
For Information

REPORT TITLE: Climate Change Master Plan Progress Report 2024**FROM: Davinder Valeri, CPA, CA, Chief Financial Officer and Commissioner of
Corporate Services**

OBJECTIVE

To provide Regional Council with the annual progress update on implementing Peel's Climate Change Master Plan and next steps.

REPORT HIGHLIGHTS

- The global climate emergency has continued to escalate, making 2024 the hottest year since record keeping began in 1880 as confirmed by National Aeronautics and Space Administration (NASA) scientists.
 - At a local level, worsening climate impacts were felt with two 100-year flood events in less than a month and multiple extreme heat episodes impacting Peel residents, employees and/or services.
 - Peel's refreshed values align with its steadfast commitment to climate leadership and strategic long-term thinking to achieve better service outcomes for the community.
 - To achieve Peel's Climate Change Master Plan (CCMP) 2030 greenhouse gas (GHG) emissions reduction target of 45 per cent below 2010 levels, there is a gap of 24,800 tonnes of emissions requiring an average year-over-year reduction of 3.95 per cent between 2024 and 2030.
 - Despite Peel's focused efforts to reduce corporate GHG emissions in 2024, overall emissions rose by 1.4 per cent, driven primarily by external factors such as population growth and a 26 per cent increase in natural gas use for electricity generation on Ontario's grid.
 - Emergency response to floods and issuing extreme heat advisories in 2024 demonstrated Peel's service excellence and care for residents while many planned climate initiatives supported all CCMP outcomes, including five spotlight accomplishments.
 - In 2024, Peel invested \$18 million to decarbonize Peel Housing Corporation's existing building stock, provided \$18 million in climate funding to the conservation authorities, invested \$2.2 million to green the fleet, secured \$1.37 million in external funding, generated \$91,600 in revenue from public use of Peels electric vehicle chargers and \$2 million from green energy, with \$320,000 reallocated for emergency flood response.
 - Peel's scheduled Climate Change Master Plan Refresh will address implementation challenges and is going forward with a focus on reducing GHG emissions within our greatest control, updating GHG emissions reduction targets, constructing and maintaining more resilient assets and enabling the community to take greater climate action.
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DISCUSSION

1. Background

a) The Climate Emergency Continues

2024 was the warmest year on record, with global temperatures temporarily exceeding the 1.5°C threshold in the summer of 2024 — the recommended limit to avoid the most severe impacts of climate change in the future. Consequently, effects are intensifying globally and are increasingly being felt here in Peel Region.

On July 16, 2024, Peel was battered by a powerful storm system that brought extreme levels of rainfall within a short period, leading to widespread flooding that damaged homes and businesses. This was followed by another significant storm, in a narrower area, on August 17, 2024, which resulted in the highest recorded single-day rainfall of 128.4mm at Pearson Airport (see Table 1).

Both storm events led to over 100 properties being damaged, including one of Peel's affordable housing buildings and a youth shelter. A total of 97 tonnes of flood-related waste were collected curbside from the events. Additional operating costs, resulting from Peel's response to the 2024 flood events, were estimated to be over \$320,000. Every Peel department was involved in the flood response or recovery, showing how climate change touches everything we do.

Table 1: Storm Rainfall Comparisons

	2013 Storm	2024 July Storm	2024 August Storm	1954 Hurricane Hazel**
Ave Monthly Rainfall - July	75mm to 85mm			--
Max 1-hour Storm Rainfall	69mm	65mm	94mm	--
Max 2-hour Storm Rainfall	83mm	98mm	125mm	--
Max 3-hour Storm Rainfall	87mm	122mm	132mm	90mm
Total 24-hour Storm Rainfall	101mm	143mm	143mm	137mm
Total 48-hour Storm Rainfall	137mm	156mm	180mm	214mm
Week prior + Storm Rainfall	170mm	220mm	180mm	> 214mm
Rainiest Day at Pearson Airport	126mm	98mm*	128mm	121mm

***Hourly rainfall data has only been collected more recently so Hurricane Hazel may also have had highly intense short duration rainfall amounts.*

Prolonged exposure to extreme heat poses serious risks to human health, and climate change is making hot weather events more frequent and intense in Peel. To help protect residents, Peel Public Health issues warnings during heat events, encouraging people and organizations

Climate Change Master Plan Progress Report 2024

who serve the vulnerable to take steps to stay cool and safe. A heat warning is called if the temperature is equal to or over 31 degrees for greater than 2 days and an extreme heat warning is called if the event is 3+ days. In 2024, there were four heat alert notifications issued, corresponding with four extreme heat events between June 14 and August 2, the longest event lasting five days.

b) Peel's Refreshed Values in Effect

Peel recently refreshed its organizational values, which are strongly aligned with Regional Council's steadfast commitment to climate leadership (see Table 2).

