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# The Regional Municipality of Durham Report

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To: Committee of the Whole  
From: Chief Administrative Officer  
Report: #2024-COW-12  
Date: April 10, 2024

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## **Subject:**

2024 Annual Climate Change Progress Report

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## **Recommendations:**

That the Committee of the Whole recommends to Regional Council:

- A) That Regional Council receive this 2024 Climate Change Progress Report for information; and
  - B) That a copy of this report, be sent to all Durham MPs and MPPs, local area municipalities, Conservation Authorities, and local energy utilities, for their information and consideration.
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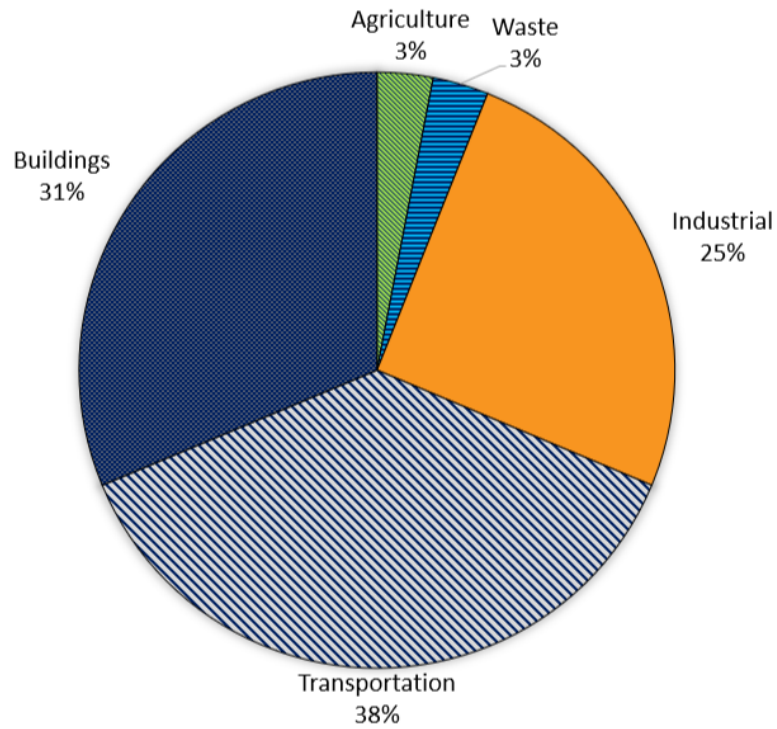
## **Report:**

### **1. Purpose**

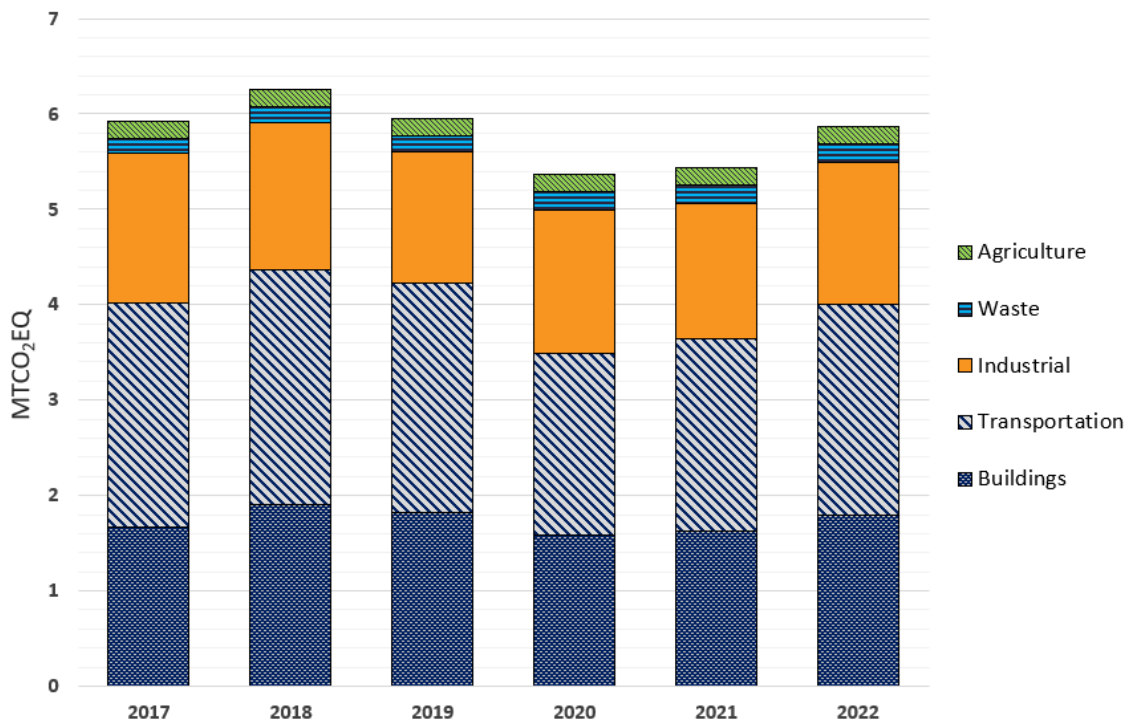
- 1.1 Leadership on climate change and sustainability is a key strategic priority for the Region, as reflected in the Region's strategic plan as well as within the new Council adopted Regional Official Plan. Regional Council's declaration of a climate emergency in January 2020 was a key decision point supporting the focus on climate action as a critical priority guiding municipal policy, investment, and operations. This annual climate change progress report provides a status update on the implementation of climate action plans endorsed by Regional Council.
- 1.2 Section 2 of this report provides an update on the [Durham Community Energy Plan](#) (DCEP). The DCEP was [endorsed](#) in principle by Regional Council and local area municipal councils in 2019 and outlines Durham's pathway to reduce greenhouse gas (GHG) emissions and facilitate the transition towards a clean energy economy through collaboration between the Region, local area municipalities, energy utilities, and other community stakeholders.

- 1.3 Section 3 of this report provides an update on the [Durham Region Corporate Climate Action Plan](#) (CCAP). The CCAP was endorsed by Regional Council in 2021 ([Report #2021-A-3](#)) and provides a framework for corporate decarbonization, including GHG reduction targets, and integration of a climate lens into the Region's business planning and budgets process. The CCAP was developed in collaboration with internal departments and operating divisions.
  - 1.4 Section 4 of this report provides an update on the [Durham Community Climate Adaptation Plan](#) (DCCAP). DCCAP was endorsed by Regional Council in 2016 ([Report #2016-COW-103](#)) and sets out a vision, goals, and actions to help Durham Region adapt to climate change impacts. This plan was developed in collaboration between the Region, local municipalities, Conservation Authorities, energy utilities, and other local stakeholders.
  - 1.5 **This is the fourth such annual climate progress report since Regional Council's 2020 climate emergency declaration. Previous annual climate update reports can be found on the [Region's website](#).**
2. **Durham Community Energy Plan (DCEP) Update**
  - 2.1 Durham Region community-wide carbon emissions inventory update:
    - a. In late 2023, The Atmospheric Fund (TAF) published its annual [carbon emissions inventory report](#) for the Greater Toronto and Hamilton Area (GTHA). The report covered 2022 carbon emissions data across the four regional municipalities (Halton, Peel, York, and Durham) and single tier municipalities (Hamilton and Toronto) that make up the GTHA. TAF estimated that GTHA emissions increased annually by 8 per cent in 2022, which was the largest annual increase since 2015. Emissions increased across all six jurisdictions covered by the report, ranging from 5 per cent in Hamilton to 12 per cent in Halton Region. Carbon emissions in the GTHA will need to decrease by 9 per cent annually to reach 2030 targets in line with achieving net zero emissions by 2050.
    - b. Durham Region's emissions, as reported by TAF, and based on total activity within Durham's geographic boundaries, increased by 8 per cent in 2022 to 5.9 million tonnes of carbon dioxide equivalent (TCO<sub>2</sub>e), nearly reaching pre-pandemic levels (see Figure 2 below). The transportation sector was the biggest driver for this increase, up 9 per cent, and continues to be the largest source of GHG emissions overall in Durham Region (see Figure 2: Durham Region Total Community Emissions, 2017-2022 (MtCO<sub>2</sub>e)
    - c. below). The report acknowledges that most of the GTHA's agricultural activity is concentrated in Durham, making up 3 per cent of Durham's total emissions, and that food grown in Durham is consumed by communities across Ontario and beyond.

