



Summary CAG-Staff Workshop

TransformTO Net Zero Strategy – Brainstorming for next Short Term Action Plan (2026-2030)

May 31, 2024 9:00 am – 1:00 pm

Canoe Landing Community Recreation Centre
45 Fort York Boulevard

Overview

On Friday, May 31, 2024, the City of Toronto hosted a workshop that brought the Climate Advisory Group (CAG) together with staff from various City Divisions and other public agencies to begin brainstorming on what could go into the next Short-Term Action Plan to help put the City on track to meeting the 2030 and 2040 goals identified in the TransformTO Net Zero Strategy.

50 people participated in the workshop, including Climate Advisory Group (CAG) members, staff from the City's Environment and Climate, Economic Development and Culture, Transportation, Planning, Solid Waste Management, and Corporate Real Estate Management Divisions, as well as staff from Toronto Hydro and the Toronto Transit Commission, and consultant teams supporting the City's facilitation of the CAG (Groundswell) and emissions modelling (Esmia). See Attachment A for the Participant List and Attachment B for the Workshop Agenda.

This summary was written by Nicole Swerhun from Third Party Public (retained by the City of Toronto to support the workshop), with contributions from all participating Third Party Public facilitators, including Stephanie Quezada, Ian Malczewski, Yulia Pak, Matthew Wheatley, and Pragya Priyadarshini. A draft of this summary was distributed to participants for their review prior to being finalized. One suggested clarification was received and it has been incorporated.

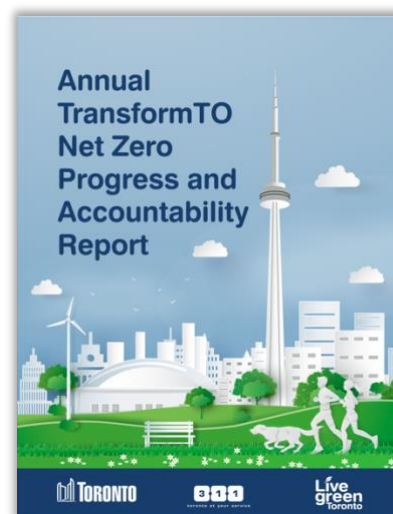
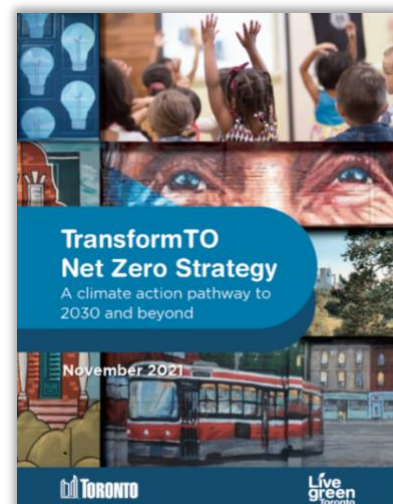
Setting up the discussion



The workshop agenda focused first on identifying and reflecting on some of the key considerations for the 2026-2030 Action Plan, including (but not limited to):

- Feedback shared at the CAG workshop on May 3, 2024, which included reflections on progress to date related to Net Zero.
- 2022-2025 TransformTO Net Zero Strategy Short-term Implementation Plan. The plan included 30 key actions in 7 key sectors, with several sub-actions.
- How over 20 City divisions, agencies and corporations play important leadership roles in the development and implementation of the TransformTO Net Zero Strategy.
- Understanding the City's authority, influence, and advocacy. This supports grouping of potential actions into categories where the City can lead by example, where the City can compel others (e.g., through regulation), and where the City can advocate and encourage others to do things (e.g., at the provincial and federal levels).
- The timeline for development of the 2026-2030 Short Term Action Plan and how decisions are made.
- The City's carbon accountability process.
- The role of technical modelling in informing the next Net Zero Short Term Action Plan.
- March 2024 Annual TransformTO Net Zero Progress and Accountability Report and its appendices, including: Appendix 1.1 Summary of implementation progress to date for the Short-term Implementation Plan 2022-2025 of the TransformTO Net Zero Strategy; Appendix 1.2 Summary of implementation progress to date on responding to City Council directions on the TransformTO Net Zero Strategy; and Appendix 1.3 GHG Reduction Actions in 2024 Budget.

All slides shared during the workshop, including those that set up the discussion, are included as Attachment C.



Modelling

The City of Toronto is working with [ESMIA](#) to inform the next TransformTO Short Term Action Plan (2026-2030) using the City's in-house modelling tool, Local Emissions for Net Zero (LENZ) modelling suite. Marvin Quitoras from the City of Toronto and Kathleen Vaillancourt from ESMIA introduced workshop participants to the modelling work underway.



There were several questions following the modelling presentation, which are summarized below. Responses are noted *in italics*, and unless otherwise noted, responses came from Kathleen.



- The model will be optimized to achieve the least cost, but it's important to identify the least cost to who? Individuals? The City? Industry? *It calculates total cost to the system as a whole. The model will always identify the approach that is the least cost to the entire city.*
- There are multiple possible baselines (e.g., an oil crisis) but there are some limitations to the fact that this project considers only one baseline. How do you deal with that? *We don't see that as a problem because the model is used to run multiple scenarios, which can give us the information needed. Ultimately, the solution will not be impacted a lot by the baseline.*
- There are constraints from the Province of Ontario regarding the amount of land that can be used for solar. Is that a constraint that can be captured in the model? *Yes, there are many things that can be done with the model, depending on how the City chooses to use it.*
- Does the model account for things like the cost of green technology dropping over time, increasing accessibility? *Yes, the model has the capacity to account for this.*
- Are we working to achieve a percent reduction in GHG emissions by a certain date? Or are we working to achieve an essential target? What does the model support? *It can do both.*
- Are we calculating all waste generated by Toronto or only the waste going to City-owned landfill sites? For example, if a landfill is not located in Toronto but receives Toronto waste, does it count in the model? We will need to be clear on this. *LENZ captures waste emissions as per the [City's sector-based emissions inventory \(SBEI\)](#). Yes, a landfill receiving Toronto waste but is not located within the geographical boundary of Toronto is included (e.g., Green Lane). The City's SBEI and LENZ follow an international standard to quantify emissions, [Global Protocol for Community-Scale Greenhouse Gas Inventories \(GPC Protocol\)](#).*
- Who will have access to use the model? *City Divisions and City agencies own the data, but the source code is entirely open. For more information about the model, please access [LENZ official webpage](#).*

All slides shared during the modelling presentation are included in Attachment C.

Sector-Specific Brainstorming

Following the first hour of workshop set-up, the remaining three hours of the meeting were dedicated to small group and full room discussions. Participants were organized into the following six sectors:

- Existing Buildings
 - New Buildings
 - Transportation
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- Renewable and Low Carbon Energy
 - Waste and Circular Economy
 - Communications and Engagement

Each sector had a dedicated table that included a mix of CAG members, City staff, agency staff, and consultants, along with a Third Party Public facilitator. All tables focused on answering the same five questions (sent in advance of the meeting for participants to consider), including:

1. What has worked well to date in achieving emissions reductions in this sector? What insights do you have about why?
2. What are 2-3 big challenges in achieving GHG emission reductions in this sector?
3. What critical actions or policies do we need to think about prioritizing to help reach the 2030 and 2040 targets in this sector, and why?
4. What tools and powers (existing and/or new) could the City use to encourage and/or compel others to help achieve the GHG emissions reductions required to achieve 2030 and 2040 targets?
5. What additional information could support the CAG and City staff in developing the next Net Zero Strategy Short Term Implementation Plan?

Each table had print materials to reference as/if needed during the discussion, including a copy of the TransformTO 2022-2025 Short Term Implementation Plan, a copy of the Annual TransformTO Net Zero Progress and Accountability Report along with Appendix 1.3 to the Report (2024 Budget), and a Draft Reference Sheet (see Attachment D) created by the facilitation team to support a one-page overview of the 2024 Budget items along with an indication of the City of Toronto's role in implementation (i.e., Lead by Example to address Corporate Emissions, items where the City Compels others to take action, and items where the City advocates/encourages others to act).

There were two rotations of about 45 minutes each at the tables. Notes taken during the first rotation were reviewed with participants at the start of the second rotation, so that discussion could build on (and/or respond to) points that had already been shared. Some participants chose to stay at the same sector discussion table for both rotations, while others chose to move.

The notes on the following pages were written by each small group facilitator and summarize a compilation of the feedback shared during both rotations. Some tables covered all discussion questions, while others focused on a subset of the questions. Where a question is not included in the summary notes from a sector, it means that the question was not a significant focus of discussion.

Note that there was a lot of common ground among perspectives shared, however not every small group participant was asked if they agreed with every point raised. As a result, the summaries from the small tables should be considered a reflection of the range of opinions shared, and not consensus.

EXISTING BUILDINGS

Facilitator: Yulia Pak



1. What has worked well to date in achieving emissions reductions with existing buildings? What insights do you have about why?

- *Loan program for residential buildings.* It has been the most visible program, with the widest reach and the most funds used.
- *Carbon budget as an internal City tool.* The carbon budget has been an effective tool to broaden mandates of different City divisions and put pressure to do more within the City regarding GHG emissions reductions.
- *Existing Buildings Net Zero Strategy.* The momentum of TransformTO has helped elevate and bring to the front the Existing Buildings Strategy with the Net Zero focus.

2. What are 2-3 big challenges in achieving GHG emission reductions with existing buildings?

- *A delinked, compartmentalized approach to Net Zero solely focused on carbon emissions is challenging.* It undermines a more comprehensive, holistic view to allow for more energy-efficient solutions. Participants shared examples of why this approach is problematic, including:
 - ISO treats heat pumps as distinct from energy efficiency measures related to building envelopes.
 - Embodied carbon and operations-related carbon emissions are not part of the definition of Net Zero but are key metrics for retrofits.
 - There is no consideration of electricity and how to best manage peak usage, taking into account electricity capacity and production. Similarly, electricity needs inside the buildings are often considered separately from electricity needs outside the building (e.g. EV charging stations).
- *There are no energy/carbon emissions standards to point to right now for retrofits and there are no benchmarks for buildings.* As a result, many opportunities are missed, and it contributes to the general confusion as to what could / should be done during retrofits in terms of reducing carbon emissions.
- *There is a general lack of awareness and education about Net Zero.* People do not know why achieving the Net Zero scenario is so important; and out of those who know, many do not understand what it entails and how to contribute to it.

