A Climate Lens for Council Decisions in Brantford

CITY OF BRANTFORD




City of Brantford

Single-tier municipality

Population: 104,000

Expected to grow to 163,000 by 2041

What is a Climate Lens?

Education, Advocacy, Innovation

- A layer of assessment on Council decisions that considers:
  - Impact of project on climate change (GHG emissions)
  - Impact of climate change on project (adaptation)
  - Other sustainability considerations, such as
    - Waste
    - Water
    - Stormwater

How did it come forward?

- Resolution prepared by Environmental and Sustainability Policy Advisory Committee (ESPAC) and proposed by Councillor to declare a Climate Emergency and Imperative Climate Action

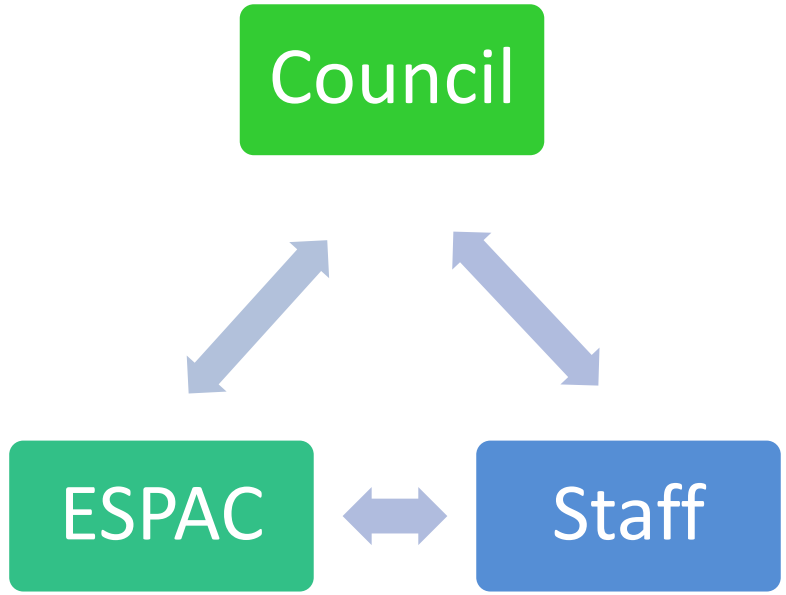
- Passed in December 2019 and provided detailed direction to staff to:

"…develop a carbon reduction strategy … that details the following:

> *i. A process to ensure that … every matter coming before City Council will quantify and report its impact relative to the climate emergency and Brantford's carbon reduction strategy; …"*

Development

- Worked with ESPAC to establish foundation and scope
- Consulted and refined process with staff
- Trained and educated report authors
- Brought concept to Council for approval
- Developed in-house with IT department – no external costs
- First year pilot program from 2021 to 2022



Function/Purpose

Quantify

- Track Data
- Calculate Emissions

Discuss

- Identify Issues
- Propose Solutions

Educate

- Climate Literacy
- Transparency

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Climate Lens Process

Two components:

1. **REPORT SECTION** in all Committee and Council reports titled “Climate and Environmental Implications”

2. **CALCULATOR TOOL** to quantify emissions and other metrics

Climate Lens Tool Pilot

- In November 2021, the calculator tool was launched to assist applicable staff with calculated GHG emissions and other metrics
- Only Public Works and Housing and Homeless Services were required to use the tool to quantify emissions
- Climate and Environmental Implications Section included in staff reports to Committee of the Whole and City Council
- All departments required to qualitatively report positive and/or negative impacts of projects

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Report Section

Data Type	Applicable Departments	Information Examples
Qualitative (Descriptive)	• All Departments	- Mitigation Strategies - Land Use Change - Policy Change - Climate Adaptation Measures - Active Transportation and Transit - Ecological Impacts

Quantitative (Measured)	• Public Works
	• Community Housing
	• Community Services and Social Development
	• Economic Development, Tourism, and Cultural Initiatives
	• Fire
		- Energy Use incl.
		  - Electricity (kWh)
		  - Natural Gas (m^3)
		  - Gasoline/Diesel (L)
		- Trees/Vegetation
		- Water Demand (L)
		- Waste Production (Kg)
		- Stormwater Impacts

Scoping of Calculations

- Only **operational** impacts are quantified at this time
- Annual and operational **lifetime impacts** are calculated
- **Comparison** to existing asset/project if proposing a retrofit/replacement

Calculator Tool

Subject	Measurement Unit
Energy (Electricity, natural gas, gasoline, diesel, other)	kWh, m^3, L, other = T of CO_2e
Waste	Tonnes
Water	Litres
Stormwater	Area (sq. m.) impermeable surface % of property impermeable
Land Use Change	Area (ha) of land subject to change
Trees	# of trees = T of CO_2e

