

A Community Climate Change Action Plan for the City of Brantford

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Introduction

Climate change is the greatest long-term global challenge that human society faces. Greenhouse gas (GHG) emissions from human activity are warming the planet, and the resulting changes in temperature and weather patterns are negatively impacting human health, infrastructure, livelihoods, and ecosystems.

The Paris Climate Agreement signed in 2015 between 195 countries, including Canada, set a target of no more than 2°C increase from pre-industrial levels, and an aspirational target of no more than 1.5°C. The difference between a global temperature increase of 1.5°C and 2°C is significant and global efforts are required to ensure that global temperatures do not increase more than 1.5°C.

The City of Brantford declared a Climate Emergency in 2019 and is joining cities across the world in setting a target of net-zero emissions. Two plans, the Corporate and Community Climate Change Action Plans (CCAP) form Brantford's Climate Future. The Corporate CCAP identifies actions that can be taken by the Corporation of the City of Brantford to achieve net-zero emissions. The Community CCAP provides a guide for all members of the Brantford community on how they can adjust their own behaviours to reduce GHG emissions.

The Community CCAP to follow will present five categories for emission reductions and identify actions that can be taken by the community, along with City actions that can help facilitate behavioural changes. The five categories of focus for the Community CCAP are:

1. Transportation
2. Buildings
3. Waste
4. Education / Outreach
5. Offsets

Need for Climate Action:

Brantford is a growing city and population estimates indicate that the City could become home to an additional 60,000 people by 2041. If emissions continue to grow relative to city population growth without any mitigating factors, this would be considered the “business as usual” (BAU) approach. In the chart below, the estimated population growth is shown to 2041. In the chart below, emissions are shown for the BAU scenario where no mitigation action is taken and the scenario where the reduction targets are met. The wedge between the blue and green lines represents the emissions reduction work required to address growth and meet the emission reduction targets in order to stay below the 1.5°C temperature increase limit.

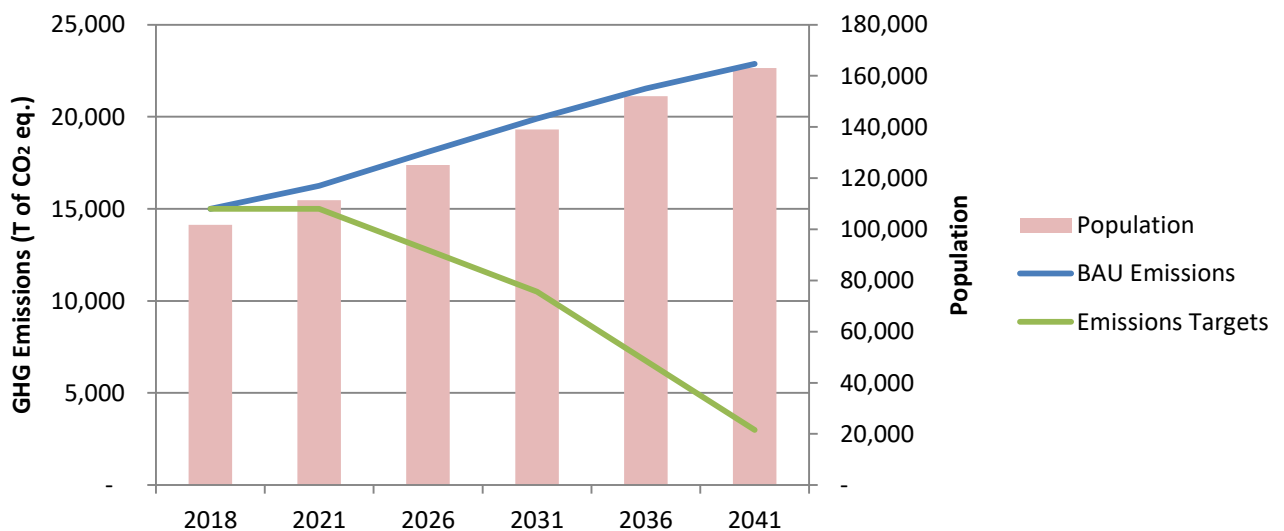


Figure 1: GHG Emissions and Population Growth.

