



GETTING HAMILTON'S LRT ON THE RIGHT TRACK

DECEMBER
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FINAL REPORT

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A REPORT ON FINDINGS AND
RECOMMENDATIONS FOR HAMILTON'S
LIGHT RAIL TRANSIT PROJECT FROM A
CLIMATE JUSTICE LENS

Prepared For:

**Hamilton Community
Benefits Network
CityLAB Hamilton**

CityLAB Semester in Residence

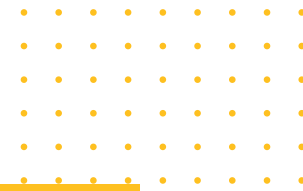
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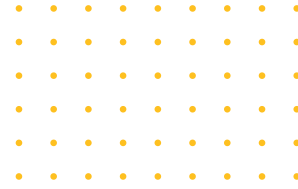


CityLAB and the City of Hamilton acknowledge and recognize that we are situated on the traditional territories of the Mississauga and Haudenosaunee nations. We recognize this land to be covered by the Dish With One Spoon Wampum Belt Agreement, an agreement between the Haudenosaunee and Anishinaabek to share and care for the resources around the Great Lakes. We also recognize that this land is covered by the Between the Lakes Purchase in 1792 between the Crown and the Mississaugas of the Credit First Nation. As we speak about new colonial land developments, including the institutions that we are a part of, the Hamilton Transit system and the proposed Light Rail Transit system, we must acknowledge a debt to those who were here before us as they offered their assistance and guidance to Colonial European Settlers on survival and deep respect for the land. We recognize our responsibility to respect and honour the land and seek new relationships with the original people of this land. May we be guided by love and right action as we transform our personal and institutional relationships with our Indigenous friends and neighbours.

We would also like to thank our CityLAB Hamilton Semester in Residence Instructors for their hard work and guidance in providing us with an impactful and meaningful semester of learning. We would like to thank Darina Vasek, Elizabeth Bang, Kojo Dampsey, and Randy Kay for teaching us to recognize and interact with the places where we are and how to take the steps to notice what is happening around us. We would like to extend our sincere gratitude for guiding us in the process of this project and report.

Finally, we would like to recognize and thank the Hamilton Community Benefits Network as our partner for this project, with a special thanks to Karl Andrus for the commitment of time and resources to mentor us in this project and inform us on this topic. We recognize them as an essential partner in the community surrounding the Light Rail Transit project and hope that their work will contribute to their vision of an equitable and prosperous Hamilton.

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Key Terms

Affordable Housing: Affordable housing is housing which is deemed affordable to those with a household income at or below the median as rated by the national government or a local government by a recognized housing affordability index. In Canada, housing is considered “affordable” if it costs less than 30% of a household's before-tax income.

BLAST Network: The initial plan for a frequent rapid transit system in the City of Hamilton, first conceived as part of The City's 2007 transportation master plan. Planned to include 5 routes, with 2 LRT lines and 3 BRT lines. (See (Re)Designed Network)

Bus Rapid Transit (BRT): A bus-based public transport system that delivers fast and efficient service that may include dedicated lanes, busways, traffic signal priority, and elevated platforms.

Climate Adaption: The changes in processes, practices and structures to moderate potential damages or to benefit from opportunities associated with climate change.

Climate Resilience: The capacity or ability of social, economic, and ecosystems to cope and recover from hazardous events, trends, or disturbance and adapt to their impacts.

Density: Refers to the number of people inhabiting a given urbanized area. Usually characterized by large populations residing in high-rise buildings with many units.

Displacement: The relocation of large numbers of people from their homes usually forced removal of a person from their home.

Equitable Transit Oriented Development (ETOD): Pushes for equity in Transit Oriented Development. A framework that promotes equity-focused services and opportunities along a transit corridor. The primary focus of ETOD is through its structure of opportunity to all people regardless of their status in income, age, gender, immigration, or ability.

Gentrification: Part of the filtering process whereby relatively inexpensive homes, often occupied by renters, become valued by middle- or upper-income groups as an investment; in aggregate; a process of inner-city urban neighbourhood social change resulting from the in-movement of higher-income groups

Greater Toronto Hamilton Area (GTHA): A contiguous urban region that is composed of some of the largest cities and metropolitan areas by population in the Canadian province of Ontario. The GTHA consists of the Greater Toronto Area and the city of Hamilton.

Hamilton Street Railway (HSR): The public transport agency for Hamilton, Ontario that operates bus services.

HCBN: The Hamilton Community Benefits Network is one of many Community Benefits Networks in Ontario and North America that aim to attain agreements with local and large-scale governments. Many of these organizations are volunteer-led and act as liaisons to have community residents' voices heard in large city decisions.

Inclusionary Zoning: Municipal planning policies that require a given percentage of units in a new housing development to be affordable by people with low to moderate incomes; a tool that could help increase the supply of more affordable housing units in a city over the long term.

Key Terms

Land Value Capture: A financing tool that allows local governments to charge fees and taxes to developers and property owners and raise revenue that can then be reinvested into community and city services; a public entity obtains benefits or revenue derived from land value or increases in land value.

Light Rail Transit (LRT): A form of urban rail public transportation. This rapid transit system operates electric-powered single cars or short trains on fixed rails. Travels faster and carries more passengers than streetcars or buses.

Metrolinx: A Crown agency of the Government of Ontario that manages and integrates road and public transport in the Greater Toronto and Hamilton Area, which comprises much of Ontario's Golden Horseshoe region.

Mitigation: Refers to measures taken to reduce the harmful effects of hazards that remain in potentia, or to manage harmful incidents that have already occurred.

(Re)Designed Network: Hamilton's current proposed rapid transit network, introduced in 2019. Planned to include 6 routes, including the LRT (See BLAST network).

Renoviction: The process of landlords evicting tenants, claiming the completion of major renovations, increasing unit value and rent.

Toronto Transit Commission (TTC): Toronto, Ontario's public transport agency that operates bus, subway, streetcar, and paratransit services, some services run into the Peel Region and York Region.

Transit Corridor or Corridor: A linear area defined by one or more modes of transportation; the street routes that public transit takes or will take. Ex. The Hamilton B-Line LRT will run along King Street. This street will be the LRT corridor.

Transit Oriented Development: A type of urban development that maximizes the amount of residential, business and leisure space within walking distance of public transport. It promotes a symbiotic relationship between dense, compact urban form and public transport use.

Transit systems: Public transportation, including buses, streetcars, light rail transit, subways, and trains, that are intertwined and used in a city.

1.0 EXECUTIVE SUMMARY

1.1 CONTEXT AND INTRO

The Hamilton LRT and accompanying rapid transit network will be the most significant development in the City in recent history, represented by an initial **\$3.4 billion investment** from provincial and federal governments. Effective public transit systems are integral to modern sustainable cities and create a blueprint for surrounding and adjacent development.

Since LRT's proposal and beginning processes, dozens and dozens of housing units and individuals have already been displaced (King Street Tenants United, 2020). The immediate displacement of residents represents a fraction of the potential social and environmental consequences of poorly planned transit-oriented development facing Hamiltonians. Acknowledging that these effects **do not affect residents equally**, many members of marginalized groups face the greatest risk and discrimination.

This report represents a paradigm shift in how we think about our systems and who we are designing them for. Positioning that equity, climate adaptation and mitigation, and adjacent social benefits should be prioritized as considerations for B-Line LRT and future rapid transit. This framework is generally referred to as **ETOD**, a rapidly increasing movement to support and protect at-risk members of cities from the consequences of TOD. This report identifies housing, climate adaptation and resilience, accessibility, and connectivity & usage as the four identified key considerations for ensuring synergistic city growth, strong community benefits, and the **well-being of all City residents**.

This project hopes to form a liaison between determined community needs and feasible development surrounding rapid transit projects in Hamilton and other municipalities. Its purpose is to inform the public and decision-makers on the issues and opportunities accompanying TOD and city residents most affected and provide recommendations to accommodate those needs and achieve mutually desirable outcomes.



1.2 PROBLEM STATEMENT

The City of Hamilton is on track with implementing Metrolinx's Light Rail Transit Project along the B-Line corridor.

While the LRT project is innovative and future-driven, it has inadequately addressed various social and environmental concerns such as climate adaptation, environmental damage, housing displacement, and gentrification.

1.3 PROPOSED RECOMMENDATIONS

Hamilton Community Benefits Network has been working with Metrolinx and the City of Hamilton regarding the B-Line LRT route to inform them of current challenges with its existing model. They have presented recommendations for this planned route to provide community benefits. Due to their current work with Metrolinx surrounding the B-line line and its plans and timeline, our recommendations focus on the five expected transit routes that are expected to be completed by 2050.

We have narrowed our research into 4 pillars that have shaped our recommendations. (1) Housing, (2) Climate Adaptation and Resilience, (3) Accessibility, (4) Connectivity & Usage. Construction was another consideration for our recommendations; however, due to our lack of experience with the construction process, we have left this out of our recommendations.



Increase Affordable Housing Units Along Rapid Transit Corridors

1. Inclusionary zoning
2. Passive housing design
3. Land value capture
4. Affordable housing & tenant support policies with tangible targets, such as adding 50% more housing units than what is currently there.



Implement Climate Adaptable Public Transit Infrastructure to Promote Transit Use and Resiliency

1. Rework transit design standards to emphasize considerations for community health, safety & resilience to climate change
2. Build climate-adaptable and accessible infrastructure, such as climate-controlled LRT shelters, similar to the TTC Access Hubs in Toronto



Ensure Connectivity Between Other Modes of Transportation and Public Transit systems in Hamilton

1. Use User Journey Mapping to identify pinch points in transit connectivity
2. Emphasize pedestrian & cycling connectivity to the LRT corridor with bike racks at each stop, *protected* bike lanes, and the allowance of bikes on the LRT during peak hours
3. Collaborate with community advocacy groups, such as Cycle Hamilton, to gain perspective on creating connectivity



Ensure Accessibility to All Communities, Physical Needs, Income Levels, and Identities

1. Keep the LRT publicly owned so fares can continue to follow the same rate as the HSR fares and the HSR Fare Assist subsidy can remain in place for low-income riders
2. Put equity analysis like Gender-Based Analysis Plus at the forefront of accessibility planning
3. Incorporate full connectivity to transportation services like DARTS

2.0 INTRODUCTION



CityLAB is an innovation hub that facilitates collaboration between students, academic leaders, and civic officials to improve Hamilton. Its Semester in Residence (SIR) program enables students to work with Hamilton City Staff and Non-Profit partners on real-world projects. The CityLAB SIR Project Team, comprising six students, collaborated with HCBN from September to December 2023 to re-envision major transit systems in Hamilton, how they are designed and who they are designed for.

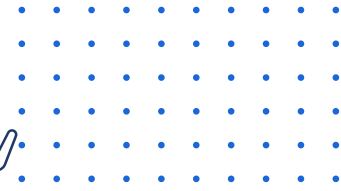
The high-level purpose of this project is to introduce a paradigm shift in the way these systems are thought of, built, designed, and for whom they are designed. This report presents the project process, extensive research, a summary of our community engagement dialogue event, and our final recommendations for City Council and Metrolinx on the B-Line LRT that can be applied to future major rapid transit developments in Hamilton.

2.1 HISTORY & BACKGROUND OF THE HAMILTON COMMUNITY BENEFITS NETWORK AND COMMUNITY BENEFITS

The Hamilton Community Benefits Network is one of many Community Benefits Networks in Ontario and North America that aim to attain agreements with local and large-scale governments. Many of these organizations are volunteer-led and act as liaisons to have community residents' voices heard in large city decisions. The Hamilton Community Benefits Network (HCBN) was formed in 2017 after a new opportunity was presented: The Hamilton Light Rail Transit (LRT) Project. The organization is a collective comprising a board of representatives from partnering non-profits. As The LRT project continued to be in the works of getting cancelled and re-introduced, the HCBN worked closely with non-profit organizations, the City of Hamilton, and Metrolinx to ensure the voices and needs of the community were heard and met in the decision-making process.

CityLAB Semester in Residence is a four-month-long program where students from all different faculties and post-secondary institutions in Hamilton collaborate to tackle issues in our community. This program aims to challenge students personally, socially and academically as they work with the local organization through partnering with a community project partner to learn about the city's complex issues, histories, and facts. This year, our group has had the opportunity to work alongside the Hamilton Community Benefits Network to closely analyze and assess the conflicts that arise from a new major transit project in a city. Over the semester, the CityLAB student Project Team hopes to present our findings, recommendations, and solutions to the issues we face in the city through the Light Rail Transit project and the (Re)Envisioned Transit Network.

2.2 Introduction to Equitable Transit Oriented Development



Equitable Transit Oriented Development (ETOD) is a framework that promotes equity-focused services and opportunities along a transit corridor. The primary focus of ETOD is through its structure of opportunity to all people regardless of their status in income, age, gender, immigration, or ability (City of Chicago, 2020. Pg.2). ETOD is a framework that has become more popular due to the patterns of significant transit development that tend to gentrify neighbourhoods and displace tenants requiring more affordable accommodations. This often happens when the land along a transit corridor is sold to private developers who profit higher by creating expensive condos and housing, which pushes away those in the lower-income bracket. This development often affects women, low-income households, youth, Indigenous and racialized communities, are among those who are more vulnerable to eviction (Garza, Costa, 2022. Pg. 4), and results in systemic racism that ETOD aims to prevent through affordable development and implementing policy to protect those who are more vulnerable to displacement and marginalization. Ensuring the affordability of services and amenities is the highest priority while also providing accessibility and enjoyable community spaces through the connectivity of homes to workplaces, accessible and friendly bike and walking infrastructure, affordable transit fares, and mixed land uses and spaces to promote dynamic spaces and further accessibility to essential amenities.

2.3 Introduction to Climate Justice: What is it and How it Will Frame our Report



Climate justice refers to the fair and equitable treatment of all people and communities, particularly focusing on the impacts of climate change and the transition to a more sustainable, low-carbon society. It recognizes that the effects of climate change disproportionately impact vulnerable and marginalized communities who often contribute the least to greenhouse gas emissions but bear the greatest burden of environmental degradation (UNDP, 2023).

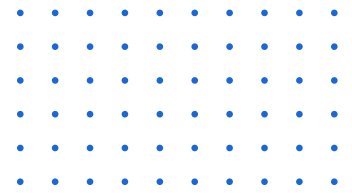
According to the United Nations Development Programme (2023), three facets of climate justice include:

1. **Structural Inequalities:** The impacts of climate change are felt unevenly due to structural inequalities based on race, ethnicity, gender, and socioeconomic status.
2. **Socioeconomic Inequalities:** The resources needed to address the impacts of climate change are distributed unequally across socioeconomic hierarchies within a municipality on a local scale and between countries on a global scale.
3. **Intergenerational Inequity:** Younger generations will bear the future burden of climate change and the actions or inactions of decision-makers to tackle it today.

Climate justice aims to build a sustainable and resilient future that benefits everyone regardless of socio-economic status, ethnicity, or geographical location. In this way, Equitable Transit Oriented Development incorporates climate justice into its framework and goals as equity in municipal transit and land use planning is an effort to address climate change in a just way.

