

REPORT

Climate Action, Planning and Development

To: Mayor Côté and Members of Council **Date:** November 15, 2021

From: Emilie K. Adin
Director, Climate Action, Planning and
Development **File:** 09.1742.02

Item #: [Report Number]

Subject: **Climate Action: 2020 Corporate Greenhouse Gas Emissions Update**

RECOMMENDATION

THAT Council receive this report for information.

PURPOSE

To provide Council with a report on the City's 2020 corporate greenhouse gas emissions inventory and City progress towards meeting our corporate emissions reduction targets.

EXECUTIVE SUMMARY

As of 2020, the City has reduced the greenhouse gas emissions produced by our internal (corporate) operations by 20.2% (852 tCO₂e) from the 2010 baseline year. This is 14.5% lower than what would have been expected in the business as usual (BAU) scenario and within 2.3% of the trajectory for being on track to meet Council's Climate Emergency targets. The City is actively working to accelerate these reductions through Bold Step #1 (Carbon Free Corporation), whereby the City will strive to be net-zero by 2030, Bold Step #5 (Carbon Free Energy), whereby the City is undertaking enhanced electrification and low-carbon district energy, and the implementation of the newly updated Corporate Energy and Emissions Reduction Strategy (CEERS). As planned by the CEERS, 2020 is the first year that contractor emissions are being included in the City's corporate emissions inventory.

In 2020, the City experienced multiple unanticipated challenges that impacted our operations and ability to reduce corporate emissions. Most notably, the COVID-19 pandemic has required the City to adjust our operations, resulting in energy being consumed or conserved in different and unexpected ways. Provincial changes to the methodology for determining annual electricity emissions have increased the City's accuracy in measuring the GHG emissions produced by electricity. While GHGs are now more accurately measured, this change will mean greater unpredictability in electricity emission outcomes each year, and demonstrate less progress on meeting our corporate GHG reduction targets.

BACKGROUND

City GHG Emission Reduction Targets

On March 11, 2019, Council declared a climate emergency and established GHG reduction targets for the City's internal (corporate) operations. These targets follow the global recommendation set out by the Intergovernmental Panel on Climate Change for collaboratively achieving the GHG reductions required to keep global temperature increases below 1.5 degree Celsius. The established targets are as follows:

- 45% (below 2010 emission baseline levels) by 2030
- 60% (below 2010 emission baseline levels) by 2040
- Net zero by 2050

To support the climate emergency declaration, the City established 7 Bold Steps for Climate Action, with the goal of moving New Westminster towards a zero-carbon future by 2050. Through Bold Step #1: Carbon Free Corporation, the City pledged to work to exceed its 2030 climate emergency target of 45% below 2010 emissions levels, by striving to be net-zero by 2030.

City Steps to Accelerate Emissions Reductions

Following establishment of the 7 Bold Steps, Council also supported creation of a new Climate Action Division within the Climate Action, Planning and Development Department. As part of this team, a Corporate Energy & Emissions Specialist position was created to provide interdepartmental support and leadership for corporate climate action initiatives.

In 2020, the City updated its ten-year Corporate Energy Emissions Reduction Strategy (CEERS), providing direction as to how the City can accelerate achieving the targets set forth by the climate emergency declaration. Included in the CEERS are a number of initiatives that have been identified as having energy saving and emissions reduction potential for the City's operations. The City is actively working towards implementing the initiatives outlined in the CEERS and is making progress towards achieving its corporate emission reduction targets.

Update to Previous Corporate Emission Measurement

In 2021, the Province updated the methodology for determining the annual electricity emission factor (EEF). Local governments use the EEF to calculate the GHG emissions produced by the electricity they consume. This update has retroactively impacted the City's corporate GHG emissions calculations from 2010 to 2019. As a result of these changes, the City's previously reported annual corporate GHG emissions are measured differently such that the numbers being reported out have increased, as seen below in Table 1. Overall, corporate emissions appear to be higher by about 6% year over year, on average, as compared to the City's previously reported emissions inventory.

