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Date November 2, 2021 **Report No.** 2021-655

To Chair and Members
Committee of the Whole – Operations and Administration

From Inderjit Hans, P. Eng., PMP
General Manager of Public Works

1.0 Type of Report

Consent Item
Item For Consideration

2.0 Topic Launch of 'Climate and Environmental Implications' Section for Staff Reports [Financial Impact - None]

3.0 Recommendation

THAT Report 2020-472, titled Launch of 'Climate and Environmental Implications' Section for Staff Reports BE RECEIVED.

4.0 Executive Summary

The new process two components: 1) a new section in the staff report template titled Climate and Environmental Implications and 2) a calculator tool developed to assist applicable staff with calculating Greenhouse Gas (GHG) emissions and other metrics associated with their report. This process is designed to gather qualitative (descriptive) information on climate and environmental impacts from all City departments and quantitative (measured) data on GHG emissions, waste, water, stormwater and tree planting/removal from Public Works and Housing Operations staff at this time. Information entered in the calculator tool will also be saved in a backend database that will be consolidated and provided as a quarterly report to Council and the Environmental and Sustainability Policy

Advisory Committee (ESPAC) on these metrics. A review process will be initiated after one year of use to ensure the tool is operating effectively and/or identify where improvements can be made.

5.0 Purpose and Overview

The purpose of this report is to provide an update on the climate lens assessment process and tool for staff reporting to Council. As the process is now in effect, this report will provide guidance on what to expect from staff reports going forward with regard to the newly added Climate and Environmental Implications section.

To assist staff with quantifying emissions and other environmental metrics, a calculator tool has been developed. The main purpose of this tool is to provide measurements of City projects and initiatives in terms of their impact on the environment, primarily climate change impacts, but also other sustainability metrics. Only by starting to measure the City's contribution to GHG emissions, waste, water, stormwater, etc. can the City begin to act toward reducing its impact. Additionally, this calculator will gather data for quarterly reporting.

Providing this information, both qualitative and quantitative, in the staff reports allows for full transparency to Council and the public when making decisions on City projects with regard to the impacts on climate change and the environment.

6.0 Background

In December 2019, Brantford City Council declared a Climate Emergency, committing the City, in principle, to becoming carbon neutral by 2050. With this declaration, staff were directed to:

“... develop a carbon reduction strategy in collaboration with the Environmental and Sustainability Policy Advisory Committee, to be provided to Council by August 2020 that details the following:

A process to ensure that by August 1, 2021, every matter coming before City Council will quantify and report its impact relative to the climate emergency and Brantford's carbon reduction strategy; ...”

In November 2020, Council approved Staff Report 2020-472 which outlined the functionality and purpose of the climate and environmental assessment process and calculator tool. This report identified the adjusted date for implementation as November 1, 2021.

A presentation on this process and the calculator tool was provided to the Environmental and Sustainability Policy Advisory Committee on September 23, 2021 where the Committee fully endorsed the use of this tool and its implementation.

7.0 Corporate Policy Context

This action is in response to a directive from Council as part of the Climate Emergency declared by Council in December 2019 as noted in Section 6. It is also listed as a Short Term action item in the Corporate Climate Change Action Plan approved by Council in November 2020.

Brantford City Council 2021-2022 Council Priorities list Desired Outcome 7: The City is mitigating its environmental footprint and adapting to climate change, and the following associated actions:

- Complete the City of Brantford Greenhouse Gas (GHG) Assessment Tool and the five milestones under the Partners for Climate Protection Program

This action is addressed herein by way of implementation of the GHG Assessment Tool, referred to as the Climate and Environmental Implications Assessment and Calculator Tool.

The five milestones under the Partners in Climate Protection (PCP) program referred to in this Council priority item are not discussed in this report, but will be addressed in the next Climate Change Action Plan update report scheduled for December 2021.

The City of Brantford is a member of the Federation of Canadian Municipalities (FCM). A focus area for FCM is “Climate Change and Sustainability” which FCM supports through the PCP program. The City of Brantford has been a member of the Partners in Climate Protection program since 1996.

