



Committee of the Whole Report For the Meeting of Sept 2, 2021

To: Committee of the Whole **Date:** August 20, 2021
From: Philip Bellefontaine, Director of Engineering and Public Works
Subject: The City of Victoria Corporate Energy and Emissions Management Plan

RECOMMENDATION

That Council:

- a) Adopt the directions as outlined in the *City of Victoria Corporate Energy and Emissions Management Plan (Appendix A)* to support implementation of the Climate Leadership Plan.
- b) Request that the Police Board endorse targets and actions identified in the Municipal Operations section of the City's Climate Leadership Plan.
- c) Request that the Police Board adopt the directions outlined in the City of Victoria Corporate Energy and Emissions Management Plan (Appendix A) to support implementation of the of the Climate Leadership Plan.

EXECUTIVE SUMMARY

In 2018, the City of Victoria adopted corporate renewable energy and GHG emissions reduction targets in its Climate Leadership Plan (CLP) that include.

- By 2030 reduce corporate greenhouse gas (GHG) emissions by 60 percent.
- By 2040, all City facilities are powered 100 percent by renewable energy.
- All new City facilities are renewably powered.
- By 2025, all City power tools, and small engine-driven equipment are renewably powered.
- By 2040, 80 percent of the City fleet is electrified or renewably powered.

These targets are ambitious and reflect the City's desire to lead on its corporate GHG reduction efforts to better support the delivery of the Climate Leadership Plan's community wide renewable energy targets. To support staff and Council in achieving the corporate GHG emissions reduction targets, the City hired Stantec Consulting Ltd. to develop the Corporate Energy and Emissions Management Plan (CEEMP).

The purpose of the CEEMP is to set the City on a path to achieving the CLP GHG emissions reductions and renewable fuel targets by establishing short-term initiatives that build momentum and lay the groundwork for further reduction actions to be implemented post-2030. The CEEMP covers a 10-year horizon from 2021 to 2030, but also signals the actions needed to achieve the 2040 and 2050 targets outlined in the CLP. It is important to recognize that this pathway will

continue to evolve over time, assumptions will change, and forecasts will need to be refreshed. As such, the CEEMP will need to be regularly updated over this period.

The CEEMP builds on a series of City energy-related works and activities that have taken place in recent years and provides a framework and management system to guide future priority activities to realize the overall GHG reduction targets, reduced life-cycle costs, and improved quality of life for City employees and other key stakeholders. The CEEMP, together with the forthcoming Corporate Climate Change Adaptation Plan, will form the environmental backbone of a future triple bottom line accounting system to support City corporate operations, services and infrastructure.

The three main objectives of the CEEMP are as follows:

1. Outline the key measures necessary to meet the City's 2030 targets.
2. Identify how the City can continue to lead and inspire through additional corporate leadership initiatives.
3. Provide a governance framework and management system to guide decision making and ensure the City remains on the pathway to achieving the City's targets.

The CEEMP utilized modeling to estimate future corporate emissions, scanned best practices by leading municipalities and consulted with key City staff to identify a set of measures necessary to meet our 2030 targets, and develop a framework to track progress and support decision-making.

Key measures to meet City's 2030 targets include:

- Decarbonizing City buildings through:
 - Electrification and energy conservation projects.
 - Replacing Crystal Pool and Fitness Centre with a low carbon facility and ensuring that the new Fire Hall #1 operates using renewable energy sources.
 - Offsetting the remainder of natural gas emissions through the purchase of renewable natural gas (RNG).
- Incorporating the following fleet decarbonization strategies within the Green Fleet Plan:
 - Eliminating the underutilization of fleet vehicles by 2025 (estimated at 10% of existing fleet size not including additional fleet required for new/expanded services).
 - Accelerating the conversion to electric and low-carbon fuelled vehicles using the cost of carbon to support the life cycle replacement cost.
 - Establishing programs that facilitate more accountability and ownership over GHG emissions and fuel consumption within individual fleet user groups.
- Converting all equipment to biofuels or electric by 2030.¹

The CEEMP also identifies additional Corporate Leadership Initiatives including:

- Incorporating departmental carbon allocations into the annual budgeting process.
- Implementing an internal shadow price on carbon.

¹ Equipment includes all gas and diesel powered handheld and off-road equipment such as leaf blowers and ride-on mowers

The CEEMP lays out the following governance framework:

- CEEMP will be governed by a steering committee made up of directors, assistant directors and department heads, with the mandate of ensuring that the CEEMP remains a priority across the City.
- An advisory group made up of departmental subject matter experts will be responsible for updating forecasts, preparing annual emissions reports, and working with various departments as they progress along the identified pathway to achieving the City's targets.

