

OUR URBAN FUTURES

# GREATER TORONTO AREA

2022 Action Plan to Drive Infrastructure Investments



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# About

**Evergreen:** Since 1991, we've been facilitating change in cities and public spaces across Canada into green, sustainable places for everyone. With 200+ staff, and \$20M+ annual revenue (in normal years), Evergreen delivers services across 60+ streams of programming. We collaborate with other community builders to create and apply urban development solutions to make our cities more livable, green and prosperous. Evergreen also operates a 16 building campus located outside of downtown Toronto called the *Evergreen Brick Works*, which includes Canada's "*Future Cities Centre*" – a global hub for urban innovation.

**Future Cities Canada:** Established in 2018 and convened by Evergreen, *Future Cities Canada* collaborative is a platform to accelerate the innovation our cities need. We believe that no one organization can solve the complex challenges we face. Future Cities Canada is accelerating innovation to transform cities for the benefit of all. It brings together people and ideas to solve the most pressing issues of our time: inequality and climate change. Our programs connect city builders to the resources, tools, tested solutions, and people required to build capacity and enact change in all communities—big, small, urban, rural, remote and northern. Many of the resources produced by Future Cities Canada can be found on the Future Cities Canada Portal, Canada's virtual hub for innovation in communities of all sizes. With more than 400 resources and tools (and growing), this online space is the backbone for learning and engagement in the areas of smart cities, housing and placemaking (add link once it's ready).

**Community Solutions Network:** Supported by Infrastructure Canada and run by Evergreen, the Community Solutions Network (CSN) is a community-centric program, created to provide communities of all sizes with the knowledge, expertise, experience and guidance they need to build internal capacity and navigate the smart cities landscape through advisory services, event-based programs and resources.



# Acknowledgements

Future Cities Canada and Evergreen want to express our gratitude to the McConnell Foundation, Suncor Energy Foundation, and an anonymous foundation for their support of Our Urban Futures. Their commitment made the Our Urban Futures project and this Action Plan possible.

Our Urban Futures was a highly collaborative project that brought together experts across sectors. Each of the following groups fulfilled specific roles:

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- 1. Expert Focus Group:** In the early stages of the project (February 2020), this group provided input into the draft of the *baseline report*, and contributed to Evergreen's horizon planning process through identifying and validating long-term trends and challenges to inform the foresight process with the Advisory and Expert Group
- 2. Advisory Group:** In 10 online meetings (between May 2020 – March 2021) with the project team, this group provided strategic direction and suggestions for adding expert group members, and shaped project elements, including: Expert group questionnaires intended to elicit expert input, provocative scenarios that support new thinking about urban development, as well as the vision statement and action plan (synthesized from broader expert process), and signing off on final project outputs.
- 3. Expert Group:** Through 5 online questionnaires (between May 2020 – February 2021) in a Delphi-inspired process, this group provided input for the purpose of scenario planning, developing a vision statement, and action planning. Contribution included assessing the future impact of trends, reflecting on the provocative future scenarios through identifying risks and opportunities for each scenario, brainstorming policy and practice actions, and peer reviewing and rating comments from other expert group members.
- 4. Project Team:** Led by the Evergreeners Ayana Webb, Thomas Hutle, and Jasmine Lefresne and supported by a broader network of Evergreeners, the project team designed the Our Urban Futures foresight process, managed all three groups, facilitated the process and all of the in-person and virtual meetings, and synthesized the crowd-sourced findings from each phase of the project.

For the final part of the project, the Action Planning phase, we collaborated with **Matti Siemiatycki**, Director of the Infrastructure Institute at the University of Toronto. Matti analyzed the crowdsourced policy and practice recommendations from the Expert Group and synthesized the findings from the entire project into an Infrastructure Policy Action Plan ([see page 16](#)) accompanied by 9 universal guiding principles based on global best practices to drive effective infrastructure policy in the GTA ([see page 12](#)).

We also worked with **Samantha Matters**, Founding Director of *Future Ancestors Services*. A woman of Métis and mixed-settler descent and member of the Our Urban Futures Expert Group in Calgary/Edmonton, Samantha provided Indigenous inclusion recommendations for this and future projects.

Below, you will find the list of experts that contributed to the project at different stages.

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#### **Expert Focus Group (February 2020):**

Aaron Barter – Director, Innovation and Sustainability, Waterfront Toronto  
Adrian Wang – Director, Innovation and Sustainability, Deltera  
Amber Osadan Ullman – Senior Development Manager, Calgary Municipal Land Corp  
Amy Buitenhaus - Resilience Lead, City of Toronto  
André Côté - Principal, Côté and Company Strategies  
Cheryl DePaoli – Executive Director, Alberta Real Estate Association  
Craig Alexander - Deloitte  
Craig Ruttan - Policy Director, Energy, Environment & Land Use, Toronto Region Board of Trade  
David Morley - Head, Public Affairs and Communications, Canada Infrastructure Bank  
Daniel Haufschild - Principal, Arup  
Dina Graser - Principal, Graser & Co.  
Dr. Anne Golden  
Heather Galbraith – Resilience and Infrastructure Calgary, City of Calgary  
Hillary Marshall – Vice President, Stakeholder Relations and Communications, GTAA  
Ikram Al Mouaswas – Deloitte  
Jessica Abt - Director, Westman Centre for Real Estate Studies, Haskayne School of Business  
John Brown – Dean, Faculty of Architecture, Landscape and Planning, City Building Design Lab, University of Calgary  
John Van Nostrand – Principal, SvN  
Joshua Taron - Associate Professor, Associate Dean (Research & Innovation), University of Calgary  
Kate Thompson – President and CEO, Calgary Municipal Land Corporation

Ken Greenberg - Urban Designer, Greenberg Consultants  
Kevin Quinlan – Senior Advisor, Mantle314  
Lisa Lalande – CEO, Century Initiative  
Mr. Leslie M. Klein, Principal, Quadrangle Architects  
Marcy Burchfield - VP, Economic Blueprint Institute, Toronto Region Board of Trade  
Noah Zon, Co-founder, Sprinboard Policy  
Richard Joy – Executive Director, Urban Land Institute  
Sebastian Herrador Guzman - Economist & Senior Consultant, Deloitte  
Shirley Hoy – Consultant, StrategyCorp

#### **GTA Advisory Group (May 2020 – March 2021):**

Amy Buitenhaus - Resilience Lead, City of Toronto  
Andrea DelZotto - Executive, Tridel Group of Companies  
Craig Walter - Head, Infrastructure M&A, Americas, Deloitte  
Dan Hoornweg - Associate Dean, Associate Professor, Richard Marceau Chair, Ontario Tech University  
Daniel Rubinstein - Senior Director, Policy and Government Relations, Federation of Canadian Municipalities  
David Morley - Head, Public Affairs and Communications, Canada Infrastructure Bank  
Gianni Ciuffo - Financial Advisory Partner, Deloitte  
Jasmine Irwin - Senior Associate, Springboard Policy  
Jo Flatt - Vice President, Corporate Planning & Sustainability, Allied REIT  
Ken Greenberg - Urban Designer, Greenberg Consultants  
Lisa Lalande - Chief Executive Officer, Century Initiative  
Oliver Sheldrick - Senior Research Associate, Medow Consulting  
Pamela Blais - Principal, Metropole Consultants  
Sara Ditta - Senior Research Associate, Medow Consulting  
Yvonne Yeung - Head of Urban Design, City of Brampton

**GTA Expert Group (May 2020 – February 2021):**

Aaron Barter - Director, Innovation and Sustainability, Waterfront Toronto  
André Côté - Principal, Cote and Company Strategies  
Craig Ruttan - Policy Director, Energy, Environment & Land Use, Toronto Region Board of Trade  
Daniel Haufschild - Principal, Arup  
Dan McGillivray - Fellow, Ryerson University  
Drew Fagan - Professor, Munk School of Global Affairs and Public Policy  
Emily Harris - Director, The Policy Shop  
Jennifer Keesmaat - CEO, The Keesmaat Group (inactive)  
Kathleen Llewellyn-Thomas - Chief Customer Officer, Toronto Transit Commission  
Mr. Leslie M. Klein, Principal and Co-founder, BDP Quadrangle  
Marcy Burchfield - Vice President, Economic Blueprint Institute  
Olivia Labonté - Local Government Expert  
Sarah Powell - Health Planning Facilitator - Built Environment, Region of Peel  
Tomas Hachard - Manager, Programs and Research, Institute on Municipal Finance and Governance

**Project Team (2019 – 2021):**

Geoff Cape - CEO, Evergreen  
Lois Lindsay - Chief Advancement Officer, Evergreen  
Martin Canning - Executive Director, Government Innovation, Evergreen  
Robert Plitt - Executive Lead, Evergreen  
Jessica Thornton - (former) Director, Strategic Initiatives, Evergreen  
Michelle German - (former) Program Director, Evergreen  
Ayana Webb - (former) Program Manager, Evergreen  
Thomas Hutle - (former) Program Manager, Evergreen  
Jasmine Lefresne - (former) Program Officer, Evergreen

**Infrastructure Policy Action Plan (July – September 2021):**

Matti Siemiatycki, Director of the Infrastructure Institute, University of Toronto

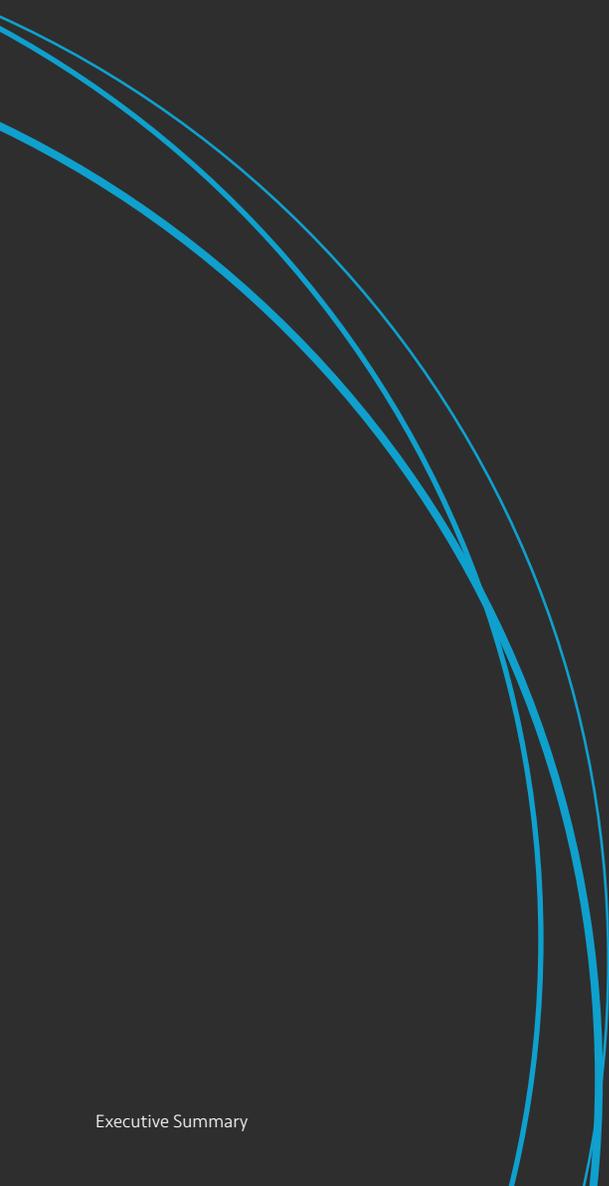
**Indigenous Inclusion Report (May – June 2021):**

