BRAMPTON PLAN

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TRANSPORTATION & CONNECTIVITY

BRAMPTON

EXECUTIVE SUMMARY

The City of Brampton is preparing a new Official Plan to guide growth and development over the next 30 years. The new Official Plan, titled "**Brampton Plan",** builds on the extensive work completed through the 2040 Vision.

A component of the Brampton Plan project involves studying issues in more detail, as identified through the work on the 2040 Vision, or identified through engagement with Council, stakeholders, and the public. To ensure these issues are appropriately addressed and considered through the development of policy, seven Discussion Papers are being prepared, which generally align with the themes and findings of the Brampton 2040 Vision. These Discussion Papers are noted below and represent a starting point for generating discussion about general policy issues that will be addressed in subsequent phases of the Brampton Plan Project. Brampton Plan comprises five phases, with multiple opportunities for residents to engage with the City and shape the future of Brampton's growth.

Focus Areas of the Official Plan Review

While there are seven distinct Discussion Papers, the themes within each paper often connect with concepts or ideas discussed in another paper. The Discussion Papers are also written through a lens of accessibility, diversity, sustainability and inclusion to ensure the recommendations consider multiple perspectives and raise awareness related to socio-economical issues impacting City of Brampton residents.

This discussion paper introduces bold visions and new ideas for Brampton's transportation network over the next 30 years, to help Brampton meet its growing needs, meet its sustainability objectives, and ultimately provide a network that works for everyone. Four "Key Directions" are introduced, and each contains several policy directions that elaborate further on how the "Key Directions" can be achieved. Underpinning the entirety of this paper are three high-level issues that matter dearly to Bramptonians: sustainability, health, and equity.

1. The first key direction, **Complete Streets**, refers to constructing Brampton's streets in a way that supports the movement of all modes of transportation. This section discusses a prioritized investment in public transit, using new ways to measure the performance of the street network, improving active transportation network connectivity, improving how crossings and accesses are built to arterial streets, and exploring new alternatives to six-lane widening projects.
2. The second key direction, **Vision Zero**, is a focus on enabling everyone to move about safely in Brampton. This section discusses prioritizing safety of vulnerable road users, addressing motor vehicle speed as a major cause of collisions, and thinking more about the movement of large trucks in the city.
3. The third key direction, **Nodes and Corridors**, discusses how transportation and development can be more closely linked to provide people more options for getting around and making walking and transit possible for more trips. This section discusses mixed-use development as a way to bring destinations closer to where people live, identifying certain streets where movement of vehicles is not the primary objective, and using high-quality transit service to allow people to make longer trips.
4. The final key direction, **Emerging Technology**, explores how Brampton can leverage new trends, technologies, and data to improve travel for residents. This section discusses ways to support electrification of cars, buses, and other modes, leveraging innovative technologies like ride-hailing and electric scooters, and finding new sources of "big data" to support better decision-making.

This is a starting point for generating discussion about Transportation bold visions and new ideas for implementation in Brampton Plan. A Policy Directions Report will follow and will outline detailed changes proposed for inclusion in Brampton Plan.

The directions and recommendations presented in this discussion paper will be refined through subsequent consultation with the public. Engagement opportunities for a full range of stakeholders to provide input and perspective on these policy issues will be available in the coming months.

Discussion Papers pertaining to each of the Brampton Plan Focus Areas can be accessed online at the Brampton Plan project website: Brampton.ca/BramptonPlan.

Let's Connect!

Comments and feedback on the Discussion Papers can be provided on the Brampton Plan project website or emailed to opreview@brampton.ca.

Table of Contents

1 INTRODUCTION

1.1 Background

The current City of Brampton Official Plan (the Official Plan) was adopted by Council in 2006 and approved by the Ontario Municipal Board in 2008. In October 2013, City staff received direction from the Planning and Development Committee to initiate a scoped review of the Official Plan. However, in 2017, the scoped review was put on hold pending the outcome of the "Brampton 2040 Vision: Living the Mosaic" (the 2040 Vision) process. Commencing in Fall 2017, the 2040 Vision process broadly engaged residents and stakeholders across the community to foster public discussion about the future of Brampton. Following this extensive engagement, the City's 2040 Vision was endorsed by City Council in June 2018.

The City's Official Plan Review was subsequently re-launched in Fall 2019 to build on the work completed through the 2040 Vision and to prepare a new Official Plan (hereinafter referred to as 'Brampton Plan') to guide growth and development over the next 30 years.

The drivers for undertaking a review of the Official Plan is three-fold:

Driver #1: Provincial Policy Consistency and Conformity

First, the City is required to review its Official Plan in accordance with the requirements of the ***Planning Act*** to ensure consistency with the ***Provincial Policy Statement***, 2020 and to ensure conformity with the ***Growth Plan for the Greater Golden Horseshoe***, including Amendment 1 (2020), applicable Provincial Plans, and the Region of Peel Official Plan.

Driver #2: Region of Peel Official Plan Conformity

Second, the Region of Peel initiated the Peel 2041+ Municipal Comprehensive Review (MCR) to bring the Regional Official Plan (ROP) into conformity with the current Growth Plan and guide the Region's population and employment growth to 2051. Brampton Plan is required to conform to the ROP.

Driver #3: Reflecting the 2040 Vision

Third, the 2040 Vision is intended to re-imagine Brampton to 2040 and proposes a future structure of the community, including areas of growth and intensification that respond to the seven key focus areas of the Vision. The 2040 Vision provides guidance for new Brampton Plan policy and sets overarching objectives for community and stakeholder engagement.

To Learn More

The Regional Official Plan is currently under review! Email Regional Planning and Growth Management to join their stakeholder list, stay up to date on upcoming meetings, and submit comments.

1.2 What is an Official Plan?

Official Plans are developed under a framework established by the Province of Ontario to ensure that short-and long-term growth is coordinated in a manner that meets local social, economic, built

and natural environment needs and aspirations. Municipal Official Plans must be consistent with the ***Provincial Policy Statement, 2020*** (PPS, 2020) issued under the ***Planning Act***, and must conform to, or not conflict with any applicable Provincial and Regional Plans, including the ***A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020*** including amendment 1(the Growth Plan), the ***Greenbelt Plan***, 2017 and the Region of Peel Official Plan, as they relate to the City of Brampton.

These overarching policy documents provide direction to the City on land use planning matters. Overall, Official Plan policies establish:

- How to promote economic development and develop community improvement initiatives;
- How to protect and conserve cultural heritage resources;
- How to protect and enhance the city's environmentally sensitive areas;
- Where new housing, industry, offices and shops will be located;
- What community infrastructure, such as roads, transportation, utilities, parks, trails and schools will be needed to accommodate growth and develop healthy and sustainable communities; and
- Where, and in what order, different parts of the community will grow.

The development of Brampton Plan offers an opportunity to adopt a contemporary and strategic set of policies that will guide growth and development over the planning horizon and direct physical change and its affects on the social, economic, built, and natural environment of the city.

1.3 Brampton Plan Program

The Brampton Plan process will be completed across five phases. An overview of the project timeline, including the purpose of the different phases is presented in Figure 1 and listed below. Each phase of this project is associated with major deliverables and tailored consultation and engagement tactics.

The Brampton Plan work program includes the following phases:

Phase 1 – Background Review & Community Engagement Strategy

To introduce the project to the community and undertake a review of relevant background information.

Phase 2 – Test the Vision & Development Growth Scenarios

To assess and identify growth scenarios to contribute to the development of population and employment forecasts.

Phase 3 – Policy Analysis and Community Structure

To review existing Official Plan policy and confirm conformity with Provincial policy and plans. An updated community structure is proposed, and community and stakeholder meetings are being held to obtain feedback on the draft community structure.