PURPOSE

The purpose of this report is to request that Council adopt the directions outlined in the Corporate Energy and Emissions Management Plan.

BACKGROUND

In 2018, the City of Victoria adopted corporate and community renewable energy and GHG emissions reduction targets in its Climate Leadership Plan (CLP). In doing so, the City set corporate targets that were more ambitious than those set for the community. This strategy was implemented in recognition that although corporate emissions account for only 1% of community emissions, they carry additional leadership value. In setting higher corporate targets, the City is pushed to look further ahead, and take bolder actions. In implementing this strategy, staff across the various departments and divisions become experts in energy efficiency and GHG emission reductions in their field and can share their knowledge with their peers across the community and region. The corporate renewable energy and GHG emission reduction targets are:

- By 2025, all City power tools, and small engine-driven equipment are renewably powered.
- By 2030 reduce corporate GHG emissions by 60 percent.
- By 2040, 80 percent of the City fleet is electrified or renewably powered.
- By 2040, all City facilities are powered 100 percent by renewable energy.
- All new City facilities are renewably powered.

The CLP also includes the following action: “by 2022, the City has developed a ‘triple bottom line’ accounting system that guides City business planning by assessing and balancing environmental and social risks and financial costs and opportunities.”

Stantec Consulting Ltd. was awarded a contract to develop the City's Corporate Energy and Emissions Management Plan (CEEMP).

ISSUES & ANALYSIS

Since 2007, energy and GHG emissions from corporate operations (including the Victoria Police Department) have decreased by 20 and 17 percent, respectively. Looking ahead, the City is targeting a 60% reduction in corporate emissions compared to 2007 levels by 2030 (see Figure 1).