Table 1: Impact of EF Change on Total Corporate Emissions (tCO₂e)

Year	Previous Emissions	Updated Emissions
2019	3510	3741
2018	3725	3897
2017	4037	4289
2016	3936	4227
2015	3801	4126
2014	3857	4133
2013	3914	4165
2012	4030	4220
2011	4321	4536
2010	4089	4227

The Province's methodological update comes in recognition that the previous methodology did not account for BC's imports of electricity generated by higher-emitting sources (i.e. coal, natural gas). This higher-carbon electricity is purchased by the Province whenever there is not enough local supply to serve customers.

Benefits of the New Provincial Methodology

Through this methodological update, the accuracy of reporting the emissions produced by the City's operations is improved. Beneficially, the new methodology will also give the City a better understanding of how fluctuations in annual weather patterns influence our corporate emissions performance. In turn, this will better position the City to identify opportunities to improve operational resiliency. The Provincial methodology update improves comparability in emissions data across economic sectors and holds government to the same reporting standards as industry.

Challenges of the New Provincial Methodology

The new methodology causes increased variability in reported GHG emissions when comparing across years. Under the previous methodology, the EEF was a consistent value over time. However, the update has now made the EEF dynamic. In other words, the proportion of high-carbon and low-carbon electricity in British Columbia changes

from year to year, depending on weather and other circumstances beyond any local government's control. This means that the amount of GHG emissions produced per unit of electricity consumed will change each year.

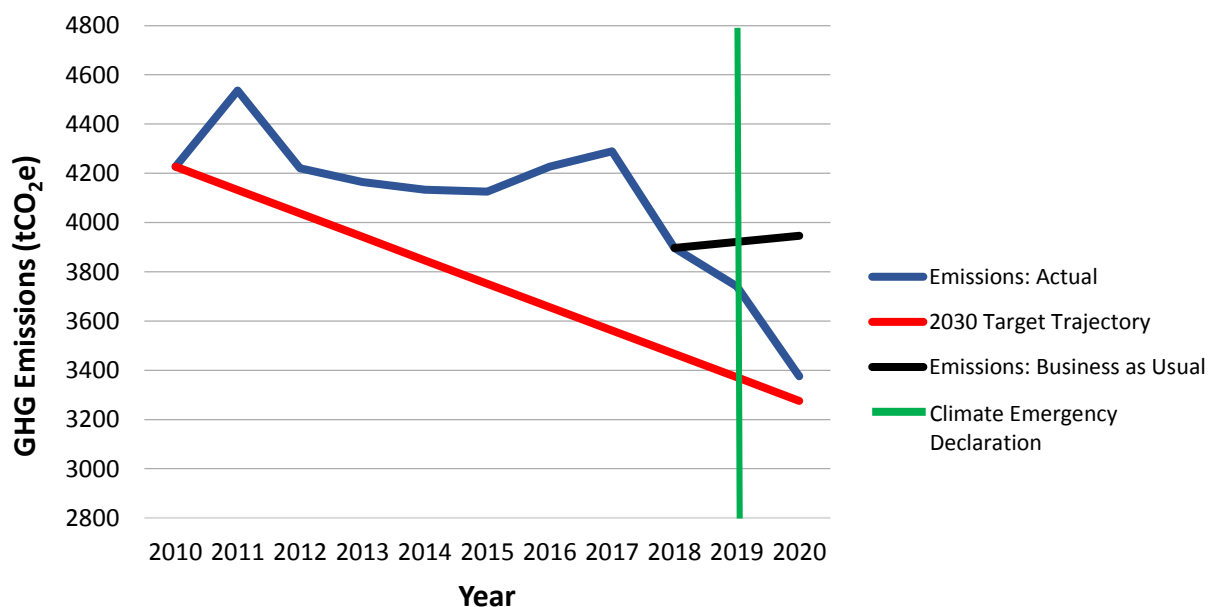
The new Provincial methodology places additional emphasis on the role of energy conservation and efficiency efforts as a means of accelerating GHG emissions reductions or mitigating GHG emission increases. To be clear, moving forward, the City's actions and plans for fuel-switching and electrification are still the preferred emission reduction strategies. In comparison to fossil fuels, electricity still produces fewer emissions.

