



SUBJECT: Climate Resilient Burlington: a plan for adapting to our warmer, wetter and wilder weather annual progress report

TO: Committee of the Whole

FROM: Environment and Energy

Report Number: EICS-05-24

Wards Affected: All

Date to Committee: May 13, 2024

Date to Council: May 21, 2024

Recommendation:

Receive and file environment and energy report EICS-05-24 regarding Climate Resilient Burlington: a plan for adapting to our warmer, wetter and wilder weather year 2 progress report.

PURPOSE:

Vision to Focus Alignment:

- Protecting and improving the natural environment and taking action on climate change

The purpose of this report is to present City Council with the second annual progress report on [Climate Resilient Burlington \(CRB\): A Plan for Adapting to Our Warmer, Wetter and Wilder Weather](#) which was approved by City Council in July 2022 ([EICS-12-22](#)). While directly aligned with Focus Area 3, risks and vulnerability associated with our changing climate will have impacts on all focus areas.

“Taking action on climate change” is one of five enabling behaviours that City Council and City staff are guided by to reach the City’s objectives under [Vision to Focus \(V2F\)](#).

V2F actions connected to the CRB plan include:

- Implement the tactics outlined in the CRB Plan. Develop a climate resilience education program preparing for a changing climate. Conduct an urban heat island assessment to identify opportunities to prepare for a warming climate.
- Update and deliver the Urban Forest Master Plan (UFMP) and Woodlot Management Strategy, each inclusive of a financial plan.

- Develop a Burlington Agricultural Action Plan with a climate lens.

The V2F objective “Establish sustainable, healthy, and low-carbon climate resilient communities” and the following associated commitments also relate to the CRB plan:

- Maintaining, expanding, and adding city parks and green spaces.
- Growing and sustaining a healthy tree canopy.
- Supporting the agricultural economy and community within all boundaries.
- Encouraging low-impact development (e.g., less asphalt, more trees, permeable pavers for parking lots and sidewalks).
- Adapting City operations and the community to become more resilient to the impacts of a changing climate.
- Maintaining a 50/50 split between rural and urban boundaries.
- Protecting, enhancing and restoring biodiversity.
- Supporting the community in becoming stewards of the natural environment.
- Fostering community interest in naturalized spaces (e.g., pollinator gardens, boulevards landscape, etc.).

Background and Discussion:

The CRB plan includes a 10-year action plan (2022-2032) to manage the highest projected risks of warmer, wetter, and wilder weather under five themes:

- Resilient Built and Natural Infrastructure
- Thriving Natural Environment
- Health and Well-Being
- Disaster Resilience
- Strong and Resilient Economy

Sustainability staff provide annual updates on the implementation of the CRB plan to City Council with the first annual progress report presented in mid-2023 ([EICS-07-23](#)). Staff also report annually on the City’s climate mitigation and adaptation actions and commitments through the Carbon Disclosure Project (CDP) and the Global Covenant of Mayors (GCoM). In November 2023, the City received an A sub-score for Adaptation Action through the [CDP](#). The City is also in compliance with [GCoM](#), receiving all three adaptation badges in 2023 after the approval of the CRB plan.

CRB Governance

Since approval of the CRB plan in July 2022, the Coordinator, Sustainability Projects has been responsible for:

- Developing a CRB Implementation Team (CRB IT) ensuring representation from the eight departments leading one or more actions, other departments who are impacted or supporting actions, Conservation Halton, and Burlington Hydro. The CRB IT was endorsed by the Burlington Leadership Team (BLT) in November 2023 with a commitment to provide BLT with annual updates on implementation.
- Onboarding new team members to the CRB IT as needed.
- Ensuring ongoing momentum towards implementation.
- Encouraging staff to increasingly use a climate lens when developing plans, strategies, and actions.
- Leading actions within the plan as applicable and providing subject matter expertise on CRB actions led by other departments.
- Presenting annual progress reports to City Council.

