



City of
Peterborough

To: **Members of the General Committee**

From: **Cynthia Fletcher**
Commissioner of Infrastructure and Planning Services

Meeting Date: **November 8, 2021**

Subject: **Report IPSTR21-018**
Transportation Master Plan Update and Approval of
Recommended Transportation Strategy

Purpose

A report to seek approval of the recommended Transportation Strategy to guide the final stages of the update to the City-wide Transportation Master Plan, and to update Council on the next steps of the project.

Recommendations

That Council approves the recommendations outlined in Report IPSTR21-018, dated November 8, 2021, of the Commissioner, Infrastructure and Planning Services as follows:

- a) That the presentation by WSP Canada Group on the Transportation Master Plan be received;
- b) That the Transportation Master Plan recommend the following Mode Share Goals as aspirational targets for the City to encourage shifts in travel behaviour and attitudes towards transportation:
 - i. By 2051 the vision for transportation in the City will result in 25% of all trips completed by walking or cycling, 10% of all trips will use an enhanced transit system, and auto travel will be reduced to 65% of all trips.

- c) That the recommended Hybrid Strategy 3-4, as described in more detail on page 9 of this report, be approved as a basis for completion of the Transportation Master Plan to guide the development of detailed recommendations on infrastructure projects, policies, and funding requirements, including:
- i. An aggressive investment in expansion of the sidewalk network;
 - ii. Implementing the Hybrid Accelerate/Spark Scenario from the Cycling Master Plan, as recently approved by Council in Report IPSTR21-009;
 - iii. Adopting policies to encourage a shift in travel modes including increasing the cost of parking and expanding the areas where paid parking would be charged;
 - iv. Investigating policies and other incentives / measures to increase the number of zero emission vehicles in the public and private fleets;
 - v. Investing in new transit services by increasing service hours by 71% over the next 30 years to add new routes and / or improve peak period frequency of service and implementing additional subsidization of transit passes to lower the cost of transit, improve equity, and encourage additional ridership;
 - vi. Developing a road network improvement plan that:
 - (1) Adopts higher thresholds of acceptable traffic volumes compared to available capacity before road improvements would be considered to address capacity deficiencies;
 - (2) Prioritizes road and intersection improvements that enhance safety or improve transit travel times;
 - (3) Provides separated cycling facilities on major collector and arterial roads identified for new cycling routes, and implements dedicated space for cycling where feasible;
 - (4) Includes a Smart Signal implementation plan for major roadway corridors to reduce delays and emissions;
 - (5) Incorporates Connected or Autonomous Vehicle (CAV) technology at intersections to support signal priority for transit vehicles and emergency response vehicles; and

- (6) Adopts new policy measures to guide capital project priorities and planning, including:
 - A Goods Movement Strategy - to support commercial vehicle access to employment areas and the downtown
 - A Complete Streets Policy - to guide the development of multi-modal transportation corridors, and
 - A Road Safety Plan - to identify key initiatives to enhance road safety for all users.
- (7) Incorporates the following strategic road network improvement recommendations, including:
 - No New North-South Arterial Road capacity on the west side of the City,
 - New Operational and safety improvements that will be required in key locations on the west side of the City.
 - New East-West Capacity for crossing the Otonabee River, to be referred to the East Side Transportation Study;
 - New North-South arterial road capacity East of the Otonabee River, to be referred to the East Side Transportation Study; and
- d) That Staff be directed to report back to Council, prior to the end of March 2022, to establish a timeline and budget to undertake the preparation of a Terms of Reference for a focused Individual EA Study to examine localized operational and safety improvements that may be required in key locations on the west side of the City as described in this report.

Budget and Financial Implications

There are no direct budget or financial implications associated with approval of this report.

Future Council's will determine the pace of investment based on actual growth and infrastructure priorities over the 30 year plan horizon. With continued funding from development charges, and provincial and federal infrastructure programs, the expected costs to implement this program can be managed.

Adopting the recommended Hybrid Transportation Strategy will establish a framework for considering a number of improvements and enhancements to guide investment decisions on Transportation infrastructure and services over the next 30 years. Specific funding requests will be reflected in future capital and operating budgets.

Between 2019 and 2021, the City has budgeted an average of approximately \$45 M per year to operate, maintain, and improve the transportation infrastructure and services that residents and businesses rely upon. With an average population of 83,000 people over this time, and an average household size of 2.2 persons, this equates to an investment of roughly \$1,200 per household per year. With a 50% growth in the expected population over the next 30 years, additional investment will be required to maintain and expand services to meet the mobility needs of a City of 125,000 people by 2051.

The recommended Transportation Strategy for can be expected to require additional funding of approximately \$12 M per year over the next 30 years for capital investments in new roads, intersection and safety improvements, new bike lanes, trails, buses, and sidewalks. An additional \$7-10M in new annual operating costs would also be required to enhance transit services, and maintain new roadway, cycling and sidewalk infrastructure. While the final cost estimates and timing for the projects and programs recommended in the TMP will be refined as part of the next phase of the project, the total new annual investment in Transportation (expressed in 2021\$) is estimated at \$550M-\$655M over the 30 year horizon of the Transportation Master Plan, which is roughly \$19-\$21M per year. Staff will be pursuing external funding opportunities to contribute to these costs as programs become available.

With expected growth of 40,000 new residents over this same time period there will be an expanded tax base to help pay for this investment. Based on an average new household size of 2.1 persons, the new annual investment equates to \$1,500 - \$1,600 per new household per year (expressed in 2021\$), depending on the pace of actual growth and the phasing in of various recommendations over the 30 year plan horizon, which will be examined in the next phase of the TMP.

Additional costs to encourage a higher share of zero emission vehicles in the public vehicle fleet and the cost to convert the municipal fleet to zero emission vehicles are not included in these initial estimates and will be the subject of future specific reports to Council for consideration.

Executive Summary

A Transportation Master Plan (TMP) is strategic planning document that establishes the overall direction for transportation planning, transportation policy development, and identifies investments in infrastructure and services that are recommended to accommodate growth, often over a 20 – 30 year horizon. TMP's are not static documents. They are intended to be reviewed and updated every 5-10 years to account for changes to the planning context in a community, including changes to growth forecasts, changes to the way people travel, implications of external initiatives (such as Via Rail), evolving community priorities, and the resulting changes to policy and infrastructure needs that may arise.

In May of 2019, Council approved a motion to begin the process of updating the City's Transportation Master Plan (TMP). Since that time, Council approved the framework for the project in December 2019, a Consulting team was hired to complete the work in spring of 2020, and the project formally kicked off in the summer of 2020.

The Council approved framework for this update to the TMP, structured the project into 5 key phases of work starting with the development of a transportation vision and key project objectives in Phase 1, the assessment of future problems and opportunities in Phase 2, the assessment of various Transportation Strategies to address future needs in Phase 3, the assessment of Infrastructure Improvement needs in Phase 4, and the finalization of the TMP in Phase 5.

In May 25, 2021, Council approved Report IPSTR21-005 which established a Transportation Vision to guide the study, and a series of Objectives and Performance Criteria to assist in evaluating alternatives, evaluating and selecting projects, and in monitoring ongoing performance of the Transportation System. Since May the Consulting team has completed work on Phase 2 and Phase 3 of the study, and have developed a recommended Transportation Strategy, for approval by Council, to guide the completion of next phases of the TMP.

Extensive engagement with the community has been undertaken to arrive at the recommended Transportation Strategy, including two rounds of public consultation during Phase 1, additional public consultation during Phase 2 and again during Phase 3, literally thousands of visits to the project website, hundreds of comments submitted to the project team, a meeting with the Peterborough Environmental Advisory Committee, and numerous meetings with a Community Working Group and the project Steering and Technical Committees.

A Transformative Strategy

The recommended Transportation Strategy, developed in response to this extensive engagement program, is Transformative in nature for a City the size that Peterborough is expected to be by 2051. Recommendation b) of this report sets an ambitious target for how residents will travel around the City by 2051, which envisions that 25% of all trips in the City will be made by walking and cycling, 10% will use an enhanced public transit system, and 65% will continue to travel by automobile.

While these targets are aggressive, the project team is confident that they are also achievable. The 2012 Transportation Master Plan established a target for 2031 that included 8% of all trips being made by walking and cycling. By 2018, with investments in new infrastructure and services, over 10% of all trips are currently being made on foot or by bike.

Encouraging a significant shift in the way residents travel around the City forms a major part of the recommended Transportation Strategy – as this is critical to achieving the community’s vision for transportation in 2051, and in supporting the City’s Climate Change goals. To achieve this shift, the proposed strategy for the new Transportation Plan will include supporting policies and aggressive investments in the cycling, sidewalk and trail networks in order to encourage approximately one in four trips in the City to be made on foot or by bike by 2051. Similarly, policy measures such as higher costs for all-day paid parking, expanding paid parking to new areas of the City, and reducing transit fares for youth to encourage early adoption of transit, would be combined with improved frequency of transit service to encourage approximately one in ten travelers to choose transit for their trip making.

A More Strategic Approach to Road Network Improvements

Even with these aggressive shifts to non-auto travel, there will be a need to consider road improvements in the Transportation Plan, however, the recommended strategy adopts a more strategic approach to determining the priorities for road network investment. Road and intersection improvements that improve traffic flow, enhance safety, and support efficient transit will be prioritized over adding new capacity. New road reconstruction projects on major roadways would be planned and designed using a Complete Streets approach, would include enhanced cycling infrastructure to improve safety where feasible, and would incorporate new Smart Signal and Connected Vehicle technologies to allow traffic to flow better while making our roads “future ready” to accommodate the next generation of smart vehicles. A Goods Movement Strategy would be developed to help guide decision making on roadway upgrades to the downtown and key employment areas that rely on commercial traffic.