Phase 4 – Discussion Papers and Policy Recommendations (current phase)

To prepare Discussion Papers to organize City priorities regarding emerging planning issues and report back on community feedback. A Policy Directions Report will also be prepared to assess

new and emerging planning policy and research on directions for the policies and schedules of Brampton Plan.

Phase 5 – Draft Brampton Plan

To undertake the technical writing, reviewing, testing, and implementation of updates to Brampton Plan based on work completed to-date.

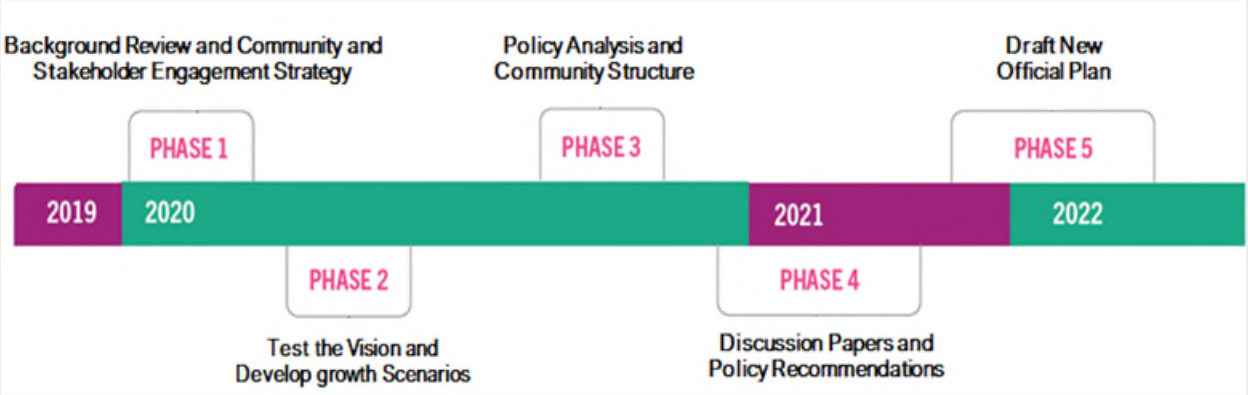

Figure 1: Brampton Plan project timeline

1.4 What is a Discussion Paper?

The current phase of the development of Brampton Plan includes the release of seven topic-based Discussion Papers, which align with the themes and findings of the Brampton 2040 Vision.

The papers are meant to get readers thinking about solutions for solving problems and charting a course for the city's future. The Discussion Papers set the stage for subsequent policy direction.

Some things to consider when reading the papers, include:

- Has the project team accurately captured the issues of importance to the city?
- Given this information, how do you see the city best developing and responding to current and potential future issues over the next 30 years?
- What ideas/solutions come to mind when reading the information?

Let's Connect!

Comments and feedback on the Discussion Papers can be provided on the Brampton Plan project website or emailed to opreview@brampton.ca.

1.5 Purpose of this Discussion Paper

Building on the work completed in 2019 and 2020, seven Discussion Papers are being prepared as the first deliverable of Phase 4 of Brampton Plan work program to guide focused subject matter reviews. Deliverables of the first phases of Brampton Plan process included the following:

- **Document Review and Gaps Analysis,** to understand key gaps and topics that need to be addressed in Brampton Plan;
- **Policy Benchmarking Exercise,** to ensure that recent policy changes at the Provincial and Regional levels have been accounted for and their implications understood.
- **Policy Conformity Matrix,** to identify specific policies in the current Official Plan and determine how they meet the requirements of Provincial and Regional Policy;
- **Preliminary City Structure,** which was presented for community input; and,
- **Secondary Plan Consolidation Strategy,** to understand the role of Secondary Plans in Brampton Plan.

Building upon work completed in earlier phases of Brampton Plan process, Discussion Papers are themed according to seven (7) areas that are identified in Figure 2.

While there are seven specific Discussion Papers, the themes within each paper are not exclusive and often connect with concepts or ideas discussed in another paper. These papers are also written with accessibility, diversity, sustainability and inclusion lenses to ensure the policy recommendations are prepared taking into account multiple perspectives and to raise awareness related to socio-economical issues impacting City of Brampton residents.

Figure 2: Focus Areas of the Official Plan Review

This discussion paper introduces bold visions and new ideas for Brampton's transportation network over the next 30 years, to help Brampton meet its growing needs, meet its sustainability objectives, and ultimately provide a network that works for everyone. Four "Key Directions" are introduced, and each contains several policy directions that elaborate further on how the "Key Directions" can be achieved. The four Key Directions are shown in Figure 3.

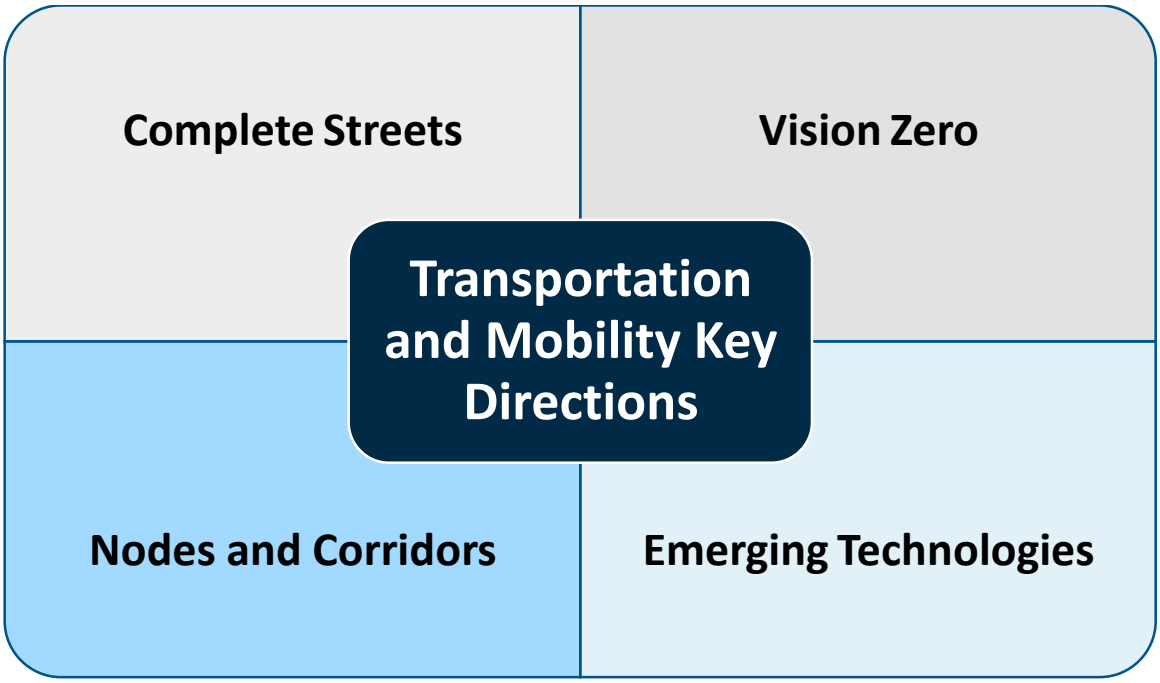

Figure 3: Transportation and Mobility in Brampton – Key Directions

2 POLICY CONTEXT INFLUENCING BRAMPTON OFFICIAL PLAN REVIEW

This review considered relevant provincial, regional, and municipal policy documents as well as guidelines and best practices to describe the City's existing policy framework and provide an analysis and recommendations for policy direction.

2.1 Provincial Legislation

It is important to understand how Provincial transportation policies influence the City Brampton's decision-making around land use planning.

