

# Annual TransformTO Net Zero Progress and Accountability Report



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# LAND ACKNOWLEDGEMENT



The City acknowledges that all facets of its work are carried out on the traditional territories of many nations, including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee, and the Wendat peoples and is now home to many diverse First Nations, Inuit, and Métis peoples. These territories are currently covered by Treaty 13 with the Mississaugas of the Credit and the Williams Treaties signed with multiple Mississaugas and Chippewa bands. We are eternally grateful for Indigenous stewardship of these lands and waters.

## **African Ancestral Acknowledgement**

The City of Toronto acknowledges all Treaty peoples – including those who came here as settlers – as migrants either in this generation or in generations past – and those of us who came here involuntarily, particularly those brought to these lands as a result of the Trans-Atlantic Slave Trade and Slavery. We pay tribute to those ancestors of African origin and descent.

# EXECUTIVE SUMMARY

## A NEW REPORTING FORMAT GOING FORWARD

This is the first edition of the Annual TransformTO Net Zero Progress and Accountability Report. With this report, the Environment & Climate (E&C) Division continues to evolve and mature the City's approach to tracking and reporting on its progress toward, and accountability for, achievement of City Council's ambitious greenhouse gas (GHG) reduction goal of net zero emissions by 2040.

Every March, this report will consolidate key information and analysis on GHG emission trends in Toronto, the GHG reduction impact of that year's Council-approved budget, and updates on the broader implementation of the TransformTO Net Zero Strategy (Net Zero Strategy).

The focus will be on progress and impact from City-led action in the context of what needs to happen to achieve net zero emissions by 2040. The report aims to provide information relevant to several key questions. Is the City on track for its goals? To what degree are City-led actions contributing to our community's progress? Do City budgets align with a net zero future? What is the status of the critical steps identified in the Net Zero Strategy? What can be done to accelerate progress? Where is federal and provincial action helping or hindering progress, and what role must Toronto residents and business play?

Answering these questions demands a focus on impact, while acknowledging the very real challenges and barriers that face this work now and in the future.

Readers of this report will find the headline information on these themes, with full detail provided in a series of appendices.

## TORONTO'S CUTTING-EDGE ACTIONS ARE REDUCING EMISSIONS IN BUILDINGS AND TRANSPORTATION

In 2021, City Council adopted the goal of net zero emissions by 2040 and endorsed the Net Zero Strategy as the roadmap for getting there.

Toronto's community-wide GHG emissions for 2021 were 41% below 1990 levels (14.5 megatonnes (MT) of carbon dioxide equivalent (CO<sub>2</sub>e), a four per cent increase over the 14 MT CO<sub>2</sub>e emitted in 2020). The Council-set targets are 45% reduction by 2025, 65% by 2030 and net zero by 2040.

The City is leading at the cutting-edge of work to reduce emissions in Toronto. Key highlights include:



- The Toronto Green Standard which is helping new developments reduce emissions by 15,000 t CO<sub>2</sub>e per year,
- City-led work to develop Emission Performance Standards for existing buildings that will help align business and household decisions with a transition to technologies like heat pumps that run on clean electricity, and
- Greening the Corporate fleet with emissions on pace for the 45% emission reduction target by 2025 and TTC planning for a zero-emissions bus fleet by 2037 – three years ahead of schedule.

## **THE CITY'S GOAL OF NET ZERO EMISSIONS BY 2040 IS AT RISK UNLESS THE CITY, OTHER LEVELS OF GOVERNMENT, RESIDENTS AND BUSINESSES SUPPORT AND INVEST IN TRANSFORMATIVE ACTIONS THAT MEET THE SCOPE AND SCALE OF THE CLIMATE CHALLENGE**

While the City continues to implement the Net Zero Strategy, and emissions temporarily decreased in 2020 and 2021 due to the COVID-19 pandemic, the rate of progress is not enough to put us on track to achieving our net zero goal.

Looking at the emissions scenarios modelled for the Net Zero Strategy helps make this clear. Those scenarios included the Do Nothing Scenario (DNS), Business as Planned (BAP), and Net Zero by 2040 (NZ40). Each scenario included background technological and market factors, while BAP also included the impact of various planned (as of 2020) actions across Toronto and NZ40 included a further set of potential future actions.<sup>1</sup>

Excepting the pandemic-induced dip in 2020-21, Toronto's emissions have been tracking above all scenarios. Looking ahead, most of the City-led GHG reduction actions that were included in the recently-approved City budget are more closely aligned with BAP than the NZ40 scenario, leaving an "emissions gap" to be addressed.

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<sup>1</sup> For full details on the emission scenarios modelled for the Net Zero Strategy see the [TransformTO Net Zero Strategy – Technical Report](#) (Nov 2021).

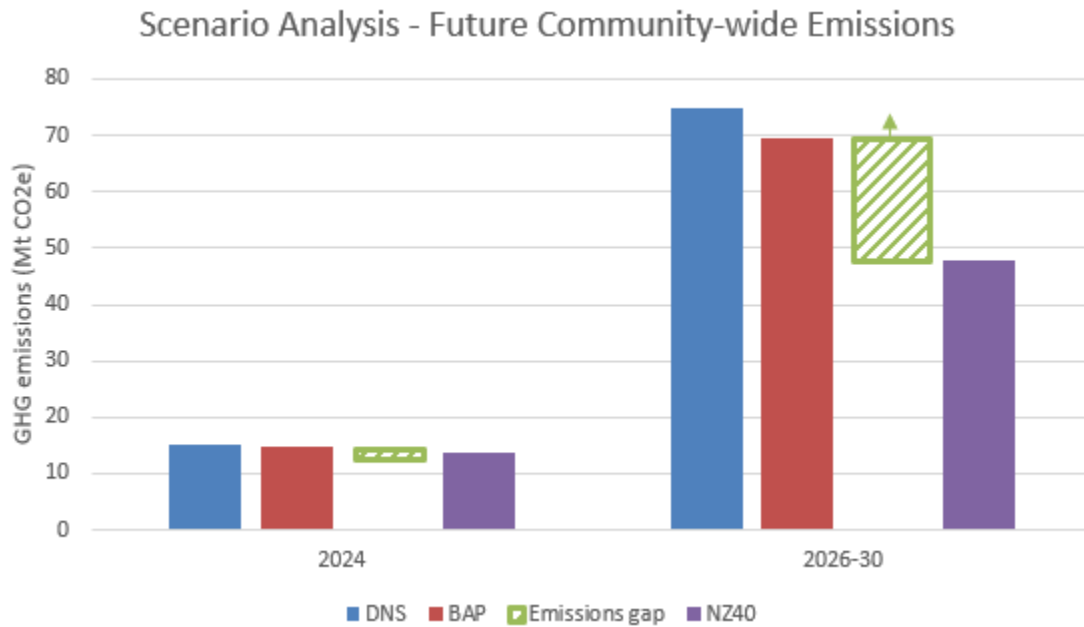


Figure 1: Scenario Analysis - Future Community-wide Emission Gap between BAP and NZ40

To eliminate emissions the use of fossil fuels to heat our buildings and power our transportation must stop. The Net Zero Strategy’s “critical steps” all link to this imperative. They require a rapid and significant reduction in fossil (natural) gas use, with City-led Emission Performance Standards (EPS) for existing buildings providing the key policy pathway to achieve this. They aim for increased access to walking, biking, transit and electric vehicles (EVs) – all modes of getting around that do not rely on fossil fuels like gasoline and diesel. The critical steps also call for increased local renewable energy to power clean buildings and for “carbon accountability” using emissions budgets to ensure plans and financial budgets are aligned with the City’s net zero goal.

**Moderate progress has been made to address the critical steps since the Net Zero Strategy’s adoption in December 2021.**

Fossil (natural) gas remains the most common energy for heating buildings and the source of more than half of all GHG emissions in the City.<sup>2</sup> For new buildings, the Toronto Green Standard (TGS) provides a set of sustainable performance measures that progressively shifts new development toward Toronto's net zero emission targets and reduced fossil (natural) gas consumption. For existing buildings, various City-led projects and programs are working to reduce fossil (natural) gas consumption.

However, the biggest impact – by far – could come through Emissions Performance Standards (EPS) for existing buildings. The Environment & Climate Division is developing

<sup>2</sup> City of Toronto, [2021 Sector-Based Emissions Inventory](#). Fossil (natural) gas consumption in the buildings sector (including residential, commercial and industrial buildings) creates 7.5 MT of GHG emissions annually, approximately 52% of the 14.5 MT GHG emissions from all sources in Toronto.

a by-law for Council to adopt in 2024 that would establish requirements for all buildings to eventually meet reasonable and achievable performance standards that limit their GHG pollution which predominantly results from fossil (natural) gas consumption. Various supports led by the City and other levels of government would help households and businesses meet those standards through adopting technologies like heat pumps that save money annually and run on clean electricity, not polluting and expensive fossil fuels.

As the Net Zero Strategy showed, it takes time to build a foundation for a transformative policy like EPS that has enough scale to tackle Toronto's biggest source of GHG pollution. But once in place it can drive major change and truly accelerate Toronto toward the net zero by 2040 pathway, especially if Ontario's electricity grid becomes a net zero grid.



There are varying levels of progress on increasing access to low carbon transportation. There is more access to safe walking and biking infrastructure than before the pandemic, but Toronto's Cycling Network Plan remains on a Business as Planned (BAP) pace instead of the ambitious build-out seen in the NZ40 scenario, in part due to resource constraints. Bus trips are getting greener as the TTC moves forward with ambitious plans for a fleet that runs solely on clean electricity by 2037, but overall transit ridership has not yet recovered to pre-pandemic levels. The number of electric vehicles (EVs) in Toronto has more than doubled in the past two years, but EVs are still only a small fraction (2.5 per cent in 2023) of passenger vehicles in Toronto. While the City cannot directly affect EV supply or demand, it is supporting EV uptake in Toronto by mitigating important barriers such as access to charging and lack of awareness and knowledge about EVs. The forthcoming federal [Electric Vehicle Availability Standard](#) will provide critical help in ensuring EV supply.



The City and its local distribution utility, Toronto Hydro, are working to ensure Toronto has enough clean, renewable and reliable electricity to power its net zero future. Since the Net Zero Strategy was adopted, Toronto Hydro has brought forward a [Climate Action Plan](#) and a regulated rate plan that includes consideration of GHG reduction but also resilience to climate change. The City is helping residents invest in local renewable generation for Toronto through incentives like the [Home Energy Loan Program](#) and the [SolarTO](#) web portal. However, local action threatens to be overwhelmed by the impact of a provincial electricity grid that includes increased reliance on polluting fossil (natural) gas. The City continues to identify the impacts of provincial reliance on gas-fired power and advocate for strong federal [Clean Electricity Regulations](#) that ensure a pathway to a net zero electricity grid.<sup>3</sup>

Finally, in 2023 City Council acted on the critical step of ensuring “carbon accountability” by making Toronto the first city in North America to enshrine its climate change goals and governance processes into law through the new [Climate Change Goals and Governance chapter](#) in Toronto’s Municipal Code.<sup>4</sup>

The Net Zero Strategy Short-term Implementation Plan 2022-2025 includes various specific actions that City Divisions and Agencies have been working on. As of the end of 2023, 21 of the 30 actions (70%) are 50 percent or more complete. Given that half of the time to implement the 2022-2025 plan has elapsed, if progress were on track, then all 30 actions (with a few exceptions) would be 50 percent or more complete by now. Currently, 5 of the 30 actions (17%) are complete. Details of the progress made on the Net Zero Strategy Short-Term Implementation Plan (2022-2025) are provided in Appendix 1.1.