While the next phase of the TMP will begin the work of identifying specific road network improvement projects, the proposed strategy includes the following key road network recommendations to guide this next phase of work:

- **Major new North-South Arterial Road capacity West of the Downtown is not recommended to support growth to 2051.** Sensitivity analysis completed by the Consulting Team determined that deficiencies in this part of the City primarily occur for a couple of hours during the afternoon peak period, with much more tolerable levels of traffic and congestion during the morning and mid-day periods. Travel demands during the afternoon peak period are highly dependent on the amount of discretionary trip making in the future, and there is potential for these trips to shift to less congested periods or to use other forms of transportation – further lessening the need for major improvements. The recommended approach in this area of the City will focus on optimizing the performance of the existing network before considering the need for major new infrastructure.

Operational and safety improvements will be required at key locations in this broad study area to ensure that intersections and road links can accommodate future demands (including new cycling and walking infrastructure) and that the road network can support enhanced transit services.

For example, in the Brealey Drive / Lily Lake Road area, new development and growth will require the urbanization of these former rural roadways and new sidewalks, protected cycling infrastructure, and minor intersection improvements (such as turning lanes) should be planned to improve operations and safety. No new widening nor by-passes are envisioned at this time. In the Clonsilla Avenue / Goodfellow Road / Sherbrooke Street area, and in the Parkhill Road / Fairbairn Street area, operational and safety improvements are recommended to address current intersection deficiencies and to provide improved pedestrian and cycling infrastructure.

Staff have initiated discussions with Ministry of Environment, Conservation and Parks to determine the most appropriate planning process for these areas given the Order issued by the Minister requiring the City to comply with Part II of the Environmental Assessment Act for the Parkway Extension project. This Order requires the City to complete an Individual Environmental Assessment (Individual EA) Study and to submit this to the Province for approval. The recommendation for operational and safety improvements in the Clonsilla Avenue / Goodfellow Road / Sherbrooke Street area and in the Parkhill Road / Fairbairn Street area is consistent with a portion of the original problem statement for the Parkway Class EA, and is therefore included in the scope of the Minister's Order.

Staff are confident that a focused Individual EA approach could be used to plan for these future operational and safety improvements. Simply completing the current Transportation Master Plan project will not meet the technical process, the consultation requirements of an Individual EA Study, nor the requirements outlined in the Minister's Order.

Recommendation d) in this report directs staff to continue discussions with Ministry staff and to report back to Council, prior to the end of March 2022, to establish a timeline and budget to undertake the preparation of a Terms of Reference for a focused Individual EA Study to examine localized improvements to address operational and safety issues in key areas on the West Side of the City.

- **New East-West Capacity will be required for crossing the Otonabee River.** This is consistent with the findings of the 2012 Transportation Plan and the City has already initiated work on the North End Class EA Study to examine opportunities to widen Nassau Mills Road across the river to partially address this need. Even with the potential widening of the Nassau Mills Road bridge, additional growth in East City and the Liftlock Secondary Plan Area is forecast to increase pressure on the more southern bridge crossings (Parkhill Road, Hunter Street, and Lansdowne Street). A new bridge crossing or widening of one these existing bridges may be required to support longer term growth.
- **New North-South arterial road capacity may be required East of the Otonabee River.** By 2051, both Television Road and Ashburnham Drive are forecast to be over capacity during both the AM and PM peak periods even with the anticipated increase in cycling, walking, and transit use. There are a limited number of alternative routes to serve this demand, which is also linked to the need for enhanced river crossing capacity as the north-south routes feed traffic to the east-west roadways crossing the river.

Alternatives to address the deficiencies on the East side of the City will be further examined as part of the ongoing East Side Transportation Study, and in consultation with the County and adjacent Townships. The results of the East Side Transportation Study will be presented to Council in a subsequent report early in 2022 and will be incorporated into the final TMP document.

Considering a Climate Lens

Approval of the recommended Transportation Strategy presented in this report can support the City's Climate Change Targets, and many of the recommendations are aligned with measures in the City's current Climate Change Action Plan.

Green House Gas (GHG) Emissions from the Transportation Sector make up approximately 27% of the total Community GHG Emissions and 24% of the Corporate GHG emissions, created from municipal operations. While the City can directly control Corporate Transportation Emissions through decisions on fuels used for the municipal fleet, controlling the growth of Community Emissions is much more difficult as these rely on day to day decisions made by residents and businesses.

With forecast population and employment growth, base level emissions can be expected to grow in both the Community and Corporate Sectors. Approval of the recommended Transportation Strategy is expected to result in a 10-13% reduction in per capita GHG emissions compared to the baseline by 2051 due to anticipated shifts in travel behaviour. This equates to an estimated reduction in annual emissions of approximately 14,000 tCO₂e compared to the status quo – which is approximately double the reduction that could be achieved by eliminating all future corporate transportation emissions.

Shifts in the way people travel can limit the growth in Community GHG Emissions from the Transportation Sector but shifting behaviour on its own will not reduce emissions enough to reach the City's emission targets. To hit these targets, additional emission reductions will need to come from a significant increase in the share of zero-emission vehicles in the Community fleet. The next phase of the TMP will explore incentives and other policies that the City can consider to encourage residents and businesses to consider purchasing more zero emission vehicles. Incentives and infrastructure at the provincial and national level will also be required to achieve broad adoption of zero emission vehicles in the Community.

Council approval of the recommendations of this report, will provide the strategic direction required to develop the final recommendations for the Transportation Master Plan. The next phases of work will focus on finalizing the recommended infrastructure projects, incorporating recommendations from the Cycling Master Plan and the East Side Transportation Study into the overall Transportation Master Plan, identifying implementation priorities and the phasing of various initiatives, developing recommended policies to support the plan, finalizing capital and operating cost estimates and financing strategies, and undertaking the final reporting and documentation activities for the project. Additional consultation activities with the public and coordination with ongoing work of the County Transportation Master Plan will be completed as part of the next phases of the project. The project is on schedule to be completed by the end of March 2022.

Background

Council at their meeting of May 27, 2019 approved the following motion:

- a) That staff be directed to begin a Transportation Master Plan;
- b) That a report on the Terms of Reference for this study be presented to Council no later than December 2019; and
- c) That staff present the findings of the Transportation Master Plan to Council no later than November 2021.

At their meeting of December 9, 2019 Council approved Report IPSTR19-028 – Framework to Develop the City’s new Transportation Master Plan, which provided the overall framework to guide the development of the City’s new Transportation Master Plan (TMP).

TMP Process

TMP’s are broad community-based planning documents which are structured to examine the need for new infrastructure on a system-wide basis while incorporating land use considerations and environmental principles into the municipal planning and decision-making process. A TMP often recommends a combination of policies and new or upgraded infrastructure to support the long-term growth in the community. The plan also provides a guide to assist in day-to-day municipal decision making, annual capital and operating budget forecasting, and priority setting.

TMP’s are not static documents. They are intended to be reviewed and updated every 5-10 years to account for changes to the planning context in a community, including changes to growth forecasts, changes to the way people travel, implications of external initiatives (such as Via Rail), evolving community priorities, and the resulting changes to policy and infrastructure needs that may arise.

The consulting team commenced the work on the TMP in June 2020. The TMP is being developed in accordance with the framework approved by Council in Report IPSTR19-028, which includes a five-phase process incorporating a transparent, evidence-based, decision-making process that includes extensive engagement with the community and with Council.

The process is consistent with the Municipal Class Environmental Assessment (MCEA) process, through which a TMP typically completes the first two phases of the five-phased MCEA process used for all municipal infrastructure projects, including:

- Development of a problem / opportunity statement (MCEA-Phase 1)
 - The Council approved framework splits this phase into two phases;
 - Phase 1 - Develop an overall Vision and Objectives to guide the TMP, and
 - Phase 2 – Assessment of current and future Challenges and Opportunities.
- Development and evaluation of alternative Solutions (MCEA- Phase 2)
 - The Council approved framework splits this phase into three phases;
 - Phase 3 - Transportation Strategy Development & Mode Share Targets,
 - Phase 4 – Determine Infrastructure Improvement Needs, and
 - Phase 5 – Develop Recommended Plan and Implementation Schedule

Many of the larger infrastructure projects recommended in a TMP will still require further study prior to being approved for implementation. For most projects, the completion of Phases 3-5 of the Municipal Class EA planning process will still be required which includes the preparation of a preliminary design, the completion of an Environmental Study Report, and additional project specific consultation.

In May 25, 2021, Council approved Report IPSTR21-005 which established a Transportation Vision to guide the study, and a series of Objectives and Performance Criteria to assist in evaluating alternatives, evaluating and selecting projects, and in monitoring ongoing performance of the Transportation System.

Following approval of Phase 1 of the Project, the study team embarked on the Phase 2 and 3 of the project, which examined future transportation problems and opportunities associated with planned growth to 2051 and developed a series of strategic approaches to address future transportation needs. The work on Phase 2 and 3 of the TMP are now complete; and the Project Team has developed a recommended Transportation Strategy to guide completion of the Transportation Master Plan.

Community Engagement

Community engagement is an important aspect of this project. While the MCEA process stipulates a minimum of two points of contact with the public, the process to develop the City's TMP is going far beyond these requirements.

In addition to formal presentations to Council at key decision points in the project, the community engagement plan is structured to reach out as broadly as possible to various groups, community organizations, and members of the public who are interested in participating in the project.

