C2 - TRAVEL DEMAND ANALYSIS REPORT

1. Introduction

The 2022 Transportation Master Plan (TMP) is the long-term transportation vision for York Region considering infrastructure needs over the next 30 years to support growth and the changing needs of travellers while highlighting focus areas for future study. The 2022 TMP was developed to allow for flexibility, ensuring changes can be made accordingly to reflect and address growth, changing travel needs, global events, technological advances, regulatory changes and emerging themes and ideas.

This report provides a summary of the travel demand analysis conducted for the TMP Study.

Travel demand analysis examines future conditions and travel trends to the year 2051 and compares different network and emerging trend scenarios and their ability to address future transportation needs for roads, transit and active transportation.

York Region uses an Activity-Based Model (ABM) to analyze travel demand and forecast the impacts of growth on the transportation network. Utilizing data gathered in the 2016 Transportation Tomorrow Survey (TTS) and Cordon Count Program (CCP), it simulates the daily travel patterns of drivers, carpoolers, pedestrians, cyclists and users of transit, including GO Transit bus and rail, in York Region and the rest of the Greater Golden Horseshoe Area. The model considers key factors that determine trip-making patterns, such as changes in household makeup over time, availability of cars to household members, how and where employment will grow, how people organize their trips in sequence and the extent to which traffic congestion will cause drivers to shift to other modes of transportation such as transit, walking or cycling.

2. Population and Employment Growth

York Region is forecasted to grow to more than 2 million people and 990,000 jobs by 2051. Through the Municipal Comprehensive Review (MCR) process the Region has updated the Regional Official Plan and allocated 2051 provincial growth forecasts across the nine local municipalities as indicated in Table 1. The allocated population and employment growth has informed the Region's master plan updates, including the 2022 TMP.
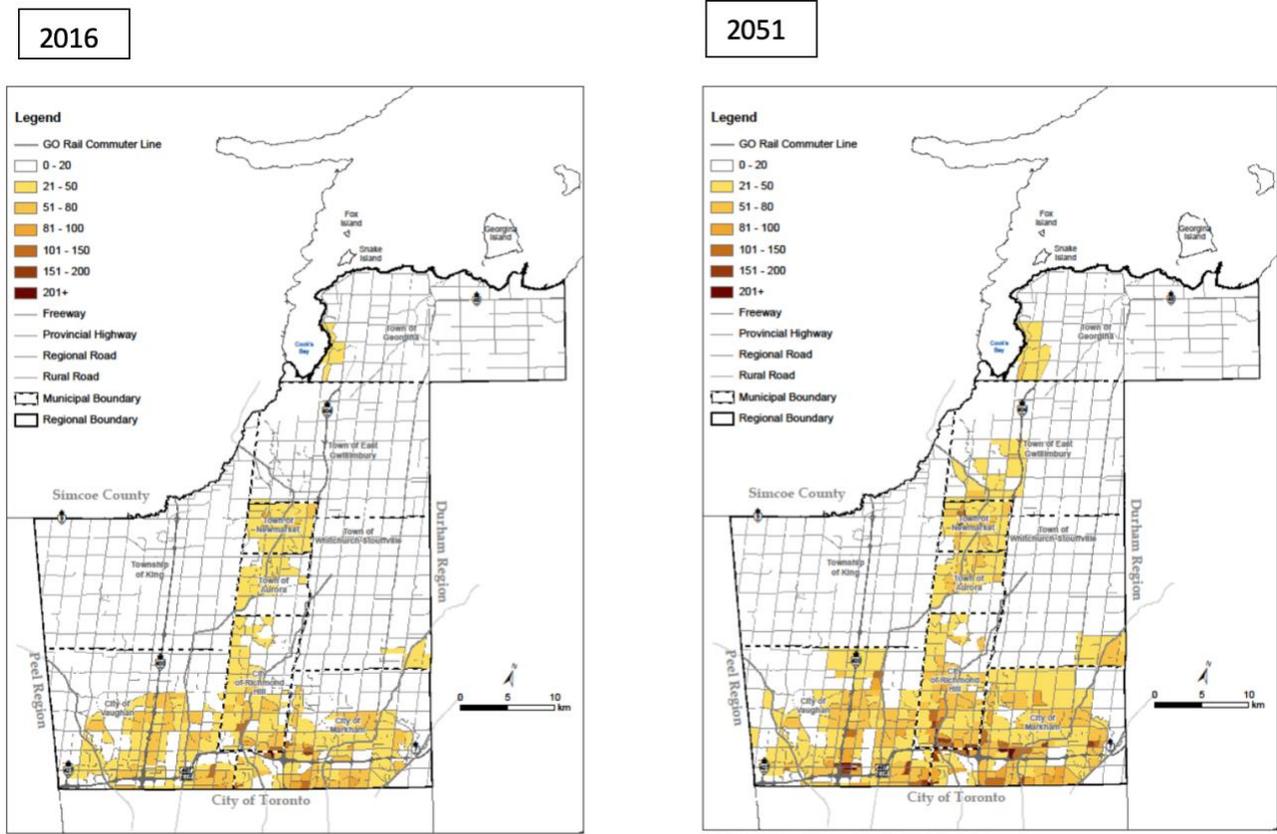
Table 1: *Population and Employment Growth*

Municipality	2016 Population	2051 Population	Population Growth 2016-2051	2016 Employment	2051 Employment	Employment Growth 2016-2051
Markham	339,100	617,600	82%	182,000	309,300	70%
Vaughan	315,700	571,400	81%	222,200	352,100	58%
Richmond Hill	201,000	317,100	58%	78,800	122,500	55%
Newmarket	86,800	110,600	27%	45,000	57,600	28%
Aurora	57,200	85,100	49%	27,300	41,000	50%
Whitchurch-Stouffville	47,300	90,800	92%	15,400	31,800	106%
Georgina	46,800	72,100	54%	9,300	21,900	135%
King	25,300	49,700	96%	9,600	16,400	71%
East Gwillimbury	24,700	106,100	330%	9,500	37,400	294%
York Region	**1,143,900**	**2,020,500**	**77%**	**599,100**	**990,000**	**65%**

Among York Region's nine local municipalities, the cities of Markham, Vaughan and Richmond Hill are expected to see continued growth with an approximate average of 2% increase per year in both population and employment between 2016 and 2051. The Town of East Gwillimbury is anticipated to become the fastest growing municipality in York Region over the next thirty years with over 300% growth in population and employment.