Our research and recommendations are shaped by ETOD and a climate justice lens in order to tackle a broad range of the most critical social and environmental impacts of the LRT. We hope our findings and recommendations will be used to build sustainable and resilient transit in Hamilton that benefits all as a way to adapt to our changing climate.

2.4 Lenses Not Included in the Planning Process



Demands from the community raised by the HCBN highlight the need for equitable and environmental outcomes for populations otherwise overlooked. There should be a greater emphasis from the City to include community groups in planning processes to help remediate negative effects. The urgency for this inclusion is supported particularly in Hamilton's case by physical proximities and affected populations. In the case of Hamilton LRT, the area of the corridor houses large percentages of low-income, racialized or otherwise marginalized groups prone to the largest consequences of transit-oriented development. (See Figure 2.1 beside) The typical framework for development such as that employed for B-Line LRT does not consider the pre-existing social and systemic inequities which perpetuate consequences for specific consistently targeted demographics. For example, racialized groups are frequently not sufficiently incorporated or considered in these processes.

Map 2. Low-income across City of Hamilton census tracts, with LRT and ward boundaries overlaid

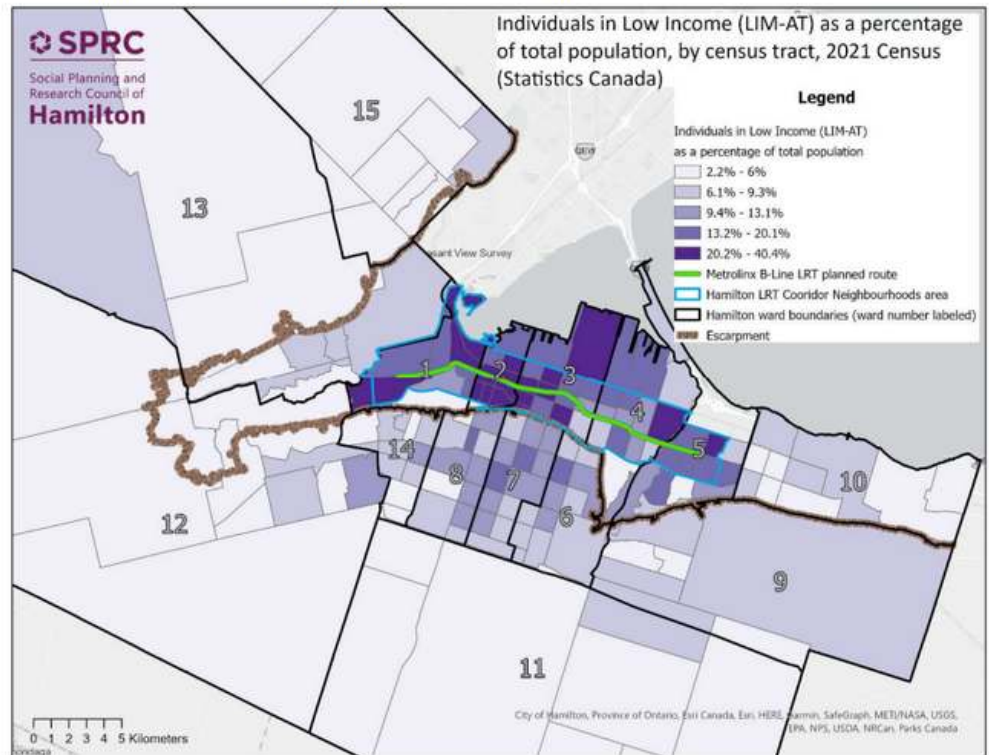
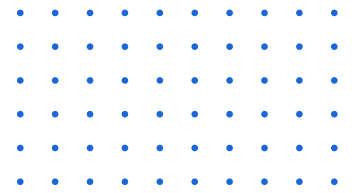


Figure 2.1: Mayo, Sarah (June 2023). Low-income across City of Hamilton Census Tracts, with LRT and Ward Boundaries Overlaid. "Keeping Hamilton LRT on Track to Bring Benefits to Low-Income Residents: 'Pro-Poor Growth' Framework and Indicators (p. 5)

Planning firms across Toronto, Peel, York, Hamilton, Kitchener-Waterloo and Ottawa consistently report less than 20% of workers as members of racialized groups. These trends have created a lack of opportunity to discuss racial injustice in planning processes; this effect has been empirically found to propagate the negative effects of TOD on the mentioned groups (CP Planning, 2023). Given the demographics of Hamilton residents most proximal to the LRT project and its effects, racial justice and other equitable lenses must be considered beyond current practice.

2.5 Considerations

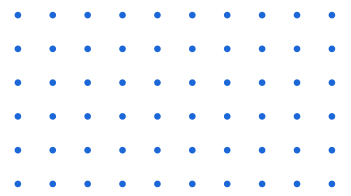


Throughout the term of CityLAB SIR and the scope of our community project around the social and environmental implications of the Hamilton LRT project, we have worked with, advocated for, and considered a diverse group of people in our process of learning what an inclusive and accessible transit corridor could look like. We understand the diverse identities, perspectives, and backgrounds of those we consider in this project as we aim to provide alternative options in the current transit network for individuals and families who have become displaced or might face housing displacement in the future due to the LRT construction or in other ways that the project has lacked consideration. We acknowledge that we have not experienced this ourselves; however, we remain committed to understanding the needs of those most affected and groups at risk of underrepresentation within the capacities of this project. This includes communities that have been marginalized based on race, gender, income, age, sexuality, ability, and religion. We have sought to keep this project inclusive of multiple opinions and voices throughout our engagement with the community and research that has shaped this project.

While researching and receiving information on the topic of the LRT, we often formatted and processed this information into documents and presentations throughout the term that familiarized us with this topic quite well. We recognized that many people we were reaching out to may not have prior knowledge of the LRT or some of the phrases and language we have accumulated throughout this project. We sought to keep accessibility at the forefront of our project, including the use of simple and accessible language in the engagement and giving as much context as needed to ensure that it was digestible. We also included images, maps, and other visuals to keep the audience engaged and provide additional accessibility through these visuals.

On November 14, we hosted a Dialogue Community Engagement Session at McMaster University. During this time, Hamilton was in the middle of its week-long HSR Transit strike, resulting in many Hamilton residents and students unable to commute to workplaces and other amenities. We considered this when hosting our dialogue event by emailing participants who were registered for the event inquiring about whether the strike impacted their ability to attend the event. We prepared to find alternative methods of travel for them and considered how we could make it accessible to those whom the strike might have influenced.

As we move forward from this project, we have created this report to highlight our findings and recommendations based on strategies in other cities and consider the need for greater affordability in Hamilton and surrounding areas. It will include our research and community engagement that took place throughout the fall academic term. A smaller community report called the 'Community Summary Report' brings this information into a condensed version and contains information that might be helpful for the community in viewing recommendations and what took place in the community surrounding this issue.



2.6 Our Four Pillars

FRAMING OUR METHODOLOGY

Using Equitable Transit Oriented Development (ETOD) to frame our vision for the transit developments coming to Hamilton, we have chosen four main pillars to shape this methodology. We also aim to explore how we can apply a climate justice lens to future transit projects while ensuring community benefits are a priority. These four pillars are not the only areas of importance when using a climate justice or social justice lens on transit developments, but were chosen based on our research findings surrounding the Hamilton LRT project. The pillars are housing, climate resilience, accessibility, and connectivity & usage.

THE PILLARS

Housing

The housing pillar considers many of the social implications that come as a result of major transit development that can be quite invasive to its environment. It will observe the affordability of housing along the LRT corridor as many housing units are expected to face gentrification and demolition. This pillar was chosen to identify affordable housing as a core need along transit routes and that further measures should be taken to ensure that all people have the ability to live near public transit.

Climate Resilience

The climate resilience pillar examines how climate change impacts will cause major damages and disruptions to public transportation. Transit systems must be planned to prepare for these changes, or else costly updates and repairs will be frequent. In this pillar, it is crucial to not only plan for the impacts made to physical transit infrastructure, but also how transit riders will be affected if climate supports are not planned for. This pillar was chosen because of the abundance of climate change planning done by Metrolinx to prevent system damages and shutdowns, but lack of planning regarding how their customer base will be affected by climate change.

Accessibility

The accessibility pillar is a major factor in ensuring equitable access to public transit. All of the benefits from equitable transit oriented development will not be gained in Hamilton if certain groups are excluded based on their ability level or how they identify. It is crucial that allowing for every person to use the transit system is a top priority.

Connectivity & Usage

Connectivity and usage are two elements which rely on each other. If a transit system cannot connect people to where they need to go, no one would use it. If a transit system is not being used, people cannot connect to places they need to go. Equitable access to transit is also a part of connectivity and usage, since gaining all the benefits from transit lines can only happen if every community is able to use it. This pillar was chosen because through our research, some of the best transit systems are ranked as such because of their strong connectedness and high utilization rates.

3.1 Examining Environmental + Transit Reports from Metrolinx and the City of Hamilton

Design plans and environmental reports for the Hamilton LRT project have been altered and redesigned throughout the years due to changing public interests, bylaws, and budgets.

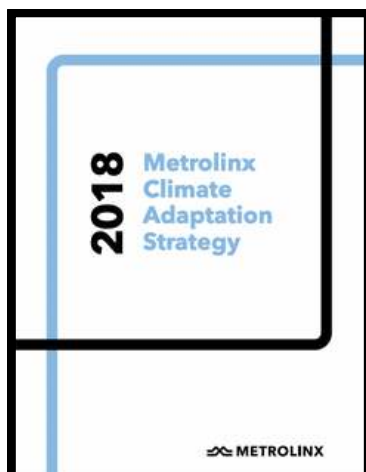
In this section of the report, we will dive into some of the current frameworks that have shaped the design and planning of the project from both Metrolinx and the City of Hamilton to outline their positive and negative aspects, but also how they fail to address climate justice.

The first plan is the *Metrolinx Climate Adaptation Strategy, 2018*. This is the corporation’s current climate resiliency plan that they embed into their planning, construction, and operating phases (Metrolinx, 2018). In this plan, they acknowledge the impact that climate change and global warming will have on transit developments and the responsibility they have to provide reliable transit systems. They also state their forty key actions, making up their framework for climate resilience. Most of their key actions are plans to improve the following areas:

- Weather planning and monitoring
- Implement climate resiliency into their planning
- Account for climate adaptation in their budgets, and
- Increase awareness about climate change

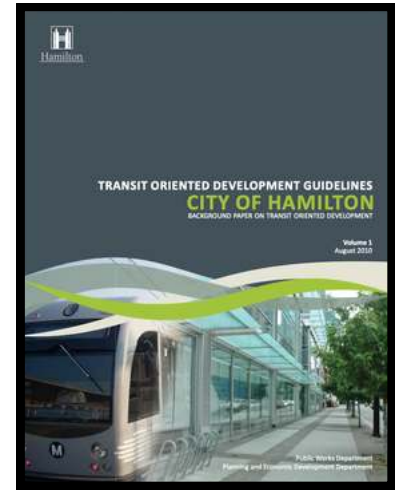
There was only one key action that could potentially relate to the health and safety of the communities that Metrolinx aims to serve, it is described as “Initiate review and modification of health and safety protocols that consider changing climate conditions (e.g. heat stress)” (Metrolinx, 2018). However, it is mentioned that this action is targeted to address issues that their staff and crew may face, rather than customers or community members.

Metrolinx has another design plan titled Sustainable Design Standard, which was released in 2021 (Metrolinx, 2021). This document also outlines their climate mitigation strategies for transit infrastructure but again mentions nothing about climate justice or the impacts that communities will face and how Metrolinx could assist them.



Another report that impacts the planning of the LRT is the *Transit Oriented Development Guidelines*, developed by the City of Hamilton in 2010. In this report, they outline the components of transit-oriented development and how it can be implemented in Hamilton. Most of the document outlines how TOD can assist the city in fostering economic growth and strengthening communities. The benefits mentioned come from a middle-class, urbanist perspective, which typically favours the growth of vibrant areas but does not include the perspective of low-income community members when TOD arrives.

For example, the report mentions that “locations near transit can increase property values, demand rent premiums, and can create an increased potential for development opportunities” (City of Hamilton, 2010). This is a great benefit for people who are able to own rental units or who want to see new, luxury developments, but for individuals who are currently struggling against renovations and rising property costs, these benefits sound more like drawbacks. Unfortunately, this 56-page document also neglects to mention anything about climate justice, the displacement of low-income groups, or any shortcomings that come with transit-oriented development and how the city will try to avoid them.



3.2 The General Plans for Hamilton’s LRT (maps, logistics, timeline, etc)

Hamilton’s LRT route will drastically change the landscape of the city before construction begins in 2024. Since 2018, many changes to the plan have taken place, including cancelling a proposed LRT bridge, making Main Street two-way, and including an extension of the line from Queenston Circle to Eastgate Square.

LRT organizers planned to build an LRT-specific bridge on King Street to cross over the 403 highway. After further consideration of the cost, it was decided that the funding could go towards projects that needed it more. This includes refurbishing the CN tracks that run underneath and refurbishing the King Street car bridge. Therefore, LRT will now run onto Dundurn Street, the same path the current B-Line bus takes (Mitchell, 2023). It will also not affect the time the route takes to complete. Abdul Shaikh, the City of Hamilton’s LRT director, stated that “moving trains onto another stretch of Main and along Dundurn fits into the city’s Complete Streets guidelines providing more pedestrian and cycling opportunities along the route” (Mitchell, 2023). HCBN’s findings suggest that this is a good diversion of funding as cycling and pedestrian use fit into the overarching values of what the LRT is trying to do for the City of Hamilton.