- For many homeowners in the city, contributions to achieving Net Zero might be a bit of a shock; and it is a big political risk.
- Currently, the energy advisors are the only Net Zero specialists that can help homeowners, architects, and design teams to find and integrate Net Zero solutions to homes. A limited number of Net Zero energy advisors creates a “bottleneck” in creating Net Zero homes.
- Many do not know which programs they could qualify for. There is no one-stop shop for consumers to understand which loans, rebates, and other programs they could be eligible for.
- *Achieving the Net Zero goal can be challenging in terms of affordability and business competitiveness.* Transition to low-carbon technologies often requires significant upfront investments, which can impact the competitiveness of smaller companies with limited capital. On the other hand, the cost of doing nothing right now can be high in the future, and that is not well calculated and communicated now.
- *Enforcement for existing programs and policies is lacking.* For example, there is a labelling building by-law, “Building Energy Disclosure and Benchmarking”, that is not currently enforced. Owners of buildings of over 50,000 sq ft are required to report their energy consumption and GHG emissions to the City annually. However, the penalties are not enforced and building owners are not motivated to make significant improvements.

3. What critical actions or policies do we need to prioritize to help reach the 2030 and 2040 targets with existing buildings, and why?

- *There is a need for a more integrated approach, where the Net Zero targets for the existing buildings are integrated with renewable and low-carbon energy, as well as engagement and communications.*
 - There needs to be a mind shift that what has worked up until now will not work anymore.
 - The holistic approach should focus on energy efficiency as opposed to just carbon emissions reduction. The approach should consider the whole building and what’s around it together – heat pumps should not be separated from the building envelopes; energy consumption should look at electricity consumption and thermal capacity and should take into consideration energy needs around the building as well.
 - The City Council should direct staff to redefine Net Zero to include embodied carbon.
- *Emissions Performance Standards (EPS) should be prioritized.* EPS will help address many of the identified challenges. Things to consider include:
 - The benchmark for buildings needs to measure intensity in absolute terms, not improvement by percentage. This will also help with modelling.
 - Existing programs and policies that could/would directly use the EPS should also be reviewed and prioritized (e.g., the Capital Replacement Program and the labelling by-law). Currently, condos are required to have Capital Replacement Plans. The City could make a requirement that all Capital Replacement Plans achieve certain EPS outcomes (but the City mustn't

mandate/regulate the measures on how to do it). The building should be labelled to discount building value if the building does not meet certain standards, which will hurt the ownership and be a good motivation for change.

- There was a difference of opinion about making the EPS as simple as possible (e.g., equipment change – yes/no). Some thought it would help to fully socialize and standardize the EPS across the City, and some thought simplicity might make it less useful in reporting, understanding the data, and achieving the goals.
- The revenue from the enforced Emission Performance Standards should be put back into communities as “carrots” to increase engagement, education and to support action in Toronto communities.
- *The existing buildings strategy should focus on Net Zero Transition Plans, replacement and reporting.* It is important to focus on the development of Net Zero transition plans that recognize the EPS is still in development, that the replacement timeline for HVAC is different from the building envelope, and that the work on the building envelope is far more expensive.
- *It is important to focus on awareness and education campaigns* to support Existing Buildings Net Zero policies and programs, including the EPS.
 - It is important to understand the different audiences and develop communication that speaks directly to what is important to them. For example, what’s in it for a homeowner? What’s in it for a tenant? What kind of information would the building managers need to know? Small commercial owners and operators would have different needs and priorities from large industrial stakeholders.
 - It is important not just to educate but also to engage communities on a neighbourhood level. Start by asking “What do the residents want and need”, then connect it to Net Zero. Engagement is needed to help with a change in understanding, perception and residents’ performance reflected on a utilities report (taking action).
 - Public messaging needs to focus on the benefits of Net Zero and provide realistic costs of not doing anything.
 - Consider focusing on towers rather than single-home residential.
 - Create a road map that identifies what kind of investments would be required in 5, 10, or 15 years to achieve the Net Zero goal. This road map would help consumers understand how to best invest in Net Zero solutions and what to expect in the future and give reassurance that investments made today would still be useful in the future.
 - Create an online tool for architects and designers to model net zero solutions themselves. Use energy consultants for measuring and reporting.
 - Create a “one-window” webpage to help consumers understand which programs they qualify for if they do certain energy-related upgrades to their spaces. *Note added by the City after the meeting: This exists to some degree on the City’s website [here](#).*

- *It is important to understand long-term financing to retrofit all existing buildings and all associated costs, including the social cost of carbon.*
 - It is important to remember that for many consumers the bottom line is going to be how much it costs and what they would get out of it. So long-term financing of converting existing buildings, particularly bigger commercial buildings, should be an important consideration for the City. Alternative models should be explored to ensure the achievement of the Net Zero goal by 2040.
 - It is also important to remember that the financial cost is not the bottom line for all. The City needs to start accounting for the social cost of carbon, which is now not included in the public discourse and public policy. The City needs to start asking “How much is it worth spending to avoid the social cost of carbon?”
 - The City should start asking “Who is best equipped to lead this change?”, “Where does the social cost of carbon get allocated to?”. The answer should not be “voting population” (due to political risk) or “marginalized communities”.

4. What tools and powers (existing and/or new) could the City use to encourage and/or compel others to help achieve the GHG emissions reductions required to achieve 2030 and 2040 targets?

- The City should explore more ways to require rather than encourage when it comes to the existing buildings. For example, the EPS should follow the Toronto Green Standard approach, where certain standards are required. The TGS approach has proven to be a great success.
- To be successful, penalties for not meeting the EPS need to be clear and enforced.
- City planning policies could be updated to better support the implementation of the EPS for existing buildings.

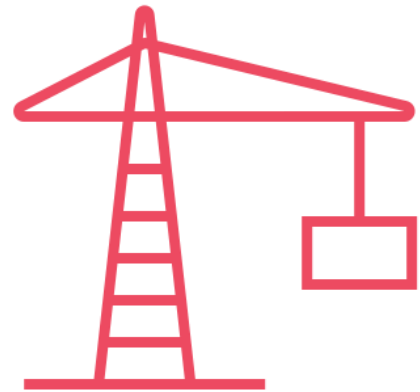
5. What additional information could support the CAG and City staff in developing the next Net Zero Strategy Short-Term Implementation Plan?

- *Interest in understanding the timeline of key milestones related to the EPS.*
- *Advice not to reinvent the wheel* and look at what works in other countries when it comes to retrofitting existing buildings to Net Zero standards (e.g., alternative financing models in Europe, the Tokyo Cap-and-Trade Program for larger buildings, etc.).



NEW BUILDINGS

Facilitator: Matthew Wheatley



1. What has worked well to date in achieving emissions reductions with new buildings? What insights do you have about why?

- *Enforcement of the Toronto Green Standard.* The Toronto Green Standard works well because it is achievable and enforceable.
- *Incentives connected to new construction.* Any incentives / rebates that are tied to new sustainable / green builds. These incentives and rebates both encourage and compel the development industry to focus on sustainability.
- *Working well doesn't mean a problem is totally solved.* Even when things are working well, more can be done to make improvements.

2. What are 2-3 big challenges in achieving GHG emission reductions with new buildings?

- *Silos of policy and decision making within the City.* The City's departments and divisions are often disconnected, which results in competing policies and standards. The City's finance department is often a driving force in policy development and decision making; they need to be part of the process but not the only voice and/or overriding voice.
- *Push back from the development community when new / higher tiers are introduced through the Toronto Green Standard.* There is a constant struggle to find a balance between environmental and financial sustainability when it comes to new tiers and levels of the Toronto Green Standard.
- *A lack of education and understanding of how to achieve environmental targets.* There were mixed opinions about whether technology is a barrier to achieving targets. Some felt very strongly that technology is not an issue and that if information is shared properly there shouldn't be any issues achieving targets. Others said technology and cost still present barriers.
- *Systems not working as planned.* Environmentally sustainable design, construction, and operations are often not achieved as planned.
- *Embedded carbon not having a return on investment.* The development industry is not receiving credit / financial incentives for embedded carbon and therefore is missing out on financial returns.
- *TransformTO targets are often not related to intensification targets.*

3. What critical actions or policies do we need to think about prioritizing to help reach the 2030 and 2040 targets with new buildings, and why?

- *Any and all policies that compel the development community to meet sustainability targets.*
- *Making sustainability a key part of the equation.* Currently sustainability is treated as something extra, like “icing on top of the cake”. Sustainability needs to be treated as key ingredient, not something extra.
- *Education and information sharing.* There needs to be a bigger focus on sharing information and providing clear instructions on how new builds can meet TransformTO targets.
- *Making green new builds financially sustainable and attractive to the development community.* There needs to be a connection between development charges (and rebates) and intensification targets.
- *Fixing the electrical grid.* There is a need to increase the capacity of the electrical grid to make it easier to provide electrical power to new buildings, especially to remove reliance on natural gas.

4. What tools and powers (existing and/or new) could the City use to encourage and/or compel others to help achieve the GHG emissions reductions required to achieve 2030 and 2040 targets?

- *Expanding policies that compel sustainable development.* This needs to go beyond expanding the Toronto Green Standard. Other municipal and provincial policies (e.g. the Building Code) need to work in tandem with the Toronto Green Standard to achieve the greatest impact.
- *Create educational tools that are easy to access, understand, and implement.* The information and technology exist to develop new buildings that will meet the TransformTO targets. The barrier is a lack of awareness and limited access to information.
- *Rebates that connect to intensification targets and Low Carbon Infrastructure (LICs).* Development charge rebates should be provided when intensification targets are being met and/or when LICs are being used. This can help the development industry see a return on investment for embedded carbon.