8.0 Input From Other Sources

- Information Technology Services
- Environmental and Sustainability Policy Advisory Committee
- Public Works

9.0 Analysis

This process has two components: 1) a new section in the staff report template titled Climate and Environmental Implications and 2) a calculator tool developed to assist applicable staff with calculating greenhouse gas (GHG) emissions and other metrics associated with their report. Additional information on these two components is provided below in Section 9.1 and 9.2 respectively.

These changes come into effect on November 1, 2021, however, due to the timing of report preparation, Committees and Council may not see this new section in all required staff reports until the next Council cycle as staff prepare and gather the necessary information for staff reports.

Providing this new information in staff reports will provide additional information to Council and Committees to make important decisions with full transparency of the climate and environmental impacts. This information will also serve to improve climate literacy amongst Council, staff and the public so that there is a better understanding of the relative impact of GHG emissions from a project. As more reports are released with this information included, report authors and readers will be better equipped to determine if the GHG emissions associated with a project are high and where it is possible to ask for improvements.

This will also initiate a larger data collection and tracking process for sustainability metrics in areas such as waste creation, stormwater increases, water usage, tree removal and GHG emissions which is a critical first step in making improvements. The data required to be included in staff reports and collected for quarterly reporting will only include projects going forward; no previously approved projects will be required to undertake this analysis unless future reports on the topic are required. Any emissions from previously approved projects or currently operating projects will be captured in the GHG Emissions Inventory annual reporting.

9.1 Climate and Environmental Implications Staff Report Section

A section has been added to the staff report template titled Climate and Environmental Implications where staff can identify and discuss any environmental or climate change impacts relevant to their reports.

This section is open to all departments to complete if there are possible climate or environmental impacts. The climate change and environmental impacts identified by staff can include negative impacts in terms of emissions, waste, stormwater, etc. or positive impacts such as reducing climate and environmental impacts through planning, design, and operation of assets and other projects. If there is no relevant climate or

environmental impact, this section can simply read “There are no anticipated climate or environmental impacts”.

If there is a possibility of climate and/or environmental impacts, there are two types of information that can be provided, qualitative discussion and/or quantitative measurement of the impact. For the first year of implementation during the pilot phase (Nov 2021- Nov 2022), only Public Works and Housing Operations staff are required to provide quantitative data. These two departments have been identified for this first phase due to the majority of City emissions and other impacts coming from buildings and vehicles, which are primarily operated by Public Works and Housing Operations. After one year of use of the calculator tool and process, an evaluation will be conducted to determine its effectiveness and identify if it should be expanded to other departments. A table with examples of qualitative and quantitative information along with applicable participating departments is provided below.

Table 1: Qualitative and Quantitative Data reporting requirements and examples

Data Type	Applicable Departments	Information Examples
Qualitative (Descriptive)	- All Departments	<ul style="list-style-type: none"> - Mitigation Strategies - Land Use Change - Policy Change - Climate Adaptation Measures - Community Impacts - Ecological Impacts
Quantitative (Measured)	<ul style="list-style-type: none"> - Public Works - Housing Operations 	<ul style="list-style-type: none"> - Energy Use <ul style="list-style-type: none"> - Electricity (kWh) - Natural Gas (m³) - Gasoline/Diesel (L) - Trees/Vegetation - Water Demand (L) - Waste Production (Kg) - Stormwater Impacts

9.2 Calculator Tool

This tool has been developed in SharePoint and is available on the City's staff intranet site and is intended to be used by staff for guidance in preparing content for the Climate and Environmental Implications section of the staff report. Data is entered into the online tool and a report with the calculations is emailed to the user. An example report is attached as Appendix A and is described in more detail in Section 9.2.1 below.

The tool has 8 sections:

1. Project Info
2. Emissions from Energy
3. Waste
4. Water
5. Stormwater
6. Land Use Change
7. Trees and Vegetation
8. Other

This tool serves two main functions:

A. Calculating Emissions

To assist staff with calculating the associated emissions from energy consumption including electricity use, natural gas use, gasoline use, diesel use and other fuels, as well as tree planting and removal. This tool provides the emissions factors for each energy source and calculates the GHG emissions based on annual estimated usage (i.e. litres of gasoline used per year). The tool will calculate annual emissions as well as lifetime emissions based on the operational life of the project. For, example if the project is expected to be in use for 40 years, then the annual emissions will be multiplied by 40 to get the lifetime emissions. Emissions are measured in tonnes of carbon dioxide equivalent (T of CO₂e).