2.1.1 Provincial Policy Statement (2020)

The ***Provincial Policy Statement***, most recently updated in 2020, provides policy direction on matters of provincial interest related to land use planning and development. All decisions affecting planning matters in Ontario must be consistent with the ***Provincial Policy Statement***. The latest update directs municipalities to prepare for the impacts of a changing climate. It also continues to encourage transit-supportive development and intensification to improve the mix of employment and housing uses that will shorten commute journeys and decrease transportation congestion. Regional Context.

2.1.2 Growth Plan for the Greater Golden Horseshoe (2020)

A Place to Grow: Growth Plan for the Greater Golden Horseshoe (Office Consolidation May 2020) provides direction for long term planning in the Greater Golden Horseshoe, ensuring that growth in this area happens in a way that is beneficial from an economic, environmental and equity standpoint. This Plan favours a greater mix of land uses and higher densities in greenfield and built-up areas to provide residents with more employment opportunities within a shorter commute – making it easier to commute by multiple modes and reducing automobile dependency.

2.2 Regional Context

The Region of Peel establishes policies related to transportation planning. Brampton Plan must conform to the Region's policy framework.

2.2.1 2041 Regional Transportation Plan (2018)

The 2041 Regional Transportation Plan provides long-term direction for transit planning in the Greater Toronto and Hamilton Area. The plan was developed by Metrolinx, a provincial government agency, and establishes an overarching vision for reliable transit service accessible to residents across the region, and for the improvement and delivery of transit infrastructure, such as the light rail transit (LRT) and bus rapid transit (BRT) projects planned respectively for Hurontario (Main Street) and Queen Streets in Brampton.

2.2.2 Let's Move Peel Long Range Transportation Plan (2019)

The Let's Move Peel Long Range Transportation Plan is a five-year plan to facilitate planning and infrastructure in Peel Region and sets out the blueprint to accommodate anticipated levels of growth until 2041. The plan serves as the basis for transportation infrastructure programming and budgeting, as well as the Development Charges Background Study. Key components include sustainable mobility, safe mobility, vehicular mobility, the recommended future transportation network, and guidance for implementation and measurement.

2.2.3 Vision Zero Road Safety Strategic Plan (2018)

Peel's Vision Zero Road Safety Strategic Plan seeks to reduce and ultimately eliminate fatal motor vehicle collisions. It identifies six emphasis areas as priorities for safety improvement including intersections, aggressive driving, distracted driving, impaired driving, pedestrians, and cyclists.

2.2.4 Sustainable Transportation Strategy (2018)

Peel's Sustainable Transportation Strategy outlines the Region's course of action in addressing long-term transportation and growth-related issues. The strategy provides a framework for a more diverse transportation system that accommodates population growth in the Region.

2.2.5 Goods Movement Strategic Plan 2017-2021 (2017)

The Goods Movement Strategic Plan 2017 - 2021 is a five-year blueprint for action for goods movement in Peel Region. It combines initiatives based on current needs and a long-term vision for the goods movement system.

2.3 City of Brampton Context

The City of Brampton is required to implement Provincial and Regional direction through Brampton Plan and land use planning decisions by City Council. It is important to understand how the current Brampton Official Plan addresses transportation and connectivity issues and how the 2040 Vision provides direction to consider in Brampton Plan as summarized below.

2.3.1 Brampton 2040 Vision (2018)

Living the Mosaic: Brampton 2040 Vision is an overarching declaration of the City's vision for its own growth and development over the next quarter-century. The Vision was devised in consultation with a broad range of residents and includes seven aspirational vision statements to build on the overarching promise that the people of Brampton will "live the mosaic". Vision #4 in this document focuses on Transportation and Connectivity, and imagines Brampton as a mosaic of safe, integrated transportation choices and new modes, contributing to civic sustainability, and emphasizing walking, cycling, and transit. The Vision includes that the priorities in the civic transportation agenda will be: first walking, then cycling, transit, goods movement and then shared vehicles and private vehicles.

2.3.2 Official Plan (currently being updated)

The City of Brampton's Official Plan is an overarching policy document that guides land-use decision making over a 30-year period. Brampton's Official Plan us currently being updated, and this discussion paper forms part of that process.

2.3.3 Transportation Master Plan (currently being updated)

Brampton's Transportation Master Plan (TMP) is a long-range umbrella policy document that guides investments into transportation initiatives, services and infrastructure in the City. The plan identifies existing transportation-related challenges in the City and provides strategic solutions to address these problems in response to significant anticipated population growth.

Brampton's TMP is currently being updated in tandem with the Official Plan. The TMP Update will better align it with the transportation strategy outlined in the 2040 Vision and identify a multimodal transportation network that prioritizes sustainable modes and that supports the city structure being identified in the Official Plan Review.

Seven guiding principles have been identified for the update:

1. Enhance mobility and travel options for people and goods
2. Advance multimodal transportation equity
3. Integrate transportation and land use planning
4. Protect public health and safety
5. Improve environmental sustainability
6. Leverage technology
7. Emphasize community engagement and collaboration

2.3.4 Active Transportation Master Plan (2019)

The City's Active Transportation Master Plan provides the network plan, policies and programs to support Brampton's 2040 Vision for safe, integrated transportation choices and new modes, contributions to civic sustainability, and emphasizing walking, cycling, and transit. The Plan aims to diversify the City's modal split to facilitate more use of Active Transportation to support environmental and health-related goals.

2.3.5 Sustainable Community Development Guidelines (2013)

Brampton's Sustainable Community Development Guidelines provide a basis for the City to review development applications with a sustainability lens. The framework for the guidelines is broken down into four themes or layers for sustainable community design: Built Environment, Mobility, Natural Environment and Open Space, Green infrastructure and Building. The two relevant to this transportation discussion paper are outlined below:

- Built Environment: The built environment should be designed in a manner to ensure that development contains the components of a community that directly impact physical activity and improve the overall health of its residents. Recognizing the importance of built environment factors in influencing and shaping travel mode choices is essential to creating a complete, walkable, and transit supportive community.
- Mobility: The indicators of mobility ensure that a variety of transportation options are available to residents. A community should be designed to encourage physical activity, facilitate active

transportation, and support public transit in place of automobile dependence. The most vulnerable population groups including children, elderly, disabled, and low-income individuals, are the most affected by choices available to them for mobility and access to services and amenities. Designing a safe, convenient, and accessible environment for walking and cycling encourages these alternative modes of transportation.

2.3.6 Overview of the Climate Reality and Climate Emergency (2019)

Climate change is expected to be one of the biggest challenges in the 21st century and is considered one of the greatest threats to livelihoods, security, and well-being. Ontario is already experiencing the effects of climate change, such as more severe precipitation, snow, ice, and wind events, greater temperature fluctuations and extremes, changing species migration patterns, and an increase in the presence of vector-borne diseases[1]. In the next quarter century, the types of impacts and their severity are expected to increase. These impacts all have economic, social, and environmental costs to municipalities and residents.

In June 2019, The City of Brampton bolstered their commitment to battling climate change when Council unanimously voted to declare a climate emergency, acknowledging that to address this crisis, the City must urgently reduce greenhouse gas (GHG) emissions and prepare for the consequences of a warming planet.

2.3.7 Community Energy and Emissions Reduction Plan (2020)

The City of Brampton's Community Energy and Emissions Reduction Plan (CEERP) provides a roadmap to improve energy efficiency, reduce greenhouse gas emissions, create economic advantage, ensure energy security, and increase Brampton's resilience to climate change. In support of Brampton's 2040 vision, the CEERP sets three goals, based on an assessment of local energy and emission data relative to global best practices. These goals are identified in Figure 4.

