgetown to Kitchener Rail Expansion Environmental Assessment and Preliminary Design Study. This study is a comprehensive investigation of the provision of GO Transit rail service to Guelph and the Region of Waterloo utilizing the Georgetown rail corridor. Paradigm Transportation Solutions Ltd. (Paradigm) has been retained by R J Burnside and Associates to assist with this study. Paradigm's primary task is the assessment of travel patterns in the study corridor and preparation of estimates of future transit ridership that could be expected with future rail services.

This report is a technical paper documenting the investigations and findings carried out by Paradigm in the development of ridership estimates for the study. These estimates will be utilized by Burnside in the feasibility study of GO Rail expansion and the more detailed planning of service expansion alternatives.

1.2 Background

GO Transit currently provides commuter rail service in three corridors in the western portion of the Greater Toronto Area (GTA); namely the Lakeshore West corridor ending in Hamilton, the Milton corridor ending in Milton and the Georgetown corridor ending in Georgetown. The Lakeshore West corridor has all day service as far west as Burlington (Aldershot Station) with peak period service to Hamilton while the Milton and Georgetown corridors only have peak service on weekdays at the present time with bus service during other time periods.

The Guelph – Region of Waterloo area is a major urban area with a combined population of about 600,000 persons immediately west of the GTA. It has a growing population, a strong economy and strong links with the GTA. The CN Rail line that accommodates the GO Rail line as far as Georgetown continues west through the centre of Guelph and Kitchener and could potentially accommodate a commuter rail service that would meet the need for travel between the Guelph – Kitchener/Waterloo/Cambridge (G-K/W/C) urban areas and the GTA. In 2007, GO Transit completed an initial study of the feasibility of rail service in this corridor. Since that time, there has been increased interest in development of GO Rail service to the G-K/W/C area. This current study by Burnside is intended to further explore the feasibility of GO Rail services and to provide the basis for further planning and preliminary design work if a decision is made to proceed.

1.4 Study Area

For purposes of developing GO Rail ridership estimates, the commuter shed that would potentially be serviced by an expansion of the Georgetown GO Rail line is assumed to consist of the City of Guelph, south Wellington County and the entire Region of Waterloo. The primary urban areas are the cities of Guelph, Kitchener, Waterloo and Cambridge (G-K/W/C). This service area is illustrated in Figure 1.1 below. The Georgetown GO rail corridor extends through Georgetown, Brampton and into the City of Toronto to Union Station. For travel demand analyses purposes, the primary study corridor is considered to include the Region of Waterloo, Guelph and south Wellington County, Halton Region, Peel Region and the City of Toronto.

In the study area, the Cities of Kitchener, Waterloo and Cambridge comprise the urban area of the Regional Municipality of Waterloo. The City of Guelph is the primary urban area within Wellington County. The location of these urban areas relative to each other and relative to the potential GO Rail corridor is illustrated in Figure 1.1. Kitchener and Waterloo form a contiguous urban area. Cambridge is located on

the southeast side of the City of Kitchener and has urban development generally adjacent to Kitchener. However, there are undeveloped areas and river valley lands between the main urban areas of Kitchener and Cambridge.

The three cities in Waterloo Region are generally developed along the central King Street spine (the original Highway 8 route). The main connecting transportation corridor is the Highway 8 freeway and the Highway 7/8/86 freeway around Kitchener and Waterloo city centres. Downtown Kitchener is approximately 3 kilometres from downtown Waterloo and approximately 18 kilometres from the downtown area of Cambridge. The primary transportation corridor connecting these three cities to existing GO Transit services is the Highway 401 freeway corridor. Other highway connections to the GO services include Highway 7 to Georgetown and Highways 6 and 8 to Hamilton/Burlington.

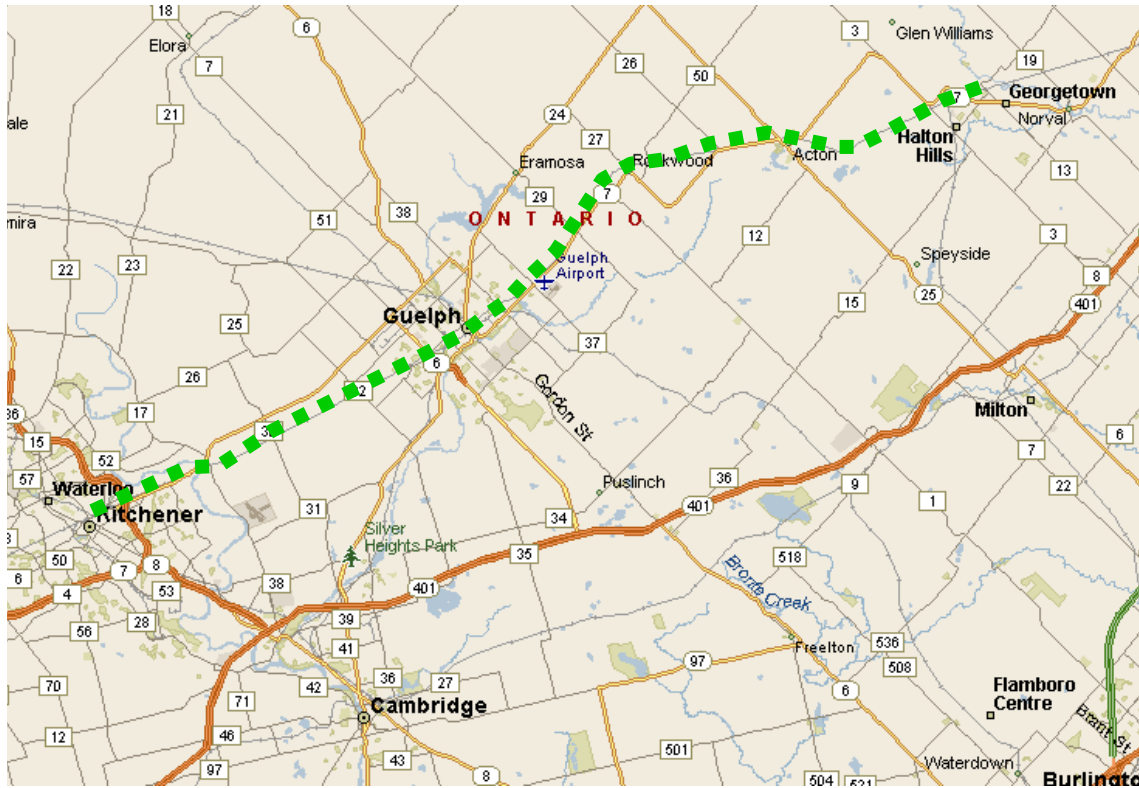
The four cities have 4 major post-secondary educational institutions as follows:

- ▶ University of Waterloo in Waterloo
- ▶ Wilfrid Laurier University in Waterloo
- ▶ University of Guelph in Guelph
- ▶ Conestoga College in Kitchener (with minor campuses in Guelph and Waterloo)

For the purpose of this investigation, the study area has been looked at on two levels: a secondary study area that is based on the overall Transportation Tomorrow Survey (TTS) area coverage; and a primary study area that is focused on the western commuter shed. The secondary study area extends from Douro – Drummer and Asphodel-Norwood in the east to Waterloo Region in the southwest to Niagara Region in the south. The primary study area includes Waterloo Region, Guelph and Wellington County, Halton and Peel Regions and the City of Toronto.

These study areas have been based on the TTS traffic zone system which has been aggregated into the analysis zones as shown in the previous study. Generally, the zone aggregation is to a municipal level of detail in the primary study area and to a regional level of detail in the remainder of the study area. The study area includes the current GO Transit service area, with western train termini at Georgetown, Milton and Hamilton Stations, and GO bus termini at Guelph, Milton and Hamilton.

FIGURE 1.1: GO RAIL EXPANSION AREA

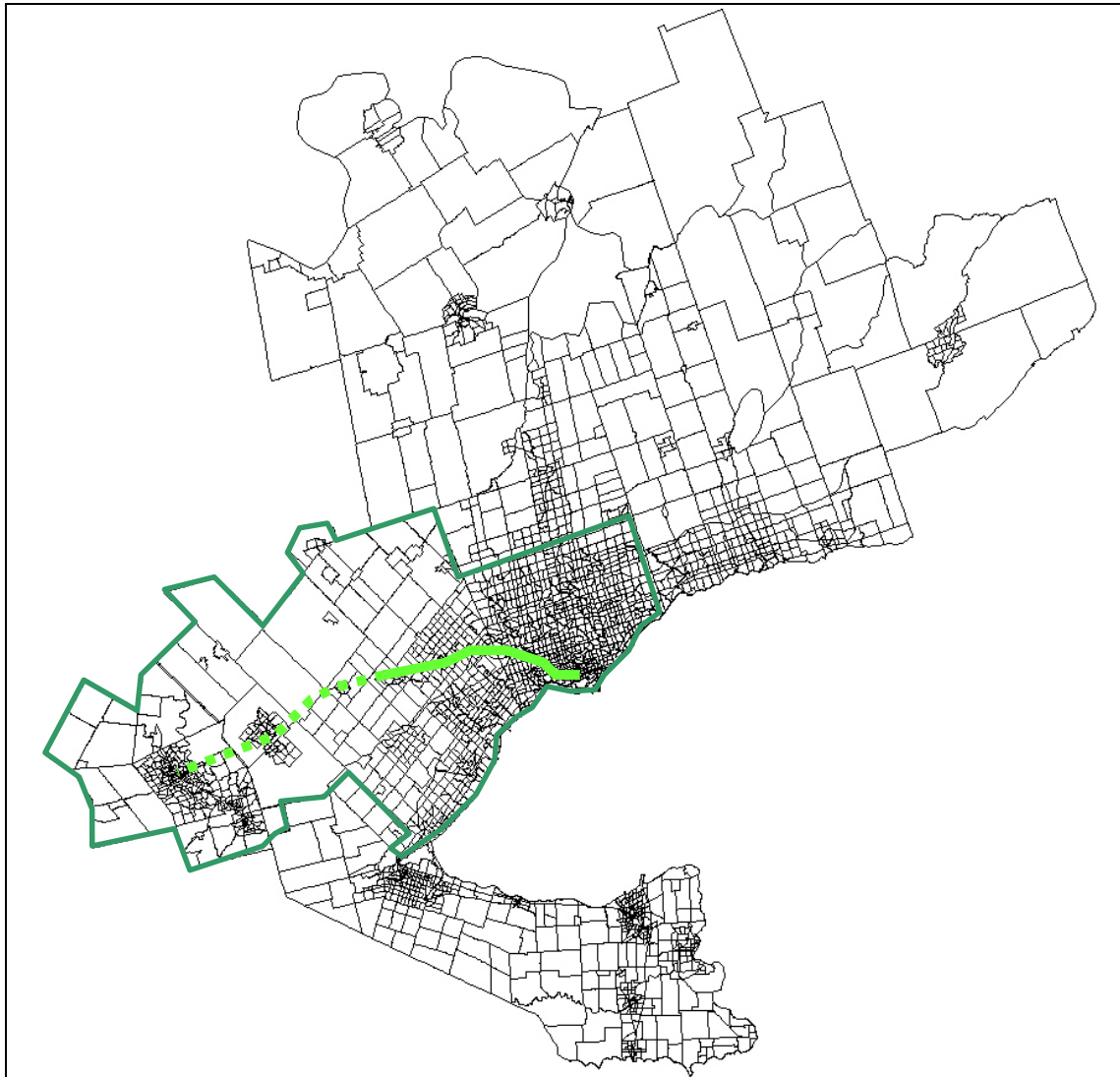


2.0 EXISTING TRAVEL DEMAND

For the past 20 years, travel data in the Greater Golden Horseshoe area have been collected every 5 years in conjunction with census years (i.e. 1986, 1991, 1996, 2001 and 2006) through the Transportation Tomorrow Survey (TTS). In general, travel data are collected for all trip purposes and trip modes made by all residents of the household (older than 15 years of age) for a sample 24-hour period. Sampling is undertaken in all member municipalities and generally falls in the 3% to 6% range. In year 2001, the survey was not conducted within the Region of Waterloo but TTS travel data was collected for both Waterloo Region and Guelph – south Wellington in 2006. Since the 2006 TTS travel data is very recent and covers the entire study area, it provides an excellent basis to establish the existing travel demand characteristics for the study corridor.

An understanding of two travel demand market segments is important when analyzing the potential for GO Transit service. In particular, the journey to work demand (i.e. Home-Based-Work or HBW) and the journey to school for post secondary students demand (Home Based School or HBSch) are the markets with greatest potential to attract GO Transit ridership. The study corridor considered in assessing the travel patterns as related to a Georgetown GO Rail expansion includes the Region of Waterloo, Guelph and south Wellington County, Region of Halton, Region of Peel and City of Waterloo. This corridor is illustrated in Figure 2.1 in relation to the overall Golden Horseshoe Area.

In terms of GO service to the area, AM peak period and PM peak period demands are important to determine the level of service required to accommodate the corridor travel demand. Daily demands also provide information with respect to total demands, although outside of the peak periods, HBW and HBSch demands total about 35% of the total daily demand in the primary study area (Figure 2.2).

