# City of Hamilton
# GENERAL ISSUES COMMITTEE
# ADDENDUM

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| **Meeting #:** | 21-023(a) |
| **Date:** | November 19, 2021 |
| **Time:** | 9:30 a.m. |
| **Location:** | Due to the COVID-19 and the Closure of City Hall (CC)<br>All electronic meetings can be viewed at:<br>City's Website: https://www.hamilton.ca/council-committee/council-committee-meetings/meetings-and-agendas<br>City's YouTube Channel: https://www.youtube.com/user/InsideCityofHamilton or Cable 14 |

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## 1. STAFF PRESENTATIONS

1.3. 8.3 GRIDS 2 and Municipal Comprehensive Review - How Should Hamilton Grow? Evaluation" (PED17010(o)) (City Wide)

*1.3.a. UPDATED Page 84 (of 274) of Appendix “A” to Report PED17010(o)

*1.3.b. UPDATED Pages 185, 186, 201, 222, 223 and 225

*document, the information it contains and the information and basis on which it relies, are subject to changes that are beyond the control of the author. The information provided by others is believed to be accurate but has not been verified.*

## Addenda – Nov. 17, 2021

*Following the completion of this brief, further analysis has been completed to refine the results. First, updated transportation data was provided, specifically modal share projections for internal and external trips for 2051 by zone. Second, interim projections (between 2016 and 2050) were removed to provide better comparability between the two scenarios. Third, commercial and industrial employment distributions were assumed to be the same in both scenarios. These changes had the impact of reducing the cumulative GHG impact (2021-2050) from 1 MtCO2e as described in this brief to 0.5 MtCO2e.*

*An analysis of the VKT reduction resulting from the NUE scenario narrowed the difference between SSG's analysis and the City's transportation analysis to 100 million annual VKT in 2050. This variance is the result of the modelling treatment of pass-through trips. From a GHG accounting perspective, pass through trips are not counted as part of the City's GHG inventory and are therefore not reflected in the CityInSight model.*

*This finding provides three insights additional to those described in the briefing:*

- *The size of the GHG benefit of the NUE scenario will be influenced by the timing of, and location of, urban expansion.*
- *The sectoral distribution of future employment between the two scenarios will also impact the difference in emissions (these have been held constant in the two scenarios). For example, if one scenario included more employment in low rise office versus high rise office, this will impact the emissions.*
- *There are additional GHG benefits from reduced passthrough trips which do not show up in the CityInSight analysis.*

# Addenda

Following the completion of this background report, further analysis and model runs have been completed to refine the transportation forecast results.

A re run of the city's transportation model (which is still under refinement) has resulted in an update to the forecasts for Vehicle-km of Travel (VKT), which is an indicator of greenhouse gas emissions. The update results in smaller difference in VKT between the No Urban Boundary Expansion scenario and Ambitious Density Scenario. This has narrowed the difference between SSG's analysis and the City's transportation analysis to 100 million annual VKT in 2050. This variance is the result of the modelling treatment of pass-through trips and reflects that there is some uncertainty when forecasting out 30 years of travel patterns. Both estimates suggest there is a saving in VKT for the No Urban Boundary Expansion option.

This affects Tables 3-1, 4-7 and 5-1 of this report.

# 1 Introduction

Through the Growth-Related Integrated Development Strategy (GRIDS) 2 and the Municipal Comprehensive Review (MCR), the City is mandated by Provincial policy to determine how and where to plan for forecasted population and employment growth to the year 2051, in accordance with the Provincial population and employment growth forecasts and land needs assessment methodology.

In August 2021, Council approved an updated evaluation framework to guide decisions on growth management. The framework is intended to help inform three sequential questions:

***How to grow?***

The City is contemplating two alternatives at the City-scale: an 'Ambitious Density' Growth Option (1,310 ha expansion for new Designated Greenfield Lands) and a second alternative, called the 'No Urban Boundary Expansion' Growth Option. The growth options have different intensification targets, greenfield densities and housing mixes. They would also require different long-term urban structure plans/policies to manage growth pressures.

***Where to grow?***

Depending on the Preferred 'How to Grow' Option, if an urban boundary expansion is required, determining where the City can feasibly expand its urban boundary by evaluating Candidate Expansion Areas.