Regarding City Council directions related to adoption of the Net Zero Strategy, 60 of the 71 actionable City Council directions (85%) are 50 percent or more complete as of the

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<sup>3</sup> See [2023.MM6.13](#) and [2023.MM7.25](#) and the [letter](#) to the Government of Canada regarding the draft Clean Electricity Regulations ([2023.IE7.6](#)).

<sup>4</sup> See section “Carbon Accountability: Benefits for Community Stakeholders” for more information on how this enhances transparency and accountability while providing new opportunities for residents and stakeholders to understand and track the City’s progress.



end of 2023.<sup>5</sup> Detailed updates on the City Council directions are available in Appendix 1.2.

Achieving net zero depends on many factors beyond the City’s control. In fact, emissions from the City’s own operations, over which it has direct control, amount to only around 5% of Toronto’s total emissions.

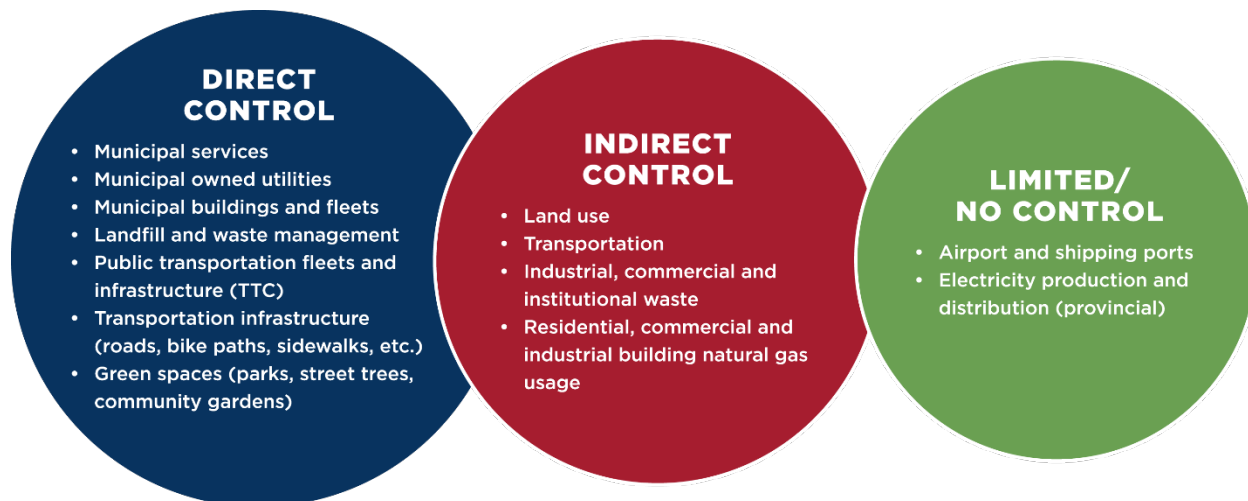


Figure 2: Drivers of GHG emissions over which the City of Toronto has direct control, indirect control, or limited / no control

Provincial and federal action is critical, especially regarding EVs and a larger, cleaner electricity grid to service electrified buildings and vehicles. Households and businesses must increasingly embrace the transition away from fossil fuels. Market conditions like interest rates and skilled labour gaps impact how far or fast any government, company or household can act. However, key technologies for a net zero future like heat pumps, EVs, solar and wind energy, and battery storage have all become competitive versus fossil fuel alternatives in a relatively short time. A net zero future has never been more attainable.

## WHAT TO WATCH FOR IN 2024

This year will see important steps forward on net zero governance and strategy, as well as key policy decisions.

### Toronto’s First Carbon Budget Process

In 2024, the City will operationalize the first annual Carbon Budget prioritization process.<sup>6</sup> Via guidance from the City Manager and Chief Financial Officer, City Divisions and

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<sup>5</sup> See section “Updates on the TTO Net Zero Strategy Short-term Implementation Plan actions & related City Council directions” for more information.

<sup>6</sup> See Municipal Code, [Climate Change Goals and Governance](#), § 669-2.3.F “Identifying and Prioritizing GHG Reduction Actions - Annual Carbon Budget.”

Agencies will be asked to identify new or enhanced actions to reduce GHG emissions. The Environment & Climate and Financial Planning Divisions will then support a prioritization screening of these actions for inclusion in the 2025 staff-proposed budget, and a Carbon Budget report will be delivered as part of the 2025 budget process.

#### The 2026-2030 Short-Term Implementation Plan Consultations and Development

The Environment & Climate Division will also lead work on preparing the next Net Zero Strategy Short-term Implementation Plan covering the years 2026-30. This Plan, due in 2025,<sup>7</sup> will provide robust and comprehensive analysis on how the City's progress can be reinforced and accelerated to meet Council's 2030 and 2040 emission goals. It will be informed by discussion and review with the Climate Advisory Group,<sup>8</sup> Joint TransformTO Implementation Committee,<sup>9</sup> and the Climate Leadership Table.<sup>10</sup> Importantly, the Plan will draw insight from new modelling tools that Environment & Climate will use to create updated emission scenarios, in consultation with all relevant City Divisions and Agencies.

#### City Leadership

The City will also advance its pledge to “lead by example” by recommending GHG emission budgets to control emissions from its own buildings and vehicle fleets for Council to decide on before the end of 2024.<sup>11</sup> City leadership will then be required to demonstrate sufficient plans to reduce emissions from buildings and fleet assets as part of the 2026-30 Net Zero Strategy Short-term Implementation plan, with special accountability measures built-in.<sup>12</sup>

#### Strengthening Emission Reduction in Buildings – Public Engagement

The City is undertaking work to analyze and model various building scenarios so that future versions 5 and 6 of the TGS ensure any new building development applications are net zero emissions by 2028. For existing buildings, the City is planning to undertake public and stakeholder engagement in 2024 to inform development of the EPS by-law. This includes engaging with technical & equity advisory groups, stakeholder working

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<sup>7</sup> See Municipal Code, [Climate Change Goals and Governance](#), § 669-2.3.C “Planning and Reporting – Community Emissions budgets”, subsection (1). Note: in this chapter the plan is referred to as an “Advanced Plan”.

<sup>8</sup> External body comprised of diverse individuals and organizations representing all sectors of the city to advise the City on TransformTO Net Zero Strategy implementation.

<sup>9</sup> Body comprised of City management and unionized staff, as well as labour unions, to help the City reach Council-directed corporate climate targets.

<sup>10</sup> Internal cross-corporate City senior management staff table to manage high-level issues and ensure overall accountability.

<sup>11</sup> See Municipal Code, [Climate Change Goals and Governance](#), § 669-2.3.B “Establishing Emissions budgets”, subsection (6).

<sup>12</sup> See Municipal Code, [Climate Change Goals and Governance](#), § 669-2.3.D “Planning and Reporting – Corporate Buildings Emissions budgets”, subsection (1) and § 669-2.3.E “Planning and Reporting – Corporate Buildings Emissions budgets” subsection (1).

groups, and a resident reference panel. These engagements support development of a proposal to City Council on an EPS by-law planned for 2024.

Determining the City's Role in Long-term Planning of Public EV Infrastructure

The City is undertaking long-term planning to identify when and where public EV charging is needed to support the City's goals for EV uptake and low carbon transportation. The results of this work will be presented to City Council in 2024 along with recommendations on actions the City can take to support provision of this key infrastructure.

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The continued engagement of residents and key stakeholders in all of the City's efforts to move toward the net zero path – from key policy/project decisions by Council, to staff-led consultations, to the annual budget process – is important for ensuring necessary progress is made in 2024 and that it properly reflects the needs and hopes of everyone who calls Toronto home.







# INTRODUCTION

This is the first edition of the Annual TransformTO Net Zero Progress and Accountability Report. With this report, the Environment & Climate Division continues to evolve and mature the City's approach to tracking and reporting on its progress toward, and accountability for, achievement of City Council's ambitious greenhouse gas (GHG) reduction goal of net zero emissions by 2040.

Previous reports on the TransformTO Net Zero Strategy (Net Zero Strategy), including the 2021 TransformTO Net Zero Strategy Report endorsed by City Council and the 2022 Annual Report, can be found [here](#).

Every March, this report will consolidate key information and analysis on GHG emission trends in Toronto, the GHG reduction impact of that year's Council-approved budget, and updates on the broader implementation of the Net Zero Strategy.



Figure 3: Annual TransformTO Net Zero Progress and Accountability draws on information and analysis from multiple work streams

The focus will be on progress and impact from City-led action in the context of what needs to happen to achieve net zero emissions by 2040. The report aims to provide information relevant to several key questions. Is the City on track for its goals? To what degree are City-led actions contributing to progress? Do City budgets align with a net zero future? What is the status of the critical steps identified in the Net Zero Strategy? What can be

done to accelerate progress? Where is federal and provincial action helping or hindering progress, and what role must Toronto residents and business play?

Answering these questions demands a focus on impact, while acknowledging the very real challenges and barriers that face this work now and in the future.

The report below provides headline information on these themes, with greater detail for certain sections provided in a series of appendices.

# IS TORONTO ON TRACK TO ACHIEVE NET ZERO?

## THE CHALLENGE AHEAD

In 2021, City Council adopted the goal of net zero emissions by 2040 and endorsed the Net Zero Strategy as the roadmap for getting there. In addition to the net zero goal, City Council has adopted the following interim emission reduction targets:

- 30 per cent below 1990 levels by 2020 (achieved)
- 45 per cent below 1990 levels by 2025
- 65 per cent below 1990 levels by 2030

These are ambitious goals, aligned with the global 1.5°C goal enshrined in the 2015 Paris Agreement. Getting on track for the 2025 and 2030 targets, and ultimately for achieving net zero emissions by 2040, is a challenge for the City government, local residents and businesses, and other levels of government. In 2021, Toronto's community-wide GHG emissions were **41% below** 1990 levels (a 4% increase over 2020 levels).

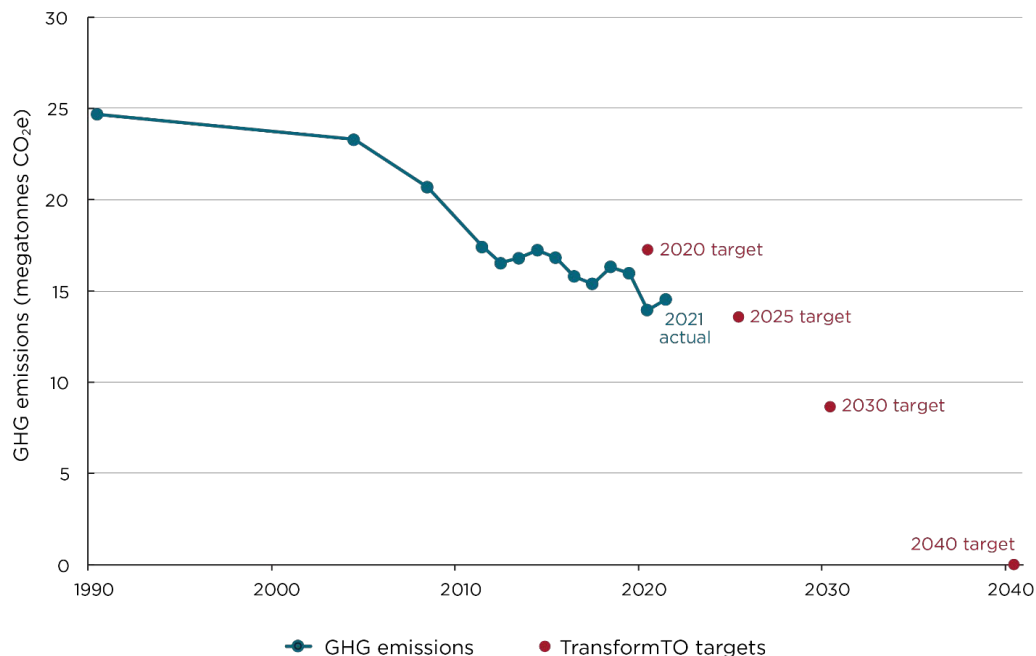


Figure 4: Toronto's annual GHG emissions must decline rapidly to meet Council-adopted targets

As previously reported in the City's [2021 Sector-Based Emissions Inventory](#), the 2025 target is "at risk" if the upward trend in GHG emissions post-pandemic continues. Major reductions are required before 2030 in the Buildings and Transportation sectors which make up 56% and 35% of Toronto's GHG emissions respectively (the Waste sector accounts for the remaining 9%).