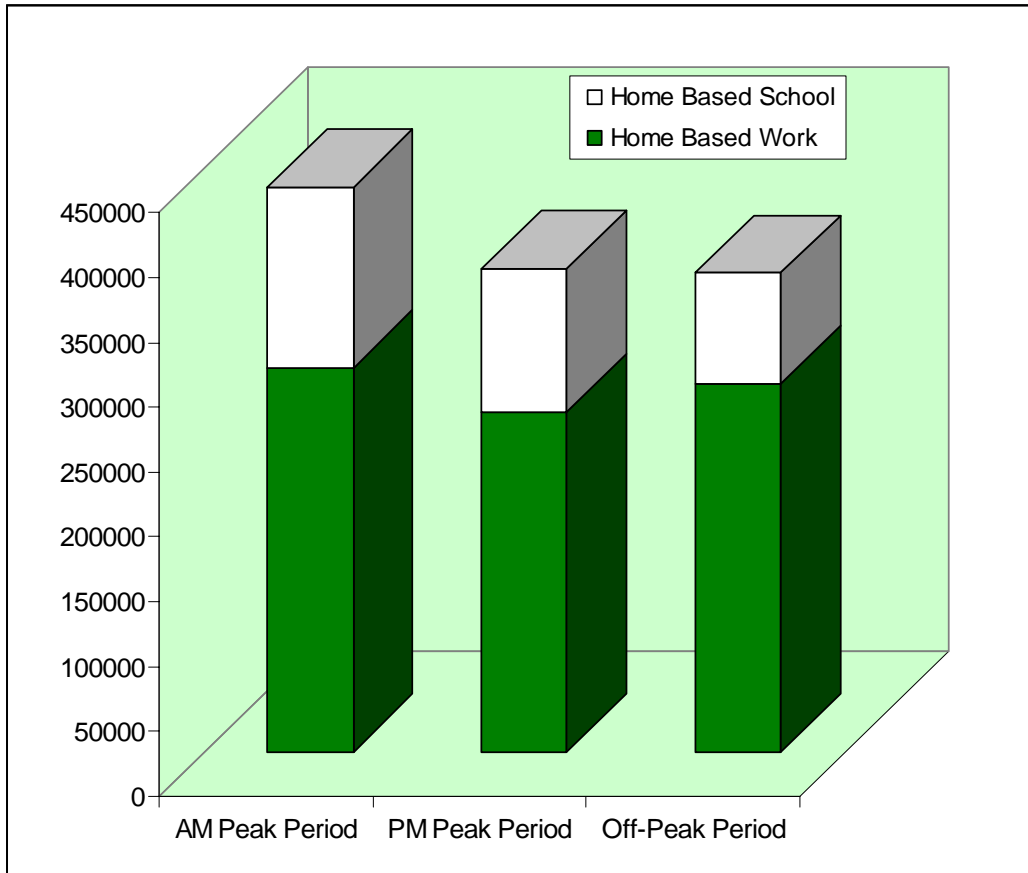
FIGURE 2.1: TRAVEL DEMAND PRIMARY STUDY CORRIDOR**AM Peak Period Travel**

For intercity travel demand, the AM peak period has been defined as any trip that has a start time between 6:00 AM and 9:00 AM. Table 2.1 below summarizes the observed HBW demand in the study corridor for the 2006 AM peak period. Some important observations include:

- ▶ There are about 7,100 work trips made during the morning commute from Waterloo Region to Guelph-Wellington and about 5,600 made from Guelph-Wellington to Waterloo Region.
- ▶ Peel Region attracts 2,700 work trips from Waterloo Region and 3,150 from Guelph-Wellington while it generates about 1,250 work trips to Waterloo Region and 650 to Guelph-Wellington.
- ▶ Downtown Toronto attracts about 220 work trips from Waterloo Region and 300 from Guelph-Wellington while it generates about 60 work trips to Waterloo Region and 90 trips to Guelph-

Wellington.

FIGURE 2.2: 2006 TEMPORAL TRAVEL DEMANDS (HBW + HBSch)



Trip Purpose	AM Peak Period	PM Peak Period	Off-Peak Period	Daily
HBW	296821	262566	284443	843830
HBSch	139393	111074	85345	335812
Total	436214	373640	369788	1179642

Trip Purpose	AM Peak Period	PM Peak Period	Off-Peak Period	Daily
HBW	35.2%	31.1%	33.7%	100.0%
HBSch	41.5%	33.1%	25.4%	100.0%
Total	37.0%	31.7%	31.3%	100.0%

Table 2.2 below summarizes the observed HBSch post secondary travel demand in the study corridor for the 2006 AM peak period. Some important observations include:

- ▶ Most Home-Based School travel tends to be shorter-distance travel with a significant amount of the demand being self-contained within the community.
- ▶ There are about 500 school trips made during the AM peak period from Waterloo Region to Guelph-Wellington and about 1,150 made from Guelph-Wellington to Waterloo Region.
- ▶ Downtown Toronto attracts about 20 school trips from Waterloo Region and 40 from Guelph-Wellington while it was not observe to generate any school trips to either Waterloo Region or Guelph-Wellington.

PM Peak Period Travel

For intercity travel demand the PM peak period has been defined as any trip that has a start time between 3:00 PM and 6:00 PM. Table 2.3 below summarizes the observed HBW demand in the study corridor for the 2006 PM peak period. Some important observations include:

- ▶ There are about 4,100 work trips made during the afternoon commute from Waterloo Region to Guelph-Wellington and about 6,675 made from Guelph-Wellington to Waterloo Region.
- ▶ Peel Region attracts 800 work trips from Waterloo Region and 700 from Guelph-Wellington while it generates about 2,475 work trips to Waterloo Region and 1,600 to Guelph-Wellington.
- ▶ Downtown Toronto attracts about 20 work trips from Waterloo Region while it generates about 280 work trips to Waterloo Region and 400 to Guelph-Wellington.

Table 2.4 below summarizes the observed HBSch demand in the study corridor for the 2006 PM peak period. Some important observations include:

- ▶ Most Home-Based School travel tends to be shorter-distance travel with a significant amount to the demand being self-contained within the community.
- ▶ There are about 775 school trips made during the PM peak period from Waterloo Region to Guelph-Wellington and about 450 made from Guelph-Wellington to Waterloo Region.
- ▶ Downtown Toronto was not observed to attract any school trips from either of Waterloo Region or Guelph-Wellington while it generated about 20 school trips to Waterloo Region and 50 to Guelph-Wellington.

TABLE 2.3: 2006 PM PEAK PERIOD HOME BASED WORK (HBW) DEMAND

Municipality	Durham-Kawatha-Peterborough	Haldon - Haldon Hills	Haldon - Burlington	Haldon - Milton	Haldon - Oakville	Haldon - Dundas	Haldon - Farnborough	Haldon - Glanbrook	Haldon - Ancaster	Hamilton-Stoney Creek	Niagara	Peel - 401/407 Gore	Peel - Brampton	Peel - Caledon-Orangeville	Peel - Mississauga	RMOW - Cambridge	RMOW - Kitchener	RMOW - Townships	RMOW - Waterloo	Simcoe	Toronto Central	Toronto Core	Toronto East	Toronto North	Toronto Northeast	Toronto Northwest	Toronto West	Wellington	Wellington - Guelph	York	ZZ Excl/Undel.	Total	
Durham-Kawatha-Peterborough	90612	32	71	36	66	16	89	70	35	19	17	621	222	397	62	64	18	20	18	522	1027	346	1887	504	915	368	573	52	2573	101	100964		
Haldon - Haldon Hills	83	3730	207	419	81	177	79	80	19	17	17	621	222	397	62	64	18	20	18	522	1027	346	1887	504	915	368	573	52	2573	101	100964		
Haldon - Burlington	41	179	13495	342	2198	6662	380	1480	377	541	1533	1682	367	1491	234	60	36	38	44	108	121	35	56	37	91	469	37	132	262	455	32922		
Haldon - Milton	116	601	659	3209	419	400	293	34	35	110	687	113	916	277	188	18	18	16	16	65	148	17	18	76	16	124	235	193	373	212	38	9629	
Haldon - Oakville	219	506	5002	974	10615	1908	115	623	49	330	463	513	985	120	5345	98	88	18	227	213	189	95	76	146	1118	34	49	372	293	30866			
Hamilton	57	51	2781	140	877	32067	1734	1123	1165	3056	5760	3145	193	643	238	194	125	84	108	84	32	54	32	54	152	97	40	168	41	1293	54206		
Hamilton - Dundas	38	18	728	34	748	748	108	34	188	108	14	11	19	11	17	78	78	17	36	20										94	2253		
Hamilton - Farnborough	25	37	551	53	34	659	229	1374	107	180	72	23	23	78	78	17	36	20											64	20	248	3878	
Hamilton - Glanbrook	25	17	153	35	413	35	17	207	89	179	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	
Hamilton-Ancaster	19	17	153	35	413	35	17	207	89	179	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	
Hamilton-Stoney Creek	21	17	153	35	413	35	17	207	89	179	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	
Hamilton-Stoney Creek	25	18	383	120	919	17	85	70	588	6732	41	42	149	21	38	18	43	18	18	51	18	18	18	18	18	18	18	18	18	18	18	18	
Peel - 401/407 Gore	601	1688	616	800	871	294	17	38	34	36	89	152	3247	3115	9754	180	194	19	18	662	818	313	505	581	421	1448	2523	190	178	3302	453	62656	
Peel - Brampton	29	136	36	33	50	18	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
Peel - Caledon-Orangeville	2071	2838	419	3382	8270	1865	147	469	69	260	298	757	2675	2652	7077	1002	700	144	170	1371	3368	2150	2004	2152	1327	4070	13929	326	705	7774	634	165387	
RMOW - Kitchener	38	72	150	193	18	272	33	208	51	106	99	168	23	213	15878	4519	1211	1275	64	54	36	18	18	18	18	18	18	18	18	18	18	18	
RMOW - Kitchener	18	130	31	39	210	16	35	16	18	35	16	18	35	16	18	35	16	18	35	16	18	35	16	18	35	16	18	35	16	18	35	16	
RMOW - Waterloo	33	117	48	54	82	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
RMOW - Townships	498	14	164	67	35	389	16	20	36	72	71	699	183	399	274	18	42	34	45	33960	177	72	73	58	69	259	229	51	1750	1114	40908		
Toronto Central	4681	97	266	200	444	171	74	50	18	107	74	118	73	3076	39	49	20	323	23683	5100	8474	6511	3402	1934	3402	1934	9557	74	9677	48	79469		
Toronto Core	11854	691	2713	711	5136	1134	150	133	32	265	213	502	6183	482	17247	112	90	18	63	883	33957	22458	14454	10091	6938	4648	30715	137	261	22215	281	194333	
Toronto East	1590	34	33	31	141	62	26	26	630	42	1028	58	20	63	6095	1409	15242	1609	153	6995	1409	15242	1609	153	6995	1409	15242	1609	153	6995	1409	15242	
Toronto North	3102	89	204	124	193	43	19	18	810	212	2212	20	63	337	6083	1291	3339	7573	3267	1923	4022	4022	4022	4022	4022	4022	4022	4022	4022	4022	4022	4022	
Toronto Northeast	5988	55	75	35	104	21	20	20	123	23	664	23	18	220	2483	715	7328	1781	8306	670	10958	62	7063	30	36845	62	7063	30	36845				
Toronto Northwest	1653	340	454	360	767	317	33	114	38	18	36	89	6491	1014	6366	123	79	18	22	1578	3762	1431	1545	3795	1459	13108	10332	58	143	12648	159	68348	
Toronto West	1965	166	678	438	1603	346	51	93	18	52	35	146	3740	801	12127	137	93	19	54	725	6877	5664	2517	2951	1807	5616	34243	20	53	7734	201	90910	
Wellington	17	98	14	94	18	71	44	480	381	122	166	63	77	44	480	381	122	166	63	77	44	480	381	122	166	63	77	44	480	381	122	166	
Wellington - Guelph	16	194	126	252	59	352	48	150	31	40	53	103	107	300	1922	2217	695	699	21	6095	6430	1660	6707	7457	7504	7448	7835	20	97	84298	155	161024	
York	12194	294	257	288	670	372	32	34	85	57	6187	2227	4911	201	225	37	40	6095	6430	1660	6707	7457	7504	7448	7835	20	97	84298	155	161024			
ZZ Excl/Undel.	654	85	346	87	69	886	151	189	102	453	127	610	143	491	119	820	875	595	361	7673	73	40	40	40	40	40	40	40	40	40	40	40	
Total	143409	12441	34203	12422	33078	57697	4117	7275	2991	6659	12381	78380	0	89364	18363	139219	27387	42611	11200	20043	55603	95010	43382	64451	46504	40971	43231	12008	8257	23857	178159	30508	1507474

Daily Travel

Table 2.5 below summarizes the observed HBW demand in the study corridor for the 2006 daily period. Some important observations include:

- ▶ There are about 16,550 work trips made over a typical day from Waterloo Region to Guelph-Wellington and about 16,950 made from Guelph-Wellington to Waterloo Region.
- ▶ Peel Region attracts 6,000 work trips from Waterloo Region and 5,500 from Guelph-Wellington while it generates about 5,850 work trips to Waterloo Region and 6,680 to Guelph-Wellington.
- ▶ City of Toronto attracts about 2,900 work trips from Waterloo Region and 2,250 from Guelph-Wellington while it generates about 3,025 work trips to Waterloo Region and 1,925 to Guelph-Wellington.

Table 2.6 below summarizes the observed HBSch demand in the study corridor for the 2006 daily period. Some important observations include:

- ▶ Most Home-Based School travel tends to be shorter-distance travel with a significant amount to the demand being self-contained within the community.
- ▶ There are about 1,200 school trips made during a typical weekday from Waterloo Region to Guelph-Wellington and about 1,500 made from Guelph-Wellington to Waterloo Region.
- ▶ Downtown Toronto attracts about 20 school trips from Waterloo Region and 60 from Guelph-Wellington while it generates about 20 school trips to Waterloo Region and 45 trips to Guelph-Wellington.