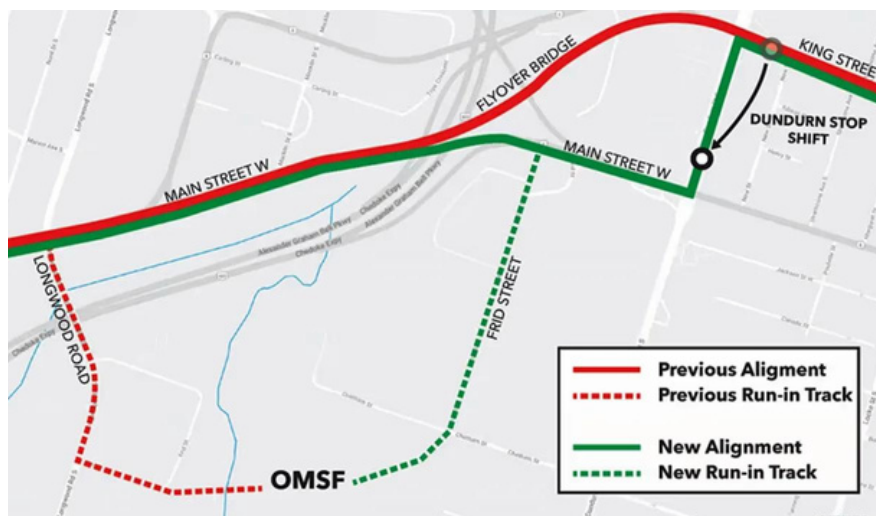


Figure 3.1: Bridge Re-Route (Metrolinx, 2023)

As many accidents involving pedestrians have happened over the last couple of years on main street intersections, talks began to somehow reduce the factors that could possibly increase the chances of them happening (Van Dongen, 2023). As Main Street is currently one-way, the City believed that making it two-way would reduce traffic collisions as motorists would no longer have the ability to treat it as a highway and speed. Having the same amount of traffic now in two lanes will reduce the ability for cars to have room to speed uncontrollably (City of Hamilton, 2022). It is also believed to help reduce the amount of traffic near the LRT system on King Street as motorists will be more inclined to be directed to Main Street since the LRT will eliminate one motor lane, and construction will slow traffic down even further. However, ongoing delays correlated to the design of a two-way main street have pushed the full LRT project to an earliest start of 2025 (Van Dongen, 2023). The completed transformation of Main Street is projected to be completed by 2026. The HCBN believes this to be concerning as Hamilton residents have already waited so long for the construction of LRT to begin, and it discerns a minimized confidence in the completion of LRT with continued delays. Hamilton residents do not want their LRT line to have the same issues that the Eglinton LRT line in Toronto is currently facing.

In 2017, plans for the LRT had the tracks only starting at Queenston Circle, with the current B-Line 10 bus connecting Queenston Circle with Eastgate Square. This was done due to organizers only receiving one billion dollars in funding from the provincial government (Craggs, 2017). Initially, in 2011, Hamilton City Council believed that the line would run to Eastgate Square with environmental and other assessments already completed. After a connecting LRT line along James Street and another one to Hamilton Harbor fell through, funding was again available to continue the tracks to Eastgate Square (Craggs, 2017). In 2019, Council voted to extend the line back to Eastgate Square to have more of the city bear the fruits of LRT and to allow better connectivity to a pre-existing transit hub (Eastgate Square terminal).



Figure 3.2: Main Street to Become Two-Way (Taekema, 2023)

The HCBN believes this to be a key addition to the LRT line as having a connecting bus to Eastgate does not address any environmental or social concerns regarding the LRT. If so much emphasis and investment is placed on an LRT line, it just wouldn't make sense for it to end before a major community and transit terminal that is not very far away. It would also not make very much sense to have a bus running from Eastgate to Queenston Circle unless the B-Line route extended further into Stoney Creek. Those residents should have a route to connect to major transit terminal like Eastgate. However, this does present the concern that if LRT ends at Eastgate, why does it not go past McMaster into Dundas and further into Stoney Creek?



Figure 3.3: Hamilton’s B-Line LRT Transit Corridor (Metrolinx, 2023)

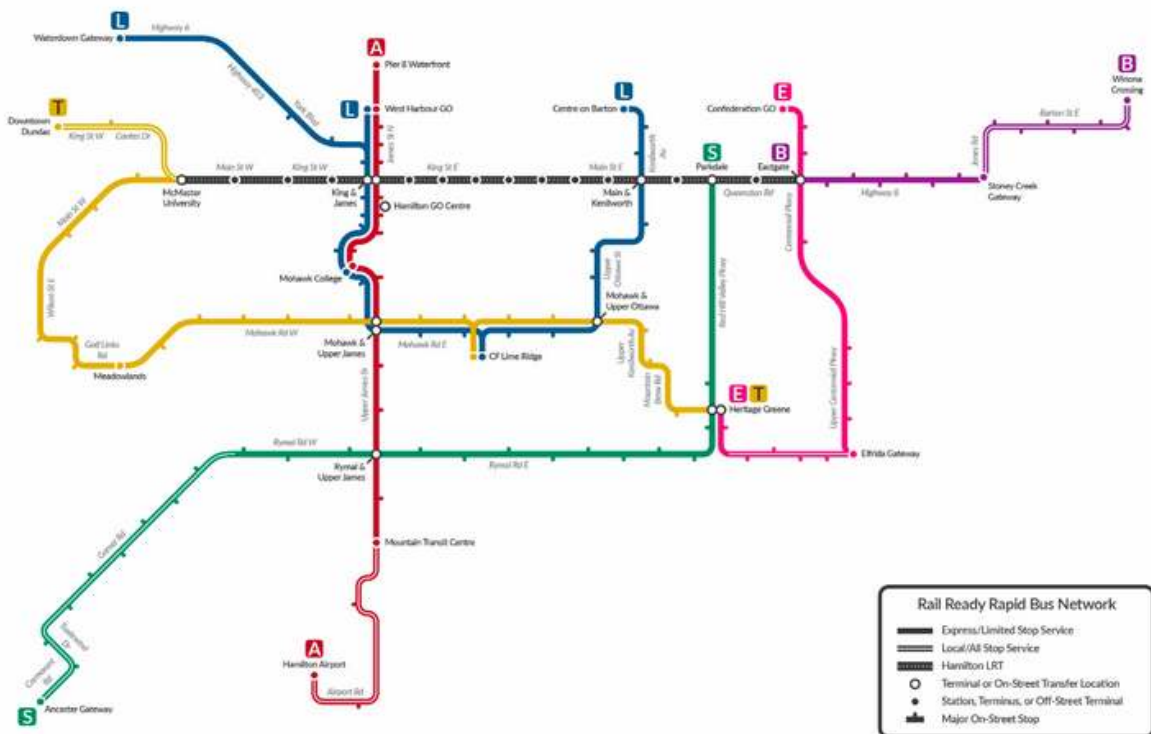


Figure 3.4: Hamilton’s Proposed (Re)Envisioned Transit Network (City of Hamilton, 2023a)

Our Approach: A Methodology of How a Climate Lens Can be Applied to Rapid Transit Projects

The LRT project is currently set to provide fast and reliable transit along King Street from Eastgate Square to McMaster University. In a changing climate, many considerations involving climate adaptation should be implemented into design models such as the LRT. Our approach to the topic of climate change in the city and how we can become prepared for the expected climate in the future comes through some changes and considerations in infrastructure, the accessibility of transit, and the surrounding development that comes as a result of transit development.

Our method of application primarily considers the themes of climate adaptation and affordability, as these are two concerns for the future of transit. In this, we have recommended that the city use the model of ETOD (Equitable Transit Oriented Development) as it considers whether the transit corridor is equitable to all residents and how the accessibility of the transit system might contribute to climate adaptation. We then structured this model around four pillars, highlighting how ETOD benefits each element. This will further inspire the final recommendations on how to incorporate these themes into future transit lines that will be delivered.

4.1. Principles of Transit Oriented Development (TOD) and Equitable Transit Oriented Development (ETOD)

TOD and ETOD

Transit Oriented Development (TOD) considers how transit and human activity connect. This is through considering both transit development and housing, public spaces, corporations, and small businesses and how they can be connected to the people who use them (City of Hamilton, 2010).

Within TOD, three core components build this structure. These are:

- Compact development
- Mixed-use development
- High pedestrian usage

With these three components, TOD focuses on the density of housing and mixed-use spaces along the transit corridor so that there is a higher incentive to use alternate transportation such as public transit, walking, or biking. The main purpose of this model is to easily connect people from their homes to their workplaces with the ability to access businesses and alternate transit infrastructure such as biking and pedestrian-friendly walkways (Metropolitan Planning Council, n.d).

While this framework emphasizes convenience through reliable transportation and connection to people's homes, it is largely developed to cater to people of higher income brackets. It presents financial challenges to lower-income people, such as increased property values, increased rent and taxes and involuntary displacement (Lung-Amam et al., 2015). From this, a new framework was developed that considered the rising cost of living and ensured that all people are considered in this form of development. The revised framework is called Equitable Transit Oriented Development (ETOD).

Principles of ETOD

Principles of eTOD



AFFORDABILITY: Equity-focused policy ensures affordable housing options near transit, low-cost transit fares and tenant protection.



DENSITY: Compact development connects people to jobs and commerce, and supports transit infrastructure.



TRANSIT: Transit contributes to equitable development by expanding access to opportunities and providing convenient, reliable transportation services.



WALKABILITY: Pedestrian-friendly elements create vibrant and active spaces, which lead to health, environmental and economic benefits.



MIXED USE: A mix of land uses within a building, block or neighborhood encourages fewer car trips and creates dynamic spaces.

Adapted from Regional Transportation Authority

Figure 4.1: Principles of ETOD (Metropolitan Planning Council, n.d.)

The principles of ETOD are largely similar to those of TOD, with the most significant priority being affordability, specifically in housing and transit fares, while encouraging density, reliable transit, walkability, and mixed-use development. It considers the social and environmental implications that TOD does not. It considers systemic racism and how benefiting one population might negatively impact another, especially through affordability and accessibility in neighbourhoods with a larger population of marginalized people. Addressing issues like gentrification and promoting more affordable alternatives to high-income housing can fill this social gap. ETOD allows for people of all incomes, races, ages, genders, ethnicity, immigration status or disability to benefit from new transit development and be connected to services and workplaces (City of Chicago, 2020. pg.2).

The benefits of ETOD are also comparable to those of TOD but on a much richer level through its model of inclusivity. ETOD considers the collaboration of the community, governments, developers and transit agencies that will contribute to the inclusivity of this model by listening to the voices of those who will be impacted (Correia, 2022, pg.10). Additionally, through large rapid-transit projects, many jobs are created from the development that can benefit low-income residents if they have access to affordable and accessible housing and commercial spaces. Using an equity-focused approach to transit services could mitigate further displacement and gentrification

Climate Justice and ETOD

ETOD and climate justice are interconnected through the framework of creating accessible and affordable transit, housing, and spaces. Naturally, when spaces are easily accessible and near each other, there should be no need to rely on cars to get to different places in the city. Fossil fuels, such as gas, are some of the most significant contributors to climate change. The ETOD model should naturally incentivize transit or other modes of transportation for residents along the LRT corridor.

The changing climate has the potential to compromise the living conditions and well-being of many people and often impacts the living circumstances of marginalized groups more significantly (Garza, Costa, pg. 2). In the current climate crisis and expected outcomes, Hamilton could see climate effects such as extreme heat and rising temperatures, as well as higher ground-level ozone that lowers air quality, which can impact peoples cardiovascular and respiratory health (Environment Hamilton, 2016). The LRT is an electric transit line considered one of the cleanest energy transit methods as it contributes zero emissions. While this is a good step in long-term climate adaptation, there are still considerations connected to ridership and the use of space that could also contribute to climate resiliency.

The first principle that both TOD and ETOD incorporate into their model that can help with climate resiliency is mixed-use development that helps centre housing and other essential facilities and amenities. When this is available, car reliance can be reduced for daily travel, and air pollution can be further avoided when traffic density is also reduced (Holland, 2022). Through ETOD, specifically surrounding affordability, the essential amenities will be more available for those who rely heavily on public transit as their primary source of transportation. Making public spaces and accommodations more densely populated allows more people to live near transit. With a reliable transit system with good connections and safe alternative infrastructure, including safe bike lanes and walkable sidewalks, driving will become less incentivized, reducing overall carbon emissions. Furthermore, suburban sprawl can be mitigated by keeping housing affordable, another way to reduce car emissions for those considering moving outside the city due to affordability (Costa, Garza, 2022. pg.3).

Another element related to density is the reduction of parking minimums for new developments. Asphalt contributes to insulated heating through high surface temperatures that excel at containing heat. Many parking lots and spaces remain empty, creating heat pads during hot days. By having less asphalt, the result will be lower surface temperatures and can free up additional space that could be made for housing or mixed-use spaces and other useful spaces (Holland, 2022). This, too, will contribute to increased ridership as it may further incentivize public transit and alternate active transportation.

Other Implementations of ETOD

ETOD is a transit development that is not new to transit systems. It has included many other cities that have shifted their Transit Oriented Development to become more affordable to residents in these cities. Chicago is perhaps one of the most influential cities that has incorporated Equitable TOD by creating policy, prioritizing communities, encouraging desegregation, and providing local businesses and affordable housing opportunities. They incorporated this structure into zoning, building codes, agencies and their city comprehensive plan (City of Chicago, 2020. pg.12).

They created an outcomes framework to show how ETOD will benefit their transit lines, which includes the prevention of displacement and encourages climate resilience by promoting equity and resilience in communities most vulnerable to climate change. Another outcome is through community reinvestment to encourage investing in areas with historically low investment rates and abandoned communities.

Desegregation was another goal, and it was achieved by promoting housing choice and highlighting health and equity to close off disparities that might cause marginalization. (City of Chicago, 2020. Pg.13).



Figure 4.2: The City of Chicago (n.d.) Evaluation Framework utilized by the ETOD work group to evaluate policy recommendations. ETOD Full Policy Plan. Pg. 13

An example of ETOD in Chicago is City Hyde Park, a tower that includes a Whole Foods grocery store as well as 36 affordable housing units and quick access to the main transit loop through express buses (Metropolitan Planning Council, 2018. pg. 2). Another example is The Hatchery, a "non-profit business incubator" for those looking to be entrepreneurs in the food business. They provide educational programs and financial assistance and are located right near an essential transit line. This is essential to the accessibility and promotion of this facility. The Hatchery has plans to open up a local market, which will be located right across from the CTA station, providing lots of opportunities for local shopping that comes directly from aspiring entrepreneurs and is also kept affordable through the ability to use discount cards (Metropolitan Planning Council, 2018. Pg. 2).

The 2010 City of Hamilton Report on TOD, section 1.6 Application of TOD in Hamilton, states that the TOD guidelines provide direction in the development and will inform future transit projects (City of Hamilton, 2010). This is exactly what the Hamilton Community Benefits Network would like to do with the application of Equitable Transit Oriented Development and is also the scope of this project.

“

Never before has the City been better prepared to commit to a new course that is founded on the power of community, that commits to desegregating our city, that provides community wealth building pathways for all...and that promotes healthy communities to close the racial life expectancy gap.”

Figure 4.3: The City of Chicago (n.d.). Quote from Report. ETOD Full Policy Plan. Pg. 12



Figure 4.4: Studio Gang. "City Hyde Park"

4.2.0 Intro to Our 4 Pillars



Throughout the course of this project, we have determined 4 pillars that have shaped our focus of re-envisioning the future Hamilton transit networks to become more sustainable to the changing trends of affordability and climate change.

These pillars consist of:



- Housing
- Climate Adaptation and Resilience
- Accessibility
- Connectivity & Usage



These pillars aim to identify where improvements can be made in the coming transit lines based on the plan for Hamilton's B-Line LRT corridor, which has failed to address gentrification, affordable housing, and climate adaptation into its strategy. These pillars will identify the current problems that are being faced in the planning and construction process of Hamilton's first Light-Rail transit line, provide examples of successes in each pillar, and identify recommendations and solutions to the current problems surrounding each pillar.