To inform the development of Phase 2 and 3 of the TMP, two new "rounds" of engagement have been completed with the community and stakeholders. These build upon the two initial rounds of engagement completed during Phase 1 of the project. The purpose of the Phase 2 and 3 engagements were to:

- Introduce the planned growth targets and transportation challenges expected to occur by 2051;
- Solicit feedback on different strategic approaches to accommodating growth in transportation demands and managing the transportation system;
- Recommend a transportation strategy and mode share targets to guide the remaining work to finalize the Transportation Master Plan; and
- Solicit feedback on the draft recommended strategy prior to finalizing recommendations to present to Council.

Phase 2 Engagement:

The purpose of this round of engagement was to present a summary of the technical work on assessing the transportation implications of planned growth contemplated for 2051. The Consulting team developed 5 different strategic approaches to managing the transportation system and asked the public and stakeholders to provide feedback on the strategies and the key policy approaches outlined in the strategies. Engagement activities included:

- A meeting in July 2021 with the Project Steering Committee (SC) and Technical Advisory Committee (TAC) that were established to guide the project;
- A meeting in July 2021 with the Community Working Group;

- Online interactive engagement with members of the public through the connectptbo.ca website, between August 6 and August 27, including an online “virtual” public open house on August 11, 2021; and
- An online Public Survey open between August 6 and August 27, 2021 which allowed residents to provide responses to various questions about future transportation issues and to provide feedback on the 5 strategies presented.

The connectptbo.ca website recorded 3,084 page visits during the Phase 2 consultation, with 1,050 survey responses completed. The virtual public open house on August 11 attracted 50 to 60 participants, which featured a presentation from the project team and a question and answer session. This level of public feedback is quite encouraging and suggests a broad level of community participation in the process.

Phase 3 Engagement:

The purpose of this round of engagement was to present a summary of the public feedback received during the Phase 2 engagement, the preliminary assessment of the various transportation strategies developed during Phase 2 technical work program, and a preliminary recommendation for a multi-modal Transportation Strategy to guide the completion of the TMP. Engagement activities included:

- A meeting in September 2021 with the Technical Committee and the Project Steering Committee to share input received on the phase 2 and phase 3 work and feedback received on progress to date;
- A meeting in September 2021 with the Community Working Group;
- Online interactive engagement with members of the public through the connectptbo.ca website, between September 28 and October 8, including an online “virtual” public open house on September 29, 2021, to seek feedback on the recommended Transportation Strategy for the project;
- An online Public Survey open between September 28 and October 8, 2021 which allowed residents to provide responses to various questions and to provide feedback on the preliminary recommendations from the Consulting Team;
- A meeting with the Peterborough Environmental Advisory Committee on October 20, 2021; and
- A meeting October 21, 2021 with the Project Steering Committee to finalize the recommended Transportation Strategy for presentation to Council.

The connectptbo.ca website recorded approximately 600 page visits during the Phase 3 consultation, with 336 views of the online presentation and the submission of 232 feedback forms in response. The virtual public open house on September 29, 2021 attracted 40 to 50 participants, which featured a presentation from the project team and a question and answer session.

Approximately 59% of respondents to a survey initiated as part of the Phase 3 consultation agreed or somewhat agreed with the preliminary recommendation to adopt a Hybrid Transportation Strategy, whereas 33% either disagreed or somewhat disagreed with the recommendation, and 8% had no preference. In general most respondents felt that the preliminary recommended strategy was well aligned with Council priorities around shifting travel modes and supporting safe transportation systems, but many who did not support the recommendation felt that the strategy did not go far enough in reducing capital and maintenance costs nor in meeting climate change goals.

The Peterborough Environmental Advisory Committee provided some feedback on the survey methodology used during the public consultation and noted that it was only reflective of those who decided to complete it, not necessarily a representative sample of the population. The Committee generally supported a number of the proposed measures in the recommended Transportation Strategy although they generally favoured more radical measures be included in the plan to address Climate Change emission reduction goals. Some members felt measures discussed in the more aggressive scenarios, such as the more aggressive cycling scenarios and the changes to approved land use would have benefitted from discussed earlier in the process prior to decisions being made.

The Committee supported the recommendation to explore opportunities to accelerate the transition of the community and corporate fleets to zero emission vehicles as being key measures that will be required to achieve City Climate Change goals and therefore worthy of investment by the City. The Committee made some suggestions on policy measures to encourage community shifts to happen, such as offering incentives for charging infrastructure, exemption of green vehicles from parking fees, implementing higher parking fees, expanding paid on-street parking City-wide to reduce vehicle ownership, and implementing a variety of Community safety measures such as reduced neighbourhood and downtown speed limits, neighbourhood road safety programs, emphasizing sidewalk construction to promote walking, and adopting safety into the design of new transportation infrastructure. Specific policy suggestions will be considered during the next phase of the project which will include developing proposed policies and programs to support the TMP.

A summary of the feedback received during the Phase 2 and Phase 3 public and stakeholder engagement program is enclosed in the Phase 2 and 3 Report attached as Appendix A.

Transportation Master Plan – Phase 2 – The Business as Usual Scenario

The focus of Phase 2 works has been to assess the state of the Transportation System in 2051 under a Business as Usual or “Do Nothing” Scenario, assuming all planned growth is accommodated but nothing is done to enhance the transportation network. This is not necessarily a realistic scenario, as some improvements would likely be implemented in response to growth, but this scenario serves as a benchmark that can be used to assess the merits of various alternatives.

The growth forecasts in the Province’s A Place to Grow Plan combined with the distribution of growth envisioned in the City’s new draft Official Plan formed the basis for the work in Phase 2. By 2051, the City is forecast to grow to 125,000 people and 63,000 jobs. Beyond the City boundaries, the townships within the County of Peterborough are forecast to grow to 82,000 people and 26,000 jobs.

The consulting team used the City’s multi-modal transportation model, covering the City and surrounding townships within Peterborough County, to assess travel demands in 2051 with future growth in place. The transportation model was developed based on the travel patterns from 2016 Transportation Tomorrow Household Travel Survey, supplemented with an additional travel survey completed in 2018 as part of the Transit Route Review and Long-Term Growth Strategy.

The model forecasts trip making by City and County residents, based on 6 different age categories for residents and 4 different employment types. Trip making by resident and non-resident post-secondary students attending Trent University and Fleming College are also included. The model estimates the desire for travel between different areas of the region based on existing patterns plus the location of where new residents and jobs are located and also forecasts the breakdown or share of trips made by various modes of travel including walking, cycling, public transit, and auto travel (both as drive alone and shared ride trips) using characteristics of the road and transit networks, travel times, trip distances, cost of parking, transit fares, and cost of auto travel. The model simulates travel during the AM Peak period, the Mid-Day Peak, and the PM Peak period and was calibrated by comparing model outputs for the 2018 base year to observed auto volumes and transit ridership across the City and County, and by predicted versus observed patterns of walking and cycling use.

Based on current transportation planning standards, a section of roadway is considered to be “congested” when the volumes are at 85% of the road’s planning capacity. By 2051, extensive congestion is forecast on the City road network if growth occurs as

planned and no improvements are made to the road and/or transit network. In the PM Peak, which represents the highest auto volumes throughout the day, approximately 206 km of roads in the region are forecast to be operating in congested conditions, up from approximately 71 km in 2018. Transit trips are forecast to increase slightly from 6.1% of all trips to 6.6% of all trips in 2051 despite increased congestion on the road network, which will impact the speed and reliability of transit. By 2051 it is estimated that 20% of the road segments used by transit routes will be operating in congested conditions, up from 5% today. Cycling and walk trips increase with population growth but decrease as a share of total travel due to more dispersed land uses as greenfield areas, already approved for growth, begin to build out. Greenhouse Gas emissions from transportation in private vehicles is expected to increase by 34-44% from current levels due to growth and increased travel by automobile, while auto travel time also increases by 38%-50%.

The Phase 2 work concluded that continuing on a “business as usual basis” will not achieve Council’s key performance priorities as summarized in Table 1, below.

Table 1 – 2051 Assessment of “Business as Usual” Scenario

Council Performance Criteria Priorities	Expected Outcome – 2051 Business as Usual
Travel Mode Shift	Minimal change in behaviour from today
Safe Transportation Systems	Increased travel and congestion could negatively impact safety
Reduced Capital and Maintenance Cost	Increase auto travel and congestion will increase the need for road widening, increase wear and tear and make maintenance more costly
Meeting Climate Change Mitigation Targets	Increased auto travel and congestion will increase emissions

The assessment of future conditions under a “Business as Usual” basis concluded that measures to encourage a shift in travel behaviour are critical to achieving the vision for transportation in 2051 and are equally critical if the City is going to be able to reduce Greenhouse Gas emissions from the Transportation Sector.

The draft Phase 2 and 3 Report, attached in Appendix A, provides a more detailed discussion on the background work and inputs used to assess future needs.

Transportation Master Plan – Phase 3 – Strategies to Encourage Shift in Travel Behaviour

Phase 3 of the TMP process has focussed on developing a strategic approach to addressing our future transportation needs, which will then be used in later stages of the project to determine which projects, which policies, and which investments should be included in the final TMP, and the relative priorities for each. Given the conclusion of the Phase 2 work – that encouraging a shift in travel behaviours is critical to meeting our future vision for transportation - the initial technical work and consultation effort have focused on different approaches that can be used to encourage different levels of shift in travel patterns.

