



The Corporation of the City of Cornwall
Regular Meeting of Council
Report

Department: Infrastructure and Municipal Works
Division: Environment
Report Number: 2020-404-Infrastructure and Municipal Works
Prepared By: Carl Goodwin, Division Manager
Meeting Date: November 23, 2020
Subject: Energy Conservation and Demand Management Update 2020

Purpose

To provide Council on an update to the 2019-2023 Energy Conservation and Demand Management plan.

Recommendation

That Council receive Report 2020-404-Infrastructure and Municipal Works.

Financial Implications

There are no financial implications at this time.

Strategic Priority Implications

Being leaders in sustainability and climate change impact.



Energy Conservation and Demand
Management Plan (2019 – 2023)
Annual Update
November 2020 Report

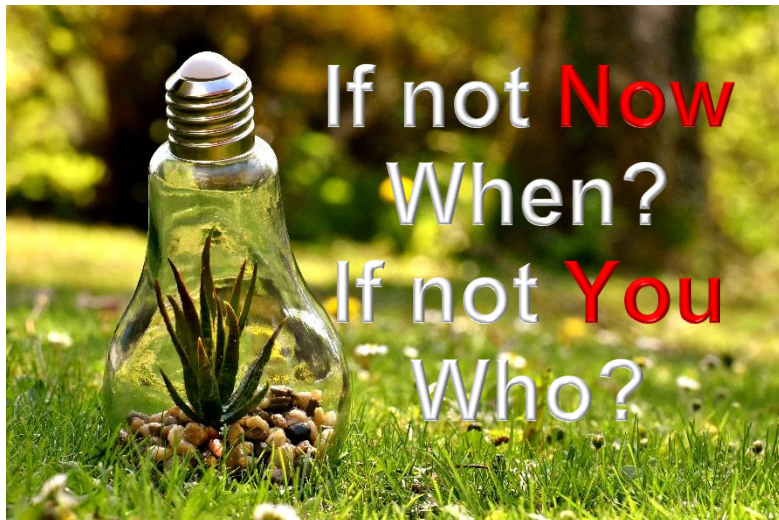
1. Overview

This report provides an update on the progress made during the Nov 2019 – Nov 2020 period and highlights the future steps to conserve energy. Energy consumption data obtained from the Ministry of Energy's 2017 Energy consumption is included in Appendix A.

Energy consumption in the City owned buildings saw a small increase during this reporting period. Although, the goal for the first year of the five-year plan was to develop reporting strategies, methods, and knowledge of energy reduction strategies. Some pilot projects are already underway to provide measurement of energy consumption. These projects will provide a dashboard and monitor effectiveness of energy reduction projects as the plan moves to the energy reduction phase of the plan.

2. Broad Picture

The City of Cornwall is working as a team with the aim to reduce the overall energy consumption and to create a continual improvement strategy with a target of 10% energy reduction every year. The 2019 – 2023 plan vision is to place energy conservation within a strategic long-term planning process. That planning process is asset management. As such, the Energy Conservation Lead for the Energy Conservation Task Force is the Asset Management Planner for the Environmental Services division. The Asset Management Planner in addition, will be co-ordinating the update of the buildings condition



assessments, which grows strategic functionality of the Energy Conservation Lead.

3. Energy Consumption Data at City of Cornwall's facilities

Energy consumption reporting for major municipal facilities has been a provincial regulation since 2011. This data is reported to the province annually although it is reported for the prior complete year. Figure 1 shows the annual consumption of electricity and natural gas starting from 2011 to 2019 at different facilities of City of Cornwall. The data for 2018 was reported earlier this year. As part of the 2019-2023 plan this annual report includes the most recent available data.