TRANSPORTATION

Facilitator: Ian Malczewski



1. What has worked well to date in achieving transportation emissions reductions? What insights do you have about why?

- *Removing automobile capacity and supporting alternative transportation modes.* There have been several initiatives that have helped remove cars from City streets and bolstered cycling, transit, and other modes. These types of efforts are critical to reducing emissions from cars. Examples include:
 - removing traffic lanes and reducing speed limits;
 - work-from-home policies (City and private-led);
 - increased interest and political support for transit priority (like RapidTO) and micromobility;
 - expansion of cycling infrastructure and Bike Share (including a 2022 [Infrastructure and Environment Committee direction](#) to protect existing or future bike lanes from electric vehicle charging infrastructure); and
 - removal of parking minimums in land use planning (such as at Villiers Island).
- *Increased adoption and popularity of electric vehicles.* Public interest in and support for electric vehicles has been increasing, aided in part by government rebates.
- *Public infrastructure spurring private change.* The City's installation of bike lanes has led some private actors to make supportive investments. For example, after the City installed bike lanes on University Avenue, University Health Network hospitals installed significant bike parking.

2. What are 2-3 big challenges in achieving GHG emission reductions the transportation sector?

- *Slow pace of rolling out alternative transportation modes.* While the City has made good progress rolling out bike and transit priority lanes, the pace of this change is too slow. Factors contributing this slow rollout include:
 - the pervasiveness of car culture (including expectations that public spaces should prioritize private cars over other uses);
 - a lack of political will and money to take bolder steps;

- missed opportunities to piggy-back on construction to add infrastructure (such as adding bike lanes during TTC streetcar track rehabilitation); and
- disproportionate influence of politically powerful homeowners and car owners. Efforts to prioritize less emissions-heavy transportation modes are difficult since politicians face intense local opposition to changes seen as inconveniencing private cars (even though these changes would help address congestion and reduce emissions).
- *Challenges with electric vehicle adoption.* The slow rollout of electric vehicle charging infrastructure is limiting people's comfort shifting from gas cars to electric. While electric vehicles are helpful in reducing emissions, too many see them as "green" without understanding that they still contribute to emissions and environmental harms by:
 - prioritizing cars over other, less emissions-heavy transportation modes;
 - increasing demand for emissions-heavy power generation like gas plants (a problem that is hard for the City to address since the Province is responsible for power generation); and
 - generating demand for more front yard parking to support private electric vehicle charging, which can remove green space.
- *Public transit being unreliable and perceived as unsafe.* With public transit being seen as unreliable and unsafe, people are less likely to switch from using their cars.
- *Lack of integration and connections across different modes.* Including missing integration between transit and cycling, such as "last mile" connections between Bike Share and TTC.

3. What critical actions or policies do we need to think about prioritizing to help reach the 2030 and 2040 targets in this sector, and why?

- *A mode shift and/or intermodal integration plan.* This plan(s) could integrate and update previous (but now old) strategies like the City's Walking Strategy and Cycling Strategy. It could include actions focused on:
 - supporting and increasing e-bike and micromobility usage (like a strategy to add public chargers for e-bikes);
 - marketing alternatives to private car ownership;
 - making transit a more attractive option;
 - encouraging satellite parking garages near transit stations in surrounding municipalities to encourage those visiting Toronto to use transit instead of their car;
 - enabling more people to combine non-automobile modes (like bikes and transit) in their trip; and
 - thinking holistically about bike parking (which is siloed across different Divisions and agencies, leading to inconsistent and insufficient bike parking).

- *More street redesign and reconstruction projects* to help discourage car use by removing parking, narrowing car lanes, and building infrastructure to support alternative transportation modes.
- *More investment in public transit*, including scaling up transit priority projects and reducing or removing TTC fares (and thereby getting rid of costly fare enforcement officers who disproportionately harm marginalized riders).
- *Establishing an intergovernmental agency or working table* to tackle strategies and funding for transportation (like a Waterfront Toronto for transportation). This table could help think about multi-modal transportation from both local and regional perspectives. It could also work to address inter-jurisdictional issues like regulation of e-bike batteries. Poor quality batteries have led to fires in transit vehicles and garages, limiting their uptake. Regulating these is a Federal responsibility (likely through import controls), and while municipalities have advocated for new regulation, it has not been a priority for the Federal government.
- *Continued focus on land use tools* to help remove cars from the road, building on the success of efforts like removing parking minimums in new development.
- *Develop a Toronto-led renewable energy plan* since the City's move to electrification will be more impactful if power generation does not produce heavy emissions (and the Provincial government is relying on natural gas power generation).
- *Align different climate action plans of different agencies*, including the City, TTC, and others. If these plans are all siloed, they are less likely to be effective than if they were unified and aligned.

4. What tools and powers (existing and/or new) could the City use to encourage and/or compel others to help achieve the GHG emissions reductions required to achieve 2030 and 2040 targets?

- *A new grant, rebate, or other incentive program to support e-bike uptake.* Rebate programs have helped encourage adoption of technologies like heat pumps and electric vehicles. E-bikes are cheaper than these but more expensive than traditional bikes, so a grant program could be a cost-effective way to encourage uptake. The City could also explore a low-income Bike Share membership to support broader uptake.
- *A new approach to identifying and building street redesign projects.* Right now, the City is limited in the amount of street redesigns it can do because these types of projects are often connected to state of good repair work. A new mechanism to initiate street redesigns outside of state of good repair could have a big impact on accelerating the pace of change. The City could also revisit its consultation requirements when reducing lanes – needing to consult a community when removing even a single parking spot can slow down progress. Efforts like these would also help support the City's Vision Zero Plan.
- *New programs and fun activities and events* to market transportation alternatives and any associated grants and incentives (similar what's already being run through City's Live Green Toronto program).

- *Existing municipal ownership of roads.* The City could more boldly assert its ownership of roads to affect changes that would reduce car dependency. For example, there is a public perception that publicly owned spaces like the curbside “belong” to homeowners to park their cars, and fear of being perceived as taking away something that belongs to them means the City is sometimes less bold in making changes.
- *Existing revenue tools to raise funds to support emissions reduction efforts,* like the vehicle registration tax, a municipal sales tax.



RENEWABLE AND LOW CARBON ENERGY



Facilitator: Nicole Swerhun

1. What has worked well to date in achieving emissions reductions through use of renewable and low carbon energy? What insights do you have about why?

- *The mandate to get off coal.*
- *District heating, including wastewater heating.* Both [Toronto Western Hospital](#) and [The Well](#) have systems.
- *Solar photovoltaic windows have been in use at [Harbourfront Centre](#) for years.*
- *The Province of Ontario has acknowledged, for the first time, that Toronto needs a third transmission line.* Clarification added by a participant after the meeting: The Province had recognized that a third transmission line was required for Toronto approximately 15-20 years ago, and the Copeland Transformer Station was built, in part, to address the need for a third line.
- *There are many programs and initiatives that have proven successful at reducing emissions.* Several examples were identified, though participants said that all of these have unfortunately ended or been cancelled, such as:
 - energy conservation and demand management programs (e.g., such as those that led to solar on school roofs);
 - labelling appliances and equipment under the EnergySTAR program;
 - Feed-In Tariff (FIT) projects;
 - Grant programs for renewable energy (\$5,000 from federal government); and
 - Toronto Hydro “peak saver” program that had thousands of people signed up.
- *The industrial, commercial, and institutional (ICI) sector is doing well with conservation and helping to shift demand.*
- *The process to identify City lands for large scale solar and energy storage is underway.*
- *The Toronto Parking Authority and Toronto Hydro have worked together on solar energy projects.*
- *City of Toronto team members have said that their relationship with Toronto Hydro is getting stronger* when it comes to the time it takes to connect new renewable infrastructure to the grid.
- *Copeland Transformer Station, the first underground station in downtown Toronto* (under the Roundhouse building where Steam Whistle Brewery is located), helped increase electricity capacity / resiliency in the downtown core.

2. What are 2-3 big challenges in achieving GHG emission reductions through renewable and low carbon energy?

- *Renewable energy initiatives are happening individually, but the efforts are not integrated.*
- *With the mandate to get off coal, it now means that we deal with more natural gas emissions. For example, the Port Lands Energy Centre generates emissions.*
- *Toronto is running out of space for large scale energy storage.*
- *Programs and initiatives that were successful at reducing emissions have ended or been cancelled, such as:*
 - energy conservation and demand management programs;
 - labelling appliances and equipment under the EnergySTAR program;
 - Feed In Tariffs (FIT);
 - Grant programs for renewable energy (\$5,000 from federal government); and
 - Toronto Hydro “peak saver” program that had thousands of people signed up.
- *The Renewable Energy Act limits the amount of ground that can be used for ground-mounted solar. This creates a constraint, which is also linked to how the City funds net-zero projects. There’s an opportunity for a procedural change internally at the City to address this.*
- *The City has issues with resiliency of the grid.*
- *Physical infrastructure can be a challenge because existing buildings are often not designed to support weight of snow AND weight of solar.*

3. What critical actions or policies do we need to think about prioritizing to help reach the 2030 and 2040 targets through renewable and low carbon energy, and why?

- *Toronto needs an updated/new Sustainable/Renewable Energy Strategy/Plan that is integrated. Several core elements to be considered when developing that strategy were identified, including:*
 - Taking a Toronto-wide look at low carbon land use and network opportunities, so that Toronto identifies where it makes sense to locate what types of renewable energy technologies, including solar thermal. For example, identifying opportunities to locate large scale energy storage infrastructure (likely need 5-10 acres) in a way that’s compatible with other infrastructure, such as underneath a warehouse or other location.
 - Considering innovations that could reduce or eliminate the need for storage facilities. Look to what [Alectra](#) is doing in Mississauga, where the system is designed to handle the storage.
 - Thinking about how the City of Toronto can best support development of the renewable energy industry, including the job training, ownership opportunities, and leading-edge technology development opportunities that support the economy and are also important to building political will and action.
 - Leveraging data in smarter ways and artificial intelligence. Lots of small companies are working on this.