TABLE 2.5: 2006 PM DAILY HOME BASED WORK (HBW) DEMAND

Municipality	Orham-Kawartha-Peterborough	Haldon - Haldon Hills	Haldon - Burlington	Haldon - Milton	Haldon - Oakville	Haldon - Hamilton	Haldon - Dundas	Haldon - Famborough	Haldon - Glanbrook	Hamilton-Ancaster	Hamilton-Stoney Creek	Niagara	Peel - 401/407 Core	Peel - Brampton	Peel - Caledon-Orangeville	Peel - Mississauga	RMOW - Cambridge	RMOW - Kitchener	RMOW - Townships	RMOW - Waterloo	Simcoe	Ontario Central	Ontario Core	Ontario East	Ontario North	Ontario Northeast	Ontario Northwest	Ontario West	Wellington - Guelph	Wellington - Guelph	York	Ex/Unref.	Total	
Durham-Kawartha-Peterborough	30075	151	205	44	404	140	33	13	46	21	36	336	336	46	120	58	23	1793	10386	18532	14651	5724	10825	3243	4127	34	303	23555	320	40506				
Haldon - Haldon Hills	154	1411	504	1509	963	228	18	142	171	19	101	19	19	101	4314	639	5284	176	118	53	37	67	242	895	83	138	68	331	402	509	781	2717	30398	
Haldon - Burlington	175	509	42469	1733	11240	14654	914	2835	546	1110	3047	2765	2765	1669	2488	237	922	957	212	50	152	79	723	3863	154	468	192	912	1906	133	423	1051	1318	105213
Haldon - Milton	168	1440	1577	10705	2046	971	33	526	34	108	248	1167	1167	3097	349	2182	303	185	171	97	1118	4024	503	466	315	1617	4411	54	313	1906	639	259	36853	
Haldon - Oakville	397	892	10844	2058	35308	4389	248	1011	102	510	884	1167	642	836	36	4454	749	575	125	162	58	478	1976	127	154	21	629	770	100	738	627	3778	184027	
Hamilton	120	245	15157	787	45338	108673	4126	2923	2647	7683	12925	642	642	69	11	251	84	67	33	33	132	298	110	136	110	286	110	286	109	805	18783	11230		
Hamilton - Dundas	38	18	1034	16	329	4344	2542	443	168	592	189	85	85	342	11	251	84	67	33	33	132	298	110	136	110	286	110	286	109	805	18783	11230		
Hamilton - Famborough	133	89	2944	579	974	2921	630	5131	36	349	462	164	164	54	70	18	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	6490
Hamilton - Glanbrook	46	16	542	18	100	2940	118	71	638	378	496	405	405	88	566	137	70	52	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	1790
Hamilton-Ancaster	21	17	1243	18	452	8246	492	406	291	2918	690	313	313	201	12	915	258	35	22	18	36	71	360	37	37	37	37	37	37	37	37	37	37	33526
Hamilton-Stoney Creek	55	19	3273	143	928	14154	173	384	481	704	2203	2913	2913	201	12	915	258	35	22	18	36	71	360	37	37	37	37	37	37	37	37	37	37	23941
Niagara	248	84	2947	211	1076	6766	120	147	384	285	2994	214948	214948	535	116	1550	147	122	55	120	73	157	789	79	91	45	193	530	23	108	282	2714	23941	
Peel - 401/407 Core	1455	4002	1592	2475	3048	935	35	284	54	88	161	429	429	109357	6571	59663	848	442	123	83	1277	4078	9793	18546	2402	1170	13607	11103	392	557	15655	1275	255048	
Peel - Brampton	239	620	55	184	330	69	11	12	12	12	12	97	97	6974	19273	5347	39	84	51	20	1805	273	849	105	376	62	2104	1691	304	196	4324	3302	48811	
Peel - Caledon-Orangeville	4315	4803	8765	8818	21132	4173	240	1038	105	453	752	1606	1606	58389	4993	232308	2123	1315	216	515	2176	12009	30210	3085	6871	3432	18337	43548	585	1619	22033	1588	501656	
RMOW - Cambridge	38	211	578	742	971	755	30	659	18	141	241	186	186	830	89	2046	5085	1265	333	396	105	141	248	82	182	20	389	297	1174	4392	341	3192	88187	
RMOW - Kitchener	81	17	171	409	226	478	34	75	16	54	35	101	101	461	76	1322	12575	70954	7283	23244	771	129	153	39	127	18	51	53	673	1338	58	1361	32466	
RMOW - Townships	23	69	187	175	133	228	16	113	34	54	54	54	54	105	578	3924	22954	4438	30625	371	71	126	126	126	126	20	34	105	208	692	2659	241	634	68128
RMOW - Waterloo	1566	125	299	154	210	667	34	20	106	125	163	1076	1076	1958	2226	3649	204	151	51	65	107220	1121	2230	378	1013	480	3799	2156	75	123	16278	4402	152274	
Simcoe	10282	261	733	421	1114	502	17	92	68	71	274	274	274	3880	286	1808	121	140	128	719	87412	72923	25676	21419	10677	9733	29707	64	224	27701	327	316782		
Toronto Central	17901	841	3741	1291	8459	1967	219	322	49	337	306	719	719	9311	790	29633	285	154	39	139	1451	68667	89984	24937	20301	12963	9224	64138	206	321	37101	636	406436	
Toronto Core	14032	73	105	123	437	146	19	19	19	19	19	19	19	2106	42	5108	137	37	16	223	25929	25971	52483	8441	21593	3983	8105	11962	125	32225	108	189997		
Toronto East	5659	140	359	234	537	174	16	16	16	16	16	16	16	2165	396	7032	145	127	18	17	382	10819	13302	21020	9110	30206	3710	5036	54	62	27227	170	136644	
Toronto Northeast	9851	106	272	88	268	38	20	20	20	20	20	20	20	14141	72	3597	20	23	18	17	382	10819	13302	21020	9110	30206	3710	5036	54	62	27227	170	136644	
Toronto Northwest	2924	635	758	849	1505	570	33	171	56	33	111	193	193	13258	1984	17755	321	194	69	82	2430	9673	9273	3859	9184	3549	41682	26075	92	282	33335	318	181293	
Toronto West	3921	570	1853	1129	4462	811	73	93	18	91	158	378	378	10925	1501	44475	335	234	36	204	1338	30639	67718	8426	12142	4979	25949	124024	57	441	27024	511	375517	
Wellington	34	968	197	625	94	119	134	19	18	18	18	64	64	834	816	1208	1372	1204	597	907	88	121	283	19	24	73	95	131	744	1266	172	943	24667	
Wellington - Guelph	84	634	386	927	249	753	48	262	39	105	108	108	108	608	280	1745	4482	5146	1328	1923	101	156	359	18	137	80	306	455	6311	5987	307	708	81028	
York	22733	634	943	1890	718	91	110	67	71	197	257	257	257	15748	4184	27279	940	398	58	203	1113	28132	38745	39554	27705	33381	24097	138	285	281088	811	57493		
Z.E.&Undef.	1587	26	1281	208	537	3110	322	691	307	1058	438	1399	1399	1345	4134	633	20649	248	645	178	170	123	322	537	322	537	322	537	635	784	865	45147	114753	
Total	398654	30071	105043	35868	103279	184748	10866	18341	6222	11250	3226	237122	237122	0	254602	48455	509500	88878	127843	32154	68580	154104	68580	427121	188315	157963	138123	165986	369345	21684	81803	576612	102946	

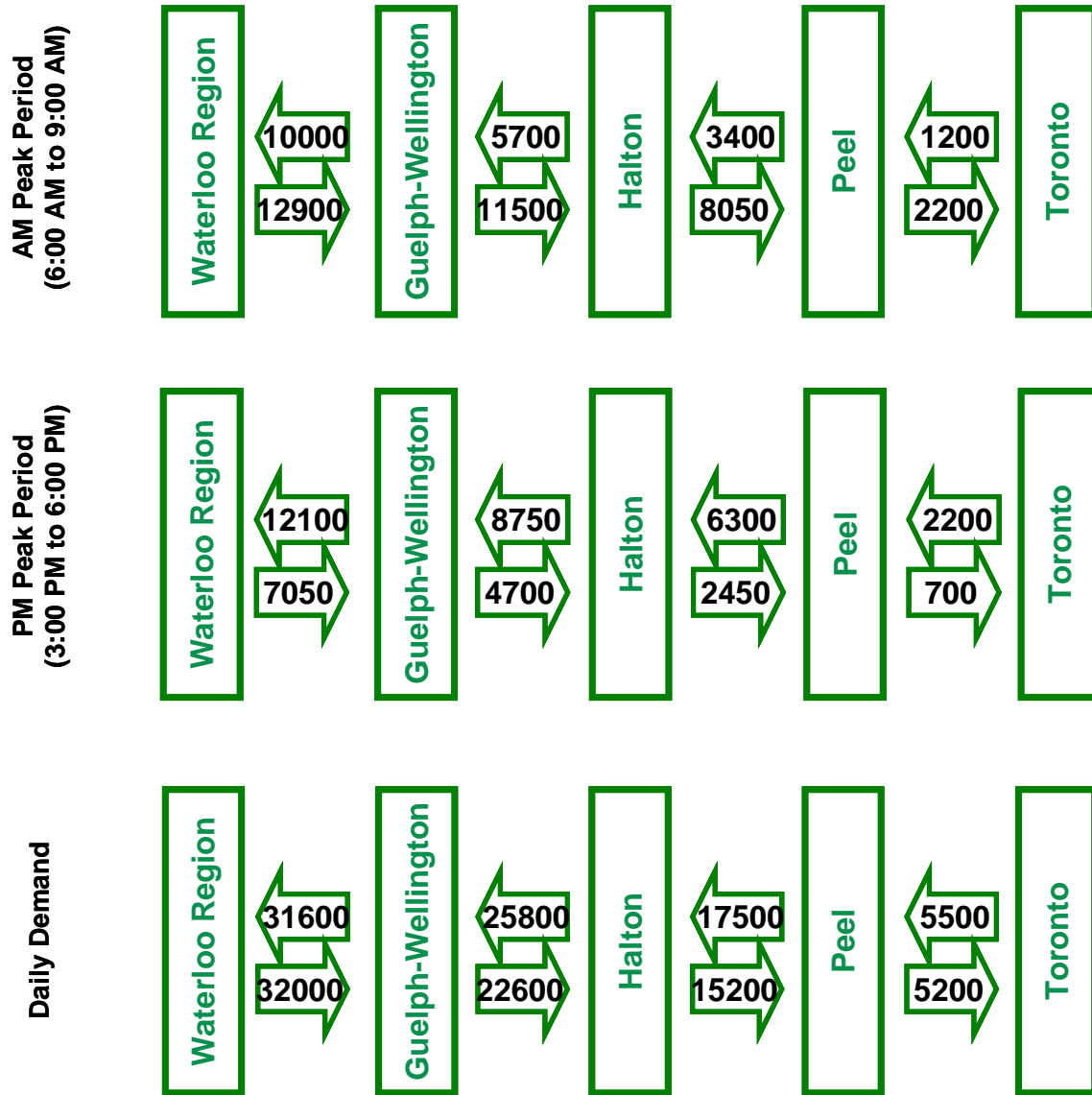
Demand Summaries

The 2006 origin-destination trip tables were used to develop total corridor demand estimates in order to facilitate ridership-forecasting models. Figure 2.3 depicts the combined work and post secondary school trips for the weekday peak time periods and the full weekday daily time period. The following is noted:

- ▶ The most significant travel activity occurs between Waterloo Region and Guelph with about 32,000 trips daily in each direction. This corridor has about 12,000 to 13,000 trips in the peak direction during the weekday peak period with the peak being eastbound in the AM and westbound in the PM. However, the non-peak direction travel is also significant.
- ▶ The travel demand generated by the Waterloo Region and Guelph urban areas tends to decrease towards Toronto, indicating that many of the inter-regional trips generated by these two areas are to and from the western GTA areas of Halton and Peel Regions.

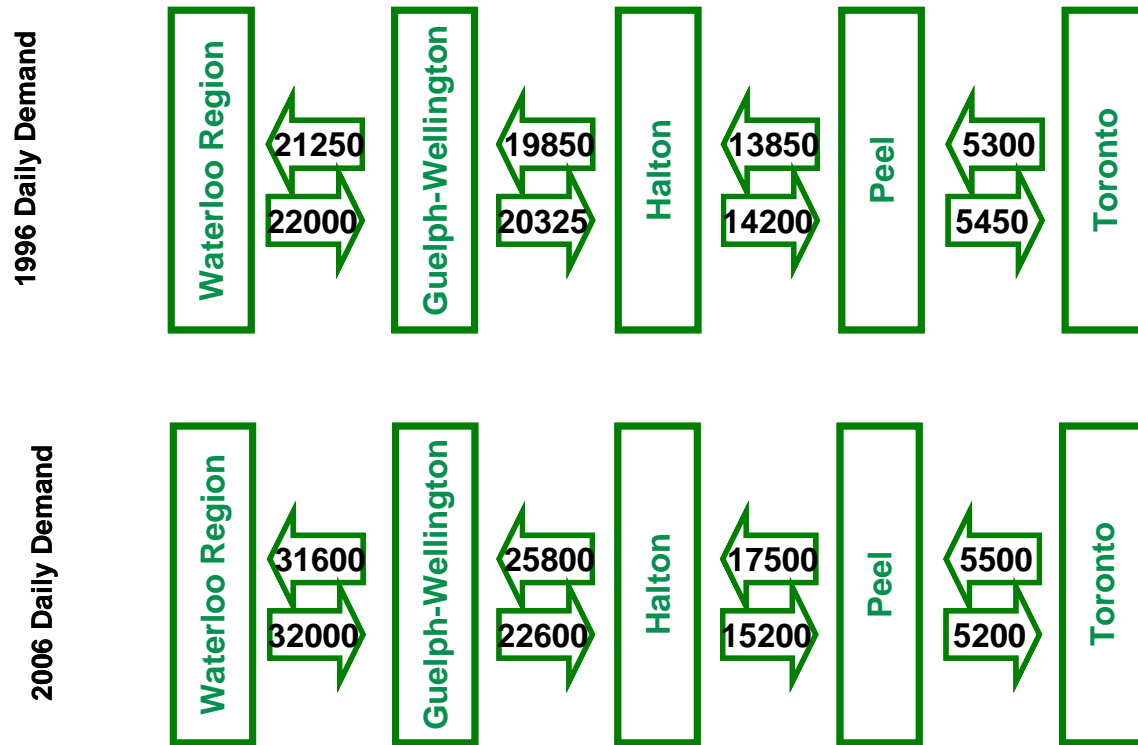
The 2006 corridor demand was compared to the 1996 corridor demand estimated in the previous study. The summary is shown in Figure 2.4, below. The traffic between the Waterloo Region and Guelph Wellington area increased significantly since 1996, however the traffic between Toronto area and Kitchener Waterloo and Guelph Wellington area have not increased as much. This increase is attributed to the increase in university and college enrollment as well as the strong employment growth in the Waterloo Region and Guelph urban areas. In 2002/2003 academic year, the double cohort plan created a significant increase in enrollment in post secondary institutions which increased traffic activities in the study area with four major universities and colleges. The increase in traffic between the Kitchener-Waterloo and Guelph-Wellington also suggest a strong employment and population growth in these areas.

