LRT and Subways
Drivers of City Development
1.0 INTRODUCTION

The City of Toronto has longed for rapid transit to serve future development. However, it had become clear that the original, preferred form of rapid transit—subways—was too costly to justify spending a substantial up-front cost. A new mode of transport, light rail transit (LRT), which shares many benefits with subways at a much lower cost, is the better option to provide new rapid transit services throughout the City of Toronto, facilitating development. Light rail transit is the better option for long-term development, as it will:

1) Substantially increase the catchment area for rapid transit in the City of Toronto
2) Provide redevelopment options for more suburban areas, benefitting the local economy
3) Provide future integration between transit operators.

2.0 RAPID TRANSIT ACCESS

Light rail transit will provide many more Torontonians with rapid transit. The necessity of buses to access rapid transit has led to dissatisfaction amongst customers (The Grid, 2011). Light rail transit will provide 290,000 people with new rapid transit services, compared to 61000 for an extended subway line (Pembina Institute, 2011). This comes at a cost of $100 million/km for LRT compared to $400 million/km for subways (Pembina Institute, 2011). LRT is a much more prudent use of scarce taxpayer dollars.
3.0 CITY REDEVELOPMENT OPTIONS

In the past, LRT systems were essential to establishing city centres. Building cities based on this model would provide pedestrian-friendly areas in more areas of Toronto. This will contribute to the local economy while benefitting new and existing residents. The more frequent LRT stops will create attractive, medium-density developments over high-rise, nodal condominium development at subway stations (Toronto Transit Commission, 2012). The presence of LRT will act as a catalyst for public realms while providing a means for entry and exist, creating a central business district and increasing activity in the local economy.

![Figure 4.1 Potential street design (Region of Waterloo, 2012)](image)

4.0 FUTURE SYSTEM INTEGRATION

The Big Move Plan includes plans for multiple rapid transit routes throughout the Greater Toronto and Hamilton Area (Metrolinx, 2008). LRT is the most versatile technology for future rapid transit systems. The Region of Waterloo (Region of Waterloo, 2012), City of Mississauga, City of Hamilton (City of Hamilton, 2012), and the Region of York are currently proposing LRT systems, which would be connected with the Toronto system. An integrated rapid transit network will improve the customer environment and reduce costs in the future, while facilitating pedestrian and transit-oriented redevelopment in auto-centric areas. It is unlikely that these areas can absorb the high costs for subway expansion.

5.0 CONCLUSION

Light rail transit is only the first step in creating a well-balanced transportation system. Each mode deserves its own place in the overall transit network. There is no universal solution. However, many preventive solutions are worth tabling, such as creating local business districts as to prevent cross-town travel. Metrolinx plans to achieve this through development of ‘mobility hubs’, which is an excellent step towards the future of mobility, accessibility and sustainability.

Word count: 466 (incl. embedded references). Word count does not include appendices. The appendix section below is purely for further detail and is not necessary for argument’s sake.
### Appendix A – Comparison between LRT and Subways on Sheppard East (Expert Advisory Panel, 2012)

<table>
<thead>
<tr>
<th>Current Issue</th>
<th>Description</th>
<th>Light Rail Transit solution</th>
<th>Subway solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic</td>
<td>Delays due to traffic on roads</td>
<td>Private right of way</td>
<td>Private right of way</td>
</tr>
<tr>
<td>Bunching</td>
<td>See below</td>
<td>Longer headway (5’00””)</td>
<td>Longer headway (5’30”, Sheppard Subway; 2’ 29”, Yonge Subway)</td>
</tr>
<tr>
<td>Line capacity</td>
<td>Bus capacity approximately 825 pphpd. For calculations see note below.</td>
<td>5 minute headways, single car train: 3000 pphpd 5 minute headways, three-car train: 9000 pphpd 2.5 minute headways, three-car train: 18000 pphpd</td>
<td>Sheppard Subway (4 cars): 11000 pphpd Yonge subway (6 cars): ~30000 pphpd</td>
</tr>
<tr>
<td>Capital Cost per km</td>
<td>Construction costs</td>
<td>$75-100 million</td>
<td>$300-400 million</td>
</tr>
<tr>
<td>Fare payment</td>
<td>Payment of fare on vehicle or off</td>
<td>Fare paid area, payment off-vehicle</td>
<td>Fare paid area, payment outside stations</td>
</tr>
<tr>
<td>Stop spacing</td>
<td>Distance between stops</td>
<td>400 m – 1000 m</td>
<td>1 km</td>
</tr>
<tr>
<td>Passengers served on proposed network</td>
<td>Catchment area of passengers on proposed network</td>
<td>290000 people</td>
<td>61000 people</td>
</tr>
<tr>
<td>Projected passengers served</td>
<td>Projected passengers travelling</td>
<td>3000 pphpd</td>
<td>4200 pphpd</td>
</tr>
</tbody>
</table>

**BUNCHING:** This is an operational failure where vehicles operating on the same route are in tandem with each other. The TTC considers buses to be ‘on-time’ if they are within three minutes of their scheduled headway. On routes with headways less than three minutes, it is possible for three buses to ‘bunch’ while all being on time. This issue is more pronounced when traffic delays happen, as almost all buses fall behind schedule.

**LINE CAPACITY:** Calculations assume a pre-Ridership Growth Strategy Orion VII bus capacity of 55 people at a 4 minute headway, 250 people per Metrolinx LRV (based on TTC Legacy Flexity Outlook Streetcar), and 250 people per T1 subway car.

**Conclusion:** light rail transit provides similar options to subway rapid transit at a substantially lower cost while providing capacity and redevelopment options for the future.
Works Cited


http://www.toronto.ca/legdocs/mmis/2012/cc/bgrd/CC20_1_app3_6.pdf