4.2.1 Housing

As mentioned in section 4.1 (see principles of ETOD), housing remains one of the most fundamental necessities in successfully implementing ETOD. With the rapid increase in housing and rent in Hamilton, acquiring housing in the city is becoming increasingly challenging. Currently, the planned LRT B-Line runs through some of the most densely populated low-income neighbourhoods in Hamilton (see Figure. 4.5). While the LRT has the potential to positively impact those who rely on public transit for daily use, the process of preparing for the LRT's construction and future plans will result in gentrification and the displacement of low-income residents to cater to those of a higher-income bracket (Habitat for Humanity, 2023).

If this project progresses as planned, the LRT could further contribute to the housing crisis by replacing affordable housing with unaffordable units. Furthermore, developers and landlords could be incentivized to set higher rates for their properties as property value will increase along the B-line corridor and surrounding areas, which will result in further displacement (HCBN, 2023). While this is pushing out low-income residents, it is also naturally disadvantaging women, youth, and Indigenous and racialized communities, thus contributing to systematic inequality (Garza, Costa, 2022. Pg. 4).

The Hamilton Community Benefits Network conducted a series of engagement sessions with participants who live along the LRT corridor and were prompted to share their most significant concerns. Nine themes for concern were listed, and of all nine, housing was the number one concern and remains the highest priority for the HCBN (HCBN, 2023). Refer to Figure 4.5.

Idea	Number of times mentioned
Affordable Housing geared to low income	106
Inclusionary Zoning	68
Variety of housing options	57
Housing-related regulations	44
Revamping or destroying old buildings	36
Building new homes	23

Figure 4.5: Results from Community Engagement Highlighting Community Benefit Priorities. Hamilton Community Benefits Network. (May 2023). "Hamilton LRT Community Benefits Engagement Report"

Adequate housing is essential for a person's and community's health and well-being. Without concern for affordable housing, there is an increase in employment and education success and the ability to comfortably participate in communities and society (CMHC, 2022). Incorporating affordable housing into the LRT corridor will prevent the displacement of low-income residents from surrounding neighbourhoods and reverse the effects of gentrification. Residents will equally have access to reliable rapid transit and connection to workplaces, and there will be opportunities for all people, as highlighted in section 4.1, that will also prevent segregation and further marginalization. The HCBN argues that the effects of gentrification can be "mitigated through sound policy, investment in affordable housing and regular engagement with communities most affected" (HCBN, 2023).

Opportunities and Recommendations for Housing

Many recommendations and visions for future opportunities have been made regarding the B-Line LRT that can support future transit lines planned for Hamilton, including the (re)envisioned network plan started in 2019. The current plans envision rapid transit to be "rapid, reliable, and safe" (Correia et al. 2022, p. 13) and that through great transit, Hamilton will be the "best place to raise a child and age successfully" (City of Hamilton, 2023). For this to happen fairly, transit and living accommodations on the corridor should be geared toward all people, not only middle to high-income households.

The first recommendation is through the implementation of inclusionary zoning. This process requires developers to designate at least 25% of all new development for affordable housing units (Correia et al., 2022, p. 9). While this still leaves 75 % of new development for higher-income units, it forces affordable housing into the market. Following this, another recommendation is through the use of surplus land. The Hamilton Community Benefits Network has asked that Metrolinx donate additional surplus land to the City of Hamilton to be able to use for further development of affordable housing (HCBN, 2023, p. 7).

Another recommendation regarding the building designs in newly developed areas is incorporating passive design into new buildings, which promotes the use of energy-efficient materials that will reduce operating costs in the long run. This model will also improve air quality indoors without the need for expensive energy systems (Correia et al., 2022. p. 8). An excellent example of passive design development is the McQueston Lofts built by Indwell, which is all affordable housing and is sustainable in its ecological footprint. Through this model, the McQueston Lofts can promote environmentally friendly approaches and cost efficiency in affordable housing, which in turn keeps the pricing cheaper for tenants (Indwell, 2023).

Figure 4.6: McQueston Lofts in East Hamilton. Building by Indwell.



Indwell (2023). "Passive House: Affordability, Conservation, and Stewardship". From <https://indwell.ca/passive-house/>

Final recommendations concerning affordable housing are given through the HCBN based on feedback from engagement sessions from King Street tenants targeted at Metrolinx through proposals. Regarding affordable housing, they propose that Metrolinx develop a policy for affordable housing, including partnerships with non-profit affordable housing providers and that the housing demolished during the destruction of properties for the LRT include twice the amount of affordable housing currently there. They also ask that "substantial tenant support" be available to those who are being displaced due to the LRT construction through implementing a firm policy. Another final proposal to Metrolinx is that they include plans for affordable housing above the train station stops to better utilize the vertical space that can be available. They propose that the city of Hamilton purchase apartments to protect them from private development that will increase rent prices, support building more supportive and transitional housing, and support the tiny homes project (HCBN, 2023. Pg.8).

4.2.2 Climate Adaptation and Resilience

Climate change considerations are crucial to plan for right now to prepare for. For transit developments, like the Light Rail Transit and Bus Rapid Transit projects coming to Hamilton, climate change will have severe effects on their infrastructure and the way people use it.

The Financial Accountability Office of Ontario wrote a report titled *Costing Climate Change Impacts to Public Infrastructure* (2023). In this report, the different ways that climate change events will impact public transportation assets are mentioned. This report outlines many of the costs associated with transit projects in Canada, specifically how these costs will increase if climate change is not taken into account when constructing new developments.

In regards to the transit developments coming to Hamilton, roads will be heavily impacted by extreme rainfall, extreme heat, and the changing of freeze-thaw cycles. These events could lead to damaged road pavement, overwhelmed drainage features, and softening asphalt. Each of these impacts may cause Hamilton's future Bus Rapid Transit (BRT) systems to be delayed or out of service for repairs. Transit engineering is another area that will face negative consequences due to climate change such as structural failures to LRT components.

Fortunately, in the various transit plans and designs created by Metrolinx and the City of Hamilton, there have been many measures to avoid infrastructure fallbacks due to climate change and extreme weather events, such as the 2018 Metrolinx Climate Adaptation Strategy mentioned in section 3.1. However, these strategies do not reflect the needs of customers or communities during extreme weather events.

The Government of Canada has a resource titled "Risks to health from climate change", which states many physical and mental health impacts that Canadians may face due to climate change (2022). Some examples of these are the increase in frequency and intensity of natural hazards, extreme heat events, and worsening air quality. These impacts relate to public transit systems, especially in a city like Hamilton. Due to the abundance of industrial emissions released in Hamilton, poor air quality is a common occurrence, which has worsened this year in 2023 because of the extreme levels of wildfire smoke making its way down to southern Ontario. Environment Canada even asked that people stay indoors or use N95 masks outdoors to avoid air pollutants (Nickerson, 2023).

Events like these are known to become more probable as global temperatures continue to rise and humans are not able to deal with the physical effects unless protective or mitigative infrastructure is implemented.

An unfortunate reality of the Metrolinx and city's design plans for the Hamilton LRT require that around 600 trees be cut down or displaced along the corridor (The Hamilton Spectator, 2018). Protecting urban canopy is essential because trees are extremely good at combating climate change "by absorbing and storing greenhouse gases, regulating water levels, protecting shorelines from storm surges and erosion, and even cooling cities" (Government of Canada, 2021). From a climate justice lens, it is important to acknowledge the benefits that trees have for improving air quality, as well as providing shade and cooling, which are solutions to many problems that Hamilton is currently facing and will face in the future.

Opportunities and Recommendations for Climate Adaptation and Resilience

Being outdoors waiting for a bus or LRT can be uncomfortable due to these environmental conditions, even without the effects of climate change. Being at a transit stop without shade, heat, cooling, or shelter can contribute to negative stressors on peoples' transit journeys and overall health. In order for public transportation to be a decent alternative to private vehicles with climate change effects in mind, the needs of customers must be taken into account, not just the infrastructure implications.

Enclosed stops are a way to avoid adverse health affects from poor air quality, as well as provide shelter and shade against extreme weather events. This topic will be examined deeper in the case study of enclosed shelters in this section.

Built form additions are not the only way to combat climate injustice for communities in Hamilton, greening the LRT corridor is another solution to the problem. Greening the corridor is a way to make up for the loss of trees and can provide solutions to worsening air quality and extreme heat. This can be done through adding greenery to transit stops or utilizing "green trackbeds" as seen in the Eglinton Crosstown LRT in Figure 4.7

Another heavy recommendation is to prioritize keeping as many trees as possible along the LRT corridor and where this cannot be done, replace them back to the Central Hamilton area where trees are most needed.

Figure 4.7:
Green trackbed in Scarborough



Note. Landau, J (2021, October 13). From BlogTO, <https://www.blogto.com/city/2021/10/eglington-crosstown-lrt-science-centre-station/>.

Tree planting in urban cores is typically seen as a challenging task, however, there are various methods to make this work. Dr. Rhoda B. deJonge from the Vineland Research and Innovation Centre provided a few suggestions for Hamilton’s LRT corridor to work trees into its design. First, it is important to mention that having soil and tree networks in urban areas is one of the best ways to store carbon, while also being a solution to improving shade and cooling. She suggested two methods, structural soil and soil cells (personal comm). Structural soil is a mixture of crushed rocks and soil which allows for tree roots to grow, while also being load-bearing. Soil cells are a matrix of plastic cells, with gaps which allow for roots to grow and soil to be added, stacked to allow for load bearing.

Case Study: TTC Access Hubs

The Toronto Transit Commission (TTC) has taken a promising step forward in both climate justice and accessibility standards by installing heated and enclosed bus shelters, pictured in Figure 4.8 The sixteen shelters, known as “Access Hubs”, were installed with the intention of primarily aiding Wheel-Trans users, but will also be usable for all other TTC riders. Wheel-Trans is Toronto’s paratransit service which is offered to people with accessibility needs. These additions are part of a plan to install 100 heated shelters in some of the city’s busiest bus routes (O’Neil, 2019).

The Access Hubs are equipped with motion-activated heaters which operate when temperatures fall below 5°C (Vyas, 2020). These enclosed shelters will prove valuable, especially when considering the increased frequency of extreme weather events or poor air quality.

Currently, the plan for Hamilton’s LRT is to have open air stops, pictured in Figure 4.9. While this is a cheaper alternative, these stops provide more benefits to more of the community. The price tag for all sixteen stops was \$7.4 million in pre-pandemic dollars. With the LRT project’s budget being \$3.4 billion dollars and there being seventeen stops along its route, these shelters could be implemented into the design if accessibility and climate justice were top priorities (Spurr, 2020).

Figure 4.8:
TTC Access Hubs in Toronto



Note. Vyas, K (2020, July 1). From BlogTO, <https://www.blogto.com/city/2020/07/ttc-heated-bus-shelters/>.

Figure 4.9
Rendering of Open Air LRT stops in Hamilton



Note. Best, J (2023, September 25). From The Bay Observer, <https://bayobserver.ca/metrolinx-opposed-to-having-hsr-maintain-the-proposed-lrt-system/>.

4.2.3 Accessibility

Accessibility is another essential pillar of this methodology because equitable access to public transit is so important. Without it, the whole of the benefits described from equitable transit-oriented development, or even transit-oriented development, would not be achieved. For our purposes, accessibility can be divided into three subsections; accessibility for all income levels, accessibility for all identities, and accessibility for all physical needs.

Accessibility for people of all identities is extremely important. By identities, we mean that the diverse customer base should be accommodated with equity and justice. To name some examples, gender, race, ethnicity, and age could be different facets of someone's identity. To ensure that a diverse group of people are able to access this transit system, different lenses must be applied to their individual journeys with public transit. From a business standpoint, looking to target based on age and transit habits makes sense; you can cater to the people as consumers and expand revenue from each type of consumer. But what about people who have personal, identity-based needs? Transit systems are not just revenue sources; they are a major part of communities and should be designed based on identity-based needs.

Making transit developments accessible for all income levels is crucial, especially for the residents of Hamilton. According to the 2021 census, 11% of Hamilton residents are living with low income in 2020 (SPRC, 2022). Additionally, households with low-income are more likely to live along the B-Line LRT corridor and "proximity to light rail stations increases accessibility to employment for working families" (Mayo, 2023). With this being said, it is of great importance that the economic benefits brought to municipalities with the introduction of transit developments also benefit people with lower incomes, rather than solely benefiting more wealthier and affluent demographics, because the LRT line has the potential to uplift current low-income populations residing on the corridor out of their current economic status. Preventing displacement along the corridor should be prioritized since proximity to transit is so important for this concept to work, but prioritizing affordability is another action that could ensure these benefits are being reaped.

Accessibility for all physical needs is crucial to providing adequate services for the entire Hamilton population, which is no secret. The current LRT plan has already made accessible designs, including low-floor vehicles and multiple accessible entrances (Hamilton, 2023). However, accessible vehicles are just one action to include individuals with accessibility needs. Having minimal to no distances between transit stops and accessible transit modes would allow for a seamless, less challenging, and safer journey.

Opportunities and Recommendations for Accessibility

In the planning field, personas are used to identify different customer segments; different personas are meant to reflect groups of individuals who typically share the same needs. Personas are being utilized in transportation planning around the world, even Metrolinx has developed some personas to identify the needs of individuals in the Greater Toronto and Hamilton Area (GTHA) in 2017. They did this through organizing focus groups, including groups including new immigrants, lower-income individuals, and adolescents/young adults, as well as administering a large quantitative survey to GTHA residents (Metrolinx, n.d.)

Figure 4.1.1
Metrolinx GTHA Traveller Personas



Note. Metrolinx. (n.d.). From https://www.tac-atc.ca/sites/default/files/conf_papers/development_of_the_draft_2041_regional_transportation_plan_gtha_regional_traveler_personas_and_the_residents_reference_panel.pdf.

From this research, Metrolinx identified six different traveller personas as shown in Figure 4.1.1, “frustrated solution seekers”, “satisfied mature urbanites”, “time & balance seekers”, “aspiring young travellers”, “connected optimizing urbanites”, and “traditional suburban travellers” (Metrolinx, n.d.). While these personas will help aid in capturing new customers and creating more travel efficiency, they will not get to the source of problems that people face using transit based on their identity. Designing personas based on people’s intersectional identities could provide a lot of insight into problems that are faced by groups, that are not just related to the timing of trips or the convenience of cars. This will be discussed further in the case study from Edmonton.

A recommendation which would increase accessibility for individuals with low incomes is to keep transit publicly operated. This way, citizens can take their issues with fare price affordability to their municipal government, rather than a private third party that has no formal responsibility to serve the public. The HSR can also implement their subsidized fare programs or enforce connectivity between their other services. As of November 2023, the Hamilton Street Railway has created the “HSR Fare Assist Program”, planned to begin on January 1st, 2024 (Hamilton, 2023). It is a program that offers 30% discounted fares to eligible Hamiltonians whose household income falls at or below the Low-Income Measurement (LIM). This is a great step in the right direction for community benefits because it assists people who can benefit the most from having low-cost transit alternatives to cars. The recommendation for Hamilton here is to implement this program with LRT fares as well.

