



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

Department: Infrastructure and Municipal Works  
Division: Environment  
Report Number: 2021-07-Infrastructure and Municipal Works  
Prepared By: Carl Goodwin, Division Manager  
Meeting Date: February 22, 2021  
Subject: Cost Analysis Cornwall Greenhouse Gas Emissions

**Purpose**

To provide Council with a cost analysis report for Cornwall's Greenhouse Gas (GHG) emissions

**Recommendation**

- a. That Council receive Report 2021-07-Infrastructure and Municipal Works.
- b. That Council request development of a Zero Carbon Roadmap report.

**Financial Implications**

There are no financial implications at this time.

**Strategic Priority Implications**

Being leaders in sustainability and climate change impact.

**Background / Discussion**

At their regular meeting of December 14, 2020, Council approved the following: "Motion to direct Administration for a report on a cost analysis associated with determining Cornwall's greenhouse gas emissions".

## Greenhouse Gas Summary Information

Green House Gas (GHG) accumulation in the atmosphere has resulted in a general warming trend of the atmosphere and a more unstable climate which has shown an increasing frequency of extreme weather events. A significant and measurable contribution is human combustion of carbon-based organic materials and the decrease of natural carbon storage.

The five primary greenhouse gases are carbon dioxide, methane, nitrous oxide, and two chlorofluorocarbons. Carbon dioxide (CO<sub>2</sub>) is most important greenhouse gas and emissions are measured as eCO<sub>2</sub> or equivalent CO<sub>2</sub>, meaning the concentrations of methane, nitrous oxide, and two chlorofluorocarbons are converted to CO<sub>2</sub> and reported as eCO<sub>2</sub>.

CO<sub>2</sub> is by far the most important greenhouse gas in both total amount and rate of increase and is responsible for 80 percent of the increased warming influence captured by the Annual Greenhouse Gas Index (AGGI) (atmospheric eCO<sub>2</sub> measured in mg/L) since 1990. The vast majority of CO<sub>2</sub> released into the atmosphere has been the result of burning of carbon-based fuels for energy (transportation and industry) and heating (homes and industry).

The current eCO<sub>2</sub> level in the atmosphere is 425 mg/L. The stable level before the industrial revolution was 280 mg/L.