- Revisiting opportunities for offshore wind power. When research was conducted into the potential for offshore wind power in the area between the Leslie Street Spit to Whitby, the results were much better than expected. Think about using this data to revisit opportunities for wind power.
 - Investigating choices, such as modelling/thinking about efforts and resources that would go into retrofitting every building in the city versus the efforts and resources to install a new transmission line and have the results of this inform the strategy. Also consider what it would take to eliminate the Port Lands Energy Centre – for example, what is achievable if the City compelled every new building to have solar and required using of Building Integrated Photovoltaics (BIPV).
 - Expanding use of Hydrostor (using compressed air and water to store energy underwater in Lake Ontario).
 - Combining the City of Toronto's Green Roof program with solar opportunities. They support each other, helping to bring resilience (through solar) and cooling (one function of green roofs).
 - Exploring opportunities for smart grid technologies (e.g., smart thermostat at homes). These technologies allow homeowners to program their energy use so they contribute fewer emissions and/or consume less energy during off-peak times. There are examples from Europe where people are even paid to use energy at certain times.
 - Thinking about who pays and how. Explore options such as whether there is the potential to pay people to turn-off their power during peak hours, which costs money up-front but could generate money over the long-term.
- *Toronto Hydro needs a Utility Transformation Plan* that includes distributed storage and energy markets. Right now, the utility sells to the user. Toronto can think about a multi-modal distribution system where there are several buyers and sellers responding when energy is needed.
 - *We need pilot projects to overcome NIMBYism.* Rapid demonstrations are one approach to showing that new initiatives are not an issue. At same time, it's important to avoid "pilot-itis" where pilots are successful but then don't get implemented long-term.
 - *Require transparency from private utilities, like Enwave.* Right now, there is no regulatory oversight with price setting. Price transparency is needed, along with thinking about how to price thermal energy properly. This will be especially necessary as low carbon systems get expanded.
 - *Revisit how the City funds net-zero projects* to bypass the barrier created by the *Renewable Energy Act* limits on the amount of ground that can be used for ground-mounted solar. There's an opportunity for a procedural change here.
 - *Toronto Hydro and Toronto Parking Authority could develop an integrated solar parking facility*, with shaded parking lots covered in solar panels

WASTE AND CIRCULAR ECONOMY

Facilitator: Pragya Priyadarshini



1. What has worked well to date in achieving emissions reductions related to waste and the circular economy? What insights do you have about why?

- *Increased opportunity to build up a circular economy based approach.* The City as well as the community are starting to think about waste as a consumption issue and focusing on sustainable consumption of waste. This provides an opportunity to accelerate the move towards a circular economy.

2. What are 2-3 big challenges in achieving GHG emission reductions related to waste and the circular economy?

- *Public and private waste management are not governed under a consistent policy landscape.* Different policy landscapes and waste management processes for public and private actors lead to confusion about the processes, and to lack of consistency in data collection – for example, it is not clear what counts towards City managed waste, diverted waste, etc.
- *There is irregularity in how different landlords approach waste management.* Community members report that their landlords, such as those in Multi Residential Buildings do not follow City recommended waste management process, taking away the opportunity and resources for the tenants to manage and separate waste properly. This increases chances of incorrect waste disposal and contamination.
- *Communities do not have clarity on the City's overall waste management processes and their role in them.* This leads to different people following different waste management practices, and many being discouraged to follow the residential waste management guidelines.
- *It is not clear what counts as emissions generated by Toronto,* and in cases where goods (like food, construction materials, etc.) are produced outside of Toronto, the actual emissions that took place in processes outside Toronto are not counted. This leads to inaccuracy in data, overall understanding of the emission numbers, and lack of adequate actions to reduce emissions.
- *Pathways to Net Zero are not clear to the different City divisions,* due to lack of concrete TransformTO targets and clear directives from City Council.

- *Within the City, conversations about waste, circularity, and emissions are currently siloed*, which leads to different divisions and teams not knowing or understanding the work that's been done by other teams.
- *There are implementation gaps between City-led climate policy and actions* due to insufficient resources provided to the Environment and Climate division and their resulting limited capacity.
- *There are competing priorities in policy directives from top-down at the City*, with lack of clarity on how to evaluate contradictory policy directives.
- *Construction waste management is a major challenge in the city*, with no clear directives on how to reduce or manage this waste.

3. What critical actions or policies do we need to think about prioritizing to help reach the 2030 and 2040 targets in this sector, and why?

- *Need to take a systems approach towards waste management in many ways*, including:
 - Thinking about waste in a circular way. It is important to approach waste also as a consumption issue and a design issue and move towards a circular economy approach to waste management, such as managing construction waste through promoting adaptive reuse of buildings.
 - Having consistent policies and data collection processes for waste generated and managed by different actors.
- *Need for a clear process for residential waste management and its enforcement, and for public education on the process*. There needs to be a clear process so that there is no confusion in the community about the recommended waste management practices. Further, when a process is in place, there needs to be an extensive public education push to ensure the community is aware of the process and trusts it.
- *Need for concrete and ambitious TransformTO targets*, which encourage different sectors towards Net Zero, and are clear to everyone.
- *Need for clear Council direction on the real TransformTO targets*, which encourage different City divisions to act towards emissions reduction, and ensure that the divisions can identify resources needed to reach Net Zero.
- *Need to create a 'Toronto Model' for industrial symbiosis*. This would help convene industries and incentivize them towards creating a circular approach to production and waste. A participant provided the example of Kalundborg Symbiosis in Denmark as a model which Toronto should aspire to.
- *Need to create more climate change and emissions expertise in the City*, with subject matter experts who can be embedded into different divisions and facilitate inter-divisional coordination.
- *Need to embed equity in all emissions reduction and waste management conversations* and consider how the measures taken to reduce emissions effect equity-deserving communities.

- *Need for a workforce culture change in the City, to make climate a cross-divisional priority, and to make climate action a public service by recruiting more subject matter experts.*
- *Need for policies and guidance on how to accurately track emissions throughout the lifecycle of a product or service, to ensure the reductions targets are well-informed and accurate.*

4. What tools and powers (existing and/or new) could the City use to encourage and/or compel others to help achieve the GHG emissions reductions required to achieve 2030 and 2040 targets?

- *City's Circular Economy Roadmap can encourage systems thinking about waste as a consumption issue. The roadmap is currently in development and will result in a concrete strategies and goals to move towards circularity, including some concrete TransformTO goals.*
- *The City should use bylaw powers and education to bring everyone under the jurisdiction of City waste management services.*
- *The education on waste management needs to come from many actors, including the City, province, and private actors responsible for waste management. Some actions which participants said could encourage community members towards proper waste management, are:*
 - *sharing good stories about waste, such as the creation of Leslie Spit; and*
 - *Involving people in the process, through programs such as the Free Compost program, which has seen enormous success in Toronto.*
- *Clear directives from City Council on emission reduction targets and priorities can help different divisions understand what their role is and what resources they would need to reach Net Zero.*
- *The City should promote or compel adaptive reuse in construction, to reduce the sources of construction waste.*
- *The City should recruit more subject matter experts focused on emissions, to increase the capacity of City divisions to work on TransformTO targets.*
- *The City should encourage communities to think about waste in a circular way, through public education initiatives.*
- *City division heads and directors should have increased accountability to attain and coordinate cross-divisional climate change initiatives and achieve corporate emissions reduction targets.*
- *Provide Environment and Climate division more resources, to increase their capacity for doing cross-divisional work and filling policy implementation gaps that currently exist. Climate change is an emergency, and the resources provided should reflect that.*

COMMUNICATIONS AND ENGAGEMENT



Facilitator: Stephanie Quezada

1. What has worked well to date in achieving emissions reductions through communications and engagement? What insights do you have about why?

- *Framing climate change around empowerment can help motivate communities to change their behaviours.* When the narrative is framed around “we need to work together”, it inspires communities and shows why climate change matters in a bigger context.
- *The Neighbourhood Climate Action Champions program helps connect people to their neighbours.* It helps communities become engaged in TransformTO’s goals.

2. What are 2-3 big challenges in achieving GHG emission reductions through communications and engagement?

- *The challenge lies in figuring out how to replicate engagement that is done one-on-one or in small groups 3 million more times.* The question is, how can the City communicate to the masses, and make information relevant to change their behaviours? There are also disinformation campaigns that should be addressed, made by gas or oil companies that confuse the masses.
- *Some people fear climate change but have no idea how to get started on their journey to better climate behaviours.* City staff are consistently getting asked, “tell us what to do”, from both individuals and small grassroots organizations.
- *Funding remains an underlining issue for individuals, organizations, and city staff.* Those who are volunteering or participating in programs like the Champions program have the privilege and time to volunteer and participate in these community programs. Paying people to participate can encourage them change their behaviours.

3. What critical actions or policies do we need to think about prioritizing to help reach the 2030 and 2040 targets in this sector, and why?

- *Partnering with local organizations that already have people on the ground, and contact databases, is how the City can help disseminate information to communities.* These may be

groups that are not currently involved with climate advocacy, but have intersectional values, like youth groups or marginalized groups, that can learn and share information with their community. The idea is to “pile on top of each other” so you are using existing resources and not inventing something new. Additionally, these existing groups/events should have a fun component to them that makes people want to come out and participate.

- *Tailored engagement, that comes from someone a community trusts and is at their level of understanding is another way the City can engage with the masses.* Generic messaging doesn't work for all. The City can start by listing out the different types of audiences they wish to reach and from there tailor communication for them (i.e., condo boards, homeowners).

4. What tools and powers (existing and/or new) could the City use to encourage and/or compel others to help achieve the GHG emissions reductions required to achieve 2030 and 2040 targets?

- *Funding is the biggest way the City can encourage and compel others to change their behaviours.* Funding can:
 - Help small organizations that are already on the ground doing the engagement work.
 - Help people participate in meetings or events, and then engage others if their time is paid for.
 - Help City programs run and sponsor other programs.
- *Study models that are already working and don't reinvent the wheel.* Use existing groups and campaigns to help spread information at a bigger level. Additionally, Councilors and their staff should be involved in communicating about TransformTO, by using community events like Community Environment Days to communicate with their constituents.
- *Empowering communities by showing off their climate activities/behaviours is how the City can help encourage others to do the same.* This can look like:
 - Creating a neighborhood map that shows their climate goals, activities and carbon footprints which can then be displayed in local institutions like the Toronto Public Libraries or Community Centres. The more people see how their community is working towards climate action, the more it can encourage them and bring them into the fold to feel they are working together. Once working, this can be scaled to target all communities and neighbourhoods.
 - Creating a list of all initiatives run by small grassroots organizations is another way to encourage others to find how to participate and communicate in better climate behaviour. It can also help new or smaller organizations understand what is already happening, if it is working well and how they can get started themselves.
 - Consider creating a one-stop guide that communicates to individuals and organizations how they can start their climate groups / behavioural changes. This can be shared in different formats to reach people's different understandings, like through a discussion guide, street play, videos etc.