Community Emissions Sources 2019

GHG emissions were first inventoried in 2018 for all community emissions. A detailed Emissions Inventory report can be found on the City’s website and an updated report for the years 2019 and 2020 is also available. The inventory gathers data on most sources of energy used within the geographical boundaries of the City of Brantford. This section has aggregated consumption data from the major energy suppliers in the City (Brantford Power, Energy +, Enbridge Gas and fuel providers).

The results of the community inventory for 2019 are summarized below. Data for 2020 are also available but were not used for this report due to the unusual energy consumption patterns due to COVID-19.

Emissions are measured in T of CO₂e., which means “metric tonnes of carbon dioxide equivalent”. Emissions from burning fossil fuels are not exclusively carbon dioxide; they also contain various percentages of methane and nitrous oxide and trace amounts of other GHGs. Each gas has different global warming potential as a GHG, so these are multiplied by the appropriate intensity factor and then converted to the equivalent strength for carbon dioxide and referred to as carbon dioxide equivalent (CO₂e.). More information on how this is calculated can be found in the City of Brantford Corporate and Community Greenhouse Gas Emissions 2018 Inventory.

Total community GHG emissions (T of CO₂e) in 2019 were 743,515 T. The Community CCAP provides a guide for reducing emissions produced in all categories and by all fuel types.

Stationary (Buildings)						
	Electricity (MWh)	Electricity emissions (T CO ₂ e)	Natural Gas (m ³)	Natural Gas emissions (T CO ₂ e)	Total energy (MWh)	Total emissions (T CO ₂ e)
Residential	312,357	9,518	68,485,845	130,079	1,024,267	139,597
Institution or Commercial	104,839	3,195	69,451,402	131,913	826,787	135,108
Industrial	558,201	17,010	57,621,186	109,443	1,157,173	126,453
Transportation						
	Gasoline purchased (L)	Gasoline emissions (T CO ₂ e)	Diesel purchased (L)	Diesel emissions (T CO ₂ e)	Total emissions (T CO ₂ e)	
On-road	97,798,124	214,870	6,130,019	16,487	231,357	
Waste						
Landfill						111,000
Emission Total						
Community Greenhouse Gas Emissions Total (T of CO ₂ e)						743,515

Table 1: Results of 2019 Community Greenhouse Gas Emissions Inventory.

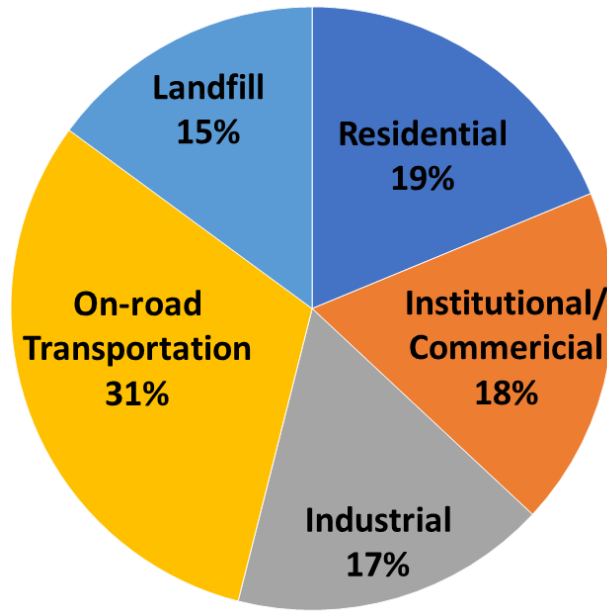


Figure 2: Community GHG Emissions for the City of Brantford by Source Category.

