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To: **Committee of the Whole**

Agenda Section: Performance Management  
Division: Corporate Performance  
Department: Procurement, Fleet & Property

Item Number: CCW - 2021 - 271

Meeting Date: October 12, 2021

Subject: Sustainable Operations Program – Fall 2021 Update

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## **Recommendation**

That Item CCW 2021-271, dated October 12, 2021, regarding an update on the Sustainable Operations Program, be received, and

That the Partners for Climate Protection (PCP) Milestone 1- 2016 Baseline Inventory attached as Schedule 1 to item CCW 2021-271 be submitted to the Federation of Canadian Municipalities (FCM).

## **Executive Summary**

In April 2018, County Council approved the County of Simcoe's membership in the Federation of Canadian Municipalities "Partners for Climate Protection" program.

This Item provides an update on the continued efforts of the Sustainable Operations Program and more specifically the collection of data and completion of the Partners for Climate Protection Milestone 1- 2016 Baseline Inventory.

Within the context of the PCP program, the corporate greenhouse gas (GHG) inventory is designed to capture GHG emissions attributable to local government operations, including outsourced operations for which the municipality has operational control. This includes emissions arising from the use of all significant assets and services, including: buildings, fleet, street lights and solid waste.

The County of Simcoe's Milestone 1- 2016 Baseline Emissions Inventory has revealed that our energy consumption in 2016 was 200,314 Gigajoules (GJ) which generated 24,815 tonnes of CO<sub>2</sub>e at a cost of \$4,744,827.72.

With Council's approval, Sustainable Operations staff will proceed with the submission of the Milestone 1- Baseline Emissions Inventory to the PCP program at the FCM.

Going forward, Sustainable Operations staff will engage and involve cross-corporate staff in the PCP process and in the completion of Milestone 2: identifying opportunities to reduce emissions and setting reduction targets that align with federal, provincial and peer municipality targets and Milestone 3: development of a Local Action Plan.

Specifically with regard to greening the County Fleet, the first Electric Vehicle (EV) was added in 2020 and has been a great success with high reliability and minimal costs. Staff have included a second EV in the 2022 budget for Council's consideration. The Fleet Policy is currently under revision to include recommendations for reduction of GHGs and will be presented to Council in 2022 for approval.

Staff will report back to Council with an update in 2022.

### **Background/Analysis/Options**

In April 2018, County Council approved the County of Simcoe's membership in the Federation of Canadian Municipalities "Partners for Climate Protection" program.

The County joined a network of over 400 Canadian upper and lower tier municipalities and separated cities who have all publicly committed to reducing greenhouse gas emissions and implementing long-term strategies to mitigate and adapt to climate change impacts. In coordination with energy management practices, the tracking and reporting of greenhouse gas emissions is integral to mitigation and adaptation. The PCP program is composed of a five-step milestone framework that enables members to reach their emissions targets. Program milestones include:

#### **Milestone 1 – Create a Baseline Emissions Inventory & Forecast**

Inventory of energy consumed and solid waste generated at County owned and operated buildings, street lighting, the municipal fleet, and corporate solid waste.

#### **Milestone 2 – Set Emissions Reductions Targets**

Develop targets to align with federal, provincial and peer municipality targets.

#### **Milestone 3 – Develop a Local Action Plan**

Summarize the County's baseline emissions forecasts and targets as well as identify existing and proposed emissions reduction strategies that will allow for the implementation of energy efficient measures that will enable the success of our emissions reduction targets.

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#### **Milestone 4 – Implement the Local Action Plan**

Identify measures to incorporate into existing projects and/or develop as new projects as well as estimating and tracking lifecycle costs, payback periods, resource savings, direct and indirect benefits, and potential sources of internal and external funds.

#### **Milestone 5 – Monitor Progress & Reporting Results**

Evaluate project outputs to compare against our original projections, adjusting activities as needed.

