Centre for Urban Research and Land Development

Transit Nodes in Ontario Have Untapped Development Potential

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*The opinions expressed in this research report are those of the authors only and do not represent opinions and views of either CUR or Ryerson University.

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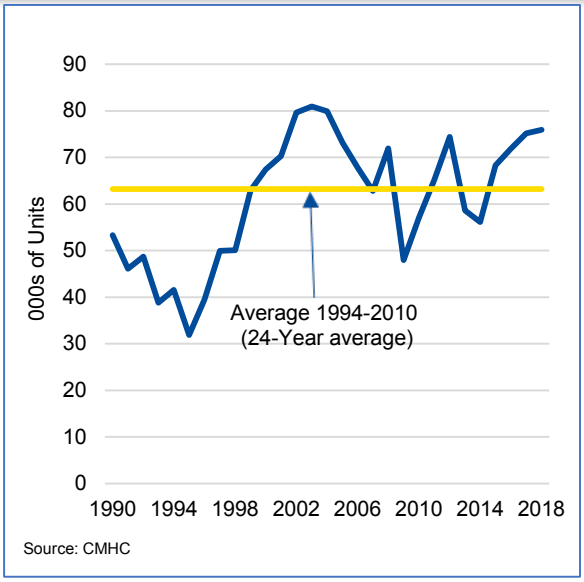
Figure 1: Housing Starts, Ontario, 1990 to 2018



Source: CMHC

The Ontario Government forecasts that the population of Ontario will rise by 4.3 million people over the next 24 years. Barring a significant change in household size, that estimate would translate into roughly 1.8 million new households. The province would need to build 75,000 new homes per year over the next 24 years to keep up with population growth. However, despite a recent jump in construction activity, the province has only seen an average of 63,000 new units created per year over the last 24 years (see Figure 1). To match the provincial governments population estimate, the province needs to create an addition 12,000 units per year on average. As the government looks to find space to accommodate this growth, it has to look no further than land around its transit nodes.

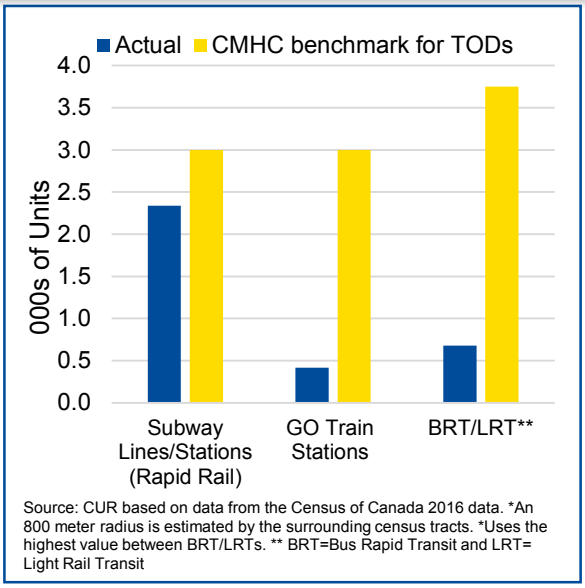
By definition, transit oriented development (TOD) refers to creating diverse, mid-to-high density, walkable neighborhoods near major transit nodes (Public Transit, 2004), for instance, subway stations, light rail lines and GO Stations. The geographic area for TODs includes 500 to 800 meters around each station, or the area within a 10-15 minute walk. Transit oriented developments are being promoted globally as a way to encourage transit use, curb unmanaged growth and link housing, jobs and services (CMHC, 2009). A recent Pembina Report also noted that housing by transit nodes would benefit households since commuting by transit is cheaper than owning a car (Pembina 2019).

Here in Ontario, building housing around priority transit nodes is at the centre of the Ontario Places to Grow Act. If implemented correctly, TODs have the potential to unlock significant space for development. There exists significant unmet development capacity across the 200 major transit nodes in Ontario, but outdated city by-laws protect much of it from higher transit supportive density development. Carefully implementing as-of-right zoning along transit corridors is likely to be an effective action governments in Ontario can take to make room for additional housing supply.

