APPENDIX 7

POPULATION AND EMPLOYMENT PROJECTIONS

1. INTRODUCTION AND OVERVIEW

Population and employment projections are a key input to the City's and University of Toronto's Regional Travel Demand Model (see Appendix 8). This appendix sets out the methodology for the small area population and employment projections that were developed as input to the ridership modeling for SmartTrack.

The City Planning Division produced the projections. Strategic Regional Research Alliance (SRRA) provided forecasts of employment in office buildings as a key input for the projections.

1.1 Time horizon

The projections are for 2021, 2031, and 2041, with 2011 as the base year.

1.2 Geography

The projections are for the Greater Toronto Area and Hamilton (GTAH) region, focusing on three sub-areas:

1. City of Toronto;
2. Rest of the Greater Toronto Area (RoGTA), made up of the regional municipalities of Durham, York, Peel and Halton;
3. City of Hamilton;

1.3 Traffic zones

The GTAH is subdivided into small areas called traffic zones. The projections distribute the total population and employment for the sub-areas into each traffic zone (TZ). The projections use the traffic zone system defined for the 2006 Transportation Tomorrow Survey (TTS) carried out by the Data Management Group. It is referred to as the '2006 zone system.' There are 2,272 traffic zones in the GTAH (see Table 1), with an average population of 2,925 in 2011.

Table 1: GTAH Traffic Zones

Sub-area	Traffic Zones
Toronto	625
Rest of the GTA	1,413
Durham	334
York	478
Peel	405
Halton	196
Hamilton	234
GTAH Total	2,272

Zone splits
In order to model SmartTrack's impact on ridership more precisely, 31 traffic zones (20 in Toronto, 5 in York and 6 in Peel) were subdivided into 74 new zones (or an additional 43 zones). These zones were split to ensure that the full impact of areas close to SmartTrack stations would be included in the modelling.

1.4 Growth Plan foundation

The projections use the population and employment forecasts in Schedule 3 of Growth Plan for the Greater Golden Horseshoe (GP) as their foundation. The Growth Plan directs these forecasts to 'be used for planning and managing growth in the GGH.' Table 2 shows the Growth Plan's forecasts for the GTAH.

Table 2: Population and Employment Forecasts in the Growth Plan

	Population ('000s)		Employment ('000s)	
	2031	2041	2031	2041
Toronto	3,190	3,400	1,660	1,720
Durham	970	1,190	360	430
York	1,590	1,790	790	900
Peel	1,770	1,970	880	970
Halton	820	1,000	390	470
Hamilton	680	780	310	350
GTAH	9,010	10,130	4,380	4,820

1.5 Scenarios

The projections distribute population and employment to the traffic zones in the GTAH for low, medium and high growth in Toronto - with and without SmartTrack. The scenarios are based on projections provided by Strategic Projections Inc (SPI) for the City of Toronto's Employment Uses Policy Study in 2012.[1]

The scenarios all use the same total GTA population and employment, and redistribute this total between Toronto and the rest of the GTA. Hamilton's total is unchanged in all scenarios. The GTA and Hamilton totals are based on the Growth Plan forecasts.

A further scenario ('all boats rise') recognizes that a transit improvement like SmartTrack will likely result in greater regional growth than would have occurred in its absence – a rising tide lifts all boats. This scenario is based on a higher total population and employment in the GTAH than the scenarios noted above.

[1] 'Sustainable Competitive Advantage and Prosperity – Planning for Employment Uses in the City of Toronto,' prepared for Toronto City Planning Division, by Malone Given Parsons in association with Cushman and Wakefield, Real Estate Search Corporation and The Centre for Spatial Economics, October 2012; available at: http://www1.toronto.ca/city_of_toronto/city_planning/sipa/files/pdf/sustainable_competitive_advantage_and_prosperity.pdf.

1.6 Models

The methodology for the projections follows a simple two-step process:

1. Determine the total population or employment in the sub-area (Toronto, RoGTA or Hamilton) in each projection year.
2. Distribute a share of this total to each of the TZs in the sub-area.