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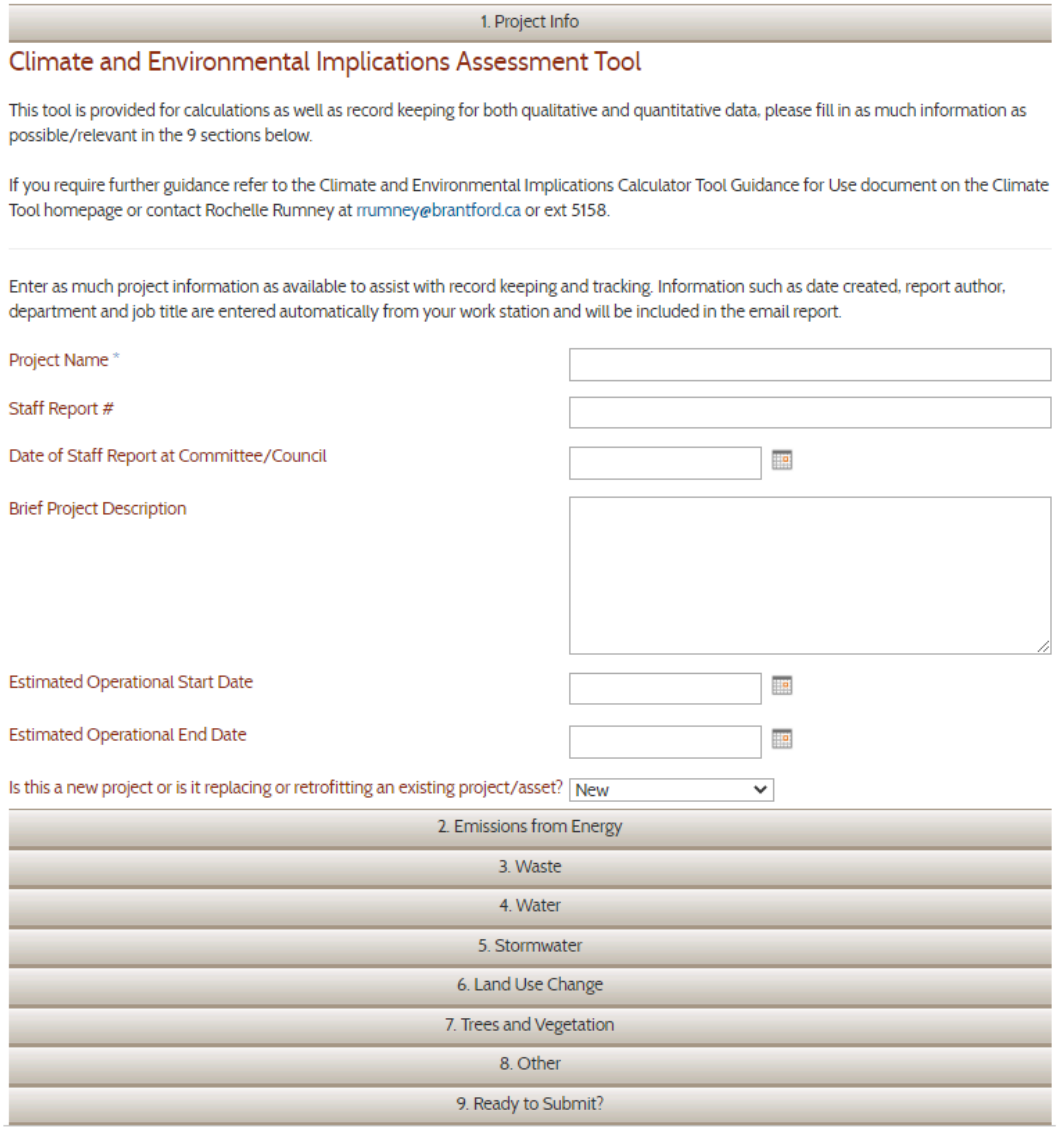
Calculator Tool



Calculator Tool

2. Emissions from Energy

Enter in the estimated **operational** energy use for the new or proposed project per year for the applicable fuel type. If this is replacing/retrofitting/improving a previous asset/project, enter the existing energy usage data in the last line and it will calculate the difference.