Based on experience from other jurisdictions, combined with scenario testing using the transportation model, the effectiveness of various measures that have been found to encourage higher transit use or increased rates of cycling and walking were tested in the Peterborough context. These included improved frequency and/or speed of transit, reduced fares for transit, increased costs for parking, expanding paid parking to areas with fee parking today, changes to land use to support transit or walking and cycling, improved cycling and walking infrastructure, various strategies to make the roadways work better, and even congestion charges. Testing the various measures on their own resulted in some shifts in travel behaviour and some improvements to network performance, but none of the scenarios induced enough change to be considered as a stand-alone transportation strategy, and it was determined that a combination of measures would be needed to encourage enough shift in travel patterns to result in noticeable benefits.

Five alternative strategies were developed under different themes ranging from a minor change to the Status Quo to an aggressive re-thinking of our transportation system and travel behaviours. Each combination strategy included different individual measures that were designed to achieve various levels of shift in travel behaviours, expressed as Mode Share Targets. The five combination strategies and associated aspirational mode share targets presented in Phase 3 are summarized in Table 2.

Table 2 – Combination Scenarios and Mode Share Targets

Scenario	Mode Share Targets				Description
	Walk	Cycle	Transit	Auto	
1. Status Quo	10%	5%	8%	77%	Continuation of current trends
2. Nudge	10%	7-10%	8%	72-75%	A modest shift to increased cycling
3. Shift	12%	7-10%	10%	68-71%	Shift to increased walking, cycling and transit use primarily through infrastructure / service enhancement
4. Transform	15%	10-12%	12%	61-63%	A significant shift to increased walking, cycling and transit use through infrastructure / service enhancement and policies to encourage less auto use.
5. Climate Focus	20%	15-20%	15%	45-50%	An aggressive shift to increased walking, cycling and transit use through aggressive policies, land use changes, and infrastructure / service enhancements to encourage less auto use.

The Mode Share Targets for each strategy were aspirational in nature, based on some of the previous work completed in other stand-alone studies (the Cycling Master Plan, Transit Route Review and Long Term Growth Strategy) and from experience in other jurisdictions. None of the aspirational targets in these stand alone studies had been considered in a multi-modal context, with interactions between various modes of travel considered at the same time. For that reason, Report IPSTR21-009 Cycling Master Plan Update recommended that additional technical assessment of various mode share scenarios for all modes of travel should be undertaken as part of the TMP to assess the achievability of various individual targets for cycling use, walking, transit, and auto use, and how improvements to one mode of travel influences all other modes of travel.

The public feedback obtained during the Phase 2 consultation indicated a strong willingness to consider shifts to alternative modes of travel to lessen or mitigate impacts to climate change, with 90% of respondents very or somewhat willing to make a change, and almost 90% of respondents supportive of investments in walking, cycling and transit to help encourage this shift. In a general sense, the majority of respondents also indicated that they were willing or somewhat willing to pay higher property taxes to fund many of the measures to enhance walking, cycling and transit infrastructure and services. There were some concerns raised about measures resulting in higher 'out of packet costs' for users, such as increased parking fees and expanded areas for paid

parking with only 58% support for these measures. Support for more aggressive fees were split almost 50% in favour and 50% not in favour.

It is noted, however, that some of these results are somewhat at odds with the results of the annual budget survey (discussed in Report CLSF21-022) completed as part of the 2022 budget process. In the budget survey, transportation / infrastructure was rated as 9th highest priority issue facing the community, slightly behind environmental / climate change / sustainability measures, ranked at 7th highest priority. In the budget survey respondents also tended to favour new user fees or increased user fees for specific activities over broader based increases to property taxes, and the majority of respondents favoured maintaining existing service levels to manage tax rate increases over higher tax rates to increase service levels.

Public feedback on the combination strategies and aspirational targets indicated a preference for the Strategy 4 option as being most desirable, however when the survey respondents were asked about achievability, a higher share of respondents indicated that Strategy 3 was likely the most achievable.

The technical assessment of each combination scenario was completed using the transportation model to forecast how travel patterns would change in response to the various combinations of policy, infrastructure, and service parameters included in each strategy. This was combined with a review of mode share successes in other jurisdictions and key differences or similarities with the context in Peterborough by 2051. Key findings from the assessment include:

- Using the transportation model, none of the Combination Strategies were able to achieve all of the aspirational mode share targets established in Phase 2. In general, the targets for walk trips have been met or exceeded in most of the strategies, and the targets for transit trips come close to meeting the targets in most strategies. Despite the potential for doubling the Cycling Mode Share from levels seen today, the targets for cycling trips fall well short of the aspirational targets in most strategies and the share of trips using the auto mode are generally higher than the targets in all strategies;
- The base land use forecasts anticipate an increase in the rate of residents who will chose to work from home. Working at home is primarily restricted to Office and some Professional job classifications. The base land use forecasts assume a 50% increase in the share of Office and Professional jobs that will work from home in the future. The base land use forecasts also assume a 55% increase in the rate of residents who do not work at a fixed place of work by 2051, but work at various off site locations that may vary day to day.

- Various policy and infrastructure measures designed to encourage more cycling use and transit use resulted in competition between these modes and resulted in some shifts in trips between these modes (i.e. many potential cycling trips shifted to transit) but these measures had less impact on the auto share. Most of the trips that diverted from auto use, were more likely to divert from shared ride rather than from drive alone trips;
- Communities that have been successful in more dramatic shifts to non-auto modes of travel are generally larger in population and generally have much higher densities (more apartment dwellings) than Peterborough, have more favourable climate, have significantly higher fuel and parking costs, and have extensive bike networks and frequent transit service with most of these factors often working in combination to encourage less travel by auto;
- Most public surveys asking about travel habits acknowledge that convenience and travel time are two of the biggest factors influencing choice of travel mode, particularly for auto users. Measures to improve travel time for non-auto modes in order to compete with driving by car were incorporated into the combination strategies to various degrees and when tested they had some benefit in shifting trips away from auto use. However, to encourage higher shifts in a City the size and density of Peterborough will require a fundamental shift in public attitudes – with residents willing to place less emphasis on convenience;
- Road network improvements will be required in all scenarios; however, the amount of road widening will be lower in the more aggressive strategies. In order to encourage additional shifts to non-auto modes of travel, these strategies use higher thresholds for tolerated road congestion before road widening projects would be programmed;
- In the more aggressive strategies, road network improvements and the objectives and/or priorities for road widening projects would change in response to the various strategies and would be less about adding new capacity for auto travel and more about improving safety, enhancing operations, or supporting frequent transit;
- A high level assessment of 30 year capital and operating costs for each scenario indicates that Strategies 1 through 4 would result in an approximate annual increase in costs between \$15.6M and \$21.8M. The Climate Focus Strategy could be expected to cost an additional \$32 M per year (not including the additional costs passed on to users through parking fees and congestion charges) with only a marginal additional increase in GHG reductions due to shifts in trips to non-auto modes of travel; and

- The changes to planned land use in greenfield areas assumed in Strategy 4 and 5 resulted in marginal changes to travel patterns and mode shares with small increases in cycling, walking and transit trips resulting in less than 3% reduction in auto trips. Given the impact a change in land use would have on the completion of the new Official Plan, and the relatively modest impact this would have on travel patterns, this type of initiative may be best considered further in future updates to the Official Plan / TMP.

An assessment of the combination transportation strategies concluded that Strategy 4 provides the best alignment with the TMP vision statement, the Council performance criteria priorities, and the feedback received from the public during the Phase 2 consultation. While Strategy 4 represents a “Best Practise” in terms of emphasizing a shift to more sustainable travel modes, the reliance on changes to land use and the likelihood that the aspirational mode share targets would not be fully achievable in a City the size and density of Peterborough in 2051, were key challenges that may still result in the need for a higher level of expansion of the arterial road network than anticipated.

Recommended Transportation Strategy

Based on the assessment of the public feedback, the evaluation of the technical performance results, and the consideration of the degree of alignment with the TMP vision and Council priorities the Consulting team has recommended a hybrid Transportation Strategy that incorporates most of the elements of Strategy 4 to maximize the potential shift in travel behaviours, without relying on changes to the land use approach being recommended in the new Official Plan. As a result, the anticipated shifts in mode share will likely be somewhat lower than the full Strategy 4, and there may be a need to incorporate some additional road improvements.

The technical modelling results suggest that achieving the original aspiration mode share targets in a City the size of Peterborough may not be achievable using current patterns of behaviour, which is based on research that concludes that travelers primarily base their choice of travel modes on availability, convenience, and economic considerations.

Given the forward looking aspect of the Transportation Master Plan, there is some value in setting an aspirational target for shifts in travel behaviour envisioned as a result of the recommendations of the TMP. However, when setting targets, it is important to establish realistic targets that may in fact be achievable. The Consulting Team is therefore recommending that the following aspirational mode share targets be approved as part of the Transportation Master Plan:

“By 2051 the vision for transportation in the City will result in 25% of all trips completed by walking or cycling, 10% of all trips will use an enhanced transit system, and auto travel will be reduced to 65% of all trips.”

Additional “societal change” in attitudes and behaviours may be required to achieve a greater shift from people using private automobiles and adopting higher rates of cycling, walking and transit use. For that reason, the aspirational targets noted above should be carried forward in the current TMP and can be reviewed and adjusted in future TMP updates based on evidence of evolving travel patterns in the future.

Table 3 provides a summary level assessment of how the recommended Hybrid Strategy 3-4 compares to Council performance criteria priorities.