As shown in Figure 1, a significant portion of York Region's growth is allocated to the four regional urban growth centres: Markham Centre, Vaughan Metropolitan Centre (VMC), Newmarket Centre and Richmond Hill/Langstaff Gateway Centre as well as two regional corridors, Yonge Street and Highway 7.

Figure 1: *Population and Employment Densities in 2016 and 2051*

3. Travel Demand Growth

The population and employment forecasts from the updated Regional Official Plan are the key inputs to the ABM for testing future travel demand scenarios. The resulting output is the 2051 travel demand forecast which was used to inform the 2051 Base Network (further details are discussed in Section 4). In this section, the 2051 Base Network was compared against the historical 2016 travel demand information extracted from the 2016 TTS and Cordon Count Program.

The continued growth of population and employment in York Region will inevitably impact travel behaviours, mode choices and patterns over the next 30 years.

Table 2 shows the Region is projected to generate over one million trips during the morning peak period in 2051 with an average growth of 2.5% per year, which is slightly faster than the population and employment growths of 2.2% and 1.9%, respectively.

Table 2: Growth in Trips Starting in York Region

Time Period	2051 Trips	Growth (%) Since 2016	Peak Period to Daily Trips Ratio (2051)
Morning (06:00-8:59)	1,004,000	88%	25%
Afternoon (15:00-18:59)	1,396,100	86%	35%
Daily	4,059,800	88%	

In 2051, travel demand is expected to increase in all local municipalities. Figure 2 presents the 2016 and projected 2051 travel demand with trips starting in York Region during the morning rush hours by local municipality. The southern three municipalities including the cities of Markham, Vaughan and Richmond Hill are projected to account for approximately 75% of the additional trips generated in the Region. Noticeably, the Town of East Gwillimbury is anticipated to generate more than 400% of its 2016 trips over the next 30 years and surpass the Town of Newmarket to become the fourth largest trip generator within the Region. The high travel demand growth in the Town of East Gwillimbury is consistent with the significant population and employment growth expected in the municipality by 2051.

Figure 2: *Growth in Morning Peak Period Trips Starting in York Region by Local Municipality*

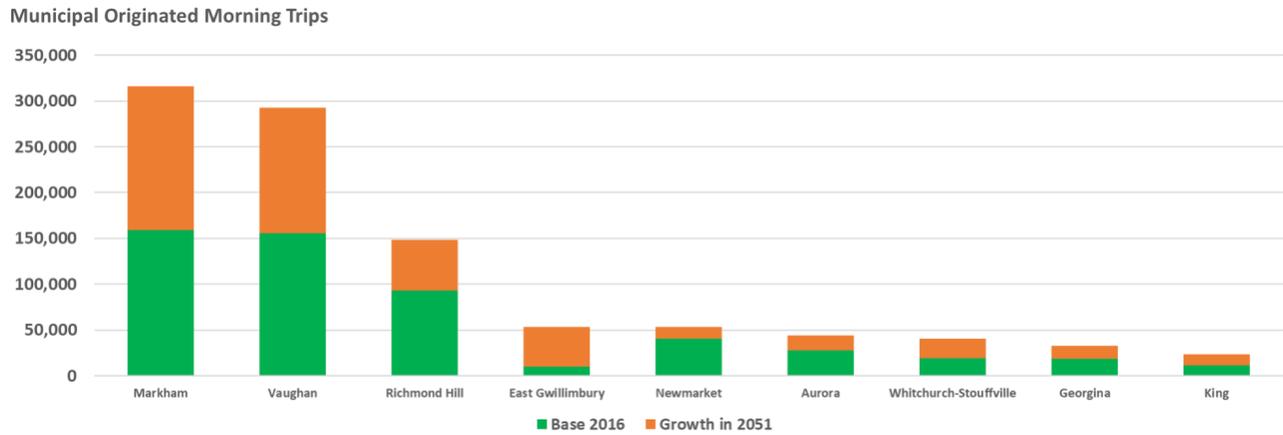**Municipal Originated Morning Trips**

Figure 3 shows the travel demand growth for the four regional centres between 2016 and 2051. These centres will benefit from future growth opportunities through subway extensions, buildout of the rapid transit network, and urban intensification which is expected to continue over the next few decades.

Figure 3: *Travel Demand Growth by Regional Centres*
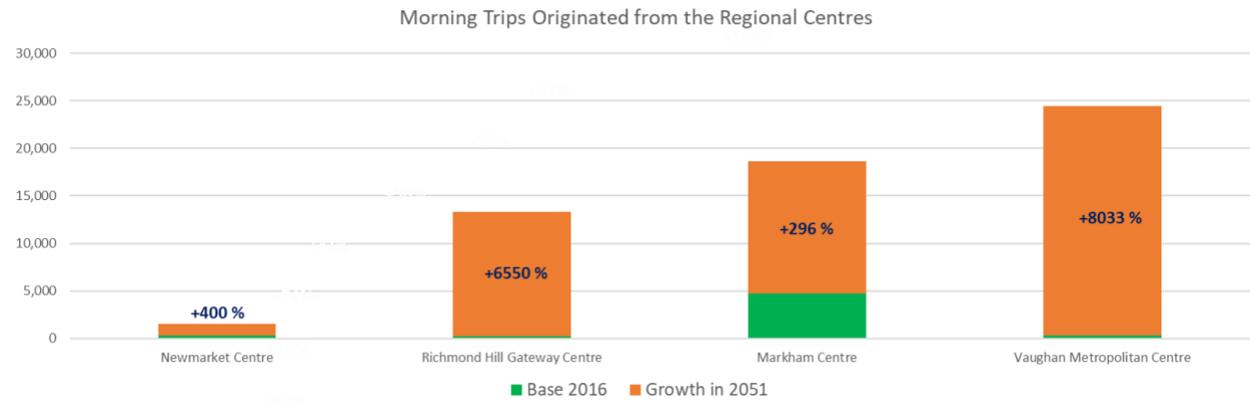
3.1 ORIGIN-DESTINATION TRAVEL PATTERNS

As York Region continues to mature, with more growth allocated in the centres and corridors, more residents are expected to live, work and play within the Region. Tables 3 and 4 present the origin-destination travel between major destinations between 1986 to 2051. During the morning rush hours, internal York Region trips are anticipated to account for 67% of trips originated in 2051 compared to 62% in 2016. In comparison, the morning rush hours trip share between York Region and Toronto is expected to decline from 30% in 2016 to 26% in 2051.