5. What additional information could support the CAG and City staff in developing the next Net Zero Strategy Short Term Implementation Plan?

Questions from the table:

- What happens to actions in the STIP that don't get completed?
- Is communication and engagement an input in the modelling?
- Does every tall building have a budget for environmental actions?



Closing Plenary Discussion

Following the reports from each of the sector facilitators, the workshop wrapped up with a full room discussion prompted by the following questions:

- Reflecting on the outcomes from the brainstorming discussions across all 6 topic areas, are there clear priorities that emerge? If so, what are they?
- Discuss prioritization of actions – what are the key emissions reduction actions? What are the supporting actions?
- What next steps would help the CAG and City staff continue working together?
- Any other comments or advice before wrapping up the workshop?



Here is a summary of what participants said:

- *We need to share what works so people do what works, at the community level.* Actions need to scale from 200 people doing something to 3,000,000. Change will come at the pace of trust. We need to talk about what people care about – benefits to them like comfort, how much money it will take and/or save, etc. There needs to be a clear, concise way to talk about this – maybe we use climate justice.
- *Actions must be coupled and integrated with economic development and the prosperity agenda – and affordability.* The financial tools of the City are totally misaligned with carbon goals (e.g., property taxes, transit funding). We should be using tools like Development Charges to incentivize where and how we want people to build.
- *We need to be talking about system transformation.* We can't assume we will always have economics based on growth. We need to transform our economic system and other systems fundamentally, and the City needs to be an enabler for that. This whole effort needs to be about change management at the highest levels. We need to look at emissions by area across the city and the cost of mitigation per capita, which links to affordability.
- *There needs to be a massive workforce development plan that focuses on the skills needed to do all this,* including integration into the apprenticeship system. We need to work synergistically with a framework that ties objectives together (like the connection between the Greenbelt and local farmers markets).
- *The lack of focus on nature-based solutions was a gap in the workshop discussions today, because there's no economy with no environment.* We won't always be getting food from California, for example, so this needs to tie into an urban food strategy and greening our city. We need to move

beyond harm reduction to well-being. We need regenerative sustainability, which connects backs to the social cost of carbon.

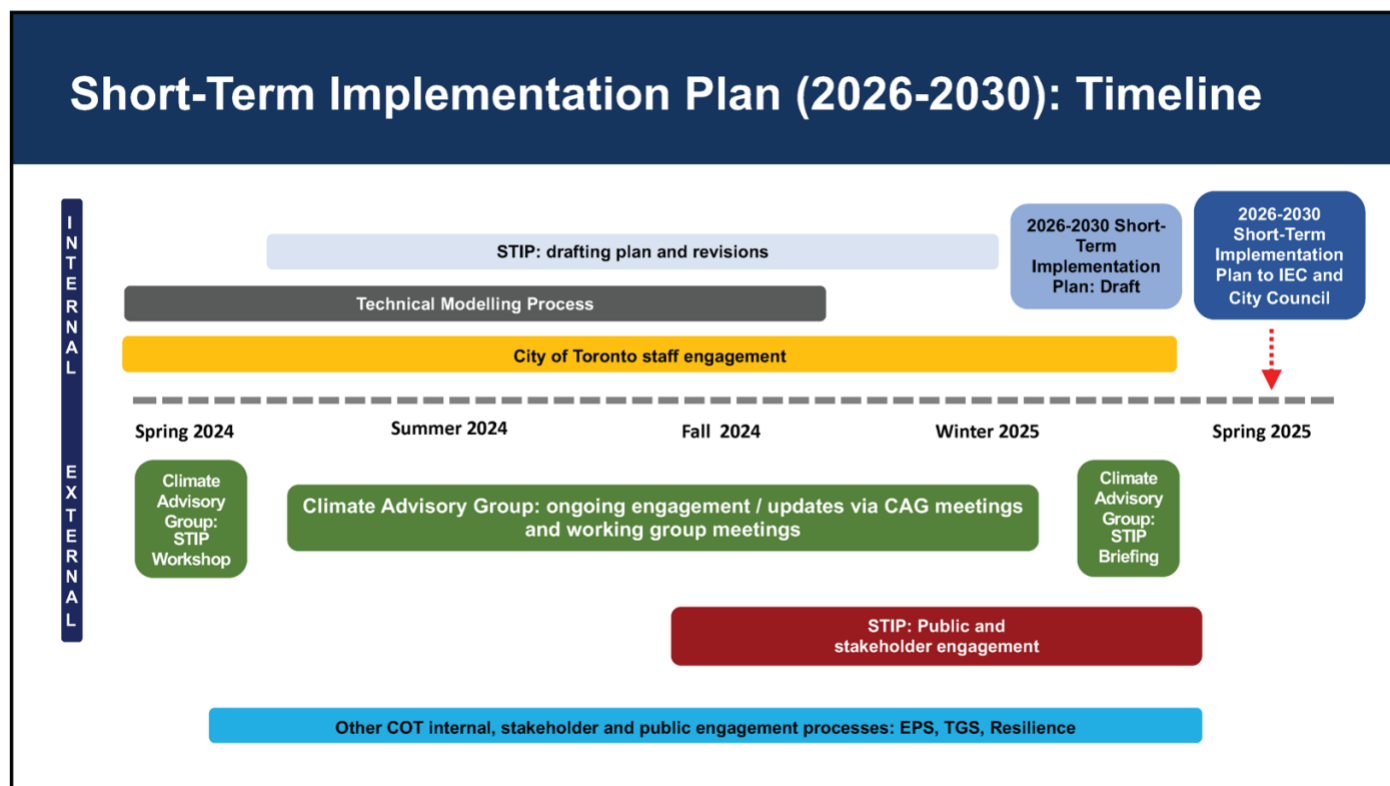
- *More climate coordination is needed internally and with stakeholders.* The City is incredibly siloed.
- *The next Short Term Action Plan needs to be clear on the emissions reductions we'll get and how much it will cost* – both at the individual and City-wide level.

Next Steps

The workshop wrapped up with thanks and appreciation shared by Ceilia Fernandez and Andrew Plunkett from the City of Toronto to all participants for taking the time to attend the half-day session and for the wise insights shared.

The facilitation team from Third Party Public committed to sending the workshop summary in draft for participant review, and encouraged all to give the document a close read to confirm that there isn't anything major missing or off base before it is finalized.

The results from the workshop will be an important input into the ongoing work to develop the next Short-Term Action Plan (see timeline below, as shared during the meeting).



Attachments

- Attachment A. Participant list
- Attachment B. Workshop Agenda
- Attachment C. Presentation slides
- Attachment D. Draft Reference Sheet

Attachment A: Participant List



Climate Advisory Group

A&J Energy Consultants, Jack Zhou
CEED Canada, Zamani Ra
ClimateFast, Lyn Adamson
David Suzuki Foundation, Julius Lindsay
Enbridge Gas Inc., Cara-Lynne Wade
Northcrest Developments, Jeff Ranson
Our Greenway, Lanrick Bennett Jr
Passive House Canada, Chris Ballard
Pollution Probe, Richard Carlson
RDH Building Science, Marine Sanchez
Toronto Community Benefits Network, Rosemarie Powell
Toronto Environmental Alliance, Sarah Buchanan
Toronto Region Board of Trade, David Campbell
University of Toronto, John Robinson
Individual Members, Maggie Chang, Shivani Chotalia,
Colin Guldemann, Joyce Mclean, Joe Ogilvie

City of Toronto Divisions

City Planning

Lisa King (Strategic Initiatives, Policy & Analysis)
Michael Hain (Transportation Planning)

Corporate Real Estate Management

Howlan Mullally (Corporate Energy Initiatives),
Katie Phillips (New Zero Building Systems and Efficient
Operations)

Economic Development & Culture Division

Rob McMonagle

Environment and Climate

James Nowlan (Executive Director)
Megan MacLean (Outreach and Engagement)
Cecilia Fernandez (Policy and Research)
Charlie Hatt (Policy and Research)
Adrian Lue (Policy and Research)
Andrew Plunkett (Policy and Research)
Marvin Quitonas (Policy and Research)
Devon Stopps (Public Energy Initiatives – Existing
Buildings)

Julia Bevacqua (Public Energy Initiatives – New
Developments)

Nageen Rehman (Public Energy Initiatives – New
Developments)

Solid Waste Management

Meaghan Davis (Circular Economy & Innovation)
Atif Durrani (Residual Waste Management)

Transportation Services

Mateen Mahboubi (Capital Projects and Program)
Doolin O'Reilly (Operational Policy & Initiatives)

City Agencies

Toronto Hydro

Nalin Sahni (Climate Action Plan Governance)

Toronto Transit Commission

Jason Genee

Consultants

Esmia Consultants

Elizaveta Kuznetsova
Kathleen Vaillancourt

Groundswell Projects

Olga Semenovych
Ruth Silver

Third Party Public Inc.

Ian Malczewski
Yulia Pak
Pragya Priyadarshini
Stephanie Quezada
Nicole Swerhun
Matthew Wheatley



CAG & City Staff Workshop

Canoe Landing Community Recreation Centre, 45 Fort York Blvd

Friday, May 31, 2024

9am – 1pm (breakfast provided at 8:30am and lunch provided at 1pm)

TransformTO Net Zero Strategy – Brainstorming for next Short Term Implementation Plan (2026-2030)

Welcome!

We're looking forward to a good discussion on Friday, May 31, 2024 to start brainstorming about how to help achieve the City of Toronto's 2030 and 2040 targets through the next TransformTO Net Zero Strategy Short Term Implementation Plan for 2026-2030. Please review this agenda and complete the worksheets of most interest and relevance to you before May 31. If you have any questions, don't hesitate to be in touch with the City team (Andrew Plunkett, andrew.plunkett@toronto.ca) or the facilitation team from Third Party Public (Nicole Swerhun, nicole@thirdpartypublic.ca or 416 572 4365).

Workshop Objectives

Bring CAG members together with City staff from multiple City Divisions and City agencies to begin brainstorming on what could go into the next Short-Term Implementation Plan to help put the City on track to meeting the 2030 and 2040 goals identified in the TransformTO Net Zero Strategy. This includes big picture thinking and early ideas on critical actions and policies.

Workshop Participants

Over 50 participants are anticipated, including CAG members, staff from a range of City Divisions and City agencies, and (in some cases) the consultants working to support them.