ANALYSIS

2020 Total Corporate Emissions

The City's 2020 total corporate GHG emissions were 3,375 tCO₂e, approximately 20.2% below the baseline year of 2010. This is 14.5% lower than what would have been expected in the BAU scenario, without the Climate Emergency Declaration and update to the CEERS having occurred. This brings the City to within 2.3% of the City's current reduction target trajectory for 2020 of 22.5% (Figure 2). This illustrates that Council's declaration of a climate emergency in early 2019, followed with additional capital resources and staffing for corporate climate action, has been successful in accelerating emissions reductions.

Figure 2: Corporate GHG Emission Inventories and Targets



It is expected that the completion of the təməsew̓txʷ Aquatic and Community Centre will result in a significant future reduction. The existing Canada Games Pool accounted for 16.8% of total corporate emissions in 2020. Its decommissioning will therefore be a major contributor to meeting the City's corporate GHG objectives.

Annual variations in seasonal weather temperatures can influence GHG emissions outcomes from year to year by causing fluctuations in energy consumption to accommodate thermal comfort. In 2020, the added implications of COVID-19 have made it difficult to determine the extent to which either of these factors influenced the City's corporate emissions.

2020 Corporate Emissions by Sector

To calculate the City's annual corporate GHG emissions, energy consumption for five key sectors (buildings, lighting, fleet, water/wastewater, and contractors) is tracked. Based on this energy consumption, the resulting GHG emissions are calculated for each sector and aggregated to produce the City's total corporate GHG emissions. Compared to the 2010 baseline year, the City's total corporate GHG emissions decreased by 20.2% (or 852 tCO_{2e}) in 2020. This means that the City needs to further reduce our emissions by 24.8% from 2010 baseline levels to reach the 2030 climate emergency target. Energy consumption and GHG emissions for each sector in 2010 (baseline year), and for 2019 and 2020, are summarized in Attachment 1.

A discussion of the City's performance in each of the sectors contributing to our GHG emissions is provided in the following sections. As detailed below, emissions from sectors that rely on electricity consumption were impacted by the Province's updated methodology, including Buildings, Lighting, and Water/Wastewater.

1. Buildings Sector

GHG emissions produced by the City's buildings and facilities have decreased by 25.5% between 2010 and 2020. Natural gas consumption decreased by 22.5% (8583 GJ) from 2019 to 2020, which translates to an emissions reduction of 429 tCO_{2e}. Electricity consumption decreased by 11.8% (1,063,510 kWh) from 2019 to 2020 but the GHG emissions produced by electricity consumption increased by 19.6% (53 tCO_{2e}). This is due to electricity's increased carbon intensity in 2020 compared to 2019, as identified with the Province's updated methodology. Electricity was roughly 34% more carbon intensive in 2020 than it was in 2019. Some of the decreased electricity consumption can be associated with the ongoing energy conservation and efficiency measures being implemented. For example, floor lighting at Moody Park Arena and Queen's Park Arena was converted to LEDs, and a dimmer system was added at Queen's Park Arena. Positive feedback has been received about these upgrades, indicating that the new lighting is better and brighter.

The COVID-19 pandemic influenced the City's corporate GHG emissions. Provincial stay-at-home orders caused some facilities to close or reduce occupancy, thereby eliminating or reducing the need to heat and illuminate them for a period of time. On the other hand, Public Health and Work Safe BC recommendations called for an increase in fresh air intake as a measure to reduce the risk of transmission. This results in HVAC systems to consume more energy than at lower levels of fresh air intake. These competing outcomes have made it difficult to understand the true GHG impact COVID-19 has had on our buildings.