***When to grow?***

Once the feasible Candidate Expansion Areas are determined, evaluating phasing scenarios to decide when these areas should be planned for development.

## 1.1 Purpose of Report

The evaluation of growth options is being undertaken based on a comprehensive approach based on ten themes. In August 2021, a background report was prepared to present both the evaluation framework as well as criteria for each theme.

The purpose of this report is to provide information and analysis to support ***Theme 6. Transportation Systems***. The report also presents information to support ***Theme 2: Climate Change***.

The focus of the analysis is primarily on Stage 1 of the evaluation framework, addressing the question of How to Grow. The analysis will be extended through subsequent iterations of this report as the evaluation progresses to support Stages 2 and 3 of the framework.

## 1.2 Description of Growth Alternatives

GRIDS 2 will result in a long-term growth strategy which allocates forecasted population and employment growth for the 2021 to 2051 time period. The Provincial forecasts for Hamilton project a total 2051 population of 820,000 persons and total employment of 360,000 jobs, a net increase of 236,000 persons and 122,000 jobs.

As part of the question of "How to Grow?" two alternatives at the City-scale are being contemplated:

- An 'Ambitious Density' Growth Option (1,310 ha expansion for new Designated Greenfield Lands)
- A 'No Urban Boundary Expansion' Growth Option

A map of the potential new designated greenfield lands also referred to as 'whitebelt' lands, is provided in Figure 1.1, with a summary of the key features of each growth option is provided in Table 1-1.

The differences in the distribution of population across for the two land use scenarios has an observed impact on trip distribution, average travel distances and mode splits. Based on an evaluation of the travel patterns for the base year (2016), approximately 1,113,000 kilometres were travelled by auto and 61,000 passenger kilometres travelled by transit in the AM peak hour. Given the projected increase in population and employment by 2051, a comparable evaluation was carried out to test the sensitivity of two growth scenarios (Table 3-1). The estimated distance travelled by automobile during AM peak hour increases from 2016 to 2051 by 48.2% under No Boundary Expansion and 58% under Ambitious Density. However, the observed vehicle hours travelled in 2051 shows an over 105% increase when compared to the base year. The estimated travel time increase is primarily related to the effect of congestion which will result in lower average travel speeds as growth increases.

For transit, there is a measurable impact on city-wide mode shares with the No Urban Boundary Expansion. Measured in terms of 'motorized shares', transit shares are projected to be 11.4% for the ambitious density scenario and 11.9% for the no boundary expansion scenario. *Note that due to the model configuration, these are different than the description of TMP targets whereby mode split is expressed as a percentage of all trips including walking and cycling.*

Passenger kilometres travelled would be higher for the ambitious density scenario due to longer average trip distances.

**Table 3-1: Peak Hour vehicle and passenger distance travelled**

| Performance Indicator | 2016 Base Year | 2051 Ambitious Density | 2051 No Boundary Expansion | % Increase | |
|---|---|---|---|---|---|
| | | | | Scenario 1: Ambitious | Scenario 2: No Boundary Expansion |
| Vehicle Kilometres Travelled | 1,113,000 | 1,759,000 | 1,71,000 | 58.0% | 54.0% |
| Vehicle Hours Travelled | 18,000 | 38,000 | 37,000 | 111% | 105% |
| Passenger Kilometre Travelled | 61,000 | 101,000 | 95,000 | 65.6% | 55.7% |
| Transit Mode Share (% of motorized trips)[a] | 11.7% | 11.4% | 11.9% | | |

**Notes:** [a] Excludes walking & cycling trips.

Active transportation needs and opportunities for the No Boundary Expansion alternative would primarily be related to the upgrading of existing facilities and the acceleration of the build-out of Planned Cycling Network as developed through the 2018 Cycling Master Plan. Greater pedestrian and cyclist trip density in intensified areas will generate a need to build higher quality, separated cycling facilities. This may include new or separated cycling facilities along Upper Ottawa, Upper Wellington and West 5th, to properly connect with the broader municipal network, to provide safe connections to the city-wide network. Higher trip density in this scenario could lead to existing communities being able to support amenities locally, they currently need to travel elsewhere for. Reducing trip distances will help make active modes more competitive for these shorter distances, which experience shows should lead to more active trips.