FIGURE 2.3: 2006 CORRIDOR TRAVEL DEMANDS (HBW + HBSCH)



Note: Demand Shown is work and school travel demand to/from Guelph-Wellington and/or Waterloo Region

FIGURE 2.4: COMPARISON OF 2006 AND 1996 DAILY CORRIDOR TRAVEL DEMAND (HBW + HBSCH)



Note: Demand Shown is work and school travel demand to/from Guelph-Wellington and/or Waterloo Region

GO Rail Mode Share

The 2006 TTS data includes data on the various modes of travel used, including GO Rail. While there is no GO Rail service to G-K/W/C, commuter trips to and from these areas may use the Georgetown, Milton or Lakeshore West GO Rail corridors by travelling to terminal rail stations and completing the trip on the GO Rail service. Table 2.7 below summarizes the observed HBW and HBSch GO Rail demand in the primary study corridor for the 2006 daily period for trips between the different urban areas. This data indicates that the GO Rail ridership generated to and from G-K/W/C is relatively low. This is related to the relatively long distance that needs to be traveled to reach GO Rail terminals. This data indicates that the current use of GO Rail for trips to and from G-K/W/C amounts to less than 1% of the total trips in the corridor. It is noted that since the TTS data is based on a relatively small sample size, the reliability of small numbers such as the number of GO Rail trips is limited. However, the data clearly indicates that other travel modes such as private automobiles are currently the dominant mode of travel in this inter-city corridor.

TABLE 2.7: 2006 DAILY MODE SHARE (HBW + HBSCH)

Direction	HB Work			HB School			Total (HB Work + HB School)		
	All Modes	GO Rail	Percentage of GO Rail Trips	All Modes	GO Rail	Percentage of GO Rail Trips	All Modes	GO Rail	Percentage of GO Rail Trips
EB	53,202	79	0.15%	4,165	24	0.6%	57,367	103	0.2%
WB	50,556	49	0.10%	4,038	24	0.6%	54,594	73	0.1%

3.0 FUTURE TRAVEL DEMAND

The 1996 and 2006 TTS data have been used to develop estimates of the future travel demand in the study corridor. These estimates are discussed below.

3.1 Future Corridor Demand

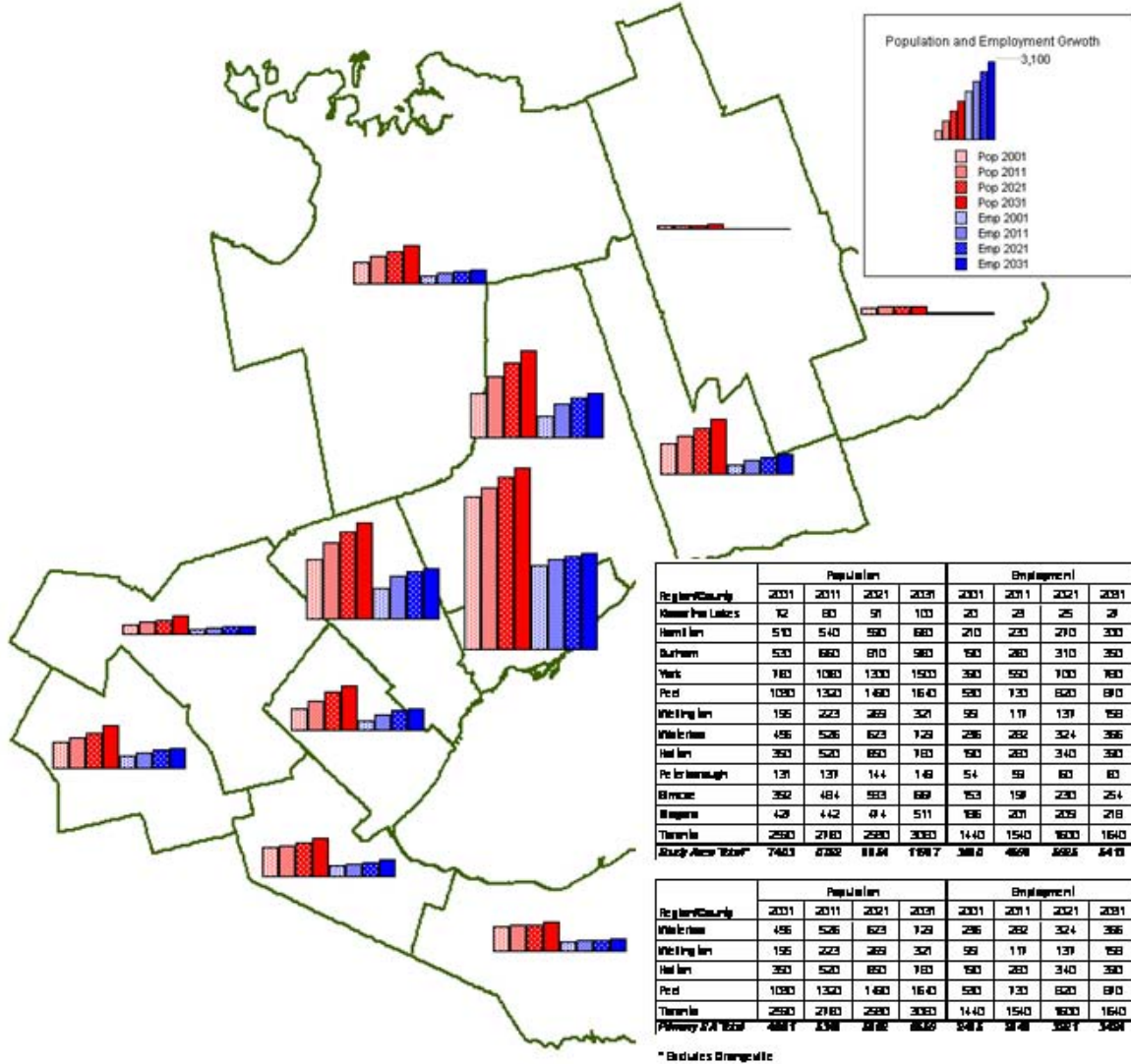
This study utilized a similar gravity model as the one developed in a previous study¹ to estimate the future travel demand in the corridor, based on the projected population and employment forecasts. Some adjustments were made to the gravity model estimates to account for the relatively high growth in demand between Guelph and Waterloo Region over the ten year period from 1996 to 2006. This high growth in travel demand in this area is expected to be due to the substantially increased university enrollment that has taken place within this time period as well as the strong growth in employment in both Guelph and Waterloo Region during that time period.

Demographic Changes

Forecasts of future population and employment have been provided in the Provincial Places to Grow plan. The growth forecasts for the Region of Waterloo and Wellington County are depicted in Figure 3.1. These forecasts indicate strong rates of population and employment growth over the next 25 years. Halton Region is projected to double in population and more than double in employment within the 25 year horizon for the study. Waterloo, Wellington and Peel are forecast to increase by about 60 to 65% for both population and employment over this period. It is noted that the number of households is increasing at a faster rate than population growth which would further emphasize the anticipated new developments. Most of this growth is expected to take place in the four urban areas of Kitchener, Waterloo, Cambridge and Guelph.

¹ Kitchener-Waterloo/Cambridge/Guelph GO Transit Service Feasibility Study, Report prepared for GO Transit by AGM Program Managers, January 2006.

FIGURE 3.1: POPULATION AND EMPLOYMENT FORECAST



Forecasting Methodology

Since there is non-linear growth in the study area and differential rates of increase, it is important to develop a forecasting basis that gives some consideration to this condition. The demand forecasting methodology utilizes a gravity model that is based on population, employment and travel time between the different analysis zones. The model incorporates the cross-product of population and employment as the surrogate measure unconstrained demand and the inverse of travel time factored to an exponent to represent the travel deterrence. A separate model was calibrated for the peak directional flow and the reverse flow. It is noted that these flows reverse orientation in the morning and afternoon. Each of these models was statistically significant. It is further noted that for the K-W to Guelph flows, the demand was less affected by the travel deterrence function. To improve the statistical reliability of this component of the demand, they were removed from the regression models and replaced with the ratio of the change in the cross product of population and employment.

For the Home-Based School travel demands, it was felt that the Transportation Tomorrow Survey may be underreporting post-secondary school travel demand. To supplement the TTS demand data, place of residence data were collected for recent reported home address for University of Waterloo, Wilfrid Laurier University, the University of Guelph and York University students. Table 3.1 summarizes these results. This data indicates the substantial student population in the western GTA attending York University. The relatively recent GO bus service along the Highway 407 corridor to/from York University has attracted significant levels of ridership and serves to demonstrate that good bus service can attract significant post-secondary student ridership.

Based on the entries in Table 3.1, the following was noted:

- ▶ Wilfrid Laurier students are less mobile with about 51% living in same City as their school. For the University of Waterloo and the University of Guelph these values were 23% and 20% respectively.
- ▶ About 925 University of Guelph Students are living in Waterloo Region while about 800 University of Waterloo and Wilfrid Laurier students reside in Guelph.
- ▶ About 140 York University Students reportedly reside in Waterloo Region and about 85 in the Guelph-Wellington area. Conversely, about 3,500 University of Waterloo and Wilfrid Laurier students and about 1,425 University of Guelph students are living in York Region.
- ▶ About 4,600 study area students are reported to be living in Peel Region, with 2,700 of these in the City of Mississauga.
- ▶ About 6,300 study area students are reported to be living in the City of Toronto.

Based on these data, there appears to be a good potential for future GO Transit services to capture post-secondary student ridership if services have connections to the major post-secondary institutions and provide reasonable connections to the student population areas in the corridor. Connections to existing services at the GO Train corridors, TTC system, Highway 407 services and Mississauga Transit as well as the local Grand River Transit and Guelph Transit services will be important to capturing a significant portion of this market. In terms of travel patterns, student ridership to/from institutions in the study area from external zones will be in a reverse flow pattern to the peak hour work ridership out/into the study area, and can occur in times other than just the peak period times associated with work travel.

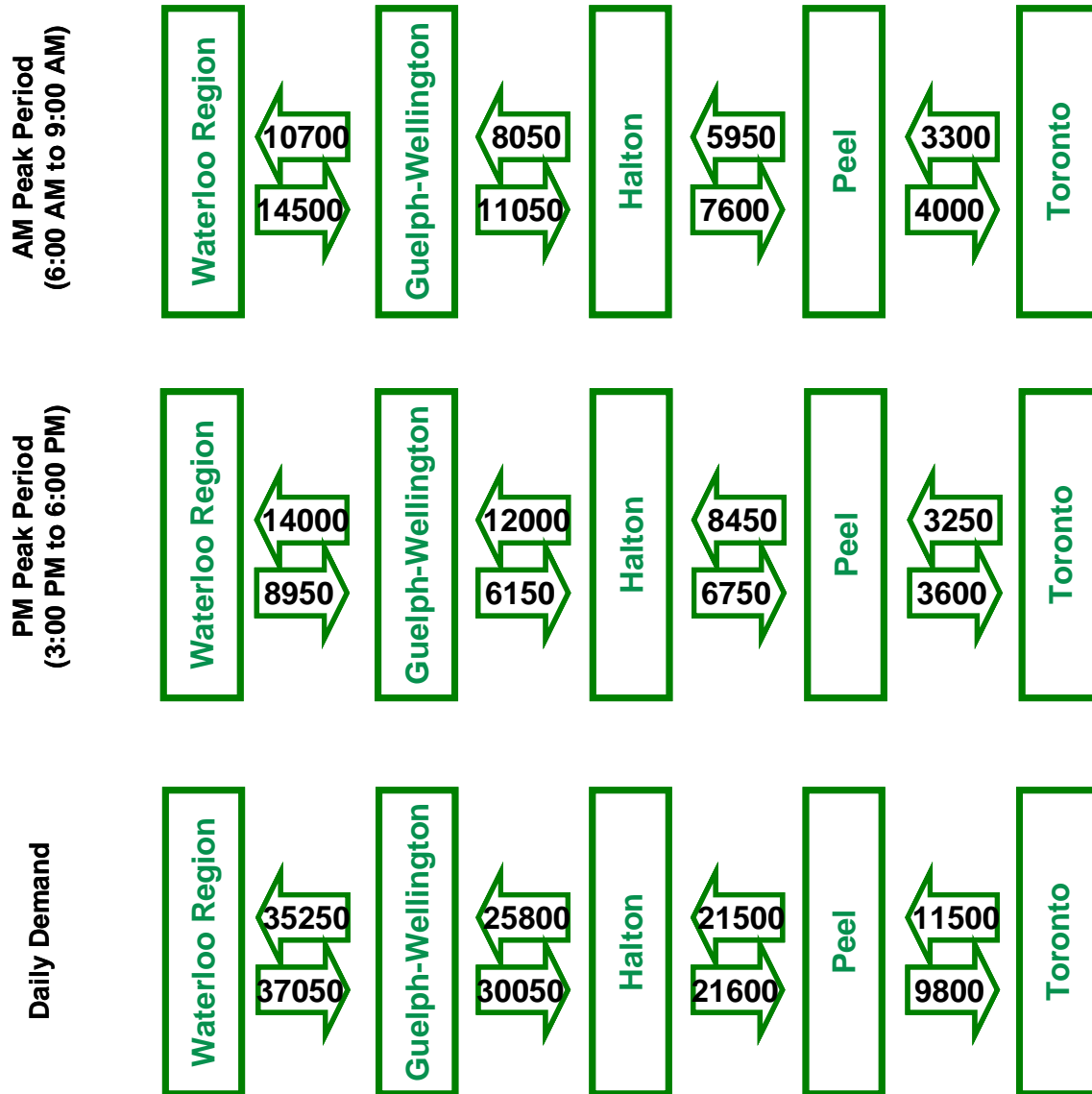
TABLE 3.1: 2005 REPORTED ADDRESS FOR POST SECONDARY STUDENTS

Area	Wilfrid Laurier University	University of Waterloo	University of Guelph	York University	Total
Waterloo	5406	4553	141	46	10146
Kitchener	1180	2061	371	56	3668
Cambridge	294	492	372	29	1187
RMOW Townships	176	338	39	10	563
Guelph	189	283	2365	53	2890
Wellington	122	192	392	32	738
Halton Hills	75	103	167	64	409
Milton	39	85	128	80	332
Burlington	145	257	388	98	888
Oakville	205	388	506	317	1416
Orangeville - Caledon	68	120	283	321	792
Brampton	166	542	471	2255	3434
401 Gore	29	159	19	641	848
Mississauga	402	1592	773	3392	6159
Falmborough	38	90	0	21	149
Dundas	13	69	87	10	179
Ancaster	44	80	215	24	363
Hamilton	81	316	268	107	772
Glanbrook	4	16	0	2	22
Stoney Creek	14	84	20	22	140
Niagara	183	413	433	98	1127
Toronto Northwest	18	171	58	7324	7571
Toronto West	193	592	488	518	1791
Toronto North	72	887	237	4575	5771
Toronto Central	187	696	677	3661	5221
Toronto Core	29	154	105	1282	1570
Toronto Northeast	54	880	147	2542	3623
Toronto East	58	408	205	1984	2655
Simcoe	173	369	642	740	1924
York	698	2827	1419	12479	17423
Durham-Kawartha-Peterborough	214	492	687	572	1965
Total in Study Area	10569	19709	12103	43355	85736