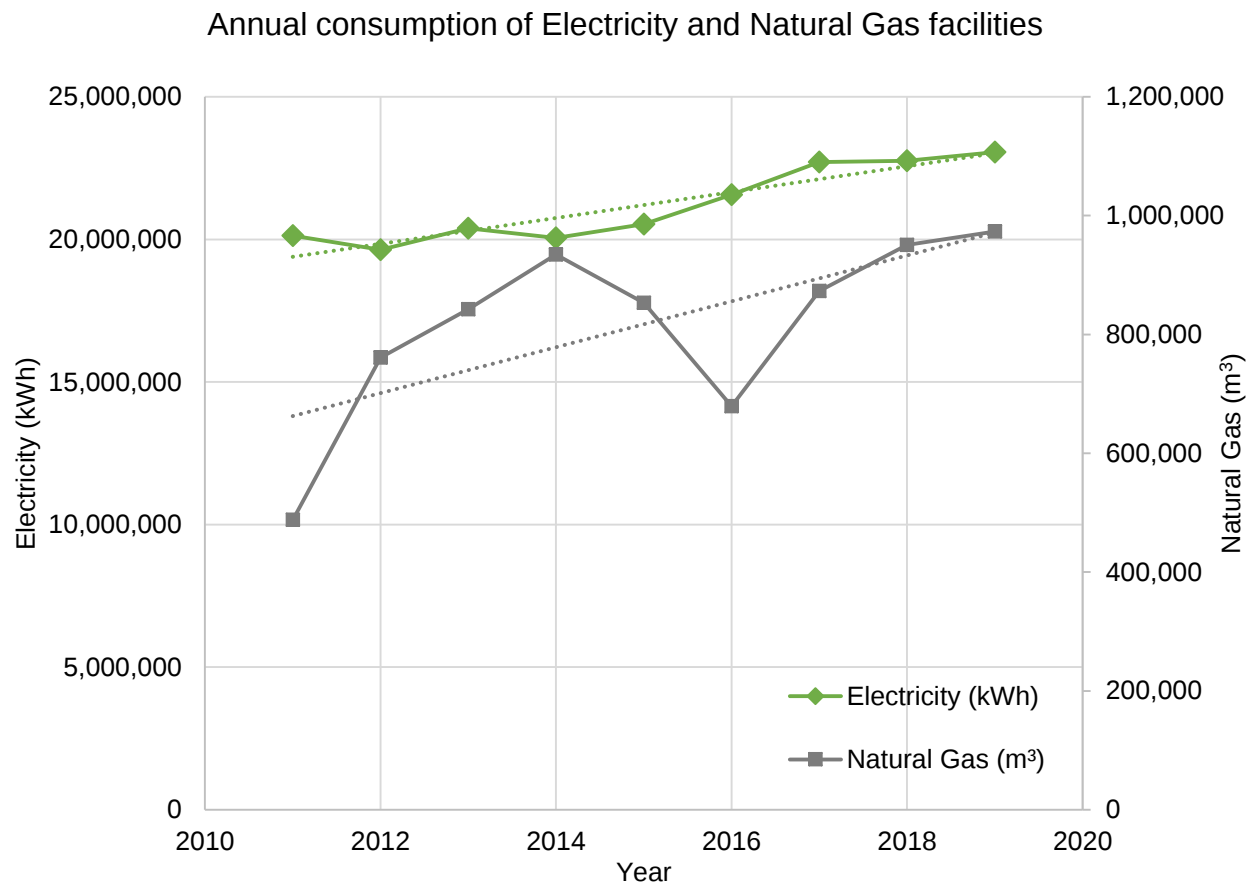


Figure 1: Annual consumption of Electricity and Natural Gas at various facilities of City of Cornwall

In 2019, the buildings energy consumption continued the increasing trend previously shown in the 2019 – 2023 Energy Conservation and Demand Management (ECDM) plan. An analysis of this trend has not yet been completed. The strategy as presented below will determine the contribution of the energy increase to the life cycle age of the components of the buildings as energy consumption is integrated into the decision making for equipment purchase and rehabilitation. This will become a fundamental calculation for the asset management planning.

4. Green House Gas (GHG) emissions

In accordance with the 2019-2023 ECDM plan, Figure 2 below updates the facilities GHG emissions 2011 to 2019.