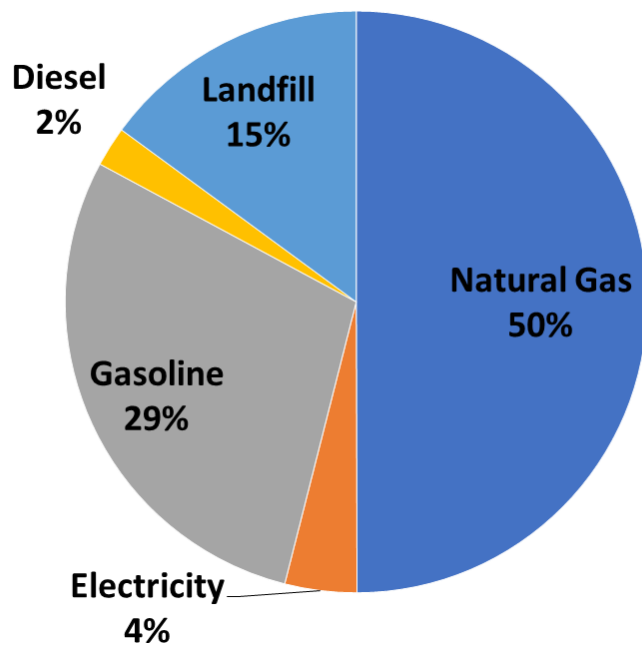


Figure 3: GHG Emissions by Fuel Type Across All Community Categories.

Emissions Reduction Targets

The emissions reduction targets in the Community CCAP are consistent with the targets approved in the Corporate CCAP. The reduction targets for both the Community and Corporate CCAPs are as follows:

- 30% emissions reduction by 2030.
- 80% emissions reduction by 2040.
- Net-Zero emissions by 2050.

It is important to note that these targets are referring to net emissions, the total of all emissions produced and subtracted by all emissions offset through strategies such as absorption from trees and other vegetation, carbon capture technologies, purchasing carbon offsets, producing excess renewable energy generation, etc. This is referred to as net-zero carbon or carbon neutral.

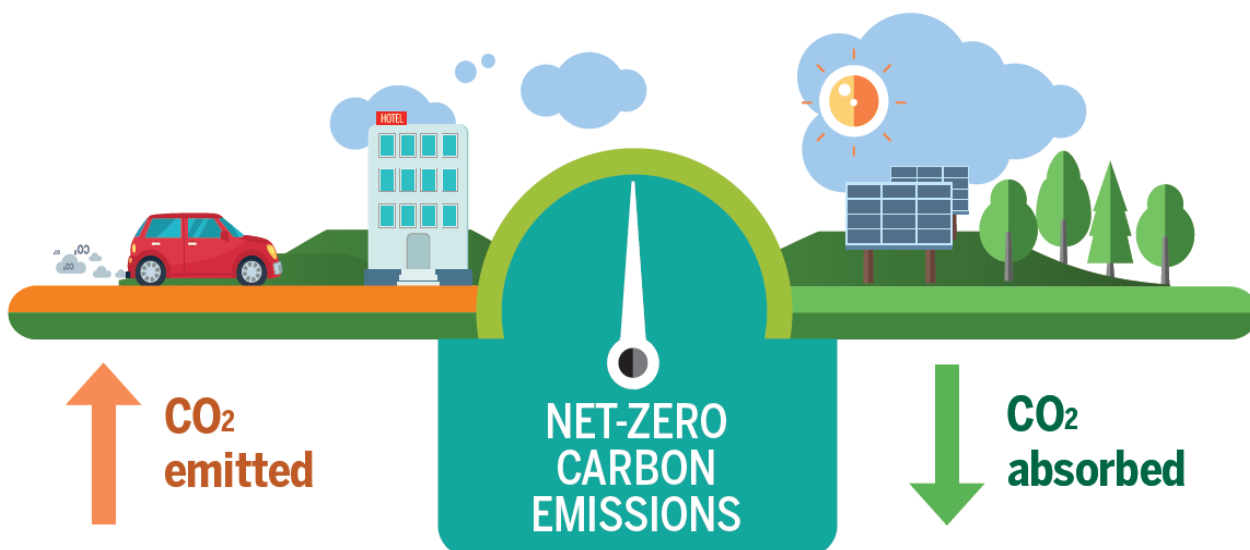


Figure 4: Net Zero Carbon Emissions.