In Brampton, the transportation sector accounts for 59% of emissions. The City of Brampton, in collaboration with the Region of Peel, has the ability to align policies and programs to plan, design, and develop green communities and encourage the adoption of low carbon transportation. This would help to achieve the objectives of reducing the average trip length and increasing the number of trips taken by walking, cycling, and transit, which will reduce GHG emissions emitted through transportation.

[1] https://www.brampton.ca/EN/residents/GrowGreen/Documents/CEERP/CEERP_Ch1_TheClimateReality.pdf

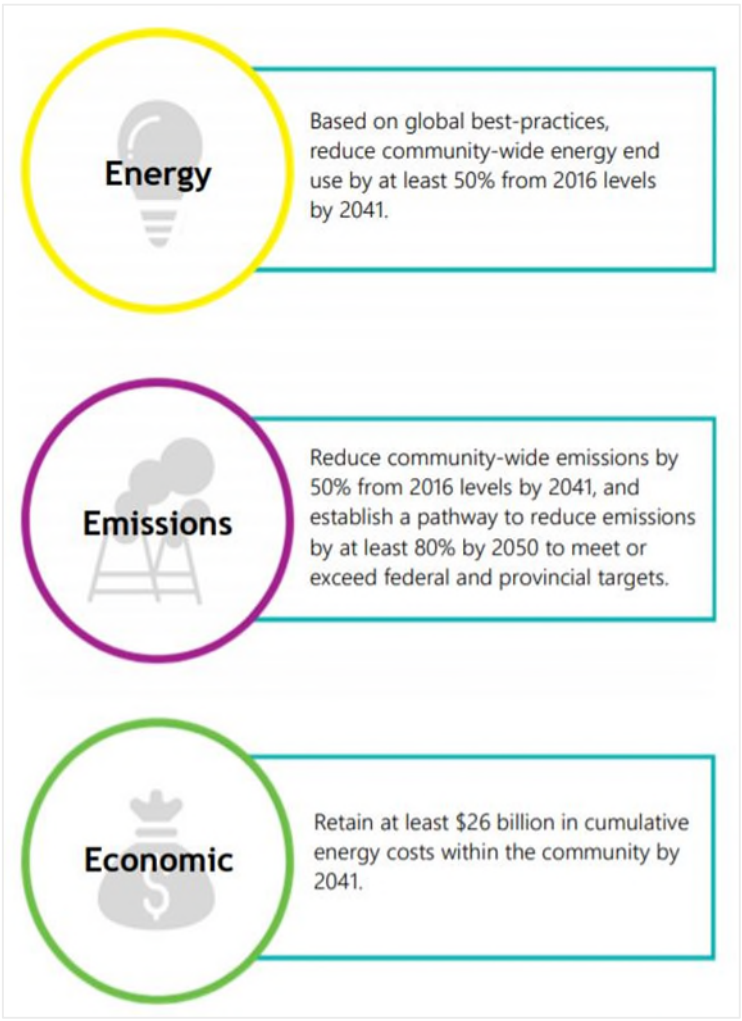

Figure 4: Goals established in Brampton's Community Energy and Emissions Reduction Plan

2.3.8 Age Friendly Brampton (2019)

In June 2019, Council unanimously endorsed its first ever Age-Friendly Strategy and Action Plan that provides a framework to move the City forward in its commitment to be an age-friendly community.

As people age, there is a tendency to drive less and to rely more on alternative modes of transportation such as transit, for-hire rides and, in the future, autonomous vehicles. The availability of accessible transportation options and different fare structures for different demographics aids in the ability of residents to participate in the community and increases access to community and health services.

3 INTRODUCTION TO THE KEY DIRECTIONS

Based on the policy context mentioned above, this discussion paper presents four Key Directions related to Transportation & Connectivity, each with several examples of policies and representative projects that could be established to support them. Underpinning this entire paper, however, are also three high-level issues that matter dearly to Bramptonians:

Sustainability: The transportation sector accounts for 59% of greenhouse gases generated in Brampton, and as a result, needs to be a major part of Brampton's efforts to become more sustainable. If Brampton's transportation network can be built in a way that makes walking, cycling, and taking transit more attractive, people will have the choice to drive less, and will produce less vehicle-related emissions as a result.

Health: Physical activity is a key component of public heath, and when people walk, bike, or even take transit, they are incorporating physical activity into their daily lives. Not only that, less driving and the resulting less vehicle emissions can improve air quality in Brampton's neighbourhoods, reducing the chance for people to develop respiratory illnesses.

Equity: Brampton's transportation network needs to work for everyone, regardless of their age, gender, ability, ethnicity, socioeconomic status, or neighbourhood of residence. While driving may be the most common way to get around in Brampton, many people do not have access to, or struggle to have access to, this mode. An equitable approach to improving transportation in Brampton means making non-driving modes accessible to everyone across the city.

4 KEY DIRECTION #1: COMPLETE STREETS

VISION: The street network in Brampton is built to safely and comfortably accommodate people walking, cycling, taking transit, and driving.

Figure 5: A rendering of an example complete street (Credit: WSP)

4.1 Context

Complete Streets (such as the one shown in Figure 5) are those that provide safe conditions for everyone, regardless of how someone is travelling. Dedicated space is provided for people walking and cycling, and priority is considered for transit vehicles, using dedicated lanes, signals, and other means. Complete Streets also include trees and other urban design features to make a street feel like a place, rather than just a conduit for movement. Other supporting elements include lighting, crossings, traffic signals, utilities, and drainage infrastructure.

Complete Streets also focus on the context of the street and customize the elements of the street to support it. For example, the design of a shopping street might focus on wider sidewalks and traffic calming elements, while a major thoroughfare would prioritize movement for all users with wider travel areas and more separation of modes and directions (a centre median). Brampton's Transportation Master Plan and Official Plan recommend the implementation of Complete Streets principles, and Brampton is currently developing its own Complete Streets Design Guidelines.

Complete Streets are a vital part of achieving a shift towards more sustainable modes of travel (walking, cycling, and transit). Brampton's Transportation Master Plan calls for a 13% increase in

these travel modes in order to achieve a 50% sustainable travel mode share by 2041. This includes targets of having 20% of PM peak period trips made by transit, 10% made by walking and cycling, and 28% made by carpooling. As a comparison, in 2016 these rates were 4.4%, 2.3%, and 16.7%, respectively.

The benefits of Complete Streets extend far beyond travel mode shift. By enabling a shift to more sustainable modes of travel, Complete Streets also provide an opportunity to reduce Brampton's transportation-related greenhouse gas emissions, which account for 59% of all GHG emissions generated in Brampton. A higher use of active modes by Brampton residents also promotes improved public heath and wellbeing.