Transit corridors have untapped development potential

In a 2009 report, the Canadian Mortgage and Housing Corporation (CMHC) studied TODs and provided a benchmark for the type of densities needed to make transit oriented developments successful (see Figure 2). This means generating mixed-use communities, raising housing supply, boosting land and property values in the area and generating enough ridership to make transit investments pay-off. The range is 1,000 housing units per square kilometer (4 units per acre) for infrequent bus service to 3,000 units per square kilometer (12 per acre) for rapid rail service

Figure 2: Density around Major Transit Nodes in Ontario, Measured by Residential Dwellings per Square Kilometer, 2016*



Source: CUR based on data from the Census of Canada 2016 data. *An 800 meter radius is estimated by the surrounding census tracts. *Uses the highest value between BRT/LRTs. ** BRT=Bus Rapid Transit and LRT= Light Rail Transit

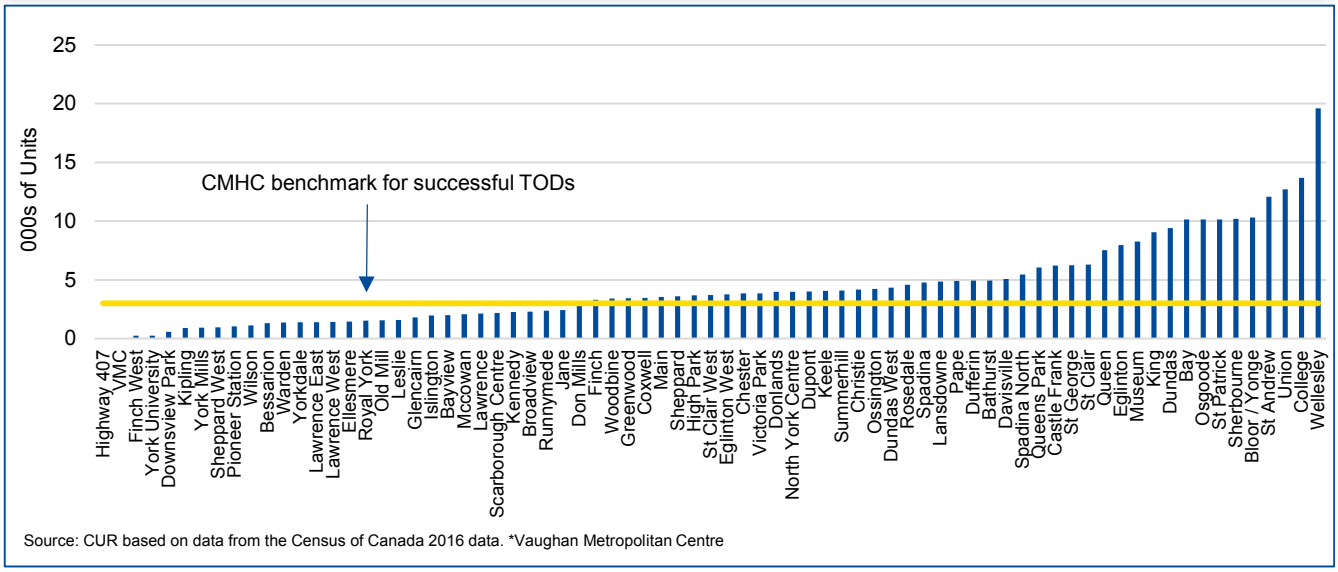
(CMHC, 2009) within an 800-meter radius of a station. These densities can be supported through the creation of "missing-middle" typologies. For instance, the Centre for Urban Research and Land Development (CUR) estimates that a townhouse development can produce 20 to 30 units per acre. CMHC identified ten successful TOD projects across Canada and showed that developers were able to exceed these densities through the creation of a range of housing, including high-rise, medium density housing and single-family homes. The higher density buildings should be closest to the transit stations, while density can ease as you move further away.