Forecast Corridor Demands

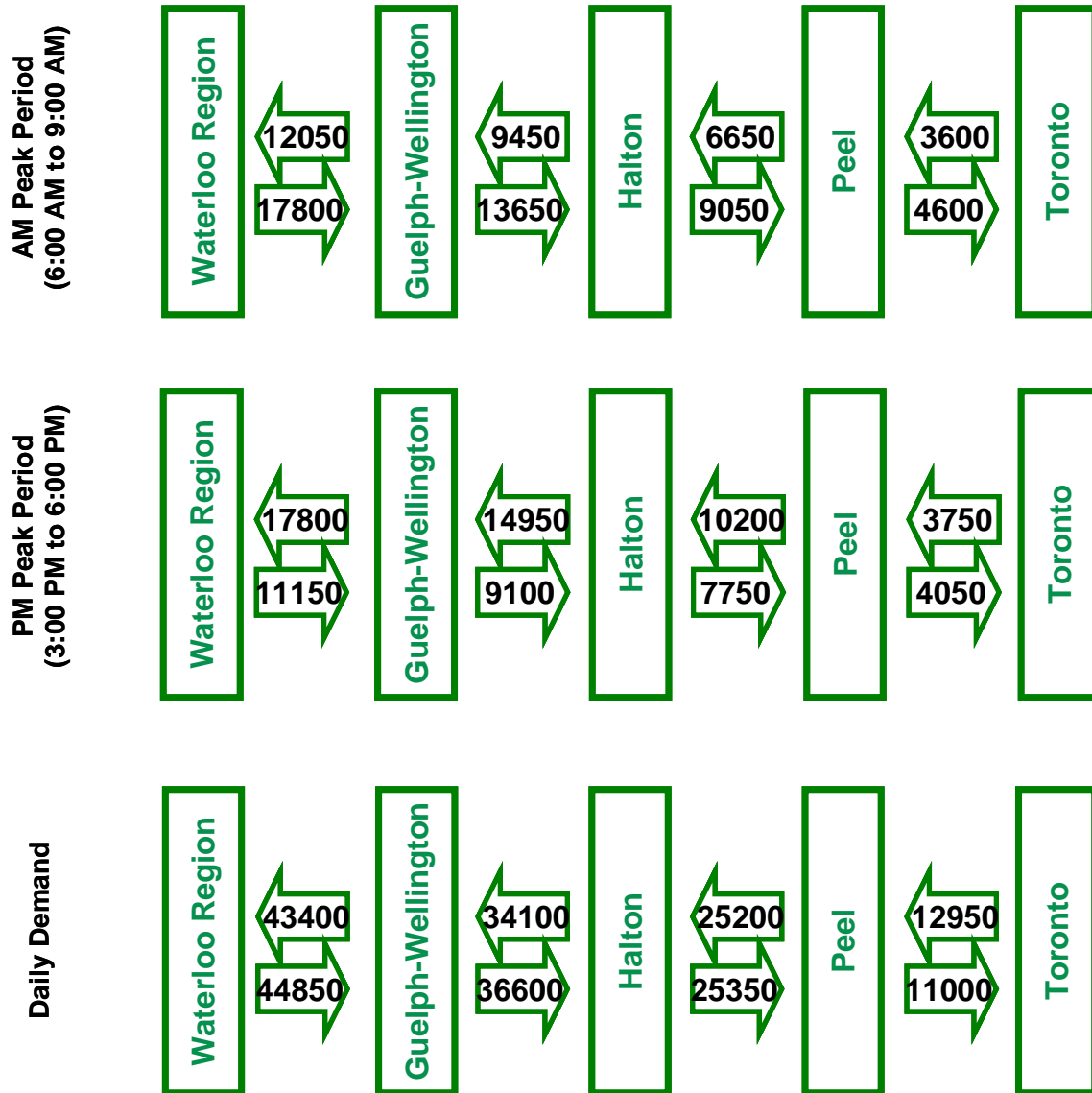
Using the above gravity model approach, the forecast inputs from the Places to Grow data, and the student trip forecasting methodology, estimates of the travel for trip interchanges were prepared. These data were then reduced to the corridor-type forecasts that were utilized previously. The data were further adjusted to reflect the specific changes in the travel activity in the corridor from 1996 to 2006. Figure 3.2, Figure 3.3 and Figure 3.4 summarize these travel forecasts for years 2011, 2021 and 2031. The forecasts indicate that in 25 years the overall study corridor travel demand will increase by approximately 30%. The corridor demand between Peel Region and Kitchener Waterloo Region and Guelph-Wellington is expected to increase significantly. This is anticipated with the projected increased growth in population and employment rate in the area. The Wellington, Halton, and Peel regions will continue to grow and ultimately add nearly 600,000 new jobs in the next 25 years, compared to the 200,000 new jobs spread across Toronto. Therefore the corridor between Peel Region and Kitchener Waterloo area will be attractive to more commuters. The travel demand forecasts recognizes these new opportunities and indicate a significant increase in travel demand in the corridor west of Toronto to the Kitchener Waterloo area.

FIGURE 3.2: 2011 CORRIDOR TRAVEL DEMANDS (HBW + HBSCH)



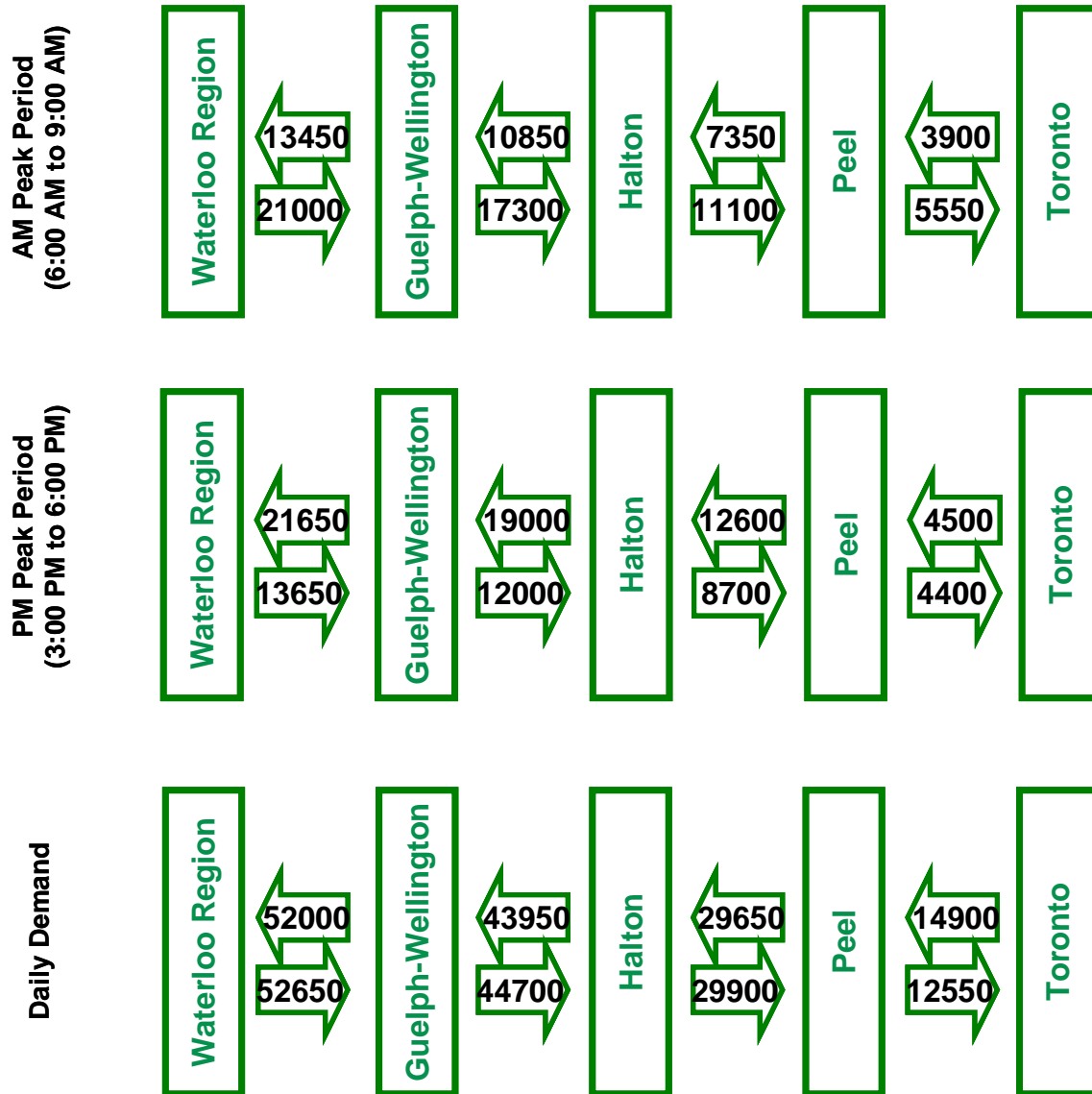
Note: Demand Shown is work and school travel demand to/from Guelph-Wellington and/or Waterloo Region

FIGURE 3.3: 2021 CORRIDOR TRAVEL DEMANDS (HBW + HBSCH)



Note: Demand Shown is work and school travel demand to/from Guelph-Wellington and/or Waterloo Region

FIGURE 3.4: 2031 CORRIDOR TRAVEL DEMANDS (HBW + HBSCH)



Note: Demand Shown is work and school travel demand to/from Guelph-Wellington and/or Waterloo Region

4.0 FUTURE GO RAIL DEMAND

This section of the report provides estimates of the potential demand for an expansion of the Georgetown GO Rail service to Guelph and Kitchener. The estimates are based on the forecasts of overall travel demand in the study corridor as well as consideration of observed existing GO Rail ridership levels.

4.1 GO Rail Modal Share Estimates

The GO Rail ridership is estimated as a portion of the total corridor demand based on GO Rail modal share data from other existing corridors. Currently, there are three GO Train corridors serving the area west of City of Toronto. These GO Train corridors are as follows:

- ▶ Georgetown GO Train Line; it provides services from Georgetown into Toronto Union Station with GO Train stations in Brampton, Malton and in northwest area of Toronto. It currently offers weekday peak period train services with all day GO Transit bus services connecting to Brampton, Bramalea and the York Mills Subway in Toronto.
- ▶ Milton GO Train Line provides services from Milton into Toronto Union Station with GO Train Stations in Mississauga and the west area of Toronto. This line offers weekday peak period train services with all day GO Transit bus services to Toronto Union Station with connections to some intermediate GO Stations.
- ▶ Lakeshore West Line is a well established GO Rail corridor. It provides rail service to Hamilton, Burlington, Oakville, and south Mississauga into Toronto with connecting GO Transit bus and local transit services at all stations. This line currently has peak period services only between Hamilton and Toronto Union. This line has all day weekday and weekend GO Train services between Toronto Union Station and Burlington GO Station (Oakville GO Station on weekends) with train-meet buses connecting west to the Hamilton GO Centre.

The GO Rail modal shares for these existing corridors are shown in Table 4.1 below.

TABLE 4.1: 2006 DAILY MODE SHARE ESTIMATES

Urban Area Served	Direction	Total Trips			GO Rail Trips			GO Rail Mode Share		
		HB Work + HB School			HB Work + HB School			Percentage of Total Trips		
		AM	PM	Daily	AM	PM	Daily	AM	PM	Daily
Hamilton (Lakeshore West Line)	EB	38,680	11,465	78,530	3,080	0	3,650	8.0%	0.0%	4.6%
	WB	14,029	34,370	75,640	0	2,646	3,170	0.0%	7.7%	4.2%
Halton Hills (Georgetown Line)	EB	9,610	1,600	16,270	837	0	877	8.7%	0.0%	5.4%
	WB	2,080	8,060	15,410	0	787	847	0.0%	9.8%	5.5%
Milton (Milton Line)	EB	10,540	3,025	19,660	796	0	866	7.6%	0.0%	4.4%
	WB	3,158	8,430	18,300	0	628	888	0.0%	7.4%	4.9%
Burlington & Oakville (Lakeshore West Line)	EB	96,200	31,160	173,800	19,120	446	21,660	19.9%	1.4%	12.5%
	WB	37,170	74,900	167,700	449	14,240	20,120	1.2%	19.0%	12.0%

These data indicate that in the Hamilton, Georgetown and Milton urban areas that only have weekday peak GO Train service, the GO Train modal share of total trips is about 7.4% to 9.8% of the total weekday peak period trips and about 4.2% to 5.5% of the total weekday daily trips. These modal share levels are fairly consistent for these three urban areas and would appear to be a reasonable indicator of the potential GO Rail mode share for a weekday peak period service with bus service in the off peak.

The data for the Burlington – Oakville urban areas provide an indication of the potential GO Rail modal share

with an all day services. These two urban areas have strong commuter ties to downtown Toronto and the GO Rail service has been in place for several decades. The GO Rail mode share of 19.0 % to 19.9% during the weekday peak periods and of 12.0% to 12.5% during the weekday daily time periods probably represents an upper limit of the potential GO Rail mode share.