Table 3: *Trips Starting in York Region (Morning Rush Hours)*

All Modes	1986	2011	2016	2051 Base
York - York	77,500	323,100	320,200	677,200
York - Toronto	71,600	161,500	156,600	262,700
York - Durham	2,000	6,200	6,100	18,300
York - Peel	6,000	23,100	23,900	35,900
York - Other	600	8,700	9,600	11,300
Total from York	157,800	522,700	516,400	1,005,400

Modes include auto driver/passenger, bus, rail, school bus, taxi, walk and bike, etc.

Share of All Trips	1986	2011	2016	2051 Base
York - York	49%	62%	62%	67%
York - Toronto	45%	31%	30%	26%
York - Durham	1%	1%	1%	2%
York - Peel	4%	4%	5%	4%
York - Other	0%	2%	2%	1%
Total from York	100%	100%	100%	100%

Source: 1986 to 2016 Transportation Tomorrow Survey 2051 York Region ABM

Table 4: *Trips Destined to York Region (Morning Rush Hours)*

All Modes	1986	2011	2016	2051 Base
York - York	77,500	323,100	320,200	677,200
York - Toronto	52,300	77,900	86,000	141,700
York - Durham	4,200	17,500	20,400	35,500
York - Peel	6,800	20,600	26,700	40,300
York - Other	1,100	18,300	23,800	27,900
Total - York	141,900	457,300	477,000	922,500

**Modes include auto driver/passenger, bus, rail, school bus, taxi, walk and bike, etc.**

Share of All Trips	1986	2011	2016	2051 Base
York - York	55%	71%	67%	73%

York - Toronto	37%	17%	18%	15%
York - Durham	3%	4%	4%	4%
York - Peel	5%	5%	6%	4%
York - Other	1%	4%	5%	3%
Total - York	100%	100%	100%	100%

Source: 1986 to 2016 Transportation Tomorrow Survey 2051 York Region ABM

Figure 4 shows the top 10 municipal travel destinations in York Region. Self-contained trips within the cities of Markham and Vaughan are expected to remain as the top two trip markets within the Region with more than 100% of growth between 2016 and 2051.The top trip destination outside of York Region is the City of Toronto.

Figure 4: Top 10 Travel Markets in York Region (Morning Rush Hours)
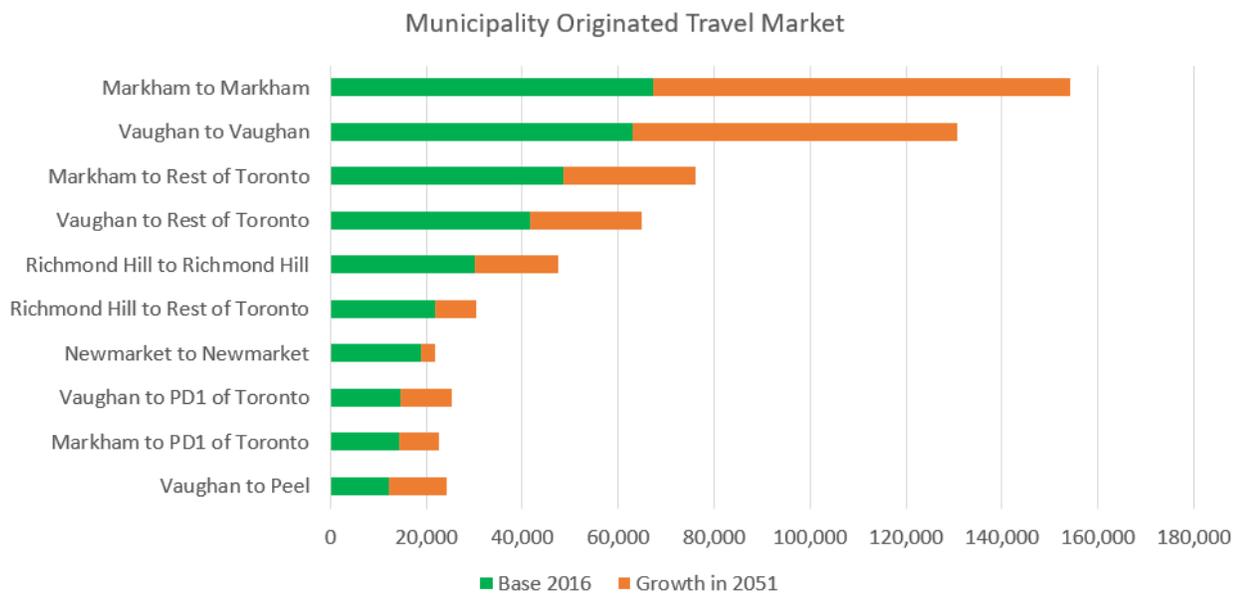
3.2 TRAVEL MODES

The changes in land use intensification and in travel pattens to and from York Region, as shown in the previous section, are expected to have significant impacts on choice of travel modes. Tables 5 and 6 summarize transit trips and transit modal shares by trip origin and destination. The proposed rapid transit improvements throughout York Region, such as BRT lines, are expected to double the transit ridership within York Region between 2016 and 2051. The City of Toronto, including Downtown Toronto, remains the top trip destination by transit due to the planned GO Rail expansion, Yonge North Subway Extension (YNSE) and improved bus connections to Downtown Toronto. As transit mode choice is highly dependent on commuter flow patterns, transit capacity and quality of service, the transit share from York Region to Downtown Toronto is about three times higher than the one from Downtown Toronto to York Region.