2. Lighting Sector

Emissions from the lighting sector (streets, parks, outdoor facility lighting, etc.) increased by 33% (26 tCO₂e) from 2019 to 2020 despite an overall decrease in electricity consumption of 27,081 kWh. This was due to electricity's increased carbon intensity in 2020. Overall, electricity consumption decreased due to continued conservation and efficiency efforts. For example, ongoing efforts to convert metal halide/HPS overhead lighting to LEDs along multi-use pathways continues to conserve energy in this sector.

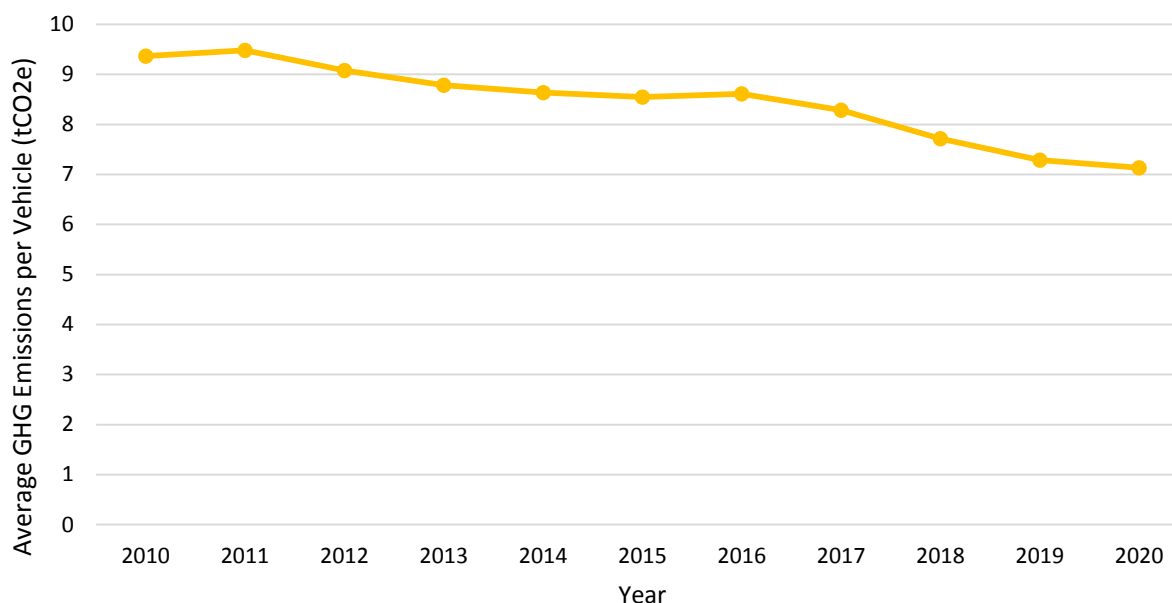
COVID-19 also presented challenges to the lighting sector, as supply chain issues meant that inefficient lighting was able to operate longer than planned while the City waited for efficient LED replacements.

3. Water and Wastewater Sector

In comparison to 2019, the consumption of electricity for the water and wastewater sector increased by 19.6% (77,689 kWh) in 2020. This is compounded by the increased carbon intensity of electricity in 2020, and translates to an emissions increase of 58% (7 tCO₂e) from 2019 to 2020. This sector currently has a minimal effect on total corporate emissions. The increased occurrence of more significant weather events as a result of climate change could cause emissions in this sector to increase. For example, rain events can result in annual variations in energy consumed by pump stations.

