

Take Action Burlington

An Update on Our Local Environment

June 2019



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Background

The City of Burlington is located on the northwestern edge of Lake Ontario within the Greater Toronto and Hamilton area. Burlington is surrounded by natural features: the Niagara Escarpment and Greenbelt to the north; Lake Ontario to the south; the Royal Botanical Gardens and the Cootes to Escarpment EcoPark System to the west; and Bronte Creek Provincial Park to the east. It is urban south of Dundas Street and Highway 407 and rural to the north.

History of Sustainable Development

In 1990, the City of Burlington declared itself a Sustainable Development Community with sustainable development then defined as “meets the needs of the present generation without compromising the ability of future generations to meet their own needs.”¹ The Burlington Sustainable Development Committee (SDC), a volunteer citizens advisory committee appointed by City Council, was formed at the same time to advise council and encourage discussion on matters related to sustainable development.²

In 1994, the SDC developed Principles and Objectives for Sustainable Development to provide guidance about how to achieve sustainable development. City Council endorsed the second edition in 2017. burlington.ca/sdc

The SDC produced its first State of the Environment Report (SOER) in 1998, reporting on the state and health of Burlington’s environment and providing recommendations for improvement. Further editions were released in 2004, 2007, 2011 and 2015. Hard copies of each edition were available at city libraries, school libraries with students from grade seven and up, events attended by SDC members and sustainability staff, and on request. The last two reports are also available at burlington.ca/sdc.



The goal of this report is to provide an overview of the state of Burlington's environment highlighting local sustainability efforts and actions that can be taken in a user friendly document.



A New Direction

In consultation with the SDC, a new direction is being used for this edition. City sustainability staff have led the research and writing of this report with feedback from members of the SDC. The goal of this report is to provide an overview of the state of Burlington's environment highlighting local sustainability efforts and actions that can be taken in a user friendly document. The result is *Take Action Burlington – An Update on Our Local Environment*.

Take Action

We'd love to hear what you think about this latest edition. Send your comments to environment@burlington.ca.

Interested in the environment? Visit TakeActionBurlington.ca for profiles on environmental initiatives and how you can reduce your impact on the environment because collectively, we can make a difference!

Become a member of a City of Burlington citizen advisory committee to provide City Council and staff with input about a wide variety of issues through discussions, presentations and recommendations. Some committees, such as the Sustainable Development Committee, burlington.ca/sdc, also organize and participate in community events. Recruitment takes place each fall.

The City of Burlington has an online engagement tool called Get Involved Burlington allowing you to contribute your ideas and feedback on municipal issues and projects that are important to you. Join the conversation and share your thoughts by signing up at burlington.ca/getinvolved.

Get involved with local non-profit organizations such as BurlingtonGreen Environmental Association burlingtongreen.org and the Halton Environment Network haltonenvironet.ca.

Introduction

Welcome to *Take Action Burlington – An Update on Our Local Environment*.

This report has four themes:

1. Land,
2. Air,
3. Water and
4. Waste



Each theme is broken down into the following headings:

- Climate change connections
- What are we doing?
- What can you do?

Climate change is now embedded within each of the themes rather than in a stand-alone chapter because:

- Our daily actions, such as how we live and move around have an impact on climate change [mitigation].³
- The effects of climate change, such as significantly more intense storms and flooding, impact our everyday lives [adaptation].⁴

In 2016, ICLEI – Local Governments for Sustainability prepared a report on climate data⁵ for the City of Burlington based on climate change models, emission scenarios⁶ and tools.⁷ The results are summarized below.



Baseline	Annual mean temp. (°C)	Days over 30°C	Days over 35°C	Days with max temp < -10°C	Annual precip. (mm)
1971-2000	8.9	20	1	3	875.5

Period	Average annual increase (°C)	Days over 30°C	Days over 35°C	Days with max temp < -10°C	Annual precip. increase (mm)
2020s	1.2 to 1.5	37	4	2	+ 17.5 to 23.8
2050s	2.1 to 3.0	43 to 54	7 to 12	1	+ 38.5 to 65.7
2080s	2.6 to 4.7	51 to 76	9 to 24	0 to 1	+ 53.9 to 97.1

The ICLEI report identified that climate change will also:

- Decrease water levels in Lake Ontario by 0.5 metres by 2050.
- Decrease ice cover time on the lakes by up to one month.
- Increase lake water temperatures, especially nearshore.
- Increase the occurrence and frequency of extreme weather events such as extreme heat days, extreme precipitation and flooding, wind storms and ice storms.
- The city recognizes that climate change is a significant issue and is working with the community and all levels of government towards the goal of the Burlington community being net carbon neutral.

Since the last SOER report was published in 2015, a new strategic plan was adopted by City Council called Burlington's Strategic Plan 2015-2040 burlington.ca/strategicplan. The plan includes four strategic directions: a city that grows, a city that moves, a healthy and greener city, and an engaging city; nine strategic objectives and many goals. *Take Action Burlington - An Update on Our Local Environment* ties into some of the goals identified in the strategic plan including: "the city recognizes that climate change is a significant issue and is working with the community and all levels of government towards the goal of the Burlington community being net carbon neutral." A detailed list of strategic plan connections can be found in Appendix A.

On April 23, 2019, Burlington's City Council unanimously passed a motion to declare a climate emergency "for the purposes of deepening our commitment to protecting the economy, environment and community from climate change."

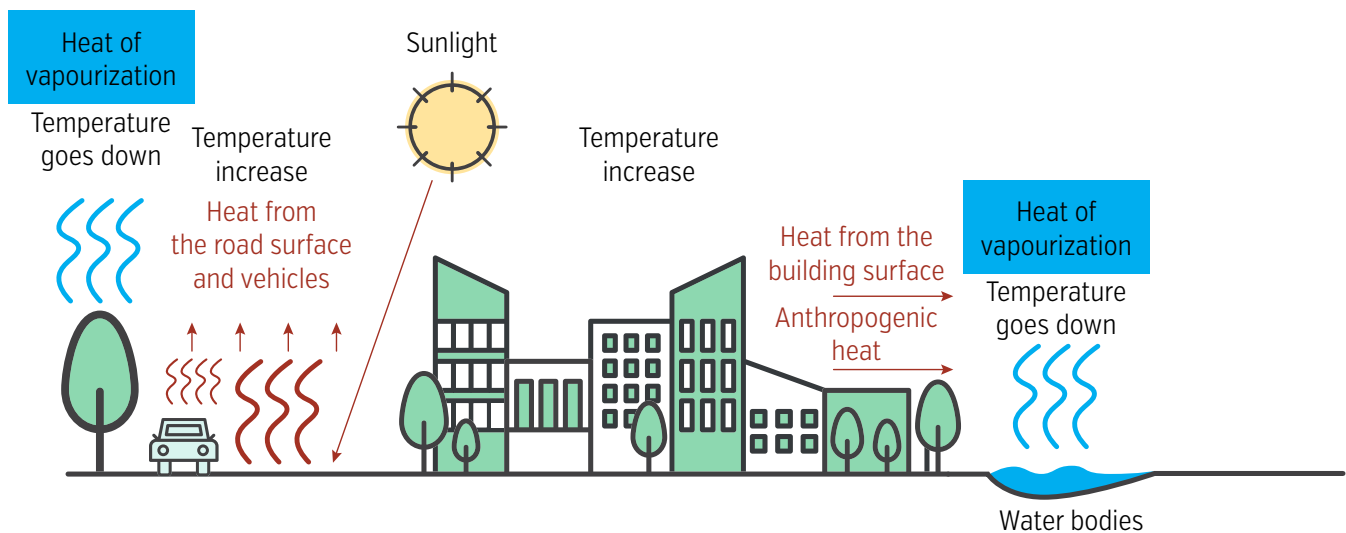


Land

Climate Change Connections

The City of Burlington is a waterfront city with almost equal urban and rural areas. Urban residents are beginning to experience a relatively new phenomenon called the urban heat island effect. On a hot summer day, there is a temperature difference between a built-up area and a park, for example, and between urban and rural areas. This is due to replacing greenspaces with roads and buildings that absorb or trap heat. This temperature difference is likely to increase with climate change.

Urban Heat Island Effect



Other climate change impacts include:

- Hotter summer days and drought
 - Increased stress on humans, animals, trees, plants and water supply.
 - Higher energy costs from increased use of air conditioners.
 - Increased irrigation for plants and crops.
- Warmer average temperature in all seasons
 - New invasive species can survive in the area increasing risk of disease, stress on trees and increased health care costs.
 - Potential to plant new crops with a longer growing season.
- More intense storms and temperature fluctuations
 - Damage to trees and infrastructure from wind, ice storms and flooding [see the 'water' chapter for flooding related issues].



Protecting current greenspaces, such as parks, and increasing natural features, such as trees and green infrastructure, within the city can help to reduce the impacts of climate change:

- Healthy trees will help cool the local environment providing shelter and shade.
- Using different building material and surfaces such as green roofs and walls, lighter colour materials, etc., can help reduce the heat island effect.
- Greenspaces/parks, rain gardens and permeable pavement can increase absorption and reduce flooding.
- Vegetation stores carbon.

This section covers:

- **Land use**
- **Natural heritage**
- **Local farms and markets**

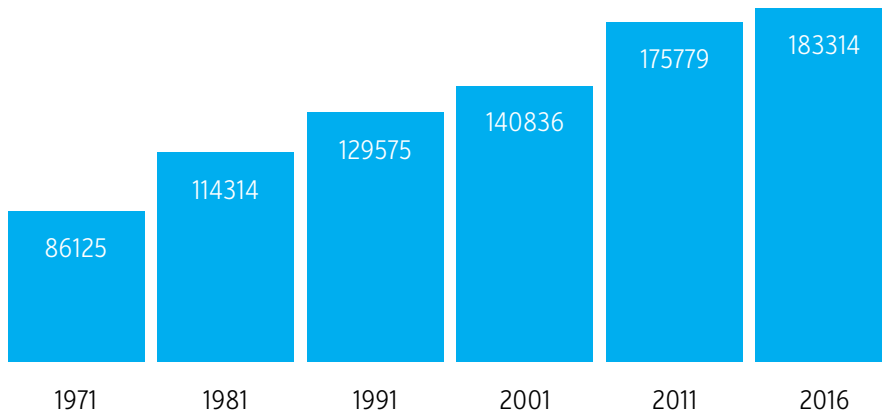


What Are We Doing?

