# A

# Appendix A

## Region of Peel 50% Sustainable Mode Share Target Background Paper

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# 1.0 Introduction

The Peel Long Range Transportation Plan (LRTP) serves as the Transportation Master Plan for the Region of Peel. By 2041, it is anticipated that morning peak hour trips within the Region of Peel will increase by approximately 40% or 303,000 added trips. This growth will have a significant impact on travel, and road widenings alone will not be able to contain the potential increase in congestion. Considering the anticipated growth, the LRTP addresses increasing demand pressures on Peel's transportation network by focusing on shifting travel behaviour through a transportation infrastructure needs approach.

Increasing the network capacity by means of road expansion is approaching its limits; the Region of Peel is shifting its focus towards sustainable travel choices. Analysis performed in 2015-2016 demonstrated the need for a 50% sustainable mode share target by 2041 to better manage growth. The target is intended to address travel demands stemming from growth while serving as a prime consideration for prioritising transportation goals in the Region.

In 2016, an independent review of the modal split targets was undertaken by a consultant. The analysis and recommendations, which developed into the Sustainable Transportation Strategy (STS), determined a 50% sustainable mode share target as feasible and outlined the Region's roles and responsibilities in achieving the mode share targets. The STS was approved by Council in February 22, 2018 under Council Resolution 2018-121.

This background paper chronicles how the Region arrived at the decision to increase the sustainable mode usage and documents the methodology followed to set a 50% sustainable mode share target..

# 2.0 Background

## Where we were

The Region of Peel has traditionally been in the practice of widening roads to accommodate population and employment growth. The planning approach during the 1990's and early 2000's was primarily car-centric, intended to complement the rise of the automobile and suburban growth, with an emphasis on keeping vehicles and goods moving.

## Where we are

Today, the Region of Peel serves 1.4 million residents and has a road network comprised of 28 Regional roads. Currently, 63% of people drive and only 37% of people use sustainable modes of transportation. As part of developing the Region's Strategic Plan 2015-2035, a community engagement survey identified traffic congestion as the number one "top of mind issue" for Peel residents followed by managing growth (see Figure 1).

**FIGURE 1**
10 Top of Mind Issues, Region of Peel

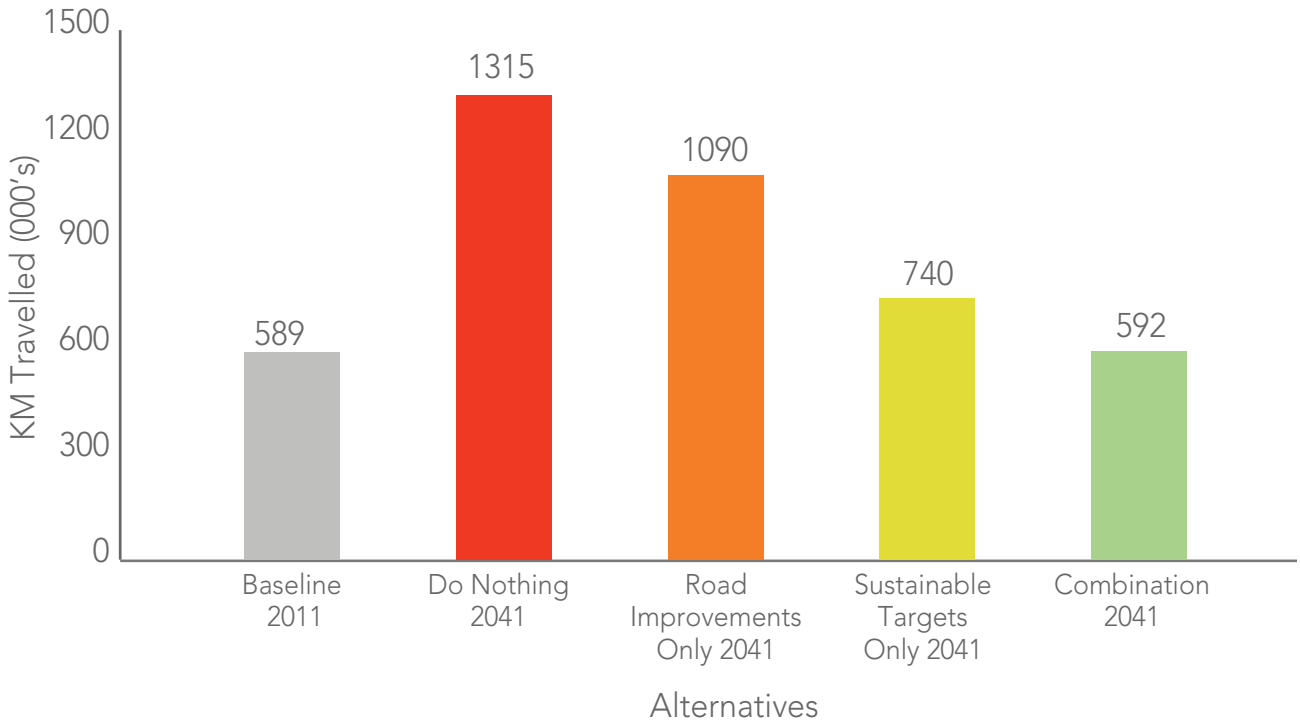
## Where we're going

By 2041, the Region of Peel will be home to over 500,000 new residents and 250,000 new jobs resulting in a total population of approximately 2 million people and 970,000 jobs (Growth Plan, 2017). Resultantly, the number of trips on Peel roads every weekday morning is expected to increase by over 40% by 2041. This is equivalent to 303,000 additional trips. With this anticipated growth, leaving current travel behaviours unaddressed will have significant impacts on the transportation network, resulting in unsustainable travel times.

Congested Vehicle-Kilometers Travelled (VKT) for all roads within Peel by 2041 is a useful estimate of the magnitude of traffic congestion at the regional level. To calculate the VKT, the congested KMs are multiplied by the respective number of vehicles experiencing congestion on a road section and are summed over the Region. A lower Congested VKT value is more desirable.

As per Figure 2, Peel's modelling analysis shows that by 2041, in a "Road Improvements Only" scenario where all feasible road improvements are implemented by Peel, local municipalities, and the province, the Congested VKT value rises 85% compared to the 2011 Baseline. This is a significant deterioration of congestion levels by 2041. This analysis helps in understanding that road improvements and widenings alone cannot solve the issue of deteriorating congestion due to growth.