**Figure 1: 2022 Durham Community GHG Emissions by Sector (MtCO<sub>2</sub>e)**



**Figure 2: Durham Region Total Community Emissions, 2017-2022 (MtCO<sub>2</sub>e)**



2.2 The Region continues to support the implementation of the DCEP in partnership with local area municipalities, energy utilities, and other organizations with influence over energy use and emissions in the community. Updates across key areas of the DCEP low carbon pathway are provided below.

### 2.3 Existing Home Energy Retrofits

- a. DCEP called for deep energy retrofits across all the roughly 200,000 existing single-family homes in Durham Region to align with a low carbon pathway to 2050. Achieving this goal requires a tripling of the rate of home energy retrofits, with each retrofit including both envelope upgrades (e.g., insulation) as well as upgrades to heating and cooling systems (e.g., switching from natural gas furnaces to electric air source heat pumps).
- b. The [Durham Greener Homes](#) (DGH) program was launched in April 2022 to provide residents with a comprehensive voluntary residential retrofit program to achieve energy efficiency upgrades and deep energy retrofits. The program includes expert energy coaching services, tailored incentives, and third-party financing services.
- c. To date, more than 1,000 Durham Region homes have registered to participate in the DGH program, and of those, close to 100 homes have completed a deep energy retrofit. In April 2024, the DGH program will be enhanced with the launch of a virtual home energy audit tool (VHEAT) that will enable insights into the energy performance of all 200,000 homes across Durham Region. The Region is working with its contracted program administrator, Windfall Ecology Centre, to implement a direct marketing campaign to invite homeowners to register through the secure DGH portal to access their VHEAT report and begin their retrofit journey. This will be supported by tailored incentives administered by the Region with the support of FCM Community Efficiency Financing Program grant funding.
- d. As outlined in Section 4.4 below, Regional staff are also working to develop an enhancement to the DGH program that will focus on supporting homeowners with implementing climate resilience retrofits that can address risks associated with flooding and extreme heat impacts. A full update to Council on the DGH program, including planned enhancement, is expected in Q2 2024.

### 2.4 Existing Building Retrofits – Industrial, Commercial, Institutional, and Multi-Unit Residential Buildings.

- a. In addition to single family homes, DCEP's low carbon pathway includes deep retrofits in all existing industrial, commercial, institutional, and multi-unit residential buildings in the Region.

- b. The [Durham Greener Buildings](#) (DGB) program launched in January 2024 to support building owners and managers in complying with the Province of [Ontario's Energy and Water Reporting and Benchmarking \(EWRB\) Initiative](#). The program seeks to build capacity around benchmarking by providing a Help Desk and training support services to build familiarity, among building owners with Energy Star Portfolio Manager (ESPM), and in turn, drive demand for energy efficiency improvements throughout the building sector.
- c. The Durham Greener Buildings program complements and expands on the Durham Greener Homes program and will include a focus on supporting benchmarking and disclosing energy and water usage data of municipally owned buildings to showcase local government leadership in addressing climate change. Additionally, the program facilitates compliance with [Broader Public Sector \(BPS\) reporting requirements](#). In subsequent steps, staff will explore financing and funding opportunities while collaborating with partners to facilitate deep energy building retrofits. For further program details, please refer to report [#2023-COW-16](#).

## 2.5 New Construction – Durham Green Development Program

- a. Given expected population growth in Durham Region, and the associated need to build thousands of new homes annually over the coming decades, the DCEP identifies high energy performance in new building construction as a critical piece of Durham's low carbon pathway. Specifically, the DCEP calls for local municipalities to implement a tiered set of energy and emissions performance standards through the planning approval process, with the first tier mandatory and upper tiers of energy and emissions performance standards voluntary, supported by incentives.
- b. Local area municipalities, including [Town of Whitby](#), [City of Pickering](#), and [Town of Ajax](#) (the municipalities), have implemented green development standards since the DCEP was endorsed. These standards include a tiered set of energy and emissions performance criteria.
- c. While the provincial government's Bill 23 initially appeared to limit the ability of municipalities to implement green development standards, subsequent amendments as outlined in a [Letter from the former Minister of Municipal Affairs and Housing, Steve Clark](#), recognize the important work being done by municipalities through green development standards. The Minister's letter further articulated that the Province intends to consult with municipalities and other stakeholders on a consistent province-wide approach for municipalities wanting to implement green building standards that are above the minimum requirements in the Ontario Building Code (OBC) although to date, such consultations have not yet occurred.

- d. As part of the implementation of the [Pan Canadian Framework on Clean Growth and Climate Change](#), the federal government has moved forward with a National Building Code that includes energy performance tiers that are designed to move the building industry to net zero by 2030. As part of the code harmonization process, the Province of Ontario is updating the OBC to align with National Codes. There is an emerging need for market transformation to align with the tiered approach.
- e. The Region has focused on industry training and capacity building initiatives in collaboration with the Durham Region Home Builders' Association (DRHBA), and Natural Resources Canada's (NRCan) Local Energy Efficiency Partnerships (LEEP) team. Together with DRHBA and LEEP, the Region hosted a series of technology forums for builders and developers that are focused on high performance new construction. These sessions are continuing into Q2 2024.
- f. In 2023, Regional staff began working to develop a Green Development Program with an aim of:
  - building alignment amongst local municipal green development standards the new national model energy code tiers, and with forthcoming changes to the OBC; and
  - supporting voluntary adoption of higher energy performance tiers.
- g. The program development process has included evaluating policy tools to enhance energy performance and reduce GHG emissions in new residential construction, and collaboration with local municipalities and cross-departmental municipal staff teams, including Finance and Planning. Staff have consulted with energy utilities and building industry stakeholders through focus group sessions. Staff anticipate bringing forward a comprehensive program proposal to Regional Council in mid-2024.