B. Tracking Climate and Environmental Metrics

Any information entered into the tool is stored in a backend database. This includes emissions, but also waste created, water used, stormwater impacts, land use change, and trees removed or planted. Data will be saved and can be tracked for future reference. Data from this database

will be gathered each quarter and reported to Council in update reports. More information on this reporting process is provided in Section 9.3.

9.2.1 Example Calculator Tool Report

The report that is created through the use of the calculator tool is emailed directly to the report author within minutes of completion. An example report has been prepared to demonstrate what type of information is collected and what calculations are provided; this report is included as Appendix A. This report looks at the Brantford Police Services Retrofit and Expansion project for the Police Headquarters building located at 344 Elgin St. This is a real project that is currently underway, but not at the stage where this information is available, so the information used in the example report will not be accurate and is provided for demonstration purposes only.

The top of the report provides the total annual emissions from all sources (emissions from energy, trees and vegetation and other) as well as the lifetime emissions for the project. In this example the annual emissions total 48.22 T of CO₂e and over the lifetime of the project, which is calculated from the start and end dates of the project, total 1,205.5 T of CO₂e over 25 years.

The Emissions from Energy section shows all data inputs for any energy expected to be consumed during operations. In this example, the building is proposed to eliminate fossil fuel use from the building, so only electricity will be used to heat and power the building. Emissions are calculated from the estimated kWh of electricity consumed which total 48 T of CO₂e for the year. Additionally, this section includes an Emissions Intensity calculation for any building project, which looks at T of CO₂e per sq. m. of floor area. This will allow Council and staff to compare carbon footprint of buildings more clearly, regardless of the size of the building. In this example, the emissions intensity of the building is 0.0046 T of CO₂e/sq m. This can be compared against other buildings in the City's building portfolio to determine if this higher or lower than the average. Emissions intensity for other City buildings can be found in the Emissions Inventory report. One other calculation that this section provides is a comparison to a previous asset if this proposal is a retrofit or replacement of an existing asset. In this example, the project is a retrofit of an existing building, so data from the Emissions Inventory report for this building can

be provided. In this case, the emissions from the Police Services building in 2020 was 265 T of CO_{2e}. Based on the estimated calculations for the new proposed building, this would be a reduction of 217 T of CO_{2e} annually and 5,425 T of CO_{2e} over the lifetime of the project (25 years).

The trees and vegetation section calculates the emissions associated with the removal of trees or the planting of trees (emissions reduction), based on a value of 0.022 T of CO_{2e} sequestered per tree per year. This total value is provided in this section and added to the total at the top of the report in the Summary section.

The sections for waste, water, stormwater, land use change and other do not provide calculations, but will collect metrics on estimated usage/production and prompt for mitigation measures in these areas.

All of this information can then be summarized and included in the new staff report Section 11. Sample Section 11 content is provided for the example calculator report attached as Appendix A.

11.0 Climate and Environmental Implications (*Example*)

The climate and environmental implications for the retrofit and expansion of the Brantford Police Services building will be a significant improvement from the current status. This building will be designed to be carbon neutral, which results a drastic reduction in emissions. Additionally, this project is a retrofit and expansion of an existing building which is a more environmentally-friendly choice as it avoids the need for new building materials and avoids the disposal of the old building materials.

The GHG emissions from this building will be reduced by 217 T of CO_{2e} annually and 5,425 T of CO_{2e} over the estimated 25 year lifespan of the building. The annual emissions from the new building will be 48 T of CO_{2e}/yr compared to 265 T of CO_{2e}/yr at the current building. This will be accomplished through the elimination of natural gas heating and the use of solar energy, air source and ground source heat pumps as well as increased building insulation and other energy efficiency measures included in the design of the building. This building is proposed to be 10,500 sq. m., which equates to an emissions intensity of 0.0046 T of CO_{2e}/sq. m. This is well below the average emissions intensity of City owned buildings of 0.0237 T of CO_{2e}/sq. m.