Table 3 – 2051 Assessment of “Hybrid Strategy 3-4” Scenario

Council Performance Criteria Priorities	Expected Outcome – 2051 Hybrid Strategy 3-4
Travel Mode Shift	Significant shift to more sustainable travel
Safe Transportation Systems	Enhanced safety focus in road improvement program
Reduced Capital and Maintenance Cost	Reduced need for road widenings compared to other scenarios, but higher operating costs for transportation
Meeting Climate Change Mitigation Targets	10-13% reduction in Greenhouse Gas emissions from private transportation (this would be higher with increased uptake of low emission vehicles in private fleet)

Hybrid Strategy 3-4 includes an aggressive mixture of policies, service enhancements and new infrastructure investments to maximize the potential shift in trip making to more sustainable travel modes compared to today. A summary of the key recommendations included in this Hybrid Strategy include:

1. An aggressive investment in expansion of the sidewalk network with emphasis on filling in gaps within the downtown, in new growth areas, and in major intensification corridors and along transit routes;
2. Implementing the Hybrid Accelerate/Spark Scenario from the Cycling Master Plan, as recently approved by Council in Report IPSTR21-009, including 80 – 160 km of new cycling infrastructure (the later being contingent on securing external funding), increases in annual programming costs to encourage higher usage, and a major expansion of the off-road trail system;

3. Adopting policies to encourage a shift in travel modes including increasing the cost of all day downtown parking and expanding the areas where paid parking would be charged beyond the downtown (these were modified in response to concerns raised by the DBIA about impacts to downtown businesses);
4. Investigating policies and other incentives / measures to increase the number of zero emission vehicles in the public and private fleets;
5. Investing in new transit services by increasing service hours by 71% over the next 30 years to add new routes and / or improve peak period frequency of service to 10 minutes on key corridors and 15 minutes on other corridors, with 30 minute frequency during off peak hours;
6. Implementing additional subsidization of transit passes or providing some free transit passes to lower the cost of transit, improve equity, and encourage additional ridership;
7. Developing a road network improvement plan that
 - 7.1. Adopts higher thresholds of acceptable congestion before road improvements would be considered to address capacity deficiencies (in order to support shifts to other modes of travel);
 - 7.2. Prioritizes road and intersection improvements that enhance safety or improve transit travel times (including the potential for dedicated transit lanes, transit queue jump lanes, and transit priority at intersections);
 - 7.3. Provides separated cycling facilities on major collector and arterial roads identified for new cycling routes, and implements dedicated space for cycling where feasible;
 - 7.4. Includes a Smart Signal implementation plan for major roadway corridors to reduce delays and emissions;
 - 7.5. Incorporates Connected or Autonomous Vehicle (CAV) technology at intersections to support signal priority for transit vehicles and emergency response vehicles, and sets the stage for the future vehicle technologies that will begin to operate on our roadways; and
 - 7.6. Adopts new policy measures to guide capital project priorities and planning, including:
 - i. A Goods Movement Strategy – to support employment areas and the downtown

- ii. A Complete Streets Policy – to guide the development of multi-modal transportation corridors, and
- iii. A Road Safety Plan – to identify key initiatives to enhance road safety for all users.

Approval of the recommended strategy will allow the Consulting Team to continue their work to refine and expand on these strategic directions as part of the next phase of work on the TMP.

Strategic Road Improvement Needs

The recommended Hybrid Transportation Strategy 3-4 recognizes that certain strategic road network improvements will still be required to accommodate planned growth to 2051. In finalizing the recommendations at this stage of the TMP, the Consulting team undertook some sensitivity analysis including:

- an assessment of road network needs assuming the original aspirational mode share targets for Strategy 4 could be achieved, and
- an assessment of road network needs assuming reduced discretionary trip making activities in the future, which may be influenced by emerging trends in online shopping and new ways of working and doing business.

Exhibit 1 and 2, illustrate the estimated base level of congestion on the road network in the morning and afternoon peak periods in 2051 with the measures in the Hybrid Strategy 3-4 in place. Both scenarios assume the completion of the Chemong Road widening project (already under design), the road network improvements in the Harper Road / Crawford Drive area that are currently nearing completion, and minor additions to the local road network in new development areas (such as Lily Lake, Coldsprings, Clean Tech Commons, Chemong West, and Ashborough Village).

Even with the significant shift in mode share that is forecast in the most optimistic estimates for the recommended Hybrid Strategy 3-4, approximately 65-66% of all trips in the City are expected to continue to being accommodated by automobile, down from 74% today. Combined with a 50% increase in population, there is anticipated to be a significant increase in the level of traffic on the major road network. If the aspirational mode share targets were able to be achieved, the base deficiencies identified are similar, although reduced in magnitude. A future change in the pattern of discretionary trip making due to emerging trends has the potential to reduce peak period travel demands by 12% from the base level forecasts.

Exhibit 1 – 2051 AM Peak – Congested Road Segments (Strategy 3-4)

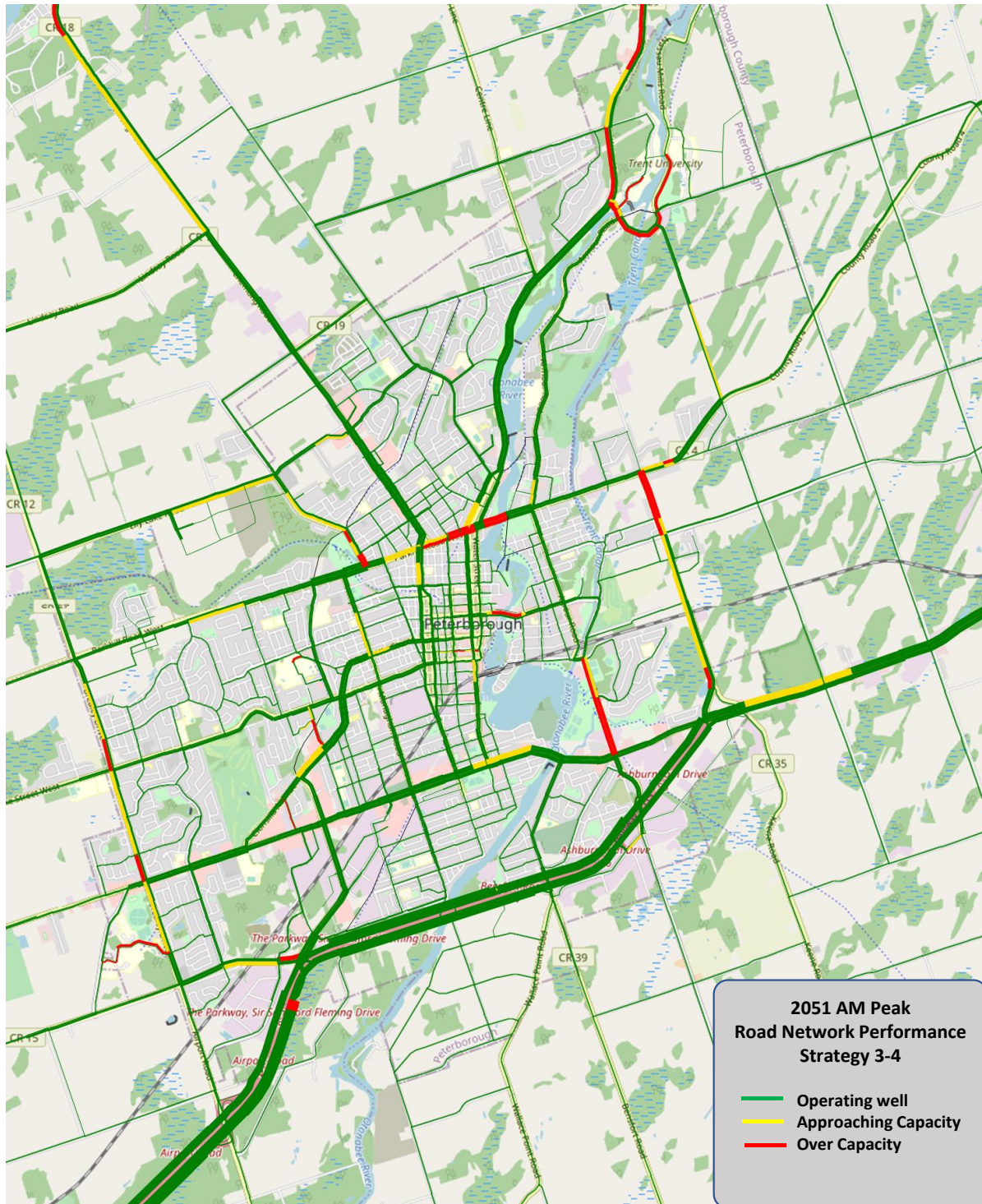
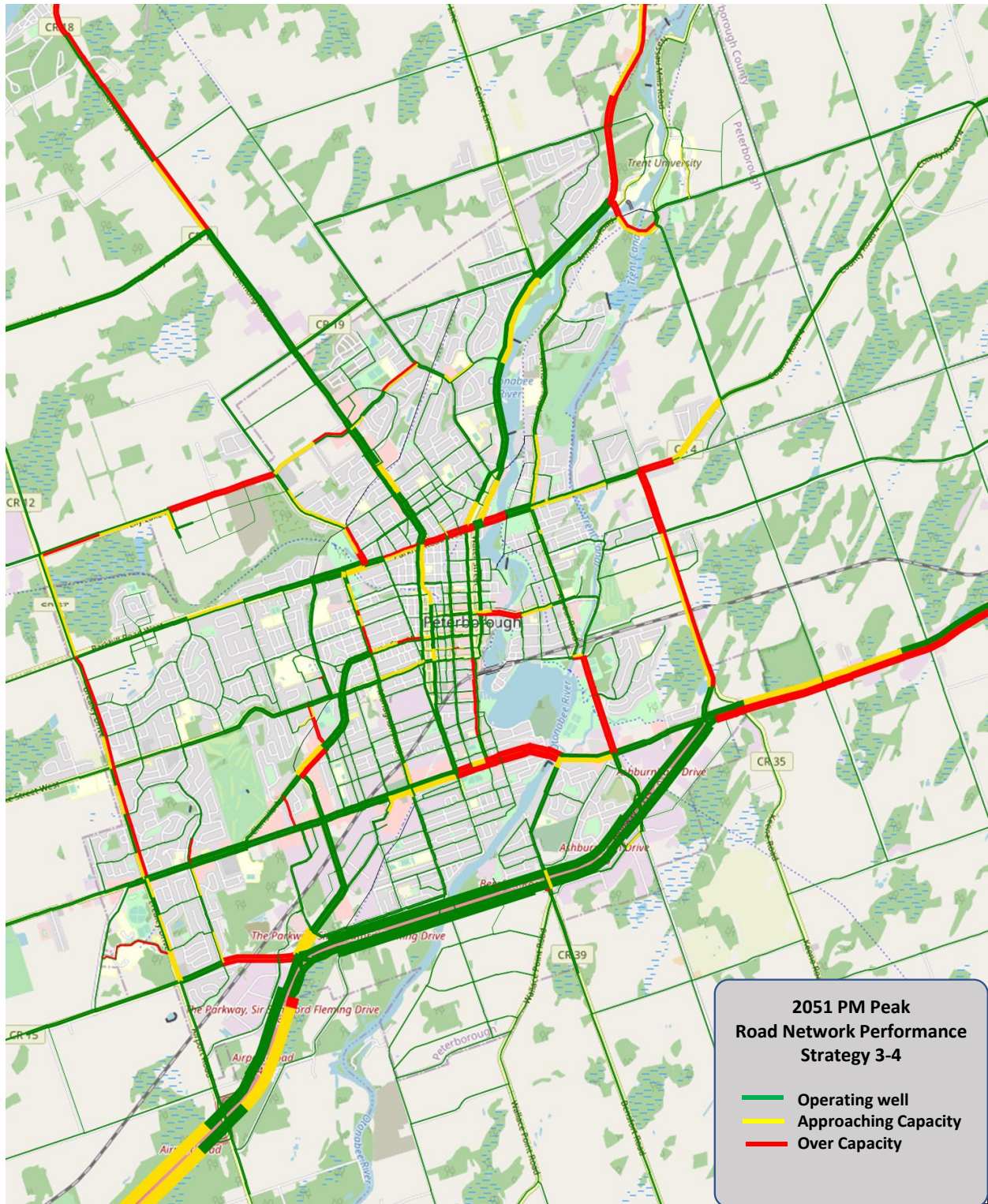