## 2.6 Low Carbon Thermal Networks – Sewer Heat Recovery/District Heating.

- a. The DCEP identifies district energy (DE) as a key strategy for building sector decarbonization in Durham Region, which can potentially contribute more than 15 percent of GHG emissions reductions to meet the 2050 target.
- b. Exploration of DE opportunities have initially focused on Courtice given the availability of heat from the Durham York Energy Centre (DYEC) and the planned high population and employment densities around the Courtice GO Station Major Transit Station Area (MTSA). A preliminary business case analysis was developed in 2023, and presented to Council in January 2024 in Report [#2024-COW-1](#). Following Council endorsement in principle of the DES project concept for the Courtice Transit-Oriented Community (CTOC), staff are evaluating service delivery model options for the Courtice district

energy system, as well as updating the preliminary business case. A report outlining the recommended next steps is expected to be presented to Council in Q3 2024.

- c. In addition to work to evaluate district energy in Courtice, the Region is working with Brookfield Residential and energy developer Creative Energy to determine the feasibility of utilizing thermal energy from the Region's sanitary sewer system to meet most of the space heating and cooling requirements of the Dockside Development in the Port of Whitby. Staff are currently undertaking the final round of consultations and will develop the required Memorandum-of-Understanding (MOU) and the necessary agreements. For further details, please refer to report [#2022-INFO-16](#).
- d. Staff will initiate an assessment of DE opportunities across strategic growth areas outlined in the Regional Official Plan as part of an overarching, comprehensive thermal energy demand mapping effort for the Region, in collaboration with local area municipalities and energy utilities.
- e. Given the relatively new nature of DE work in Durham Region, the projects will help inform the development of future policies, standard agreements, and protocols to support the pre-screening, review and approval of district energy and waste energy transfer projects.

## 2.7 Electric Vehicle Adoption

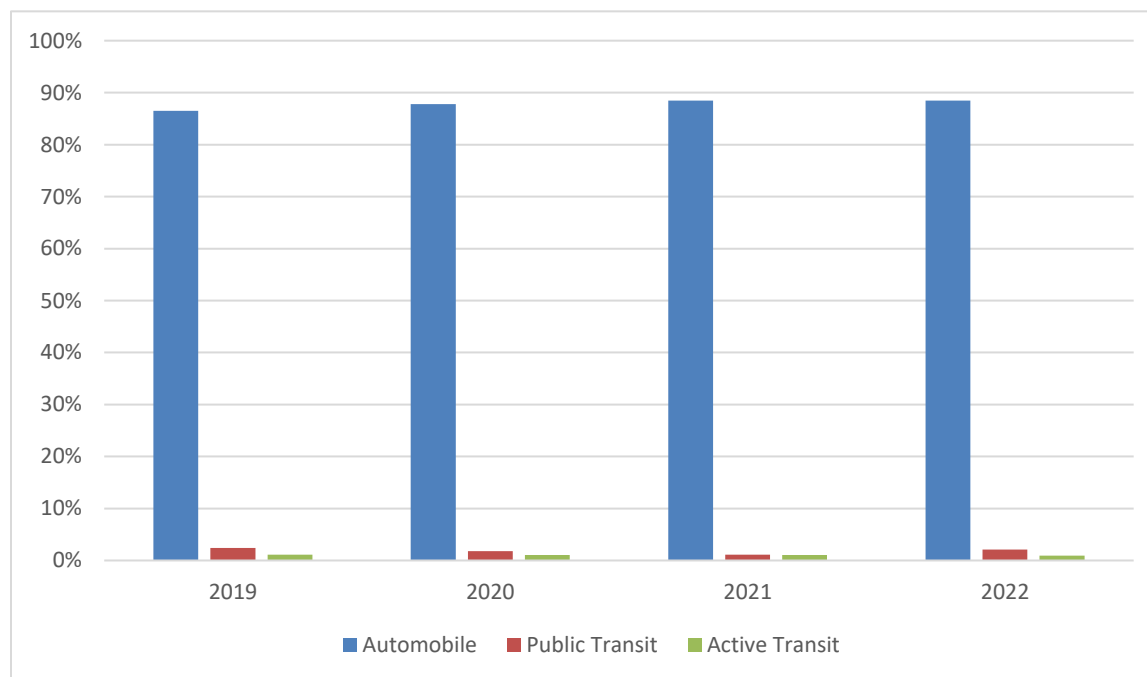
- a. The DCEP points to the transportation sector as a key area of focus, where electric vehicle (EV) adoption to reduce gasoline and diesel fuel use, will help to drive GHG reductions across Durham. As part of a multi-faceted approach to encourage the uptake of EVs across Durham, the Region, in collaboration with local municipalities and other public sector organizations have proceeded with the implementation of EV charging stations to support public and corporate fleet charging activities.
- b. To date, the Region has led on four collaborative proposals to NRCan for funding under the Zero Emissions Vehicle Infrastructure Program (ZEVIP) to support the implementation of EV chargers. Collaborative applications have been developed in partnership with local area municipalities, the Durham Catholic District School Board (DCDSB), Trent University Durham GTA, Oshawa Power and Utilities Corporation, and Central Lake Ontario Conservation Authority (CLOCA). In total, the Region secured \$ 2.7 million in approved grant funding to cover up to 50 per cent of eligible project costs related to the implementation of over 360 EV chargers to support public charging and corporate fleet applications.
- c. The installation of EV charging infrastructure plays a key role in stimulating consumer demand for EVs. In 2022, Durham experienced a surge in EV purchases compared to 2021, with 3,707 EVs (an increase of 80 per cent

over 2021) and 1,402 plug-in hybrid vehicles (PHEVs) (an increase of 34 per cent over 2021).

## 2.8 Public and Active Transportation

- a. Low carbon mobility options such as public and active transit are important for aligning community-wide carbon reduction outcomes with other priorities like community health, well-being and cost-of-living. As shown in Figure 3 below, the automobile remains the dominant form of transportation in Durham Region representing close to 90 per cent of total trips taken in 2022 (the latest year for which data is available). Auto mode share increased over the period from 2019 to 2022, with a commensurate decline in the share of trips taken by public transit and active modes. Transit did show an increase between 2021 and 2022, reflecting resumption of normal services from the COVID pandemic.

**Figure 3: Durham Region – Percentage of total trips per mode<sup>1</sup>**



- b. The Region has a critical role to play in enabling low carbon mobility through public transit service, and through investment in active transportation infrastructure through the Regional Cycling Plan, including strengthening its Transportation Demand Management (TDM) offerings and policies under its Smart Mobility Durham program.

<sup>1</sup> Source: Google Environmental Insights Explorer – Transportation Activity Data for the Regional Municipality of Durham. Available here:

<https://insights.sustainability.google/places/ChIJNWdhIINO1YkR3unhOZ62X88?hl=en-US&ty=2022>



- c. In the fall of 2023, Durham Region Transit (DRT) saw record ridership levels which exceeded pre-pandemic levels. This was achieved despite a lower overall amount of service hours delivered by DRT in 2023 as compared to 2022 (~roughly 480,000 service hours in 2023 vs close to 590,000 service hours in 2022). Section 3.6a below provides additional information on planned investment to support increased transit service alongside bus fleet electrification.
- d. Through implementation of the Regional Cycling Plan (RCP) the Region continues to advance the installation of new cycling infrastructure. Since the adoption of the 2021 RCP, the Region has built approximately 52 kilometres (km) of cycling infrastructure for a total of approximately 121 km of regional cycling facilities. The 2024 budget approved funding for the construction of approximately 19 km of cycling infrastructure to be implemented as part of Regional Roads construction projects and \$0.9 million to advance shovel-readiness of cycling network infill projects.