Table 2: Climate Aligned Values in Practice

Our Values	Climate Alignment	2024 Examples
We Care	By placing people at the centre of the climate emergency response, especially those at higher risk to impacts.	During the 2024 summer floods, Peel was there for the community offering guidance and assistance to hundreds of residents and business. Peel processed over 100 property damage claims, shared public health information, initiated additional flood-related waste collection, provided essential support and referrals to shelters, and distributed clothes, shoes, and food.
We are Transparent	By adopting a science-based approach, reporting performance and progress on climate change.	Peel has reported progress on climate change and efforts to meet science based GHG targets every year since the CCMP was first launched in 2020.
We Lead	By innovating and driving impactful, sustainable change using technology and new approaches.	Peel was awarded the Government Leadership Award by Canada Green Building Council for developing the corporate Net Zero Emissions Policy and Standard for New Construction.
We Collaborate	By working in partnership with others, leverage funding, and actively engaging diverse communities to advance low carbon outcomes.	Peel supported the groundbreaking of the Lakeview District Energy Development with the City of Mississauga and Enwave. Peel collaborated with the Danish Consulate and Centre for Community Energy Transformation to host over 150 municipal and industry leaders at a Low Carbon District Energy Event.
We are Inclusive	By ensuring climate equity and climate justice are considered in recommended climate actions.	Over 900 Peel employees attended the annual Truth and Reconciliation Event where participants were encouraged to reflect on the deep climate connection to Indigenous cultural knowledge, practices and protecting the land.

c) Peel's Climate Change Master Plan

Climate Change Master Plan Progress Report 2024

The Climate Change Master Plan (CCMP), approved in 2019, provides organization-wide direction and a pathway of actions needed to achieve Peel’s 2030 climate change outcomes. The Plan’s focus is to first lead by example, then influence and enable the community’s low carbon and resilient transformation.

The CCMP has two primary outcomes:

- **Reduce corporate greenhouse gas (GHG)** emissions 45 per cent below 2010 levels by 2030.
- **Be Prepared** by providing a safe, secure, and connected community through ensuring Regional services and assets are more resilient to extreme weather events and future climate conditions.

The primary outcomes are supported by three enabling outcomes; **Build Capacity, Invest,** and **Monitor and Report**. In total, the CCMP is comprised of 20 actions that guide climate actions across all Regional Services and Programs.

Peel reports annual reductions in GHG emissions using the best available data. This practice is followed by other municipalities and agencies and relies on the emission factors that are updated annually through Canada’s National Inventory Report (NIR). There is a two-year lag in the release of emission factors, so latest available data is from 2023.

2. Current State of Corporate Greenhouse Gas Emissions (GHG)

To achieve the 2030 GHG reduction target, there is a gap of 24,800 tonnes of carbon dioxide equivalent (tCO₂e) requiring an average year over year GHG emissions reduction of 3.95 per cent between 2024 and 2030. (See Table 3)

Peel’s latest corporate GHG emissions inventory shows an overall increase of 1.4 per cent over the previous year. This rise was largely driven by external factors, including population growth that led to higher demand for wastewater treatment services and a 26 per cent increase in natural gas use for electricity generation on Ontario’s grid - a province-wide change that affected all municipalities drawing power from the grid. Without these factors, Peel’s corporate emissions would have decreased by 3.5 per cent.

Table 3: Annual GHG Emission Reductions

Change in GHG Emissions	% increase/decrease
Required year over year change in GHG emissions to achieve 2030 target	- 3.95%
Recent change in annual GHG emissions (with external factors)	+1.4%
Recent change in annual GHG emissions (without external factors)	- 3.5%

