

# Appendix B

## POSSIBLE INDICATORS

To monitor progress towards the vision of a transformed transportation system in our region, we need to measure progress towards the entire set of goals and objectives presented in Appendix A. This results in a long list of indicators, some of which are readily available and easily collected. For example, traditional transportation indicators such as ridership, modal split, level of service or congestion delay are important, but they do not show us the big picture of a transportation system serving broader objectives of a sustainable region and society.

To holistically assess our progress, we need to measure new elements, which will require additional research.

1. Some indicators are fully quantifiable and lend themselves to modelling. These are marked in bold print.
2. Others may be measurable, but cannot be modelled.
3. Some indicators are essential in tracking progress towards an objective, but their assessment is qualitative.
4. Since the transportation system contributes significantly but only partially to some issues such as air quality, some indicators are measurable and need to be tracked over time, acknowledging the partial contribution of transportation.

The table below contains a selection of possible indicators to measure the extent to which individual projects and the overall transportation plan can help fulfill the goals and objectives shown in Appendix A.

*Please note that indicators will be further amended and refined based on feedback received.*

OBJECTIVES	POSSIBLE INDICATORS
<b>A HIGH QUALITY OF LIFE: More CAPABLE AND COMPATIBLE Transportation</b>	
Improved transportation experience	<ul style="list-style-type: none"> <li>• Variability of travel time</li> <li>• Number and duration of major blockages/delays/year – roads and transit</li> <li>• Change in people-moving capacity (as opposed to vehicular capacity)</li> <li>• Customer satisfaction measures/index</li> </ul>
Less crowding on transit	<ul style="list-style-type: none"> <li>• <b>Average load factors by transit mode</b></li> </ul>

OBJECTIVES	POSSIBLE INDICATORS
<b>A HIGH QUALITY OF LIFE: More CAPABLE AND COMPATIBLE Transportation</b>	
Decreased need to travel, particularly over long distances and at rush hour	<ul style="list-style-type: none"> <li>• Size of “activity area” (from TTS)</li> <li>• Total motorized and mechanized travel</li> <li>• Average home-based work trip length</li> <li>• Per cent of trips at rush hour</li> </ul>
Increased transportation options for accessing a range of destinations	<ul style="list-style-type: none"> <li>• <b>Transit, active transportation modal split</b></li> <li>• Accessibility index – jobs and variety of uses within 30 minutes of one’s home – by active transportation, transit and auto</li> <li>• Time spent travelling per day by mode</li> <li>• <b>Per cent of commuters who can get to work within 30 minutes via transit, active transportation, auto</b></li> <li>• Average trip duration via transit, active transportation, auto</li> <li>• <b>Per cent of population and jobs and density of population and jobs within 500m of transit and within 1, 2 and 5km of rapid transit</b></li> <li>• Per cent of residents in priority neighbourhoods beyond 1 km of transit and 2 km of rapid transit</li> <li>• Proximity of major generators, Urban Growth Centres, corridors, dense areas to higher-order rail transit infrastructure</li> <li>• Increased seat-kilometre/square kilometre via each transit mode: REX, GO, Rail, urban RT, express bus, local bus</li> <li>• <b>Average service frequency by transit mode</b></li> <li>• Per cent of residents with a monthly or annual transit pass</li> <li>• <b>Comparison between modes on variety of sample trips; e.g. travel speeds by transit and auto in selected major travel corridors</b></li> <li>• Reduced rate of congestion growth on roads (percent/year)</li> </ul>
Region-wide integrated fare collection and schedule coordination	<ul style="list-style-type: none"> <li>• Per cent implementation of fare integration</li> <li>• Number of remaining transit service discontinuities at municipal boundaries</li> </ul>

OBJECTIVES	POSSIBLE INDICATORS
<b>A HIGH QUALITY OF LIFE: More CAPABLE AND COMPATIBLE Transportation</b>	
Improved information, including real-time information, available to people to plan their trips	<ul style="list-style-type: none"> <li>• Availability of a complete mobility trip planner</li> <li>• Per cent of stops with availability of “Next bus” information; per cent of users with mobile devices able to access information</li> <li>• Availability of dynamic route optimization tools in cars and trucks</li> </ul>
Reduced impacts of air quality on human health	<ul style="list-style-type: none"> <li>• Hospital admissions related to air quality; rates of asthma in children and adults</li> <li>• Premature deaths related to air quality</li> </ul>
Reduced transportation-related noise	<ul style="list-style-type: none"> <li>• Effect on noise levels in residential areas</li> <li>• Per cent of areas over noise threshold</li> </ul>
More transit and pedestrian-friendly streetscapes; Improved walking and cycling amenities	<ul style="list-style-type: none"> <li>• Barrier effect of infrastructure</li> <li>• Per cent of transit stops with shelters</li> <li>• <b>Active Transportation modal split</b></li> <li>• Per cent of population within 300 m of a bicycle lane or trail via neighbourhood streets</li> <li>• Per cent of transit stations with bicycle storage</li> <li>• Per cent of streets with sidewalks</li> <li>• Km of pedestrian ways, bikeways</li> <li>• Km of sidewalks per km of new roads</li> </ul>
Increased daily levels of exercise from walking and cycling	<ul style="list-style-type: none"> <li>• Minutes of walking and cycling per day</li> <li>• Per cent of children walking/cycling to school</li> <li>• Obesity rates</li> <li>• Type II Diabetes rates</li> <li>• Hypertension rates</li> <li>• Chronic Obstructive Pulmonary Disease (COPD) rates</li> </ul>
Towards zero casualties and injuries on all transportation modes, including walking	<ul style="list-style-type: none"> <li>• Number of collisions, casualties and injuries by mode and impact on children/seniors; total, per million residents, million person-km; per million vehicle-km per year</li> </ul>
Improved traveller safety, both real and perceived	<ul style="list-style-type: none"> <li>• Number of breaches of personal safety within the transportation system</li> <li>• Percent of travellers who perceive a fear of personal safety on various modes of transportation</li> </ul>