Land Use

Demographics

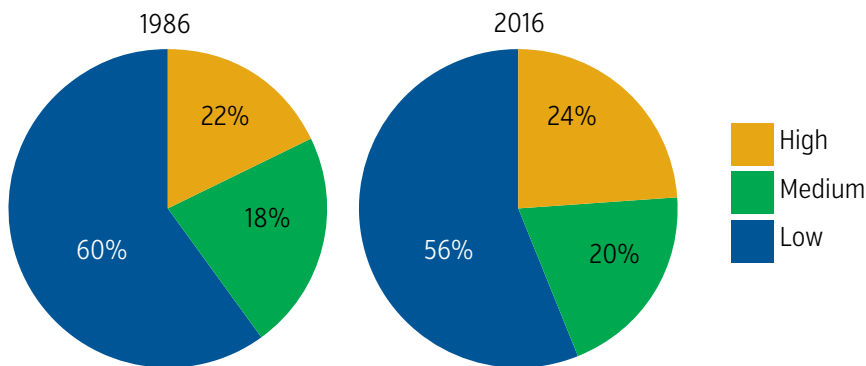
Burlington's population increased by just over four per cent between 2011 and 2016 to 183,314.⁸



Housing

As the city accommodates population growth within its existing urban area, the share of higher density housing forms is expected to increase. This shift is already happening. In 1986, low density⁹ housing units made up approximately 60 per cent of all the housing units in the city. In 2016, that number decreased to 56 per cent, while the share of medium¹⁰ and high¹¹ density housing units increased.

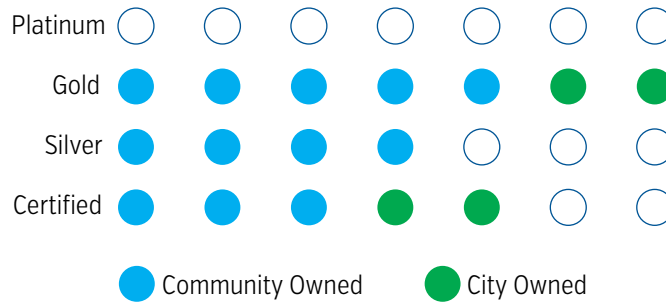
Housing units by type





Green Buildings

There are currently 16 buildings in Burlington certified through Canada Green Building Council's Leadership in Energy and Environmental Design (LEED)¹². Four are city buildings: Appleby Ice Centre, Burlington Transit Administration and Maintenance building, Fire Station No. 8 and the Performing Arts Centre.



Joseph Brant Museum is closed for a major expansion. The project is registered through the LEED program and will be ranked after completion. Some of the green features include geothermal energy and a green roof.

In April 2018, City Council approved Sustainable Building and Development Guidelines. A copy of these guidelines is given to all development applicants and they are encouraged to incorporate green design into their project. A future update to the Burlington Official Plan will include these guidelines. burlington.ca/newop

Natural Heritage

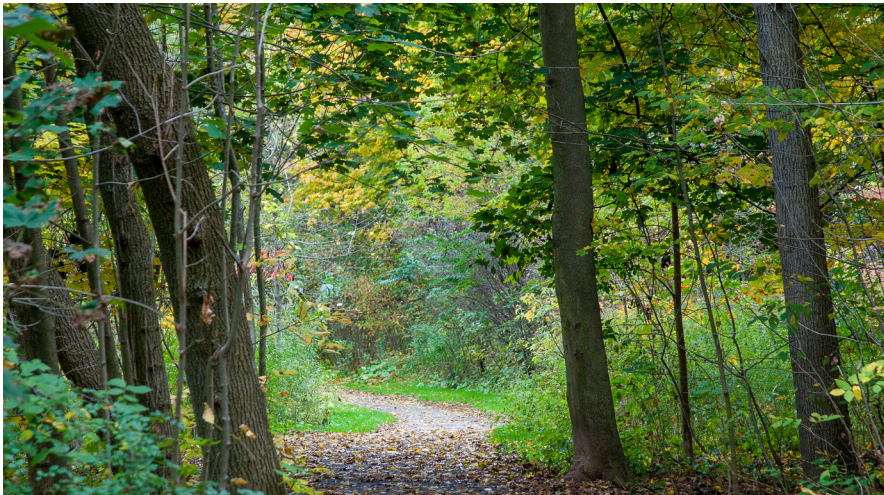
The City of Burlington is surrounded by nature with Lake Ontario to the south; the Niagara Escapement, a UNESCO World Biosphere Reserve, to the north; the Royal Botanical Gardens and Cootes to Escarpment EcoPark System to the west; and Bronte Creek Provincial Park to the east.

There are plans and policies in place to protect, preserve and enhance the biodiversity and ecological function of the 7,816¹³ hectares of Burlington's natural heritage system. This natural heritage system is recognized and protected in the Region of Halton's Official Plan. Natural features within this system include endangered and threatened species habitat, wetlands, woodlands, valleylands, areas of natural and scientific interest, and streams. They are further protected and connected through a system of linkages, buffers and other areas that enhance and provide additional support to the ecosystem.

Park Area

The city has 592 hectares of park area, up from 573 hectares in 2014. This includes city, community and neighbourhood parks, parkettes and woodlots. It does not include greenspace on school properties, multi-use trails, creek blocks, the Royal Botanical Gardens and private lands with public access, such as Bruce Trail lands. An additional 580 hectares of greenspace are owned and maintained by Conservation Halton in Burlington.

Splash pads and shade (natural or artificial) features are increasingly being added to parks to provide residents with some relief on hot summer days. These are expected to increase with climate change. The city makes efforts to use low water spray nozzles to conserve water.

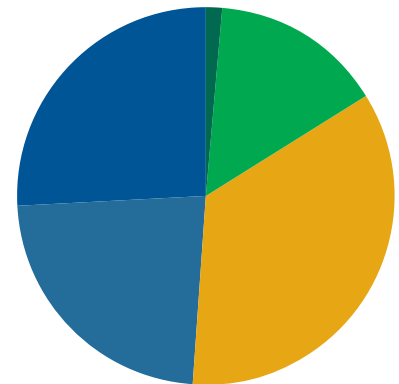


Public Trees

The City of Burlington's Roads, Parks and Forestry Department manages over 70,000 trees in the city's urban and rural areas located near roadways and in manicured areas of parks. This number does not include trees in woodlots, on land managed by others such as Conservation Halton, or on private property. burlington.ca/forestry

These trees are under increasing stress from climate change impacts such as droughts, wind and ice storms. Invasive species such as Emerald Ash Borer (EAB) have also had a negative impact on trees. In 2018, of 2,258 trees removed, 1,982 were due to EAB. For 2019, it is expected that the city will reach peak EAB removals. This will reduce the number of trees in the city's inventory as tree removals will outpace replacement tree plantings. This trend is anticipated to be reversed in 2020 with one tree planted for every tree removed to the end of the program in 2024. burlington.ca/eab

Park Type in Hectares



City	207
Neighbourhood	152
Community	136
Special Resource	88
Parkette	9



In 2018, of 2,258 trees removed, 1,982 were due to EAB.

Tree Management Planning

The city is using new technology to manage the city's urban and rural trees near roadways and in manicured areas of parks. This modern data collection uses geospatial data (GIS) to help with inspections, maintenance, future planning and information sharing. For example, each tree that is tracked has species and age information allowing forestry staff to understand when to vary tree species and plant new trees before older trees reach end of life or to fill existing voids in the overall city-wide tree canopy.

Soil Volume and Tree Canopy

The city is updating urban street tree planting guidelines to plant trees in more soil for improved tree health. Soil quality and room to grow are some of the most critical aspects of street-tree survival. Without enough soil, tree health is compromised so trees are small with a thin tree canopy and a short lifespan. This results in greater costs to maintain and manage street trees. A new technique to improve street tree health uses structural cells around new trees. Structural cells are pre-engineered products that can support the sidewalk, and anything on the sidewalk, while also providing lots of soil for tree roots to grow. This reduces the damage to sidewalks from tree roots and gives trees the best chance for the best health. The Elgin Promenade project included two Honey Locust trees planted in large structural cells behind the west bus shelter on John Street.

Partnerships

To increase the number of trees planted, the city is entering into partnerships. In 2018, the city partnered with

- BurlingtonGreen
- Burlington Hydro
- Conservation Halton
- Halton District School Board
- IKEA
- Laurel Steel
- Rotary Club
- TD Bank and
- Union Gas.

These collaborations helped plant 110 large trees and 2,158 small trees across Burlington.

In 2018, Conservation Halton also planted 12,540 trees and shrubs in Burlington.