Table 5: *Transit Trips Starting in York Region (Morning Rush Hours)*

Transit Trips	1986	2011	2016	2051 Base
York -York	2,600	10,100	10,200	27,500
York - Downtown Toronto	8,600	36,500	33,800	60,300
York - Rest of Toronto	5,300	14,000	11,400	25,300
York - Durham	0	300	300	1,500
York - Peel	50	300	500	2,400
York - Other	50	200	300	700
Total from York	16,600	61,400	56,500	117,700

Share of Transit Trips	1986	2011	2016	2051 Base
York - York	3.4%	3.1%	3.2%	4.1%
York - Downtown Toronto	53.7%	73.5%	71.9%	75.9%
York - Rest of Toronto	9.5%	12.5%	10.4%	13.8%
York - Durham	0.0%	4.8%	4.9%	8.2%
York - Peel	0.8%	1.3%	2.1%	6.7%
York - Other	8.3%	2.3%	3.1%	6.2%

Table 6: *Transit Trips Destined to York Region (Morning Rush Hours)*

Transit Trips	1986	2011	2016	2051 Base
York - York	2,600	10,100	10,200	27,500
Downtown Toronto - York	400	700	700	1,600
Rest of Toronto - York	5,600	6,700	7,300	15,700
Durham - York	25	25	100	1,600
Peel - York	150	500	700	2,100
Other - York	50	100	200	1,000
Total to York	8,825	18,125	19,200	49,500

Share of Transit Trips	1986	2011	2016	2051 Base
York - York	3.4%	3.1%	3.2%	4.1%
Downtown Toronto - York	23.5%	21.9%	16.3%	18.0%
Rest of Toronto - York	11.1%	9.0%	8.9%	11.8%
Durham - York	0.6%	0.1%	0.5%	5.8%
Peel - York	2.2%	2.4%	2.6%	5.2%
Other - York	4.5%	0.5%	0.8%	3.6%

Figure 5 illustrates trips starting in York Region by mode during the morning rush hours. Although these trips are still predominantly made by automobile with auto driver trips increased by almost 80%, there is significant growth of over 100% by sustainable travel modes, such as auto passenger, transit travel (including YRT/Viva and GO Rail) and non-motorized travel over the next 30 years. This leads to the decrease in auto driver mode share from 65% in 2016 to 61% in 2051, as shown in Figure 6.

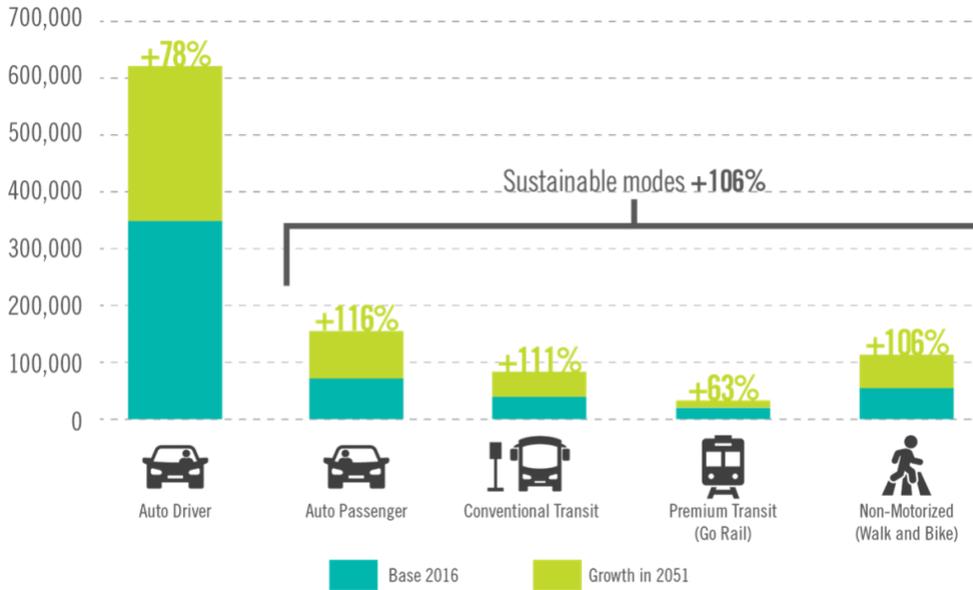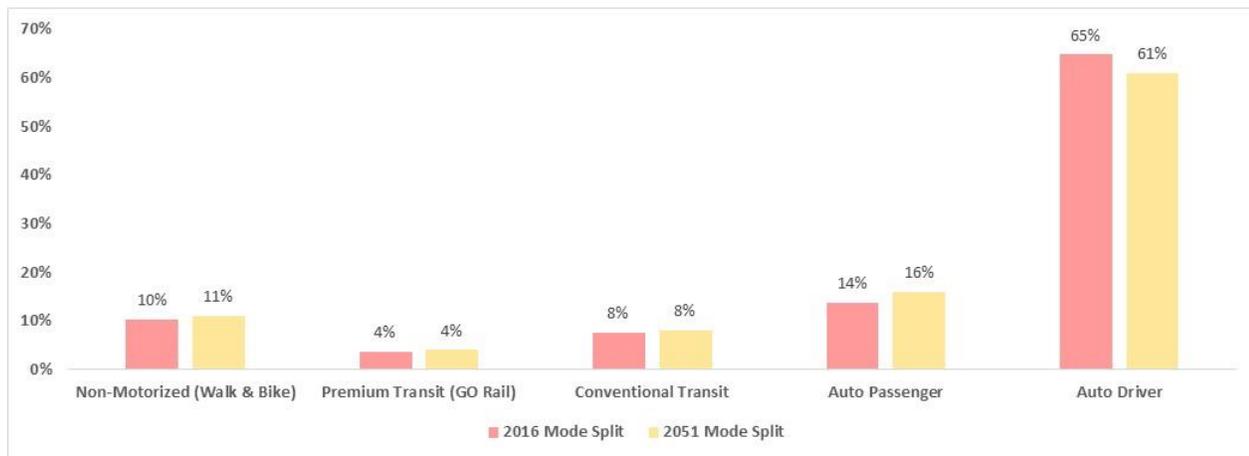*Figure 5:* Trips Starting in York Region by Mode (Morning Peak Period)

Figure 6: Modal Share for Trips Starting in York Region (Morning Peak Period)

4. Future Network Assumptions

This section includes future road and transit improvements that were used in the scenario testing to inform the development of the 2051 transportation networks for roads, rapid transit and active transportation. The need for active transportation facilities is identified at a broad network assessment level and then informed in more detail through community design and inter-agency collaboration and partnerships.