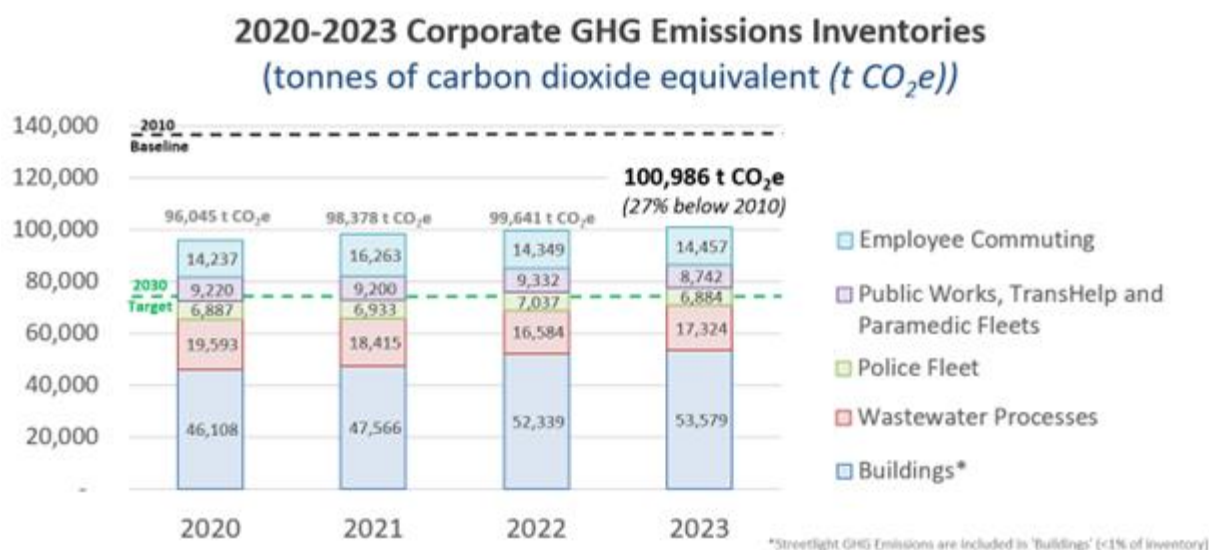
Specific trends in corporate GHG emissions are shown in Figure 1. In 2024, Peel-owned buildings had higher emissions (two per cent increase) driven by the dirtier electricity grid;

Climate Change Master Plan Progress Report 2024

Wastewater emissions linked to processing and biosolid incineration went up (four per cent) reflecting population growth. Employee commuting emissions similarly increased (one per cent) due to a slight uptick in the number of kilometres travelled by Peel Regional Police and Peel employees.

A source of GHG emissions that Peel and Peel Regional Police have greater control is fleet fuel use. A six per cent reduction was realized in the Region's fleet, driven by increasing the use of high ethanol blend gasoline (E85), and a two per cent reduction was realized in the Police fleet largely due to fuel economy measures, including less idling.

Figure 1: Corporate GHG Emission Trends (2020-2023)



3. 2024 Climate Change Achievements by Outcome

In 2024, Peel continued to demonstrate leadership by implementing Peel's Climate Change Master Plan, leveraging external funding, deepening knowledge, and supporting innovation across the organization. The following sections list the key accomplishments from 2024 across all CCMP outcomes with a comprehensive list of actions provided in Appendix I.

a) Reduce Greenhouse Gas Emissions

No single action will allow Peel to meet its GHG reduction target. It calls for a range of solutions, including energy conservation, system optimization and efficiency, fuel switching, renewable energy generation, and enhancements to standards and processes, all while continuing to advocate for a clean and reliable electricity grid. Many of these solutions have been advanced in the 2024 through strong, internal collaboration and deserve recognition.

Key Accomplishments

i) In Buildings

Climate Change Master Plan Progress Report 2024

Peel continued to transform existing and new buildings to achieve net zero or near net zero emissions through the implementation of Net Zero Emission (NZE) Standards and Energy and Emissions Management Plans to guide long term capital investment, leveraging external funding, and collaborating in new ways.

Spotlight: Hillside Place to achieve near net zero emissions

Hillside Place, located in south Mississauga, is in the first group of five front-runner affordable buildings that are being programed to achieve near Net Zero Emissions by replacing all old fossil fuel equipment, at their end-of-life, with low carbon efficient technology, such as electric heat pumps. Hillside is a multi-year project with an overall cost of \$20.4 million. Substantial construction progress was made in 2024, including upgrades to the building envelope. Once completed, the deep retrofit will reduce approximately 88 per cent of current building GHG emissions and save \$82,000.00 or 42 per cent in annual utility costs.

ii) In Fleet Vehicles and Employee Commuting

As per Peel's Green Fleet Strategy, the Vehicle and Equipment Acquisition Policy was updated in 2024 to prioritize the selection and purchase of vehicles or equipment that minimize environmental impact and reduce GHG emissions. Peel also adopted a balanced approach for its return to in-person connections and Hybrid Work policy that avoids the return to pre-Covid commuter emission levels.