Figure 5: A breakdown of greenhouse gas emissions by sector in megatonnes (MT) and percentage in 2021

Looking at the emissions scenarios modelled for the Net Zero Strategy helps make this clear. Those scenarios included the Do Nothing Scenario (DNS), Business as Planned (BAP), and Net Zero by 2040 (NZ40). Each scenario included background technological and market factors, while BAP also included the impact of various planned (as of 2020) actions across Toronto and NZ40 included a further set of potential future actions.<sup>13</sup>

Excepting the pandemic-induced dip in 2020-21, Toronto’s emissions have been tracking above all scenarios. Looking ahead, most of the City-led GHG reduction actions that were included in the recently-approved City budget are more closely aligned with BAP than the NZ40 scenario, leaving an “emissions gap” to be addressed.

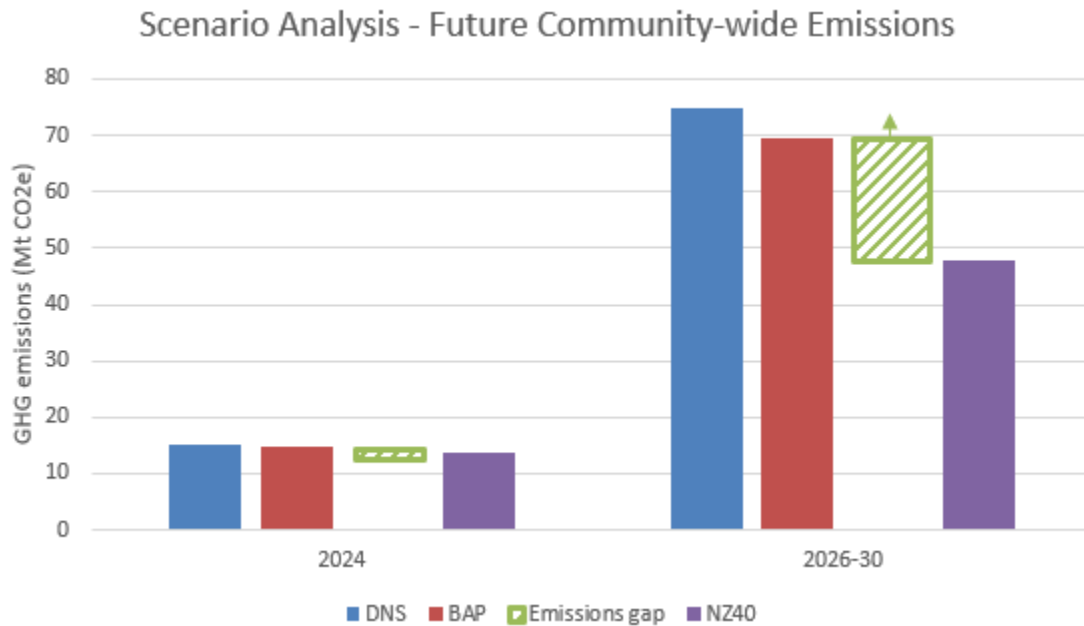


Figure 6: Scenario Analysis - Future Community-wide Emission Gap between BAP and NZ40 (identical to Figure 1)

Another way to understand the challenge is through “emissions budgets”, or the upper limit of cumulative greenhouse gas emissions for Toronto between now and 2040 that is aligned with our global commitments to stay on or below a 1.5 degree increase in temperature.

<sup>13</sup> For full details on the emission scenarios modelled for the Net Zero Strategy see the [TransformTO Net Zero Strategy – Technical Report](#) (Nov 2021).



City Council has already set total “emission budgets” for the 5-year period of 2026-30 (budgets for 2031-35 and 2036-40 will be set in 2025).<sup>14</sup> Emissions budgets for the 2026-30 period are:

- For Corporate emission sources (i.e. emissions from the City government’s own operations): 2,016,471 tonnes CO<sub>2</sub>e or 2.0 megatonnes (MT)
- For Community emission sources (i.e. all sources in Toronto excluding Corporate sources): 53,060,555 tonnes CO<sub>2</sub>e or 53.1 megatonnes (MT)

If annual emissions in the 2026-30 5-year emission budget period are on par with 2021 emissions (14.5 MT Community; 0.67 MT Corporate), the Corporate emissions budget would run out in the first 3 years and the Community emissions budget would run out in just over the first 3.5 years. Failing to stay within the 5-year emissions budgets means that Toronto will not be fully contributing to combatting global climate change over those time periods, as the ultimate level of warming the world experiences – whether 1.5°C, 2°C or more – is driven by the *total* emissions of CO<sub>2</sub> into the atmosphere until we reach net zero emissions.



## 2024 BUDGET REFLECTS A “BUSINESS AS PLANNED” TRAJECTORY WITH INVESTMENTS FOR THE FUTURE

As discussed in the [Carbon Budget Baseline](#) briefing note, current progress in reducing actual emissions and most City-led GHG reduction actions within the 2024 budget align

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<sup>14</sup> See Municipal Code, Climate Change Goals and Governance, § 669-2.3.B “Establishing Emissions budgets”. For research background see Staff Report, “[Carbon Accountability: Institutionalizing governance, a Carbon Budget and an Offset Credits Policy](#)” (Apr 12, 2023), adopted by Council in [2023.IE3.4](#).

with the BAP emissions scenario rather than the more ambitious NZ40 scenario. Some actions, however, remain aligned with NZ40 but are future focused and therefore are not expected to reduce emissions from current sources in 2024. For example, emissions from future new developments will be significantly lower because of the accelerated Toronto Green Standard provisions requiring net zero designs, while emissions for existing buildings will be substantially reduced in future if City Council adopts an Emissions Performance Standards (EPS) by-law at the end of 2024. In other words, while various long-planned City-led actions will, in future, reduce emissions more significantly, current emission reductions are expected to align more with those expected in the BAP scenario.

The 2024 Capital and Operating Budget contains City-led GHG reduction actions contributing to an estimated reduction potential of approximately 73,889 t CO<sub>2</sub>e in 2024.<sup>15</sup> This means that City-wide GHG emissions could be approximately 0.5% higher absent the GHG reduction actions in the 2024 budget, while Corporate GHG emissions could be approximately 4.8% higher absent those actions (using 2021 inventory numbers as the baseline). The GHG reduction actions identified in the 2024 budget involve a planned capital investment of \$1,486.35 million<sup>16</sup> and an operational budget of \$63.36 million.

The budget amounts, estimated GHG reductions, and emissions scenario alignment assessments for individual City-led GHG reduction actions (projects and programs) in the 2024 can be found in Appendix 1.3. There was no change to this information between the Staff-proposed budget submissions and the approved Mayor's budget.

Corporate fossil fuel dependency via the consumption of fossil (natural) gas, gasoline, and diesel in City operations will cost \$48.17 million in the 2024 budget and is estimated to result in 338,650 t CO<sub>2</sub>e. The 2024 budget also contains \$826.02 million in capital spending tagged as "fossil fuel reliant projects" (i.e., equipment like fossil (natural) gas boilers and internal combustion engine vehicles). While some continued funding of such equipment and infrastructure is necessary during the short- to medium-term as alternatives scale-up, the Net Zero Strategy recognizes the importance of reducing such expenditures progressively to avoid either the "lock in" of future emissions from continued reliance on fossil fuels or the need to replace "stranded" fossil fuel reliant equipment and other assets before the end of their useful life. The Carbon Budget Report for the 2025 budget and subsequent budget cycles will continue tracking these fossil fuel dependencies.

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<sup>15</sup> For some actions that are expected to reduce emissions, a specific quantified estimate was not available due to data limitations, project-level analysis limitations, or the nature of the action (e.g. educational programming).

<sup>16</sup> This reflects total investments in tagged capital projects including spending on components of projects that do not reduce GHG emissions but are nevertheless necessary to realizing climate positive outcomes of an initiative.

More information on the Carbon Budget prioritization process and future Carbon Budget Reports can be found in the section “Carbon Accountability: Annual Carbon Budget Process”.

# TransformTO: Getting TO Net Zero



## NET ZERO STRATEGY: 2023 UPDATE

This section provides an update on progress made in 2023 towards achieving the TransformTO (TTO) Net Zero Strategy’s GHG reduction targets. This includes updates on advancement of the critical steps to achieving net zero, the work underway with the TTO Short-Term Implementation Plan 2022-2025, the status of related Council directives, and updates on various other items under the Strategy.

### THE CRITICAL STEPS TO ACHIEVING NET ZERO:

To realize a net-zero future, there are critical areas for significant and sustained action:

Critical Steps to Net Zero	
	Demonstrate carbon accountability locally and globally by establishing a carbon budget.
	Accelerate a rapid and significant reduction in fossil (natural) gas use in buildings.
	Increase access to low carbon transportation options, including walking, biking, public transit and electric vehicles.
	Increase local renewable energy to contribute to a resilient, carbon-free grid.

Figure 7: Critical Steps to Achieving Net Zero

These critical steps represent the largest opportunities to advance our progress on aligning with our net zero path, both within the City Corporation and across Toronto. Below is an update on progress related to each of these critical steps, with a focus on

advancements made in 2023. It also highlights areas where the City is “Leading by Example” in its efforts to reduce GHG emissions across the Corporation, identifies key challenges and barriers, and describes critical needs to advance this work.

**Moderate progress has been made to address the critical steps since the Net Zero Strategy’s adoption in December 2021.**

Fossil (natural) gas remains the most common energy for heating buildings and the source of more than half of all GHG emissions in the City.<sup>17</sup> For new buildings, the Toronto Green Standard (TGS) provides a set of sustainable performance measures that progressively shifts new development toward Toronto's net zero emission targets and reduced fossil (natural) gas consumption. For existing buildings, various City-led projects and programs are working to reduce fossil (natural) gas consumption.

However, the biggest impact – by far – could come through Emissions Performance Standards (EPS) for existing buildings. The Environment & Climate Division is developing a by-law for City Council to adopt in 2024 that would establish requirements for all buildings to eventually meet reasonable and achievable performance standards that limit their GHG pollution which predominantly results from fossil (natural) gas consumption. Various supports led by the City and other levels of government would help households and businesses meet those standards through adopting technologies such as heat pumps that save money annually and run on clean electricity, not polluting and expensive fossil fuels.