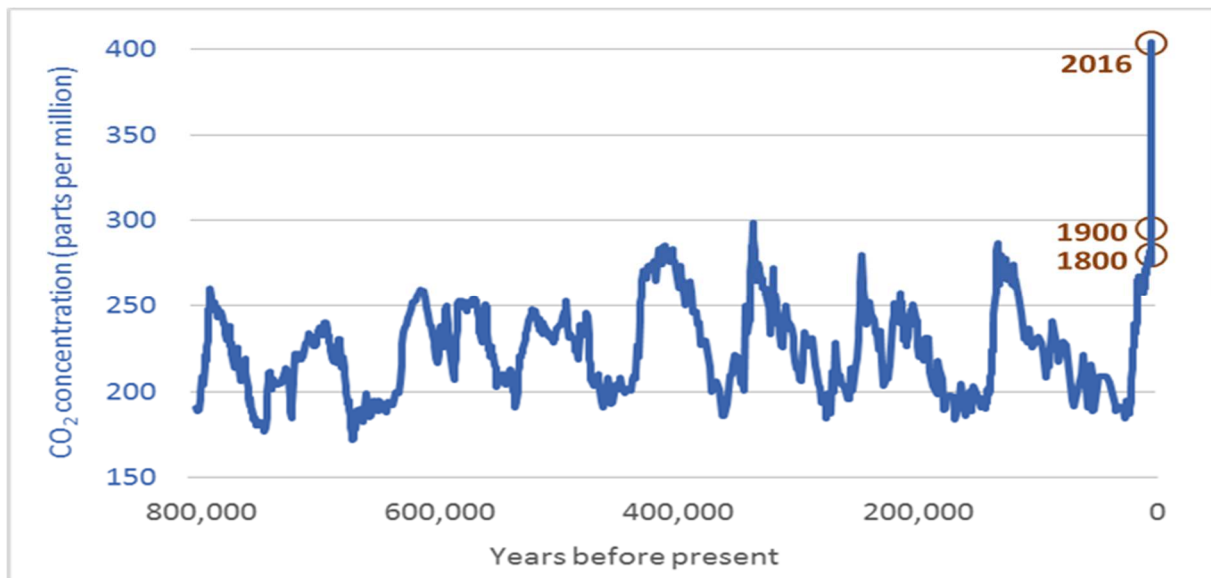
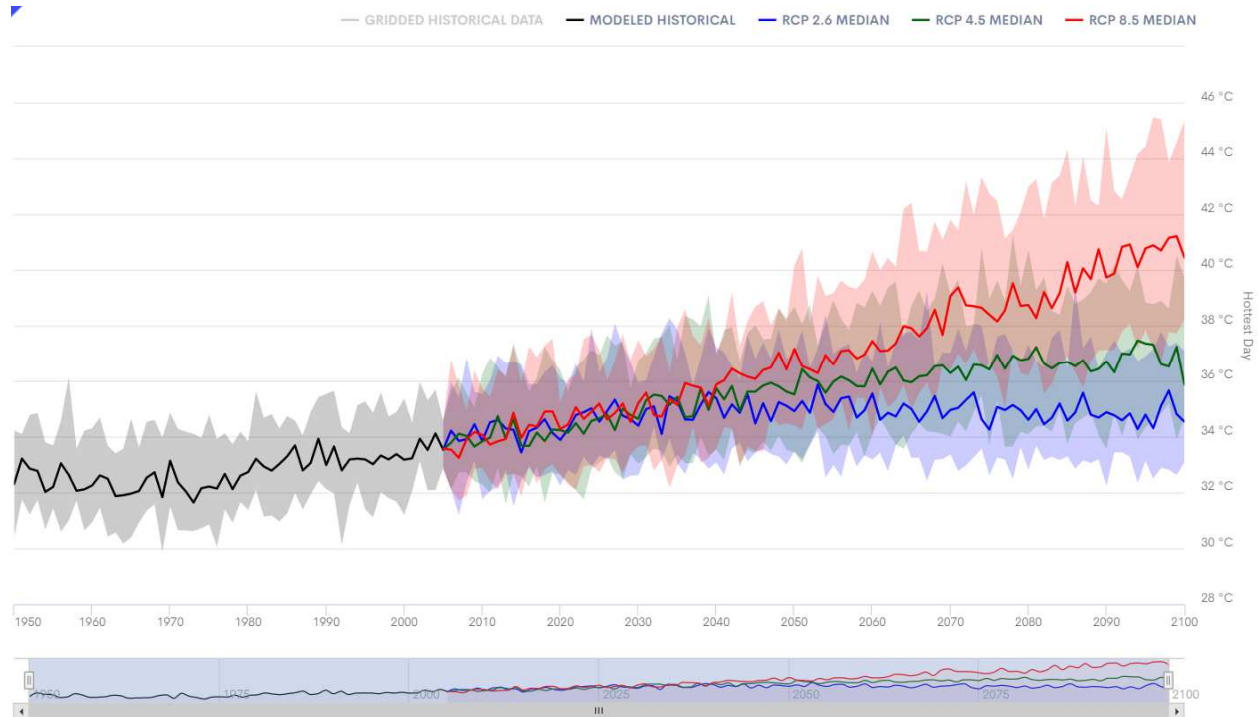


Figure 1. Historical Atmospheric CO<sub>2</sub> Concentration (mg/L).



*Figure 2. Cornwall Hottest Day Predictions.*

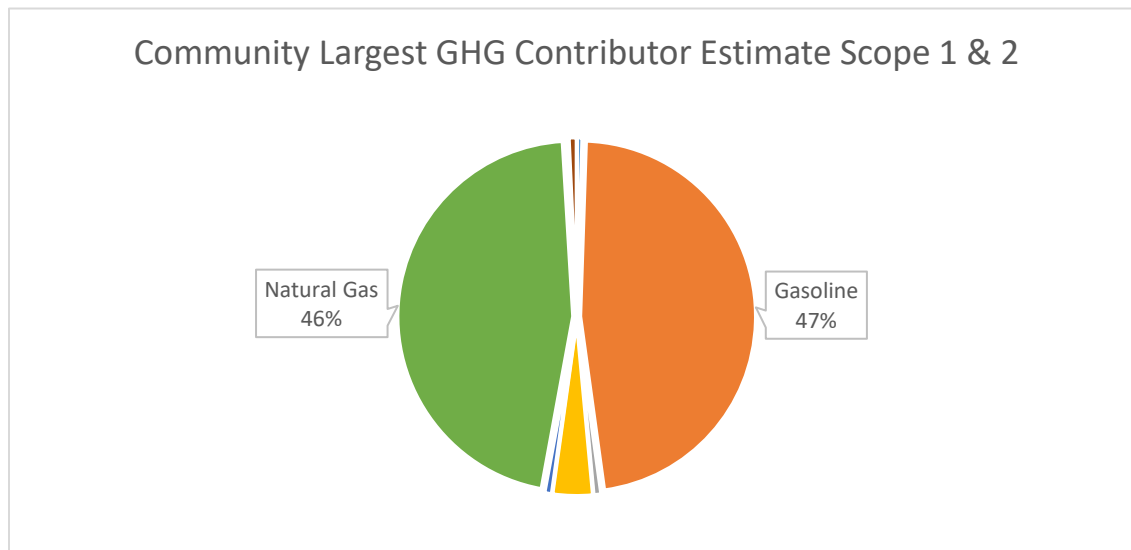
Figure 2 depicts the prediction for Cornwall's hottest day over the 30 years. The red line is the prediction without GHG emissions reduction. The blue line occurs if the world aggressively moves to zero carbon emissions.