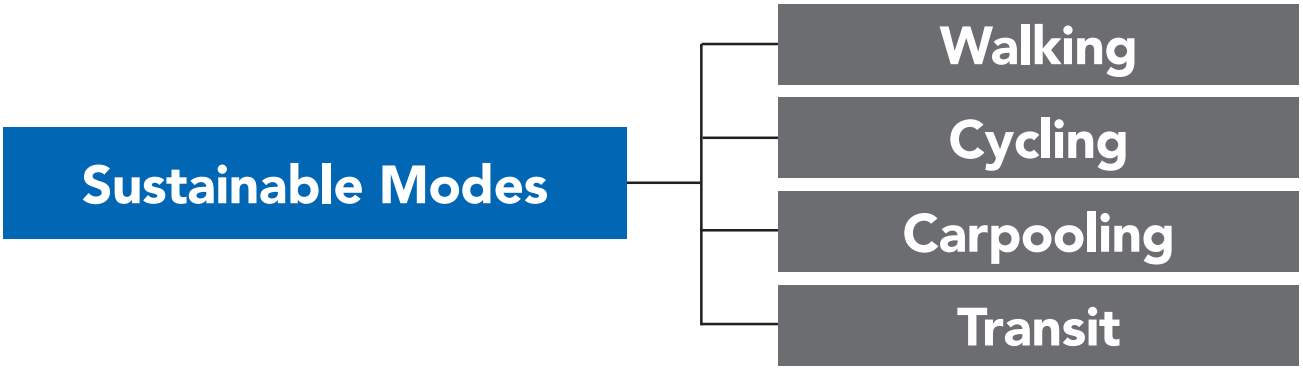
**FIGURE 2**
Congested VKT Values for the Morning Peak-Hour on All Roads Within Peel by 2041



## Importance of the LRTP Mode Share Target to the Region of Peel

The Region's Long Range Transportation Plan sets the framework to guide long-term transportation infrastructure needs, investment, and decision making. It is the mechanism to shift travel behaviour away from single occupant vehicle trips and towards sustainable modes of transportation comprised of walking, cycling, carpooling, and public transit (See Figure 3). This shift plays an important role in diverting the Regional road system from unsustainable travel times.

**FIGURE 3**
Congested VKT Values for the Morning Peak-Hour on All Roads Within Peel by 2041




To build a "Community for Life" as envisioned in the Region's Strategic Plan, the Region of Peel is responsible for addressing the top of mind issues identified in Figure 1. The Regional Official Plan sets out the policy framework for identifying an approach to address these issues and mandates facilitating the movement of all travel modes while promoting the efficient movement of people and goods, with a focus on moving people by modes other than single occupant vehicles. The 50% sustainable mode share target is a Region wide position that commits to developing and promoting a sustainable and integrated multimodal transportation system.

With the implementation of the sustainable mode share targets, in combination with feasible road widenings, the Congested VKT by 2041 will only see a 5% increase from the 2011 Baseline, which is extremely desirable [please refer to Figure 2].

The modal split is also an action plan for the guiding principles of the Provincial Growth Plan, 2017 which gives direction on providing travel choices, including sustainable transportation as a practical element of the urban transportation system. By prioritizing the 50% sustainable mode share, the Region is planning and managing its transportation system in a way that encourages the most financially and environmentally appropriate mode for trip-making.

# 3.0 Development of Mode Share Targets

## 3.1 Preliminary Research and Resources

### Data Selection and Historical Trend Analysis

Various datasets were used in the in the development and validation of the Region's modal split targets (see Table 1). The process took place in 2015 and 2016, and thus, the data and references beyond ones approved in 2016 were not used in the analysis.

**TABLE 1**: Sources of Data Used

| Source | Description | Comments |
|---|---|---|
| **Transportation Tomorrow Survey** | Collects information on the demographics (age, gender, etc.) and travel choices and preferences every 5 years | Current conditions of the roadway, active transportation (AT) infrastructure, carpool and transit networks |
| **Census Program – National Household Survey** | Statistics Canada collects census data for every person in Canada every five years on a specific day | Feasible road improvements based off capital plans and master plans from Peel, local municipalities, and the Province by 2041 |
| **Region of Peel's Population and Employment Forecasts** | Population and employment forecasts that are obtained from Regional Planning and Growth Management in the Region of Peel are used to see the rate of future growth | Current conditions of the roadway, but enhanced transit networks<br>Reaching the Region's mode share target of achieving 50% sustainable transportation modes by 2041 by improving AT and carpool network and helping local municipalities improve transit operations on Regional roads |

The Transportation Tomorrow Survey (TTS) from 1996-2011 was used to identify the historical trends of mode shares in Peel Region. The TTS data was retrieved by using the "Primary Mode of Travel" and "Regional Municipality of Households" parameters, whilst filtering it for the AM Peak Hour (6:00am to 9:00am), and for trips that start from Peel households. These factors were applied ensure consistency with project's goals and ensure compatibility with Peel's Travel Demand Forecasting Model. From there, the data was used to find the historical trends of mode shares in Peel Region. Between 1996 and 2011, the morning peak transit mode share increased from 9.1% to 10.9%, while the auto driver mode share decreased from 64.2% to 63.0% (see Table 2).

**TABLE 2**: Historical Trends of Household Trips Mode Share within Peel (1996-2011)
*Other mode includes trips such as: school bus, taxi passenger, and any uncaptured modes

| AM Peak Period | 1996 | 2001 | 2006 | 2011 |
|---|---|---|---|---|
| **Auto Driver** | 64.2% | 64.7% | 62.9% | 63.0% |
| **Carpool** | 13.5% | 13.8% | 15.2% | 14.9% |
| **Transit (local and GO Transit)** | 9.1% | 9.1% | 9.5% | 10.9% |
| **Walk and Cycle** | 8.4% | 7.9% | 7.6% | 6.9% |
| **Other*** | 4.7% | 4.5% | 4.8% | 4.3% |

## Internal and External References Used

In addition to the compilation of datasets, Regional staff undertook a detailed review of available plans and policies from the Region of Peel, local municipalities and transit agencies, and the Province (see Table 3). These references provided Regional staff with direction in regards to the future mode shares, since some plans and policies incorporated pre-determined modal split targets.