The projections use different methodologies for Toronto and the Rest of the GTA and Hamilton to reflect different conditions in these areas. The employment scenarios that include SmartTrack also use a variation on these methodologies that treats the GTA as a single unit. These methodologies are described in greater detail in the following sections of this appendix.

The projections for Toronto are fresh projections to replace those produced in 2002 as part of development of Toronto's Official Plan and described in Flashforward[2].

The projections for the Rest of the GTAH use small area projections previously produced by our regional municipal partners and/or their consultants to support their land use and transportation planning[3]. These projections provide the spatial basis for the distribution of the overall GTA and Hamilton totals in each of the scenarios.

2. POPULATION PROJECTIONS

The population projections for the City of Toronto were developed by City Planning based on: the Growth Plan forecasts for the City and the population component of the SPI projections, the changing demography of the City and its traffic zones; and projected household sizes and the location of future housing supply.

The population projections for the Rest of the GTA and Hamilton were based on the Growth Plan forecasts and the projections of population by traffic zone that were provided by the regional partners.

2.1 Scenarios

The following scenarios were developed for the population projections:

1. Low without ST (Growth Plan totals for Toronto and the Rest of the GTA)
2. Low with ST
3. Medium
4. High

[2] City of Toronto, Urban Development Services (2002), *'Flashforward: Projecting Population and Employment to 2031 in a Mature Urban Area*; see especially pages 52-95.
[3] The following regional and municipal partners provided their most up-to-date projections: Durham (prepared in 2014), York (2015), Peel (2008 - for Caledon), Brampton (2013), Mississauga (2013), Halton (2011), and Hamilton (2005).

2.2 2011 Base data

The 2011 counts for each TZ and for Toronto, the regional municipalities and Hamilton are the 2011 Census count adjusted for the census net under-coverage. Statistics Canada's Annual Demographic Estimates (ADE) are used to make this adjustment, based on the most up-to-date population estimate for 2011 for each regional municipality. First, for each regional municipality the ratio of the ADE estimate for 2011 to the 2011 Census count is calculated. This ratio is then applied to the 2011 census count for each TZ in the regional municipality, resulting in the adjusted value for the TZ.

The Growth Plan's population forecasts include the census net undercoverage. It is also included in the projections for the sub-areas and the TZs.

2.3 The Population Projections for the GTAH Sub-areas

The total projected population for the GTAH sub-areas in 2021 is found in the Growth Plan as adopted in 2006. The projected totals for 2031 and 2041 are those in the Growth Plan as amended in 2012 (see Table 2).

The Toronto totals are based on the total Toronto population projected by SPI in the Employment Uses Policy Study. SPI projects population because it is an important determinant of employment. SPI's Low, Medium and High projections were adjusted to reflect the amendments to the Growth Plan in 2012, and to align with subsequent adjustments to the total employment in the City (see Table 3).

The Rest of the GTA total is the difference between the GTA total and the Toronto total in each projection year (see Table 3).

Table 3: Summary of Population Projections

	2011	2021	2031	2041
Growth Plan, 2006				
GTA	5,600,000	7,180,000	7,960,000	
Toronto	2,760,000	2,930,000	3,080,000	
Growth Plan, 2012				
GTA			8,340,000	9,350,000
Toronto			3,190,000	3,400,000
SPI Projections, 2012				
GTA	6,318,300	7,166,900	8,158,200	8,795,300
Toronto - Base	2,727,200	2,911,800	3,123,700	3,260,400
Toronto - Low	2,722,100	2,930,000	3,080,000	3,210,000
Toronto - High	2,743,700	3,047,400	3,305,500	3,528,900
Smart Track Projections				
GTA	6,251,265	7,280,000	8,340,000	9,350,000