Samantha Matters - Founding Director, Future Ancestors Services

**Scenario Set (June – July 2020):**

Ayana Webb - (former) Program Manager, Evergreen

# Executive Summary



It is estimated that \$11-\$22 trillion will be invested in infrastructure and real estate over the next 50 years in Canada. To maximize the impact of this investment, it is critical that we understand the changing needs of our cities, and how to make future-ready investment decisions today. Many governments, recognizing the scale of required investment, are now taking steps to understand and address infrastructure needs in more long-term and comprehensive ways. With this in mind, Evergreen launched Our Urban Futures, to explore a new approach to long-term infrastructure and real estate planning using strategic foresight tools in three Canadian regions: Calgary-Edmonton, the Greater Toronto Area, and Metro-Montréal.

Strategic foresight provides a range of methods to explore alternative futures and push the horizons of planning for infrastructure and real estate. Drawing from strategic foresight, design thinking and systemic design tools, Our Urban Futures developed regional scenarios used for action planning for three regions in Canada. The purpose of this was to catalyze longer-term thinking to ensure infrastructure and real estate investment decisions are informed by an understanding of the future of our cities, not simply current-day assumptions.



### **Part 1: Developing a Baseline**

The first part of the Our Urban Futures process focused on developing a baseline understanding of the current state of infrastructure and real estate planning in Canada, as well as current projections to 2067. To accomplish this, an understanding was established of the stakeholders involved, emerging future trends, as well as 7 expert perceptions of the change and priority areas. This part of the process included three phases:

1. Understanding the domain and developing a challenge statement to activate stakeholders;
2. Exploring future focused trends that have the potential to shift perspectives of what the future of cities may hold; and
3. Engaging experts to advise and provide input to the project.

### **Part 2: Building Future Scenarios**

The second part of the process focused on building future scenarios and a shared understanding of a vision statement. This required scenario development using a strategic foresight method, and consensus building among key stakeholders to develop a shared vision. This part of the process entailed two phases:

1. Scenario worldbuilding and scenario development to generate four alternative future scenarios; and
2. Using these scenarios to identify preferred aspects, resulting in vision statements that articulate an aspirational future in 30 years.

### **Part 3: Mobilizing Action**

The final part of the process, presented in this document, focuses on translating insights into action by developing strategic action plans and supporting documentation. This part of the process entails two phases:

1. Working with expert groups to develop an action plan through the identification of the policies and practices necessary to enact the vision statement; and

2. Developing the necessary communication materials to support advocacy and action.

Our Urban Futures has led to a more robust understanding of infrastructure, an improved thinking about infrastructure and real estate in systems, and a deeper understanding of the futures we are planning for. As Canadian cities respond to calls to “build back better” in a post-COVID-19 era, this is an opportune time to think differently about how we design our cities. COVID-19 and its impacts have demonstrated to us the importance of planning for the unknown, how the unimaginable can become reality overnight, and how quickly things can change in the face of disruption. Programs like Evergreen’s Community Solution Network further validate the data, technology and innovation approaches advanced through the action planning process, via national outreach and an event-based delivery model. With \$11-\$22 trillion to be invested in infrastructure and real estate over the next 50 years, Our Urban Futures presents a promising new approach that can ensure this significant investment enables the cities we want in 2067.

# Vision Statement

## 2050 GTA Vision Statement: A Whole New Ball Game

It's 2050 and the GTA provides a high-quality of life for all residents by prioritizing climate resilience and equitable access to core services. Now, no matter where you live in the GTA, all residents have access to affordable housing, services, green spaces, and suitable job opportunities. Climate resilience is supported by a flexible transportation network that makes travel within and between regional hubs fast, easy and affordable. Among other carbon emitters, single-occupancy vehicles are a thing of the past. From the lakeshore to the ravine system to the Greenbelt, the GTA's green spaces are thriving, connecting communities to nature and protecting the region from the impacts of climate change. Homelessness is at an all-time low, as economic hardship is no longer a barrier to accessing affordable housing. Due to the quality of life, affordable living, leading climate risk mitigation strategies and notable green infrastructure, the GTA is an attractive environment for local business and international companies alike. The strong economy attracts immigrants from around the world, bringing new skills and contributing to the region's growing population. All this has been made possible through the establishment of quicker decision-making processes and a focus on meeting the needs of the region's most vulnerable first.



Please refer to Appendix C (GTA Vision Statement) to see the entire vision statement including a more detailed breakdown into three key focal areas that emerged from the process: The Built and Natural Environment; Regional and Municipal Decision-Making Processes; and Financial Context.

# Preface to the Action Plan

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*Written by Matti Siemiatycki*

Canada is at a critical fork in the road when it comes to the nation's urban infrastructure. The past eighteen months has laid bare the magnitude of the intersecting crises of the COVID-19 public health emergency, the looming magnitude of climate change, and the ravages of systemic racism and inequality.

Through these crises, the failings and shortcomings of Canada's urban infrastructure have been in the spotlight – tragic COVID outbreaks in long-term care homes, increased flooding of infrastructure and communities, a digital divide exacerbating inequality. While the pandemic and climate change effects everyone, the impacts are not at all equal. Black, Indigenous, people of colour and newcomers have had far higher rates of COVID-19 infection and hospitalization, reflecting socio-economic inequalities, overcrowded housing, and gaps in access to health care.<sup>1</sup> Climate change poses a critical risk to the basic functioning of Canada's urban transportation, energy, health care and social infrastructure, while exacerbating and accelerating inequalities from flooding, heatwaves, wildfires, extreme storms and accompanying economic upheaval.

Central to the response and recovery effort from these interconnected crises is strategic investments in urban infrastructure. Governments frequently highlight that infrastructure investments serve a triple bottom line – creating jobs and economic prosperity, spurring a green transition to a low carbon society, and furthering social equity and inclusion. Each of these objectives is all the more pressing as Canada plans to support economic growth by welcoming over 1.2 million immigrants in the next three years, the majority of whom will settle in cities.<sup>2</sup> To this end, Canada is about to embark on the largest wave of infrastructure investment in a generation. The federal government has committed to spend \$185 billion over 12 years on public transit, green infrastructure, social infrastructure, and trade and northern infrastructure nationwide, matched by massive spending by provincial and

municipal governments. A wall of private capital is also lined up to invest in infrastructure assets that can deliver long-term, stable returns.

Yet the announcement of an unprecedented commitment to infrastructure investment does not assure success. Carefully coordinated investments in public transit, affordable housing, safe long-term care facilities, renewable energy, city-wide accessible high-speed internet, parks and bicycle lanes could create '15-minute neighbourhoods' where residents have access to all their daily needs nearby. Alternatively, infrastructure spending, fueled by borrowed funds, could dig a massive financial hole while actually making matters worse. Projects on the drawing board to build new mega-highways, car-oriented subdivisions, and warehouses on environmentally sensitive lands could exacerbate pollution, inequality, and contribute to a more polarized economy of winners and losers.

This points to the challenge ahead - to balance the financial, social, environmental, and yes, often deeply political objectives of infrastructure. Infrastructure is both nation building and the nation's plumbing. When well-planned, infrastructure investments create new connections, new opportunities, new ways of seeing a collective future, galvanizing a path forward. We should also not lose sight of the fact that one person's visionary nation building triumph is another's displacement disaster. Nation building mega-projects from the trans-Canada railway construction over a century ago to more recent urban renewal and freeway construction initiatives have been central to the dispossession of Indigenous, Black and people of colour from their lands. The double-edged power of infrastructure investments to both connect and divide highlights the central place for empowerment, co-creation and meaningful consultation to produce a shared vision of the future.

At the same time, the nation's plumbing metaphor for infrastructure suggests a more prosaic task, maintaining a technical system of roads, rails, pipes, wires, and public works that has been built up over years and is largely out of site and out of mind until something goes wrong. Effective infrastructure asset management requires technical skill and sustained commitment, month after month, year after year. This is no easy task in a world of limited resources and short attention spans. Deciding how to prioritize investments in both the maintenance and expansion of infrastructure requires detailed data, as well as transparent project selection process so that evidence can inform action.

The advent of new infrastructure technologies creates another dimension of uncertainty, opportunity and risk. Cities are on the cusp of radical innovations in many infrastructure sectors, such as transportation, construction, housing, energy, telecommunications, health care, and education. New players pouring into the infrastructure sector are some of the largest tech firms in the world, ambitious start-ups and the biggest institutional investors, many of them Canadian public sector pension funds and asset managers. Some of the new technologies and private business models being developed to transform infrastructure from a boring old-world industry into an exciting, digital on-demand consumer service sector could reshape the way cities and communities function forever. Privacy, inter-operability, precarious employment, profiteering, monopoly ownership, democratic oversight, and regulation are issues at the forefront of this infrastructure revolution.

As can be seen, getting the balance right with urban infrastructure is both of national importance, and incredibly complicated. Commitments of long-term stable public funds towards infrastructure is a necessary and welcome first step. A lot of hopes and aspirations are being invested in the restorative and transformational powers of infrastructure. In an increasingly polarized world, infrastructure appears to be one of the rare areas of broad consensus. But shoveling money into infrastructure alone will not necessarily bring widespread benefits. To be effective and spur inclusive growth, resilience and prosperity, infrastructure investments must be made in the right place, at the right time, with the right technologies, involving all the necessary people at the table, and with a plan in place to operate and maintain the asset over its complete lifespan. Decisions made today will have implications for decades to come.