## 2.9 Climate Governance and Public Reporting

- a. In addition to taking critical steps in advancing climate initiatives, the Region also undertook efforts to enhance community advisory capacity, and public facing communications on progress, as outlined below.
- b. **Durham Climate Roundtable (DCR)** – In 2023, the Durham Region Roundtable on Climate Change (DRRCC) advisory committee was integrated with the Durham Environmental Advisory Committee (DEAC), and a new arms-length Durham Climate Roundtable (DCR) was created, coordinated by Ontario Tech University. The DCR serves as a leadership accelerator, with membership representing diverse sectors across Durham Region, including regional and local government, corporate entities, and community organizations. The objectives of the DCR include providing advice to the Region of Durham on climate change matters and conducting climate change awareness and outreach activities. DCR member responsibilities include reviewing the annual DCR Report, participating in an annual Climate Forum, endorsing identified priorities for action by implementation teams, and acting as champions for climate action priorities within respective organizations, networks, and communities. For further details, please refer to report [#2022-COW-28](#).
- c. **Annual Durham Climate Forum** - the [Durham Climate Roundtable](#) (DCR) hosted the inaugural Durham Environment and Climate Forum on November 14<sup>th</sup>, 2023. The event showcased progress on climate action and celebrated the accomplishments of environment and climate change leaders across Durham Region. Staff are working with the Brilliant Energy Institute (BEI) and Ontario Tech University to deliver the upcoming annual climate forum, scheduled for fall 2024.

- d. **Durham Climate Dashboard** - The [Durham Climate Dashboard](#), formally launching later in April 2024, is an online platform designed to monitor the DCEP's progress in achieving the Region's climate targets. The dashboard displays local energy and emissions data and enables community members to see the progress and impact of climate action initiatives undertaken by the Region and area municipalities, and visually track the outcomes and impact of these actions.

### 3. **Durham Region Corporate Climate Action Plan Update – Leading by Example**

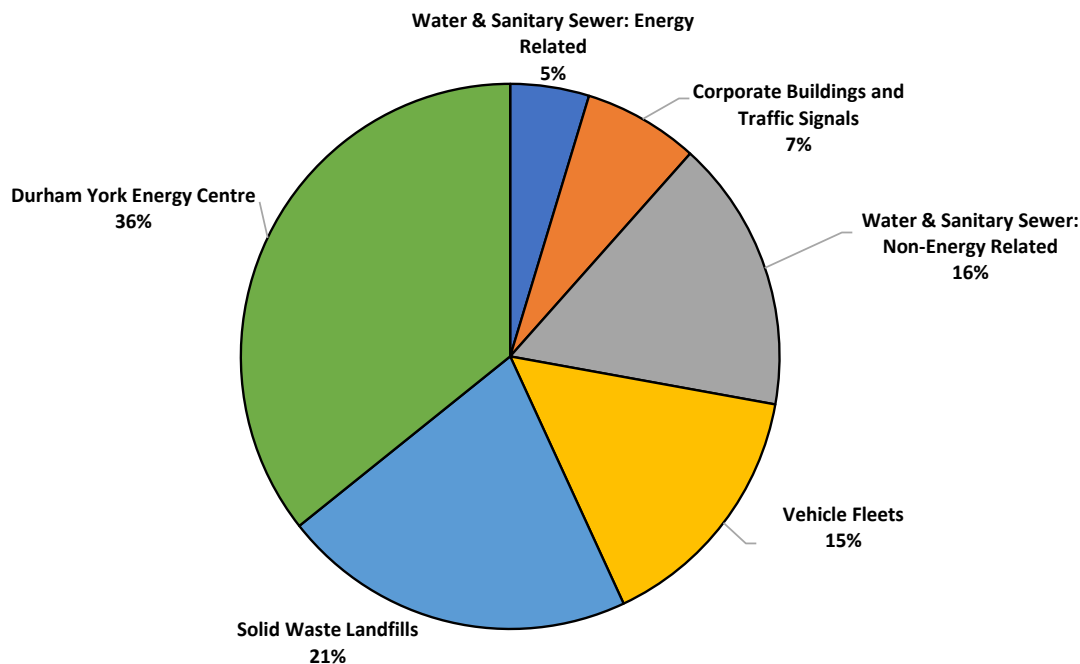
- 3.1 Regional Council approved the [Corporate Climate Action Plan](#) (CCAP) in 2021 in support of municipal leadership in the community-wide transition to net zero and climate resilience. Key elements of the CCAP include GHG emission reduction targets for Regional operations, and a system to track, forecast and report progress annually against those targets to senior leadership and Regional Council.

- 20 per cent GHG emissions reduction by 2025, below 2019 levels,
- 40 per cent GHG emissions reduction by 2030, below 2019 levels, and
- 100 per cent GHG emissions reduction by 2045, below 2019 levels.

#### 3.2 **Durham Region corporate GHG emissions inventory update:**

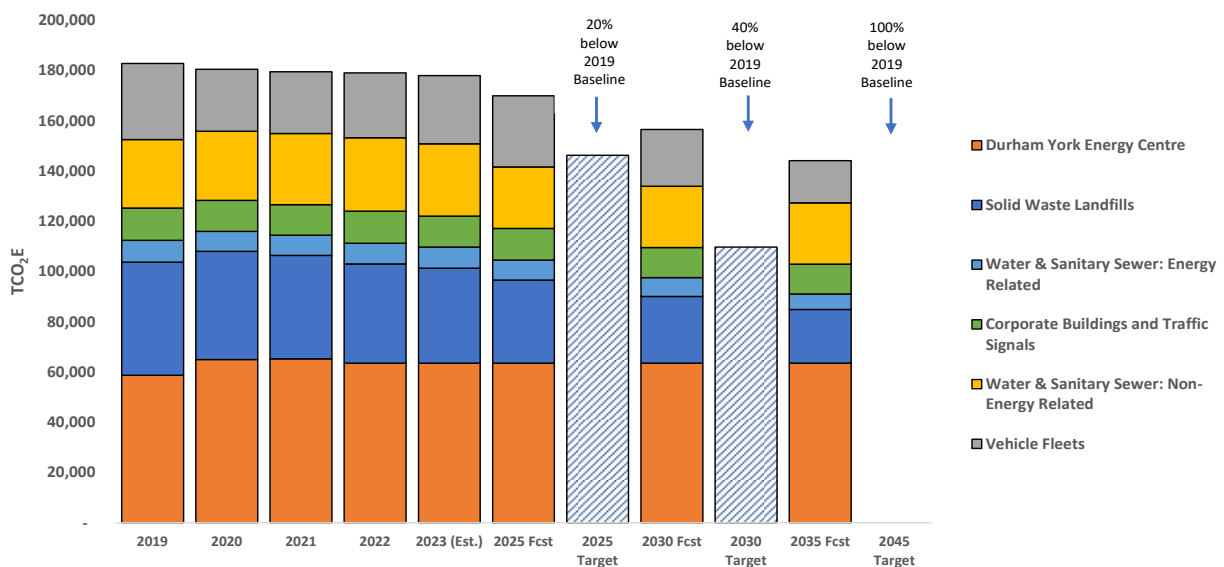
- a. Durham Region's corporate emissions include energy consumption in regional buildings, vehicles, and infrastructure (e.g. water, wastewater, and solid waste management), as well as non-energy GHG emissions associated with the Region's solid waste management (closed landfill and DYEC emissions) and wastewater operations (process fugitive emissions).
- b. Based on preliminary estimates, 2023 corporate GHG emissions were approximately 178,000 tonnes (tCO<sub>2</sub>e, rounded), which represents a 1 per cent decrease from 2022 totals. Non-energy related emissions in solid waste management and wastewater treatment operations continue to represent the largest share of total corporate emissions.
- c. For other corporate operating areas, GHG emissions are largely associated with fossil fuel consumption in fleets from gasoline and diesel fuel whereas GHG emissions in corporate buildings are largely related to natural gas use for space and water heating in buildings. Energy-specific emissions for which the Region is directly responsible for billing was approximately 27 per cent of the corporate totals (based on 2023 estimates and net of the York Region estimated share of Duffin Creek WPCP).