An action that would make significant improvements for people with physical needs would be to ensure the entire municipal transit system is connective to other modes of transportation, including the current accessible transportation services that Hamilton offers (e.g. DARTS, Taxi Scrip Program, and the accessible low floor buses).

Case Study: Edmonton Transit Service

The Edmonton Transit Service (ETS) became one of the first transit organizations in North America to begin using gender-based analysis plus (GBA+) to improve safety and security. They worked directly with various community groups, including women's groups and Indigenous organizations, to get to the source of issues surrounding the safety of women and girls (Wanek-Libman, 2020). In 2022, they ran a GBA+ engagement for transit safety, as well as "an anti-racism review of low income fare programs, and an initial equity analysis of the transit network" (Edmonton Transit Service, 2023). This report included industry and academic research which was done to examine their transit system using an equity lens, which involved looking at how their services were being allocated across communities, informing them on how to equitably distribute transit service.

Their main finding was that equity deserving groups would benefit more from increasing transit service during off-peak hours due to their professional and personal needs. They were able to identify the specific locations in Edmonton which require increasing transit in off-peak hours, and which areas were already well served during off-peak hours. The implementation of these findings happened in 2023, through increasing services to several routes during off-peak hours.

4.2.4 Connectivity & Usage

Connectivity is an essential part of transit development, especially when using a climate change lens. Through our research, having a connective transit system is a key element to its utilization rate, which is important because the more people want to use a transit system, the less car dependency is required in the city and the less carbon emissions will pollute the atmosphere.

During our research phase, we came across a world ranking for public transportation known as the Oliver Wyman Forum Urban Mobility Readiness Index. This report ranks cities across the world for their mobility and future mobility readiness because "cities that tackle future mobility challenges will be the most sustainable and attractive for people and businesses" (Oliver Wyman Forum, 2023). In this index, they also have a "Public Transit" ranking, which they measure based on "public transit density, efficiency, and utilization rate and the extent to which they can adapt to address competition from emerging mobility services" (Oliver Wyman Forum, 2023). At the top of this public transit ranking are Hong Kong, Zurich, and Stockholm. In general, these cities are ranked the highest because of their superior connectivity and their utilization rates. When city infrastructure or housing are integrated with public transit systems, people are more likely to use them because it offers more convenience than passenger vehicles. Offering multiple modes of transportation is another way to boost connectivity, mentioned in several ranked cities' profiles. This includes having connective cycling infrastructure with public transit, with rideshare opportunities, and other modes of transportation.

Cycling provides more options to people when combined with public transportation. One can take on longer distances between transit stops compared to just walking, and transit provides options to travel longer distances with less worry for weather and physical conditions. While cycling is included in Hamilton's LRT design plans and has also been made a key design theme, it is missing full connectivity with the LRT and cycling.

Some examples of the lack of cycling connectivity in current design plans include:

- Bikes being excluded from LRT vehicles during peak times
- Bike lanes that connect perpendicularly to the corridor but not alongside it, unless necessary to preserve a cycling route
- SoBi bike share hubs have been included in design plans, but not at every HSR shelter

In order for new transit developments to be equitable, they must also be connective to all communities. At the bare minimum, transit systems should be connected to all neighbourhoods and communities so that every citizen may reap the rewards of public transportation. However, when it comes to community-specific needs, large transit agencies often do not tend to cater to them. When going through a user's journey, connectivity issues can be identified and changes can be made.

This thought came out after a personal communication with Kerry LeClair, Hamilton's Ward 3 Climate Action Community Coordinator. Communities in the North End of Hamilton face poor air quality from foul odours from nearby corporations that frequently bother residents of the area, and typically, their complaints are neglected, meaning they must deal with the odours in their day-to-day lives (LeClair, 2023). With this example or other similar situations, people experiencing environmental issues may avoid certain transit stops, extending their daily commutes.

Opportunities and Recommendations for Connectivity & Usage

While there are many cities with thriving cycling infrastructure and transit systems, many are in European cities which already have less car-dependent landscapes and populations so using their frameworks for cycling connectivity may not work with a North American municipality's needs. For Hamilton specifically, there is already an advocacy organization whose mission is "to make Hamilton a place where people of all ages and abilities can safely get around by bike to all parts of the city", Cycle Hamilton (Cycle Hamilton, 2023). They continuously work with community members to identify challenges that citizens have with cycling in Hamilton, and also identify solutions. Including this organization on the LRT subcommittee would ensure that a cyclist perspective is taken into design planning to increase connectivity.

Something that could be implemented to boost connectivity for all communities is user journey mapping. User journey mapping is a design process that is human-centred by implementing design features based on how a user actually uses a service. Rather than planning bus or LRT stops based solely on population or commercial nodes, basing them on findings from user journey mapping would pinpoint stops where people need them. User journey mapping would be able to locate areas of concern to better suit the people living in these communities, such as those residing in the North End of Hamilton.

Community Engagement Dialogue Event and Exploration Process

5.1 Overview and Purpose

On November 14th, 2023, the CityLAB Project Team hosted a Community Information and Q&A engagement session (hereafter referred to as a Dialogue Event) from 6:00 to 7:30 PM in the LR Wilson Hall Community Room on McMaster University's main campus. This event, titled Hamilton's Transit: How We Move Together, was an evening of learning and community conversation about the future of transit in Hamilton, with a special focus on the B-Line LRT and the proposed (Re)Designed Transit Network. The Dialogue was targeted towards post-secondary students at McMaster, Redeemer and Mohawk, but all attendees were welcome.

The Dialogue consisted of the following:

- An informal presentation from the Hamilton Community Benefits Network on who they are, what they do and what Community Benefits are.
- A presentation by the CityLAB Project Team introducing the LRT and the (Re)Designed Transit Network along with our four pillars of ETOD.
- A moderated Q&A facilitated by the Project Team.
- A large-scale interactive engagement activity in the form of seven Interactive Voting (or Dotmocracy) Boards (see Section 5.2 for a description of these boards and their accompanying dialogue questions).

The Purpose of this Dialogue Event:

Inform Hamilton's postsecondary students of the new rapid transit developments coming to their city.

Understand what students value surrounding rapid public transit, where their needs lie, and how they perceive the LRT will impact them.

Stimulate discussion on our pillars of Equitable Transit Oriented Development.

Determine a set of recommendations for Hamilton City Council and Metrolinx for rapid transit that are informed by student values, needs, and experiences as a diverse stakeholder group.

5.1.1 Event Logistics

Promotions and Registration

The CityLAB Project Team began promoting the Dialogue Event approximately one week before the day of the event. Promotional materials consisted of social media graphics and printed posters. The social media graphics were circulated on the Instagram pages of the HCBN, CityLAB SIR, McMaster's Student Union, McMaster's School of Earth, Environment and Society Student Association and Graduate Student Committee, McMaster's Political Science Student Association, and McMaster's Institute of Transportation Engineers Student Chapter. They were also shared via email to McMaster

students by program Academic Advisors. Physical posters were placed around the Mohawk and Redeemer campuses. These efforts allowed us to reach a breadth of students at each institution.

An Eventbrite form was created for attendees to register in advance (see Appendix B for the event description on the form). Registrant names and emails were collected, along with information on any accessibility accommodation needs and dietary restrictions or preferences. 35 attendees registered for the Dialogue Event.

Room Setup

The Community Room was set up into six table groups with a projector screen at the front of the room and a buffet-style food table at the back. Table groups were essential to facilitating and encouraging meaningful dialogue between participants during the interactive engagement activity. Figures 5.1 and 5.2 illustrate how this room setup allowed for better participant collaboration and ease of movement between the various Interactive Voting Boards.



Figure 5.1: Dialogue Event engagement activity



Figure 5.2: Dialogue Event engagement activity

Participant Turnout and the Impact of the 2023 HSR Strike

There were a total of 30 attendees at the Dialogue Event. Of the 30, two were students from Redeemer University, and two were students from Mohawk College, as seen in Figure 5.3.

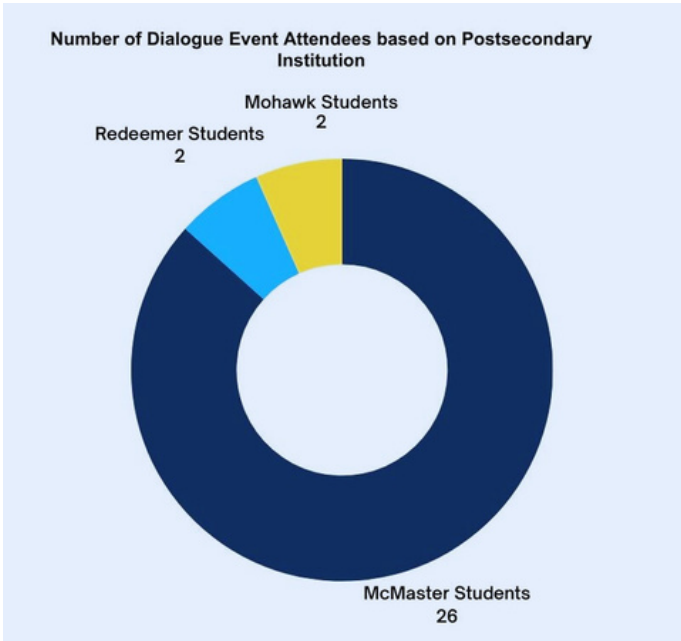
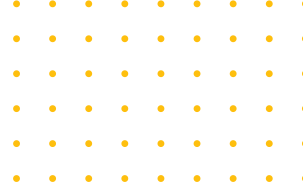


Figure 5.3: Breakdown of attendee numbers by educational institution

On November 9th, 2023, the City of Hamilton’s transit union, ATU Local 107, commenced a transit worker strike that lasted until November 17th (City of Hamilton, 2023). Although this did not affect the content of the Project Team’s Dialogue Event, it is anticipated to have impacted the number of attendees as public transit services were out of service. Thus, students who do not live within walking distance of McMaster, especially McMaster and Redeemer students, may have been unable or less inclined to make it to the event. See Section 2.5 for considerations we made to troubleshoot this challenge.

5.2 Dialogue Plan and Facilitation

5.2.1 Target Audience: Why Students?

The Hamilton Community Benefits Network (HCBN) has done very little engagement with students on Hamilton’s transit.

McMaster, Redeemer and Mohawk sit along routes that are part of the (Re)Envisioned Transit Network.

Students are a diverse group of people with valuable insight

The Hamilton Community Benefits Network (HCBN) has done very little engagement with students on Hamilton’s transit.

Created in 2017 as a way to ensure community benefits remain at the forefront of the LRT project, the HCBN is a key stakeholder in the project that Metrolinx has committed to engaging with over its course. Over the last six years, the HCBN has conducted 15 community engagement sessions to learn what Hamiltonians want from the LRT. However, according to Community Benefits Manager Karl Andrus, they have done little engagement work with students. As students themselves, the Project Team was able to leverage its connections to this demographic group for holistic engagement.

McMaster, Redeemer and Mohawk sit along routes that are part of the (Re)Envisioned Transit Network.

This means that all student groups will be directly impacted by and exposed to this transit network, and students at each institution will remain stakeholders for years to come.

Students are a diverse group of people with valuable insight

Students form a diverse demographic due to a variety of factors that contribute to their unique backgrounds, experiences, and characteristics. These factors include age, cultural and ethnic background, economic status, gender identity, abilities and disabilities, linguistic diversity, educational backgrounds, religious beliefs, and more. They offer valuable insight on the topic of public transit through education and lived experience. Even if current students may not reside in Hamilton or wish to stay in Hamilton after finishing their degrees, they may be affected in the short term by the planning and construction of the LRT.

5.2.2 Dialogue Event EDI Considerations and Implementations

The Project Team took various measures in consideration of Equity, Diversity and Inclusion for the Dialogue Event. These measures included:

- Promoting the event through avenues that cater towards equity-deserving groups such as McMaster's Indigenous Student Service and Black Student Success Centre.
- Asking participants to share any accessibility accommodations and dietary restrictions or preferences in optional questions on the registration form.
- Offering a variety of dietary-conscious foods at the event, including dairy-free, vegetarian and halal, taking into consideration the responses on the registration form.
- Hosting the event in a venue that is wheelchair accessible.
- Using clear language and defining all terms during the presentation.
- Printing the Interactive Voting Boards in large font on 42-inch by 30-inch boards for the visually impaired.
- Ensuring all interactive activities could be engaged with on paper or in person for participants without access to technology. For example, we led open discussions on two Mentimeter polls used at the beginning of the session (see Appendix C for the Mentimeter questions and how participants responded).

5.2.3 Facilitation Tools, Strategies and Setting the Tone of Engagement

The Project Team used various physical tools to aid with the facilitation of the event. These included things like a presentation slide deck for participants to visually follow along with the information presented, a screen and projector for the presentation, table group seating to foster collaboration, Mentimeter polls and Interactive Voting Boards for engagement.

Facilitation strategies used by the Project Team included

1. Emphasizing the goals of the dialogue event to promote transparency and ensure the dialogue stays on the right track
2. Focusing on participation by helping to draw out peoples' perspectives
3. Keeping the discussion moving forward through things like moderating the Q&A and reminding students of the time left for the engagement activity
4. Remaining neutral. In other words, facilitating the conversation in a non-partisan way, and not siding with one perspective over another when participants shared in big group discussions

At the beginning of the Dialogue Event, the Project Team set a clear tone of respect, non-partisanship and open discussion with participants. This tone was reinforced and carried throughout the event. The following Rules of Engagement were clearly outlined in our introductory remarks and before the commencement of the Q&A session in order to set this tone:

1. **Active Listening:** We encouraged participants to actively listen to others without interrupting. This includes maintaining eye contact, avoiding side conversations and giving others the opportunity to express their thoughts.
2. **Active Participation:** We encouraged active participation from all attendees by inviting everyone to share their thoughts.
3. **Respect:** We emphasized the importance of treating all participants with respect regardless of differing opinions and reminded everyone to use inclusive and non-judgmental language
4. **Open-Mindedness:** We reminded participants to approach the dialogue with an open mind and a willingness to consider alternative viewpoints. This helped create an atmosphere of mutual understanding.
5. **Timely and Relevant Contributions:** We reminded participants to keep their contributions timely and relevant to the discussion topic. This helped maintain focus and prevented the conversation from drifting off course.
6. **Mindful Timekeeping:** We set expectations for the duration of the presentation, Q&A, and interactive activity portions of the event and verbally reminded the group of how much time remained for each section to ensure everyone had the opportunity to contribute at some point.