Toronto - Low	2,701,365	2,975,000	3,190,000	3,400,000
Toronto - Medium	2,701,365	3,070,900	3,314,100	3,627,200
Toronto - High	2,701,365	3,070,900	3,404,500	3,763,900
RoGTA - Low	3,549,900	4,305,000	5,150,000	5,950,000
RoGTA - Medium	3,549,900	4,209,100	5,025,900	5,722,800
RoGTA - High	3,549,900	4,209,100	4,935,500	5,586,100
Hamilton	510,000	600,000	680,000	780,000

2.4 Toronto Population Projections

The Toronto population projections for the SmartTrack ridership modelling are derived from population and household projections that were prepared as background information to the Municipal Comprehensive Review of the City's Official Plan.

The Toronto population forecasts in the Growth Plan were used as control totals in a cohort component model to project the City's population by single years of age to 2041, using the 2011 Census as the base year data. These projections embody assumptions and parameters associated with fertility, mortality, migration and household headship rates, based on the following information:

- fertility and mortality rates by single years of age;
- migration rates by single years of age for total, interprovincial, intraprovincial and immigration; and
- housing occupancy statistics and trends.

The population was projected by single years of age and sex to 2041, and then converted into projected demand for housing by dwelling type for each five-year period to 2041.

The projected housing demand was allocated to TZs across the City based on the City's existing housing stock and the potential housing supply. The existing housing stock in each TZ is as reported by the 2011 Census and 2011 National Household Survey. The potential housing supply includes all active development proposals received in the five years from 2010 to 2014 and those received prior to 2010 but which have seen approval or construction activity in the last two years. These development projects are documented in the research bulletin *How Does the City Grow? Update 2015* presented to Planning and Growth Management Committee on June 18, 2015. The housing supply also includes the results of an analysis of residential potential throughout the City in accordance with the land use policies of the Official Plan, including the remaining housing potential in the Secondary Plan areas. A status report on the *Housing Potential Analysis* was presented to Planning and Growth Management Committee on November 21, 2013. An updated analysis was built into the current projections. Supply is matched to housing demand by drawing on the various sources of potential housing in proportion to the pattern of development proposals over the past fifteen years. Surplus potential in a

given time period is carried forward into future time periods to be utilized to support subsequent demand.

Small-area projection scenarios were then constructed by matching the potential housing supply across the City over time to the projected housing demand in each time period. This included an assessment of as-of-right construction and demolitions over the past fifteen years in order to estimate the net demolitions required to realize the potential housing in a given time period. Trends in the average numbers of persons per household by dwelling type and period of construction were developed from analyses of household data from past Censuses and the 2011 National Household Survey. These trends were used to determine the number of dwelling units actually required in each time period to accommodate the projected population. The resulting additional units were multiplied by the average number of persons per household by Traffic Zone in order to generate the projected population in each Traffic Zone in each time period.

Three scenarios were constructed for the SmartTrack ridership modelling, corresponding to the Low, Medium and High total projected population for Toronto shown in Table 3. Each projection scenario includes just sufficient potential housing to accommodate the forecasted total population growth based on the pattern of development activity over the past 15 years.

2.5 Rest of the GTA and Hamilton Population Projections

Rest of the GTA
The methodology for the Rest of the GTA distributes total projected population into traffic zones based on the distribution of population in the small area projections provided by the regional and municipal partners.

The model calculates population in each TZ as follows:

i. Calculate the region's share of the RoGTA population found in the Growth Plan (see Table 2).
ii. Calculate the region's total for the scenario by applying the Growth Plan share (in i) to the RoGTA total shown in Table 3.
iii. Apply the zone's share of the regional total in the original data provided by the regional partners to the total population for the region for the scenario (in ii).

Hamilton
The methodology for Hamilton distributes the Growth Plan's forecasted population for Hamilton to traffic zones based on the distribution of population in Hamilton's Growth Related Integrated Development Strategy (GRIDS) small area projections. Unlike Toronto and the Rest of the GTA, for Hamilton, the same projections are used for each scenario – the numbers for each zone do not change from scenario to scenario.