**Figure 4: Corporate GHG Emissions by Operational Area for 2023 (Preliminary Estimate)**



- 3.3 Progress in implementing the CCAP and aligning with Council-endorsed GHG reduction targets have been hindered by the extraordinary challenges facing the Region through the COVID-19 pandemic, ongoing supply chain constraints, and inflationary economic conditions. The Province of Ontario's Bill 23, passed in November 2022, added to these fiscal challenges through sweeping changes to regional land use planning and municipal financing that will place a greater burden on existing property taxpayers and ratepayers to cover the cost of future infrastructure for new community areas. In addition, the Region's corporate emissions profile includes complex emissions sources in solid waste management and wastewater treatment for which technology options are currently limited.
- 3.4 Figure 5 provides a projection of anticipated GHG reductions over the forecast period based on information contained within departmental 10-year capital plans. Based on current information and assumptions, large shares of the reductions are expected to be realized through fleet operations, including the planned electrification of transit service and through the natural decline of methane generation in closed landfills. As reported in 2022, there remains a significant gap between forecasted emissions, and Council endorsed corporate GHG reduction targets. As the findings and recommendations of the GHG Emission Reduction Pathways studies and Water & Wastewater GHG Management Strategy are developed and finalized, forecast estimates will be updated.

**Figure 5: Durham Region Total Corporate Emissions, 2019 to 2023 (Estimated) (MtCO<sub>2</sub>e)**



### 3.5 Corporate Buildings

- a. Corporate buildings (owned and leased facilities, excluding water and sanitary sewer vertical infrastructure) and Regional traffic signals represent seven per cent of total corporate GHG emissions, but a much larger share of the energy-related emissions at just over 25 per cent. With buildings representing the second largest source of emissions community-wide, Regional action in this area is important to demonstrate corporate leadership. Furthermore, with Regional buildings often providing front line services to vulnerable residents (e.g. long-term care homes, childcare centers, and social housing), investments to support climate resilience are critical.
- b. With the adoption of the [Durham Standard](#) in April 2023, all Regionally-owned and operated buildings will be constructed, renovated, retrofitted or expanded to a corporately approved building standard that aligns with the Strategic Plan and CCAP. Specific to corporate climate action, the Durham Standard sets a zero GHG design target and mandates that there is no on-site combustion of fossil fuels (excluding backup power fuel requirements).
- c. The Region has a number of corporate decarbonization projects underway:
  - Traffic Operations /Health Protection at 101 Consumers Dr. (Whitby): deep retrofit will lead to the phase out of on-site fossil fuel consumption.
  - Durham Region Local Housing Corporation (DRLHC) deep retrofits at 155 King St. E. (Oshawa) and 655 Harwood Ave. S (Ajax): include

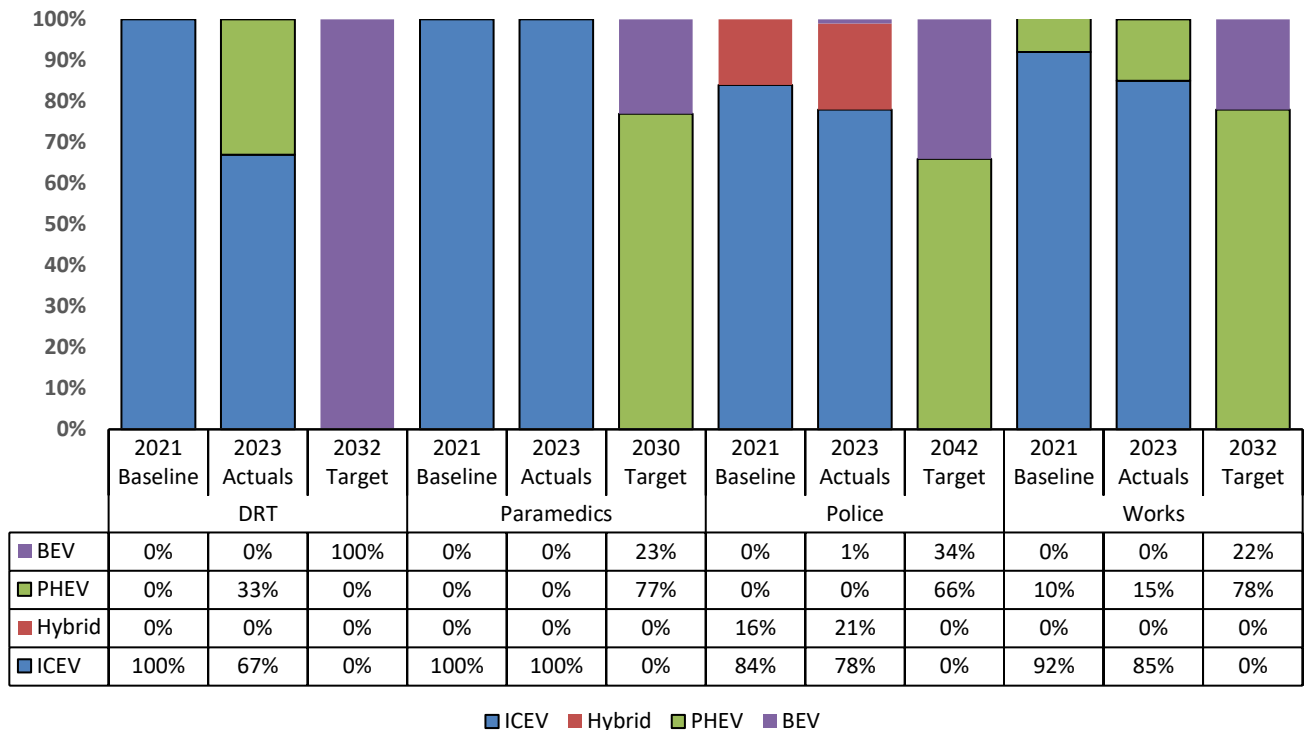
- improved building envelopes and upgrades to building heating, cooling, and ventilation systems.
- Seaton Region of Durham Paramedic Services (RDPS) Station and Training Facility (Pickering): includes a geothermal system that will provide heating and cooling for the building and a solar photovoltaic (PV) system that will contribute to making this a zero-carbon building. This new build project is expected to be completed by the year end 2024.
  - Beaverton Transitional Supportive Housing Facility (Brock): all electric building systems and a rooftop solar PV system which will offset approximately 50 per cent of the building's electrical consumption.
  - Seaton Long Term Care (Pickering): is the first new building to be designed following adoption of the Durham Standard. As outlined in Report #2023-COW-34, the building will be 25 percent more efficient than OBC and future upgrades will be required to retrofit the building to meet the Region's target of net zero by 2045.
  - Clarington Police Complex Phase 2 (Clarington): is currently under construction and designed to include a geothermal field for heating and cooling. With DRPS requiring emergency redundancy for operations, natural gas will remain on site as a backup system.
  - DRT Thornton Rd. Transit Maintenance Facility (Oshawa): this project is in the early design phase with a goal of net zero GHG emissions. Design and issuance of the tender is planned for fall 2024, with construction beginning in early 2025 subject to the federal government's approval of the Regional funding application under the Zero Emissions Transit Fund.
- d. In addition to retrofit projects underway, staff are advancing the development of GHG Emission Reduction Pathways studies for all Regional buildings. Once complete at the end of 2024, measures recommended through these studies will be integrated into the 10-year capital plan and implemented through the annual budget process.