Since receiving County Council approval to join the program, Sustainable Operations staff have gained a detailed understanding of the program, participated in a workshop with the County's PCP Regional Climate Advisor, completed a gap analysis of data available and required for Milestone 1, introduced County green teams to the program, and gathered an inventory of best practices to understand the most efficient and high impact actions to pursue GHG emissions reductions within the corporation.

Although the global pandemic redirected our focus in 2020 and early 2021, staff is pleased to advise that the Milestone 1- 2016 Baseline Inventory is complete.

#### **Milestone 1 - Overview of Process and Inventory Outcomes**

The purpose of Milestone 1 is to document and complete a Corporate Greenhouse Gas (GHG) emissions inventory for the baseline year of 2016 for the County of Simcoe, as well as a business-as-usual forecast of future emissions.

Within the context of the PCP program, the corporate GHG inventory is designed to capture GHG emissions attributable to local government operations, including outsourced operations for which the municipality has operational control. This includes emissions arising from the use of all significant assets and services, including:

- Buildings
- Fleet
- Streetlights
- Water & Sewage
- Solid Waste

Milestone 1 is the foundation for a corporate energy strategy that indicates how an organization consumes energy and generates waste. Preparing an inventory creates the necessary baseline data against which our progress can be measured. It involves creating a greenhouse gas emissions inventory and forecast by gathering data on municipal energy use and solid waste generation.

By measuring emission levels at regular intervals, we can monitor our activities and behaviours to determine whether our organization is reducing its emissions or continuing along a business-as-usual (BAU) trajectory.

To align with annual reporting requirements under the Electricity Act and to capture the progress of the Sustainable Operations Program and Green Teams made to date, 2016 has been established as the baseline year for Milestone 1.

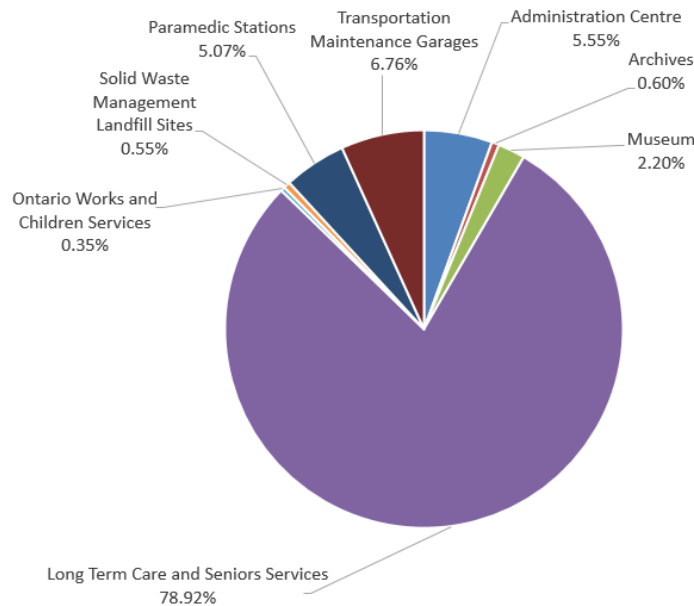
The County’s Milestone 1- 2016 Baseline Emissions Inventory & Forecast has revealed that our annual energy consumption was 200,314 Gigajoules (GJ) which generated 24,815 tonnes of CO<sub>2</sub>e at a cost of \$4,744,827.72.

This represents enough power to keep 4,587 residential homes operable for an entire year and would require approximately 124,180 adult trees to offset our 2016 carbon emissions.

**Overview of Buildings**

In 2016, the County managed, owned or leased 37 facilities. Utility bill data was used to determine the amount of electricity, natural gas, and propane used at each location. Data was collected and GHG emissions were calculated using a tool provided through the PCP program. Figure 1 below indicates the metric tonnes of CO<sub>2</sub> emitted by each building department in our 2016 corporate inventory.