Exhibit 2 – 2051 PM Peak – Congested Road Segments (Strategy 3-4)



Based on the results of the analysis at this stage of the study, the Consulting team has identified three strategic road improvement recommendations:

- New East-West Capacity will be required for crossing the Otonabee River;
- New North-South arterial road capacity may be required East of the Otonabee River; and
- New major North-South Arterial Road capacity on the west side of the City is not recommended at this time, however operational improvements in key locations will be required.

Other road improvements may be required to serve more localized needs, and a more detailed assessment to identify recommended projects will be completed in the next phase of the TMP process.

East – West Capacity Across Otonabee River

By 2051, each of the existing bridges across the Otonabee River are forecast to be over capacity during both the AM and PM peak periods even with the anticipated increase in cycling, walking, and transit trips forecast in Hybrid Scenario 3-4. Under current conditions, there are 5 lanes of capacity (in each direction) on the existing bridges crossing the Otonabee River. Technical analysis of future travel demands suggests that 2-3 additional arterial lanes of traffic (in both directions) may need to be added in the future to address growth in travel demand.

Instead of adding capacity, increasing levels of congestion could be tolerated in the hopes of pushing more drivers to shift to alternative modes of travel, however increased congestion on these strategic bridge crossings may impede access to East City for residents, commercial traffic, and emergency services; will result in increased risk of collisions (particularly at intersections); and will undermine the effectiveness of investments in transit and the reliability of service – as buses rely on these same crossings as auto traffic.

The need for additional capacity for crossing the river is consistent with the recommendations of the previous Transportation Master Plan, although with additional growth and the longer planning horizon to 2051, the needs are more extensive than identified in the 2012 TMP. The City has already initiated work on the North End Class EA Study to examine opportunities to widen Nassau Mills Road across the river to partially address this need, and to enhance the supporting road network to encourage improved access to Trent University, enhanced transit use, and provide improved cycling and walking infrastructure. Confirmation of the need for east-west capacity enhancements across the river through the current TMP process will allow work on the North End Class EA Study to continue.

Even with potential improvements in the area of Trent University, the additional growth in the Liftlock Secondary Plan Area and increased intensification in key areas of East City is also forecast to increase pressure on the more southern bridge crossings (Parkhill Road, Hunter Street, and Lansdowne Street). Alternatives to address these deficiencies will be further examined as part of the ongoing East Side Transportation Study, and in consultation with the County and adjacent Townships, the results of which will be presented to Council in a subsequent report early in 2022 and will be incorporated into the final TMP document.

North-South Capacity East of the Otonabee River

By 2051, both Television Road and Ashburnham Drive are forecast to be over capacity during both the AM and PM peak periods even with the anticipated increase in cycling, walking, and transit trips forecast in Hybrid Scenario 3-4. Under current conditions, there are a limited number of alternative routes to serve this demand.

Despite additional transit service assumed in Hybrid Strategy 3-4, this area of the City is not envisioned to see as much shift in demands to other travel modes as other more established areas of the City. As a result, technical analysis of future travel demands suggests that additional arterial road capacity may be needed in the future to address growth in travel demand associated with build out of the Liftlock Secondary Plan Area and additional growth and intensification in East City. This need is also linked to the need for enhanced river crossing capacity as the north-south routes feed traffic to the east-west roadways crossing the river.

Alternatives to address these deficiencies will also be examined as part of the ongoing East Side Transportation Study, and in consultation with the County and adjacent Townships, the results of which will be presented to Council in a subsequent report early in 2022 and will be incorporated into the final TMP document.

No Need for New North – South Arterial Road Capacity West of Downtown

Future growth in the North End and West End of the City will result in an increase in travel demands, including the major north-south roadways to the west of the downtown, and to some extent in the east-west and north-south roadways in the north end. The sensitivity analysis completed by the Consulting Team determined that these deficiencies primarily occur in the afternoon peak period, with much more tolerable levels of traffic and congestion during the morning and mid-day periods. The analysis also found that the degree of congestion anticipated during the afternoon peak period is highly dependent on the amount of discretionary trip making in the future, and there is a higher potential for these trips to shift to less congested periods or to use alternative transportation modes. As noted previously, this has the potential to reduce demands by up to 12% from base forecasts.

If additional shifts do not occur, however, increasing levels of congestion could be expected and may result in more diversion of through traffic to local streets, increased risk of collisions (particularly on local streets and at intersections), a potential increase in response time for emergency vehicles, and increased congestion on major roads that will undermine the effectiveness of investments in transit and the reliability of service – as buses rely on the same roads as auto traffic.

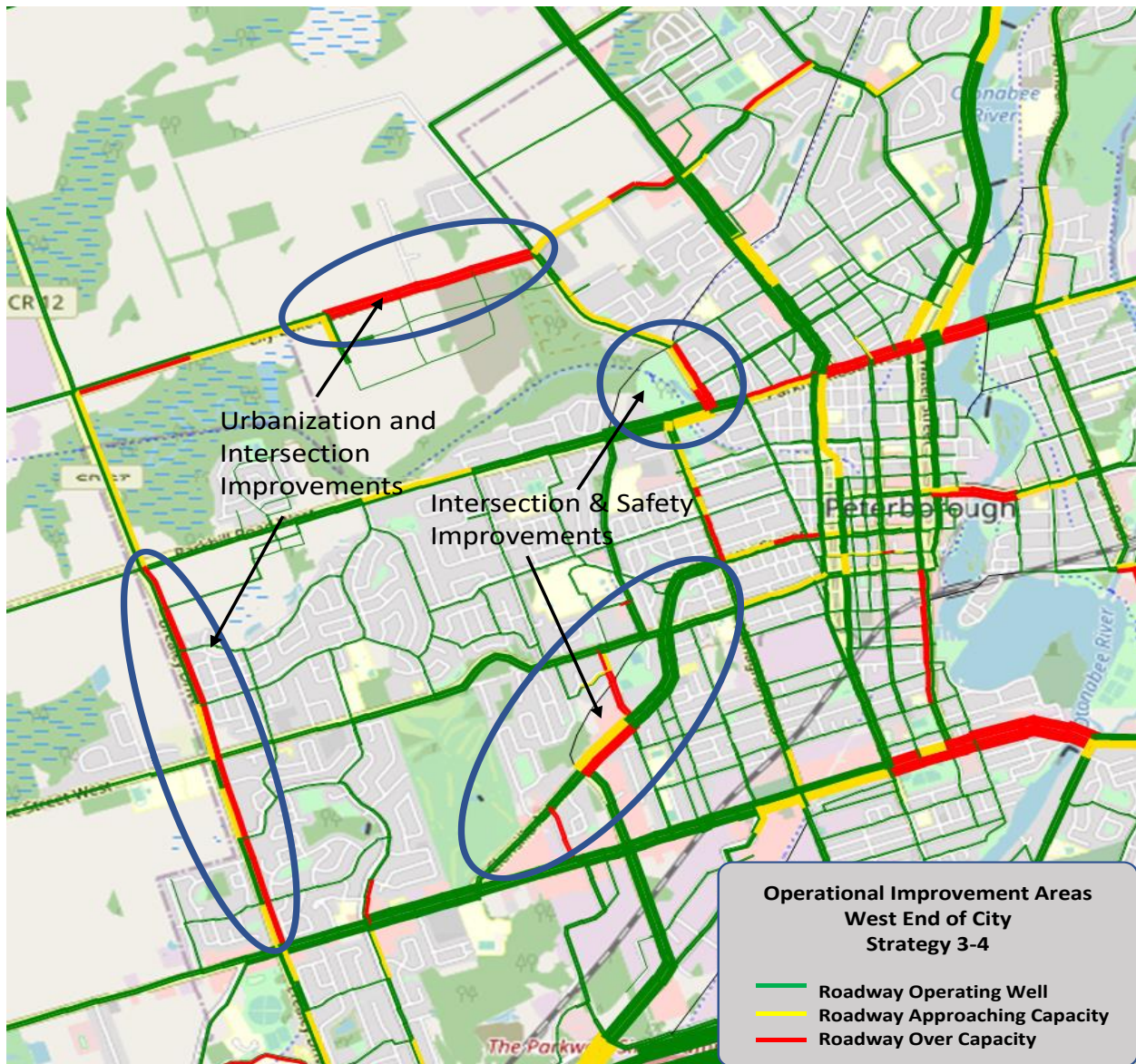
The consultant has reviewed the performance of the road and transit network in this area of the City and have concluded that major new North-South Arterial Road capacity is not recommended to support growth to 2051. The recommended approach in this area will focus on optimizing the performance of the existing network, investing in transit, and investing in new cycling and walking infrastructure.