In both scenarios, there may be a need to upgrade and install other existing infrastructure. This could include installing sidewalks where there are none, making sidewalks that connect to key destinations wider, upgrading unpaved trails to year-round facilities, and other localized enhancements.

## 4.5 Emissions from Transportation

In addition to developing the background to evaluate the criteria under Transportation Systems, this report also provides a forecast of key inputs required to estimate Greenhouse Gas (GHG) emissions from transportation, as input to the Climate Change Theme criteria.

As background, transportation in Hamilton currently accounts for 13% of GHG emissions from all sources. Excluding industrial sources, which dominate Hamilton's GHG emissions, transportation accounts for 39% of emissions produced (Source: Hamilton and Burlington Low-Carbon Scenario and Technical Report 2016 to 2050, Sustainability Solutions Group)

Using the Hamilton Transportation Demand Model, it is possible to estimate total vehicle-kilometres (VKT) travelled by personal automobiles and passenger-kilometres travelled (PKT) by transit, each of which can be converted to GHG emissions based on fuel efficiency. VKT and PKT are key indicators of greenhouse gas emissions. While the resultant emissions are dependent on projected trends in fuel efficiency and fuel type mix (e.g. gasoline, diesel, natural gas, hydrogen, or electric), fundamentally VKT and PKT represent travel effort for which energy is required.

As shown on Table 4-7 both growth scenarios will result in significantly more VKT and PKT being generated by Hamilton residents, as expected due to increased population and employment. Comparing the two growth scenarios, the Ambitious Density Scenario would result in a 58% increase in VKT vs. 54% for the No Urban Boundary scenario. A

similar magnitude difference is projected for PKT as well, due to the fact transit trips would be longer on average for the Ambitious Density scenario.

On a per capita basis, VKT per capita is projected to increase by 9% and 6% for the ambitious and no boundary expansion scenario respectively.

**Table 4-7 Projected GHG Indicators (VKT and PKT)**

| Metric | 2016 Base | 2051 Ambitious Density | 2051 No Boundary Expansion |
|---|---|---|---|
| VKT (Peak hour) | 1113000 | 1759000 | 1710000 |
| PKT (Peak hour) | 61000 | 101000 | 95000 |
| VHT | 31 mins/veh | 42 mins/veh | 40 mins/veh |
| VKT (Per annum) | 4,062,450,000 | 6,420,350,000 | 6,241,500,000 |
| % increase from 2016 | | 58% | 54% |
| VKT per capita | 7,196 | 7,827 | 7,611 |
| % increase from 2016 | | 9% | 6% |
| PKT (Per annum) | 183,000,000 | 303,000,000 | 285,000,000 |
| | | 66% | 56% |

## 5.1 Transportation and Climate Change

**Table 5-1: Evaluation Table | GHG Emissions from Transportation & Climate Change**

| Growth Option 1: Ambitious Density (1,310 Ha Expansion) | Growth Option 2: No Urban Boundary Expansion |
|---|---|
| **Does the growth option present any significant risks associated with climate change?** | |
| • 58% increase in auto vehicle kilometres of travel compared to 2016<br>• 66% increase in transit passenger kilometres of travel compared to 2016<br>• 9% increase in VKT per capita compared to 2016<br>• Based on projected average auto trips lengths and projected mode shares, residents will be more exposed to financial risk if transportation energy costs increase | • 54% increase in auto vehicle kilometres of travel compared to 2016<br>• 56% increase in transit passenger kilometres of travel compared to 2016<br>• 6% increase in VKT per capita compared to 2016 |
| **Overall Result**<br>Addresses a couple of aspects of this theme.<br>  | **Overall Result**<br>Addresses some aspects of this theme.<br>  |
| **Does the growth option present any significant opportunities associated with climate change?** | |
| • Targeted densities in new growth areas could support forms of development that are conducive to working from home<br>• Population and employment will increase in transit supportive areas<br>• Streets for new growth areas can be designed to mitigate impacts of climate change (i.e. Stormwater management, street trees) | • Population and employment will increase in transit supportive areas<br>• Based on average trip distance and access to higher order transit, a greater proportion of trips are “feasible” trips for sustainable modes (walk/cycle/transit) |