Spotlight: Transitioning fleet vehicles to lower carbon fuel

Following a successful pilot project in 2022, Public Works greatly increased the use of high-ethanol blend (E70/E85) fuel. Ethanol is a renewable fuel that is primarily composed of local corn. It can be blended in high concentrations with gasoline (*e.g. E85 = 85 per cent ethanol and 15 percent gasoline*) for use in 'Flex Fuel' vehicles. The Region continued to operate 129 Flex Fuel vehicles and used 370,000 litres of high-ethanol blend fuel. This resulted in 500 tonnes of GHG emissions reductions and drove the Region's fleet emissions to their lowest levels since 2013.

iii) In Operational Processes

With Peel's population growing faster than forecasted, the requirement for energy to support water treatment/delivery and wastewater treatment processes increased as did the associated GHG emissions. Peel has pursued alternative processes to avoid what could have been larger increases in GHG emissions and will continue to explore options to achieve greater reductions.

Spotlight: Biosolids Diversion Program

Demonstrating leadership and ingenuity, Peel conducted a Biosolids Diversion Program pilot to divert biosolids generated at the Clarkson Water Resource Recovery Facility (WRRF) away from incineration and additional diversion from GE Booth WRRF. This initiative reduces wastewater treatment process GHG emissions while promoting carbon sequestration and reducing reliance on synthetic fertilizers in agriculture. Since its launch in 2022, the program has reduced over 3,000 tonnes of corporate GHG emissions per year

Climate Change Master Plan Progress Report 2024

with \$340,000 in annual electricity savings. In 2024, contract services were procured for approximately three years for the continued removal, haulage and beneficial utilization of Clarkson and GE Booth WRRF Biosolids.

b) Be Prepared

Building climate resilience is a complex process. It requires a deep understanding of how climate-related extreme weather events threaten people, property, and infrastructure; and inform what resources are needed to protect, maintain or enhance what is valued. It's also essential to recognize that climate impacts do not affect everyone equally with the most vulnerable communities often bearing the greatest burden. In 2024, Peel continued to advance its understanding along side its readiness for and response to worsening climate impacts.

Key Accomplishments

Through 2024, Peel continued to assess climate risks and estimate the cost to adapt or not adapt buildings and facilities to be more resilient. Targeted flood risk assessment of regional roads and crossing were completed in partnership with the Conversation Authorities. To enhance flood preparedness, Peel partnered with the University of Waterloo Intact Centre on a water bill insert promoting flood protection measures to 130,000 Peel residents. Peel Public Health developed an *Extreme Heat Vulnerability Index* to identify geographic areas of high heat vulnerability, which included accounting for social determinants of health, to support focused and equitable heat response planning. Peel Public Health also introduced a *Wildfire Smoke Warning Notification Procedure* to inform community partners about poor air quality events due to wildfire smoke and allow partners to adjust operations, protecting their employees and clients.

Spotlight: Enhancing the resiliency of natural green infrastructure (GI)

Natural GI (ex. trees and shrubs) provides important services to Peel and the community including, but not limited to, stormwater management, shade and cooling, carbon storage and sequestration and aesthetic value. In 2024, the condition of 18,678 natural GI assets was evaluated across Peel properties, including 15,941 individual trees, 2,687 tree and shrub clusters covering approximately 35 hectares, and 60 tree and shrub communities covering approximately 51 hectares. Approximately 45 per cent of forested areas on Peel properties were considered in either poor or very poor condition, largely due to the presence of invasive species. Understanding the state of natural GI Peel owned and managed properties allows Peel to act and is essential to inform the future development of GI Asset Management Plan.

c) Build Capacity

Building capacity empowers Peel employees and community partners with the knowledge, skills and tools to participate more meaningfully in climate change efforts. Across the organization, innovative climate-aligned projects in 2024 demonstrated how employees embraced change to tackle the climate emergency.

Climate Change Master Plan Progress Report 2024

Key Accomplishments

In 2024, Peel participated in the circular economy by launching a Circular Economy Initiative (CEI) Fund for community-groups looking to reduce residential waste, while corporately Peel diverted office chairs, clean fill and ceramic tiles from landfill as well as redirected approximately 500,000 m³ of excess soil from disposal sites. Regional Council adopted the Sustainable Procurement Program, including the Sustainable Procurement Guidelines to ensure Peel balances environmental, social and economic benefits with fiscal responsibility.