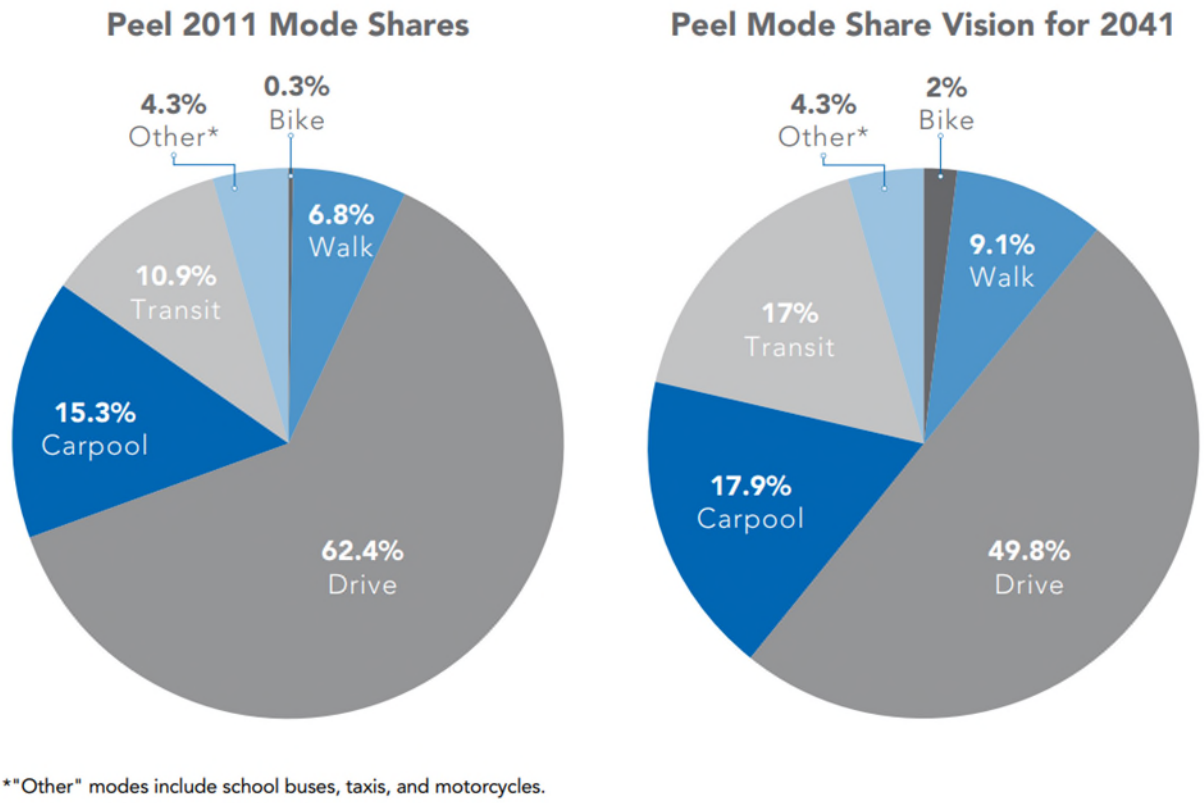

Figure 6: A comparison of Peel's 2011 mode share and Peel's 2041 vision for mode share, showing the desired growth in trips made by transit, walking, cycling, and carpooling (Credit: Peel Region)

4.2 Policy Directions

Brampton Plan is expected to make a number of significant policy changes to shape the city as it continues to grow and develop. Policy Directions include:

4.2.1 Prioritized investment in transit

Public transportation is essential for efficiently and sustainably moving large numbers of people around Brampton. In fact, a dedicated transit lane (such as the one depicted in Figure 7) can move up to 10 times more people than a standard vehicle lane (NACTO). Transit in Brampton includes the Brampton Transit and Züm networks, GO Bus and GO Train services, the forthcoming

Hurontario LRT, and Via Rail. Brampton Transit, including Züm, is one of the fastest-growing transit networks in Canada, and to continue building on this success, more capital and operating funding is needed to improve service and support interregional transit connections.

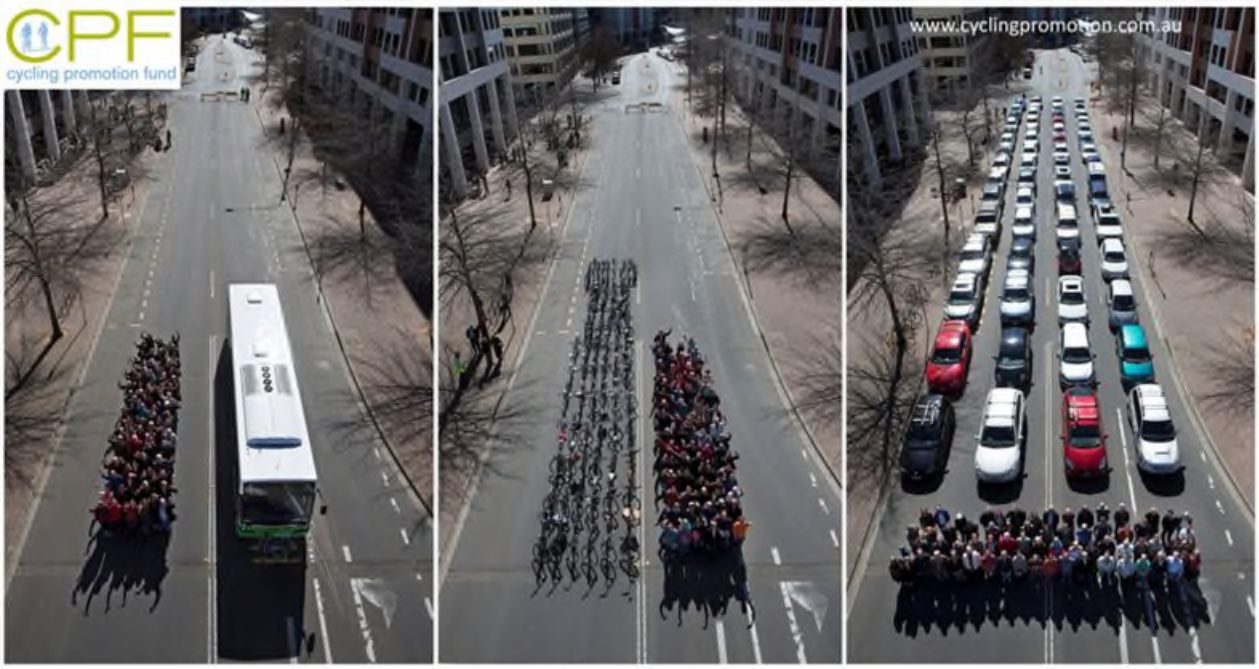

Figure 7: A demonstration of the same number of people accommodated on a bus, by bicycle, and in cars. (Credit: Australian Cycling Promotion Fund)

Investments in transit are not limited to major infrastructure projects. Increased operational funding allows transit to become more attractive by running new routes, or more frequent service on existing routes, and implement alternate service delivery models such as On Demand services. Transit can also be prioritized at intersections through investments in Transit Signal Priority (TSP) technology, which is commonly used to speed up buses and streetcars in places like Toronto. Finally, new communities and roadways should be designed to make transit a convenient option for people to get around; for example, the draft Heritage Heights Secondary Plan proposes a fine-grained street network that is more compatible with a grid network of transit routes. New community designs should incorporate passenger amenities such as shelters and benches, and consider transit operational requirements and provision for electric bus on-road charging systems.

Figure 8: A street with centre-median bus-only lanes to allow transit to operate faster and more reliably (Credit: Matt Pinder)

4.2.2 Implement new metrics for measuring street and network performance

Transportation planning traditionally focuses on vehicle level of service and network travel times as the key metrics for deciding where road investments are needed. These metrics prioritize motor vehicles, and the results of prioritizing these modes (wider roadways) often result in worse conditions for people walking, cycling, and taking transit.

Multi-modal level of service (MMLOS) is an emerging tool for measuring the performance of street or intersection for all modes. For example, pedestrian level of service (PLOS) at an intersection is evaluated based on things like time spent waiting to cross, the number of lanes crossed, and whether motorists are allowed to turn at the same time as pedestrians are crossing. Cities including Ottawa and Halifax have adopted this metric to support decision-making on road projects, and Brampton is currently developing its own Multimodal Analysis Framework.

Vehicle kilometres travelled (VKT) is a metric that measures the total distance travelled by all vehicles. A transportation network, and a city as a whole, is more efficient when people do not have to travel as far (or are able to share rides) to get to work, shopping, daycare, school, and other destinations. Reducing VKT requires a change to both land use patterns and the transportation network, which produces different outcomes compared to the traditional focus on minimizing vehicle network delay.