Courtesy of BurlingtonGreen

Private Tree Bylaw Pilot

The City of Burlington knows that most urban trees are privately owned so a two-year tree bylaw is being tested in Roseland as of March 1, 2019. The bylaw protects trees with diameters larger than 30 cm, historic and rare trees from damage or destruction. During the pilot, forestry staff will be engaging the public through consultation to investigate the feasibility of a city-wide bylaw. When the pilot ends in March 2021, a report with an assessment of the results and recommendations will be presented to City Council. burlington.ca/privatetree



Courtesy of BurlingtonGreen

Burlington Beach Dune Restoration

The Burlington Beach Regional Waterfront Master Park Plan includes both Spencer Smith Park and Burlington Beach. It was approved by Halton Regional Council in 2015 and includes dune rehabilitation. halton.ca/burlingtonbeach

Between 2013 and 2016, BurlingtonGreen partnered with the City of Burlington, Conservation Halton and Halton Region to host six events to remove invasive plants and plant native vegetation to stabilize the dunes. They received a grant from the Province of Ontario's Great Lakes Guardian Community Fund to do this work. burlingtongreen.org

Burlington Beach

A Natural Treasure

Burlington Beach is a significant natural resource with unique features of regional, provincial, national and even international significance.

It is part of the largest baymouth bar in Ontario (7 kilometers in length) and consists of pure sand formed over thousands of years.

It is the only dune habitat in Halton and therefore it supports a number of plant species that only occur on dunes, many of which are rare or uncommon.

236 plant species have been identified in the area
44% native
15 regionally rare
13 regionally uncommon



3 species at risk have been observed at the site

The area has been recognized internationally as an important bird area providing habitat for a variety of colonial and migratory birds. Birds can nest and roost in the small wooded area and sheltered cove north of the beach.



Restoration of Burlington Beach

The beach and dunes at Burlington Beach are recognized as a Dynamic Beach because of their unstable nature and the risk of flooding from high lake levels and storm events. Development is restricted within this hazard area.

An Environmental Management and Restoration Plan has been developed to guide park management, while ensuring the protection and restoration of the natural environment.

The dunes are being restored through natural succession and by planting using native species which are known to occur at the site and are tolerant of the harsh conditions (e.g. shifting sand, extreme temperature changes, low fertility and drought).

How can you help?

Volunteer for community planting events which effectively restore the area's native habitats. Help with organized invasive plant removal that is necessary to control the spread of species which can outcompete native species.



Numerous species of birds migrate along Burlington Beach.

Look for birds such as waterfowl, birds of prey, terns, gulls and songbirds.



- Planted about 23,000 native trees, shrubs and grasses.
- Removed over 200 bags of invasive species, such as garlic mustard, and many large piles of woody invasive plants, such as buckthorn.
- Installed four large interpretive signs to explain the importance of protecting the dune environment and smaller signs asking the public to keep off the dunes.

"In the end our society will be defined not only by what we create, but by what we refuse to destroy" - J.C. Sawhill

As you enjoy the beauty, peacefulness and array of activities the area has to offer, we ask that you help to protect this natural treasure by keeping litter in its place and by staying on the established trails and dune crossings.



Burloak Regional Waterfront Master Plan

The Burloak Regional Waterfront Park Master Plan is a Halton Regional project, in collaboration with the City of Burlington and the Town of Oakville. The plan was approved by Halton Regional Council in 2014 and includes removing invasive trees and shrubs [completed in 2017] and replacing with appropriate plants. In 2018, the following were planted:

- 304 trees
- 477 whips [very young trees that are two to three feet long, without branches]
- 8,000 small shrubs
- 1,740 very small shrubs
- 1,132 live stakes [cut branches about two feet long].

burlington.ca/burloak

Cootes to Escarpment EcoPark System

The City of Burlington is one of nine organizations that is working to reconnect, restore and protect 1,900 hectares of natural lands owned in the Hamilton-Burlington region. Considered to be one of the most biologically rich areas of Canada, there are over 1,500 species, including more than 50 species at risk.

cootestoescarpmentpark.ca

Jefferson Salamander

Since 2012, the City of Burlington has closed a section of King Road for three to four weeks for the safe crossing of the endangered Jefferson salamanders during their spring breeding migration. Since then, there have been no reports of road deaths observed during the closure.

ontario.ca/page/jefferson-salamander

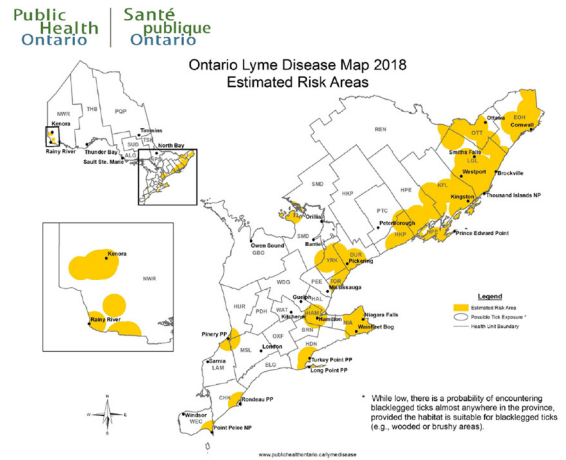


Courtesy of Conservation Halton



Blacklegged Ticks and Lyme Disease

Infected blacklegged ticks can transmit Lyme disease. In the early 1990s, the only known 'hot spot' in Ontario was at Long Point Provincial Park. Since then, the populations have been increasing and expanding. Ticks feed on and are carried by migratory birds, so the risk of infection, while low in Burlington, can happen anywhere. The risk of infection is greatest in wooded, brushy areas. For more information on blacklegged ticks and Lyme disease, please visit halton.ca.



Food and Farms

Community Gardens

In 2012, with funding support from the Province of Ontario, BurlingtonGreen in partnership with the City of Burlington established the first public community garden with 30 plots at Central Park. By 2018, the number of community gardens grew to five and the number of plots to 204. Thirteen of the plots are dedicated to people with mobility needs. Another 13 plots are for community food sharing, seven of which are supported by the city's Neighbourhood Community Matching Fund.

burlington.ca/communitygardens

Additional gardens of various sizes operate across the city including on faith lands, private land, and school grounds.



Local Farms and Markets

There are currently three farmers markets operating in Burlington:

- Burlington Centre - 777 Guelph Line
- Aldershot - 35 Plains Rd. E., and
- Downtown - Centro, 437 Brant St.

According to 2016 census data, 15 Burlington farms sell directly to consumers at on-site kiosks, stands and pick-your-own¹⁴. For more information visit halton.ca/simplylocal.

The total number of farms operating in Burlington continues to decline with 70 farms reported in 2011 and 66 in 2016¹⁵. Types of farms in Burlington include:

- Animal farming/production,
- Nursery/tree/greenhouse/floriculture production,
- Fruit/vegetables and
- Cash crops.¹⁶

The city plans to “initiate and develop a strategy for Burlington’s rural areas. This strategy will consider economic, social, cultural and environmental factors in support of the rural community, agricultural industry, natural heritage and water resources.” burlington.ca/strategicplan.



**According to 2016 census data, 15
Burlington farms sell directly to
consumers at on-site kiosks, stands
and pick-your-own.
For more information visit
halton.ca/simplylocal.**

What Can You Do?

- Plant a tree that is the right size and species for the location.
- Make sure you have a variety of trees in case of plant disease/infestation.
- Volunteer on tree planting days in your area.
- Water the city tree next to your property during droughts.
- Protect root zones of trees when making improvements to your home.
- Replace lawns with native and drought tolerant plants that attract pollinators.
- Try to keep the amount of paved areas on your property to a minimum. If possible, increase the greenspace. Consider permeable pavers or a rain garden.
- Replacing your roof? Consider a lighter-coloured roofing material to help counter the urban heat island effect.
- Consider growing your own food to lower your carbon footprint. Don't have the space or right conditions?
 - Apply for a community garden plot before November 30 each year.
 - Go to a local farm to pick your own in-season local food or purchase directly from farmers at farmers' markets.
- Help protect our beach dunes. Walk on designated areas only and stay off the dunes.
- Check out [TakeActionBurlington.ca](https://www.takeactionburlington.ca), an eco-blog showcasing how we can collectively reduce our impact on the environment.

**Check out
TakeActionBurlington.ca,
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environment.**



Air

Climate Change Connections

Burlington has been impacted by climate change and has identified it as a significant issue.

- Severe weather such as high winds, ice storms and flooding cause social and economic problems for residents, businesses and institutions [see the 'water' chapter for flooding related issues].
- Higher summer temperatures have a greater impact on vulnerable populations and add demand to electricity infrastructure for air conditioning.
- Significant swings in winter temperatures shorten the lifecycle of city roads and sidewalks.

Taking collective action to reduce our impact on climate change is crucial and requires less reliance on the use of fossil fuels¹⁷ in almost every aspect of our lives and businesses. Fossil fuels are used to power vehicles, heat buildings and generate electrical energy. Reducing the use of fossil fuels can also improve local air quality.

Burlington has committed to take action. Burlington's Strategic Plan 2015-2040 calls for city operations to be net carbon neutral¹⁸ by 2040 and to work towards being a net carbon neutral community.

Taking collective action to reduce our impact on climate change is crucial and requires less reliance on the use of fossil fuels in almost every aspect of our lives.

This section covers:

- Energy and greenhouse gas emissions
- Air quality
- Transportation

What Are We Doing?

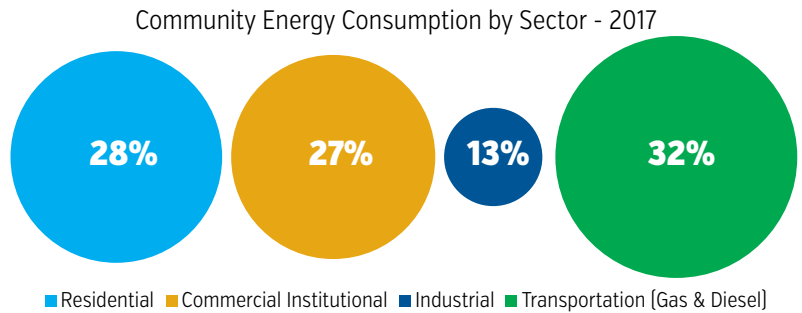
Energy and Greenhouse Gas Emissions

Community Energy Plan

Burlington developed its first Community Energy Plan in 2014 working with local community stakeholders. The group had a shared vision to improve energy efficiency, reduce our carbon footprint¹⁹ and improve energy security, while supporting the local economy. There are five areas of focus:

1. Community engagement,
2. Improving energy efficiency of buildings,
3. Developing local sustainable energy²⁰,
4. Land use and
5. Transportation efficiency.