As the Net Zero Strategy showed, it takes time to build a foundation for a transformative policy like EPS that has enough scale to tackle Toronto’s biggest source of GHG pollution. But once in place it can drive major change and truly accelerate Toronto toward the net zero by 2040 pathway, especially if Ontario’s electricity grid becomes a net zero grid.

There are varying levels of progress on increasing access to low carbon transportation. There is more access to safe walking and biking infrastructure than before the pandemic, but Toronto’s Cycling Network Plan remains on a Business as Planned (BAP) pace instead of the ambitious build-out seen in the NZ40 scenario, in part due to resource constraints. Bus trips are getting greener as the TTC moves forward with ambitious plans for a fleet that runs solely on clean electricity by 2037, but overall transit ridership has not yet recovered to pre-pandemic levels. The number of electric vehicles (EVs) in Toronto has more than doubled in the past two years, but EVs are still only a small fraction (2.5 per cent in 2023) of passenger vehicles in Toronto. While the City cannot directly affect EV supply or demand, it is supporting EV uptake in Toronto by mitigating important barriers such as access to charging and lack of awareness and knowledge about EVs. The forthcoming federal Electric Vehicle Availability Standard will provide critical help in

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<sup>17</sup> City of Toronto, [2021 Sector-Based Emissions Inventory](#). Fossil (natural) gas consumption in the buildings sector (including residential, commercial and industrial buildings) creates 7.5 MT of GHG emissions annually, approximately 52% of the 14.5 MT GHG emissions from all sources in Toronto.



ensuring EV supply. To ensure that charging is available to support this transition, the City is undertaking long-term planning of the public charging network in Toronto; the results of this work will be included in a report to City Council in Q2 2024.

The City and its local distribution utility, Toronto Hydro, are working to ensure Toronto has enough clean, renewable and reliable electricity to power its net zero future. Since the Net Zero Strategy was adopted, Toronto Hydro has brought forward a [Climate Action Plan](#) and a regulated rate plan that includes consideration of GHG reduction but also resilience to climate change. The City is helping residents invest in local renewable generation for their city through incentives like the [Home Energy Loan Program](#) and the [SolarTO](#) web portal. However, local action threatens to be overwhelmed by the impact of a provincial electricity grid that includes increased reliance on polluting fossil (natural) gas. The City continues to identify the impacts of provincial reliance on gas-fired power and advocate for strong federal Clean Electricity Regulations that ensure a pathway to a net zero electricity grid.<sup>18</sup>

Finally, in 2023 City Council acted on the critical step of ensuring “carbon accountability” by making Toronto the first city in North America to enshrine its climate change goals and governance processes into law through the new [Climate Change Goals and Governance chapter](#) in Toronto’s Municipal Code.<sup>19</sup>

The following section outlines with greater detail the City’s progress achieved in 2023 on the critical steps required to achieve Net Zero.

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<sup>18</sup> See [2023.MM6.13](#) and [2023.MM7.25](#) and the [letter](#) to the Government of Canada regarding the draft Clean Electricity Regulations ([2023.IE7.6](#)).

<sup>19</sup> See section “Carbon Accountability: Benefits for Community Stakeholders” for more information on how this enhances transparency and accountability while providing new opportunities for residents and stakeholders to understand and track the City’s progress.



## #1 DEMONSTRATE CARBON ACCOUNTABILITY LOCALLY AND GLOBALLY BY ESTABLISHING A CARBON BUDGET

In May 2023, Toronto became the first city in North America to enshrine its climate change goals and governance processes into law. The new [Climate Change Goals and Governance chapter](#) of Toronto's Municipal Code:

- sets five-year absolute GHG emission budgets leading up to 2040 (2026-30, 2031-35, 2036-40) and mandates plans and reports to ensure transparency and accountability in achieving the budgets;
- sets an annual Carbon Budget Process to identify and prioritize new and enhanced City-led action to reduce GHGs in each year's financial budget proposal;
- requires an annual Carbon Budget report that identifies the estimated GHG reduction impact of the City-led projects and programs actually included in the financial budget;
- defines the "net" of net zero according to key science-based principles, ensuring the priority is on actual emission reductions instead of offsets.

Alongside the adoption of the policy and process, implementation began with the [Carbon Budget Baseline](#) briefing note published in January for the 2024 Budget.

While the emission budgets, key science-based principles, and robust planning and reporting processes described above apply to both Corporate and Community emissions, additional requirements apply to Corporate emissions. This is because the City has full control over emissions from its own operations and has pledged to lead by example in reducing those emissions further and faster than Community emissions. Sector-specific emission budgets will apply to Corporate buildings and transportation, with detailed plans and reports required for demonstrating how the budgets will be achieved. If reports show a lack of progress, failsafe mechanisms require urgent reporting on remedial measures to get on track.

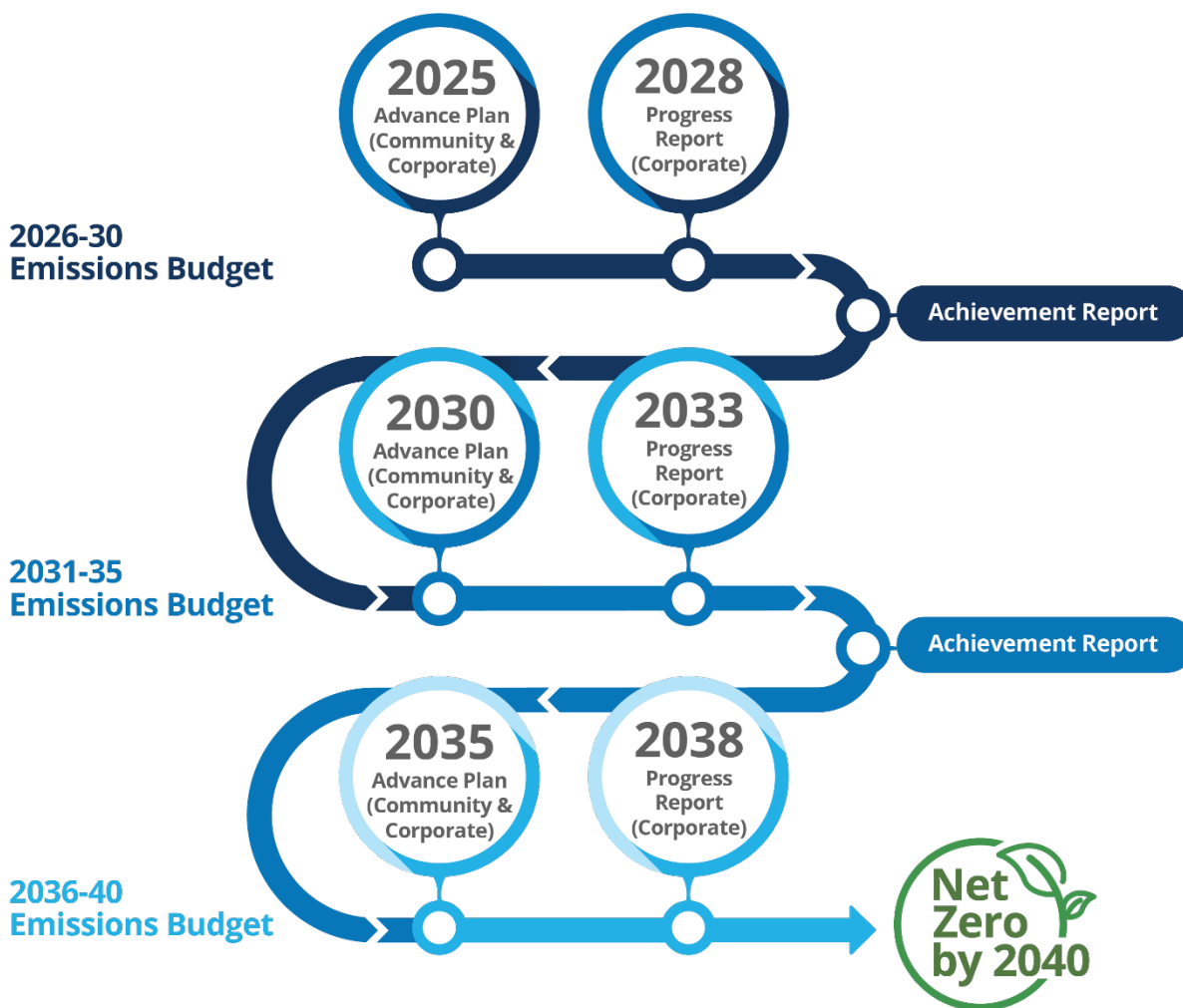


Figure 8: Planning and reporting cycle to meet five-year emission budgets and net zero by 2040

The City has also set a comprehensive and science-based policy for how any remaining Corporate emissions in 2040 will be “netted” out to achieve net zero. The Corporate [Offset Credits Policy](#) ensures that any remaining Corporate emissions can only be offset by action that removes carbon dioxide from the atmosphere with long-term, durable storage, meaning permanently. This is what the science of net zero emissions requires.

Successful implementation requires quantifying the GHG reduction impact of the City-led actions wherever possible. This can be challenging due to data gaps and methodological gaps in certain areas. However, new modelling tools procured by the Environment & Climate Division and key process changes will begin to address these challenges in 2024. The modelling tools are complex and require expert knowledge.

Ensuring the annual Carbon Budget Prioritization process and Carbon Budget report become integrated and established within existing budget processes also requires ongoing coordination across City government, and co-management with the Financial Planning Division. Best practice from other cities shows that financial department leadership and ownership of these processes, with support from the climate department

on quantifying the emissions impact of budget actions, is the best way to mainstream GHG reduction in municipal budgeting.

In 2024, the first annual cycle of the Carbon Budget Prioritization process will begin, culminating in the Carbon Budget report for the 2025 budget. In parallel, work on plans to achieve the 2026-30 emissions budgets now set out in law will take shape in 2024, leading to a report that will chart a course for the next critical phase in the City's drive for net zero emissions.



## **#2 ACCELERATE A RAPID AND SIGNIFICANT REDUCTION IN FOSSIL (NATURAL) GAS USE IN BUILDINGS**

The TTO NZS identified two distinct critical steps that pointed to the need to reduce fossil (natural) gas use in buildings and the need for buildings emission performance standards (the primary effect of which will be to reduce fossil (natural) gas use in buildings). In this report, these two critical steps have been combined to address this issue holistically going forward.

Buildings are the largest source of community-wide GHG emissions in Toronto today (58 per cent of total emissions) because they predominantly rely on burning fossil (natural) gas (in boilers and furnaces) to heat space and water. Net zero emissions by 2040 cannot realistically be achieved without transitioning the buildings sector away from fossil (natural) gas to cleaner energy sources, especially clean electricity to power heat pumps (for space heating and cooling) and water heaters.

Along with the already existing Toronto Green Standard (TGS) which applies to new buildings, setting Emissions Performance Standards (EPS) is the most impactful action the City can undertake to reduce emissions from buildings.



## **New Development**

The Toronto Green Standard (TGS) is a set of sustainable performance measures that progressively shifts new development toward Toronto's net zero emission targets. Accelerated timelines now require any new private building development applications to be near zero emissions by 2028. New City-owned developments are already required to meet net zero emissions requirements.