OBJECTIVES	POSSIBLE INDICATORS
<b>A HIGH QUALITY OF LIFE: More CAPABLE AND COMPATIBLE Transportation</b>	
Improved accessibility for seniors, children and the disabled	<ul style="list-style-type: none"> <li>• Per cent of universally accessible transit vehicles and stations (to AODA standard)</li> <li>• Strategy on planning, delivery and management of special needs transit</li> <li>• Per cent of seniors and people with disabilities within 300 metres of transit via continuous, fully accessible sidewalks and protected crosswalks</li> <li>• Per cent of the region accessible by specialized transit</li> </ul>
Increased engagement in the planning of the transportation system from a diversity of citizens	<ul style="list-style-type: none"> <li>• Number of citizens participating in consultation processes</li> </ul>

OBJECTIVES	POSSIBLE INDICATORS
<b>A Thriving, Healthy and Protected Environment: CLEANER and MORE CONSERVING Transportation</b>	
Decreased use of non-renewable resources.	<ul style="list-style-type: none"> <li>• Total transportation-related energy use by type</li> <li>• <b>Average fuel consumption per person-km travelled</b></li> <li>• Average fuel consumption per tonne-km transported</li> <li>• Salt and organic or mineral-based melter use</li> </ul>
Increased recycling rate of construction materials and vehicles.	<ul style="list-style-type: none"> <li>• Tire recycling rates</li> <li>• Construction materials recycling rates</li> <li>• Vehicle recycling rates</li> </ul>
Reduced and stabilized transportation-related GHG emissions – provincial target: -6 per cent by 2014, -15 per cent by 2020, -80 per cent by 2050	<ul style="list-style-type: none"> <li>• <b>GHG emission levels per person-km and/or total emissions/year</b></li> </ul>
Improved air quality	<ul style="list-style-type: none"> <li>• Number of smog days per year</li> <li>• <b>CAC pollutant (NOx, SOx, CO, PM10 and PM2.5 values) emissions per person-km and/or total emissions/year - overall emissions and localized concentrations, including in priority neighbourhoods</b></li> </ul>
Reduced car use	<ul style="list-style-type: none"> <li>• <b>Vehicle-kilometres travelled (VKT) (total and per capita)</b></li> <li>• <b>Average weekday person trips</b></li> <li>• Number of vehicles per household</li> <li>• <b>Average home-based work trip length</b></li> </ul>
Improved energy efficiency	<ul style="list-style-type: none"> <li>• Average passenger fleet, commercial truck fleet and locomotive fuel efficiency</li> <li>• Energy use / tonne and passenger / kilometres;</li> <li>• Ratio of transportation energy use / GDP</li> </ul>
Reduced consumption of land for urban development	<ul style="list-style-type: none"> <li>• Hectares of land dedicated to transportation infrastructure</li> <li>• Amount of urbanized space per capita</li> <li>• Per cent of development in existing built up areas</li> <li>• Density of development in greenfield areas</li> <li>• Density of development in Urban Growth Centres</li> </ul>
Reduced ecological impact to our natural systems	<ul style="list-style-type: none"> <li>• Impact on wetlands, biodiversity, farmland, terrestrial and aquatic habitats, groundwater, lakes and watercourses</li> </ul>

OBJECTIVES	POSSIBLE INDICATORS
<b>A Thriving, Healthy and Protected Environment: CLEANER and MORE CONSERVING Transportation</b>	
Awareness of how travel choices impact the environment	<ul style="list-style-type: none"> <li>• Availability of quantifiable measures on various choices to users</li> <li>• Integration of information on impacts through trip planning tools</li> </ul>