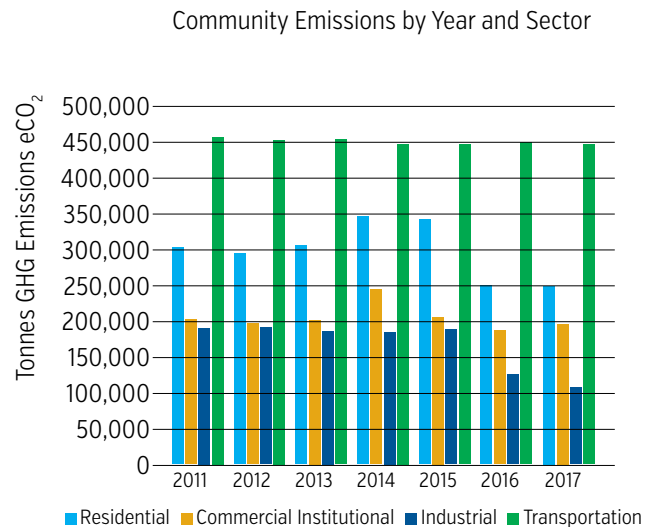
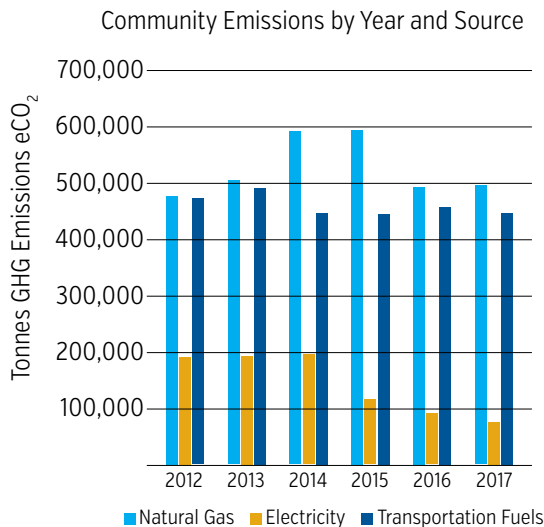
The plan will be updated in 2019.
burlington.ca/cep



Since 2014, community greenhouse gas emissions have decreased by almost two hundred thousand tonnes, primarily from the residential and industrial sectors. That's equivalent to the emissions of 42,463²¹ passenger vehicles driven for one year.

The carbon footprint of the provincial electricity grid reduced significantly since the phase out of the coal fired generating plants. In 2018, over 93 per cent of Ontario's electricity was generated from non-greenhouse gas emitting sources such as nuclear, hydro, wind and solar.²²

The use of natural gas, which is used primarily to heat buildings, can vary from year-to-year based on weather. This contributes significantly to the community carbon footprint. While transportation represents just over 30 per cent of the community energy consumption it represents almost 45 per cent of the community carbon footprint.



Renewable Energy in Burlington

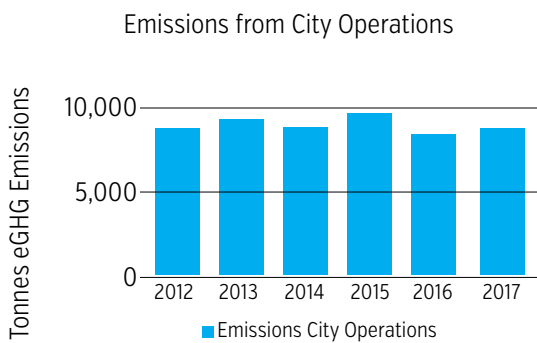
There are no major renewable energy systems, such as wind or solar farms in Burlington. Most solar installations took place under the former provincial FIT (Feed-in Tariff) and micro FIT programs. In 2015, there were about 4 MW [megawatts] of installed solar capacity in Burlington. In 2018, this increased to almost 7 MW. Most installations are rooftop solar panels on homes and businesses. There are also 12 developments known to be using geothermal systems (using earth energy to heat buildings) throughout the city.

Corporate Energy Plan for City Operations

Burlington has a Corporate Energy Management Plan to provide a road map for city operations to improve energy efficiency. burlington.ca/environment

Emissions from city operations are considered minor compared to community-based emissions. However, the city must show community leadership in its efforts to reduce emissions. The chart below shows total greenhouse gas emissions from city operations, with the exception of transit buses (part of the community carbon profile). Measures need to be focused on the use of natural gas in city facilities as well as the city's fleet of

vehicles to achieve the city's net carbon neutral goal by 2040.

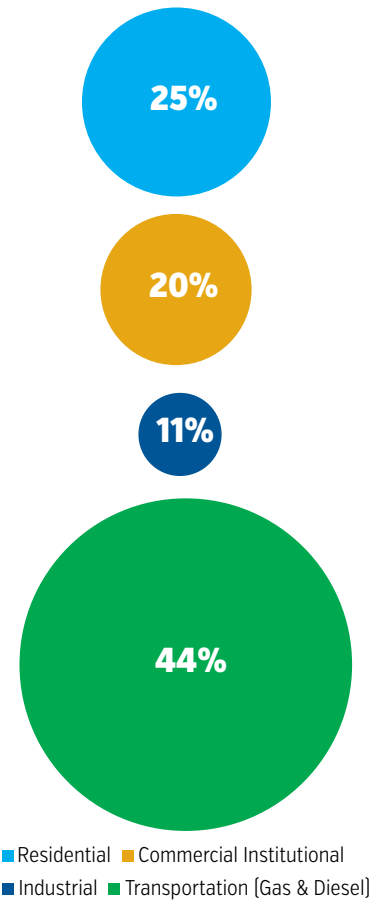



Emissions from city operations vary from year-to-year, often due to weather. Streetlights and traffic signals are much more efficient since being converted

to LEDs. Continuous improvements are made to city facilities to improve energy efficiency. For example, the new City View Park Pavilion is designed to have a net carbon neutral operation.


The Corporate Energy Management Plan, which will be updated in 2019, will identify short, medium and long-range goals including how to be net carbon neutral by 2040. The city's Green Fleet Transition Strategy also needs to be updated. Options for transit buses in the future will depend on available and cost-effective technologies, such as electric or hydrogen buses.

Community Emissions by Sector - 2017





Burlington is partnering with a number of organizations to address climate change.



Partnerships and Community Initiatives

Bay Area Climate Change Office

Burlington partnered with the City of Hamilton and Mohawk College to address climate change on a regional basis. The Bay Area Climate Change Office has been created under the Centre for Climate Change Management at Mohawk College and the Bay Area Climate Change Council has been formed. The council will work with implementation teams of experts to take actions on climate change issues related to transportation, buildings and food. mohawkcollege.ca/bacco

Halton Climate Collective

The Halton Climate Collective represents another collaborative effort to contend with climate change with the City of Burlington, the towns of Halton Hills, Milton and Oakville, Halton Region, Conservation Halton and the school boards. The Halton Environmental Network has taken the lead on developing this network. haltonenvironet.ca/halton-climate-collective

Other Networks

The city is involved in other networks where information, best practices and lessons learned are shared between organizations including:

- Clean Air Council,
- QUEST (Quality Urban Energy Systems of Tomorrow),
- ICLEI (Local Governments for Sustainability),
- Ontario Environmental & Sustainability Coordinators Network,
- Municipal Energy Coordinators Network,
- Canada Green Building Council and
- Sustainable Hamilton Burlington.

BurlingtonGreen Environmental Association

BurlingtonGreen is a local non-profit community-based organization that delivers programs to help individuals and organizations to reduce their carbon footprint such as Make the Switch, Kids Go Green Challenge and Eco Solutions Challenge. burlingtongreen.org

Gas and Electric Utilities

Burlington Hydro and Union Gas (transitioning to Enbridge) are the local electricity and natural gas utilities in Burlington. Each utility delivers energy efficiency programs for homes and businesses. burlingtonhydro.com/power-to-conserve.html and uniongas.com

Provincial and Federal Government

In 2018, the Ontario government ended Cap and Trade; a program that put a price on carbon pollution. The funds raised through this program funded carbon reduction initiatives like the Electric and Hydrogen Vehicle Incentive Program, the EV Charging Incentive Program and the Green Ontario Fund (which provided up to \$5,000 in rebates for windows, thermostats, heat pumps and insulation). The province is working on a new environment plan and emissions reduction target.

The federal government has introduced carbon pricing to those provinces and territories that do not have programs. The carbon price is revenue neutral for households through the income tax system. Carbon pricing provides an incentive to businesses and households to improve overall energy efficiency and reduce their carbon footprint.

Carbon pricing provides an incentive to businesses and households to improve overall energy efficiency and reduce their carbon footprint.



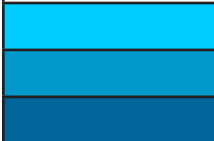

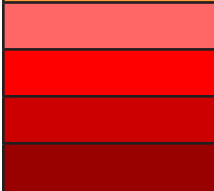

Air Quality

Air quality in Ontario is good 90 per cent of the time.²³ In 2015, the province moved from the Air Quality Index [AQI] to the Air Quality Health Index [AQHI]. The AQHI provides health messaging for both the general and at-risk populations (children, seniors, and people with diabetes, heart and lung disease) to limit short term exposure to air pollution and adjust for activities. airqualityontario.com

The Burlington monitoring station is located near the QEW at North Shore Boulevard East and Lakeshore Road. It measures ozone [O₃], fine particulate matter [PM_{2.5}] and nitrogen dioxide [NO₂]. Readings are reported hourly at airqualityontario.com.