Role of City staff

City Staff are active participants, as are CAG members. The role of staff is to:

- Hear feedback from the CAG regarding the TransformTO Net Zero Short-Term Implementation Plan (2026-2030) that is currently under development;
- Participate in the discussions at the workshop around opportunities and challenges associated with reaching our net zero goals; and
- Be available to answer questions the CAG may have regarding progress to date and future plans.

Proposed Agenda

9:00 Welcome, Introductions, and Agenda Review
Environment & Climate Division & Third Party Public

9:20 Key considerations for 2026-2030 Implementation Plan
Environment & Climate Division & Third Party Public

9:25 How modelling will inform 2026-2030 Implementation Plan
Environment & Climate Division & Esmia

Questions for participants following the presentation:

1. Do you have any questions about of clarification about the modelling?
2. What do you see as the general strengths of the modelling approach?
3. Do you have any ideas for the City to consider on how to strengthen or refine the approach?

10:15 Round 1: Early thinking and brainstorming for TransformTO NZS Implementation Plan 2026-2030

There will be six small tables dedicated to each of the following six topics: Existing Buildings, New Buildings, Transportation, Renewable and Low Carbon Energy, Waste and Circular Economy, and Communications and Engagement. There will be an opportunity to participate in two topic-specific discussions (Round 1 and Round 2). City and City agency staff will be active participants, along with CAG members. Each table will have a facilitator.

Questions at each table will be the same, and include:

1. What has worked well to date in achieving emissions reductions in this sector? What insights do you have about why?
2. What are 2-3 big challenges in achieving GHG emission reductions in this sector?
3. What critical actions or policies do we need to think about prioritizing to help reach the 2030 and 2040 targets in this sector, and why?
4. What tools and powers (existing and/or new) could the City use to encourage and/or compel others to help achieve the GHG emissions reductions required to achieve 2030 and 2040 targets?
5. What additional information could support the CAG and City staff in developing the next Net Zero Strategy Short Term Implementation Plan?

- 11:00 Break**
- 11:15 Round 2: Early thinking and brainstorming for TransformTO NZS Implementation Plan 2026-2030**
- 12:00 Report Backs: Facilitated full room discussion**
1. Reflecting on the outcomes from the brainstorming discussions across all 6 topic areas, are there clear priorities that emerge? If so, what are they?
 2. Discuss prioritization of actions – what are the key emissions reduction actions? What are the supporting actions?
 3. What next steps would help the CAG and City staff continue working together?
 4. Any other comments or advice before wrapping up the workshop?
- 12:55 Wrap up and next steps**
Third Party Public & ECC
- 1:00 Adjourn + Lunch**





Climate Advisory Group Workshop:
TransformTO Net Zero Strategy
Short-Term Implementation Plan (2026-2030)

May 31, 2024



Call 





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Land Acknowledgement

The City of Toronto acknowledges that we are on the traditional territory 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. The City also acknowledges that Toronto is covered by Treaty 13 signed with the Mississaugas of the Credit, and the Williams Treaties signed with multiple Mississaugas and Chippewa bands.



Call 



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.



Call 311



3

Welcome

James Nowlan

Executive Director

Environment & Climate Division

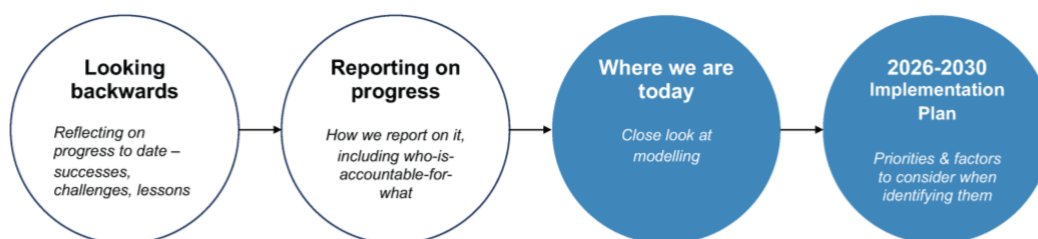


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Approach to May meetings



May 3rd CAG meeting

- Discussion of the inventory, actions, successes, challenges
- What City has direct authority over, can compel others, can encourage others
- CAG feedback on TransformTO progress and on future annual reporting

Facilitation led by groundswell

May 31st CAG & Staff Working Session

- In broad strokes, what do we need to prioritize in the second NZS Implementation Plan (2026-2030) to reach the 2030 and 2040 targets? More specifically, what critical actions or policies do we need to consider?

Facilitation led by Third Party Public



Call 311



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Agenda

- 9:00 am Welcome, Introductions & Agenda Review
- 9:20 Key considerations for 2026-2030 Implementation Plan
- 9:25 How modelling will inform 2026-2030 Implementation Plan
- 10:15 Round 1: Early thinking and brainstorming for 2026-2030 Implementation Plan
- 11:00 Break
- 11:15 Round 2: Early thinking and brainstorming for 2026-2030 Implementation Plan
- 12:00 Report Backs: Full Room discussion
- 12:55 Wrap-Up and Next Steps
- 1:00 pm Adjourn

OBJECTIVES

To bring CAG members together with City staff from multiple City Divisions and City agencies

To begin brainstorming on what could go into the next Short-Term Implementation Plan to help put the City on track to meeting the 2030 and 2040 goals identified in the TransformTO Net Zero Strategy

Big picture + early ideas on critical actions and policies



Call 311



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Agenda

- 9:00 am Welcome, Introductions & Agenda Review
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- 1:00 pm Adjourn

[Existing Buildings](#)

[New Buildings](#)

[Transportation](#)

[Renewable and Low Carbon Energy](#)

[Waste and Circular Economy](#)

[Communications and Engagement](#)



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Agenda

- 9:00 am Welcome, Introductions & Agenda Review
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- 1:00 pm Adjourn

[Worksheets](#)

The worksheet titled "NEW BUILDINGS" contains five numbered questions for participants to discuss during the workshop. The questions are:

- What has worked well to date in achieving emissions reductions in this sector? What insights do you have about why?
- What are 3-5 big challenges in achieving GHG emissions reductions in this sector?
- What critical actions or policies do we need to think about prioritizing to help reach the 2030 and 2040 targets in this sector, and why?
- What tools and program building and/or pilot projects could the City use to encourage and/or compel others to help achieve the GHG emissions reductions required to achieve 2030 and 2040 targets?
- What additional information could support the CAG and City staff in developing the next Net Zero Strategy (Short Term Implementation Plan)?



Call 311



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Summary of Workshop #1 (May 3rd) What we heard from the CAG



Call **311**



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TransformTO CAG May 3, 2024 Workshop

Summarized in
the following
slides

Part 1:
Reflection on
Progress to
Date

Part 2:
Feedback on
NetZero
Strategy
Reporting and
Communication



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Reflection on progress to date: key ideas

1. Include Community Engagement and Equity as part of the critical steps
2. Consider adding Waste as part of the critical steps
3. Make a connection to employment and jobs strategy
4. Collaborate across City Divisions, with other levels of government and private sector actors
5. Make connections across priorities
6. Transportation: accelerate investments into infrastructure
7. Energy: increase focus on grid design and capacity expansion

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TransformTO Net Zero Strategy Short-Term Implementation Plan (2026-2030): Background Information, Timeline and City Decision Making Processes

12

What is the Short-Term Implementation Plan (2026-2030)?

- The Short-Term Implementation Plan (STIP) is part of the TransformTO Net Zero Strategy: it is a set of actions to be implemented across various sectors, designed to help achieve the ambitious goals and targets set out in the strategy
- The 2022-2025 plan included a set of 30 key actions in 7 key sectors, with a number of sub-actions

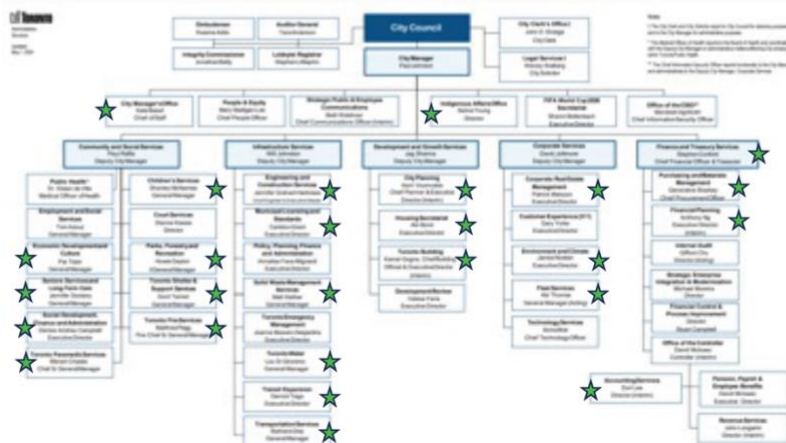


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TransformTO Net Zero Strategy: City of Toronto Leadership



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Understanding the City's authority, influence and advocacy

LEAD BY EXAMPLE (CORPORATE)

- Municipal Services
- Municipal Owned Utilities
- Municipal buildings and waste
- Landfill and waste management
- Public transportation fleets and infrastructure (TTC)
- Transportation infrastructure (roads, bike paths, sidewalks etc.)
- Greenspace (parks, street trees, etc.)