5.2.4 Dialogue Questions: Interactive Voting Boards

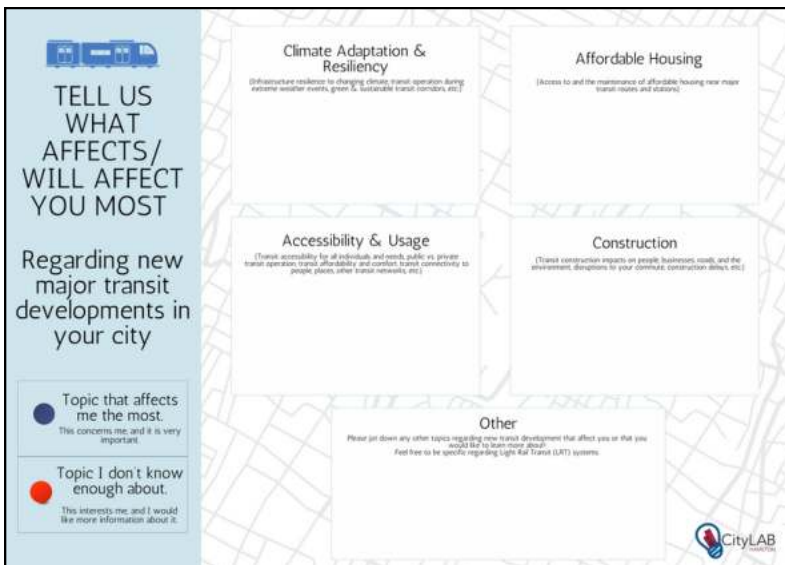
As mentioned in Section 5.1, our Dialogue engagement activity consisted of seven Interactive Voting Boards. The questions and images on these boards were carefully planned to ensure relevance to our research, achievement of our Dialogue Event purpose (see Section 5.1), and ease of understanding with little context or prior knowledge of the LRT and Hamilton's proposed (Re)Envisioned Network. These 42-inch by 30-inch boards were designed using Canva and printed at the Hamilton Public Library's Makerspace.

The following questions were asked on each board. See Boards 1 to 7 for visuals of the designs of each board.

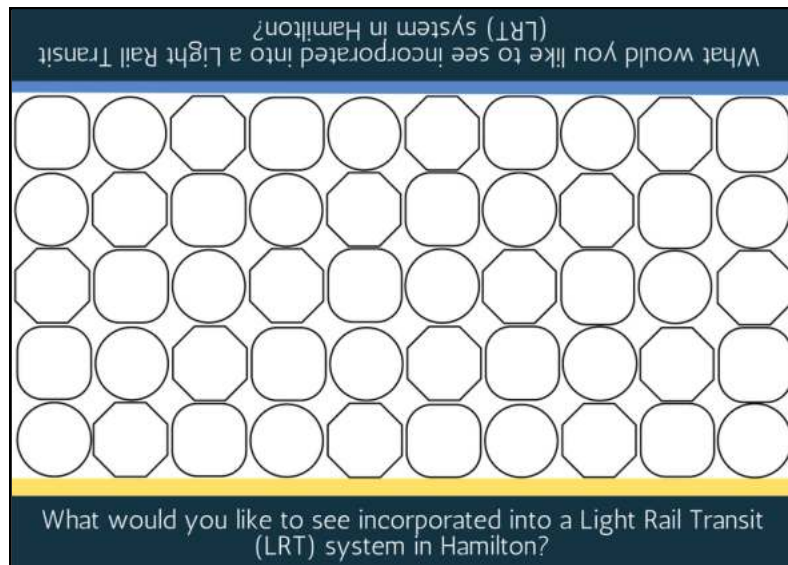
- **Board 1** (voting): Tell us what affects/ will affect you most regarding new major transit developments in your city.
 - Options: Climate Adaptation & Resilience, Affordable Housing, Accessibility & Usage, Construction, Other (open-ended)
- **Board 2** (open-ended): What would you like to see incorporated into a Light Rail Transit (LRT) system in Hamilton?
- **Board 3** (voting): What do you envision a pedestrian/cyclist crosswalk to look like along an LRT corridor in Hamilton?
 - Options: Example 1: Valley Line West LRT, Edmonton; Example 2: Hazel McCallion Line (Huronario LRT), Mississauga; Example 3: Indianapolis Cultural Trail, Indiana, USA; Example 4: Pedestrian scramble crosswalk, Chicago, USA
 - Follow-up (open-ended): What do you like and/or dislike about the example above?

- **Board 4:** Climate Adaptation and Resilience
 - Question 1 (voting with open-ended): Consider a neighbourhood in Hamilton: Are you satisfied with the number of street trees? Are there enough?
 - Options: Too many, Just enough, Somewhat enough, Not enough, Other (please specify)
 - Question 2 (voting): How important do you consider bike lanes & cycling infrastructure to climate change adaptation in major transit projects?
 - Options: Very important, Important, Somewhat important, Not important
 - Question 3 (open-ended): What measures or considerations should the City and Metrolinx implement to address climate change and environmental sustainability in LRT & BRT projects?
- **Board 5** (voting): Which of these LRT corridors do you prefer?
 - Options: Example 1: Smartgrowth Proposed LRT, Tulsa-USA; Example 2: Proposed LRT, Jharkhand-India; Example 3: King Street East Projection, Hamilton; Example 4: Proposed Beltline LRT, Atlanta-USA
 - Follow-up (open-ended): What do you like and/or dislike about the examples above?
- **Board 6** (open-ended): Consider the way you get around Hamilton (travel by bus, car, bike, walking, etc.). How might the construction of the Rapid Transit Network affect your transit journey?
 - Follow-up (voting and open-ended): Do you foresee yourself using the rapid transit lines of the (re)Designed Network pictured below?
 - Options: Vote Yes, Vote No.
 - If yes, explain what you will use it for. If no, explain why not.
- **Board 7** (open-ended): Open Discussion! What else do you want Hamilton City Council and Metrolinx to consider in the development of Rapid Transit in Hamilton? What is important to YOU?

Incorporating a mix of closed and open-ended questions aided in promoting participant engagement as it struck a balance between efficiency and gathering specific, quantifiable information (closed-ended/voting) and encouraging exploration, expression and more in-depth thought (open-ended). Further, participants had flexibility in what they chose to answer and how because of this.



Board 1



Board 2

What do you envision a pedestrian/cyclist crosswalk to look like along an LRT corridor in Hamilton?

EXAMPLE 1: Valley Line West LRT, Edmonton
 EXAMPLE 2: Hazel McCallion Line (Hurontario LRT), Mississauga
 EXAMPLE 3: Indianapolis Cultural Trail, Indiana, USA
 EXAMPLE 4: Pedestrian scramble crosswalk, Chicago, USA

VOTE ON THE EXAMPLE YOU LIKE BEST!

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3	EXAMPLE 4	OTHER (please specify)
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What do you like and/or dislike about the examples above?

Board 3

Climate Change Adaptation & Resilience

Consider a neighbourhood in Hamilton: Are you satisfied with the number of street trees? Are there enough?

How important do you consider bike lanes & cycling infrastructure to climate change adaptation in major transit projects?

TOO MANY (there are too many street trees)		VERY IMPORTANT	IMPORTANT
JUST ENOUGH (there are enough street trees)			
SOMEWHAT ENOUGH (there could be more street trees)		SOMEWHAT IMPORTANT	NOT IMPORTANT
NOT ENOUGH (there are not enough street trees)			
OTHER (please specify)			

What measures or considerations should the City and Metrolinx implement to address climate change and environmental sustainability in LRT & BRT projects?

Board 4

Which of these LRT corridors do you prefer?

EXAMPLE 1: Smartgrowth Proposed LRT, Tulsa-USA
 EXAMPLE 2: Proposed LRT, Burkhard-India
 EXAMPLE 3: King Street East Projection, Hamilton
 EXAMPLE 4: Proposed Beltline LRT, Atlanta-USA

VOTE HERE!

What do you like and/or dislike about the examples above?

Board 5

Consider the way you get around Hamilton (travel by bus, car, bike, walking, etc.) How might the construction of the Rapid Transit Network affect your transit journey?

Write your thoughts below!

Do you foresee yourself using the rapid transit lines of the (re)Designed Network pictured below?

Vote YES	Vote NO
Explain: what you will use it for?	Explain: why not?

Board 6

Open Discussion!

What else do you want Hamilton City Council and Metrolinx to consider in the development of Rapid Transit in Hamilton?
 What is important to YOU?

Board 7

5.3 Dialogue Process and Methodology: What Informed the Dialogue Plan and Engagement Strategy?

5.3.1 The Principles of Equitable Public Engagement

The weekly CityLAB Dialogue class sessions influenced the engagement methods the Project Team used for the Dialogue Event. From these class sessions, an article titled *Beyond Inclusion* from Simon Fraser University, which outlined various principles for equitable public engagement, was particularly influential. The Project Team focused on four of these principles to guide their community engagement process; plan early and proactively, engage the internal diversity of a community, tailor engagement plans to the context, and commit to ongoing learning and improvement (Fraser, 2020). First, 'Plan early and proactively' included the group's research on the community, the transportation issues at play, and any relation the student community may have with public transportation, such as bus passes and Presto. The group further followed the principle 'engage the internal diversity of a community.' This principle is used to justify the decision of the community for which the group chose to host the engagement session (Fraser, 2020). Students are a diverse community that outline a variety of different subgroups in society all in one place. In an attempt to include as many differing voices in our research as possible, the Project Team felt as though this community would be ideal, considering what was attainable in the project scope. The principle of 'tailor engagement plans to the context' refers to understanding the audiences and their needs (Fraser, 2020). The Project Team used this principle when offering any accessibility needs before and during the Dialogue Event. Lastly, the final principle used is 'commit to ongoing leading and improvements.' Here, the group was able to utilize the student participants' feedback in forming the project's final recommendations. The Project Team was committed to learning through the community and their experience, not just through secondary research.

5.3.2 Inspiration from the Town of Oakville's "Let's Talk Midtown" Public Engagement Event (Oct 25)



Figure 5.4: "Let's Talk Midtown" Presentation and public turnout



On October 25th, 2023, the CityLAB Project Team attended a public community engagement event hosted by the Town of Oakville titled "Let's Talk Midtown." The purpose of this event was to engage residents on Oakville's future and the vision for Midtown Oakville through an informative presentation and moderated Q&A with the developer Project Team as seen in Figure 5.4 as well as engagement activities like the one pictured in Figure 5.5. This event provided much of the inspiration for the setup and logistics of our Dialogue Event, including our designing and facilitation of the engagement activity with the Interactive Voting Boards. We followed the same dotmocracy format of balancing images and text for participants to vote on, and we used a similar buffet style for catering the event. We further used several of the facilitation techniques used by the Oakville event Q&A moderator during our Dialogue Event, such as setting the rules of engagement, summarizing and clarifying long-winded questions by drawing out key points, pacing questions to keep within the allotted time, and being flexible with the direction the conversation takes. This led to fruitful and respectful discussions, especially during our engagement activity.



Figure 5.5: "Let's Talk Midtown" engagement activity

5.3.3 The IAP2 Spectrum of Public Participation

The IAP2 Spectrum of Public Participation outlines five levels of public engagement, as seen in Figure 5.6. These levels, ranging from Inform to Empower, indicate increasing degrees of public involvement in decision-making as read from left to right (International Association for Public Participation, n.d.).

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives and/or solutions.	To obtain public feedback on analysis, alternatives and/or decision.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

Figure 5.6: The IAP2 Spectrum of Public Engagement (International Association for Public Participation, n.d.)

The Dialogue Event hosted by the CityLAB Project Team aimed to meet the goals associated with the Inform and Collaborate levels. This shaped the purpose of our Dialogue and the structure of our Dialogue Plan. Not only did we inform students of objective information regarding Hamilton’s transit and the LRT fallbacks when it comes to ETOD to build an understanding of the problem and possible solutions, but we also collaborated with them through the engagement activity where we sought advice and opinions that we could incorporate in our recommendations to decision-makers at the City and Metrolinx. Feedback from students played a crucial role in shaping our final recommendations from transit connectivity to green climate-adaptive infrastructure.

5.4 Key Findings

As described, the interactive material of the community engagement event was used to formulate topic area research, discussions, and goals for the recommendations to be proposed. Many of the attendees offered valuable insight and a point of view that provides a unique user opinion/experience. The Appendix includes the Interactive Voting boards that called for students to add their comments and vote on the prompts. Essentially, the event's findings focused on two main concerns: usage and climate/green adaptations. Much of the design suggestions and surveyed information are concerning one or both of these two focuses, which will be discussed in more detail further below.

Usage Concerns

As an introduction question, students were prompted to answer which topics relating to the LRT and Hamilton transportation projects concerned them the most and which they felt they did not know. Shown in Figure 5.7, many students expressed that Accessibility and Usage may be a topic that would affect them the most, while topics such as Climate Adaptations, Resilience and Construction were seen as the least concerning in terms of effect. Interestingly, the votes did express that, although construction may be seen as least impactful by students, it is the topic most feel they do not know about. Notably, Affordable Housing did have an interesting amount of variation between a topic that may affect one the most, and a topic that students did not know very much about. As the topic is voted to be the second most impactful for students, about a quarter of the votes claimed that they still do not know enough about the topics.

What Affects you the Most Regarding New Major Transit Developments in your City

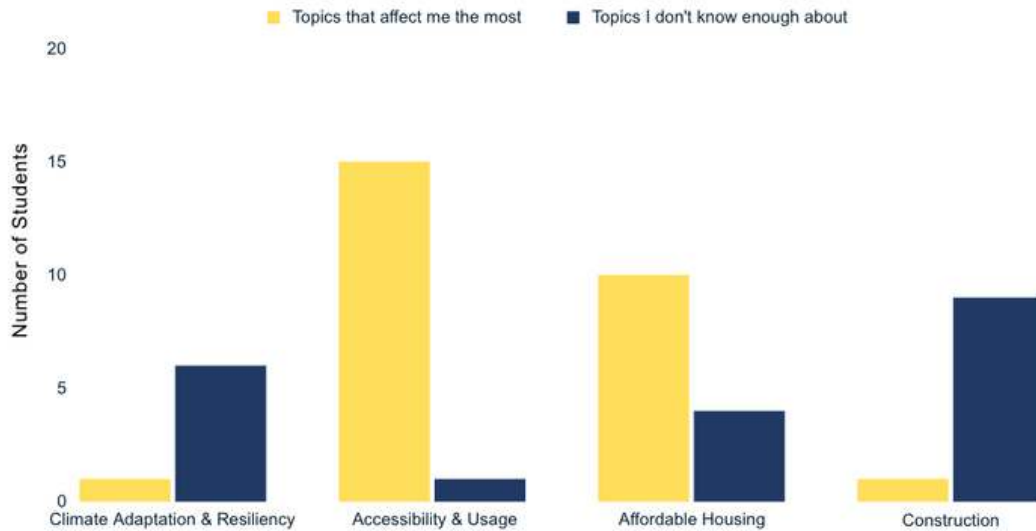


Figure 5.7: Number of students that voted on which of the four topics affect them most and which they don't know enough about regarding new transit developments

Students were later given four options on pedestrian/cyclist crosswalks in various areas in the world, including Edmonton, AB; Mississauga, ON; Indianapolis, USA; and Chicago, USA (Appendix A). They were asked to choose between which of the four they envision a Hamilton LRT corridor to look like and why. The Valley Line West LRT in Edmonton, AB, shown in Figure 5.8, was the most favourable among students. Many participants explained how they enjoyed the look of the bright colours to differentiate the lanes. Similarly, many students liked the physical and coloured separation between different land uses, such as separate bike lanes, barriers for pedestrians, and priority signals. When asked about the further design details they would like to see in either Hamilton's LRT corridor or their voted LRT corridor,



Figure 5.8: Preferred LRT corridor with the most votes (Valley Line West LRT, Edmonton, Alberta)

ideas such as elevated pedestrian or bike lanes, designated areas for different transportation uses, and a greeted presence of natural landscaping and trees. Overall, students were in favour of organized, detailed, and separated lanes.