The health risk associated with air quality in Burlington is low most of the time, based on the readings taken at 4 p.m. each day. Most of the 'moderate' air quality readings were on the lowest range of the category. In addition, there was one 'high' reading in 2015 and no 'very high' readings in any reported year.

AQHI Categories and Health Messages

Air Quality Health Index Categories, Values and Associated Colours	Health Risk	Air Quality Health Index	Health Messages	
			At Risk Population*	General Population
	Low	1 - 3	Enjoy your usual outdoor activities.	Ideal air quality for outdoor activities.
	Moderate	4 - 6	Consider reducing or rescheduling strenuous activities outdoors if you are experiencing symptoms.	No need to modify your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.
	High	7 - 10	Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.	Consider reducing or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.
	Very High	Above 10	Avoid strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.	Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.

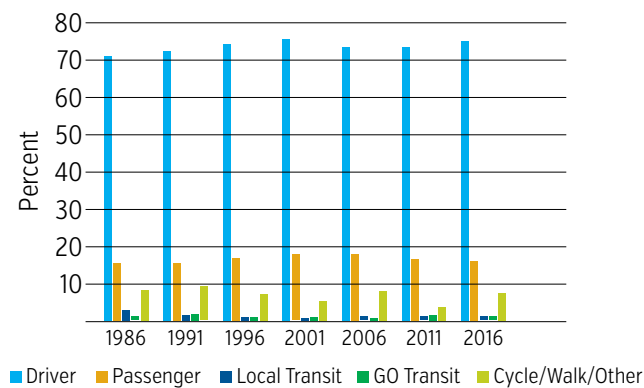
*People with heart or breathing problems are at greater risk. Follow your doctor's advice about exercising and managing your condition.

Transportation

Travel Choice in Burlington

Travel within Burlington is primarily by personal vehicle.²⁴ Transportation emissions make up 44 per cent of Burlington’s community greenhouse gas emissions. To become a net carbon neutral community, Burlington residents need to travel using electric or hydrogen forms of transportation (personal vehicles or transit) and increase active transportation trips. The opportunity for active transportation is most appropriate for trips less than five kilometres which make up a large percentage of trips made within Burlington.

Travel in Burlington

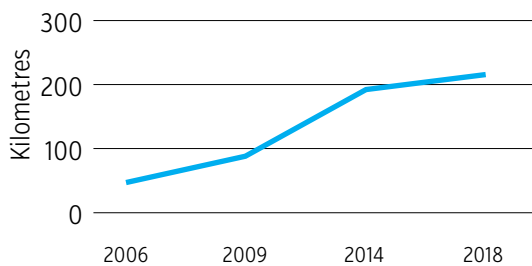


Cycling Master Plan

The city’s first cycling master plan was approved in 2009. In 2018, there were 212.7 kilometres of cycling facilities in Burlington which include bike lanes (including shared lane marked or sharrow streets), multi-use paths (off-road or adjacent to road), signed routes and paved shoulders.

There will be a new cycling plan in 2019. In the future, the goal is to integrate all individual plans and policies related to transportation into one mobility plan and include automobile, cycling, transit, sidewalk policies, and an active transportation strategy for north Burlington.

Cycling Facilities in Burlington



Electric Vehicles (EVs)

The market share of new registrations for EVs²⁵ (hybrid electric, plug in hybrid and battery electric) increased in Burlington between 2015 and 2018 from 1.45 per cent to 5.01 per cent. The increase in EVs may be due to incentives that were in place until mid 2018, improved battery range, the increased number of options available and better public awareness. EVs are cheaper to operate and maintain and reduce greenhouse gas emissions. plugndrive.ca

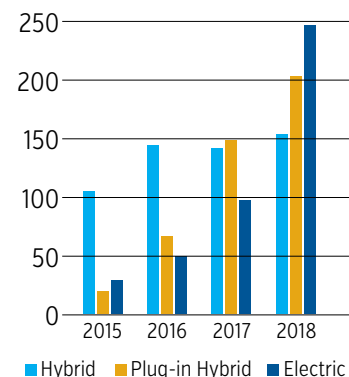
Charging Stations

In 2015, the first public electric vehicle charging station was installed on city property in downtown Burlington. It had two ports. By 2018, there were 29 Level 2 charging ports available on city property; 20 of which received funding through the provincial Workplace EV Charging Incentive Program. An additional 64 Level 2 and 3 charging stations were also available throughout Burlington, some of which require a fee to charge. plugshare.com

Burlington Electricity Services Inc. (BESI), a non-regulated sister company of Burlington Hydro Inc., is expanding “Intelligent” EV charging stations for their Burlington customers including:

- Single-detached or town home owners who own or are considering owning an EV,
- Condominium owners to get agreements to install Level 2 charging stations in multi-residential parking garages,
- Condo developers to ensure needs of prospective unit owners are met without impacting unit owners who do not want charging stations, and
- Businesses who wish to install charging stations. futuregrid.ca

New Vehicle Registrations



Idling

The City of Burlington launched an idling awareness campaign in 2003. Burlington City Council adopted the city's first idling bylaw to limit unnecessary idling in 2004. The bylaw was strengthened in 2009 by:

- Reducing the limit for unnecessary idling from three minutes to one minute,
 - Eliminating the temperature exemption, and
 - Changing the type of ticket issued from ticketing a person (like a speeding ticket) to ticketing a vehicle (like a parking ticket) making enforcement easier.
- burlington.ca/idling



Between June 2009 and December 2018, 120 tickets and 69 warnings were issued. The fine is \$120.

What Can You Do?

Transportation

- Determine the best way to go electric by visiting Plug 'n Drive's Electric Vehicle Discovery Centre or check out their website at plugndrive.ca. EVs are cheaper to operate and maintain.
- Carpool with others to work or other activities
- Walk, cycle, skate, or board for short trips.
- Use public transit.
- If you drive a gas or diesel vehicle, turn your engine off while you wait. The City of Burlington has a one-minute limit for unnecessary idling. burlington.ca/idling



Home / Business

- Consider a net zero energy building which produces as much clean energy as is used on an annual basis. No fossil fuels (natural gas, propane and oil) are used in the building for heating and cooking. Such homes have a better building envelope with more insulation and high efficiency/triple glaze windows. As a result, they are more comfortable for occupants with more constant air temperature throughout the living space, have better air quality, good humidity control, a quieter living environment being impacted less by external noise, and cost less to operate.
- Renovating?
 - Check out saveonenergy.ca for offers to help save you money on items such as insulation, air sealing, windows, water heaters and other heating and cooling incentives.
 - Switch to a cold climate air source heat pump or install a hybrid heat pump if your fossil fuel furnace is a newer model.
 - Replacing appliances? Ensure they are Energy Star labelled indicating they use less energy to operate saving you money every time you use them.
- Reduce phantom power by unplugging all non-essential devices such as chargers, coffee makers and other small appliances.
- Renewable energy
 - Invest in renewable energy businesses or financial instruments.
 - Install solar photovoltaic panels and/or batteries under Ontario's Net Metering program.



water

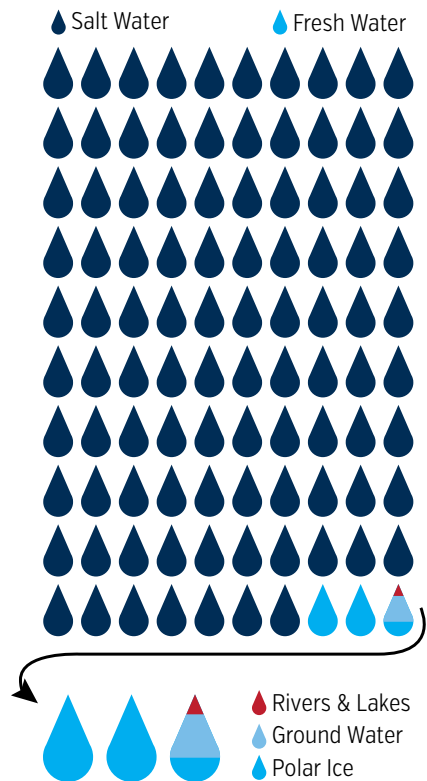
Climate Change Connections

There is a misconception that water is unlimited, so water is a resource that is often taken for granted. Freshwater resources are limited and need to be protected and conserved.

Climate change will have an impact on water in many ways:

- Burlington is expected to be warmer and receive more precipitation in autumn, winter and spring. Summer is expected to have less precipitation.²⁶
- Warmer temperatures could cause:
 - Increased lake evaporation resulting in less water availability.
 - Less ice cover/more open water on the lakes in the winter could lead to more evaporation and more shoreline erosion during storms.²⁷
 - More algae growth due to warmer shoreline water temperatures.
- More frequent and higher intensity rain, ice and wind storms could cause:
 - High Lake Ontario water levels at times. This was experienced in 2017 due to “extreme and at times unprecedented weather conditions including extremely high, natural water supplies and highly unusual winter weather conditions.”²⁸
 - Flooded basements from overland water flow and sewer backup.
 - Damage to grey and green infrastructure such as roads, buildings and tree canopy.
- Less precipitation in summer could cause:
 - More demand for irrigation (agriculture, residential, etc.).
 - Low aquifer levels in rural Burlington.
 - More stress on trees, plants and crops.
- Increased opportunities for water conservation programs (halton.ca/water) such as:
 - Rain barrels and
 - Drought tolerant landscaping.

All of the Water in the World



This section covers:

- Water quality
- Burlington flood risk and prevention
- Community outreach

What Are We Doing?