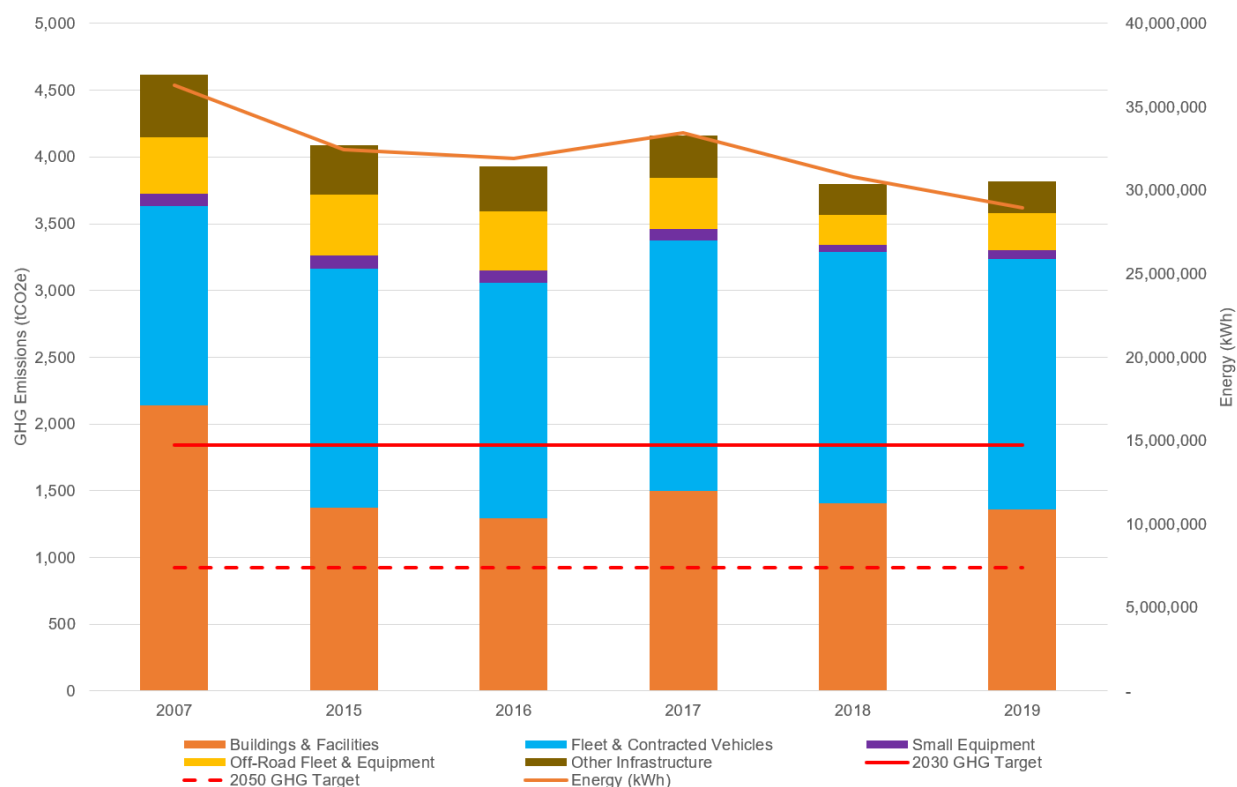


Figure 1. 2007 - 2019 Energy and GHG Emissions Trends by Reporting Sector

The CEEMP utilized modeling to estimate future corporate emissions, as a first step, a business as usual (BAU) forecast for corporate GHG emissions was completed to provide a baseline for future actions.

Business as Usual Energy and GHG Emissions Forecast

A business as usual (BAU) energy and GHG emissions forecast was developed to understand what the City's footprint would look like in 2030 and 2050, and to examine the potential effectiveness of energy and GHG reduction opportunities (Figure 2). The City's 2050 BAU GHG footprint is estimated to be 3,800 tonnes of carbon dioxide equivalent (CO₂e) – a decrease of 18 percent from the 2007 base year emissions and an increase compared to the 2019 reporting year.

The forecast assumes that the City can continue servicing the growing community utilizing existing building assets but requires additional fleet and equipment. The forecast also assumes that the following changes to the existing assets occur:

- Fire Station #1 and the addition of the mechanics building to Fire Station #3 will be fueled using renewable fuels such as renewable natural gas.
- A 20% reduction in energy consumption occurs at the Beacon Hill Park greenhouses as a result of energy projects.

The forecast also accounts for initiatives set by the Federal Government (e.g. Federal vehicle corporate fuel-economy standards).

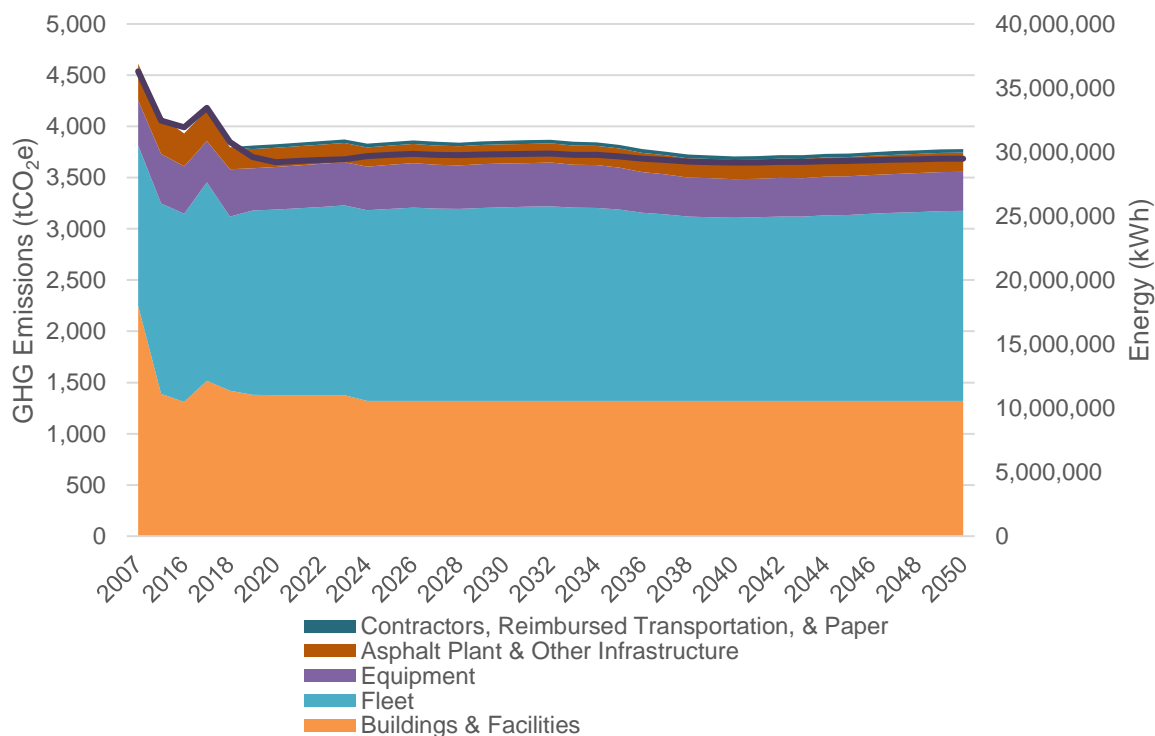


Figure 2. Business as Usual Energy and GHG Emissions Forecast

While the BAU forecast does not show a significant rise in GHG emissions, without additional measures corporate GHG emissions will not decline.

