



City of
Peterborough

To: Members of the Peterborough Environmental Advisory Committee

From: Kevin Jones, Manager – Transportation Division

Meeting Date: October 20, 2021

Subject: Report PEAC21-024
Transportation Master Plan – Phase 3 Update

Purpose

A presentation to provide the Peterborough Environmental Advisory Committee with an overview of the Transportation Master Plan – Phase 3 Update.

Recommendation

That the Peterborough Environmental Advisory Committee approve the recommendation outlined in Report PEAC21-024 dated October 20, 2021, of the Manager – Transportation Division as follows:

That the presentation from the Transportation Division regarding the Transportation Master Plan – Phase 3 Update be received for information.

Budget and Financial Implications

There are no budgetary or financial implications associated with the recommendation.

Background

The Transportation Master Plan (TMP) is the guiding document to set the long-term vision for multi-modal transportation in Peterborough. The TMP is being developed in multiple phases to allow community member and stakeholder input and for Council to approve and provide direction at each phase of the process.

The TMP Vision and Objectives were the focus of the Phase 1 work and were approved by Council at their meeting of April 26, 2021. The approved Vision for the TMP states that:

“As the City grows, Peterborough’s transportation network will be enhanced to create a low emissions, responsive system where people of all ages and abilities can move safely, sustainably and efficiently, no matter how they choose to travel, today and in the future.”

To achieve this vision, Council also approved the following five Objectives for the TMP:

- i. Travel Choices - Continually improve travel choices for people and goods by providing an increased number of reliable, equitable, and accessible options that support the health and well-being of our growing community;
- ii. Community Building - Plan the transportation network to support the growth of vibrant communities in the region;
- iii. Safe, Livable Communities - Improve the safety of transportation systems for all users. Ensure that investments in transportation systems enhance equity and accessibility by expanding access to jobs, services and amenities regardless of age, ability or travel choice;
- iv. Climate Mitigation and Natural Environment - Protect against negative impacts to the natural environment and reduce vehicle emissions to achieve Council’s Climate Change targets;
- v. Economic and Financial - Enhance access to jobs, services and amenities to support a more resilient regional economy. Invest strategically in new capital projects that will provide long-term benefit to the City, while ensuring that existing assets are maintained and supported.

In Phase 2, an assessment of the state of the Transportation System in 2051 under a Business as Usual or “Do Nothing” Scenario was undertaken, assuming all planned growth, in accordance with the Provincial Growth Plan and the new Official Plan, is accommodated but nothing is done to enhance the transportation network.

The Phase 2 work concluded that continuing on a “business as usual basis” will not achieve Council’s key performance priorities nor the TMP Vision and Objectives, and 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 Community Transportation Sector.

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.

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 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. The five combination strategies and associated aspirational mode share targets presented in Phase 3 are summarized in Table 1.

Table 1 – 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 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 pocket 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 like congestion charges were split almost 50% in favour and 50% not in favour.

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, as reflected in the Strategy Rankings in Table 2, with the lowest overall scores being rated a most desirable.

Table 2 – TMP Phase 2 Public Consultation Transportation Strategy Ranking Results

Most Desirable Option	Ranking	Most Achievable Option	Ranking
Option 4: Transform	2.32	Option 3: Shift	2.69
Option 5: Climate Focus	2.36	Option 2: Nudge	2.78
Option 3: Shift	2.74	Option 1: Status Quo	2.93
Option 2: Nudge	3.36	Option 4: Transform	3.03
Option 1: Status Quo	4.26	Option 5: Climate Focus	3.55
No Opinion/Not Sure	4.61	No Opinion/Not Sure	4.08

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. To test these aspirational targets, the technical assessment of each combination scenario was completed using the City's 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. 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, however this 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 and also assume a 55% increase in the rate of residents who do not work at a fixed place of work by 2051.
- 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 car were incorporated into the combination strategies 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 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 decrease in GHG emissions 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, as summarized in Table 3.

Table 3 – Assessment of Strategy 4 - Transform

Strategy	Mode Share	Alignment	Challenges
Option 4: Transform	Walking = 14-17% Cycling = 3-7% Transit = 7-10% Driving = 66-76% <u>GHG avoided</u> -13% GHG per capita from 2018 levels	Most aligned with TMP vision, Council priorities, and public feedback. Aligns with best practices in other Ontario municipalities transportation mode shift strategies	<ul style="list-style-type: none"> • Achieves aggressive mode share goals due to change in the culture of travel behaviour • Requires changes to land use planning in new Official Plan • Considerable investment in transit and active transportation • Moderate likelihood of arterial network investments to support the movement of people and goods • Cost of roadway, transit, cycling, walking, and intersection safety estimated at \$655 million by 2051

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 Hybrid 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.

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

Table 4 – 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;
4. Investigating policies and other incentives / measures to increase the number of zero emission vehicles in the corporate 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;
 - 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:
 - A Goods Movement Strategy – to support 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.

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.

Phase 3 Consultation

From September 29 to October 8, Phase 3 stakeholder consultation commenced seeking input on the preliminary recommended strategy proposed by the TMP consultant after analyzing community and stakeholder feedback amassed during Phase 2 strategy consultation (Table 1).

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 30 to 40 participants, which featured a presentation from the project team and a question and answer session. Results of this consultation are still being reviewed and assembled by the project team.

Contribution to Climate Change Action Plan and Strategies

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 5. To achieve deeper reductions in the GHG emissions from the Transportation Sector, additional measures will be required, beyond shifting behavior.

Table 5 – 2051 Assessment of Community GHG Emissions (Transportation)

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

Two key supporting measures 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 6, 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. This trend of reduced emission intensity would be expected to continue as the City replaces its fleet. 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.

Table 6 – 2051 Assessment of Corporate GHG Emissions (Fleet)

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 City has allocated funding in the 2021 budget to undertake and 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 7 below summarizes the “On the Move” strategies identified in the CCAP and how the alignment with The TMP Strategy Recommendations.

Table 7 – 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

Next steps

The consultant will review community feedback gathered between September 29 and October 8 regarding the proposed hybrid strategy. The final strategy recommendation to be pursued in the TMP will be presented to Council on November 8. Once a strategy is confirmed, Phase 4 and 5 will commence – where the project team will undertake future work to develop the final recommendations for the Transportation Master Plan. These phases 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.

Submitted by,

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