3. EMPLOYMENT PROJECTIONS

The employment projections were developed by City Planning, using SRRA's forecasts of the distribution of employment in office buildings.

The projections distribute the total projected employment for Toronto, Rest of the GTA and Hamilton (see Table 4) to traffic zones using different methodologies for each sub-area, as outlined below.

The differences in zonal employment with and without SmartTrack result from SRRA's forecasts of office employment with and without SmartTrack. Non-office employment remained the same with or without SmartTrack.

Types of Employment

The employment projections use three categories of the 'place of work':

1. Work at home
2. Usual place of work (not at home)
3. No usual place of work.

The Growth Plan forecasts include all three categories; they represent the total jobs in the region.

The small area projections include the first two categories in each TZ, but do not separate them out. Since jobs with no usual place of work cannot be tied to individual TZs, they are not included in the projections for each TZ.

3.1 2011 Base data

The 2011 counts for each TZ and for Toronto, the regional municipalities and Hamilton are based on the 2011 National Household Survey. The 2011 TZ counts were adjusted using 2006 census data and municipal employment surveys and employment projections to address possible problems with NHS data quality and suppression.

3.2 The Projections of Total Employment

The total employment projected in Toronto and the Rest of the GTA (RoGTA) is based on SPI's employment projections, by sector (See Table 4). SPI provided projections by 2-digit NAICS[4] for the GTA and the City of Toronto (see Table 5 for the 2-digit NAICS). Employment in each NAICS in the RoGTA is the difference between the GTA and the City for each NAICS. The employment in each NAICS includes the first two types of employment noted above ('usual place of work' and 'work at home'). SPI also included a projection of the third category (persons with 'no usual place of work') for the GTA and Toronto, to align their total employment with the employment forecasts in the Growth

[4] NAICS: North American Industry Classification System

Plan. SPI did not provide projections for Hamilton, as it was not included in the Toronto region considered by the Employment Uses Policy Study.

SPI developed a single projection (by NAICS) for the GTA (the Base case) that was then used to provide 3 scenarios for the City and the Rest of the GTA:

1. Base – based on a 'best case' assessment of the City's potential for export-based job growth; it assumes the City will retain its share of such jobs.

2. Low – based on the Growth Plan forecast for the City of Toronto, which SPI believes understates the City's growth potential

3. High – based on the population growth in the City of Toronto projected by the Ministry of Finance's population projections for the Province that were released in Spring 2012. These projections showed more growth in Toronto than the 2006 Growth Plan forecasts then in effect.

The projected total employment for the City in the Base case lies between the Low and High totals. The Base case was used as the Medium projection scenario.

Since the GTA total is the same for each scenario, the Low case for the City produced the highest employment total for the RoGTA, while the High case for the City produced the lowest employment total for the RoGTA (see Table 4).

Adjustments to the SPI Projections to reflect Growth Plan Amendment 2

The Growth Plan employment forecasts were revised in 2012 after SPI had provided its projections for the Employment Uses Policy Study. The 2031 forecasts for the GTA and its regions increased, and forecasts for 2041 were added. For the SmartTrack projections, the SPI forecasts were adjusted to align with the new Growth Plan forecasts:

1. The original SPI projections by NAICS for the GTA for 2031 and 2041 were adjusted to the new Growth Plan totals for 2031 and 2041 by retaining each NAICS sector's share of the total as in the original SPI forecasts. For the projected GTA employment, this meant an increase of approximately 1.6% for each sector in 2031 and 2.9% in 2041.

2. For the City of Toronto projections, employment in each NAICS sector was adjusted to retain the City's share of the total GTA employment in the sector as it had in the SPI projections.