Implemented CEEMP GHG Emissions Forecast

In consultation with key City departments, a suite of GHG emission reductions measures were identified and their effectiveness modelled to build suite of measures that would support reaching the corporate GHG emissions reduction target. Figure 3 below

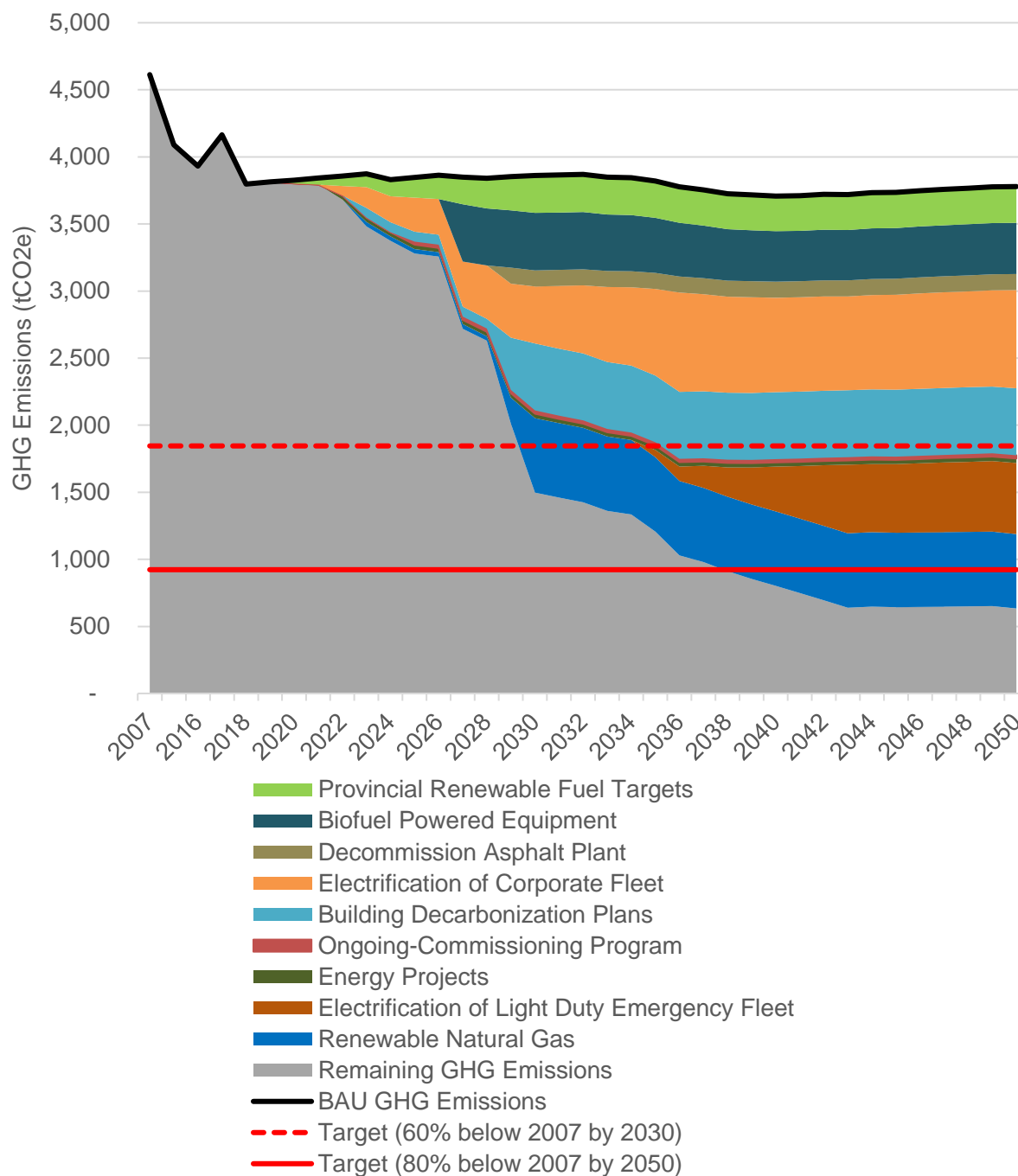


Figure 3. Forecasted GHG Emission Reductions by CEEMP Initiative Category

The forecast recognizes that no single measure will support the City achieving its 2030 GHG emissions reduction target, but that a suite of measures implemented across the City does provide a pathway to reach the 2030 and 2050 targets.