CUR has identified almost 200 major transit nodes across Ontario that are either existing or are currently in the planning stages and/or are under construction. These lines include the subway lines in Toronto, GO Train Stations across the Greater Golden Horseshoe and the LRTs, both planned and under construction, in Toronto, Ottawa, Kitchener-Waterloo, Hamilton and Mississauga. There is almost 1,500 square kilometers of land within 800 meters of a major transit node in Ontario that can support more density.

When set against the CMHC minimum density requirements for TODs, Figure 3 shows that the surrounding areas (approximated by census tracts) around many of Ontario's major transit nodes still have considerable capacity for development, especially around some of the GO Train Stations and many of Toronto's subway stations. The greatest opportunity and space for development exists around Toronto's newest subway stations between Downsview Park and the Vaughan Metropolitan Centre, but the land around a quarter of Toronto's older subway stations are also underutilized (see Figure 2, page 3). Some of these stations include Kipling, York Mills, Islington and Royal York where the density is under 1,000 units per square kilometer (4 units per acre) in the surrounding neighborhoods, a third of what would be supportive of TOD around a subway station and a tenth of the density around Toronto's most densely populated subway stations.

Over 30% of the geographic space surrounding the 200 major transit hubs in Ontario is predominately single-detached homes and have room to absorb more density. CUR believes there are incredible opportunities through missing middle and gentle density types of development to increase housing supply in these low-density, transit-efficient neighbourhoods. By CUR's estimates, the land around these transit nodes offer enough space for missing-middle housing to accommodate all of the province's expected population growth over the next 24 years, and then some (see Appendix B).

Figure 3: Density within 800 Meters of Subway Stations, Measured by Number of Dwellings per Square Kilometer, the City of Toronto and the City of Vaughan, 2016



Source: CUR based on data from the Census of Canada 2016 data. *Vaughan Metropolitan Centre

Research also suggests that households want to be near transit. A study conducted by the University of North Carolina looked at condo prices around TODs in San Diego relative to condo prices in car-friendly environments. The results suggest that households would pay a premium to live near a transit station versus a car-oriented neighborhood (Duncan, 2011).

"As-of-right" zoning key to unlocking more housing around transit corridors

Land-use across Ontario is governed by municipal zoning by-laws – rules that dictate what can be built and where. Much of the zoning rules across Ontario date back to the 1970s or before (Martin Prosperity Institute, 2010), a time when the city was building suburbs, households were dependent on the car and there was a greater need to separate employment (industrial) areas and housing. These rules are not conducive to transit-friendly denser mixed-use communities, compatible with TODs and at the center of the Ontario Places to Grow Act.

Zoning changes around TODs can occur in two ways. Developers can apply to have zoning rules changed to support denser development. In this way, zoning changes are initiated by land-owners. This process is politically uncertain, which adds both time and costs to infill development, acting as a deterrent (Sheutz et all, 2018). The other option is for municipalities to re-zone these areas proactively to allow for higher densities in advance of development.

In its study of successful TODs, CMHC found that the use of transit supportive zoning was one factor that helped make projects financially viable (CMHC, 2009). Four of the 10 successful projects studied were in areas that had been re-zoned by the municipality for higher density in advance of development. A report from the U.S. Federal Reserve and University of Southern California analyzed development around five transit stations in California. They found that stations with TOD supportive zoning had higher development and densities than stations that did not (Sheutz et all, 2018).