The results of the observed 2006 GO Rail modal shares outlined above combined with the previous forecasts of total travel demand were used as a basis to estimate the potential GO Rail ridership in the study corridor. It is also noted that Georgetown line may not fully serve the entire study corridor because some trips, especially from the Cambridge area may travel via the Milton GO Rail line or even the Lakeshore West GO Rail line. Recognizing the uncertainty in estimating the GO Rail modal share of travel in the corridor as well as the potential diversion of some corridor trips to the Milton GO Rail line, it is appropriate to consider low and high estimates of future GO Rail ridership. The “high” estimates included trips from entire Kitchener Waterloo and Guelph-Wellington areas and the “low” estimates exclude the Cambridge trips from the Kitchener Waterloo and Guelph-Wellington area trips.

To estimate the GO Rail modal share of the total trips in the study corridor, the low and high estimates of the GO Rail modal share outlined in Table 4.2 were used. These modal share estimates represent the range of observed GO Rail modal share in the existing GO Rail corridors note previously.

TABLE 4.2: GO RAIL MODAL SHARE ESTIMATES FOR KITCHENER WATERLOO – GUELPH-WELLINGTON CORRIDOR

Suggested Modal Share Estimates for Study Corridor		GO Rail Mode Share (Percentage of Total Trips)		
		AM	PM	Daily
Peak Period Peak Direction Service	Low Estimate	7%	7%	5%
	High Estimate	9%	9%	7%
All Day Service Both Directions	Low Estimate	15%	15%	12%
	High Estimate	19%	19%	15%

Using the above suggested trip rates and estimated future corridor trip demand from previous section, the GO Rail ridership was estimated for the horizon years 2011, 2021 and 2031. The projections indicate that the ridership with the all day service will be greater than with the peak period service only. In the study corridor, the Georgetown line extension to Guelph – Kitchener/Waterloo/Cambridge is not expected to have all day GO Rail service until 2021 or 2031. The forecast ridership is also expected to increase with time as a more established service will tend to attract increased number of regular travellers as evidenced on the Lakeshore West Line.

These estimates of potential GO Rail ridership have been used to develop detailed low and high estimates of the breakdown of study corridor GO Rail ridership for each horizon year. The low estimates of GO Rail ridership are based on the following conditions:

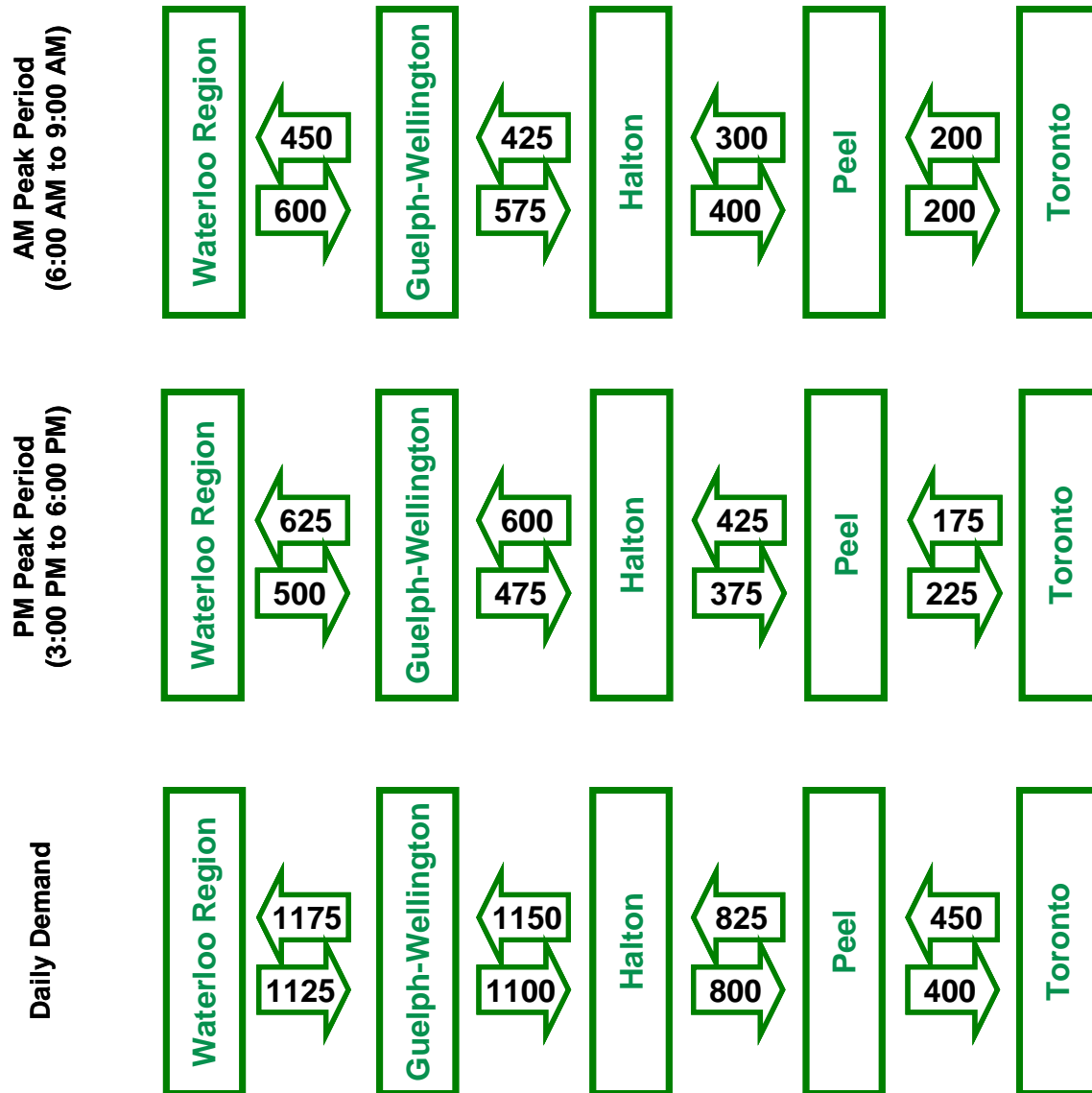
- ▶ For 2011 and 2021, estimates are based on the low GO Rail modal share for peak only service and Cambridge corridor travel not included.
- ▶ For the 2031, estimates are based on all day service with the low GO Rail modal share and Cambridge corridor travel not included.

The high estimates of GO Rail ridership are based on the following conditions:

- ▶ For 2011 and 2021, estimates are based on the high GO Rail modal share for peak only service and the Cambridge corridor travel included.
- ▶ For the 2031, estimates are based on all day service with the high GO Rail modal share and the Cambridge corridor travel included.

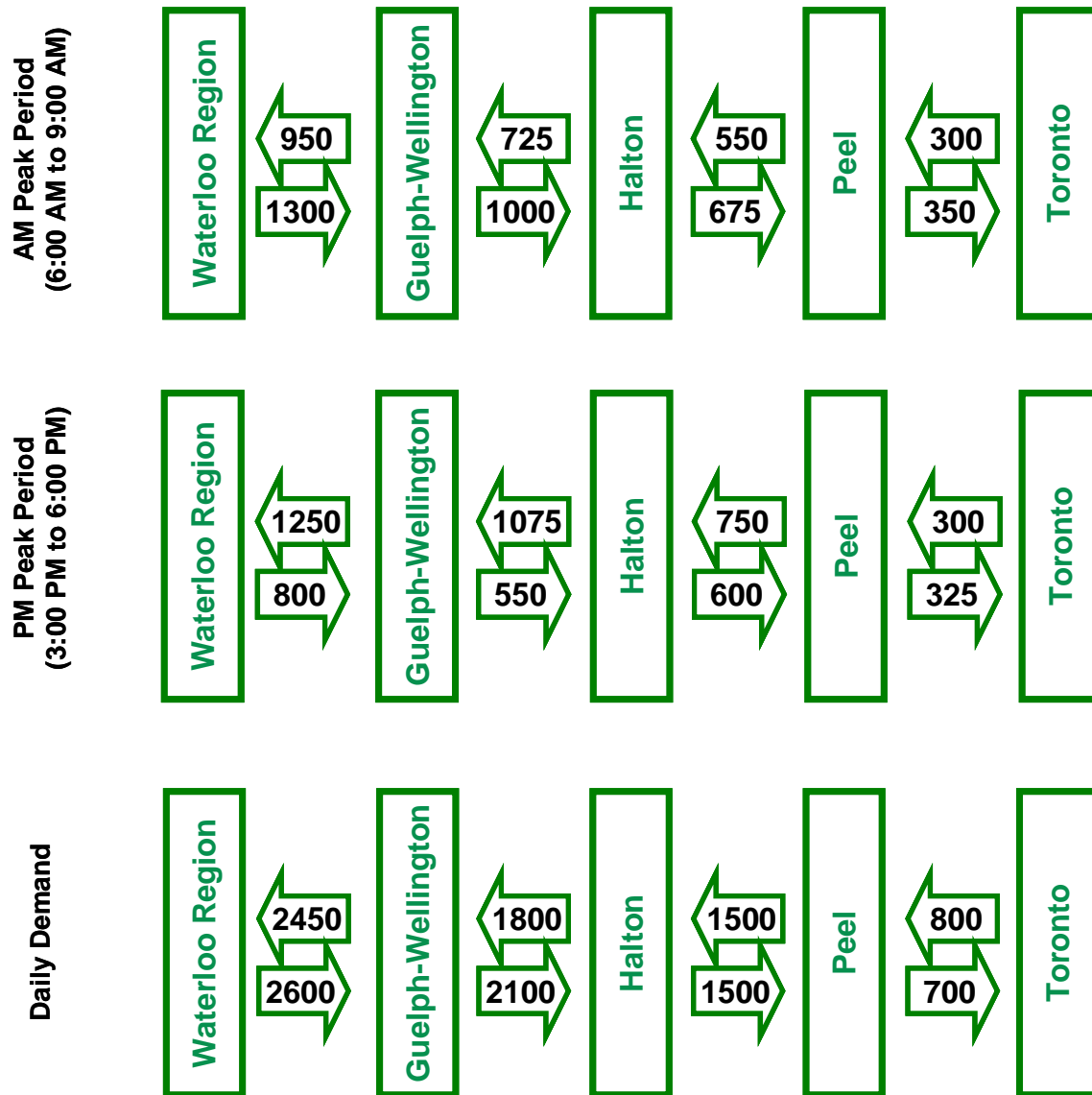
The low and high estimates of the corridor GO Rail demand are shown in Figures 4.1 – 4.6 below for the horizon years 2011, 2021 and 2031, respectively.

FIGURE 4.1: 2011 CORRIDOR GO RAIL DEMANDS (HBW + HBSCH) (LOW ESTIMATES)



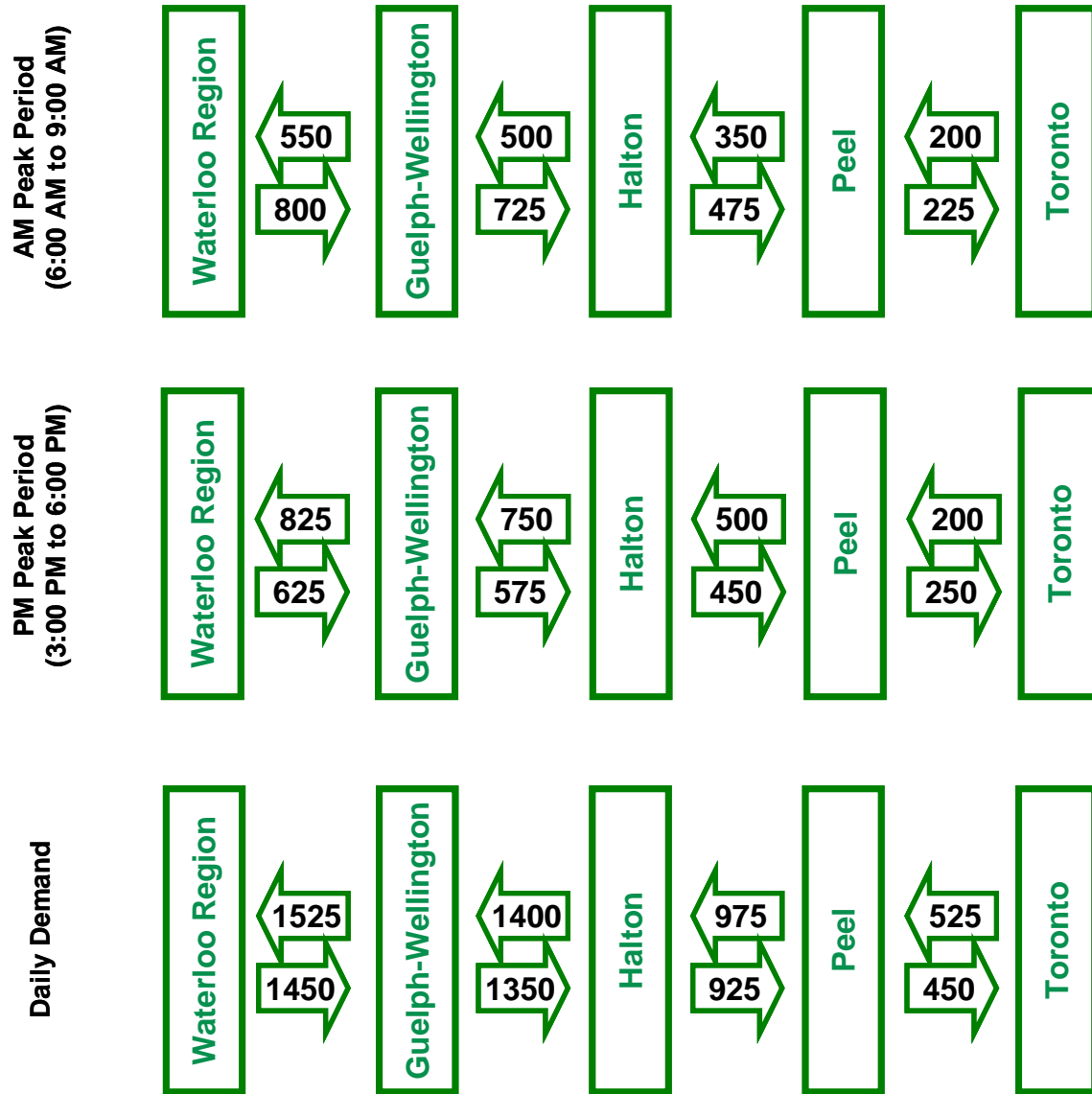
Note: Demand Shown is work and school travel demand to/from Guelph-Wellington and/or Waterloo Region