Table 4: Original SPI projections, Growth Plan Forecasts and Subsequent Adjustments

	2011	2021	2031	2041
Growth Plan, 2006				
GTA	3,400,000	3,770,000	4,030,000	
Toronto	1,540,000	1,600,000	1,640,000	
Growth Plan, 2012				
GTA			4,080,000	4,470,000*
Toronto			1,660,000	1,720,000
SPI Projections, 2012				
GTA	3,122,100	3,632,700	4,014,600	4,354,300
Toronto - Base	1,532,900	1,713,500	1,834,200	1,955,600
Toronto - Low	1,532,700	1,600,000	1,640,000	1,710,000
Toronto - High	1,542,000	1,793,500	1,941,000	2,116,800
Smart Track Projections (Adjusted SPI Projections)				
GTA	3,108,225	3,632,700	4,080,000	4,480,000
Toronto - Low	1,519,325	1,600,000	1,660,000	1,710,000*
Toronto - Medium	1,519,325	1,713,500	1,864,000	2,012,200
Toronto - High	1,519,325	1,793,500	1,972,600	2,178,200
RoGTA - Low	1,588,900	2,032,700	2,420,000	2,770,000
RoGTA - Medium	1,588,900	1,919,200	2,215,800	2,457,800
RoGTA - High	1,588,900	1,839,200	2,107,200	2,291,800
Hamilton	210,000	230,000	310,000	350,000

* Schedule 3 of the Growth Plan shows 4,820,000 for the GTAH, while the constituent regions and cities add to 4,840,000. Since the original 2012 SPI projection for Toronto was 1,710,000, this was retained as the SmartTrack Total, with the result that the GTA regions and the City add to 4,480,000, compared with 4,490,000 in Schedule 3 of the Growth Plan.

Table 5: Economic Sectors: 2-digit NAICS Used to Develop the Projections

Sector Label	Sector Name
11	Agriculture, forestry, fishing and hunting
21	Mining, quarrying, and oil and gas extraction
22	Utilities
23	Construction
31-33	Manufacturing
41	Wholesale trade
44-45	Retail trade
48-49	Transportation, warehousing
51	Information and cultural industries
52	Finance and insurance
53	Real Estate and rental and leasing
54	Professional, scientific, technical services
55	Management of companies and enterprises
56	Administrative and support, waste management and remediation services

61	Educational services
62	Health care and social assistance
71	Arts, entertainment, recreation
72	Accommodation and food services
81	Services not specified elsewhere
91	Public administration

3.3 The Toronto Model

The employment projections model for Toronto distributes total projected employment for the City into traffic zones based on the sectoral distribution of employment in 2011, the sectoral composition of total employment in the projections years (from the SPI projections), and the distribution of employment in office buildings development. Employment sectors are based on 2-digit NAICS (Table 5).

The model calculates employment in each zone as follows:

i. Calculate the zone's share of total employment in each sector in 2011.
ii. Use this share to project the zone's employment in the sector in the projection years (2021, 2031, 2041).
iii. Sum the projected employment in each sector in the zone to project the zone's total employment.
iv. Adjust the employment in the zone to recognize SRRA's forecast of office employment in the zone.

The projections are also adjusted to recognize that the situation in 2011 is an inadequate base on which to project future employment in the Port Lands due to planned redevelopment by which significant land use change and employment growth is anticipated after 2011.

3.4 The Rest of the GTA Model

The projections model for the RoGTA distributes total projected employment into traffic zones based on the zonal distribution of employment in regional or municipal partners' small area projections and the distribution of employment in office buildings development. Since large areas of the RoGTA were not developed in 2011, the sectoral (NAICS) distribution of employment in 2011 was not used as the basis for this, because it would not provide an adequate base for the projections.

The model calculates employment in each zone as follows:

i. Calculate the zone's share of the total employment in the region in the partners' small area projections.
ii. Apply this share to the region's projected total.
iii. The region's projected total is calculated by applying its share of the Growth Plan forecast for the RoGTA to the RoGTA total (in Table 4).
iv. Adjust the employment in the zone to recognize SRRA's forecast of office employment in the zone.

The projections are also adjusted to recognize that projections we received from Mississauga did not adequately project future employment at Pearson International Airport.

