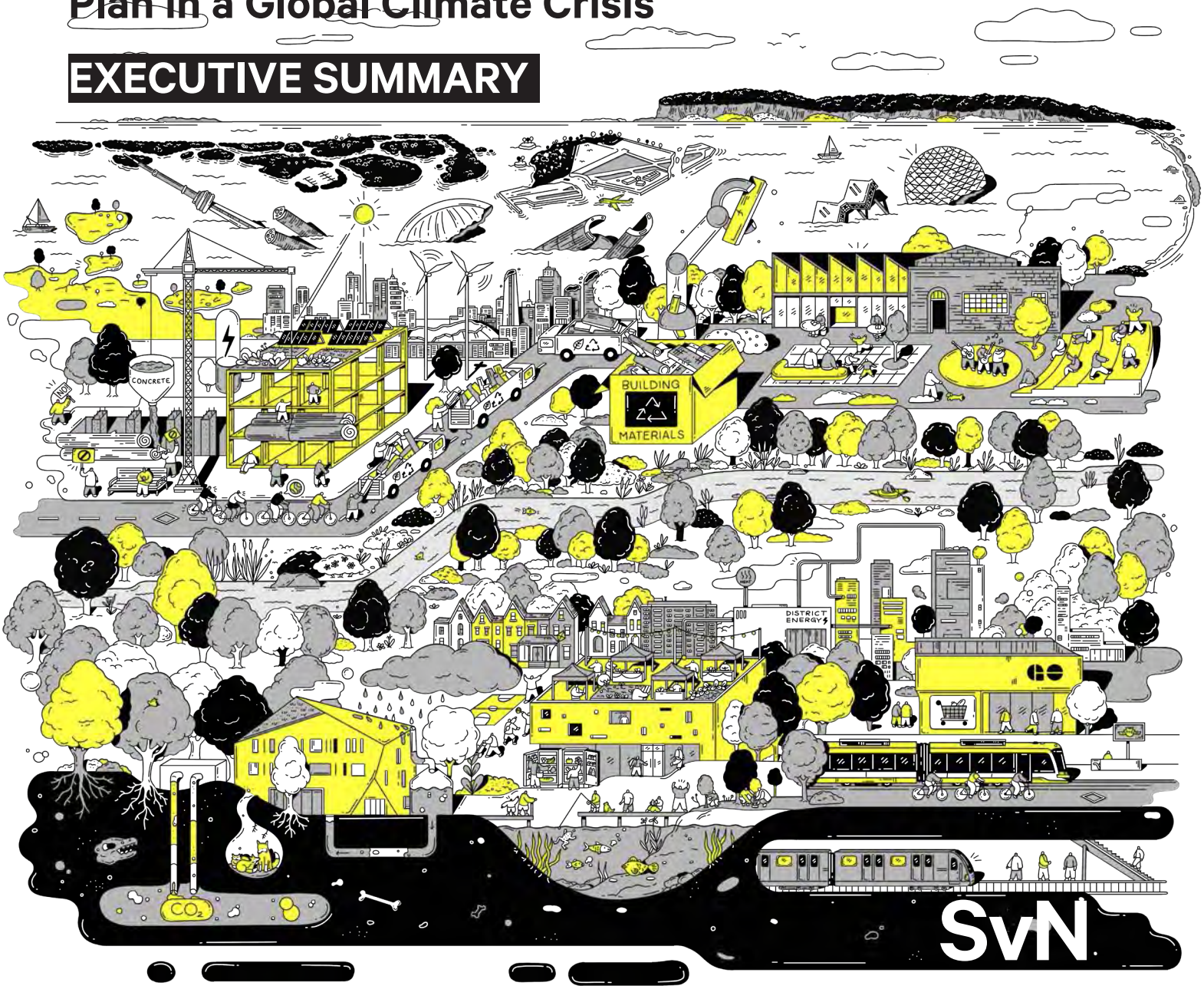
THE HOUSE IS ON FIRE !

The Urgency to Rethink Toronto's Official Plan in a Global Climate Crisis

EXECUTIVE SUMMARY



Dear Mayor Tory

Toronto City Council declared a climate emergency in 2019. Since then, your administration has put forward several reports and recommendations highlighting the urgent need to decarbonize. You have created strategies, set increasingly ambitious targets and have achieved broad agreement about what should be done. However, without a quick and aggressive pivot toward implementation, the City risks having this work dismissed, in the words of Greta Thunberg, as just more “BLAH BLAH BLAH”.

The TransformTO Net Zero Strategy is the most ambitious strategy to date. However, it may be challenging implement given the broad misalignment between it and the numerous other plans and policies that guide the development of the City of Toronto. Industry experts, city builders and your City Council colleagues all recognize this. During the December 2, 2021 Infrastructure and Environment Committee Meeting, Councillor Mike Layton put forward the following motion:

“*City Council request the Chief Planner ensure the Official Plan, Zoning By-laws, planning policies and various planning guidelines support the recommendations in the Net Zero Strategy, including: to discourage vehicle trips, enhance building energy efficiency, reduce embedded carbon during construction, and encourage active transportation and transit for short trips.*”

In short, the goals and ambitions of the TransformTO plan must become embedded in all City policy – with the Official Plan chief among them.

The Official Plan has evolved into an unwieldy consolidation of policies, plans, designations and statutory reviews. It largely reflects the ambitions of decades passed, and does not adequately address the core issues and challenges of our time. The new Official Plan, which will emerge out of the ongoing Municipal Comprehensive Review process, will affect Toronto’s built and natural environment, as well as its social, financial, and ecological sustainability, for a generation. It is a core component of the machinery, which makes the city work.

The global climate crisis, and the increasing urgency to create an inclusive, equitable and resilient city, necessitate a fundamental rethink of this core planning instrument, and how it finds the ‘teeth’ needed to address the urgency of our issues and challenges.

Toronto will add close to one million people over the next 25 years. According to the City’s 2019 Greenhouse Gas Inventory, approximately 57% of the City’s carbon dioxide emissions come from buildings, and an additional 36% come from transportation. Applying a climate-positive lens to the Municipal Comprehensive Review process, which aligns the new Official Plan with the TransformTO Net Zero Strategy and other City-led initiatives, is the City’s best option for addressing and mitigating climate change, and ensuring that our strategies and targets are implemented.

Beyond merely advocating, we would like to work with you to prove it. We have prepared the attached call to action report, titled “The House Is on Fire: The Urgency to Rethink Toronto’s Official Plan in a Global Climate Crisis”. It highlights key opportunities, challenges and recommendations to inform the ongoing Municipal Comprehensive Review process and help transition the Official Plan from a land use focus into a carbon focus. We hope these materials will empower the City to act in a meaningful and decisive way, and we look forward to collaborating and engaging with you throughout the process.

By proactively addressing and mitigating climate change, we will create economic opportunities, strengthen environmental resilience, and encourage a healthier and more liveable city.

Together we can make a difference.

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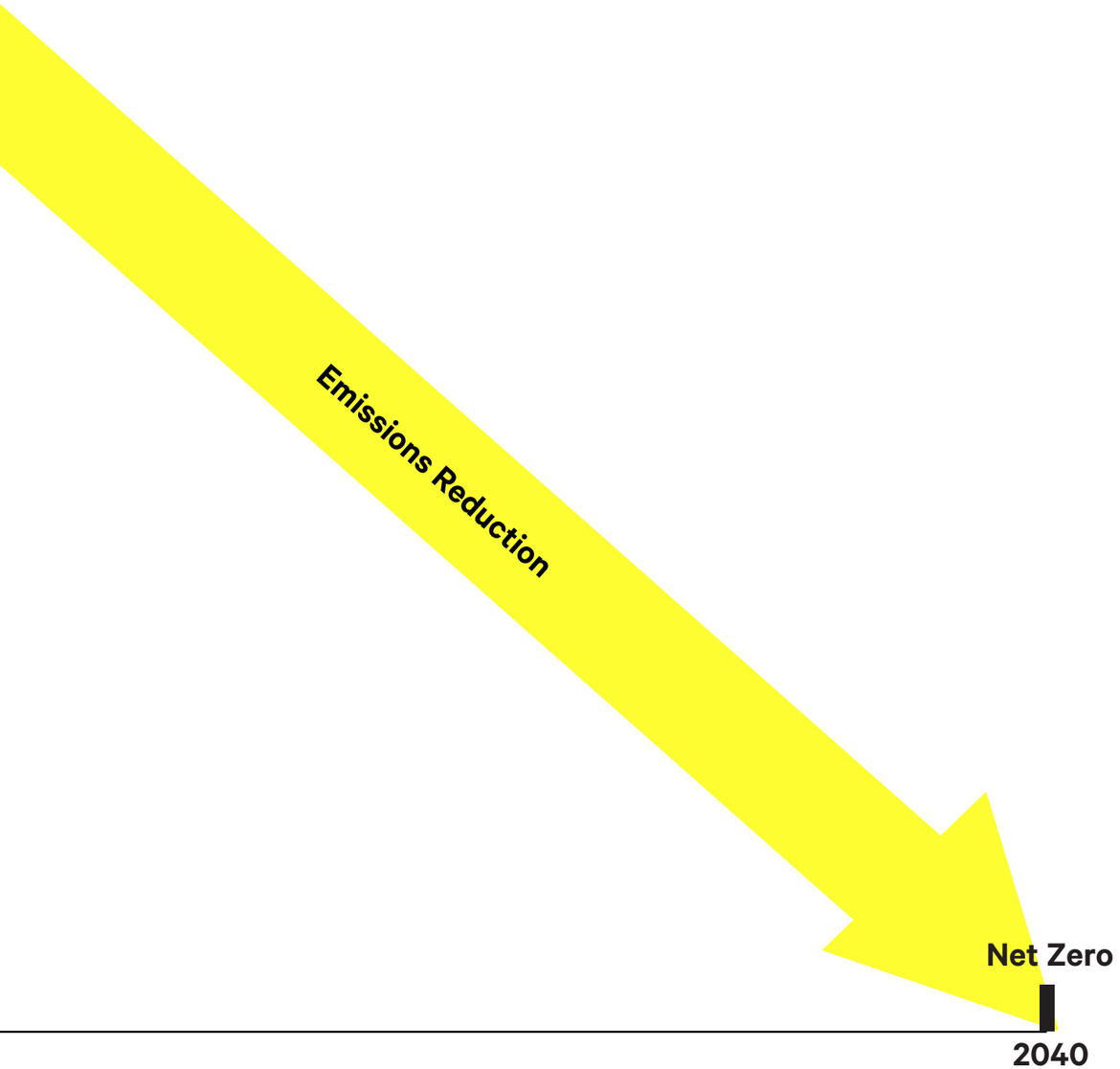
Executive Summary

We are living in a crucial moment for action - climate change is on our doorstep, and we don't have a second to waste. In 2019, Toronto City Council declared a climate emergency, and set a target of achieving net zero greenhouse gas emissions by 2050, or sooner. But progress has been limited, and we are not on track to meet that goal. TransformTO, the City's climate change strategy, has recently been updated with a number of urgent action items to get Toronto on the path to net zero by 2040. Achieving this new goal requires coordinated, dramatic changes, and we need to use every tool in the box.

As planners and designers, we work with the City's planning policies and regulatory framework every day. The Official Plan is one the most important pieces of planning policy because it represents the long-term vision and aspirations for our city. The Official Plan is an essential tool for fighting climate change, and the current Municipal Comprehensive Review is our last chance to create a plan that mitigates the worst impacts.

We believe the City of Toronto's Official Plan needs to re-centre its purpose by adopting climate-positive policy as the foundational element of all planning. Climate change knows no boundaries, and affects everyone. The house is on fire, and we need to act like it.



TransformTO Net Zero Strategy, 2021

Understanding the Context

Toronto's Official Plan establishes the framework for change and guides how the city will develop over a 30 year time horizon. If we don't act now, Toronto is going to be a much less livable place in 30 years.

The Official Plan contains policies that affect land use, transportation, urban design, and the natural environment and is the main policy barometer that is used to evaluate proposals for new development. The City is required by Provincial policy to review and update the Official Plan through a process called a Municipal Comprehensive Review (MCR). This process is currently underway, and the City has until July 2022 to pass a new Official Plan.

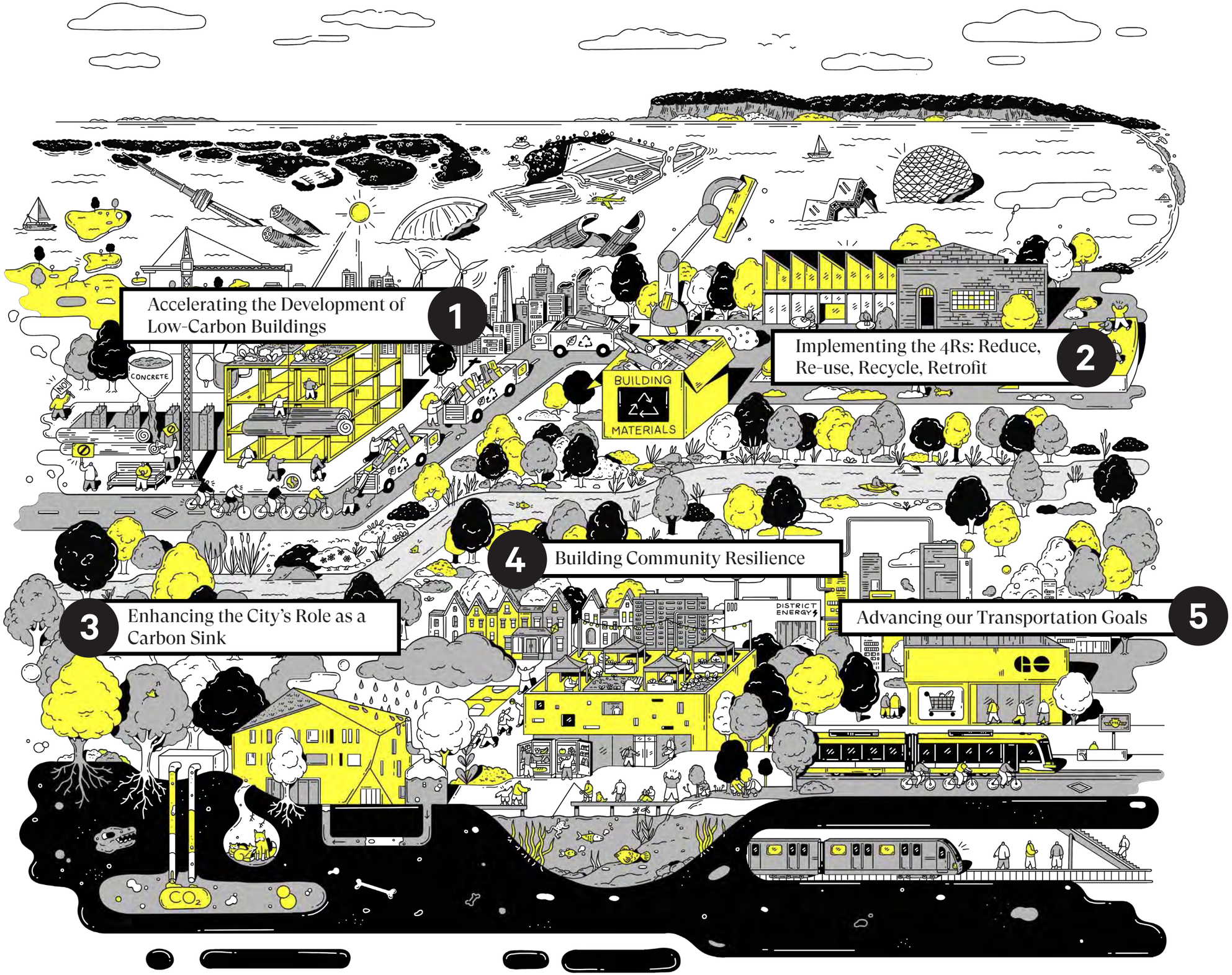
Strengthening and Accelerating City-Led Climate and Related Initiatives

The City of Toronto currently has a number of strategies and initiatives that are indirectly or directly linked to climate change adaptation or mitigation. These include the TransformTO Climate Change Action Strategy (2017), TransformTO Net Zero Strategy (2021), Toronto Resilience Strategy (2019), Toronto Biodiversity Strategy (2019), Toronto Green Standard, and Toronto Zero Emissions Building Framework (2017). The MCR is an opportunity to strengthen and harmonize these strategies in one place.