**TABLE 3**: List of References used in this project

| Sources | Year | Carpool | Transit | A.T. |
|---|---|---|---|---|
| **The Big Move, Metrolinx** | 2008 | | X | |
| **Long Range Transportation Plan (LRTP), Region of Peel** | 2012 | X | X | X |
| **Active Transportation Plan, Region of Peel** | 2012 | | | X |
| **5 Year Transportation Demand Management Plan, Region of Peel** | 2015 | X | X | X |
| **Moving Mississauga from Vision to Action, City of Mississauga** | 2011 | | X | |
| **Cycling Master Plan, City of Mississauga** | 2010 | | | X |
| **Transportation Master Plan Update (as well as Technical Reports #3, #4, #5 and #6), City of Brampton** | 2015 | X | X | X |
| **Pathways Master Plan, City of Brampton** | 2002 | | | X |
| **GO Rail Ridership Growth Projection, Metrolinx** | – | | X | |
| **Transportation Demand Management Evaluation Tool, Region of Peel** | 2015 | X | X | X |

# 3.2 Detailed Review of References

In order to gain a better understanding of the factors that affect the modal share in Peel Region, research was done on various documents, plans, policies, programs, and planned future developments (see Table 3). All factors that could influence future behavioural change were reviewed and evaluated, as detailed below.

## Active Transportation (Walk and Cycle)

Based on the 2012 Active Transportation Study, the Region of Peel is aiming to increase the total active transportation trips from 5% to 10% in the long term. Both the City of Brampton and City of Mississauga have a long-term active transportation target of 10% (see Table 4).

Peel Region's first Active Transportation Plan (approved in 2012) fostered the development of Active Transportation infrastructure, programming and education. The Active Transportation facilities that were implemented by the Region of Peel from 2012 – 2015 (see Appendix A) were also taken into consideration.

**TABLE 4**: Future Active Transportation Targets

| | Short Term | Long-Term Goal | Source |
|---|---|---|---|
| **Region of Peel** | 7% | 10% | Peel Region's Active Transportation Plan (2012 |
| **City of Mississauga** | – | 10% | Moving Mississauga From Vision to Action: Mississauga Interim Transporation Strategy (July 2011) |
| **City of Brampton** | – | 10% | City of Brampton Transporation Master Plan Update (April 2015) |

## Public Transit

The transit system within Peel Region consists of GO Transit, Mississauga Transitway (MiWay) and Brampton Transit, owned by Metrolinx, City of Mississauga and City of Brampton respectively. Jurisdiction of public transit lies with the local municipalities. Therefore, the transit component in this approach is highly dependent on the information and data collected from each owner.

## City of Mississauga

City of Mississauga has identified their A.M. peak travel period transit modal split to be 18% in 2031 (see Table 5). This split was calculated with an assumption that all planned improvements, including Metrolinx 2041 RTP projects, MTO highway improvements, local and regional road Improvements would be implemented within the planned timeframe.

## City of Brampton

City of Brampton has identified their local transit modal splits in the P.M. peak travel period as 14% by 2031 and 16% by 2041 (see Table 5). To achieve this, Brampton Transit recommends that higher order transit facilities be implemented in strategic locations. This includes expanding upon the ZÜM network and also introducing new rapid transit corridor that operate in exclusive lanes.

## Metrolinx

The GO Rail Passenger Survey (2013) within Peel Region provides the ridership information of Lakeshore West Line, Milton Line and Georgetown Line. It allows a brief understanding of the usage of each station along these three transit lines. However, the summary does not provide any information on trip origin/destination at the station, nor the number of Peel residents using the transit services. Therefore, the GO Rail Passenger Survey could only be used as a reference.

**TABLE 5**: Future Public Transit Targets

| | 2031 | 2041 | Comments | Source |
|---|---|---|---|---|
| **City of Mississauga** | 18% | – | • The modal split target was determined for AM Peak Period trips<br>• It includes both local and GO transit | Moving Mississauga From Vision to Action: Mississauga Interim Transportation Strategy (July 2011) |
| **City of Brampton** | 14% | 16% | • The modal split target was determined for PM Peak Period trips<br>• It includes only local transit | City of Brampton Transportation Master Plan Update (April 2015) |

## Regional Transportation Demand Management Programs

Transportation Demand Management (TDM) Programs developed by Peel Region were considered during the review of references (see Table 6). To account for the impact and effectiveness of TDM in reducing vehicular trips, each project was assigned a score reflecting the influence that the project could have on various modal choices.

**TABLE 6**: TDM Programs and Projects within Peel Region

| Programs/Projects | AT | Transit | Carpool | Telework | Origin/ Destination | Priority |
|---|---|---|---|---|---|---|
| **AT Infrastructure** | 1 | 2 | 0 | 0 | Both | Very High |
| **Smart Commute Program Support** | 2 | 2 | 1 | 2 | Destination | High |
| **TDM Guidelines and Tools Project** | 1 | 1 | 1 | 0 | Both | High |
| **Changes to Development Approval Process** | 1 | 1 | 1 | 0 | Both | High |
| **Development Review** | 1 | 1 | 1 | 0 | Both | High |
| **Telework Guidebook** | 0 | 0 | 0 | 1 | Destination | High |
| **Residential Outreach Programs** | 2 | 1 | 0 | 0 | Origin | High |
| **TDM Social Marketing** | 1 | 1 | 1 | 0 | Origin | High |
| **School Parking Pilot Program** | 1 | 0 | 0 | 0 | Both | High |
| **School Travel Planning Pilot** | 1 | 0 | 0 | 0 | Both | High |
| **Pedal wise Mentorship Program** | 1 | 0 | 0 | 0 | Origin | Medium |
| **CBSM in Southfields Neighbourhood** | 1 | 1 | 1 | 0 | Origin | Medium |
| **Individualized Marketing for Carpool Lot** | – | 1 | 1 | 0 | Origin | Medium |
| **Walk + Roll Peel Website** | 1 | 0 | 0 | 0 | Both | Low |
| **Bicycle Clinic Pilot Project** | 1 | 0 | 0 | 0 | Origin | Low |
| **Events (e.g.: Bike Month, etc.)** | 1 | 0 | 0 | 0 | Origin | Low |
| **Greenbelt Trail** | 1 | 0 | 0 | 0 | Both | Low |
| **Employee Trip Reduction Programs** | 1 | 1 | 1 | 2 | Destination | Low |
| **Peel Safe and Active Route to School Committee (PSARTS)** | 1 | 0 | 0 | 0 | Both | Low |
| **Bike Rodeo Kit** | 1 | 0 | 0 | 0 | Both | Low |
| **Active Switch Community Program** | 1 | 0 | 0 | 0 | Origin | Low |
| **Study on Mitigating Congestion** | 2 | 2 | 2 | 2 | Both | Low |
| **Carpool lot in Bolton** | 2 | 1 | – | – | Origin | Low |