CEEMP Measures

Key measures to meet City's 2030 targets include:

- Preparing and implementing building decarbonization plans for Centennial Arcade, City Hall, Crystal Garden, Public Works Buildings, and the Beacon Hill Park administration building to achieve at least a 30% reduction in energy while shifting the energy profiles of each to consume at least 85% electricity.
- By 2030, replace Crystal Pool and Fitness Centre with a low carbon facility and ensure that the new Fire Hall #1 operates using renewable energy sources.
- Implement recommended energy conservation projects within CEEMP. For other facilities or infrastructure, seek out energy projects to reduce energy and GHG emissions.
- Offset the remainder of natural gas emissions through the purchase of renewable natural gas (RNG).
- Implement an ongoing building commissioning and monitoring program to maintain energy conservation and reduce GHG emissions.
- Incorporate the following fleet optimization strategies within the Green Fleet Plan:
 - Eliminate the underutilization of fleet vehicles by 2025 (estimated at 10% of existing fleet size not including additional fleet required for new/expanded services).
 - Accelerate the conversion to electric and low-carbon fuelled vehicles using the cost of carbon to support the life cycle replacement cost.
 - Establish programs that facilitate increased accountability and ownership over GHG emissions and fuel consumption within individual fleet user groups.
- Convert all equipment to biofuels or electric by 2030.

Additional Corporate Leadership Initiatives include:

- Incorporate departmental carbon allocations into the annual budgeting process beginning in 2022. Carbon allocations should be derived from the GHG emissions targets identified for each of the key departments within the CEEMP. This will allow the organization to track progress, build accountability and support decision-making.
- Incorporate an internal shadow price on carbon into decision making pertaining to corporate assets and operations, beginning with the upcoming green fleet plan as a trial. This is in essence a "price on paper" used in financial analyses to compare actual and/or notional costs for different options to guide corporate decisions.
- Implement more flexible work environments as a means to reduce travel related costs (both staff time and reimbursement of fees) and GHG emissions.
- Develop a Sustainable Products Ranking Framework and associated program by 2025. A Sustainable Products Ranking Framework would enable the City to clearly assess the degree to which environmental and social considerations have been addressed over the life cycle of a good or capital asset

CEEMP Responsibility and Accountability

A coordinated approach is required to achieve full implementation of the CEEMP. This coordination will be provided by the CEEMP Steering Committee with support from the advisory group and performance reporting supplied by each department or business unit as appropriate. It is important to recognize that the pathway that has been identified by the CEEMP will continue to evolve over time, assumptions will change, and forecasts will need to be refreshed. As such the CEEMP recommends that the City's GHG emissions breakdowns be reviewed annually and lays out a governance framework to facilitate the continuous improvement of the plan.

The following table outlines the roles and responsibilities of the key groups involved in the City's energy and GHG emissions management process.

CEEMP Accountability – Key Groups

| | Members | Roles and Responsibilities |
|--------------------------|---|---|
| Council | | Receives CEEMP annual reports and approves CEEMP budget items as part of annual Financial Plan |
| CEEMP Steering Committee | Includes Senior Leadership from Finance, Parks & Facilities, Fire, Police and Engineering/PW Depts. | Based on CEEMP, sets annual departmental carbon allocations, reviews annual reports and approves CEEMP budget requests for insertion into draft Financial Plan. |
| CEEMP Advisory Group | Environmental Sustainability Coordinator and SMEs from Fleet, Facilities, Finance and Procurement | Generates annual departmental carbon emissions reports. Supports the Steering Committee and Departmental CEEMP teams implement carbon allocations. Supports CEEMP project prioritization. |
| Departmental CEEMP Teams | Departmental Managers and ADs, and their Finance team supports | Receives annual carbon budget, allocates carbon budget across departmental BUs for Parks & Facilities, Fire, Police and Engineering/PW. Generates and implements annual CEEMP project list in alignment with carbon budget. |

Table 1. CEEMP Accountability - Key Groups

The CEEMP will be governed by a steering committee made up of directors, assistant directors, and/or department heads, with the mandate of ensuring that the CEEMP remains a priority across the City. The steering committee will:

- Consist of senior leadership with direct accountability for the largest GHG target areas such as EPW and PRF.
- Create an inter-departmental awareness, ensuring a consistent approach across the organization and a consistent level of priority
- Review the annual corporate energy and emission trends and annual departmental emission reports.
- Set annual departmental carbon allocations with support from the Advisory group, using the CEEMP pathway and latest emissions trends.
- Annually approve CEEMP overall work plan and budget requests for insertion into draft Financial Plan.
- Provide information for the annual Corporate Energy and GHG Emissions Progress Report to Council.