Addressing the Shortcomings of the Existing Official Plan

The current Official Plan does not go far enough in addressing climate change and its impacts and there are a number of challenges that will need to be addressed through the MCR process. Key opportunities to address climate change and concurrently advance other city-building objectives include:

- Capitalizing on recent changes to provincial legislation;
- Aligning the Official Plan with the City of Toronto's climate and related initiatives;
- Removing the Official Plan's overly-prescriptive and rigid development policies, particularly at the low-rise scale within Neighbourhoods, and at the mid-rise scale along Avenues, and establishing a more flexible policy framework to guide development on a city-wide basis;
- Addressing gaps within, and limitations of, the Toronto Green Standard;
- Addressing the challenges posed by institutional inertia and capacity limitations within the City of Toronto; and,
- Augmenting policies focused on a transition away from fossil fuel combustion-based energy sources, with those that seek to reduce building energy needs.


Accelerating the Development of Low-Carbon Buildings
1
CONCRETE
NO!
BUILDING MATERIALS
Implementing the 4Rs: Reduce, Re-use, Recycle, Retrofit
2
4
Building Community Resilience
DISTRICT ENERGY
3
Enhancing the City's Role as a Carbon Sink
Advancing our Transportation Goals
5
CO_2

Key Recommendations

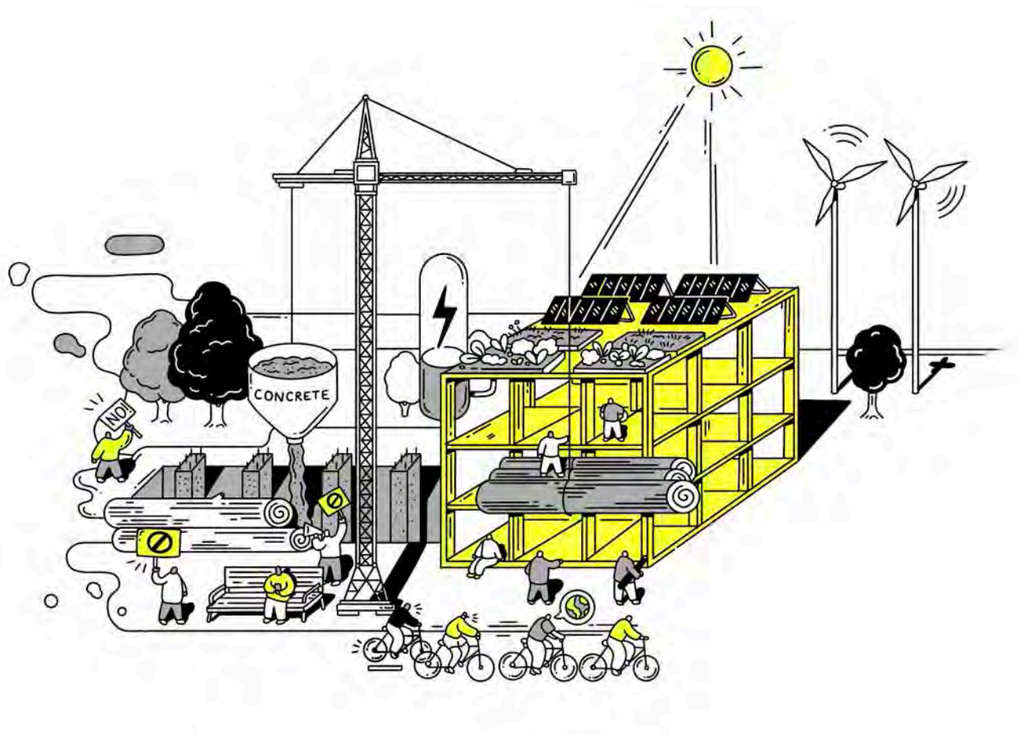
Planning for the Climate Emergency

We have identified five priority areas that must be addressed through the MCR process and the development of new policies. Our recommendations are based around the following 5 themes:

1. Accelerating the Development of Low Carbon Buildings
2. Implementing the 4Rs: Reduce, Reuse, Recycle, Retrofit
3. Enhancing the City's Role as a Carbon Sink
4. Building Community Resilience
5. Advancing our Transportation Goals

1

Accelerating the Development of Low-Carbon Buildings



Buildings and construction are the number one source of greenhouse gas emissions in Toronto, accounting for 57% of all carbon emissions[1]. Logically, addressing building-related emissions is a core component of the TransformTO strategy. It should also be integral to the Official Plan. he Official Plan is based on a growth forecast or "target" for people and jobs. It should also be based on a 1.5 degree climate forecast and carbon budget. Specifically, key recommendations include:

1. Use the TransformTO net-zero strategy as the basis for all revised and new policies introduced through the MCR;
2. Set specific targets based on a whole-life carbon approach, applicable at the secondary plan or district level;
3. Direct the revision of all urban design guidelines by applying a climate change mitigation and adaptation lens, for example, building orientation and unit design that maximizes passive heating and cooling;
4. Prioritize built form that facilitates the construction of high-performance buildings and low-emissions construction systems such as mass timber, and reduces the need for concrete and steel;
5. Utilize tools found in the *Planning Act*, including the Development Permit System or Community Benefits Charge to incentivize climate-positive buildings, and fast-track approvals that achieve desired performance criteria;
6. Promote clean electrification by facilitating renewable energy generation and energy storage;
7. Prohibit new connections to natural gas lines and phase out existing connections as buildings are renovated/retrofitted;
8. Provide energy modelling and life cycle assessment software to development proponents early on in the process, and require their use as part of the re-zoning and site plan approval submission checklist; and,
9. Use zoning as a tool for achieving net zero.

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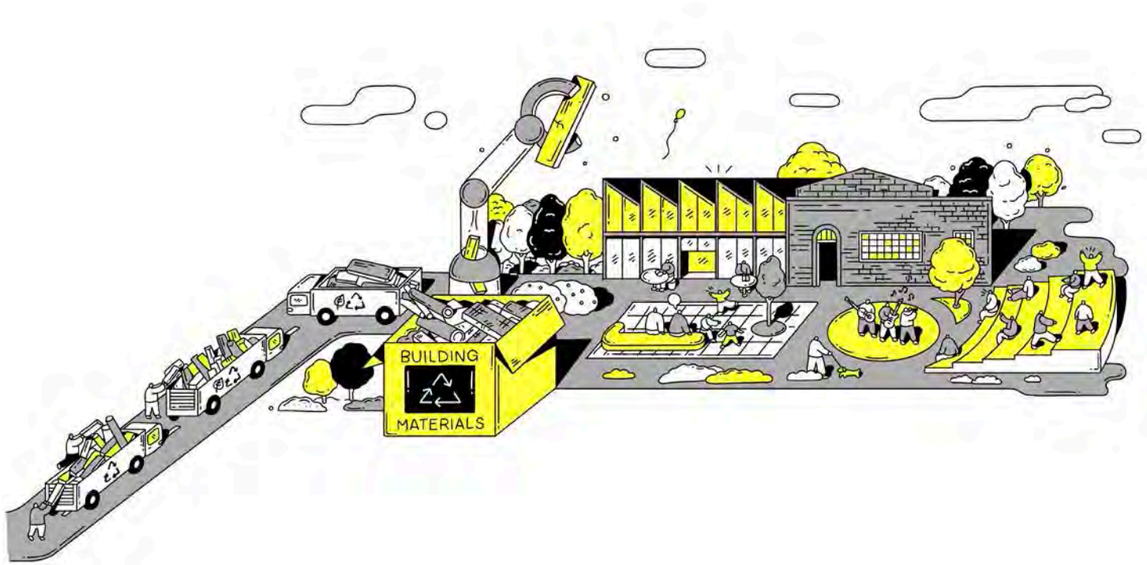
1 *City of Toronto 2018 Greenhouse Emissions Inventory, City of Toronto, 2020*

2

Implementing the 4Rs: Reduce, Re-use, Recycle, Retrofit



As the city intensifies, we are seeing development proposals for sites where an existing functional building is demolished to allow for new construction. Addressing waste in city building activities is an important priority that is not reflected in the current Official Plan. We need to reduce the amount of new materials needed, by prioritizing retrofits of the existing building stock. We can also reduce the amount of construction waste by implementing a comprehensive waste diversion program, whereby waste materials are recycled and reused as inputs for other types of construction or other industries entirely. Specifically, key recommendations include:

1. Employ the 4Rs as a framework for evaluating new development proposals;
2. Promote adaptive reuse of existing buildings and public spaces to reduce carbon emissions associated with new construction;
3. Discourage the demolition of existing buildings by requiring environmental impact studies and construction waste management plans at all scales of development, and increasing fees;
4. Target net-zero energy and emissions for all existing buildings by encouraging deep retrofits that improve energy efficiency and lower carbon emissions;
5. Set targets for recycled content of building materials to lower carbon emissions associated with manufacturing; and,
6. Provide a centralized construction waste-management resource, also known as a material bank, and help establish a material passport system with a network of recycling facilities specifically for construction materials.

3

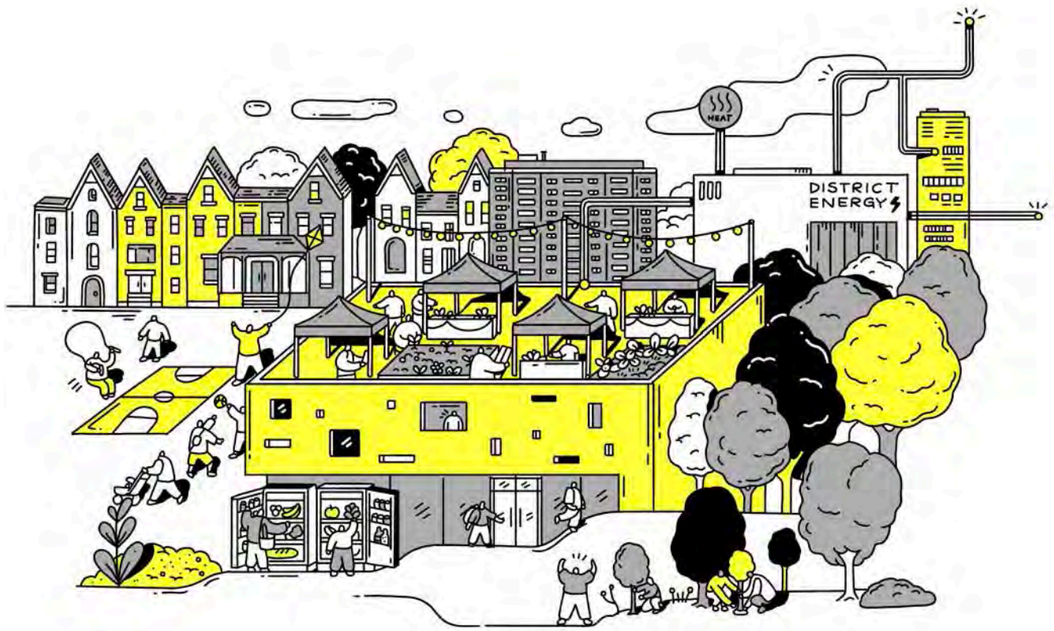
Enhancing the City's Role as a Carbon Sink

There are two sides to the net zero equation: the carbon we produce through our daily activities and consumption, and the carbon that can be absorbed by natural ecosystems, or stored. Net zero acknowledges that while an overall reduction in carbon emissions is the most important, true net zero also requires carbon removal and storage. Specifically, key recommendations include:

1. Set city-wide targets for carbon sequestration, tree canopy cover and biodiversity;
2. Establish a requirement for natural, landscaped surfaces across all land use designations and introduce performance standards to achieve a net increase in ecological function, biodiversity and carbon storage;
3. Introduce "bio-reserve" as a new land use designation and develop a natural asset management plan, thereby establishing the basis for continued investment in our urban ecosystem;
4. Provide guidelines for high-performance landscapes, a catalogue of native plant species, and education for designers and property owners;
5. Where variances to increase lot coverage or reduce landscaped area are sought, require the applicant to demonstrate an overall increase in biodiversity and/or carbon storage;
6. Promote the ecological intensification of fallow city-owned lands to support biodiversity, enhance resilience to extreme weather, and improve natural functions; and,
7. Encourage the "rewilding" of lawns in residential areas.