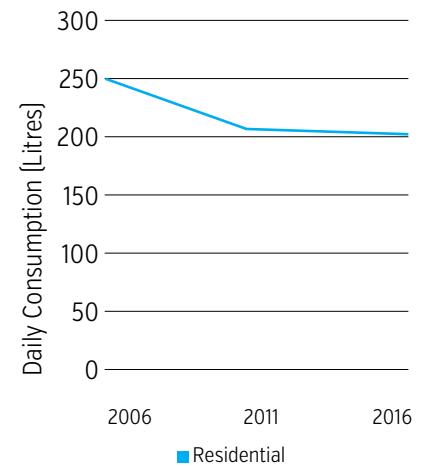
Water Quality

Halton Region

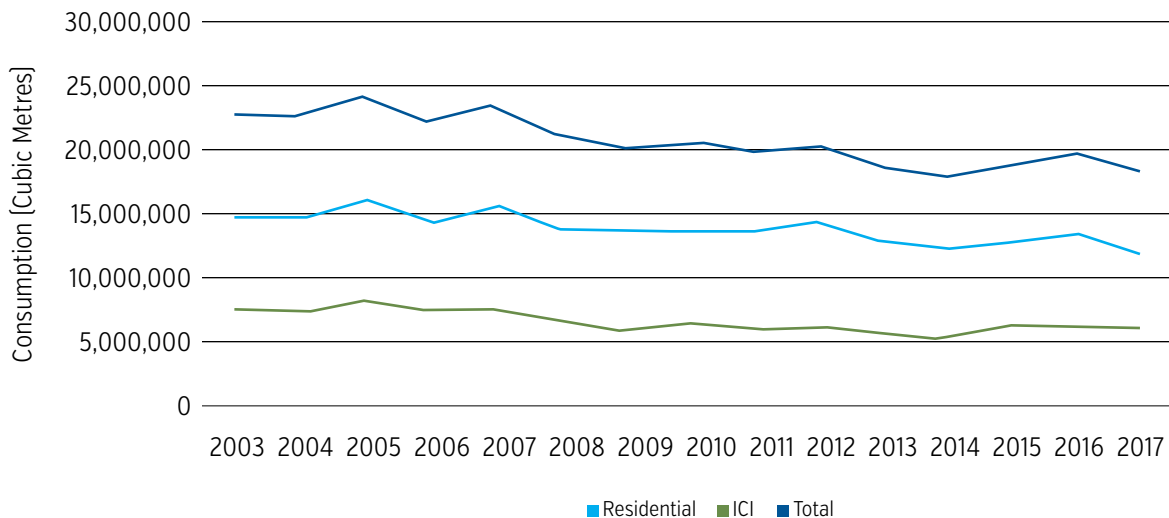
Halton Region is responsible for water purification and distribution, wastewater collection and treatment in Burlington. They constantly monitor drinking water quality to make sure it's safe when it reaches homes, schools and businesses and treat the wastewater before safely returning it back to the environment.

Total water consumption has been declining, even with increasing population thanks to successful conservation efforts. Below are two charts to reflect this trend: one showing annual water consumption for the residential, and industrial, commercial and institutional (ICI) sectors;²⁹ the other showing average daily water use by residents for the last three census years.³⁰

Daily Water Consumption Per Capita



Annual Water Consumption in Burlington



Hamilton Harbour Remedial Action Plan (HHRAP)

Environment Canada is the lead for the HHRAP, a multi-stakeholder effort to clean up Hamilton Harbour (also known as Burlington Bay) so it is no longer polluted and an “Area of Concern” hamiltonharbour.ca/about_the_rap. The most significant HHRAP project is the Randle Reef Sediment Remediation Project. Its purpose is to contain highly toxic materials dating back to the 1800s and covering an area the size of 120 football fields. randlereef.ca

Stormwater Quality

The City of Burlington is addressing stormwater quality issues:

- A stormwater management pond clean-out ensures ponds are operating efficiently, reducing the amount of sediment entering creeks.
- More oil grit separators are reducing sediment and oil from stormwater to improve stormwater quality. Less sediment is associated with lower phosphorus levels.
- Training and professionally certifying staff in erosion and sediment control.
- Updating stormwater design standards in stormwater quality, climate change adaptation and low impact development and presenting these new standards to City Council in 2019.

Burlington Flood Risk and Prevention

On Aug. 4, 2014, the City of Burlington received the equivalent of two months of rain [191 millimetres] in eight hours. Roads, highways and more than 3,000 homes reported flooding resulting in insured damages exceeding \$90 million, not including uninsured belongings. Many Southern Ontario municipalities have experienced similar major storms in recent years.

Options to deal with future storms were presented to City Council in 2015. \$20.4 million was added to the existing 10-year stormwater capital budget and forecast for major flood improvements such as upsizing major creek culverts and creek channel improvements to increase capacity to reduce flooding risk. burlington.ca/flood

On the third anniversary of the flood, the University of Waterloo's Intact Centre on Climate Adaptation launched the Home Flood Protection Program (HFPP) in Burlington. This pilot program offered a comprehensive inspection of residents' homes and a recommendation report for flood risk reduction action items. It informed residents on how to reduce their risk of flooding and in turn reduce damage if flooding occurred. The program was initially offered to Burlington residents at a subsidized price of \$125. In 2018, the program was offered for free to the first 100 registrants to encourage more residents to sign up at homefloodprotect.ca. Over the course of the HFPP in 2017 and 2018, 120 home inspections were done in Burlington.

Halton Region offers four subsidy programs to help residents protect their homes from flooding:

- Downspout disconnection subsidy,
- Weeping tile disconnection and sump pump installation subsidy,
- Backwater valve installation subsidy, and
- Sewer lateral (pipe) lining and repair subsidy. halton.ca/water



Community Outreach

Watershed Programs

Conservation Authorities report on watershed health every five years including surface water and groundwater quality, forest cover and impervious land cover. The 2018 report card is available at conservationhalton.ca/watershed-report-card.

Conservation Halton is involved in community programs including Halton Watershed Stewardship Program (conservationhalton.ca/stewardship), Stream of Dreams (conservationhalton.ca/stream-of-dreams), Healthy Neighboursheds (conservationhalton.ca/healthyneighboursheds) and the Halton Children's Water Festival (hcf.ca).

Halton Children's Water Festival

Between 2006 and 2018, over 45,000 elementary students attended the annual Halton Children's Water Festival, a four-day outdoor event at Kelso Conservation Area. Sixty curriculum-linked activities teach children in grades two to five about ground and surface water under four themes:

- Water conservation and protection,
- Water health and safety,
- Water science and technology, and
- Water and society.

Local high school students develop leadership skills as they are trained to deliver several activities at the festival.

The City of Burlington has been an active member of the festival since 2007, dedicating funding and staff hours to program development and delivery. hcf.ca

In 2018, 30 per cent of elementary students and 65 per cent of high school volunteers at the festival were from Burlington.





Yellow Fish Road Program

City sustainability staff have promoted Trout Unlimited Canada's Yellow Fish Road program since 2005. The program raises awareness that any material that is dumped into storm drains will eventually end up untreated in our lakes and why it's important to properly dispose of household hazardous waste. Painting kits and supplies are available free of charge. burlington.ca/water

Bottled Water

In 2010, the city launched a "Thirsty? Try the tap" campaign. It promotes using tap water and restricts bottled water sales in most city facilities. City facilities have bottle refilling stations and outdoor events on city property have use of two water bottle refilling bars. burlington.ca/water

In 2015, City Council endorsed the Blue Dot Declaration for the right of citizens to a healthy environment. The Blue Dot campaign was organized by the David Suzuki Foundation along with Ecojustice. The ultimate goal is an amendment to the Canadian Charter of Rights and Freedoms that guarantees Canadians the right to a healthy environment.

In 2017, the Healthy Kids Community Challenge (burlington.ca/healthykids), promoted water as a healthy beverage choice over sugary drinks. City staff reached out to local businesses to ask them to join Blue W, a community-based program promoting and mapping free municipal tap water refilling locations. bluew.org



Pool, Spa and Hot Tub Maintenance

Beginning in 2016, City sustainability staff have raised awareness on the environmentally responsible way to maintain and empty chlorine and saltwater pools, spas and hot tubs through the Take Action Burlington blog TakeActionBurlington.ca. In 2018, sustainability staff also prepared a brochure. burlington.ca/water

Beginning in the summer of 2018, City of Burlington operations staff have used devices at its three outdoor pools to safely and easily allow animals and other creatures to get out of the pool.

What Can You Do?

Be thankful for our clean water supply.

- Thirsty? Try the tap to quench your thirst instead of using bottled water. burlington.ca/water
- Join Blue W, a community-based organization promoting municipal tap water. By registering, businesses are saying they are open to those that need to refill their reusable bottles without pressure to make a purchase. In 2018, 57 Burlington locations were registered at bluew.org

Protect the resource.

- Keep contaminants out of the water supply.
 - If you have a pool, ensure you maintain and empty your pool the right way. Check out our online brochure for tips. burlington.ca/water
 - Does your car need a bath? Take it to a car wash to ensure used water is properly captured and treated. If you wash your car on your driveway, the dirty water, soap, oil, etc., will be washed down the nearest storm drain and end up in a water body without proper treatment.
- Paint the city yellow. Sign out a Yellow Fish Road painting kit. burlington.ca/water
- Participate in the Great Canadian Shoreline Clean-up, a national conservation program encouraging Canadians to take action and pick up litter wherever water meets land. shorelinecleanup.ca
- If you use well water, make sure that your well is a safe distance from potential sources of contamination such as septic systems, barnyards and roads and that the land slopes away from the well to prevent surface water from entering. For more information, please visit halton.ca and download the Safe Water Guide for Private Well Owners.