During the event, students were also asked about construction-related questions regarding the LRT. They were asked how they feel their transit journey may be affected by the construction of the new (Re)envisioned rapid transit networks coming to Hamilton. Two main concerns were raised: commute interruptions and bike safety worries. Many individuals stated their worries about longer commute times due to traffic, traffic being diffused into smaller neighbourhood streets that create new traffic, and the potential of getting lost while trying to avoid traffic. One Comment even went as far as to state that the construction would impact their job decisions in an attempt to avoid longer commute times to get to and from work. In relation to Bike safety, individuals also shared that they are concerned about the removal of bike lanes during construction, how the convenience of biking may become more difficult, and the overall safety of bikers when the construction is underway.

Within the same board (Appendix A), participants were then further asked if they foresee themselves using the new rapid transit lines and why. An overwhelming majority answered 'Yes,' whereas those who answered 'No' were individuals who claimed they usually drive more than they use public transit. Students who answered 'Yes' shared that they would use these rapid transit routes to get to and from McMaster University and up the mountain more frequently. Many shared that they felt the route would be a faster and more reliable way to get to various parts of the city without the need for transferring buses.

Green Concerns

On one of the interactive boards, students were asked to vote on which LRT corridor they preferred and why (Appendix A). The options were LRT corridors in Atlanta, USA; Tulsa, USA; Jharkhand, India; and the proposed look for Hamilton, ON. The proposed Beltline LRT in Atlanta (Figure 5.9) received the most votes, while the Smartgrowth proposed LRT in Tulsa (Figure 5.1.1) received the least amount of votes. When asked what the student liked or disliked in the images, many answers related to climate and environment concerns. Participants enjoyed the great amount of green space in the design and mentioned how beneficial the natural shade and stormwater management are in some designs.



Figure 5.9: Proposed Beltline LRT, Atlanta



Figure 5.1.1: Proposed Smartgrowth LRT, Tulsa

Students were also asked about their level of tree satisfaction based on neighbourhood. Many who voted 'Enough Trees' or 'Somewhat Enough Trees' lived in neighbourhoods surrounding McMaster, Westdale, Ainslee Woods, and Cootes. Those who voted 'Not Enough Trees' lived in areas such as Downtown, Beasley, and Meadowlands. Additionally, along the same board (Appendix A), students were asked to answer how important they feel bike lanes and cycling infrastructure is as a climate change adaptation in major transit projects. As shown in Figure 5.1.2 many students found this to be 'Important' to 'Very important' to them.

How Important Would you consider Bike Lanes & Cycling Infrastructure to Climate Change Adaptation in Major Transit Projects?

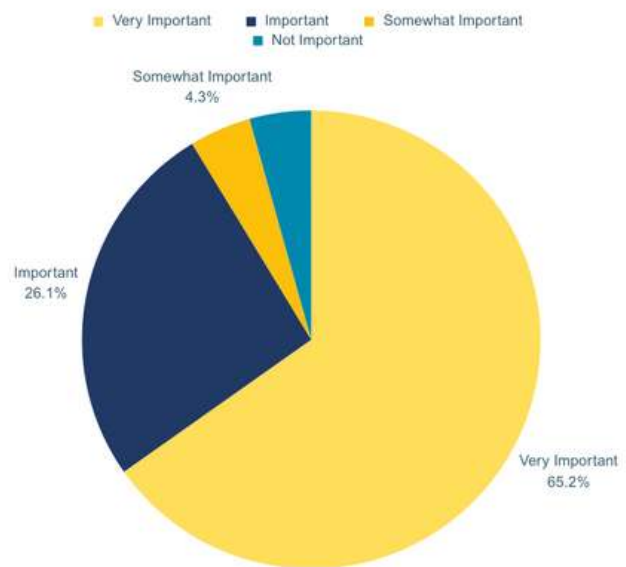


Figure 5.1.2: Percentage of student voters who consider bike lanes and cycling infrastructure important to climate change adaptation in transit projects, on a scale of Very Important to Not Important

Lastly, the students were asked to provide their knowledge and input on what measures or considerations they think the City and Metrolinx should implement to address climate change and environmental sustainability in their LRT and BRT projects. The suggestions included stormwater management infrastructure, biking-LRT integration and connectivity between other modes of transportation, urban heating, and long-term sustainable climate change considerations in their work.

6.0

Project Limitations

Working on a development as large as Hamilton LRT. There are a great number of limitations and concessions, things that cannot be incorporated given the scale. This section addresses the known limitations and project scope.

6.1 Limitations Regarding our Scope

6.1.1 Limitations of Project and Development Timeline

The timeline of the redesigned transit network has meant that its planning far exceeds the time of the work term. This means that many of the logistical plans of B-Line LRT in particular are set and not subject to change utilizing our discretion. Timing also limits the depth of specific recommendations that can be made to address community benefits, affordable housing and tree planting, for example. While these demands are discussed on a large scale, the logistical planning and the specifics as they relate to Hamilton's layout and design exceed this project's scope and knowledge. In sum, individual tree and property oversight is too specific. As such, treating Metrolinx or developers on the construction and planning of this project exceeds scope.

6.1.2 Limitations of Gathered Data

Given the existing available data and the survey expectations of this project, large-scale quantitative surveys were deemed not within the scope of this project. Focus was placed on qualitative community contributions to inform our planning and recommendation. It is worth noting that small-scale quantitative surveys of members present were also completed as part of the dialogue event.

6.2 Limitations Regarding our Primary Research and Community Engagement Event

6.2.1 Limitations of Event Context

An HSR transit strike was ongoing at the time of the event (City of Hamilton, 2023b). This raised accessibility concerns, creating a potential decrease in attendance at our event, this was reflected by a larger demographic of McMaster students relative to Mohawk and Redeemer students, still, participants from all three did attend (See Section 5.1.1). While the effect of the strike cannot be known for certain, it likely impacted turnout as well as discussion and impression of Hamilton Transit at the time.

Student contributions were limited by the information that they were provided and had access to. The curation of information provided at the event was intended to be strictly informational and nonpartisan, it is worth acknowledging potential carry-over bias in presentation material and imparted information. While this does represent a limitation, it accentuates the need for education and the dispersal of accessible information regarding significant transit developments from the City and relevant stakeholders.

There is additionally a tonal bias which might influence contributions. Congregations of this sort are always subject to the established social and ideological norms. The established precedent could raise concerns regarding the social desirability bias of contributions. Measures were taken to ensure a respectful and open tone to avoid this bias listed in section 5.2.3.

6.2.2 Limitations of Chosen Demographic

Students were the chosen demographic for primary data collection. Despite this, there was a strong overlap of interests with other underrepresented groups as well as a deliberate project effort to consider community opinions apart from the student group. Acknowledging the student demographic, students themselves are a diverse but simultaneously homogenized and bubbled group. While students do well to represent future considerations and perceptions of the city, they are limited by perspective. This limits the found data and its effective use across a grander municipal scale, failing to represent all resident considerations.

6.2.3 Limitations of Recorded Contributions

Community engagement also produced several discussions and contributions not disclosed in chapter five as they did not blend with the project goals and themes. While representing genuine concerns, some of the topics omitted include:

- **The inclusion of LRT fares in provided McMaster MSU bus passes.**
- **Public and Private Ownership, maintenance of LRT post development.**
- **Influence of LRT on car lanes and traffic within the city.**
- **Inclusion and seamlessness of LRT with pre-existing HSR network.**

In addition, there was consistent discussion and concern around the functionality of the LRT system and the possibility of disrepair. These included questions about how LRT systems work, what will happen when a car breaks down and whether that affects the entire transit system.

7.0

Final Recommendations

7.1 Recommendations and Tangible Actions for The City and Metrolinx

Housing

- Create Further Policies to Increase Affordable Housing Units and Tenant Protection Measures Along Rapid Transit Corridors** – with the extreme need for affordable housing in the city, combined with the effects of displacement and gentrification from the LRT project, creating sound policies around developing affordable housing can protect residents from displacement and private development. Recommendations connected with this include:
- Liaison between the City of Hamilton and non-profit affordable housing organizations.
 - Keep strict inclusionary zoning policy to ensure the promise of affordable housing in private development.
 - Incorporate passive design to include the use of environmentally friendly infrastructure in the development.
 - Effective Land Value Capture to have excess land used for community benefits such as affordable housing, mixed-use development including small businesses, and community spaces.
 - Affordable housing and tenant support policies with tangible targets, such as adding 50% more housing units than what is currently there.

Climate Adaptation and Resilience

- Implement Climate Adaptable Public Transit Infrastructure to Promote Transit Use and Resiliency** – This includes the addition of enclosed bus shelters that adjust temperatures and adapt heating and cooling when they fall above or below certain temperatures to protect users from harsh elements and incentivize transit use. Additionally, ensuring that greening the LRT corridor and preserving urban tree canopy are top priorities.
- Reinvent infrastructure to adapt to the current and future climate barriers to address changing climate.
 - Rework transit design standards to emphasize considerations for community health, safety and resilience to climate change.
 - Build climate-adaptable and accessible infrastructure, such as climate-controlled LRT shelters, similar to the TTC Access Hubs in Toronto.
 - Consider structural soil and soil cells to encourage the healthy growth of street trees to absorb carbon and add green space while providing much-needed cooling and shading in the city.

Final Recommendations Continued

Accessibility

Ensure Accessibility to All Communities, Physical Needs, Income Levels, and Identities – By keeping Hamilton's LRT line publicly owned, fares can continue to follow the same rate as the HSR fares. Taking additional measures to ensure accessibility to all people regardless of income, race, gender, religious identity, and immigration status will also create further accessibility.

- Accessibility for physical needs as well as safety needs, including the use of floodlights for better visibility and security.
- Keeping the LRT publicly owned so transit fares can continue to follow the same rate as the HSR fares and the HSR Fare Assist subsidy can remain in place for low-income riders.
- Put equity analysis like Gender-Based Analysis Plus (GBA+) at the forefront of accessibility planning.
- Incorporate connective routes, nodes and stops along the LRT & BRT corridors for accessible transportation services like DARTS & Taxis as part of the Taxi Scrip Program

Connectivity & Usage

Ensure Connectivity Between Other Modes of Transportation and Public Transit Systems in Hamilton – Some of the best transit systems often have integration with city infrastructure that allows connections to housing, work, and other transit systems.

- Use User Journey Mapping to identify pinch points in transit connectivity.
- Emphasize pedestrian and cycling connectivity to the LRT corridor with bike racks and SoBIs at each stop, protected bike lanes, and the allowance of bikes on the LRT during peak hours.
- Collaborate with community advocacy groups like Cycle Hamilton to gain perspective on creating connectivity.



7.2 Opportunities for Future Rapid Transit Corridors

New rapid transit system corridors not only have the opportunity to connect residents inside, and to other municipalities quickly, but they can also provide a new way of thinking about public transit. Using a climate justice equity mindset, residents can be encouraged to use public transit and away from cars by using an honorary system. Users can receive tax breaks, rebates from carbon taxes, and reduced rates if they commonly use public transit. The recommendation can help socially promote the social aspect of ETOD. However, this recommendation does have some gaps as to how the city would be able to determine the percentage that users would be getting back based on the frequency of ridership. Would residents solely be riding public transit for no purpose other than to obtain tax credits?

When building new transit corridors, municipalities could help foster their local economy and workforce by introducing quotas for jobs attached to the construction of the corridors, something that can be organized in a community benefits agreement. By doing so, residents in high unemployment areas and marginalized communities have a better opportunity to obtain decent jobs. This would also help the local economy as investment from outside developers would stay in the local economy since the wages of workers would be mostly used and spent in the nearby area. With more valuable opportunities that are available in a community, living standards and quality of life improve. However, drawbacks to this idea include a possible lack of candidates who have the skills to complete the available jobs. An equity debate could arise as many who are not in those communities might also be unemployed. It would also be difficult to decide who the most deserving communities are to receive the jobs, and it would be challenging to negotiate with developers to use residents from local communities instead of workforces from outside.

Another future opportunity of rapid transit systems is the connectivity to neighbouring areas. While Go Transit already provides this service to some degree across Ontario, it could also be added to the United States to save user costs and air pollution. Over 50 percent of air pollution is emitted by just one percent of the world (Grain4Lab, 2022). Keeping transit public also has the opportunity to keep fares at a low cost as subsidies would be created. However, competition from the private market could also reduce costs as well. As interest in a rail line between eastern North American cities continues, it is important to keep an open mind on the benefits and infrastructure that could be built from a transit corridor like this.

To conclude, the CityLAB Project Team's findings and recommendations urge the City of Hamilton to take an equity-based approach to Transit Oriented Development. With secondary research, community feedback, and insight from the HCBN, the CityLAB Project Team believes that we have compiled a complete story of what Hamilton's B-Line LRT and (Re)Envisioned Transit Network could like using ETOD and a Climate Justice lens. Further feedback on these recommendations from City Council and City staff, non-profit organizations, and the Hamilton community at large would aid in our city's ever-evolving transit developments.

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Appendix A

Community Engagement Dialogue Event Interactive Activity Boards



TELL US WHAT AFFECTS/ WILL AFFECT YOU MOST

Regarding new major transit developments in your city

● Topic that affects me the most. This concerns me, and it is very important.

● Topic I don't know enough about. This interests me, and I would like more information about it.

Climate Adaptation & Resiliency
(Infrastructure resilience to changing climate, transit operation during extreme weather events, green & sustainable transit corridors, etc.)

●●●●●●●

Affordable Housing
(Access to and the maintenance of affordable housing near major transit routes and stations)

●●●●●●●●●●

Accessibility & Usage
(Transit accessibility for all individuals and needs, public vs. private transit operation, transit affordability and comfort, transit connectivity to people, places, other transit networks, etc.)


●●●●●●●●●●●●●●●●

Construction
(Transit construction impacts on people, businesses, roads, and the environment, disruptions to your commute, construction delays, etc.)

●●●●●●●●●●

Other
Please jot down any other topics regarding new transit development that affect you or that you would like to learn more about. Feel free to be specific regarding Light Rail Transit (LRT) systems.

● What happens if the money is spent on maintenance?



Climate Change Adaptation & Resilience

Consider a neighbourhood in Hamilton: Are you satisfied with the number of street trees? Are there enough?

TOO MANY <small>(there are too many street trees)</small>	
JUST ENOUGH <small>(there are enough street trees)</small>	●●●●●●●●●●
SOMEWHAT ENOUGH <small>(there could be more street trees)</small>	●●●●●●●●●●
NOT ENOUGH <small>(there are not enough street trees)</small>	●●●●●●●●●●
OTHER <small>(please specify)</small>	●

How important do you consider bike lanes & cycling infrastructure to climate change adaptation in major transit projects?