COMPEL

- Residential, commercial and industrial buildings
 - Developers
 - Building/Home Owners
 - Landlords
 - Tenants
- Land use
- Transportation (mode shift)
- Industrial, commercial and institutional waste

ADVOCATE

- Airport and shipping ports
- Electricity production and distribution (Provincial)
- Other Provincial and Federal programs and regulations, e.g.
 - Building Code
 - ZEV Regulation
 - Carbon-intensity of the Grid
 - Natural Gas Distribution

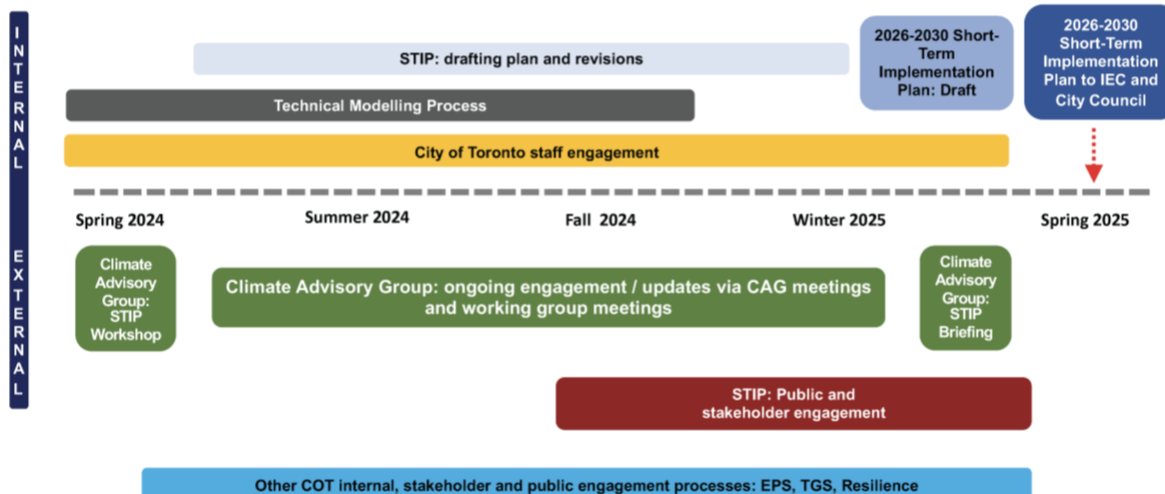


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Short-Term Implementation Plan (2026-2030): Timeline



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Carbon Accountability Process

The Emissions Budgets process sets both a measuring stick for emissions over 5-year periods and requires aligned plans and reporting.

1. Formalizing climate governance structure and process
2. Promoting integrated governance for climate initiatives.
3. Ensuring accountability through rigorous monitoring and reporting.
4. Producing strategic action plans to meet milestones.
5. Defining emissions reduction milestones as cumulative emissions budgets.

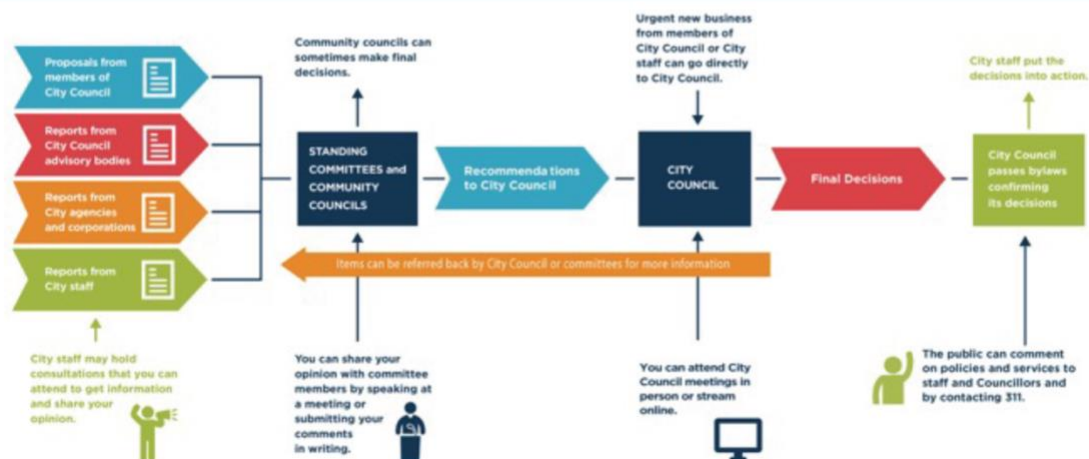


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Live green
Toronto

17

City of Toronto: how decisions are made



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Live green
Toronto

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Technical Modelling and TransformTO Net Zero Strategy Short-Term Implementation Plan (2026-2030)



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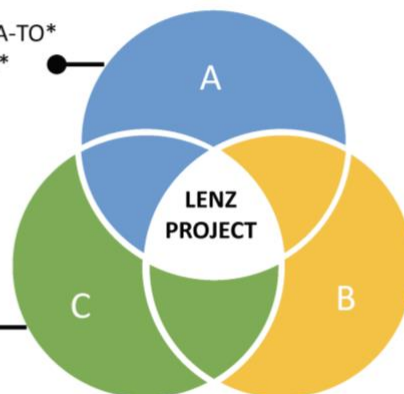
Development of Local Emissions for Net Zero (LENZ) Modelling Suite

Set of models

1. Capacity expansion model: TEMOA-TO*
2. Production cost model: SILVER-TO*
3. Linking tool

Case study

6. Report with example use cases



A Technical Advisory Group guided the development of LENZ.

Documentation

4. Model manuals
5. Video tutorials

*TEMOA-TO and SILVER-TO are adaptations of the open-source Tools for Energy Model Optimization and Analysis (TEMOA) and Strategic Integration of Large-capacity Variable Energy Resources (SILVER) modified to the characteristics of the City of Toronto

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LENZ: Added features to previous NZ modelling analysis



Previous

Long-Term Modelling (CityInSight)

- Simulation model
- Applied broad spatial and temporal resolutions
- Ideal to facilitate planning discussions and develop policies that are relevant to meet long-term GHG reduction targets
- Proprietary model



Current



Long-Term + Short-Term Modelling (LENZ)

- Optimization model with objective to minimize cost
- Incorporates high spatial and temporal resolution
- Provides sufficient information to facilitate planning and develop policies and programs that are critical to meet GHG emissions reduction targets
- Captures the operational aspects of an energy system
- Open-source model

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Local Energy for Net Zero (LENZ) Modelling Suite

Climate Advisory Group (CAG)

City of Toronto

May 31, 2024

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ESMIA in brief

- A modelling & consulting firm founded in **2013** and based in Montreal (Vancouver, Grenoble)
- **One-stop shop** for **4E** (energy-electricity-economy-environment) system modelling for strategic decision-making
- In North America, and globally (4 continents)
- A team of **modellers** with strong engineering, mathematics, economics, climate change science background (M.Sc., M.Eng., MBA & Ph.D.)
- Modellers and senior policy analysts with **+20 years of experience**
- Uniquely maintain strong links with researchers from several **North American universities**

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Outline

- Introduction to the LENZ Modeling Suite
 - a long-term planning model
 - a short-term planning model
 - a linking tool
- Approach for informing the 2026-2030 Net Zero Implementation Plan

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TEMOA-Toronto a long-term planning model



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SILVER-Toronto a short-term planning model

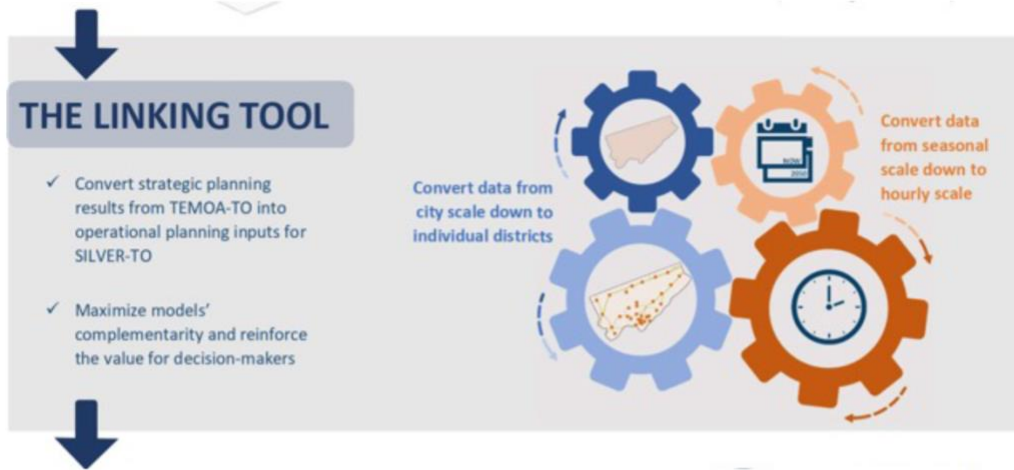


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A Linking Tool that enhance model complementarity

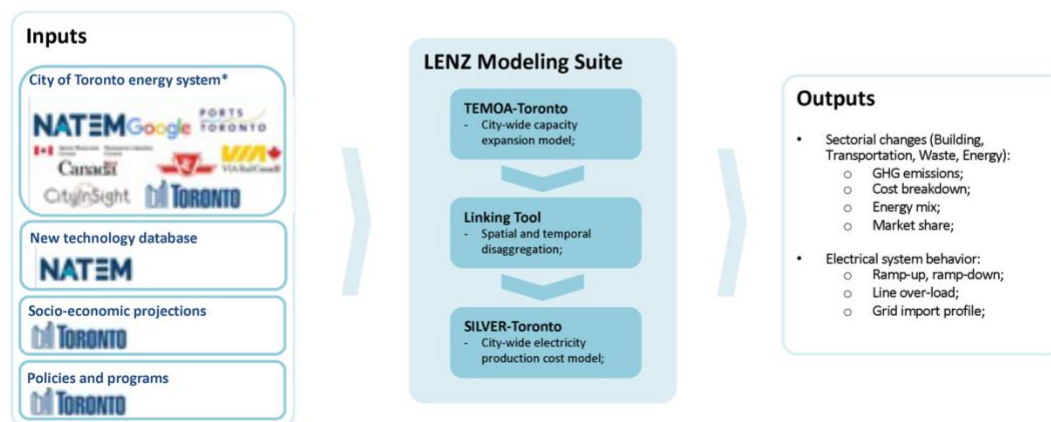


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A data-driven approach to generate insightful results



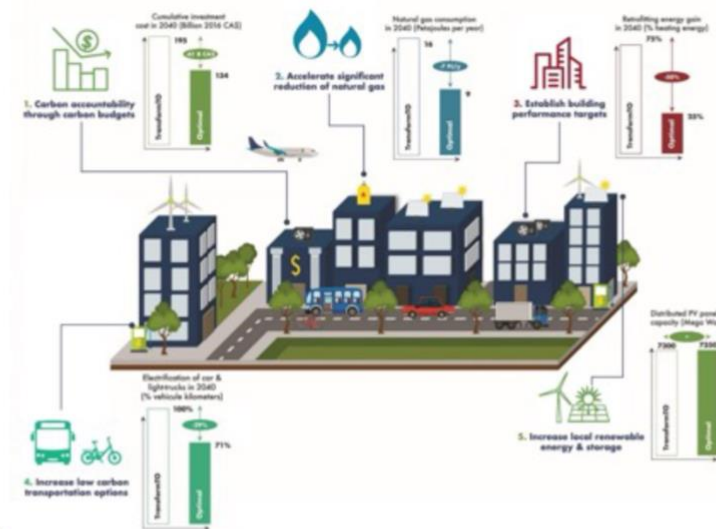
*Calibrated on the CoT GHG Inventory

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Optimization to reduce cost in achieving net zero goals