TGS Version 4 came into effect for new planning applications on May 1, 2022, and sets out a building's energy and emissions caps for new construction above the minimum energy efficiency requirements of the Ontario Building Code. In May 2023, Council approved an update to the TGS to further require embodied emissions caps for Tier 2+ and City-owned projects.<sup>20</sup>

Under TGS V4, the current minimum TGS energy and emissions requirements for new private development under Tier 1 is set at approximately 25-30% above (more stringent) than the Ontario Building Code. All new development applications subject to the planning approval process are required to submit an energy model which is reviewed and verified for compliance with the TGS energy efficiency and greenhouse gas reductions requirements. The 194 site plan applications submitted in 2023 demonstrated an average greenhouse gas intensity of ~15 kgCO<sub>2</sub>/m<sup>2</sup>/yr, which is unchanged from 2022.

The TGS performs an important role as a market transformation tool to progressively push development beyond the minimum energy efficiency standards of the Ontario Building Code and closer towards Toronto's zero-emissions targets. The objective is to influence and support change to

achieve more sustainable development. Builders who are market leaders in sustainability and build to the higher Tier 2+, are eligible for a partial rebate on development charges paid under the TGS Development Charge (DC) Refund Program.

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<sup>20</sup> [2023.PH3.19](#)





In 2023, ten private development projects were verified and certified to Tier 2 higher levels of performance, green buildings, and 18 new projects were enrolled into the DC Refund Program for high performance low emissions buildings. In total, 168 projects have been enrolled in the DC Refund Program since 2010 with Tier 2 or higher levels of building performance. In support of the TGS Tier 2+ Development Charge Refund Program, City Council approved an update to the Development Charge Bylaw 1137-2022 to enhance the development charge refund rates for near zero emissions projects.<sup>21</sup>

The TGS Communication Strategy was launched in October 2023 with advertisements to “Choose a Better Future – Choose a Toronto Green Standard Building” in 100 bus shelters across the City. Staff continue to work to roll out the strategy to enhance public understanding with an aim to increase public demand for green developments.

The City has been demonstrating to the private sector that we are leading by example when it comes to new developments. Working with some of Canada’s leading design and construction teams, the City’s own new development projects are pioneering green building technologies and practices alongside the low or zero carbon energy sources on development sites. Some of the Net Zero emissions project examples under construction include: [Mt. Dennis Childcare Centre](#); [North East Scarborough Community Centre](#), Centennial Library, Toronto Police Services 41 Division and Toronto & Region Conservation Authority head office, one of the first mass timber buildings in Toronto. In addition, there are two new City-owned projects being designed to net zero emissions: Pleasant View Library and Dufferin Waste Management Office Building.

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<sup>21</sup> [2023.PH8.16](#)



In 2023, construction began on the geo-exchange district energy system that will serve the Etobicoke Civic Centre Precinct - Toronto's First Net Zero Community. Within the Precinct, the new Etobicoke Civic Centre will be designed to achieve TGS Version 3 Tier 4, and it will anchor the geo-exchange district energy system serving the entire mixed-use precinct. This project includes both advancement on buildings efficiency and energy systems. In 2023, the City's development partners broke ground on the first phase of housing, which will achieve TGS Version 3 Tier 3, as well as the Canada Green Building Council's Zero Carbon Building standard.

In 2023, the City worked closely with the Ministry of Municipal Affairs to identify potential changes to the Building Code which could be enforced through a municipal by-law. While Bill 68 (2017) allows for a requirement that all buildings meet higher municipal green building standards, the accompanying code changes have not been established yet by the province. City Council has previously requested that the province continue to work expeditiously with the City on this important initiative and staff are working to identify alternative pathways to meet the City's net zero targets in new construction. The City will also explore the impact of any changes to the energy efficiency requirements in the Ontario Building Code, as a new Ontario Building Code is expected to be released by the Province in 2024.

Recently, the uptake of the Tier2+ refund program has dropped off, in part due to a general slow down of the market and changes to market conditions affecting product supply chains and general costs of construction. To address this, the City is undertaking a study in early 2024 to review the TGS buildings energy and emissions targets and construction costs in relation to the City's Net Zero 2040 city-wide target. The study will include substantial involvement from the building industry to help understand current conditions and find ways to advance net zero community-wide emissions in the buildings sector.



## **Existing Buildings**

Existing homes (single family and multi-unit residential buildings - MURBs) are the largest source of community-wide GHG buildings emissions in Toronto (approximately 55% of total buildings emissions), and for the most part rely on private, voluntary homeowner/landlord investment to reach our community-wide targets. That is why, the City currently operates a number voluntary capital loan programs – such as the [Home Energy Loan Program \(HELP\)](#), the [Energy Retrofit Loan Program](#), the [High-Rise Retrofit Improvement Support Program \(HI-RIS\)](#), and the new [Taking Action on Tower Renewal \(TATR\) program](#) launched in May 2023 – that educate, incentivize and help finance household and business decisions to reduce fossil (natural) gas dependence and increase energy efficiency in buildings.

However, to parallel voluntary financial support to building owners, the City has shown regulatory leadership in accelerating the development of an Emissions Performance Standards (EPS) by-law that would move beyond a voluntary approach to require all buildings to decarbonize over time via reasonable and achievable pathways.

In December 2023, City Council adopted the Emissions Performance Reporting by-law ([2023.IE9.5](#)), a necessary precursor to the EPS. As part of the ongoing work on EPS, the City is also developing retrofit guidance materials targeting various building types and audiences and reported in 2023 on Design Principles for Retrofit Financing Programs and Funding Solutions to Support Building Decarbonization.<sup>22</sup>

The City is leading by example on existing buildings through implementation of the Council-adopted [Net Zero Carbon Plan](#), which seeks to decarbonize all

buildings operated by the City. Some key projects include the development of the St. Lawrence North Market, which will be low carbon, and the City's first Zero Carbon

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<sup>22</sup> [2023.IE6.5](#).



Childcare Centre at Mount Dennis – both of which are planned to open in 2024. The City is also developing a standardized scope of work for net-zero feasibility studies and transition plans for its buildings; so far these studies have been carried out for 12 City facilities. Additionally, a Sustainable Energy Plan Financing (SEPF) loan has been secured for net-zero retrofits at two City facilities. The SEPF program provides financing at the City's cost of borrowing to invest in energy efficiency, renewable energy, and emission reduction projects in support of TransformTO. It is a key tool to help reduce building emissions.

Despite some good progress during 2023, key challenges and barriers to successful reductions of GHGs from existing buildings persist for various groups, and include:

Challenges for the public (homeowners, landlords, business owners):

- whether and to what degree fuel switching from fossil (natural) gas to electricity imposes a cost on households and businesses, including up-front costs and ongoing utility costs;
- the cost of comprehensive building retrofits to reduce overall energy demand, beyond simply fuel switching;
- pressures to maintain buildings operational and inability to tolerate downtimes, resulting in pressure on facility management teams and “emergency” replacements being done (i.e., like-for-like gas burning equipment versus taking the time to plan and deliver a net-zero option during unexpected failures);
- availability of financial support for retrofits from the Province and federal government;

Challenges for government(s) and industry:

- the City's jurisdiction, which excludes direct regulation of energy or the building code;
- the City's ability to lead by example through decarbonizing its own existing buildings at a pace consistent with the net zero by 2040 goal;
- effective communications with stakeholders about building retrofits, which can be a complex and technical topic;
- developing the EPS by-law on an accelerated timeline while considering interdependencies with other City policy areas and the required scale of community engagement given the by-law's scale of impact;
- availability of alternative low-carbon energy sources sufficient to meet the demands of future developments, whether at the individual or district scale;
- market capacity (in terms of labour, supply chains, and finance) for a significantly increased pace of retrofits of existing buildings;
- whether the Province delivers a net zero electricity grid by 2040 despite current plans to add fossil (natural) gas generating capacity leading to higher grid emissions; and

- whether Ontario’s grid becomes net zero by virtue of pending federal Clean Electricity Regulations seeking to ensure net zero electricity grids across Canada by 2035.

Moving forward, each of these challenges must be addressed. In some cases, the City directly controls the outcome, such as with its pledge to lead by example. Elsewhere the City’s influence is limited, such as with market factors and the policy decisions of the Province or the Federal governments, including with regard to whether the provincial electricity grid becomes net zero emissions.

The City is continuing to advance action on these critical steps in 2024. The City will begin work to analyze and model various building scenarios so that future versions 5 and 6 of the TGS ensure any new building development applications are net zero emissions by 2028. For existing buildings, the City will be undertaking extensive stakeholder engagement in 2024 to inform development of the EPS by-law. This includes engaging with technical and equity advisory groups, stakeholder working groups, and a resident reference panel. The City is also engaging with the Province on planned actions and additional regulatory mechanisms. These engagements will lead into and underlie a proposal to City Council on an EPS by-law that is planned for 2024.



### **#3 INCREASE ACCESS TO LOW CARBON TRANSPORTATION OPTIONS, INCLUDING WALKING, BIKING, PUBLIC TRANSIT AND ELECTRIC VEHICLES**

On-road transportation accounts for about 35 per cent of the community-wide GHG emissions in Toronto today, with most of these emissions coming from passenger cars and trucks. Gasoline powered cars and trucks alone accounted for 27 per cent of all community-wide emissions in 2021. Achieving Toronto’s community-wide GHG emissions reduction targets will require us to reduce fossil fuels by shifting to more low carbon modes of transportation including walking, cycling, public transit and electric vehicles. Below are some examples of progress made in 2023 to advance this work.

#### **Walking and Cycling**

The City continues to implement the Cycling Network Plan and Missing Sidewalk Link programs to provide opportunities for safe and zero emissions mobility through cycling and walking. The Cycling Network Plan's 2022-2024 Near-Term Implementation Program proposes approximately 100 centreline km of new bikeways, in addition to upgrades to existing routes and studies for future implementation. In 2023, approximately 19 km of bikeways were constructed, with another 27 km of bikeways under-construction, and approximately 13 km of upgrades to improve and enhance the existing network.





Bike parking is known as one barrier for cyclists to use their bikes for everyday transportation. As part of the ongoing review of the parking standards in the city-wide Zoning By-law, the City has been reviewing the bicycle parking standards. These standards apply to new or expanded development. The review is guided by the principle that bicycle parking zoning standards should require sufficient parking to encourage people of all ages, abilities and means to bicycle for everyday transportation, recreation and commercial activity. Public consultation in 2023 explored aspects of current bicycle parking that will inform recommended amendments to the Zoning By-law and the Guidelines for the Design and Management of Bicycle Parking Facilities, which are anticipated in 2024.

In 2023, Fleet Services purchased three electric bicycles for City staff within the Transportation Services Cycling and Pedestrian Projects team as a mode of commuting to meetings, site visits and transporting materials. A pilot program was also launched, which provided Municipal Licensing and Standards (MLS) by-law enforcement officers with a fleet of 18 City-owned bicycles for usage whenever feasible in parks or large events, to reduce vehicle usage and greenhouse gas emissions.

Despite continued advancements in active transportation, significant challenges remain. With current staffing and funding levels, there is not sufficient capacity to bundle the design and construction of [Complete Streets](#) including bikeways with all programmed road reconstruction work, which was directed by City Council to Transportation

Services.<sup>23</sup> On average, the City completes 31 to 35 km of major road rehabilitation and 75 to 80 km of local road rehabilitation each year. From a resource perspective (staff and budget), there is currently only capacity for approximately 10 km of bundled bikeway projects per year. Currently the cycling budget is between \$20 and \$30 million per year, and acceleration of implementation would also require additional funding and staff resources.