### **GHG Community Wide Emissions Inventory**

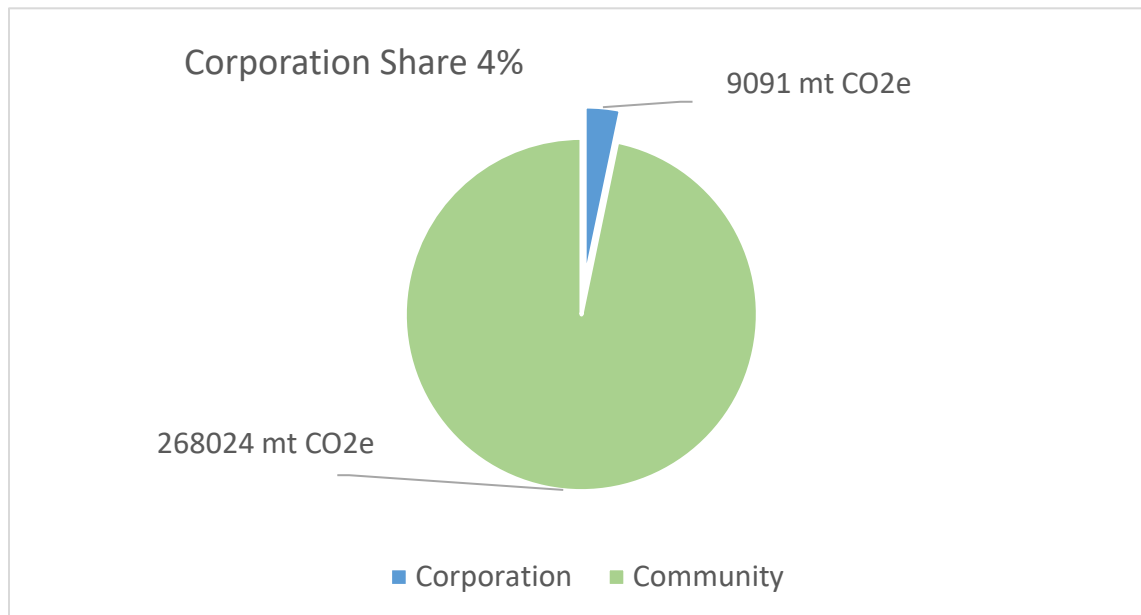
GHG inventories conducted in communities consisted primarily of two scopes of measurement. Scope 1 inventories GHG emissions that are direct discharges from all private and public sources within the community. Scope 1 includes natural gas consumption for heating and vehicle fuel consumption. Scope 2 inventories GHG emissions are indirect emissions from purchased energy sources such as those emissions that result from the generation of electricity purchased from a utility provider.

With respect to the City of Cornwall GHG emissions, this information which can be derived from information supplied by Cornwall Electric and Enbridge Gas who provide annual energy consumption within individual municipalities. The Kent Group is an analytics company which provides data relating to the downstream (refining and fuels marketing/retailing) petroleum industry and have provided annual sales of gasoline and diesel sold within Cornwall.

Figures 3 & 4, provide an important overview and context for climate mitigation in Cornwall. The main targets for climate mitigation are heating fuels and vehicle fuels. If utilizing natural gas or furnace oil for heating and/or using vehicles and equipment fueled with diesel or gasoline, then all these sources of GHG should be targeted for mitigation or ultimately, elimination. How this will be conducted will be somewhat complicated although the technological solutions and policy tools currently exist to guide motivated people and organizations to navigate the map to zero carbon in a sustainable manner.