Spotlight: Expanding Peel's Electric Vehicle Charger Network

In 2024, Public Works installed 27 electric vehicle (EV) charging stations at Copper Yard and Peel Integrated Waste Management Facility in Brampton. Copper Yard's installation featured the Region's first fleet dedicated DC Fast Charger. By installing this enabling infrastructure, Peel confidently acquired seven electric pick-up trucks in 2024, marking the first electric models of this vehicle type within the Region's fleet. The total number of battery and plug-in hybrid electric vehicles in operation was 53 at the end of 2024, with almost \$1 million invested in 2024. Expanding and future proofing for charging infrastructure continues to be an integral component of major renovations and new facility designs, enabling the pace of fleet electrification to accelerate from 2025 onward.

d) Invest

Recognizing that investing in climate action today helps avoid higher future costs, generates savings, and creates broad benefits, Peel takes a measured, targeted, and innovative approach to funding climate initiatives by requiring a climate lens on all budget requests and is starting to integrate climate increments with long-term capital and asset management planning. Climate investment in 2024 was from both internal and external sources.

Key Accomplishments

In 2024, Regional Council approved \$18 million capital investment through the budget process to decarbonize affordable housing buildings and advance near Net Zero Emission goals of Peel Housing Corporation. Council approved another \$18 million towards the conservation authority's climate change programs and priorities. Peel invested \$2.2 million to green the fleet and generated \$91,600 in revenue from public use of Peels electric vehicle chargers. Peel produced over \$2 million in revenue or avoided costs from green energy generation and secured over \$1.37 million in external funding for energy conservation, decarbonization and electric vehicle charging station projects.

e) Report and Monitor

Regular, accessible, and transparent reporting on Peel's climate progress is essential for accountability. It also provides an important opportunity to recognize and celebrate the successes and leadership driving positive change in the community. In 2024, new reporting initiatives were introduced and welcomed as a step forward.

Climate Change Master Plan Progress Report 2024

Key Accomplishments

In 2024, Regional Council approved Peel's Strategic Agenda priorities (2024-2027), which positioned several climate change initiatives prominently in the Sustainability Pillar. These climate priorities will be the focus of regular in-year reporting to Peel's executive leadership to ensure successful outcomes. Peel also joined the first cohort of municipalities to participate in the International Organization for Standardization's (ISO) environment, social and governance (ESG) certification process for Sustainable Cities and Communities. The annual ISO certification process provides an ESG indicators framework that is designed to support municipal leaders to address risk, improve transparent decision-making and enhance their sustainability performance.

NEXT STEPS

Peel's scheduled Climate Change Master Plan refresh is underway and will be brought to Regional Council for approval in 2026. It will address the reported increase in GHG emissions and need for greater annual reductions by focusing on reducing the GHG emissions within our greatest control. The refreshed plan will update corporate GHG emissions reduction targets, introduce actions for constructing and maintaining more resilient assets and enable the community to take greater climate action. The refreshed plan will also include an update on the total cost for implementation of climate change actions.

Along-side the Climate Change Master Plan Refresh process, other important climate work continues, including but not limited to:

- Prioritizing flood management and response by strengthening coordination and collaboration among external partners.
- Leveraging external funding and the budget process to further integrate long-term capital and asset management planning with net zero emissions and resilience standards.
- Updating the Long-Term Financial Planning Strategy to embed climate change considerations and principles for investment.
- Implementing a new Vendor Code of Conduct to achieve environmental, social and economic benefits, including procuring goods and service more sustainably.
- Advocating to the province for an electricity grid that has greater capacity and cleaner generation to support achieving Peel's climate change targets.

FINANCIAL IMPLICATIONS

Significant funding is still needed to reduce corporate GHG emissions beyond the Climate Change Master Plan's initial estimated investment of \$300 million - \$400 million. As Peel improves the understanding of climate change risks and impacts to infrastructure, it is anticipated that substantially more investment will be needed to construct and maintain resilient assets.

Climate Change Master Plan Progress Report 2024

CONCLUSION

In recognition of the strong climate leadership of Regional Council, capital funding has been approved to support key near-term efforts to reduce GHG emissions. However, achieving deeper, year-over-year reductions and meeting the 2030 target will require increased action, sustained funding, and continued advocacy for a clean grid. Peel's swift and coordinated response to the 2024 flood events - along with ongoing preparations for extreme heat and wildfire impacts - reflects both service excellence and the growing need for continued investment in risk assessment, adaptation planning, and emergency preparedness. Throughout these efforts, Peel remains committed to leading the climate emergency response with care, transparency, innovation, and equity.

APPENDICES

Appendix I - 2024 Climate Change Accomplishments



Davinder Valeri, CPA, CA, Chief Financial Officer and Commissioner of Corporate Services

Authored By: Mark Pajot, Advisor, Office of Climate Change and Energy Management