Table 1 provides a comparison of what strategies might be taken to reduce VKT, compared to traditional strategies to reduce vehicle network delay. While vehicle network delay reduction strategies tend to be very motor vehicle centric and encourage more driving, VKT reduction strategies focus on changing development patterns and enabling walking and cycling for shorter trips.

Table 1: Comparison of traditional measures to reduce network delay, compared to reducing VKT

Strategies to Reduce Vehicle Kilometres Travelled	Strategies to Reduce Vehicle Network Delay
Mixed-use development to make trips shorter	Widen roads and intersections
More frequent intersections and crossing opportunities	More space between intersections
Increase the number of access points to major streets, including pedestrian "shortcuts" through developments	Reduce driveways and access points along major streets
Provide direct routes for walking and cycling	Increase vehicle travel speeds

4.2.3 Improve active transportation network connectivity

Many of Brampton's neighbourhood street networks, especially in residential communities, are circuitous and tend to have limited connections to major streets. While this network design helps to reduce "cut-through" car traffic on local streets, it also limits people's ability to walk or cycle to destinations. A convenience store or grocery store or a transit stop that is less than 400 metres away viewed on a map could require over a kilometre of walking to get there.

Walking and cycling are most attractive when they are as direct as possible. Brampton should leverage all opportunities to build or retrofit communities with more direct active transportation connections. When a new development is proposed, for example, the site plan could include one or more pedestrian "shortcuts" – small strips of land between buildings with a sidewalk or pathway connection – to provide direct walking routes while maintaining less direct routes for cars. When a larger development like a new subdivision or mall occurs, Brampton should ensure that a fine-grained street network is provided for people walking and cycling. Through City and developer initiated Secondary Plan and Block Plan updates, more attention could be placed on exploring options for longer term network upgrades and increased mobility choices.

4.2.4 Implement a human-focused approach to access management

Access management refers to how private properties (driveways) and intersecting streets are connected to larger roadways. A road with a high degree of access management has elements like centre medians to prevent left turns from driveways and side streets, and intersections spaced every 400 metres or more. Where intersections are provided, they tend to be much larger because a greater number of turning vehicles need to be accommodated.

This form of roadway design prioritizes the fast movement of cars over longer distances, while ignoring the connectivity needs of people on foot. The walkability of a street is improved when crossings (like the one shown in Figure 9) are spaced every 100-200 metres (TAC). When crossings are spaced further apart, people walking may commonly have to "double back" to reach a destination on the other side of the street, which may encourage crossing mid-block where no signal is provided. This can lead to unsafe "jaywalking" and can result in motorists striking crossing pedestrians at midblock locations.

Especially in areas of mixed-use development and near higher-order transit (see **Nodes and Corridors** section of this document), Brampton should introduce more pedestrian-friendly principles of access management to improve walkability of these areas. Brampton should also work closely with the Region to develop standards for access management that are more suited for urban areas, since Peel Region operates many of the major streets through mixed-use areas.

Figure 9: Midblock crossings like this one improve the number of crossing points to make streets more walkable (Credit: Matt Pinder)

4.2.5 Investigate alternative design options to six-lane road widenings

There is mounting evidence that road widening projects do not improve congestion in the long term. Instead, they encourage more people to drive and the extra road space from the widening eventually "fills up", leading to increased travel by car and increased greenhouse gas emissions. Road widenings also come at the expense of other modes: crossing distances are increased for pedestrians and less space is available for cycling facilities and landscaping. Brampton should explore other ways to increase the person-throughput of a street rather than focusing on vehicle capacity, such as adding dedicated transit lanes or transit priority measures, enhanced walking and cycling facilities, and exploring ways to increase the efficiency of signals with intelligent transportation systems (ITS). An example of a multimodal-oriented street reconstruction is shown in Figure 10.

As part of Brampton's Transportation Master Plan update, work is currently underway to develop an interim strategy for dealing with near-term planned six-lane road widenings.

Figure 10: Clarke Avenue in Vaughan reconstructed as a Complete Street, with fully-accessible pedestrian and bicycle crossings, multi-use pathways, cycle tracks, and a transit "queue jump" lane (Credit: WSP)

5 KEY DIRECTION #2: VISION ZERO

VISION: Brampton's street network is designed, built, and operated in a way that minimizes risk of injury and death for all road users.

Figure 11: A new street constructed with a number of traffic calming features to improve safety (Credit: WSP)

5.1 Context

The year 2020 was Peel Region's deadliest year on record for traffic fatalities. These fatalities are tragic and affect everyone, but disproportionately affect more vulnerable road users. In total, 43 deaths were recorded on Peel streets, including 15 pedestrians, four cyclists, and four motorcyclists[2].

Vision Zero is a belief that all serious injuries and deaths on our streets are preventable, and a Vision Zero strategy focuses on eliminating these serious injuries and deaths, while providing safe,

[2] https://www.mississauga.com/news-story/10309320-2020-was-peel-s-deadliest-year-for-traffic-fatalities-police-say/

healthy, and equitable mobility for all road users. Compared to a conventional approach to road safety, Vision Zero focuses on system-wide changes to the way streets are designed and operated, to prevent the most serious collisions. Committing to Vision Zero requires strong collaboration between many different stakeholder groups, collection and analysis of collision data, managing vehicle speeds to levels that are safe, and establishing goals, funding and timelines for achieving progress.

Vision Zero strategies have been adopted by various governments at all levels across Canada, including Manitoba, British Columbia, Halifax, Kingston, London, and many more. The Ontario Traffic Council is currently developing its own Vision Zero guidance document to be used across Ontario.

Both Peel Region and Brampton have adopted the Vision Zero framework, which serves as the basis for Peel's Vision Zero Road Safety Strategic Plan. The plan aims to reduce fatal and injury collisions in Peel by 10% from 2018 to 2022. Vision Zero has also been incorporated into Peel's Sustainable Transportation Strategy as part of an overarching effort to make roads safer for vulnerable users. The Strategy identifies innovative engineering, education and enforcement as viable strategies to improve safety in priority areas.

5.2 Policy Directions

Brampton Plan is expected to make a number of significant policy changes to shape the city as it continues to grow and develop. Policy Directions include:

5.2.1 Prioritize vulnerable road users

The most proactive approach to road safety involves considering safety during design and construction, rather than waiting for collisions to happen and retrofitting changes later. Serious injuries and deaths from traffic crashes are not evenly felt among the population; people in equity-seeking communities, racialized persons, and people walking and cycling are injured at higher rates, making walking and cycling improvements a key issue for achieving equity.

Brampton should make road safety for all users, especially vulnerable road users, a key consideration for every street design. Frameworks like the multimodal level of service (MMLOS, see Section 4.2.2) are an example of quantifying how various design decisions impact different roadway users, so that when trade-off decisions are required, it is easier to compare options. For example, smaller corners at intersections encourage slower vehicle turning speeds, reducing the chance of a pedestrian being struck or injured at a crosswalk. "Protected intersections" are another emerging design focused on pedestrian and cyclist safety, an example of which is shown in Figure 12. Traffic signal timing can also be reflected to better serve pedestrians, such as by providing longer walk times for people with reduced physical ability, or shorter overall cycle lengths to reduce waiting times.

The benefits of prioritizing walking and cycling extend far beyond just safety – higher rates of walking and cycling coincide with a healthier population, reduced emissions, and improved social well-being.

Figure 12: A “protected intersection” in Ottawa that prioritizes safety for all users (Credit: Matt Pinder)

5.2.2 Revisit the role of speed in creating a safe, equitable, and livable city

While travelling faster offers people a way to get where they are going more quickly, there are many consequences of high-speed roadways. When collisions happen at higher speeds, people involved are more likely to be seriously injured or killed. Faster speeds create more noise pollution and reduce the “place” quality of a street. As an example, conventional, auto-centric street design would suggest that when streets are designed for speeds faster than 50 km/h, large “clear zones” are needed at the sides of the roadway. This requirement reduces the space available for landscaping and other amenities that help to mitigate the impacts of excessive vehicles speeds and that contribute to the quality of place at the street edge.