(0=not a main target of the project/program; 1=Intensive; 2=Less Intensive)

**Other**

Other unique initiatives considered during the literature review included but were not limited to:

- Mississauga Transitway
- Hurontario Light Rail Transit (LRT)
- Regional Express Rail (RER) services
- GTA West Corridor Planning and Environmental Assessment Study

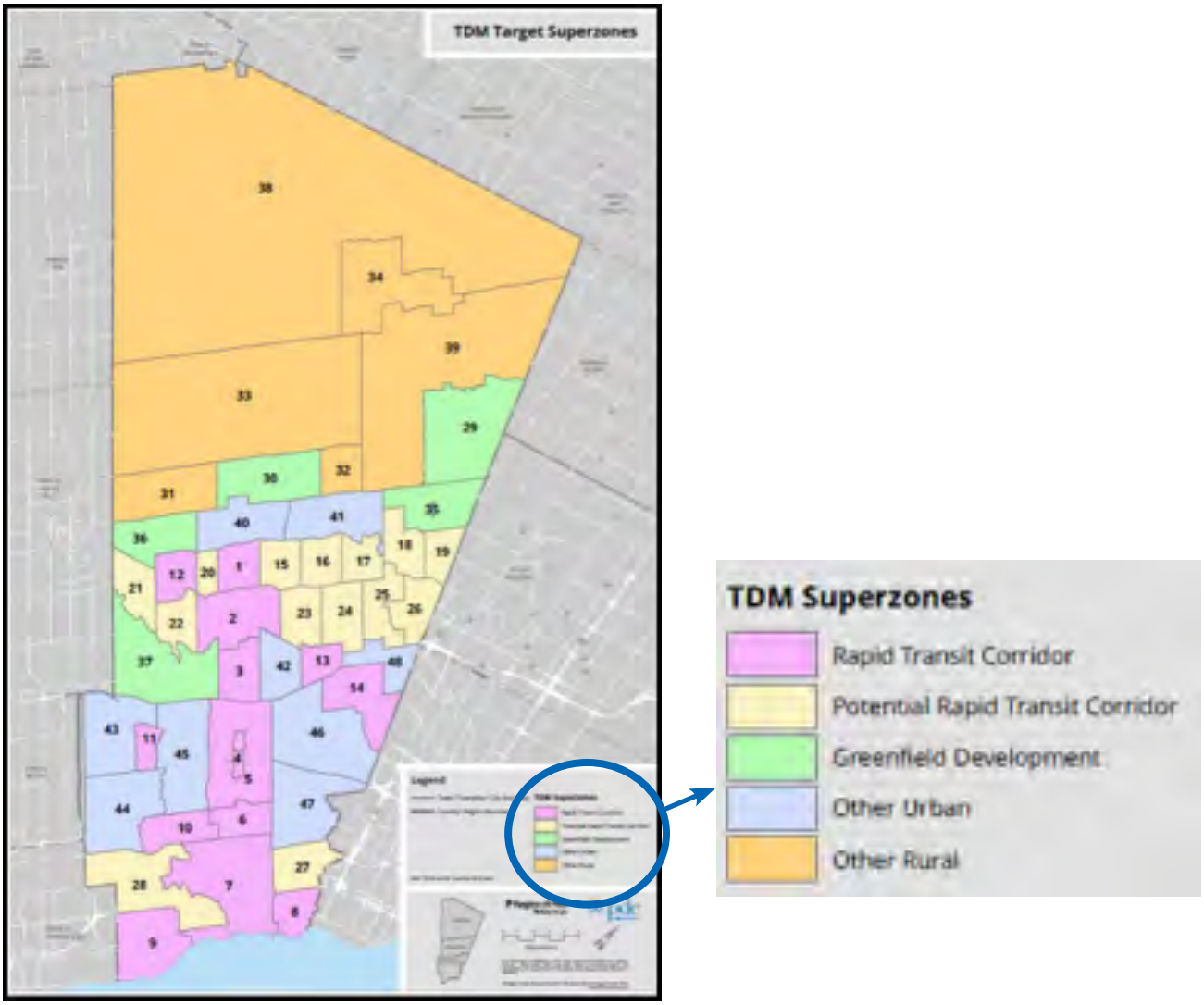
# 3.3 Development of Preliminary Modal Split Targets

## Step 1: Development of Traffic Super-Zones

To forecast future mode share targets in Peel, a total of 48 regional Super-zones were grouped into five different Super-Zone categories.

The Super-zones were created by grouping together smaller TTS traffic zones that have similar land use characteristics, current and future transportation infrastructure, routes, including transit, and growth rates. Thus, it can be assumed that the future mode share targets will be similar in each of the Super-zone categories. The Super-zone categories included rapid transit corridor, potential rapid transit corridor, greenfield development, other urban, and other rural areas (see Figure 4).

**FIGURE 4**
Super-zones for Mode Share Analysis



## Step 2: Ranking of Modal Targets for Traffic Super-Zones

To determine the sustainable mode split growth potential for each Super-zone category, transportation and land use characteristics, past travel behavior patterns, future plans, policies, and infrastructure were weighted (see Table 7).