Figure 1: Building Greenhouse Gas Emissions (tCO<sub>2</sub>e) by Department



Emissions were generated as a result of but not limited to: lighting, heating, cooling, plug loads, pumps, fans etc.

Building emissions accounted for 4,664 tCO<sub>2</sub>e/year or 18.8% of our total corporate emissions. Our total 2016 energy costs were \$3,050,261.41.

It should be noted that County of Simcoe owned affordable housing units are excluded from our 2016 inventory at this time.

**Overview of Fleet**

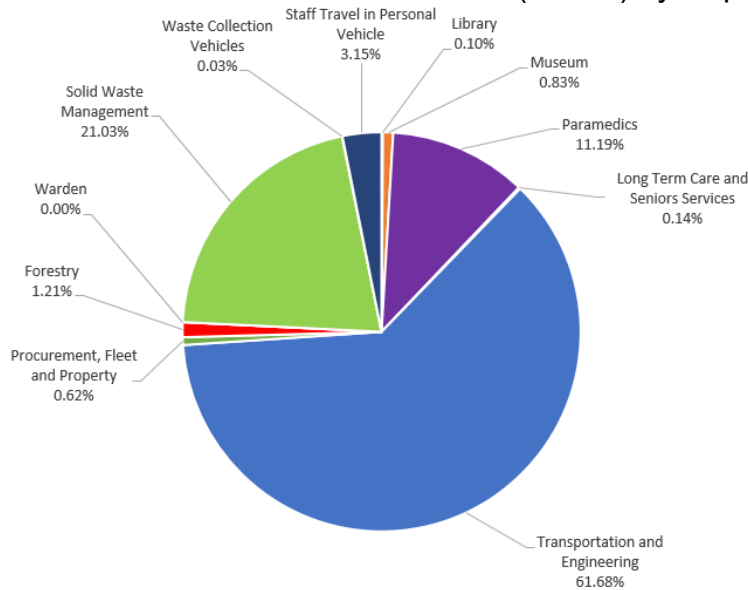
In 2016, the County owned 229 fleet vehicles, equipment, and attachments including but not limited to light duty trucks, outdoor maintenance equipment, ambulances, and other heavy machinery such as tractors and excavators.

The 2016 inventory also includes fuel consumed by staff in personal vehicles for work travel. Based on staff mileage claims a total of 447,268 kilometres were travelled in 2016 consuming 39,360 litres of gasoline which was multiplied by the average cost of fuel. The total cost of fuel for staff travel equated to \$37,155.84 and produced 91.2 tonnes of CO<sub>2</sub>e.

Waste collection is a key municipal service, therefore emissions from our waste collection fleet, although provided by a third party, are included in this inventory. Staff worked with our subcontractor to calculate the amount of compressed natural gas consumed by waste collection vehicles. It was determined that each vehicle uses approximately 1.03 m<sup>3</sup> of natural gas per km traveled. With the assistance of our GIS team, staff were able to determine that waste collection routes equate to approximately 710,736 km/year. The total cost of fuel for waste collection vehicles equated to \$652,333.63 and produced 1.09 tonnes of CO<sub>2</sub>e.

Figure 2 below indicates the metric tonnes of CO<sub>2</sub> emitted by departmental fleet in our 2016 corporate inventory.

Figure 2: Fleet Greenhouse Gas Emissions (tCO<sub>2</sub>e) by Department



Fleet emissions accounted for 2,885 tCO<sub>2</sub>e/year, or 11.6% of our total corporate emissions. Our total 2016 fuel costs were \$1,643,914.71.

Note: Specifically with regard to greening the County Fleet, our first Electric Vehicle (EV) was added in 2020 and has been a great success with high reliability and minimal costs. Staff have included a second EV in the 2022 budget for Council’s consideration. The Fleet

Policy is currently under revision to include recommendations for reduction of GHGs and will be presented to Council in 2022 for approval.