Emissions Reduction Principles

Much like “reduce, reuse, recycle” for waste reduction, the “reduce, improve, switch” principles for emissions reduction is a guideline for reducing energy consumption and emissions. The order of the steps is intentional. The most effective approach in transitioning to a low-carbon community is to first reduce the amount of energy needed as much as possible through energy conservation (Reduce), then to improve the amount of work being done with that energy by increasing energy efficiency (Improve),

and finally to switch to low carbon fuel sources to supply the remaining demand (Switch).

Reduce

Reduce the amount of energy used daily. This can involve habit changes such as walking somewhere instead of driving or turning off lights when you leave the room. It can also be a product of planning activities such as route planning for buses to reduce unnecessary kilometres. Energy can also be reduced by insulating buildings so internal temperatures are more easily maintained. Reducing energy usage as much as possible in the first place saves having to address it (and pay for it) in the following two stages.

Improve

Improve the efficiency of the work being done to make the required energy have greater impact. Examples of how this can be done include buying more energy efficient appliances, furnaces and boilers, buying more fuel efficient vehicles, or replacing traditional light bulbs with LEDs.

Switch

Switch the source of the remaining energy required to a clean source of energy that doesn't use fossil fuels or produce GHG emissions. Clean energy sources include electricity (depending on the province), solar, geothermal, wind, renewable natural gas, waste heat recovery, etc.

Short-Term Priorities

The following short-term priorities were identified for community GHG reductions based on actions that are ongoing or are expected to occur in the near future. These short-term priorities are expected to have a great impact on community GHGs and target emissions in all source categories.

Organic Waste Diversion

- Expected implementation of program in 2023.
- Will reduce GHG emissions from the landfill and promote a circular economy.
- Community responsibility to divert organics when the program is implemented.

Create a Sustainable Business Support Office

- Expected implementation of program in 2022.
- Will support businesses in reducing their GHG emissions and promote environmentally friendly sustainable practices.

Explore Home Energy Retrofit Loan/Grant Programs

- Expected exploration of programs to begin in 2023.

- Will reduce GHG emissions from the residential category and potentially reduce natural gas use.

Complete Transit Route Optimization Study

- Expected implementation in 2023.
- Will reduce GHG emissions from on-road transportation and gasoline fuel use.
- Community responsibility to use public transit and active transportation modes to reduce their emissions.

Climate Change Communication Strategy and Engagement

- Expected communications strategy and engagement to begin in 2022.
- Will reduce GHG emissions in each category through knowledge sharing about how behaviours and activities can be adjusted.
- Community responsibility to take ownership over their impact on GHG emissions and make active efforts to reduce their carbon footprint.

Emission Reduction Categories

The Community CCAP presents five categories for emission reductions and identifies actions that can be taken by the community, along with City actions that can help facilitate behavioural changes. The five categories of focus for the Community CCAP are:

1. Transportation
2. Buildings
3. Waste
4. Education / Outreach
5. Offsets

Transportation

Transportation is a key aspect of the City's climate change efforts. The priority actions that have been identified for transportation focus on reducing emissions from single passenger vehicle trips within and outside of Brantford.