Our research suggests that of some 1,500 square kilometers of land around transit nodes in Ontario, studied in this report, we can only

Figure 4: Annual Construction Activity Within 800 Meters of a Major Transit Node as Measured by Housing Starts per Square Kilometer, by Select Transit Types, Ontario, Annual, 2010 to 2018

	2010	2011	2102	2013	2014	2015	2016	2017	2018	3-year average (2016 to 2018)
No zoning change	**8**	**9**	**15**	**10**	**9**	**13**	**12**	**10**	**14**	**12**
Subway Lines/Stations	39	47	85	49	39	63	66	54	70	63
GO Train Stations	5	5	8	4	5	8	5	5	7	6
Vaughan BRT	6	3	16	11	19	13	12	9	14	12
Ottawa LRT/BRTs	0	1	3	4	3	2	1	1	1	1
Hamilton LRT	0	0	1	0	3	0	0	4	1	2
Eglington LRT	5	17	8	9	15	13	4	2	11	6
Finch West LRT	0	0	0	0	19	0	0	1	0	1
Kitchener-Cambridge-Waterloo LRT	4	8	10	3	12	8	13	13	4	10
Transit nodes with a recent zoning change	**5**	**18**	**9**	**21**	**10**	**19**	**12**	**21**	**42**	**25**
Toronto Subway Lines	4	36	13	57	12	30	36	31	90	60
Hurontario LRT	1	42	12	25	4	38	1	25	69	32
Hamilton LRT/GO Train Stations (2016)	0	0	1	0	13	1	6	4	6	5
Ottawa Zoning By-Law Changes in 2014 that Captured Land around Transit Nodes	9	5	8	9	11	11	10	20	21	17

Source: CUR based on CMHC and data from the 2016 Census of Canada. *An 800 radius is estimated by the surrounding census tracts. Large census tracts were removed from analysis.

find zoning changes by municipalities for 154 square kilometers. This is corroborated by recent Neptis Foundation comments that most of the major transit stations in the City of Toronto overlap with its Established Neighbourhood Policies (often referred to by planners as the 'yellowbelt'), which are protected single-detached and semi-detached home neighbourhoods (Burchfield, 2018).

In Figure 4, CUR highlights the amount of construction activity that has occurred around Ontario's various transit nodes. The figure separates out transit nodes between those that have and have not had a "pre-zoning" for higher density. The figure shows that areas that have had a re-zoning prior to development have had more construction activity per square kilometer than areas that had not. In the last three years, transit nodes that have not had a re-zoning and studied in this report have seen an average of 13 housing units built per square kilometer in the census tracts directly surrounding them. However, areas that have had a zoning change to be more TOD compatible have had almost twice that amount of construction activity.

For example, pre-zoning around the Ottawa LRT under construction in 2014 (Pearson, 2014) led to a doubling in new units being built per square kilometer since 2014. Hamilton created a Transit Oriented Corridor Zone (called TOC) around its upcoming LRT line (City of Hamilton, 2019), which is being implemented in stages. New home construction around this line jumped from basically zero between 2010 and 2014, to an average of 6 units per square kilometer since.

In contrast, the areas directly surrounding the upcoming Finch and Eglinton LRTs have had very little construction activity when compared to other transit lines.

Based on this experience, a conservative estimate would suggest that re-zoning could encourage yearly construction around under-zoned transit nodes and lines by up to 25 housing units per square kilometers at a minimum. That could translate into a minimum of 20,000 more units per year along transit corridors in Ontario.

Economic benefits of re-zoning

Development and intensification around transit nodes can bring significant positive economic impacts to communities across Ontario. The economic benefits will range from an increase in household disposable income due to lower transit costs and the productivity gains from shorter commute times. Pembina estimated that households could save up to 45% on housing and transit costs by living near TODs (Pembina, 2019).

We can directly estimate the economic impact of the additional 20,000 units that would be constructed every year. This would result in a $5 to $7 billion uptick in residential construction expenditure. The combined higher spending on construction and the knock-on effects to the rest of the economy (more jobs, household income and spending) could lift economic activity in Ontario by $8 to $10 billion (or a 1% to 1.3% increase) and create 40-56 thousand jobs. These estimates are based on the Statistics Canada's expected multipliers for spending on construction activity.