Instead of new north-south capacity through the entire study area, operational improvements will be required at key locations (identified in Exhibit 3) to ensure that intersections and road links can accommodate future demands (including new cycling and walking infrastructure) and that the road network can support enhanced transit services.

In the Brealey Drive / Lily Lake Road area, new development and growth will require the urbanization of these former rural roadways. Along with urbanization, new sidewalks and protected cycling infrastructure will be required, and minor intersection improvements (such as turning lanes) should be planned to improve operations and safety. No new widening is envisioned at this time.

In the Clonsilla Avenue / Goodfellow Road / Sherbrooke Street Area, and in the Parkhill Road / Fairbairn Street Area, operational and safety improvements are recommended to address current intersection deficiencies and to provide improved pedestrian and cycling infrastructure.

Exhibit 3 – Operational Improvement Needs (Strategy 3-4)



Alternatives to Address Localized North-South Operational Improvement Needs

The Class Environmental Assessment (EA) Study completed for the Parkway Corridor in 2013, reviewed a number of alternatives for a north-south transportation route. The recommended plan approved by Council at that time was intended to provide a long-term solution to accommodate planned growth to 2031 and beyond, but it also provided a solution to address a number of existing operational and safety concerns that are currently occurring at a number of key intersections. Many of these intersections are included in the list of top ten collision locations in the City each year.

On September 16, 2016, the Minister of the Environment and Climate Change (now Minister of Environment, Conservation and Parks) issued an Order requiring the City to comply with Part II of the Environmental Assessment Act for the Parkway Extension project. This Order requires the City to complete an Individual Environmental Assessment (Individual EA) Study and to submit this to the Province for approval. Completing an Individual EA requires a proponent to restart the entire planning process for a project, including determining the need for the project, examining all reasonable alternatives, evaluating the positive and negative effects of each alternative, and recommending a preferred alternative along with committing to measures to avoid, reduce, or mitigate adverse effects created by the project.

Recent discussions with Ministry staff have confirmed that any project that is intending to solve the same problems that the original Parkway Class EA was intending to solve, is subject to the Minister's Order and is required to proceed through the Individual EA process in order to seek approval from the Province prior to being able to proceed to implementation. This would include any alternative routes for a new corridor or any combination of other improvements, such as intersection improvements or widening other roads, that are intended to address the same problems.

The recommendation at this stage of the TMP process - that new north-south arterial road capacity is not needed to support long term growth - suggests that approval of this new Hybrid Transportation Strategy replaces a portion of the original problem statement that formed the basis of the Parkway Class EA. By adopting this recommendation, the City would accept the growth in traffic volumes and potential for increased congestion on these roads; and would invest in more transit, more walking and cycling infrastructure, and policies to encourage a shift in travel behaviour instead of providing new north-south arterial road capacity in the west end of the City.

The recommendation that operational improvements are needed in the Clonsilla Avenue / Goodfellow Road / Sherbrooke Street area and in the Parkhill Road / Fairbairn Street area does overlap with a portion of the original problem statement for the Parkway Class EA, that relates to addressing existing operational and safety concerns at key intersections.

Based on the above, and previous discussions with Ministry staff, staff would recommend that a focused Individual EA approach be used to plan for these future operational and safety improvements. Simply completing the current Transportation Master Plan project will not meet the technical process, the consultation requirements of an Individual EA Study, nor the requirements outlined in the Minister's Order. Ministry staff have indicated that they would be looking for proponents to identify and consider all reasonable alternatives during an Individual EA.

The first step in the IEA process is the completion of a Terms of Reference. The Terms of Reference establishes the scope of work and approach to completing the Individual EA study, including:

- the purpose of the study and the study area under consideration,
- how alternatives will be generated and evaluated,
- how and when stakeholders will be consulted, and
- how decisions on the project will be made.

Consultation with the public, reviewing agencies and First Nations is required during the development of the Terms of Reference. Council will be able to approve this document prior to submission to the Province, but the final decision on how the study will be completed rests with the Minister.

The work completed in the TMP so far can likely be used to provide the transportation planning framework for the Individual EA project, recognizing that Council will have already approved a land use plan (as outlined in the new Official Plan) and a multi-modal Transportation Strategy for accommodating growth - which includes significant investments in transit, walking, and cycling, combined with strategic road improvements.

A focused Individual EA would seek to limit the scope of investigation to only those alternatives that are needed to address the identified problem(s) and may even limit the size of the study area to any area necessary to ensure that a reasonable range of alternatives could be generated. Based on the recommendations in this report, a focused Individual EA would not include the full completion of the Parkway as an alternative, ~~however alternatives utilizing portions of the lands reserved for the corridor may be considered.~~

Staff would propose to confirm this approach with Ministry Staff as part of developing the Terms of Reference for a focused Individual EA study.

Preparation of a Terms of Reference is likely to require 12-16 months to complete (excluding Ministry review time), which includes:

- retaining external consultants to complete the work,
- preparing the technical background information to set the context for the study,
- identifying the initial range of reasonable alternatives to be considered,
- preparing an initial draft Terms of Reference document to facilitate consultation with stakeholders, First Nations, and Ministry Officials,

- working with stakeholders and review agencies to incorporate their comments and feedback, and
- prepare a final Terms of Reference Document for approval by Council and submission to the Province for their approval.

It is recommended that Staff be directed to report back to Council, prior to the end of March 2022, to establish a timeline and budget to undertake the preparation of a Terms of Reference for a Focused Individual EA Study to examine localized improvements to address operational and safety issues in key areas on the West Side of the City.

Applying A Climate Lens to the Project Recommendations

In December 2016, Council approved the recommendations of Report CSD16-031 – Adoption of the Climate Change GHG Reduction Targets and Action Plans. This report adopted a greenhouse gas (GHG) emission reduction target of both Community and Corporate Sector emissions of 30% from the 2011 baseline levels by 2031 as budgets permit.

In September 2019, Council declared a Climate Emergency “for the purpose of naming, framing and deepening our commitment to protecting our community, its economy, and its ecosystems from climate change.” The declaration recognized “the need to achieve a target of 45% GHG emission reduction by 2030 and net-zero by 2050”, and directed that staff “Incorporate a climate change lens into all city actions and policies recognizing the need to achieve a target of 45% GHG emission reduction by 2030 and net zero by 2050.”

This section of the report provides a preliminary assessment of the various ways that approval of the recommendations in this report can support the City’s Climate Change Targets and the achievement of the recommendations in the current Climate Change Action Plan.

Understanding Corporate and Community Sector Transportation Sector GHG Emissions

GHG emissions that result from the municipal operations of the City of Peterborough are defined as Corporate Sector emissions. These emissions result from the day-to-day operations by the municipality to deliver services to the community and include. For the Transportation Sector these emissions are primarily generated by gasoline and diesel fuel used in fleet vehicles and equipment owned and operated by the City.

The City of Peterborough has control over the Corporate GHG emission profile and can impact these through municipal decision-making.

Community Sector emissions arise from the activities of residents and businesses living and operating in the City. For the Transportation Sector these emissions are also generated by gasoline and diesel fuel used in personal and business vehicles used for transportation.

The City of Peterborough does not have control over the Community GHG emission profile; however, the behaviours and activities that create these emissions can be influenced by municipal policies and programming.

Current Inventory of Emissions for the Transportation Sector

Since publication of the initial Climate Change GHG Reduction Targets and Action Plans, updates have been made to the 2011 base emissions to reflect new information and refined methodologies for estimating local emission inventories. Table 4 summarizes the updated total Community Sector GHG Emissions of the City and the estimated share of total emissions attributable to the Transportation Sector, which was estimated at 27.2% for 2018.