4

Building Community Resilience

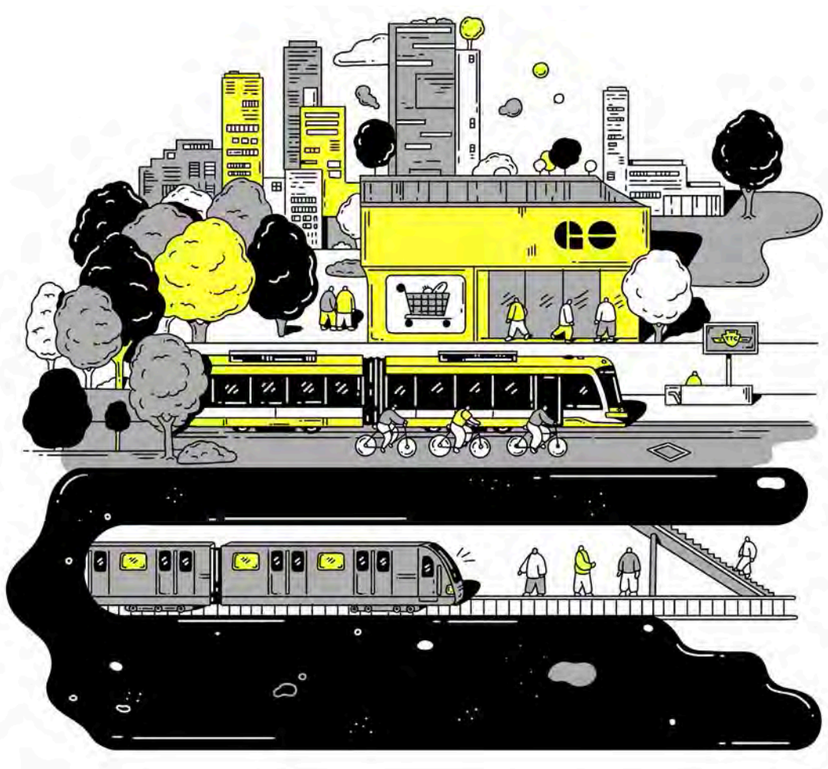


We have already experienced the damaging effects of extreme weather caused by climate change, including flash floods, heat waves, and ice storms. Climate models predict that Toronto could see more than 50 days of 30+ degree weather by 2051. Resilience is about our ability to respond, to bend not break, and to bounce back.The Official Plan should provide the basis for resilience across all land use designations and city functions. A resilient neighbourhood has different characteristics than a resilient transportation system, or a resilient downtown. Specifically, key recommendations include:

1. Implement community resilience plans for areas that are most vulnerable to extreme weather and climate-related impacts, such as neighbourhoods that are located within or close to the floodplain;
2. Establish a target for local food production and invest in small-scale farming and distribution networks, including market spaces, processing, facilities, as well as community pantries and refrigerators;
3. Invest in planning resources and capacity building for disadvantaged, low income, and racialized communities to collaboratively identify and address the physical manifestations of marginalization;
4. Develop programs specifically geared towards assisting low income Torontonians in meeting climate goals;
5. Mandate Low Impact Development (LID) measures as the primary approach to stormwater management, provide guidance on best practices, and create a robust framework for the ongoing maintenance of green infrastructure as part of the capital plan;
6. Plant trees in neighbourhoods with the lowest amount of tree cover. If development results in the removal of trees from one site, ensure that trees can be either replanted on site, or planted in a tree “priority” neighbourhood; and,
7. Establish the framework for decentralized electrification or fossil fuel-free district energy networks and make community energy planning a requirement for all new secondary plans.

5

Advancing our Transportation Goals



Transportation is the second largest source of carbon emissions in Toronto, measured at 36% of all emissions in 2019. In order to meaningfully combat climate change, the City of Toronto needs to accelerate its transportation goals. Specifically, key recommendations include:

1. Intensify low density neighbourhoods that are walking distance to transit with multiplexes and additional dwelling units, and introduce permissions for a wider range of uses so that all residents are able to meet their needs within a short distance of their homes;
2. Support investments in public transit with a low-carbon land-use vision and development standards for Major Transit Station Areas to create dense, resilient, complete communities;
3. Set up a program for “road diets”, initially with pilot testing the removal of driving lanes on major streets, with the objective of eventually making them permanent;
4. Develop road standards for woonerfs and active-transportation streets;
5. Eliminate parking minimums and use cash-in-lieu to build better transit, faster;
6. Implement tolls on the Gardiner and Don Valley Parkway to discourage private car use and use fees collected to fund transit initiatives;
7. Promote the installation of electric vehicle charging infrastructure as part of the City’s road resurfacing program, and require the provision of charging infrastructure for all new development;
8. Increase the supply of e-bikes, introduce e-scooters as an additional mobility option, and establish a hierarchy and network of micro-mobility infrastructure in the vicinity of existing and planned higher-order transit stations to address first-last mile solutions.

Call to Action

An Official Plan that proactively anticipates climate change will ultimately address a variety of other important goals. It will foster social equity, improve access to jobs and services, support public health, preserve public and private investments in communities, and create economic opportunities for the private sector.

A climate-positive approach to restructuring the City of Toronto's new Official Plan is the only option. To achieve this objective, we are calling on:

City Council to make good on their climate change emergency declaration;

City Staff to address the shortcomings of the existing Official Plan, strengthen and harmonize city-led climate and related initiatives, plan for the climate emergency, and implement the vision and recommendations set out in this report; and,

Public Agencies, other stakeholders and the public to advocate for the application of a climate change mitigation and adaptation lens in all land use planning processes.

SvN

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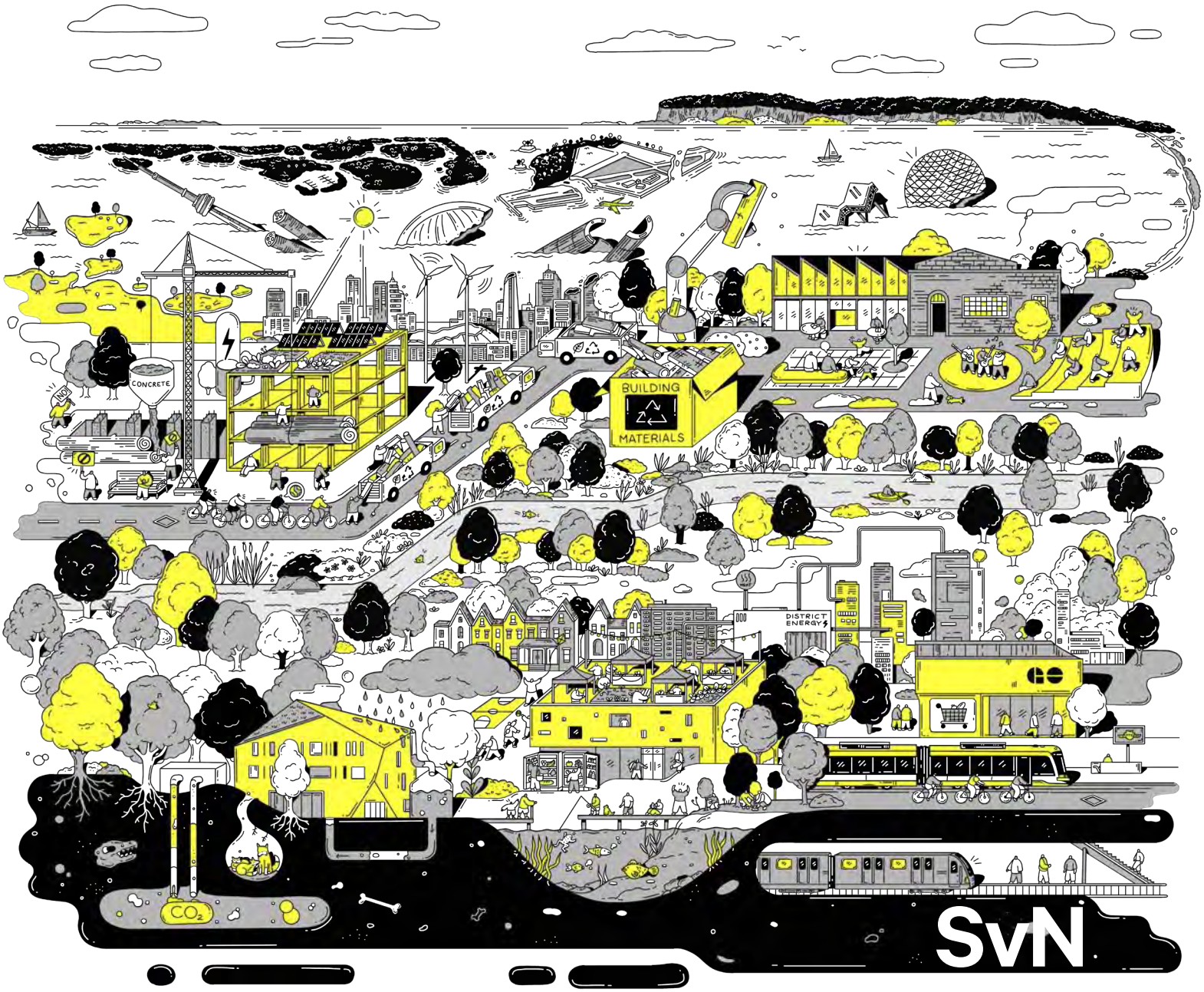

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We must act now.

Content

1. Introduction

Who Is SvN?

SvN Architects + Planners Inc. (SvN) is one of Canada's leading practices in planning and design, drawing on over 40 years of experience in tackling complex city-building projects where there are no ready-made solutions. We are a fully integrated, multi-disciplinary office, with over 100 Planners, Urban Designers, Architects and Landscape Architects under one roof. Our team supports a diverse practice that includes full-scope architecture, policy and land-use planning, urban design, landscape architecture and engagement services.

At SvN, we endeavour to tackle the most pressing issues of our time. We challenge ourselves to think beyond the bounds of our disciplines and infuse our work with research and innovation to achieve meaningful, catalytic results. Each of our projects is able to positively impact communities at a social, physical, economic or environmental level. We have revitalized industrial waterfronts, developed new forms of affordable housing, and designed resilient communities - all of which respond to current and future challenges. Simply put, SvN transforms big ideas into better housing, mobility and communities. This motivation guides everything we do. By focusing on opportunities that reimagine how people live, learn, work and travel, we foster value-driven relationships with partners and clients who share a similar commitment to creating a better future.

SvN Post Carbon Research Group

As the world is transitioning toward a post-carbon future, SvN is retooling its practice to re-imagine the world we want to live in. We acknowledge the role of our industry in the climate crisis and the urgency to act today. Through our Post Carbon working group, we are developing a post-carbon culture and empowering our team of architects, planners, landscape architects and urban designers to radically rethink and decarbonize every project we engage with.

We are cultivating new strategies, tools, resources and collaborations to reconsider the broader environmental and social impacts we have on our planet and drastically reduce our carbon footprint. This report is a product of the SvN Post Carbon Research Group, whose mandate is to advance our project work and participate in larger industry and community conversations around sustainability and climate change action.

Why are we doing this?

We believe that climate change is the pre-eminent issue of our time, and a threat to our collective well-being. We are experiencing its impacts today, with extreme weather events including droughts, heat waves, and flooding occurring around the world. The Paris Agreement, and now The COP26 Glasgow Climate Pact, have acknowledged the need to drastically reduce carbon emissions to keep rising temperatures below 1.5° Celsius and avoid significant loss of biodiversity, worsening climate events, reduced access to vital resources and a lower quality of life. We only have a very short window of time, less than 10 years, to course correct and avoid the worst impacts of climate change.

As citybuilders, we have a tremendous responsibility to take a leading role in combating climate change. The municipal land use policy framework presents a significant opportunity to foster positive, meaningful and tangible change. The City is required by Provincial policy to update the Official Plan through a process called a Municipal Comprehensive Review (MCR). This process is currently underway, and the City has until July 2022 to pass a new Official Plan. The MCR process presents a crucial opportunity to position the Official Plan as a central pillar of its response to the climate emergency.

Positioning climate change as the key driver for planning in the City can have a significant and direct impact on carbon emissions, increasing resilience while promoting the principles of sustainability and equity. Conversely, maintaining the City of Toronto's status quo of implementing policy and land use changes on a piecemeal basis will not produce the outcomes that are required to meaningfully combat climate change. **A paradigm shift is past due**. As Greta Thunberg says, "We must change almost everything in our current societies. The bigger your carbon footprint, the bigger your moral duty. The bigger your platform, the bigger your responsibility."

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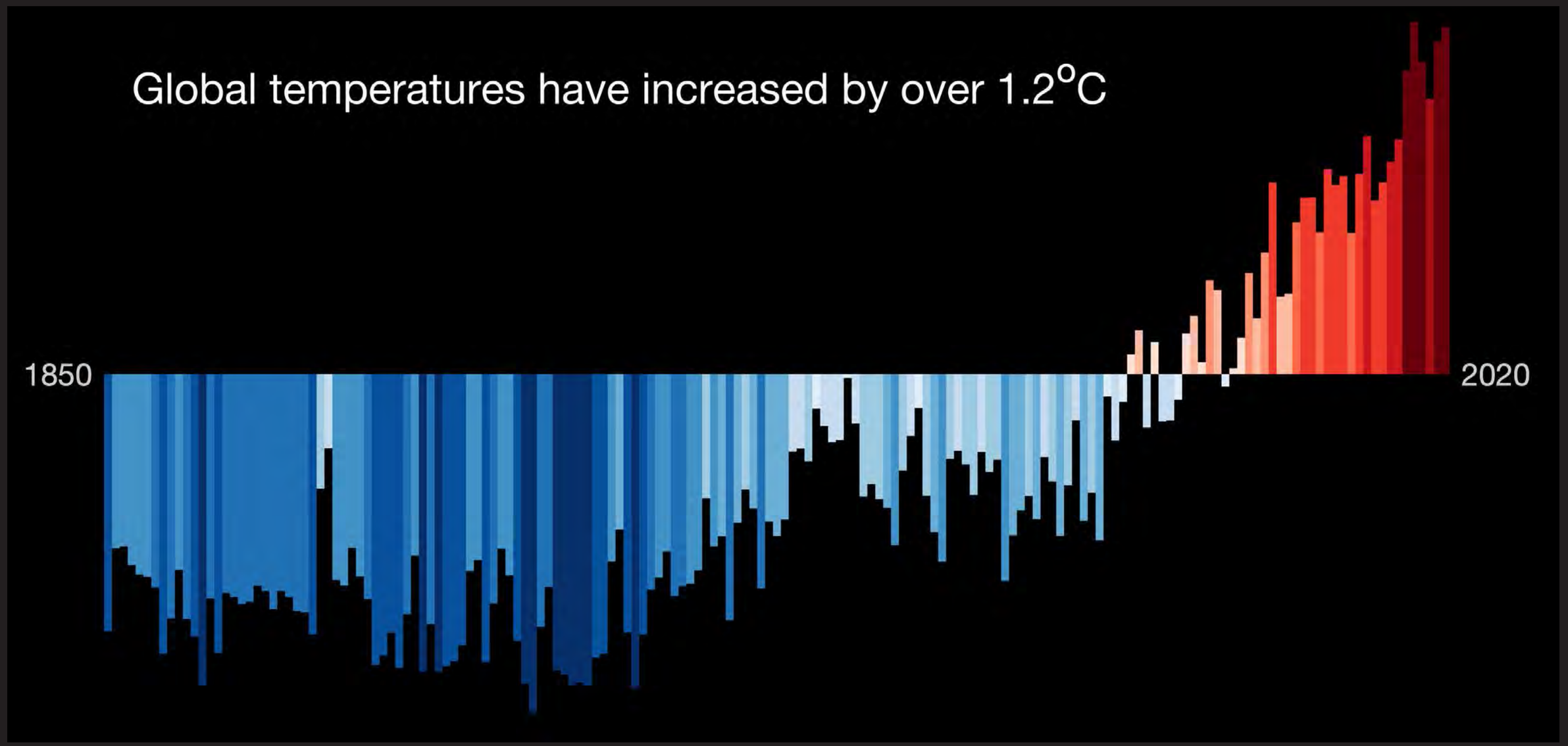
-Greta Thunberg



source: Ed Hawkins (University of Reading), https://showyourstripes.info

Our Approach and Methodology

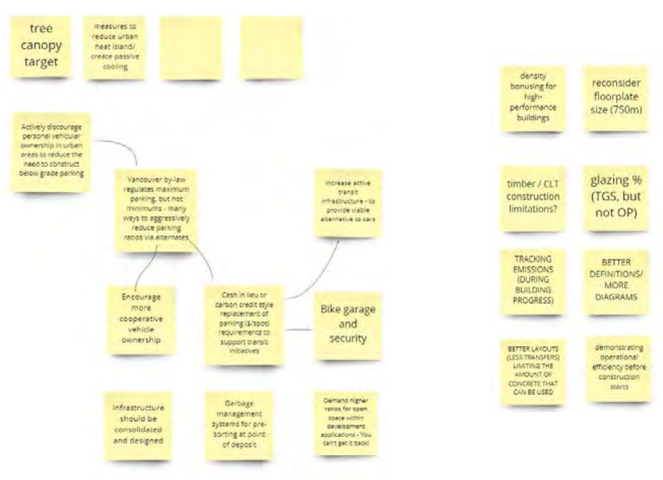
Our background research was based on the following questions:

How does the Official Plan currently address carbon emissions and climate change and where does it fall short?