4.1 2051 BASE NETWORK SCENARIO

A 2051 Base Network was developed based on the projects included in the Region's 2022 10-year roads and transit capital program, Metrolinx's Regional Transportation Plan (RTP) and MTO's highway expansion plan. The details of road and transit improvements are described in the sections below.

Roads

The future Base Road Network is assumed to include the Region's (2022) 10-year capital program as shown in Figure 7 and MTO's highway expansion projects as shown in Figure 8, including:

- Highway 413 (also known as Greater Toronto Area (GTA) West Corridor)
- Highway 400 – Highway 404 link (also known as Bradford Bypass)
- Highway 404 extension to York-Durham Line
- Highway 427 extension to GTA West
- Highway 404 expansion to Wellington Street
- Highway 400 expansion to Barrie
- Highway 400 Expansion to Barrie

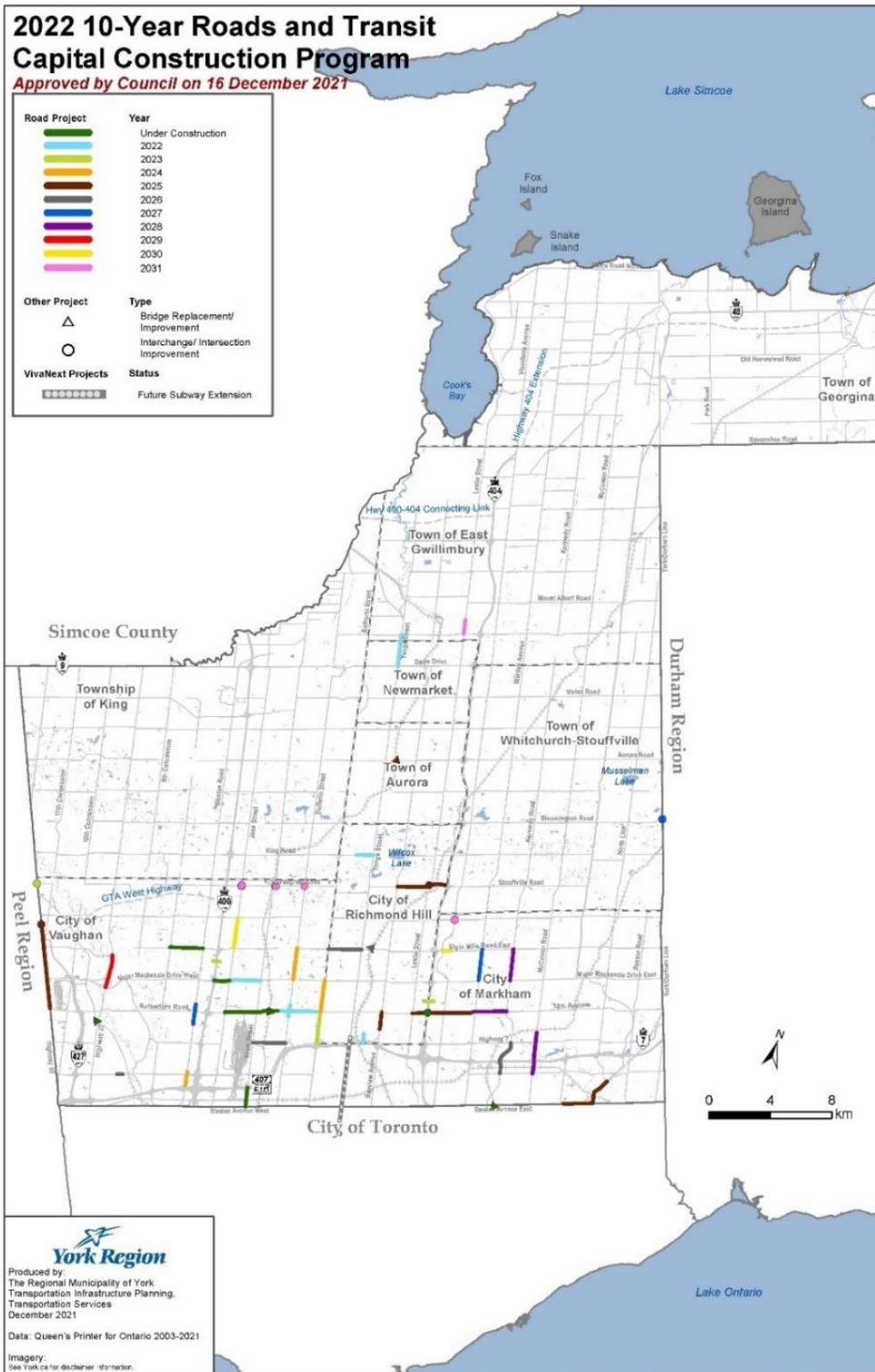***Figure 7:*** *2022 York Region 10-Year Capital Program*

Figure 8: *MTO's Road Improvements*

Source: MTO Highway Expansion Plan

Transit

The rapid transit network in York Region is assumed to include:

- Davis Drive rapidway (from Yonge Street to Highway 404)
- Highway 7 rapidway (from Highway 50 to Cornell Terminal)
- Yonge Street rapidway (between Richmond Hill Centre and Newmarket Terminal)
- Yonge North Subway Extension (between Finch Avenue, Toronto and Richmond Hill Centre)
- GO Rail Expansion Program (two-way 15-minute headway on Barrie GO and Stouffville GO Lines, one-way 15-minute headway on Richmond Hill GO Line)

Some sections of the rapidways mentioned above, were completed by 2016, such as the Highway 7 rapidway between Bayview Avenue and Enterprise Road in the Cities of Richmond Hill and Markham (opened in early 2015).