OPTIONS & IMPACTS

The CEEMP identifies the corporation's largest sources of GHG emissions, mainly buildings and fleet, and identifies the need for both incremental and major initiatives to reach the 2030 GHG emissions reduction and renewable energy targets.

Buildings and Facilities

Figure 5 identifies specific facilities and infrastructure initiatives and their estimated impact on GHG emission reductions. The overall approach in these sectors is to optimize energy consumption to reduce emissions, electrify HVAC systems where possible, and substitute natural gas for renewable natural gas where other options are not available. Renewable natural gas is available in limited quantities, is approximately three times the price of fossil fuel based natural gas, making it similar in cost to electricity on a unit of energy basis, and requires no change to building equipment or supplies.

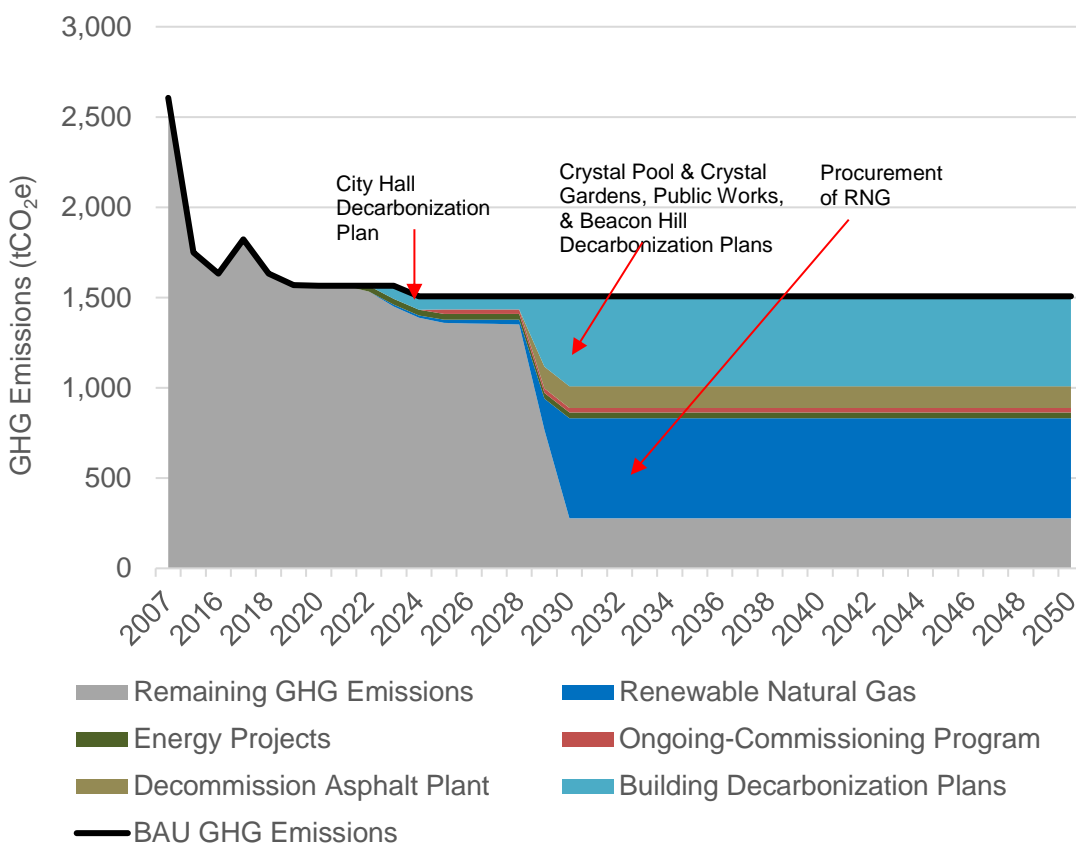


Figure 5. Forecast of Buildings GHG Emissions

While substantial GHG emissions reductions have been gained in buildings to date through both internal and external factors including maintenance divestiture (McPherson Theatre) and fuel switching, further assessment is needed to understand the capital investment required to achieve the remaining building emissions reductions required. Hiring a Corporate Energy Specialist in 2019 has resulted in 1.1 GWh of energy savings (\$100,000) and 45 tonnes of GHG emissions reductions through fuel switching and energy efficiency upgrades. It is recommended that the City continue implementing energy efficiency and fuel switching retrofits, as well as develop a facilities

investment plan (similar to the green fleet planning work that is currently underway) to inform facilities capital planning for larger projects. Additionally, ongoing management and commissioning of energy use in facilities will help ensure that energy use does not drift towards inefficiencies.