### 3.6 Corporate Fleet

- a. Corporate fleet vehicles made up 15 per cent of overall corporate emissions in 2023 but more than half of energy-related emissions. With transportation representing the largest share of community wide emissions (see **Figure 1**), action to reduce its fleet GHG emissions can serve as a leadership example for other public and private sector organizations.

- b. Regional investment to enhance public transit service can increase corporate GHG emissions in absolute terms while significantly reducing community-based emissions (e.g., growth of corporate transit fleet assisting in reducing passenger vehicle travel).
- In February 2023, Council approved Durham Region [Transit's 2023-2032 Transit Service and Financing Strategy \(Report #2023-DRT-05\)](#) which outlines an unprecedented 10-year investment in DRT services, including a 127 percent increase in revenue services, significant capital investments to implement the [DRT Fleet Electrification Plan](#), and priorities for infrastructure, accessibility, and passenger amenities. The 2024 budget includes an increase of 59,665 revenue service hours, bringing total service to 569,876 hours of conventional service and 174,692 hours of On Demand service.
  - DRT's first six battery electric buses are scheduled to be delivered in April 2024, and the bus fleet is anticipated to be fully electric by 2037. The 2024 budget includes the acquisition of 34 electric buses and supporting electrification infrastructure (pending federal funding approval). DRT's commitment to increasing revenue service hours and fleet electrification represents one of the most significant contributions the Region is making towards both community-wide and corporate decarbonization.
- c. In April 2023, Regional Council adopted a [Light Duty Fleet Electrification Plan](#) which outlines preliminary target years for 100 per cent electrification by fleet group. Figure 6 provides an update on the current state of light duty vehicle electrification across fleet groups, including battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEV), hybrid electric vehicles (hybrid) and internal combustion engine vehicles (ICEVs). The 2024 budget includes investments of \$4.1 million for BEVs, PHEVs and hybrid vehicles in the Works and DRPS fleets.

**Figure 6: Light Duty Fleet Electrification Plan - 2021 Baseline, 2023 Actual, Targets**



- d. Staff are investigating the opportunity to pilot the use of renewable diesel as a seasonal diesel alternative for medium- and heavy-duty fleet during non-winter periods. A Request-for-Information (RFI) was undertaken by staff in the fall 2023 to assess market opportunities and understand the range of product offerings from various vendors, as well as associated environmental benefits and potential operating implications. Renewable diesel is a cleaner, green fuel, which could reduce the GHG emissions from summer diesel by 60 per cent or more (on a lifecycle basis). Potential cost implications continue to be assessed considering product price premiums, potential exemptions on applicable carbon fuel surcharges, and investments in the Region’s fleet electrification plans.

**3.7 Solid Waste Management.**

- a. This source of emissions is related to the management of residential solid waste on behalf of a growing region of more than 250,000 households. Solid waste management makes up 57 per cent of corporate emissions, with DYEC contributing 36 per cent and closed Regional landfills contributing 21 per cent. Solid waste emissions are estimated to have declined by close to 2 per cent in 2023 due to a decrease in methane production at the Region’s closed legacy landfills (DYEC held constant from 2022 values).

- b. Following Regional Council's decision to pause the procurement process for the Mixed-Waste Pre-Sort and Anaerobic Digestion (AD) Project in June 2022, staff developed an Organics Management Plan that was endorsed by Council in March 2023 ([Report #2023-WR-3](#)). The next steps to move the Region's organics management plan forward comprise of short- and long-term processes. The short-term process provides operational continuity by securing third-party organics processing capacity at a suitable AD facility beyond the end date of the current organics processing contract of June 30, 2024. The long-term process focuses on the future viability of the Region's AD Project. Regional staff will monitor the performance of the short-term organics management plan and adjust the long-term organics management plan requirements as appropriate.
- c. In October 2023, a biocover pilot project at the closed Oshawa landfill site was launched to determine if it can be an effective methane reduction method for closed landfill sites in the Region. The feasibility study estimates that a biocover could reduce methane emissions by up to 50 per cent and preliminary findings are promising. The pilot project will continue until March 2025, after which staff will determine whether the project warrants expansion.

### 3.8 Water and Wastewater

- a. Water and wastewater operations make up 21 per cent of total corporate emissions in 2023. This source of energy and non-energy emissions is related to the treatment, storage, and pumping of drinking water and wastewater for the benefit of residents, businesses, and institutions across the Region. Combined, water and wastewater produced approximately 37,200 tCO<sub>2</sub>e (rounded), largely relating to wastewater treatment operations (mainly biosolids incineration at Duffin Creek WPCP, fugitive wastewater emissions and natural gas usage).
- b. In 2023, the Works Department initiated the development of a Water and Wastewater GHG Emission Management Strategy to provide a roadmap towards decarbonization across the Region's water and sanitary sewer treatment plants, storage facilities and pumping stations. Work to finalize the Strategy is underway, and is anticipated to be presented to Council in Q2 2024 with identified decarbonization measures incorporated into the 2025 business planning and budgets process, including the 2025-2034 ten year capital plan. The Strategy will identify measures such as renewable natural gas (RNG) generation from wastewater treatment plants, and thermal heat recovery from the Region's sewer network as key opportunities to align corporate leadership with community-wide decarbonization objectives.
- c. The Strategy will also make recommendations for inclusion of additional emissions within the Region's corporate emissions inventory, mainly related



to Regional wastewater process emissions not currently quantified and reported. It is expected that the Region's emissions reporting protocols and boundaries for GHG reporting will be expanded for the 2025 CCAP update to include these additional emission sources.

#### 4. Durham Community Climate Adaptation Plan (DCCAP) Update – Towards Resilience

4.1 This section provides an update on climate adaptation and resilience measures, and highlights implementation progress, by sector, on the proposed programs recommended in the DCCAP approved by Council in 2016.

4.2 In 2020, the Region updated its future climate projections using the most up-to-date climate information. This updated [climate modelling](#) indicates that the [climate change impacts](#) already being felt will become more intense and severe over the coming decades.

4.3 **Cross-Sector** – Recommended Programs to increase climate resilience and action across departments and sectors and strengthen social cohesion in communities.