**TABLE 7**: Ranked Mode Share for each Super-zone Category

| Zone Category | Auto Driver | Carpool | Public Transit | Active Transportation |
|---|---|---|---|---|
| **Rapid Transit Corridor** | 5 | 3 | 1 | 1 |
| **Potential Rapid Transit Corridor** | 4 | 4 | 2 | 2 |
| **Greenfield Development** | 2 | 1 | 4 | 3 |
| **Other Urban** | 3 | 5 | 3 | 4 |
| **Other Rural** | 1 | 2 | 5 | 5 |

Note: 1 is the highest, 5 is the lowest

For example: the Rapid Transit Corridor was ranked as having the highest potential growth in regards to Public Transit amongst the Super-zone categories. This was concluded from the planned service and infrastructure improvements (such as Hurontario LRT, Mississauga Transitway, and RER). Similar analysis was performed for each mode and Super-zone category.

## Step 3: Development of Modal Targets for Individual Super-Zones

The rankings of modal share growth informed the mode targets for each Super-zone. This was done at the individual Super-zone level, and then aggregated to the entire Super-zone category.

It was assumed that the travel behavior trend in the past will continue into the future. Thus, linear extrapolation was used to forecast data for each individual Super-zone. However, adjustments had to be made to account for past trends that could change over the next thirty years. Factors taken into consideration while adjusting the projected trends included, but were not limited to:

- Population and Employment Growth: Obtaining Population and Employment Forecasts and calculating Compound Annual Growth Rates (CAGR) from the forecasts. Through the reference review and the increasing sustainable mode trends, multiple scenarios were analyzed where the population and employment CAGR was used to increase sustainable mode shares and decrease driving.
- Official predetermined mode share targets by Local Municipalities and/or the Region itself: Predetermined mode share targets by the Region and (its) local municipalities were considered when developing the future modal splits for each Super-zone category.

## Step 4: Aggregation of Modal Split Targets into Super-zone Categories

Once the forecast modal targets for each individual Super-zone were developed, the results were then aggregated to determine the future modal targets for the entire Super-zone category. This was done using the Weighted Average Method, with Population and Employment as the weights (see Table 8 for results).

**TABLE 8**: Summary Table of Modal Split Targets for each Super-Zone Category (2011 – 2041)

| Rapid Transit Corridor | | | | |
|---|---|---|---|---|
| | **2011** | **2021** | **2031** | **2041** |
| **Driving** | 62.3% | 59.7% | 55.5% | 51.0% |
| **Carpool** | 14.7% | 16.2% | 17.5% | 19.2% |
| **Transit** | 13.1% | 14.5% | 16.3% | 18.5% |
| **Walk/Cycle** | 6.9% | 7.4% | 8.5% | 9.5% |
| **Others** | 3.0% | 2.2% | 2.2% | 1.8% |

| Potential Rapid Transit Corridor | | | | |
|---|---|---|---|---|
| | **2011** | **2021** | **2031** | **2041** |
| **Driving** | 63.3% | 60.5% | 58.0% | 54% |
| **Carpool** | 15.7% | 16.5% | 18.3% | 19.0% |
| **Transit** | 9.4% | 10.8% | 12.5% | 16.2% |
| **Walk/Cycle** | 7.2% | 7.8% | 8.5% | 9.2% |
| **Others** | 4.4% | 4.4% | 2.7% | 1.6% |

| Greenfield Development | | | | |
|---|---|---|---|---|
| | **2011** | **2021** | **2031** | **2041** |
| **Driving** | 66.8% | 64.8 | 63.0% | 60.0% |
| **Carpool** | 14.0% | 15.4% | 16.2% | 17.5% |
| **Transit** | 6.8% | 7.2% | 8.0% | 10.0% |
| **Walk/Cycle** | 5.2% | 5.5% | 6.5% | 7.2% |
| **Others** | 7.2% | 7.1% | 6.3% | 5.3% |

| Other Urban Areas | | | | |
|---|---|---|---|---|
| | **2011** | **2021** | **2031** | **2041** |
| **Driving** | 62.5% | 60.0 | 58.1% | 56.0% |
| **Carpool** | 15.3% | 16.2% | 17.0% | 17.5% |
| **Transit** | 10.8% | 12.2% | 13.0% | 15.0% |
| **Walk/Cycle** | 7.1% | 7.4% | 8.5% | 9.0% |
| **Others** | 4.36% | 4.2% | 3.4% | 2.5% |

| Rapid Transit Corridor | | | | |
|---|---|---|---|---|
| | **2011** | **2021** | **2031** | **2041** |
| **Driving** | 71.2% | 68.5% | 68.5% | 66.8% |
| **Carpool** | 6.6% | 7.5% | 8.1% | 9.2% |
| **Transit** | 3.5% | 3.6% | 3.8% | 4.0% |
| **Walk/Cycle** | 1.6% | 1.7% | 2.0% | 2.5% |
| **Others** | 17.2% | 17.7% | 17.0% | 17.5% |

## Step 6: Conversion of Modal Targets to the Municipal and Regional Level

The mode share targets for each Super-zone category were then further aggregated to determine the targets for Local Municipalities and the Region.

The findings of the analysis resulted in a 54% driving and 46% sustainable mode share target by 2041 for the Region of Peel (see Table 9).

**TABLE 9**: Region of Peel Preliminary Mode Share Targets by horizon year

| Mode Share (AM Peak Period) | 2011 (TTS) Total Population: 1.56M | | 2021 Horizon Total Population: 1.56M | | 2031 Horizon Total Population: 1.77M | 2041 Horizon Total Population: 1.94M | | |
|---|---|---|---|---|---|---|---|---|
| | No. Trips | % of Trips | No. Trips | % of Trips | No. Trips | No. Trips | % of Trips | |
| **Driving** | **0.42M** | **63%** | **0.46M** | **60%** | **0.50M** | **0.51M** | **54%** | ↓ |
| **Sustainable Mode** | **0.25M** | **37%** | **0.30M** | **40%** | **0.36M** | **0.43M** | **46%** | ↑ |
| Carpool | 0.10M | 15% | 0.12M | 16% | 0.15m | 0.17M | 19% | ↑ |
| Transit | 0.07M | 11% | 0.09M | 12% | 0.11m | 0.15M | 16% | ↑ |
| Walk/Cycle | 0.05M | 7% | 0.06M | 7% | 0.07M | 0.08M | 9% | ↑ |
| Others | 0.03M | 4% | 0.03M | 4% | 0.03M | 0.02M | 2% | ↑ |
| **Total Trips** | **0.67M** | **100%** | **0.76M** | **100%** | **0.86M** | **0.94M** | **100%** | ↑ |

## Step 6: Review of Results

The results were validated quantitatively and qualitatively, samples of the validation techniques are presented below.