- Use water efficiently.
 - Don't overwater your lawn.
 - Capture rain water for your plants and garden. Check the status of Halton Region's annual rain barrel sales at halton.ca/water.
 - Switch to a WaterSense approved high efficiency toilet and get a \$75 rebate. Offer is limited to one rebate per household. halton.ca/water

Protect your home and adapt to a changing environment

- Be prepared. Download a copy of Halton's Guide to Flooding Prevention and Recovery at halton.ca/water.
- Find out if your home qualifies for Halton's Enhanced Basement Flooding Prevention subsidy program including downspout disconnection, weeping tile disconnection and sump pump installation, backwater valve installation, and sewer lateral (pipe) lining and repair. halton.ca/water
- Learn how to reduce your risk of flooding through the Home Flood Protection Program. homefloodprotect.ca
- Attend one or all three of Conservation Halton's Healthy Neighboursheds homeowner workshops offered each year for ideas on how to create low cost, environmentally friendly and visually appealing gardens. Topics include:
 - Getting started! Learning to go with the flow.
 - Working with nature: selecting the right plants.
 - Rain gardens and low impact landscaping.
 Learn more at conservationhalton.ca/healthyneighboursheds.

Learn how to reduce your risk of flooding through the Home Flood Protection Program.



Waste



Climate Change Connections

Ontarians threw out 9.5 million tonnes of waste in 2016 or 678 kg per person.³¹

When the Halton Waste Management Site, which includes the landfill, opened in 1992, it was expected to close in 20 years. With waste diversion efforts, the site is now expected to remain open until 2044, over 30 years longer than its original closing date. Despite recycling and composting, we continue to produce a lot of garbage.

Waste contributes to greenhouse gas emissions through:

- Product development, production and transportation
 - Energy is needed to produce and transport the product, sometimes multiple times from the production facility, which could be located overseas, to a central warehouse, then to a store and finally to the consumer. Some products are also made using scarce natural resources such as water and metals.
- Use of product
 - Energy could be used during the life of the product.
- End of life disposal process
 - Transporting the product to a landfill, recycling or composting plant uses energy. If it ends up in the landfill instead of a compost plant, it could have methane emissions, which if not captured, have a far greater impact on climate change than carbon dioxide emissions.

This section covers:

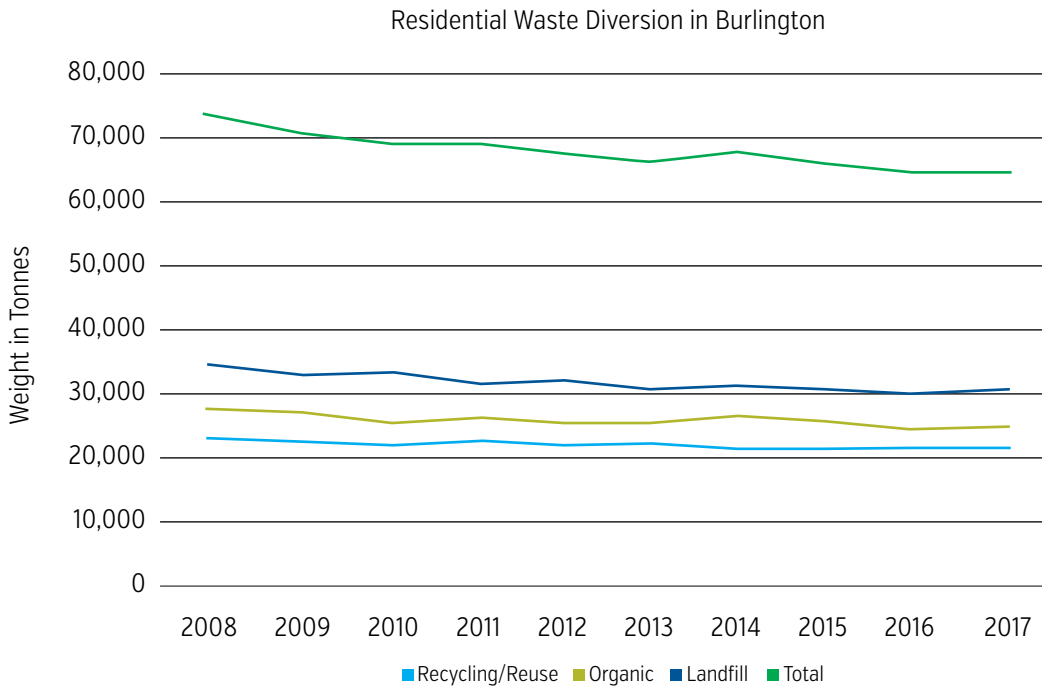
- Residential waste management
- City of Burlington “Towards Zero Waste” strategy for city-owned buildings
- Annual community clean-up



What Are We Doing?

Residential Waste Management

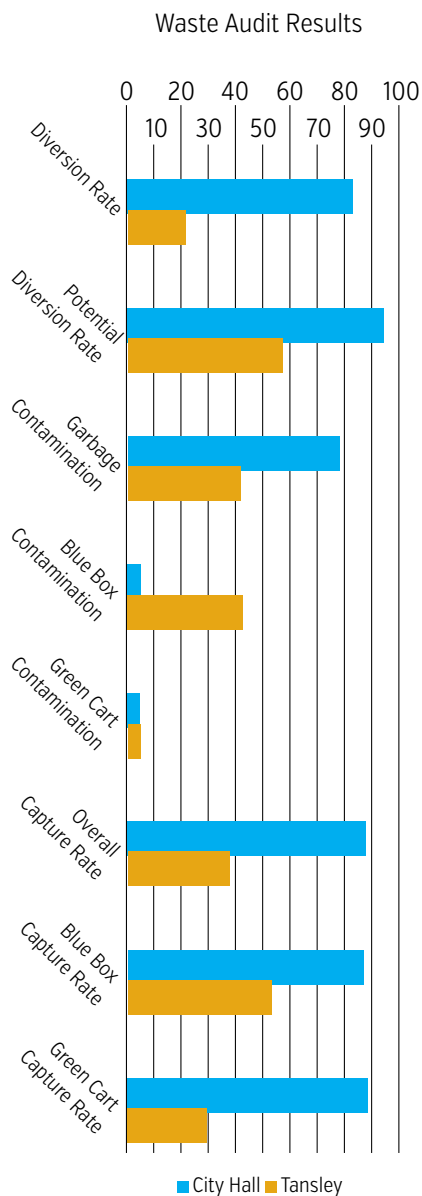
Halton Region manages residential waste in Burlington including curbside collection, the Halton Waste Management Site and Special Waste Drop-off Days. Annual progress reports are available at halton.ca/waste.



The weight of landfill waste has decreased steadily since 2008 even with population growth. This is due to enhanced recycling and composting options plus the transition to lighter weight products like plastics.

The volume of recycled material is increasing but the weight of recyclables collected is decreasing. As a result, the diversion rate, based on weight, has stayed more or less consistent since 2008. It ranges between 56.4 and 59 per cent.





City of Burlington Towards Zero Waste Strategy for City-Owned Buildings

In 2009, the city introduced a “Towards Zero Waste Strategy” for city-owned buildings in partnership with Halton Region:

- Centralized waste stations were introduced in most city facilities with Blue Boxes, Green Carts and garbage.
- Garbage cans were removed from individual work stations in City Hall. Daily landfill waste decreased by about 50 per cent.
- Waste audits were done for City Hall in November 2015 and Tansley Woods Community Centre in February 2016 using three days of data. The program at City Hall was successful but not at arenas and community centres. One of the reasons is that recycling and composting programs vary across the province and visitors to city facilities from other municipalities may not realize that the program is different. However, random disposal of waste in the nearest bin is an issue.
- Large, underground, side-by-side recycling/waste stations were installed at major parks near picnic areas and sports fields after a successful pilot project at Tansley Woods. These units hold much more waste than regular garbage and recycling cans and don't have to be emptied as often. This reduces transportation costs and greenhouse gases.
- Over 29 tonnes of household batteries have been collected at 15 city facilities between 2009 and 2018
burlington.ca/environment.
- Electronic recycling bins are available at Fire Headquarters - Station No. 1, Fire Station No. 4, and Fire Station No. 7. Proceeds go to the fire extrication team. burlington.ca/ecycle

Annual Community Clean-Up

The City of Burlington partners with BurlingtonGreen on annual ‘Clean Up Green Up’ events. BurlingtonGreen has increased participation and waste collected during the weeklong event which also includes schools and businesses.

In 2018, 13,911 community members, including 42 schools, 52 community groups, and 17 businesses participated in the community clean-up. burlingtongreen.org

What Can You Do?

- End 'wish cycling.' Dispose of waste in the right bin. Confused? Use Halton Region's online tool at halton.ca/waste.
- Remember, recycling is at the bottom of the hierarchy with reducing and reusing being at the top. A fourth R is rethink. Ask yourself, do you really need to purchase a new product? Can it be leased or borrowed? Can you repair a broken item? Can your textiles be donated?
- Are you planning an event?
 - Follow the lead of Canada's Largest Ribfest, winner of best greening of a festival or event for the past seven years by Festivals & Events Ontario. canadalargestribfest.com/going-green-1
 - Halton Region can help you reduce waste at outdoor public events. halton.ca/waste
 - BurlingtonGreen provides services to help sort your waste at events. burlingtongreen.org
 - BurlingtonGreen has provided event greening services to 52 events resulting in about 61 tonnes of waste diverted from the landfill between 2009 and 2018.
- Organize your own clean-up anytime of year. You can receive a grant of up to \$300 to cover expenses through the Love My Hood program. burlington.ca/lovelyhood



Appendix A: Connections to Burlington's Strategic Plan

Take Action Burlington - An update on our local environment has ties to many goals identified in the Strategic Plan including:

1.1 Promoting Economic Growth

When a City that Grows creates the kind of city people want to live in, you attract businesses to locate here.

1.1.b More people who live in Burlington also work in Burlington.