# Core Guiding Principles for the Action Plan

*Written by Matti Siemiatycki, based on inputs from the Advisory and Expert Group of this project in the GTA region*

The following report presents a core set of guiding principles and an action plan to drive infrastructure investments in Greater Toronto. The report is the culmination of Evergreen's Our Urban Futures initiative. Between 2018 and 2019, Evergreen and Deloitte undertook research to identify the scale of infrastructure investment in Canada to 2067. The research estimates that **between now and the year 2067, Canada will need between \$11 trillion to \$22 trillion in infrastructure investment just to maintain current standards of living**, let alone make improvements. This is a staggering sum of money, which raises a whole suite of questions: where should it be spent, what will be built, who should decide, and how will it be paid for?

This report presents the findings from Evergreen's Greater Toronto Area process, developing a GTA Infrastructure Policy Action Plan. It begins by identifying **9 core principles** to drive effective infrastructure policy in the region. These are universal principles based on global best practices. Then it synthesizes the crowd-sourced GTA policy suggestions to produce a **strategic action plan**, which highlights insights on what should be built, who should be involved, and how this work should be undertaken. These actions are intended to have relevance across the region, in downtowns and more suburban locations. The report identifies the key actions that will enable the GTA to make strategic long-term investments in infrastructure that will be the foundation for a more prosperous, fairer, resilient region.

## CORE PRINCIPLES

This section sets out 9 core principles to drive Our Urban Future in Canadian cities. These principles capture the fundamental values and implementation practices that must be present for Canadian cities to achieve a shared urban future.

### 1. Triple Bottom Line Screen

The core mission of the current wave of infrastructure investments is to foster Canadian cities that are more equal, enable inclusive prosperity, and address climate change. To achieve this mission with a laser focus, all infrastructure projects must be evaluated through the lens of a triple bottom line.

**Equity Lens:** An equity lens is critical to identify and dismantle the policy decisions that lead to structural racism and systemic inequality in urban infrastructure provision. Through institutional policies and practices borne out over decades, noxious infrastructure like garbage dumps, mega-highways, heavy industry, unsafe drinking water, and local power transformers are most prominently located in Black, racialized, Indigenous and low-income communities.

Gender, sexual orientation and physical ability are other dimensions along which infrastructure inequalities exist. A recent study by Akwasi Owusu-Bempah and Scot Wortley shows how Black and Indigenous riders are 'grossly overrepresented' in interactions with transit enforcement officers in Toronto<sup>3</sup>; women, LGBTQ2+, and racialized people continue to be disproportionately targeted for hate crimes, physical assault, harassment and micro aggressions in public spaces; and many critical public spaces, including park playgrounds and many of Toronto's subway stations, are not accessible for people with disabilities. Today, the pandemic has further revealed the intersection of poverty, gender and race with the prevalence of overcrowded housing, unequal access to transit and health care, streets that are hostile to walking and cycling, and a vast digital divide. An equity lens must assess infrastructure investments on at least two dimensions: spatial equity to ensure that people in all parts of the city have equal access to high quality infrastructure, regardless of their ability to pay; and operational equity to ensure that all people feel safe in public spaces and are treated equally in the provision of infrastructure services.

**Inclusive Prosperity:** Infrastructure investments are widely

being touted as a strategy to kick start the economy and create well-paying jobs. A critical consideration is thus jobs and economic benefit for whom? In Canada, in 2019, there were 608,000 jobs associated with the infrastructure sector, accounting for 3.6% of all hours worked in the country. Infrastructure investments create many jobs in construction, yet the construction sector is overwhelmingly white and male. <sup>4</sup> Across Canada men make up over 90% of the workforce in the construction trades, where pay is the highest and work conditions are best. <sup>5</sup> While women, newcomers and racialized people are often more deeply involved in operating certain types of social infrastructure, such as daycares and long-term care homes, these frontline workers tend to be in low paid, precarious positions. A business-as-usual approach to infrastructure investment will inadvertently exacerbate inequality. Equity does not only apply to what projects get built, but also who builds and operates infrastructure.

Climate Lens: Across Canada, cities have led the provinces and national governments in declaring a climate emergency and committing to major emission reduction targets. Climate change in Canada is very much an urban phenomenon, with deep implications for infrastructure. After the oil and gas sector, the two largest sources of emissions in Canada are: transportation, mainly passenger travel by fossil fuel powered cars and light trucks and freight trucking, which have increased dramatically since 1991; and buildings, which mainly relates to the energy sources for heating, cooling and electricity, as well as the energy involved in building the structure. <sup>6</sup> The urgency of the moment requires that all infrastructure projects are assessed for their climate impact – both to mitigate emissions and adapt to a changing climate. In practical terms, a climate lens prioritizes decarbonizing the transportation system through active transportation, mass transit and electrifying personal and freight transport, improving the energy efficiency of existing and new buildings, investing in local green energy production and

grids, and reducing waste that release greenhouse gases as it decomposes. <sup>7</sup> A climate lens also captures the ways that infrastructure is being modified to be resilient in the face of more extreme weather, and the accompanying technical, social and economic ripple effects.

Taking a triple bottom line approach reveals the tensions that can sometimes exist within projects that on their surface appear to meet all the criteria for equitable, green, inclusive projects. For instance, in many Canadian cities new rapid transit lines are being built to provide improved sustainable mobility for people in low income, racialized, newcomer communities that have often had poor access to reliable transit. Projects often also include community benefit agreements targeting more inclusive employment and contracting. Yet these projects also run the risk of spurring development pressure that can drive gentrification and displacement of existing residents and small local retailers, who are the cornerstones of successful communities. In the Toronto neighbourhoods of Little Jamaica along Eglinton, Jane and Finch, and Thorncliffe Park, communities are actively mobilizing to counter the pressures of displacement being unleashed by new rapid transit lines. This example demonstrates the need to carefully consider the unintended consequences of infrastructure decisions, even ones that on their face have many positive features, to develop intentional strategies to realize equitable, green, inclusive prosperity.

## **2. Infrastructure as Drivers of Complete Communities**

To achieve a triple bottom line, infrastructure must be a driver of complete communities where residence have access within a short safe walk or bicycle ride to rapid transit, quality jobs, education, retail, parks, health care, and public services. This has been captured in the 15-minute neighbourhood concept, first popularized by the mayor of Paris and now inspiring urban development plans globally. According to Robert Cervero and Kara Kockelman, the ‘three ds’ of successful transit oriented

complete communities are density, diversity and design. They are dense communities built within around a 10-15 minute walk from high quality transit; they have a diverse mix of residential, employment, retail and services to encourage transit ridership and ensure activity throughout the day; and they have an inviting public realm that is fostered through high quality urban design. <sup>8</sup> The pandemic has accelerated the reallocation of road space to bicycle lanes, wider sidewalks, and street cafes in cities across Canada, creating the seeds of a more vibrant, inviting public realm. Cities nationwide are also proceeding with major urban transit projects, coupled with plans for community hubs at key transit stations that collocate schools, libraries, daycares, recreation centres, shops, workplaces and mixed income housing. The federal and provincial governments are also active city builders and can further accelerate the realization of complete communities through the leveraging of their major urban real estate holdings, program funding, and application of regulation and legislation. These efforts should be redoubled as the cornerstone of a healthy city. It is important to ensure that such investments are spread equally throughout the city, and not only located in downtown areas, to ensure that all residents are able to take advantage of the benefits of complete communities.

## **3. Maintenance & New Build Infrastructure**

In the race to effectively invest hundreds of billions of dollars in urban infrastructure, a balance must be struck between building new facilities and maintaining and upgrading the existing stock of infrastructure. The public and political impulse to invest scarce resources in new infrastructure is strong. New transit, green energy, affordable housing, long-term care, schools, and parks are highly visible initiatives that can deliver transformative community benefits when prioritized correctly. At the same time, the scale of need to maintain and upgrade existing urban infrastructure is staggering. Ontario oversees over \$230 billion in highways, bridges, transit lines, schools and recreation, spread between



many different departments and agencies. Deferred maintenance has been a challenge across all types of urban infrastructure. There is significant value in rehabilitating and retrofitting existing infrastructure assets to get the most out of them, and intensifying adjacent land use. Maintenance, rehabilitation and retrofitting programs can create local jobs quickly and deliver emission reductions and equity gains far faster than planning and building new assets. This has been demonstrated in the quick, cost-effective conversion of underused hotels in many cities into shelters and supportive housing buildings. Infill developments are also increasingly being built at many existing transit stations, getting the most out of current assets.

#### **4. Foster Intergovernmental Collaboration**

Collaboration and coordination is critical to the effective development of sustainable infrastructure and complete communities. Yet infrastructure planning, land use policy and project delivery in Canadian cities is highly fragmented. Responsibility is split between various orders

of government, Indigenous communities with urban reserves, the private sector and non-profit organization. Each stakeholder has their own mandate, jurisdiction and resources. To date, there are few venues for constructive dialogue between the multiple stakeholders, either at the leadership level where the regional vision is set or at the staff level where projects are designed. This creates tensions between competing plans that can delay or derail projects, as highlighted by recent intergovernmental conflicts over plans for the Ontario Line in Toronto and the Green Line in Calgary. Strategies are required to create spaces where stakeholders can feel comfortable sharing sensitive information and proactively coordinate the various organizations involved in city building. Effective venues can include small stakeholder workshops, member-based forums, panels, and regional planning councils.

#### **5. Community Engaged**

Alongside coordination between stakeholders, meaningful community engagement is essential to the effective planning and delivery of infrastructure to meet the current moment of urban crisis. With significant urban transformations on the horizon, community engaged infrastructure planning involves the public in decision making and the co-creation of solutions to complex urban challenges. At its best, effective engagement provides diverse communities with all the available project information early in the planning process and lets them use their local knowledge to participate in developing meaningful solutions that are better than any agency or firm could come up with on their own. It upends the framing of low income, Indigenous, Black and other racialized communities being marginalized, and instead focuses on a community's strength and local knowledge. Meaningful community engagement thus has the potential to co-create better solutions to urban challenges, while building empathy and legitimacy for projects that may otherwise face stern opposition.

Meaningful consultation, of course, is easier said than done. Statutory consultations that are required as part of official infrastructure planning processes are often inadequate, serving as a form of placation and tokenism, where communities are consulted but their input has little impact on decisions. This 'decide and defend' approach to consultation undermines local trust. There is also a fine line between not in my backyard style opposition to change, and legitimate concerns about projects that will devastate communities through disruption, gentrification or displacement. And communities themselves are highly varied, with the loudest voices and those with the most resources tending to dominate community consultations. To move beyond tokenistic consultation requires early and ongoing engagement, intentional strategies to ensure broad public participation, the transparent release of project information, and clarity about how power will be shared and input from the consultation will be used in decision making. The pandemic has limited the types of in-person town-hall and open house style meetings that are possible, but it has also opened up opportunities to use virtual methods to reach a wider range of participants.