Looking ahead, further analysis specific to cycling is needed to understand specific details around how many kilometres of new bikeways would be needed, and where, to achieve the TransformTO goal for 75% of school and work trips under five kilometres to be covered by walking, biking, or transit by 2030. Consideration of cycling infrastructure will be considered in current updates to Net Zero modelling. To accelerate the implementation of bikeways, there would need to be changes to process, increases in budget, staff and resourcing, as well as growth in capacity within the field of construction contractors, materials, and consulting firms.

### **Public Transit**

In 2023, the TTC has made progress on both the electrification of transit as well as improving public transit access. TTC installed twenty new eBus charge points, received four new streetcars to support ridership growth and received 243 additional hybrid-electric buses as part of its transition to a completely zero-emissions fleet. The TTC also decommissioned the last diesel Wheel-Trans bus.



Through 2023, the TTC continued implementation of its 5-Year Service Plan (2020-2024) through the Annual Service Plan (ASP) process. The 5-Year Service Plan intends to improve travel options, reliability and comfort for transit users while also reducing journey and wait times across the network. As of December 2023, the TTC has made progress or achieved 17 of the 20 actions within the Plan. During 2023, the TTC also began the review and update of the 5-Year Service Plan for the next planning period of 2024-2028. This included three rounds of consultation with a diverse range of internal and external stakeholders. The final Plan is projected to be presented to the TTC board in winter 2024.

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<sup>23</sup> [2019.IE6.8](#)

On Transit Expansion, City staff provided an update on the Eglinton East Light Rail Transit (EELRT) project and an updated initial business case in 2023. Through this report, City Council approved the EELRT alignment, thus allowing City staff to proceed with the Transit Project Assessment Process (10% design). By providing connections to the TTC and GO Transit networks, the EELRT will also offer more transportation options to historically underserved communities in eastern Scarborough. Additionally, in November 2023 City Council approved the Waterfront East Light Rail Transit (WELRT) alignment and granted authority to advance design for key segments of the WELRT and protect for future delivery of the remaining portions, while minimizing additional financial commitments for the City. The WELRT, consisting of the Union Station to Queens Quay Link and the East Bayfront Light Rail Transit, is a City of Toronto priority transit project. According to growth projections, when fully built, the proposed 3.8-kilometre WELRT project will provide over 50,000 daily trips, bringing higher-order transit to support an estimated 100,000 residents and 50,000 jobs.

The SmartTrack Stations Program is an investment to improve transportation choices within Toronto through the use of existing transit infrastructure to serve more people. Combined with Metrolinx's GO Expansion Program, SmartTrack will accelerate the transformation of heavy rail infrastructure in Toronto from a regional commuter service into an urban rapid transit network, thereby bringing transit faster to communities across the city. The scope of the Program consists of five stations: Finch-Kennedy, East Harbour, King-Liberty, St. Clair-Old Weston, and Bloor-Lansdowne. Following City Council direction in 2023, the funding commitments to the Program were increased to \$1.689B, comprised of \$878 million from the City, \$585 million from the Government of Canada and \$226 million from the Province of Ontario. The SmartTrack Stations are targeted to start construction in 2024 and anticipated to be in operation in 2029.

Significant challenges and barriers exist around improving access to public transit as a low carbon option for transportation. Current staffing and funding levels prevent the TTC from achieving its Board-approved Service Standards, and create challenges to expand/create services that are required to meet changing travel patterns and the population/employment growth occurring in the city. Furthermore, City Council has also requested that the Province and the Government of Canada provide funding to enable the construction of both the EELRT and WELRT projects.

Strategic planning and alignment with the implementation of electric charging infrastructure to support TTC's electric fleet at bus garages, and general state of good repair at all TTC locations to identify low carbon alternatives, is critical. In addition, timely upgrades of electrical infrastructure to support both fleet and facilities, while obtaining funding timely is also critical. Looking forward, support will be required from various departments within the TTC, as well as external stakeholders such as Toronto Hydro.

Further analysis specific to transit and the transportation network as a whole is needed to understand what investment in transit service would be needed to achieve the TransformTO goal for 75% of school and work trips under five kilometres to be covered by walking, biking, or transit by 2030.



## **Electric Vehicles (EVs)**

The number of EVs in Toronto has more than doubled in the past two years, but EVs are still only a small fraction (2.5 per cent in 2023) of passenger vehicles in Toronto. The shift to EVs will need to accelerate if Toronto is to achieve the TransformTO goal that, by 2030, 30 per cent of registered vehicles in Toronto are electric. The recently announced federal Electric Vehicle Availability Standard, which requires auto manufacturers and importers to meet annual zero-emission vehicle (ZEV) regulated sales targets, will be important for ensuring that electric vehicles are available to meet demand.

To support the shift to EVs, the City is implementing an [Electric Vehicle Strategy](#) which was approved by City Council in 2020; an Update on Electric Vehicle Strategy Implementation was provided to City Council in July 2022. The City's efforts to support EV uptake in Toronto have focused on mitigating important barriers such as access to charging and lack of awareness and knowledge about EVs. The City is also leading by example through transitioning the City's fleet of more than 10,000 vehicles and equipment to ZEVs to reduce fleet-related emissions by 65 per cent by 2030 and achieve net zero by 2040.

Corporately, City Fleets' climate mitigation and adaptation strategies and actions have been recognized for their success, and as an example of effective local leadership on climate action. Initiatives undertaken by City Fleets made a significant contribution to overall City emissions reductions. Currently, 8% of City-owned vehicles are ZEVs.

The City continues to support access to home charging through requirements to ensure that new buildings are future-proofed to support EV charging and by providing financing for EV charging stations in existing buildings through the Home Energy Loan Program and Energy Retrofit Loan program.



While progress is being made to support the transition to EVs, significant barriers remain. While home charging is convenient and cost-effective, 60 per cent of Toronto households live in apartment buildings and there may be cost, technical, and/or other constraints to providing EV charging in at least some of these buildings. In addition, five per cent of Toronto residents park their vehicles on the street. Public charging will therefore be needed to meet the base charging needs of many Toronto residents, in addition to the needs of EV drivers to charge en route.

Since 2020, the City has helped to expand the public EV charging network in Toronto by providing public charging stations at on-street parking spaces (97 installed to date) and in Green P parking facilities (310 charging stations). Toronto Parking Authority manages these charging stations and aims to have over 500 public charging stations open by the end of 2024 across both on-street and off-street locations. While public charging is critical for the shift to EVs, it is expensive to install. With more than one million registered passenger vehicles in Toronto, thousands of public EV charging stations will be needed to support the transition to EVs. Creation of a network of this size will require investment and participation from both the private and public sectors.

The City is undertaking long-term planning to ensure that public EV charging is available when and where it is needed to support the City's goals for EV uptake and low carbon transportation. The results of this work will be presented to City Council in 2024 along with recommendations on actions the City can take to support provision of this key infrastructure. The City will also work with the vehicle-for-hire sector and other interest groups to help ensure that charging is sufficiently fast and available to meet the industry's unique needs to support the achievement of net zero by 2030.



#### **#4 INCREASE LOCAL RENEWABLE ENERGY TO CONTRIBUTE TO A RESILIENT, CARBON-FREE GRID**

A carbon-free electricity generation system in Ontario is critical to a net zero future. However, the emissions intensity of Ontario's electricity grid is expected to increase in the near-term as more generation will come from fossil-based sources (i.e., fossil (natural) gas). For Toronto to get to net zero, the grid needs to be carbon free. The backbone of a net zero Toronto must be an emissions free electricity grid that both delivers more energy to address the demands of an increasing population and an increase to electricity consumption for buildings and vehicles, and delivers it with greater resilience to extreme weather.





The City has facilitated adoption of renewable energy by leveraging its own assets, such as enabling access to City-owned land and infrastructure to host renewable thermal energy projects and utilizing the City's existing information and software resources to help residents, businesses and institutions assess renewable energy potential. For example, the City Waterfront Building located at 627/635 Queens Quay West recently completed an ambitious, comprehensive net-zero emissions energy retrofit project that included a shallow lake heat exchange system and a solar panel installation. In 2023 alone, the City has successfully moved forward with installing solar PV systems on 11 of its facilities, including community centres and EMS stations.

Throughout 2023, City staff have continued working with partners including Toronto Hydro to eliminate existing barriers and develop processes to quickly

deploy renewable energy. This includes supporting solar adoption in the community through the SolarTO program, which helps Toronto residents, businesses and institutions with their decisions to adopt solar and storage and helps transform Toronto into a "Solar Ready City" that is prepared for, and supportive of, mass adoption of solar.



The City also continues to work with the private sector to achieve higher levels of emissions reductions and renewable energy projects. This includes attending pre-application consultation meetings to advocate for higher emissions reduction standards earlier in the building design process and encouraging the adoption of geothermal energy solutions.

In 2023, the City made progress on wastewater energy transfer technologies as a local, low-carbon emission heating and cooling solution for buildings. The first wastewater energy transfer project broke ground at Toronto Western Hospital, which will nearly eliminate the hospital's use of fossil (natural) gas for heating and cooling.

Despite these successes there remain significant barriers to expansion of renewable energy across the city. One challenge is that in order to accelerate renewable energy adoption, regulatory and non-regulatory processes need to be streamlined. Within the City of Toronto corporately, increasing renewable energy requires that multiple divisions seamlessly collaborate and coordinate; this requires the right human, technological, and physical resources.

When looking to the future of renewable energy in Toronto, the City will continue to execute and scale its existing array of renewable energy projects and research new ways to accelerate renewable energy adoption for both corporate and community assets. For example:

- Implementation of solar PV projects on 11 City-owned facilities in partnership with Parks, Forestry & Recreation; Children's Services; Toronto Paramedic Services; and Corporate Real Estate Management.
- Development of a set of standard specifications that examine how to combine re-roofing and solar projects, as well as, parking lot reconstruction and car port solar projects; conducting market sounding to test and finalize procurement documents; and liaising with asset owning divisions and Purchasing & Material

Management Division (PMMD) for implementation. Specific sites where this process can be applied are still being explored.

- Building on the success of the lake-based energy system at the City Waterfront Building retrofit, staff are identifying and working with stakeholders to map lakebed ownership and create a process that will assist interested parties in navigating the regulatory aspect of implementing similar systems, as well as establish a framework for reviewing conceptual project proposals.
- City staff will continue to assist Divisions and Agencies in the development of Net Zero transition plans. Work on this is already underway with Toronto Zoo and TOLive.

The City will also investigate opportunities to encourage wider adoption of renewable energy through regulatory changes and incentives structures such as rebates, low-interest financing, and streamline/enhance the Distributed Energy Resource interconnection process for renewable energy.

## **UPDATES ON THE TTO NET ZERO STRATEGY SHORT-TERM IMPLEMENTATION PLAN ACTIONS & RELATED CITY COUNCIL DIRECTIONS**

The year 2023 saw advancement of some critical initiatives that pave the way for future emissions reduction and alignment with the Transform TO Net Zero Strategy's (the Strategy) net zero goal. The progress made in 2023 built upon the foundations of the climate change mitigation work implemented to date by the City and its partners. Where 2022 ground tested realities, provided opportunities for cross-corporate partnerships and started work on priority actions, 2023 put into motion some key pieces of work (i.e., EPS) that have the potential to change our current trajectory and help us get on track to net zero.