Goal	City Actions	Tips for the Community
Increase Transit Ridership.	<ul style="list-style-type: none"> • Complete Transit Route Optimization Study. • Promote use of public transit. • Educate residents on public transit. 	<ul style="list-style-type: none"> • Kids Ride Free program (kids 12 and under). • Go Transit connections outside of Brantford. • Brantford Transit route planner can be used to map out your trip.
Increase Active Transportation.	<ul style="list-style-type: none"> • Complete Active Transportation Master Plan. • Continuous improvements to on-road and off-road trail networks. 	<ul style="list-style-type: none"> • Over 70km of trails to use in and around Brantford. • Bike lanes available on several residential roads (over 18km). • Several bike safety programs available, including from Brant Cycling Club. • Bike Month held in June every year to improve knowledge of cycling network.
Promote Electric Vehicles.	<ul style="list-style-type: none"> • Explore provision of public charging stations at locations across the City. 	<ul style="list-style-type: none"> • 17 charging stations are available for public use at various locations, including Wilfrid Laurier University downtown. • Market for electric vehicles is expanding, including more affordable options.

Table 2: Transportation Priority Actions.

Buildings

Actions identified in the buildings category focus on emissions that can be reduced from energy consumption in residential, commercial, and institutional buildings.

Reducing GHG emissions from buildings not only helps curb climate change, it reduces costs of electricity and natural gas bills.

Goal	City Actions	Tips for the Community
Reduce GHG Emissions from Private Homes.	<ul style="list-style-type: none">• Explore a green building standard for new homes.• Explore the provision of incentive programs to complete home retrofits.	<ul style="list-style-type: none">• Switch to LED bulbs (75% more energy efficient).• Unplug electronics when they are not in use (use 5-10% less energy)• Wash laundry in cold water (90% more energy efficient).• Lower your thermostat by two degrees in the winter (save 1-3% on electric heating).
Reduce GHG Emissions from Businesses.	<ul style="list-style-type: none">• Promote ways that businesses are reducing their GHG emissions through a green business recognition program.	<ul style="list-style-type: none">• Start a zero-waste workplace to encourage employees to divert waste.• Switch to LED bulbs (75% more energy efficient).
Reduce GHG Emissions from Institutions and School Boards.	<ul style="list-style-type: none">• Assist schools with active transportation planning projects.• Increase education on energy conservation programs for institutions.	<ul style="list-style-type: none">• Start a zero-waste program at institutions to encourage waste diversion.• Performing an energy consumption audit will help identify ways institutions can save on costs of their facilities.

Table 3: Buildings Priority Actions.

Waste

The actions identified in the waste category focus on waste that is produced by the community as well as emissions from use of water.

Help make the transition from a linear to a more sustainable circular economy.

Goal	City Actions	Tips for the Community
Reduce GHG Emissions Produced from Waste.	<ul style="list-style-type: none">• Implement a green bin program to divert organic waste from the landfill.• Promote reducing, reusing, recycling, and composting – circular economy.	<ul style="list-style-type: none">• Use Brantford Recycling Coach for tips on properly recycling and collection schedule at www.brantford.ca/recycling.• Use reusable bottles and cups instead of disposable.• Buy secondhand items and donate used goods.
Reduce Water Consumption and Waste.	<ul style="list-style-type: none">• Implement advanced water metering program.• Increase educational programs about water conservation.	<ul style="list-style-type: none">• Turn off the tap when water is not in use (save up to 6L per minute).• Install water saving appliances (at least 20% can be saved by upgrading shower heads, toilets, dishwashers, and more).• Use rain barrels to collect water for use.• Identify and fix household leaks.

Table 4: Waste Priority Actions.

Education and Outreach

The actions associated with education and outreach focus on educating the community on the importance of climate action.

Collectively as a community, and as individuals, we need to focus on reducing our carbon emissions as much as possible and move toward a carbon neutral future by 2050.