#### **6. Tech-Enabled, Not Tech-Led**

The arrival of new technologies in cities must be carefully managed to ensure that they deliver broad public benefit. There is much hype about the potential of new technologies to improve all facets of urban life, promoted by some of the largest and most powerful companies in the world. Fleets of electric driverless vehicles, autonomous drone parcel delivery, cheap rooftop solar energy, elder care robots, automated modular building construction, and ubiquitous sensors and cameras in smart city developments are all innovations on the horizon. Yet new technologies can be both transformative and super disruptive; innovations can contribute to greener, more inclusive city building, or exacerbate inequality and raise issues of privacy, corporate monopolies and poor working conditions. Moreover, tech companies like Uber and AirBnB have displayed a pattern

of aggressively entering new urban markets with their services, often pressing municipalities to change their regulations and accelerate timelines to suit the company's interest. Cities must proceed deliberately to harness the power of new urban technologies, while avoiding precarious employment, lost privacy, or the worst excesses of tech led capitalism. Evergreen refers to this as the advancement of the Open Smart City, where governments collaborate with residents, community-based organizations, academics and firms to identify when new technologies are appropriate, and how to mobilize them in an ethical, accountable and transparent way.<sup>9</sup> It is critical that cities leverage the potential of innovative urban technologies without permitting urban tech firms to direct the terms.

### **7. Leverage All Policy Tools**

Government should use all available policy levers to ensure that infrastructure investments deliver on the triple bottom line of climate positive design, greater social equity and inclusive prosperity. At the urban scale, municipalities can leverage land use intensification and density bonuses adjacent to new transit or newly flood protected lands in order to pay for some of the infrastructure or fund the cost of other community amenities. Hong Kong and Vancouver have been leading jurisdictions in using density bonuses and other land value capture approaches to finance infrastructure and inclusive development. Strategies to simplify and accelerate development approvals and pre-approving zoning in designated areas have a financial value that can be tapped into to pay for community facilities. With the average building having a lifespan of 50 years, upgrading the energy efficiency standards in the building codes and enhancing enforcement can reduce emissions over the long-term.

<sup>10</sup> Social procurement and community benefit agreements create frameworks for major infrastructure investments to foster high quality jobs for diverse workers.

Governments of all levels tend to favour financial incentive

programs, like the Canada Green Homes Grant, to encourage energy efficient retrofits, rebates on electric vehicles, or the installation of backwater valves to guard against home flooding. Conversely, infrastructure pricing and user pay approaches like road charges, higher parking charges, and storm water fees based on a property's hard surfaces have been far less politically popular in Canada, even though they can effectively raise revenue for infrastructure and shape usage patterns. Many types of urban infrastructure are deeply subsidized, from roads and transit to energy and municipal water. This raises tensions about who should pay for infrastructure in Canadian cities – general taxpayers, users or some combination of the two.

### **8. Use Evidence as a Core Tool in Infrastructure Decision-Making**

With so many different considerations influencing infrastructure investment choices, evidence-based decision making is central to effective infrastructure policy, as it provides a framework to systematically use knowledge to inform action. Far from the common plea to 'get the politics out of infrastructure policy', evidence-based policy making is in fact a model of balancing technical evidence and political accountability as the expression of democracy. The textbook model of evidence-based policymaking is deceptively simple. Politicians, as the representatives of the electorate in our democratic system, set the high-level policy priorities and strategic directions. Technical evidence is produced by the independent civil service, often with inputs from private consultants and including community engagement, to evaluate whether the benefits of a particular project outweigh its costs. These multi-criteria evaluations consider economic, social and environmental factors. Once the technical evidence is produced, it is released publicly, and the politicians weigh the evidence and decide on the best course of action to meet the overarching policy goals. The politicians are held accountable for their choices come election time at the ballot box. Of course, there are all sorts of ways that

this textbook model of evidence-based policy making is undermined, from a disregard for the evidence that runs counter to the politically preferred options, to poor quality studies, to undue political pressure placed on civil servants to skew study results. While there is no universal solution to uphold the integrity of evidence-based planning processes, transparency of information and independent peer review processes are strategies that create layers of accountability.

### **9. Better Data to Inform Action**

Practicing evidence-based infrastructure planning requires high quality data to inform decision making. To date, the infrastructure sector is often making decisions in the dark. In many instances there are large gaps in data about infrastructure performance, cost, risk, procurement results, the state of repair, usage patterns and by whom. Data is often split between public and private sector organizations. Moreover, the pandemic has reinforced the need to collect race based data in order to better understand the different impacts that urban infrastructure policies have on Black, Indigenous and people of colour.<sup>11</sup> Fundamental is the transition of agencies, departments and firms that manage infrastructure into data driven organizations, which are committed to collecting and reporting information about all aspects of their business. As part of this process, it is necessary to develop more advanced analytics about infrastructure performance and investment outcomes, combined with clearer ways of displaying data in dashboards, info-graphics and other formats to inform decision making and public dialogue. This requires capacity building to create a workforce with the skill to collect and analyze complex infrastructure data, and to effectively manage data security and privacy. Finally, it bears noting that collecting better data on its own will not necessarily improve infrastructure outcomes. Rather data needs to be carefully integrated into decision-making processes and released publicly for accountability so that evidence can truly inform action.

# Infrastructure Policy Action Plan

Written by Matti Siemiatycki, based on inputs from the Advisory and Expert Group of this project in the GTA region

The following section sets out 10 key areas for action with a series of specific recommendations to turn the core principles for effective infrastructure planning into practice in the Greater Toronto Area. These proposed actions come at a moment of great activity on the infrastructure file in the region. Over the past year in Greater Toronto there have been a flurry of plans drafted, funding committed, private sector development proposals, and innovations rolled out as part of the pandemic recovery effort. The actions being proposed below aim to consolidate a busy infrastructure landscape and provide guidance on a path forward. The actions cover what should be carried out, how it should be executed, and by whom.

Key Areas for Action		
What	How	Who
Action 1: Coordinate Infrastructure Investments and Land Use	Action 5: Require Triple Bottom Line Assessments in Deciding Funding Priorities	Action 9: Diversify the Infrastructure Sector Leadership and Workforce
Action 2: Coordinate Infrastructure Investments and Land Use	Action 6: Require Triple Bottom Line Assessments in Deciding Funding Priorities	Action 10: Foster Meaningful Collaboration
Action 3: Co-Locate Infrastructure	Action 7: Improved Data Collection	
Action 4: Align Infrastructure Funding and Policy Goals	Action 8: Full Lifecycle Funding for Operations and Maintenance	

## I. What Should be Done

### 1. Coordinate Infrastructure Investments and Land Use

Greater Toronto must follow through on the many plans in the region that emphasize coordinating infrastructure investments and compact, mixed-use development to foster complete communities. The provincial government's regional development plans for Greater Toronto – the Growth Plan for the Greater Golden Horseshoe and Metrolinx's 2041 Regional Transportation Plan - call for the concentration of growth in mixed use hubs and the limiting of low density, auto-oriented urban sprawl. The province has also passed the Transit Oriented Communities Act to reinforce this policy agenda. Municipal official and secondary plans in the City of Toronto, Vaughan, Markham, Richmond Hill, Mississauga and Brampton all prioritize the concentration of development in transit-oriented growth centres, as well as infill development in mid-rises along major arterial roads. In practice, progress has been slow and uneven: some transit-oriented communities like North York Centre and Vaughn Metropolitan Centre are taking shape, while extensive sprawling, car-oriented development continues throughout the region. Against this backdrop the following measures should be taken to coordinate infrastructure and land-use planning to realize complete communities in Greater Toronto.

- Cancel highway 413: The province must immediately cancel its plans for the GTA West Highway (Highway 413), which will cut through existing farmland, spur sprawling developments, more deeply entrench car dependence throughout the region, and only save drivers minutes per trip according to an expert panel. Nearly all of the municipalities that the proposed highway passes through now oppose the project, and it is currently undergoing a federal environmental assessment.
- Concentrate development: Municipalities across the

region must stop approving low density, single use, car-oriented residential subdivisions and office park developments. As articulated in the province's regional growth plans, development must be concentrated in strategic mixed-use transit-oriented growth centres. Where suburban style subdivisions are being targeted, densities can be increased by including a greater mix of townhouses, small walk-up apartments, and secondary suits, and must be coordinated with existing and new transit services.

- Protect wetlands and floodplains: Protecting and extending the greenbelt and other wetlands and floodplains in the Greater Toronto region is essential to prevent costly flooding, provide clean drinking water, sequester carbon from the atmosphere, and provide spaces for outdoor recreation. According to the Greenbelt Foundation, the Greenbelt absorbs enough water annually to avoid \$224 million in flooding per year, offsets 71 million tonnes of carbon annually, the equivalent of 56.5 million cars, and affects the drinking water quality of 7 million people.<sup>12</sup>
- Broaden provincial growth planning: Provincial growth planning, which has typically focused on connecting transit and land use planning, should be broadened to consider the strategic concentration of all types of civic infrastructure that comprise a complete, 15-minute neighbourhood. This includes transit, active transportation, schools, health care, long-term care, recreation centres, libraries, affordable housing, parks, etc.
- Increase green building standards: Municipalities across the region should increase green building standards above the base provincial standard to improve energy efficiency, minimize carbon emissions, reduce operating costs, improve indoor environments, and enhance climate comfort for occupants of new buildings. There are a variety of existing performance-based standards, including Passive House and Toronto Green Building

Standards (Tiers 1-4), which are implementable and evidence based that municipalities can draw on.

In the City of Toronto, for instance, development charge refunds are available for projects that exceed the minimum green building standards and achieve voluntary targets.<sup>13</sup>

- Encourage development of "missing middle": Municipalities can explore changes to zoning regulations and the reduction of development costs to encourage the development of 'missing middle' mid-rise housing along major avenues and gentle intensification in neighbourhoods of single-family homes.<sup>14</sup>
- Leverage density bonus to fund infrastructure: Transparent density bonus and land value capture mechanisms can be leveraged to fund transit and other community infrastructure. For example, in Vancouver, the city is divided into density bonus zones. In each zone documents specify the types of public benefits and amenities that can be funded through agreements with developers in exchange for additional density above what is allowed in the base zoning. The density bonus rate per square foot of development is also published for each zone based on the needs of the specific community.<sup>15</sup> In Montreal, a direct benefit fee is being applied to all new developments approved within close proximity of the new REM rapid transit line to recoup some of the uplift in value spurred by the construction of the multi-billion dollar transit line.