3.5 Hamilton Model

The projections methodology for Hamilton distributes the Growth Plan's forecasted employment for Hamilton to traffic zones based on the distribution of employment in Hamilton's GRIDS small area projections (2006). The Growth Plan forecast is adjusted to exclude 'no usual place of work' employment. The same projections are used for each scenario.

3.6 Office Employment

The projected employment for each traffic zone in the GTA is disaggregated into employment in office buildings and all other employment. The office buildings component of the projections is based on the distribution of employment in office buildings in the GTA in 2011 and forecasts of office development and related employment provided by SRRA. In this appendix, reference to 'office' or 'office employment' means employment or development in office buildings

Total office employment in the projection years
Total office employment in Toronto and the RoGTA in each of the projection years was based on the distribution of employment in office buildings in each NAICS sector in each sub-area in 2011 and employment in the sectors in the projection years.

The models calculate total office employment as follows:

i. Calculate the office share of total employment in each sector in 2011.
ii. Apply this share to the projected total employment in the sector in the projection years.
iii. Sum this projected office employment in each sector to calculate the total office employment.

Office employment in each sector was based on data provided by SRRA that showed office floor space in Toronto and the Rest of the GTA in 2011, classified by NAICS sector.

Office employment in the RoGTA was not disaggregated by regional municipality, because SPI did not provide forecasts for each regional municipality.
There were no office projections for Hamilton. The SPI projections didn’t include Hamilton and SRRA did not forecast office growth in Hamilton.

Office employment in each traffic zone
Office employment in each traffic zone was based on forecasts of office employment in each traffic zone provided by SRRA.

The models calculate office employment in each zone as follows:

i. Calculate SRRA's estimate of the traffic zone's share of change in total office employment in the sub-area (Toronto or the RoGTA) between the projection years.
ii. Apply this share to the total office growth in the sub-area.

3.7 Non-office employment

Non-office employment in each traffic zone in each projection year was based on the amount of non-office employment in the zone in 2011. The 2011 share was applied to the projected total employment in the zone.

The models then calculated total employment in the zone as the non-office employment plus the office employment as calculated above.

3.8 GTA-wide Model

A 'GTA-wide' projections methodology was developed to recognize the likely impact of SmartTrack on the distribution of office employment. The model treats the GTA as a single unit.

The model distributes total projected employment in the GTA into traffic zones based on:

- the distribution of non-office employment described above;
- the distribution of employment in office buildings in the GTA that would result if SmartTrack is built, as forecast by SRRA;
- total office employment in the GTA, which is the sum of total office employment generated by the Toronto model and by the Rest of the GTA model.

Since it provides for changes in the distribution of office employment resulting from SmartTrack, the GTA-wide model results in different total employment and office employment in Toronto and the Rest of the GTA, than the 'no ST' scenarios .

3.9 SRRA's Methodology

SRRA based its forecasts on the results of its 'Nodal Study,'[5] which is a high level assessment of places in the GTA where the next wave of office growth is likely to occur. For the study, SRRA identified 27 existing and potential nodes or clusters of office development in the GTA. They interviewed a select group of major employers that are large enough to generate the development of a new office building, in order to understand their locational needs and preferences in the region.

The nodes are groupings of traffic zones. SRRA forecast the office employment in each node in 2021, 2031, and 2041 for each of the forecast scenarios. The nodal forecasts were constrained by estimates of the total office growth projected in the GTA, Toronto and the

[5] SRRA, 'The Nodal Study: The Future of Office Development in the GTA', Toronto, March 2015

Rest of the GTA. The forecasts for each node were then disaggregated into the traffic zones in the node, taking into account the capacity of each zone to accommodate new office buildings.

SRRA's final report on the office forecasts will be presented at a later date.

3.10 The Employment Projection Scenarios

Five scenarios were developed projecting employment with and without ST:

1. Low without ST
2. Low with ST
3. Medium without ST
4. Medium with ST
5. High with ST

The scenarios all use the same total GTAH employment, with variations in total employment between Toronto and the rest of the GTAH, as shown in Table 4. Hamilton's total is based on the Growth Plan and is the same in all scenarios.