Goal	City Actions	Tips for the Community
Increase Resources to Educate the Community on Climate Change.	<ul style="list-style-type: none">• Provide free resources to the community reflecting climate change information on City of Brantford website and via social media.• Host climate action workshops to engage with the community on how they can reduce their GHG emissions.• Partner with community groups to create a network that delivers key messaging about climate change.	<ul style="list-style-type: none">• Talk to your neighbours, friends, coworkers, and family members about what they are doing to reduce GHG emissions – you might get inspired!• Join a volunteer organization or board with other passionate people who want to take climate action – examples are Equal Grounds Community Gardens and the Environmental Sustainability Policy Advisory Committee.• Visit the City of Brantford's climate action page at www.brantford.ca/ClimateAction for updates, tips and resources to reduce your GHG emissions.
Climate Change Adaptation Plan.	<ul style="list-style-type: none">• Develop inventory of natural assets.• Identify ways the City can adapt to climate change.	<ul style="list-style-type: none">• Form an emergency plan within your household or business in the event of extreme weather – floods, extreme heat, windstorms, etc.

Table 5: Education and Outreach Priority Actions.

Offsets

The actions associated with offsets focus on those items that remove carbon from the atmosphere to help achieve net-zero when some GHG emissions will be unavoidable.

Planting trees absorbs carbon in the atmosphere, as well as providing shade and beautifying the community.

Goal	City Actions	Tips for the Community
Increase City Tree Canopy.	<ul style="list-style-type: none">• Explore measures that encourage tree preservation through education and enforcement.• Continue annual tree giveaways to residents.	<ul style="list-style-type: none">• The City of Brantford hosts free tree giveaways in the spring on a first come first served basis to residents.• The Brant Tree Coalition hosts annual tree planting events in Brantford that you can take part in.• Research specific species of tree to learn how to best take care of them – specific trees require specific care.

Table 6: Offsets Priority Actions.

Metrics

Success can be measured in a variety of ways; the most relevant for the purposes of this Plan is the consistent reduction of overall annual GHG emissions. Success will be measured by reaching the GHG targets identified in this Plan and the ultimate goal of net-zero emissions by 2050.

Targets have been identified for 2030, 2040 and 2050, but the interim years are very important to monitor and gauge success annually or bi-annually. If emissions are decreasing at a rate that is on track with the identified emissions, then staff, Council and the community are successfully implementing the Plan.

The following metrics have been identified in the five categories to measure the progress of the Community Climate Change Action Plan.

Category	Metrics to Measure Program Success
1. Transportation.	<ul style="list-style-type: none"> • % of people using public transit for transportation. • # of transit passes sold annually. • # of transit riders monthly and annually. • % of people using cycling for transportation. • # of km of bike lanes. • # of km of sidewalks and multi-use paths. • # of EV chargers available for public use.
2. Buildings.	<ul style="list-style-type: none"> • # of incentives or grant programs introduced to assist with home retrofits. • # of homes subject to green building standards. • # of education materials shared about energy conservation programs. • # of wayfinding signs for active transportation added. • # of business recognition awards given.
3. Waste.	<ul style="list-style-type: none"> • # of tonnes of waste diverted from the landfill. • # of education programs focused on importance of waste diversion. • # of education programs focused on reducing water consumption. • # of homes fitted with advanced water metering.
4. Education and Outreach.	<ul style="list-style-type: none"> • # of community members engaged in climate change discussion. • # of education materials shared regarding climate change. • # of workshops or events held to share climate change information. • # of social media posts about climate change. • # of natural assets identified in inventory. • Implementation of natural asset management plan. • Development of Climate Change Adaptation Plan.
5. Offsets.	<ul style="list-style-type: none"> • % of tree canopy in the City of Brantford. • # of trees given away to the community. • # of trees planted during tree planting events.

Table 7: Performance Metrics by Priority Category

Aside from the metrics above, the City will continue to inventory the community GHG emissions to determine Brantford's progress towards becoming net-zero by 2050. Progress updates on the Community CCAP will be provided annually to identify new actions the community can take to reduce their GHG emissions.