What other policies, regulations or strategic initiatives in the City of Toronto address carbon emissions and climate change?

Are there tools used in other jurisdictions that could be applied in the City of Toronto?

To answer these questions, we conducted a detailed review of the Official Plan and other City documents, and then undertook precedent research from other municipalities published in reports and online. We then used these examples to guide a studio-wide workshop based on one question: “What would an official plan for the climate emergency look like?” In preparation for the workshop, we assigned participants to six groups and provided some of our research as advanced readings. The groups generated over **100 different ideas** for achieving a net zero built environment and bolstering the City’s ability to combat climate change.

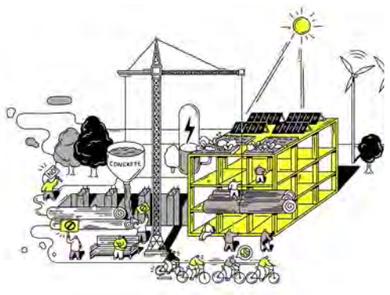


SvN Workshop - Aug 19th 2021
“ The House is On Fire” - An Official Plan for a Climate Emergency

Key Themes

1

Accelerating the development of Low Carbon Buildings



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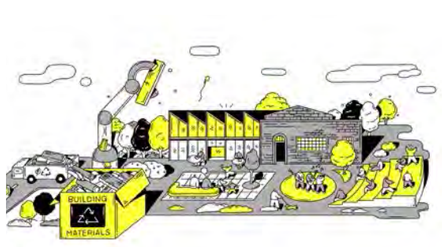
Implementing the 4Rs: Reduce, Reuse, Recycle, Retrofit

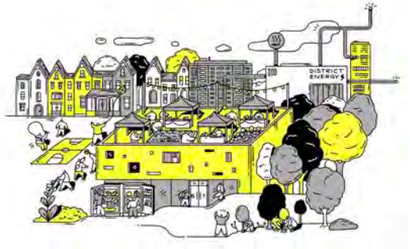


3

Enhancing the City's Role as a Carbon Sink

4

Building Community Resilience



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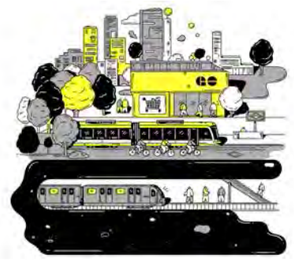
Advancing our Transportation Goals



When we reviewed the ideas generated by our colleagues, five key themes emerged. This report serves as the culmination of that workshop, combined with other research conducted by the Post Carbon Research Group, and our own architecture, landscape architecture, urban design, and planning practice. Based on our collective expertise in planning and designing buildings and urban environments, we have focused our analysis on how the Official Plan shapes the development of sites and buildings. We identify new ways that the Official Plan can be used as a key tool to underpin and strengthen climate initiatives. We conclude with a series of recommendations that should be considered and applied in order to meaningfully address the climate emergency through the planning process.

2. Understanding the Context

The following section provides contextual information regarding the provincial and municipal policy framework, as well as City-led climate and related initiatives, which serve as the basis for the Municipal Comprehensive Review process. It also sets the stage for the issues, challenges, opportunities and recommendations identified later in the report.

Policy Framework

Provincial Policy

The Provincial Policy Statement ("PPS") (2020) and the Growth Plan for the Greater Golden Horseshoe ("Growth Plan") (2019) establish the Province's overarching direction on matters related to land use planning and development. These high level policy documents emphasize land use planning as a tool to limit carbon emissions and create a more resilient and sustainable Region. The PPS directs planning authorities to support energy conservation and efficiency, improve air quality, reduce greenhouse gas emissions, and prepare for the impacts of a changing climate through land use and development patterns.

The Growth Plan provides a strategic framework for managing growth and environmental protection in the Greater Golden Horseshoe ("GGH"), including protecting natural areas, directing development to key locations such as in Urban Growth Centres and along Priority Transit Corridors, and preserving Employment Areas of strategic economic importance. The Growth Plan contains population and employment forecasts, and requires that municipalities update their Official Plans on a regular basis to respond to these targets. This process is known as a Municipal Comprehensive Review (MCR).

The Growth Plan works to support the achievement of complete communities and climate change mitigation, by increasing the modal share for transit and active transportation, and by minimizing land consumption through compact built forms. It recognizes the need to respond and act upon the climate crisis, stating that the impacts of this changing climate are already being felt. Communities and infrastructure must be adapted to be more resilient. In addition, greenhouse gas emissions across all sectors of the economy need to be reduced, and valuable water resources and natural areas must be protected.

The Growth Plan stresses that municipalities play a crucial role in managing and reducing GHG emissions through the actions implemented via their Official Plans. Municipalities are encouraged to develop strategies that not only reduce emissions and improve resilience, but also to identify vulnerabilities to climate change whilst reflecting and reporting on their efforts towards achieving these target goals for low-carbon communities.

All planning decisions, including new Official Plans, must be consistent with the PPS and conform to the Growth Plan.

City of Toronto Official Plan, 2021 Consolidation

The City of Toronto Official Plan ("the Official Plan") is a comprehensive policy document that guides development in the City of Toronto, providing direction for managing the size, location, and built form compatibility of different land uses and the provision of municipal services and facilities. Originally adopted by Council in 2006 and approved at the Ontario Municipal Board in 2009, the current iteration of the Official Plan reflects a consolidation of amendments and policies in effect as of April 2021 and as a whole represents the vision for the future of Toronto.

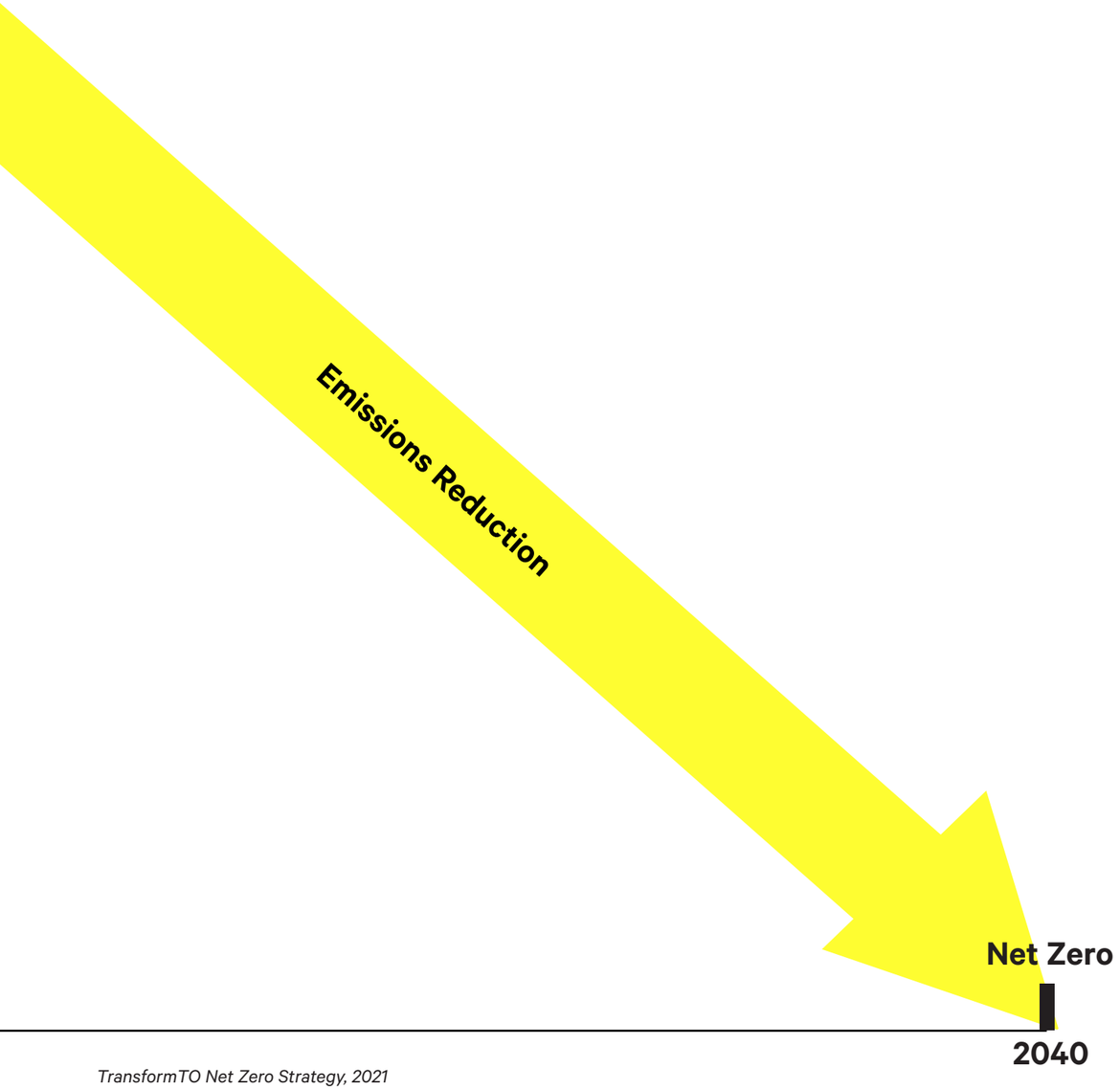
The Official Plan incorporates broad-based environmental objectives, including the adoption of infrastructure and socioeconomic systems to disrupt climate change. It also emphasizes the urgency to reshape the downtown to mitigate against the most severe impacts of climate change, while building resilience to shocks and stresses. Policies for areas defined as "Centres" provide slightly more detailed direction on addressing climate change, including assessing opportunities through a Secondary Plan, such as inclusion of small local energy solutions that incorporate renewables, district energy, combined heat and power or energy storage through preparation of a Community Energy Plan.

The majority of policies in the Official Plan are broad-based, providing less specificity and direction in how to achieve these goals. Instead, it simply encourages lessening reliance on carbon-based fuels and energy consumption, to "developing a resilient and low-carbon Downtown," and "improve air quality, energy efficiency and reduce greenhouse gas emissions."

As city-builders, we have a tremendous responsibility to take a leading role in combating climate change.

Orillia Waterfront Redevelopment

This project explored net zero carbon principles through a mix of housing typologies including lowrise and midrise forms using wood frame and mass timber construction. Additionally, the development puts landscape first as the site is organized around an urban promenade, new public spaces, community gardens and greenhouses for local food production.



TransformTO Net Zero Strategy, 2021

TransformTO Climate Change Action Strategy, 2017

TransformTO is the City of Toronto's ambitious climate action strategy. Unanimously approved by Toronto City Council in July of 2017, it includes a set of long-term, low-carbon goals and strategies to reduce local greenhouse gas emissions and improve our health, grow our economy, and improve social equity.

In October of 2019, Toronto City Council voted unanimously to declare a climate emergency and accelerate efforts to mitigate and adapt to climate change, adopting a stronger emissions reduction target of net zero by 2050 or sooner. Toronto's greenhouse gas (GHG) emissions reduction targets are now as follows (based on 1990 levels):

- 65 percent by 2030; and,
- Net zero by 2050, or sooner.

TransformTO Net Zero Strategy, 2021

The City of Toronto recently published the TransformTO Net Zero Strategy in response to Toronto City Council's climate emergency declaration by focusing on a new target of net zero GHG emissions City-wide by 2040. The strategy outlines the rationale behind the net zero pathway and opportunities needed to successfully reach the net zero target. It presents a set of 2030 interim targets for City-wide emissions, as well as City of Toronto corporate targets to demonstrate leadership by example. Finally, it presents 30 near-term solutions that will be taken to put Toronto on the net zero pathway.

Achieving the targets and goals set out in TransformTO will require transformational changes in how we live, work, build and commute. With this objective in mind, Toronto City Council has directed City Staff to bring forward a Net Zero Strategy, which is intended to escalate the recommended actions outlined in TransformTO.

City of Toronto: Related Initiatives

Toronto Resilience Strategy, 2019

The Toronto Resilience Strategy sets out a vision, goals, and actions to help Toronto survive, adapt and thrive in the face of any challenge, particularly climate change and growing inequalities. It comprises 10 goals and 27 actions to achieve its vision with a range of “Priority Actions” addressing everything from equity challenges for neighbourhoods and poverty, to centralizing resources for city-wide flood planning.

Urban resilience is the capacity of individuals, communities, institutions and systems within a city to survive, adapt, and thrive in the face of the chronic stresses and acute shocks they experience. Shocks are acute events that threaten the immediate well-being of a city. In Toronto, we face potential shocks due to flash floods, heat waves, blizzards, cold snaps and power outages. Stressors are chronic occurrences, which can weaken the fabric of a city, and impact its ability to bounce back in response to a shock. In Toronto, stressors include growing economic inequality among residents, a worsening housing crisis, aging infrastructure, and a changing climate.

Advancing equity is a core component of building resilience. The ability of a city to survive and thrive in the face of challenges is as much about the strength of its communities and neighbourhoods as it is about the design and management of its infrastructure and buildings.

Wild, Connected and Diverse: Toronto Biodiversity Strategy, 2019

In October 2019, City Council unanimously passed the first Biodiversity Strategy. The Biodiversity Strategy sets out a vision and goals for supporting a healthier and more robust ecosystem, and increasing the population’s nature awareness to encourage collective protection and stewardship. It outlines 10 principles and 23 actions, stressing the importance of working with Indigenous leaders and other key partners such as citizen scientists, advocacy groups, and external agencies.