City Auditor's Audit of Climate Plans

In 2023, the City Auditor performed a review of the City's three climate plans, including the CRB plan, given the City's commitments to taking action on climate change through its strategic planning initiatives and participation in national and international climate programs. The purpose was to assess the performance of the implementation plans, the measurement approach, funding/resourcing, and communication tools.

The findings were presented to the Audit Committee in December 2023 ([CA-12-23](#)). Strengths identified included comprehensive reporting to Council and public stakeholders; effective integration with other projects, initiatives, and stakeholders; extensive and effective communications with the public; and compliance with Provincial regulations for energy conservation and demand management plans.

Areas for improvement (Medium risk) included developing dedicated workplans; improving key performance indicators; and financial resources not being aligned to climate programs. In response, the Year 2 CRB update provided in Appendix A has been modified from Year 1 as noted below.

- 1) The responsible City Lead is more specific noting staff positions.
- 2) A status update is now provided for each action: completed, underway, ongoing/continuous improvement, not started, or delayed/at risk. This was not included in the Year 1 update as less than a year passed since the plan was approved.
- 3) The target completion dates of ongoing, 1-2 years, 3-5 years and 5-10 years include further details (a year) and/or align with target dates identified in Vision to Focus 2022-2026.

Appendix B was added to the Year 2 update to track Key Performance Indicators (KPIs). Some KPIs will need to be identified (when biodiversity and agricultural plans are developed), modified (to align with updated KPIs in other plans such as the Urban

Forest Master Plan), or revised (with more suitable KPIs). Data to track progress for fossil fuel emissions reductions for climate mitigation is available but finding appropriate KPIs to track progress with climate adaptation is challenging as it's difficult to associate situations that don't occur (no flooding, no wind damage, no power outages, etc.) with successful implementation of one-off projects. However, it is anticipated that multiple implemented adaptation initiatives could show positive trends over time.

CRB Progress Highlights

Work towards implementing the 32 actions in the CRB plan is ongoing as noted in Appendix A with one action completed, 14 underway, 11 ongoing/ continuous improvement, and six not started. Some 2023 highlights include:

- Plains Rd. protected bikeway project featured a [rain garden](#) at Howard Rd. and Plains Rd. W., with 18 trees and a variety of grasses and flowers.
- [Cootes to Escarpment EcoPark System](#) – [restoration project at City View Park](#) by the City, and landowner projects in the Hidden Valley neighbourhood by Conservation Halton (CH).
- [Effects of Climate Change on Biodiversity within Conservation Halton's Watersheds](#) released by CH.
- Phase two engagement on Burlington's [Urban Forest Master Plan](#) (UFMP) 2023-2043 including a survey, public information centres and the release of the draft plan; [Woodland Management Strategy](#) interim update; planting events and giveaways to grow the tree canopy on private and public lands.
- Public testing of [Alert Burlington](#), a public notification system for community emergencies, in December 2023.
- Climate Action in Burlington [video](#) developed in 2023 and released in January 2024 to highlight local mitigation and adaptation actions.
- Ongoing promotion of the [Home Flood Protection Program](#), [Plumbing Permit Fee Grant Program](#) and Halton Region's [Enhanced Basement Flooding Prevention Subsidy Program](#).
- [Drainage By-law Amendment](#) providing revisions to definitions and policy to prohibit the obstruction of any drain or watercourse and regulate the altering, relaying or repairing of private drains within the City of Burlington ([ES-27-23](#)).
- [Shoreline reconstruction](#) continued at Burlington's Window-to-the-Lake sites.
- [Flood hazard mapping](#) for Tuck, Shoreacres, Appleby and Sheldon Creeks completed by CH.
- [Beachway](#) and [Burloak](#) Master Plans updates by Halton Region. Implementation plans for Beachway Park were adjusted due to increasing flooding and erosion. Work to restore and protect beach and dune areas will help reduce flood risk.