The rapid transit improvements that are not located within York Region but assumed in the 2051 Base Transit Network include:

- Subways, such as Ontario Line, Eglinton Crosstown West Extension and Scarborough Subway Extension
- Light Rail Transits on Eglinton Avenue, Finch Avenue, Sheppard Avenue and Hurontario Street
- BRTs on Queen Street and Steeles Avenue

The rapid transit improvements not assumed in the 2051 Base Transit Network, include:

- Bolton Rail Service (also known as Caledon-Vaughan GO Line) and Havelock Rail Service
- Highway 407 Transitway

5. Network Scenario Analysis

This section summarizes the evaluation results of the network scenarios.

5.1 EVALUATION OF NETWORK SCENARIOS

The 2022 TMP road network was developed based on two scenarios: "10-year capital plan" (included in the 2051 Base Scenario) and "2016 TMP Network". The 2051 Base Scenario does not provide sufficient travel capacity to accommodate the Region's transportation needs by 2051. Whereas the road improvements proposed in the 2016 TMP Network provide more road capacity; however, the estimated cost of $8.2 billion is not affordable based on the principles of fiscal sustainability contained within the Region's Fiscal Strategy. As a result, additional network alternatives were developed recognizing that it is essential to balance the Region's future transportation needs with the ability of future generations to pay for it.

The principles that were applied to develop the 2022 TMP Road Network are summarized as follows:

- Start with the approved 10-Year Roads and Transit Capital Construction Program (included in the 2051 Base Scenario) and add highest priority projects from the full suite of 2016 TMP projects
- Prioritize mid-block crossings and new road links
- Focus on four-lane roads in urban growth areas
- Prioritize six-lane roads in the Region's most congested core areas, providing connections to freeways, and servicing major employment areas
- Consider improvements at selected interchanges: tied to growth and not considered by the MTO to be provincial initiatives

This led to a preferred 2051 road network being identified with an investment beyond what is included in York Region's current 10-Year Roads and Transit Capital Construction Program while not being as aspirational as the road network presented in the 2016 TMP. See Attachment A for road network assumptions used in these scenarios.

Table 7 presents the network capital costs associated with the network alternatives.

Table 7: *Network Capital Cost*

Project Type	Base Case 10-Year Capital Plan Cost ($M)	Quantity	Complete 2016 TMP Network Cost ($M)	Quantity	2022 TMP Draft Preferred Network Cost ($M)	Quantity
Widen to 4	$ 280	49	$ 2,180	491	$ 1,118	264
Widen to 6	$ 703	79	$ 2,584	283	$ 1,403	149
Midblock crossings	$ 102	3	$ 475	10	$ 434	11
Missing Links	$ -	0	$ 1,098	4	$ 966	3
New roads	$ -	0	$ 115	6	$ 25	1
Interchanges	$ -	0	$ 421	14	$ 176	4
Grade separation	$ 133	4	$ 1,298	28	$ 668	17
Minor capital & misc.*	$ 600		$ -		$ 600	
Total Cost	**$ 1,817**		**$ 8,171**		**$ 5,390**	

*Minor capital & misc. includes minor growth capital, intersections, programs, active transportation, streetscape, etc.

Note: the fiscal analysis undertaken for the 2022 TMP has identified a road network cost to York Region of $4.2 billion, in line with the Region's rate of capital spending forecast for roads. The $4.2 billion Regional share reflects the fully costed network of $5.4 billion, minus non-Regional costs including projects along local roads or provincial highways, grade separations assumed to be subject to Metrolinx/rail authority funding and the cost of the Langstaff Road extension across the CN MacMillan Rail Yard, which is outside York Region's capital funding capability and assumed to be implemented only if funded assistance is received from other sources.

Table 8 shows the project priority scores from York Region's Council-approved Priority Setting Model. The benefit score is calculated for each of four categories for each project. Criteria categories include:

- Capacity score, based on existing and forecast traffic volumes/capacity
- Development score, based on active development in the project area
- Population and employment score, based on existing population and employment
- Multi-modal score, based on truck percentage, transit service, proximity to Regional Centres and corridors and proximity to freeways

The benefit/cost ratio is calculated by dividing the project benefit by the estimated project cost ($M).

Table 8: Priority Setting Indicators

Indicator	Project Type	Base Case 10-Year Capital	2016 TMP	2022 TMP Draft Preferred Network
Benefit Score	Widen to 4 lanes	694	3,986	2,602
	Widen to 6 lanes	2,009	6,797	4,003
	Total	**2,703**	**10,783**	**6,605**
Benefit/Cost	Widen to 4 lanes	2.48	1.83	1.86
	Widen to 6 lanes	2.86	2.63	2.98
	Total	**2.75**	**2.26**	**2.41**

The 2022 TMP Preferred Road Network provides a lower benefit score but has a better value (benefit/cost) than the full 2016 TMP Network as shown in Table 8. The 10-year capital plan provides good value but is insufficient for growth to 2051.

The 2022 TMP Preferred Network also includes transit improvements in addition to the 2051 Base Scenario, such as:

- Stouffville GO Line – 10 southbound trains in the morning peak hour (from Unionville GO station)
- Regional BRT – dedicated bus lanes assuming 50% of posted speed
  o Jane Street (Vaughan Metropolitan Centre - Major Mackenzie Drive)
  o Major Mackenzie Drive (Jane Street - Highway 48)
  o Leslie/Don Mills (Don Mills station - Major Mackenzie Drive)
- Conventional YRT
  o 15-minute or better headways
  o 40% of posted speed if services are operated in High Occupancy Vehicle (HOV) lanes

As the 2022 TMP Preferred Network provides more convenient, flexible and reliable transit services that add extra capacity in the overall transportation system in the Region, it shows improvements over the 2051 Base Scenario in terms of volume to capacity ratios for most screenlines (Table 9) and reduces travel time delay and total vehicle hours compared to the 2051 Base scenario (Table 10).

Figure 9: *TMP Screenlines*

* A screenline is a line defined along a municipal boundary, roadway, boundary, or natural barrier.