Amount of electricity estimated per year	0 (kWh/Yr)
Amount of gasoline estimated per year	0 (L/Yr)
Amount of diesel estimated per year	0 (L/Yr)
Amount of natural gas estimated per year	0 (m3/yr)
Other fuel estimated per year	0 (T of CO2/yr)
If you are proposing a building project, please enter area of building	sq m
If you implemented any emissions reduction measures in the design, construction or operation of this project, please describe	
If this project is replacing/retrofitting a previous asset please provide annual emissions from previous project	0 T of Co2/yr

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Example Results & Report

Proposed EGCG greenhouse

Climate Lens Assessment Report

Created on: 2/19/2023 7:45 PM
Direct Link

SUMMARY

TOTAL ANNUAL EMISSIONS : -0.22 T of CO2e
LIFETIME EMISSIONS: -0.22 T of CO2e

Author Info

Name: Rick Cox
Department: Parks & Facilities Services
Job Title: Director of Parks & Facilities Services

Project Info

Project Name: Proposed EGCG greenhouse
Staff report #: 2023-166
Date of staff report at Commitee/Council: 3/7/2023
Brief Project Description: An off-grid 24'x30' greenhouse is proposed for construction as part of a community garden

Estimated operational start date of project: 5/21/2024
Estimated operational end date of project: 1/1/0001
Resulting project life span: 1 years

This Project is: New

Emissions from Energy

Amount of electricity estimated per year: 0 kWh/yr
Calculated GHG emissions from above energy usage: 0 T of CO_2e /yr

Amount of gasoline estimated per year: 0 L/yr
Calculated GHG emissions from above energy usage: 0T of CO_2e/yr

Amount of Diesel estimated per year: 0 L/yr
Calculated GHG emissions from above energy usage: 0 T of CO_2e/ yr

Amount of natural gas estimated per year: 0 m3/yr
Calculated GHG emissions from above energy usage: 0T of CO_2e /yr

Amount of propane estimated per year: 0 m3/yr
Calculated GHG emissions from above energy usage: 0T of CO2e/L

Amount of other fuel estimated per year: 0 T of CO_2e/yr

Total annual emissions from energy: 0 T of CO_2e

Lifecycle energy emissions of project: 0 T of CO_2e/yr

Area of building (if applicable): 66.9 sq m

Calculated Emissions Intensity of building: 0 T of CO_2e/sq m

Emissions reduction measures to be implemented in the design, construction or operation of project?

If this project is replacing/retrofitting a previous asset/project, please provide annual emissions from previous project:
0 T of CO_2e/yr

Emissions Increase/Decrease:
0 T of CO_2e/yr

Lifecycle emissions increase/decrease from previous project:
0 T of CO_2e/yr

Waste

Estimated waste created per year?
0.5kgs

Lifecycle waste created:
0.5kgs

If you implemented any waste reduction measures in the design, construction or operation of this project, please describe

All organic waste will be composted for use in the community garden

Water

Estimated water consumed per year:
500L

Lifecycle water consumed:
500L

If you implemented any water reduction measures in the design, construction or operation of this project, please describe:
Rainbarrels will be used to catch water coming off the roof for use in greenhouse and garden operations

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Example Results & Report

Stormwater

Area of new impermeable surface created as a result of proposal:
66.9 Sq. m.

What is the percent (%) coverage of impermeable surfaces on the property?
60 %

If you implemented any stormwater reduction measures in the design, construction or operation of this project, please describe:

Land Use Change

Current Land Use as described in the Official Plan:
Open space

Proposed Land Use as described in the Official Plan:

Open space/park

Area of land subject to OP land use change:
0ha

Trees and Vegetation

Number of trees planted:
10

Number of trees removed:
0

Resulting Annual Emissions Impact:
-0.22 T of CO_2e

If you implemented any tree and/or vegetation conservation measures in the design, construction or operation of this project, please describe:

Ten fruit trees, pollinator garden and multiple fruit bushes will be part of the community garden

Other

Other carbon emissions not captured above:
0 T of CO_2e

Other carbon reductions not captured above:
0 T of CO_2e

Other environmental/climate impacts not captured above:

Other environmental/climate protection measures not captured above:

Equivalents/Comparisons

This annual emissions for this project are equivalent to:

- **-0.0709677419354839 gasoline cars** (with a fuel consumption rating of 9 L/100 km driving 15,000 km/yr)
- **-0.0578947368421053 gasoline SUVs** (with a fuel consumption rating of 11 L/100 km driving 15,000 km/yr)
- **-0.0488888888888889 gasoline trucks** (with a fuel consumption rating of 13 L/100 km driving 15,000 km/yr)
- **-0.0523809523809524 average homes** (approx. 1600 sq ft home using 2100 m3 of natural gas and 8000 kWh of electricity)
- Cutting down **10 trees**

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Example Climate and Environmental Implications Section