Strategy/process/risk

City staff and community stakeholders (Conservation Halton and Burlington Hydro) on the CRB IT provided updates on actions related to the CRB plan. Additional groups were also engaged including members from Burlington's Climate Action Stakeholder Team representing 15 stakeholder members.

Risk

The CRB plan identifies actions to manage the highest projected risks associated with our changing climate. The 2022-2032 action plan focuses on where the City can take a lead or play a significant role in managing the risks. Not implementing the plan will increase the financial, social and environmental risk to our corporation and the community due to projected warmer, wetter and wilder weather.

The principal risk identified through the audit of the City's three climate plans in 2023 was reputational impairment should the City not successfully achieve its stated goals with the three approved climate plans. Other identified risks (ranked as Medium) included financial/operational exposures to the City from climate related weather disruptions, lack of capital funding to retrofit City assets, changing Council priorities, and lack of execution of climate plans. Risk could change as the plans are implemented.

Options Considered

Doing nothing is not an option to prepare for the impacts of our changing climate. Climate change impacts won't just affect our natural environment but all facets of our lives. As such, climate action should not be an 'add on' or a 'nice to have' but a lens we apply to every service we provide and everything we do.

Financial Matters:

Total Financial Impact

The CRB plan was completed in 2022 within the Council approved budget. Funding requests needed to implement the 32 actions will continue to be brought forward for review and consideration through the annual budget process by lead service areas and/or departments. To prepare for our changing climate and associated risks and vulnerabilities, as well as our international reporting commitments, the City will revisit and renew the CRB plan every five years, pending budget approval.

Source of Funding

As noted above and in Appendix A, implementation of the CRB plan is underway to help reduce our risk and increase our resiliency to our warmer, wetter, and wilder weather. Below is financial information, where available, linked to some actions in the plan.

2023 Initiative	Cost	Funding Source
Action 1-3: Deep energy retrofit studies (Appleby Ice Centre, Brant Hills CC, Fire Stations 2 and 7) Solar array (with connection fees)	\$260K \$88K	\$60K Energy Conservation Initiatives Capital Plan; \$200K FCM Green Municipal Fund Energy Conservation Initiatives Capital Plan
Action 2-1: Trees planted street side (2,081 trees) Spring and Fall 2023 tree giveaway events (1,152 trees in three- and five-gallon pots) Tree planting events (1,779 container trees in two-gallon pots)	\$405.40/tree \$20.15/tree \$12.27/tree	Forest Health operating budget and EAB program Tree Planting Initiatives Reserve Tree Planting Initiatives Reserve
Actions 2-4 and 2-5: Cootes to Escarpment EcoPark System – City View Park restoration project Rain garden component of the Plains Road protected bikeway project	\$45K \$187,471.75	Parks Canada National Program for Ecological Corridors Capital budget RA0246
Action 3-2: Identify gaps in public space cooling	\$11,950	Sport and Community Development operating budget
Action 4-1: Alert Burlington	\$34K + HST per year	ITS operating budget
Action 4-2: Community Climate Resilience Education Program video	\$4,250.50 + HST	Communications (\$4K) and Environment and Energy (remainder) operating budget
Action 4-4: Plumbing Permit Fee Grant Program (59 rebates) Home Flood Protection Program (3 assessments)	\$26,192.51 \$712.50 + HST	Operating budget Stormwater capital budget

Specifics on successful budget requests for the 2024 operating year (enhanced winter maintenance, window cleaning program, and tree pruning risk mitigation) will be reported on in next year’s annual update.

The following items were brought forward to the City’s Strategy and Risk Team in 2023 and will be prioritized into future budgets.

- 1-11: wind risk and vulnerability mapping

- 2-5: biodiversity plan (first phase - gap analysis)
- 4-2: community climate resilience education program (V2F 2022-2026 action)
- 5-2: expand opportunities to support local food production

An application was also submitted for external funding but was not successful.