Details of the progress made on the Net Zero Strategy Short-Term Implementation Plan (2022-2025) are provided in Appendix 1.1. This year, progress is being reported on a more granular level, with each action reporting a percentage completion to reflect the total amount of progress on this action made over the past two years. Given that the end of 2023 marks the halfway point of the Short-Term Implementation Plan (2022-2025), it is anticipated that many actions should be well underway. For some actions, progress was not anticipated to ramp up until 2024 or 2025, in which case this is noted in the appendix.

An important consideration when looking at the Short-Term Implementation Actions is that while these actions are supportive of the ultimate goal of achieving net zero GHG emissions by 2040, these actions alone will not achieve our climate goals. It is the City's intention that the next Short-Term Implementation Plan (2026-2030) will have actions that more closely reflect the level of ambition and effort required to achieve our climate goals.

As of the end of 2023, 21 of the 30 actions (70%) from the Short-term Implementation Plan 2022-2025 are 50 percent or more complete. Given that half of the time to implement the 2022-2025 plan has elapsed, if progress were on track, then all 30 actions (with a few exceptions) would be 50 percent or more complete at this time. Significant support is needed to bring Toronto on track to meet 2030 interim targets, and net zero emissions by 2040. Five of the 30 actions (17%) are complete at this time. Detailed updates on each action and numerous sub-actions can be found in Appendix 1.1.

As of the end of 2023, 60 of the 71 actionable City Council directions (85%) related to adoption of the Net Zero Strategy are 50 percent or more complete. Forty-four of the 71 Council directions (62%) are complete. Detailed updates on the City Council directions are available in Appendix 1.2.

## **UPDATES ON ACCOUNTABILITY AND MANAGEMENT FRAMEWORK FOR THE TTO NET ZERO STRATEGY**

In 2022, City Council approved an Accountability and Management Framework to guide implementation of the TransformTO Net Zero Strategy on climate, including the creation of advisory groups and management processes to guide the City's accountable and inclusive implementation of the Net Zero Strategy. This approach was designed to be flexible and respond to the NZ Strategy's and community's needs over time. This flexibility included the ability to establish working sub-groups of these structures, and potentially other bodies, as needed. The Framework created relationships of advisement and accountability by establishing three main groups:

1. Climate Advisory Group (CAG) made up of community members;
2. Net Zero Climate Leadership Table (NZCLT) made up of internal, inter-divisional City senior management staff; and
3. Joint TransformTO Implementation Committee (JTIC) made up of City staff and labour union organizations.

Updates on the progress made around the formation and ongoing operation of these three groups, with a focus on 2023 progress, is provided in Appendix 1.2.



# UPDATES ON OTHER TTO NET ZERO STRATEGY ITEMS

There are several other important updates that fall under the TTO Net Zero Strategy. An update of each of these items is provided below:

**Climate Change Equity Indicators:** The TransformTO Net Zero Strategy has the potential to have a significant positive equity impact, but only if multiple needs are addressed and implementation is done with equity at its core to maximize the co-benefits from climate action. Locally, the impacts of climate change will be felt by everyone, but some will feel its impacts more than others. The outcomes of the delivery of climate action can improve equity, economic prosperity, resilience and health. Inaction, on the other hand, has the potential to negatively impact many vulnerable populations in Toronto.

The Environment & Climate Division is in the process of developing a list of key equity indicators related to actions to reduce GHG emissions that are specifically relevant to Toronto, with the intention of reporting on them regularly. In 2023, research was initiated to gather and analyze foundational data and information needed to understand the complexity of equity impacts related to climate change and climate action. This includes consideration of impacts on gender equity as part of the City of Toronto's forthcoming Gender Equity Strategy, expected to be released later in 2024, discussions about how climate can be represented in the upcoming Toronto Neighbourhoods Assessment Framework, and embedding climate considerations into the third term action plan for the poverty reduction strategy, also expected to be released in 2024.

Throughout 2024, this important work will continue and culminate in a framework for evaluating the equity impacts of climate action to reduce GHG emissions. This framework will then be applied to specific actions under the TransformTO Net Zero strategy to understand and address, where possible, the impacts of climate actions on equity deserving groups across the city. Also in 2024, a research project will be initiated to develop a framework to map neighbourhood climate vulnerability in Toronto and will evaluate indicators to represent those most likely to be impacted by climate change. Finally, equity considerations will be included in a separate research project that will explore potential climate resilience indicators for the City.

**Climate Resilience:** As the climate changes, Toronto strives to remain a livable and vibrant City for all. Divisions across the City of Toronto are working to address climate impacts that affect their services, assets, programs and policies now, and to prepare for the future. A refreshed, coordinated effort on climate resilience will align us to peer cities, and is critical to ensure Toronto is prepared for extreme weather including protecting our most vulnerable communities. Adapting now will also save money in the future. The Environment & Climate Division has brought forward this staff report to inform City Council that current climate extremes being felt by Toronto residents are predicted to worsen in coming years and that although the City has been doing important climate adaptation work, focused leadership and a coordinated approach to further strengthen Toronto's




climate readiness is critical at this stage. The report will provide details on how topics like city governance (Divisional roles and responsibilities) are being approached, as well as how critical technical information will help inform and prioritise near and long-term work to ensure climate resilience of the City's assets, services and people, including equity deserving groups who may be especially vulnerable to the impacts of climate change. The report will address the importance of building relationships with Indigenous people to learn their world views and enable Indigenous community leadership to enhance climate resilience.

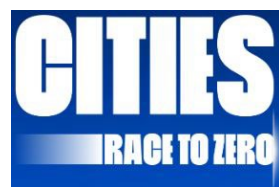


*Figure 9: Toronto faces multiple climate hazards including extreme heat, extreme storms and flooding*

**Climate and Resilience Research Fund (CARRF):** The Climate Action and Resilience Research Fund (CARRF) was established in 2023 to fill gaps in research that will assist in the implementation of the TransformTO Net Zero Strategy's Critical Steps, 2030 sector targets, and 30 Short-term actions, along with other City of Toronto environmental and resilience priorities. The fund was established in collaboration with Strategic Partnerships and the CivicLabTO initiative, utilizing the new Ontario Collaborative Innovation Platform (OCIP) developed by eCampus Ontario, an online platform. City staff post research challenges/priorities to OCIP, for response by the local academic institutions (four colleges and four universities). To date, six projects have been approved, with an approximate value of \$230k from the CARRF. In 2023, the total value of research was approximately \$500k, an additional \$230k-300k of matched research funding benefitting the City. The first round of projects focuses on a number of topics in Climate and Resilience, including small business electrification, neighbourhood-level climate vulnerability, embodied carbon in the construction of buildings and linear infrastructure, emissions impacts of cycling infrastructure, and community engagement on climate and resilience in equity-deserving communities. The research developed with these projects will fill data gaps, provide case studies, and assist staff in data-driven decision making in

the ongoing implementation of climate and resilience initiatives under the TransformTO Net Zero Strategy.

 **Cool Food Pledge:** In December 2019, Toronto's Medical Officer of Health signed the World Resources Institute's Cool Food Pledge (CFP), committing the City of Toronto to reducing the GHG emissions associated with the food that the City procures by 25 per cent by 2030, relative to 2019 baseline. The purpose of this initiative is to encourage cities, organizations and corporations to utilize procurement opportunities to facilitate a shift toward dietary behaviors and menus that include more plant-rich, climate-friendly options in order to make progress toward the target. In 2023, the City began working with Sysco Toronto for the supply and delivery of groceries for Seniors Services and Long-Term Care (SSLTC), Shelter, Support & Housing Administration (SSHA), and Children's Services (CS) ([2023.GG4.20](#)) based on a public procurement process which inserted Cool Food Pledge reporting requirements into the public procurement bidding process to ask vendors to quantify emissions associated with the bids they were submitting. The scoring criteria to evaluate proposals from potential Vendors reflected the Cool Food Pledge requirements. The City is currently doing further studies to assess how to implement the changes required to meet the CFP along with the associated budgetary impacts, and will provide a report to the Infrastructure and Environment Committee with recommendations in March 2024. Finally, participating in the WRI's CFP will help achieve the City's commitment in the C40 Good Food Declaration. The City has committed to the C40 Good Food Cities Declaration which commits signatories to increase plant-based food, decrease the purchase of meats and dairy and decrease food waste by 50 per cent from the 2019 baseline by 2030.



**Cities Race to Zero:** In the leadup to COP26 in 2021, City Council committed Toronto to joining the [Cities Race to Zero](#) campaign. Through Cities Race to Zero, Toronto is member of the broader UN-backed [Race to Zero](#) campaign, an ongoing global effort to align the net zero pledges of cities, businesses and institutions with the best available science and governance guidance.

Toronto fulfilled its pledges as part of Cities Race to Zero via City Council's endorsement of the targets and actions in the TransformTO Net Zero Strategy, which included the target of net zero emissions by 2040 in light of the climate emergency ([2021.IE26.16](#)), and continued implementation of the Toronto Green Standard. Further, the new Climate Change Goals and Governance chapter of the Municipal Code and the Corporate Offset Credits Policy codify the City's science-based targets and processes for achieving net zero, thereby satisfying the updated criteria of the Race to Zero campaign.<sup>24</sup>

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<sup>24</sup> For more details see Appendix 1.2 on City Council Directions, updates CRZ 1-6.

# WHAT TO WATCH FOR IN 2024

## CARBON ACCOUNTABILITY: BENEFITS FOR COMMUNITY STAKEHOLDERS

Toronto's comprehensive Carbon Accountability system establishes it as a leader in global climate action. It ensures alignment with the leading science on what it means to achieve net zero emissions and brings the City into alignment with the participation criteria of the UN's Race to Zero Campaign and the recommendations outlined in the UN High Level Expert Group on the Net Zero Emissions Commitments of Non-State Entities. Toronto is meeting the requirements to ensure a credible net zero approach.

The two main instruments of the Carbon Accountability system are new:

1. [Climate Change Goals and Governance](#) chapter of Toronto's Municipal Code (the "by-law"); and
2. Corporate [Offset Credits Policy](#)

The by-law serves as a comprehensive framework that enhances transparency and accountability. It defines "net zero", provides process certainty on how the City government will work to prioritize GHG reduction actions and how the City will use emission budgets to organize planning and public reporting.

The Offset Credits Policy applies to Corporate emissions and it makes clear the primary goal is immediate emissions reduction. Only beyond 2040, in case of any residual emissions, will the Corporation use carbon removal offset credits to achieve net zero. Consistent with the leading science on net zero, these offsets ensure that carbon removed from the atmosphere is securely stored over the long-term (e.g. in deep rock formations or oceans) in a way that ensures permanency with a low risk of reversal.