### 2. Create Rapid Response Programs

Significant triple bottom line benefits can be achieved through investments in flexible, 'tactical' interventions in infrastructure. These investments are quick to implement, relatively low cost, and at a scale that they can be assessed, trialed and evaluated before long-term commitments are made. Many tactical programs began as urgent responses to the pandemic and the declaration of a climate emergency, and can be ramped up and expanded as their benefits are demonstrated. Both the federal and

provincial governments have created new funding programs to support rapid interventions in active transportation (federal), community infrastructure (federal) and school retrofits (provincial). In order to ensure equity, it is critical that tactical urban interventions are targeted in a way that serves those communities with the greatest needs. Careful monitoring and data collection protocols should be implemented to evaluate the results of tactical urban interventions and determine which ones should be scaled up or back.

- Active transportation and streetscapes: Protected bicycle lanes, wider sidewalks and outdoor patios should be rolled out to provide safe spaces for travel and recreation. Importantly, attention is necessary to ensure that such infrastructure is evenly distributed and accessible to all communities across the region, while policies are implemented to ensure that improved local infrastructure benefits diverse communities without spurring gentrification and displacement.<sup>16</sup>
- Transit priority: Dedicated bus lanes to provide improved surface transit are now being planned along many arterial roads throughout the Toronto region, especially in locations where bus service remained crowded throughout the pandemic. BRT systems are among the most cost-effective approach to delivering improved mobility and reduced carbon emissions.<sup>17</sup> Additional funding is required to accelerate the roll out of a BRT network.
- Schools: School boards must work quickly through the massive undertaking of retrofitting ventilation systems and ensuring windows open. School yards and nearby public parks could also be retrofitted with open-air pavilions to support the expansion of outdoor education that is safer for in person learning if COVID-19 cases rise again, and has reported pedagogical benefits as well.<sup>18</sup>
- Digital Divide: Throughout the pandemic access to internet has been a critical lifeline, and programs to bridge the digital divide both in terms of low-cost

internet access and providing access to hardware devices have been led by public libraries, schools and other anchor institutions. Recent analysis shows that while companies such as Rogers offer a low-cost internet service for seniors and residents of subsidized housing, many people eschew the program because the 25 Mbps speed is too slow. Given the gap, analysis is currently being carried out to explore whether a low cost, public option should be developed by affordable housing providers or municipalities to provide high speed internet in communities where service is prohibitively expensive.<sup>19</sup> This challenge is reflected in the suite of toolkits created by the Community Solutions Network to support the development of community broadband plans <https://futurecitiescanada.ca/portal/resources/getting-started-with-community-broadband/> Flood mitigation: There are many green infrastructure initiatives that can be immediately implemented by home and building owners to better manage stormwater. This includes: building green roofs and rain gardens, replacing pavement with permeable surfaces, planting trees that absorb water, and directing downspouts into rain barrels to manage runoff.<sup>20</sup>

- Heatwave Adaptation: Extreme heatwaves as a result of a changing climate are a major threat to public health and infrastructure in Greater Toronto. In the City of Toronto alone there are around 3,400 buildings without air conditioning, which pose a serious threat to the health of residents in high temperatures.<sup>21</sup> Strategies to adapt buildings and communities for heatwaves include: the opening of a network of cooling stations in public buildings, painting building roofs white where a green roof is not an option,<sup>22</sup> including solar shade on older apartment buildings as part of energy retrofits, planting trees to provide shade and reduce the urban heat island effect, with special focus on low income and racialized communities where tree cover is lowest.<sup>23</sup>
- Reliable Energy: The implementation of distributed energy systems like solar panels, on site battery storage,

and district energy systems can increase urban energy reliability, which is particularly vulnerable to extreme weather like heatwaves and storms.<sup>24</sup>

- Vibrant Streets: Temporary 'meanwhile uses' enable the programming of spaces like properties slated for future construction or retail and commercial spaces that are vacant, maintaining vibrant public spaces while they are in a period of transition. For instance, the Why Not Theatre NGO have created programs and partnered with landlords to enable performing artists to use vacant retail and commercial spaces for rehearsals until new long-term tenants are found.<sup>25</sup>

### 3. Co-Locate Infrastructure

Co-locating complementary public, private and non-profit uses in the same building is an effective approach to leverage the fast pace of regional development to provide important spaces for delivering public services, create neighbourhood vibrancy, share costs, and foster complete communities.

- Creative mixed-use buildings are a made-in-Toronto innovation that co-locate public services like schools, libraries and recreation centres in buildings with non-profit services such as homeless shelters, daycares, and arts centres, with private sector housing and offices. To date, more than 60 creative mixed-use buildings have been built in the region. These public-private-non-profit partnership projects are typically one-off initiatives that are spearheaded by their private, public and non-profit promoters.<sup>26</sup>
- Community hubs are an emerging large-scale, policy-led approach to provide high quality public services at the heart of complete transit-oriented communities. Community hubs are typically public-public partnerships that co-locate anchor public institutions like schools, libraries, recreation centres and health care in the same building and near transit. The co-location of critical public services enables each institution to have their own independent space, while finding synergies

in their programming and making it possible to share construction and operating costs. The most ambitious community hubs also integrate affordable housing into the hub building above the institutional spaces, and may include other private or non-profit services on site.<sup>27</sup> The Indigenous Hub that is being built in the east downtown Canary district neighbourhood provides an example of the possibilities through inter-organizational collaborations.<sup>28</sup>

- Green infrastructure can also be designed to do double duty as environmental and socially beneficial features of the landscape. For instance, waterfront berms and dikes that provide critical flood protection can be landscaped as beautiful public parks, as has been done by Waterfront Toronto at Corktown Commons along the Don River in Toronto.

#### 4. Align Infrastructure Funding and Policy Goals

The way that infrastructure is funded and paid for by users has a big impact on what gets built, and how infrastructure services are consumed. Public and private sector funding programs must be designed to encourage green, inclusive infrastructure investments. And the setting of user fee rates plays a significant role in managing infrastructure demand and can encourage green, inclusive consumption choices.

- Road Tolls: The City of Toronto and the Province of Ontario should examine the introduction of tolls on the major highways in the Greater Toronto region (ie. the City Owned Gardiner Expressway and Don Valley Parkway; the Provincially owned 400 series highways), with revenue directed to facility maintenance and any further profits devoted to public transit alternatives. Other jurisdictions such as Oregon and Utah in the United States have introduced pilot programs for electronically collected taxes on all vehicle kilometres traveled, to fill the funding gap for infrastructure as gas taxes decline with a shift to electric vehicles.<sup>29</sup>
- Parking Policy: Parking policy is an area that can have

a significant impact on land use and transportation patterns. This includes increases in street parking fees, variable residential parking rates depending on car size and emissions of the vehicle as is being explored in the City of Vancouver, and changes to zoning rules to eliminate minimum parking requirements as was recently implemented in Edmonton, which can lower building costs. Companies that offer free parking on-site can also develop parking cash out programs to pay their employees not to drive to work, thereby providing an incentive for workers to use other travel options and enabling the firm to reduce their costly parking requirements over time. California mandates parking cash out programs for all employers with more than 50 works.<sup>30</sup>

- Stormwater Charges: All municipalities in the Greater Toronto region should adopt stormwater charges that rise based on the amount of hard surfaces on the property. This provides property owners with an incentive to reduce the building footprint, driveways, parking spaces, patios and hardscaped landscaping on their properties that contribute to storm water runoff, in order to reduce their stormwater charge. Mississauga implemented such a program in 2016, with revenue dedicated to stormwater management in the municipality.<sup>31</sup>
- Financing Energy Retrofits: Programs from all orders of government and private investors should be coordinated and scaled up to accelerate building energy retrofits. There is an opportunity for new business models that finance the upfront costs of building retrofits through long-term energy savings. Special attention should be placed on retrofits that improve the living conditions and reduce energy costs in social and low-income housing. Examples include improved insulation, more efficient windows, on site solar panels, and the addition of solar shades on the exterior of buildings.
- Financing Vehicle Charging Stations: Governments and firms should explore business models and incentive

programs to roll out networks of charging stations throughout the region to support the mass adoption of electric vehicles and busses. Entrepreneurs and auto manufacturers may also explore alternative vehicle charging options such as shared electric vehicle fleets, swappable batteries and contactless charging infrastructure built city roads and parking spaces at depots.

- Coordinated Funding Programs: To encourage the development of complete communities, the federal government should coordinate programs between its various departments and agencies like Infrastructure Canada, Transport Canada, and Canada Mortgage and Housing Corporation to collectively invest in transit infrastructure, internet for underserved communities, active transportation, and affordable housing adjacent to new transit lines.

## II. How Should Infrastructure Programs be Executed

### 5. Require Triple Bottom Line Assessments in Deciding Funding Priorities

How to prioritize between the large number of potential investment options, and the many potential financing tools? Projects, programs and plans being considered for investment should be required to document how they will improve equity, address climate change and foster inclusive prosperity goals as part of the assessment process. The specific assessment tools can be flexible to respond to the local context and the particularities of the project or program under evaluation. At the same time, common guidance can be developed to provide options for frameworks and methods to effectively assess infrastructure initiatives through a triple bottom line lens. This guidance should be developed in collaboration between the multiple orders of government, stakeholders, and community. The guidance documents and resulting reports should be made publicly available to enable transparent reporting.

## 6. Evidence-based planning

There is no magic bullet solution to uphold the integrity of evidence-based planning processes. Decisions about infrastructure investments are inherently political, as they are fundamentally about the prioritization and allocation of scarce resources.

**Transparency:** At a minimum, all technical studies and business cases to assess the merits of major infrastructure projects should be publicly released prior to a final decision being made, something that is not always the case for large infrastructure and land use plans in the region. Transparent access to information provides the foundation for open public dialogue and debate.

**Independent Peer Review:** Going a step further, the federal government should establish an independent expert review panel to assess the technical evidence and make recommendations on the preferred course of action for projects of national importance that are applying for federal funding. It is recommended that the minimum cost threshold for a project to receive a full peer review is \$100 million or otherwise designated as a project of significance, given the amount of time and resources involved. Once these recommendations from the independent expert review panel have been publicized, it is then the role of the politicians from each order of government to decide on the preferred course of action, with accountability to the electorate at the ballot box.