- a. **CS1: Protect Our Outside Workers** – Durham Region approved a [Heat Stress – Occupational Health and Safety Directive](#) in 2023 to ensure protective procedures are in place to reduce the hazard of heat stress to all Region of Durham employees who work in high temperature environments.
- b. **CS2: Social Infrastructure for Emergency Resilience** – Several local area municipalities have or are developing cross-sector adaptation and resilience plans to identify and address local climate risks and vulnerabilities, including:
  - [City of Pickering](#) (in development),
  - [Town of Ajax](#),
  - [Town of Whitby](#), and;
  - [Municipality of Clarington](#).
- c. Other initiatives to support community resilience and cross-sector climate action have been initiated including:
  - [Climate Resiliency: A Resident's Guide](#) developed by Durham Environment and Climate Advisory Committee (DECAC),
  - [Sustainable Neighbourhood Action Program \(SNAP\)](#) in Ajax and Whitby, and

- Planning for a new Toronto and Region Conservation Authority (TRCA) Climate Ready Towers program for multi-unit residential buildings.
- d. **Corporate Resilience** – The Region and local area municipalities are required to develop [corporate asset management plans and reports](#) which include reporting of risk and climate change adaptation and mitigation initiatives. Integration of climate adaptation into infrastructure design and operations occurs on a divisional basis. The Region is currently developing a Sustainable Infrastructure Design Policy and Standard in alignment with Strategic Plan goals and values, providing a tool to operationalize sustainability into Transportation, Water and Wastewater, and Waste infrastructure projects and facilities. Staff expect to present an overview of a draft policy and example standard to Council for information later in 2024.
- 4.4 **Building Sector** – Recommended programs to improve resilience of new and existing buildings to future climate conditions, through development standards and adaptation retrofits.
- a. **B1: The Durham Climate Resilience Standards for New Buildings** –, The Region and several local area municipalities have approved new standards incorporating climate resilience into new construction. In 2023, Durham Council approved the Durham Standard – A Standard for Regional Municipality of Durham Facility Construction and Renovation Projects requiring measures for asset resiliency, circular economy, water efficiency and ecology. [Town of Ajax](#), [City of Pickering](#), [Town of Whitby](#), and [Municipality of Clarington](#) have Green Development Standards approved or under development that promote cool roofs, natural heritage and urban forest, stormwater management, renewable energy, and greenspace protection. The Conservation Authorities have also developed technical and engineering guidelines for stormwater management, guided by provincial requirements.
- b. **B2: Building Retrofit for Climate Resilience** – The Region is working to expand the Durham Greener Homes (DGH) program (described above in Section 2.3) to include resilience measures such as basement flood mitigation, stormwater management and sustainable landscapes. This program will cross-promote emergency preparedness and heat protection programs. Staff expect to bring a proposed program update that includes resilience measures to Council for review and approval later in 2024.
- 4.5 **Flooding Sector** – Recommended programs to proactively reduce urban and riverine flooding risk, severity, frequency, and impact.
- a. **F1: Address Urban Flooding** –

- There have been several urban flooding and stormwater related assessments and projects led by the local area municipalities, for example [Whitby Bridge and Culvert Master Plan](#), and [Uxbridge Stormwater Management Master Plan](#).
  - Following a [Stormwater Management Funding Feasibility Study](#), the Town of Ajax introduced a Stormwater Fee and Credit Program in 2023 to support funding for the Town's stormwater management program, including system maintenance and rehabilitation.
  - There are also examples of low impact development (LID) implementation projects across the Region at public facilities, within municipal rights-of-way, and at demonstration sites, for example at [Ontario Tech University's North Oshawa Campus](#), and [Ajax Lakeshore Rain Gardens](#), and [permeable parking installations](#).
  - In Q2 2023, Durham Region launched [Flood Ready Durham](#), an information and resource hub about flood risk and resilience in the community. The website helps residents learn about their flood risk level, different types of flooding, and offers guides and other resources to help get flood ready and know who to call if flooding occurs.
- b. **F2: Redefine Flood Hazards to Consider Climate Change & F4: Address Riverine Flooding** – Durham conservation authorities have led several initiatives including updated floodplain mapping for Durham's watersheds including analysis of future climate change scenarios (e.g., TRCA [Duffin's Creek](#), GRCA [Lovekin, Bouchette Point, Port Granby Creeks, Wilmot, Graham Creek](#)), watershed flood studies and management plans (e.g., [Lynde Creek, Krosno Creek](#)) and dike rehabilitation projects (e.g., [Ajax](#)).
- c. **F3: Improve Flood Forecasting, Warning and Emergency Response** – Conservation authorities continue to provide flood forecasting, flood status indicators, and flood warnings to municipalities and the broader community. Updated flood modelling developed through studies such as the Region's Flood Vulnerable Road and Crossing Hydraulic Capacity Assessment (outlined below in Road Sector), provide information for emergency planning. Where possible, local area municipalities together with other municipalities, conservation authorities, and Ministry of Natural Resources and Forestry develop annual Flood Contingency Plans and Flood Preparedness Guides (e.g., [Clarington Flood Preparedness Guide](#)). Area specific plans have also been developed, including Town of Ajax Lower Carruthers Site Specific Emergency Response Plan.

- 4.6 **Human Health Sector** – Recommended programs to reduce health risks associated with extreme heat through advanced warning, protective measures for vulnerable residents, and reduced ambient summer temperatures.
- a. **HH1: Extreme Weather Alert and Response (EWAR) System** – In 2016, Durham’s Health Protection division launched [Durham Region’s Heat Warning and Information System \(HWIS\)](#), which provides advance notice of extreme heat conditions to municipalities, community partners and the public so that heat response plans can be activated in advance of extreme heat.
  - b. **HH3: “Cool Durham” Heat Reduction Program** - In 2018, Durham developed [Keeping Our Cool - Urban Heat Strategy](#) providing an overview of urban heat island causes, impacts, high risk areas in Durham, and recommended reduction measures. The Durham Region Standard (refer to Section 3.5) and local area municipal green building standards (see Section 2.5) integrate measures to encourage cooling of buildings as part of new construction or major renovation. Efforts to reduce urban heat have also been considered in local area municipal initiatives such as parks and recreation plans, urban forest initiatives, and Sustainable Neighbourhood Action Program (SNAP) in Ajax and Whitby.
  - c. Durham Region Health Department (DRHD) is currently developing a region-wide [Climate Change and Health Vulnerability Assessment](#) to examine the health-related impacts of climate change. These include extreme heat, extreme weather, vector-borne diseases (e.g., [tick-borne diseases](#) and [West Nile virus](#)) access and quality of food and water, poor air quality, and ultraviolet radiation.
- 4.7 **Road Sector** – Recommended programs to improve road performance and resilience to extreme heat and rain events and protect from washouts at stream crossings.
- a. **R1 Resilient Asphalt Program** – Heat resilient asphalt standards are now available. Climate-related increases in heat will be monitored and implemented when warranted.
  - b. **R2: Road Embankment Program** – The Region has led several successful pilots to address the impacts of extreme storm events on road embankments, with lessons applied to new projects where application is warranted.
  - c. **R3: Adaptive Culverts and Bridges** – Durham Region worked with TRCA in 2022 to develop a Flood Vulnerable Road and Crossing Hydraulic Capacity Assessment, identifying roads most vulnerable to flooding and recommendations to prepare for more frequent and intense rainstorms. This work informs asset management, disaster route planning, and

prioritizing future investments. CLOCA completed a similar study in 2023, and planning is underway for GRCA to undertake this work in 2024. All risk assessment results will be made available to regional staff through Durham's GIS mapping.