Toronto Green Standard

The Toronto Green Standard (TGS) is the City of Toronto’s sustainable design regulations for new private and city-owned developments. The Standard consists of tiers (Tiers 1 to 4) of performance measures with supporting guidelines that promote sustainable site and building design. Tier 1 of the TGS is a mandatory requirement of the planning approvals process. Financial incentives are offered through the Development Charge Refund Program for planning applications that meet higher level voluntary standards in Tiers 2 to 4.

Applications submitted on or after May 1, 2018 are required to meet Version 3 of the TGS. Version 4 of the Toronto Green Standard was adopted by Toronto City Council in July of 2021, and will come into effect in May of 2022 for all new planning applications.

Toronto Zero Emissions Building Framework, 2017

The City of Toronto’s Zero Emissions Building Framework launched in March 2017, and builds upon the Toronto Green Standard. As part of ambitious efforts for GHG reduction targets and pledge for renewable and district energy generation, the Zero Emissions Building Framework outlines the need for an integrated building framework to reduce the impact of buildings on the environment while improving their resilience to climate change. The framework centres on protecting Torontonians from escalating energy costs and aims for high quality and enduring performance. It includes Energy Modelling Guidelines, and a Climate Change Resilience Checklist for New Development to be incorporated in the TGS.

Our Plan Toronto: Municipal Comprehensive Review

The Province of Ontario issues new population and job forecasts every 5 years, and allocates some of that growth to each municipality in the Greater Golden Horseshoe. The growth forecasts are included as Schedule 3 to the Growth Plan. In 2020, an amendment to the Growth Plan included new forecasts to 2051. The City of Toronto is currently in the midst of a Municipal Comprehensive Review (MCR) to plan for the people and jobs that are expected over the next 30 years. In June of 2020, Toronto City Council approved a work plan for the MCR process. In the Spring of 2021, City Planning published "Your Guide to Our Plan Toronto", which outlines five steps associated with the MCR process. These include:

- Review the current Official Plan policies and undertake background studies to determine where growth can and should go;
- Review existing plans for local areas and neighbourhoods;
- Strengthen commitments to climate change action;
- Lay the groundwork for a 2051-ready Plan; and,
- Develop draft changes to the Official Plan.

The City recently held public consultation events to obtain input on the priorities for the Official Plan review. SvN attended the meetings and noted that a number of participants from the public raised their concerns that the Official Plan does not go far enough to address the climate crisis. This has consistently been identified as a priority for the MCR, but the presentation only referenced climate change action in the context of addressing urban heat island impacts. This is important, but insufficient.

Following completion of the review, the resulting Official Plan will establish a vision to guide growth between 2021 and 2051, while supporting our communities, environment and economy. Given the planning horizon, it is critical that the new Official Plan comprehensively address the existential threat of climate change, through the introduction of robust policies which seek to mitigate its worst impacts, and adapt to our changing climate.

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Active Tower

This adaptive reuse project incorporates a heritage building at the base and a 5-storey commercial office addition for an ecologically minded tourism company. The building design includes a vertical garden and operable façade for natural ventilation and shading, as well as, strategic cuts through the floorplate to allow natural daylighting deep into the core.

3. Addressing the Shortcomings of the Existing Official Plan

Planning is an ongoing process. The policies of the Official Plan need to be regularly reviewed to ensure they are consistent with higher level Provincial planning priorities, and also to verify that they are creating the intended outcomes. The existing Official Plan was first enacted in 2006, though it has been subsequently amended with new and revised policies over the past 15 years. While climate change was known and understood in 2006, at that time its impacts on and relationship to urban development and city operations were only beginning to be considered.

The following section describes the limitations of the Official Plan in addressing climate change and its impacts. We identify a number of challenges with the existing Official Plan which will need to be addressed through the MCR process. This section also begins to identify key opportunities to centre climate change in the Official Plan review, and concurrently advance other city-building objectives. Specifically, key opportunities include:

- ***Capitalizing on recent changes to provincial legislation;***
- ***Aligning the Official Plan with the City of Toronto's climate and related initiatives;***
- ***Removing the Official Plan's overly-prescriptive and rigid development policies, particularly at the low-rise scale within Neighbourhoods, and at the mid-rise scale along Avenues, and establishing a more flexible policy framework to guide development on a city-wide basis;***
- ***Addressing gaps within, and limitations of, the Toronto Green Standard;***
- ***Addressing the challenges posed by institutional inertia and capacity limitations within the City of Toronto; and,***
- ***Augmenting policies focused on a transition away from fossil fuel combustion-based energy sources, with those that seek to reduce building energy needs.***

Capitalizing on Recent Changes to Provincial Legislation

The existing Official Plan is not designed to capitalize on recent changes to the *Municipal Act* introduced through Bill 68, which are designed to help municipal governments combat climate change. Specifically, paragraph 10(2) 5 and paragraph 11(2)5 of the *Municipal Act* have been repealed and replaced, allowing municipalities to pass by-laws respecting climate change. This builds upon existing municipal powers to enact by-laws relating to economic, social, and environmental well-being. A similar change has been introduced to the *City of Toronto Act*, with the repeal and revision of paragraph 8(2)5.

Section 147 of the *Municipal Act* is also repealed and amended. Municipalities can now provide for, or participate in, long-term energy planning, which may include, among other considerations, climate change. Previously, Section 147 enabled municipalities to provide, arrange for, or participate in an energy conservation program. A similar change has been introduced in the *City of Toronto Act*.

Section 2 of the *Planning Act* has also been amended to make the mitigation of greenhouse gas emissions and adaptation to a changing climate an enumerated matter of provincial interest, providing grounds for planning matters. All of this represents a paradigm shift allowing municipalities to be proactive in combating climate change.

Through the MCR, an opportunity exists to leverage and capitalize on these recent amendments to provincial legislation, and incorporate new Official Plan policies which bolster the City of Toronto's efforts to mitigate and adapt to effects of climate change. Specific policy recommendations that respond to these legislative changes are included in Section 4.

SE Health Care Senior's Housing Prototype

This project seeks to de-institutionalize senior's housing by offering an affordable model that prioritizes healthy living, social interaction and the integration of nature through shared gardens and greenhouses. The prototype can be adapted for varying site conditions and explored a mid-rise application suitable for low carbon wood frame and mass timber construction.

Aligning the Official Plan with the City of Toronto's Climate and Related Initiatives

The existing Official Plan is not designed to achieve the objectives of the City of Toronto's existing and emerging climate and related initiatives, as discussed above. Through the MCR process, an opportunity exists to align the Official Plan with these and other City-led initiatives. In doing so, the *Planning Act* provides the City of Toronto with the legal weight and authority to enforce these policies across the full range of municipal planning and land development activities.

Remove Restrictive Policies that Limit Adaptation and Responding to Change

The existing Official Plan applies an overly-prescriptive approach to built form standards for new development, which pose significant challenges to achieving the City of Toronto's climate change mitigation and adaptation efforts. Importantly, these same policies also exacerbate the City's growing housing crisis. Of particular concern is Toronto's approach to regulating low-rise residential buildings within its Neighbourhoods, and mixed-use mid-rise buildings along its Avenues.

Reimagining our Neighbourhoods

Evidence suggests this may be beginning to change, as the City advances its Expanding Housing Options in Neighbourhoods ("EHON") Study. On November 1, 2021, the Chief Planner and Executive Director of City Planning released an Interim Report on a sub-component of the EHON Study, which is dedicated to multi-unit residential buildings ("Multiplex Study"). The report presents research to date on the expansion of multiplex permissions in Toronto's Neighbourhoods, initial consultation outcomes, and ideas for further consultation.

The report states that permitting multiplexes helps reduce greenhouse gas emissions through the efficient use of land and resources. It also highlights several key issues and challenges associated with existing Official Plan policies, and indicates that City Staff are carefully considering where policy and interpretation can be revisited to allow more flexibility in building types. This is necessary to achieve desired outcomes for healthy, vibrant low-rise neighbourhoods.
Additionally, the report outlines a series of preliminary directions, to serve as the basis of public consultation in 2022. These include permitting all low-rise residential building types across all Neighbourhoods in the City of Toronto, creating / standardizing form-based residential zoning that provides flexibility to allow for up to four units on a lot, incentivizing the creation of additional units in multiplex, and revising Neighbourhood policies in the Official Plan.

In order to meaningfully combat both climate change, and the City's housing crisis, it is critical that the MCR process result in revised development policies that not only permit, but encourage, the creation of multi-unit residential buildings. We are encouraged by the City's leadership in this respect, and the preliminary directions that have emerged out of the EHON Study.

Reimagining our Avenues

Beyond its Neighbourhoods, a significant shift in policy is required to address development along the City's Avenues, which are priorities for mixed-use mid-rise intensification. Built form standards that implement the Official Plan policy are extremely restrictive, and prevent the achievement of highly efficient, green buildings capable of meeting Passive House standards. If the City is to establish a policy and regulatory framework capable of achieving Version 4 of the Toronto Green Standard, many of these guidelines will need to be revised.

Generally, there is an opportunity for the MCR process to result in new Official Plan policies which are more flexible and less prescriptive by design. This is necessary in order to achieve the City of Toronto's environmental and housing objectives.

Addressing Gaps within, and Limitations of, the Toronto Green Standard

The TGS does not apply to low-rise buildings, with less than 5 units. Additionally, there are limitations to what can be achieved through the Toronto Green Standard, which is implemented as part of Site Plan Control. For example, some properties do not have the physical space required to manage the volume of water that the TGS stormwater balance requirement outlines.

In order to address these gaps and limitations, and to avoid conflicts with the Ontario Building Code, the City of Toronto should transition toward a model which implements all relevant sustainability and resiliency policies through zoning by-law regulations. To achieve this, there is an opportunity for the MCR process to result in a new Official Plan that incorporates the full range of relevant policies specific to mitigating climate change, and adapting to its effects, while setting out clear implementation requirements at the Zoning level.

Other Opportunities and Challenges

Institutional inertia at the City of Toronto is preventing the implementation of sustainability and resiliency initiatives. Additionally, insufficient capacity exists for City Staff to advance such initiatives. In undertaking the MCR process, there is an opportunity for the City of Toronto to collaborate with external supporters and advisors to aid City Staff in achieving these initiatives.

Finally, the current focus of relevant sustainability policies is to transition away from the use of fossil fuel combustion-based energy sources. While important, there is a need to pair these policies with those which seek to minimize energy requirements through sustainable development practices and the promotion of compact built form, particularly at the low to mid-rise scale, where Passive House standards can be promoted, and wood-frame, low emissions construction can be achieved.

There is an opportunity for the MCR process to result in new Official Plan policies which are more flexible and less prescriptive by design

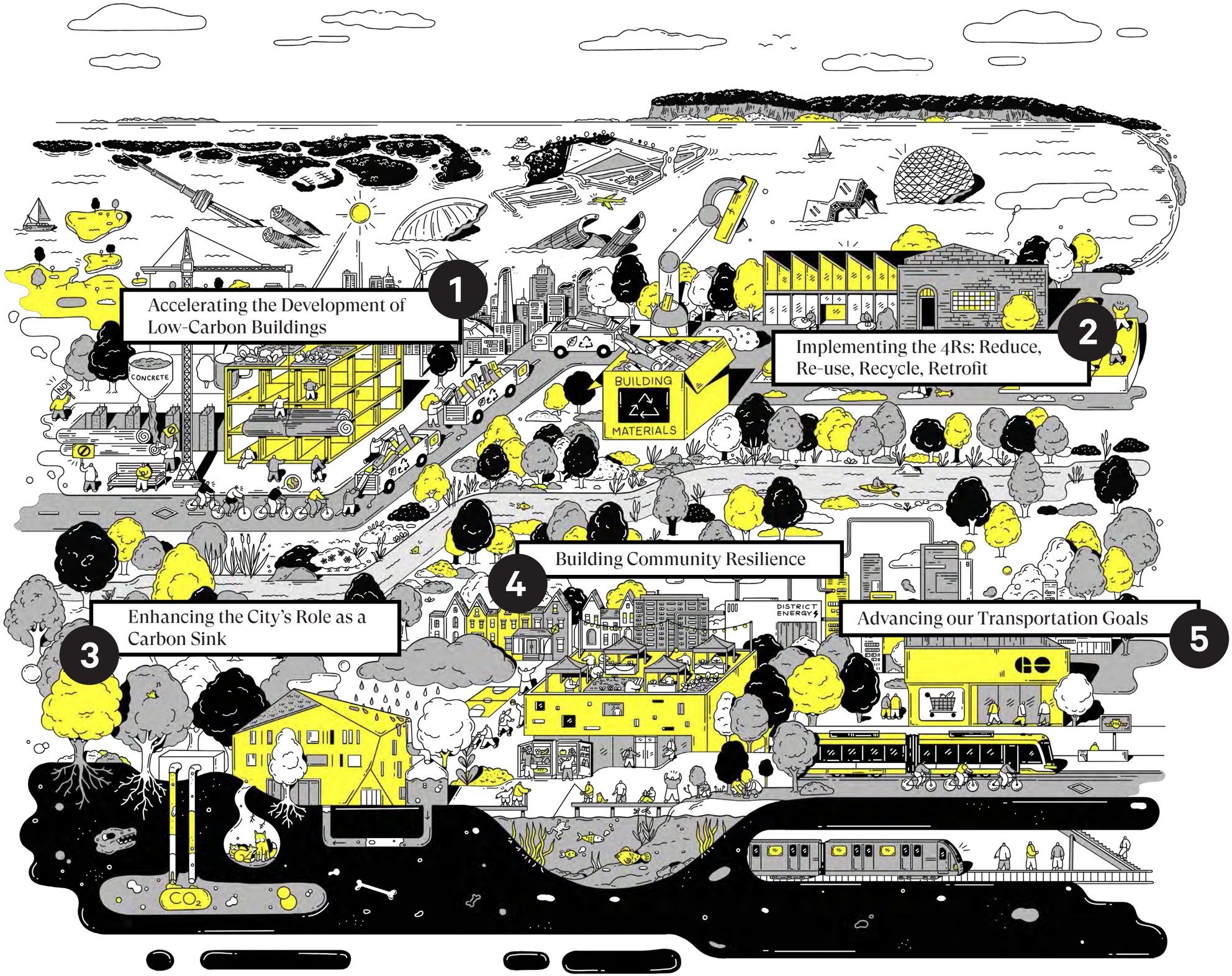
St. Julian Multi-Faith Hub

This affordable housing and community hub project is organized around a central green space and explores a number of environmental design strategies including sloped roofs for potential solar energy collection, natural ventilation, rain water collection and a ground source heat pump system.