### **Overview of Street Lighting**

In 2016, the Transportation and Engineering Department created an inventory of all streetlights, traffic lights and flashing beacons at the County based upon location, quantity, lamp type, wattage and hours of operation.

The County maintains streetlights on mainly rural roads and intersections and does not manage parks or sports facilities that would require outdoor lighting. As a result, the impact of street lighting on emissions is lower compared to other municipalities in an urban setting.

Traffic lights were assumed to be in use 24 hours/day while streetlights and flashing beacons were used for 12 hours/day. Multiplying the operating hours by the lamp wattage for the span of a calendar year has allowed us to calculate electricity usage per year. Once calculated, the variables were input into the PCP tool to calculate total emissions.

Street lighting emissions accounted for 14 tCO<sub>2</sub>e/year or 0.1% of our total corporate emissions. Our total 2016 energy costs were \$50,651.60.

### **Overview of Water and Sewage**

The County's member municipalities are responsible for water and wastewater functions and therefore are not included in this inventory.

### **Overview of Solid Waste**

The PCP Protocol states that municipalities must report emissions in one of two ways. Scenario One is based upon corporately owned waste disposal facilities while Scenario Two entails data from corporate solid waste generation. If a municipality owns or operates its own solid waste facility, it must estimate the direct GHG emissions generated from all the waste disposed at the corporate-owned landfill(s) and incineration facility(s) if applicable during the inventory year.

Under this approach, the municipality accounts for 100% of the direct annual emissions generated at its solid waste disposal sites, regardless of where the solid waste originates.

The County is accounting for the direct emissions from corporate owned landfills, waste that is diverted through composting or recycling initiatives are excluded.

Data on the mass of solid waste landfilled annually has been identified through information provided by our Solid Waste Management Department waste audits. The County's landfills do not have a landfill gas collection system, so emissions were calculated following the methane commitment model formulas in the PCP protocol. Any assumptions made in the formula such as the methane correction factor, were done in consultation with the Solid Waste Management staff.

Table 1 below describes the mass of landfilled waste at each of the four active landfilling sites at the County. Waste audits were not completed in 2016, therefore audit data from 2015 and 2019 were used to estimate tonnage. These waste audit results can be seen in Tables 2 and 3 below.

**Table 1. Mass of Landfill Waste**

<b>Landfill</b>	<b>Mass Landfilled (Tonnes)</b>
Collingwood - Site 2	14,750
Nottawasaga - Site 10	6,491
Oro Medonte - Site 11*	56
Tosorontio - Site 13	8,575
<b>Total</b>	<b>29,872</b>

**Table 2. Waste Audit Results 2015 for Nottawasaga, Oro, and Tosorontio**

<b>Material Type</b>	<b>Percentage</b>
Recyclable Containers	3%
Recyclable Paper	5%
Organic Materials	40%
Diapers & Sanitary Products	9%
Pet Waste	15%
HHW	0%
Textiles	4%
Plastic Film	3%
Styrofoam	1%
Residual Garbage	20%
<b>Total Material</b>	<b>100%</b>

**Table 3. Waste Audit Results 2019 for Collingwood**

<b>Material Type</b>	<b>Percentage</b>
Household Garbage	71%
Non-shred garbage	2%
Rigid Plastic (non program)	2%
Upholstered Furniture	14%
Carpet	7%
Toilets and Ceramic Tiles	2%
Mattresses	0%
Plastic Film	0%
Styrofoam	0%
Suspected Asbestos	0%
Kitchen Organics & Pet Waste	1%
Recyclables	0%
Cardboard	0%
Metal	0%
Wood	0%
Drywall	0%
Electronics	0%
HHW	0%
Insulation	1%
Textiles	0%
<b>Total Material</b>	<b>100%</b>

Solid waste emissions from County owned landfill sites accounted for 17,252 tCO<sub>2</sub>e/year, or 69.5% of our total corporate emissions. As waste does not consume energy there is no related expenditure.