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Capabilities and limitations of the modeling framework

LENZ CAN:

- Reproduce **historical** GHG emissions and provide future **projections**;
- Provide a **least-cost investment roadmap** following the City's NZS;
- Assist in the **design** of new **policies** and assess their impacts on energy mix, GHG emissions and cost;
- Assess **energy security and resilience** of the City's NZS against energy market disruptions (shocks on energy prices, shocks on energy availability);
- Identify the sectors and end-uses with the lowest and highest **carbon abatement cost**;
- Evaluate the implications of decarbonization pathways on **hourly power demands** and hourly net power demand in each transformer zone;

LENZ CANNOT:

- Account for some GHG emissions such as **biogenic carbon, carbon embodied in material, non organic waste recycling, and land use change** (however, the tool reports GHGs as per the GHG Protocol for Cities);
- Evaluate GHG emissions based on **consumption of imported goods**. The methodology focuses on geographic boundaries (sector-based GHG emissions inventory) and mainly considers emissions generated within the limits of Toronto;
- Assess the **physical impacts of climate change** and corresponding adaptation measures (however, this report provides the analysis of mitigation actions that may help to enhance resilience);
- Capture **detailed macroeconomic** impacts such as the impact on GDP or employment;

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How will LENZ inform the 2026-2030 Net Zero Implementation Plan?



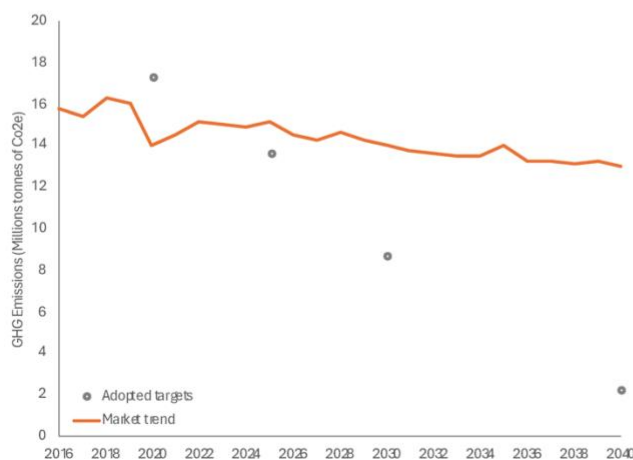
- LENZ is first calibrated to the most recent GHG inventory.
- This provides a robust basis to project impacts of policies and actions.

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1 – Optimization, a framework to capture market trends



Market trends driven by:

- Cost decrease of clean technologies (i.e., EV, heat pump)
- Energy efficiency (i.e. Energy Star)

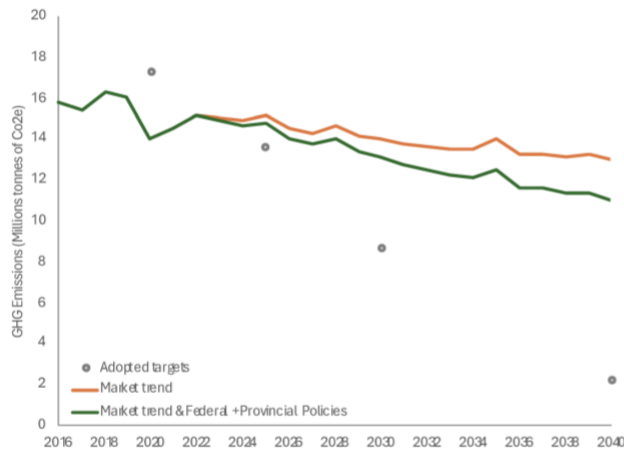
For illustration purpose only, not representative of modeling results

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2 – Capturing the impacts of policies and programs



Federal & provincial policies will be modeled incrementally by policy bundle:

- Federal Carbon Tax
- Clean Technology Investment Tax Credit
- CFR and Blending Mandates
- LD ZEV Mandate
- MD and HD ZEV Mandate
- Greener Home Grants
- Clean Electricity Ontario

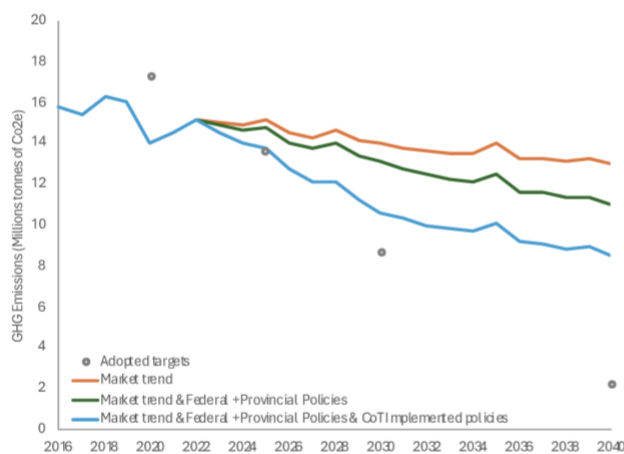
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3 – Incremental modelling of the CoT implemented actions



Implemented CoT policies are approved by City Council with secured funding:

- Example 1 TBD
- Example 2 TBD
- Others TBD

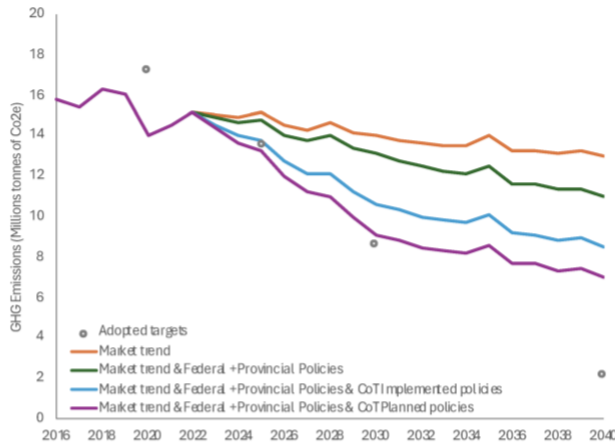
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4 – Incremental modelling of the CoT planned actions



Planned CoT policies are subjects to higher uncertainty:

- Example 1 TBD
- Example 2 TBD
- Others TBD

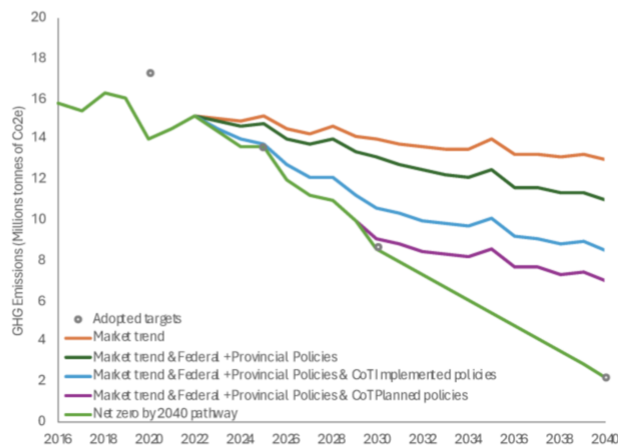
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5 – Close the gap in reaching net-zero by 2040



Additional actions in reaching net-zero:

- Cost-optimal actions
- Optimal timelines

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Questions?

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President and Founder
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ESMIA Consultants Inc
Montreal, Canada

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Questions

1. Do you have any questions of clarification on the modelling process?
2. What do you see as the general strengths of the modelling approach?
3. Do you have any ideas for the City to consider on how to strengthen or refine the approach?

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Early Thinking and Brainstorming for the TransformTO Net Zero Strategy Short-Term Implementation Plan (2026-2030)



Call 311



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Discussion Supports / Resources

Examples of factors to consider when identifying actions in next Short-Term Implementation Plan:

- Emissions reductions
- Aligns with existing City programs, policies, etc.
- City mandate/power
- City resources required (and available)
- Community and stakeholder support / Cost
- Equity considerations
- Synergies and co-benefits
- Priority of TransformTO vs other City priorities / political will
- Other? *This list is not exhaustive*



Call 311

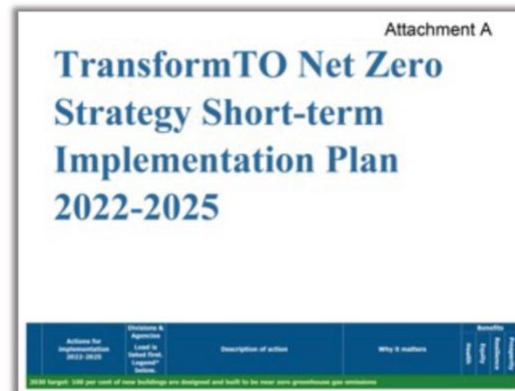


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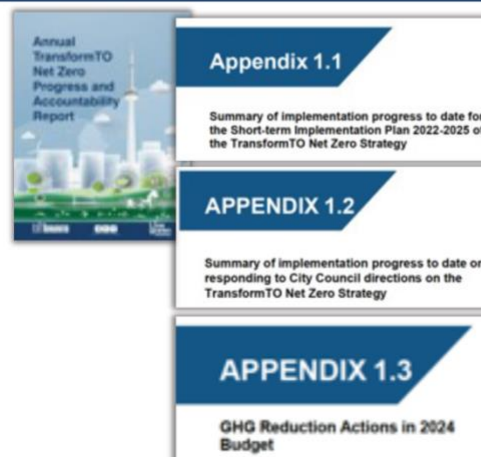


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Appendix 1.1

Summary of implementation progress to date for the Short-term Implementation Plan 2022-2025 of the TransformTO Net Zero Strategy

APPENDIX 1.2

Summary of implementation progress to date on responding to City Council directions on the TransformTO Net Zero Strategy

APPENDIX 1.3

GHG Reduction Actions in 2024 Budget



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