4. Planning for the Climate Emergency

The following section outlines key recommendations and calls to action, which will need to be addressed through the MCR process, in order for the City of Toronto to meaningfully combat climate change and advance other city-building objectives. Specifically, key recommendations include:

- ***Accelerating the Development of Low-Carbon Buildings;***
- ***Implementing the 4Rs: Reduce, Re-use, Recycle, Retrofit;***
- ***Enhancing the City's Role as a Carbon Sink;***
- ***Building Community Resilience; and,***
- ***Advancing our Transportation Goals.***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Accelerating the Development of Low-Carbon Buildings
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3
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4
Building Community Resilience
5
Advancing our Transportation Goals
CONCRETE
BUILDING MATERIALS
DISTRICT ENERGY
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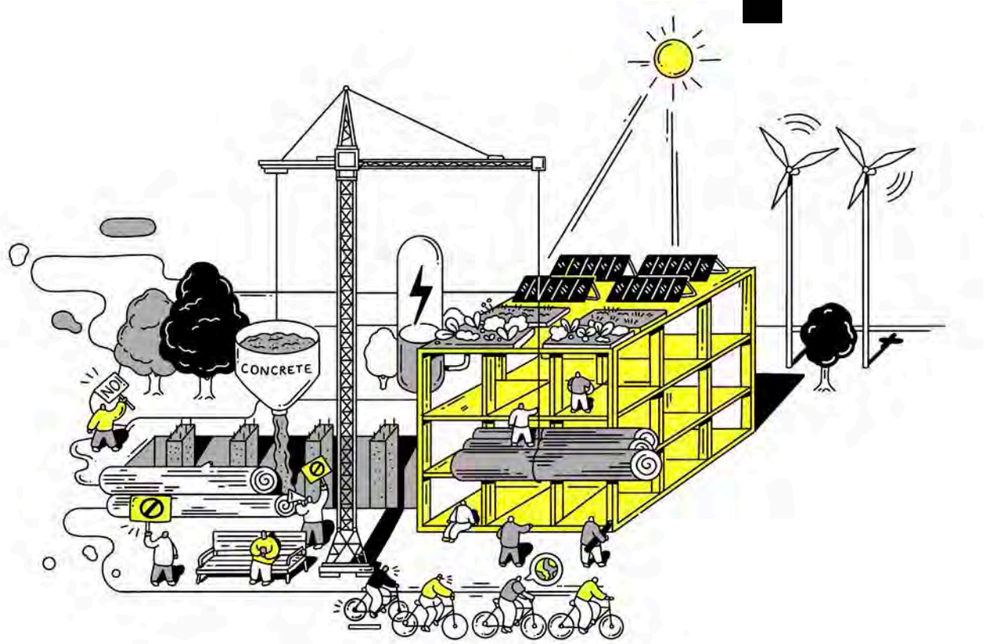


1 Accelerating the Development of Low Carbon Buildings

Buildings and construction are the number one source of greenhouse gas emissions in Toronto, accounting for 57% of all carbon emissions[1]. Logically, addressing building-related emissions is a core component of the TransformTO strategy. It should also be integral to the Official Plan. he Official Plan is based on a growth forecast or "target" for people and jobs. It should also be based on a 1.5 degree climate forecast and carbon budget. Specifically, key recommendations include:

1. Use the TransformTO net-zero strategy as the basis for all revised and new policies introduced through the MCR;
2. Set specific targets based on a whole-life carbon approach, applicable at the secondary plan or district level;
3. Direct the revision of all urban design guidelines by applying a climate change mitigation and adaptation lens, for example, building orientation and unit design that maximizes passive heating and cooling;
4. Prioritize built form that facilitates the construction of high-performance buildings and low-emissions construction systems such as mass timber, and reduces the need for concrete and steel;
5. Utilize tools found in the *Planning Act*, including the Development Permit System or Community Benefits Charge to incentivize climate-positive buildings, and fast-track approvals that achieve desired performance criteria;
6. Promote clean electrification by facilitating renewable energy generation and energy storage;
7. Prohibit new connections to natural gas lines and phase out existing connections as buildings are renovated/retrofitted;
8. Provide energy modelling and life cycle assessment software to development proponents early on in the process, and require their use as part of the re-zoning and site plan approval submission checklist; and,
9. Use zoning as a tool for achieving net zero

The following paragraphs expand upon these recommendations, while placing particular emphasis on the need to achieve climate-positive design, prioritize electrification, and reducing carbon through the development approvals process.

1 *City of Toronto (2020) 2019 Greenhouse Emissions Inventory.*

Achieving Climate-Positive Design

Toronto City Staff reported to the Infrastructure and Environment Committee on December 2nd, 2021 with an update on the TransformTO Net Zero Strategy, which has a new target to reach net zero by 2040. We are pleased to see that many of our recommendations are reflected in the Net Zero Strategy. We encourage City Planning to use the Net Zero Strategy as the basis for all revised and new policy introduced through the OP review.

Building-related emissions are attributed to a combination of embodied and operational carbon. Operational carbon refers to emissions generated through processes associated with building operations. These include heating, cooling, ventilation, and electrical load. Conversely, embodied carbon refers to emissions generated through processes associated with the extraction of raw materials as well as the manufacturing, transportation / delivery and installation of construction materials. The way in which buildings are planned and designed impact both their embodied and operational carbon.

Many of the policies, regulations and performance standards currently used to measure and evaluate design quality also complicate the viability of achieving low carbon buildings. For example, Performance Standards for Mid-Rise Building specify that 6 to 11 storey buildings, situated on major streets, should adhere to front and rear-yard angular planes, which necessitate the provision of stepbacks and terraces. Such design elements are difficult to achieve in an efficient and cost-effective manner. Wood or mass timber, which sequester carbon, serve as the most desirable structural system from an environmental perspective. However, reinforced concrete is best suited to accommodate the desired form. This is problematic, as reinforced concrete possesses a significant amount of embodied carbon. Additionally, the provision of stepbacks, which increase the area of exterior building surfaces, increase the potential for heat loss and thermal bridging which increases the building's operational carbon.

The Performance Standards for Mid-Rise Buildings were approved by Council in 2010. It's time to look at them again. The Official Plan should direct the revision of all urban design guidelines by applying a climate change mitigation and adaptation lens, while prioritizing built form that facilitates the construction of high performance buildings and low emissions construction systems such as mass timber.

Orillia Waterfront Redevelopment

This project explored the redevelopment of an 8.6 acre site along the Orillia waterfront as a mixed use community complete with an urban promenade linking public spaces, community gardens and greenhouses for local food production and increased density through varied building forms. At the heart of the project is the use of mass timber construction to minimize carbon emissions while also creating a strong link to the City's heritage as a centre for lumber production.

It can be done

The City of Vancouver provide height and density bonuses for buildings that achieve certain environmental performance targets.

High performance buildings are more costly to build, which makes them less likely to be built. We need to accelerate the construction of low carbon buildings as quickly as possible, and regulation is only one tool. We encourage the City to examine other Planning Act tools, including the development permit system or community benefits charge, to incentivize the construction of better buildings. Other jurisdictions, such as Vancouver, provide height and density bonuses for buildings that achieve certain performance targets.

Prioritizing Electrification

In the City of Toronto, residential, commercial and industrial buildings collectively account for 57% of total emissions[1]. Within all buildings, space heating serves as the single greatest source of carbon emissions. Electricity and natural gas constitute the two most common sources of space heating. Despite the fact that 96% of Ontario's total electricity mix is derived from clean sources of energy, natural gas space heating accounts for 91% of Toronto's building emissions, and 50% of Toronto's total emissions[2]. In order to achieve true net zero emissions, we must eliminate natural gas as a heating source, starting with new construction. Renewable energy, electric systems and/or fossil fuel-free district heating should be the only options. New buildings should not be permitted to connect to natural gas lines and all buildings, through the issuing of relevant permits, should be required to accommodate all space heating requirements through the use of electric / heat pump technology.

The switch to electric will put additional demand on our existing energy sources. There is an opportunity to increase the supply of clean energy and also increase Toronto's energy security through investments in decentralized clean energy sources and storage systems. However, planning policy and regulations limit where and how these systems can be installed. The Official Plan should promote clean electrification through facilitating renewable energy generation and energy storage, such as on rooftops.

1 *City of Toronto (2021) TransformTO Net Zero Strategy.*
2 *Canada Energy Regulator (2019) Provincial and Territorial Energy Profiles - Ontario.*

Reducing Carbon Through the Development Approvals Process

In order to meet the Paris Climate Agreement targets, net-zero energy and zero-carbon buildings must become the primary form of building construction across all economies by 2050. The City's main tool for achieving the target for new buildings is the TGS, a set of multidisciplinary criteria that new development must meet.

The TGS is applied at the time of a site plan control application, following completion of detailed design work. As architects, we know that energy modelling and life-cycle assessments need to be undertaken early in the conceptual design stage. This is critical, for the purpose of achieving low carbon and energy-efficient buildings. We encourage the City to make the necessary energy modeling and life cycle assessment software available to development proponents early on in the process, and require their use as part of the re-zoning and site plan approval submission checklist.

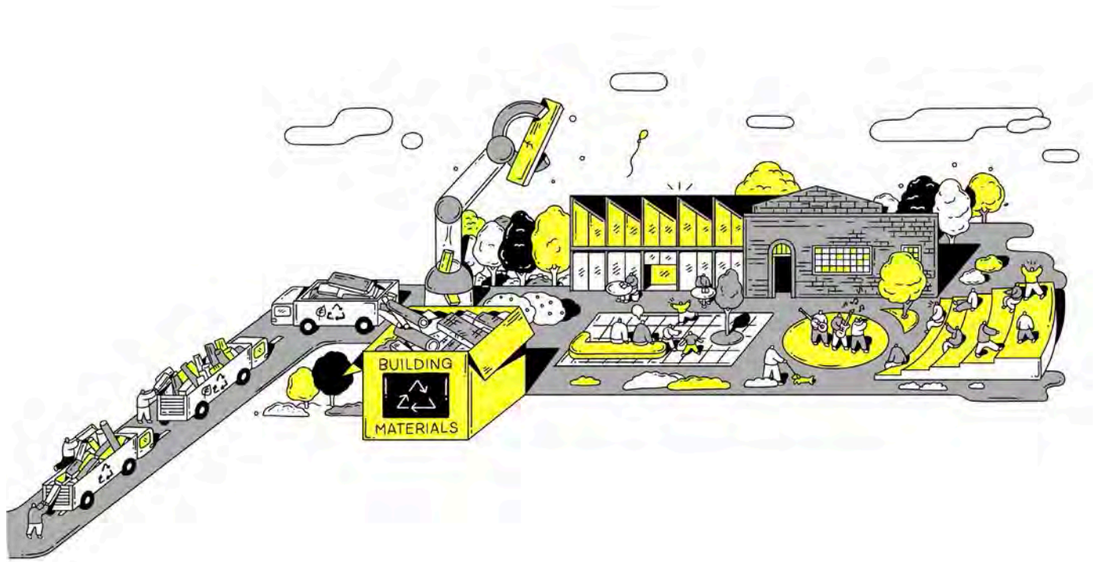
In the City of Toronto, the majority of new developments are subject to site-specific rezoning. This is necessary to secure appropriate land use permissions and built form standards, because as-of-right permissions do not reflect market realities or the existing and emerging built form context. The City is in the process of reviewing its comprehensive city-wide Zoning By-law. We encourage the City to consider other ways the zoning by-law can be used to achieve climate objectives. Considerations include:

- Introduce built form standards that maximize passive strategies, low-carbon and energy-efficient buildings and infrastructure. For example eliminate the requirement for building stepbacks that necessitate the use of concrete structural systems;
- Apply a carbon budget on a per-housing unit basis, or based on gross-floor area (GFA) that includes below grade areas;
- Require renewable energy production such as rooftop solar photovoltaics, and geothermal systems as well as energy storage systems;
- Eliminate parking minimums to reduce the amount of concrete needed to build below grade, and encourage alternative modes of travel; and,
- Translate the TGS into zoning requirements so that they become applicable law.

The Netherlands has a maximum embodied carbon limit and requires reporting of embodied carbon at the building permit application stage.

It can be done

2 Implementing the 4Rs



Toronto is a desirable place to live and work, and we hope that it will always be that way. As the city intensifies, we are seeing development proposals for sites where an existing functional building is demolished to allow for new construction. Addressing waste in city building activities is an important priority that is not reflected in the current Official Plan. We need to reduce the amount of new materials needed, by prioritizing retrofits of the existing building stock. We can also reduce the amount of construction waste by implementing a comprehensive waste diversion program whereby waste materials are recycled and reused as inputs for other types of construction or other industries entirely. Specifically, key recommendations include:

1. Employ the 4Rs as a framework for evaluating new development proposals;
2. Promote adaptive reuse of existing buildings and public spaces to reduce carbon emissions associated with new construction;
3. Discourage the demolition of existing buildings by requiring environmental impact studies and construction waste management plans at all scales of development, and increasing fees;
4. Target net-zero energy and emissions for all existing buildings by encouraging deep retrofits that improve energy efficiency and lower carbon emissions;
5. Set targets for recycled content of building materials to lower carbon emissions associated with manufacturing; and,
6. Provide a centralized construction waste-management resource, also known as a material bank, and help establish a material passport system with a network of recycling facilities specifically for construction materials.

The following paragraphs expand upon these recommendations, while placing particular emphasis on the need to adopt a cradle to cradle perspective, retrofit existing buildings, and optimize waste management.

Adopting a Cradle to Cradle Perspective

The Official Plan is intended to manage long-term growth and change, which is achieved largely through infill, development and redevelopment. When it comes to redevelopment, the majority of buildings that face demolition do so not as a result of having reached the end of their functional lives, but because they are inflexible by design. They lack the ability to adapt or even expand in response to changes in land economics and market demands. Of the buildings that have been demolished in the recent history of Toronto, the majority are less than 50 years of age.

The manner in which buildings are used will need to change as the city continues to grow, just as they must evolve to accommodate for changes in human behavior. The COVID-19 pandemic serves as a suitable case study. It has led to fundamental changes in travel patterns and lifestyle preferences, some of which may be here to stay. Corporations and households alike are reconsidering their space needs, and commercial landlords are exploring the potential of repurposing existing office space for other uses. In time, the same will hold true for public agencies and corporations who manage structured parking facilities in a world where the intersection between autonomous, electric and shared vehicles has fundamentally altered vehicle ownership, travel patterns, and modal splits.

The Official Plan contains policies that encourage the retrofit and renewal of older apartment buildings. There is an opportunity to expand upon these objectives at a broader scale. With this comes the need to accommodate a greater degree of flexibility in our Zoning By-law regulations. The Residential Apartment Commercial (RAC) Zone serves as a suitable precedent. It was introduced in 2016 to permit a greater diversity and range of uses within existing and new apartment buildings[1]. The Official Plan should promote adaptability and repurposing of existing buildings and public spaces, and ensure that new buildings are designed with flexibility and adaptation in mind. This should be implemented through flexible and performance-based zoning standards, or a Development Permit System.

It can be done

Philadelphia makes it easier to repurpose old buildings for new uses through relaxed zoning requirements and tax incentives.