FIGURE 4.2: 2011 CORRIDOR GO RAIL DEMANDS (HBW + HBSch) (HIGH ESTIMATES)



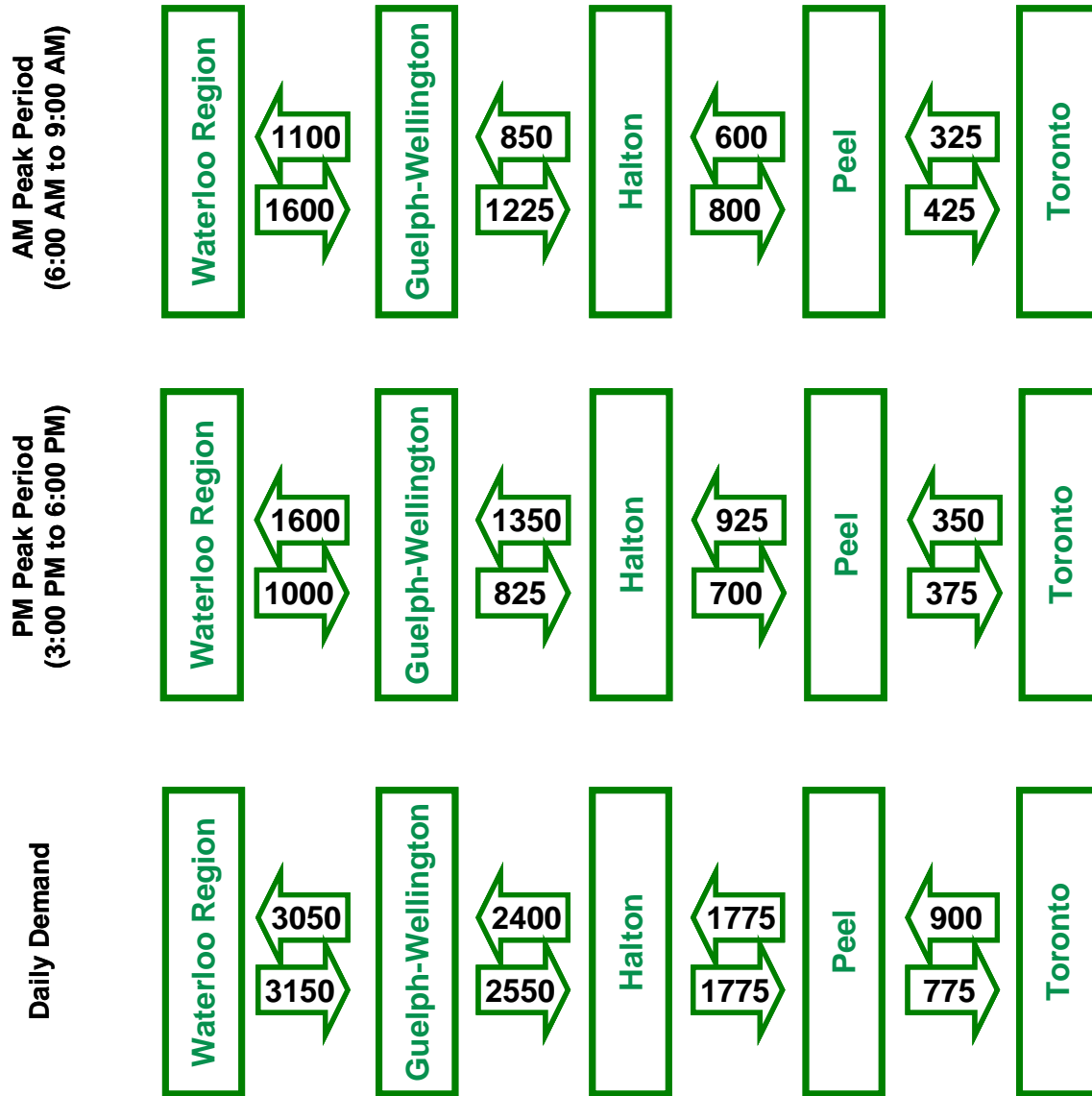
Note: Demand Shown is work and school travel demand to/from Guelph-Wellington and/or Waterloo Region

FIGURE 4.3: 2021 CORRIDOR GO RAIL DEMANDS (LOW ESTIMATES)



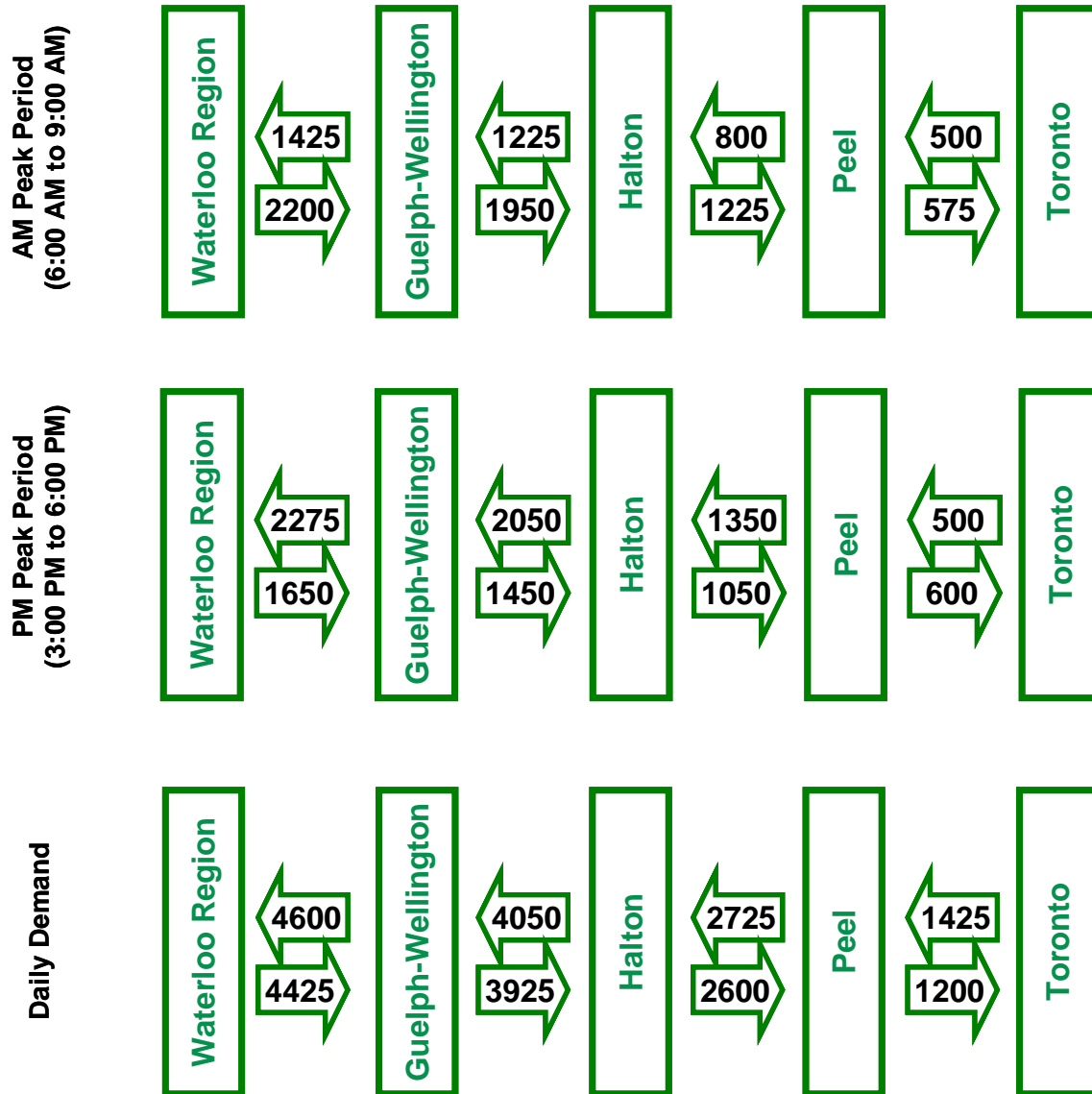
Note: Demand Shown is work and school travel demand to/from Guelph-Wellington and/or Waterloo Region

FIGURE 4.4: 2021 CORRIDOR GO RAIL DEMANDS (HIGH ESTIMATES)



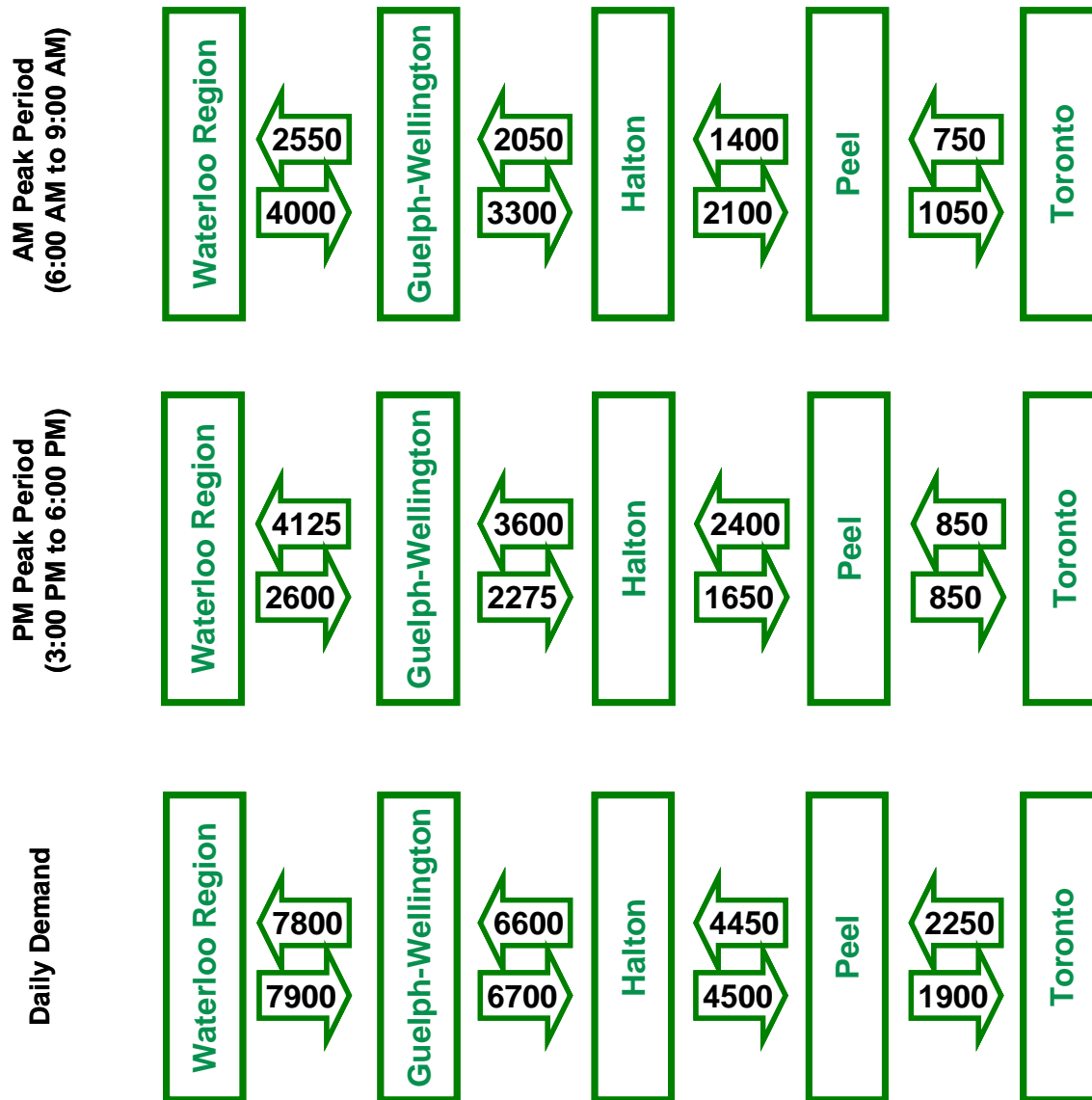
Note: Demand Shown is work and school travel demand to/from Guelph-Wellington and/or Waterloo Region

FIGURE 4.5: 2031 CORRIDOR GO RAIL DEMANDS (LOW ESTIMATES)



Note: Demand Shown is work and school travel demand to/from Guelph-Wellington and/or Waterloo Region

FIGURE 4.6: 2031 CORRIDOR GO RAIL DEMANDS (HIGH ESTIMATES)



Note: Demand Shown is work and school travel demand to/from Guelph-Wellington and/or Waterloo Region

4.2 Comparison of Ridership Estimates with Existing GO Rail Experience

GO Transit provides a comprehensive inter-regional rail and bus service throughout the Greater Toronto Area (GTA) and Hamilton with service connections to Barrie, Orangeville and Guelph. The ridership at some of selected GO Rail stations was reviewed to provide an independent reference for the ridership estimates developed above for the G-K/W/C corridor. This comparison is intended to provide a check on the forecasts. Some existing GO Rail ridership situations are as follows:

- ▶ The Hamilton and Aldershot GO Stations generally serve most of Hamilton and also Aldershot but

probably not the east end of Hamilton. These two stations serve a population of about 400,000 people and have a combined daily ridership of 2200 to 2400 daily trips using GO Rail;

- ▶ Burlington and Appleby GO stations generally serve Burlington and also east Hamilton and Niagara areas and perhaps some parts of Milton and Flamborough. The daily ridership is about 7,000 trips and the population served is perhaps 250,000 people. It should be noted that these two stations have high levels of GO Rail service that has been in operation for a long time.
- ▶ Oakville and Bronte GO Stations have daily ridership about 16,000 trips. These stations serve Oakville and surrounding areas with a catchment population of about 200,000 people. Oakville has all day GO Rail service that has been in operation for decades and the ridership is well established.
- ▶ Georgetown GO Station currently serves Georgetown, part of Halton Hills, Acton and south Wellington County with a catchment area population of about 100,000. The daily ridership is about 1,200 trips.
- ▶ Milton GO Station serves a catchment area of Milton, Acton and to a lesser extent Guelph/Cambridge/Kitchener/Waterloo to the west. It has a daily ridership of about 2,500 trips.
- ▶ Oshawa and Whitby GO Stations serves Oshawa, Whitby and eastern parts of Durham Region. This catchment area has a population of about 300,000 people. It also has post-secondary institutions which increase ridership. The stations have high levels of GO Transit services and generate about 15,000 daily trips.
- ▶ Richmond Hill Station serves a population of about 200,000 with daily ridership of about 4,200 trips.