### Mathematical methods of validation

Trend analysis was performed to see the relationship of future modal split targets with past modal splits. As previously estimated, the relationship for most modes were not linear, but rather higher-degree functions. The targets fit well with exponential and polynomial functions. This indicates that in order to obtain the future modal splits, there needs to be an accelerated effort of increasing sustainable modes, more so than in the past.

### Referencing with predetermined municipal targets

The results were cross-referenced with pre-determined modal split targets from external sources. For example:

- Calculated Active Transportation modal split of 9% was less than the Region's target of 10%.
- The transit target for the City of Mississauga was calculated to be 17% by 2041. However, the City of Mississauga's own transit target for 2031 (10 years earlier) was determined as 18%.

Overall, the results suggest that the calculated targets are less than the Local Municipal and Regional pre-determined targets for various sustainable modes. This suggests that the preliminary modal share targets might be slightly low.

### Comparison of Targets with other Municipalities

The mode share targets for the Region of Peel were compared against current modal splits of other municipalities. Since the Region of Peel will be experiencing rapid intensification and urbanization by 2041, comparisons were made to the City of Toronto, which has achieved a 53.6% sustainable modal split in 2011 for AM Peak Period (see Table 10). This analysis indicates that a 46% target of sustainable modes by 2041 might be slightly low.

**TABLE 10**: Summary Table of Modal Splits for Single Tier and Regional Municipalities within the Greater Toronto Area – Year: 2011

| | Auto Driver | Carpool | Public Transit | Walk + Cycle | Other |
|---|---|---|---|---|---|
| **Toronto** | 46.4 | 11.6 | 29.3 | 10.9 | 1.8 |
| **Peel** | 63.0 | 14.9 | 10.9 | 6.9 | 4.3 |
| **York** | 65.6 | 13.7 | 11.3 | 5.6 | 3.9 |
| **Durham** | 66.0 | 13.0 | 9.5 | 6.9 | 4.6 |
| **Halton** | 69.5 | 11.1 | 8.9 | 6.1 | 4.4 |

## Step 7: Review of Results

As the Region of Peel stands right now, there are limited road widening opportunities to increase capacity throughout the transportation network. The undertaking of the technical analysis was a necessary step for Peel to determine the most practical approach to addressing congestion and its worsening state.

While the in-house preliminary analysis resulted in a 46% sustainable mode share target, a detailed review and validation of the results determined that the sustainable targets were slightly low from a technical standpoint due to the following reasons:

- Pre-determined mode share targets set by the Local Municipalities regarding Active Transportation and Transit are higher than the Region's preliminary analysis.
- Pre-determined mode share target set by the Region regarding Active Transportation is higher than the Region's preliminary analysis.
- Comparisons with other municipalities such as the City of Toronto indicate the feasibility of higher sustainable mode shares for a rapidly urbanizing municipality like Peel.

A 50% target was determined to be technically sound and a viable solution to growth demands. The technical analysis was combined with the need to provide sustainable transportation as a practical element of the urban transportation system to accommodate growing communities, as directed through the Growth Plan (2017).

Therefore, for the Region of Peel to proactively stay ahead of the growth forecasted into 2041, the technical analysis and policies illustrate the need for new active transportation routes, transit, and shared mobility services are required to alleviate the network from increasing congestion.

From an infrastructure stand point, the 50% sustainable mode share target ensures faster transitions of the Regional infrastructure to one that viably supports future community growth.

# 4.0 Background

Throughout the fall of 2016, the Region of Peel engaged IBI Group to undertake an independent review of the 50-50 mode share target through the 2041 horizon year. IBI's review included validating individual mode targets for all traffic zones within Peel via a "bottom-up" approach. This was to account for the fact that specific area conditions can influence on modal splits.

The validation process started with a review of current zone conditions and trends for each mode as well as targets set by current policies and plans.

Following that, each zone was scored based on criteria that indicated its potential for increasing a specific sustainable mode. For example, if a zone had a walking mode share of 6% and above, a point would be allocated to the zone rank, indicating that particular zone has geographic characteristics that encourages walking today and can therefore be leveraged to encourage more walking in the future (see Table 11 for full list of criteria).

Zones with the highest scores were assigned the highest mode share increases. For example, to meet the Regional walking mode share target of 9% by 2041, 45,000 trips of this mode are required. A zone with higher score in walkability will be then assigned the highest mode increase that would accommodate the required trips. The feasibility of the increase in trips was then assessed using separate criteria to ensure that the increases in trips are attainable in each zone.

IBI's review confirmed the 50% sustainable mode share target is feasible. The interim modal share targets for 2021 and 2031 were also adjusted to better reflect the potential increase in each of the sustainable mode, and will be used to measure the Region's progress.

The final set of modal share targets, broken down by municipality and horizon year, was also developed by IBI (see Table 12).

**TABLE 11**: IBI Mode Specific Criteria

| Mode | Criteria |
|---|---|
| **Walking** | • Specific area's 2011 walking mode share being greater than 6%<br>• Over 500 trips being made that are less than 2 km<br>• Population density greater than 50 persons/ha<br>• The area's land use is a mix of residential and employment |
| **Cycling** | • 2011 cycling mode share being higher than average<br>• Over 500 auto trips that are under 5 km<br>• Urban density is greater than 50/persons/ha |
| **Transit** | • Specific area has more than 80 jobs + persons/ha by 2041<br>• The 2031 transit time to auto time competitiveness ratio is lower than 2.0<br>• 2011 transit mode share is above Regional average<br>• Specific area's future transit mode share has the potential to be greater than 10% |
| **Carpool** | • Specific area's 2011 commute carpooling mode share is above 5%<br>• 2031 transit time to auto time competitiveness ratio is higher than 2.5<br>• Car ownership rate lower than Regional average of 1.7 cars/household |