11.0 Climate and Environmental Implications

- Total emissions are… *48 T of CO2e*
- Lifetime emissions are... *1,205 T of CO2e*
- Emissions decreased by... *217 T annually and 5,425 T over the lifetime*
- Waste/water/wastewater created/consumed… *2,500,000 L water annually*
  Waste/water/wastewater decreased by… *40% reduction in water usage expected*
- Impermeable surfaces are… *Increasing by 5,000 sq. m. to a total of 59% of site*
- Mitigation features include… *energy efficient building, solar panels, low flow toilets, onsite stormwater management, etc.*
- Impacts are equivalent to… *Emissions from building are equivalent to 15 cars/yr, emissions saving are equivalent to planting almost 10,000 trees*

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CO_2e Comparisons

Table 1: CO_2e values for common reference points

Item	T of carbon dioxide equivalent*† (CO_2e)/yr	Assumptions
1 BBQ Propane Tank	0.024/tank	8 kg of propane (20 lb tank filled to 88% capacity)
1 Gasoline Car	3.1	Fuel consumption 9 L/100 km, driving 15,000 km/yr
1 Gasoline SUV	3.8	Fuel consumption 11 L/100 km, driving 15,000 km/yr
1 Gasoline Truck	4.5	Fuel consumption 13 L /100 km, driving 15,000 km/yr
1 Diesel Transit Bus	90	Traveling 56,000 km/yr
1 Average Home	4.2 (3.96 + 0.24)	2100 m^3 of natural gas + 8000 kWh of electricity (approx. 1600 sq ft home)
1 Tree	-0.022	Estimated average carbon sequestration annually over 50 year lifespan of urban tree

Table 2: CO_2e equivalencies

Amount of $CO_2e^{\dagger}$	Equal to…*
1 T of CO_2e	• Cutting down 45 trees • Driving an SUV for 5000 km (3 months) • 42 propane BBQ canisters
10 T of CO_2e	• 3 cars/yr • 2 ½ homes/yr • 2 trucks/yr
50 T of CO_2e	• 11 trucks/yr • 12 homes/yr • 16 cars/yr
90 T of CO_2e	• 1 Transit bus/yr • 29 cars/yr

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Tool and Implications Section Feedback

- First year of using the tool = SUCCESS!
- After the pilot year was complete, a review was conducted with staff, ESPAC, and Council
- Feedback received from staff was positive, indicating that the tool was user friendly and provides the necessary information
- Members of Council indicated the report section is not completed consistently and how some reports quantify impacts and others do not
- Continue quarterly memos to Council and ESPAC

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Revision Process & Updates

- Following the positive feedback, the Climate Lens Tool was expanded to other departments and training was conducted
- Edits to tool are being made to make it more user friendly, include additional calculations, and provide necessary information for staff reports
- Climate and Environmental Implications section expanded to all staff reports including reports to Advisory Committees and Task Forces
- To address consistency in reports a Climate and Environmental Implications General Wording document created

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Revision Process & Updates

Climate and Environmental Implications General Wording

This general wording is to support staff with including qualitative climate and environmental implications information within their reports to Committees and Council. If your project does not fit within the following categories or you are ensure of correct wording please reach out to the Climate Change Officer, Rebecca Szczepanowski at rszczepanowski@brantford.ca or 519-759-4150 ext. 5158.

Category	Examples with General Wording	Associated CCAP	Quantifiable with Climate Tool?
Construction and Building Operations/ Maintenance	**New Corporate Building Construction** As per Report 2022-571 titled "City of Brantford Net-Zero Building Strategy" that was approved by City Council on October 4 , 2022, all new Corporate buildings are to be built net-zero or net-zero ready. Net-zero buildings produce as much energy as they consume and will therefore not increase Corporate energy consumption or greenhouse gas emissions. **New Housing Subdivision** Constructing a new housing subdivision will lead to increased GHG emissions from construction activities as well as increase community GHG emissions. **Existing Building Retrofits** Retrofitting a building with more energy efficient equipment and/or lighting will lead to reduced energy consumption and reduced GHG emissions. **Changes to Building Operations** Changes to building operations such as adjusting schedules, set points, and preventative maintenance will help reduce energy consumption as well as prolong the lifespan of equipment and ensure it is rung efficiently. The reduction of energy consumption will lead to a reduction in GHG emissions.	Corporate Community	Yes
Facilities Operations	**Construction/Installation of New Facility Amenities (pool, washroom, kitchen, court)** The construction/installation of a new facility amenity will lead to more energy consumption and thus more GHG emissions. **Energy Retrofits to an Existing Facility Amenity**	Corporate	Yes

Continued Support

- Review all Climate Lens Tool reports to ensure accuracy
- Review all staff reports to ensure Climate and Environmental Implications section is included and completed
- Available to assist staff with writing the Climate and Environmental Implications section and calculate emissions

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Questions?

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