An example of a downtown main street in Ottawa recently reconstructed to encourage slower speeds is shown in Figure 13. Especially along collector and local roadways, where vehicle movement is not the top priority, Brampton should revisit its design criteria and expectations for vehicle speeds. Montreal, Ottawa, Edmonton, and Calgary are among the Canadian cities pursuing lower speed limits on local and collector roadways to achieve improved safety. Along arterial roadways, Brampton should identify key corridors and zones where lower speeds are desired to

improve the function of the street for other road users, such as in retail, mixed-use, and school zones.

Figure 13: Ottawa's Elgin Street was recently reconstructed to a design speed of 30 km/h to improve safety for vulnerable road users (Credit: Matt Pinder)

5.2.3 Re-examine the role and impacts of freight and large trucks

While large trucks and other freight vehicles are vital for Brampton's economy and the movement of goods, designing for these vehicles often runs counter to the needs of vulnerable road users. Large trucks need wider lanes and corners, which can lead drivers of smaller vehicles to travel faster. Trucks also have many more "blind spots" that put pedestrians and cyclists at risk. Brampton should focus on accommodating these vehicles only where they need to go, and plan more compact street designs in contexts where truck traffic is expected to be lower.

Figure 14: Large trucks are important for goods movement but pose a significant danger to vulnerable road users (Credit: Matt Pinder)

6 KEY DIRECTION #3: NODES AND CORRIDORS

VISION: New development in Brampton is focused around key areas (nodes) and streets (corridors) that are supported by quality transit service, where residents can meet all their needs with the choice to not use a car.

Figure 15: Rendering of a potential boulevard design for Heritage Heights in Brampton (Credit: City of Brampton)

6.1 Context

For the past several decades, communities have been planned based on the separation of land uses: areas are designated exclusively for residential or commercial, but not a combination of the two (see Figure 16 for an example). In turn, this has increased distances between where people live and where they travel daily, creating more dependency on cars and roads for people to meet their basic needs and further contributing to emissions.

Mixed-use development (such as the example from the Heritage Heights proposal in Figure 15) seeks to integrate areas where people live with a range of activities, employment, and services. Within these developments, people can meet many of their needs on foot, while travelling to and from these areas on high-quality transit service. Development **nodes** are multi-use areas focused around a major hub like a GO or an LRT station, while **corridors** are those focused around a frequent on-street transit service like Züm. Together, nodes and corridors present a new way of thinking about how people live, work, and get around, that allows people to rely less on motor vehicles.

Brampton's current Official Plan supports this approach by discussing the introduction of grid-based transit services to provide direct and effective access within the city and strengthen corridors, and the promotion of intensification and transit-supportive development around major transit corridors and nodes. Brampton's Transportation Master Plan also discusses the integration of high-quality pedestrian and cyclist facilities as part of major transit nodes.

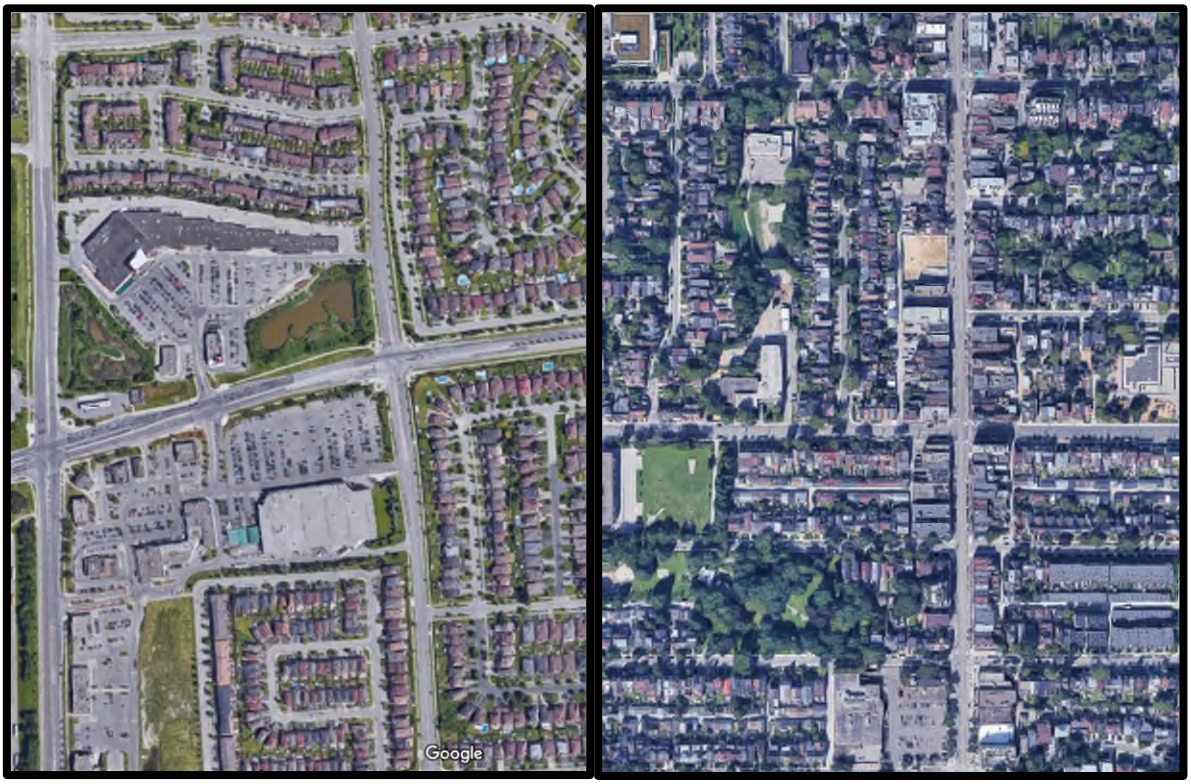

Figure 16: LEFT: A community where land uses are separated. Retail and residential land uses are not mixed. RIGHT: a mixed-use community, where retail, residences, and other uses are continuous

6.2 Policy Directions

Brampton Plan is expected to make a number of significant policy changes to shape the city as it continues to grow and develop. Policy Directions include:

6.2.1 Focus on making trips shorter by bringing people and activities closer together

When people live closer to destinations like malls, doctor's offices, restaurants, schools, and other destinations, it makes shorter trips possible. When trips are shorter, more sustainable transportation such as walking, cycling, and transit become much more convenient options, leading to a decrease in GHG emissions. A recent research paper from March 2020 found that people who

live in mixed-use centres that are connected by quality transit (an example of which is shown in Figure 17) travel less distance overall and are more likely to walk for their trips[3].

Achieving this shift requires a coordinated effort between Brampton's land use and transportation plans. Nodes and corridors that are designated for mixed-use need to be supported by pedestrian-friendly street designs with frequent crossings and a fine-grained network, as well as a commitment to provide frequent, rapid transit service to the area.

Figure 17: A transit station integrated with a university campus, with a multi-use pathway providing access between buildings (Credit: Matt Pinder)

6.2.2 Identify key corridors where access is more important than throughput

All streets are required to strike a balance between **throughput** (getting people *through* the area) and **access** (getting people *to and from* local destinations). The traditional vehicle-oriented approach to streets assumes that as they get busier, they should increasingly prioritize throughput over access (such as with more travel lanes and larger intersections); however, this is not always

[3] Keunhyun Park, Reid Ewing, Sadegh Sabouri, Dong-ah Choi, Shima Hamidi & Guang Tian (2020) Guidelines for a Polycentric Region to Reduce Vehicle Use and Increase Walking and Transit Use, Journal of the American Planning Association, 86:2, 236-249, DOI: 10.1080/01944363.2019.1692690

the case: a street could be busy with pedestrians and vehicles because it serves an important destination purpose.