The G-K/W/C urban area has a combined catchment area population of about 500,000 persons. This area also has three universities and one college which increase transit ridership potential. The short term (2011) ridership estimates in Section 4.1 about 2,500-5,000 daily GO Rail trips and our long term estimates (2031) indicate about 9,000-16,000 daily GO Rail trips.

The short term ridership estimates are generally consistent with or higher than the GO Rail ridership noted for the Hamilton – Aldershot GO Station or the Georgetown and Milton GO Stations combined. The long term GO Rail ridership estimates are similar to the current GO Rail ridership estimates for Burlington stations, Oakville stations or the Oshawa/Whitby stations. This comparison generally indicates that the GO Rail ridership estimates for the G-K/W/C corridor are the right order of magnitude and also that the low and high range seems reasonable.

Further, the ridership forecast in Section 4.1 was compared to a ridership forecast estimated in a report on this same rail corridor prepared by Dillon Consulting in February 2006². This report estimates a daily ridership of about 1,500 – 2,700 daily trips within a 5-10 year period following implementation of a passenger rail service in the corridor. This could be compared to our short term ridership estimates of about 2,500 to 5,000 daily GO Rail trips. In this case, this independent estimate is similar to the low estimates of ridership outlined in Section 4.1.

Overall, the comparisons with observed ridership in other GO Rail corridors and the estimated ridership in an independent study indicate that the estimates in this study appear reasonable or may tend to be a bit

² Northern Mainline Rail Alliance Business Case Development Increased Passenger Rail Service along the North Mainline, prepared by Dillon Consulting, February 2006.

high or optimistic. However, it must be recognized that the Guelph-Kitchener/Waterloo/Cambridge is a unique area and would appear to have significant potential for strong inter-regional transit ridership.

4.3 GO Rail Station Demand Characteristics

As input to the development of preliminary plans for GO Rail station on an extension of the Georgetown GO Rail corridor to Guelph and Waterloo Region, more detailed estimates of the expected passenger activity at future commuter rail stations along the new corridor have been developed. The methodology and the resulting estimates of the GO Rail station passenger demand characteristics are discussed below. It should be noted that all the GO Rail passenger demand estimates provided below represent “potential demand”. For example, the passenger trips destined to Waterloo Region (i.e., Offs) westbound in the AM peak period are only expected to occur if there is GO Rail service provided in the westbound direction in the corridor during the AM peak period.

The GO Rail ridership demand estimates in the study corridor were further analyzed to estimate the potential GO Rail trip origins and trip destinations by direction (i.e., Ons and Offs) to/from Guelph-Wellington and Waterloo Region. As per the GO Rail corridor passenger volume forecasts, high and low estimates of the GO Rail trip origins and trip destinations were initially estimated for each region and are shown in Appendix A. These estimates show that the range between the low estimates and high estimates is quite wide indicating considerable uncertainty. To simplify the forecasts, a median value of the GO Rail trip origins and destinations has been considered in assessing the passenger demand characteristics at the future GO Rail stations in Waterloo Region and Guelph – Wellington areas. These median values of GO Rail passenger trip origins and destinations are shown in Tables 4.3 and 4.4, below, for years 2011 and 2031.

TABLE 4.3: 2011 GO RAIL PASSENGER ORIGINS AND DESTINATION ESTIMATES FOR WATERLOO REGION AND GUELPH AREAS

Location	EB		WB	
	ON	OFF	ON	OFF
AM				
Waterloo	950			700
Guelph	310	430	310	200
PM				
Waterloo	660			940
Guelph	210	240	420	300
DAILY				
Waterloo	1820			1860
Guelph	580	820	840	560

TABLE 4.4: 2031 GO RAIL PASSENGER ORIGINS AND DESTINATION ESTIMATES FOR WATERLOO REGION AND GUELPH AREAS

Location	EB		WB	
	ON	OFF	ON	OFF
AM				
Waterloo	3100			1980
Guelph	1020	1400	890	580
PM				
Waterloo	2110			3190
Guelph	730	840	1440	990
DAILY				
Waterloo	6200			6160
Guelph	2080	2790	2770	1860

The GO Rail ridership origin and destination characteristics outlined above were utilized to estimate the potential GO Rail ridership for potential stations in Waterloo Region and Guelph areas. Estimates have also been provided for a potential station in the Acton area of Halton Hills.

In each of Waterloo Region and Guelph, it is anticipated that there will be two types of GO Rail stations, as follows:

- ▶ Downtown area stations along the rail corridor in downtown Kitchener and downtown Guelph. Both of these stations are expected to be located to have direct connections to the local public transit services. In Kitchener, it is expected that a new downtown station would be adjacent to the planned central transit corridor and would also have direct connection to the local Grand River Transit bus services. In Guelph, it is expected that a new GO Rail station would be located in the area of the existing VIA Rail station and would be adjacent to the planned new downtown transit terminal. In addition to direct connections to local public transit services, it is expected that the GO Rail stations would have strong pedestrian connections to businesses and other activities within downtown Kitchener and Guelph as well as accommodation of cyclists and some automobile drop off and pick up. It is not expected however, that the GO rail station in downtown Kitchener or downtown Guelph would have any significant amounts of parking for park and ride activity.
- ▶ Urban fringe stations are expected to be outside Kitchener and Guelph urban areas primarily to accommodate an automobile park and ride and kiss and ride interface. In these areas vacant land is more likely available for provision of automobile parking. Also the arterial road network outside the central urban area is less congested and can better accommodate the peak traffic demand associated with automobile travel to and from GO Rail stations. For the passenger estimates in this study, it is assumed that there is one fringe station at each of Kitchener and Guelph. However, it is possible that more than one station may be provided (e.g., one station on either side of the Kitchener urban area) and in that case the fringe station passenger demand would be shared by the different stations.

In addition to the foregoing GO Rail stations, the potential for a GO rail station in the Acton area of Halton Hills has been considered. For this station, it is assumed that the passengers attracted would have similar characteristics as the current passenger activity at the existing Georgetown GO Rail station and, in fact, much the potential passenger demand at an Acton GO rail station would be ridership diverted from the existing Georgetown GO Rail station. The demand at Acton has been estimated on the basis of the relative population of Acton and Georgetown as well as consideration of the level of destination activities (i.e.,

employment and post secondary education opportunities) in this community.

The expected ridership characteristics at each station also reflect observed GO Rail passenger demand characteristics on existing established GO Rail corridors such as the Lakeshore West corridor. In these corridors, about 68 % of the passenger trips arriving at GO Rail stations use automobile park and ride for access to the GO station and about 14 % use kiss and ride access to the GO stations. This level of automobile travel to and from GO Rail stations in Waterloo Region and Guelph may be slightly higher than will actually occur because of the higher level of post secondary student travel in these two communities as well as the strong public transit services in the two communities. Therefore, in the passenger demand estimates for this corridor it has been assumed that about 65 % of the passenger demand would be automobile oriented demand that is most likely to use the fringe stations and the remaining 35 % of the passenger demand would use the downtown stations and would use local transit walking or cycling access modes with some minor amount of kiss and ride access activity.

Based on the foregoing assumptions, the estimated GO Rail ridership characteristics at each of the potential stations in Kitchener Waterloo and Guelph are shown for year 2011 and 2031 are shown in Table 4.5 and 4.6 below.

TABLE 4.5: 2011 RIDERSHIP ESTIMATES FOR FUTURE GO RAIL STATIONS

Potential Station Locations	EB		WB	
	ON	OFF	ON	OFF
AM				
Kitchener Downtown Station	330			700
Kitchener Fringe Station	620			0
Guelph Downtown Station	110	430	110	200
Guelph Fringe Station	200	0	200	0
Acton Station	180	0	30	0
PM				
Kitchener Downtown Station	600			330
Kitchener Fringe Station	60			610
Guelph Downtown Station	200	80	420	100
Guelph Fringe Station	10	150	0	190
Acton Station	30	30	30	190
DAILY				
Kitchener Downtown	640			650
Kitchener Fringe	1,180			1,210
Guelph Downtown	200	530	540	200
Guelph Fringe	380	290	290	370
Acton Station	250	40	70	250

TABLE 4.6: 2031 RIDERSHIP ESTIMATES FOR FUTURE GO RAIL STATIONS

Potential Station Locations	EB		WB	
	ON	OFF	ON	OFF
AM				
Kitchener Downtown Station	1,090			1,980
Kitchener Fringe Station	2,020			0
Guelph Downtown Station	360	1,400	310	580
Guelph Fringe Station	670	0	580	0
Acton Station	260	0	30	0
PM				
Kitchener Downtown Station	2,000			1,120
Kitchener Fringe Station	110			2,080
Guelph Downtown Station	700	290	1,440	350
Guelph Fringe Station	30	540	0	640
Acton Station	40	40	40	280
DAILY				
Kitchener Downtown Station	2,170			2,160
Kitchener Fringe Station	3,200			4,000
Guelph Downtown Station	730	1,820	1,800	650
Guelph Fringe Station	1,000	980	970	1,210
Acton Station	360	50	90	350

The parking demand at each of the potential stations was also estimated for years 2011 and 2031. The “GO Transit 2005 Rail Passenger Survey Report” indicates that approximately 14% of the GO Rail passengers in the 905 area code areas access the stations kiss and ride or passengers in the autos. IN assessing the overall parking demand at the four western stations on the GO Lakeshore West line, it is noted that the peak parking demand averages about 55% of the daily boardings at these stations. Applying this information and assuming that the downtown stations will have no parking facilities, the parking demand at the fringe stations was estimated based on the daily ridership at each of the stations. The estimated parking demands for year 2011 and year 2031 at the three stations that may have parking facilities are shown in Table 4.7 below.

TABLE 4.7: ESTIMATED PARKING DEMAND AT POTENTIAL GO RAIL STATIONS

Potential Station Locations	Parking Demand	
	2011	2031
Kitchener Fringe Station (s)	670	2200
Guelph Fringe Station	210	670
Acton Station	140	200

These estimates may be compared to the current GO transit experience at other stations. The GO Lakeshore West line in Burlington (Aldershot, Burlington and Appleby GO Stations) have parking lots serving the Hamilton and Burlington communities with a combined population of perhaps 700,000 persons and the current combined peak parking demand is about 4,500 vehicles. However, these stations have long established all day service. The Georgetown and Milton GO stations serve a population of perhaps 100,000

to 150,000 persons and have a combined peak parking demand of about 1,400 vehicles. In this case, the GO Rail service is limited to peak period, peak direction service only. Recognizing this information, the estimates for Waterloo Region and Guelph GO stations is within the range of existing GO Rail stations and appear reasonable.

Appendix A

GO Rail Passenger Forecasts

AM Peak Period
High Estimates

Location	2011						2021						2031						
	EB		WB		WB		EB		WB		WB		EB		WB		WB		
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	
Waterloo	1307			962	1600	1086				3996									
Guelph	388	588	433	254	480	298	489	298	489	1286	1798	1150	721						
Halton		353	235		446		294		294		1206	736							
Peel		364	205		428		231		231		1072	529							
Toronto		361	295		415		324		324		1051	739							

AM Peak Period
Low Estimates

Location	2011						2021						2031						
	EB		WB		WB		EB		WB		WB		EB		WB		WB		
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	
Waterloo	596			431	797	537				2208									
Guelph	227	268	194	148	281	174	242	174	242	762	994	635	428						
Halton		181	119				157		157		688	421							
Peel		186	104		229		123		123		611	302							
Toronto		197	191		227		210		210		583	486							

AM Peak Period
Median Estimates

Location	2011						2021						2031						
	EB		WB		WB		EB		WB		WB		EB		WB		WB		
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	
Waterloo	952			697	1199	812				3102									
Guelph	308	428	314	201	381	236	366	236	366	1024	1396	893	575						
Halton		267	177				226		226		947	579							
Peel		275	155		329		177		177		842	416							
Toronto		279	243		321		267		267		817	613							

PM Peak Period
High Estimates

Location	2011						2021						2031					
	EB		WB		WB		EB		WB		WB		EB		WB		WB	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
Waterloo	807			1261	1004			1604			2591					4113		
Guelph	217	249	567	377	320	368	722	470	1026	892	1851	1261						
Halton		160	346			236	448		667		1233							
Peel		214	511			284	615		736		1566							
Toronto		326	293			364	337		840		853							

PM Peak Period
Low Estimates

Location	2011						2021						2031					
	EB		WB		WB		EB		WB		WB		EB		WB		WB	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
Waterloo	502			613	625			822			1637					2273		
Guelph	192	221	276	212	228	262	370	264	647	563	1023	718						
Halton		117	180			156	239		421		691							
Peel		156	266			188	329		465		877							
Toronto		229	169			255	195		599		501							

PM Peak Period
Median Estimates

Location	2011						2021						2031					
	EB		WB		WB		EB		WB		WB		EB		WB		WB	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
Waterloo	655			937	815			1213			2114					3193		
Guelph	205	235	422	295	274	315	546	367	837	728	1437	990						
Halton		139	263			196	344		544		962							
Peel		185	389			236	472		601		1222							
Toronto		278	231			310	266		720		677							