Fleet and Equipment

Compared to the 2007 base year, fleet, and equipment GHG emissions are expected to continue to rise as services increase to match community growth but will be offset by increasingly stringent Provincial and Federal Vehicle Fuel Efficiency Standards. Figure 6 illustrates the progression of GHG emissions reductions over time compared to those forecasted in the business as usual (BAU) scenario and identifies key initiatives required inside and outside the organisation to support reaching the 2030 and 2050 GHG emission reduction targets.

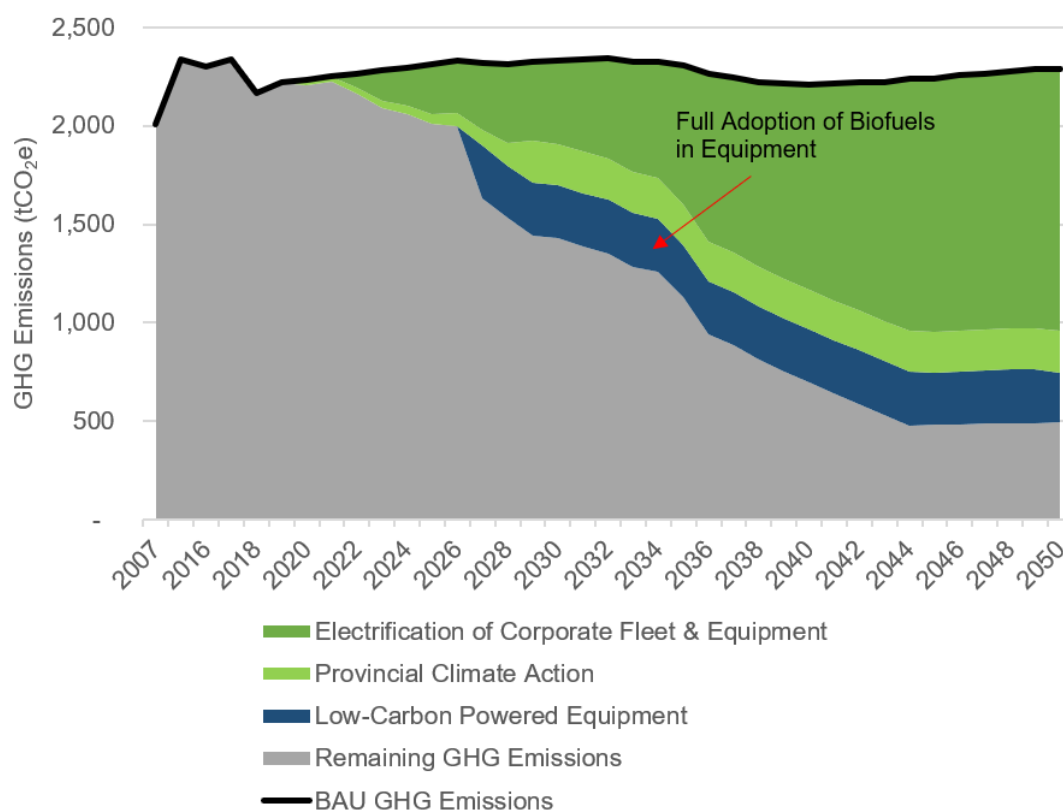


Figure 6. Forecast of Fleet & Equipment GHG Emissions

The previous figures show that it will be difficult for the City to quickly and significantly reduce or offset GHG emissions by 2030 due to a range of factors both within and outside of the City's control.

External Risks

External factors include a limited number of available low- or no-emission heavy-duty vehicle and equipment options currently available for purchase, not all of which meet the City's requirements. While the City will pilot and adopt the use of electric equipment where possible, biodiesel) and other biofuels will be used in equipment to achieve its CLP target of converting all small equipment to 100% renewable fuels by 2025 and to support the achievement of the 2030 GHG reduction

target. Accessing a supply of renewable fuels may be difficult in the next five years, but with increased demand from other cities, like Vancouver, post-2025, supply is not expected to be an issue.