## 7. Improved Data Collection

A robust program should be undertaken to collect detailed information that provides insights on the impacts and outcomes of infrastructure in Greater Toronto, as the foundation for informed decision making. The data will be qualitative and quantitative, and intentionally include information about race, income and other demographic characteristics, as has been widely called for throughout

the pandemic. A robust urban data collection program will include data standardization across orders of government, aggregation of datasets across the public, private and non-profit sectors, enhanced protection of privacy, the research and development of new analytical techniques, and a common clearinghouse for publishing data. There are a variety of models that could be developed to operationalize this enhanced data collection program, including the creation of an independent agency modeled on the Canadian Institute of Health Information, a Centre of Excellence based at a university, or a non-profit data observatory. Each model could include funding and governance representation from each of the participating orders of government.<sup>32</sup>

## 8. Full Lifecycle Funding for Operations and Maintenance

All major infrastructure investment proposals should be accompanied by a clear operations and maintenance plan, including an identified source of funding over the entire lifespan of the asset. This is especially important because while many types of infrastructure receive federal and provincial capital funding grants, they often create new long-term operating expenses for municipalities and other orders of government beyond any revenues generated. These expenses can become a significant financial burden if not carefully planned for and accompanied by a sustainable source of funding. In one example, in 2007 the City of Toronto threatened to shut down the recently opened \$1 billion Sheppard Subway Line, due to what was described at the time as the City's unsustainable financial position. With major commitments to infrastructure in Greater Toronto now being made, preparations are critical to ensure that today's infrastructure investments have the resources to be operated and maintained over the long-term.

## III. Processes for Inclusive Infrastructure Delivery

### 9. Diversify the Infrastructure Sector Leadership and Workforce

Intentional strategies are necessary to ensure that infrastructure investments drive inclusive prosperity.

- Community benefit agreements have been widely used in infrastructure projects in Greater Toronto to provide opportunities for racialized people and newcomers to Canada to enter the workforce in construction and facility operations. Major provincial projects like the Eglinton Crosstown and municipal led initiatives including Woodbine Live in Rexdale have entered into community benefit agreements. All orders of government should accelerate policies to integrate community benefit frameworks into their procurement policies and improve labour conditions for workers. The Toronto Community Benefits Network has been an important advocate, promoter and negotiator of these community benefit agreements in the infrastructure sector in the region.<sup>33</sup>
- Social procurement policies have also been enacted by various governments to increase access to contracts by businesses owned by women, Indigenous and racialized people.
- Regulations must be implemented so that infrastructure business models that rely on low wage, precarious employment such as ridesharing, nursing home staff, and childcare are reorganized to improve wages and conditions.
- Public and private sector organizations must actively implement strategies to diversify the leadership and staff teams responsible for major infrastructure in the region, an area where significant diversity gaps exist. This is critical so that people with diverse backgrounds and perspectives are involved in all levels of decision making.

### 10. Foster Meaningful Collaboration

Meaningful intergovernmental collaboration and community engagement is critical to an effective infrastructure program. In particular, new forms of governance innovation are required to implement complex

community-level infrastructure projects that require multi-stakeholder negotiation and decision making. In the absence of wholesale institutional change in the region, a variety of new policy networks have emerged in recent years to enable more integrated place-based infrastructure development. This includes the Recovery and Prosperity Alliance (GTA-RPA) which is a temporary arrangement that convenes city managers and chief administrative officers across the region, Metrolinx led provincial-municipal tables focused on transit fare and service integration, and convenings by stakeholders such as the United Way-Bank of Montreal hosted Inclusive Local Economic Opportunity Table. Further governance innovation can build on the momentum for greater regional collaboration.

- **Regional Complete Communities Table:** In Greater Toronto, an intergovernmental complete communities table should be created to convene municipal, provincial, federal and Indigenous representatives with a focus on coordinating regional infrastructure and land use policy, and resolving conflicts as they arise. To date there is no venue to enable inter-governmental collaboration and problem solving in the region. This forum could be set up as an independent commission, a member led association like the National Executive Forum on Public Property, or an institute affiliated with a local academic institution or non-government organization.
- **Project Level Committees:** As specific place based complete community projects take shape across the Toronto region, the local municipality should take the lead in convening a committee of public, Indigenous, private and non-profit stakeholders to share information and coordinate action, something that remains rare.
- **Co-Create Community Engagement:** Effective community engagement involves developing approaches to evolve engagement from top-down

processes to inform and consult communities on decisions, to processes that foster collaboration and empowerment in decision making. Municipalities should fund and proactively work with local civic organizations and neighbourhood leaders to co-create meaningful engagement processes for infrastructure initiatives that will reshape the future of the region for decades to come.<sup>34</sup>

- **Recognize shortcomings:** Organizations involved in major infrastructure initiatives in Greater Toronto should look introspectively to explicitly identify who is excluded from their processes, how their current policies and practices may systemically perpetuate inequalities, and what corrective actions must be taken. This is essential to build deep and meaningful relationships within the context of infrastructure planning's colonial origins, and the record of displacement and unequal outcomes of infrastructure that remain through to the present.
- **Capacity:** Realizing an ambitious action plan through meaningful collaboration requires capacity to enable long-term implementation. At present the entire city building ecosystem in Greater Toronto is stretched responding to the pandemic and planning for the recovery. Capacity support goes beyond funding, which is of course important. It requires new ways of meeting, sharing information, priority setting and decision making to produce synergies and achieve outcomes that are better than anyone organization could realize alone. Cities can build internal capacity in the concepts of Open Smart Cities by accessing programming like Evergreen's Community Solutions Network which offers a range of tools, resources and event-based learning opportunities.



# Next Steps: Where to Start

*Written by Matti Siemiatycki*

As documented in the Action Plan, the magnitude of the moment requires urgent, wide-ranging, sustained action to foster inclusive prosperity, greater equity, and sustainability. Indeed, there is so much to do that it can seem daunting and overwhelming. For politicians and policymakers, the moment of intersecting crises of public health, climate and systemic inequality and racism requires bold, urgent action. Below are the top 10 immediate actions that policymakers and politicians can take to make a positive difference in the region.

1. Develop a clear, objective set of metrics by which federal, provincial and municipal infrastructure proposals can be evaluated against the triple bottom line and value for money. Examples include:
  - Net new rider per dollar invested for transit projects
  - Number of low income, BIPOC, and low wage workers served by the infrastructure investment
  - Number of jobs created per dollar invested
  - Net greenhouse gas emissions reduced or averted by the project
  - Net embodied carbon created through the project, including emissions from demolished buildings and new construction
  - Total capital costs, including property acquisition, construction and project financing
  - Accessibility by transit, walking and cycling for new social infrastructure facilities such as hospitals, community centres, libraries, etc.
  - Total lifecycle costs, including operations and maintenance
2. Immediately create a GTA region-wide bus priority grid network with special focus on connecting currently underserved and low income neighbourhoods to jobs and employment areas, to be funded with either tolls on 400-series highways or a regionwide parking tax.
3. Create a dense, connected grid network of protected bicycle lanes focusing on underserved neighbourhoods and employment areas by 2023.
4. Cancel the GTA West Highway (Highway 413).
5. Create a fast-track planning approvals process for development projects that support affordable housing, the development of new long-term care facilities, and building energy retrofits.
6. The province to curb urban sprawl by mandating through the new Growth Plan for the Greater Golden Horseshoe Area that all growth will take place within existing urban boundaries.
7. Require community benefit agreements as part of large provincial and municipal infrastructure projects to ensure job creation and training opportunities for BIPOC workers who are underrepresented in the construction sector.
8. Collect improved data on infrastructure impacts and outcomes in Greater Toronto, including disaggregated race-based data that enable equity impact assessments.
9. Co-locate public infrastructure in community hubs and creative mixed-use buildings that blend complementary public, private and non-profit uses, to develop complete communities and practice development without displacement.
10. Create an intergovernmental complete communities forum to convene municipal, provincial, federal and Indigenous leaders with a focus on coordinating regional infrastructure and land use policy, and resolving conflicts as they arise.

# APPENDIX A

## 4 PROVOCATIVE SCENARIOS FOR THE GTA

As part of the process, Evergreen developed four provocative scenarios for the future of the GTA using Dator's Generic Images of the Future framework. This deductive scenario development method classifies social change into four narratives:

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1. **Continuation and growth scenario** (business as usual, more of the status quo growth)
2. **Decline and collapse** (system degradation or failure modes as crisis emerges)
3. **Limits and discipline** (behaviours to adapt to growing internal or environmental limits)
4. **Transformation** (new technology, business, or social factors that change the game)

The four scenarios were developed with input of a broad expert group consisting of GTA municipal government, provincial and federal government, developers, planners, engineers, designers, architects, academic researchers, and community hubs. The contents of the scenarios are informed by a set of 47 trends researched over six months in 2019-2020, alongside input of these experts. There are multiple reasons for using scenarios, for instance to stimulate new thinking (about an old problem), to future-proof long-term decision-making, or to detect plausible or probable future risks and opportunities and adjust approaches accordingly. In this process, the scenarios supported the expert group in identifying a preferred vision for regional urban development and consequent opportunities and risks in the way we plan and invest in infrastructure. Below, you will find short summaries of each scenario.

### Continuation and growth scenario

Major investments in green infrastructure minimize climate impacts in the GTA. The region settles an influx of elite global climate refugees who drive up property value in the downtown core, pushing the working class to settle far outside city limits, retire later, and shoulder prohibitive user fees off-loaded due to strained municipal finances. Toronto is vibrant, ethno-culturally diverse, and filthy rich.

### Decline and collapse

A patchwork of small, tightknit communities emerge after a cataclysmic hurricane hits a GTA which is now home to many refugees and US corporate headquarters fleeing America's economic uncertainty. The booming population contributes to the economy through remote work and to their neighbourhoods through local councils and direct democracy.

### Limits and discipline

New municipal revenue model introduced to address strained budgets in Canada's most productive region. Cities across the GTA complete a move toward 20-minute communities. A wealth redistribution taxation system drives and exodus of wealthy Ontarians, and corporate headquarters. Initial success warns of imminent collapse.

### Transformation

Universal Basic Income is implemented after rapid developments in job automation lead to peak unemployment rates. A profitable and green GTA sees ten years of political polarization due to growing pains of UBI. A populist administration becomes intent on surveilling the self-organizing & community development efforts of its residents.

We encourage you to read the full-versions with the narrative for each scenario here <https://futurecitiescanada.ca/portal/resources/our-urban-futures-gtha-scenario-set> – it might trigger new ways of looking at the future of your city too!

# APPENDIX B

## TRENDS DECK

Researched over six months in 2019-2020, Evergreen collected signals of change that could influence Canadian infrastructure and real estate development and compiled them into a broad range of trends if we found sufficient evidence (signals) supporting that assumption. Some trends are very likely to influence urban regions and their infrastructure and real estate investment and planning, while others are much less so. Some of their implications are predictable, while others are volatile. Though the connection to this work may not always be obvious, it is important to consider trends of all strengths, maturity, and degrees of relevance to make informed decisions about the future.