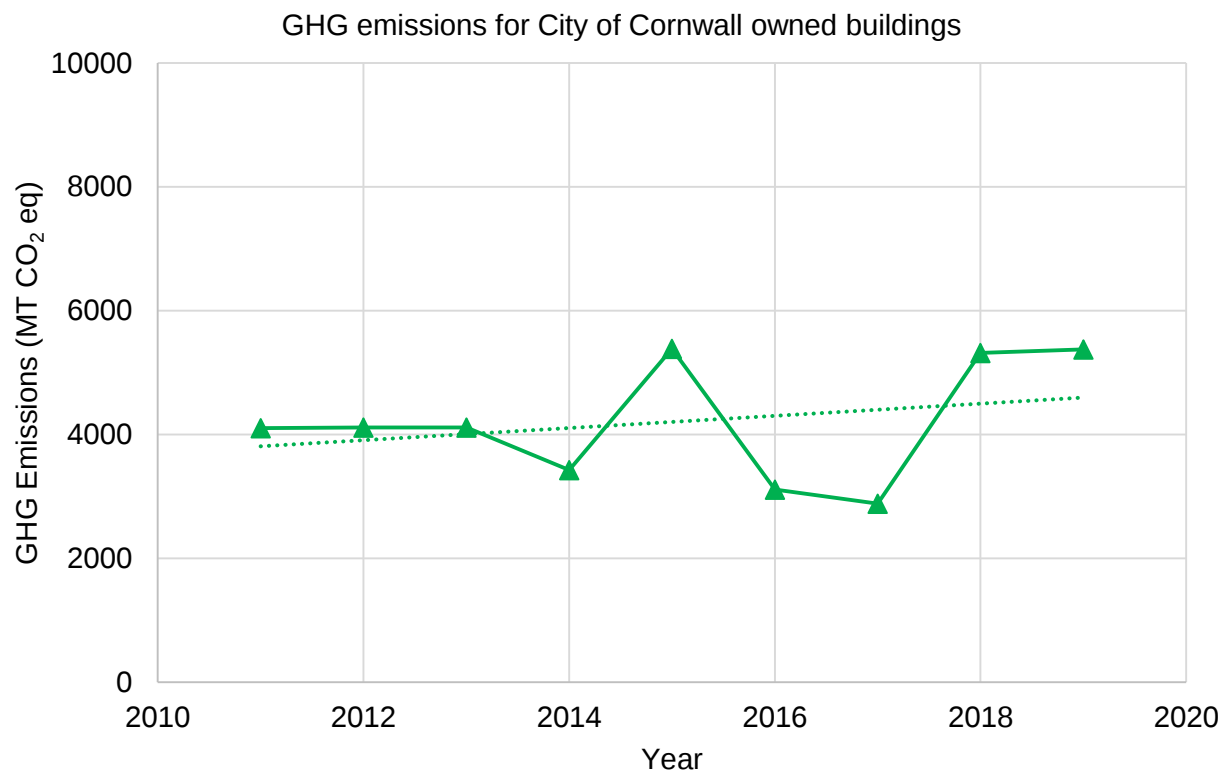


Figure 2: GHG emission for City of Cornwall owned facilities from 2011 - 2019

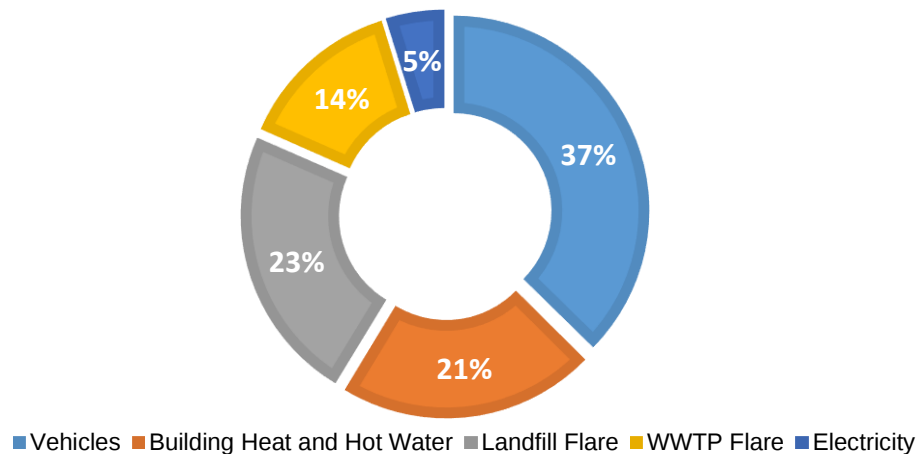


Figure 3: Relative contributions of GHG emissions for various energy consumption locations