Internal Risks

Internally, there are barriers to facilities, fleet and equipment optimization. While transitioning to renewably powered facilities and fleet can bring significant savings in maintenance and operating costs, it is capital intensive and requires additional infrastructure planning and management, e.g. expansion of electrical services at key facilities where fleet vehicles park, overnight and new work procedures to ensure vehicles are charged when required. A green fleet planning process is underway which will provide actionable guidance on fleet management over the next five years that aligns with the corporate 2030 and fleet 2040 targets. The plan will provide both fleet investment and infrastructure investment strategies to inform the 2022 and future budgets. A summary of proposed fleet initiatives can be found in the CEEMP (page 47)

The above risks can be mitigated by regularly assessing the City's performance as well as any assumptions related to external factors. It will be the role of the CEEMP advisory group to keep the CEEMP steering committee updated of any changing information so they can make informed decisions that are in line with the CEEMP.

The CEEMP also identifies the following two corporate leadership initiatives which will help guide decision-making across the organisation. It will be the role of the steering committee to oversee the trial and implementation of these initiatives over coming year:

1. Departmental Carbon allocations

Departmental carbon allocations provide accountability and aid decision makers in understanding how their choices will impact on corporate and departmental GHG emissions. It will assist departments to build in any costs for GHG reductions into project budgets eliminating the need for a climate top-up budget. The steering committee will lead a trial of this new carbon allocation method during the 2022 budget process in order to evaluate what tools and support will be required for these carbon allocations to inform capital and operating plans for 2023 and future years.

2. Corporate Internal Carbon Pricing

An internal shadow price on carbon is an action in the CLP and a decision-making tool adopted by several neighbouring municipalities including the District of Saanich and the City of Vancouver. It is in essence a "price on paper" used in financial analyses to compare actual and/or notional costs for different options. A corporate carbon price is not the same as a carbon tax, which is a carbon price set by a government and applied across a jurisdiction. In this case, the carbon price is used to inform decision-making with respect to City assets or operations to help the City reach its climate change targets. It is recommended that the City align this policy with the City of Vancouver which establishes the ICC at \$160/tCO₂e in 2021. The ICC will then escalate at 6% per year. The steering committee will lead the incorporation of internal carbon pricing into various decisions, beginning in 2021 with the upcoming green fleet plan.

In establishing the key measures, corporate leadership initiatives, and governance framework identified in the CEEMP, the corporation will be better positioned to achieve its corporate GHG emissions reductions targets.

Accessibility Statement

The CEEMP identifies a pathway to achieve the City's GHG emissions reduction targets, through the forecasting of potential GHG emissions reduction measures related to buildings and fleet. Implementation of the CEEMP will be the responsibility of Steering Sub Committee. Accessibility plans and policies, should be considered during the planning stage of each measure.

Official Community Plan Consistency Statement

By leading at a corporate level the City supports the following Official Community Plan Goals:

- 12 (A) Victoria and Victorians are more resilient to climate change and energy scarcity and costs.
- 12 (B) New and existing buildings are energy efficient and produce few greenhouse gas emissions.
- 12 (C) Transportation options reduce fossil fuel dependence, help conserve energy and produce low greenhouse gas emissions and other air contaminants.
- 12 (E) Victoria relies on clean, renewable, diverse and efficient energy sources.

2019-2022 Strategic Plan

The CEEMP Aligns with Strategic Objective Six of the 2019-2022 Strategic Plan: Climate Leadership and Environmental Stewardship

Impacts to Financial Plan

With the completion of a number of specific strategies and plans, starting in 2022, a number of climate action investments such as electrification of City fleet, and the expansion of public EV charging infrastructure have been built into the 10 year capital plan in order to ensure they can be consistently funded. The initiation of departmental carbon allocations within the Financial Plan will also assist departments to continue to build in any costs for GHG reductions into project budgets. Staff propose that the 2022 budget year be used to trial this new GHG budgeting process and evaluate what tools and support will be required for these budgets to inform capital and operating plans for 2023 and future years.

CONCLUSIONS

The requirements to meet a key target in the CLP's Municipal Operations chapter have been identified through the development of a Corporate Energy and Emissions Management Plan (CEEMP). The CEEMP recognizes that the current pattern of investment in corporate operations and services will not support the achievement of the CLP's corporate renewable energy and emissions reduction targets. The CEEMP proposes a number of measures and investments over the next ten years that will inform decision-making and redirect corporate investments and planning to support achieving its corporate GHG emissions reduction and renewable energy goals.

With Council's adoption, the CEEMP will be implemented to guide expenditure of City resources to align with corporate emission reduction goals through integration with the financial plan.

Respectfully submitted,

Laura Berndt
Manager, Energy and Climate Action

Philip Bellefontaine
Director, Engineering and Public Works

Report accepted and recommended by the City Manager.

APPENDIX A

City of Victoria: Corporate Energy and Emissions Management Plan (CEEMP)