### **Summary of Corporate Sources and Emissions Inventory**

Following the Federation of Canadian Municipalities Partner for Climate Protection protocol for quantifying GHG emissions, the County's total corporate GHG emissions in 2016 amounted to 200,314 Gigajoules (GJ) which generated 24,815 tonnes of CO<sub>2</sub>e at a cost of \$4,744,827.72. A breakdown by percentage and source is shown in Figure 3 below.



Figure 3: Greenhouse Gas Emissions (tCO2e) by Source

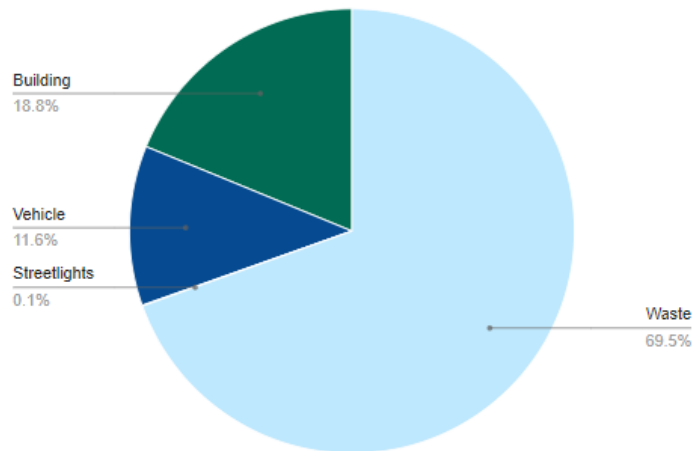


Figure 4 below is a representation of how many metric tonnes of CO2 are emitted by source in our corporate inventory.

Figure 4: GHG Emissions by Source (Metric Tonnes of CO2e)

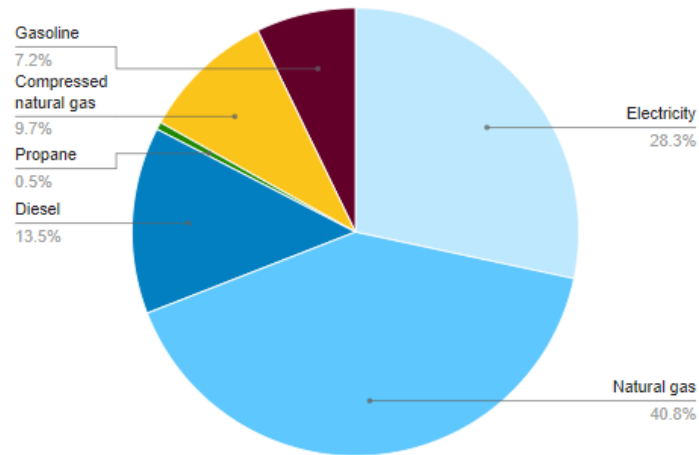
GHG emissions by source		total GHGs (metric tonnes CO2e)
<b>Buildings</b>	Energy use in corporate buildings and facilities	4,664
<b>Fleet</b>	Energy use for corporate vehicles and equipment	2,885
<b>Streetlighting</b>	Energy use for streetlights, traffic signals, and other outdoor public lighting	14
<b>Water &amp; Wastewater</b>	Energy use by municipal water and wastewater infrastructure	0
<b>Solid Waste</b>	Solid waste generated at corporate facilities, including parks, recreation centres and public receptacles.	17,252

**Summary of Corporate Energy Sources**

Energy is consumed throughout the County in many different forms which contribute to our GHG footprint. All facilities use electricity generated from the grid and are heated by natural gas, propane, or electricity. Our fleet runs on gasoline, compressed natural gas (CNG), and diesel.

96% of the electricity generated in Ontario through zero emitting sources such as nuclear, hydro, wind and solar sources. A breakdown of the County’s energy sources is shown below in Figure 5.