1 *Tower Renewal Partnership (2017) Residential Apartment Commercial (RAC) Zoning, http://towerrenewal.com/initiatives/rac-zone/.*

Optimizing Waste Management

In typical construction practices, it is estimated that as much as 30%[1] of the total weight of all building materials delivered to a construction site is destined to become construction waste. Not only does this contribute to a building's upfront carbon, it places strain on our waste management system. It is possible to mitigate these issues, by minimizing the amount of materials destined for landfill. This can be achieved by diverting construction waste, demolition, and land clearing debris in a manner which allows for recovered resources to be recycled back into the manufacturing process or reused however appropriate. Management of building-related waste is expensive and often presents unintended consequences, a fact that is acknowledged by the inclusion of construction waste diversion targets in the TGS. But it is hard to achieve these targets if there is nowhere for that waste to go. The City should provide a centralized construction waste management resource, a material bank, and help to establish a network of recycling facilities specifically for construction materials. Manufacturers and suppliers should also be incentivized to recycle materials at the source and minimize waste. To the extent that materials can be recycled and reused within the City of Toronto, this also helps to reduce the energy required to produce and transport raw materials from elsewhere.

It can be done

Oogstkaart is an online marketplace for redundant and second-hand materials in the Netherlands. An interactive map, allows people to search for and find materials nearby. (www.oogstkaart.nl)

30%

As much as 30% of the total weight of building materials delivered to a building site is construction waste

1 *Osmani, M. (2011) Chater 15 - Construction Waste. in: Waste, a Handbook for Management.*

It can be done

The Pembina Institute provides resources and best practices for municipalities to support the increased participation in deep retrofits (www.pembina.org)

Retrofitting Existing Buildings

The majority of a building's embodied carbon is generated as upfront carbon. Upfront carbon refers to greenhouse gas emissions, which have been released in the early phases of a life cycle. In the case of buildings, this refers to emissions which are largely generated prior to completion and operation. Retrofitting our existing building stock not only reduces construction waste and embodied carbon, it also helps to preserve the built legacy of our city, promote diversity of built form and helps to tell our stories to future generations.

One of the most significant opportunities lies with deep retrofits. Deep retrofits refer to those renovations which improve the energy performance of existing buildings by at least 50%. Deep retrofits are expensive, but they are essential to achieving the City's net zero target. Policy must incentivize and prioritize retrofits, and the adaptive reuse of existing buildings, as a strategy. Planning tools such as community improvement plans and development charge/community benefits charge exemptions can be used to encourage deep retrofits. The City can also incentivize the adaptive reuse of existing buildings, and recycling of building materials, through exemptions or credits on development charges.

Retrofitting our existing building stock not only reduces construction waste and embodied carbon, it also helps to preserve the built legacy of our city

The Destructor Park

This project features the adaptive reuse of the Wellington Destructor, a key part of the City's infrastructure heritage and supports its transformation into a publicly accessible hub organized around an indoor winter park, event space, café and learning centre. Alongside the Destructor, a new pavilion building with working ateliers will tie into a Direct Energy neighbourhood energy system and an expanded green park space towards the west.

3

Enhancing the City's Role as a Carbon Sink

There are two sides to the net zero equation: the carbon we produce through our daily activities and consumption, and the carbon that can be absorbed by natural ecosystems, or stored. Net zero acknowledges that while an overall reduction in carbon emissions is the most important, true net zero also requires carbon removal and storage. Specifically, key recommendations include:

1. Set city-wide targets for carbon sequestration, tree canopy cover and biodiversity;
2. Establish a requirement for natural, landscaped surfaces across all land use designations and introduce performance standards to achieve a net increase in ecological function, biodiversity and carbon storage;
3. Introduce "bio-reserve" as a new land use designation and develop a natural asset management plan, thereby establishing the basis for continued investment in our urban ecosystem;
4. Provide guidelines for high-performance landscapes, a catalogue of native plant species, and education for designers and property owners;
5. Where variances to increase lot coverage or reduce landscaped area are sought, require the applicant to demonstrate an overall increase in biodiversity and/or carbon storage;
6. Promote the ecological intensification of fallow city-owned lands to support biodiversity, enhance resilience to extreme weather, and improve natural functions; and,
7. Encourage the 'rewilding' of lawns in residential areas.

The following paragraphs expand upon these recommendations, while placing particular emphasis on the need to enhance the natural heritage system, exceed minimum standards, and support ecological intensification.

Enhancing the Natural Heritage System

Trees are the first thing most people think about when it comes to absorbing carbon. But other vegetation also helps to remove carbon from the atmosphere, while supporting biodiversity and other ecosystem functions. Every flat roof in the city should be a green roof, and green roof vegetation should include an array of plants that support pollinator species and birds. Green roofs can even be functional for human society - we have hundreds of acres of potential food growing space above our heads. Increasing the amount of food produced within the city decreases our reliance on food imports and reduces the carbon footprint associated with transportation distances. The Official Plan should establish a requirement for vegetated surfaces across all land use designations, and set city-wide targets for carbon sequestration, tree cover and biodiversity.

The current Official Plan has the Natural Heritage System designation which is an overlay that identifies the location of significant environmental or hydrological features, natural habitats, and other features. When development is proposed on or near lands shown as part of the natural heritage system, the proposed development's impact on the system is evaluated and an impact study may be required. Existing policies generally focus on reducing potential negative impact of new development on the natural heritage system, and protecting sensitive areas from encroachment. These policies should also establish targets for expanding and enhancing the natural heritage system. A new land use designation - bio-reserve - should be introduced, to establish the basis for continued investment in our urban ecosystem.

It can be done

In the U.K., conservation charity Nottinghamshire Wildlife Trust is hoping to make Nottingham the country's first "rewilded city". (www.nottinghamshirewildlife.org)

The Official Plan should establish performance standards for new landscaped open spaces to achieve a net increase in ecological function or carbon impact.

Greenwood Yard

This prototype project is centred around the redevelopment of the Greenwood TTC servicing rail yard and is organized around the principles of Transit Oriented Communities, circular economy and mass timber construction, research and production. The hybrid program is part educational campus, part industrial fabrication spaces, part residential and community facilities, and part nature with agriculture, micro-forests, waste treatment, energy production and public spaces.

It can be done

San Francisco mandates green roofs on most new construction and provides guidance for native species selection and habitat creation.

Exceeding Minimum Standards

As the population grows and densities increase, access to open space becomes even more important. The COVID-19 pandemic has demonstrated the importance of outdoor access, and that small condo balconies are not sufficient. All new developments are subject to minimum requirements for private and shared outdoor amenity spaces, as well as a conveyance of land or payment of cash-in-lieu for park purposes. The City's Green Roof By-law establishes a requirement of 20-60% green roof cover for new developments over a certain size. All of these standards are essential for creating new green spaces as the city grows, but they can also play a role in sequestering carbon and enhancing the ecological function of our city. The Official Plan should establish performance standards for new landscaped open spaces to achieve a net increase in ecological function or carbon storage. To achieve this, the City should provide guidelines for high-performance landscapes, a catalogue of plant species, and education for designers and property owners.

Similar standards could be applied to ground-related housing. Approximately 35% of the land area of the City is situated within the Neighbourhoods designation, which is made up of primarily low density housing types. Many of Toronto's neighbourhoods are known for their landscaped open space and mature tree cover, but in many cases these ecological features are in jeopardy as property owners seek to build new, larger homes on existing lots. These are often approved through minor variances to the Zoning By-law by the Committee of Adjustment. The Official Plan should require that, where variances to increase lot coverage or reduce landscaped area are sought, the applicant must demonstrate an overall increase in biodiversity as a condition of approval.

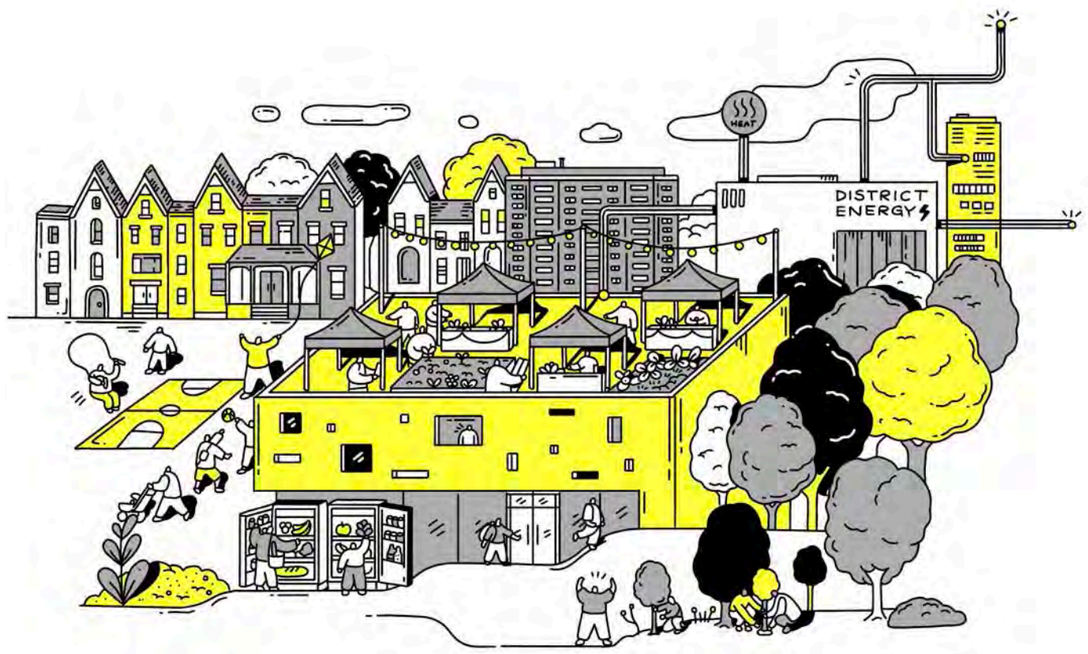
Supporting Ecological Intensification

Planners talk a lot about intensification. It is a key element of creating complete communities, making an efficient use of existing infrastructure, and supporting public investments, such as transit. But the same concept can be applied to our landscaped open spaces to support a complete community of flora and fauna, enhance resilience to extreme weather, and improve natural functions such as stormwater management and carbon sequestration. The Official Plan should promote the ecological intensification of fallow city-owned lands, including grass boulevards along major streets, utility corridors, and lawns in front of public buildings. To encourage similar measures on private property, the Official Plan should promote the 'rewilding' of lawns and provide educational resources and grants to help homeowners.

The Wildlife Trust in the UK works with highways authorities, councils and landowners to advise and help manage road verges for wildflowers and pollinators. (www.wildlifetrusts.org)

It can be done

4 Building Community Resilience



We have already experienced the damaging effects of extreme weather caused by climate change, including flash floods, heat waves, and ice storms. Climate models predict that Toronto could see more than 50 days of 30+ degree weather by 2051[1]. Resilience is about our ability to respond, to bend not break, and to bounce back. The Official Plan should provide the basis for resilience across all land use designations and city functions. A resilient neighbourhood has different characteristics than a resilient transportation system or the downtown. Specifically, key recommendations include:

1. Implement community resilience plans for areas that are most vulnerable to extreme weather and climate-related impacts, such as neighbourhoods that are located within or close to the floodplain;
2. Establish a target for local food production and invest in small-scale farming and distribution networks, including market spaces, processing, facilities, as well as community pantries and refrigerators;
3. Invest in planning resources and capacity building for disadvantaged, low income, and racialized communities to collaboratively identify and address the physical manifestations of marginalization;
4. Develop programs specifically geared towards assisting low income Torontonians in meeting climate goals;
5. Mandate Low Impact Development (LID) measures as the primary approach to stormwater management, provide guidance on best practices, and create a robust framework for the ongoing maintenance of green infrastructure as part of the capital plan;
6. Plant trees in neighbourhoods with the lowest amount of tree cover. If development results in the removal of trees from one site, ensure that trees can be either replanted on site, or planted in a tree “priority” neighbourhood; and,
7. Establish the framework for decentralized electrification or fossil fuel-free district energy networks and make community energy planning a requirement for all new secondary plans.

The following paragraphs expand upon these recommendations, while placing particular emphasis on the need to foster strong and resilient communities, address climate justice, and create resilient infrastructure.

1 *Climate Atlas of Canada (2019) http//climateatlas.ca*

In the context of climate change, we know that the poor and vulnerable are the first to suffer as a result of extreme weather events and the changing climate.”

Addressing Climate Justice

Addressing equity is one of the stated objectives of the City's Official Plan review. In the context of climate change, we know that the poor and vulnerable are the first to suffer and the worst hit by extreme weather events and the changing climate. Climate justice means ensuring that no one is left behind, or forced to bear undue hardship. It is essential to ensure that disadvantaged, low income, and racialized communities are consulted on planning decisions and policy changes that will impact them.

Some examples of the differential and unequal impacts of climate change already being experienced include:

- Seniors and people with disabilities are more vulnerable to severe heat, and may not be able to evacuate quickly from extreme weather events;
- Low income people often live in poorly maintained housing that may have inadequate insulation, mould problems, or lack of air conditioning, causing them to be more at risk;
- Economically disadvantaged people may not have adequate insurance;
- Droughts and extreme weather can affect food production, supply, and distribution, making healthy food more expensive and more difficult to obtain; and,
- Low income people are less able to invest in home retrofits or resilient strategies.

The changes we urgently need to make are not easy. They are expensive, and require every one of us to make personal sacrifices and to reconsider our values. We must acknowledge equal access to resources and opportunity when incentivizing climate change strategies and develop programs specifically geared towards assisting low income populations in meeting climate change goals.

It can be done

Athens has appointed a chief officer of heat to protect people from soaring temperatures and to adapt the city to the heat waves and extreme weather.

Fostering Strong, Resilient Communities

Resilience means the capacity of individuals, communities, institutions, and systems within a city to survive, adapt, and thrive in the face of the chronic stresses and acute shocks they experience. In 2016, Toronto was accepted into the 100 Resilient Cities Network, with funding for a Chief Resilience Officer and the preparation of a Resilience Strategy. One of the actions identified in the Toronto Resilience Strategy (2018) is the integration of resilience into development and land use planning processes. The current Official Plan uses the term resilience in a number of different policies, but resilience is not defined. The Official Plan should define a resilient city and provide policy to guide planning for resilience across all land use designations and city functions.

Resilience at the neighbourhood level is extremely important, particularly for neighbourhoods that are more vulnerable to extreme weather, including those which are situated within or close to the floodplain. The Official Plan should establish a framework for the creation of community resilience plans through consultation with local residents.

Over the course of the COVID-19 pandemic, local community groups and individuals have mobilized to support each other - for example, getting groceries for elderly or immunocompromised neighbours, and helping people get the vaccine. These informal coalitions of people helping each other are referred to as mutual aid groups, and are an important but invisible type of community infrastructure that contributes to resilience and quality of life.

As we are already seeing with droughts in western Canada and extreme weather events that disrupt supply chains, our food system is extremely vulnerable to climate change. Food insecurity already impacts nearly 20% of Toronto residents[1]. Local food production on rooftops, in parks, on vacant lots, and in private yards is an important strategy to creating local food security that is more resilient to climate change. The Official Plan should support food security by creating opportunities for local food production, pop ups and farmer's market spaces, and community pantries and refrigerators. A strong local food system also supports the local economy and reduces the greenhouse gas emissions from transport.