The models and inputs used to produce the output for each scenario are summarized in Table 6. The Low and Medium 'without ST' scenarios were developed first and then used as the basis for the corresponding 'with ST' scenario. The High 'with ST' scenario used the total office employment for Toronto and the Rest of the GTA resulting from the sectoral makeup of SPI's high projection for Toronto, and distributed the totals to the traffic zones using the Toronto and RoGTA models. The GTA-wide model was not used for this scenario.

Table 6: Development of the Employment Projection Scenarios

Scenario	Region	Input - Total employment *	Non-office employment	Office employment	Output - Total employment*
Low no ST	Toronto	SPI – low	Toronto model	Toronto model	SPI – low
	RoGTA	SPI - low	RoGTA model	RoGTA model	SPI - low
	Hamilton**	Growth Plan	Hamilton model		Growth Plan
Low with ST	Toronto	SPI – low	Toronto model	GTA-wide model	SPI-Low revised***
	RoGTA	SPI - low	RoGTA model	GTA-wide model	SPI-Low revised***
	Hamilton**	Growth Plan	Hamilton model		Growth Plan
Medium no ST	Toronto	SPI - Base	Toronto model	Toronto model	SPI - Base
	RoGTA	SPI - Base	RoGTA model	RoGTA model	SPI - Base
	Hamilton**	Growth Plan	Hamilton model		Growth Plan
Medium with ST	Toronto	SPI - Base	Toronto model	GTA-wide model	SPI-Base revised***
	RoGTA	SPI - Base	RoGTA model	GTA-wide model	SPI-Base revised***

	Hamilton**	Growth Plan	Hamilton model		Growth Plan
High with ST	Toronto	SPI - High	Toronto model	Toronto model	SPI - High
	RoGTA	SPI - High	RoGTA model	RoGTA model	SPI - High
	Hamilton**	Growth Plan	Hamilton model		Growth Plan

* For each scenario the GTA total employment is the same, equivalent to the Growth Plan forecast for the projection year.
** The Hamilton projections do not disaggregate employment in each zone to office and non-office employment.
*** The revised total employment for Toronto and the RoGTA in the 'with ST' scenarios result from the redistribution of office employment in the GTA in those scenarios.

4. THE ALL BOATS RISE SCENARIO

Economic research strongly suggests that a transit improvement like SmartTrack will likely result in greater regional growth than would have occurred in its absence – 'a rising tide lifts all boats.' Improved accessibility leads to increased agglomeration economies and greater productivity in the region.

The All Boats Rise (ABR) scenario is a 'what if?' scenario developed in the absence of more detailed research and modeling for the agglomeration and productivity benefits resulting from SmartTrack. It assumes that after SmartTrack becomes operational in 2021 it will result in 10% more growth than otherwise in 2031 and 2041. The scenario further assumes that this increased growth will be spread equally across the regional economy, both sectorally and spatially. The methodology for the scenario can be easily adjusted to vary the percentage difference in overall growth from 10%.

The ABR model is a modification of the GTA-wide model. There is no change to the 'no ST' scenarios. The scenario is based on increasing the SPI projection of growth in each NAICS sector by 10% for 2021-31 and 2031-41. The model then uses these adjusted NAICS projections to calculate:

- Total employment in Toronto and in the RoGTA;
- Total office employment in Toronto and in the RoGTA using the same NAICS-based method as in the Toronto and RoGTA models;
- Employment in each traffic zone in Toronto using the same NAICS-based method as in the Toronto model;
- Non-office employment in each traffic zone in Toronto and the RoGTA using the same methods as the Toronto and Rest of the GTA models.

The GTA-wide model then uses these inputs to calculate the projected employment in each traffic zone. The model uses the same SRRA forecasts of office employment as in the GTA-wide model to calculate office employment in each TZ.