**TABLE 12**: Final Targets: Peel Region Mode Share Targets by Municipality 2041
(Source: IBI Group/Region of Peel)

| Peel Region | 2011 | 2041 Vision |
|---|---|---|
| Driving | 62.5% | 49.8% |
| Walking | 6.8% | 9.1% |
| Cycling | 0.3% | 2.0% |
| Transit | 10.8% | 17.0% |
| Carpool | 15.2% | 17.9% |
| Other | 4.3% | 4.3% |
| **Sustainable Transportation** | **37.5%** | **50.3%** |

| Caledon | 2011 | 2041 Vision |
|---|---|---|
| Driving | 71.0% | 68.1% |
| Walking | 3.5% | 3.6% |
| Cycling | 0.0% | 0.8% |
| Transit | 2.0% | 2.5% |
| Carpool | 8.2% | 9.9% |
| Other | 15.3% | 15.1% |
| **Sustainable Transportation** | **29.0%** | **31.9%** |

| Brampton | 2011 | 2041 Vision |
|---|---|---|
| Driving | 62.7% | 51.8% |
| Walking | 7.4% | 9.1% |
| Cycling | 0.2% | 1.8% |
| Transit | 8.8% | 14.6% |
| Carpool | 16.5% | 18.6% |
| Other | 4.4% | 4.0% |
| **Sustainable Transportation** | **37.3%** | **48.1%** |

| Mississauga | 2011 | 2041 Vision |
|---|---|---|
| Driving | 61.8% | 45.4% |
| Walking | 6.6% | 9.8% |
| Cycling | 0.4% | 2.3% |
| Transit | 12.9% | 21.1% |
| Carpool | 14.8% | 18.3% |
| Other | 3.4% | 3.1% |
| **Sustainable Transportation** | **38.2%** | **54.6%** |

# 5.0 Exploring Possible Solutions through Municipal Class Environment Assessment

The Long Range Transportation Plan is a transportation master plan (TMP) and as such, it needs to undergo the Municipal Class Environmental Assessment (MCEA) process. Throughout the MCEA, the Region of Peel has identified multiple approaches for addressing the growing demand on its transportation system and derived the best preferred scenario using public consultation feedback as well as qualitative and quantitative in-house analyses.

As part of this process, the Region of Peel identified seven (7) preliminary scenarios that were presented at a Public Information Centre (PIC) for stakeholder review and feedback. The preliminary scenarios assumed various modal splits and possible changes to the transportation network. A qualitative and sensitivity analyses were performed to communicate the implications of each scenario on the 2041 network [refer to Appendix B].

The stakeholder feedback from the PIC, combined with assessment of scenario implications on the Regional road network, resulted in narrowing down the original preliminary scenarios to the "Do Nothing", "Planned Road Improvements Only", "50 per cent Sustainable Transportation Modes Only", and "Combination of Planning Road Improvements and 50 percent Sustainable Mode Split" alternatives.

To land on the scenario that addresses growth pressures on the transportation network and meets the long-term demand needs, evaluation criteria were developed using best practices from neighbouring Regions, including Halton and York, as well as requirements prescribed in Phase 2 of the MCEA Process. To assess the scenarios against the criteria, qualitative and quantitative analyses were performed on each of the alternatives.

- The qualitative analysis was performed to better understand the underlying implications that each alternative may impose on the transportation network, natural environment, cultural heritage, social care, health care, and economics.
- The quantitative analysis involved macroscopic modelling, which uses the population and employment forecasts to predict the number of vehicles that will travel through Regional road segments in future.

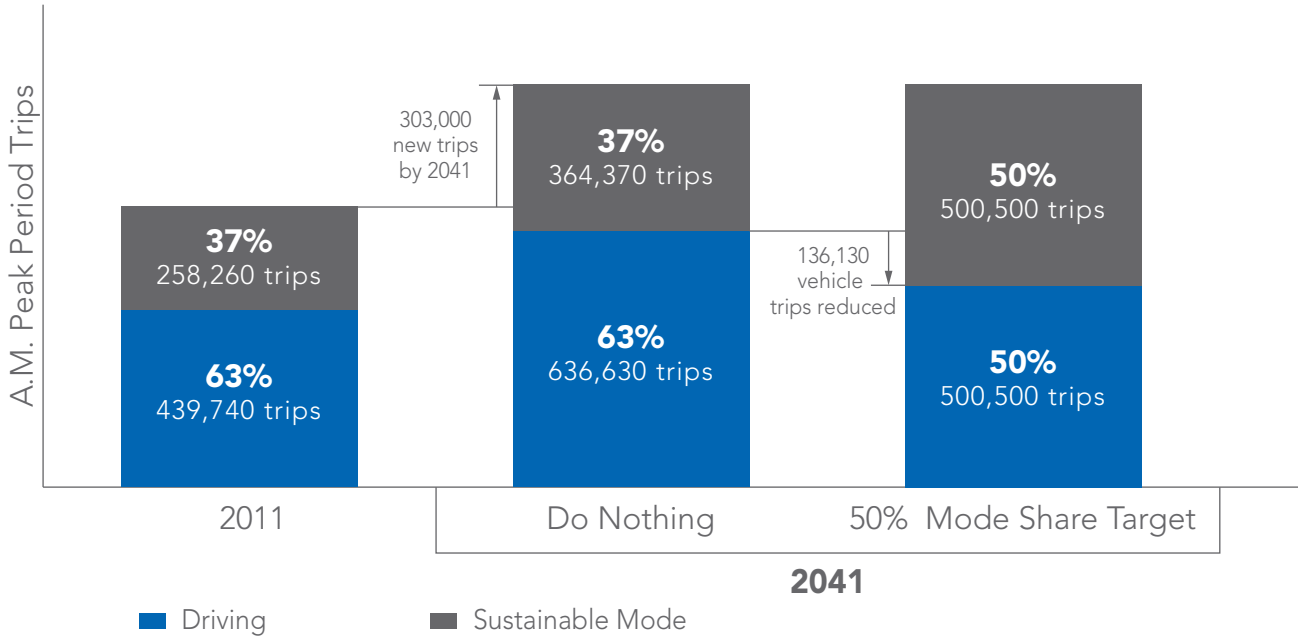
The model is used to determine which roads on the network are nearing or exceeding capacity and is becoming congested travel. This serves as an indication for network improvements as part of the Regional Road Capital Program.