As a group, vehicles contribute the largest source of GHG emissions (Figure 3). The Landfill Flare is the largest single source of GHG emissions. The next largest source of GHG is contributed by corporate buildings as a group. The reduction of GHG contributed by groups of contributing assets such as vehicles and buildings can be a challenge to create energy reductions as they involve multiple projects and often the multiple projects are planned separately over years. (Note: fuel usage is showing a decrease in 2020 due to the exceptional circumstances).

In 2020, an electric car and a hybrid car were added to fleet of vehicles as shown in Figure 4. The energy consumption and operating and maintenance costs for these two vehicles are being monitored. The vehicles were introduced on routes and jobs with maximum utilization. The overall life cycle cost of these vehicles will be used for decision making for switching other conventional vehicles to electric or hybrid vehicles.



Figure 4: City of Cornwall's electric and hybrid vehicles

4.1 ECDM 2020 Focus

4.1.1 Energy Information

The electrical and natural gas consumption for the City owned facilities has been gathered from the Accounting Department into a single excel file within a shared folder for access by the Task Force. Trend analysis and charts of the energy data (electricity and natural gas) have been created to present a historical picture of the energy consumption with seasonal trends. The goal of this project is to have the excel sheets linked to the accounting sheets in read only mode and shared with the Task Force.

A pilot project is in process to provide real time energy data. This pilot will install two electricity consumption meters and will be installed at the Water Purification Plant. The pilot will be used to better understand the installation of the meters, the quality of the data and the ability to get data to a cloud based reporting website. The pilot has two main goals. One is to evaluate the effectiveness of the data for decision making and second to be better able to determine the specifics of any project to expand real time energy reporting throughout the City owned facilities. A secure internet connection will upload the data to a website. The data



will be available to track electrical energy usage at 5 minutes intervals and will allow dashboards to present energy usage. As shown in Figure 1, it will be important to monitor the data in real time if the increasing trend is to be reversed as the plan moves to the continual improvement 10% reduction phase of the plan.

The pilot project results will be used to provide the specifications and project management details for a capital project to be presented to Council for the purchase of energy meters including reporting software. The meters will be installed in City Facilities where energy reduction projects are planned. The estimated budget for the project is \$100,000. The City will be applying for funding available from National Research Council to match 50% of available funding up to maximum of \$40,000.

5. Additional Items presented in ECDM - Current Status

A co-digestion feasibility study is underway at the Waste Water Treatment Plant with the next steps report due in early January 2021. Results to date are promising with a number of potential partners expressing interest. The overview of this project was presented to Council in September of this year.

The Procurement Policy includes Environmentally Responsible (Green) Procurement.

The City has included Leadership in Energy and Environmental design (LEED) certification as part of Requests for Proposal (RFP) terms of reference associated with the design of three new buildings (Fire Hall, Municipal Works Administration Building, Municipal Works Multi-use Building).

Demand Management (water meter) report was presented to Council Fall 2019. Council recommended proceeding to a Water Servicing and Conservation Master Plan which will include water conservation measurements. Water conservation



could potentially reduce municipal water consumption by 7 million liters over the next 10 years.

The City of Cornwall has joined the Canadian Urban transit Research and Innovation Consortium (CUTRIC). This consortium is providing insights and assistance with the concept of creating a green mobility hub for the biogas and/or green hydrogen at the WWTP as part of the Co Digestion study. Pairing biogas and/or green hydrogen with a mobility solution creates a significant GHG reduction, although more importantly brings greater financial resources to the Co Digestion project.

Accessibility Impact

None



Report Approval Details

Document Title:	Energy Conservation Demand Management 2020 Update Report.docx
Attachments:	- Appendix A - ECDMP report 2020.pdf
Final Approval Date:	Nov 17, 2020

This report and all of its attachments were approved and signed as outlined below:

Bill de Wit - Nov 17, 2020 - 5:52 PM

Maureen Adams - Nov 17, 2020 - 8:02 PM