Key Policy Recommendation

Ontario has a significant amount of space prime for development with room to accommodate population growth over the next two decades around its transit nodes. This suggests that outdated zoning regulations are more of a constraint to the supply of housing than land supply. As-of-right zoning along major transit corridors could be a relatively affordable effective way to boost new home supply. CUR recommends policymakers:

- Revise the application of Section 37 so that it no longer disincentives municipalities from creating zoning compatible with TODs;
- Require re-zoning in areas with transit supportive zoning around all existing and planned major transit stations in municipalities across Ontario. Re-zoning must be done carefully to encourage the creation of missing-middle and gentle density typologies.
- Municipalities should re-zone land at transit supportive densities at new transit nodes as they are built/developed.

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Appendix A: How CUR Identified Land Around Transit Nodes

CUR collected data by census tract around 200 transit nodes identified. Data from census tracts that are larger than 5 km squared would skew the analysis because they were predominately more than 800 meters from the transit station. However, by excluding these properties also would removed large pieces of land with development capacity. Therefore, we proportionately spread the number of dwellings and housing starts across these census tracts and included only a 2 kilometer radius in our calculations.

Appendix B: Calculation of Number of Units That Can Be Accommodated Around Transit Stations

CUR estimates that the 200 transit nodes can accomodate up to 4 million housing units through missing-middle development. This calculation was done in four stages (Table 1):

1. For each station, we calculated the number of dwellings per square kilometer in the census tracts considered in this report. (Column A, Figure 1)
2. We then subtracted that from CMHC's benchmark for TODs found in Figure 1 of Report. (Column B, Figure 1)
3. We then multiplied the difference by the number of square kilometers around each station (Column E, Figure 1).
4. We then summed the total

Appendix B: Figure 1:Calculation on Number of Units that Can be Built Around Transit Nodes in Ontario

	A	B	C=(B-A)	D	E=D*C
	Actaul Dwellings/Square Kilometer	**CMHC Benchmark**	**Room to Grow (per square kilometer)**	**Square Kilometers**	**Romm for Additional Dwellings**
Subway Lines/Stations	2339	3000	661	201	133014
GO Train Stations*	417			863	
GO Train Stations	391	3000	2609	842	2197915
BRT/LRT*	677	3750		787	
Vaughan BRT	798	3750	2952	141	416737
Ottawa Trillium LRT	1214	2250	1036	26	26896
Ottawa BRT	149	3750	3601	170	611044
GO Train Stations not yet Built	1499	3000	1501	21	30984
Hamilton LRT	1688	2250	562	21	11538
Eglington LRT	1977	2250	273	32	8805
Finch West LRT	1196	2250	1054	34	36325
Hurontario LRT	1502	2250	748	33	24668
Kitchener-Cambridge-Waterloo LRT	499	2250	1751	133	232401
Ottawa LRT Extensions	471	2250	1779	137	244156
Ottawa Confederation LRT	722	2250	1528	60	92084

Source: CUR based on Census of Canada 2016 data. *An 800 radius is estimated by the surrounding census tracts. Large census tracts were removed from analysis.

Appendix C: Calculation of Number of New Units That Can be Created through Re-Zoning

This calculation was created as the sum of the difference between housing starts per square kilometer in 2018 and 25 (Column C, Table 1) multiplied by square kilometers around each line (Column D, Table 1).

Appendix C Table 1: CUR Estimate of Re-Zoning Impact

	A	B	C =25-B	D=(C*A)
	sq km of space	Average Housing Starts per Square Kilometer 2016 to 2018	Difference between 25 units and what was built in 2018	Additional Units
Subway Lines/Stations	201	62	--	--
GO Train Stations	842	7	18	15229
Vaughan BRT	141	14	11	1621
Ottawa Trillium LRT	26	19	6	160
Ottawa BRT	170	2	23	3912
Eglington LRT	32	11	14	467
Finch West LRT	34	0	25	856
Hurontario LRT	33	69	--	--
Kitchener-Cambridge-Waterloo LRT	133	4	21	2827
Ottawa LRT Extensions	137	7	18	2521
Ottawa Confederation LRT	60	14	--	--
Total				28,004

Source: CUR based on Census of Canada Program Data, 2016 and CMHC data