This building will also include waste reduction measures such as centralized garbage and recycling stations, on site composting and waste reduction information posted for staff and visitors. Water reduction features include low flow shower heads and low flush fixtures, automated taps and a greywater system that uses rain water for the toilets. Metrics on water use and waste production are not available, but will be tracked over the operation of the project.

Stormwater impacts will go up. With the increased size of the facility and parking needs, the impermeable surfaces on the property will be increased by 5,000 sq. m. bringing the percentage of impermeable surfaces on the site up to 59%. Stormwater management features include existing swales on site from the purchased Enbridge land as well as the greywater system that will collect and make use of rain water.

Additionally, approximately 10 trees will be lost. Approximately 60 trees will need to be removed for the expansion of the parking lot and access routes. It is estimated that 50 of those trees will be replaced. This net loss of 10 trees results in an additional 0.22 T of CO_{2e} a year that will no longer be offset by those trees.

Overall, this project will have a positive impact on climate change, by reducing emissions by 82% at this location. Sustainable choices have been made where possible to reduce energy, waste, water and stormwater.

9.3 Quarterly Reporting

The information entered into the calculator and resulting calculations will be gathered each quarter and reported to Council in update reports. The amount of carbon emissions from each approved report will be totaled for the previous quarter. Other metrics included in the calculator will be totaled and presented in the quarterly report. Emissions reduction strategies from notable City projects from the previous quarter will be discussed. Other information will be consolidated from the qualitative information as deemed appropriate. This data will be gathered and a summary report will be prepared by climate change staff.

These quarterly reports will be provided to Committee of the Whole – Operation and Administration and the Environmental and Sustainability Policy Advisory Committee (ESPAC).

A year-end report will be provided following the conclusion of the calendar year. This report will review total GHG emissions produced and avoided, major projects and their impacts, and a look at the emissions approved compared to the emission reduction targets identified in the Climate Change Action Plan. As multiple year-end reports are prepared, trends can be identified in emissions decisions. Comparisons to previous year's approvals of emissions can be provided to identify if the City's proposals and Council decisions are trending up or down with regard to consideration of climate change impacts. The year-end report will be provided to ESPAC and Committee of the Whole – Operations and Administration and posted on the City's Climate Action webpage.

9.4 Pilot Review and Revision

After a year of implementation a thorough review process will be undertaken to understand if the assessment process is working as intended and where improvements can be made. Feedback will be solicited from Council, ESPAC and staff. At that time, it will also be determined if additional departments should be included in the quantitative assessment requirement.

10.0 Financial Implications

There are no financial implications to this report.

11.0 Climate and Environmental Implications

The process described herein has the potential to greatly improve the City's ability to mitigate climate and environmental impacts. Increasing education, literacy and knowledge on these topics is still very necessary and providing regular discussion and measured data in these areas will assist with this goal City-wide. Additionally, requiring discussion and consideration of climate and environmental impacts on all staff reports will signal to the community and other jurisdictions that the City of Brantford is committed to environmental stewardship and meeting the necessary climate change targets. With growing knowledge and heightened visibility of these issues, Council will be better equipped to identify problem areas and work toward mitigating them.

Although the impact of this proposal cannot be measured, this is the first step in moving toward a decision making process that factors in environmental and climate change impacts that Council decisions have on future generations.

12.0 Conclusion

The Climate and Environmental Implications staff report template discussion section and supporting calculator tool is operational. Council can expect to see the results of this process in staff reports in the next several months as staff begin to gather the necessary data to complete this section. Both qualitative discussion and quantitative measurements will be provided for applicable reports and for applicable departments as discussed in this report. This newly gathered information on climate and environmental impacts will also be consolidated into quarterly reports and provided to Council and ESPAC.



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Attachments (if applicable)

Appendix A - Example Climate and Environmental Implications Calculator Report

Copy to:

Environmental and Sustainability Policy Advisory Committee

In adopting this report, is a by-law or agreement required? If so, it should be referenced in the recommendation section.

By-law required yes no

Agreement(s) or other documents to be signed by Mayor and/or City Clerk yes no

Is the necessary by-law or agreement being sent concurrently to Council? yes no