1.1.d Employment lands are connected to the community and region through active transportation and public transit. Employment lands include transportation links and options that are easy to access and contribute to a sustainable, walkable and bikeable community.

1.1.g Burlington's downtown is vibrant and thriving with greater intensification attracting both businesses and people to enjoy the quality of life.

1.1.h The City of Burlington's rural areas will be economically and socially active, producing agricultural products and providing rural recreational activities for the city.

1.2 Intensification

A City that Grows demonstrates density [intensification] done well. There are green design options, less sprawl, more affordable housing choices and improved public health in a vital, diverse and safe city.

1.2.a Growth is being achieved in mixed-use areas and along main roads with transit service, including mobility hubs, downtown and uptown.

1.2.b Mobility hubs are developed near each GO station and in the downtown.

1.2.c Aging commercial plazas are being redeveloped and transformed into mixed-use neighbourhood areas where a mix of residential, commercial, cultural, or institutional uses are provided. Buildings are connected to the street with doors and windows, have high-quality design and provide pedestrian and cycling connections.

1.2.d New and transitioning neighbourhoods are being designed to promote easy access to amenities, services and employment areas with more opportunities for walking, cycling and using public transit.

1.2.f City policy encourages and rewards energy-efficient buildings and other on-site sustainable features, reducing Burlington's environmental footprint. Existing buildings are renovated to improve efficiency.

1.2.h Burlington has a downtown that supports intensification and contains green space and amenities, has vibrant pedestrian-focused streets, is culturally active and is home to a mix of residents and businesses.

1.2.i Architecture and buildings are designed and constructed to have minimal impact on the environment reflecting urban design excellence that create buildings and public spaces where people can live, work or gather.



2.1 Increased Transportation Flows and Connectivity

A city that moves offers transportation options and actively connects people and places.

2.1.a Public transportation systems will have efficient, greener, convenient and usable transportation options including consideration of evolving technologies within the city and the broader region.

2.1.b Mobility hubs are being developed and supported by intensification and built forms that allow walkable neighbourhoods to develop. Metrolinx will have worked with the city to ensure the creation of hubs aligns with intensification and built form objectives.

2.1.c Complete Streets vision is put in place through a coordinated plan, which will include on-road and off-road bike lanes, sidewalks, multi-use paths and trails and a public transit system that are well-connected throughout the city.

2.1.d Employment areas are well-served by public transportation and riders can access the regional and provincial transportation network.

2.1.e All levels of government work together to create a transportation experience that offers convenient and timely connections between municipalities.

2.1.g Walkability and cycling has guided the development of new and transitioning neighbourhoods and the downtown so that people rely less on automobiles.

2.1.h Rural areas of Burlington are connected to the city and are part of transportation planning and investment considerations.

3.1 Healthy Lifestyles

A healthy and greener city improves public health and quality of life.

3.1.a Every resident of Burlington lives within a 15 to 20 minute-walk from parks or green spaces.

3.1.b Parks and green spaces are multi-use. Residents and visitors will be able to use them in a number of ways.

3.1.c Burlington increase the availability of community garden plots so that residents may grow their own fresh and healthy food.

3.1.d The trail system is being linked to the city's park network, to neighbourhoods and to other regional systems including transit, ensuring that the city's rural area and waterfront are easily accessible and accommodate walking and cycling.

3.1.e The Bruce Trail is being supported by planning and investments to ensure usability, safety and access.

3.1.f. Burlington adopts an appropriate walkability score tool, using it to help make planning decisions.

3.1.g Rural Burlington has improved access to parks and amenities, and the city is supporting several initiatives to create recreational offerings in the rural area.

3.1.h The city supports Halton Region's rural strategy, including support for growing food locally.



3.2 Environmental and Energy Leadership

A healthy and greener city improves energy efficiency, protects the natural environment and mitigates climate change impacts.

3.2.a The city has a healthy, natural heritage system that is protected, well connected, conserved and enhanced and forms a fundamental component of the city's urban and rural areas.

3.2.b The city's operations are net carbon-neutral.

3.2.c The city's urban forest and tree canopy has increased and continues to thrive.

3.2.d Burlington's waterfront continues to be clean, safe and usable. The city takes a leadership position in ensuring the rehabilitation and preservation of the city's creeks and streams.

3.2.e The city will work with community stakeholders to implement the Community Energy Plan and achieve the goals and objectives related to energy conservation, generation and availability.

3.2.f The city reinforces a strong position in protecting the existing urban-rural boundary.

3.2.g The city recognizes that climate change is a significant issue and is working with the community and all levels of government towards the goal of the Burlington community being net carbon neutral.

3.2.h The city will become a leader in storm water management and low impact development.

4.1 Good Governance

An Engaging City involves residents to enhance sound decisions.

4.1.d Burlington's position is articulated to senior levels of government on pressing policy matters.

4.1.e City infrastructure, such as buildings and roads, are in good condition and properly maintained.

4.1.g Enhanced performance measurements give the community the ability to track key indicators of the city's progress.



Endnotes

1. The definition was developed by the Brundtland Commission whose purpose was to bring countries together to discuss how to pursue sustainable development. The 1987 report “Our Common Future” was produced as a result.
2. Additional information about the SDC, including their terms of reference, can be found at burlington.ca/sdc.
3. Mitigation – the actions we need to take to reduce our greenhouse gas emissions to keep a global temperature increase to below 2°C.
4. Adaptation – the actions we need to take to deal with a new reality such as more intense storms, droughts, hotter summer temperatures, etc.
5. ICLEI Local Governments for Sustainability [2016]. Climate Data for the City of Burlington, Ontario.
6. The climate change models and emission scenarios are defined by the Intergovernmental Panel on Climate Change (IPCC) using models that account for mitigation, a stabilizing scenario, and a rising scenario.
7. Temperature and precipitation change data were constructed using Environment Canada’s Canadian Climate Change Data and Scenarios (CCDS) tool and the Institute for Catastrophic Loss Reduction’s Intensity-Duration-Frequency Climate Change Tool.
8. Statistics Canada. 2017. Burlington, CY [Census subdivision], Ontario and Halton, RM [Census division], Ontario [table]. Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released Nov. 29, 2017. www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E. Retrieved Feb. 27, 2019.
9. Statistics Canada Census Data: Low density = single detached, semi detached, other single attached and movable dwellings.
10. Statistics Canada Census Data: Medium density = row house and apartment or flat in a duplex.
11. Statistics Canada Census Data: High density = apartment in a building fewer than five storeys and apartment in a building that has five or more storeys.
12. Canada Green Building Council. LEED Project Profiles. leed.cagbc.org/LEED/projectprofile_EN.aspx. Retrieved Feb. 5, 2019. Note that although there are 18 projects listed for Burlington, ON, two projects were removed for reporting purposes as those locations no longer exist. They were two former Target stores, both of which were demolished/ repurposed for new tenants.
13. This was calculated using Halton Region’s 2009 Official Plan Natural Heritage System mapping as it applies to the Burlington land area.
14. Statistics Canada. Table 32-10-0447-01 Farms reporting selling agricultural products directly to consumers in the year prior to the census. www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210044701. Retrieved Nov. 30, 2018.



15. Statistics Canada. Table 32-10-0440-01 Total number of farms and farm operators. www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210044001&pickMembers%5B0%5D=1.1147. Retrieved Nov. 30, 2018.
16. Statistics Canada. Table 32-10-0403-01 Farms classified by farm type. www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210040301&pickMembers%5B0%5D=1.1147. Retrieved Nov. 30, 2018.
17. Fossil fuel – a carbon-based fuel made from the decayed plant and animal remains. Examples include coal, oil and natural gas.
18. Net carbon neutral – the carbon emissions used equals the amount of carbon that is offset either by purchasing carbon credits or through actions such as planting trees.
19. Carbon footprint – the total amount of equivalent carbon dioxide that we use directly (to drive or heat our homes) or indirectly (the emissions used to produce the food we eat).
20. Sustainable energy – energy that does not emit greenhouse gases such as solar.
21. United States Environmental Protection Agency. Greenhouse Gas Equivalencies Calculator. epa.gov/energy/greenhouse-gas-equivalencies-calculator. Retrieved Feb. 11, 2019.
22. IESO. 2018 Electricity Data. ieso.ca/en/Corporate-IESO/Media/Year-End-Data. Retrieved Feb. 25, 2019.
23. Ontario Ministry of the Environment, Conservation and Parks. Air Quality Ontario – Frequently Asked Questions website. Retrieved Jan. 28, 2019. airqualityontario.com/press/faq.php#b1
24. The Transportation Tomorrow Survey (TTS) is a cooperative effort by local and provincial governments to collect information about urban travel in southern Ontario. The survey is carried out every five years with the first in 1986 and the most recent in 2016. The information helps to inform transportation planning and investment decisions. transportationtomorrow.on.ca
25. Data purchased from IHS Markit in March 2019.
26. ICLEI Local Governments for Sustainability [2016]. Climate Data for the City of Burlington, Ontario.
27. Lemmen, D.S., Warren F.J., Lacroix, J. and Bush, E. editors [2008]: From Impacts to Adaptation: Canada in a Changing Climate, 2007; Government of Canada, Ottawa, ON, 448p.
28. International Lake Ontario – St. Lawrence River Board [established by the International Joint Commission]. Lake Ontario-St. Lawrence River 2017 High Water Levels - Questions and Answers. ijc.org/en/loslr/watershed/faq/2017. Retrieved Feb. 6, 2019.
29. Annual water consumption data for residential and ICI sectors in Burlington was provided by Halton Region.
30. Daily residential water use data was calculated using Statistics Canada population data and Halton Region's annual water consumption data.
31. Statistics Canada [2016]. Disposal of waste by source. 150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3810003201. Retrieved Jan. 14, 2019.