- 4-1: enhanced emergency notification and communications plan incorporating needs of vulnerable populations

Other Resource Impacts

While Sustainability staff in the EICS department report annually on progress, the actions within the plan involve eight City departments whose staff are direct leads for one or more actions as well as supporting departments and community stakeholders.

Cost of climate change

As noted in previous staff reports ([EICS-02-22](#), [EICS-12-22](#), and [EICS-07-23](#)), adapting to climate change is more economical than not adapting to climate change. According to the [Canadian Climate Institute](#) “for every \$1 spent on adaptation measures today, [\\$13-\\$15](#) will be returned in years ahead in direct and indirect benefits.”

Severe weather continued to wreak havoc in Canada in 2023 with [\\$3.1 billion in insured damage](#), just like in [2022](#). The [Insurance Bureau of Canada](#) reports that over the last decade there have over 35 catastrophic flooding events in Canada with insured losses greater than \$30 million per flood. Insured claims for flooding average \$800 million per year. With Canada becoming riskier to insure, over 1.5 million households can no longer access affordable flood insurance. The intention to launch a [national flood insurance program](#) was announced in the [2023 Federal Budget](#) for Canadians living in high-risk areas without access to adequate insurance, but details have not yet been shared.

Local impacts

A synopsis of Burlington’s weather in 2023 is provided below. Costs associated with weather events are reported where available, such as forestry related storm costs. Costs resulting from facility closures (buildings, fields, etc.) or power outages (repairs and cascading impacts) due to weather, health impacts due to wildfire smoke, or response to the increase in grass fires are not included.

January started off warm and wet with the Rotary Centennial Pond closed on New Year’s Day and a watershed condition statement issued for water safety. Winter returned later in the month with advisories/warnings/statements due to fog, freezing rain and snow (facility closures). This continued into February with a cold alert (warming centres), fog, strong winds (a truck rollover on a day when temperatures reached +15°C and wind gusts of 93 km/hr were recorded at Hamilton airport), freezing rain (schools

closed), heavy rain, and mixed precipitation. March brought a winter storm warning (power outages, facility closures), travel advisory (facility closures), high winds and freezing rain (power outages). Over 40 percent of the \$162,694 in forestry related storm damage costs reported in 2023 were due to two storms in March. The rest were from multiple smaller events that cost \$10K or less per storm.

Dry weather in April contributed to an increase in grass fires reported on different days along a rail corridor in Burlington and Milton caused by sparks from passing trains. The first 30°C temperature and air quality statement of the season occurred in April. A frost advisory was issued in mid-May but heat and humidity returned the last day in May.

Frequent Special Air Quality statements throughout June due to wildfire smoke from northern Ontario and Quebec blowing south were unprecedented in our area. At one point, Burlington had the worst air quality in the province. In response, a city-wide burn ban was issued, and some outdoor facilities were temporarily closed. Between June and August, weather statements or advisories for heavy rain (sport field and outdoor pool closures, and watershed condition statement for water safety), funnel clouds, extended heat warnings, and severe thunderstorm warnings were issued. There was also one major power outage reported by Burlington Hydro on July 27 impacting 10,678 customers. Early September brought extended heat. Warm temperatures were also experienced in October. Weather advisories were issued in November and December predominantly for fog (over 200 hours of fog over 17 days were recorded in Toronto in December).

Climate Implications:

Our climate is changing. 2023 ranked as planet's hottest year dating back to 1850 by multiple sources including [NASA](#), [NOAA](#) and [C3S](#) (Copernicus Climate Change Service) with Antarctic sea ice coverage dropping to a record low. The 10 warmest years since 1850 have all occurred in the past 10 years and it has been 47 years since Earth had a colder-than-average year.