Table 4 – Base Community Sector GHG Emissions

Year	Total (tCO₂e)	Transportation (tCO₂e)	%
2011 (Rebaseline)	368,368	105,498	28.6%
2018	335,123	91,293	27.2%

Report IPSIM21-018 provided Council with an update on the Corporate Emissions for 2011 and 2018, and these figures are summarized in Table 5. The Transportation share of the total corporate emissions is estimated at approximately 24%, primarily related to emissions from the fleet of Transit vehicles, which make up 61% of the total emissions from fleet vehicles. Some additional emissions for vehicles in the Parking Fleet are not included in this inventory at this time.

Table 5 – Base Corporate Sector GHG Emissions

Year	Total (tCO₂e)	Transportation Fleet (tCO₂e)	%
2011 (Rebaseline)	22,491	3,602	16.0%
2018	18,407	4,419	24.0%

With forecast population and employment growth, base level emissions (before accounting for reduction initiatives) can be expected to grow in both the Community and Corporate Sectors. More residents, households, and jobs will generate new Community Sector emissions from household and business uses and additional personal transportation.

The need to provide municipal services to a larger population base would also increase base Corporate Sector emission levels to some degree as well, however, increases in the Transportation Fleet emissions would primarily be dictated by increased transit service levels (frequency of service), or increased distance traveled due to new routes to serve growth areas. In the 2051 Status Quo scenario no increase to transit service levels and no new routes have been assumed – resulting in no significant change to base Corporate emissions for Transportation.

As noted previously, the technical modelling work undertaken as part of this stage of the TMP work has identified that none of the aspirational mode share targets are likely to be fully achieved by 2051 with current prevailing attitudes and travel behaviour, even with aggressive investment in infrastructure to support non-auto modes of travel, and pricing strategies and policies to encourage shifts in behaviour.

The recommended Hybrid Transportation Strategy is expected to result in a 10-13% reduction in per capita GHG emissions compared to the baseline for 2051 due to shifts in travel behaviour. Even the Climate Focus Scenario, tested in Phase 3 of the TMP only resulted in a 14% reduction in per capita GHG emissions, despite including much more radical land use changes and punitive measures (like congestion charges) to encourage shifts in travel modes.

With a 50% growth in population, total GHG emissions in the Community Transportation Sector could be expected to grow to between 121,150 – 125,325 tonnes of Co₂e, as summarized in Table 6. This equates to an estimated reduction in annual emissions of approximately 14,000 tCO₂e compared to the status quo – which is approximately double the reduction that could be achieved by eliminating all future corporate transportation emissions. To achieve deeper reductions in the GHG emissions from the Transportation Sector, additional measures will be required, beyond shifting behavior.

Table 6 – 2051 Assessment of Community GHG Emissions

GHG Emissions	2011	2018	2051 Preliminary Forecast
Community Transportation (tCO ₂ e)	105,498	91,293	121,150 – 125,325
Population	78,700	81,950	125,000
tCO ₂ e Per Capita	1.34	1.114	0.969 - 1.003

If the most aggressive aspirational mode share targets from the Climate Focus Strategy were able to be achieved the types of policies and pricing measures that would be needed to reach these targets would far exceed the measures originally contemplated in this strategy and would likely still result in an absolute increase in the total emissions from the Community Transportation Sector relative to the 2011 baseline.

There are two key supporting measures that will be needed to achieve more extensive greenhouse gas (GHG) emission reductions. First and foremost is the widespread adoption and increased market penetration of zero-emission vehicles in the community. With the current mix of generation in Ontario’s electricity grid, operating an EV produces 83% fewer GHG emissions than an internal combustion engine (ICE).

Recommendation 4, in the Hybrid Strategy includes “Investigating policies and other incentives / measures to increase the number of zero emission vehicles in the corporate and private fleets”. While this will be a critical initiative that will require multi-jurisdictional funding and policy support, the next stages of the TMP will further explore supportive actions that the City can take to encourage this transition.

Even a 100% conversion of the Community Fleet to zero emission vehicles, will not eliminate emissions from the Transportation Sector due to the emissions created during electricity generation. This points to the second measure, which is the continued decarbonization of Ontario’s electricity grid by the Provincial government. Any additional generation capacity that is added with a higher GHG-intensity (i.e., natural gas generation) will reduce the impact of zero-emission vehicles on GHG reduction targets.

The recommended Hybrid Strategy also includes a significant expansion of transit service to encourage shifts in travel behaviour, which will influence Corporate GHG emissions. As summarized in Table 7, the intensity of GHG emissions generated from the Transit Fleet has been somewhat reduced between 2011 and 2018 due to replacing

older buses with newer, more fuel efficient buses, even though overall emissions have increased due to increased service. The increase in emissions due to investments in the Transit Service Hours between 2011 and 2018, combined with capital investments in the Cycling infrastructure in the City, which has increased usage have contributed to the reduction in Community Emissions observed over the same period, as summarized previously in Table 6.

Table 7 – 2051 Assessment of Corporate GHG Emissions

GHG Emissions	2011	2018	2051 Forecast
Transit Service Hours	111,500	142,000	243,600
Corporate Transportation (tCO ₂ e)	3,602	4,419	6,820 – 7,308
tCO ₂ e Per Service Hour	0.0323	0.0311	0.0280 – 0.030*

* - assumed rate based on continued enhancements to current diesel bus technology

The trend of reduced emission intensity for the transit fleet would be expected to continue as the City replaces its fleet with newer vehicles over time. However, the significant increase in service hours in the recommended Hybrid Strategy will still result in an increase in Corporate emissions compared to 2018 with the continued reliance on diesel bus technology.

The City allocated funding in the 2021 budget to undertake an Alternative Fuel Feasibility Study for the Transit Fleet to consider the full range of costs and operational / implementation considerations that need to be considered with different low to zero emission fuel technologies, and to recommend an approach for the City to guide future bus purchases and the design of a new bus storage garage. The study is expected to be completed in 2022.

A number of the recommendations in the Hybrid Transportation Strategy align with actions identified in the Climate Change Action Plan (CCAP). Table 8 below summarizes the “On the Move” strategies identified in the CCAP, the current status of the various initiatives, and the alignment with the TMP Strategy Recommendations contained in this report.

Table 8 – Proposed TMP Hybrid Strategy 3 & 4 Alignment with CCAP

CCAP Strategy	Status	TMP Strategy Recommendations
Strategy M1: Build an active transportation network and support active transportation		
Develop a Complete Streets Policy and Guidelines, including consistent sidewalk requirements and guidance on paved shoulders/cycle lanes	Will be developed in TMP and include elements from Cycling Master Plan	1, 2, 7.3, 7.6
Install bike racks on buses	In progress. Pilot initiated in 2021	N/A
Support cycling education programs for adults and children	In development as part of Cycling Master Plan	2
Promote and support Active and Safe Routes to School partnership and related programming and campaigns	Ongoing	1, 2
Strategy M2: Facilitate alternatives to single-occupant vehicle use to reduce frequency of personal vehicle use		
Explore feasibility of carpool lot network in partnership with the County and other Townships	Most applicable in County / Townships due to longer trip lengths	N/A
Strategy M3: Make public transportation more appealing to increase its usage		
Implement a trip planning program/service for public transit	Complete – Google Transit	N/A
Implement technology for real-time bus tracking system (web and smart phone app)	In progress, spring roll out	5
Explore opportunities to increase the number of students using public transit to get to school	Trent/Fleming express service enhancements	5
Explore transitioning from transit hub model to a grid model of public transit during next Public Transit Operations Review	Complete in 2021	5
Strategy M4: Help transition vehicles to use cleaner and lower greenhouse gas emitting fuel sources		
Install electric vehicle (EV) charging stations for public usage	Ongoing	4
Support local organizations to work with local businesses to transition corporate fleets to EV	Green Economy Peterborough launched 2021	4

Finalizing the Transportation Master Plan

With Council approval of the recommendations of this report, Phases 4 and 5 of the TMP project can continue using the approved Transportation Strategy and Mode Share Targets developed in Phase 3 to develop the final recommendations for the Transportation Master Plan.

This phase will focus on finalizing the recommended infrastructure projects (outside of the study area for the North-South Transportation Operational Improvements noted above), incorporating recommendations from the Cycling Master Plan and the East Side Transportation Study into the overall Transportation Master Plan, identifying implementation priorities and the phasing of various initiatives, developing recommended policies to support the plan, finalizing capital and operating cost estimates and financing strategies, and undertaking the final reporting and documentation activities for the project. Additional consultation activities with the public and coordination with ongoing work of the County Transportation Master Plan will be completed as part of the next phases of the project.

Summary

The Transportation Master Plan is being developed in accordance with the Municipal Class Environmental Assessment (MCEA) process and the planning framework approved by Council at the outset of the study. The project team has completed Phases 3 and 4 of the project and recommend approval of the Hybrid Transportation Strategy 3 / 4 to guide the completion of the remaining tasks in the project.

The next steps of the TMP will focus on finalizing the recommended infrastructure projects, identifying implementation priorities and the phasing of various initiatives, developing recommended policies to support the plan, and finalizing capital and operating cost estimates and financing strategies for the plan. These final phases of the project will be completed by spring of 2022.

Upon approval of the recommendations, staff will report back to Council by the end of March 2022 to establish a timeline and budget to undertake the preparation of a Terms of Reference for a Focused Individual EA Study to examine North-South Transportation Operational Improvements for the West Side of the City.

Submitted by,

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Attachments

Appendix A: Draft Phase 2 & 3 Report