*Figure 3. Largest Scope 1 & 2 CO<sub>2</sub> Emission Sources.*



*Figure 4. Corporation to Community Large Source Emissions.*

## Climate Lens

Innovative policy has resulted in a shifting away from just simply measuring GHG emissions, creating wide inventories, modelling and the creation of new plans. The innovative approach now endeavours to directly remove the carbon energy emissions using a sustainable business case.

Recently, the Federation of Canadian Municipalities (FCM) has published work on the creation of methods to move change. An organization called The Clean Air Partnership, which was selected by FCM to deliver their new climate change efforts, has developed a municipal "Climate Lens". The lens imagines using special glasses to discover and integrate GHG reduction (mitigation) and climate adaption into projects and community planning.

The Climate Lens process is a requirement applicable to Infrastructure Canada's Investing in Canada Infrastructure Program (ICIP), Disaster Mitigation and Adaptation Fund (DMAF) and Smart Cities Challenge. It has two components: the GHG mitigation assessment, which measures the anticipated GHG emissions impact of an infrastructure project, and the climate change resilience assessment, which employs a risk management approach to anticipate, prevent,

withstand, respond to, and recover and adapt from climate change related disruptions or impacts.<sup>1</sup>

Use of the Climate Lens process will be a prerequisite for governmental grant applications for any net zero initiatives that the City may apply for. As the Climate Lens tool (process) can measure the GHG reduction and climate risk directly of the project for which grants have been applied.

### **Zero Carbon Roadmap**

It is proposed that the Environmental Services Department transition an existing full-time position to assume the role of Sustainable Operations Project Coordinator. The Project Coordinator will, among other responsibilities, initiate a collaborative process involving staff, vendors, funding agencies, and consultants which would result in the development of a Zero Carbon Roadmap for presentation to, and approval by, Council. The position will be responsible for developing, implementing and maintaining a sustainability program encompassing all areas of the Corporation, its facilities, operations and culture including community engagement and partnerships. The roadmap concept starts with the consideration of a destination being zero carbon energy. Then through the creation of a map, discover multiple ways to get to the destination. This concept allows agile progress towards the destination even if one road gets washed away by a flood. Simply get the map out and plot a different route.

Asset Management plans by design include the requirement to monitor and control long term costs, risks and level of service. The Project Coordinator will promote that a Zero Carbon goal could be integrated into existing plans without the need to build and design entirely new and separate plans. In addition, the City already has a number of positions in the organization with asset management responsibility and training.

Additionally, each Capital Project sheet could contain a paragraph with the Climate Lens applied and would identify to Council and Administration the Climate Mitigation and Climate Adaptation of each capital projects and quantify the expected risk reductions.

There is no additional cost to the Corporation to establish a Sustainable Operations Project Coordinator as the Environmental Services Department will transition an existing a full-time position to assume responsibilities. There will be

---

<sup>1</sup> <https://www.infrastructure.gc.ca/pub/other-autre/cl-occ-eng.html#1.1>

some direct costs involved with the training and meetings required to build knowledge and build the tools to imbed the Climate Lens into the Corporation's existing plans and policies. The training and software development costs will be absorbed within the existing training budget allocated to the Department.

### **Integration of GHG Mitigation into the Community**

A number of cities have developed a non-profit organization to lead the community wide net zero goals. These have proven very effective. The Clean Air Partnership has created a guidance paper for such an initiative as described herein. The premise is to use public engagement to find a GHG reduction project in one sector, implement an energy reduction/GHG reduction initiative, celebrate the success and then replicate that success in other sectors. This has been found to be significantly more effective than compliance through building codes, incentive alone and community statements. Two excellent examples of non-profit organizations carrying out GHG reduction work in the community include the group in the City of Kingston called Sustainable Kingston, and in the City of London the non-profit party is called Project Neutral. Cornwall's Sustainable Operations Project Coordinator would examine the feasibility of the City developing Cornwall's own organization which would provide education and promotion of GHG reduction activities.

Document Title:	Cost Analysis Cornwall Greenhouse Gas Emissions - 2021-07-IMW.docx
Attachments:	
Final Approval Date:	Feb 18, 2021

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

**Carl Goodwin - Feb 18, 2021 - 11:05 AM**

**Bill de Wit - Feb 18, 2021 - 11:19 AM**

**Maureen Adams - Feb 18, 2021 - 11:29 AM**