Table 9: Volume to Capacity Ratios at Screenlines

Screenline		Direction	2016			2051 Base Scenario			2051 2022 TMP Preferred Network		
			Auto Volume	Auto Capacity	v/c ratio	Auto Volume	Auto Capacity	v/c ratio	Auto Volume	Auto Capacity	v/c ratio
York-Toronto	Hwy 50 - Hwy 400	NB (in)	12,697	23,200	0.55	20,322	27,200	0.75	20,285	27,200	0.75
		SB (out)	21,313	23,200	0.92	32,597	27,200	1.20	32,666	27,200	1.20
	Jane St - Don Mills Rd	NB (in)	9,090	29,600	0.31	13,618	30,400	0.45	13,120	30,400	0.43
		SB (out)	17,183	29,600	0.58	23,532	30,400	0.77	23,154	30,400	0.76
	Hwy 404 - York-Durham Line	NB (in)	21,397	39,100	0.55	29,344	40,000	0.73	29,424	41,700	0.71
		SB (out)	26,427	39,100	0.68	40,392	40,000	1.01	40,616	41,700	0.97
York-Peel	Steeles Ave - South of King Road	EB (in)	17,733	21,900	0.81	28,664	26,100	1.10	28,486	26,100	1.09
		WB (out)	12,384	21,900	0.57	20,788	26,100	0.80	21,224	26,100	0.81
	King Road - Hwy 9	EB (in)	1,949	4,100	0.48	3,264	4,100	0.80	3,367	4,100	0.82
		WB (out)	1,639	4,100	0.40	2,759	4,100	0.67	2,431	4,100	0.59
York-Simcoe	Hwy 27 - Yonge St.	NB (out)	3,994	14,600	0.27	5,802	14,600	0.40	5,591	14,600	0.38
		SB (in)	8,639	14,600	0.59	11,091	14,600	0.76	11,132	14,600	0.76
York-Durham	Steeles Ave - 19th Ave	EB (out)	2,619	11,700	0.22	7,423	13,700	0.54	7,637	14,800	0.52
		WB (in)	6,773	13,700	0.49	14,750	13,700	1.08	15,033	14,800	1.02
	Loretta Crescent - Davis Drive	EB (out)	1,596	8,700	0.18	4,312	8,700	0.50	4,053	8,700	0.47
		WB (in)	2,830	8,700	0.33	4,962	8,700	0.57	4,924	8,700	0.57
	Herald Road - Holborn Road	EB (out)	276	2,800	0.10	1,123	2,800	0.40	1,179	2,800	0.42
		WB (in)	553	2,800	0.20	1,765	2,800	0.63	1,661	2,800	0.59
	Durham Rd 39 - Lake Ridge Road	SB/EB (out)	770	6,000	0.13	1,705	6,000	0.28	1,552	6,000	0.26
		NB/WB (in)	627	6,000	0.10	1,502	6,000	0.25	1,466	6,000	0.24
Hwy 400	Steeles Ave - South of King Road	EB	21,522	28,600	0.75	35,965	28,500	1.26	35,506	30,300	1.17
		WB	19,193	28,600	0.67	31,049	28,500	1.09	31,384	30,300	1.04
	King Road - Hwy 9	EB	5,241	5,800	0.90	6,717	5,300	1.27	6,071	5,300	1.15
		WB	4,418	5,800	0.76	6,316	5,300	1.19	5,296	5,300	1.00
Hwy 404	Steeles Ave - 19th Ave	EB	15,431	20,500	0.75	25,058	22,500	1.11	24,613	23,300	1.06
		WB	17,877	20,500	0.87	25,640	22,500	1.14	24,828	23,300	1.07
	Stouffville Road - Queensville Road	EB	9,376	17,400	0.54	18,539	16,800	1.10	18,203	18,500	0.98
		WB	9,204	17,400	0.53	14,817	16,800	0.88	14,589	18,500	0.79
South York	Albion Vaughan - Hwy 400	NB	3,933	10,000	0.39	7,274	12,000	0.61	7,033	13,100	0.54
		SB	8,792	10,000	0.88	15,751	12,000	1.31	15,567	13,100	1.19
	Jane Street - Leslie Street	NB	4,218	10,600	0.40	7,625	11,500	0.66	7,767	12,400	0.63
		SB	7,605	10,600	0.72	12,459	11,500	1.08	13,909	12,400	1.12
	Hwy 404 - York-Durham Line	NB	5,263	15,000	0.35	9,538	17,000	0.56	9,202	18,100	0.51
		SB	12,015	15,000	0.80	20,271	17,000	1.19	20,175	18,100	1.11
East Gwillimbury	Holland Landing Road - York-Durham L	NB	1,513	14,000	0.11	4,525	14,000	0.32	3,629	14,800	0.25
		SB	5,497	14,000	0.39	10,705	14,000	0.76	10,685	14,800	0.72
Ravenshoe	Leslie Street - York-Durham Line	NB	1,043	10,800	0.10	2,806	10,800	0.26	2,505	10,800	0.23
		SB	4,078	10,800	0.38	4,902	10,800	0.45	4,483	10,800	0.42

* Screenline analysis is a quantitative measure of network performance that assesses traffic volumes, road capacities crossing screenlines and identifies traffic bottlenecks in the road network. Volume-to-capacity ratios measure operating capacity of a roadway. If the v/c ratio is greater than 1 (highlighted in red), it indicates that the demand (traffic volume) is beyond the capacity.

Table 10: *Network Performance*

Travel Indicators	2016	2051		
	Current Year	Base Scenario	2022 TMP Preferred Network	2016 TMP Network
Morning Peak Period Trips	534,800	1,005,400	1,004,600	1,006,700
Auto Driver Mode Share (Peak Period)	64.8%	61.3%	61.0%	61.3%
Sustainable Mode Share (Peak Period)	35.2%	38.7%	39.0%	38.7%
Total VKT (Peak Hour)	3,282,100	5,666,300	5,704,900	5,771,900
Congested VKT (%)	12%	49%	45%	40%
Total VHT (Peak Hour)	67,300	206,400	190,600	182,000
Congested VHT (Peak Hour)	24%	72%	67%	63%
Total Delay (Peak Hour)	23%	92%	77%	71%

VHT – Vehicle-hours-travelled. VKT – Vehicle-kilometres-travelled.