On June 27, 2023, the Government of Canada released the final copy of their first National Adaptation Strategy. "The [Strategy](#) lays out an agreed-upon framework to reduce the risk of climate-related disasters, improve health outcomes, protect nature and biodiversity, build and maintain resilient infrastructure, and support a strong economy and workers. It also identifies goals, objectives, and targets to focus the efforts of governments and communities across key areas and to help ensure future investments are targeted and effective." The Government of Canada Adaptation Action Plan, first released on Nov. 24, 2022, along with the draft Strategy was also updated.

On Dec. 8, 2023, the Government of Canada released [Canada in a Changing Climate Synthesis Report](#). Since 2017, over 650 experts were involved in a process that

resulted in six reports to inform decision making. The latest report provided 10 key conclusions:

- Canada's ageing infrastructure is at high risk from climate change.
 - Climate change is harming our health.
 - Our food and natural resources are highly climate sensitive.
 - The business case for adaptation is strong.
 - Nature-based approaches save money and provide many benefits.
 - Improved incentives and coordination can help close Canada's adaptation gap.
 - Local-level adaptation plays a leading role in our climate change response.
 - Self-determined and Indigenous-led climate action supports reconciliation.
 - Adaptation can promote equity.
 - Now is the time for the private sector to step up on adaptation.
-

Engagement Matters:

Since approval of the CRB plan in July 2022, the Coordinator, Sustainability Projects met with management teams for all eight departments tasked with leading one or more actions as well as two impacted departments to ensure awareness and key responsibilities (five in each of 2022 and 2023). Presentations were also made to community groups (one in 2022 and three in 2023) with regular updates to the Climate Action Stakeholder Team, with representation primarily from external organizations.

Climate Resilient Burlington Implementation Team

The CRB Implementation Team (CRB IT) terms of reference was presented to the Burlington Leadership Team in 2023 for endorsement with a commitment to provide annual updates. The CRB IT meets to share progress on action implementation; ensure alignment between the CRB plan actions, targets and indicators and other corporate and community initiatives; and contribute to the annual progress report. The CRB IT met three times in 2023 with plans to meet up to five times per year as of 2024.

Climate Resilience Education Program

One of the actions in the CRB plan is to develop a community climate resilience education program focusing on high climate risks to help residents understand climate science, risks, adaptation actions, funding opportunities and relevant City initiatives. Initiatives that took place in 2023 included:

- Updated content on burlington.ca/climatechange, getinvolvedburlington.ca/crb, and on the [climate impacts story map](#) (included links to the CRB plan, staff

reports and presentations, climate projections, risks and impacts, extreme weather and public notification system, and information about subsidies and grants)

- Posted two Government of Canada videos to help explain climate change and climate adaptation
- Developed a [Climate Action in Burlington](#) video highlighting City actions on both climate mitigation and adaptation. It is hoped that additional videos will be created, pending funding.
- Published 37 posts on the [Take Action Burlington](#) blog in 2023 with 8,277 visitors and 12,301 views. There are currently 215 subscribers to the blog. Climate related topics included available [programs and subsidies](#) related to basement flooding, [low impact development](#), [emergency preparedness](#), [wildfire smoke](#), the [Urban Forest Master Plan](#), [naturalization project](#), [creek flood hazard mapping](#), [community gardens](#), the [Plains Road protected bike lanes and rain garden](#), [Better Homes Burlington](#) program, [deep energy retrofit studies](#), [solar panel installations](#), [EV charging expansion](#), free [Burlington Transit](#) for kids and seniors, [compliance](#) with international reporting frameworks, etc.

Conclusion:

Implementation of the actions identified in the Climate Resilient Burlington plan will better position our city to reduce the risks and vulnerabilities associated with our changing climate. Not adapting is not a viable option.

Respectfully submitted,

Fleur Storce-Hogan

Coordinator, Sustainability Projects

905-335-7777 x7580

Appendices:

- A. CRB Year 2 Progress Update
- B. CRB Key Performance Indicators

Report Approval:

All reports are reviewed and/or approved by Department Director, the Chief Financial Officer and the Executive Director of Legal Services & Corporation Counsel.