The trends in this document are evidence-based, each synthesizing three to six signals of change, evidence of disruption, innovation, and change. These signals were collected from across media types, including academic, government, mainstream, pop, and alternative media.

### Trends Overview

Social Trends:	Technological Trends:	Economic Trends:
<ul style="list-style-type: none"> <li>Tech Addiction &amp; Dependency</li> <li>Socio-economic Mixing</li> <li>Ageing Population</li> <li>Digital Divide</li> <li>Increase in Mental Health Challenges</li> <li>Court of Public Opinion</li> <li>Education 4.0</li> <li>Digital Activism</li> </ul>	<ul style="list-style-type: none"> <li>Mobility Diversification</li> <li>Smart City Testing</li> <li>Data Ownership Tensions</li> <li>Move to Green Infrastructure</li> <li>Decreased Trust in Online Apps</li> <li>Rise of Disruptive Technologies</li> </ul>	<ul style="list-style-type: none"> <li>Uncertain Futures of Cryptocurrency</li> <li>Remote Work Precedent</li> <li>Job Automation</li> <li>Energy Revolution</li> <li>Sharing Economy</li> <li>Urban Price Hikes</li> <li>State-Assisted Relocation</li> <li>The New Gig Economy</li> <li>Fear of Pathogen Exposure</li> <li>Wage Polarization</li> <li>Rising Cost of Air Pollution</li> <li>Green Bonds</li> <li>Rise of Co-Ops</li> </ul>
Environmental Trends:	Political Trends:	Values-Based Trends:
<ul style="list-style-type: none"> <li>Building and Retrofitting</li> <li>Sudden Nature Shocks</li> <li>Changing Shorelines</li> <li>Climate Migration</li> <li>Urban Densification</li> <li>Suburban Growth</li> <li>Rise of the Circular Economy</li> <li>Wild in the City</li> </ul>	<ul style="list-style-type: none"> <li>Increase in Taxation Needs</li> <li>Rise of Political Extremism</li> <li>Tensions with Trade Partner</li> <li>Truth &amp; Reconciliation</li> <li>Empowered Megacities</li> <li>Must be Austere</li> </ul>	<ul style="list-style-type: none"> <li>New Family Structures</li> <li>Accessibility &amp; Inclusive Design</li> <li>Decolonizing Spaces</li> <li>Social Media Legitimization</li> <li>Free Speech Debate</li> <li>Urban-Rural Division</li> </ul>

[For more information and signals for each trend, please have a look at the trends deck here.](#)

# APPENDIX C

## GTA VISION STATEMENT

Supported by the four provocative future scenarios and its opportunities and risks, the expert group identified a preferred vision for regional urban development and the way we plan and invest in infrastructure in the GTA.

### GTA Vision Statement 2050 “A Whole New Ball Game”

#### The Vision

It's 2050 and the GTA provides a high-quality of life for all residents by prioritizing climate resilience and equitable access to core services. Now, no matter where you live in the GTA, all residents have access to affordable housing, services, green spaces, and suitable job opportunities. Climate resilience is supported by a flexible transportation network that makes travel within and between regional hubs fast, easy and affordable. Among other carbon emitters, single-occupancy vehicles are a thing of the past. From the lakeshore to the ravine system to the Greenbelt, the GTA's green spaces are thriving, connecting communities to nature and protecting the region from the impacts of climate change. Homelessness is at an all-time low, as economic hardship is no longer a barrier to accessing affordable housing. Due to the quality of life, affordable living, leading climate risk mitigation strategies and notable green infrastructure, the GTA is an attractive environment for local business and international companies alike. The strong economy attracts immigrants from around the world, bringing new skills and contributing to the region's growing population. All this has been made possible through the establishment of quicker decision-making processes and a focus on meeting the needs of the region's most vulnerable first.

#### The Details

##### 1. The Built and Natural Environment

With Toronto at the centre, the GTA is a collection of distinct, interconnected city centres and hubs. This mix of historic and new regional centres are linked by new

forms of mobility with an emphasis on transit, cycling, and walking. The post-war, auto-dependent urban fabric has been transformed into compact, mixed-use, and walkable neighbourhoods made up of a distinctive mix of high-rise, mid-rise, and low-rise buildings. More families and households live vertically, with workplaces, living spaces, and community centres integrated in towers. Community hubs provide readily accessible social infrastructure. Revitalization of the GTA's green spaces creates more leisure space for residents while restoring the full network of the GTA's watersheds, acting as a leading climate mitigator.

1.1. Connected Communities. Residents and communities throughout the region are connected by an integrated transportation plan. Regional hubs are connected by an affordable, high-speed and carbon-neutral transit network. Local communities are connected by a network of cycling, pedestrian, and transit routes which provide convenient access to meaningful jobs, community services, and leisure activities.

1.2. Green Infrastructure. The GTA's natural assets and green spaces are recognized as vital to the health, resilience, inclusion and safety of the population. New re-greening policies led to the revitalization and protection of key assets - including the lakeshore, ravine system, and Greenbelt - mitigating the impacts of climate catastrophe. Locally, well-used community hubs, parks, and green spaces are within walking distance of all neighbourhoods, encouraging physical activity and social connection.

1.3. Food Security. Policies that protect prime agricultural land ensure continued and resilient access to food.

1.4. Built Environment. New infrastructure projects are built to the highest environmental standards, incorporating a long-term planning lens, retrofits, and repurposing existing assets to create a more resilient region.

1.5. Access to Housing. Investment in a broader range of housing has created mixed-income neighbourhoods, ensuring that all residents have access to appropriate housing in close proximity to the services they use.

## **2. Regional and Municipal Decision-Making Processes**

Decision making is guided by democratic participation and outcomes-based practices. Municipal and regional decision-making, including decisions about the municipal budget and large infrastructure projects, are built upon three widely accepted principles: community-led design, evidence-based decision making and cross-sectoral partnerships. New legislation expedites evidence-based decisions that improve socio-economic inclusion and climate resilience.

2.1. Community-Led Design. Urban planning practices prioritize and reflect the needs of marginalized communities. An emphasis on political transparency and relationship-building has strengthened the public's trust and has redefined public engagement to make it accessible for all.

2.2. Evidence-Based Decision Making. Place-based development ensures the wider social and economic impacts of infrastructure development are understood, contributing to effective land-use planning.

2.3. Cross-Sectoral Partnerships. Decisions about infrastructure investments are shaped by cross-sectoral partnerships and consider long-term returns including climate resilience. Capital budgeting takes into account the

long-term impacts on the environment and on vulnerable populations.

2.4. Efficient Processes. More expedient decision-making processes handle time-sensitive infrastructure decisions addressing climate and inequity.

## **3. Financial Context**

A regional vision for the GTA has brought a range of investors and partners together to create a more equitable and climate resilient GTA through strategic infrastructure investment. New partnership models unlock funds and provide more local autonomy over region-wide projects than ever before. Increased sectoral and regional collaboration create synergies that allow for infrastructure development that better meets the needs of residents.

3.1. Updated Revenue Models. New revenue models result in new partnerships between private- and public-sector agencies and incorporate new ways of growing investment by citizens, businesses and governments.

3.2. Protected Essential Services. A foundational economy provides goods and services deemed essential for a thriving population, including high-quality health care, education, housing, green space, and food supply. In recognition of the personal, social, and economic benefits of investing in a healthy and happy population, services that meet these core needs are designed to ensure their financial viability does not affect their continued operations.

3.3. Immigration. Now better supported in resettlement, immigrants and newcomers bring new skills and ideas to the GTA, catalyzing economic growth by contributing to a greater workforce and closing the skills gap.

## APPENDIX D

### TOOLKIT FOR INFRASTRUCTURE PLANNING

Evergreen created a practical toolkit which provides an overview of Evergreen's Our Urban Futures project, followed by a How-to Guide to facilitate scaling and replication of the approach. The How-to Guide is divided into Three Parts, and describes seven project phases. Part One explores how to develop a baseline including understanding the current state, understanding future trends, and what key experts currently perceive to be the key priorities over the next 50 years. Part Two builds on this understanding to develop data-driven scenarios which challenge perspectives on what is possible and even likely to shape our future. These scenarios facilitate a discussion of what key stakeholders want for the future, culminating in a vision statement. Part Three translates visions to action, identifying a policy action plan to ensure the vision catalyzes change. The three core products of this process, as well as the process as a whole, has great utility in informing an infrastructure assessment and catalyzing a multi-sectoral collaboration to seize opportunities and address gaps in long-term strategic infrastructure planning.

To access the Our Urban Futures Practical Toolkit for Infrastructure Planning, [click here!](#)



## APPENDIX E

### INDIGENOUS INCLUSION RECOMMENDATIONS

Throughout the project, it became evident that the Our Urban Futures project was lacking Indigenous participation and perspectives. Despite participation of Indigenous Peoples in the expert groups of the project and Evergreen's genuine efforts to add more Indigenous voices, no Indigenous Peoples were involved in the Advisory Groups, resulting in a lack of Indigenous perspectives especially in the planning stages of the project and also in the Vision Statement and throughout other parts of the project.