The 2022 TMP Preferred Network provides infrastructure improvements that are required to support new development in the Region, aligns with the 10-year capital construction program approved by Regional Council through the annual budget process and with the Region's fiscal Strategy over the next 30 years and offers a wide range of safe and reliable travel options available to York Region travellers that help the Region achieve its financial and environmental sustainability goals.

6. Sensitivity Analysis for Emerging Trend Scenarios

In addition to the network scenarios discussed in the previous section, six emerging trend scenarios were assessed to understand potential impacts on the transportation networks, including:

- Parking charges
- Work from home (Teleworking) + e-shopping
- YRT 10-minute service
- Free transit
- Higher active transportation travel
- Peak spreading

These scenarios were developed and explored based on feedback and comments received through extensive consultation and engagement during the first phase (Discover) of the TMP. Travellers showed increasing interest in taking more active modes, such as walking and cycling and taking rapid transit especially when it is convenient, reliable and has competitive travel times compared to travel by car.

Parking Charges

As road improvements are not expected to accommodate all the auto demand generated by future development in York Region, one cost-effective way to manage traffic congestion is to charge for parking in the Region's most intensified areas. As parking charges are not under the Region's jurisdiction, this scenario was undertaken for the purposes of modelling and policy research only. In this scenario, a parking fee of $15 is applied to the following employment and metropolitan centres:

- Highway 404 & Highway 7 areas
- Markham Centre
- Markham: Denison/Steeles Business Park and 14th Avenue Business Park
- Newmarket Centre
- Richmond Hill Centre / Langstaff Gateway
- Vaughan Metropolitan Centre and Weston / Highway 7

Preliminary modelling results show that charging parking at these areas decreases auto demands and increases transit modal shares.

Work from home (Teleworking) + e-shopping

During the COVID-19 pandemic, travel demand across the Region decreased significantly as most non-essential workers worked from home. With most non-essential workers no longer travelling to and from work and many retail locations with in-person restrictions, there was an increase in online shopping. As part of the emerging trend analysis, a teleworking and e-shopping scenario was created and evaluated through the York ABM. This scenario assumes that 25% of the overall working labour force works from home and 15% of daily shopping trips are reduced because of online shopping. Employees in some sectors such as IT, Finance and Professional services are more likely to work from home. In contrast, most employees in retail, manufacturing and construction sectors are not able to work from home. The results show that traffic congestion is considerably alleviated as travel demands for all modes, including auto driver mode, decrease.

YRT 10-minute service

In this scenario, York Region Transit (YRT) services are increased to 10-minute frequencies (instead of 15-minute frequencies assumed in the 2051 Base Scenario) during rush hours. This is consistent with the Frequent Local Transit Service recommended in the Province of Ontario's 2051 Greater Golden Horseshoe (GGH) Transportation Plan. As expected, the YRT ridership increases with more buses in service. This results in reduced traffic congestion in the areas with improved YRT services.

Free Transit

This scenario assumes travellers can ride any transit services in the GGH area for free. The preliminary modelling results indicate that there is a substantial mode shift from auto to transit between York Region and Downtown Toronto. In particular, the increase of GO rail trips is much greater than that of conventional transit trips as GO Transit becomes more attractive than other travel modes when GO fares for long trips are eliminated.

Higher Active Transportation Travel

During the TMP consultation, there was a strong interest in walking and cycling. As the Region expands its cycling network, it is assumed that more residents are expected to walk and cycle for short-distance trips in 2051. Therefore, this scenario switches 50% of travellers who commute by automobile to walking and cycling modes for trips shorter than five kilometres. This modal shift reduces traffic congestion in terms of the amount of time and distance travelled by automobiles across the Region.

Rush Hour Travel Demand Spreading

Rush hour travel demand spreading is another way to reduce auto demand and relieve traffic congestion during rush hours. It is envisioned that travellers are expected to avoid morning and evening traffic peaks by leaving earlier or later as traffic congestion deteriorates. In this scenario, the rush hour auto demand is more evenly distributed across the day. The results are positive as total travel times, distances and delays are significantly reduced in the network.

Based on the results of the emerging trends scenarios, transportation network recommendations focus on infrastructure investments which are identified as being beneficial under numerous potential future trends. This is consistent with an identified objective of the 2022 TMP which is to ensure future plans are flexible. As always, the Region will continue to monitor emerging trends, explore opportunities to implement new supporting programs or policy initiatives, and adjust future plans accordingly.

7. Findings/Recommendations

As the Region continues to grow over the next 30 years, a set of network and emerging trend scenarios were evaluated to develop a preferred network and potential policies to be implemented to support future development. Given that the future is unknown, testing infrastructure investments under different future scenarios ensures that projects included in the recommended transportation network provide benefits. This section summarizes key findings and recommendations.

- Travel demand growth is aligned with the population and employment growth.
- The proportion of self-contained trips within York Region is expected to increase by 2051 (i.e., more residents are expected to live, work and play within the Region)
- Overall travel demand is expected to grow over the next 30 years, but the proportional growth of sustainable modes is expected to be greater than that of auto driver
- Transit demand increases as a result of transit improvements; however the business case needs to ensure that the improvement costs justify the increase in ridership.
- The proportion of travel trips by transit for Toronto-bound trips will increase significantly because of substantial investments in rapid transit projects, such as the GO rail expansion and YNSE

The recommended TMP network (bicycle, road, and transit) is expected to provide travel options to help reduce delays and improve reliability. The results of the sensitivity analysis for emerging trend scenarios show that one or a combination of multiple scenarios can be used as a tool to manage increasing traffic demand during the rush hours and potentially defer the need to improve road corridors to solely address car capacity needs. Regional staff will continue to explore partnership opportunities and monitor emerging trends such as new technologies, changing travel patterns, and the impacts of disruptive events such as the COVID-19 pandemic to adjust transportation planning as needed.

ATTACHMENT A - ADDITIONAL MAPS

2022 TMP Preferred Road Network