Figure 5: Energy (GJ) by Source



**Business As Usual Emissions Forecast**

Milestone 1 of the PCP program also requires that the County calculate a Business as Usual (BAU) forecast using the PCP tool to multiply baseline emissions by an annual population growth rate. The County’s planning department provided a growth multiplier of 1.95% based on available census data.

The purpose of the BAU forecast is to estimate future emission levels in the absence of any action on climate change.

Figure 6: County of Simcoe Corporate BAU Forecast

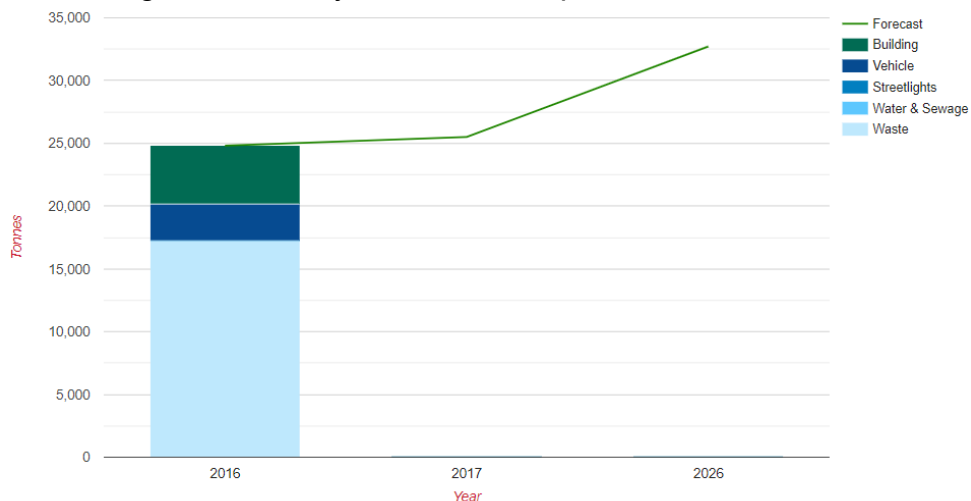


Figure 6 above presents the County’s 2016 GHG emissions of 24,815 tonnes of CO<sub>2</sub>e. Without intervention, emissions are forecasted to exceed 32,707 tonnes of CO<sub>2</sub>e by 2026. This would be an increase of 31.8% from 2016 emissions levels.

**Milestone 1 Next Steps**

With Council’s approval, Sustainable Operations staff will proceed with the submission of the Milestone 1- 2016 Baseline Inventory.

**Milestone 2 and 3**

Going forward, Sustainable Operations staff will engage and involve cross-corporate staff in the PCP process and in the development of Milestone 2, identifying opportunities to reduce emissions and setting reduction targets that align with federal, provincial and peer municipality targets and Milestone 3, developing a Local Action Plan.

Staff will report back to Council with an update in 2022.

**Financial and Resource Implications**

There are no financial and resource implications associated with this Item.

**Relationship to Corporate Strategic Plan**

This Item is directly related to Strategic Direction D:

Environmental Sustainability: To preserve, conserve, and safe guard our environment and natural resources, while recognizing opportunity, innovation, and the needs of our community.

**Reference Documents**

- CCW 2020-068 – PCP Report – Update on PCP Program and Planning for Climate Action
- CCW 2020-102 Sustainable Operations Program - Summer 2020 Update
- CCW 2021-178 Sustainable Operations Program - Summer 2021 Update

**Attachments**

Schedule 1 – CCW 2021-271 Partners for Climate Protection (PCP) Milestone 1- 2016 Baseline Inventory

**Prepared By**            Kyle Rous, Sustainable Operations Program Supervisor

**Approvals**

**Date**

Catherine Payne, Manager, Procurement and Sustainable Operations  
 Dawn Hipwell, Director, Procurement, Fleet and Property  
 Trevor Wilcox, General Manager, Corporate Performance  
 Mark Aitken, Chief Administrative Officer

September 24, 2021  
 September 25, 2021  
 October 4, 2021