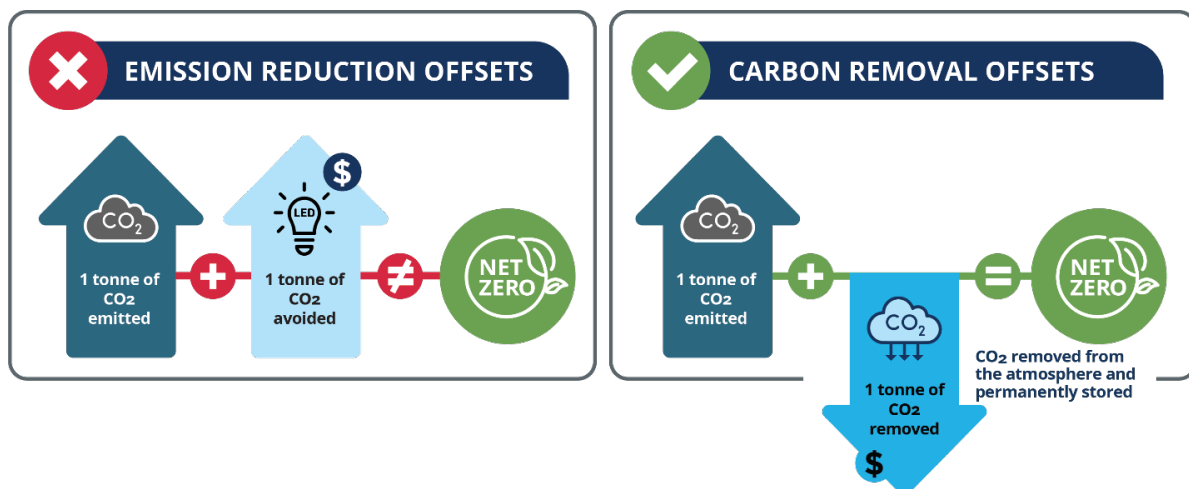


Figure 10: Only offset credits for carbon removal with permanent storage can balance out CO<sub>2</sub> emissions from burning fossil fuels

The Carbon Accountability system provides a number of benefits for stakeholders of the City's Net Zero Strategy:

**1. Formalizing climate governance structure and process:**

Roles and responsibilities are clearly defined, processes are set out and mechanisms are in place should requirements not be met, increasing predictability and certainty for the public and Councillors. Writing these pieces into law makes them more resilient to changes in political mandates and supports transparency and credibility. It also helps to focus attention on the urgent priority of reducing emissions and build public awareness about where we are and are not making progress. The structure ensures that community stakeholders understand in advance what sort of planning and reporting the City has committed to and have a well-defined platform for engagement, fostering collaboration and understanding of the city's climate initiatives.

**2. Promoting integrated governance for climate initiatives:**

Envisioning a whole-of-government approach, the by-law encourages and requires collaboration across City divisions. This integrated approach streamlines efforts, benefiting community stakeholders by maximizing the impact of climate initiatives and creating a cohesive pathway towards net zero.

**3. Defining emissions reduction milestones as cumulative emissions budgets:**

Unlike emission reduction milestone targets that are set for particular years, the by-law creates emissions budgets for each of the key 5 year periods between now and the 2040 net zero date (2026-30, 2031-35, 2036-40). This allows an objective yardstick for measuring whether the impact of City-led action will be enough to achieve future emission reduction targets. It also provides flexibility, because in cases where emissions in a given year are "over budget", e.g. due to operational choice or circumstances resulting in greater fossil fuel use, as long as other years in the 5-year period are "under budget" then emissions are still on track. With fixed emission budgets, Council and residents have a clear picture and can track the rate at which actual emissions are depleting the budget, as well as whether projected future emissions will remain within budget. For example, annual emissions at the rate seen in 2021 would deplete the emissions budget meant to last for the five year period of 2026-30 in just over 3.5 years.

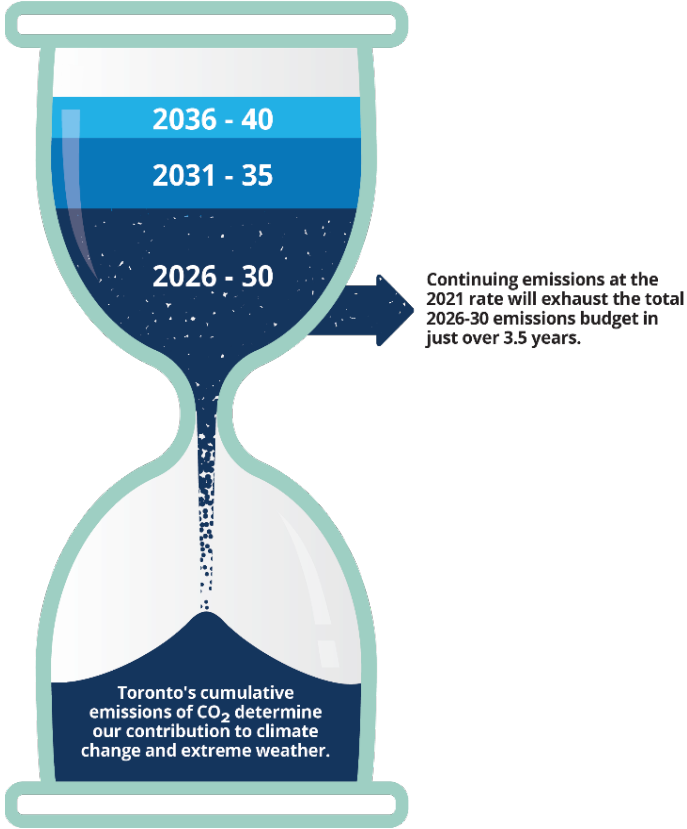


Figure 11: Emission Budgets



#### **4. Producing strategic action plans to meet milestones:**

The by-law's requirement for the City to produce action plans with required content adds a practical dimension. These plans not only serve as roadmaps for achieving emissions budgets but also ensure that goals are supported by concrete and achievable strategies, fostering a sense of purpose and direction within the community. The by-law requires at least two in-person consultations with the external Climate Advisory Group while an action plan is in development and at least one more consultation once a draft action plan has been published but before City Council has voted on it.

#### **5. Ensuring accountability through rigorous monitoring and reporting:**

By mandating rigorous monitoring and reporting, the by-law establishes a continuous feedback loop. This transparency allows community stakeholders to actively track progress, providing them with clear insights into the City's performance at reducing GHG emissions and promoting an informed and engaged community.

# CARBON ACCOUNTABILITY: ANNUAL CARBON BUDGET PROCESS

A new annual "Carbon Budget" prioritization and reporting process has been introduced to work alongside the existing financial budget process. As seen in Figure 12, starting in March of each year, the City Manager and Chief Financial Officer (CFO) issue a directive ("Action Guidance") to Divisions, Agencies, and Corporations outlining key areas for new or accelerated GHG reduction actions. These entities, with support from the Financial Planning and Environment & Climate divisions, propose ideas and develop estimates of GHG reduction and financial impact. The City Manager and CFO then conduct a prioritization screen for GHG reduction actions to be included in the upcoming year's budget.

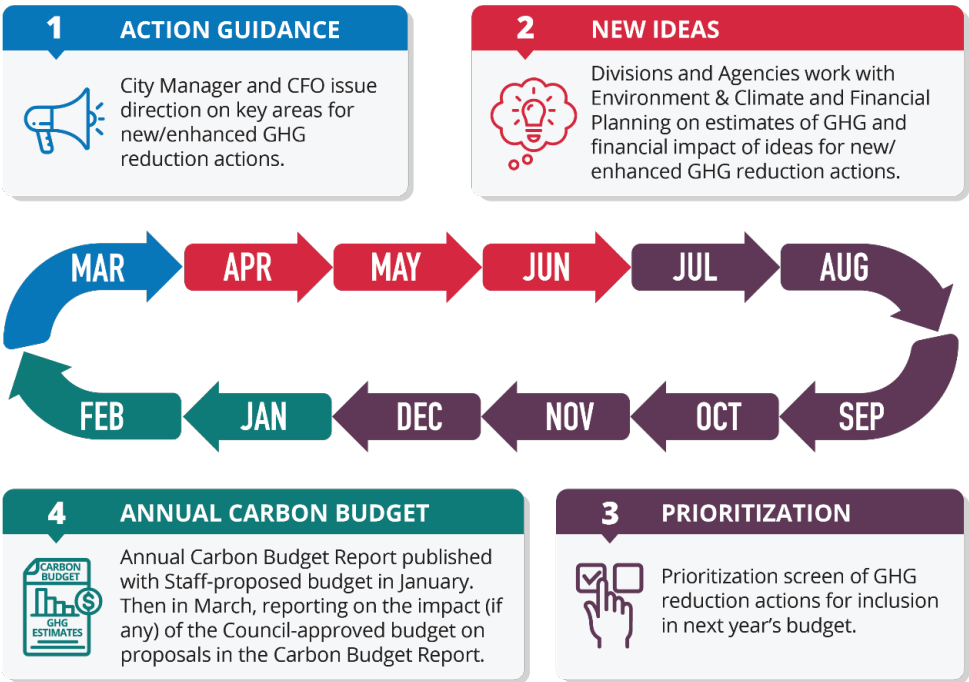


Figure 12: Annual Carbon Budget Prioritization Process

Subsequently, Divisions, Agencies, and Corporations continue refining prioritized actions, with ongoing support from the Financial Planning and Environment & Climate divisions, to enhance estimates of GHG reduction and financial impact. The final step involves the release of the "Carbon Budget Report" by the Financial Planning and Environment & Climate divisions in January of the following year (alongside the Staff-proposed Capital and Operating Budget submissions) which synthesizes the GHG impact and budgetary cost and revenue impacts of each action. Council votes on GHG reduction actions as part of budget proposals.

This new Carbon Budget process enhances GHG reduction initiatives by encouraging Divisions, Agencies and Corporations to propose new innovative ideas. It ensures thorough information on GHG and financial impacts for Council and residents during

budget approval. The approach is informed by best practices from advanced municipalities like Oslo and Edmonton, where finance departments spearhead similar annual prioritization and budget review processes.

The annual Carbon Budget process will complement the Net Zero Strategy Short-term Implementation Plan for 2026-30. Both processes will rely in a harmonized way on data from the 2024 modelling update (see “Update of Net Zero Modelling Scenarios” below) and will be overseen in coordination by Environment & Climate division staff.

## **UPDATE OF NET ZERO MODELLING SCENARIOS**

In 2024, the Environment & Climate Division will be conducting an update of the Net Zero modelling, including updates of the Business-as-Planned and Net Zero by 2040 scenarios. The update will be completed using Environment & Climate’s internal “Local Emissions for Net Zero (LENZ) Modelling Suite – Toronto” or LENZ model, which was developed to allow the City to be more responsive and adjust climate actions and implementation to an ever changing local, national and global context. LENZ aims to support the City to actively test the implementation options of the net zero transition pathway and refine climate policies and programs as needed with cost optimality considerations, as well as provide insights on the operational aspect of the electricity grid. The 2024 modelling update will use current data and an-up-to date policy context to model those actions that need to be taken in order to reach our 2030 and net zero by 2040 climate goals. The results of this modelling exercise will inform the work of Environment & Climate, and divisions and agencies across the City, as we look to develop the next iteration of the Net Zero Strategy Short-Term Implementation Plan (2026-2030) and the Carbon Budget prioritization process.

## **NEXT NET ZERO STRATEGY SHORT-TERM IMPLEMENTATION PLAN (2026-2030)**

Throughout 2024 and into early 2025, the Environment & Climate Division will lead the development of the next Net Zero Strategy Short-Term Implementation Plan (2026-2030). Given this plan will be the last opportunity for Toronto to reach its 2030 climate goal of a 65% reduction in greenhouse gas emissions, this plan will identify the key actions, accelerations and funding requirements needed to meet this goal. This Plan, due in Q2 2025, will provide robust and comprehensive analysis on how the City’s progress can be reinforced and accelerated to meet Council’s 2030 and 2040 emission goals. It will be

informed by discussion and review with the Climate Advisory Group, Joint TransformTO Implementation Committee, and the Climate Leadership Table. Importantly, the Short-Term Implementation Plan (2026-2030) will draw insight from new modelling tools that Environment & Climate will use to create updated emission scenarios, in consultation with all relevant City Divisions and Agencies.