4. Vehicle Fleet Sector

In 2020, emissions produced by the City's fleet decreased by 35 tCO₂e from 2019, and have decreased nearly 13% (211 tCO₂e) from the baseline year. The City's Low Carbon Fleet Policy has played a key role in this success, resulting in a 23.7% reduction in the average GHG emissions produced per vehicle using fossil fuels, as seen in Figure 1. This is despite a 14.6% growth in the fleet's size to serve the needs of the growing community.

Figure 1: Average GHG Emissions (tCO₂e) per Vehicle

These reductions have been achieved despite unanticipated challenges that influenced fuel consumption, primarily related to the COVID-19 pandemic. For example, In order to adhere to COVID-19 physical distancing measures, additional vehicles were used to maintain physical distancing, resulting in increased vehicle trips, fuel consumption and resulting emissions. The pandemic also restricted the City's ability to use propane, a cleaner and cheaper fuel option, as physical distancing measures limited staff enrollment in the required propane safety and handling certification course.

5. Contractor Emissions Sector

Contractor emissions are defined as those emissions coming from the vehicles and equipment used to provide a typical municipal service (e.g. tree trimming, line painting) on contracts valued at over \$25,000. In 2020, contractor emissions contributed 79 tCO₂e to the corporate emissions inventory, a 72% decrease from 2019 (284 tCO₂e). This decrease was likely related to the COVID-19 pandemic and the reduced use of certain contracted services while Provincial health orders were in effect.

Although reducing contractor emissions is not within our direct control, the City may be able to influence these emissions by considering the sustainability of contractor's operations during the vendor selection process. More organizations are beginning to report these types of emissions to understand the full GHG impacts of their operations and leverage their position to encourage sustainability throughout their purchasing.

As recommended by the updated CEERS, 2020 is the first year that contractor emissions are being included in the City's corporate emissions inventory. As seen in Attachment 1, contractor emissions are reported separately to differentiate which emissions the City can control, and which emissions the City can only influence.

This approach will also maintain consistency in measuring the City's progress to reaching its corporate emission reduction targets, since the 2010 baseline year did not include the emissions produced by this sector.

NEXT STEPS

The City continues to undertake projects that reduce fuel and electrical consumption, which increasing the ratio of energy use reliant on low-carbon electricity. Despite the challenges presented by the COVID-19 pandemic, the City has a clear path forward through implementation of the updated CEERS, which provides a detailed outline of planned actions and strategies for the 10 year horizon. Attachment 2 provides a summary of energy conservation, efficiency, and measures that are currently underway or were completed in 2020.

FINANCIAL IMPLICATIONS

Under the Provincial Climate Action Charter, the City currently receives back 100% of the annual carbon tax paid to the Province as part of the Climate Action Revenue Incentive Program (CARIP). The City has been receiving approximately \$115,000 annually through CARIP and reports to the Province on our progress each year. The City uses CARIP resources to help implement corporate energy projects. On May 11, 2021 the Province announced the end of the CARIP program, outlining that 2020 will be the final year for reporting, with the final grant paid to local governments in 2021.

In 2019 the City allocated capital funds that would be used to implement CEERS building and fleet-related projects within the 2020-2024 Financial Plan based on the carbon price of \$150/tCO₂e applied to total corporate emissions. Following the announcement of the end of the CARIP program, the proposed 2022 Capital Plan was adjusted to reflect the loss of this funding.

INTERDEPARTMENTAL LIAISON

This report has been developed by the Climate Action, Planning and Development Department in consultation with the Engineering Services Department and the Electrical Utility. Additional interdepartmental staff consultation has occurred within the Energy Management Committee in the preparation of this report.

OPTIONS

The following options are presented for Council's consideration:

1. That Council receive this report for information; or
2. That Council provide alternative direction to staff.

Staff recommends Option 1.

ATTACHMENTS

Attachment 1: 2010, 2019, and 2020 Corporate Energy & Emissions Inventories (tCO_{2e})
with New Electrical Emission Factors Applied

Attachment 2: Committed Initiatives and Future Considerations by Sector

APPROVALS

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