Brampton should consider a framework to help distinguish between access and throughput-oriented streets. Along designated nodes and corridors, Brampton should shift the balance more towards providing access over throughput, such as by slowing down vehicles and orienting buildings closer to the street. A roadway can transition between a movement-oriented design and an access-oriented design as it travels through a node or corridor.

6.2.3 Focus on transit service as the primary mechanism to move people

Mixed-use development (such as the example shown in Figure 18) relies on placing origins and destinations closer together, leaving less space for automobile-oriented transportation amenities like wide roads and large parking lots. In these areas, public transit can move more people more efficiently, and thus in nodes and corridors the movement of transit should be prioritized above driving. Higher-order transit like BRT and LRT and GO provide the faster connections needed over long-distances between these centres.

Brampton's nodes and corridors require careful coordination with the existing and planned transit network. Rather than building mixed-use areas and waiting for transit demand to increase before improving service, Brampton should make more funding available to provide quality transit service from the onset of node and corridor developments. Furthermore, investments in transit can be used as a strategy to stimulate new development along high-potential corridors.

Along existing high-frequency transit routes, strategies like Transit Signal Priority (TSP) should be considered to help buses navigate intersections more quickly, enabling them to better maintain their schedules and increasing their competitiveness with private vehicle travel.

Figure 18: In dense, mixed-use areas, transit is the most efficient way to move people over longer distances (Credit: Matt Pinder)

7 KEY DIRECTION #4: EMERGING TECHNOLOGY

VISION: Brampton leverages emerging technologies to enhance and advance its broader mobility goals and move the city in a more sustainable and equitable direction

Figure 19: A self-driving shuttle bus on a test track in Michigan (Credit: WSP Client Photography)

7.1 Context

The transportation landscape is increasingly influenced by changing technology. The rise of services like Google Maps and Waze have provided users with better data for avoiding traffic congestion and have also created new datasets that cities can use to improve their planning. Companies like Uber and Lyft have shown how technology can connect people to drivers and vehicles seamlessly. Electric vehicles offer a new pathway to achieving vehicle emissions reduction mandates and sustainability goals. Finally, autonomous vehicles may offer the greatest change of all, but with a future that is still uncertain.

Emerging transportation technologies offer significant opportunity for Brampton to achieve its broader goals, but without proactive policies, new technology may have the opposite effect. Autonomous vehicles will allow us to move in new ways without the need to own a vehicle, but

could create more congestion and use more energy as vehicles travel empty across the city to find cheap parking or pick up other riders. Electric vehicles may significantly reduce emissions, but they do nothing to reduce traffic. Smaller technologies like scooters provide people with a new option but can conflict with other users if a safe space for operating them is not provided.

Peel's Sustainable Transportation Strategy supports this key direction by identifying the exploration of new technologies and business models to support carpooling and ridesharing as a key theme for action. The strategy also looks to avert the negative impact of autonomous vehicles and other forms of "new mobility", while capitalizing on the opportunity they present to promote sustainable modes of travel such as carpooling, ridesharing and micro transit.

7.2 Policy Directions

Brampton Plan is expected to make a number of significant policy changes to shape the city as it continues to grow and develop. Policy Directions include:

7.2.1 Support the transition to electrified transportation networks

Electrification offers benefits for all modes, at all levels, and a tremendous opportunity to reduce transportation-related emissions, which account for 59% of all emissions generated in Brampton. The electrification of the GO Train network will allow trains to run faster and more frequently. Electric cars and buses are quieter and cleaner. Electric bicycles allow riders to travel further with less effort, making large hills an easy feat to overcome.

Brampton has recently made strides on this direction, having recently launched a first-of-its-kind electric bus demonstration and integration trial.

Brampton should pursue further options to encourage this shift, which could include:

- Incorporating electric buses into the Brampton Transit fleet on a broader scale, and support the incorporation of electric bus charging infrastructure into developments
- Purchasing electric vehicles and electric cargo bicycles for use in the Brampton's corporate fleet
- Offering purchase incentives for e-bikes and electric cargo bicycles
- Exploring opportunities to provide priority parking spots for low and zero emission vehicles
- Provide incentives to encourage new buildings to be constructed with EV-supportive infrastructure

Figure 20: A new fully electric bus in the TTC's fleet (Credit: Matt Pinder)

7.2.2 Explore innovative technologies to enhance mobility

Many new technologies and modes of travel have emerged, resulting in an "ecosystem" of different vehicle types, and a wide array of new demands on the transportation system. No longer is the distinction between pedestrian and vehicle space so clear: electric scooters and e-bikes have different operating speeds and space requirements, creating potential for conflicts with other users.

Brampton should keep on top of emerging modes and trends and focus on how the positive aspects can be supported, while protecting against the negative aspects. Examples that could be considered include:

- Determining effective regulation for electric scooters and e-bikes, and working with stakeholders to determine what infrastructure is needed to accommodate them
- Considering the infrastructure needs of increased ride-hailing and eventually autonomous vehicles, such as the need for more "pick-up/drop-off" zones and potentially less demand for parking
- Creating priority parking spaces for carshare or electric vehicles
- Partnering with or procuring micromobility initiatives like bike share

Figure 21: Electric bicycles provide opportunities for more people to cycle and tend to be used for longer trips (Credit: Gazelle Bikes)

7.2.3 Explore new sources of data that can inform decision-making and help optimize the transportation system

The prevalence of smartphones and other connected devices and vehicles have led to massive amounts of data collection on how people move, and many companies have started assembling this data in secure ways that respects people's privacy. Some of these datasets are available for free (for example, the Strava Global Heatmap that shows where the app's users are cycling), while others are available for purchase (such as Streetlight, which uses cellphone data to predict traffic volumes).

In recent years, the City of Toronto's Big Data Team has emerged as a municipal leader in the use of data to improve efficiency and create new possibilities. Toronto's robust use of data has also allowed it to create more "open data" available to the public, allowing for more innovation from non-government organizations and private sector companies. Brampton is already using big data to help make decisions; Brampton's GEOHUB tool provides access to open data as well as unique tools and dashboards relating to City operations.

Brampton should explore the potential of more new forms of data for optimizing its planning, data collection, and decision-making processes. For example, intelligent transportation systems (ITS) rely on large amounts of data collection, and they use these data to better optimize traffic signals and other elements of streets. Brampton can also find new ways to provide more useful transportation information directly to travellers, through tools and apps.

Figure 22: Apps like Waze use and collect data to make transportation more efficient for people (Credit: Intelligent Transport)

8 NEXT STEPS

This Discussion Paper is one of seven Papers that are being completed as part of Phase 4 of the Brampton Plan project. The seven Discussion Papers align with the key focus areas of Brampton Plan and build on the work completed in Phases 1-3 to establish a foundation from which to develop policy directions. The focus areas have been informed by the work completed through the 2040 Vision, policy review and research and through consultation with city staff. The directions and recommendations presented in Section 3 of this paper will be refined through subsequent consultation with the public.

This is a starting point for generating discussion about Transportation and Mobility related issues and recommendations. A Policy Directions Report will follow and will outline detailed changes proposed for inclusion in Brampton Plan.

Discussion Papers pertaining to each of the Brampton Plan Focus Areas can be accessed online at the Brampton Plan Project Website: Brampton.ca/BramptonPlan.

Let's Connect!

Comments and feedback on the Discussion Papers can be provided on the Brampton Plan project website or emailed to opreview@brampton.ca.