- d. Durham Maintenance Operations – Roads and Facilities staff successfully secured funding from [Canadian Wildlife Federation \(CWF\)](#) to lead a pilot to implement pollinator gardens along two regional roads and at regional depot facilities. The process and outcomes will be monitored and may help inform a broader strategy for pollinator plantings along strategic regional roads and facilities on a larger scale. This work is supported by the [Council-endorsed DECAC motion](#) regarding programming to support pollinators on Regional facilities and along Regional Rights-of-Way to support natural habitats and restoration.

#### **4.8 Natural Environment Sector – Recommended programs to enhance natural capital and build climate resilience in the natural environment.**

##### **a. NE1: Achieving Climate Change Resilience in the Natural Environment**

- In 2022, a TRCA Durham Natural System Climate Change Vulnerability Assessment was developed to identify natural system vulnerability to future climate conditions, helping inform Durham Region's Natural Heritage System (NHS) science, policy, and planning.
- Recent watershed planning is incorporating climate change scenarios into the process (i.e., [TRCA Carruthers Creek Watershed Plan](#)), and some conservation authorities are developing climate adaptation strategies (i.e., [LSRCA](#)).
- Protection and natural system resilience continues to be supported by local area municipalities and conservation authority's securement of environmentally sensitive land, ecological restoration and management projects, neighbourhood, or project-scale nature-based initiatives. The Town of Ajax has recently developed an [Urban Forest Study](#), [Invasive Species Awareness Program](#), and Invasive Phragmites Strategic Management Plan which will inform other local area municipality approaches.
- New ecosystem services tools have been developed including TRCA, Credit Valley Conservation (CVC), and LSRCA's [Natural Asset Carbon Assessment Guide and Toolbox](#) in 2022, developed to estimate green infrastructure carbon sequestration and storage . [Oshawa's Municipal Natural Assets Initiative](#) was initiated to understand and increase resilience of natural assets along the Oshawa Creek. TRCA's [Nature-Based Climate Solutions Siting Tool](#)

was developed in 2023 to identify strategic locations for green infrastructure and co-benefits, and can be applied outside TRCA jurisdiction.

- In 2022, Durham Region and its five conservation authorities launched [Durham TREES](#), a subsidized rural tree-planting program resulting in 218,000 trees planted in two (2) years. Planning is underway for a second phase, as well as a partnership with Trees for Life to support the Federal government's [2 Billion Trees program](#) across the Region.
- Since 2020, the Region and local area municipalities have partnered with LEAF (Local Enhancement and Appreciation of Forests) to plant over 1,300 native trees and shrubs. The LEAF planting program offers a subsidized rate through the Backyard Tree Planting Program for residents, multi-unit property owners, and commercial property owners in participating municipalities.

**4.9 Food Security Sector – Recommended programs to address climate adaptation in the commercial agriculture and food supply sectors.**

- a. **FS1: Convene Commercial Agriculture Task Force** – Following the approval of the Durham Community Climate Adaptation Plan in 2016, two addenda were developed to support development of climate adaptation strategies in the commercial agriculture and food supply sectors. In 2019 [Growing Resilience - A Durham Agriculture Sector Climate Adaptation Strategy](#) was developed by the Agricultural Sector Expert Task Force, identifying risks to the local agricultural sector and adaptation opportunities. In 2021, [Inspiring Next Steps - A Summary of Durham Region's Food Security Task Force](#) was developed summarizing climate change impact on residents' food access, the results of several food security initiatives and key recommendations on food security.
- b. In 2024, the Durham Food Policy Council published the first [Durham Food System Report Card](#), evaluating a range of local food system indicators including food access, production, farmland protection, waste, education and literacy, Indigenous food sovereignty, cultural connections to food, and farmers and food system worker welfare. This report card and the above noted strategies support the objectives of the citizen-led [Durham Food Charter](#) developed in 2009.

**5. Relationship to Strategic Plan**

**5.1** This report aligns with the following strategic goals and priorities in the Durham Region Strategic Plan:

- a. Goal #1 – Environmental Sustainability

- Goal 1.1 - Accelerate the adoption of green technologies and clean energy solutions through strategic partnerships and investment;
  - Goal 1.4 - Demonstrate leadership in sustainability and addressing climate change; and
  - Goal 1.5 - Expand sustainable and active transportation.
- b. Goal #3 – Economic Prosperity:
- Goal 3.4 - Capitalize on Durham’s strengths in key economic sectors to attract high-quality jobs.

## 6. Conclusion

- 6.1 Following Durham Region’s climate emergency declaration, staff have focused on driving implementation of the Region’s existing council-endorsed plans, and working to establish the Regional municipality as a leader in the context of community wide climate action. This report provides Council with an update on the implementation status of Region’s three Council-endorsed climate action plans covering work on community-wide energy transitions under the DCEP, community-wide climate resilience initiatives under the DCCAP, and corporate climate leadership programs under the CCAP. The report identifies key challenges, opportunities, and next steps to better align climate action efforts with the vision, goals and targets established by Regional Council.
- 6.2 Within the DCEP, implementation remains focused on supporting energy retrofits in existing homes and buildings with planned enhancements to the Durham Greener Homes (DGH) program to leverage digital technologies to enhance resident engagement, and the initial implementation of the Durham Greener Buildings (DGB) Program. Critical work continues in new building construction, including creation of a voluntary green development support program for the building industry, and work to advance the feasibility of district energy opportunities in strategic growth areas. Transportation-related emissions continue to represent the largest share of the Region’s community-wide carbon footprint, and will require sustained investment in public transit services, active transportation infrastructure, and EV charging infrastructure to see reductions in the coming years.
- 6.3 Within the CCAP, corporate building retrofits and high-performance new building construction are commencing, and GHG Emission Reduction Pathway studies are expected to be completed towards the end of 2024 for all building portfolios to enable integration of measures into the business planning and budgets process. The Water and Wastewater GHG Management Strategy is nearly complete and will provide a pathway towards decarbonization across Regional water and wastewater options, accounting for planned capacity growth to serve a growing population.

- 6.4 Within the DCCAP, implementation led by the Region, local area municipalities and conservation authorities is well underway across most recommended program areas. In 2024, the focus is on integrating resilience retrofit measures into the DGH program, developing a Durham Sustainable Infrastructure Design Policy and Standard, and completing Public Health climate vulnerability assessments. These will integrate equity considerations, leverage collaborations for collective impact, and consider strategic monitoring and evaluation to track change and demonstrate success.
- 6.5 This report has been reviewed by staff in Works, Finance, Planning, Social Services, Transit, DRPS, and Health, including RDPS and approved by Sandra Austin, Executive Director, Strategic Initiatives, 905-668-7711, extension 2449.
- 6.6 For additional information, contact: Ian McVey, Manager, Sustainability, at 905-668-7711, extension 3803.

Respectfully submitted,

**Original signed by**

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