The MCEA results indicated that the "Combination of Planning Road Improvements and 50% Sustainable Mode Split" is the most preferred scenario for the Region of Peel.

# 6.0 Conclusion

Background and modeling work have shown that by 2041, Peel Region's growth will translate to approximately 303,000 more trips in the AM peak period (see Figure 5). This induces significantly more vehicles on the road which increases congestion. The technical analysis has demonstrated that roads can only be widened to a practical limit, and a shift in modal shares is required to manage the growth of vehicular trips and minimize congestion.

**FIGURE 5**
AM Peak Period Travel Demand Into 2041 Horizon Year




The development of Region of Peel's modal split targets went through two important phases spanning over 3 years: an internal analysis, and afterwards, a detailed review by an external consultant. Both phases followed a sound methodology that used both quantitative and qualitative methods. References and information from Local Municipalities and the Province were sources for developing the modal share targets.

Through Peel and IBI's examination, a 50% sustainable modal split target by 2041 is feasible, and via modelling analysis it was confirmed that this target will support the Region with addressing congestion and increased travel times in light of the forecasted growth.

As further commitment on behalf of the Region to decrease traffic congestion, manage growth, and support development of viable communities, the 50% sustainable mode share target was endorsed by Regional Council in February 2018 (Resolution 2018-121, refer to Appendix A).

# Appendix A-1: **Council Resolution 2018 – 121**

## Resolution 2018 – 121

That the Region of Peel's Sustainable Transportation Strategy and its associated five-year implementation plans, be approved;

And further, that the Director of Transportation be delegated the authority to execute both the Service Delivery agreement with Metrolinx and the Funding Agreement with three Transportation Management Associations (Smart Commute Mississauga, Smart Commute Brampton-Caledon, and Smart Commute Pearson Airport Area) in the Region of Peel, to be renewed as required;

And further, that a copy of the joint report of the Commissioners of Public Works and Health and the Medical Officer of Health, titled "Sustainable Transportation Strategy and Five-Year Implementation Plans", be forwarded to the City of Brampton, City of Mississauga, City of Toronto, Credit Valley Conservation Authority, Dufferin-Peel Catholic District School Board, Halton Region, Metrolinx, Peel District School Board, Toronto and Region Conservation Authority, Town of Caledon, York Region, Ontario Ministry of Transportation, Ontario Ministry of Municipal Affairs, and the Building Industry and Land Development Association for their information.

The MCEA results indicated that the "Combination of Planning Road Improvements and 50% Sustainable Mode Split" is the most preferred scenario for the Region of Peel.

# Appendix A-2: **Preliminary Evaluation of Alternatives**

| Scenario | Network Assumptions | Demand Assumptions | Transportation Planning Principles |
|---|---|---|---|
| **Do nothing** | • Current conditions of the roadway, active infrastructure, carpool and transit network | • Current modal split: 37 per cent sustainable modes and 63 per cent driving | • Base scenario for benchmarking |
| **Planned Road Improvements Only** | • GTA West<br>• No Peel-Halton Freeway. Only modifications on arterials roads (Williams Parkway, Financial Drive and BramWest Parkway)<br>• Planning road improvements based off Capital Plans and Master Plans from Peel, local municipalities, the Province and other Regions/Municipalities in the GTHA | • Current modal split: 37 per cent sustainable modes and 63 per cent driving | • Less reflective of healthy, compact and complete community planning principles.<br>• Address long term network goals and needs |
| **Ultimate Road Improvements Only** | • GTA West<br>• No Peel-Halton Freeway. Only modifications on arterials roads (Williams Parkway, Financial Drive and BramWest Parkway)<br>• Widening every Regional Road in the City of Brampton and Mississauga to 6 lanes<br>• Widening Airport Road, Gore Road, Dixie Road, and Mississauga Road from Mayfield to King Street to 4 lanes | • Current modal split: 37 per cent sustainable modes and 63 per cent driving | • Less reflective of healthy, compact and complete community planning principles.<br>• Address long term network goals and needs<br>• Impractical to assume network can be continuously widened to address long term network goals and needs |
| **50 Per Cent Sustainable Transportation Modes Only** | • Current conditions of the roadway, but enhanced transit, AT and carpool infrastructure | • 50 per cent sustainable modes and 50 per cent driving | • Very reflective of healthy, compact and complete community planning principles<br>• Address long term network goals and needs |
| **Combination of Planned Road Improvements and 40 per cent Sustainable Mode Split** | • GTA West<br>• No Peel-Halton Freeway. Only modifications on arterials roads (Williams Parkway, Financial Drive and BramWest Parkway)<br>• Planned road improvements based off Capital Plans and Master Plans from Peel, local municipalities, the Province and other Regions/Municipalities in the GTHA<br>• Slightly enhanced transit, AT and carpool infrastructure | • 40 per cent sustainable modes and 60 per cent driving | • Slight shift towards healthier, compact and complete community planning principles<br>• Address long term network goals and needs |
| **Combination of planned Road Improvements and 50 per cent Sustainable Mode Split** | • GTA West<br>• No Peel-Halton Freeway. Only modifications on arterials roads (Williams Parkway, Financial Drive and BramWest Parkway)<br>• Planned road improvements based off Capital Plans and Master Plans from Peel, local municipalities, the Province and other Regions/Municipalities<br>• Enhanced transit, AT and carpool infrastructure | • 50 per cent sustainable modes and 50 per cent driving | • Very reflective of healthier, compact and complete community planning principles<br>• Exceeds long term network goals and needs |
| **No GTA West – Combination of Planned Road Improvements and 50 per cent Sustainable Mode Split** | • No GTA West<br>• Peel-Halton Freeway with road modifications on arterial roads (Williams Parkway, Financial Drive, and BramWest Parkway)<br>• Planned road improvements based off Capital Plans and Master Plans from Peel, local municipalities, the Province and other Regions/municipalities in the GTHA<br>• Enhanced transit, AT and carpool infrastructure | • 50 per cent sustainable modes and 50 per cent driving | • Scenario considered to prepare for Ontario Ministry of Transportation's announcement on the status of the GTA West Environmental Assessment |