OBJECTIVES	POSSIBLE INDICATORS
<b>A Strong, Prosperous and Competitive Economy: More COST-EFFECTIVE and AFFORDABLE Transportation</b>	
Lower average trip time for people and goods	<ul style="list-style-type: none"> <li>• <b>Average vehicle speed and travel time – auto, truck and transit</b></li> <li>• <b>Per cent of arterials and expressways experiencing congestion</b></li> <li>• Average time to clear a collision</li> </ul>
Greater reliability of the freight system	<ul style="list-style-type: none"> <li>• Variability of truck and rail travel times</li> </ul>
Eased congestion	<ul style="list-style-type: none"> <li>• Per cent of vehicle kilometres travelled in congestion</li> <li>• <b>Total hours of delay (autos and trucks, transit)</b></li> <li>• <b>Costs resulting from congestion</b></li> </ul>
Increased productivity of the transportation system	<ul style="list-style-type: none"> <li>• Utilization rate of roads</li> <li>• Transportation costs as per cent of GDP</li> <li>• Average number of passengers per vehicle; per cent of vehicles with a single driver</li> <li>• Per cent of vehicles with dynamic routing optimization tools</li> <li>• Per cent of dead-heading trucks (i.e. a truck travelling without cargo), or average loading ratios</li> <li>• Per cent of shipments processed with route optimization, loading optimization</li> <li>• Per cent of trucks centrally managed with localization technology</li> </ul>

OBJECTIVES	POSSIBLE INDICATORS
<b>A Strong, Prosperous and Competitive Economy: More COST-EFFECTIVE and AFFORDABLE Transportation</b>	
Improved transportation and land use integration	<ul style="list-style-type: none"> <li>• Policies in place to direct development – including publicly funded facilities – to areas well-served by transit</li> <li>• Per cent of resident and workers in new large trip generators within walking distance of a rapid transit station</li> <li>• Satisfaction of functional objectives at mobility hubs (connectivity, amenities, type and amount of development)</li> <li>• Policies to coordinate large-scale logistics facilities in adequate areas with minimal incursion from incompatible uses</li> <li>• Walking and cycling urban design standards</li> <li>• Number of non-residential parking spaces / number of jobs</li> <li>• <b>Per cent of population and jobs and density of population and jobs within 500m of transit and 1, 2 and 5km of rapid transit</b></li> <li>• Per cent of length of roads and streets that fulfil the “complete streets” concept</li> </ul>
Reduced delays, damage and costs in transferring goods from one mode to another and more seamless region-wide services for travellers and service-providers	<ul style="list-style-type: none"> <li>• Benchmarking of design, construction, maintenance and operational costs tied to satisfaction metrics</li> <li>• Cost per passenger/km and tonne/km for roads</li> </ul>
Improved real-time information about transportation choices, their speeds and costs	<ul style="list-style-type: none"> <li>• Availability of a complete mobility trip planner</li> <li>• Availability of “next bus” information</li> <li>• Availability of flexible, real-time information for choosing a travel route</li> </ul>
Improved connections and service within the GTHA and to/from interregional, inter-provincial and international terminals and facilities	<ul style="list-style-type: none"> <li>• Improvements in connectivity within and beyond the region</li> </ul>
Increased self-sufficiency of the transportation infrastructure and projects	<ul style="list-style-type: none"> <li>• Revenue opportunities, subsidy requirement</li> <li>• Cost recovery opportunity and ratio</li> </ul>
Reduced use of out-of-province energy sources	<ul style="list-style-type: none"> <li>• Spending on imported fuels for transportation</li> </ul>
Increased prevalence of transportation demand management practices	<ul style="list-style-type: none"> <li>• Per cent of large employers (100+) with a transportation demand management plan</li> </ul>

OBJECTIVES	POSSIBLE INDICATORS
<b>A Strong, Prosperous and Competitive Economy: More COST-EFFECTIVE and AFFORDABLE Transportation</b>	
Improved value of transportation investment and spending for households, businesses, governments and other users	<ul style="list-style-type: none"> <li>• Transportation costs as per cent of GDP relative to other benefits</li> <li>• Average annual transportation expenditures per household as a per cent of income relative to other benefits</li> </ul>
Competitive shipping cost structure	<ul style="list-style-type: none"> <li>• Average transportation cost as a per cent of the cost of end products compared to competing jurisdictions</li> </ul>
Transparent and fairly allocated passenger transportation costs, across modes	<ul style="list-style-type: none"> <li>• <b>Total transportation costs/year for a full range of travel modes including rail, bus, automobile, cycling, walking</b></li> <li>• <b>Total transportation provider costs (capital, operating) for a full range of travel modes</b></li> <li>• <b>Net revenues from transportation user fees</b></li> <li>• Fare integration policies</li> </ul>
Fair and effective fiscal treatment of various modes	<ul style="list-style-type: none"> <li>• Fair treatment provincial fiscal policies</li> <li>• Engagement of federal government</li> </ul>
Optimized use of all travel rights-of-way by commercial vehicles through a range of incentives and disincentives	<ul style="list-style-type: none"> <li>• Measure of balanced use of parallel corridors by commercial vehicles</li> </ul>
Direct transportation user fees that reflect the full costs of providing transportation	<ul style="list-style-type: none"> <li>• <b>Per cent of transportation system capital and operating costs recovered from user fees</b></li> </ul>
Minimized direct and indirect economic losses due to accidents	<ul style="list-style-type: none"> <li>• Direct and indirect economic costs of accidents, by mode and area</li> </ul>