We asked Samantha Matters, a member of the Calgary/Edmonton expert group of the Our Urban Futures project, to provide recommendations in regards to adequately address reconciliation and improve collaboration with Indigenous peoples for this specific and similar projects led by Evergreen in the future. A woman of Métis and mixed-settler descent, and Founding Director of *Future Ancestors Services*, Samantha described some of the gaps from this project and recommended equity strategies for a process that is more inclusive of Indigenous voices and perspectives. These are some of Samantha's recommendations:

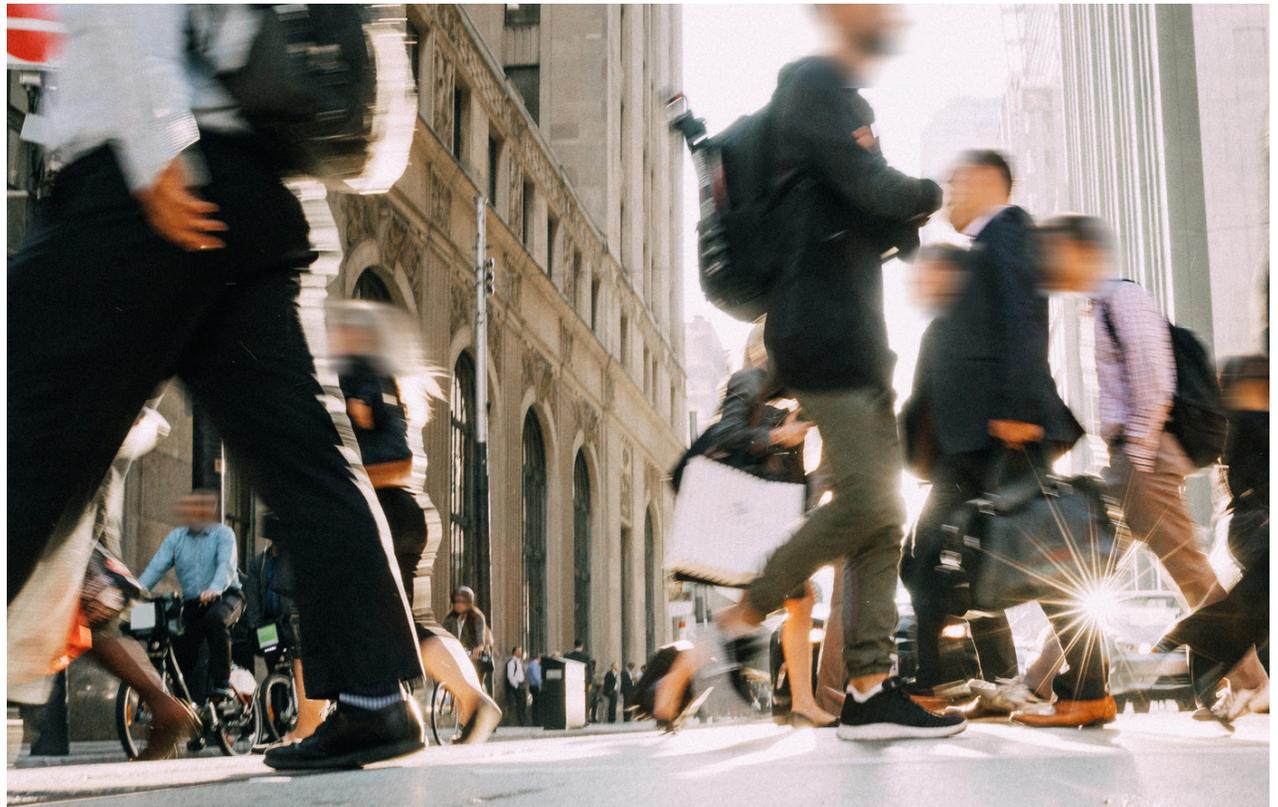
- 
- 1. Build capacity to engage Indigenous communities:** Build genuine and reciprocal relationships with Indigenous communities, i.e. show up at Indigenous events to demonstrate your genuine interest in Indigenous communities beyond a working relationship, hire Indigenous consultants at the earliest stage of a project, clearly state their responsibilities, and identify Indigenous Elders to work with project leads and staff. Proper compensation and protocols must be honoured when working with Elders.
  - 2. Prioritize a capacity-based approach:** Often, colonial institutions apply a deficit framing when seeking to "serve" Indigenous communities and Peoples, representing people in terms of deficiency, focusing on absence, lack or failure. In contrast, a capacity-based approach, focusing on an individual's or community's strengths, abilities, desires, and choices is the better approach. It is further recommended to uncover and examine internal (often unconscious) biases and beliefs about Indigenous Peoples and cultures, or to build capacity to hold ethical space. Ethical space is a theoretical space between thought worlds, where engagement can happen in a respectful, balanced way.
  - 3. Critically examine Eurocentricity of tools & methodologies:** Many of the mainstream tools we use are grounded in a western worldview, this includes futures studies and tools like Strategic Foresight. There are Indigenous futurism methodologies that are worth exploring. Indigenous futurism is a means by which to explore futures beyond the binds of colonialism through concepts of time, culture, and community.
  - 4. Redistribute power:** Modern architecture and infrastructure development upholds and perpetuates anti-Black and anti-Indigenous racism, and urban development and design bolsters colonial dominion frameworks. Understanding the roots of racism and the consolidation of colonial power in the context of urbanity is essential if we are seeking to decolonize cities, policies and processes. Decolonization must be done in partnership with Indigenous communities and Peoples, while reconciliation is a settler responsibility. A fundamental aspect of decolonization will be naming power dynamics and redistributing this power, i.e., by critically assessing who is best positioned for leading projects (often, white-led non-profit organizations are selected above Indigenous-led organizations to receive funding and carry out projects), reallocating funding

towards Indigenous-led initiatives, or by supporting emerging Indigenous designers and planners (i.e., through partnering with post-secondary institutions to offer scholarships and internships and decolonizing hiring processes to recruit Indigenous candidates).

**5. Understand and acknowledge the history of the region:** When creating a vision statement for a region, project leads should seek to learn about the history of the land both before and after European contact in the area. This history and its impacts should be acknowledged in the vision statement and include language that speaks to how the history of the land informs the region's future, the amends that need to be made and the responsibilities of all who live in

the region to creating a just and equitable future. It is important to acknowledge the specific Nations who are the original stewards of the region and who continue to exist there.

**6. Acknowledge limitations:** Acknowledging limitations and shortcomings can be a challenging endeavor, especially when we are particularly proud of a project and our work. However, it is equally important to admit and acknowledge failure as it is to celebrate success. This starts by acknowledging the lack of Indigenous participation and perspectives in a project, and continues with naming accountability and commit to restorative action, i.e. through a failure report along with a commitment to improve relationships and build long-term trust with Indigenous communities.



<sup>1</sup> See: <https://www.canada.ca/en/public-health/news/2021/02/cpho-sunday-edition-the-impact-of-covid-19-on-racialized-communities.html>; <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2021001/article/00017-eng.htm>

<sup>2</sup> See: <https://www.canada.ca/en/immigration-refugees-citizenship/news/2020/10/government-of-canada-announces-plan-to-support-economic-recovery-through-immigration.html>

<sup>3</sup> See: [https://www.ttc.ca/About the TTC/Commission reports and information/Commission meetings/2021/April 14/Reports/5 Racial Equity Impact Assessment of TTC Enforcement Activit.pdf](https://www.ttc.ca/About%20the%20TTC/Commission%20reports%20and%20information/Commission%20meetings/2021/April%2014/Reports/5%20Racial%20Equity%20Impact%20Assessment%20of%20TTC%20Enforcement%20Activit.pdf)

<sup>4</sup> See: <https://www150.statcan.gc.ca/n1/daily-quotidien/200928/dq200928c-eng.htm>

<sup>5</sup> See: [https://www.careersinconstruction.ca/sites/cic/files/pdf/state\\_of\\_women\\_in\\_construction\\_in\\_canada\\_0.pdf](https://www.careersinconstruction.ca/sites/cic/files/pdf/state_of_women_in_construction_in_canada_0.pdf)

<sup>6</sup> See: <https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions.html>

<sup>7</sup> Miller, D. (2020). Solved. Toronto: University of Toronto Press.

<sup>8</sup> Cervero, R. and Kockelman, K. (1997). Travel demand and the 3Ds: Density, diversity, and design. *Transportation Research: Part D*. 2(3), 199-219.

<sup>9</sup> See: <https://futurecitiescanada.ca/stories/making-the-case-for-open-smart-cities/>

<sup>10</sup> See: [https://www.c40knowledgehub.org/s/article/How-to-set-energy-efficiency-standards-for-new-buildings?language=en\\_US](https://www.c40knowledgehub.org/s/article/How-to-set-energy-efficiency-standards-for-new-buildings?language=en_US)

<sup>11</sup> See: [https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370\(21\)00092-4/fulltext](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(21)00092-4/fulltext)

<sup>12</sup> <https://www.greenbelt.ca/learn>

<sup>13</sup> <https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/toronto-green-standard/>

<sup>14</sup> See: [https://www.evergreen.ca/downloads/pdfs/2018/What is the Missing Middle Evergreen CUI s2.pdf](https://www.evergreen.ca/downloads/pdfs/2018/What%20is%20the%20Missing%20Middle%20Evergreen%20CUI%20s2.pdf)

<sup>15</sup> See: <https://vancouver.ca/files/cov/density-bonus-zoning-bulletin.pdf>

<sup>16</sup> <https://www.urbandisplacement.org/>

<sup>17</sup> [https://csce.ca/elf/apps/CONFERENCEVIEWER/conferences/2018/pdfs/Paper\\_GC147\\_0607031946.pdf](https://csce.ca/elf/apps/CONFERENCEVIEWER/conferences/2018/pdfs/Paper_GC147_0607031946.pdf)

<sup>18</sup> <https://theconversation.com/outdoor-learning-has-huge-benefits-for-children-and-teachers-so-why-isnt-it->

[used-in-more-schools-118067](#)

<sup>19</sup><https://www.thestar.com/news/gta/2021/07/03/should-public-housing-have-public-internet-tchc-mulls-covering-costs-for-subsidized-tenants.html>

<sup>20</sup><https://unfloodontario.ca/>

<sup>21</sup><https://www.toronto.ca/legdocs/mmis/2019/hl/bgrd/backgroundfile-126531.pdf>

<sup>22</sup><https://e360.yale.edu/features/urban-heat-can-white-roofs-help-cool-the-worlds-warming-cities>

<sup>23</sup><https://www.utoronto.ca/news/toronto-s-low-income-and-racialized-communities-have-fewer-trees-u-t-researchers>

<sup>24</sup><https://www.toolkit.bc.ca/tool/district-energy-systems>; <https://www.ucsusa.org/sites/default/files/2019-10/Power-Failure-How-Climate-Change-Puts-Our-Electricity-at-Risk-and-What-We-Can-Do.pdf>

<sup>25</sup><https://whynot.theatre/>

<sup>26</sup><https://www.schoolofcities.utoronto.ca/research/creative-mixed-use>

<sup>27</sup><https://www.schoolofcities.utoronto.ca/research/creative-mixed-use>

<sup>28</sup><https://www.azuremagazine.com/article/the-indigenous-hub-in-toronto-promises-a-brighter-future/>

<sup>29</sup><https://www.washingtonpost.com/transportation/interactive/2021/electric-mileage-tax/>

<sup>30</sup><https://www.vtpi.org/tdm/tdm8.htm>

<sup>31</sup><https://www.mississauga.ca/services-and-programs/home-and-yard/stormwater/stormwater-charge/>

<sup>32</sup><https://canurb.org/publications/the-case-for-a-canadian-urban-policy-observatory/>

<sup>33</sup><https://www.communitybenefits.ca/>

<sup>34</sup><https://policyresponse.ca/its-time-to-rethink-community-consultations/>



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