It can be done

Community Fridges Toronto is a Toronto-based volunteer-driven community initiative with a network of fridges and pantries that offer free food to combat food insecurity.

1 *City of Toronto (n.d.) Food Insecurity in Toronto.*

It can be done

Raleigh, NC requires the use of green stormwater infrastructure in all City development projects, and provides incentives and resources for private landowners to do the same.

Creating Resilient Infrastructure

Most infrastructure continues to be designed on the basis of historical climate data and assumptions, generally meaning they do not account for an expected increase in frequency and intensity of climate hazards or new climate events. For example, storm pipes and drainage infrastructure may need to be larger to accommodate increased water flow, or sea walls built higher to protect against storm surges and sea-level rise. The Official Plan should mandate Low Impact Development (LID) measures as the primary approach to stormwater management, provide guidance on best practices, and create a robust framework for the ongoing maintenance of green infrastructure as part of the capital plan.

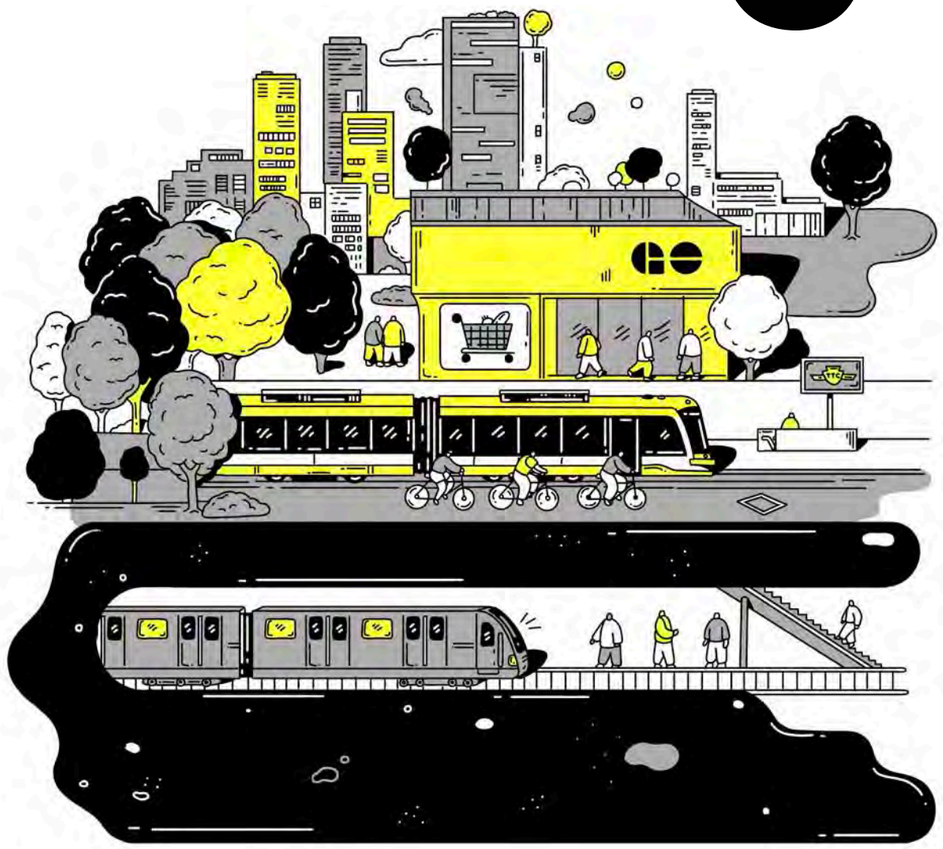
Trees are an example of natural infrastructure that provide a range of benefits to city residents. This is largely acknowledged, and is the reason we have strict requirements for tree replacement or compensation when a tree is removed. Often trees are removed to permit new development, and are required to be replaced on site, or a cash in lieu payment provided. Trees, and their associated benefits, are not evenly distributed across the city. There are many neighbourhoods that are “tree poor”, which corresponds to lower air quality and a greater urban heat island effect. The Official Plan should require, where a tree cannot be replaced on the site where it is removed, it should be planted in a tree “priority” neighbourhood, to create a more equitable urban tree cover.

Existing Official Plan policies speak to climate resilience generally, and certain policies speak specifically about resilience to power disruptions (i.e. blackouts). Energy resilience is only a small part of what it takes to create strong communities. Electrification is a major component of the City’s Net Zero Strategy, and as we move towards greater reliance on the electrical grid, we are going to be increasingly vulnerable to disruptions. The Official Plan should establish a framework for decentralized electrification or district energy networks and make community energy planning a requirement for all new Secondary Plans.

Victoria Park

This prototype project explores the idea of community infrastructure, building resilience and the creation of a new public realm for a 19 acre site located adjacent to the Victoria Park subway station. A number of strategic infill buildings re-organize the site and are tied together with a continuous green landscape of recreational spaces, plazas and community gardens. It also serves as infrastructure for stormwater management, water filtration systems and maximizes biodiversity on the site to enhance resiliency.

5



Advancing our Transportation Goals

Transportation is the second largest source of carbon emissions in Toronto, measured at 36% of all emissions in 2018[1]. In order to meaningfully combat climate change, the City of Toronto needs to accelerate its transportation goals. Specifically, key recommendations include:

1. Intensify low density neighbourhoods that are walking distance to transit with multiplexes and additional dwelling units, and introduce permissions for a wider range of uses so that all residents are able to meet their needs within a short distance of their homes;
2. Support investments in public transit with a low-carbon land-use vision and development standards for Major Transit Station Areas to create dense, resilient, complete communities;
3. Set up a program for “road diets”, initially with pilot testing the removal of driving lanes on major streets, with the objective of eventually making them permanent;
4. Develop road standards for woonerfs and active-transportation streets;
5. Eliminate parking minimums and use cash-in-lieu to build better transit, faster;
6. Implement tolls on the Gardiner and Don Valley Parkway to discourage private car use and use fees collected to fund transit initiatives;
7. Promote the installation of electric vehicle charging infrastructure as part of the City’s road resurfacing program, and require the provision of charging infrastructure for all new development;
8. Increase the supply of e-bikes, introduce e-scooters as an additional mobility option, and establish a hierarchy and network of micro-mobility infrastructure in the vicinity of existing and planned higher-order transit stations to address first-last mile solutions.

The following paragraphs expand upon these recommendations, while placing particular emphasis on the need to become transit-oriented and green, target driving infrastructure in an aggressive manner, and expand personal transportation options.

1 *City of Toronto (2020) 2019 Greenhouse Emissions Inventory.*

Becoming Transit-Oriented & Green

Coordinating land use planning with transit investment is a core principle in the 2006 Official Plan, in order to create more housing in proximity to transit and increase ridership. However, there are many low-density established neighbourhoods that fall within walking distance of good transit. Overall, 96% of Neighbourhoods are within 500 metres of an existing TTC transit service, and 19% are within 500 metres of existing and planned subway, LRT, or GO stations.[1]

The Official Plan should promote the intensification of underdeveloped areas of the city, such as low-density neighbourhoods, to create more housing that is close to transit and to support transit operations through increased ridership. On November 25, 2021, Planning and Housing Committee considered an interim report on permitting multiplex housing in established neighbourhoods. We support this work plan and look forward to the recommended policy changes in Spring 2022.

In addition to expanding housing options near transit, the Official Plan should promote the introduction of a wider range of uses that are within walking distance of transit. This will create what is referred to as the '15-minute city', where residents are able to meet their daily needs within a short distance of their homes. It will reduce reliance on vehicular transportation and support local economic development.

As part of the MCR, City Planning is undertaking a review of Major Transit Station Areas and identifying priority stations for growth. Density and a mix of uses are key priorities for Major Transit Station Areas, as well as affordable housing. As planning for these key nodes is ongoing, we urge City Planning to bring forward a bold land-use vision for Major Transit Station Areas that promotes low carbon, resilient design as a key component of dense, complete communities.

It can be done

Melbourne's Official Plan, "Plan Melbourne" is based on the concept of 20-minute neighbourhoods, where residents are actively engaged in the planning for their

1 *City of Toronto (2021) Expanding Housing Options in Neighbourhoods: Multiplex Study - Interim Report.*

Communities with strong public transportation can drastically reduce carbon emissions

Grand Central Mimico

This project is an example of a transit-oriented community that promotes increased density and a mix of uses adjacent to the Mimico Go Station. The project introduces active street frontages and includes two public spaces bounded by a mix of retail and commercial uses and featuring accessible, weather-protected connections for pedestrians and cyclists.

It can be done

Barcelona created "superblocks" to prioritize pedestrians and create more street life, and gave 3-year free transit passes to residents wiling to give up their cars.

Aggressively Targeting Driving Infrastructure

Transportation Demand Management (TDM) is the technical term for an array of policies, programs, and services that encourage people to use sustainable modes of transportation, rather than driving alone, or to make fewer trips by car. Personal vehicles constituted 80% of all transportation-related emissions in 2018[1]. In order to reduce transportation-related carbon emissions, we need to influence individual preferences and behaviours on a massive scale. One of the key TDM strategies is reducing the supply of driving infrastructure, such as parking spaces or driving lanes, to make driving a less convenient or less desirable option.

In order to achieve net zero by 2050, we need a strategy that incrementally introduces greater incentives to get people out of their cars. We need to set more barriers to single occupancy vehicular trips and ensure public transportation, walking and cycling is the most attractive option. The COVID-19 pandemic provided an opportunity to experiment with "road diets" across the city, limiting the road space dedicated to cars and providing more space for active transportation, restaurant patios, and public art. The Official Plan establishes the ultimate right-of-way widths for major streets. It should also set up a program for road diets, initially with pilot testing and eventually as permanent reductions in automotive travel lanes.

We can remove cars from existing streets, and we can plan new streets that don't have cars at all. The City maintains a manual of engineering design standards for various types of streets, but all of them contemplate cars.

Many cities have now removed parking minimums from the Zoning By-laws, either in certain high growth areas, or city-wide. Toronto's Planning Department is currently reviewing parking requirements and considering introducing parking maximums instead of minimums. We are in favour of this approach and encourage the elimination of minimum parking for all except for barrier-free parking and electric vehicles. This policy should be reinforced by the Official Plan.

The cost of building underground parking is high - between $48,000 and $160,000 per parking space. The removal of parking minimums results in a significant cost savings. Building underground parking also requires large volumes of concrete, which is high in embodied carbon. The viability of removing parking is largely impacted by the availability and quality of other transportation alternatives. Toronto has under-invested in public transit for decades, and we are now trying to catch up. If the City decides to approve the elimination of parking minimums, this should be accompanied by a corresponding increase in development charges or a cash-in-lieu contribution to invest in transit.

Expanding Personal Transportation Options

Electric vehicles are a major component of Toronto's (and Canada's) net zero strategy. By 2050, all private vehicles should be electric. Unfortunately, uptake of electric vehicles is dependent on the availability of charging infrastructure. Most people who have an electric vehicle also have a driveway or garage at home where they can conveniently park and charge their car. However, In many parts of the City, including older neighbourhoods and high density communities, most people do not have a driveway or garage. The City initiated an on-street electric vehicle charging program in 2020. In order to accelerate the transition to electric vehicles, the Official Plan should promote the installation of charging infrastructure as part of the City's road resurfacing program, and require the provision of charging infrastructure for all new development.

Not every trip needs to be by car or by transit, in fact, one of the TransformTO goals is that, by 2050, 75 percent of trips under 5 kilometres will be walked or cycled. This could be expanded to include other micromobility options including scooters, wheelchairs, skateboards, and others. The Official Plan can support the achievement of this goal by establishing a hierarchy and network of micro-mobility infrastructure in the vicinity of existing and planned higher-order transit stations to address what is known as the first-and-last mile challenge, where the distance from the transit station to a home or workplace is just a bit too far to walk. To facilitate this, the City should also expand the geographic range of the Bike Share Toronto program, increase the supply of e-bikes, and introduce e-scooters as an additional mobility option.

Micromobility, including bikes and scooters, has been a significant component of Paris' '15-Minute City' strategy, which has also involved the removal of half of all street parking spots.

It can be done

1 *City of Toronto (2020) 2019 Greenhouse Emissions Inventory.*

5. Implementing the Vision and Recommendations

In the previous section we provide a range of policy suggestions that can be implemented and/or strengthened by incorporating new policies into the Official Plan. However, the policies themselves can only go so far. The most important chapter when it comes to achieving our net zero objectives is the Implementation section (chapter 5 in the current Official Plan). Chapter 5 outlines key Official Plan implementation tools, which will need to be addressed through the MCR process, in order for the City of Toronto to meaningfully combat climate change, and advance other city-building objectives. We should be using every tool in the box to get to net zero as quickly as possible. Some of the tools referenced in Section 4 include:

- **Secondary Plan** - Local policies to guide growth and development in defined areas of the city, where major physical changes are expected or desired, adopted as area-specific amendments to the Official Plan;
- **Development Permit System** - A regulatory framework that provide tools to address local planning issues, promote community building and facilitate and streamline development, implemented as an alternative to a conventional Zoning By-law;
- **Community Improvement Plan** - A tool that allow the City to direct funds and implement policy initiatives toward a specifically defined project area with the intent of encouraging revitalization initiatives and/or stimulating development and redevelopment;
- **Development Charges / Community Benefit Charges** - Fees collected from developers at the issuing of Building Permits to assist in paying for the cost of infrastructure required to provide municipal services to new development, such as roads, transit, water and sewer infrastructure, community centres and fire and police facilities;
- **Approval Conditions (Plan of Subdivision, Condominium, or Site Plan)** Restrictions or requirements imposed by the City as conditions for obtaining Building Permits.
- **Toronto Green Standard** - Sustainability requirements for new development, implemented through Site Plan Control;
- **Zoning By-laws** - Regulatory tool intended to allow the City to implement the vision, objectives and policies of the Official Plan on a site-specific basis, identifying permitted uses and required minimum / maximum performance standards for each zone; and,
- **Climate By-laws** - Regulatory tool intended to allow the City to implement climate change mitigation policies on a site-specific basis.

In addition, City Planning should create a “fast track” for low carbon developments, similar to the Open Door program for affordable housing. Expediting approvals is an effective way to incentivize sustainable development and good design.

6. Call to Action

An Official Plan that proactively anticipates climate change will ultimately address a variety of other important goals. It will foster social equity, improve access to jobs and services, support public health, preserve public and private investments in communities, and create economic opportunities for the private sector.

A climate-positive approach to restructuring the City of Toronto's new Official Plan is the only option. To achieve this objective, we are calling on:

City Council to make good on their climate change emergency declaration;

City Staff to address the shortcomings of the existing Official Plan, strengthen and harmonize city-led climate and related initiatives, plan for the climate emergency, and implement the vision and recommendations set out in this report; and,

Public Agencies, other stakeholders and the public to advocate for the application of a climate change mitigation and adaptation lens in all land use planning processes.

SvN