VERY IMPORTANT	IMPORTANT
●●●●●●●●●●	●●●●●●●●●●
SOMEWHAT IMPORTANT	NOT IMPORTANT

What measures or considerations should the City and Metrolinx implement to address climate change and environmental sustainability in LRT & BRT projects?

●●●●●●●●●●

Getting Hamilton's LRT on the Right Track

Consider the way you get around Hamilton (travel by bus, car, bike, walking, etc).
How might the construction of the Rapid Transit Network affect your transit journey?

Write your thoughts below!



Do you foresee yourself using the rapid transit lines of the (re)Designed Network pictured below?

What do you envision a pedestrian/cyclist crosswalk to look like along an LRT corridor in Hamilton?



EXAMPLE 1: Valley Line West LRT, Edmonton

EXAMPLE 2: Hazel McCallion Line (Huronario LRT), Mississauga

EXAMPLE 3: Indianapolis Cultural Trail, Indiana USA

EXAMPLE 4: Pedestrian scramble crosswalk, Chicago, USA

VOTE ON THE EXAMPLE YOU LIKE BEST!

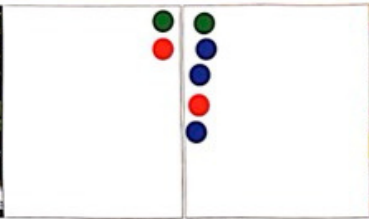
What do you like and/or dislike about the examples above?



Which of these LRT corridors do you prefer?



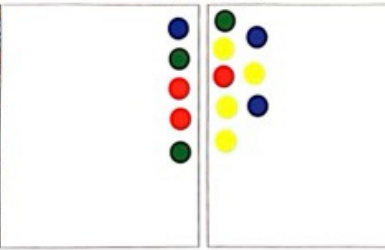
EXAMPLE 1: Smartgrowth Proposed LRT, Tulsa-USA



EXAMPLE 2: Proposed LRT, Jharkhand-India



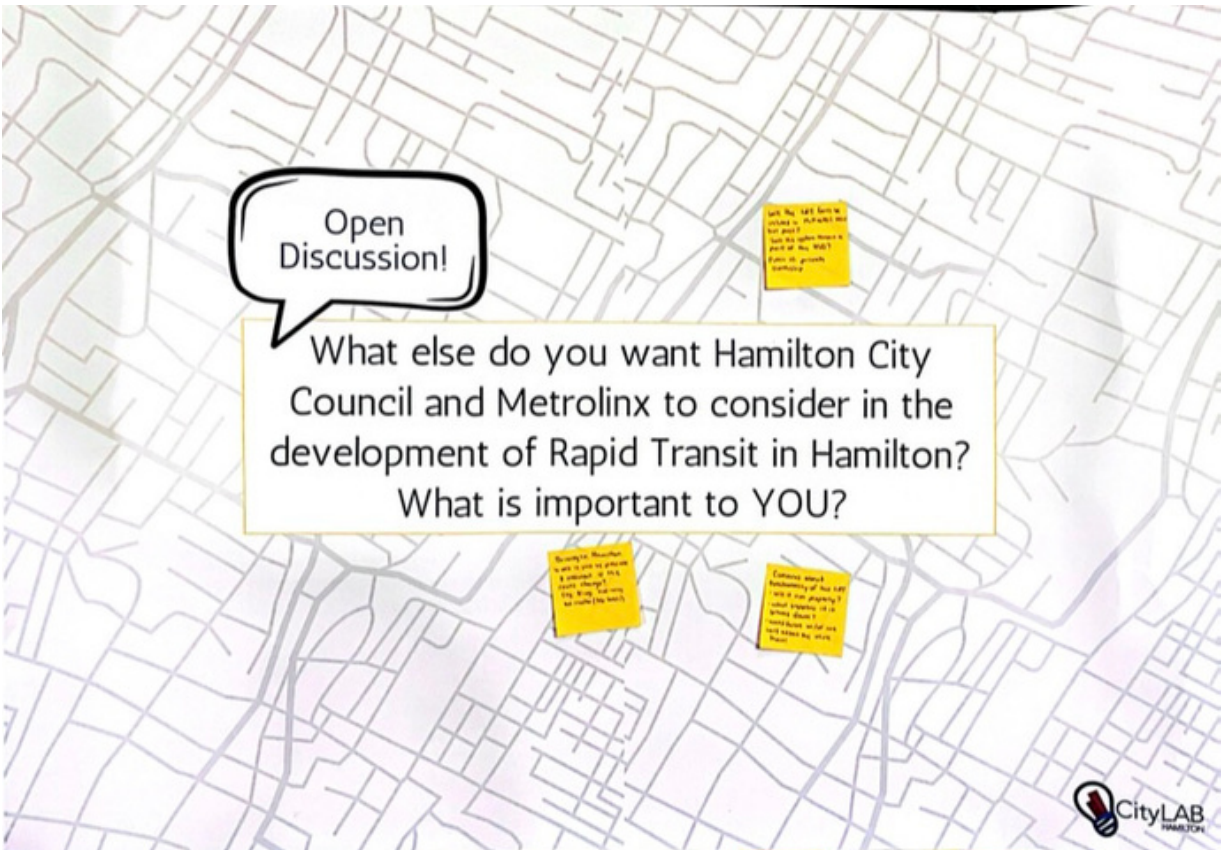
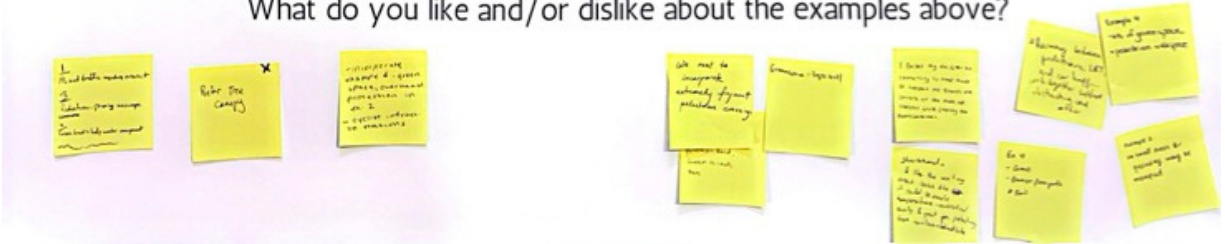
EXAMPLE 3: King Street East Projection, Hamilton



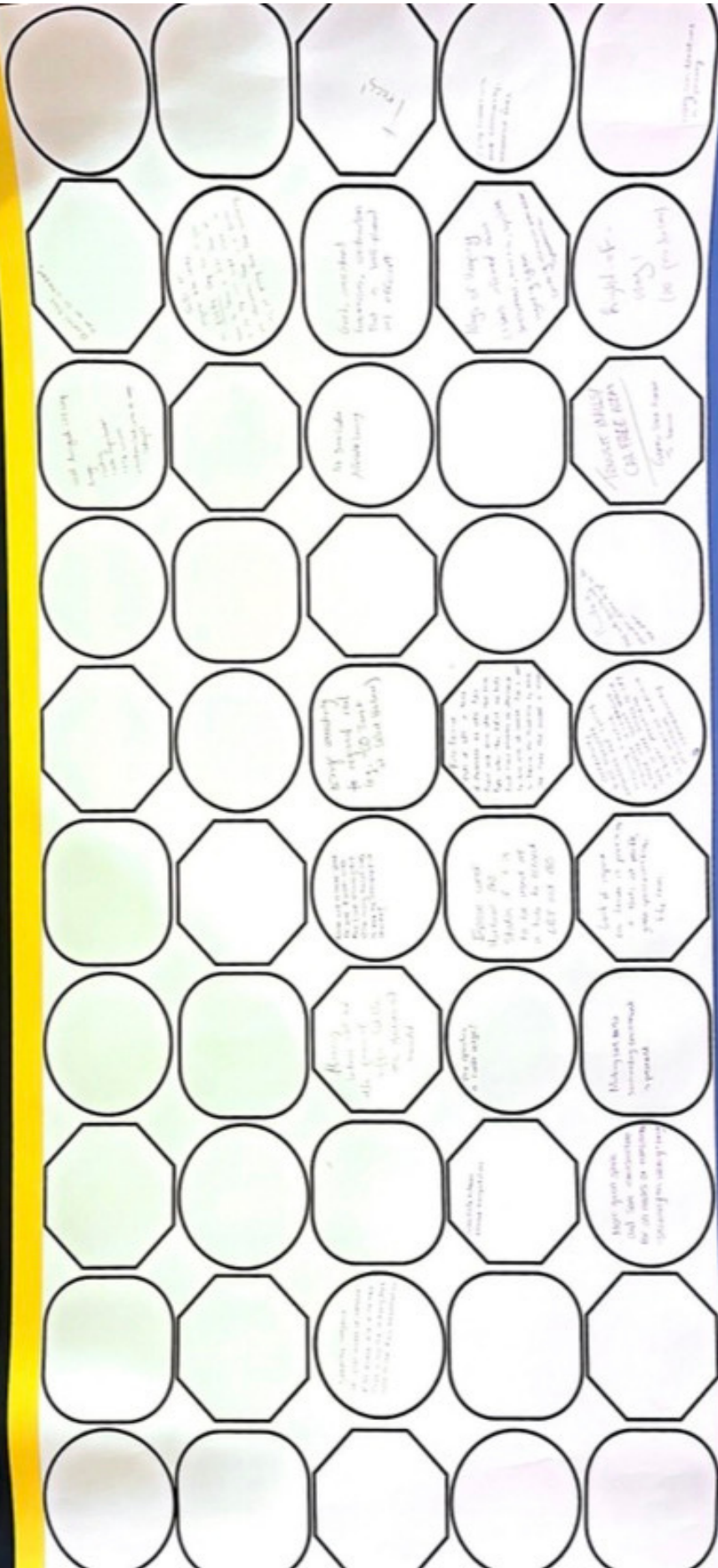
EXAMPLE 4: Proposed Beltline LRT, Atlanta-USA

VOTE HERE!

What do you like and/or dislike about the examples above?



What would you like to see incorporated into a Light Rail Transit (LRT) system in Hamilton?



What would you like to see incorporated into a Light Rail Transit (LRT) system in Hamilton?

Appendix B

Community Engagement Dialogue Event Eventbrite Registration Page

Tuesday, November 14

Hamilton's Transit: How We Move Together

Join us on November 14th for an informative and interactive community engagement seminar on the future of transit in Hamilton!




By CityLAB Hamilton

13 followers | 4 events in last 10 months

Follow

Date and time

 Tue, Nov 14, 2023 6:00 PM - 7:30 PM EST

Location



McMaster University

1280 Main Street West Hamilton, ON L8S 4L8

[Show map](#) 

Getting Hamilton's LRT on the Right Track



About this event

Hamilton's Transit: How We Move Together

LOCATION: LR Wilson Community Room (LRW 1003), McMaster U main campus

On Tuesday, November 14th, 2023, we welcome you to join us for an evening of learning and community conversation about the future of transit in Hamilton, with special focus on the upcoming Light Rail Transit (LRT) set to replace the B-Line bus route, as well as the proposed (Re)Designed Transit Network.

Together, we will explore the possibilities and potential of these new transit developments in Hamilton and hear from guests from the Hamilton Community Benefits Network (HCBN). Engage in lively discussions with students, experts and fellow community members who are passionate about shaping a sustainable future for Hamilton!

This is an informal 1.5-hour public event and community conversation targeted towards post-secondary students at McMaster, Redeemer and Mohawk, but all attendees are welcome.

Doors open at 5:45 PM, event formally begins at 6:00 PM and ends at 7:30 PM. Doors close at 8:00 PM.

Free food and refreshments will be provided. Venue is wheelchair accessible.

Our agenda includes:

- Special guest speakers from the Hamilton Community Benefits Network
- An informative presentation on Hamilton's upcoming transit developments
- Introduction to our Four Pillars of Equitable Transit-Oriented Development
- Moderated Q&A with student facilitators from CityLAB, HCBN, Metrolinx, and Hamilton City Staff
- Engagement Activities (have your say!)

Whether you're a transit enthusiast, a commuter, or simply curious about the future of our city, this event is for you. Don't miss this opportunity to connect with like-minded individuals and contribute to the conversation on how we can grow together as a community through enhanced transportation.

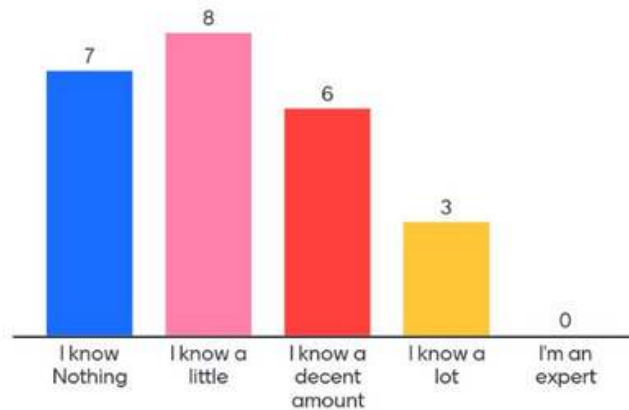
Mark your calendars! We look forward to seeing you on **Tue, Nov 14, 2023 at 6:00 PM EST** for an evening of insightful discussions, networking, and envisioning a better transit future for Hamilton.

Appendix C

Community Engagement Dialogue Event Mentimeter Poll Results

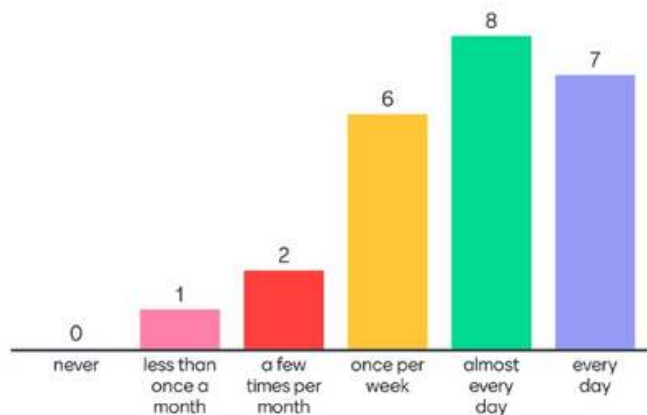
Mentimeter

How much do you know about the Hamilton LRT?



Mentimeter

How often do you use public transit in Hamilton (if at all)?



Appendix D

Community Engagement Dialogue Event Photographs





THANK YOU!

FINAL REPORT

DECEMBER
2023

Prepared By:

**Diana Samanou
Griffin Kinzie
Hannah Horlings
Isabela Sipos
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A REPORT ON FINDINGS AND
RECOMMENDATIONS FOR HAMILTON'S
LIGHT RAIL TRANSIT PROJECT FROM A
CLIMATE JUSTICE LENS

Prepared For:

**Hamilton Community
Benefits Network
CityLAB Hamilton**

CityLAB Semester in Residence